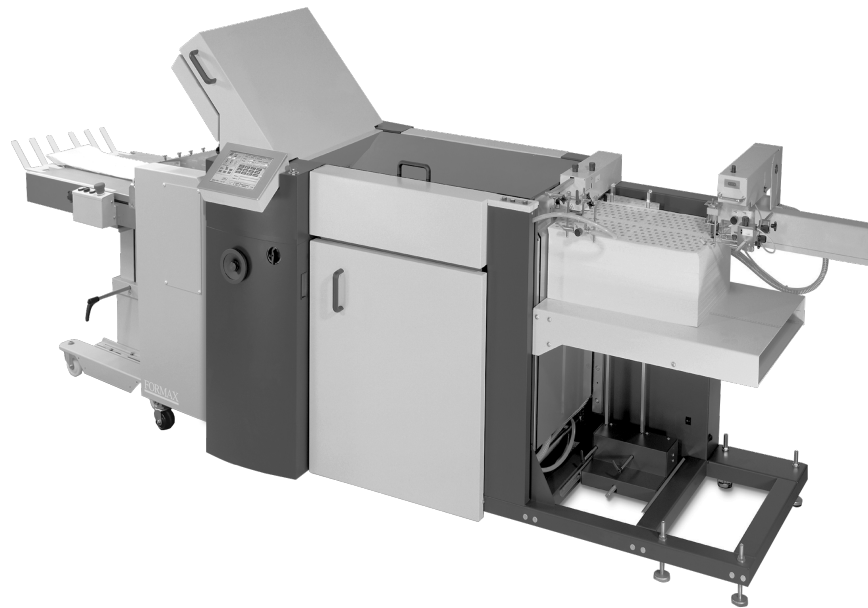


# FORMAX<sup>®</sup>

---

2300 Series  
AutoSeal<sup>®</sup> Production Pressure Sealer





2300 Series  
AutoSeal® Production Pressure Sealer

<b>A</b>	<b>Safety</b>	<b>A3</b>
1.	Basic safety instructions	A3
	1.1 Transport and storage	A3
	1.2 Organizational measures	A4
	1.3 Selection of personnel, basic responsibilities	A5
	1.4 Standard operation	A5
	1.5 Special work, maintenance, repair	A5
	1.6 Treatment of electrical equipment	A5
	1.7 Design of the safety instructions	A6
2.	Product-specific safety instructions	A7
	2.1 Proper handling of the machine	A7
	2.2 Safety instructions for the operation of the machine	A8
	2.3 Safety features at the machine	A11
	2.4 Residual risks	A12
	2.5 Emergency stop button	A12
<b>B</b>	<b>General description</b>	<b>B3</b>
1.	Description of the product and its functions	B3
	Buckle fold principle	B3
	Knife fold principle	B4
2.	Basic components of the machine	B5
3.	Space requirements	B7
4.	Operating positions	B8
5.	Specifications	B9
<b>C</b>	<b>Installation and start-up</b>	<b>C3</b>
1.	Arrival at the customer	C3
2.	Intermediate storage	C3
3.	Installation	C5
4.	Electrical installation	C6
5.	Pneumatic installation	C8
6.	Start-up	C9
7.	Disassembly and disposal	C9

## Contents

<b>D</b>	<b>Setting up and operation</b>	<b>D3</b>
	<b>Automatic setting</b>	<b>D5</b>
1.	Description of the touchscreen display	D5
1.1	Output parameters	D6
1.2	Function keys	D8
1.3	Input parameters	D8
2.	Description of the setting menus	D9
2.1	BASIC menu	D9
2.2	SETUP menu	D9
2.2.1	Selecting the fold setting	D9
2.2.2	Sheet size	D10
	User-defined sheets	D10
2.2.3	Standard fold	D11
	Standard sheet sizes	D11
	Setting by fold symbols for parallel fold	D12
	Measuring the paper thickness	D13
	Setting by fold symbols for crossfold	D14
2.2.4	Special fold	D15
2.2.5	Saved job	D17
2.3	CORRECTION menu	D19
2.3.1	Sub-menu - Fold length	D19
2.3.2	Sub-menu - Roller gap	D22
	Correction of roller gap (symmetrical)	D23
	Correction of roller gap (asymmetrical)	D25
2.3.3	Sub-menu - Position	D26
	Correction of flat pile feeder	D26
	Correction of alignment rails	D26
	Correction of the delivery rollers	D26
2.3.4	Sub-menu - Read-in paper thickness	D29
2.4	COUNTER menu	D30
2.5	CONTROL menu	D31
2.6	CONFIGURATION menu	D33
2.7	JOB menu	D34
2.8	SERVICE menu	D39
	Selecting a language	D39
	Setting the date and time	D40
<b>E</b>	<b>Manual settings</b>	<b>E3</b>
1.	Feeders	E3
1.1	Pneumatic sheet feeder	E3
1.1.1	Principle of operation	E3
1.1.2	Description	E3
1.1.3	Setting the sheet size	E4
1.1.4	Setting the sheet separation	E4
1.1.5	Front paper stop	E7
	Adjusting the horizontal position	E7
	Adjusting the vertical position	E7
1.1.6	Positioning the paper stack	E8
1.2	Flat pile feeder	E9
1.2.1	Principle of operation	E9
1.2.2	Description	E9
1.2.3	Setting the sheet size	E10
1.2.4	Loading the pile table	E10

1.2.5	Moving the paper stack to work position	E12
1.2.6	Adjusting the suction wheel	E13
1.2.7	Exchanging the suction wheel	E14
1.2.8	Rear edge separator	E15
	Fine adjustment of working position	E15
	Hold-down rods	E16
	Automatic height setting mechanism	E16
	Making the lifting suckers inoperative	E18
	Setting the stripper springs	E18
1.2.9	Air settings	E19
2.	Register table	E21
2.1	Functional principle	E21
2.2	Description	E21
2.3	Setting the sheet size	E22
2.4	Adjusting the angle of the alignment rail	E22
2.5	Ball rail	E24
2.6	Changing balls	E25
3.	Fold unit	E26
3.1	Basic configuration	E26
3.2	Description	E27
3.3	Position of the fold plates	E28
3.4	Installing and removing the fold plates	E29
3.5	Angle correction of the fold plate stops	E30
3.6	Fold plate infeed section	E31
3.7	Adjusting the fold plate aperture	E34
3.8	Transport rollers	E38
4.	Transfer brige	E39
4.1	Functional principle	E39
4.2	Description	E39
4.3	Setting	E39
5.	Roller table	E41
5.1	Functional principle	E41
5.2	Description	E41
5.3	Setting the angle of the alignment rail	E42
5.4	Ball rail	E43
5.5	Changing balls	E43
5.6	Setting the hold-down rods	E44
5.7	Setting the alignment rail backward or forward	E45
6.	Deliveries	E47
6.1	Shingle delivery	E48
	Functional principle	E48
	Description	E48
	Setting the transfer height	E49
	Setting the sheet size	E50

## Contents

<b>F</b>	<b>Maintenance</b>	<b>F3</b>
1.	Safety instructions for cleaning and maintenance	F3
2.	Safety instructions	F3
3.	Maintenance work	F5

<b>A</b>	<b>Safety</b>	<b>A3</b>
<b>1.</b>	<b>Basic safety instructions</b>	<b>A3</b>
1.1	Transport and storage	A3
1.2	Organizational measures	A4
1.3	Selection of personnel, basic responsibilities	A5
1.4	Standard operation	A5
1.5	Special work, maintenance, repair	A5
1.6	Treatment of electrical equipment	A5
1.7	Design of the safety instructions	A6
<b>2.</b>	<b>Product-specific safety instructions</b>	<b>A7</b>
2.1	Proper handling of the machine	A7
2.2	Safety instructions for the operation of the machine	A8
2.3	Safety features at the machine	A11
2.4	Residual risks	A12
2.5	Emergency stop buttons	A12





## Safety

### 1. Basic safety instructions

The machine has been built in accordance with state-of-the-art standards and the recognized safety rules.

All hazardous points at the machine are equipped with safety devices. Nevertheless, residual risks cannot be generally precluded when performing certain functions.

Therefore failure to observe the safety instructions may lead to injuries to the operator or bystanders, or the machine and other property may be damaged. Pictographs and explanations in this manual warn of possible remaining risks.

The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine. Any malfunctions, especially those affecting the safety of the machine, should therefore be rectified immediately.

#### 1.1 Transport and storage

The following instructions and warnings are applied to the packing to ensure appropriate and safe transport:



**Top! Transport in upright position only!**



**Protect from humidity!**



**Fragile! Handle with care!**

These instructions and warnings must also be observed for transport within the user's premises.

For transport to other premises resp. for return shipment the machines must be packed and provided with the same markings.

## 1.2 Organizational measures

The operating manual must always be available near the machine.

In addition to reading the operating manual, observe and instruct the user in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection.

The operating manual must be supplemented by instructions covering the duties involved in supervising and notifying special organizational features, such as job organization, working sequences or the personnel entrusted with the work.

Personnel entrusted with work on the machine must have read and understood the operating manual and in particular the chapter on safety before beginning the work.

This applies especially to persons working occasionally on the machine, e.g. during setup or maintenance.

Check whether the personnel is carrying out the work in compliance with the operating manual and paying attention to risks and safety factors.

For reasons of security, long hair must be tied back or otherwise secured, garments must be close-fitting and no jewellery - such as rings - may be worn. Injury may result from being caught up in the machine or from rings catching on moving parts.

Observe all safety instructions and warnings attached to the machine.

See to it that safety instructions and warnings attached to the machine are always complete and perfectly legible.

In the event of safety-relevant modifications or changes in the performance of the machine during operation, stop the machine immediately and report the malfunction to the competent person.

Take the necessary precautions to ensure that the machine is used only when in a safe and reliable state.

Never make any modifications, additions or conversions which might affect safety.

Adhere to prescribed intervals or those specified in the operating manual for routine checks and inspections.

**1.3 Selection of personnel,  
basic responsibilities**

Employ only trained or instructed staff and set out clearly the individual responsibilities of the personnel for operation, setup, maintenance and repair.

Work on the electrical system and equipment of the machine must be carried out only by a skilled electrician in accordance with electrical engineering rules and regulations.

**1.4 Standard operation**

Before starting up the machine, make sure that nobody is at risk and that there are no foreign objects in the machine.

Operate the machine only if all protective and safety-oriented devices, emergency shut-off equipment and noise reduction hoods are in place and fully functional.

Avoid any action that might be detrimental to safety.

In the event of malfunctions stop the machine immediately and prevent further use. Have any defects rectified immediately by authorized personnel.

**1.5 Special work, maintenance, repair**

Observe the setting, maintenance and inspection activities and intervals set out in the operating manual.

Pull the power plug for maintenance and repair work or before opening the electrical cabinet.

If the machine is completely shut down for maintenance and repair work, it must be secured against inadvertent starting by attaching a warning sign to the main switch.

Check the safety features for proper function after completion of the maintenance or repair work.

Always tighten any screw connections that have been loosened during maintenance and repair.

**1.6 Treatment of electrical equipment**

Always keep the electrical cabinets closed.

Switch off the machine immediately if trouble occurs in the electrical system.

The electrical equipment is to be inspected and checked at regular intervals.  
Defects such as loose connections or scorched cables must be repaired immediately by authorized service personnel.

Ensure that electrical cables are laid in such a way that there is no risk of tripping.

1.7 Design of the safety instructions

- 
Warning - General hazard
- 
Warning - Electric current
- 
Warning - Rotating rollers, shafts and gears
- 
Warning - Revolving chains
- 
Warning - Shear hazard
- 
Warning - Revolving belts
- 
Warning - Revolving blades
- 
Warning - Danger of crushing

► **Note**  
 Refers to special information on how to use the machine most efficiently.

## 2. Product-specific safety instructions

### 2.1 Proper handling of the machine

The 2300 Series is built for processing pressure seal forms.

Components of the basic version of the machine:

#### ***Flat pile feeder***

For holding a stack of forms and separation of the sheets from the stack.

The sheets are separated from the top of the stack by means of air and vacuum.

#### ***Fold/Seal unit***

For folding and sealing forms arriving from the feeder.

#### ***Delivery***

For controlled receiving of the folded sheets arriving from the fold unit.

Any use beyond the scope of the intended applications of the machine, for instance handling other materials (such as plastics, textiles, foils) is not in accordance with its intended purpose.

Only such paper sizes and paper thicknesses may be handled that are listed in the chapter "Specifications".

Unsuitable handling of the machine and the non-observance of safety instructions put the operator's life and health at risk and affect the proper function of the machine.

The manufacturer/distributor is not responsible for damages resulting from such unsuitable applications. Responsibility lies alone with the user.

Reading the operating manual and observing the conditions for inspection and maintenance are part of the proper handling of the machine.

**2.2 Safety instructions for the operation of the machine**

The machine may only be operated by trained staff who must comply with national safety and accident prevention regulations.

The line voltage must correspond to the values on the name plate.

Repairs and maintenance work must be carried out only by trained personnel authorized by the manufacturer or his representatives.

**In case of an emergency always push the EMERGENCY button and pull the power plug.**

All hazardous points at the machine are equipped with safety devices.

Nevertheless, remaining risks cannot be generally precluded when performing certain functions.

The following pictographs and explanations in this manual warn the user of these risks:



**Warning - Risk of injury!**

Never bypass or remove safety components!



**Warning - Risk of injury!**

A handwheel clicking into place during operation can lead to injuries. Never pull out the handwheel during operation.



**Warning - Risk of injury from electrical cables!**

Check the electrical cables regularly for breaks and cracks. Only allow trained and authorized staff to work on electrical cables.



**Warning - Risk of crushing from material feed and moving parts on the feeder!**

Moving parts on the feeder can lead to crushing. When making adjustments on the feeder, pay particular attention to moving parts and dangers in the area of the rear edge separator and the material infeed.



**Warning - Risk of injury from revolving chains!**

Do not reach into the area of revolving chains when working on the feeder.



**Warning - Risk of crushing from revolving belts!**

Only perform adjustment work when the machine has been switched off.



**Warning - Risk of injury from rotating suction wheel!**

Reaching into the area of the suction wheel can lead to injuries.

Do not reach into the area of the suction wheel while the machine is running.



**Warning - Risk of crushing from rotating fold rollers!**

Do not reach into the area of the fold rollers while the machine is running.

Wear close-fitting clothing and, if necessary, a hairnet.

Ensure that ties and any jewelry you wear (for example necklaces or bracelets) cannot get caught up on fold rollers or be pulled in.



**Warning - Rotating rollers - Risk of injury!**

Running rollers on the roller table can draw in hair, clothing and limbs. Wear close-fitting clothing and, if necessary, a hairnet.



**Warning - Risk of injury when opening and closing the noise-reduction hood!**

If the noise reduction hood is closed quickly, limbs can get caught up and injured. Always open the noise reduction hood up to the end position.



**Warning - Rotating rollers - Risk of injury!**

Only perform adjustment work on inclined rollers and the alignment rail when the machine is switched off.





**Warning - Rotating rollers - Risk of injury!**

Only perform work on the ball rail when the machine has been switched off and secured against being switched back on.



**Warning - Rotating shafts - Risk of crushing!**

Only remove or fit slitter shafts when the machine has been switched off and secured against being switched back on.



**Warning - Risk of cut injuries from blades and sharp counter-rollers!**

Rotating slitter shafts can draw in clothing, hair or limbs and cause severe injuries. Never reach into the unit while it is running. Only change blades when the machine has been switched off and secured against being switched back on. Wear close-fitting clothing and, if necessary, a hairnet.



**Warning - Risk of injury from sharp blades!**

The cutting and perforating knives are very sharp. For your own safety you should always wear protective gloves and work with the utmost care.



**Warning - Risk of crushing from moving cross bar!**

Swinging the cross bar can cause crushing areas. Swing the cross bar up and down slowly. Pay attention to any potential crushing points.

2.3 Safety features at the machine

The 2300 Series Pressure Sealers are equipped with various safety features. They ensure the safety of the persons working with the machine.

► **Note**  
Protection and safety devices must not be dismantled, manipulated or bypassed. Check these devices every day for proper function.

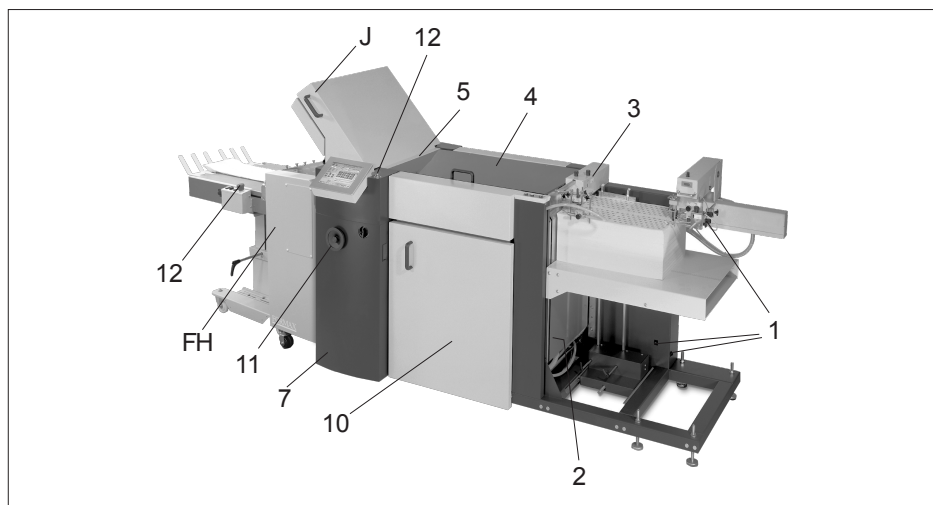


Fig. 1 Entire machine

Fig.	Designation	Test procedure
1/1	Safety switch for pile table	Visual and functional check
1/2	Chain protection for pile table drive	Visual inspection
1/3	Suction wheel cover	Visual inspection
1/4	Swing-up cover at register table	Visual inspection
1/5	Protective bar at fold roller infeed area	Visual inspection
1/6	Slitter shaft cover	Visual inspection
1/7	Electrical cabinet cover	Visual inspection
1/8	Motor compartment cover	Visual inspection
1/9	Swing-up noise reduction hoods	Visual inspection
1/10	Lateral noise reduction door	Visual inspection
1/11	Safety handwheels	Visual and functional check
1/12	Emergency stop switch	Visual and functional check
1/13	Übersicht über die Maschine	Visual inspection

Tab. 1

Possible residual risks, for instance during setup, are pointed out in the respective paragraphs of this manual.

## 2.4 Residual risks

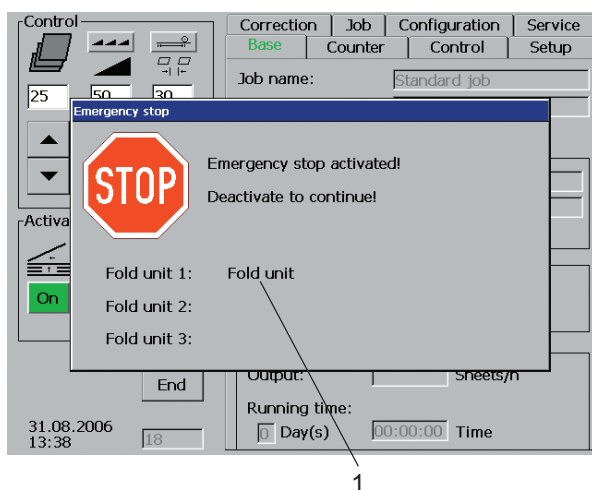
Perform adjustment work when the machine is at standstill.

Pay particular attention to residual risks in case of adjustments which can only be performed with the machine running.

Perform maintenance work only when the machine is at standstill.

Turn the main switch to the "Off" position and prevent it from being switched back on accidentally.

## 2.5 Emergency stop buttons



The emergency stop buttons are located at the feeder, folding station and delivery.

After pushing an emergency stop button, a window with the appropriate information appears on the touchscreen display, indicating which button was pushed (Fig. 2/1).

Fig. 2 Reference to emergency stop on the touchscreen display

Description of the risks / Residual risks	How to reduce the risk
The machine can also be started if the fold plates are not installed and the noise reduction hoods are open	Train your staff
The upwards motion of the pile table at the flat pile feeder can cause potentially dangerous crushing areas	Train your staff
The motion of the lifting suckers at the rear edge separator can cause potentially dangerous crushing areas	Train your staff
There are potential draw-in risks at the ball rails	Train your staff
During the automatic setting process of the side stops, crushing areas can develop between the side panel and the stop carriage when the stop carriage moves back (under the pile table)	Train your staff
There are potential sources of danger under the pile table when the stop carriage is moving: Crushing areas at the openings where the spindle protrudes from the stop; garments and hair may be drawn in by the spindle; crushing area between stop carriage and rear panel	Do not reach under the pile table Train your staff
During the automatic setting process of the alignment rail crushing areas can develop between the housing of the paper thickness sensor and the operator panel	Train your staff
There are potential crushing areas and draw-in risks between the last pair of fold rollers and the crossbar below the slitter shaft	Train your staff
There are potential draw-in risks if the contact surfaces between the transfer bridge and the roller table are not aligned properly	Improve alignment Train your staff
There are potential draw-in risks between drive shaft and side panel at the additional hook-in small format fold unit KF 31 when it is in the work position	Train your staff
There are potential draw-in risks at the transport belts of the additional small format fold unit KF 31	Train your staff
There are potential draw-in risks at the transport belts of the upright delivery SKM 36	Train your staff



**B General description**

**B3**

1. Description of the product and its functions  
Buckle fold principle  
Knife fold principle
2. Basic components of the machine
3. Space requirements
4. Operating positions
5. Specifications

B3  
B3  
B4  
B5  
B7  
B8  
B9

## General description

## General description

### 1. Description of the product and its functions

The 2300 Series Pressure Sealers are computer-controlled folding/sealing machines with an infeed width of 52 cm.

The 2300 Series offers a high level of operator convenience thanks to its intelligent machine control, operation via a central touch-screen panel, the high degree of automation during Setup and the interface for network integration.

The machine is of modular design. Its basic version consists of the following components:

- Flat pile feeder with register table
- Fold unit
- Delivery

The basic version can be extended and adapted to job-specific requirements by adding a second and third fold unit, a mobile knife fold unit or an additional hook-in fold unit.

The basic version of the 2300 Series uses a buckle fold.

When combining it with a knife folding unit, the knife fold principle is used besides the buckle fold principle.

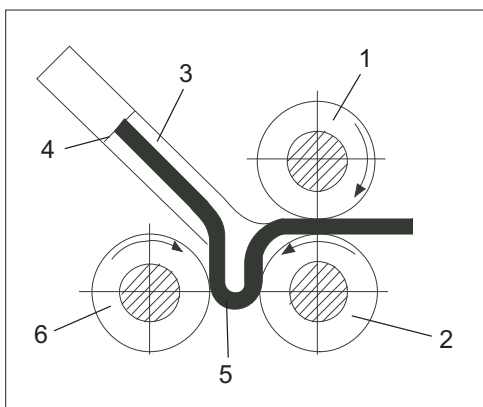


Fig. 1 Buckle fold principle

#### Buckle fold principle

At least three fold rollers and one fold plate are needed for this fold principle.

The infeed rollers (Fig. 1/1) and (Fig. 1/2) transport the sheet to be folded into a fold plate (Fig. 1/3). As soon as it comes up against the adjustable stop (Fig. 1/4), the sheet forms a buckle (Fig. 1/5) because the infeed rollers keep on moving. The loop gets bigger until the sheet is seized by counter-rotating rollers (Fig. 1/2) and (Fig. 1/6); this is where the actual fold occurs.

This sharp crease is the result of the adjustable pressure between fold rollers (Fig. 1/2) and (Fig. 1/6).



## General description

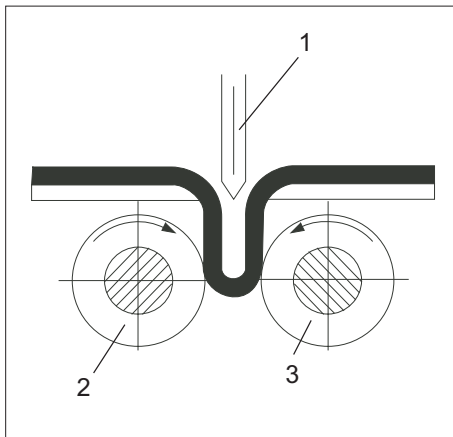


Fig.2 Knife fold principle

### Knife fold principle

A vertically movable folding knife and two counter-rotating fold rollers are needed for this fold principle.

A belt system transports the sheet to be folded under the folding knife (Fig. 2/1) where it runs up against an adjustable stop.

After a short alignment and rest period, the knife is triggered and moves down.

It pushes the sheet between the pair of fold rollers below (Fig. 2/2) and (Fig. 2/3).

The loop is gripped by the counter-rotating fold rollers.

The actual fold occurs as a result of the pressure between fold rollers (Fig. 2/2) and (Fig. 2/3).

**2. Basic components of the machine**

As a result of its modular design, the 2300 Series offers a wide range of applications and configurations to suit the requirements of the user.

The following components and machine modules are available:

- Flat pile feeder
- 1<sup>st</sup> fold unit with 4 automatic fold plates and register table
- 1<sup>st</sup> fold unit with 6 automatic fold plates and register table
- 2<sup>nd</sup> fold unit with 4 automatic fold plates and roller table
- 2<sup>nd</sup> fold unit with 6 automatic fold plates and roller table
- 3<sup>rd</sup> fold unit with 4 automatic fold plates and roller table
- Shingle delivery
- Small format vertical stacker
- Mobile knife fold unit

## General description

### 3. Space requirements

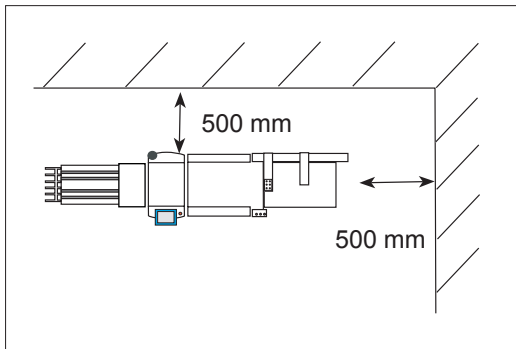


Fig. 3 Distance between wall and machine

When choosing a location for the machine, please bear in mind that additional space for the operator, for maintenance work and for pallets is needed.

When placing the machine close to a wall, make sure that sufficient space is available for maintenance work.  
The minimum distance between wall and machine should be 500 mm.

## General description

### 4. Operating positions

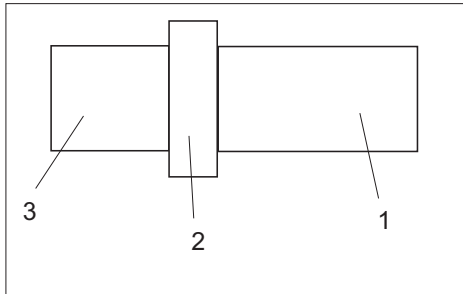


Fig. 5 Operating positions

There is no fixed operator position for the 2300 Series.

The operator must move between the following sections:

Fig. 5/1 Feeder	Loading of unfolded paper
Fig. 5/2 Operator panel	Entering setting data
Fig. 5/3 Delivery	Removing the folded paper

In addition, the machine is accessible from any other position for cleaning, resetting, jam clearance, maintenance work, etc.

5. Specifications

**Paper sizes**

Maximum (width x length)	38 x 65 cm (PBA)
Minimum (width x length)	7 x 12 cm (PBA)
Maximum (width x length)	38 x 75 cm (FSA)
Minimum (width x length)	10 x 12 cm (FSA)

**Fold length**

Maximum in all fold plates	48.0 cm
Minimum in all fold plates	3.5 cm

**Speed:** 220 m/min (depending on paper quality)

**Paper weights:** 40 - 250 GSM for single parallel fold

**Electrical:**

Voltage	3 x 400 V / 50 Hz / N / PE
Current consumption	max 10 A
or	
Voltage	3 x 208 V / 60 Hz / PE
Current consumption	max 16 A

**Power consumption**

Flat pile feeder	0.3 kW
1st fold unit with register table	0.9 kW
2nd fold unit with roller table	0.9 kW
Delivery	0.1 kW
Delivery	0.3 kW
Knife fold unit	0.5 kW
Compressor	1.9 kW

**Ambient conditions:**

Room temperature	15 - 40°C
Air humidity	50 - 90%

**Weight (net)**

Flat pile feeder	160 kg
1st fold unit ( 6 plates) with register table	305 kg
1st fold unit (4 plates) with register table	265 kg
2nd fold unit (6 plates) with roller table	355 kg
2nd fold unit (4 plates) with roller table	320 kg
3rd fold unit with roller table	290 kg
Delivery	60 kg
Compressor	50 kg
Small format vertical stacker	75 kg

## General description

### Load-carrying capacity test for pile support:

The following tests were performed in accordance with the EU Machinery Directive 2006/42/EG:

- The static test was conducted with 1.25 times the maximum weight of the pile.
- The dynamic test was conducted with 1.1 times the maximum weight of the pile.

Both tests were conducted successfully. There were no evident strength defects.

### Noise emission:

The noise emission values were ascertained in line with EN 13023.

The sound pressure level does not exceed 85 dB(A).

The sound power level is  $L_{WA}$  94dB(A).

#### ► **Please note**

The manufacturer advises the operator to wear appropriate hearing protection at all times.

### General information:

All performance characteristics and production speeds that have been mentioned depend on the paper used, the print and finishing, the static charge and climatic conditions, as well as on the expected folding accuracy and the competent operation of the machine

**C Installation and start-up**

**C3**

- |    |                          |    |
|----|--------------------------|----|
| 1. | Arrival at the customer  | C3 |
| 2. | Intermediate storage     | C3 |
| 3. | Installation             | C5 |
| 4. | Electrical installation  | C6 |
| 5. | Pneumatic installation   | C8 |
| 6. | Start-up                 | C9 |
| 7. | Disassembly and disposal | C9 |



## Installation and start-up

## Installation and start-up

### 1. Arrival at the customer

Use a fork lift to unload the folder, which is packaged and on pallets.



**Warning - Transport of pallets - Risk of injury!**

Always wear sturdy shoes when moving the unit.

**Note**

When lifting units, always observe the maximum permitted carrying force of your crane and the maximum permitted carrying weight of the ropes used.

The machine is covered with a VCI protective foil which protects it from the influences of the weather. For sea transport, the fold rollers may also have been sprayed with a thin layer of rust inhibitor. This layer can be removed with a soft cloth after the installation.

### 2. Intermediate storage

If it is necessary to store the machine before the installation, the following conditions must be observed:

- Do not remove the packaging of the machine.
- Make sure that the doors and transport paths are wide enough for the transport of the pallets.
- Make sure that the storage area is the correct size.
- Never exceed the permitted floor load.
- Store the machine in a dry, covered location where it is protected from dew.
- Make sure that the ambient conditions are observed during transport and intermediate storage (see item „Specifications“).
- Make sure that the machine is not subjected to vibrations.



**Warning - Transport - Risk of injury!**

Always secure the units during transport against tipping or dropping from lifting devices.

## Installation and start-up



### **Warning - Falling units - Risk of injury!**

Any units not secured correctly can slide during transit and fall over, with potential for causing injuries.

Always transport the units in a sufficiently secure manner.

Do not stand below cranes or in the immediate area of the product in transit.



### **Warning - Risk of injury when moving the unit!**

Always wear sturdy shoes when moving the unit.

### 3. Installation

- ▶ **Note**  
When choosing the installation site, make sure that the load capacity and strength of the floor must be sufficient and suitable for the weight of the machine.
- ▶ **Note**  
The machine needs a firm and horizontal surface to ensure precise settings and operation.
- ▶ **Note**  
Installation of the machine, including electrical and pneumatical work, must only be carried out by trained personnel authorized by the manufacturer or his representatives.

Proceed as follows to install the machine:

1. Remove the protective foil.
2. Check that the machine and the accessories have been delivered correctly and in full.
3. Loosen the fixing brackets and steel strapping used for securing the machine.
4. Use a fork lift to lift the fold unit and the flat pile feeder from the pallet.
5. Dispose of packaging and cleaning material in an environmentally friendly manner.
6. Observe the minimum distance from the wall. The machine must be accessible from all sides for service work.
7. Make sure that there is sufficient lighting.
8. When choosing the installation site, make sure that the machine is not exposed to direct sunlight, cold or warm drafts.

- ▶ **Note**  
A hand pallet truck can be used to move the flat pile feeder and the fold units over short distances.  
Place the forks of the hand pallet truck under the fold unit from the rear.  
The hand pallet truck must have a minimum carrying force of 7500 N.

4. Electrical connection

► **Note**

The electrical installation of the machine must be carried out only by skilled personnel authorized by the manufacturer or his representatives.

The machine is connected to the local power supply by means of the power cable attached to the machine.

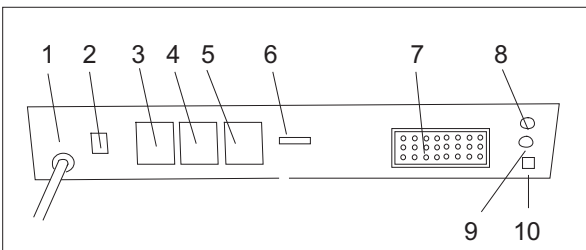
The various machine modules are connected by a power and data cable. The plugs of the power and data cables are inserted into the matching sockets of the preceding module.



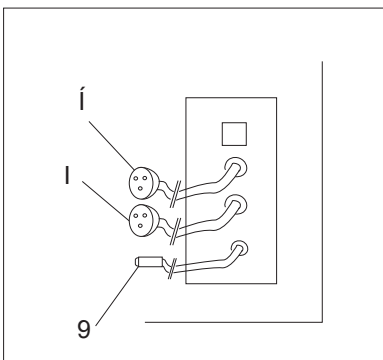
**Warning - Risk of injury from electrical cables!**

Check the electrical cables regularly for breaks and cracks. Allow only trained and authorized staff to work on electrical cables.

Fig. 1 • 1st fold unit



fold unit



• 1st fold unit

The following receptacles or connections are located at the base of the fold unit and sealer unit. Connect the plugs and interface cable on the sealer to the corresponding receptacles on the folder:

1st fold unit

- Fig. 1/1 Power cord 400 V
- Fig. 1/2 Overload protection switch / Fuse switch
- Fig. 1/3 - 4 Receptacles 230V (current supply when turning on the main switch)
- Fig. 1/5 Receptacle 230V ( current supply when turning on the motor)
- Fig. 1/6 Ground wire receptacle for the next fold unit or the delivery
- Fig. 1/7 Power and data receptacle for the delivery or the 2<sup>nd</sup> fold unit
- Fig. 1/8 Receptacle for folder/sealer interlock
- Fig. 1/9 Receptacle for output photodetector
- Fig. 1/10 Network connection

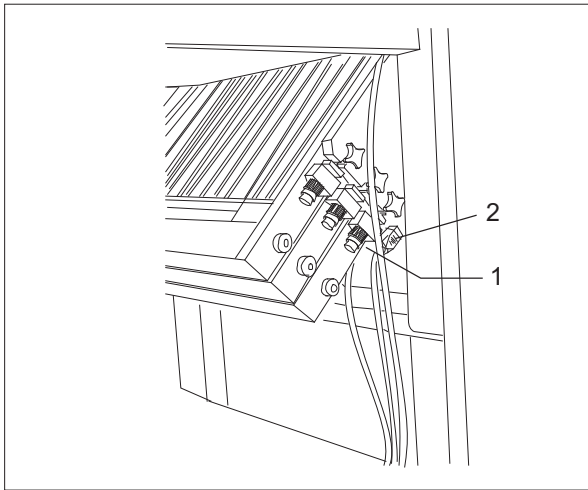


Fig. 3 Receptacles

The receptacles for the connection of the flat pile feeder and the compressor are located at the 1st fold unit below the lower fold plates.

Fig. 3/1 Receptacle for connecting cable of the compressor

Fig. 3/2 Receptacle for connecting cable of the feeder



**Warning - Risk of injury from electrical cables!**

When making or breaking any electrical connection, always first turn off the main switch.



**Warning - Risk of injury from electrical cables!**

Never use force when establishing a plug-in connection.



**Warning - Risk of injury from electrical cables!**

Always close the safety lock levers after inserting the plugs. They must engage audibly.



**Warning - Risk of injury from electrical cables!**

Lay out electrical cables in such a way that they do not generate any potential obstacles for tripping over.



**Warning - Risk of injury from electrical cables!**

Do not bend electrical cables sharply or place heavy objects on them - they may get damaged.

## 5. Pneumatic installation

- ▶ **Note**  
The pneumatic connection of the machine must be carried out only by skilled personnel authorized by the manufacturer or his representatives.

A compressor supplies the folder with air and vacuum.  
It is located under the register table, covered by noise reduction doors.

The compressor is connected directly to the folder and therefore turns on and off with the machine.

- ▶ **Note**  
It is important to observe the sense of rotation of the compressor when making the electrical connection.

Air and vacuum are adjusted directly at the compressor.

Pictographs explain the adjustment.

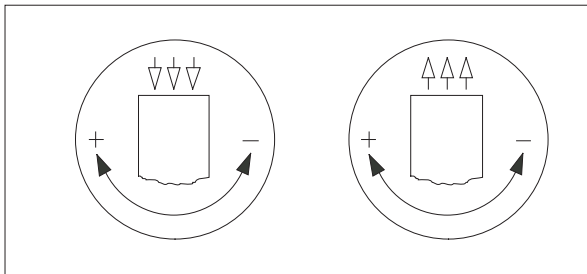


Fig. 4 Pictographs

We recommend, however, to set the valves of the compressor always to maximum performance and to make the required adjustments by means of the valves at the machine (feeder).

**6. Start-up**

- ▶ **Note**  
The start-up of the machine after installation at the customer site should be performed only by skilled personnel authorized by the manufacturer or his representatives.

Once the machine has been installed and all electrical and pneumatic connections have been made correctly, the machine can be switched on by turning the main switch.

**7. Disassembly and disposal**

Only allow authorized and trained personnel to take care of disassembly and disposal.

- ▶ **Note**  
Protect the environment!  
The handling and disposal of old components are subject to legislative rulings.



## Installation and start-up

**D Setting up and operation****D3****Automatic setting****D5**

1.	Description of the touchscreen display	D5
1.1	Output parameters	D6
1.2	Function keys	D8
1.3	Input parameters	D8
2.	Description of the setting menus	D9
2.1	BASIC menu	D9
2.2	SETUP menu	D9
2.2.1	Selecting the fold setting	D9
2.2.2	Sheet size	D10
	User-defined sheets	D10
2.2.3	Standard fold	D11
	Standard sheet sizes	D11
	Setting by fold symbols for parallel fold	D12
	Measuring the paper thickness	D13
	Setting by fold symbols for crossfold	D14
2.2.4	Special fold	D15
2.2.5	Saved job	D17
2.3	CORRECTION menu	D19
2.3.1	Sub-menu „Fold length“	D19
2.3.2	Sub-menu „Roller gap“	D22
	Correction of roller gap (symmetrical)	D23
	Correction of roller gap (asymmetrical)	D25
2.3.3	Sub-menu „Position“	D26
	Correction of flat pile feeder	D26
	Correction of alignment rails	D26
	Correction of the delivery rollers	D26
2.3.4	Sub-menu „Read-in paper thickness“	D29
2.4	COUNTER menu	D30
2.5	CONTROL menu	D31
2.6	CONFIGURATION menu	D33
2.7	JOB menu	D34
2.8	SERVICE menu	D39
	Selecting a language	D39
	Setting the date and time	D40

## Setting up and operation

## Setting up and operation

In the following chapters, setting-up the machine is described in a logical sequence.  
 Chapter D comprises the automatic settings by means of the operator panel.  
 Chapter E comprises the instructions for the manual settings at feeder, register table, fold unit, roller table and delivery.

- ▶ **Note**  
 We recommend to carry out all operations and settings in the sequence mentioned in this manual.
- ▶ **Note**  
 The terms “left” and “right” always refer to the direction of paper travel.

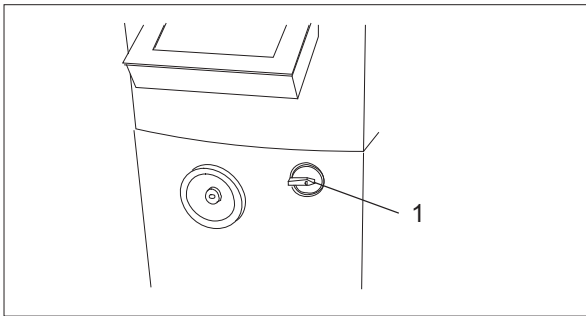


Fig. 1 Main switch

Turn on the machine before making any settings.

The main switch (Fig. 1/1) is located below the operator panel and has to be set from 0 to 1 by turning it clockwise.

- ▶ **Note**  
 After turning on the machine, it takes about 7 to 10 seconds until a display appears on the touch-screen.  
 The machine first performs a function check before you can start setting up.



**Caution - Possible damage to the fold rollers!**

Before switching on the drive, turn the safety handwheel to ensure that nothing grinds against the fold rollers.  
 Only make settings when the machine has been switched off and secured against being switched back on.



**Warning – Risk of injury!**

A handwheel clicking into place during operation can lead to injuries.  
 Never pull out the handwheel during operation.

## Setting up and operation

## Automatic setting

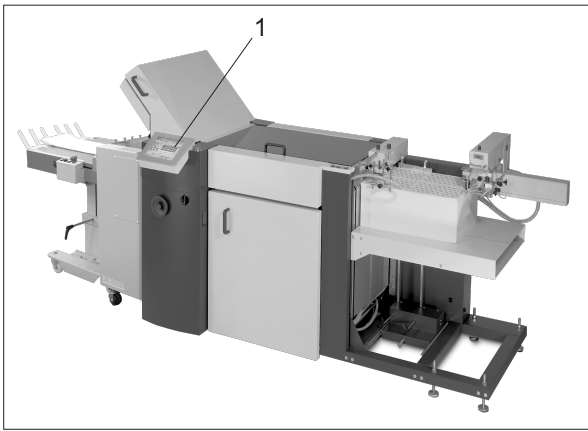


Fig. 2 Position of operator panel

The automatic settings are made at a central operator panel (Fig. 2/1), which is located at the first fold unit.

The operator panel is equipped with a touch-screen display.

Communication between operator and machine takes place by means of setting menus, symbols, text displays and pop-up numerical or alpha-numerical keypads.

### 1. Description of the touchscreen display

The touch-screen display is divided into three sections:

- Output parameters
  - Function keys
  - Input parameter window
- Form and contents of the input parameters windows are variable because they depend on the menu selected.

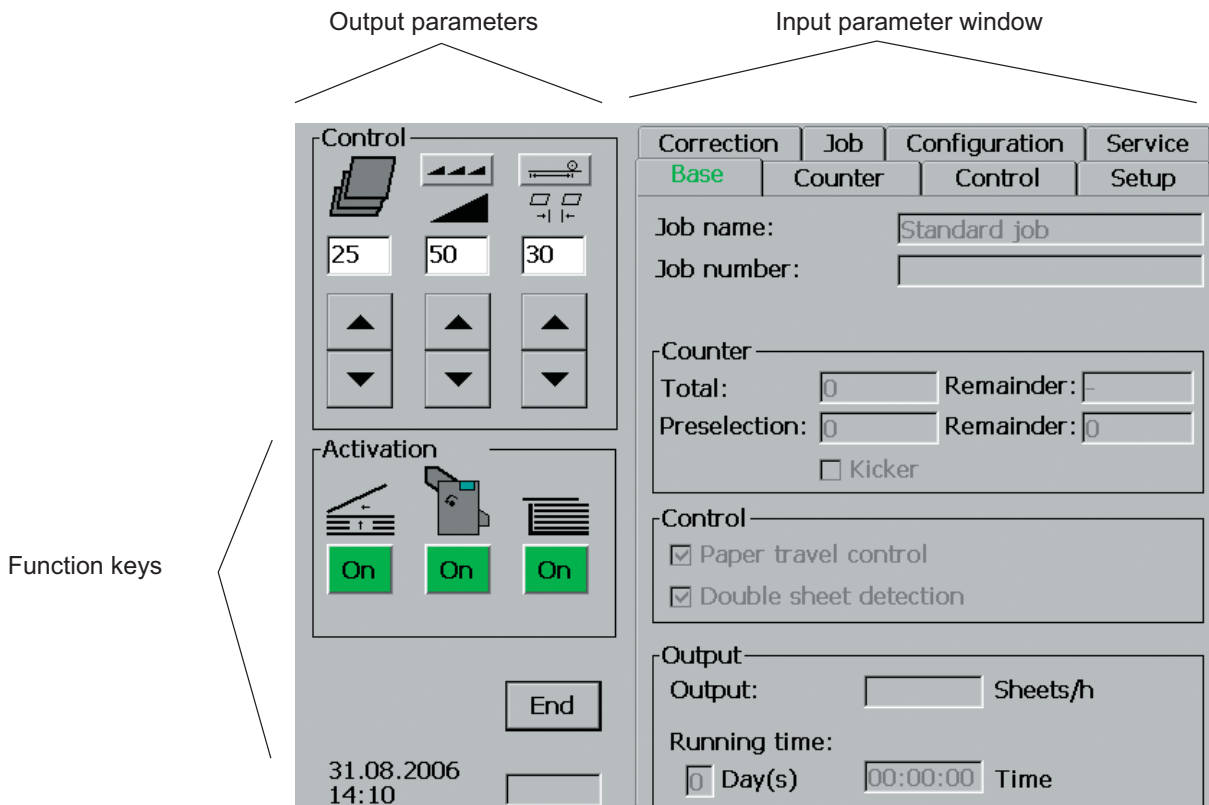


Fig. 3 Touch-screen display

## Setting up and operation

### 1.1 Output parameters

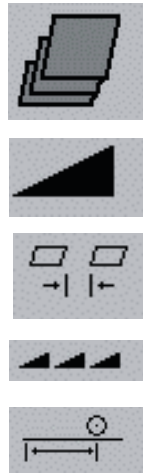


Fig. 4 Output parameters

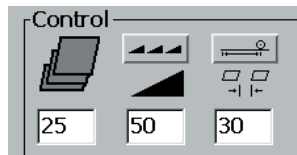


Fig. 5 Input window

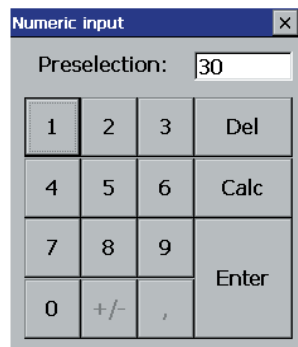


Fig. 6 Input keyboard

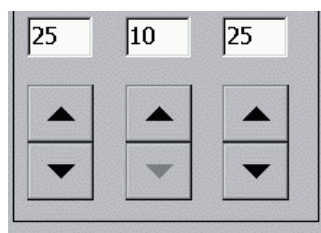


Fig. 7 Arrow keys

You can call up and change the output parameters by touching pictographs.

The pictographs have the following meanings:

Shingle delivery on the delivery table

Folding speed

Sheet gap

Individual speed of the fold units

Suction length

The input windows below the pictographs show the current settings.

You can change the settings by means of input windows or arrow keys.

#### Correction by touching input windows

1. Touch the desired input window.  
A numerical keypad appears.
2. Enter a numerical value.  
You can correct incorrect entries by touching the *Del* key.  
Additional calculator functions can be activated by means of the *Calc* key.
3. Touch the *Enter* key when a numerical entry has been completed.  
The computer should accept the corrected value.

#### Correction by touching arrow keys

With the arrow keys, you can increase or decrease settings directly without intermediate steps.

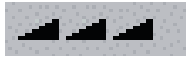


Fig. 8 Pictograph "Speed"

With this pictograph, a submenu is opened which allows the correction of the speed of the individual fold units.

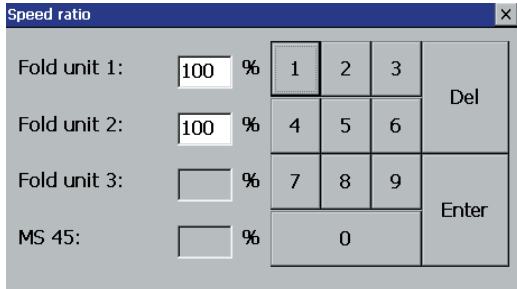


Fig. 9 Speed ratios



Fig. 10 Pictograph "Suction length"

With this pictograph, a sub-menu is opened by means of which the suction length (duration) can be changed.



Fig. 11 Suction length

- **Note**  
Optical signals draw the operator's attention to settings of the individual speeds and suction lengths which deviate from the standard values. The pictographs change colour - black becomes red.



## Setting up and operation

### 1.2 Function keys

The individual functions of the machine are switched on and off by touching the function keys.

The pictographs have the following meanings:

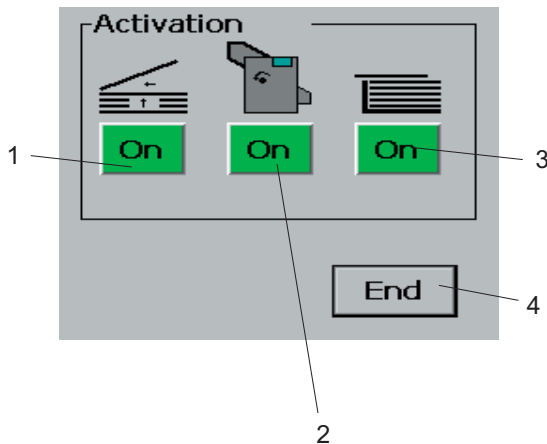


Fig. 12/1 Compressor on or off

Fig. 12/2 Motor/drive on or off

Fig. 12/3 Sheet feed on or off

- short keypress: single sheet

- long keypress, approx. 2 sec.: continuous feed

Fig. 12/4 Display program off

► **Note**

When you want to turn off the machine, you first have to close the display program by touching the *END* key.

Then turn the main switch to the „0“ position.

Fig. 12 Function keys

### 1.3 Input parameters

The input parameters are organized analogous to a conventional card file, i.e. different tabs show the available menus.

The current menu tab is highlighted with green script. When another tab is touched, the display changes to a different menu whose contents and defaults then become visible.

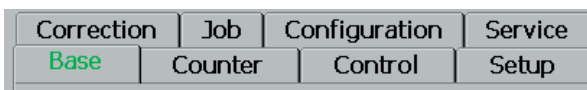


Fig. 13 Input parameters

## 2. Description of the setting menus

### 2.1 BASIC menu

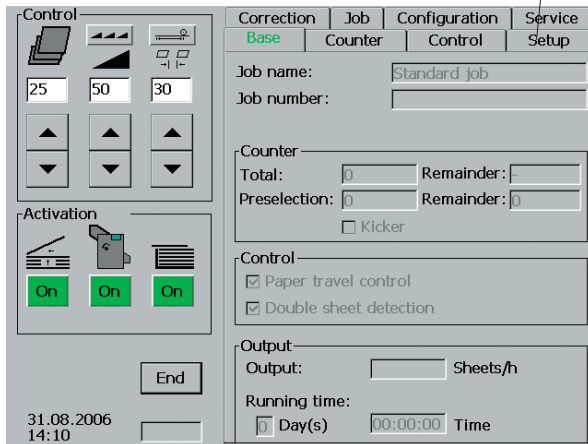


Fig. 14 BASIC menu

The **BASIC** menu always appears when the machine is switched on. This menu signals readiness for operation and shows some important data about the current job.

Touch the „Setup“ tab (Fig.14/1) for setting up the machine. Various types of folds are shown as pictographs.

### 2.2 SETUP menu

#### 2.2.1 Selecting the fold setting

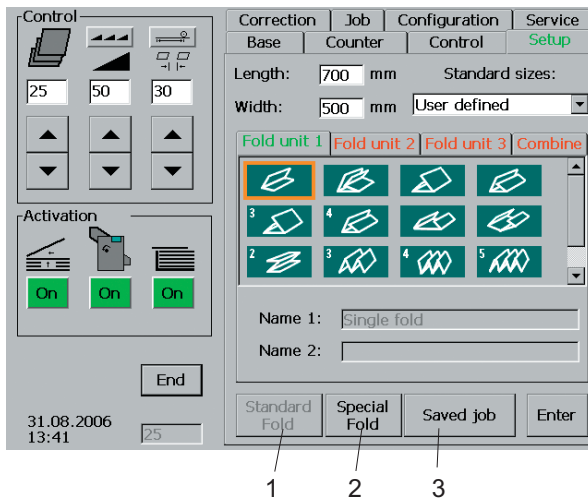


Fig. 15 Fold setting

For setting the type of fold, there are three alternatives which can be selected by touching a key:

- Fig.15/1      Standard fold
- Fig.15/2      Special fold
- Fig.15/3      Saved job

## Setting up and operation

### 2.2.2 Sheet size

The setup of a job starts with entering the size of the unfolded sheet, independent of the type of fold setting:

There are two alternatives for entering sheet sizes:

- Entry of user-defined sheet sizes
- Entry of standard sheet sizes

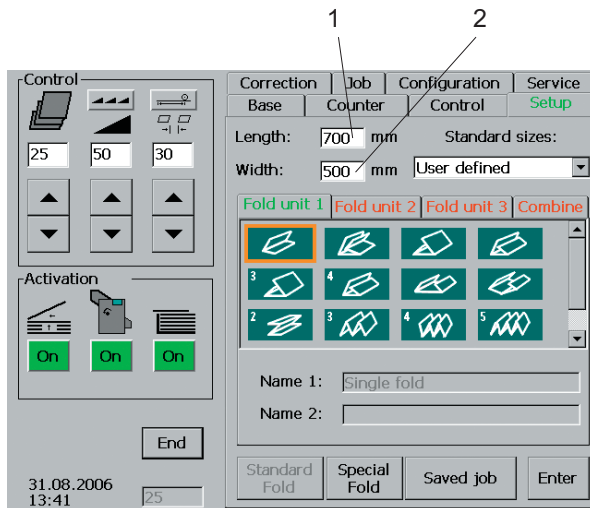


Fig. 16 SETUP menu

#### User-defined sheet sizes

The sheet size is entered by means of two input windows:

1. Touch the input windows for „*Length*“ (Fig. 16/1).  
Enter the sheet length (in millimeters) by means of the keypad now open.
2. Touch the input windows for „*Width*“ (Fig. 16/2).  
Enter the sheet width (in millimeters) by means of the keypad now open.

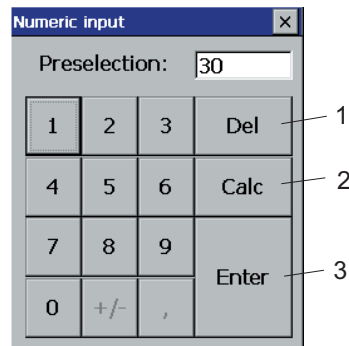


Fig. 17 Input keyboard

- **Note**
- You can correct incorrect entries with the *Del* key (Fig. 17/1).  
You can activate additional calculator functions by means of the *Calc* key (Fig. 17/2).
3. Touch the *Enter* key (Fig. 17/3) when the entry has been completed.

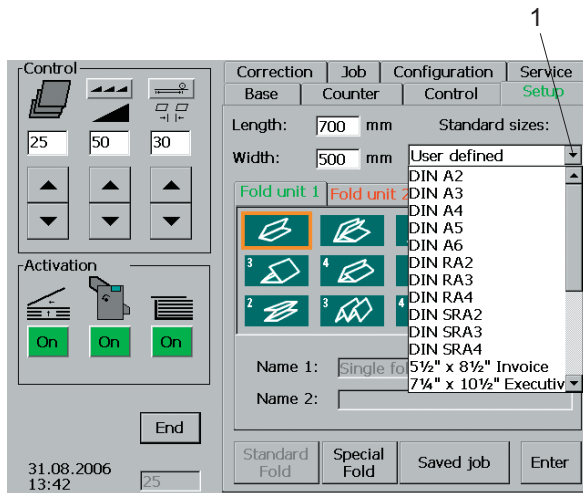


Fig. 18 Standard sheet sizes

### Standard sheet sizes

You can choose frequently used DIN or other standard formats on a list.

1. Touch the arrow (Fig. 18/1) below „Standard sizes“.
- A selection of different sheet sizes appears.
2. Touch the sheet size to be set.

### 2.2.3 Standard fold

In the „Standard fold“ mode, various types of fold are shown as pictographs. The operator selects the desired fold.

This mode of operation is activated by touching the *Standard fold* key (Fig. 19/1).

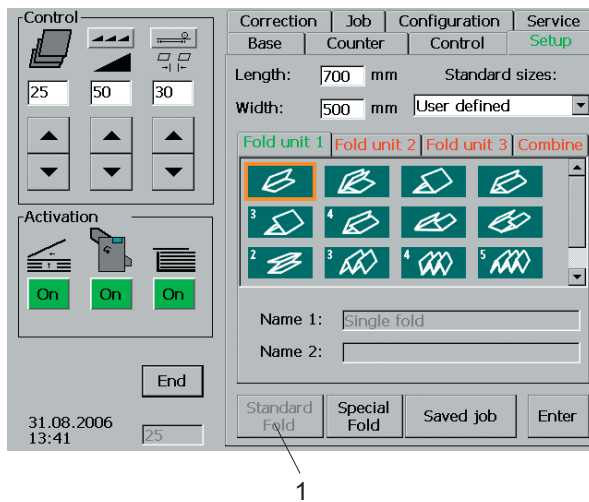


Fig. 19 Standard fold

There are tabs above the fold symbols by means of which individual or several fold units can be selected. The colours indicate a status as follows:

- red: Fold unit not available (is not connected or does not exist)
- black: Fold unit is available, but has not been selected
- green: Fold unit has been selected and is ready for set-up

Standard folds can be set as follows:

- By selecting a fold symbol for parallel folds (default for every individual fold unit)
- By selecting a fold symbol for crossfolds (default for at least two fold units)

## Setting up and operation

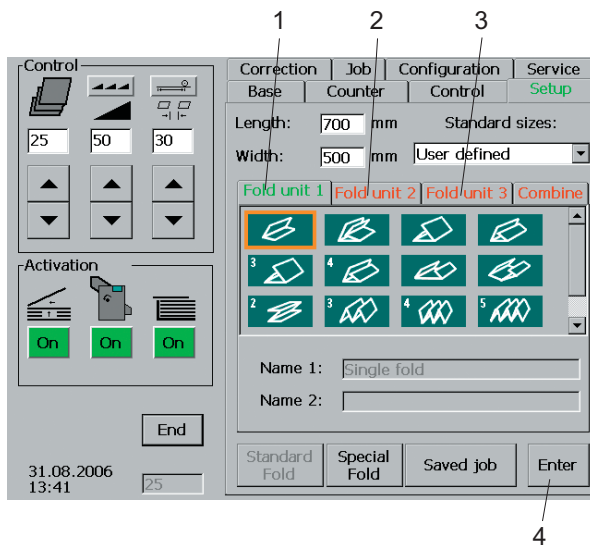


Fig. 20 Standard fold

### Setting by fold symbols for parallel fold

This method for setting the type of fold is possible for all machine combinations, independent of the number of fold units.

1. Touch the *Fold unit 1* tab (Fig.20/1) (script colour changes)
  2. Touch the appropriate fold symbol (the fold symbol is marked by an orange-coloured frame).
- **Note**  
If there are additional fold units, *Fold unit 2* (Fig. 20/2) resp. *Fold unit 3* (Fig. 20/3) are set in the same way.
3. Touch the *Enter* key (Fig. 20/4).  
This command activates the automatic setting.

The following status messages appear in the display during automatic setting:

„Setting positions for feeder, alignment rails or delivery“  
„Setting plates“

When the settings are complete, the colour of the frame around the selected fold symbol turns from orange to green.

At the same time a window is opened indicating that the paper thickness must now be measured.

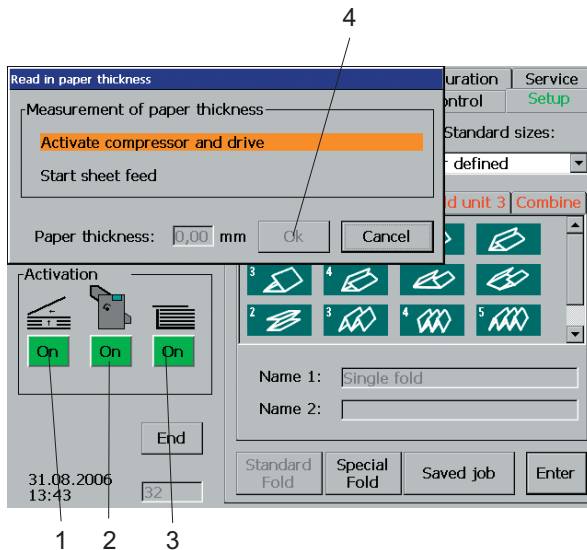


Fig. 21 Measuring the paper thickness

### Measuring the paper thickness

1. Load the feeder with paper.
2. Touch the *Compressor* key (Fig.21/1).
3. Touch the *Drive* key (Fig.21/2).
4. Touch the *Sheet feed* key (Fig.21/3).

A sample sheet is fed from the feeder and transported onto the register table. During this process, a sensor measures the paper thickness.

The value measured is shown immediately in the window „Paper thickness“.

5. Check the sample sheet for doubles.
6. If no double sheet has been fed, confirm with the *OK* key (Fig. 21/4).

This activates the automatic setting of the fold rollers.

The status message „Setting rollers“ shows the status of the process.

Automatic setting is complete when the status message disappears.

7. Touch the *Drive* key (Fig. 21/2).

The sample sheet is transported through the fold unit and reaches the delivery section as a folded product.

## Setting up and operation

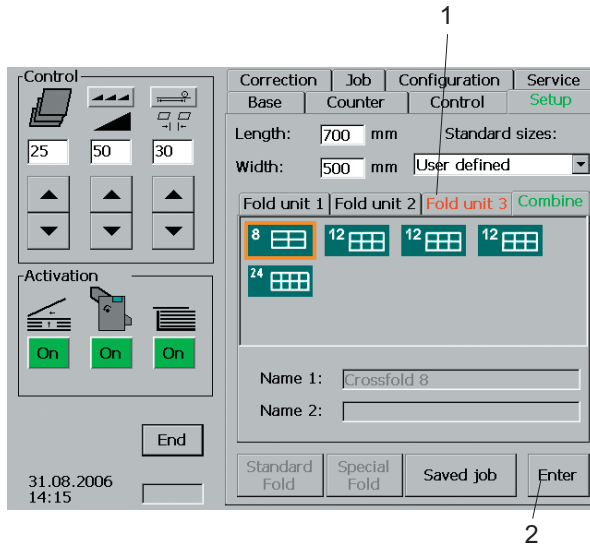


Fig. 22 Fold symbols for crossfold

### Setting by fold symbols for crossfold

This method of setting the type of fold assumes that the machine is equipped with two or three fold units. For typical crossfolds, the settings for several fold units can be made by touching just one key.

1. Touch the *Combine* tab (Fig. 22/1) (script colour changes).
2. Touch the appropriate fold symbol (the fold symbol is marked by an orange-coloured frame).
3. Touch the *ENTER* key (Fig. 22/2). This command activates the automatic setting.

The following status messages appear in the display during automatic setting:

„Setting positions for feeder, ralignment rails or delivery“  
„Setting plates“

When the settings are complete, the colour of the frame around the selected fold symbol turns from orange to green.

At the same time a window is opened indicating that the paper thickness must now be measured.

Settings for paper thickness measurement as described in the previous chapter.

### 2.2.4 Special fold

Activate this mode of operation by touching the „Special Fold“ key (Fig. 23/1).

In the „Special Fold“ mode, the fold length is set individually for each fold plate.

You can make the settings by means of:

- Input windows (for major changes of the fold length)
- Arrow keys (for minor changes of the fold length)

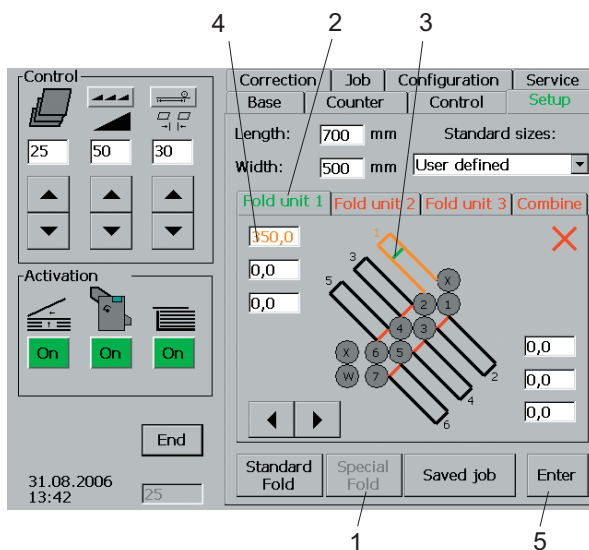


Fig. 23 Special fold

#### Setting with input windows

1. Select the desired fold unit (Fig. 23/2) and touch the appropriate key (script colour changes).
2. Touch the fold plate (Fig. 23/3) to be set (fold plate and numbers in the input window turn orange).
3. Touch the input window (Fig. 23/4). A numerical keyboard pops up.
4. Enter a numerical value. You can correct an incorrect entry by pressing the *Del* key (Fig. 24/1). Calculator functions for calculating the fold length can be activated by touching the *Calc* key (Fig. 24/2).
5. Touch the *Enter* key (Fig. 24/3) when the entry is completed.
6. Repeat this process until all fold plates are set.

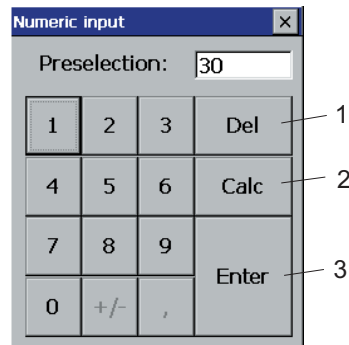


Fig. 24 Input keyboard

► **Note**  
You have to make this setting also for fold plates which are not used. Enter „0“ as fold length.

7. Touch the *Enter* key (Fig. 23/5) when the settings in all fold plates have been completed. This activates the automatic setting of the fold length in all fold plates.



## Setting up and operation



### ► Note

A green tick in the display means:  
Fold length setting completed.

A red cross in the display means:  
The settings have not yet been made.  
The settings are not initiated until touching the *Enter* key.

The following status messages appear in the display during automatic setting:

„Setting positions for feeder, alignment rails or delivery“

„Setting plates“

At the same time a window that is opened indicates that the paper thickness has now to be measured. Settings for paper thickness measurement as described in the previous chapter.

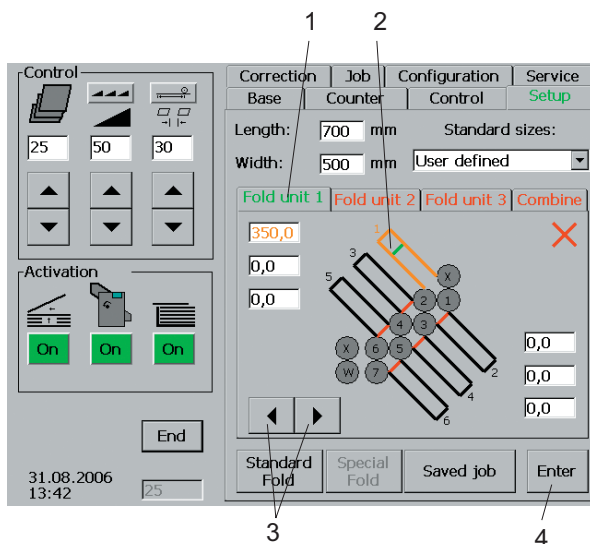


Fig. 25 Special fold

### Setting with arrow keys

1. Select the desired fold unit by touching the tab (Fig. 25/1) (script colour changes).
2. Touch the fold plate (Fig. 25/2) to be set (fold plate and matching display window turn orange).
3. Touch the *arrow* key (Fig. 25/3) until the setting value is reached.
4. Touch the *Enter* key (Fig. 25/4) when you have made the settings in all fold plates. The automatic adjustment is activated by touching the *Enter* key.

The following status messages come on in the display during the automatic setting process:

„Setting positions for feeder, alignment rails or delivery“

„Setting plates“

At the same time a window that is opened indicates that the paper thickness has now to be measured. The set-up procedure for the paper thickness measurement is described in the previous chapter.

### 2.2.5 Saved job

In the „Saved job“ mode, the complete data of the desired fold job are retrieved from the memory and converted into instructions for the machine. This permits the automatic positioning of all stops from the feeder to the delivery section as well as the settings of speed, sheet gap, suction length, shingle delivery, counter.

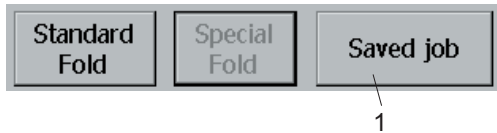


Fig. 26 Fold setting

This mode of operation is activated as follows:

1. Touch the *Saved job* key (Fig. 26/1).

All the jobs that have been saved become visible in a window (Fig. 27/1).

The current job is marked with an X.

The basic information for this job, such as type of fold, volume, sheet size, name, etc., are shown below the window (Fig. 27/2).

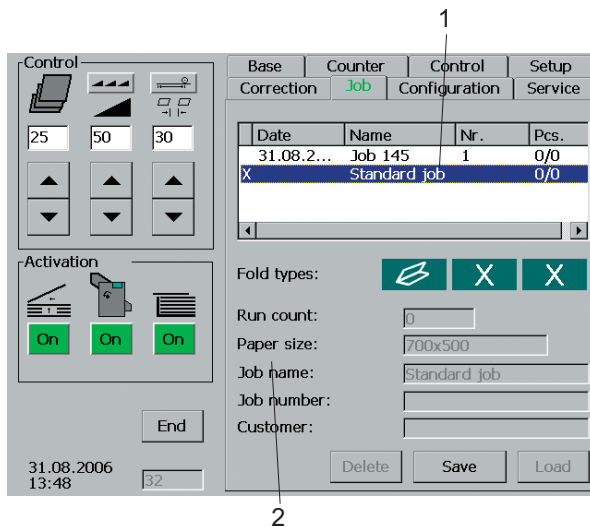


Fig. 27 Saved job

2. Select the job by touching the respective line (Fig. 27/1).

The background colour of the line changes and the basic information for the job called up is displayed.

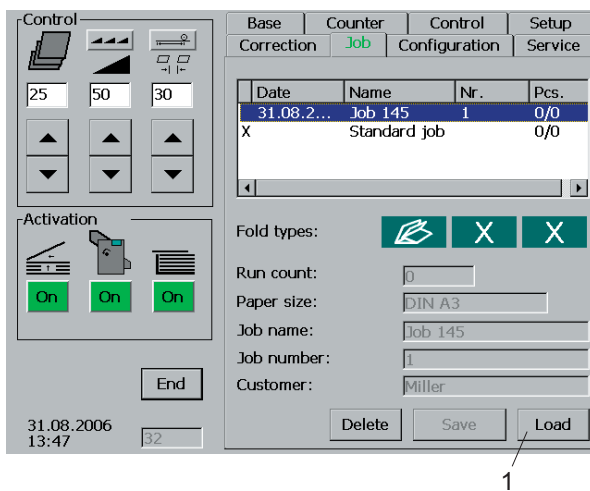


Fig. 28 Loading a job

3. Touch the *Load* key (Fig. 28/1).  
Fold symbols (after entry via „Standard Fold“) or setting measurements (after entry via „Special Fold“) are shown in a window that is now opened.

## Setting up and operation

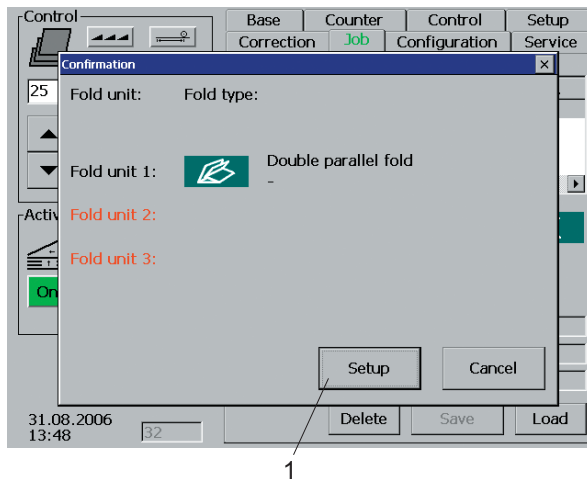


Fig. 29 Setup

4. Touch the *Load* key (Fig. 29/1).

Alignment rails, fold plates and fold rollers are set one after the other.

Appropriate status messages show the process.

The settings are complete when the chosen job marked with an **X** is shown in the window.

## 2.3 CORRECTION menu

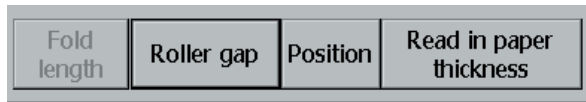


Fig. 30 Correction

### 2.3.1 Sub-menu „Fold length“

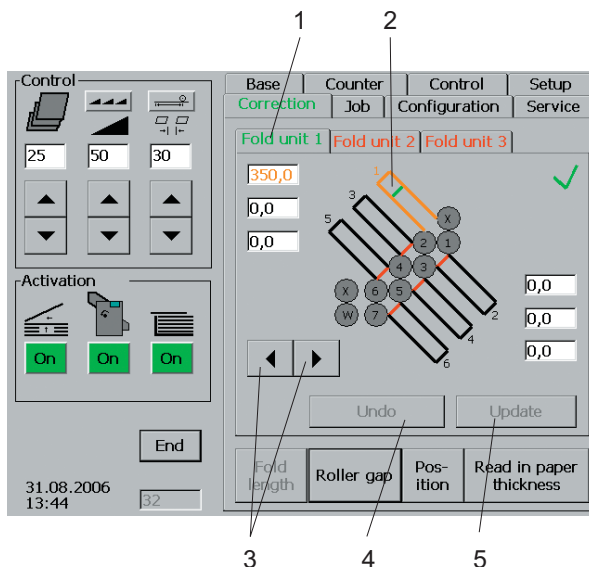


Fig. 31 Correction of fold length

With the **CORRECTION** menu, the following settings can be changed individually:

- Fold length
- Roller gap
- Position of rear edge separator / side stops in the feeder
- Positions of the alignment rails for register table and roller table
- Position of the delivery rollers in the shingled delivery

When calling up the **CORRECTION** menu, the sub-menu that has last been selected is always shown.

The respective sub-menus are called up by touching the appropriate key.

The fold plate stops in all fold units can be corrected with this sub-menu.

The correction of the fold length can be achieved as follows:

- With arrow keys (minor corrections of the fold length)
- Input windows (major corrections of the fold length)

#### Correction with arrow keys

1. Select the desired fold unit and touch the appropriate key (Fig. 31/1) (script colour changes).
2. Touch the symbol of the fold plate (Fig. 31/2) where the fold length has to be corrected (fold plate and matching input window turn orange).
3. Keep pressing the *arrow* key (Fig 31/3) until the correction value is reached.

► **Note**  
You can cancel incorrect entries with the *Undo* key (Fig. 31/4).

4. When the correction entries are complete, touch the *Update* key (Fig. 31/5).

► **Note**  
This command activates the automatic adjustment of all corrections that have been entered. The *Update* key can be touched after each individual correction or after changing all corrections.

## Setting up and operation

- **Note**  
After the adjustment, the *Undo* (Fig. 32/4) and *Update* (Fig. 32/5) keys are no longer active. This is shown by the change of the front colour from black to grey.

- **Note**  
A green tick in the display means:  
Correction of the fold lengths is complete.

A red cross in the display means:  
Corrections that have been set have not yet been executed.  
Correction settings are not initiated until touching the *Update* key.

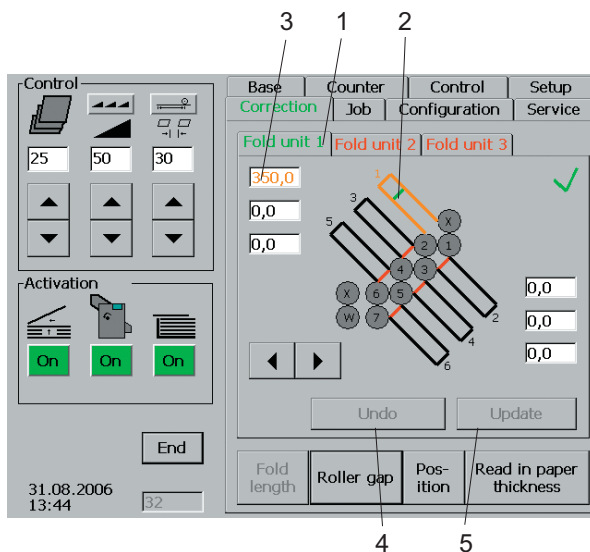


Fig. 32 Correction of fold length

### Correction with input windows

1. Select the desired fold unit and touch the appropriate key (Fig. 32/1) (script colour changes).
2. Touch the symbol of the fold plate (Fig. 32/2) where the fold length has to be corrected (fold plate and matching input window turn orange).
3. Touch the input window (Fig. 32/3). A numerical keyboard pops up.
4. Enter a numerical value.  
You can correct an incorrect entry by pressing the *Del* key (Fig. 33/1).  
Calculator functions for calculating the fold length can be activated by touching the *Calc* key (Fig. 33/2).
5. Touch the *Enter* key (Fig. 33/1) when the entry is completed.
6. Repeat the process in the fold plates where corrections are required.

- **Note**  
You can cancel incorrect entries by touching the *Undo* key (Fig. 32/4).

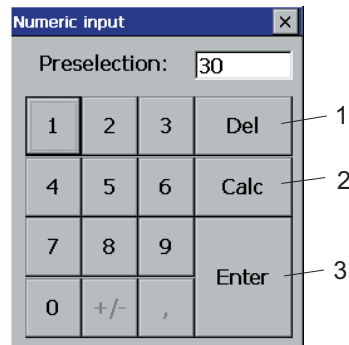


Fig. 33 Input keyboard

7. Touch the *Update* key (Fig. 32/5) when the corrections are completed.  
With this command, the automatic adjustment of all corrections that have been entered is activated.

► **Note**

After the adjustment, the *Undo* and *Update* keys are no longer active - this is shown by a change of the script colour from black to grey.

## Setting up and operation

### 2.3.2 Sub-menu „Roller gap“

All roller gaps can be corrected with this sub-menu.

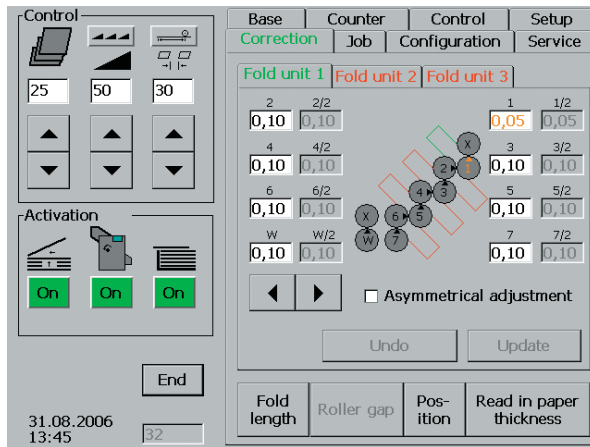


Fig. 34 Correction of roller gap

All adjustable rollers are marked with an arrow and a number.

The arrow indicates the direction (vertical or horizontal) in which the rollers can be adjusted.

The meaning of the numbers is as follows:

Roller 1	is the	Infeed roller
Roller 2	makes the	1st fold
Roller 3	makes the	2nd fold
Roller 4	makes the	3rd fold
Roller 5	makes the	4th fold
Roller 6	makes the	5th fold
Roller 7	makes the	6th fold
Roller W	is the	Slitter shaft

The roller gap can be corrected individually through:

- symmetrical adjustment
- asymmetrical adjustment

#### Symmetrical adjustment

When making a symmetrical adjustment, the roller gap is changed in equal steps on the left- and right-hand side.

This symmetrical adjustment mode is active when **no** tick is visible in the input window „Asymmetrical adjustment“.

#### ► Note

Touching *Asymmetrical adjustment* initiates the change from symmetrical to asymmetrical setting and vice versa.



Fig. 35 Symmetrical adjustment



Fig. 36 Asymmetrical adjustment

#### Asymmetrical adjustment

When making an asymmetrical adjustment, the roller gap can be changed individually on the left- and right-hand side.

This adjustment mode is activated when **a** tick becomes visible in the input window „Asymmetrical adjustment“.

#### ► Note

Touching *Asymmetrical adjustment* initiates the change from asymmetrical to symmetrical adjustment and vice versa.

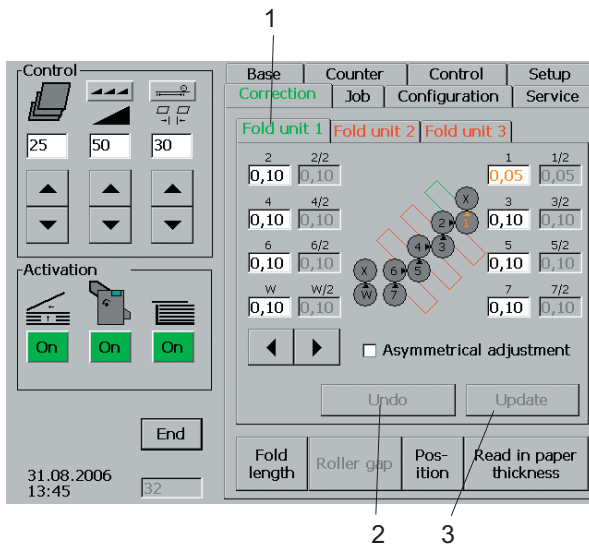


Fig. 37 Correction of roller gap

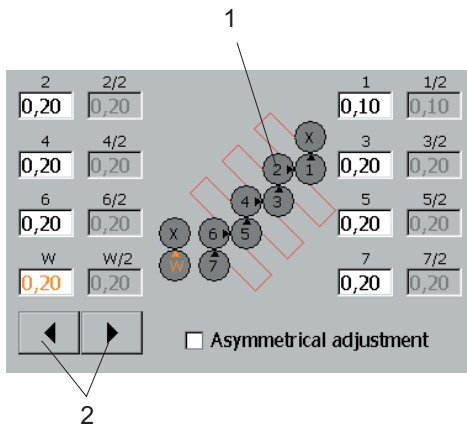


Fig. 38 Symmetrical correction

### Correction of roller gap (symmetrical)

The roller gap can be corrected by means of:

- Arrow keys (minor corrections of the roller gap)
- Input windows (major corrections of the roller gap)

#### Correction with arrow keys:

1. Select the fold unit by touching the appropriate tab (Fig. 37/1) (script colour changes).
2. Select the fold roller (Fig. 38/1) for which the gap must be changed by touching the appropriate symbol (roller number and matching input window turn orange).
3. Keep pressing the *arrow* key (Fig. 38/2) until the desired correction value is reached.

#### ► Note

For symmetrical adjustments, the changes of the numerical values will be identical in both input windows.

#### ► Note

You can cancel incorrect entries by touching the *Undo* key (Fig. 37/2).

4. Touch the *Update* key (Fig. 37/3) when entering the corrections is complete. This command activates the automatic adjustment of all corrections that have been entered. The *Update* key can be touched after each individual correction or after changing all corrections.

#### ► Note

After the adjustment, keys *Undo* and *Update* are no longer active.



## Setting up and operation

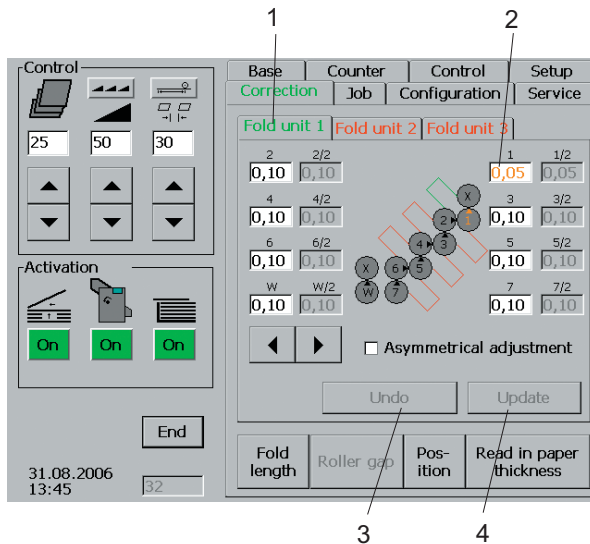


Fig. 39 Correction of roller gap

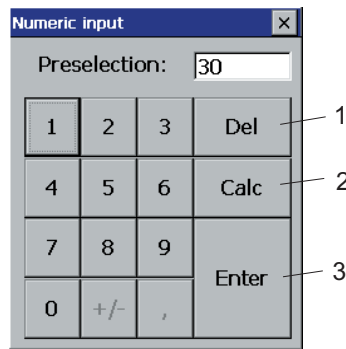
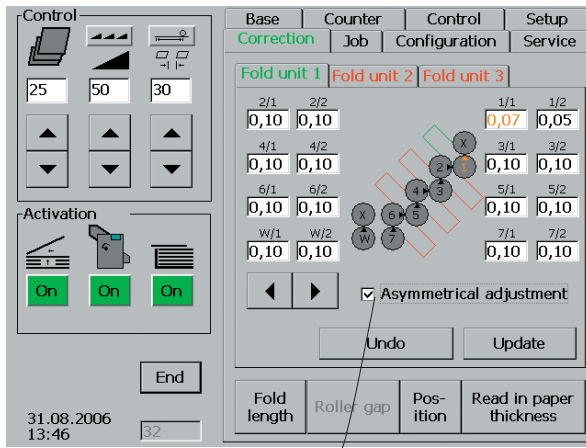


Fig. 40 Input keyboard

### Correction with input windows

1. Select the fold unit by touching the appropriate tab (Fig. 39/1) (script colour changes).
2. Select the roller for which the gap has to be corrected by touching the appropriate symbol (roller number and matching input window turn orange).
3. Touch the input window (Fig. 39/2). A numerical keyboard pops up.
4. Enter a numerical value.  
You can correct an incorrect entry by pressing the *Del* key (Fig. 40/1). Calculator functions for calculating the fold length can be activated by touching the *Calc* key (Fig. 40/2).
5. Touch the *Enter* key (Fig. 40/3) when the entry is completed.
6. Repeat the process in the fold plates where corrections are required.
  - **Note**  
For symmetrical adjustments, the changes of the numerical values will be identical in both input windows.
  - **Note**  
You can cancel incorrect entries by touching the *Undo* key (Fig. 39/3).
7. When entering the corrections is complete, touch the *Update* key (Fig. 39/4).  
This command activates the automatic adjustment of all corrections that have been entered.  
The *Update* key can be touched after each individual correction or after changing all corrections.
  - **Note**  
After the adjustment, the *Undo* and *Update* key are no longer active.



1

Fig. 41 Correction of roller gap

### Correction of the roller gap (asymmetrical)

Analogous to the symmetrical adjustment, the asymmetrical adjustment is possible by means of:

- Arrow keys (minor corrections of the roller gap)
- Input windows (major corrections of the roller gap)

► **Note**  
Make sure that there is a tick (Fig. 41/1) on the display in front of „Asymmetrical adjustment“. This tick is the precondition for a different setting on the left- and right-hand side.

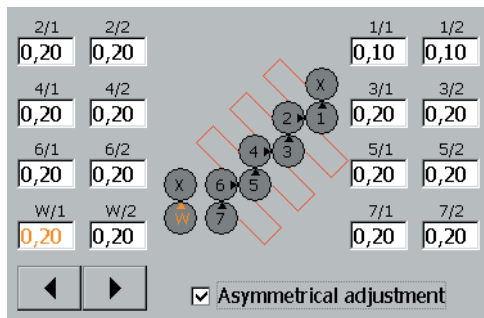


Fig. 42 Asymmetrical correction

The left input window is meant for setting the left side of the roller.

The right input window is meant for setting the right side of the roller.

Switching from the left to the right side of the roller or vice versa is possible by

- touching the roller to be corrected several times
- selecting the left or right input window

► **Note**  
For asymmetrical adjustments, the numerical value will not change in both input windows, but just in the active one.

## Setting up and operation

### 2.3.3 Sub- menu „Position“

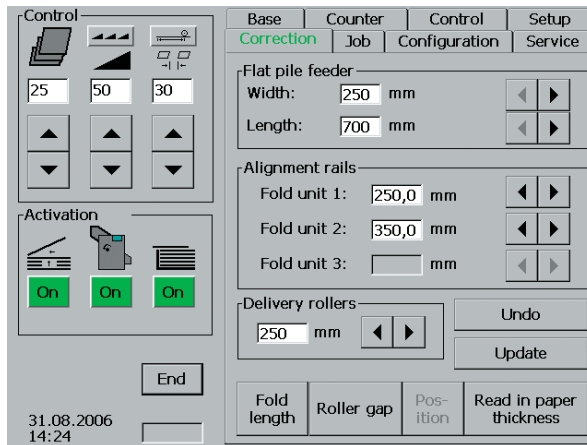


Fig. 43 Correction of position

In this sub-menu, the following settings can be corrected:

- Flat pile feeder
- Alignment rails
- Delivery rollers

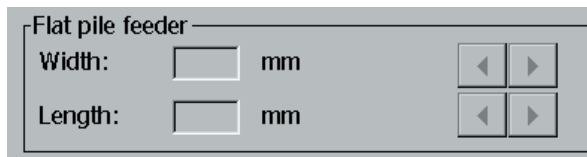


Fig. 44 Correction of flat pile feeder

#### Correction of flat pile feeder

Width means: Position of the side stops (half sheet width)  
 Length means: Position of the rear edge separator (entire sheet length)

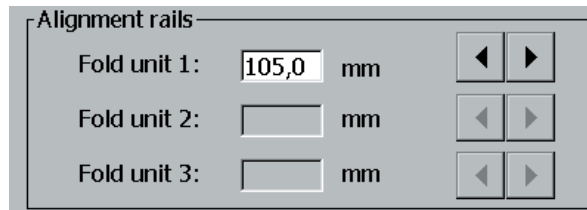


Fig. 45 Correction of alignment rails

#### Correction of alignment rails

The number of the alignment rails equals the number of the fold units used.  
 The numerical values provide information about the current setting.



Fig. 46 Correction of delivery rollers

#### Correction of the delivery rollers

The position of the delivery rollers in the shingle delivery depends on sheet length and type of fold.  
 The numerical value provides information about the current setting.

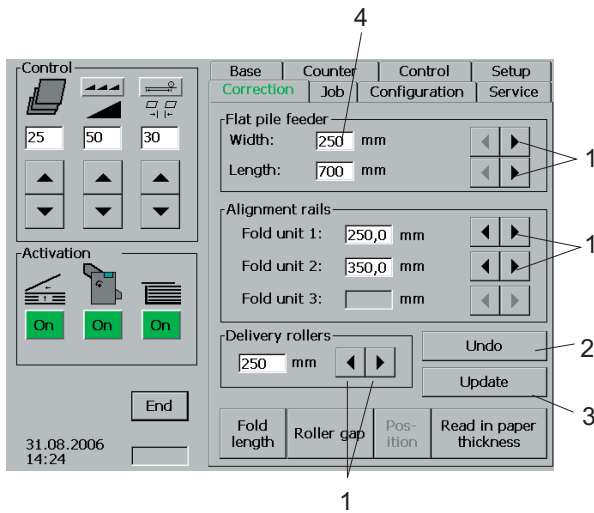


Fig. 47 Correction of position

The positions that have been set for flat pile feeder, alignment rails and delivery rollers can be corrected by means of:

- Arrow keys (minor corrections of the positions)
- Input windows (major changes of the positions)

### Correction with arrow keys

1. Keep pressing the *arrow* key (Fig. 47/1) until the correction value is reached.

#### ► Note

You can cancel incorrect entries by touching the *Undo* key (Fig. 47/2).

2. When entering the corrections is complete, touch the *Update* key (Fig. 47/3). This command activates the automatic adjustment of all corrections that have been entered. The *Update* key can be touched after each individual correction or after changing all corrections.

#### ► Note

After the adjustment the *Undo* and *Update* keys are no longer active.

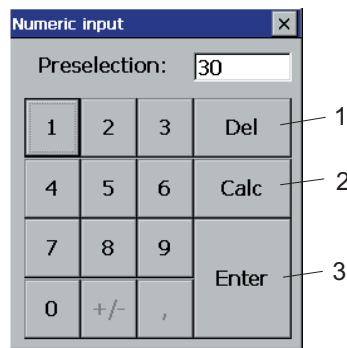


Fig. 48 Input keyboard

### Correction with input windows

1. Touch the input window (Fig. 47/4). A numerical keyboard pops up.
2. Enter a numerical value.
  - You can correct an incorrect entry by touching the *Del* key (Fig. 48/1).
  - Calculator functions can be activated by touching the *Calc* key (Fig. 48/2).
3. Touch the *Enter* key (Fig. 48/3) when the entry is completed.
4. Repeat the process in the fold plates where corrections are required.

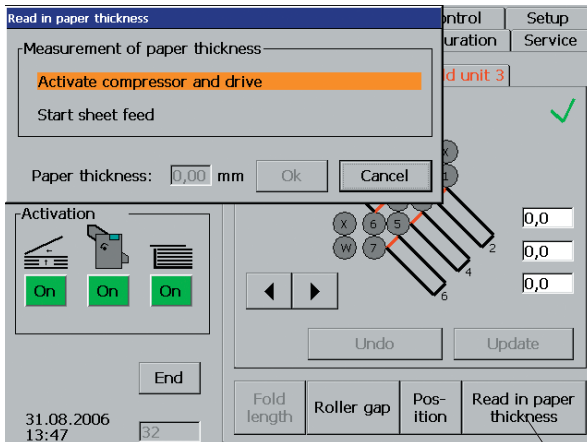
## Setting up and operation

- ▶ **Note**  
You can cancel incorrect entries by touching the *Undo* key.
  
- 5. When entering the corrections is complete, touch the *Update* key.  
This command activates the automatic adjustment of all corrections that have been entered.  
The *Update* key can be touched after each individual correction or after changing all corrections.
  
- ▶ **Note**  
After the adjustment, the *Undo* and *Update* keys are no longer active.

### 2.3.4 Sub-menu „Read-in paper thickness“

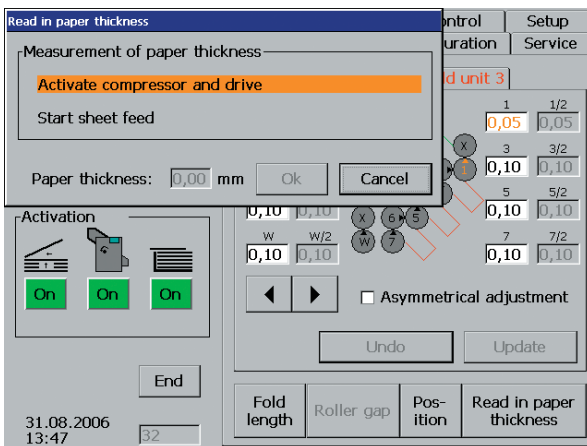
During the correction process, the paper thickness can be read-in from every sub-menu.

After touching the key *Read-in paper thickness* (Fig. 48/1), the following display views are possible:



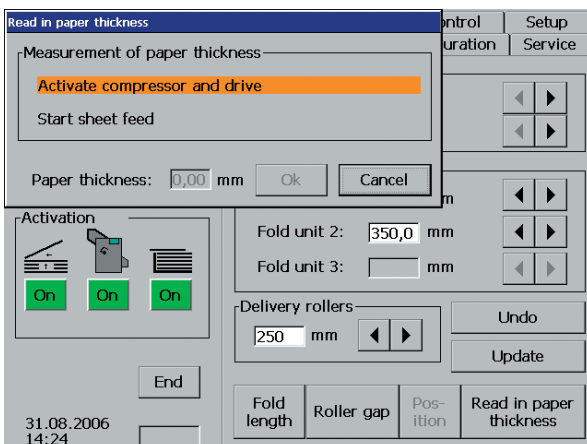
Sub-menu „Fold length“

Fig. 49 Read-in paper thickness Fold length 1



Sub-menu „Roller gap“

Fig. 50 Read-in paper thickness Roller gap



Sub-menu „Position“

Fig. 51 Read-in paper thickness Position

## 2.4 COUNTER menu

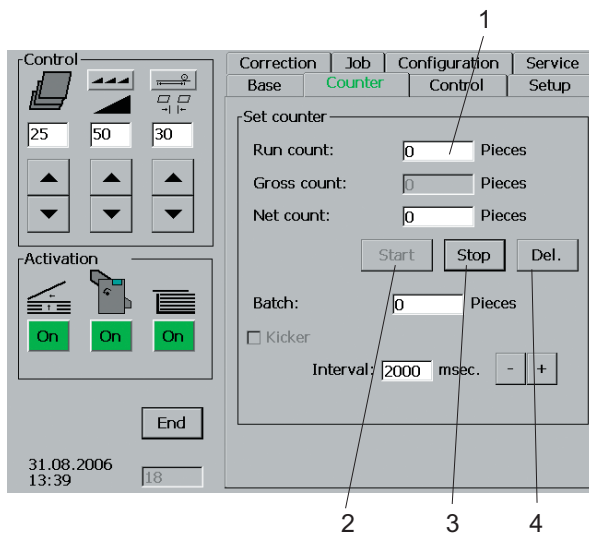


Fig. 52 Counter

The counter can be set with this menu.  
The following parameters are variable:

- Volume (the machine stops after reaching the run count)
- Net count (this count starts when the counter was activated deliberately by touching the *Start* key)
- Batch (number of sheets in one batch)
- Interval (length of sheet gap between batches)

Setting:

1. Touch the input window for *Run count* (Fig. 52/1).  
A numerical keyboard pops up.
2. Enter a numerical value.  
- You can correct an incorrect entry by touching the *Del* key (Fig. 53/1).  
- Calculator functions can be activated by touching the *Calc* key (Fig. 53/2).
3. Touch the *Enter* key (Fig. 53/3) when the entry is completed.  
The preselected numerical value is displayed.
4. Also enter the numbers for „Batch“ and „Interval“ when you work with batch counting.

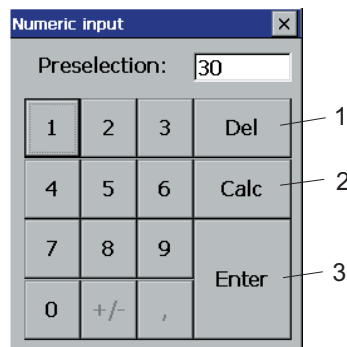


Fig. 53 Input keyboard

► **Note**  
When entering the batch, 2,000 milliseconds is the default value as the minimum interval time. Changes can be made using the keypad.

► **Note**  
For the „Gross“ count all sheets are counted, including the sheets used for set-up. Do not activate the „Net“ count until the set-up process has been completed. This guarantees that the number of the net sheets coincides with the desired run count when the machine stops automatically after reaching the desired run count.

Meaning of the keys:

- Fig. 52/2 *Start* - Net count is activated
- Fig. 52/3 *Stop* - Net count is deactivated
- Fig. 52/4 *Del* - Net count is reset

## 2.5 CONTROL menu

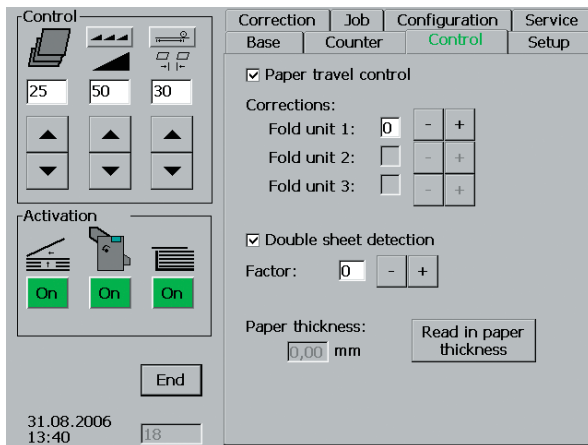


Fig. 54 Control

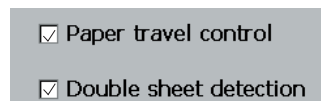


Fig. 55 Control functions on

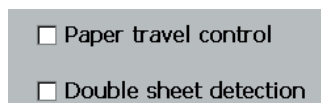


Fig. 56 Control functions off

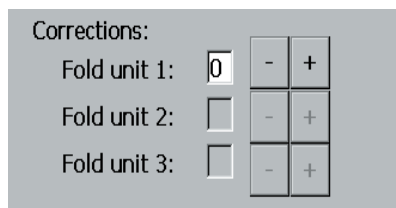


Fig. 57 Corrections

The following control functions can be switched on or off in this menu:

- Paper travel control
- Double sheet detection

► **Note**

The functions can be activated or deactivated by touching *Paper Travel Control* or *Double Sheet Detection*.

The control functions have been **activated** if a **tick** is visible in the input window.

The control functions are **deactivated** if **no tick** is visible in the input window.

### Individual setting of the control functions

The paper travel control and double sheet detection record and measure each sheet.

As soon as a pre-determined tolerance value is reached, the machine stops and the error is displayed.

However, for some types of paper too narrow tolerance values will not be practical.

► **Note**

If the machine stops repeatedly although no error has occurred, an individual setting must be made.

### Correction of the paper travel control

The tolerance range has to be set gradually from 0 to 3.

The meaning of the numerical values is as follows:

0: Standard setting

1 to 3: Steps for increasing the tolerance range

► **Note**

Settings below the standard value are not possible.



### Correction of the double sheet detection

The tolerance range can be set gradually from -5 to +5.

The numerical values have the following meanings:

0: Standard setting

-5 bis +5: Steps for changing the tolerance range

If the machine stops repeatedly because of a „double sheet“ although no double sheets are fed, the tolerance range must be increased.

Increase the factor shown in the display by touching the plus key.

If the machine does not stop although double sheets are being fed, the tolerance range must be reduced.

Reduce the factor shown in the display by touching the minus key.



Fig. 58 Positive factor



Fig. 59 Negative factor

## 2.6 CONFIGURATION menu

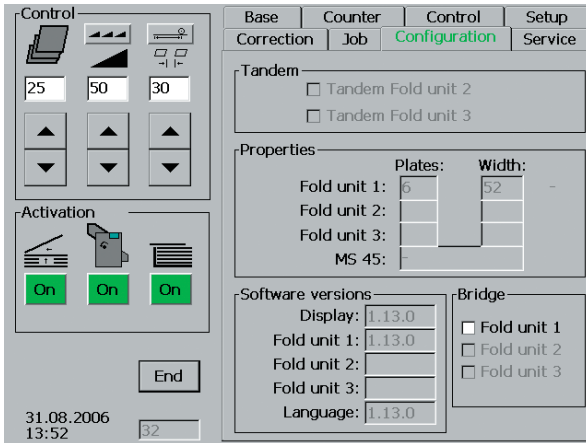


Fig. 60 Configuration



Fig. 61 Standard operation mode



Fig. 62 Tandem operation mode

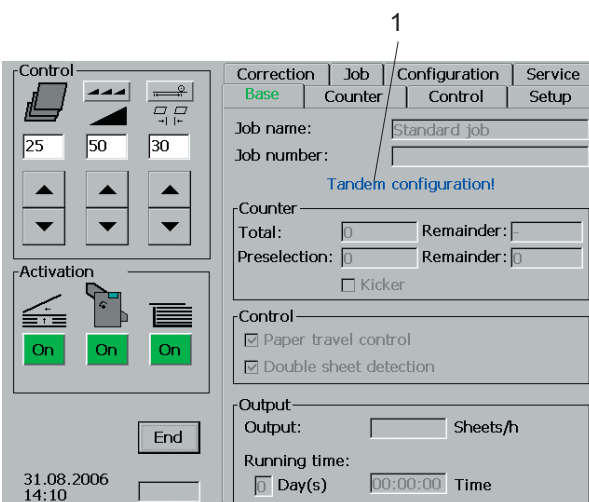


Fig. 63 Tandem display

The **CONFIGURATION** menu provides information about the current state of the hard- and software in the following positions:

- Arrangement of the fold units (tandem/right-angle)
- Number of fold units
- Number of fold plates per fold unit
- Infeed width of the fold units
- Software version

With this menu it is also possible to switch between the operating modes „Standard“ (right-angle arrangement of the fold units) and „Tandem“ (second or third fold unit is placed in line with respect to the preceding fold unit).

► **Note**

You can switch between the operating modes by touching *Tandem Fold unit 2*.

### Standard operation mode

This operating mode is activated when **no tick** is visible in the display field. The buckle fold units must be placed in right-angle arrangement.

### Tandem operation mode

This operating mode is activated when **a tick** is visible in the display field. The fold units must be placed in line.

In the **BASIC** menu, the blue message „Tandem-Configuration!“ (Fig. 63/1) points to the settings which differ from the standard - provided that the machine is set up for tandem operation.

Particular features on in line operation:

- In the **SETUP** menu, additional parallel folds are offered under „Standard folds“.
- The alignment rails on the register tables are set to the (original) sheet width.
- When setting the fold rollers it is assumed that a fold is complete only after the sheet has passed the last fold unit (in case of a letter fold, for example, this means that in the last fold unit the fold rollers are also set to just one paper thickness up to the last fold).

## Setting up and operation

### 2.7 JOB menu

With this menu, you can save and recall jobs. Individual corrections made during set-up and run will also be saved.

► **Note**

The job should not be saved until all necessary corrections have been completed for:

- Fold length
- Sheet gap
- Roller gap
- Speed
- Suction length
- Shingle delivery

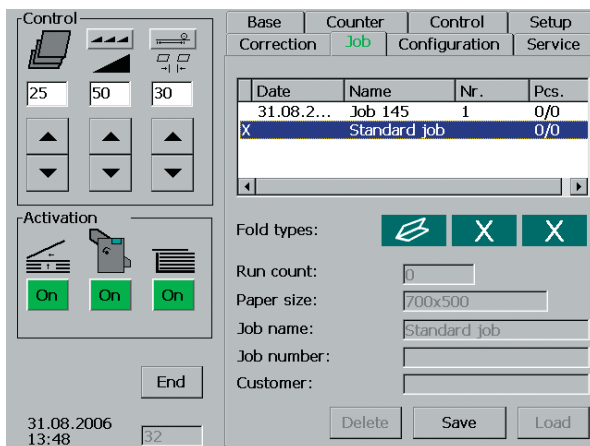


Fig. 64 Job

#### A job is saved as follows:

1. Touch the *Job* tab.  
The following information is shown in a window:
  - the current job, which has not been saved (it is marked with an X, but it still has no date and is called standard job).
  - all the jobs that have been saved (with date and name).
2. Touch *Standard job* (script colour changes).

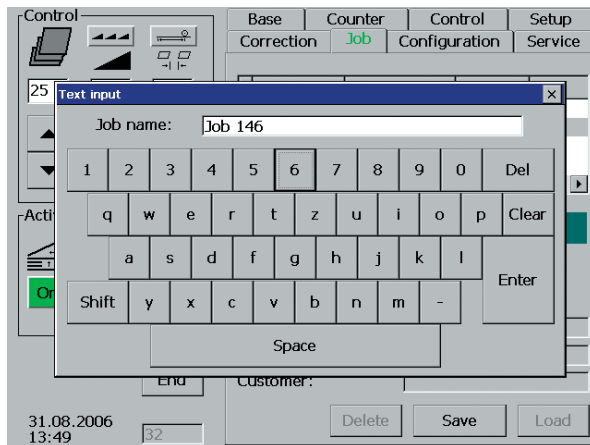
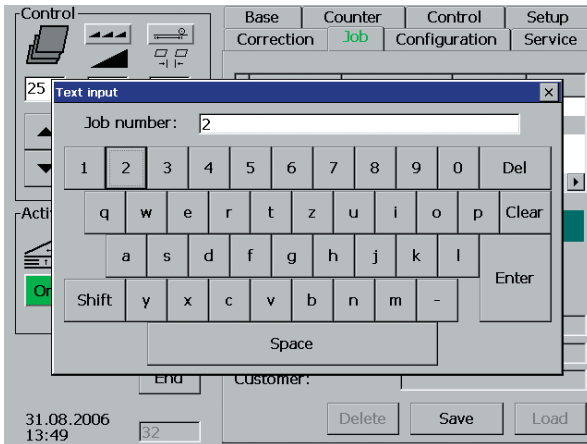


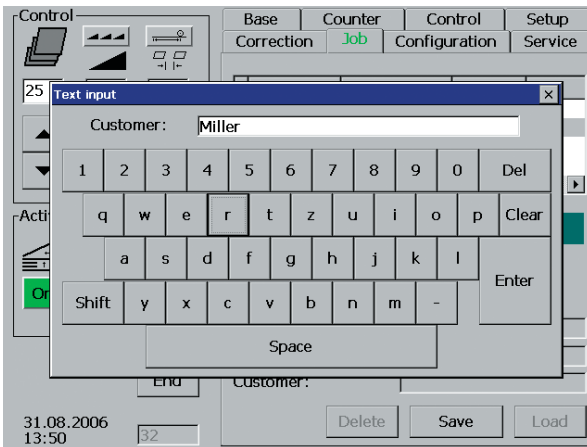
Fig. 65 Job name

3. Touch the *Save* key.
4. Use the keypad to enter the job name.
5. Touch the *Enter* key.



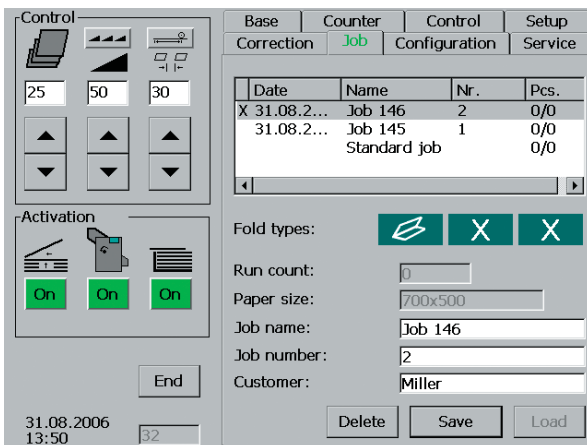
6. Use the keypad to enter the job number.
7. Touch the *Enter* key.

Fig. 66 Job number



8. Use the keypad to enter the customer name.
9. Touch the *Enter* key.

Fig. 67 Customer name



The saving process is complete when the current job (marked with an X) is visible with date, name and number.

Fig. 68 Saving complete

## Setting up and operation

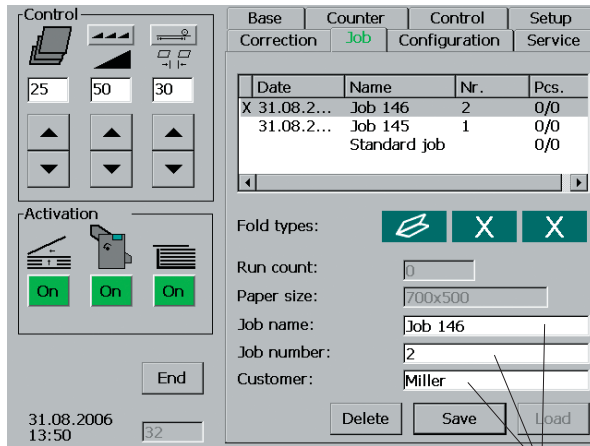


Fig. 69 Job

1

## Changing the job descriptions

For every job that has been saved, you can retroactively change the information about job name, job number and customer name.

Proceed as follows if you want to make changes:

1. Briefly touch the appropriate display window (Fig. 69/1)

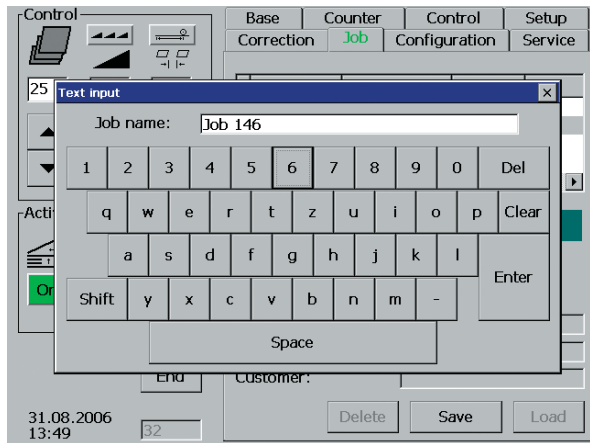


Fig. 70 Changing the job name

2. Use the keypad that has opened to make the change.
3. Confirm the change by touching the *Enter* key.
4. Repeat the procedure if you also want to change the job number and customer name.

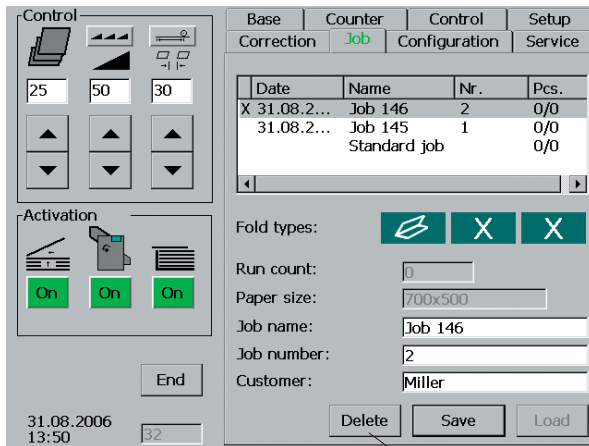


Fig. 71 Selecting a job

### Clearing saved jobs

It is possible to clear each saved job.  
Proceed as follows:

1. Briefly touch the job to be cleared in the display window.
2. Touch the *Delete* key (Fig. 71/1).

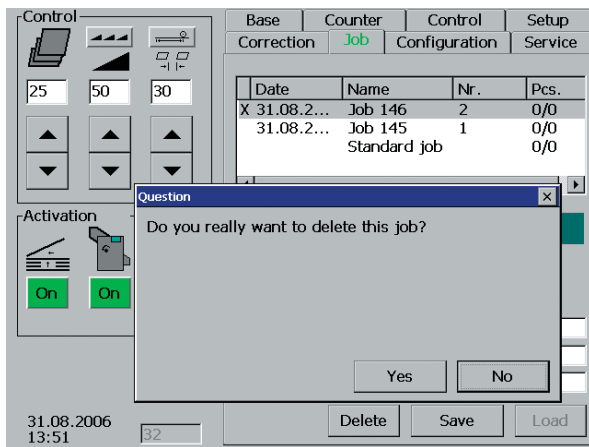


Fig. 72 Clearing a job

3. If you really want to clear the job you have selected, touch the Yes key in the window that is opened.

## Setting up and operation

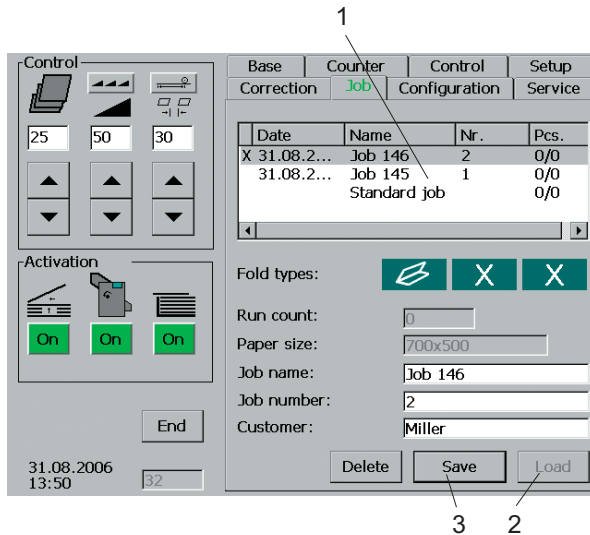


Fig. 73 Selecting a job

## Copying / Overwriting

The data of saved jobs can be changed retroactively. The job in question must be set up to make the changes.

1. Touch the job to be changed in the display window (Fig. 73/1).
2. Set up the job by means of the *Load* key (Fig. 73/2).
3. Use the different setting menus to make the required changes.
4. Touch the *Save* key (Fig. 73/3).

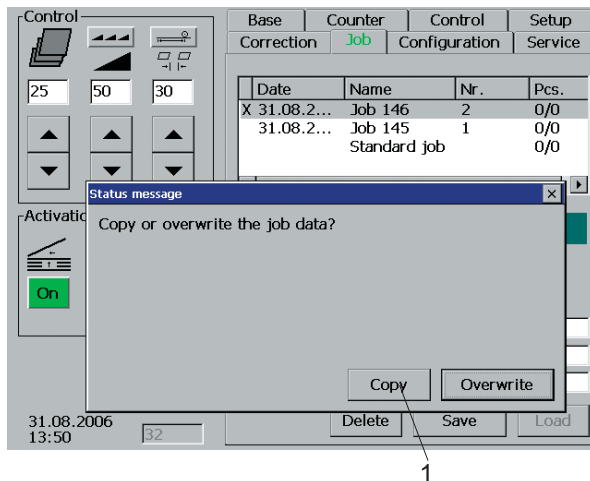


Fig. 74 Copying / Saving

The window that is opened gives you the choice between two saving alternatives:

### - Copying:

During the copying process, the data of the job that has been selected are preserved. The changes are saved as a new job with a new name.

### - Overwriting:

During the overwriting process, the data of the job that has been selected are not preserved - they are overwritten with the changes. Only the description remains the same.

Proceed as follows to copy the job:

1. Touch the *Copy* key (Fig. 74/1).
2. Use the keypad to give the new job a new name.
3. Confirm by touching the *Enter* key (Fig. 75/1).
4. Also use the respective keypads when entering the new descriptions for the job number and the customer name.

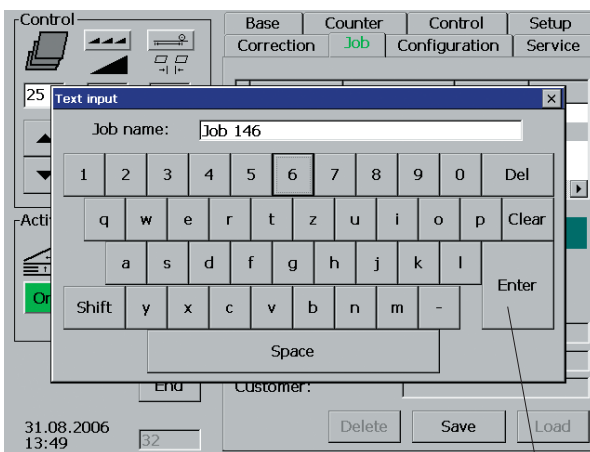


Fig. 75 Changing the job name

## 2.8 SERVICE menu

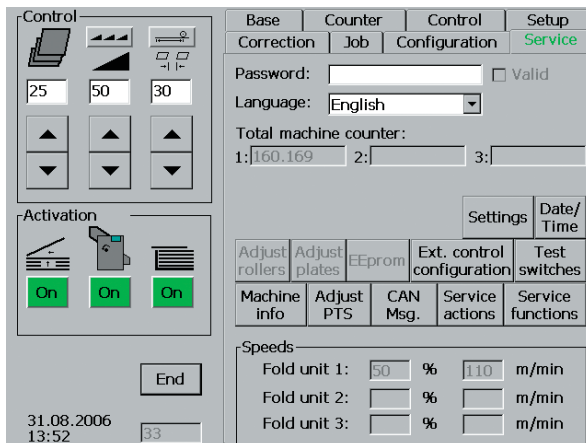


Fig. 76 Service

This menu allows a choice between languages, a change of date and time as well as access to special information and setting menus for the service technician.

- **Note**  
Access to the service information and service setting menus is only possible after entering a password.

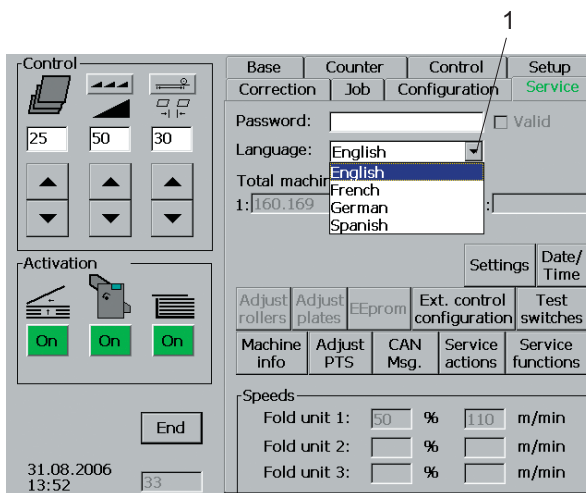


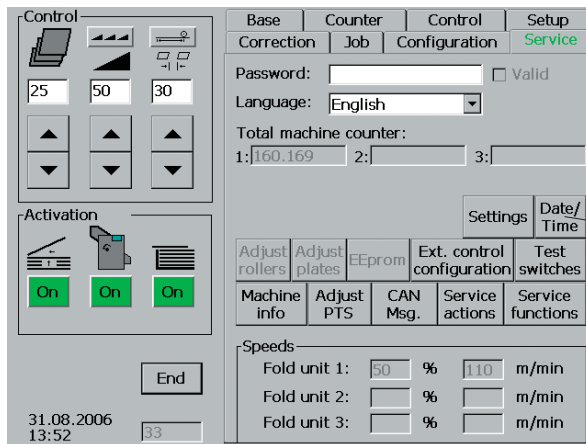
Fig. 77 Selecting a language

### Selecting a language

1. Touch the *arrow* (Fig. 77/1) shown in the window „Language“.  
A window with a selection of languages will open.
2. Touch the language of your choice.



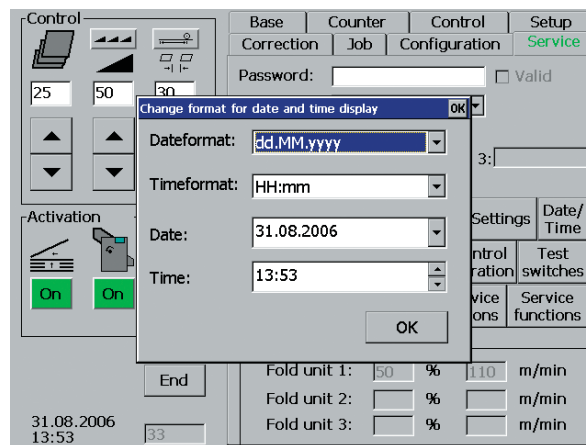
## Setting up and operation



### Setting the date and time

Touch the *Date/Time* key in the **SERVICE** menu (Fig. 78/1).

Fig. 78 Service



A setting template for date and time is opened.

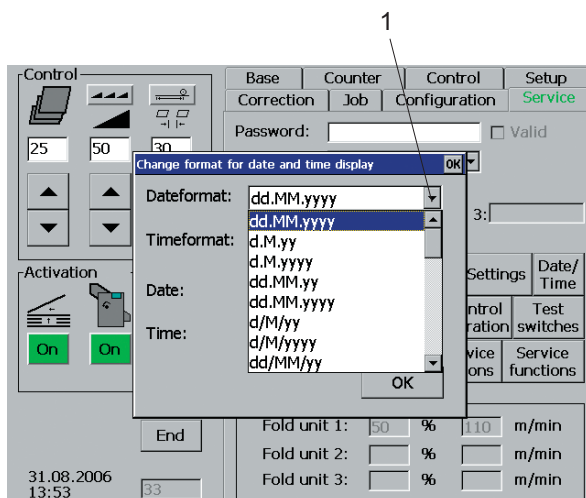
You can determine the type of presentation by means of *Dateformat* and *Timeformat*.

Examples for the different types of presentation:

Date: 27.06 2006 or 06/27/06

Time: 13.39 or 1.39 PM

Fig. 79 Setting template for date and time



### Types of presentation of the date

1. Touch the arrow (Fig. 80/1) in the Dateformat window.  
An additional window is opened with a selection of the presentation types.
2. Touch the desired type of presentation.
3. Touch the OK key.

Fig. 80 Types of presentation of the date

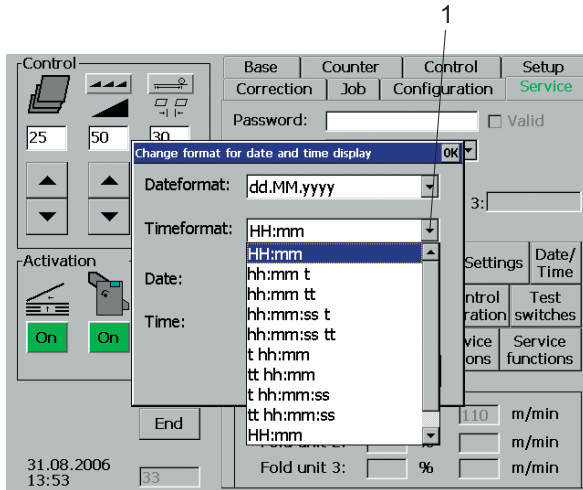


Fig. 81 Type of presentation of the time

### Types of presentation of the time

1. Touch the *arrow* (Fig. 81/1) in the Time-format window.  
An additional window is opened with a selection of the presentation types.
2. Touch the desired type of presentation.
3. Touch the *OK* key.

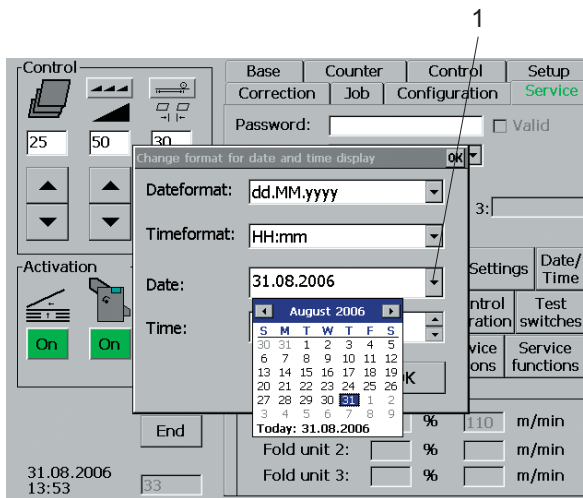


Fig. 82 Setting the date

### Setting the date

1. Touch the *arrow* (Fig. 82/1) in the Date window.
2. Mark the current date in the calendar by touching day, month and year.
3. Touch the *OK* key.

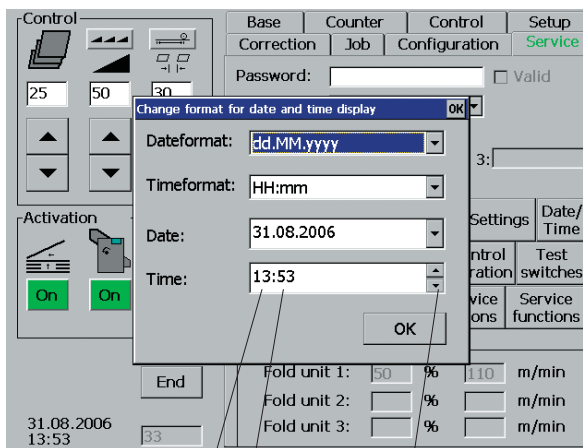


Fig. 83 Setting the time

### Setting the time

1. Touch the hour (Fig. 83/1) or minute display (Fig. 83/2) in the window Time.
2. Adjust the time by touching the arrow keys (Fig. 83/3).

## Setting up and operation

<b>E</b>	<b>Manual settings</b>	<b>E3</b>
1.	Feeders	E3
	1.1 Pneumatic sheet feeder	E3
	1.1.1 Principle of operation	E3
	1.1.2 Description	E3
	1.1.3 Setting the sheet size	E4
	1.1.4 Setting the sheet separation	E4
	1.1.5 Front paper stop	E7
	Adjusting the horizontal position	E7
	Adjusting the vertical position	E7
	1.1.6 Positioning the paper stack	E8
	1.2 Flat pile feeder FSA 38	E9
	1.2.1 Principle of operation	E9
	1.2.2 Description	E9
	1.2.3 Setting the sheet size	E10
	1.2.4 Loading the pile table	E10
	1.2.5 Moving the paper stack to work position	E12
	1.2.6 Adjusting the suction wheel	E13
	1.2.7 Exchanging the suction wheel	E14
	1.2.8 Rear edge separator	E15
	Fine adjustment of working position	E15
	Hold-down rods	E16
	Automatic height setting mechanism	E16
	Making the lifting suckers inoperative	E18
	Setting the stripper springs	E18
	1.2.9 Air settings	E19
2.	Register table	E21
	2.1 Functional principle	E21
	2.2 Description	E21
	2.3 Setting the sheet size	E22
	2.4 Adjusting the angle of the alignment rail	E22
	2.5 Ball rail	E24
	2.6 Changing balls	E25
3.	Fold unit	E26
	3.1 Basic configuration	E26
	3.2 Description	E27
	3.3 Position of the fold plates	E28
	3.4 Installing and removing the fold plates	E29
	3.5 Angle correction of the fold plate stops	E30
	3.6 Fold plate infeed section	E31
	3.7 Adjusting the fold plate aperture	E34
	3.8 Transport rollers	E38
4.	Transfer brige	E39
	4.1 Functional principle	E39
	4.2 Description	E39
	4.3 Setting	E39
5.	Roller table	E41
	5.1 Functional principle	E41
	5.2 Description	E41
	5.3 Setting the angle of the alignment rail	E42
	5.4 Ball rail	E43
	5.5 Changing balls	E43
	5.6 Setting the hold-down rods	E44
	5.7 Setting the alignment rail backward or forward	E45

## Manual settings

6.	Deliveries	E47
6.1	Shingle delivery	E48
	Functional principle	E48
	Description	E48
	Setting the transfer height	E49
	Setting the sheet size	E50
6.2	Small format vertical stacker	E51
	Functional principle	E51
	Description	E51
	Setting the transfer height	E52
	Setting the sheet size	E52
	Setting the paper thickness	E54
	Setting the kicker assembly	E55
7.	Perforating, scoring and cutting tools	E57
7.1	Perforating	E58
7.2	Scoring	E59
7.3	Cutting	E60
7.4	Removing the slitter shaft	E61
7.5	Installing the tools	E63
7.6	Re-installing the slitter shafts	E64
7.7	Setting the tools to the sheet size	E65
7.8	The purpose of strippers	E66
7.9	Up/down travel limit of the lower slitter shaft	E67
8.	Fine adjustments and corrections	E68
8.1	Fold length deviations	E68
8.2	Skewed folds	E68
	Adjusting the angle at the register table	E69
	Adjusting the angle at the roller table	E70
8.3	Out-of-square paper	E71
8.4	Bulged fold	E72
8.5	Shadow fold	E73
8.6	Skewed perforations/scores after the crossfold	E74
8.7	Creasing	E74
9.	Possible malfunctions and their remedies	E75

**E Manual settings**

**1. Feeders**

**1.1 Pneumatic sheet feeder PBA 38**

**1.1.1 Principle of operation**

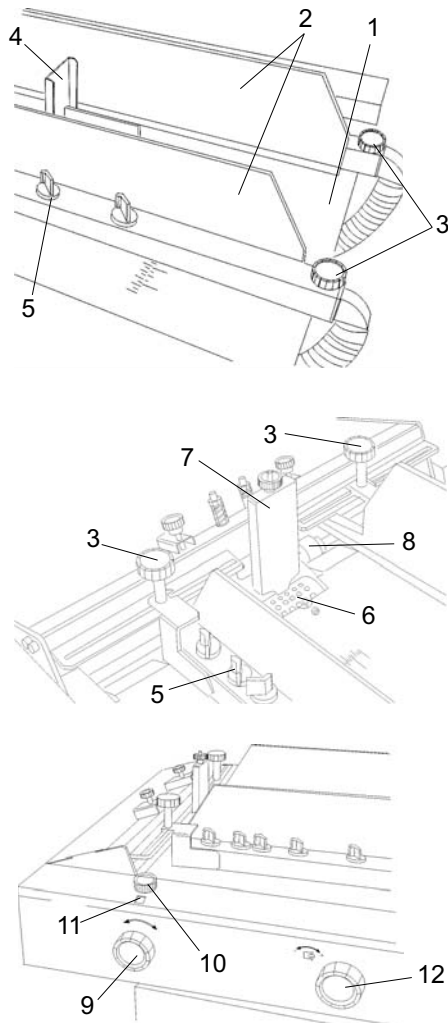
The pneumatic sheet feeder is suitable for handling a wide variety of papers - uncoated papers as well as coated, freshly printed or thin papers. It even handles folded sheets.

**1.1.2 Description**

The sheets are separated by air and vacuum. Air is supplied from the bottom of the stack both on the left and right side, separating the paper in the stack which now floats on a cushion of air.

A rotating suction drum then separates the sheets from the bottom of the paper stack. This principle has the advantage that paper can be continuously reloaded with the machine running. There is no need to stop the machine.

Components and operating elements of the PBA feeder:



- Fig. 1/1 Feed table
- Fig. 1/2 Air brackets left and left
- Fig. 1/3 Knob for adjusting the air brackets
- Fig. 1/4 Rear paper stop
- Fig. 1/5 Air adjustment valves
- Fig. 1/6 Suction drum with suction segment
- Fig. 1/7 Front paper stop
- Fig. 1/8 Guide rollers
- Fig. 1/9 Lever for adjusting the suction segment
- Fig. 1/10 Lock screw
- Fig. 1/11 Window for suction segment adjustment
- Fig. 1/12 Vacuum adjustment valve

Fig. 1 Components and operating elements

## Manual settings

### 1.1.3 Setting the sheet size

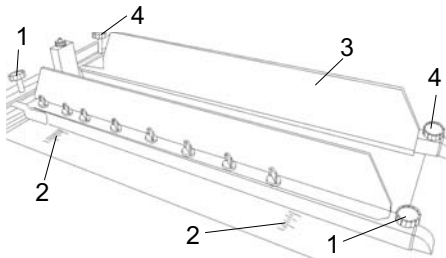


Fig. 2 Setting the sheet size

#### Note

When setting the sheet size, make sure that the sheets are fed approximately from the center.

1. Loosen the handles (Fig. 2/1) by turning them counter-clockwise.
2. Set the left air bracket to half sheet width with the help of the scales (Fig. 2/2).
3. Tighten the handles of the left fair bracket.
4. Place a stack of about 50 sheets on the feed table.
5. Slide the right air bracket (Fig. 2/3) against the edge of the stack.

#### Note

Make sure that the sheet does not actually touch the air bracket. There should be a gap of about 0.5 mm. The right and left feed guide should be parallel.

6. Tighten the handles of the right air bracket (Abb. 2/4).

#### Note

If the width of the paper is less than 7 cm, only one air bracket can be used.

### 1.1.4 Setting the sheet separation

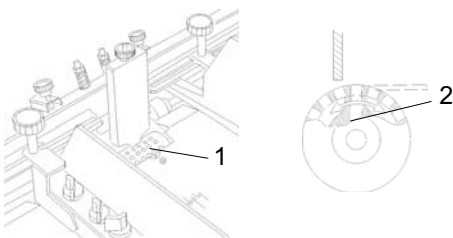


Fig. 3 Air

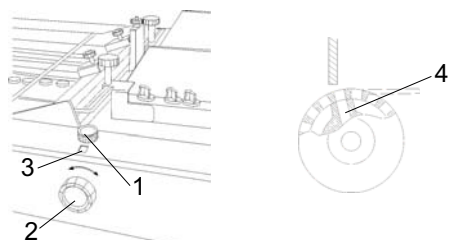


Fig. 4 Basic setting

Sheet separation is achieved by the combined action of the rotating suction drum, the paper stop and the air. Paper weight and type of paper have an influence on the setting.

#### Air

A suction drum (Fig. 3/1) separates the sheets from the bottom of the stack. This is achieved by the suction segment (Fig. 3/2) inside the suction drum. The angle of the suction drum segment with respect to the paper stop can be changed to suit different types of paper.

#### Basic setting

1. Loosen the lock screw (Fig. 4/1).
2. Turn the knob (Fig. 4/2) until the figure "6" on a red background appears in the window (Fig. 4/3).
3. Tighten the lock screw (Fig. 4/1).

Now the suction segment is in its zero position (Fig. 4/4).

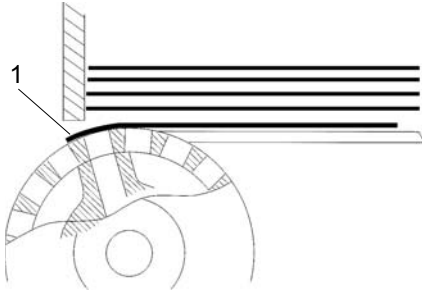


Fig. 5 Inclination of suction segment

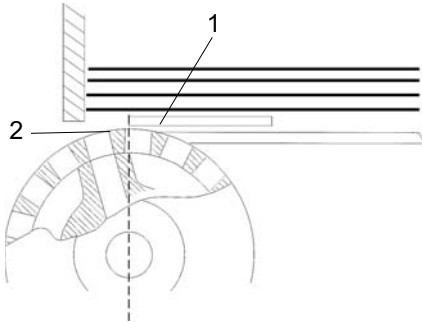


Fig. 6 Cover plate

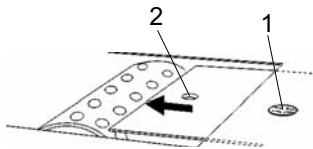


Fig. 7 Pull out cover plate

Most types of paper with a weight of 80 - 90 GSM can be separated in this position.

For other paper grades, other figures must be set in the window:

- Paper grades below 80 GSM: 7 - 9
- Paper grades above 90 GSM: 1 - 5

**Setting for light paper grades:**

**Note**

For running light-weight paper, first try the suction segment setting as described under "Basic setting". A steeper inclination is only necessary for special types of paper.

Light paper grades tend to cling to the curve of the suction drum. Therefore the suction segment must be tilted in direction of the paper stop. The inclination of the suction segment in this direction has the effect that the paper is wrapped around the suction drum (Fig. 5/1).

The sheets are easily separated from the stack and double sheets occur very rarely.

In the batch counting mode it may happen that a single sheet is fed during the interval time. This is caused by the fact that the suction drum continues to turn during the interval time (although without vacuum). For light paper grades the friction between paper and suction drum may be sufficient for detaching a sheet. To prevent this, a special plate (Fig. 6/1) can be placed over the suction drum. This plate, which is pulled out of the feed table, can cover the suction drum up to its highest point (Fig. 6/2). Sheets are no longer affected by the friction of the suction drum.

Pull out the cover plate as follows:

1. Loosen the screw (Fig. 7/1).
2. Insert a screw driver in the hole (Fig. 7/2).
3. Pull out the cover plate.
4. Tighten the screw (Fig. 7/1).



## Manual settings

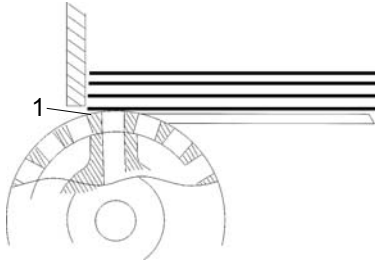


Fig. 8 Setting for heavy paper grades

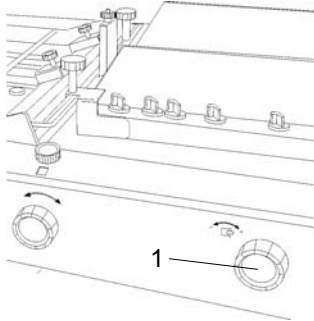


Fig. 9 Efficiency of vacuum

### Setting for heavy paper grades

Heavy paper grades do not easily cling to the curve of the suction drum (Fig. 8/1). For this reason the suction segment must be tilted in direction of the paper stack. The inclination of the suction segment in this direction has the effect that the paper is barely wrapped around the suction drum. This is sufficient because heavier paper grades are more easily separated from the stack.

### Vacuum:

Vacuum can be modified by means of a regulating valve (Fig. 9/1). This is necessary because heavy paper grades require more vacuum than light paper grades. The vacuum can be modified by turning the knob (Fig. 9/1).

### Setting the vacuum:

For setting the vacuum, the machine must be turned on.



**Exercise caution in the vicinity of rotating shafts and rollers! Hair, loose garments and jewellery may get caught! SERIOUS INJURY MAY RESULT!**



**Do not get close to rotating shafts and rollers while the machine is running and the noise reduction hoods are open! SERIOUS INJURY MAY RESULT!**



**Exercise caution in the vicinity of perforating and slitting knives! They have sharp edges for proper function! SERIOUS INJURY MAY RESULT!**

1. Close the valve (Fig. 9/1) for setting the minimum effect.
2. Start the machine.
3. Slowly open the valve (Fig. 9/1) by turning the knob clockwise. Observe the sheet separation while doing this.

### Note

At first no sheets are pulled off the stack or they are pulled off irregularly. The more the valve is opened, the smoother is the paper transport.

### Note

Make sure that much vacuum does not cause feeding of double sheets.

4. Switch off the machine.

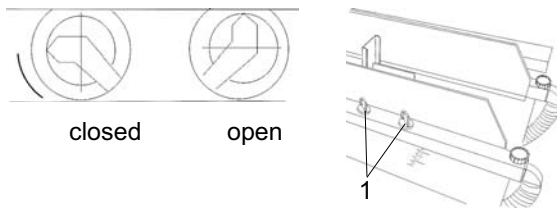


Fig. 10 Valves

**Air**

Open the valves (Fig. 10/1) at both air brackets.

**Note**

In most cases it is sufficient to open the second and the last valve (with respect to the format length).

**1.1.5 Front paper stop**

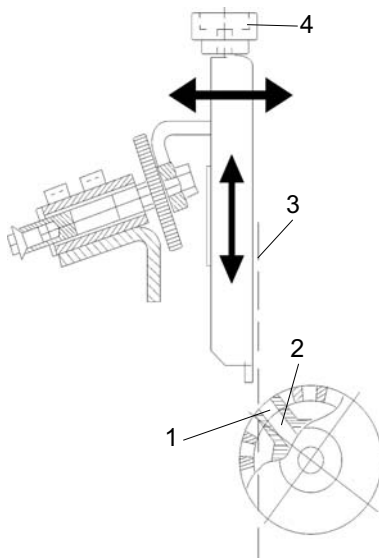


Fig. 11 Front paper stop

The position of the front paper stop (Fig. 11) can be adjusted in a horizontal and vertical direction.

**Adjusting the horizontal position:**

The horizontal position of the front paper stop determines the suction point on the paper and in turn depends on the position of the suction segment in the suction drum.

**Note**

The inclination of the suction segment must be set correctly before making the horizontal adjustment.

**Note**

When the suction segment is adjusted, the horizontal position must also be changed accordingly.

1. Turn the handwheel until the openings of the suction drum (Fig. 11/1) are exactly above the openings of the suction segment (Fig. 11/2).
2. Adjust the horizontal position of the front paper stop in such a way that it forms a vertical line (Fig. 11/3) with the leading edge of the suction openings. To achieve this, turn the knurled screw (Fig. 11/4) counter-clockwise or clockwise.

**Adjusting the vertical position:**

The respective paper thickness is set by adjusting the vertical position of the front paper stop. Proceed as follows:

1. Place a stack of about 50 sheets on the feed tale.
2. Start the machine.

## Manual settings



**Exercise caution in the vicinity of rotating shafts and rollers! Hair, loose garments and jewellery may get caught! SERIOUS INJURY MAY RESULT!**



**Do not get close to rotating shafts and rollers while the machine is running and the noise reduction hoods are open! SERIOUS INJURY MAY RESULT!**



**Exercise caution in the vicinity of perforating and slitting knives! They have sharp edges for proper function! SERIOUS INJURY MAY RESULT!**

3. By turning the knurled screw (Fig. 11/4), adjust the vertical position of the paper stop in such a way that only one sheet is pulled off the stack.

### 1.1.6 Positioning the paper stack

1. Fan the paper stack well to avoid double sheets.
2. Place the stack on the feed table.
3. Position the rear paper stop. It prevents the paper from sliding off the table.

## 1.2 Flat pile feeder

The flat pile feeder of the 2300 Series with a rear edge sheet separator is suitable for separating different kinds of paper, uncoated as well as coated, freshly printed or thin paper.

### 1.2.1 Principle of operation

Sheet separation is done by vacuum and air at the rear of the paper stack.

Rear blowers are employed to separate the topmost sheets at the rear edge of the stack.

The air flow from the separator blower is controlled by the upward motion of the lifting suckers.

As soon as the lifting suckers have lifted the topmost sheet by approx. 2 cm, the separator blower has cleared an air block, providing a continuous flow of air and creating an air cushion under the sheet.

The suction wheel at the front edge of the stack grips the sheet and leads it onto the register table.

### 1.2.2 Description

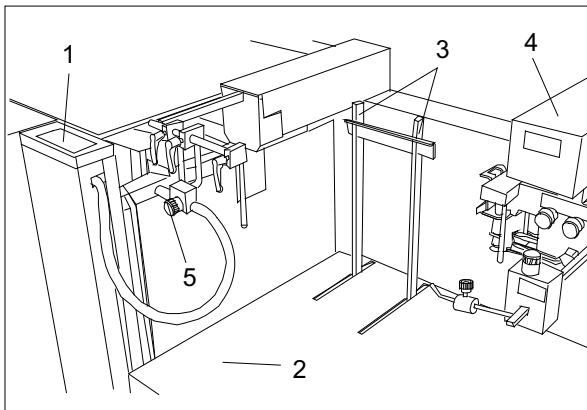


Fig. 12 Flat pile feeder

Main assemblies:

Fig. 12/1	Operator panel
Fig. 12/2	Pile table
Fig. 12/3	Stacking stops
Fig. 12/4	Rear edge separator
Fig. 12/5	Side blowers



**Warning – Risk of injury from moving parts on the feeder!**

Moving parts on the feeder can cause injuries.

Always pay attention to moving parts when making adjustments on the feeder.



**Warning – Risk of injury at the feed section of the feeder!**

Pay particular attention to moving parts when making adjustments on the feeder. Never attempt to access the sheet separation or material infeed areas while the machine is running.



**Warning – Risk of injury from revolving chains!**

Do not reach into the area of revolving chains when making adjustments on the feeder.

## Manual settings

### 1.2.3 Setting the sheet size

The setting of the sheet size (positioning of side stops and the rear edge separator) is automated. The necessary setting data is available because sheet length and sheet width was entered in the **SETUP** menu.

Servomotors take over the automatic setting. Fine adjustments are possible any time.

### 1.2.4 Loading the pile table

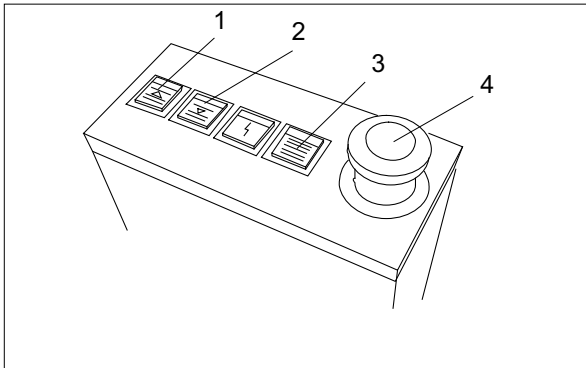


Fig. 13 Operator panel of the flat pile feeder



#### **Warning – Lowering the pile table - Risk of injury!**

When the pile table is lowered make sure that nobody is working under the pile table and that no limbs or other body parts are under the pile table.



Make sure that there are no objects under the pile table.

Considerable mechanical damage may occur if the table hits an obstacle.

The pile table can be moved up or down by pressing push-buttons.

With these push-buttons, you can control the following functions:

- Fig. 13/1 The pile table moves up automatically to the top position.
- Fig. 13/2 The pile table moves down, but only as long as the push-button is pressed.
- Fig. 13/3 **Auto mode**  
The distance that the pile table moves down corresponds to the height of the paper stack being replenished.  
This ensures that the loading height is always in the ergonomically favorable position.
- Fig. 13/4 **Emergency stop button**

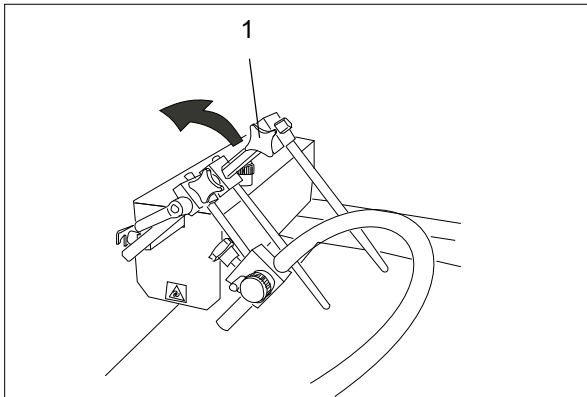


Fig. 14 Front side stop

The feeder is designed in such a way that all hindering components can be swung out of the way or tilted up when loading paper.

1. Swing the front side stop (Fig. 14/1) to the left.

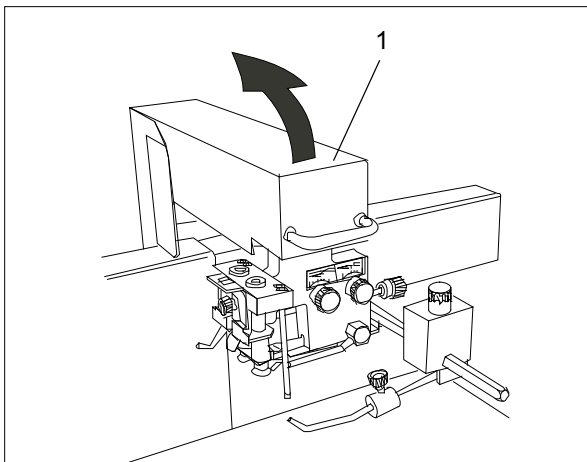


Fig. 15 Rear edge separator

2. Tilt the rear edge separator (Fig. 15/1) all the way up (it is supported and held by a gas-filled shock absorber).



**Warning – Risk of injury from tilting the automatic sheet separator!**

The motion of the rear edge separator can cause injuries.

Move the arm slowly up or down, watching for potential pinch points.

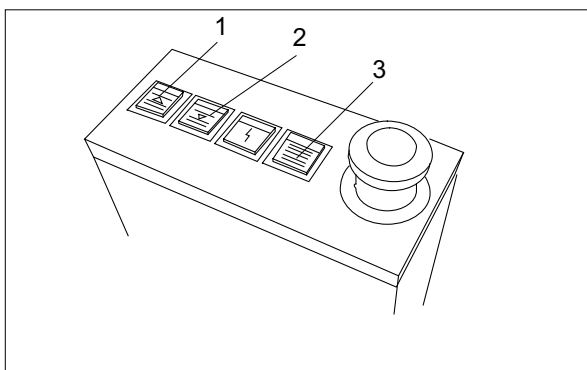


Fig. 16 Operator panel of flat pile feeder

3. Lower the pile table to a position that is favorable for you by pressing the appropriate push-button (Fig. 16/1 or 16/2).
4. Reload paper.
5. Lower the pile table by pressing the push-button (Fig. 16/3) to maintain the favorable stacking height.

## Manual settings

### 1.2.5 Moving the paper stack to work position

When the pile table is loaded, the paper stack must be brought to the work position.

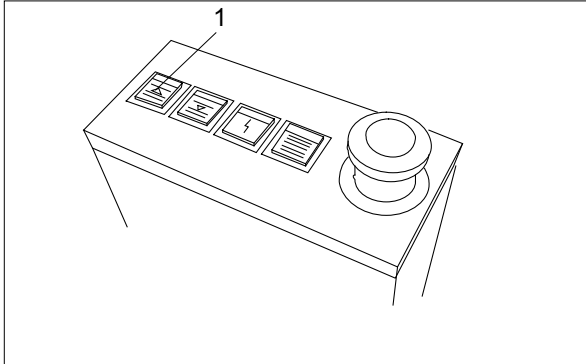


Fig. 17 Operator panel of flat pile feeder

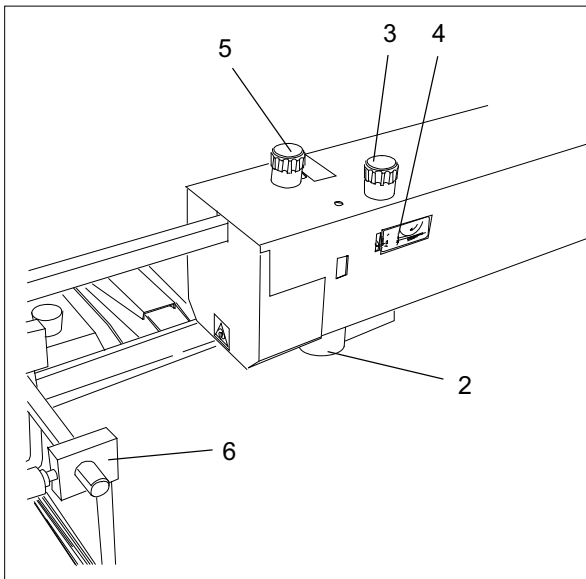


Fig. 18 Stack sensor switch



#### Warning – Risk of injury from moving parts!

The upward motion of the paper stack can cause potentially dangerous pinch points. Do not reach into the danger areas while the paper stack moves up.

1. Push button (Fig. 17/1).  
The stack moves automatically to the correct position, controlled by the stack sensor switch (Fig. 18/2).

#### Note

The stack height switch is a capacitive sensor that reacts to the density of the paper stack. For this reason the gap between stack and suction wheel may vary when the paper stack has reached the work position depending on the type of paper used.

2. Check whether the gap between stack and suction wheel is 8 mm.
3. If the gap is not correct, it can be corrected with the adjustment screw (Fig. 18/3). A scale (Fig. 18/4) facilitates this setting.
4. Tilt the rear edge separator all the way down to its work position.
5. Loosen the lock screw for the front side stop (Fig. 18/5) by turning it counter-clockwise.
6. Tilt the front stop (Fig. 18/6) to the work position and approach it to the paper stack so that it barely touches it.
7. Secure the lock screw for the front side stop (Fig. 18/5) by turning it clockwise.

### 1.2.6 Adjusting the suction wheel

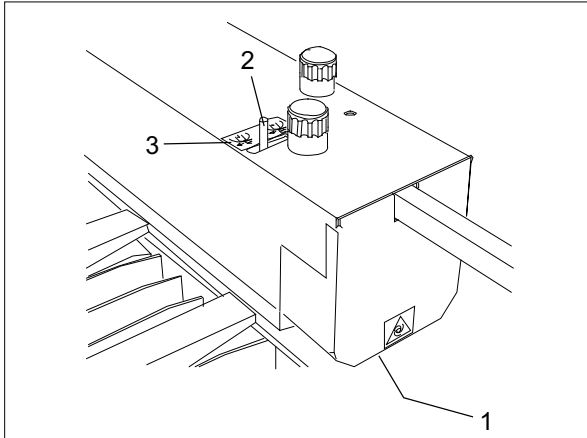


Fig. 19 Suction wheel cover

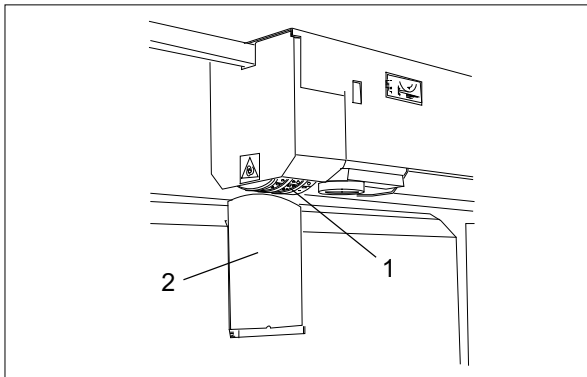


Fig. 20 Suction wheel and separator plate

The suction wheel (Fig. 19/1, Fig. 20/1) is located in the transfer area between feeder and register table. Vacuum action separates the leading edge of the uppermost sheet from the stack and the rotary motion transports the sheet onto the register table. The lifting of the sheet is achieved by the suction segment inside the suction wheel. The suction angle (Fig. 19/2) can be changed to adapt the pick-up point and suction area to different types of paper. A scale (Fig. 19/3) facilitates the setting.

In most cases, an adjustment is only necessary when the sheets are not flat.

Sheets with a downward curl:

Push the lever backward.  
This will shift the suction segment forward and sheet separation is delayed.

Sheets with an upward curl:

Push the lever forward.  
This will shift the suction segment backward and sheet separation is advanced.

► **Note**  
Fine adjustment is only possible with the machine running.

In connection with the adjustment of the suction segment, the height of the separator plate (Fig. 20/2) can also be varied. An adjustment screw at the rear is available for this purpose.



## Manual settings

### 1.2.7 Exchanging the suction wheel

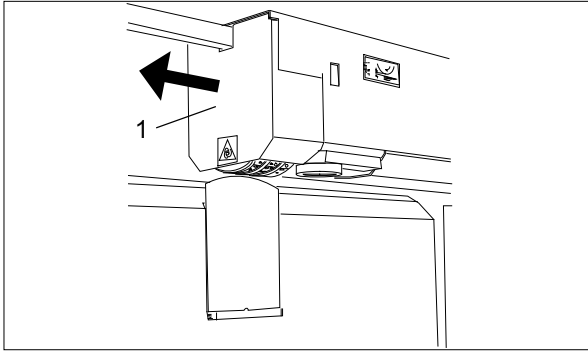


Fig. 21 Suction wheel cover

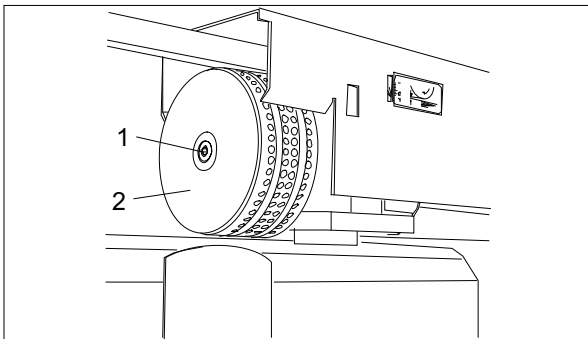


Fig. 22 Suction wheel

The suction wheel is factory-equipped with two PUR-rings for reliable sheet detachment.

If marks occur on sensitive or freshly printed paper, a different suction wheel (accessory) can be used.

This suction wheel has a PUR-coating over the entire surface and consequently a higher coefficient of friction.

To exchange the suction wheel proceed as follows:

1. Pull off the cover (Fig. 21/1).
2. Loosen the Allen screw (Fig. 22/1).
3. Remove the suction wheel (Fig. 22/2).
4. Install the PUR suction wheel.
5. Tighten the suction wheel with the Allen screw (Fig. 22/1).
6. Replace the cover (Fig. 21/1).

### 1.2.8 Rear edge separator

The task of the rear edge separator is to aerate the trailing edge of the sheets on the paper stack, to separate them and to raise the uppermost sheets for separation.

The rear edge separator is positioned with the help of motors.

The necessary setting data is available because sheet length was entered in the **SETUP** menu. Servomotors take over the automatic setting. Fine adjustments are possible any time.

#### Fine adjustment of the working position

The position of the rear edge separator is correct when the stop rods (Fig. 23/1) touch the trailing edge of the paper stack.

The position of the rear edge separator can be re-adjusted by means of the plus-/minus keys (Fig. 24/1).

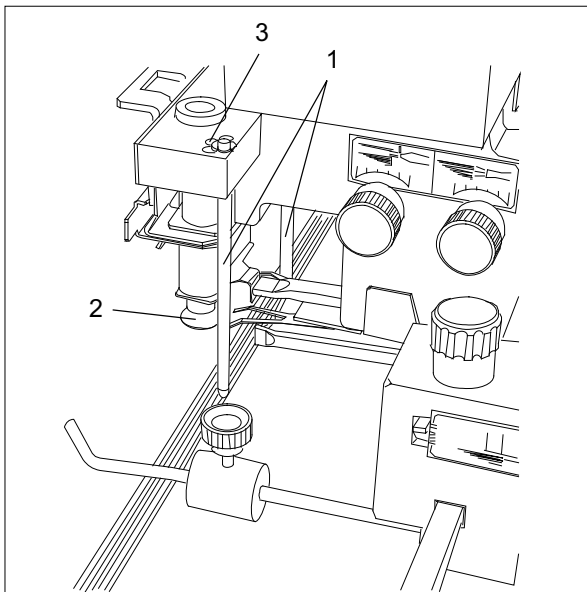


Fig. 23 Lifting suckers

► **Note**  
The edges of the lifting suckers (Fig. 23/2) should be placed about 2 mm from the rear edge of the paper stack.

► **Note**  
For light paper stack it is recommended to place the lifting suckers even closer to the rear edge of the stack.  
In order to be able to reposition the stop rods in this case, additional holes (Fig. 23/3) are provided in the mounting bracket to receive the rods.

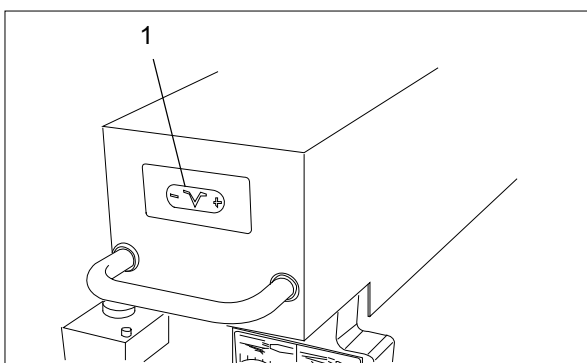


Fig. 24 Rear edge separator

1. Introduce the stop rods in another hole (identical on both sides).

2. Adjust the position of the rear edge separator with the plus-/minus keys (Fig. 24/1).

► **Note**  
Final positioning is only possible during the test run.

## Manual settings

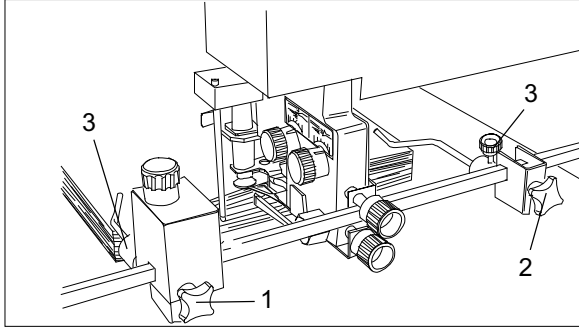


Fig. 25 Hold-down rods

### Hold-down rods

The hold-down rods improve sheet guidance. They prevent the uncontrolled movement of the upper sheets on the stack as a result of the air blowing into it.

1. Slide the left (Fig. 25/1) and right (Fig. 25/2) hold-down rods towards the outer edge of the paper stack (about 2 cm inside the edge).
2. Set the pressure of the hold-down rods (Fig. 25/3) as follows:

Heavy paper grades:	Slide the weight forward
Light paper grades:	Slide the weight rearward
Small formats:	Slide the weight forward
Large formats:	Slide the weight rearward

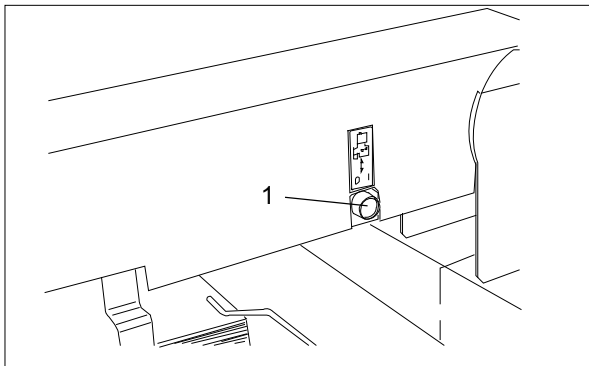


Fig. 26 Automatic height setting mechanism

### Automatic height setting mechanism

The automatic height setting mechanism ensures a permanent gap between lifting suckers and paper stack. It can be switched on and off by pressing a push-button (Fig. 26/1).

The illuminated push-button shows that the function is active.

#### ► Note

For small formats or flat sheets, the automatic height setting mechanism is often not needed and can therefore be switched off.

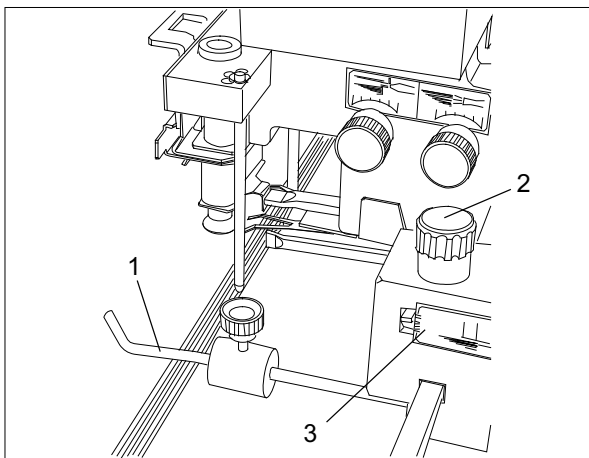


Fig. 27 Automatic height setting mechanism

The height setting is detected by a sensor which is located in the left hold-down rod (Fig. 27/1).

Proceed with the setting as follows:

1. Check whether the automatic height setting mechanism has been switched on.
2. You can change the gap between the lifting suckers and the paper stack by turning an adjustment screw (Fig. 27/2). A scale (Fig. 27/3) facilitates the setting.

### Basic setting:

The lifting suckers should be 1 - 2 mm above the paper stack (with air turned off).

### Increasing the gap:

Turn the adjustment screw (Fig. 27/2) clockwise:  
Pointer moves to the plus range „+“

### Reducing the gap:

Turn the adjustment screw (Fig. 27/2) counter-clockwise: Pointer moves to the minus range „-“

### ► **Note**

For paper with an upward or downward curl, the automatic height setting mechanism must be set with special care.

## Manual settings

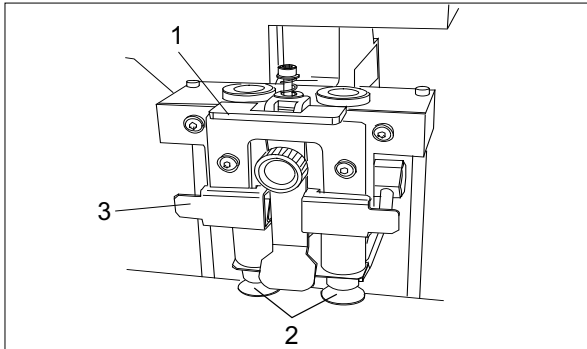


Fig. 28 Lifting suckers

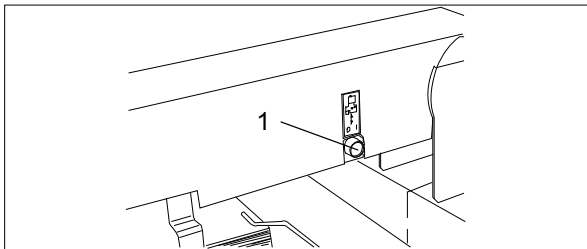


Fig. 29 Automatic height setting mechanism

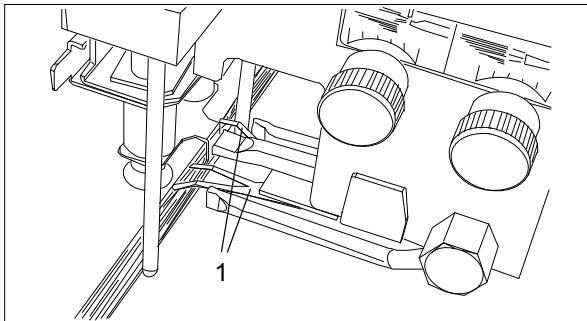


Fig. 30 Stripper springs

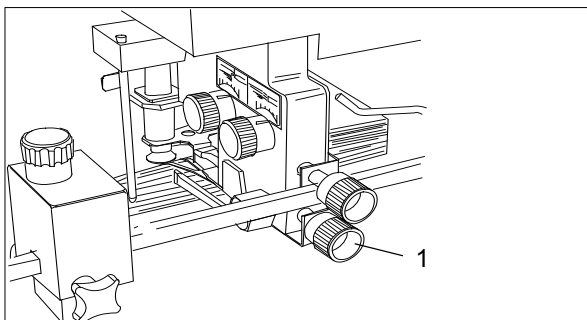


Fig. 31 Position of stripper springs

### Making the lifting suckers inoperative

For short formats it is often advantageous to work without lifting suckers. In this case the air continuously separates the sheets from the rear edge. The lifting suckers can be made inoperative.

1. Pull the bracket (Fig. 28/1) all the way upwards.
2. Slide the lifting suckers (Fig. 28/2) to the top position.
3. Push the lock lever (Fig. 28/3) backwards.
4. Switch off the automatic height setting mechanism by pushing button (Fig. 29/1) (the white lamp goes out).

### Setting the stripper springs

The stripper springs (Fig. 30/1) ensure that just one sheet at a time is lifted by the lifting suckers.

The correct setting prevents double sheets.

Set the stripper springs in such a way that they reach about 2 mm into the stack.

The position of the springs can be adjusted by turning an adjustment screw (Fig. 31/1).

To move the springs away from the stack:  
Turn the adjustment screw counter-clockwise

To move the springs further into the stack:  
Turn the adjustment screw clockwise

- **Note**  
If double sheets occur, the stripper fingers must be adjusted in such a way that they reach further into the stack.

### 1.2.9 Air settings

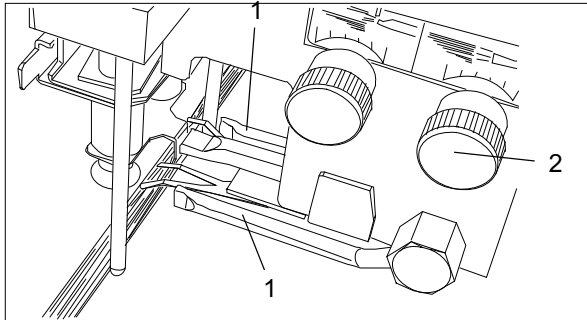


Fig. 32 Rear blowers

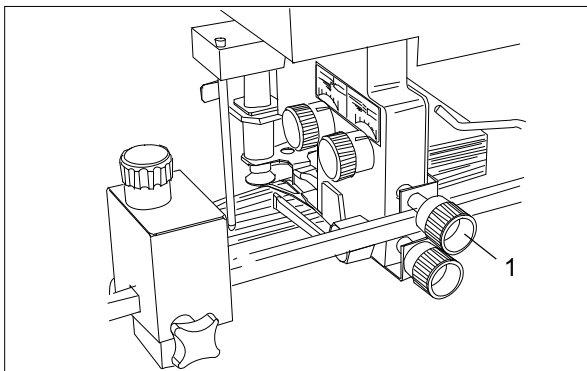


Fig. 33 Angle position of rear blowers

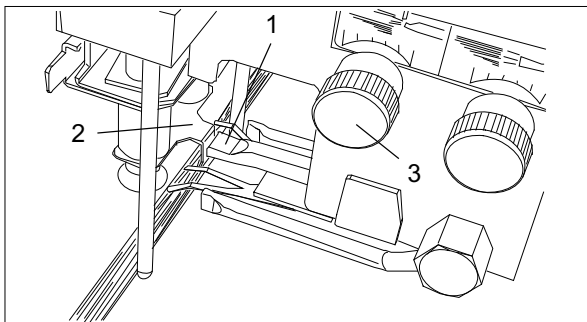


Fig. 34 Separator blowers

A variety of air nozzles (rear blowers, separator blowers, side blowers) are located in different positions to aerate the uppermost sheets of the paper stack and to support sheet separation.

#### Rear blowers

Two rear blowers (Fig. 32/1) have the task to aerate the uppermost sheets of the stack at the rear edge.

The volume of the air can be adjusted by means of a valve (Fig. 32/2).

More air: Turn the adjustment screw counter-clockwise

Less air: Turn the adjustment screw clockwise

The effect of the air can be influenced by changing the angle of the rear blowers. An adjustment is possible by turning the adjustment screw (Fig. 33/1).

Air directed angled upwards:

Turn the adjustment screw counter-clockwise

Too high: Double sheets may occur.

Air directed angled downwards:

Turn the adjustment screw clockwise

Too low: Sheets on top are not aerated properly.

► **Note**

Air volume and angle are set correctly when the top 10 to 15 sheets separate easily.

► **Note**

Use as little air as possible for proper function!

#### Separator blower

The separator blower (Fig. 34/1) is a nozzle providing a continuous flow of air which is normally blocked by an air block (Fig. 34/2).

As soon as the lifting suckers have lifted the sheet, the separator blower has been lifted over the air block and the continuous flow of air from the separator blower creates an air cushion under the separated sheet.

The air volume can be adjusted by means of a valve (Fig. 34/3) and depends on the type of paper.

Heavy paper grades: More air:  
Turn the adjustment screw counter-clockwise

Light paper grades: Less air:  
Turn the adjustment screw clockwise

## Manual settings

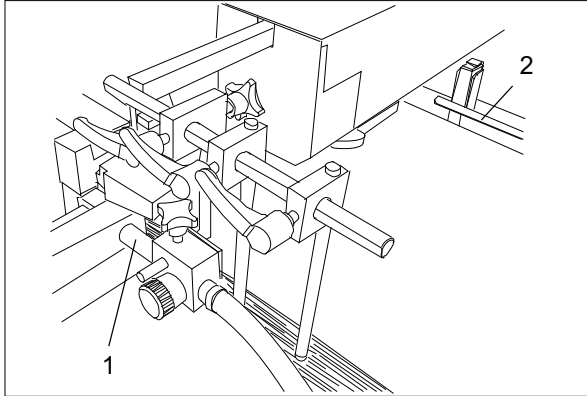


Fig. 35 Side blowers

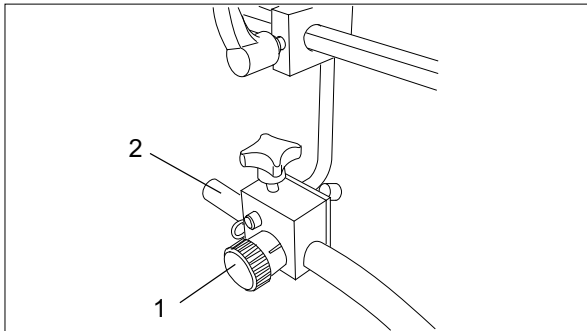


Fig. 36 Side blowers

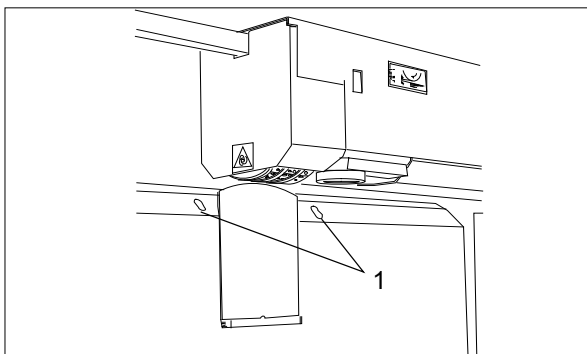


Fig. 37 Front blowers

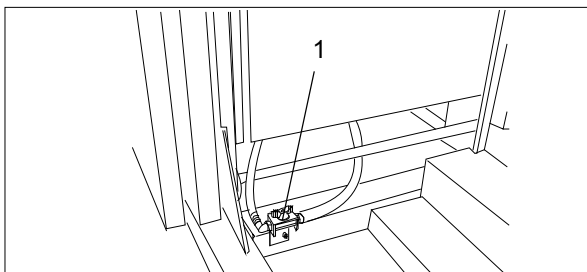


Fig. 38 Valve

### Side blowers

The side blowers (Fig. 35/1) stabilize the air cushion in the area of the leading edge of the sheet – this is especially useful for long sheets.

To achieve the best possible result, a flow inhibitor (Fig. 35/2) must be attached to the right stop rods.

1. Place the side blower next to the front stops with a gap of 1 to 2 cm so that the air stream hits the opposite flow inhibitor (Fig. 35/2).
2. Adjust the intensity of the air stream by means of the valve (Fig. 36/1). The valve can be closed completely by turning it clockwise.
3. Turn the air nozzles (Fig. 36/2) so that the topmost 10 to 15 sheets are aerated thoroughly.

### Front blowers

Front blowers (Fig. 37/1) are available as an optional equipment to support the air cushion, especially when handling heavy and long sheets. They are positioned to the left and right of the suction wheel and blow air under the leading edge of the sheet.

Thus the sheet clings more easily to the suction wheel. You can control the air volume of the front blowers by means of a valve (Fig. 38/1).

#### ► Suggestion for repetitive jobs

Most setting elements of the feeder are equipped with scales.

For repetitive feeding jobs it is recommended to mark the settings at the scales.

The machine can thus be set up more quickly. Please note, however, that the same result can only be reached under identical conditions.

**2. Register table**

**2.1 Functional principle**

The register table aligns the sheets in such a way that their leading edges are parallel to the fold rollers (precondition: sheets are trimmed at right angles). An angled feed belt, on which a ball rail for sheet guidance is installed, guides the sheets laterally against an alignment rail thus aligning them. Alignment rail, ball rail as well as the inclined transport belt form a functional entity and are brought to the correct position by the automatic setting mechanism.

**2.2 Description**

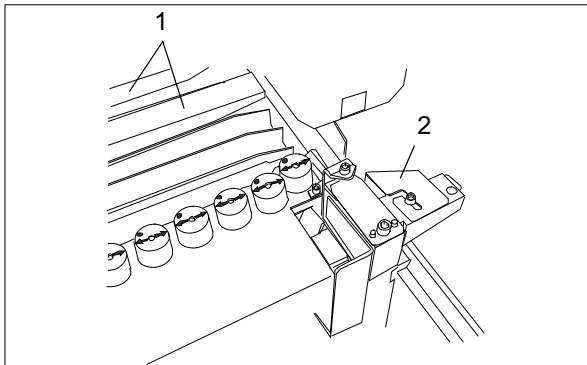


Fig. 39 Register table

- Fig. 39/1 Hold-down rods
- Fig. 39/2 Guide plate
- Fig. 40/1 Scale
- Fig. 40/2 Ball rail
- Fig. 40/3 Angle adjustment

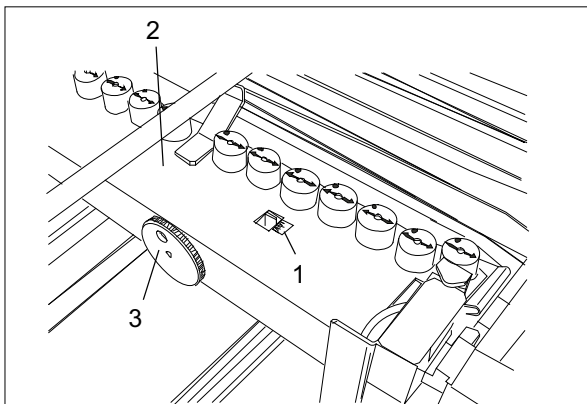


Fig. 40 Register table



## Manual settings

### 2.3 Setting the sheet size

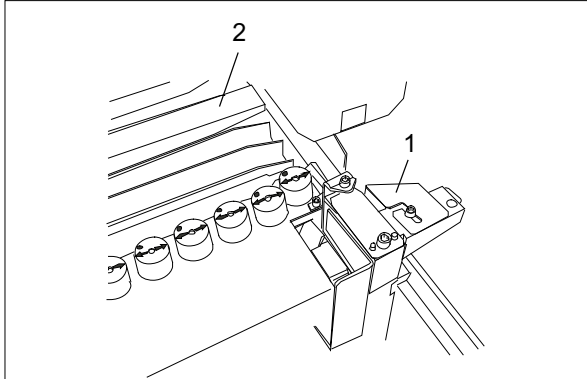


Fig. 41 Register table

The setting of the alignment rail is automated. The necessary information is available because the sheet width has been entered in the **SETUP** menu. Servomotors take over the automatic settings. Fine adjustments are possible any time.

► **Note**

If the sheet is less than 18 cm wide, you must detach the paper guide plate (Fig. 41/1) from the alignment rail. An appropriate information will appear on the display.



**Warning – Risk of injury from revolving belts!**

Only perform adjustment work when the machine has been switched off!

The hold-down rods which stabilise the arriving sheets are set manually. A guide plate is attached to the outer hold-down rod to support the edge of the sheet.

1. Slide the right hold-down rod with guide plate to half the sheet width.
2. Distribute the other hold-down rods across the sheet width.
3. Place one of the rods (Fig. 41/2) in front of the suction wheel.

### 2.4 Adjusting the angle of the alignment rail

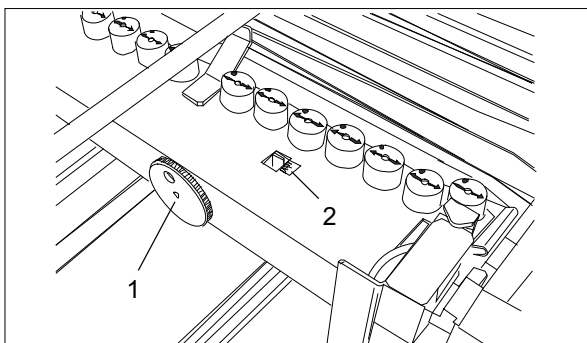


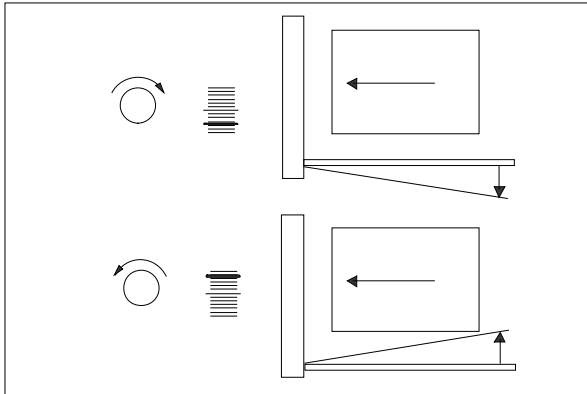
Fig. 42 Alignment rail

The angle of the alignment rail is adjustable. This makes an adjustment to the sheets to be folded possible.

The infeed angle can be changed by means of an adjustment screw (Fig. 42/1). A scale facilitates the setting (Fig. 42/2, Fig. 43).

Basic position: Indicator pointing to „0“  
The alignment rail is at right angles with respect to the fold rollers.

Angle adjustment:



Turning the adjustment screw clockwise:  
Angle increases

Turning the adjustment screw counter-clockwise:  
Angle decreases

Fig. 43 Angle adjustment

## Manual settings

### 2.5 Ball rail

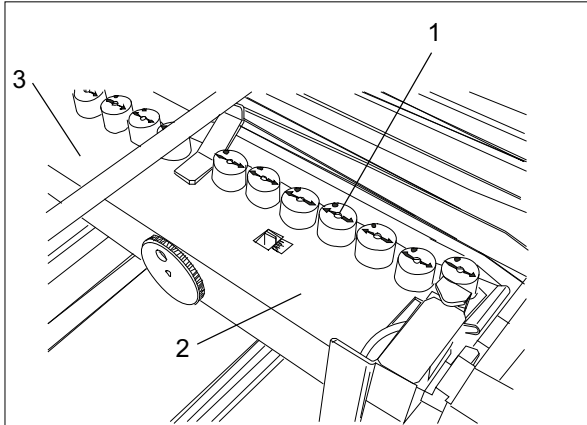


Fig. 44 Ball rail

The balls are used for reliable and fast transport of the sheets.

They are located in a ball cage (Fig. 44/1).

The ball cages are arranged in a ball rail (Fig. 44/2).

The ball rail is part of the alignment rail (Fig. 44/3).

The ball rail can be equipped with plastic or steel balls, depending on the paper size and type of paper.

► **Note**

Always try to use as few balls as possible.

Balls not needed for a particular job should be removed to lessen wear of the transport belt.

It is recommended to use the following balls:

Paper grades below 60 GSM:

Plastic balls

Paper from 60 to 150 GSM:

Plastic balls, every 4<sup>th</sup> ball should be a steel ball

Paper grades above 150 GSM

Steel balls

In the infeed section (the first four to six balls) it is recommended to use one or two steel balls.

For very light paper grades, some openings should be left free.

## 2.6 Changing balls

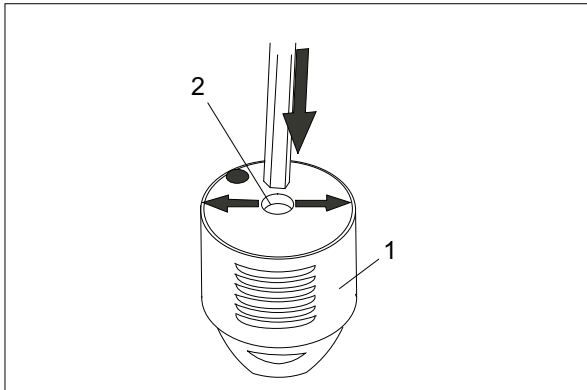


Fig. 45 Ball cage

All balls are located in removable ball cages (Fig. 45/1).

When inserting the ball cages, make sure that the protruding guide key of the ball cage engages the corresponding recess in the ball rail.

Proceed as follows to change balls:

1. Hold the ball cage with two fingers and pull it upwards out of the ball rail.
2. Pull the ball out of the ball cage or use a pen to push it out by introducing the pen in the upper opening of the ball cage (Fig. 45/2).
3. Push the replacement ball into the ball cage from below.
4. Install the ball cage in the ball rail.

► **Note**

The ball cages are mounted correctly when all arrows on the ball cages point in the direction of paper travel.

## Manual settings

### 3. Fold unit

#### 3.1 Basic configuration

The fold unit of the 2300 Series is equipped with 4 automatic fold plates.

Each fold plate has a deflector which engages automatically, so that it is no longer necessary to remove the fold plates and replace them by deflectors when changing the type of fold.

All fold plates have the same length.

The electrical connection is made by a cordless plug-in connection when installing the fold plates in the fold unit.

The basic version of the machine can be extended by adding a second or third buckle fold unit.

The setting of the fold plate stops and fold rollers is automated.

The necessary information is available because the type of fold and the fold lengths have been entered in the **SETUP** menu and the paper thickness has been measured automatically.

Servomotors take over the automatic settings.

Fine adjustments are possible any time.

### 3.2 Description

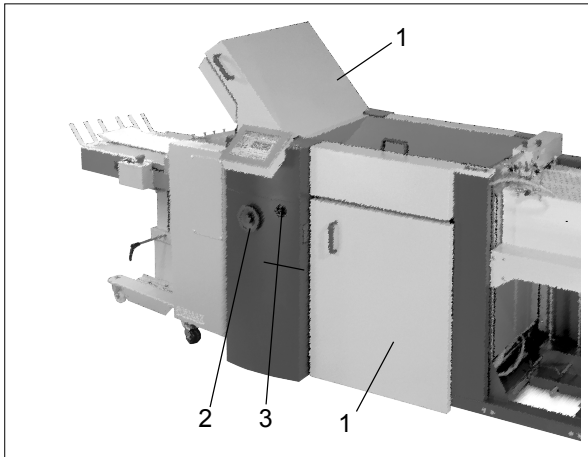


Fig. 46/1 Noise reduction hoods  
Fig. 46/2 Handwheel  
Fig. 46/3 Main switch

Fig. 46 Fold unit

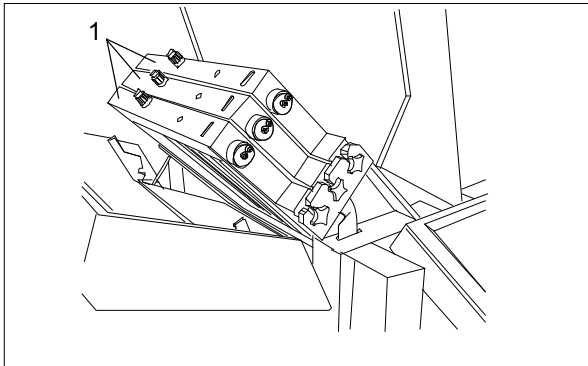


Fig. 47/1 Fold plates

Fig. 47 Fold plates

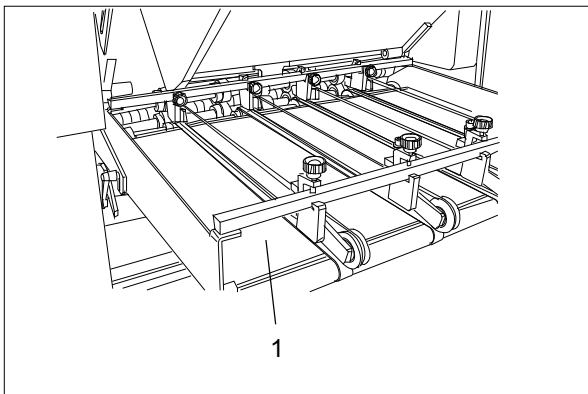


Fig. 48/1 Transfer bridge

Fig. 48 Transfer bridge

## Manual settings

### 3.3 Position of the fold plates

Every fold plate always has a defined position in the fold unit.

The thickness of the fold plates is determined by its position in the machine.

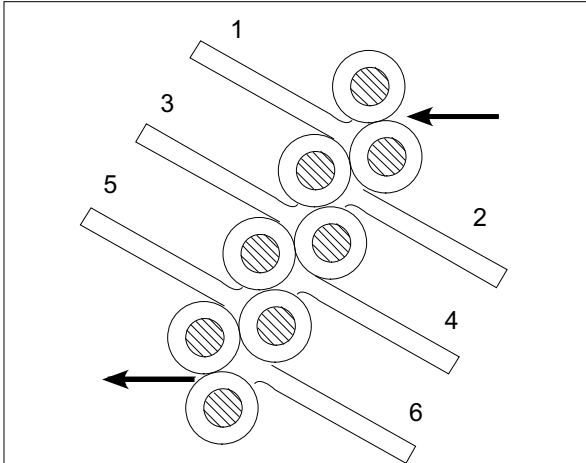


Fig. 49 Fold unit

- **Note**  
All fold plates are marked with a number.  
Make sure that fold plate number and position number are identical.

### 3.4 Installing and removing the fold plates

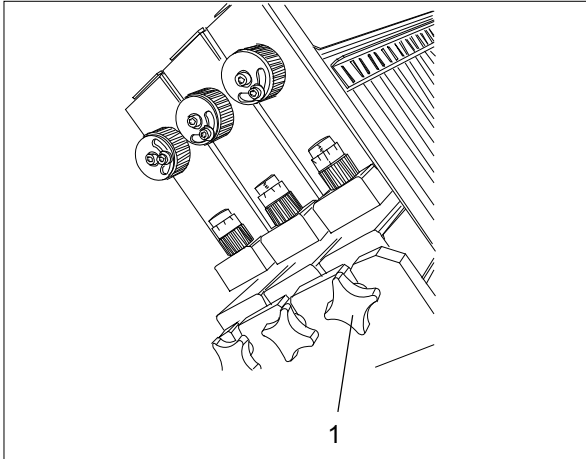


Fig. 50 Fold plates



**Warning – Risk of injury when opening and closing the noise reduction hood!**

If the noise reduction hood is closed unexpectedly, limbs can get caught up and injured. Always open the noise reduction hood up to the end position.



**Warning – Risk of injury from rotating fold rollers!**

Do not reach into the area of the fold rollers while the machine is running. Wear close-fitting clothing and, if necessary, a hairnet. Make sure that any ties or jewelry you wear (such necklaces or bracelets) cannot get caught up on fold rollers or be pulled in.

Each fold plate has a lock lever (Fig. 50/1) at the left- and right-hand side.

1. Insert the fold plates in such a way that the lock levers fit in the recesses in the frame of the fold unit.
2. Secure the fold plates by turning the lock levers clockwise. The fold plates are guided to automatically engage the electric connection.

► **Note**

To remove the fold plates, loosen the lock screws by turning the lock levers counter-clockwise.



**Warning – Risk of injury from slipping buckle plates!**

After loosening the lock levers on fold plates 2, 4 or 6, the fold plate could slip out. Hold the fold plate on both sides or ask another person for help.



## Manual settings

### 3.5 Angle correction of the fold plate stops

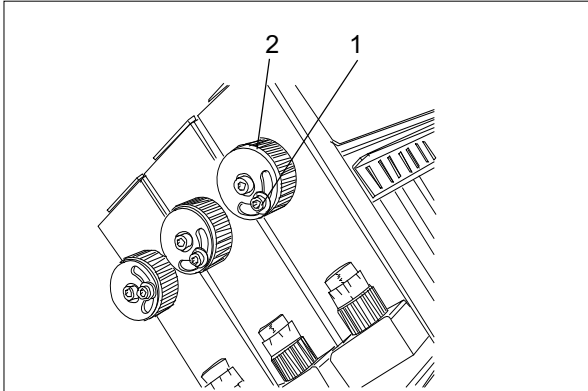


Fig. 51 Angle correction

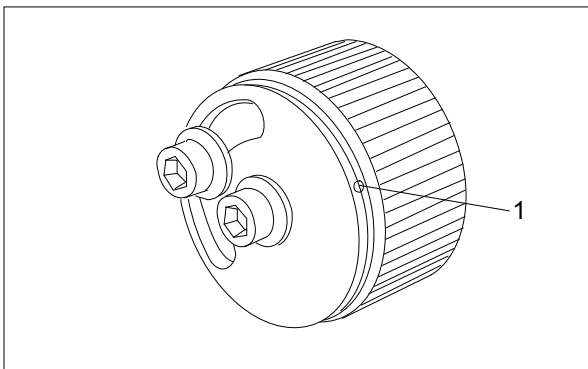


Fig. 52 Angle correction

If sheets are not cut at right angles, it is possible to adapt the fold plate stop to the sheets by correcting the angle.

To do this, proceed as follows:

1. Loosen the Allen screw (Fig. 51/1) by turning it counter-clockwise.

2. Turn the knurled knob (Fig. 51/2) counter-clockwise or clockwise.

Counter-clockwise turn: left side of the stop gets longer

Clockwise turn: left side of the stop gets shorter

Basic position: Stop is parallel  
Both semicircular marks (Fig. 52/1) face each other.

3. Tighten the Allen screw by turning it clockwise.

### 3.6 Fold plate infeed section

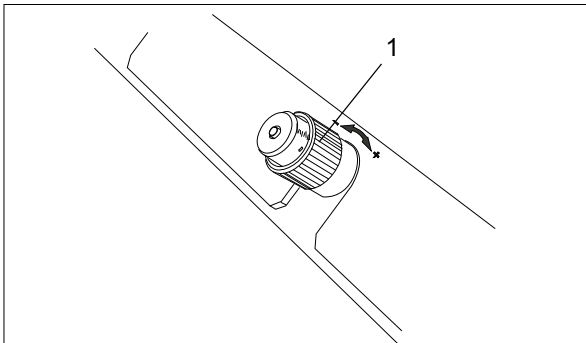


Fig. 53 Micrometer screw

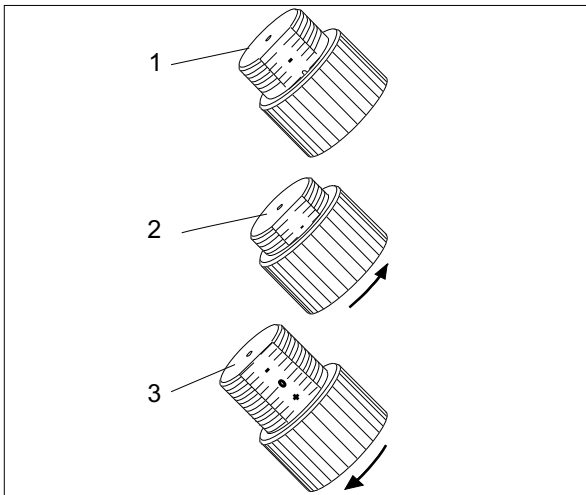


Fig. 54 Adjusting the lower lip

### Adjusting the lower lip

You can adjust the lower lip of the fold roller infeed section by means of a micrometer screw (Fig. 53/1) to adapt the buckle space to the thickness and rigidity of the paper.

A scale indicates the positioning of the lower lip.

Basic position (Fig. 54/1):  
Micrometer screw at „0“

#### Thin paper grades:

Turn the micrometer screw in the minus (-) direction (Fig. 54/2)

- Lower lip is advanced
- Buckle space gets smaller

#### Heavy paper grades:

Turn the micrometer screw in the plus (+) direction (Fig. 54/3)

- Lower lip is set back
- Buckle space gets larger

The fine adjustment requires a certain amount of experience and feel.

## Manual settings

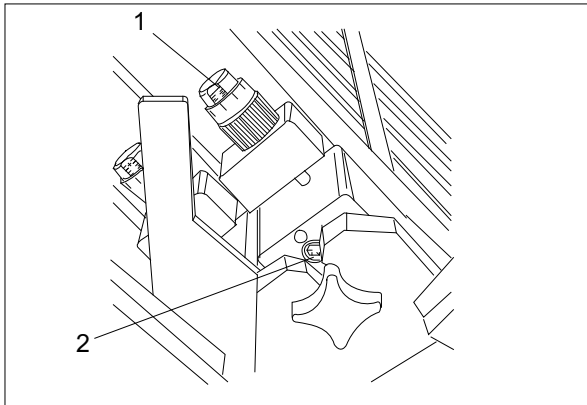


Fig. 55 Adjustment of fold plate position

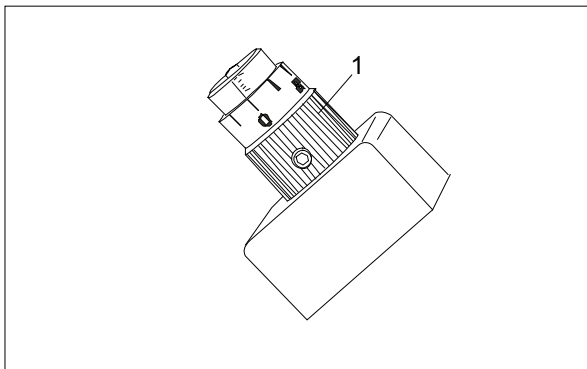


Fig. 56 Micrometer screw

### Adjusting the fold plate position

The distance between fold plates and fold rollers is adjustable - independent of the adjustment of the lower lips.

There is a micrometer screw (Fig. 55/1) for adjusting the fold plate position at the left- and right-hand side of each buckle plate.

The factory setting of these screws is at zero.

You can change the fold plate positions by

- parallel adjustment of the fold plates
- oblique setting of the fold plates

### Parallel shifting of fold plates

Retracting the fold plate infeed section by 1 to 2 mm away from the fold rollers is recommended for difficult-to-handle paper or when making multiple zigzag folds.

1. Loosen the Allen screws (Fig. 55/2) on both sides by turning them counter-clockwise.
2. Change the position of the fold plate by turning the micrometer screws (Fig. 56/1) clockwise or counter-clockwise.

To increase the gap: Turn screw counter-clockwise

To decrease the gap: Turn screw clockwise

### ► Note

A scale allows a setting with a precision of 1/10 mm.

1 full turn corresponds to 1 mm.

3. Set the micrometer screw to the same dimension on both sides.
4. Secure the new position by tightening the Allen screws (Fig. 55/2) on both sides.

### Oblique setting of the fold plates

The oblique setting of the fold plates is a correction method that can be used when perforations or scores run out of line in the second or third fold unit.

This malfunction is caused by the different behaviour of the sheets with closed or open edges.

The oblique setting must be made at the last fold plate only (before the perforating or scoring process).

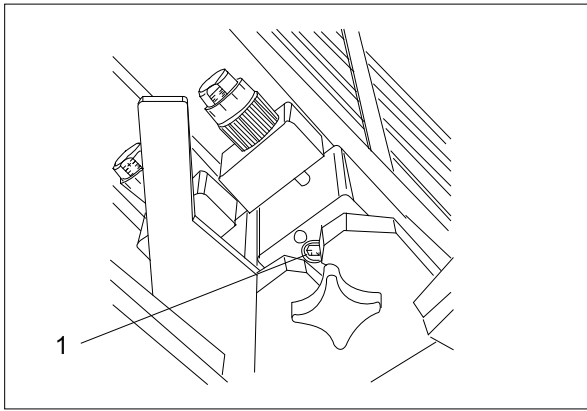


Fig. 57 Adjustment of fold plate position

1. Loosen the Allen screw (Fig. 57/1) at the operator side of the last fold plate by turning it counter-clockwise.
2. Move the fold plate to an oblique position by turning the micrometer screw clockwise or counter-clockwise.
3. Check whether the perforation or scoring lines are now running straight as a result of the adjustment.
4. Repeat the adjustment, if necessary.
5. Secure the oblique position of the fold plate by tightening the Allen screw (Fig. 57/1).

## Manual settings

### 3.7 Adjusting the fold plate aperture

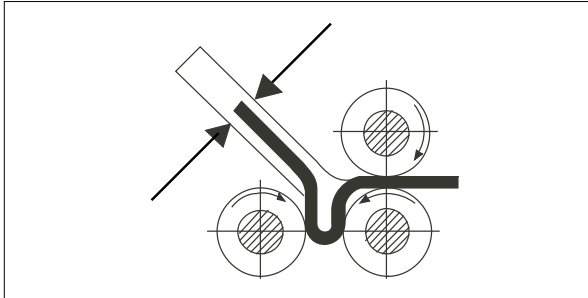


Fig. 58 Fold plate aperture

The fold plate aperture which describes how wide the fold plate opens, is the gap between the guide rods of the upper and lower grates of the fold plate (Fig. 58).

The fold plate aperture determines the maximum paper thickness that can be handled. For this reason the fold plate aperture must always be adjusted to match the paper thickness.

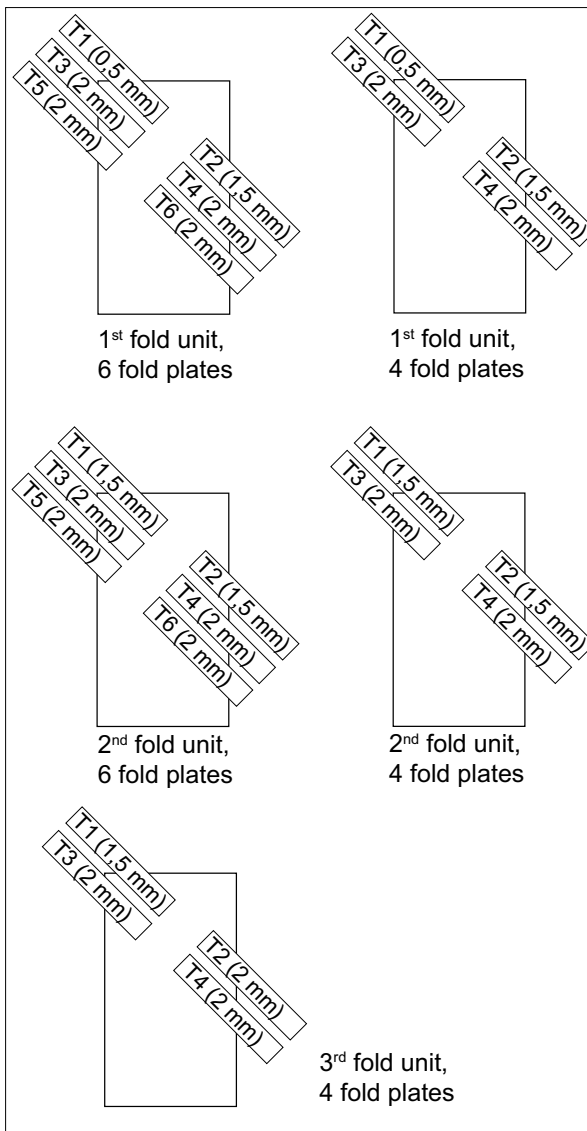


Fig. 59 Fold plate aperture

The measurements for the fold plate aperture are different within one fold unit. The aperture of the first fold plate is smaller than that of the following fold plates.

This default value is necessary because the paper layer becomes thicker with each fold and takes up more space.

For the same reason there are other basic values for adjusting the fold plate apertures in the second or third fold unit.

The fold plate aperture is factory-set as shown (Fig. 59).

The basic setting of the fold plate aperture should only be changed if

- the sheets are so thick that they no longer run into the fold plate without getting stuck.
- the sheets are so thin that they form waves between the guide rods of the lower and upper grate of the fold plate. As a result, fold inaccuracies may occur.

Proceed as follows to adjust the fold plate aperture:

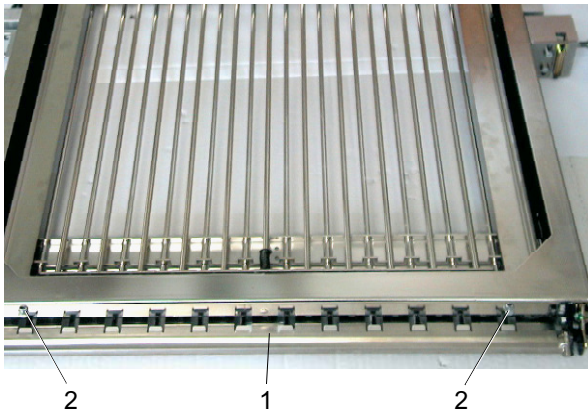


Fig. 60 Fold plate with lower lip pointing upwards



**Warning – Risk of crushing from rotating fold rollers!**

The machine can also be started if the fold plates are not installed and the noise reduction hoods are open.

Do not reach into the area of the fold rollers while the machine is running. Wear close-fitting clothing and, if necessary, a hairnet. Ensure that ties and any jewelry you wear (for example necklaces or bracelets) cannot get caught up on fold rollers or be pulled in.

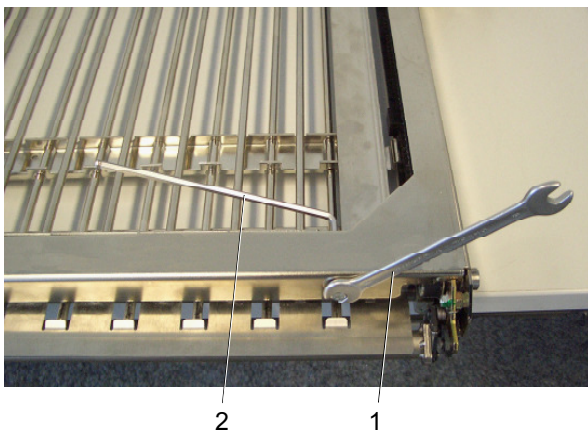


Fig. 61 Loosening the lower screws

1. Turn off the machine.
2. Remove the fold plate from the fold unit (see chapter 3.4).
3. Place the fold plate on a flat surface with the adjustable lower lip (Fig. 60/1) pointing upwards.
4. In the lower section of the fold plate, loosen the two screws (Fig. 60/2) which are fixed in an oval hole. To do this, use an 8 mm open-end wrench (Fig 61/1) and a 4 mm Allen key (Fig. 61/2).

## Manual settings

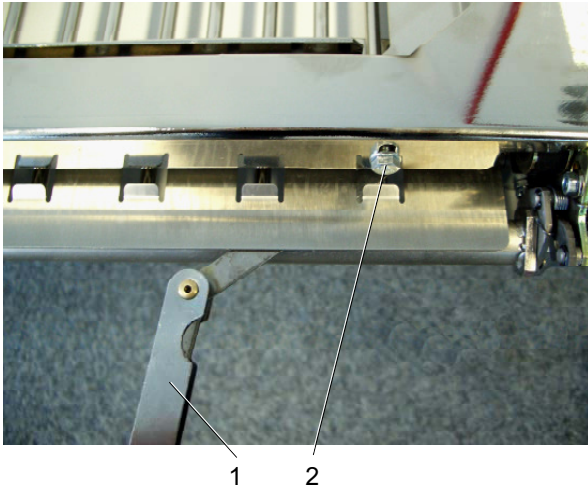


Fig. 62 Use of the feeler gauge

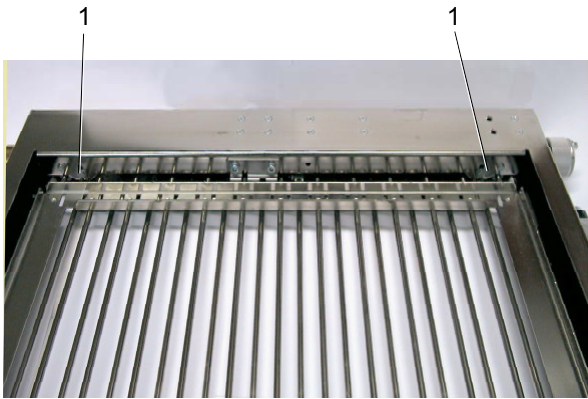


Fig. 63 Upper screws

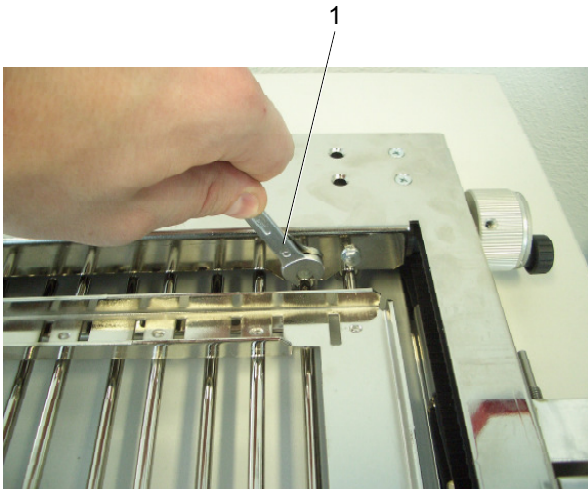


Fig. 64 Loosening the upper screws

5. Set the feeler gauge (Fig. 62/1) to the desired distance.
6. Slide the feeler gauge on the right-hand side of the fold plate into the fold plate infeed between the lower lip and deflector.
7. Tighten the right-hand screw (Fig. 62/2) with open-end wrench and Allen key.
8. Now repeat the adjustment on the left-hand side of the fold plate.

9. In the upper section of the fold plate, loosen the two screws (Fig. 63/1) which are fixed in an oval hole.

Use a 7 mm open-end wrench (Fig. 64/1) for loosening the upper screws.



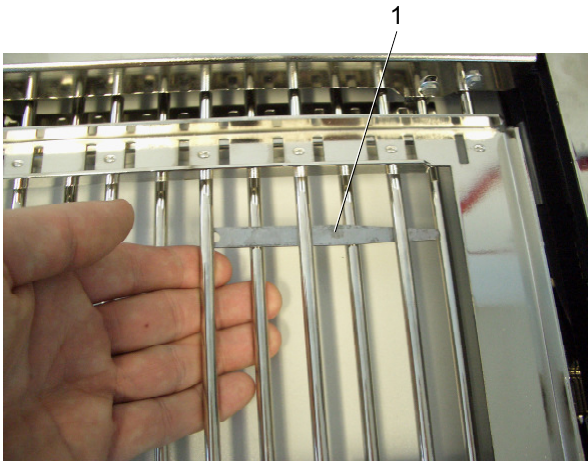


Fig. 65 Pull the fold plate grate upwards

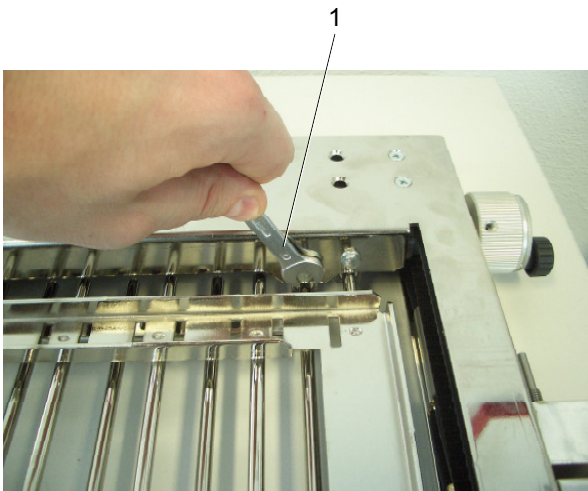


Fig. 66 Tightening the upper screws

10. Set the feeler gauge to the desired distance.
11. Slide the feeler gauge (Fig. 65/1) on the right-hand side of the fold plate into the fold plate infeed between the lower lip and deflector.
12. Pull the lower grate of the fold plate upwards so that it touches the feeler gauge.

13. Tighten the right screw (Fig. 66/1) with the open-end wrench to ensure that the fold plate grate remains firmly in that position.
14. Repeat the adjustment on the left-hand side of the fold plate.

► **Note**

A fold plate infeed section that has not been set correctly may damage the fold rollers. Before switching on the machine, turn the handwheel to check whether the fold plate infeed section touches the fold rollers.



## Manual settings

### 3.8 Transport rollers

The transport rollers are located on the slitter shafts. Always set them in such a way that the upper and lower rollers run on top of each other.



#### **Warning – Risk of injury from rotating fold rollers!**

Do not reach into the area of the fold rollers while the machine is running. Wear close-fitting clothing and, if necessary, a hairnet. Make sure that any ties or jewelry you wear (such as necklaces or bracelets) cannot get caught by fold rollers and pulled in.



#### **Warning – Risk of cut injuries from blades and sharp counter-rollers!**

Rotating slitter shafts can draw in clothing, hair or limbs and cause severe injuries. Never reach into the unit while it is running. Only change blades when the machine has been switched off and secured against being switched back on. Wear close-fitting clothing and, if necessary, a hairnet.

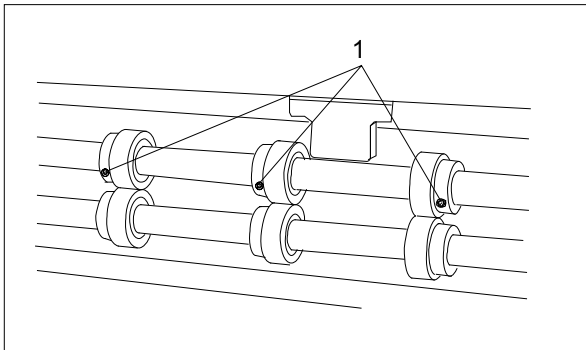


Fig. 67 Transport rollers

The transport rollers must only be adjusted when the sheets are no longer transported properly after the paper size has been changed.

1. Turn the handwheel until the Allen screws (Fig. 67/1) on the transport rollers become visible.
2. Loosen the Allen screws.
3. Shift the transport rollers.
4. Secure the Allen screws.

## 4. Transfer bridge

### 4.1 Functional principle

Folded sheets from the folder are taken over by a transfer bridge and guided between transport belts onto the roller table of the next fold unit. Folders with two or three fold units are always equipped with a transfer bridge.

### 4.2 Description

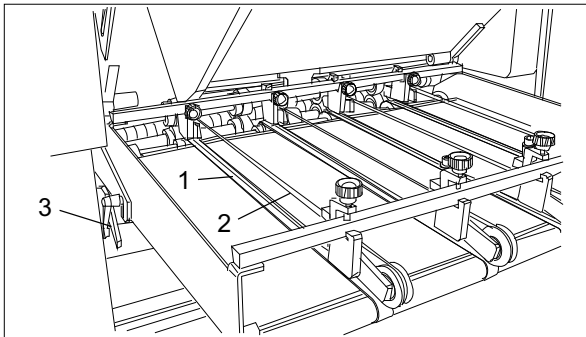


Fig. 68 Transfer bridge

Fig. 68/1 Flat belts  
 Fig. 68/2 Round belts  
 Fig. 68/3 Lock lever for angle adjustment

### 4.3 Setting

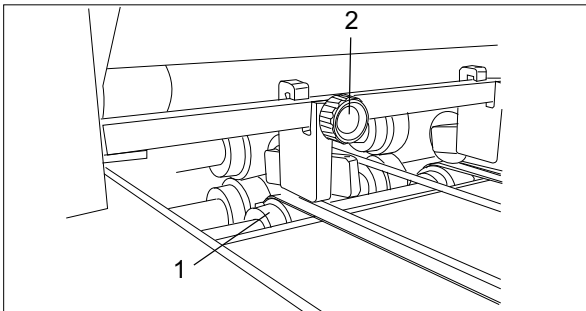


Fig. 69 Setting



**Warning – Risk of injury from revolving belts!**

Only perform adjustment work with the machine switched off.

Set the flat and round belts in such a way that the sheets are transported reliably across the entire width.

For the adjustment proceed as follows:

1. Loosen the Allen screws of the flat belt rollers (Fig. 69/1).
2. Position the flat belt rollers and flat belts.
3. Tighten the Allen screws of the flat belt rollers (Fig. 69/1).
4. Loosen the clamp screws (Fig. 69/2) for the round belt guides.
5. Move the belt guide with the belts to the desired position.

## Manual settings

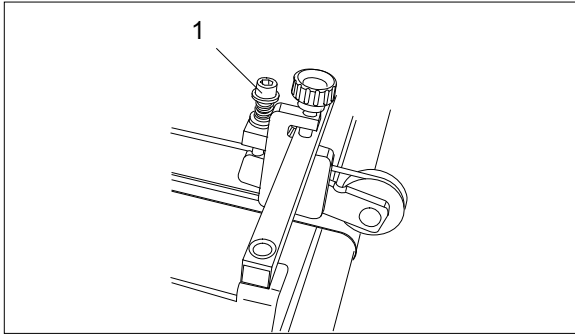


Fig. 70 Setting

6. Tighten the clamp screws for the round belt guides.
7. Set the pressure of the round belts to the paper thickness by turning the Allen screws (Fig. 70/1).

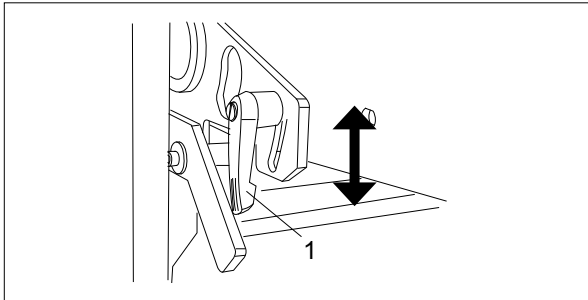


Fig. 71 Angle adjustment

The angle of the transfer bridge is adjustable and can therefore be adapted to the type of paper and fold.

1. Loosen the lock lever on both sides of the bridge (Fig. 71/1) by turning it counter-clockwise.
2. Change the angle of the bridge.
3. Tighten both lock levers (Fig. 71/1).

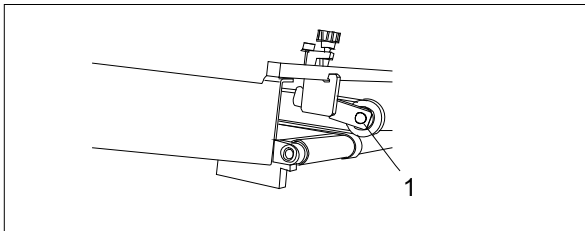


Fig. 72 Supporting plate

- **Note**  
Make sure that the contact surface (72/1) of the transfer bridge is positioned properly on the roller table so that the belts do not drag.

## 5. Roller table

### 5.1 Functional principle

On the roller table, the sheets are transported to the next fold unit by means of rollers which are positioned at an angle with respect to the alignment rail.

### 5.2 Description

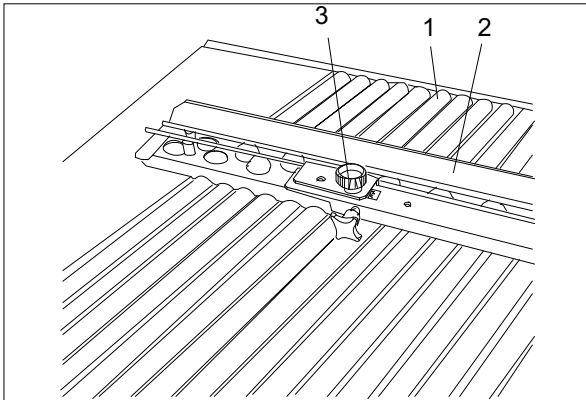


Fig. 73 Roller table

Fig. 73/1 Angled rollers  
 Fig. 73/2 Alignment rail  
 Fig. 73/3 Angle adjustment screw

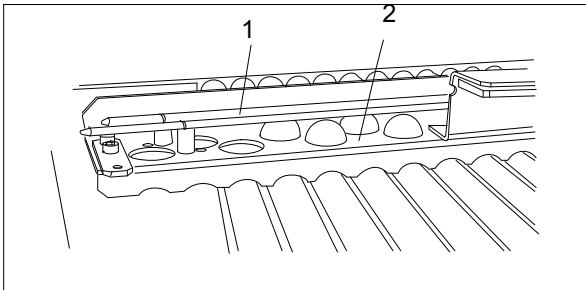


Fig. 74 Ball rail

Fig. 74/1 Ball hold-down rods  
 Fig. 74/2 Ball rail

► **Note**  
 The roller table can be placed in different positions:

For crossfolds:  
 At an angle of 90° with respect to the preceding fold unit

For more parallel folds:  
 In-line to the preceding fold unit (for tandem operation)

The setting of the alignment rail is automated. The necessary information is available because the sheet size and the type of fold have been entered in the **SETUP** menu.

Servomotors take over the automatic settings. Fine adjustments are possible at any time.

5.3 Setting the angle of the alignment rail

The angle of the alignment rail is adjustable. Therefore fine adjustments and adaptations to the sheets to be folded are possible.



**Warning – Rotating rollers - Risk of injury!**

Rotating rollers can draw in hair, clothing and limbs. Wear close-fitting clothing and, if necessary, a hairnet.



**Warning – Rotating rollers - Risk of injury!**

Only perform adjustment work on oblique rollers and the alignment rail with the machine switched off.



**Warning – Rotating rollers - Risk of injury!**

Only perform work on the ball rail when the machine has been switched off and secured against being switched back on.

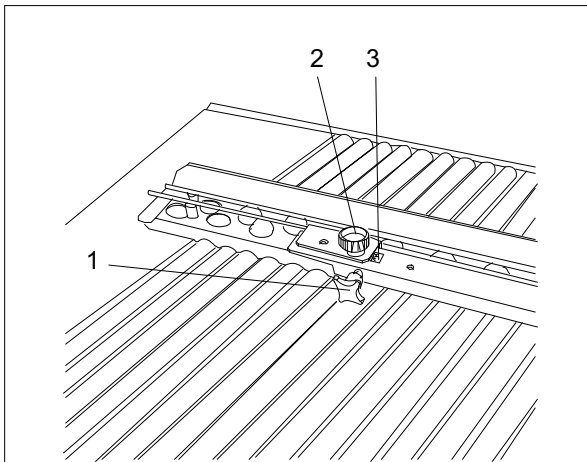


Fig. 75 Angle adjustment

You can change the angle by means of an adjustment screw (Fig. 75/1). A scale (Fig. 75/3) facilitates the setting.

Basic position: Indicator points to „0“  
The alignment rail is positioned at right angles with respect to the fold rollers.

Angle adjustment:

1. Loosen the lock screw (Fig. 75/2) by turning it counter-clockwise.
2. Make the correction with the adjustment screw (Fig. 75/1).

Turning the adjustment screw clockwise:  
Angle decreases

Turning the adjustment screw counter-clockwise:  
Angle increases

3. Secure the lock screw (Fig. 75/2) by turning it clockwise.

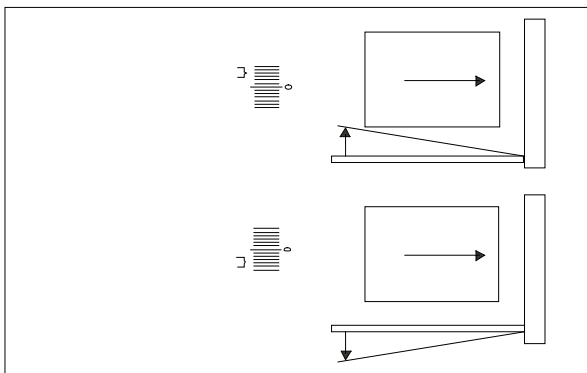


Fig. 76 Angle adjustment

#### 5.4 Ball rail

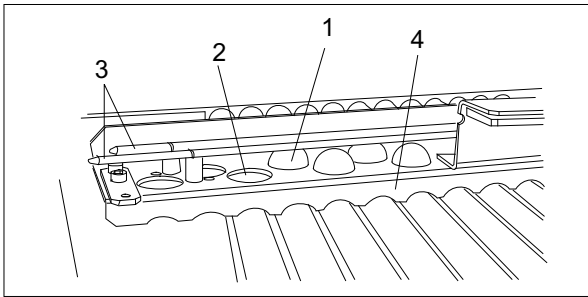


Fig. 77 Ball rail

The balls (Fig. 77/1) are used for the reliable and fast transport of the sheets.

They are located in a ball cage (Fig. 77/2) and are held by ball hold-down rods (Fig. 77/3).

The ball cages are arranged in a ball rail. The ball rail is part of the alignment rail (Fig. 77/4).

► **Note**

Always try to use as few balls as possible. Balls not needed for a particular job should be removed.

It is recommended to use the following balls:

Paper grades below 60 GSM    Plastic balls

Paper from 60 to 150 GSM    Plastic balls, every 4th ball should be a steel ball

Paper grades above 150 GSM    Steel balls

For very light paper grades, some openings should be left free.

#### 5.5 Changing balls

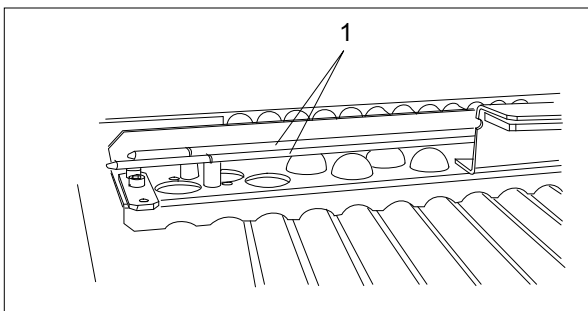


Fig. 78 Ball rail

Proceed as follows to change balls:

1. Bend the ball hold-down rods (Fig. 78/1) to the side.
2. Take balls out of the ball cage with the help of some adhesive tape.
3. Drop in replacement balls.

## Manual settings

### 5.6 Setting the hold-down rods

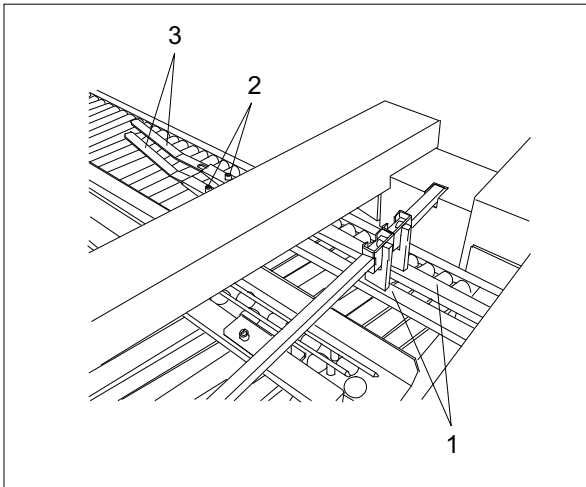


Fig. 79 Hold-down rods

The hold-down rods (Fig. 79/1) serve to guide and settle the paper travelling along the roller table. They are mounted on a cross-bar and can be moved sideways.

The correct setting depends on the format, type of fold and type of paper.

1. Move the outer hold-down bar in such a way that it is located over the outer edge of the sheet.
2. Distribute the other hold-down bars over the width of the sheet.

At high speed the folded sheets tend to open up during transport across the roller table, caused by air resistance (especially large sheet sizes).

You can prevent this by using the extensions of the hold-down rods.

1. Loosen the Allen screws (Fig. 79/2) at the hold-down rods (Fig. 79/1).
2. Pull out the extensions (Fig. 79/3).
3. Secure the Allen screws (Fig. 79/2).

### 5.7 Setting the alignment rail backward or forward

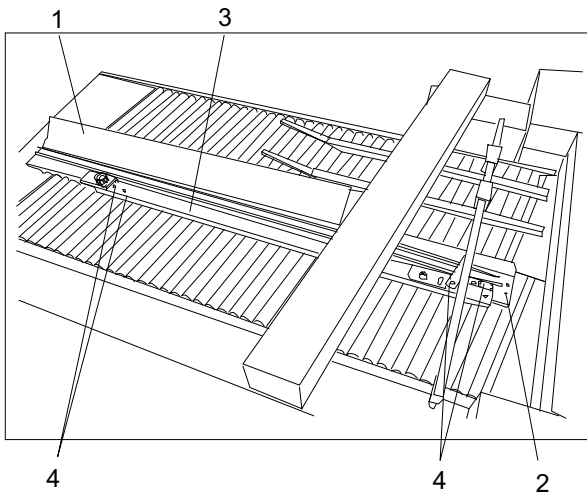


Fig. 80 Alignment rail

The alignment rail (Fig. 80/1) on the roller table can be gradually set backward or forward in direction of paper transport.

This makes it possible to place the front ball (Fig. 80/2) very close to the fold roller infeed area thus optimizing the transfer of the sheet, especially when a tandem arrangement is used.

The holes that are needed (Fig. 80/4) have already been drilled in the longitudinal cross bar (Fig. 80/3).

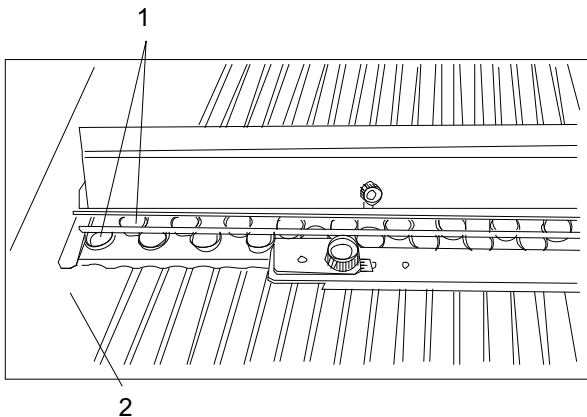


Fig. 81 Home position

The alignment rail is in its home position when the two rear ball cages (Fig. 81/1) are located on top of the corrugated plate (Fig. 81/2).

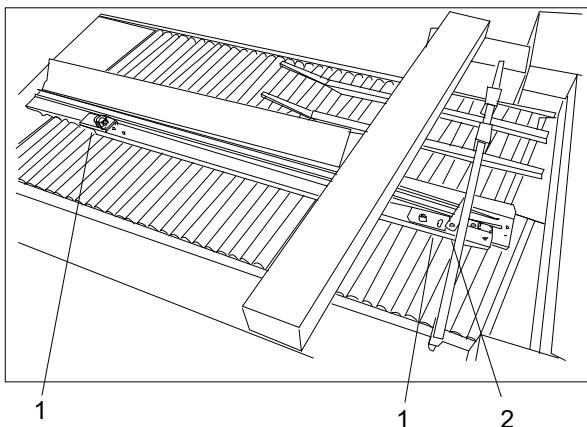


Fig. 82 Loosening the screws

Proceed as follows to move the alignment rail forward:

1. Use a 10 mm flat wrench to loosen the two screws (Fig. 82/1) by means of which the alignment rail is attached from the underside of the longitudinal cross bar. Remove the screws.
2. Use a 7 mm flat wrench to loosen the screws (Fig. 82/2) by means of which the hold-down slide is attached from the underside of the longitudinal cross bar. Remove the screws.



## Manual settings

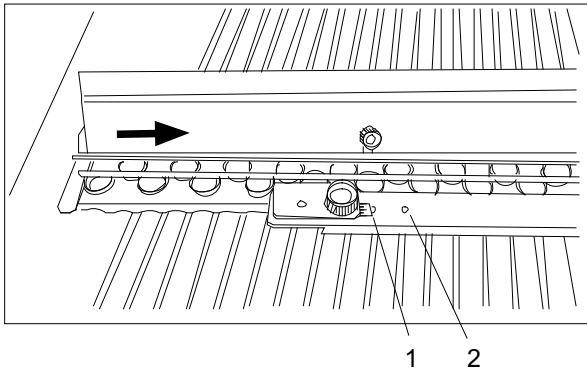


Fig. 83 Setting the alignment rail forward

3. Slide the alignment rail in direction of the fold roller infeed area until the screw fits into the first hole (Fig. 83/1) (width of one roller) or in the second hole (Fig. 83/2) (width of two rollers) of the longitudinal cross bar.
4. Introduce the two 10 mm screws into the appropriate holes and tighten them with a flat wrench.

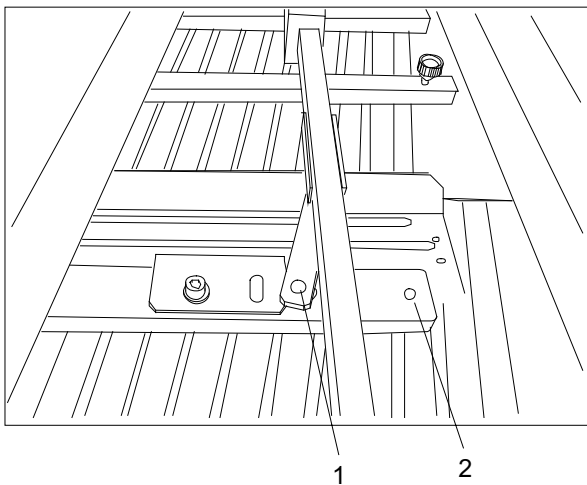


Fig. 84 Setting the hold-down slide forward

5. Introduce the 7 mm screw of the hold-down slide (Fig. 84/1) into the front hole (Fig. 84/2) of the longitudinal crossbar and tighten it with the flat wrench.

Proceed likewise to set the alignment rail forward.

**6. Deliveries**

Two different types of delivery are available to accept the folded sheets from the folder.

- Shingle delivery  
For products that can be delivered shingled out.
- V-Stack36 vertical stacker

## Manual settings`

### 6.1 Shingle delivery

### Functional principle

The shingle delivery gathers the sheets arriving from the fold unit and places them on the delivery belts as a shingled stream. It is possible to mark the pre-set batches.

### Description

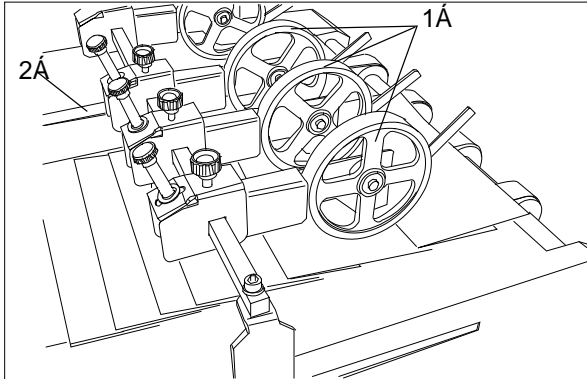


Fig. 85 Delivery

Fig. 85/1 Delivery rollers  
Fig. 85/2 Delivery belts

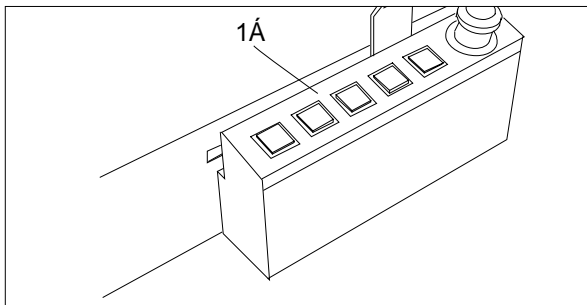


Fig. 86 Operator panel

Fig. 86/1 Operator panel

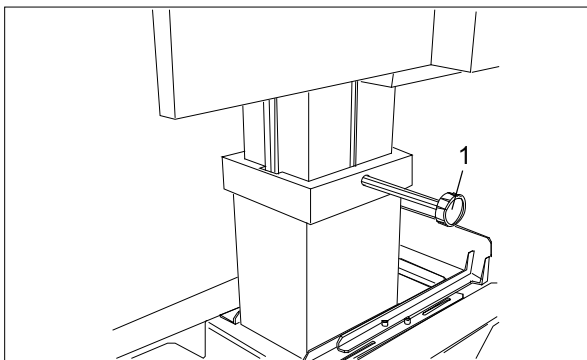


Fig. 87 Lock screw

Fig. 87/1 Lock screw for height adjustment

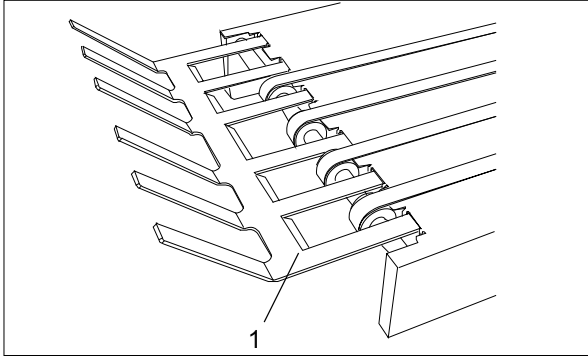


Fig. 88 Delivery rack

The capacity of the delivery can be increased by means of a retractable rack (Fig. 88/1).

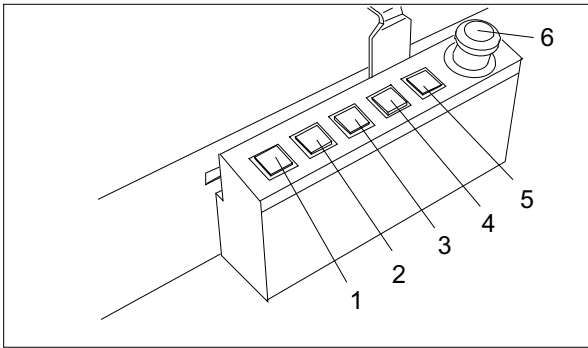


Fig. 89 Operator panel

The following functions of delivery and folder can be controlled at the operator panel:

- Fig. 89/1 High speed for removal of sample sheets
- Fig. 89/2 Increasing the gap between slitter shafts and delivery rollers
- Fig. 89/3 Reducing the gap between slitter shafts and delivery rollers
- Fig. 89/4 Motor/Drive for folder on/off
- Fig. 89/5 Sheet feed on/off
- Fig. 89/6 Emergency stop

**Setting the transfer height**

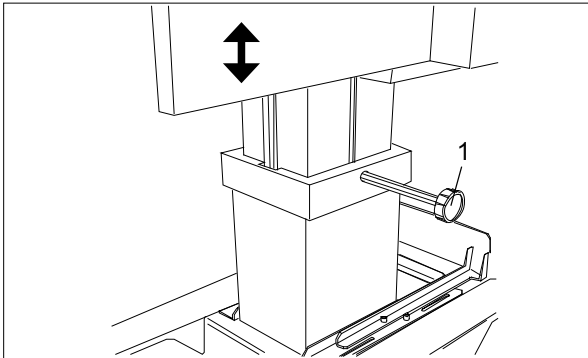


Fig. 90 Lock screw

1. Loosen the lock screw (Fig. 90/1) by turning it counter-clockwise.
2. Raise or lower the delivery table (this is supported by a gas-filled shock absorber).
3. Tighten the lock screw (Fig. 90/1) by turning it clockwise.

### Setting the sheet size



#### **Warning - Risk of injury from revolving belts!**

Only perform adjustment work with the machine switched off.

The setting of the delivery rollers is automated. The necessary information is available because the sheet size and the type of fold have been entered in the **SETUP** menu.

Servomotors take over the automatic settings. Fine adjustments are possible any time.

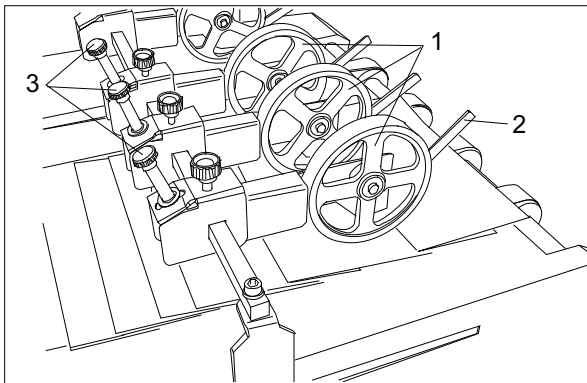


Fig. 91 Delivery rollers

The delivery rollers (Fig. 91/1) are needed to prevent the folded sheets from opening up on the delivery belt, thus achieving a clean shingled delivery. The movable fingers (Fig. 91/2) support this process. Their position depends on the speed, format, type of fold and type of paper.

The pressure of the delivery rollers can be changed by means of knurled screws (Fig. 91/3).

Paper grades below 80 GSM: less pressure  
Paper grades above 80 GSM: more pressure

<b>F</b>	<b>Maintenance</b>	<b>F3</b>
1.	Safety instructions for cleaning and maintenance	F3
2.	Safety instructions	F3
3.	Maintenance work	F5

## Maintenance

### 1. Safety instructions for cleaning and maintenance

Proper cleaning contributes to a long life of the machine and a consistent quality. Therefore it is important to clean the machine in regular intervals. The intervals between maintenance jobs depend on the workload.



**Warning - Electrical current!**

Before cleaning and maintenance jobs always pull the power plug.



**Warning - Risk of injury!**

Perform maintenance work only when the machine is at standstill and secured against being switched back on.



**Warning - Risk of injury from sharp blades!**

The cutting and perforating knives are very sharp. For your own safety you should always wear protective gloves and work with the greatest of care.

### 2. Safety instructions

- Cleaners as well as substances and solvents used for cleaning may be explosive, flammable, caustic, poisonous, detrimental to health, aggressive and environmentally hazardous.
- Only use cleaners with a flashpoint above 55°C.
- Caution when handling these substances!
- Any oil and grease soiling on the floor in the area of the machine must be removed immediately. This soiling presents a risk of slipping.
- Ensure adequate room ventilation during all cleaning work.
- Do not use any naked flames or other ignition sources.
- Never smoke, eat or drink when handling these substances.
- Always wear protective gloves.

## Maintenance

- Note the applicable accident prevention regulations, safety rules and safety data sheets of the manufacturers.
- To avoid potential self-ignition, you must keep soiled cleaning cloths, cotton waste, and other auxiliary materials separate.
- Leaked substances and waste must be disposed of immediately in the proper manner.
- Do not use any cleaners that might damage painted or plastic parts of the machine.
- Check all safety features for proper function after completion of the cleaning and maintenance work.



### 3. Maintenance work

- Remove paper or print powder from all fixed and movable parts of the machine.
- Use compressed air to clean the fold plates when paper with a high degree of powder has been folded.  
Carefully remove deposits in the control box with a vacuum cleaner.
- Clean the air filter of the compressor using brushes or air.
- The maintenance-free flat belt drive needs no lubrication of any kind.

▶ **Note**  
It is recommended to clean the machine once a week.

▶ **Note**  
Clean the fold rollers regularly to maintain the grip of the PUR-rings.

▶ **Note**  
Do not use pointed objects for cleaning!

▶ **Note**  
Do not use any caustic liquids or solvents such as Aceton or Toluol!