MBO
Folding Technology

Operating Manual

Typen: F 660 and F 760

Pile feeder

Contents

Prologue

By purchasing an MBO folding machine you have acquired a valuable product. However, it is absolutely imperative that all Safety Regulations and Safety Instructions are complied with fully. This Operating Manual will help to instruct you on how to correctly operate the feeder, to comply with the Safety Regulations and also how to maintain the machine properly.

1.0 Machine specification

1.1 Manufacturer

MBO Binder & Co. - Maschinenbau Oppenweiler
Grabenstrasse 4, 71570 Oppenweiler
P.O. Box 1169, D-71567 Oppenweiler
☎ +49 7191 46 0
Fax +49 7191 4634
http://www.mbo-folder.com

1.2 Type:

Pile feeder F660 and F760

1.3 Technical data:

1.3.1 Sizes

	F 660	F 760
Maximum open sheet size:	66 x 102 cm (26 x 39 ½“)	76 x 108 cm (30 x 43”)
Minimum open sheet size:	15 x 20 cm (6 x 9 ¾”)	15 x 20 cm (6 x 10”)

1.3.2 Power requirements:

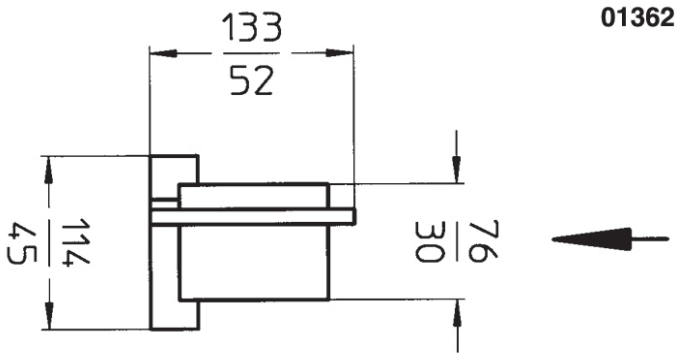
Feeder:	0,75 KW	0,75 KW
Air pump:	2,4 KW	2,4 KW

1.3.3 Weights in kg:

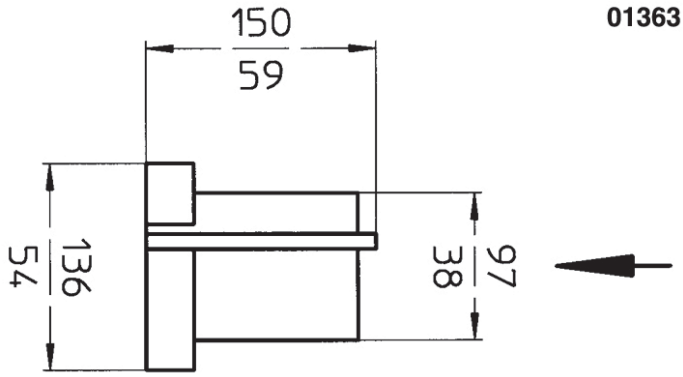
	Net	Gross
Feeder :	600/800	700/900

1.3.4 Floor plan (measurements in cm):

F 660



F 760



1.4 Documentation

Customer: _____

Machine no / Serial no: _____

Type of feeder: **Continuous feeder** _____

Type of air pump: _____

Electrical specifications: _____

Wiring diagram no: _____

Feeder: _____

Operational voltage (V: / Hz:): _____

Control voltage (V: / A:): _____

Control voltage (V: / A:): _____

Total nominal current (A:): _____

Fuse at power supply (A:) _____

Certificate of Conformity: _____

GS - marking no: _____

1.5 Supplementary documentation

Operating Manual of air pump: _____

Operating Manual of other manufacturers: _____

Spare parts lists: _____

Feeder: _____

Air pump: _____

Other manufacturers: _____

1.6 User information / Functional description

SHEET FEEDER for OPEN SHEETS

The feeder is designed to feed open sheets only. Feeding of any other material should not be attempted. The manufacturer or supplier will not be liable for any damage caused as a result.

Furthermore, the manufacturer will also not be liable for any malfunctions or damage of additional installations or alterations that were not delivered or installed by him.

The construction of your feeder may differ in some details from the photographs/diagrams shown. However, this does not have any influence on its safe operation. Since we are continuously working on further developments, we reserve the right to make alterations.

However, the efficiency depends on the type of paper, size, and type of fold, as well as on the different circumstances of the user which cannot be influenced by the manufacturer.

The following description should impart a general understanding of the feeder and its working method to the operator.

Please be advised that due to technical reasons and for better understanding certain options are already described in the standard feeder description.

The feeder basically consists of the basic frame, the upper and lower table including transport tapes, drum with tapes and chains, suction tape for sheet infeed, register table with suction tape for sheet alignment, and double sheet control.

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 of 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 at the working place - destined use of the feeder

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

2.2.2 For safety reasons 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 feeder should only be operated when in good working order. Any malfunctions which may impair the safety must be removed immediately by trained personnel of the manufacturer/supplier.

2.2.4 The feeder is exclusively destined to feed sheets. The feeding of any other material should not be attempted as the manufacturer or supplier will not be liable for any damage caused thereof.

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

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

2.2.7 Add to 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 feeder, and do not make any changes which may impair the safety of the feeder.

2.2.10 **>DANGER<** Never use any tools which are not in perfect condition, and make sure that no tools are left on the feeder after completion of settings and maintenance work. Tools which fall into the feeder 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 feeder in relation to the safety must be reported to the supervisor or manager of your company immediately.

2.2.13 The operating personnel should be aware that loose clothing, jewellery or (long?) hair can cause serious injuries if caught in the feeder.

2.2.14 It is absolutely prohibited to clean rollers, eliminate malfunctions, or to undertake adjustments while the feeder is on operation.
>DANGER< Therefore, always activate the EMERGENCY STOP button.

2.2.15 Make sure that no other person starts the feeder while you are working on it!
>DANGER< Therefore, always activate the EMERGENCY STOP button, or turn OFF the main switch, or UNPLUG.

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

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 the 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 main switch has been turned off.

2.2.19 Any damaged cables or electrical connections must be reported to the competent authorities of your company.

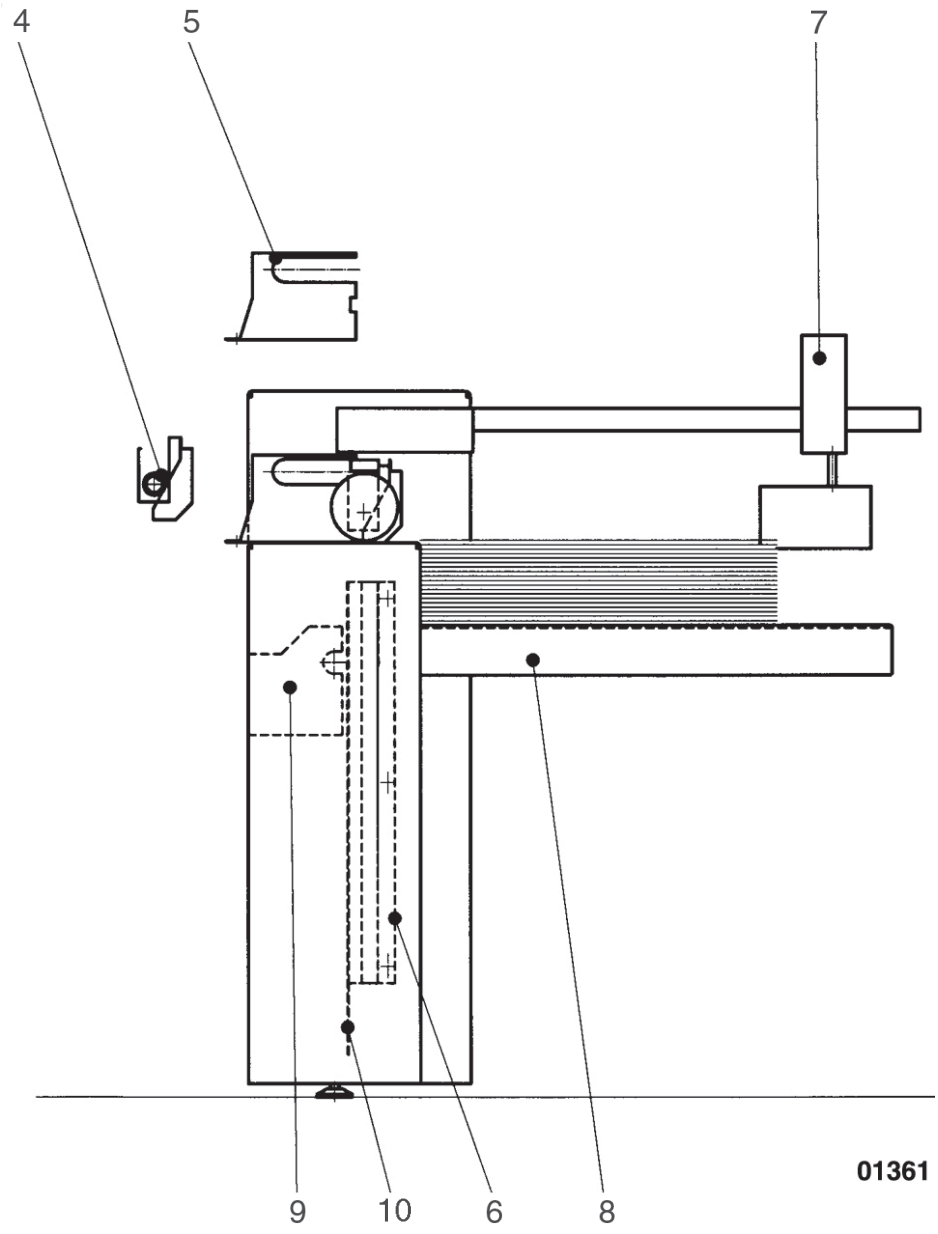
2.2.20 Machine connections must be installed in such a manner that no cables, tubes or hoses are left trailing.

2.3 Safety devices

2.3.1 Check list of protective hoods

POS.	Designation	Function control	Visible control	Result	Remarks
4	Guard over the drive shaft				At suction wheel or suction tape
5	Guard over the pulley				At suction wheel or suction tape
6	Guard over the chain system				
7	Guard over the Vacustar				
8	Pile Plate				
9	Guard over the drive gear motor				
10	Front plate				
	Date	**Name**			**Signature**

2.3.2 Chart for protection hood of feeder

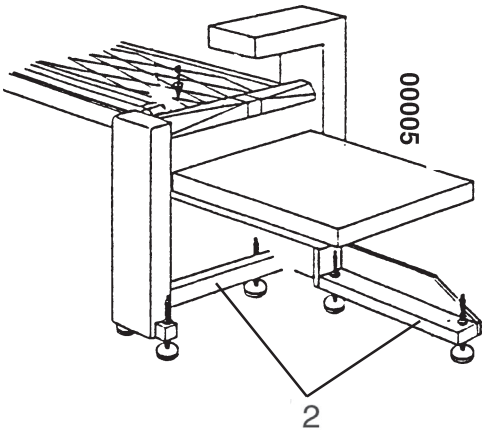


3.0 Transportation/Erection/Installation

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

3.1 Transportation

Unscrew the feeder off the pallet and move it with a fork lift at positions **2** to its final destination.



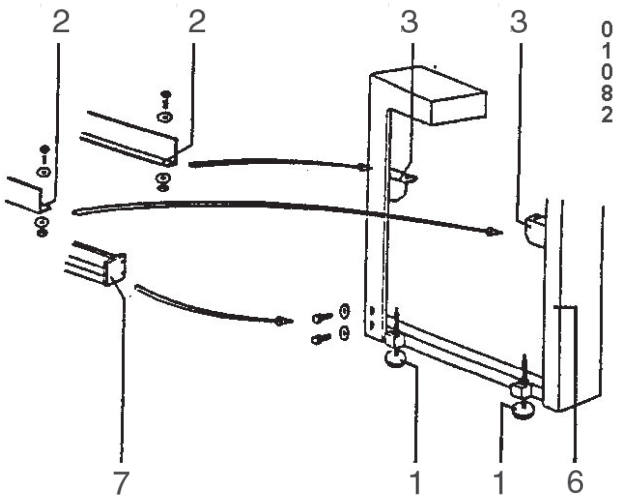
>DANGER< The feeder may fall/tip over or slip away!
Secure the feeder accordingly!

>ATTENTION<
The feeder may fall (tip) over two additional persons are required to secure the feeder!

>DANGER< Risk of personal injuries!

3.2 Erection/ / Installation

3.2.1 Feeder



Place the feeder onto the levelling screws and plastic feets **1** and move it to the folding unit.

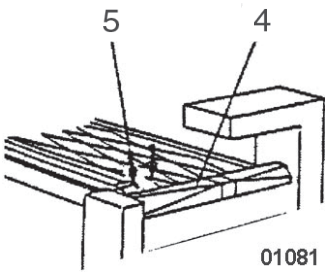
Alignment holes of register table **2** and feeder **3** must correspond with each other.

Exact position has been marked by the factory.

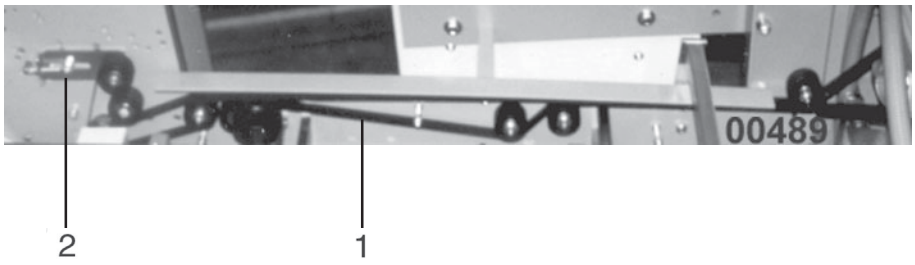
A distance of 1-2 mm must be between the conveyor plate **4** and the register bar **5**.

Set the exact height through the setting screws, adjust it with the spirit level **6** and screw them up without stress.

Thereafter, screw the feeder and folding unit with the connecting piece **7** up without stress.



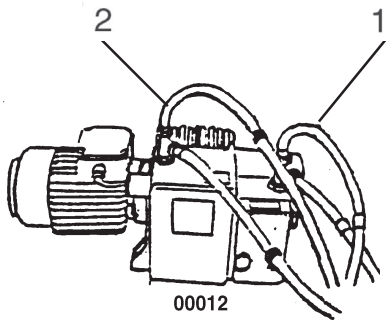
Place the flat belt **1** for the drive of suction wheel onto the drive rollers and tension it with the tensioning roller **2**.



3.2.2 Pressure-/vacuum pump

Put the vacuum and air tubes onto the matching connection pieces **1**,**2** which are marked in colour.

Blue = Blast air
Grey = Vacuum air



>ATTENTION< Check the rotating field. If the motor reverses this may cause serious damage to the pressure/vacuum pump or to the feeder head „Vacustar“.

3.3 Electrical connection

>DANGER - MAY BE HAZARDOUS TO YOUR LIFE<
These works are only to be carried out by authorized or skilled personnel!

3.3.1 Installation of main control panel

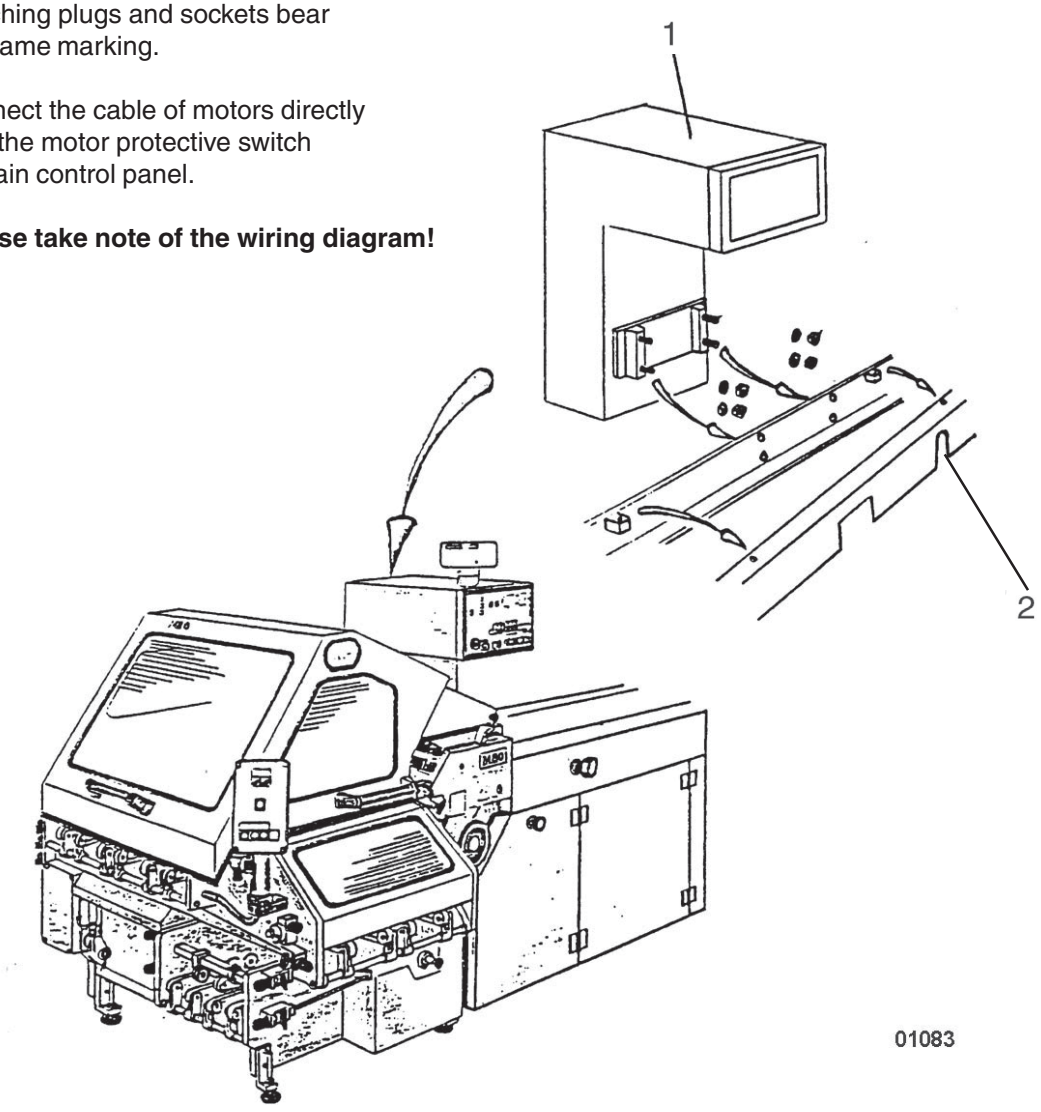
Fasten the main control panel **1** onto the side panel of the register table **2**.

Insert the plugs of machine and feeder into the corresponding sockets.

Matching plugs and sockets bear the same marking.

Connect the cable of motors directly with the motor protective switch at main control panel.

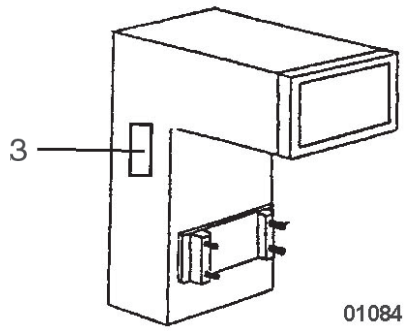
Please take note of the wiring diagram!



3.3.2 Main current connection

>DANGER - MAY BE HAZARDOUS TO YOUR LIFE<
These works are only to be carried out by authorized or skilled personnel!

>ATTENTION< Check whether the supply voltage and frequency correspond to the data indicated on the machine label **3**.



Enter the connecting cable from the base of the control panel, connect the wires to the main terminals provided and secure it with protective plates.
Please note wiring diagram!

>ATTENTION< Check clockwise rotating field!

>ATTENTION< Check the rotating field of the motors! If necessary, alter the terminal strip in the main control panel. **Turn the machine immediately OFF**, if the rotating field of the pile table does not correspond with the switch position at main control panel. In this case the final switch control is not properly functioning. This may cause essential damages to the feeder!

4.0 Maintenance

This part is directed to the competent service personnel or internal authorized personnel.

>DANGER< No cleanings nor maintenance works should be carried out unless the electrical supply is isolated. Always turn OFF the isolator on the control cabinet and secure it with a safety lock! If you manually turn the handwheel the foldrollers cannot be stopped by hand.

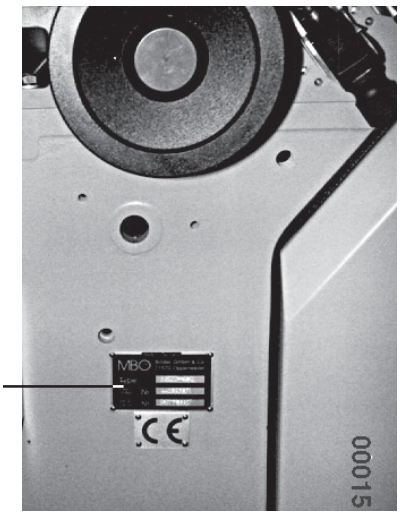
>NOTICE< The tensioning of the tapes for the foldrollers at parallel fold as well as for the crossfold drive for version KL occurs through self-tensioning elements. Rollers to center the tape running are marked red. Other drive belts should be checked monthly.

>DANGER< These as well as the following described work should be carried out by one person only! Danger of squeezing!

Procurement of spare parts

>ATTENTION< Only use the spare parts which are supplied or recommended by the manufacturer.

For inquiries and spare parts orders it is necessary to provide the machine and serial number, which may be read-off from the label **1**.



4.1 Exchange and / or tensioning of belts / tapes

4.1.1 Register belt at register table

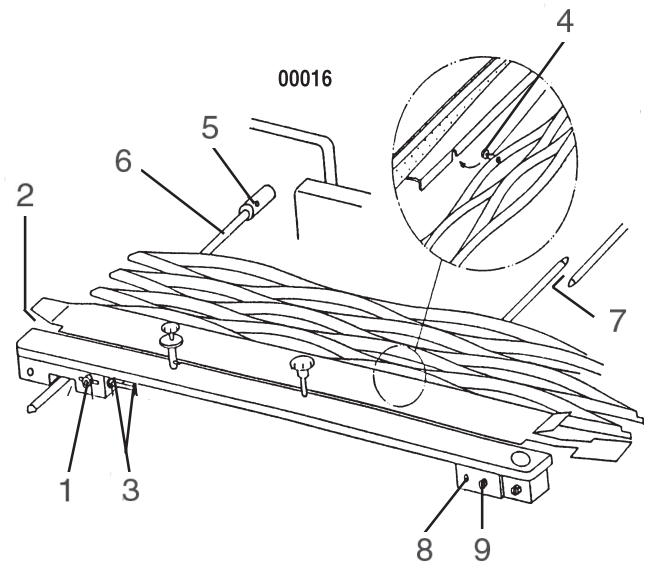
Exchange of register belt:
Loosen the screw **1** and release tension of register belt **2** through screws **3**. Unhinge the latticetype alignment table at **4**.

Loosen the screw **5** and remove rod **6**.
Take the register belt off the rollers and thread out at **7**.

Insert the new register belt in the opposite sequence.

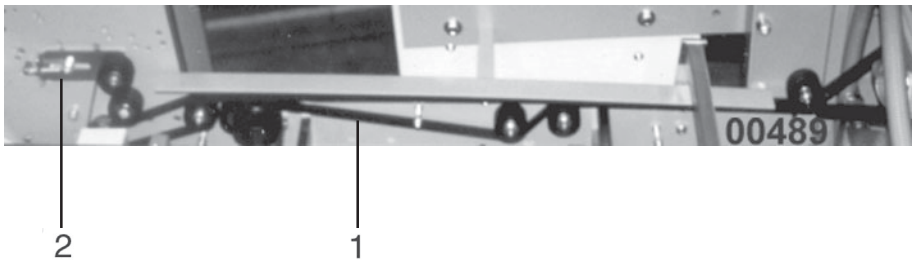
Adjust for centre running of the tape with screw **8**.

Prior thereto, loosen the screw **9** and retension after completion of work.
Screws **8** and **9** are located at the internal side!



4.1.2 Drive belt for the suction wheel

Put on the flat belt **1** for the drive of the suction wheel/Vacubelt and tension it with the tensioning roller **2**.



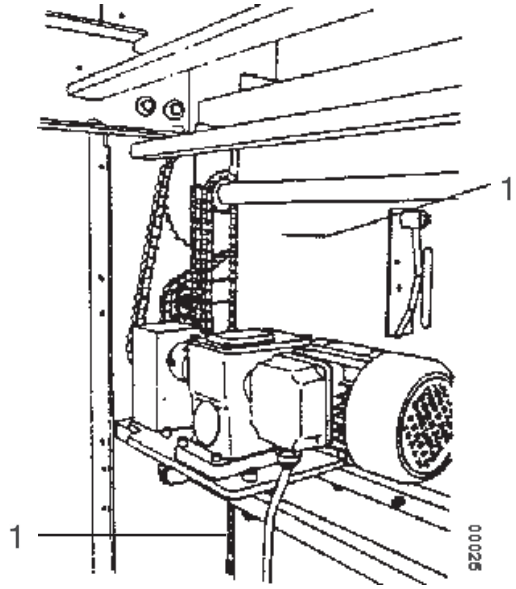
4.2 Lubrication / Cleaning

>NOTICE< Generally, the machine should be cleaned after each job, particularly moveable parts which have been changed due to change of sheet size, because heavy dust may cause reduction of function.

4.2.1 Feeder

Check the loose ends **1**
of the pile plate chains,
clean it off from dust and provide it
with a slight touch of oil.

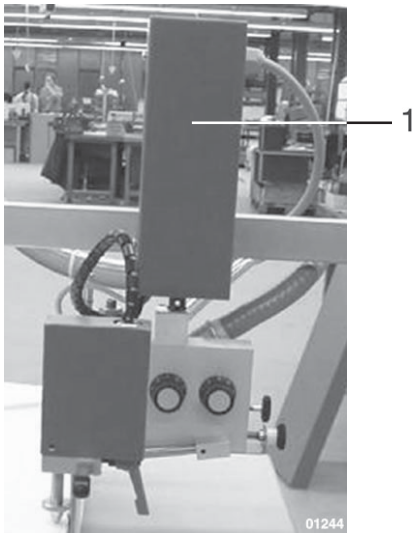
Move the pile table up in its top
position for these work!



4.2.2 Vacustar

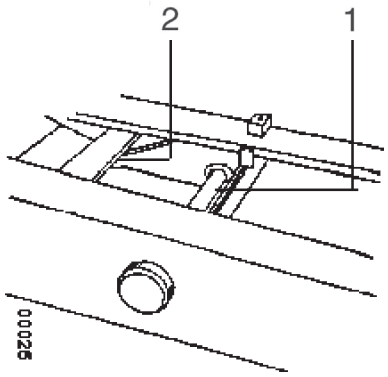
Remove protective hood **1** and
put a slight touch of spray-oil onto
all guiding elements and
moving parts, monthly.

>NOTICE< If you add too much
spray-oil lubricant may drop onto
the sheets through the knife guide.



4.2.3 Register table

Clean the guide shaft
for sheet size adjustment **1**
as well as drive shaft **2**
off from dust and provide them
with a slight touch of oil.

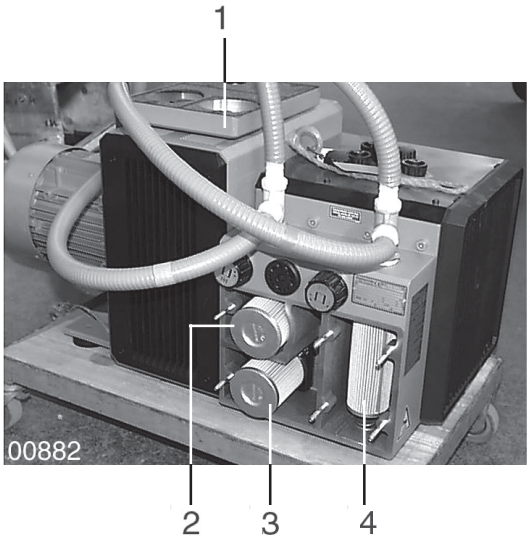


4.2.4 Pressure/Vacuum Pump

Please check separate Operating Manual of manufacturer.

>NOTICE< To ensure full efficiency, however, the cartridge at suction side should be checked and cleaned occasionally. The Filter cartridge must be cleaned every 50 hours of operation and be exchanged every 6 months. Dirty or damaged cartridges must be replaced immediately. Do not remove the filter cartridge in any case, otherwise penetration of foreign substances will damage the pump. Make sure that pump is turned OFF during maintenance works.

Remove cap **1**, as
well as Filter cartridges **2**, **3** and **4**.
Clean these cartridges
by blowing through from
the internal to the external side.
Exchange cartridges every six months.



4.2.5 Maintenance Report

This page may be attached to the Maintenance and Check List with the feeder, whereby all items described under 4.2 should be considered!

Working cycle	Interval	Date	Signature
Vacustar (4.2.2)	monthly		
Vacustar (4.2.2)	monthly		
Vacustar (4.2.2)	monthly		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		
Filter cartridge (4.2.4)	after 50 hrs. of operation		

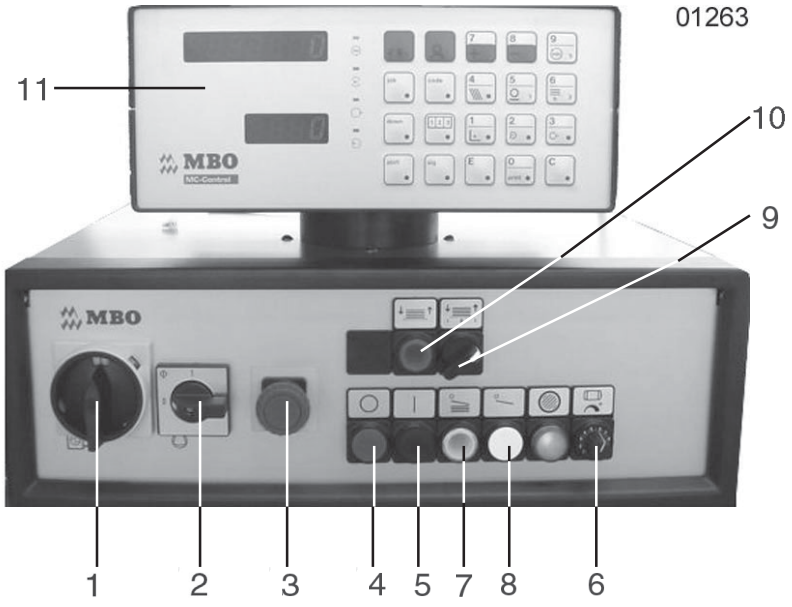
5.0 Operation of the machine

5.1 Main control panel - Standard control ”MC”by Combi folding machines “MS“ by Buckle folding machines

If your machine is equipped with the optional Micro-Processor-Control MC you will find its description in the attached Operating Manual ”MC”.

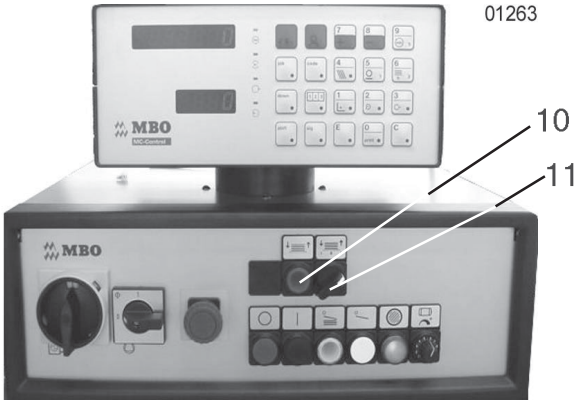
1 MAIN SWITCH
2 ON/OFF switch for PRESSURE/VACUUM PUMP
3 Red mushroom button with locking for EMERGENCY STOP
4 Button to STOP the machine
5 Button to START the machine
6 Potentiometer **(optional)** for electronic speed regulation
7 Button for SHEET INFEED during production and feeder START/STOP
8 Button for SINGLE SHEET INFEED
9 Switch to release PILE PLATE UP/DOWN
10 Button to RELEASE PILE TRANSPORTATION

11 Batch counter MCC 3 with integrated sheet infeed control „MC“.
See separate Operating Manual „MC Control“ for detailed description.



5.2 Feeder

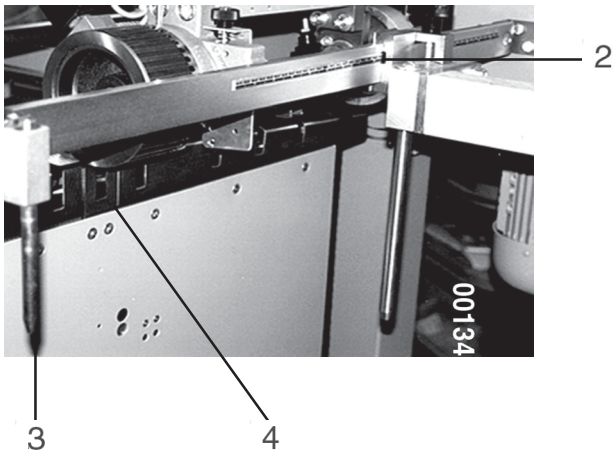
5.2.1 Loading



The push button **10** must be lit, and the switch **11** must indicate the „DOWN“ position.

The pile table moves down until you either select the stop button **10** or the selector switch **11** in the OFF position.

Set the pile stop **2** to the appropriate sheet size (½ of the sheet width) before you load the table (scale).

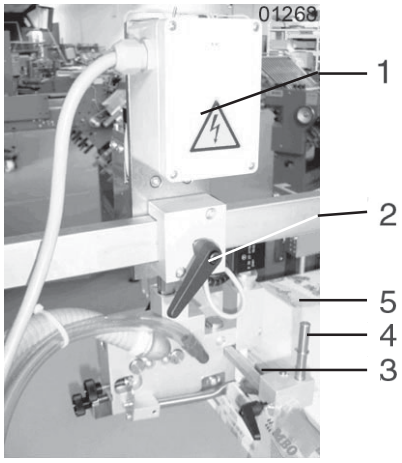


Load the pile table; if the loading is impeded by the position of the „Vacustar“, lift the support bar.

>NOTICE< Sheets which cling or stick together should be aerated sufficiently prior to loading!

Place the pin **3** to the pile edge. A height adjustable retaining plate **4** avoids eventual forwarding of the aerated sheets.

Prior to moving the pile table UP:



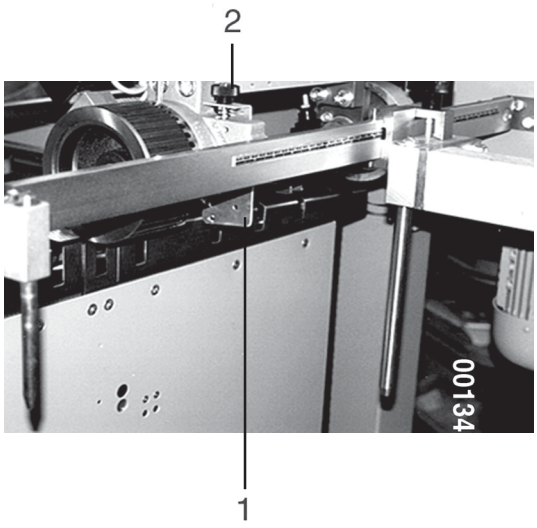
Place the feeder head „Vacustar“ **1** above the pile **5**, and position with the clamping lever **2.** The rear edgeof the suckers **3** should be approximately 2 mm inside the pile’s rear edge and the stop pins **4** at the rear edge of the pile.

5.2.2 Height control of pile and „Vacustar“

The pile UP movement is stopped by the proximity switch **1**.

The distance between the suction wheel and the pile is approximately 5 mm; this basic setting has been made by the manufacturer.

Alterations, depending on the sheet pile, through knurled screw **2**.



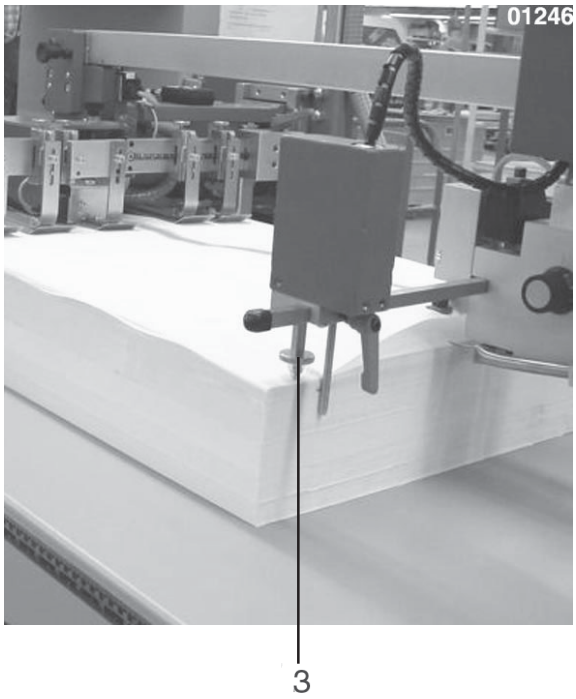
>ATTENTION< Make sure that proximity switch **1** is not covered!

After the pile STOP:

The „Vacustar“ is automatically moving onto the rear edge of pile. The pressure foot **3** stops the down movement shortly after reaching the top edge of pile.

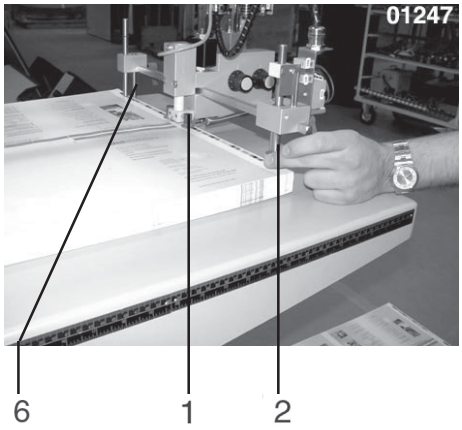
Pile DOWN:

The „Vacustar“ always moves time-delayed into its top position.



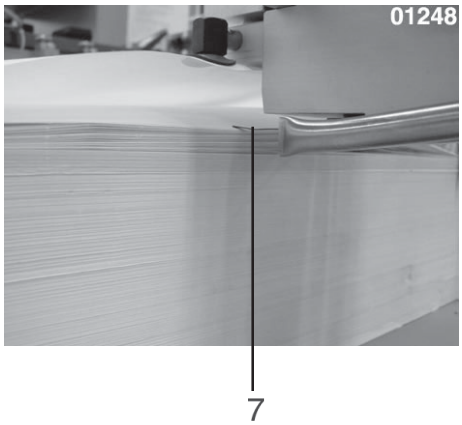
5.2.3 Feeder head „Vacustar“

Basic position of „Vacustar“:
The sucker **1** approximately 5-10 mm distance from the rear edge of pile and 5-10 mm above the pile.

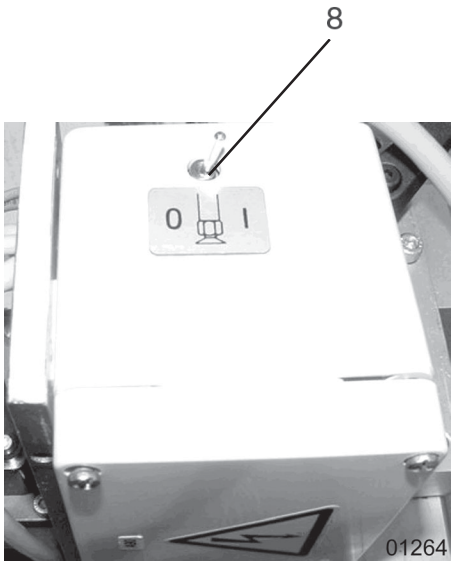


Adjustments through knurled screw **2**;

Stop holders **6** should fix small sheets sizes laterally and to the rear.
Large sheet sizes:
Move the stop holders **6**
as far as possible away from the „Vacustar“.



Double sheets are stripped off by the stripper element **7**; they should reach approx. 3-4 mm into the pile, distance approx. 1 mm.



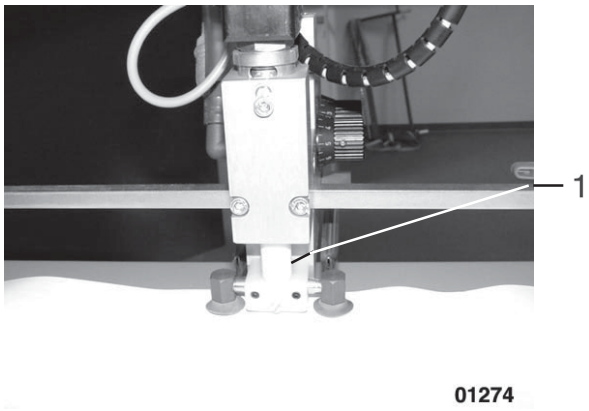
Selector switch **8** for Vacustar **ON/OFF**.

5.2.4 Air support

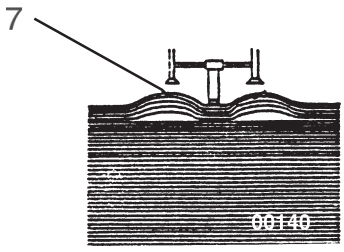
Air blast and suction air
for the feeder is provided by
a pressure/vacuum pump.
ON/OFF position occurs through
switch **2** at main control panel

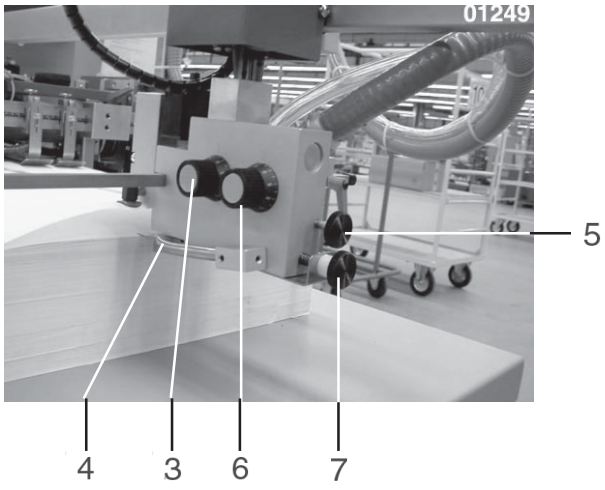
A sheet ist automatically drawn up.

How to regulate the <u>air blast</u>
<u>of the nozzles **1**</u> through
the adjustment knob **3**:
Increase the power of air blast slowly
until the sheet is lightly fluttering and
touching the suction wheel.



Pre-blowers **4**: height adjustment
through knurled screws **5**.
Regulate the air blast through the
adjustment knobs **6** so that the
top sheets of the pile
are ventilated in a „mushroom-“ shape **7**.

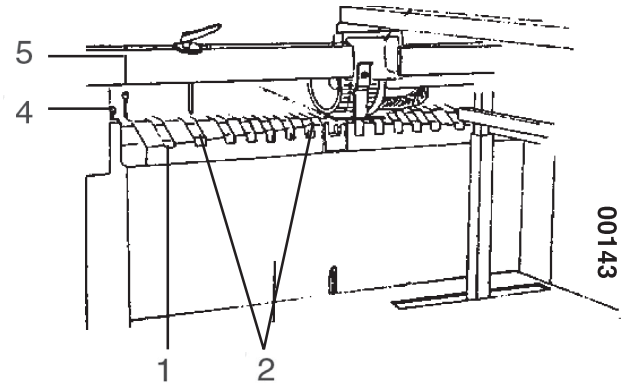




5.2.5 Front air nozzles

Front air nozzles are located under the slotted plate **1**.
They enable you to separate difficult papers much better.

Set the angle of inclination through lever **4** and the height through knurled screw **5**.



Valves:

Regulate the quantity of air through valves **1** thru **4** at the feeder side.

Nozzles and valves belong to each other are marked with the same numbers.

For consistent sheet feed normally lesser aeration in the centre of pile, but rather more aeration at the edges of the pile.

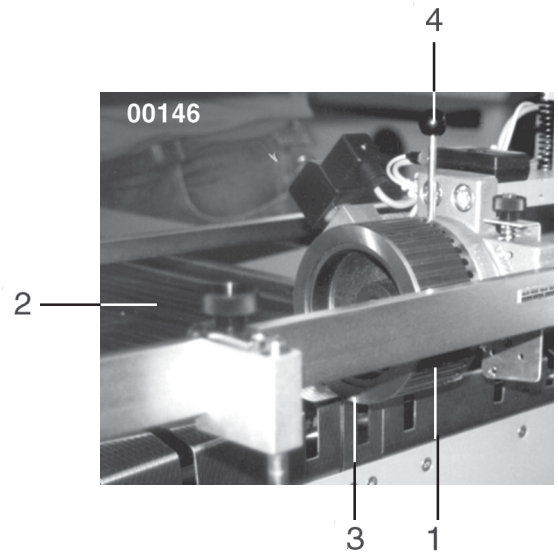
5.2.6 Suction wheel

The suction wheel **1** carries the sheets onto the register table **2**.

Point of suction **3** should be on the lowest position of the suction wheel; set lever **4** into vertical position.

If sheets tend to roll down:
point of suction should be at the front (push lever **4** to the right)

If sheets tend to roll up:
point of suction should be at the rear (push lever **4** to the left).



5.3 Other options

If this machine includes other options not described, separate Operating Manuals are attached.

5.4 Peripherical units

Operating Manuals pertaining to mobile peripherical units are attached separately, if these units are part of the order at the time of shipment.

5.5 Final remarks

We wish you much pleasure and success with this machine. Should you, however, still have problems with it, please do not hesitate to contact our technicians or supervisors who will be able to further assist you. Any recommendations to improve this Operating Manual are greatly appreciated.

Änderungen vorbehalten
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