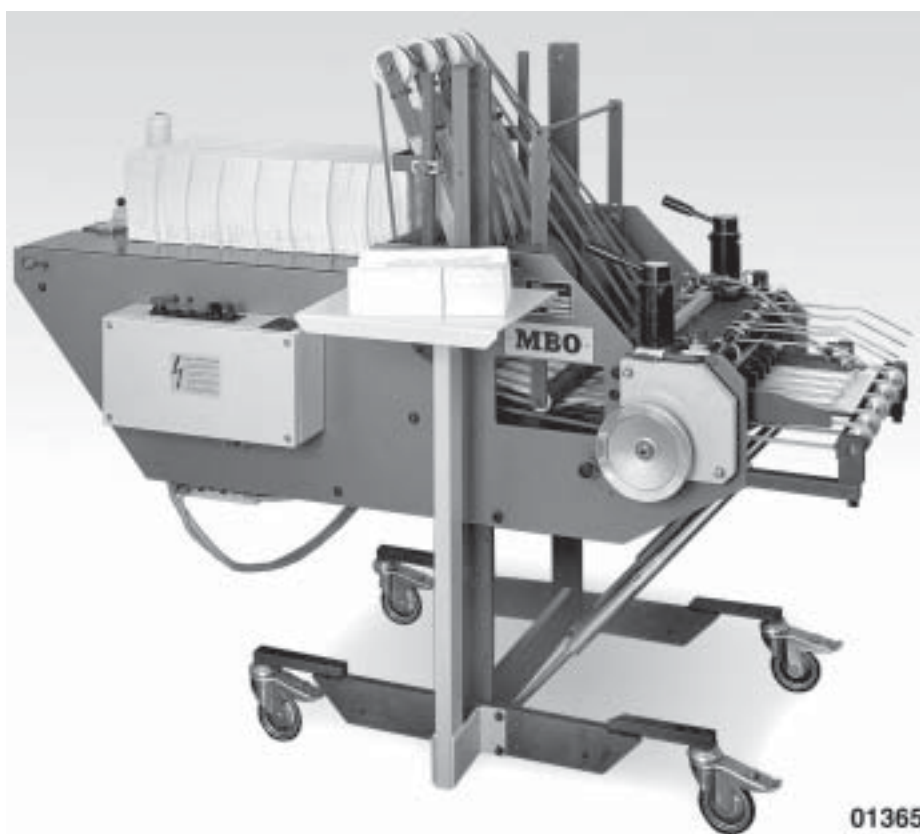




**MBO**  
Folding Technology

# Operating Manual

SAP 46 L  
Vertical Stacker Delivery  
with sheet pressing



01365

# Contents

|   |    |
|---|----|
| Prologue .....  | 4  |
| 1.0 Machine specifications .....  | 4  |
| 1.1 Manufacturer .....  | 4  |
| 1.2 Type: .....   | 4  |
| 1.3 Technical data .....  | 5  |
| 1.3.1 Sizes .....   | 5  |
| 1.3.2 Floor plan .....  | 5  |
| 1.4 Documentation .....   | 6  |
| 1.5 User information/Description of functions .....                                 | 7  |
| 2.0 BASIC SAFETY INSTRUCTIONS .....   | 8  |
| 2.1 Warnings and symbols .....  | 8  |
| 2.2 Safety in the working place Destined use of the Vertical Stacker Delivery ..... | 8  |
| 2.3 Safety Devices .....  | 10 |
| 2.3.1 Protection hoods - overview .....   | 10 |
| 2.3.2 Protection hoods - check list .....   | 10 |
| 3.1 Transport .....   | 11 |
| 3.1 Transportation .....  | 11 |
| 3.2 Installation .....  | 11 |
| 3.3 Erection .....  | 12 |

|              |  |           |
|--------------|--|-----------|
| <b>3.4</b>   | <b>Electrical connections .....</b>  | <b>12</b> |
| <b>4.0</b>   | <b>Service/Maintenance .....</b>   | <b>13</b> |
| <b>4.1</b>   | <b>Procurement of spare parts .....</b>                                    | <b>13</b> |
| <b>4.2</b>   | <b>Lubrication .....</b>   | <b>14</b> |
| <b>4.3</b>   | <b>Cleaning of the pressing rollers and the transportation tapes .....</b> | <b>15</b> |
| <b>4.4</b>   | <b>Tensioning of belts and tapes .....</b>                                 | <b>15</b> |
| <b>5.0</b>   | <b>Operation (of the delivery) .....</b>                                   | <b>16</b> |
| <b>5.1</b>   | <b>Control desk/Function buttons .....</b>                                 | <b>16</b> |
| <b>5.2</b>   | <b>Setting of fold rollers .....</b>                                       | <b>17</b> |
| <b>5.3</b>   | <b>Batch counter .....</b>   | <b>18</b> |
| <b>5.3.1</b> | <b>Batch counter .....</b>   | <b>18</b> |
| <b>5.3.2</b> | <b>Marking device .....</b>  | <b>18</b> |
| <b>5.4</b>   | <b>Pressing unit .....</b>   | <b>19</b> |
| <b>5.5</b>   | <b>Sheet transportation .....</b>  | <b>19</b> |
| <b>5.5.1</b> | <b>Sheet control .....</b>   | <b>19</b> |
| <b>5.5.2</b> | <b>Sheet running .....</b>   | <b>20</b> |
| <b>5.5.3</b> | <b>Line-up table .....</b>   | <b>21</b> |
| <b>6.0</b>   | <b>Final remarks .....</b>   | <b>21</b> |

## **Prologue**

With this MBO product you have purchased a highly valuable industrial product with which you will achieve the highest reliability and efficiency if you carefully observe the instructions provided within this Operating Manual. The Operating Manual should also instruct you to correctly operate the machine, to comply with the Safety Regulations and to maintain the machine properly.

### **1.0 Machine specifications**

#### **1.1 Manufacturer**

**MBO Binder & Co., Maschinenbau Oppenweiler**  
Grabenstrasse 4, D - 71570 Oppenweiler  
P.O. Box 1169, D - 71567 Oppenweiler  
Tel.: +49 (0)7191 460  
Fax.: + 49 (0)7191 4634  
E-Mail: info@mbo-folder.com

#### **1.2 Type:**

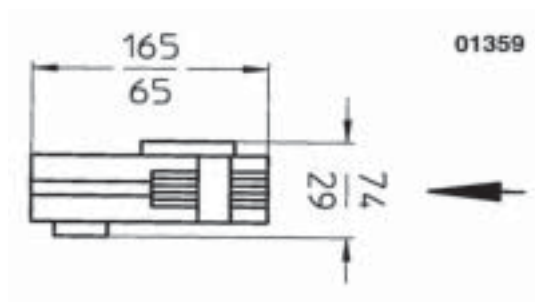
**Vertical Stacker Delivery SAP 46 L**

## 1.3 Technical data

### 1.3.1 Sizes

|                    |  |               |
|--------------------|--|---------------|
| Working width:     | maximum: 46 cm / minimum: 15 cm                            |               |
| Infeed height:     | maximum: 94 cm / minimum: 38 cm                            |               |
| Pressing power:    | 2,000 kp   |               |
| Power requirement: | 1.0 kW   |               |
| Production speed:  | 40–150 metres/minute, infinitely adjustable electronically |               |
| Weights in kg:     | <b>Net:</b>  | <b>Gross:</b> |
|                    | 340kg  | 420kg         |

### 1.3.2 Floor plan



## 1.4 Documentation

Customer: \_\_\_\_\_

Machine configuration: **Vertical Stacker Delivery SAP 46 L** \_\_\_\_\_

Machine No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_

BA-Batch counter IVO: \_\_\_\_\_

### Electrical data:

Wiring diagram no.: \_\_\_\_\_

Operational voltage (V/Hz): \_\_\_\_\_

Control voltage (V/A): \_\_\_\_\_

Control voltage (V/A): \_\_\_\_\_

Total nominal current (A): \_\_\_\_\_

Fuse at power supply (A): \_\_\_\_\_

Wiring diagram no.: \_\_\_\_\_

CE marking no.: \_\_\_\_\_

Certificate of Conformity: \_\_\_\_\_

Noise level (dB/AI): \_\_\_\_\_

GS marking no.: \_\_\_\_\_

## **1.5 User information/Description of functions**

The Vertical Stacker Delivery SAP 46 L is a mobile, separate unit with self-drive to vertically stack the folded sheets with the spine and collating mark at the top. The sheets can also be pressed and marked through a batch counter.

## 2.0 BASIC SAFETY INSTRUCTIONS

### 2.1 Warnings and symbols

The following designations or symbols are used for very special instructions in this Operating Manual:



>**NOTICE**< Special instructions in respect to the economical use of the machine.



>**ATTENTION**< Special instructions or requirements and prohibitions to avoid injuries and damage.



>**DANGER**< Instructions or requirements and prohibitions to prevent personal injuries or extensive damage.

### 2.2 Safety in the working place Destined use of the Vertical Stacker Delivery

2.2.1 MBO units correspond to their prescribed Safety Technical Requirement at the time of their shipment. For this purpose, any moveable and rotating parts are covered with protective hoods and are mechanically or electrically interlocked to such an extent as to not unreasonably detract from the operation.

- Single person operation only (insufficient view at the drive side).

2.2.2 With technical safety precautions it is extremely important that all operating personnel receive sufficient technical safety instructions and are advised of all potential sources of danger. However, it must be remembered that even with proper use of the machine, accidents can occur which present a danger to life and limb of the operator or third parties. Respectively, it does not exclude the detraction of the machine and other material assets.

2.2.3 The delivery should only be operated when in good working order. Any malfunctions that may impair safety must be removed immediately by trained personnel of the manufacturer/supplier.

2.2.4 The delivery is exclusively designed to handle folded paper sheets. The processing of any other materials should not be attempted as the manufacturer or supplier will not be liable for any resulting damage.

2.2.5 Carefully read the complete Operating Manual, including the Safety and Service Requirements, before you operate the machine.

2.2.6 The Operating Manual should be kept with the machine at all times.

2.2.7 Complete the Operating Manual, if necessary with internal Safety Instructions, as well as with the legal regulations for the Prevention of Accidents.

- 2.2.8 Make sure that all frequently substituted operators are thoroughly informed about the aforementioned subjects and trained accordingly.
- 2.2.9 Never remove any protective or safety devices from the delivery, and do not make any changes that may impair the safety of the delivery.
- 2.2.10 Never use any tools which are not in perfect condition, and make sure that no tools are left on the delivery after completion of settings and maintenance work. Tools that fall into the delivery may cause serious injuries and damage.
- 2.2.11 Note that all Safety Instructions are kept in a legible and visible condition.
- 2.2.12 Any audible and visible change on the delivery in relation to its safety must be reported immediately to the supervisor or manager of your company.
- 2.2.13 All operating personnel should be aware that loose clothing, jewellery or long hair can cause serious injuries if caught in the delivery.
- 2.2.14 It is absolutely prohibited to clean the transport tapes or pressing rollers, eliminate malfunctions, or to undertake adjustments while the delivery is in operation.



>**DANGER**< Therefore, always activate the **EMERGENCY STOP** button.

- 2.2.15 Make sure that no other person starts the delivery while you are working on it, e.g. adjustment or other works!



>**DANGER**< Therefore, always activate the **EMERGENCY STOP** button, or turn **OFF** the main switch, or unplug the delivery.

- 2.2.16 Do not immediately turn the delivery ON if it has stopped for any inexplicable reason. Make sure that the delivery is in good working condition and that no other person is working on the delivery.

- 2.2.17 Turn off the main switch and secure it, if necessary, with a lock if you are required to undertake extensive mechanical or electrical maintenance and repair work.

- 2.2.18 Never open the main or subcontrol panel! Only authorised personnel should gain access to electronic control cabinets as there are no user serviceable parts.



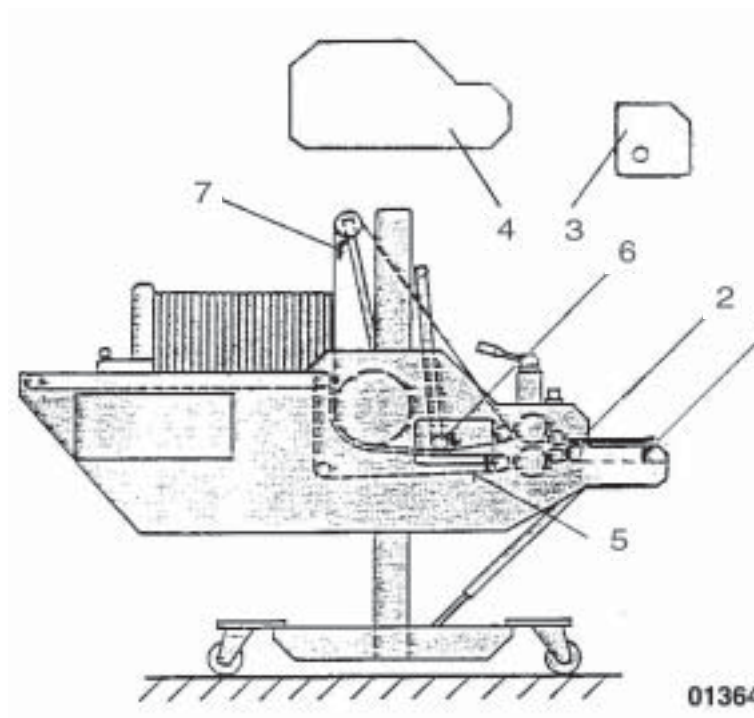
>**DANGER**< if control cabinet is open! All main terminals could be alive even though the mains switch has been turned off.

- 2.2.19 Any damaged cables or electrical connections must be reported to the appropriate supervisor of your company.

- 2.2.20 Machine connections must be installed in such a manner that no cables, tubes or hoses are left trailing.

## 2.3 Safety Devices

### 2.3.1 Protection hoods - overview



### 2.3.2 Protection hoods - check list

| Pos | Description              | Function control | Visible control | Result | Note      |
|-----|--------------------------|------------------|-----------------|--------|-----------|
| 1   | Protection at infeed     |                  |                 |        |           |
| 2   | Protection at infeed     |                  |                 |        |           |
| 3   | Protection at gear wheel |                  |                 |        |           |
| 4   | Protection at drive      |                  |                 |        |           |
| 5   | Protection at infeed     |                  |                 |        |           |
| 6   | Protection at infeed     |                  |                 |        |           |
| 7   | Protection at infeed     |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |
|     | Date                     | Name             |                 |        | Signature |
|     |                          |                  |                 |        |           |
|     |                          |                  |                 |        |           |

### 3.1 Transport

This part of the Operating Manual is specifically directed at service personnel and internal authorised personnel responsible for transportation, erection and installation.

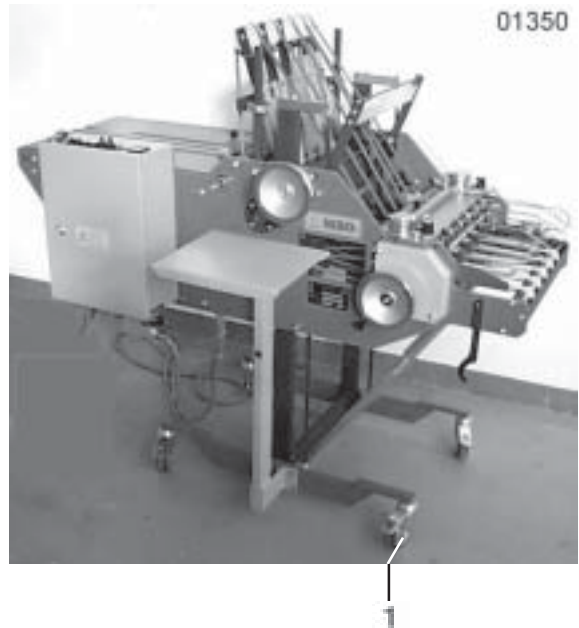
### 3.1 Transportation

The Vertical Stacker Delivery SAP 46 L is shipped either on a pallet or in a crate.

Transport the pallet/crate as close as possible to its final destination by means of a forklift. Unscrew the delivery from the pallet, lift it at one side, and put solid timber blocks or similar beneath it;

affix the rollers **1** which have been delivered with the unit. Remove the timber blocks and repeat this process at the opposite side.

Roll the delivery off the pallet.



**>ATTENTION<** There is a risk of injury as the delivery may overturn!



**>DANGER<** The unit must therefore be supported by two persons during unloading.

### 3.2 Installation

Clean the SAP 46 L with rust preventing agents.

### 3.3 Erection

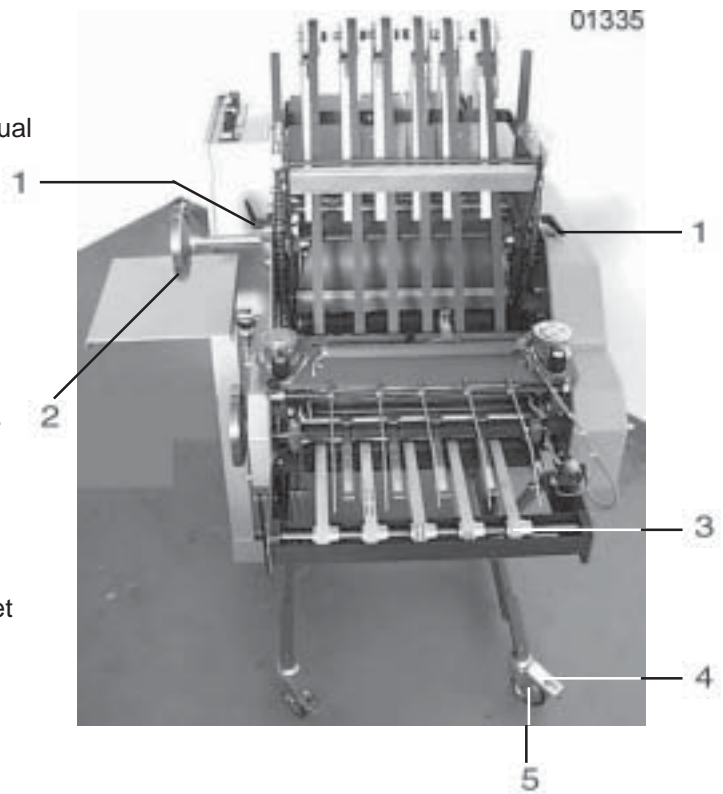
Transport the SAP 46 L to the individual exit of the folding machine.

Loosen the T-screws **1** and set the infeed height by manually turning the handwheel **2**.

The infeed tapes **3** should be slightly deeper than the sheets that are running out from the folding machine.

Secure the position of the delivery through the locking devices **4** at the transportation rollers **5**.

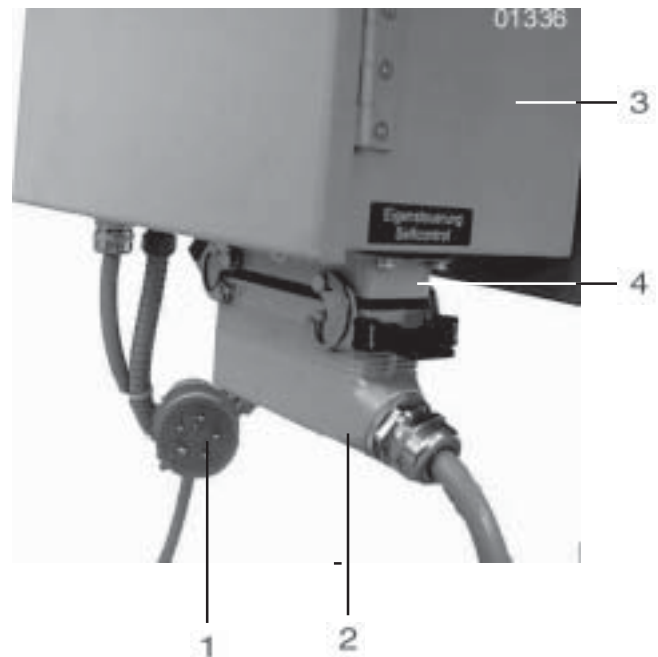
Make sure that the centre of the sheet corresponds with the centre of the delivery.



### 3.4 Electrical connections

Connect the SAP 46 L to the folding machine with the power supply plug **1** and the control plug **2**. Due to its self-drive it may also be connected to foreign machines.

For this purpose, connect the power supply plug **1** with the mains system and insert the control plug into the socket „Self-drive“ **4** at the control cabinet. Make sure that both units may be turned **ON** and **OFF** separately.



**>DANGER<** Please be advised that there is no joint current interruption if connected to foreign machines.

The manufacturer and the supplier will not assume liability caused by lack of safety disconnection.

## 4.0 Service/Maintenance

This part of the Operating Manual is specifically directed at service personnel and internal authorised personnel of the operating company.

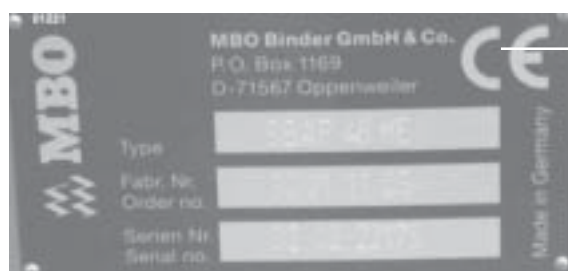


>**DANGER**< Unless the delivery is isolated no service or maintenance work should be carried out. Always activate the **EMERGENCY STOP** button or turn **OFF** the main switch, or pull out the power supply plug.

## 4.1 Procurement of spare parts



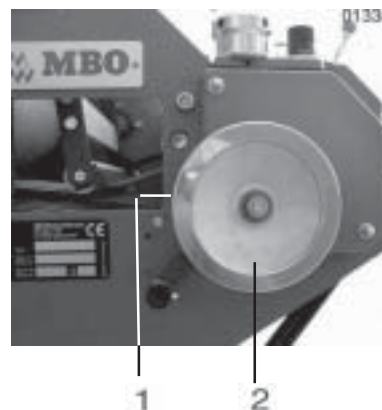
>**ATTENTION**< Only use spare parts that are supplied or recommended by the manufacturer. For inquiries and spare parts orders it is necessary to provide details of the machine and serial number, which may be obtained from the label **1**.



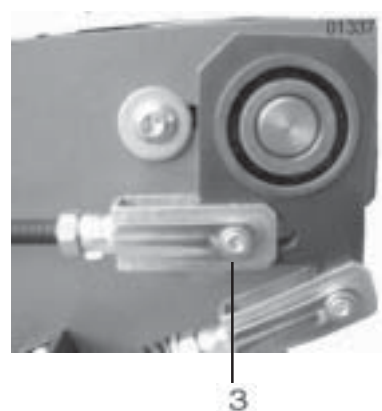
## 4.2 Lubrication

Lubricate at the following positions once a week!

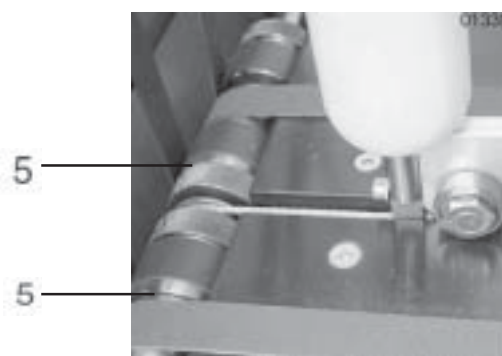
The lubricating nipple **1** at the operator side, left side behind the handwheel **2**.



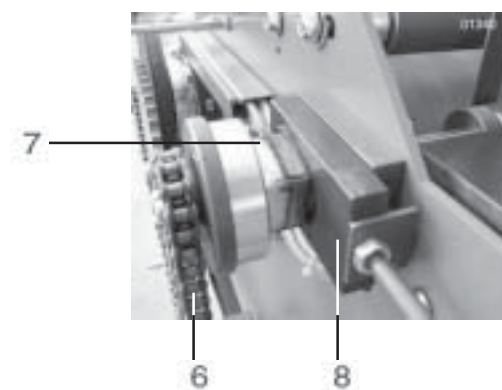
Slide **3** at the free wheel of the speed regulations for the upper transport belts.



The bearing **5** of the upper transportation belts.



The drive chain **6**, the running surface of the ball bearing **7** and the slide **8**.



### 4.3 Cleaning of the pressing rollers and the transportation tapes



>**NOTICE**< Generally, the delivery must be cleaned after each application! Particularly movable or rotating parts that are frequently changed for exchange of sheet size must be cleared of dust. Heavy dust may reduce the operating efficiency of the machine.

The transportation belts and the pressing rollers should be cleaned while the delivery has been turned **OFF**.

Heavy contamination of printing powder or ink deposits on the transport tapes and the pressing rollers may cause reduction in the quality of the folded products. The tapes should be cleaned with a cleansing agent suitable for synthetic materials.

Please contact your machine/delivery supplier for further details. Unsuitable cleansing agents may swell the material or seriously damage the adhesive proportion of the material. Do not use any aggressive cleaners! Protective gloves should be worn while you are cleaning. Protect exposed parts of the body against splashes or contact. Dispose of the soiled cleaning material in the correct environmentally friendly manner. Consider the flammability of the cleansing agent.

Make sure to check all technical data of the manufacturer's cleansing agents for any possible residual danger. MBO, the manufacturer of this Vertical Stacker Delivery, recommends a cleaning material made by **VARN** for the fold rollers, bearing the designation „**VARN Wash VM 111**“ or „**VWM**“.

### 4.4 Tensioning of belts and tapes



>**DANGER**< Make sure that no other person is running the delivery while you are working on it! Activate the **EMERGENCY STOP** button, or turn **OFF** the main switch, or pull out the power supply plug!

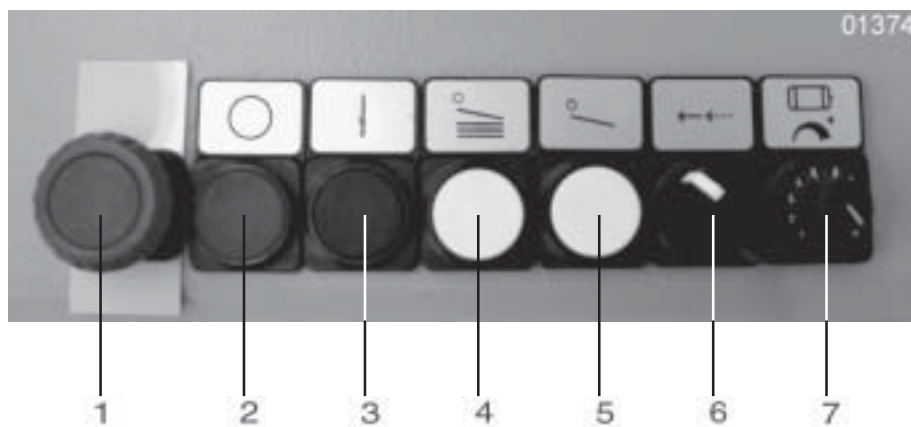


>**NOTICE**< Check the tension of drive tapes and belts once a week and, if necessary, re-tension them.

## 5.0 Operation (of the delivery)

### 5.1 Control desk/Function buttons

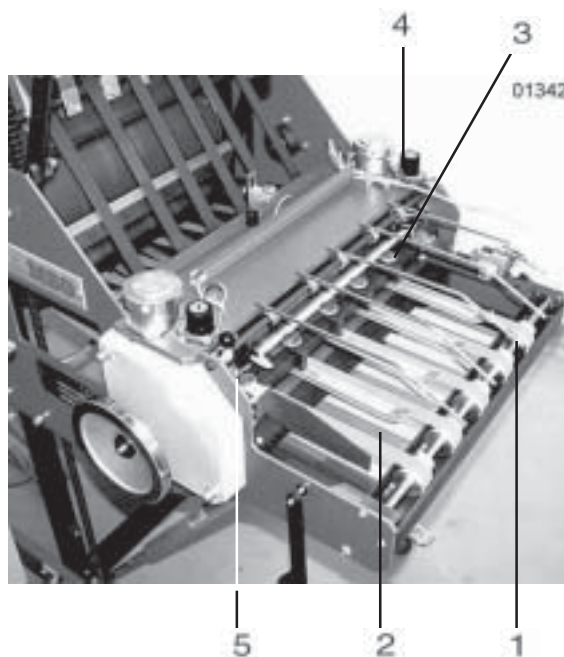
- 1 EMERGENCY OFF button
- 2 Button to STOP the machine
- 3 Button to START the machine
- 4 Sheet stream/Continuous infeed
- 5 Button for the SINGLE SHEET infeed
- 6 Button for continuous running/Empty
- 7 Button for SPEED REGULATION



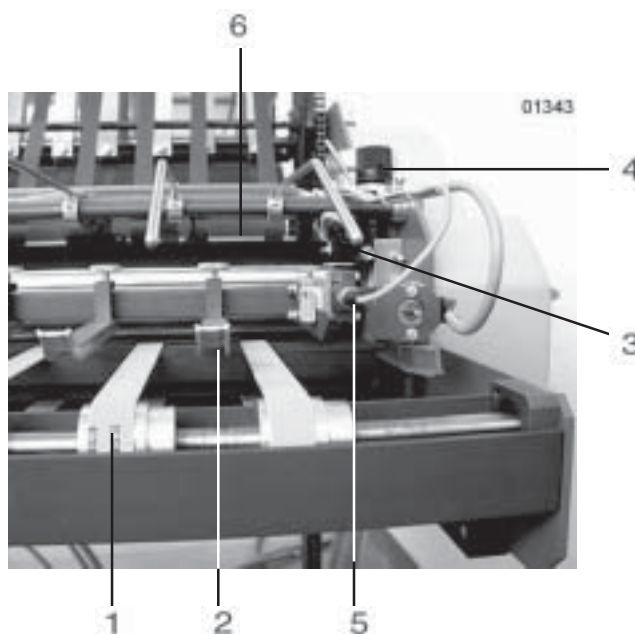
## 5.2 Setting of fold rollers

After the sheet has passed the infeed tapes **1** and the smoother bars **2** above them, it continues into the pre-pressing rollers **3**.

These rollers may be adjusted by inserting a paper strip (thickness of the product) into the calipers **4**.



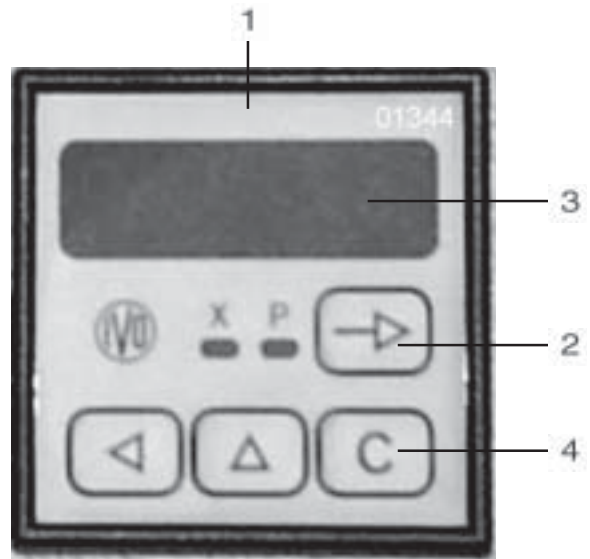
If a product that is too thick reaches this element the machine will be disconnected by the micro switch **5** to avoid a stoppage in the main pressing rollers **6**.



## 5.3 Batch counter

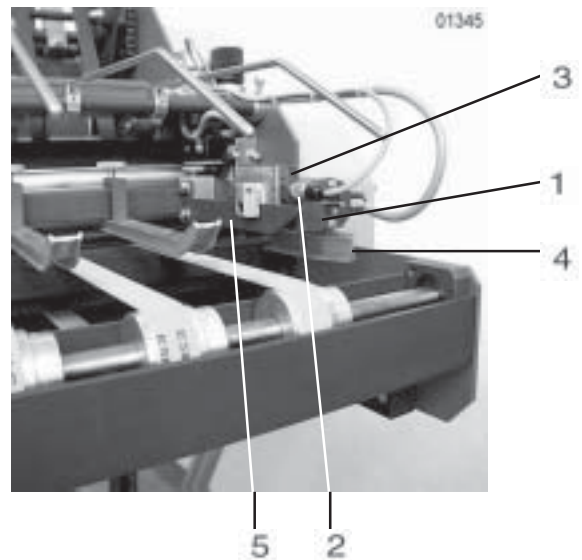
### 5.3.1 Batch counter

Enter the desired quantity of sheets per batch into the batch counter **1** through the pre-selector **2**. The progress of the batch and the number of the remaining sheets are checked at the electronic display **3**. This display can be deleted at the reset button **4** after completion of the job.

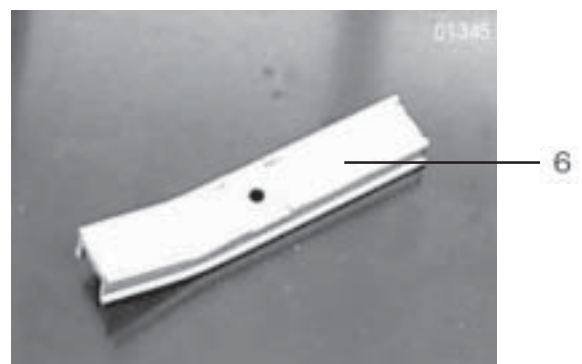


### 5.3.2 Marking device

Affix the kicker **1** so that the photocell **2** will detect the oncoming sheet. Functioning check: the red diode at the amplifier **3** must be lit. The kicker slide **4** must displace the sheet for approximately 10-15 cm to the left side. Therefore, you should position the counter-stop **5** accordingly.

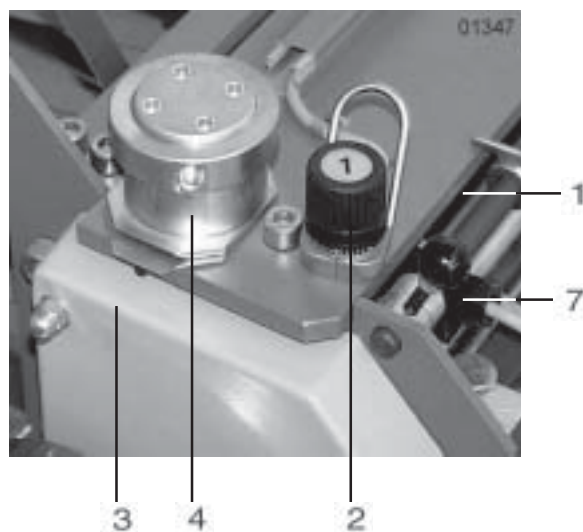


If unstable sheets start to crease at the kicker slide you should affix a U-profile **6**.



## 5.4 Pressing unit

Adjust the pre-pressing rollers **1** by inserting a paper strip into the setting element **2**. This paper strip should normally cover the full product thickness. The setting of the main pressing rollers **3** occurs by inserting a paper strip of approximately  $\frac{3}{4}$  of the product thickness into the setting element **4**. For opening of the setting element **4**, turn the setting key **5** left, and for closing turn the setting key to the right. If a product that is too thick reaches the pressing rollers the machine will be disconnected by the micro switch **7**.

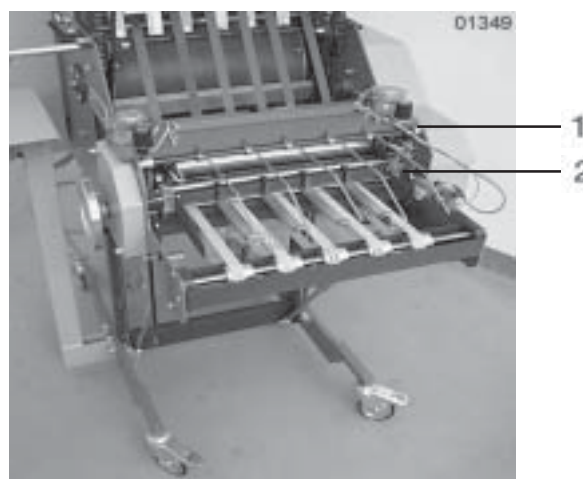


## 5.5 Sheet transportation

### 5.5.1 Sheet control

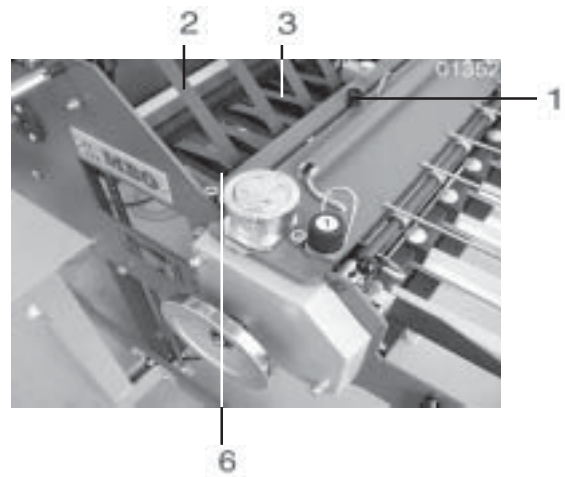
During set-up work or during production, single sheets may be taken before they enter the machine.

For this purpose, rotate the rake **1** downwards by means of the ball grip **2**. The sheet will run on the rake and may be taken off without any danger.

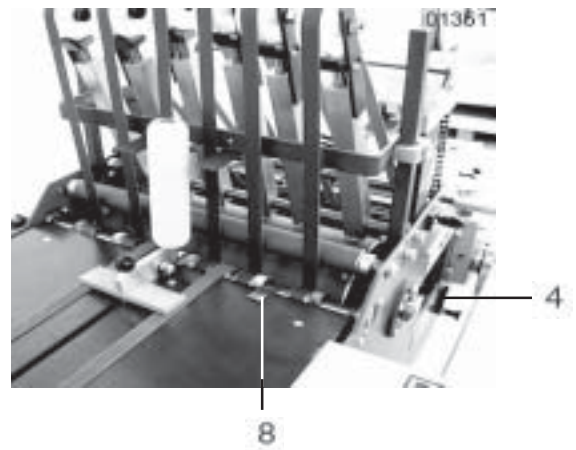


### 5.5.2 Sheet running

If the photocell **1** detects a sheet the line-up tapes **2** and the lower tapes **3** automatically start to run. The collecting or height of drop after the pressing rollers can be altered.

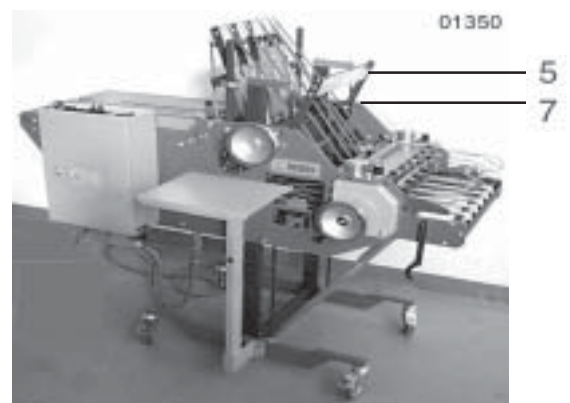


For this purpose swivel the lower tapes **3** over the stop bolt **4**.



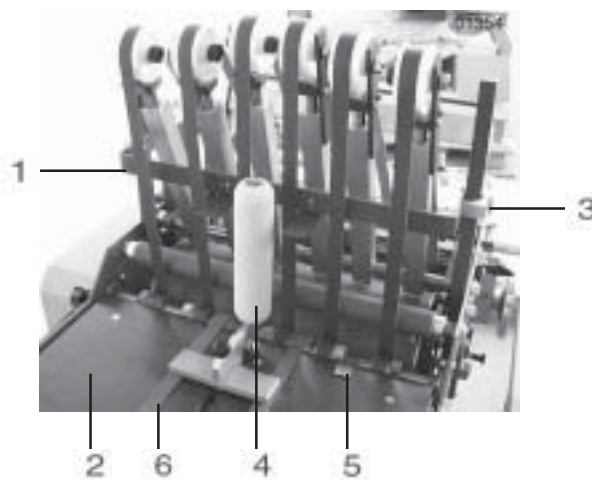
The shingle can be set by swivelling the frame **5** over the collector tape roller **6**. The height of this collecting tape roller may be altered by loosening the screws **7**.

Bulky products may be pushed down at the rear edge of the sheet by the smoother bar **8** ensuring a trouble-free running of the subsequent sheets.

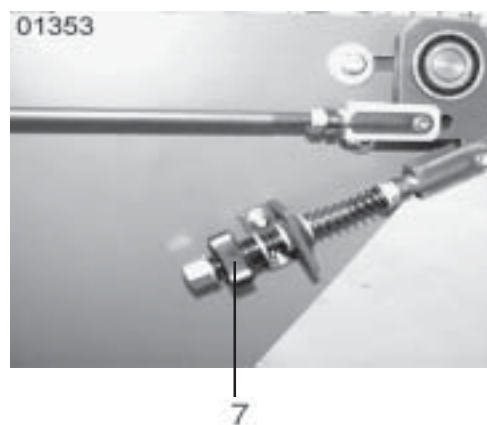


### 5.5.3 Line-up table

The sheet stops **1** over the line-up table **2** can be set for product height by loosening the knurled screws **3**. The stop **4** prevents the sheet pile from toppling over. Place the brass spring **5** to the sheet edge to avoid any dog ears.



The speed of the transportation tapes **6** can be altered through the knurled nut **7**.



## 6.0 Final remarks

You have now reached the end of this Operating Manual. We hope that you have understood everything. If so, then our efforts in preparing this manual have been worthwhile. Of course, we accept comments and wish to thank you for any suggestions you may have to improve it. Even we are not perfect! We wish you every success with this machine. However, should you still have any problems with its operation, please do not hesitate to contact our technicians or supervisors who will be able to assist you.

Änderungen vorbehalten  
Alterations reserved  
sous reserve de modifications



Binder & CO.  
Postfach 1169  
D - 71567 Oppenweiler

Telefon 07191 / 46-0  
Telefax 07191 / 4634  
<http://www.mbo-folder.com>

Stand 01/2004 Nol/JHO