Buckle Folding Machine

Original Manual

P00289

B21
Continuous Feeder

Preserve for future appliance!

Machine type:	Buckle Folding Machine B21		
Model:	Continuous feeder		
Manufacturer:	**MBO Binder Máquinas Gráficas SA** Rua Joaquim Alves da Silva Apartado 5093 4456-951 Perafita/Portugal Tel.: +351 22 998 22 00 Fax: +351 22 998 22 01		
Document type:	Operating manual/ANSI		
Stand:	13-09-2006	Professional:	S. Matos; M. Wiech
Version:	09/06	Language:	English
Alterations reserved!			

Prologue

With the MBO folding machine you have purchased a valuable product. However, it is absolutely imperative to comply with all Safety Regulations and Safety Instructions. This Operating Manual should instruct you how to operate correctly the MBO folding machine and to comply with the Safety Regulations and to maintain the machine properly.

Keep this operator manual for future apply at the machine.

Copyright

Warranty

Our products are contractually regularized. However, MBO´s warranty does not cover the following:

- Self-assembling/installations and alterations at the machine.
- Damages caused biy self-assembling/installations, faulty maintenance and self-repair.
- Assembling of spare parts when not purchased from an authorized MBO dealer.
- Not definded apply.
- Removing of guards or safety devices and resultant damages.

Customer´s information

MBO machines and spare parts can be purchase from our dealers worldwide, also close to you.

For questions, request for technical support or service please contact your dealer.
Allways indicate these statements for the sevice orders and spare part orders which can be read-off from the machine label.

- Fabrication number
- Serial number
- Machine type

Use only spare parts, which are supplied or recommended by the manufacturer.

Indice

1 General

1.1 Content and diagram conventions

That construct organizes itself this user information in:

Chapter 1: General

Chapter 2: Safety

Chapter 3: Transportation/Set up/Installation

Chapter 4: Adjustment/Setup

Chapter 5: Operation

Chapter 6: Out of order

the sequnce of these chapters enables you a uniformly progressive trained success with the unse of the machine. The single chapters gives first a surveyover the subject handled, going progressively into detail.

Working hint and information:

SAFETY FIRST This sign marks information that seve the securityand the protection of the machine.

NOTICE This sign marks information for procedure, that guarantee a simple and helpful mode of operation.

1.2 Important references to the operating manual

The existing user information is aligned on the operator of the machine. It should make the operator trusted with the operation method, operating mode, security references and the maintenance of this machine.

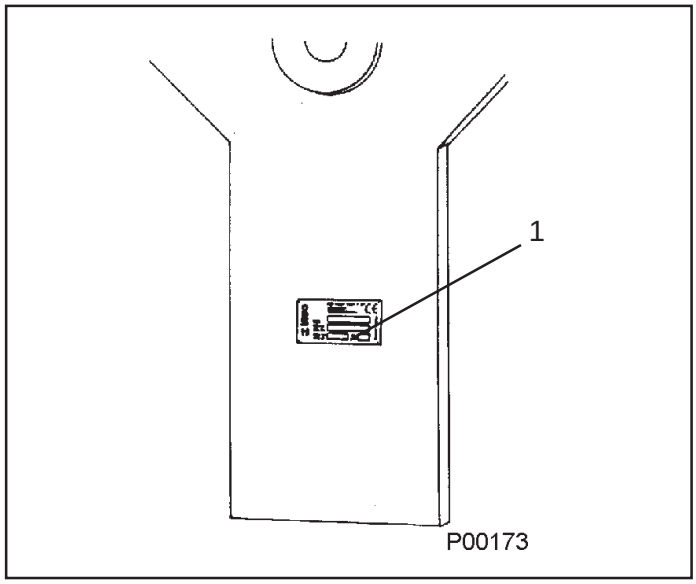
This user information is a part of your product. It must be stored during the service life of the product at the machine. Give this instruction to each following owner or user of the product.

Keep this user information allways updated. Introduce every update in this document.

Our machine corresponds at the moment of delivery to the newest state of technology. As we work permanently at further developments, we reserve ourselves changes.

User judgment of the operating instructions:
Our operating instructions are regularly updated. Help us with your proposals to form user-friendly operating instructions.

1.2.1 Marking of the product



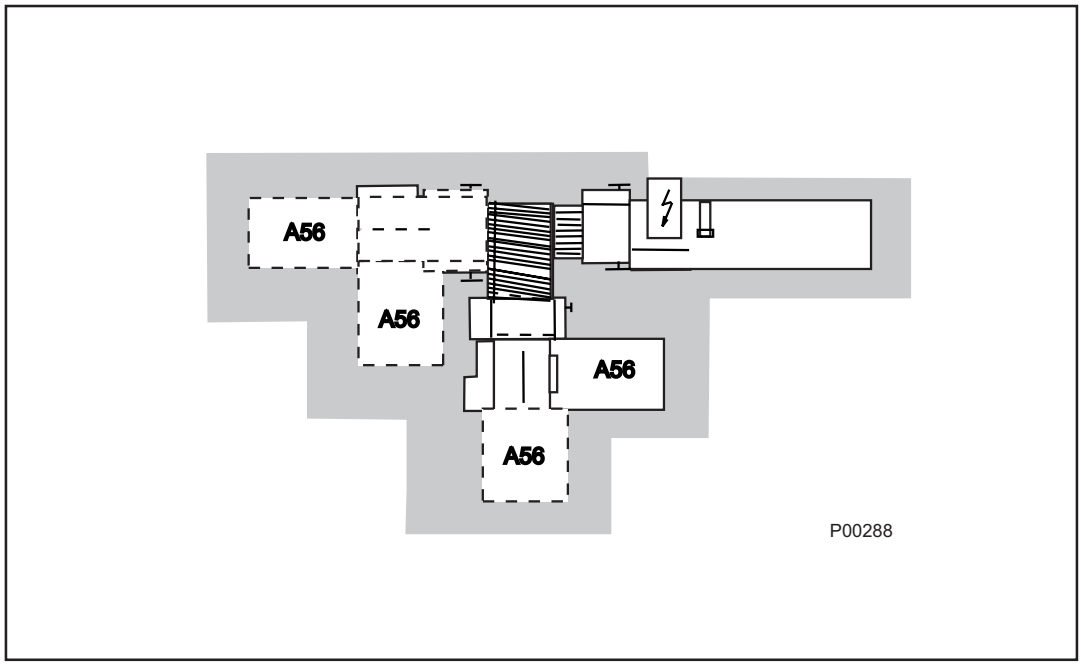
The identification of the machine as well as the most important machines data can be seen at the machine in the type sign (1).

Allways indicate these statements for the sevice orders and spare part orders:

- Fabrication number
- Serial number
- Machine type

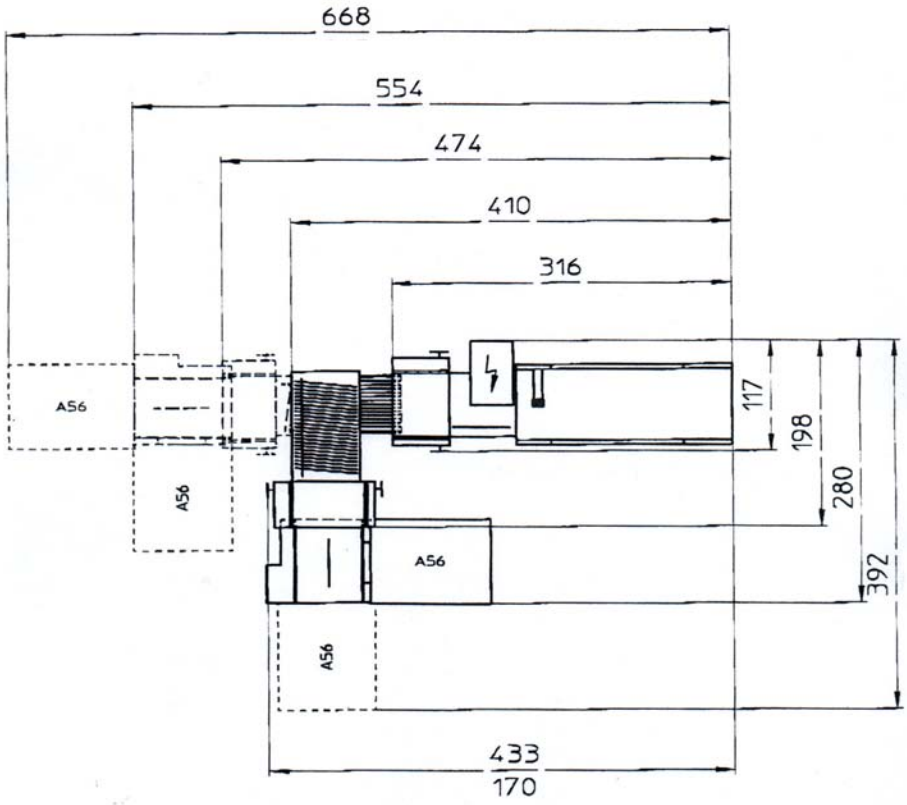
1.2.2 Working area

The represented graphics show the single working area of the machine. The permitted work field during the operation is marked in grey.



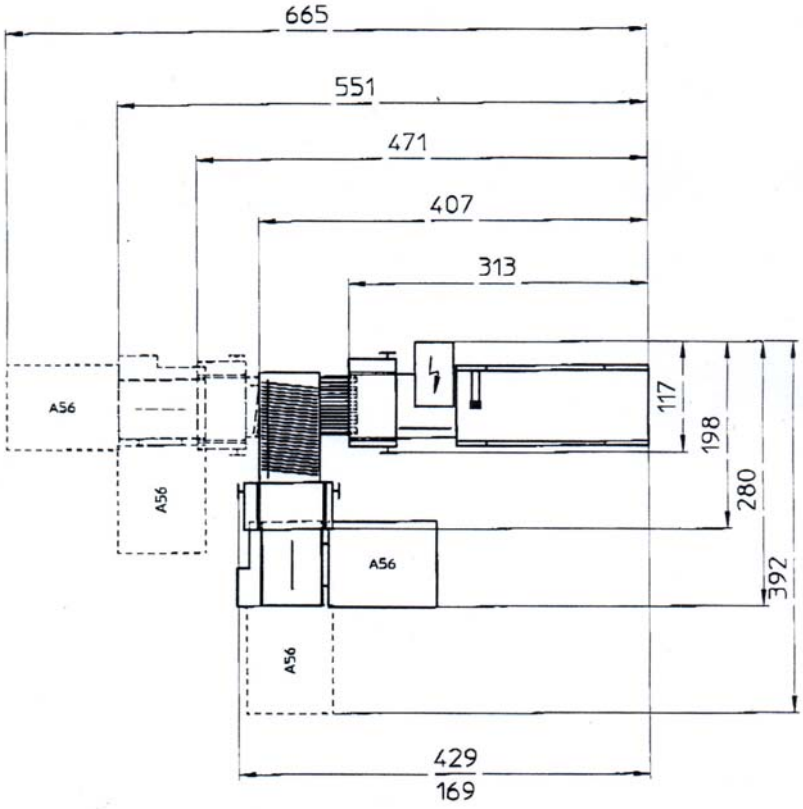
1.3 Product data

1.3.1 Floor plan B21/44X



Measurements in inch

1.3.2 Floor plan B21/64X



Measurements in inch

1.4 Technical Data

Machine data:	Name:	Buckle folding machine B21
	Customers address:	
	Machine configuration:	4; 4X; 44; 44X; 6; 6X; 64; 64X; 66; 66X
	Machine- and serial no.:	
	Feeder typ:	Continuous feeder - C
	Compressor typ:	
Certification:	Conformity certification:	
	GS-Sign no.:	
Sound emission:	Sound emission (Al):	
Electrical data:	Wiring diagram no.:	
	8 page unit	
	16 page unit	
	Knife unit "X"	
	Stream delivery:	
	Operation voltage (V: /Hz:)	
	Control voltage (V: /A:)	
	Total nominal current (V: /A:)	
	Main supply fuse (A:)	
Formats:	Minimal format:	6 x 6 inch
	Maximal format:	21 x 33 inch
Connected wattage: (220V;50HZ)	Parellel unit	0,75 KW
	Compressor:	1,5 KW
	Continuous feeder	0,1 KW
	8 page unit	0,75 KW
	Knife unit "X"	0,55 KW
	Stream delivery SE500/3; A56	0,12 KW
Working speed	Min. working speed:	400 inch/min.
	Max. working speed:	8000 inch/min

		Net lbs	Brut lbs
Weight in lbs:	Continuous feeder 4 buckles	1219	1585
	Continuous feeder 6 buckles	1234	1600
	Parallel unit 4 buckles with noise hood	990	1631
	Parallel unit 4 buckles without noise hood		
	Parallel unit 6 buckles with noise hood	1047	1752
	Parallel unit 6 buckles without noise hood		
	8pg 4 buckle unit with noise hood		
	8pg 4 buckle unit without noise hood		
	8pg 6 buckle unit with noise hood		
	8pg 6 buckle unit without noise hood		
	Knife unit "X" T530-4X	595	881
	Knife unit "X" T530-44X	637	926
	Stream delivery SE 500/3	79	235
	Stream delivery A56	218	383

1.5 Supplyed documents

Users manual:	Counter:	
	Air producer:	
	Sequence station:	
Wiring diagram no.:	Machine:	
	Sequence station:	
Spare parts manual:	Machine:	B21 Continuous feeder
	Knife unit "X":	B21
	Stream delivery:	SE 500/3 / A56
	Sequence unit:	
Knife list:	TM 35/2	

1.6 Equipment

1.6.1 Buckle folding machine

The buckle folding machine works exclusively in accordance with the principle of buckle folding. The MBO buckle folding machine B21 with pile feeder has been developed to process sheets in the sizes of 6 x 6 inch up to 21 x 33 inch. The production speed can be regulated between 400 and 8000 inch/min. However, this result depends on the type and size of sheet and type of fold.

The basic machine consists of a folding unit one with pile feeder as well as the well-proven MBO register table.

1.6.2 Folding unit one

The folding unit one is equipped with four (optional six) stainless-steel buckle plates, sheet stop fine adjustment and integrated swing deflectors. Moreover, it is also equipped with the well-proven MBO spiral foldrollers, which may be adjusted through the quick-setting elements located on top of the machine, combined with the low-noise belt drive system and solid, quickly removeable slitter shafts through plug bearings.

1.6.3 Folding unit two

The folding unit two is a mobile buckle folding unit with own drive, register table, a maximum working width of 21 inch as well as four buckle plates as descriped above.

1.6.4 Knife folding unit „X“

The knife folding unit “X”, which is equipped with belt drive system, maximum working width of 21inch, and electronical knife control is useable as a folding unit two or three.
The knife folding unit “X” has an own drive and self-control.

1.6.5 Hook on stream delivery

The hook-on stream delivery SE500/3 is available in the configurations B21/4 ; B21/6 ; B21/44 ; B21/64; B21/66 as standard. The mobile delivery A56 is optional. Machines with a unit ”X” configuration, 4X ; 6X ; 44X; 64 or 66X, must choose the optional A56 ,because SE500/3 can not be suspended at the ”X” unit.

The following description from the feeder to the machine should enable the operator to achieve a general understanding of the machine.

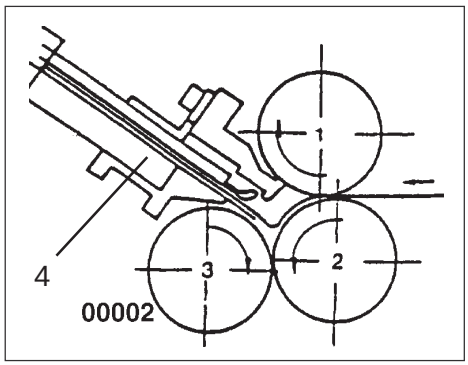
1.7 Functioning description

1.7.1 Functioning description buckle fold

The principle of buckle fold is that the sheet is always pushed into the buckle plate.

three foldrollers and one buckle plate are necessary to prepare a buckle fold. Foldrollers **1** and **2** carry the sheet into the buckle plate **4** to the sheet stop.

A buckle occurs during transporation through these foldrollers to the direction of foldrollers **2** and **3** by which the sheet is folded through its passage.

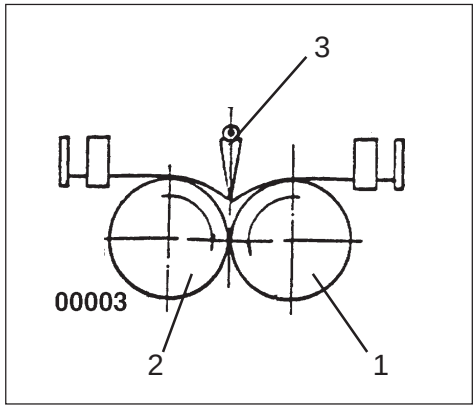


1.7.2 Functioning description knife fold

Two foldrollers **1** und **2** as well as one knife **3** are necessary to prepare aknife fold.

The sheet is transported under the knife to a sheet stop and aligned.

After the knife has been released it moves the sheet between the foldrollers where it is folded during its passage.



2 Safety

2.1 Representation of alerts

2.2.1 Safety references and colours

Representation	Meaning
	**Forbid** Red border White background Black symbol
	**Warning** Yellow background Black symbol
	**Commandment** Blue background White symbol

2.1.2 General dangers signs

	Warning of hot surface
	Warning of falling objects
	Warning of rotating machine parts
	Warning of hand injuries
	Warning of dangerous electric tension
	Caution, danger through stumble places
	Caution, lifting of heavy machine parts
	Caution, danger through rotating slitter shafts
	Caution, danger through rotating chain drive

2.1.2 General dangers signs

Representation	Meaning
	Caution, danger through rotating belt drives.
	Caution before falling down of the opened protection hood.
	Caution before flammable agents.
	Danger before used cleaning agents and rags.
	Warning of a dangerous place.

2.1.3 Danger level

Danger level give a reference to the heavy of the danger. They are constructed after a classification system, which differs through different signal words:

- Danger (Safety signs presented)
- Warning (Safety signs presented)
- Caution (Safety signs presented)
- Caution (without Safety signs)

Danger levels	Meaning
⚠DANGER	A directly threatening danger that leads to heavy injuries or to death.
⚠WARNING	A possibly dangerous situation that can lead to heavy injuries or to death.
⚠CAUTION	A possible dangerous situation that can lead to easy personal injury.
CAUTION	A possible dangerous situation that can lead to material damage.

2.1.4 Safety advises at the operators manual

⚠DANGER

Danger of electric tension.
Negligence can cause, heavy injuries or death.
Report damaged electrical connections to respnsible supervisor.

⚠DANGER

Danger of electric tension at head clams with main switch off.
Negligence can cause, heavy injuries or death.
Work at the electronics can only be carried out of authorized persons or skilled personnel.

⚠DANGER

Danger of electric tension.
Negligence can cause, heavy injuries or death.

- Keep the main control cabinet and the lower distributor cabinet always locked against unauthorized persons.
- During maintenance working at the control cabinet turn off main switch and disconnect the network connector.
- Turn off and lock out system power before servicing.

⚠WARNING

Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.
Report each audible/visible security-related change of the machine to the responsible for that in your business.

⚠WARNING

Danger before running belt-drive.
Negligence can cause, bruise emerges at the hands.
This work should be carried out by one person only !

⚠WARNING

Danger before falling down of the opened protection hood.
Negligence can cause heavy injuries through bruise of body part.
Be sure that in work with opened noise hoods this is completely opened to the attack.

⚠CAUTION

Danger of stumble places through lying around cables.
Negligence can cause personal injuries.
Place the machines connections (cables, hoses, tubes) so, that they form no stumble places.

⚠DANGER

Danger of running machines part.
Negligence can cause, heavy injuries or death.

- Keep hairs always together bandage and protected.
- Take by operation and maintenance working at the machine your jewellery off.
- Carry during operation or maintenance on the machine only adjoining garment.

⚠DANGER

Danger of running machines part.
Negligence can cause, heavy injuries or death.
In sudden stop of the machine, review before turning on:

- That no further person is at the machine.
- That the machine is in a flawless condition.

⚠WARNING

Danger of sound pressure.
Negligence can cause, ear damage can emerge.
Use an ear protection for work at the folding machine.

⚠WARNING

Danger through maintenance tool.
Negligence can cause heavy personal injuries or extensive damages.

- Use only tools in good working condition.
- Pay attention that after adjustment or maintenance working at the machine, all tools are removed.

⚠DANGER

Danger of running machine parts during the installation work.
Negligence can cause heavy personal injuries or extensive damages.

- Allow service and cleaning works only to be carryed.
- Turn off the machine during maintenance and restoration work by the main switch.
- Neutralize the electrical cabinet against unintentional switch on.
- Check before turning on, that no further person is at the machine.

⚠CAUTION

Danger through heavy machines components.
Negligence can cause heavy personal injuries or extensive damages.

If the weight amounts more than 25 kg, a further person must be aid for taken of the components.

⚠WARNING

Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.

- Safety switches at the protection and noise hoods can not be manipulated or modified.
- Adjustments by opened protection hoods are only permited for setup. Setups can only be performed on machines with electronical speed regulation.
- Machines with mecanical speed regulation can only be adjusted with opened protection hoods throught the hand wheel.

⚠WARNING

Danger of slitter shafts.
Negligence can cause cut injuries.

- During maintenance work at the slitter shafts, the use of protection gloves and safteyshoes is required.
- Do not hold the slitter shafts by the tool but always at the shaft.

⚠WARNING

Danger before wrong use of cleansing agents.
Negligence can cause health defects.

- Avoid skin contact.
- Protect yourself against splashes in the eyes.
- Use for cleansing protection gloves.
- Inform yourself through the cleaner manufacturer about remaining dangers and compatibility for human skin.

⚠CAUTION

Danger before used cleansing rags.
Negligence can cause health defects.

- Note the fire dangers through the flammability of the cleaner.
- Detoxifythe cleaning rags.
- Inform yourself at the cleaner manufacturer about remaining dangers as well as over the correct disposal.

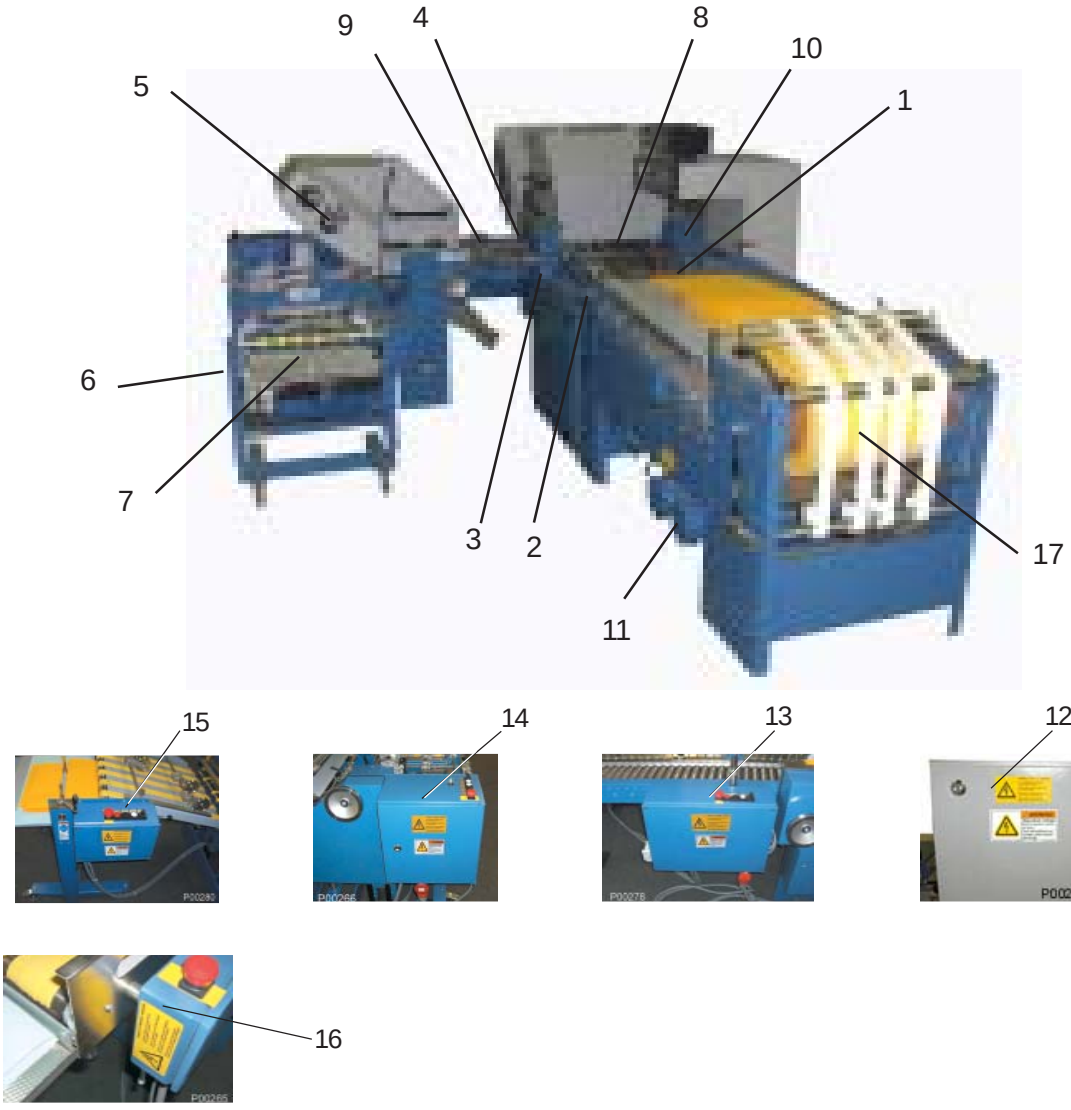
⚠WARNING

Danger of running machines part during the installation working.
Negligence can cause heavy personal injuries or extensive damages.

- Never grasp into the running machine in!
- Keep protection hood close during production.

2.1.5 Dangerous zones / Warning signs at the machine

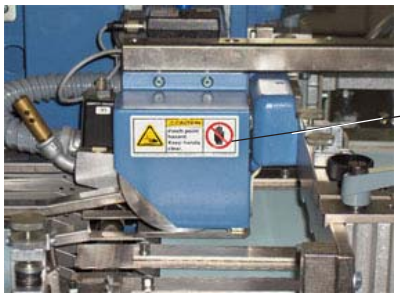
2.1.5.1 Overview

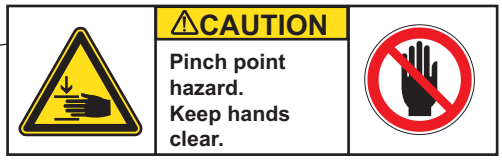


1	Suction wheel
2	Ball bar
3	Fold head - operator side cover
4	Slitter shaft protection
5	Mobile knife folding unit „X“
6	Hand wheel at X-unit
7	Mobile stream delivery A56 (Option)
8	Hand wheel shaft/cleaner roller support
9	Sheet transport 8 and 16 page unit
10	Fold head drive side cover
11	Compressor
12	Main cabinet parallel unit
13	Control cabinet 8 and 16 page unit
14	Control cabinet mobile knife folding unit „X“
15	Control cabinet stream delivery A56
16	Control cabinet hook on stream delivery SE 500/3
17	Feeder drum

2.1.5.2 Danger references-arrangement and meaning

Pos. 01 **Suction wheel**



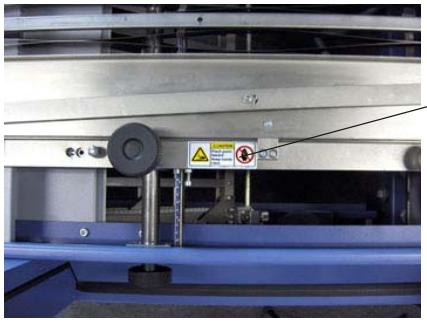


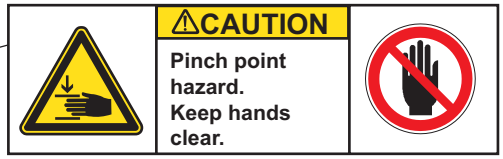
Meaning:

Danger before running suction wheel. Negligence can cause bruises on your hands.

Keep your hands away from the running suction wheel.

Pos. 02 **Ball bar**



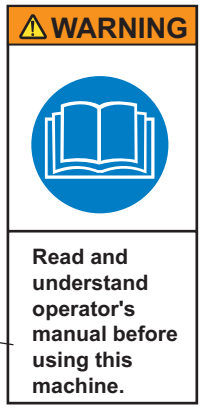


Meaning:

Danger before ball bar. Negligence can cause bruises on your hands.

Keep your hands away from this dangerous place.

Pos. 03 **Fold head - operator side cover**

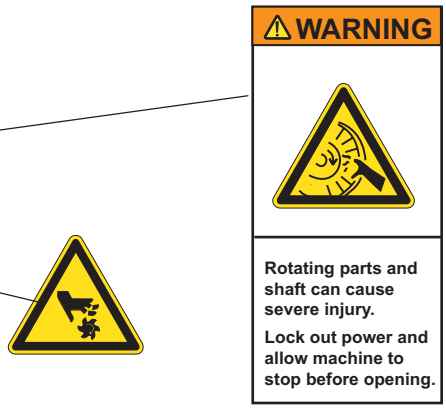


Meaning:

Warning before moving machine parts in area of fold head - operator side cover. Work only under super vision of a second person at the machine.

Read and understand operator´s manual before using this machine.

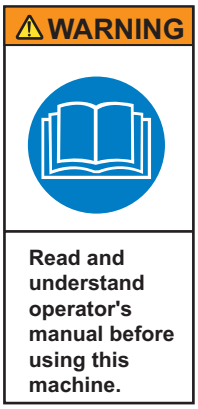
Pos.04 **Slitter shaft protection**



Meaning:

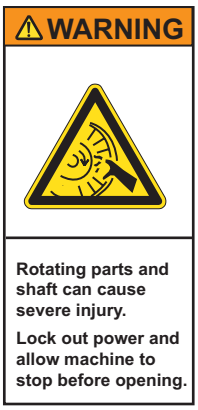
Danger before rotating slitter shafts. Negligence can cause cut or tear off of body parts. Lock out power and allow machine to stop before opening.

Pos.05 **Mobile knife folding unit „X“**



Meaning:

Read and understand operator´s manual before using this machine.



Meaning:

Danger before rotating slitter shafts. Negligence can cause cut or tear off of body parts. Lock out power and allow machine to stop before opening.

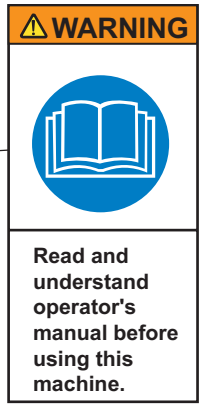
Pos. 06 **Hand grip at X-Unit**

Meaning:

Danger before material damages.

Operate X-Unit only with locked hand grip.

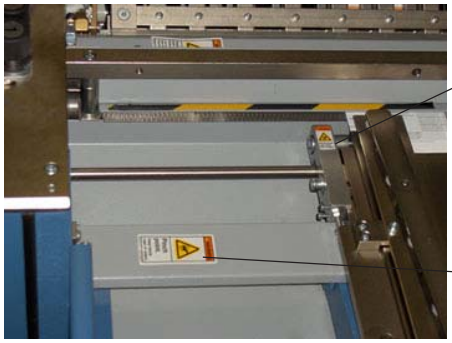
Pos.07 **Mobile stream delivery A76**



Meaning:

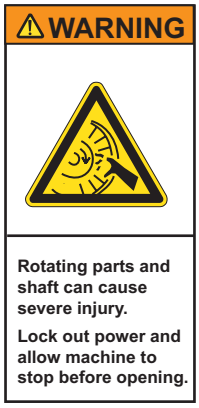
Read and understand operator´s manual before using this machine.

Pos.08 **Hand wheel shaft/cleaner roller support**



Pos. 1

Pos. 2



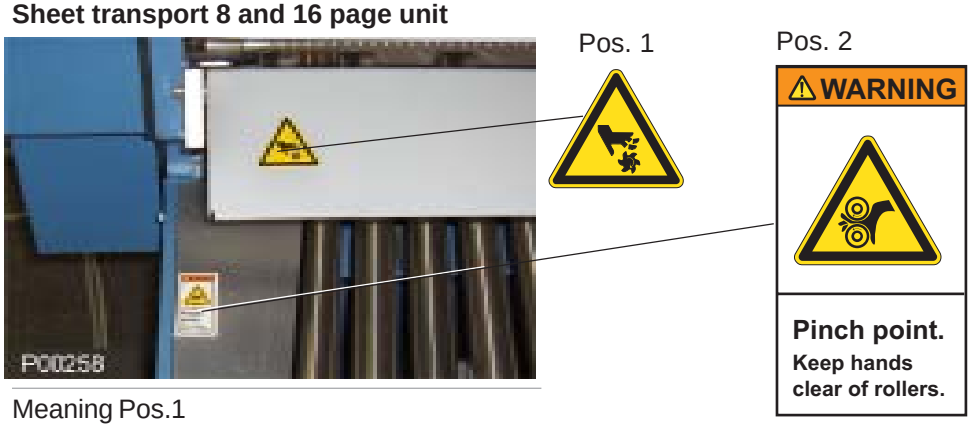
Meaning Pos. 1

Danger before rotating machine shafts. Negligence can cause cut or tear off of body parts. Keep your hands clear of rollers.

Meaning Pos. 2

Danger before rotating slitter shafts. Negligence can cause cut or tear off of body parts. Lock out power and allow machine to stop before opening.

Pos 09 **Sheet transport 8 and 16 page unit**



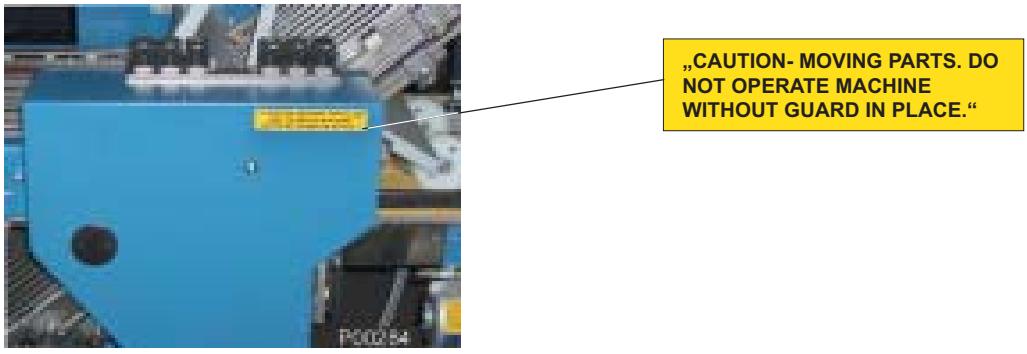
Meaning Pos.1

Danger before rotating machine shafts. Negligence can cause cut or tear off of body parts. Keep your hands clear of rollers.

Meaning Pos.2

Danger before rotating transport rollers at the sheet transport. Negligence can cause bruises on your hands. Keep hands clear of rollers.

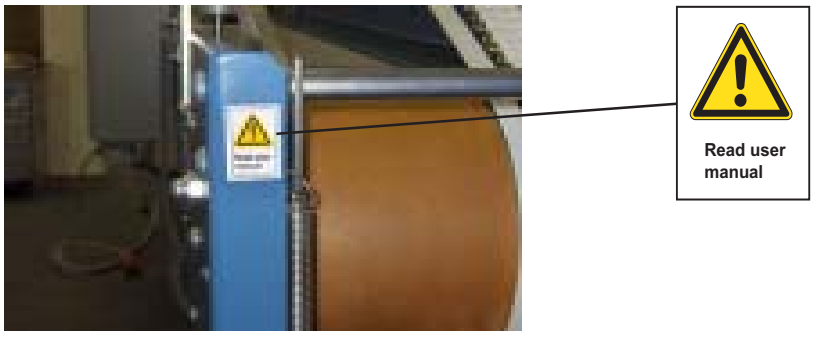
Pos. 10 **Fold head drive side cover**



Meaning:

Warning before moving machine parts in area of parallel fold head-drive side cover. Work only under super vision of a second person at the machine.

Pos. 11 **Sheet guide support**

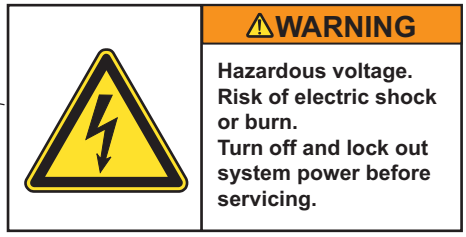


Meaning:

Read and understand the operator manual before using this machine.

Pos. 12 **Main cabinet parallel unit**

Pos.1



Pos.2

Characteristic for all fuses medium time-lag Pos.3

USE COPPER WIRE ONLY! Pos.4

Meaning Pos.1 und Pos. 2:

Hazardous voltage. Negligence can cause electric shock or burn.
Turn off and lock out system power before servicing.

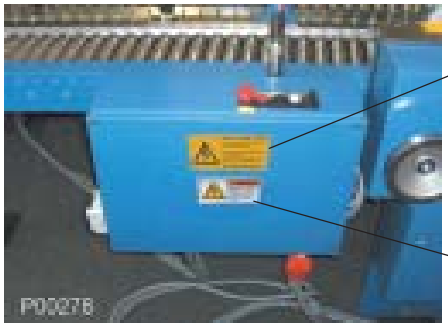
Meaning Pos.3:

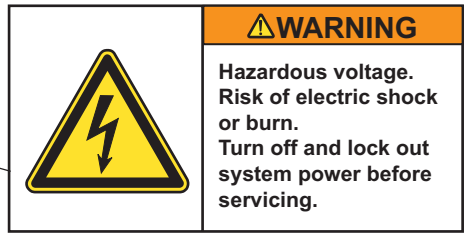
Replacement of fuses only with same specification.

Meaning Pos.4:

Use copper wire only!

Pos. 13 **Control cabinet 8 and 16 page unit**

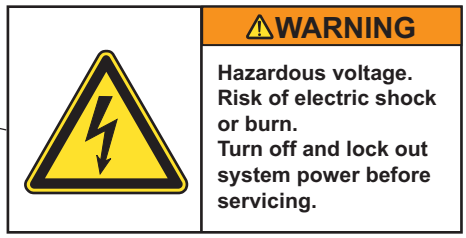




Meaning:

Hazardous voltage. Negligence can cause electric shock or burn.
Turn off and lock out system power before servicing.

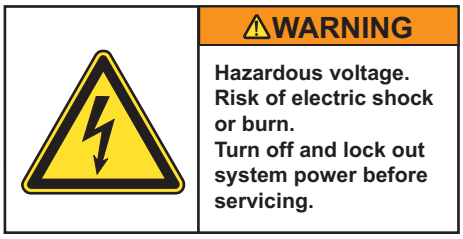
Pos. 14 **Control cabinet mobile knife folding unit „X“**



Meaning:

Hazardous voltage. Negligence can cause electric shock or burn.
Turn off and lock out system power before servicing.

Pos.15 **Control cabinet stream delivery A56**



Meaning:

Hazardous voltage. Negligence can cause electric shock or burn.
Turn off and lock out system power before servicing.

Pos. 16 **Control cabinet hook on stream delivery SE 500/3**

Meaning:

Hazardous voltage. Negligence can cause electric shock or burn.
Turn off and lock out system power before servicing.

2.2 Product security

2.2.1 Obligation and liability

Note references in the operation instructions:

Prerequisite for safety and free interference working with this machine is the knowledge of the basic safety references and the safety prescript.

This operating instruction is to be noted by all persons, who work at the machine. In addition all rules valid for accident prevention has to be noted.

Potential danger while operating with machine:

The Buckle folding machine is after the state of the technology and that acknowledged safety rules constructed. Nevertheless dangers for body and life of the unser or third and/or inpairment can emerge in its use at the machine or at other material asset.

The machine is to be used only:

- For the due use
- In safety flawless condition

Interferences, which can impair the safety, are to be removed immediately.

Guarantee and liability

Herefor our general sale and delivery conditions has to be concerned. The Guarantee and liability claims with personal injuries and equipment damages are not excluded if they are to be led back to one or several of the following causes:

- Due use of the machine,
- Improber installation, do into operation, serving and maintenance of the machine,
- Operating of the machine in defective safety arrangements or not regular appropriate or not operable safety devices and protection devices,
- Not following of the references in the operating instructions regarding carrier, storage, assembling, starting, operating, maintenance and mobilizing of the machine,
- Independent structural variations at the machine,
- The not keeping of maintenance and cleaning intervals that exclude a standstill of the machine,
- Deficient supervision of machines part, that a wear be subject,
- Bad servicing and damages through foreign objects.

2.2.2 Due use

- The machine is intended only for the folding, designing, perforating and cutting of paper.
- The machine is displayed only for the one-man-operation.
- The machine can only be operated in a flawless technical condition. Interferences, which endanger the safety, must immediately be removed by instructed persons or from manufacturer or from supplier.
- The machine can only be operated of seviced by skilled and autorized personnel. Machine can only be operated/serviced by persons older than 18 years.

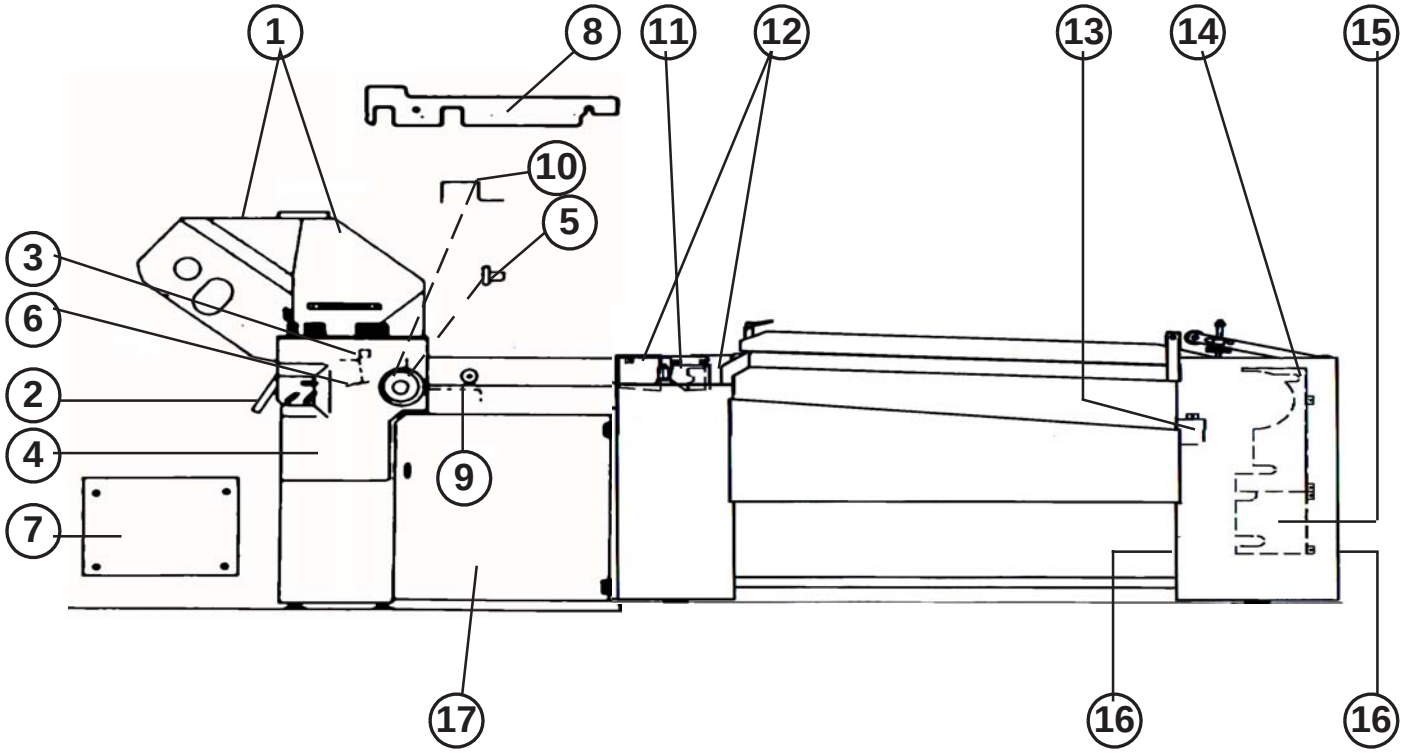
2.2.3 Inappropriate use is:

- An other use of the machine as folding, designing, perforating and cuttting of paper.
- Working of other materials as a paper.
- Manipulating and independent modification of the machine.
- Removing of protection and safety devices from the machine.
- Operating of the machine without instructed or trained personal.
- Operating / maintenance by persons younger than 18 years.
- Operating of the machine without instructed or trained personel.

The manufacturer and/or supplier is not responsible for all damages, that develop from inappropriate use.

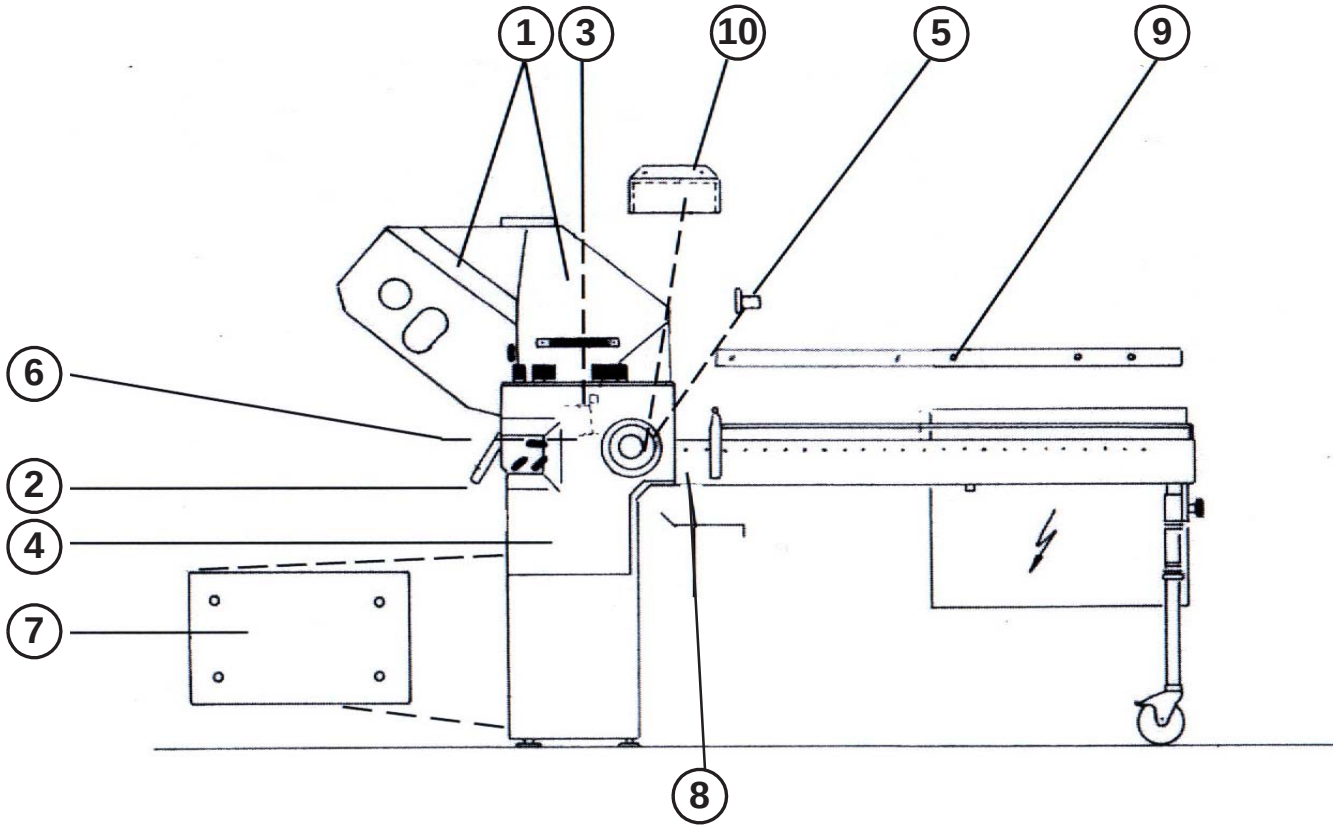
2.3 Protection guard -general plan

2.3.1 Protection guard - general plan of machine



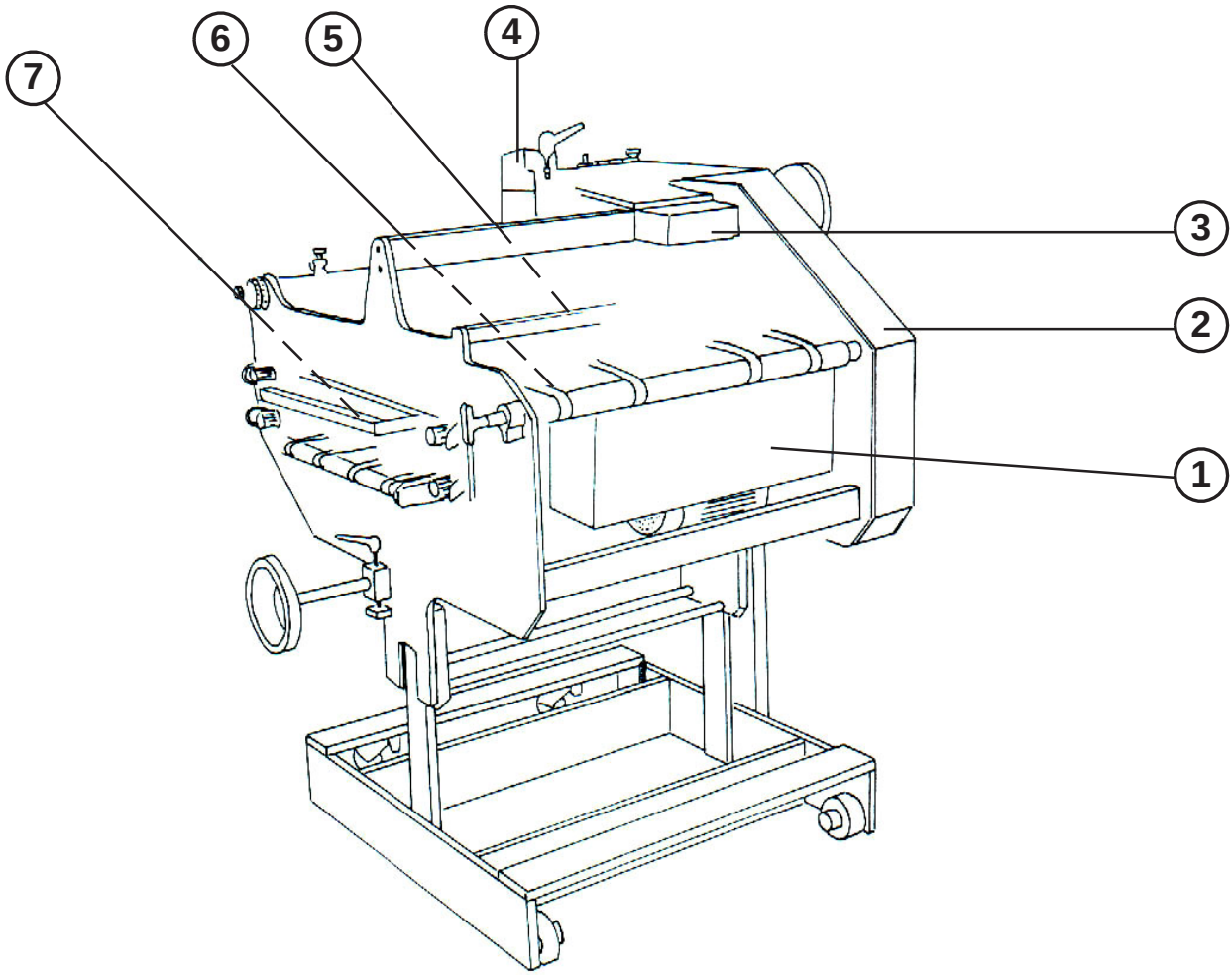
Pos.	Description	Funktion kontroll	Visual kontroll	Result	Comment
1	Protection guard parallel unit				2 Parts
2	Protection guard slitter shaft				elektr. Blocked
3	Protection fold roller				
4	Protection parallel unit				Op. and drive side
5	Guard behind handwheel				Op. and drive side
6	Infeed guard parallel unit				
7	Protection guard parallel unit				
8	Guard suction wheel drive				
9	Bottom guard parallel unit				
10	Guard handwheel shaft				
11	Protection suction wheel				
12	Protection suction wheel drive				
13	Protection driving chain				
14	Protection driving chain				
15	Protection driving chain				
16	Protection guard feeder				Op. to drive side
17	Door				
	Date:	**Name:**		**Signature:**	

2.3.2 Protection guard list 8 and 16pg unit



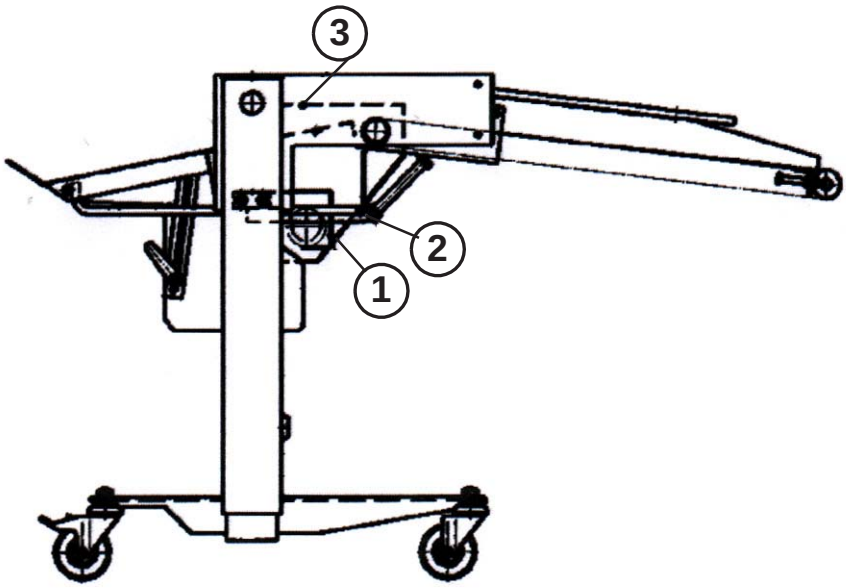
Pos.	Description	Funktion kontroll	Visual kontroll	Result	Comment
1	Protection guard parallel unit				2 Parts
2	Protection guard slitter shaft				elektr. Blocked
3	Protection fold roller				
4	Protection parallel unit				Op. and drive side
5	Guard behind handwheel				Op. and drive side
6	Infeed guard parallel unit				
7	Protection guard parallel unit				
8	Bottom guard parallel unit				
9	Protection of tape roller				
10	Protection belt tensioner				
	Date:	**Name:**		**Signature:**	

2.3.3 Protection guard list knife folding unit „X“



Pos.	Description	Funktion kontroll	Visual kontroll	Result	Comment
1	Protection fold roller				
2	Protection drive belt				
3	Protection couppling drive				2 Parts
4	Protection couppling				
5	Protection fold sward				
6	Protection fold roller adjusting				left
7	Protection fold roller adjusting				right
	Date:	**Name:**		**Signature:**	

2.3.4 Protection guard list Delivery A56



Pos.	Description	Funktion kontroll	Visual kontroll	Result	Comment
1	Protection main shaft				
2	Protection belt shaft				
3	Protection drive belt				
	Date:	**Name:**		**Signature:**	

2.4 Organisational and personnel

2.4.1 Working safety

- Preserve the operationg instructions manual permanently at the machine regarding to the operating instructions the universally valid local regulations to the accident prevention and to the environmental protection.
- Keep all safety references and dangers references at the machine in readable conditions.
- Review the safety references and dangers references occasionally.

2.4.2 Demands on the operating personnel

This table represents the jurisdictions and the different activities of person groups, which work at the machine.

	Instructed Persons	Mechanic firm	Customer service	Responsable supervisor
Transport and packing	■			■
Starting	■	■	■	
Operation	■	■	■	■
Troubleshooting mechanically	■	■	■	■
Interference removal electrically			■	
Arrange, mobilizing	■	■	■	■
Maintenance	■	■	■	■
Restoration		■	■	
Out of order, storage		■	■	

2.4.3 Qualification and training

Ensure that the operating personal was trained with the machine and that the operating manual was read. A correct operating of the machine can prevent severe injuries to the operator and third persons as well as material damages.

Attend to following references:

- Permit only trained and on manner personnel work at the machine.
- The user information must be read and understood by the operating and maintenance personnel.
- Determine clearly the responsibility of the personnel for operating, converting and maintenance.
- Let only trained personnel work at the machine under supervision of a trained person.
- Instruction must be receipt in written form.

2.5 Personal protection equuipment

⚠WARNING

Danger of sound pressure.
Negligence can cause, ear damage.
Use an erar protection for work at the folding machine.

⚠WARNING

Danger before slitter shafts.
Negligence can cause, cut injuries can emerge.
Carry protection gloves and safety shoes while maintenance work.

2.6 Tasks for Emergency

2.6.1 Rescue of persons

1 Urgent measures

Rescue the injured person.
Replace vital functions again, hold this uprightly
Avoiding further damage.

2 Emergency call

Telephone no.:..... (Register number)
Who reports?
What happened?
How many are injured?
Where happened?
Which type of injuries?
Wait for check response!

3 First aid
Further care of the injured:

Secure the accident place
Confortable and correct situation
Calming encouragement
Stable if fractures
Place bandages on open wounds.

4 Further measures

Advise/inform rescue service
Keep curious persons away.

2.6.2 Emerging substances

Concern the factory directives with its statements in the fire case. Depend on the given directions. Is this not by hand advance so:

2.6.2.1 Solvent degreasing out of hydrocarbons

- Inform superior.
- Emerging of the material: in larger quantities supply immediately for fresh air and leave the location.
- Slight spill quantities absolve with allocated binding agent.
- In case of fire extinguish only with extinguisher located to this.
- Notify immediately First helper and supervisor.
- Wash off in skin contact with much water and skin cleaner.
- By eye contact rise with much water (eye shower).
- After inhaling of softening, reach for fresh air.
- Carry unconscious persons immediately to the fresh air.

2.6.2.2 Inflammable degreasing solvents out of not water mixable hydrocarbons (ex. petroleum, test gasoline, Naphtene: Cyclohexan)

- Disengage inflammation of the material: Unit, leave dangers area and inform layer master.
- Use extinguish: Coal dioxide (CO2), foam, powder extinguisher or water as spray ray.
- Leakage: Slight spill quantities absolve with allocated binding agent.
- Gather remainder materials and refuse in containers planned for that.
- Eyes: Rise immediately with much water at least 10 minutes and search for physician.
- Skin: Rise concerned skin place with much water.
- Inhaling: Worry immediately for fresh air. Keep quietly and hold warm search for physician.
- Swallowing: Search immediately for medical help.

2.6.2.3 Cleaner with watery alkaline cleaning solution:

- Leakage: Inform superior. Spill quantities absolve with allocated binding agent. Clean slight quantities with much water.
- Accidents: Inform first helper and superior.
- Irritation of skin or eyes rise with much water.
- In swallowing of the concentrate rise mouth drink much water.
- Search for after swallowing of concentrate or continuous irritation medical help.

2.6.2.4 Cleaner BG5-9, weakly alkaline:

- Leakage: Neutralize of initiating running out of little quantities into the discharge channel.
- Eyes: Rise immediately with a lot water at least 10 minutes and search for physician.
- Skin: Rise concerned skin with a lot water.
- Inhaling: Go immediately for fresh air. Keep calm and hold warm and contact medical assistance.
- Swallowing: Immediately contact medical assistance and show label safety data sheet.

3.0 Transportation, assembly and installation

This part of the Operating Manual is directed to the service personnel and internal authorized personnel.

⚠CAUTION

Danger through heavy machines components.
Negligence can cause heavy personal injuries or extensive damages.
If the weight amounts more than 25 kg, a further person must be aid for taken of the components.

⚠WARNING

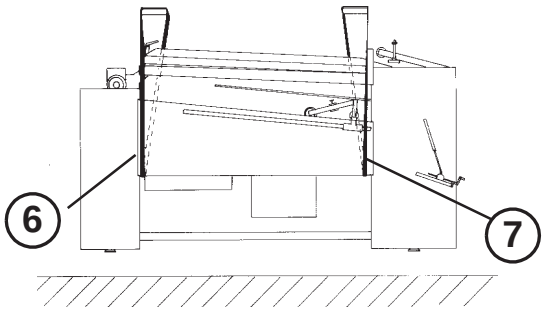
Danger before turn of component during the unloading and assembling process.
Negligence can cause heavy personal injuries or extensive damages.

- Note the weight statement for the carrier under chapter „technical data“.
- Use the forklift for transportation.
- Arrange additional personnel for unloading and setting up. Some machine groups must be additionaly secured and supported.

3.1 Transportation

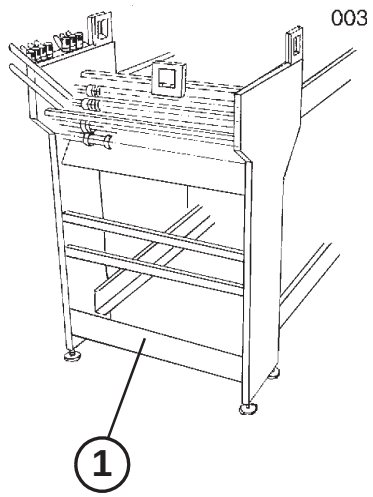
3.1.1 Feeder

The folding unit one and the continuous feeder are delivered in separate crates. Carry the pallet with a fork lift as close as possible to its final position. Unscrew continuous feeder from the pallet. You should hang tm ropes on the points **6** and **7** and lift it minimal with the use of a fork lift. Remove the pallet and set the continuous feeder to its final position.



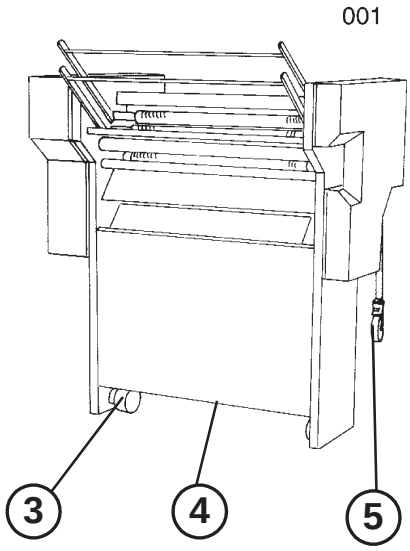
3.1.2 Parallel unit

The folding unit I, completely mounted with pile feeder, is delivered in one crate. Carry the pallet with a fork lift as close as possible to its final position. Unscrew the machine off the pallet and set the fork lift to the tiebars **1**. Remove the pallet and set the folding unit to its final position.



3.1.3 8 and 16pg unit

Make sure that machine rollers **3** and guide roller **5** will not be damaged when taking the unit of the pallet.
Unscrew the folding unit II off the pallet and set the fork lift to the tiebar **4**.
Two additional persons are also required to hold the unit. Remove the pallet and carry the unit to its final position.



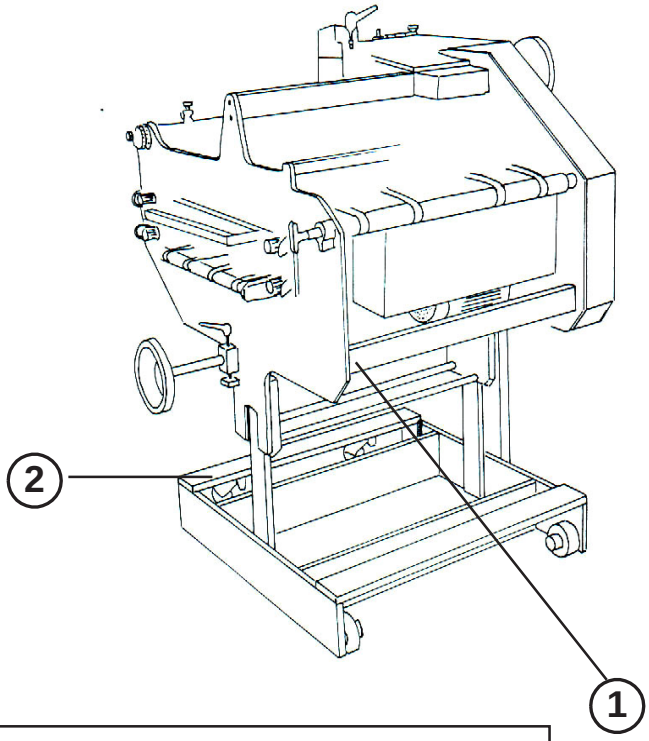
3.1.4 Mobile knife folding unit “X”

⚠WARNING

Danger before turn of component during the unloading and assembling process.
Negligence can cause heavy personal injuries or extensive damages.

- Secure the knife folding unit to prevent it from falling over or sliding! Arrange additional personnel for unloading and setting up.

Unscrew the knife folding unit “X” off the pallet, set the fork lift onto the frame **1**, and remove the pallet. Affix the four guide wheels **2** and let the knife folding unit carefully down



3.1.5 Mobile stream delivery

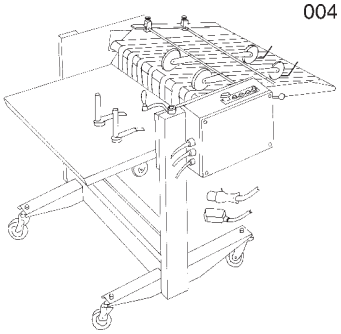
⚠WARNING

Danger before turn of component during the unloading and assembling process.
Negligence can cause heavy personal injuries or extensive damages.

- Secure the mobile stream delivery in addition with two persons off. Be careful that by dropping it is not damaging the guide rollers and machine rollers.

Unscrew the stream delivery and lift it with two additional persons off the pallet.

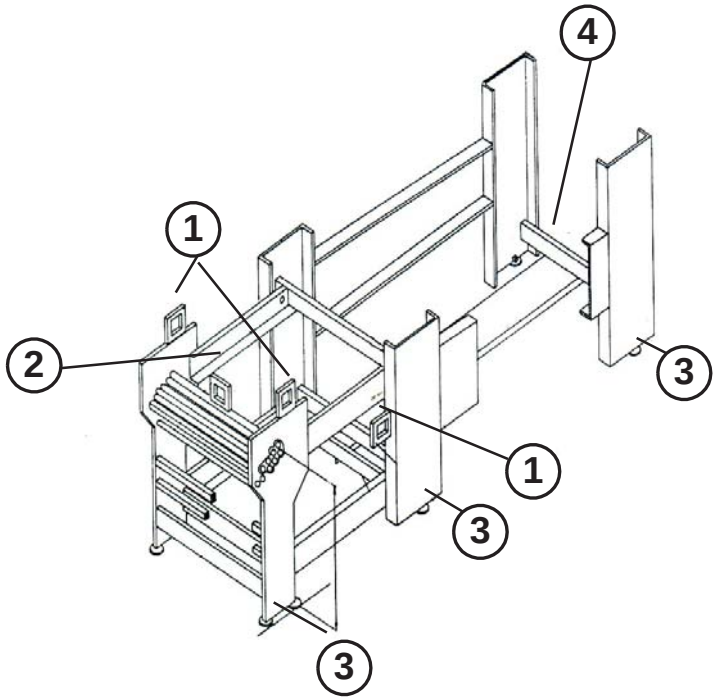
A56 004



Clean all machine parts (folding units and deliveries) with rust preventing agents!

3.2 Assembly and installation of machine

Carry the machine to its final position. Plastic feets **3** must be placed underneath the eight levelling bolts. Level out the machine by means of these levelling bolts. Alignments should be made in crossdirection on the upper, free accessible foldroller **2**.
Levelling should be made also in longitudinal direction on side frames **1** at left and right side.
Insert the buckle plates. Detach the guide rails at register table and affix slitter shafts. All these works are descriped under the following category “Operation of the Machine”.



3.3 Electrical connection

⚠DANGER

Danger of electric tension.
Negligence can cause, heavy injuries or death.
Report damaged electrical connections to respnsible supervisor.

⚠DANGER

Danger of electric tension at head clams with main switch off.
Negligence can cause, heavy injuries or death.
Work at the electronics can only be carried out of authorized persons or skilled personnel.

⚠DANGER

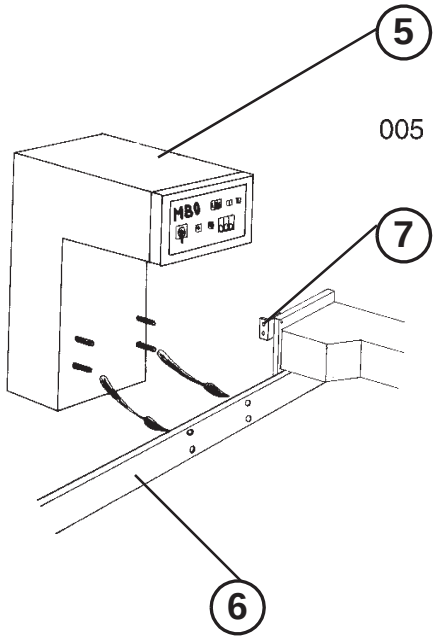
Danger of electric tension.
Negligence can cause, heavy injuries or death.

- Keep the main control cabinet and the lower distributor cabinet always locked against unauthorized persons.
- During maintenance working at the control cabinet turn off main switch and disconnect the network connector.
- Turn off and lock out system power before servicing.

3.3.1 Control cabinet

Unpack the control cabinet **5** and fasten it onto the side panel of the register table **6** as well as onto the angled backplate **7** at the feeder. Insert the plugs of the feeder and the machine into the sockets of the control cabinet. Plugs as well as sockets bear the same marking.

Connect the cable of the feeder motor, machine motor, sockets for auxiliary folding units as well as the connection cable of the compressor directly to the motor protective switch inside the main control panel according to the attached wiring diagram.



3.3.2 Main current connection

CAUTION

Make sure that power supply and frequency correspond with the data of your machine! These data should be checked with the label on the side of the control cabinet.

CAUTION

Consider **Clockwise rotating field!** After wiring has been completed the terminals must be protected with cover plates provided .

⚠DANGER

After connections have been completed check the rotating field of motors as described under item **3.3.1**. However, if one of these motors should have the wrong rotating field, change the connection of the individual motor at the terminal. Turn **OFF** the machine immediately, if direction of pile plate does not correspond with switch position **1.10** at main control panel. Otherwise the limit switch control will not function properly and switch **OFF**! This may cause serious personal injuries or extensive damage to the feeder !

Insert the cable in the base of the control cabinet and connect it with the main terminals provided according to the attached wiring diagram.

3.3.3 Stream delivery

⚠DANGER

Danger, the printed circuit board (p.c.b.) of the stream delivery is provided with 220 voltages!
Negligence can cause heavy injuries or death.
If you are working on the opened cabinet of the delivery make sure that no power is supplied or do not touch this p.c.b!

4.0 Maintenance

This part of the Operating Manual is directed to the competent service personnel and internal authorized personnel.

⚠WARNING

Danger through maintenance tool.
Negligence can cause heavy personal injuries or extensive damages.

- Use only tools in good working condition.
- Pay attention that after adjustment or maintenance working at the machine, all tools are removed.

Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.

- Safety switches at the protection and noise hoods can not be manipulated or modified.
- Never carry out foldroller settings while machine is still running.
- Even manual foldroller setting by the handwheel.

⚠DANGER

Danger of running machine parts during the installation work.
Negligence can cause heavy personal injuries or extensive damages.

- Allow service and cleaning works only to be carryed.
- Turn off the machine during maintenance and restoration work by the main switch.
- Neutralize the electrical cabinet against unintentional switch on.
- Check before turning on, that no further person is at the machine.

⚠WARNING

Danger of slitter shafts.
Negligence can cause cut injuries.

- During maintenance work at the slitter shafts, the use of protection gloves and safteyshoes is required.
- Do not hold the slitter shafts by the tool but always at the shaft.

4.1 Tensioning or exchange of belts/tapes

NOTICE

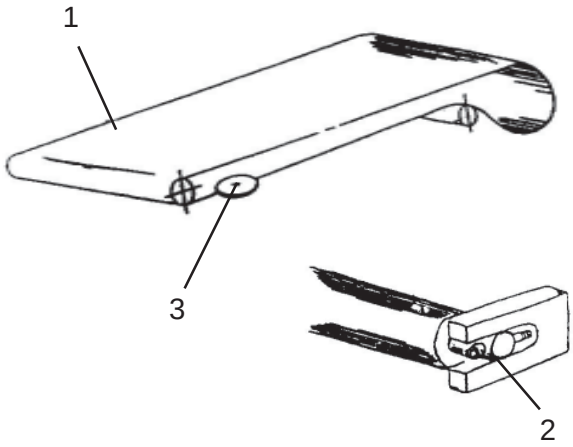
The tension of drive belts, and especially for foldrollers and slitter shaft drives should be checked periodically, i.e. monthly. The drive belts must be tensioned to such an extent that the foldrollers cannot manually be held if the machine is turned by handwheel.

⚠WARNING

Danger before running belt-drive.
Negligence can cause, bruise emerges at the hands.
This work should be carried out by one person only !

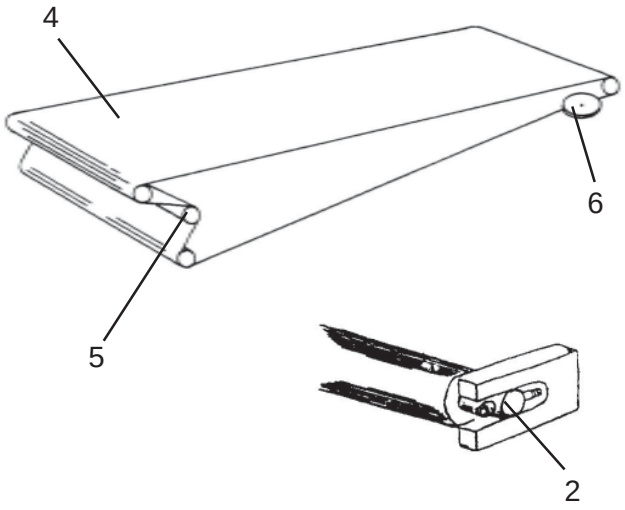
4.1.1 Upper feeder transport tape

For an undisturbed transport, the upper transport tape (1) must be strained tightly. Re-strain the tape if required: Turn both screws (2).
The adjustment must be undertaken on both sides equal.
The tape will be led by disks (3)



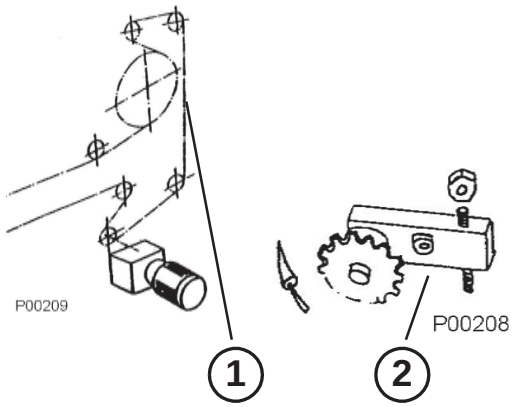
4.1.2 Lower feeder transport tape

For an undisturbed transport, the upper transport tape (1) must be strained tightly. Re-strain the tape if required: Turn both screws (2). The adjustment must be undertaken on both sides equal. The tape will be led by disks (3).



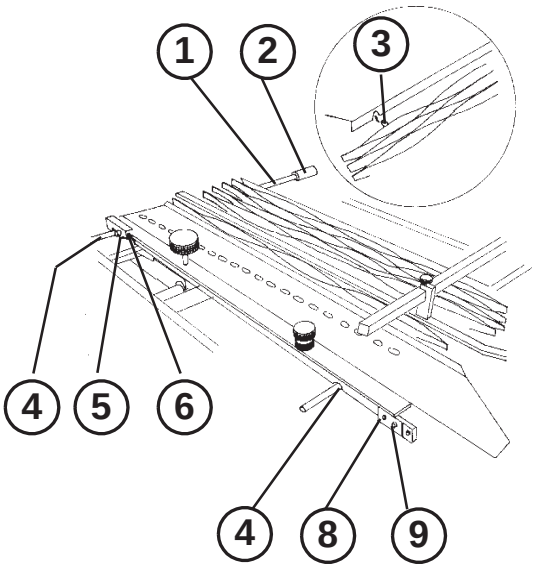
4.1.3 Feeder chain

Test the feeder chain occasionally for its tension and re-strain if necessary.
Strain the drive chain (2) with the chain tensioner (1).



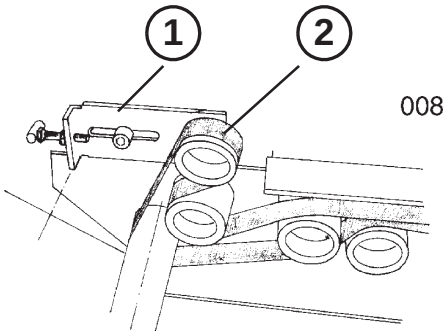
4.1.4 Alignment tape at register table

Loosen screw **5** and **6** release tension of tape. For threading/rethreading unhinge the lattice-type alignment table at pos. **3**.
Loosen screw **2**, push back the rod **1** in direction of drive side, remove tape from the rollers and rethread at pos. **4**. Install new tape in the opposite sequence and tension it through
screw **6**.
Adjustment for centre running of tape occurs through screw **8**.
For this purpose loosen the screw **9** (screw **8** and **9** are located at the internal side) and fasten it again after completion. Thereafter, check again and, if necessary, make necessary corrections.



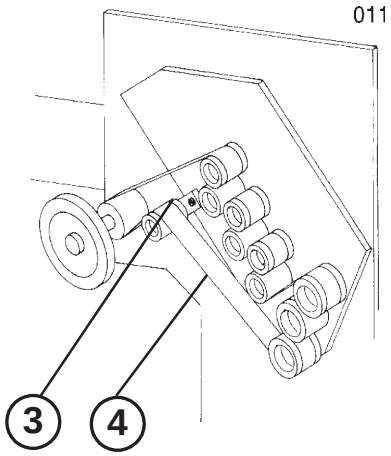
4.1.5 Drive belt for suction wheel

The drive belt **2** is tensioned by means of tensioning lever **1**.



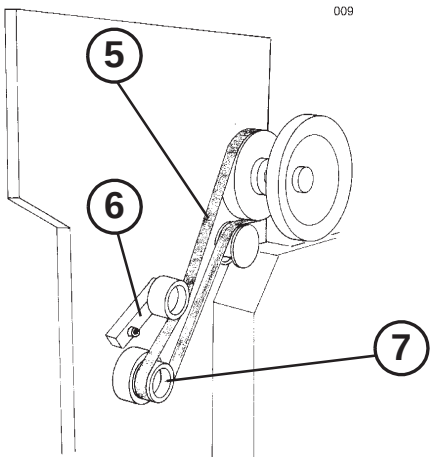
4.1.6 Drive belt for foldrollers and slitter shaft at parallel unit

The drive belt **4** is tensioned by means of tensioning lever **3**.



4.1.7 Main drive of parallel unit

The poly-V-belt **5** coming from the main drive shaft **7** to the parallel unit is tensioned by means of tensioning lever **6**.



4.1.8 Drive belt for foldrollers at parallel unit and slitter shafts at subsequent unit

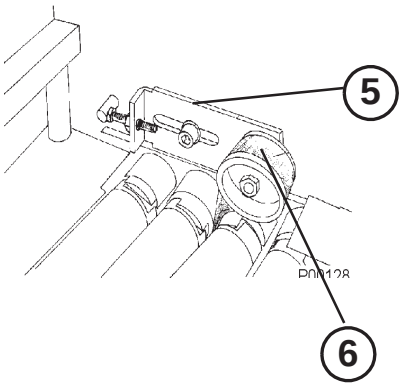
See item **4.1.3** page **49.**

4.1.9 Drive belt at register table of following folding unit

⚠WARNING

Danger befor running belt drive.
Danger of injuries to fingers.
This work should be carried out by one person only !

The drive belt **6** should be tensioned by means of tape tensioner **5**.

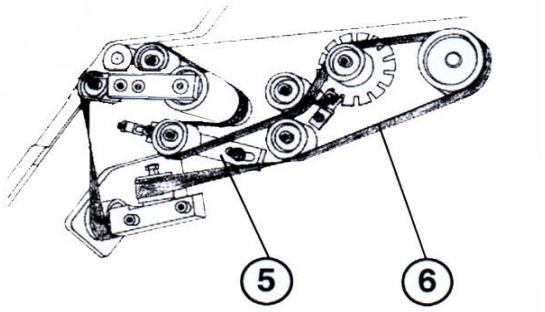


CAUTION

Danger, overstretching of the drive belt.
Negligence can cause material damage.
Let the folding unit run by turning the hand wheel. At the same time the cross rollers must be easy to stop with the other hand.

4.1.10 Drive belt for foldrollers and slitter shafts of knife folding unit “X”

The drive belt **5** is tensioned by means of tensioning lever **6**.

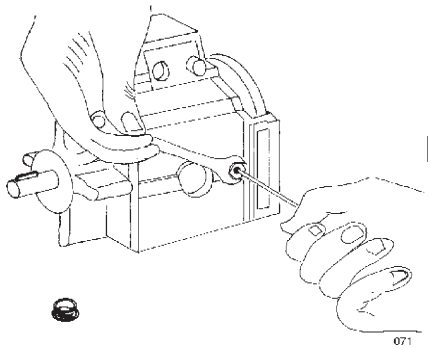


NOTICE

All tapes and belts should be correctly tensioned as described under item **4.1.**

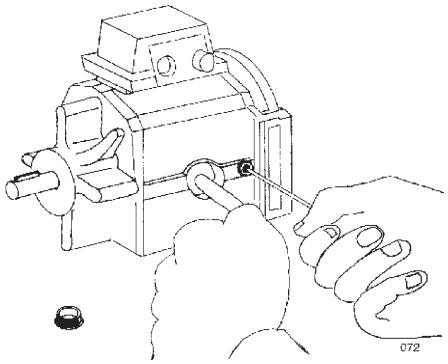
4.1.11 Setting of air gap for knife coupling of knife folding unit “X”

The nominal air gap can be set easily and without any difficulties through two setting screws. It is not necessary to dismantle the COMBIBOX. All you need is a hexagon key, a C-wrench as well as a feeler gauge to check the nominal air gap.



Setting instruction 4.5

1. Remove both access plugs.
2. Loosen both counter nuts.
3. Insert feeler gauge at both sides between rotor and armature and turn in the locking screws to such an extent that you reach the nominal air gap of 0.15 - 0.20 mm. Check if gap is equal at both sides.
4. Retension counter nuts whereby the locking screws should not change the position previously set.
5. Mount both access plugs.



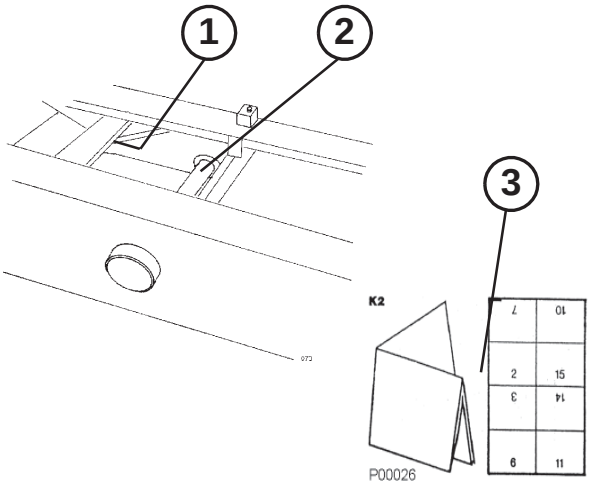
4.2 Lubrication / Cleaning

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.

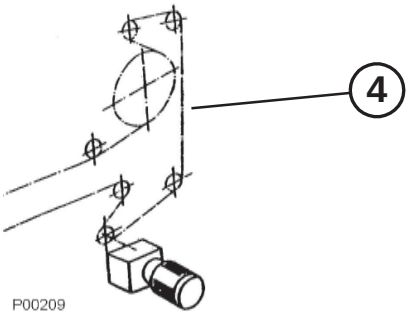
4.2.1 Main machine including register table

Clean dust off guide shaft **2** for change of sheet size at register table as well as drive shaft **1** and supply a slight touch of oil.
Safety handwheels should also occasionally be relubricated at nipples **3**.



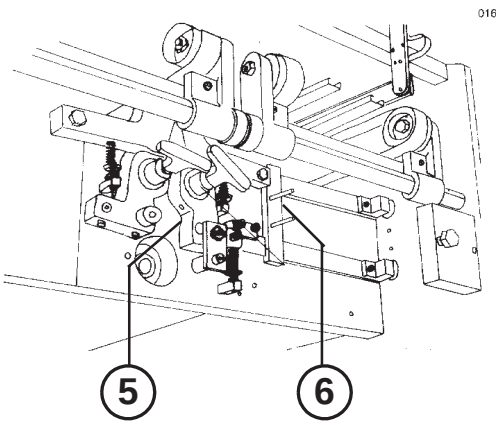
4.2.2 Continuous feeder R

Clean drive chain **4** grease slightly.



4.2.3 Guides of pressure bars / Bearings of foldrollers

Supply a slight touch of oil to all pressure bars of foldrollers and slitter shafts in all folding units **6** as well as between the machine panel and bearing levers **5**, monthly (also parallel unit).

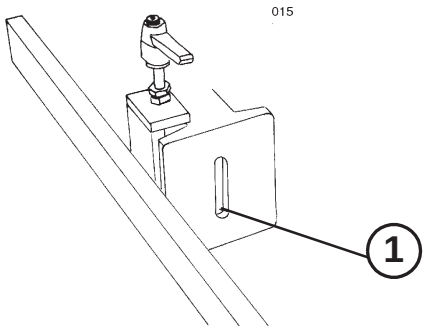


4.2.4 Coupling of knife folding unit “X”

Provide a slight touch of oil to all knife guides with ball-type nipple, monthly.

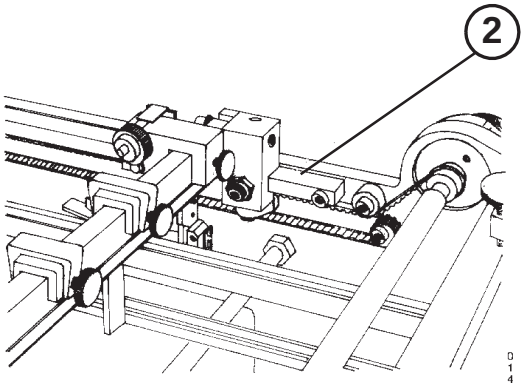
NOTICE

Just use a few drops of oil because too much lubricant may drop onto the sheets through the knife guide!



4.2.5 Guide rails / sheet stop (knife folding unit “X”)

Clean dust off the guide rails of the sheet stop **2** from to ensure perfect condition of stop guides.



4.2.6 Cleaning of foldrollers

⚠WARNING

Danger before wrong use of cleansing agents.
Negligence can cause health defects.

- Avoid skin contact.
- Protect yourself against splashes in the eyes.
- Use for cleansing protection gloves.
- Inform yourself through the cleaner manufacturer about remaining dangers and compatibility for human skin.

⚠WARNING

Danger before running machine elements.
Negligence can cause bruise at the hands.

Fold rollers should be cleaned only if the machine is not in motion! Push the Emergency Stop button and/or turn **OFF** main switch. Ensure that the machine cannot be re-started!

⚠CAUTION

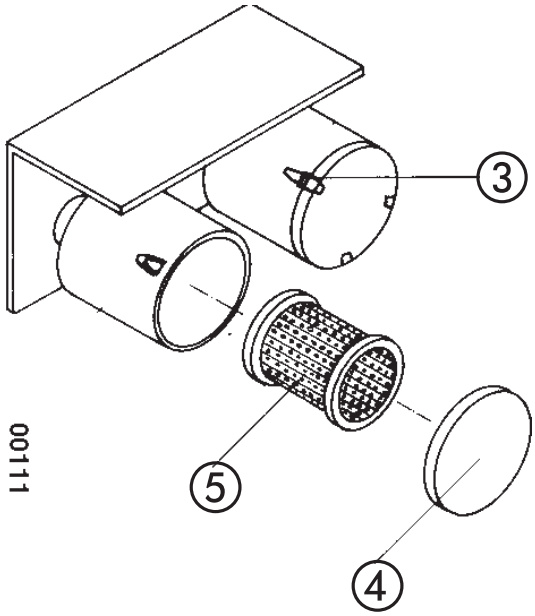
Danger before used cleaning rags.
Negligence can cause health defects.

- Note the fire dangers through the flammability of the cleaner.
- Detoxifythe cleaning rags.
- Inform yourself at the cleaner manufacturer about remaining dangers as well as over the correct disposal.

Depending on the extent of ink build-up, the foldrollers must be cleaned from time to time. The affect of printing powder or ink build-up on the foldrollers may decrease the quality of the folding. The rollers must be cleaned with a cleansing agent suitable for the synthetic material. Please contact your machine supplier. Improper cleaner may cause decomposure or swelling of the foldroller coating.
MBO - the manufacturer of this folding machine recommends a cleaning material for the foldrollers made by VARN, bearing the no. VARN -Wash VM 111 or VWM. Our recommendation is on a label near the foldrollers.
The VARN company is a worldwide supplier for the printing industry. Therefore, it cannot be excluded that in certain other countries different indications are used. Please take the individual order no. from the technical data sheets of VARN.

4.2.7 Compressor

Essential maintenance:
To ensure full efficiency, however, the Filter cartridge at suction side should be checked and cleaned occasionally. The Filtre cartridge must be cleaned every **50 HOURS OF OPERATION** (see page **58**) and be exchanged every 3.000 hours of operation, according to manufacturers statement. Dirty or damaged cartridges must be replaced immediately. Do not remove the filter cartridge with the compressor running, otherwise penetration of foreign substances may damage the compressor. Make sure that compressor is turned **OFF** during maintenance work.



Exchange of admission filter:
Turn the compressor switch OFF and / or the main supply OFF. Make sure that no other person can turn ON the pump.
Open the clips **3**, remove the guard **4** and the cartridge **5**. Clean the cartridge (blow throught inside to outside) and replace it if it is necessary.

Replacement occures every 6 mounth.

5.0 Operation of the machine

In addition to the numbers the operating sequences to operate the machine are marked with B.

⚠DANGER

Danger of running machines part.
Negligence can cause, heavy injuries or death.

- Keep hairs always together bandage and protected.
- Take by operation and maintenance working at the machine your jewellery off.
- Carry during operation or maintenance on the machine only adjoining garment.

⚠WARNING

Danger of sound pressure.
Negligence can cause, ear damage can emerge.
Use an ear protection for work at the folding machine.

⚠DANGER

Danger of running machines part.
Negligence can cause, heavy injuries or death.
In sudden stop of the machine, review before turning on:

- That no further person is at the machine.
- That the machine is in a flawless condition.

⚠WARNING

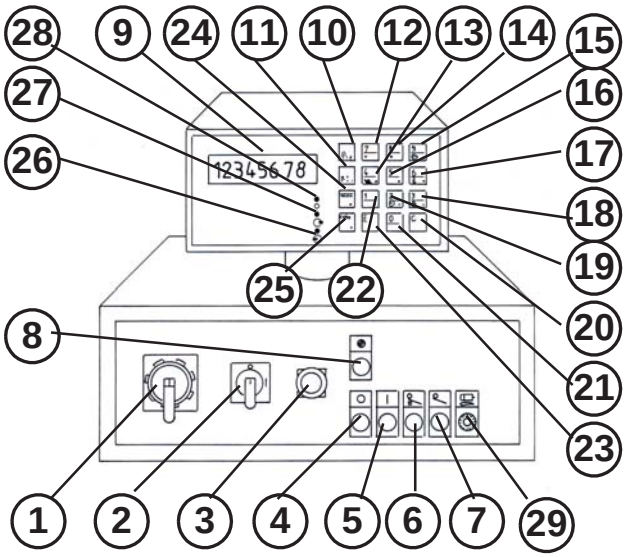
Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.

- Never carry out foldroller settings while machine is still running.
- Even manual foldroller setting by the handwheel.

B 1.0 Main control panel

NOTICE

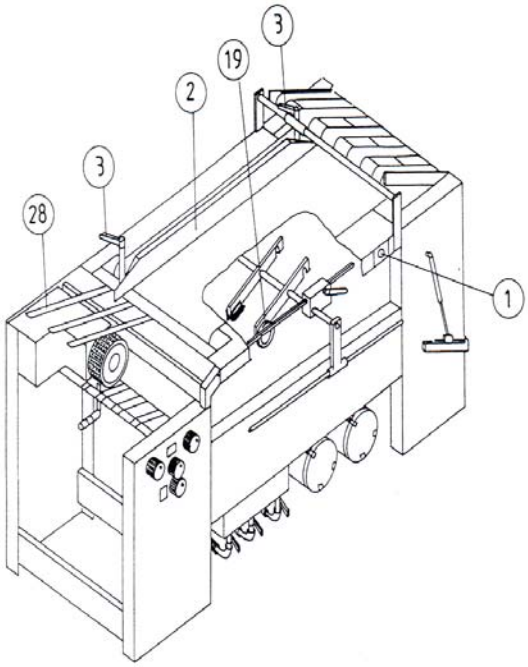
For more information see separated operating manual “MS - Control”.



1.1 MAIN SWITCH
1.2 Turn ON/OFF switch for compressor
1.3 EMERGENCY-STOP button
1.4 Red button for machine STOP
1.5 Black button for machine START
1.6 White button for SHEET INFEED
1.7 White button for SINGLE SHEET INFEED
1.8 Green indicator light for MACHINE RELEASE
1.9 8- digit display
1.10 Button suction length
1.11 Button suction gap
1.12 Button with double function 7 / +
1.13 Button with multliple function 4/ speed up delievery/ Kicker/ marking device
1.14 Button with double function 8 / -
1.15 Button with double function 9 / speed indication
1.16 Button with double function 5 / interruption suction wheel
1.17 Button with double function 6 / current productions speed / hrs
1.18 Button with double function 3 / total counter at infeed
1.19 Button with double function 2 / total counter at exit
1.20 Button Clear (delete)
1.21 Button 0
1.22 Button 1
1.23 Button Enter (confirm)
1.24 Button Batch preselection
1.25 Button Code
1.26 Diagnosis LED photocell at exit B 43 (Option)
1.27 Diagnosis LED photocell at suction wheel B 2
1.28 Diagnosis LED slot initiator B 1
1.29 Potentiometer for electronical speed regulation

B 2.0 Continuous feeder C

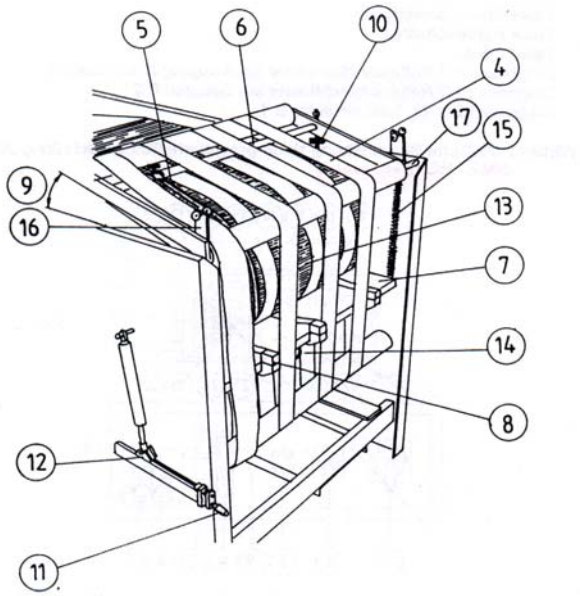
2.1 Generally settings



For pile transportation use the blue push button **1.6** (see page 30) at main control panel or the blue push button on the feeder **1**. Use the locking handle **3** to adjust lateral sheet guide **2**,. set to 112 of sheet width. (Lateral sheet guide can be used on either left or right side, if you want to load the feeder at drive side!). The tapes **4** have to be set in accordance with the sheet size.
If large sheets have to be processed use the four tapes, for smaller sheets use less tapes.
The outer tapes should be positioned approximately 2 cm away from the sheet edge by means of setting element **14**. The tape in the middle should be centred.

NOTICE

After setting the tapes of the feeder let it run some turns. This will provide a better setting of the tapes.



To be able to transport sheets around the drum without damaged edges Teflon tapes **5** should be affixed onto the sides of the bar **6** and placed around the drum down to the lower table **7**. As a transition between the chains and the lower table, affix three spring steel tapes **8** on the lower table. The angularity **9** between the upper table and the tapes may be changed by means of the knurled nut **10**.

NOTICE

The angularity should be adjusted on the left and right side at the same time. With a too plane angle the sheet edges may be damaged.

To adjust the pressure of the. tape **4** use the staring crank **11** for the setting element **12** (clockwise = more tension on the tapes, anti-clockwise = less tension on the tapes). The sheets should be guided which means pressure around the drum **13** if gapping occurs on the lower table **7** (sometimes on very smooth sheets) the pressure should be reduced, which causes a minor 'loop formation' of the sheets underneath the drum. When using heavy sheets the pressure must be reduced.

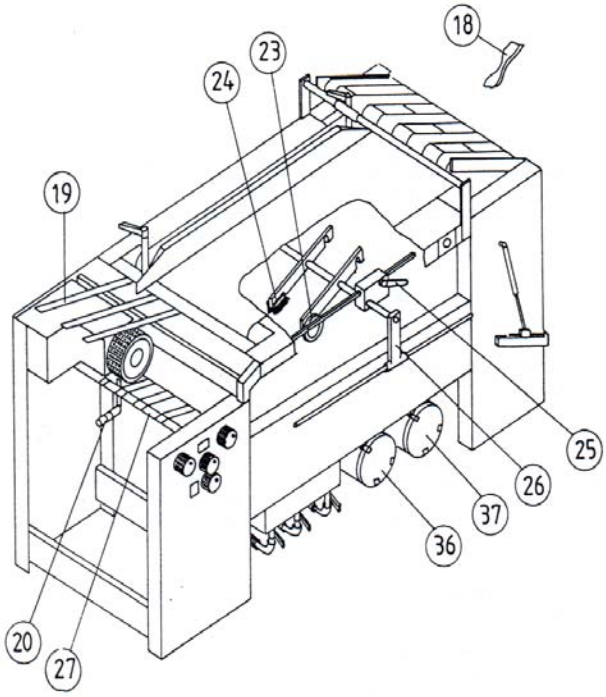
The small lower table **7** is mobile. It is adjusted by means of the two feelers tongue **15**. The feeler tongue is hanged with a holder **16**, which has two rust points, at a shaft **17**. The adjustment of the feeler tongue may be bigger or smaller according to the height and format of the pile.

Lower position	more prestressirig
Upper position	less prestressing

NOTICE

A slightly tension should be adjusted.

Load and fan out the sheets on the upper table; the entire table may be loaded and streamed with wooden paddle **18** . By detaching stainless steel rods **19** you achieve and additional extension of the upper table.

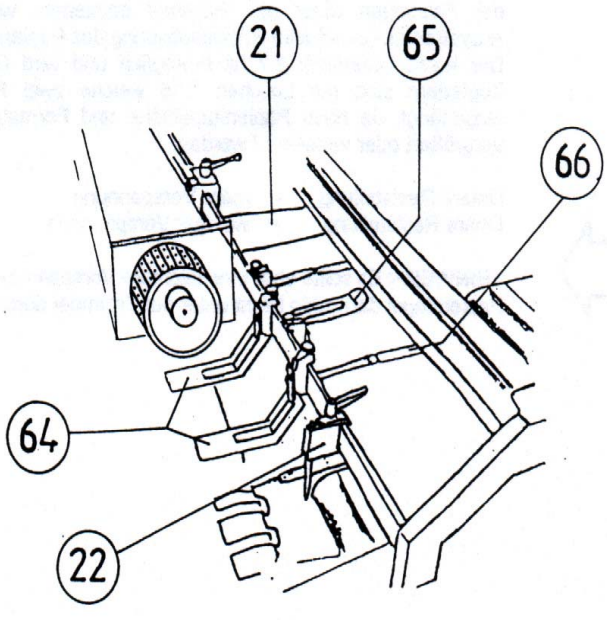


The sheets which are transported on the lower table are controlled through a feeler tongue **20** which is placed underneath the suction wheel. In order to obtain an exact position of the sheet it is necessary to install a guide plate **21** at drive side and the guide pin **22** at operator side.

NOTICE

Both guide elements shouldn't be too tight to the sheets or otherwise it may lead to a jam-up.

At the end of the shingled sheets soft rubber rollers **23** as well as a brush **24** should be placed on top of the first 2-5 sheets to achieve a safe sheet separation. The rollers **23** may be adjusted therefore loosen the adjustment ring **25** with the knurled screw on the desired sheet length. The sheet length may be read-off on a scale **26**.



2.2 Air support

Air pressure and vacuum are supplied by a compressor, which can be turn ON/OFF through switch **1.2** (see page **30**) at main control panel. Carefully read the technical data sheet or maintenance data which are attached to this Operating Manual.

NOTICE

It is extremely important to clean both filter cartridges **36** and **37** (see item **4.2** page **29**)!

2.3 Transportation system - ventilation

The sheet transportation is controlled by the feeler tongue **20** and a inductive switch **38**. If no sheets are at the tongue and if the end of this tongue **39** is placed at the inductive switch **38** the feeder will run approximately 2,0 m/min in rapid speed, if sheet infeed **6** is activated. If the feeler tongue **42** leaves the sensor **38**, caused by the sheets arrive], the speed will reduce to ca. 0,3 m/min The sheet transportation will stop if the distance between the end of the feeler tongue and the sensor **43** is approximately 8 mm.

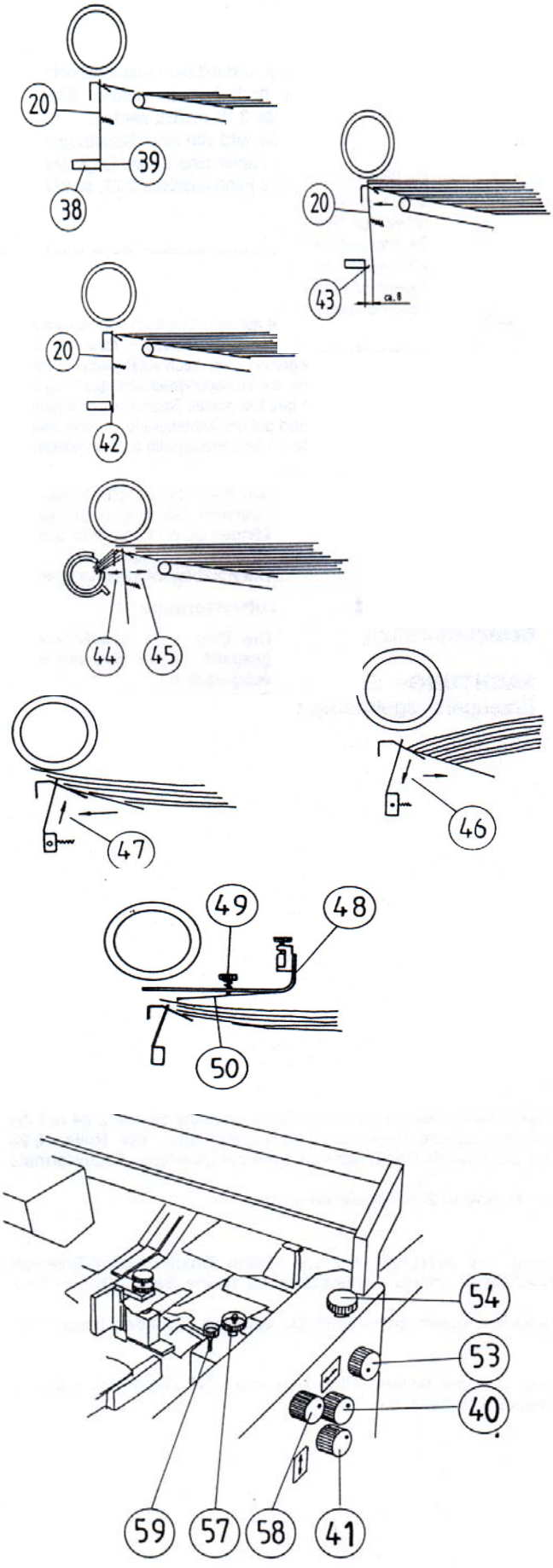
The feeler tongue **20** may be adjusted through two buttons at feeder operator side in a horizontal **40** and vertical **41** position.

Button **40** sets the tongue forwards and backwards. Button **41** sets the tongue upwards and downwards.

Tongue **20** should be moved forwards if sheets need to be more ventilated **44** but if a few sheets should be ventilated **45**, move the tongue **20** backwards.
If the sheets tend to roll down you should set the tongue downwards **46**. If sheets tend to roll up then you should set the tongue upwards **47**.

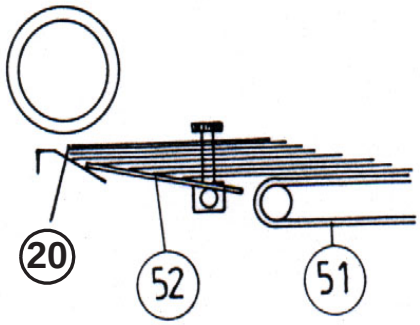
If the sheets tend to roll up you may affix and additional smoother bar **48** beside the suction Meet onto the tie-bar. The plate spring **50** with the knurled screw **49** enables you to smooth sheets which tend to push upwards.

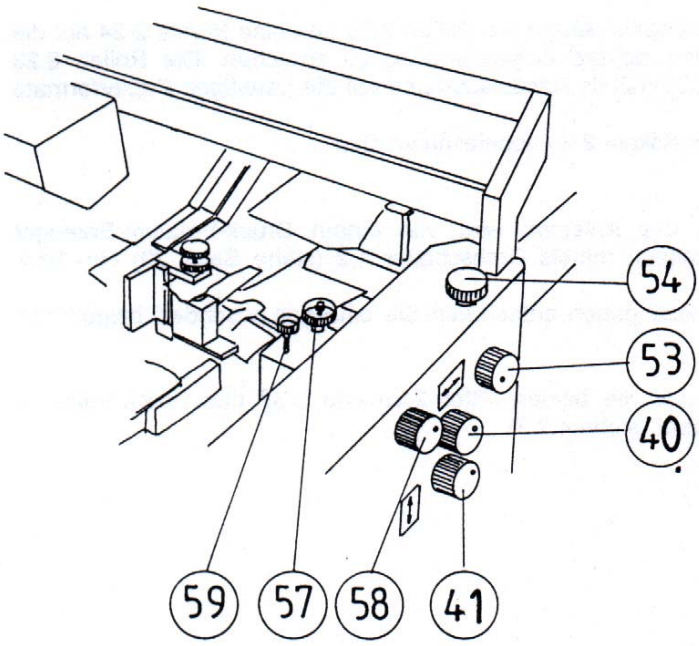
Between the lower transportation tape **51** and the feeler tongue **20** rests an infeed plate **52**



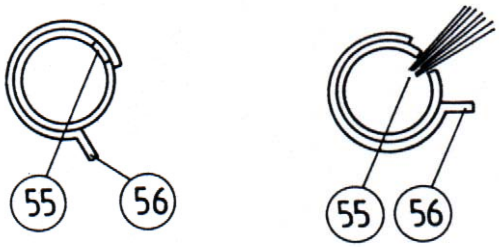
Between the lower transportation tape **51** and the feeler tongue **20** rests an infeed plate **52** which may be adjusted through a knurled grip **53** after loosen the knurled screw **54** upwards and downwards.

Set the plate upwards if sheets tend to roll down.
Set the plate downwards if sheets tend to roll up.

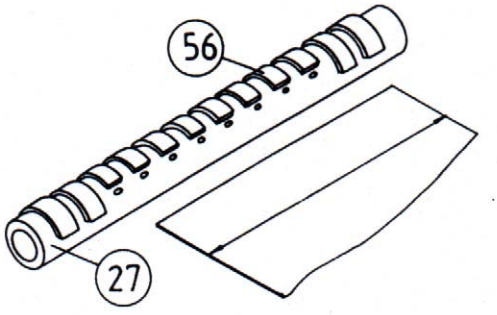




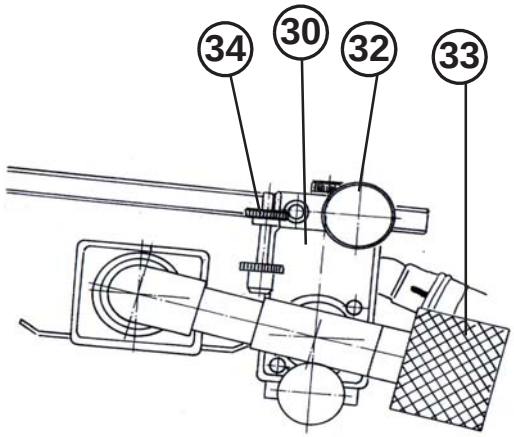
The air tube **27** is located underneath the suction wheel. It contains air discharge holes **55** along its Mole length. These discharge holes may be opened or closed through slide clips **56**. These clips should be opened in accordance to the sheet width, the remaining clips should be closed. In order to achieve more air blast at the side blower it is advisable to open every send clip only. However, the clips in the centre of the air tube underneath the suction wheel should be opened continuously.



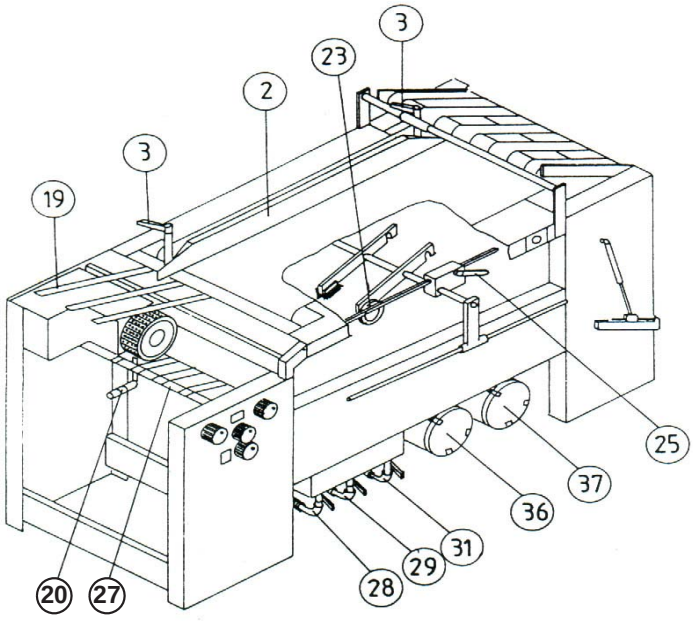
The air tube is height adjustable through knurled nut **57**. On the knurled grip **58** the air tube may also be turned after loosen the knurled screw **59**.



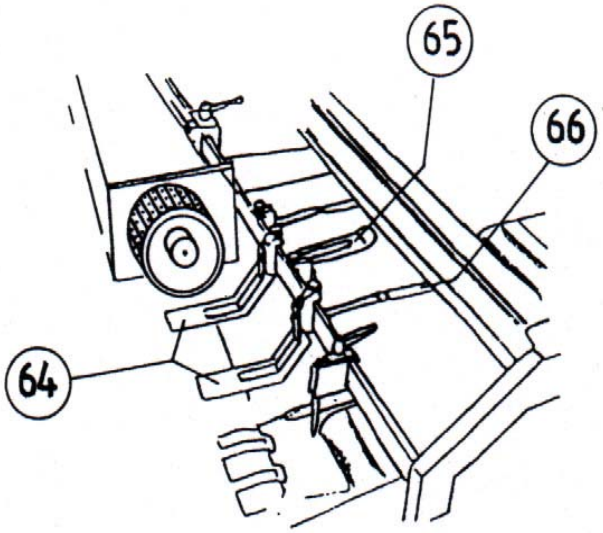
The air blast of the air tube **27** may be regulated through the chokes **28** and **29**. In order to achieve an exact sheet separation it is necessary that the first 10-15 top sheets of the shingled pile are properly ventilated.



In addition to the air tube **27** a side blower **30** may be used. The air support may be regulated through the chokes **31**. This side blower may be adjusted in the longitudinal as well as in the transversal direction of the feeder through the element **32**. The balance of the blower should be adjusted through the weight **33** to such an extent that the blower is slightly touching the sheet. A dip of the blower may be avoided after adjusting the knurled screw **34**. This will be achieved a even ventilation.



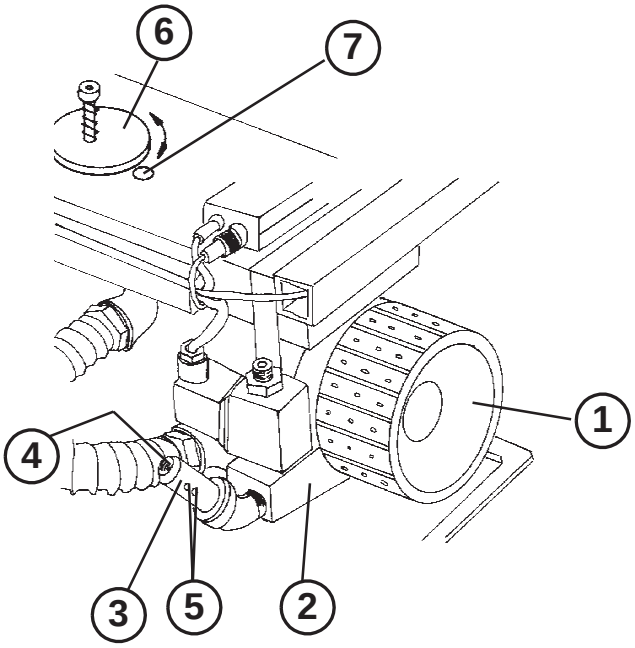
For a controlled move of the sheets to the alignment table smoother use bars **65** and two spring steel smoothers **66** beyond the air tube and smoother bar **64** into the direction of the feeder are used. These bars also creates a suction effect for better sheet control.



Air filter for vacuum **36**
Air filter for air blast **37**

2.4 Suction wheel

The suction wheel **1** which transports the sheets onto the alignment table enables you to change the point of suction . Generally, the point of suction should be at the lowest position of the suction wheel, for which the adjustment lever **2** must be in a vertical position. However, should the suction point be moved forward (if sheets are curled at front) move the lever into the upwards direction. Should, however, the point of suction be moved to the rear (if sheets are curled up) move the lever into the downwards direction. When processing sensitive papers and double sheets are supported frequently you may decrease the vacuum at suction wheel.
Near the suction wheel you can find a handle **3**. The handle **3** has got a screw **4** and two air holes **5**.The screw **4** has been completely screwed-in by manufacturer and the holes are closed. Partial unscrewing of this screw will cause the opening of one or both of these holes. You can open the air hole **7** by turning the disc **6**. The opening of the air holes will than cause a decrease of vacuum at suction wheel.

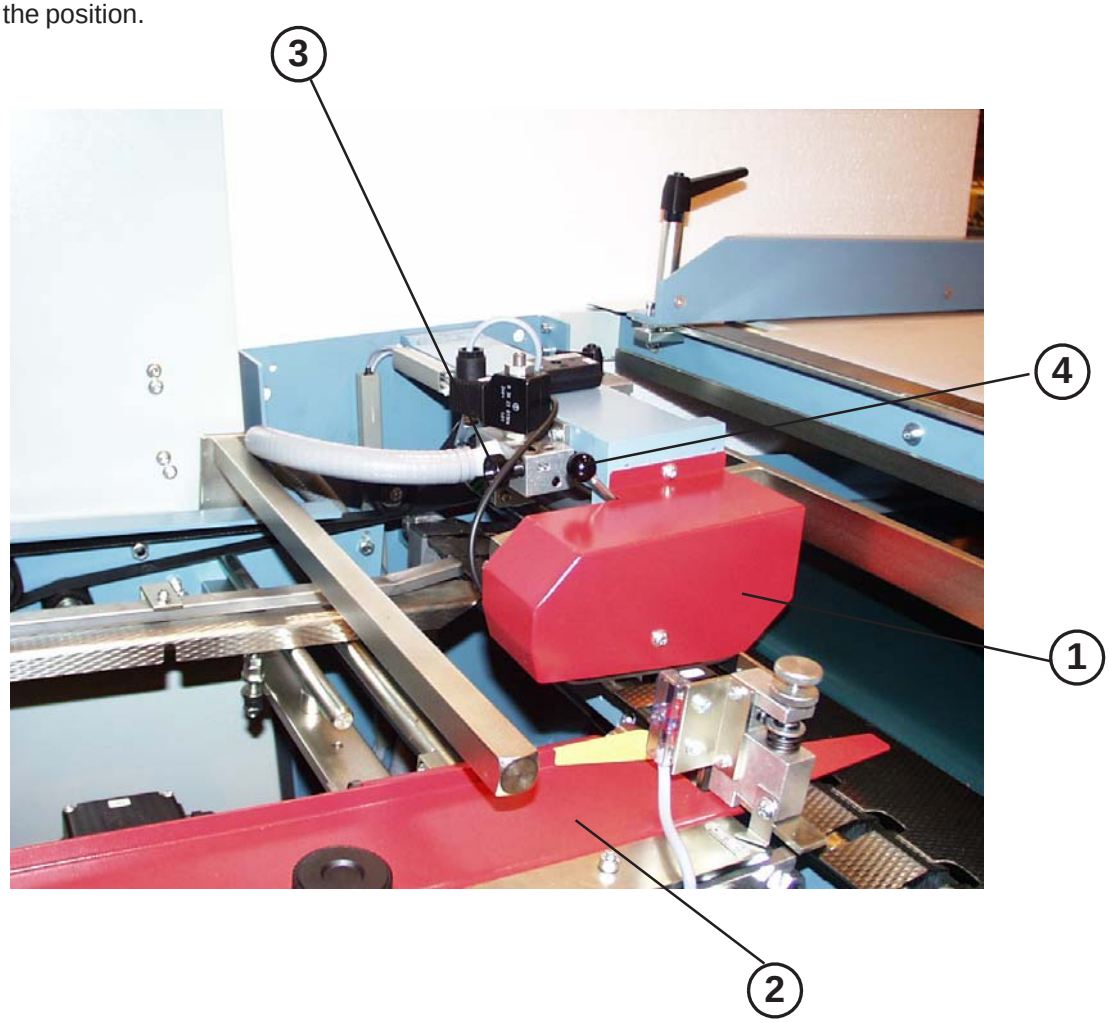


With all holes closed	maximum quantity of vacuum
With some holes open	medium quantity of vacuum
With all holes open	minimum quantity of vacuum

2.5 Vacu-Infeed (Option)

The Vacu-Infeed **1** transports the sheets onto the register table **2**. The power of vacuum for various types of paper can be adjusted through the red screw **3**, use scale **+/-**

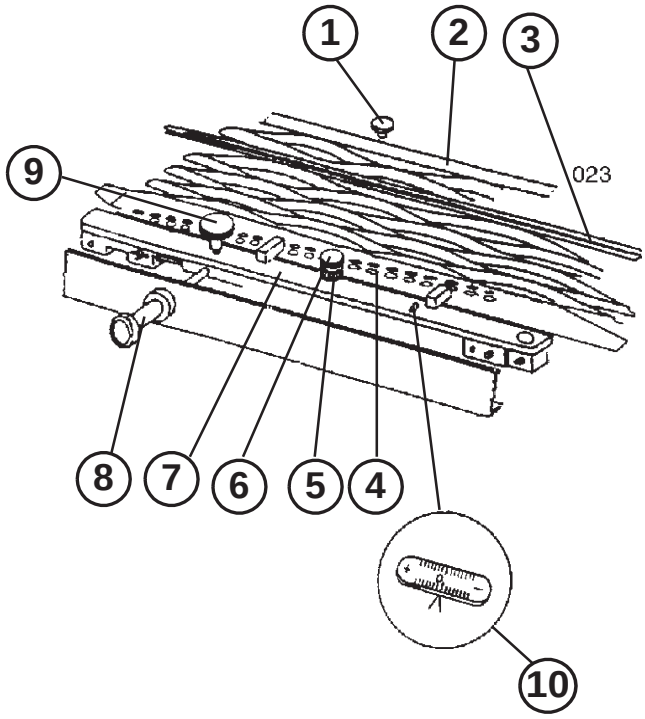
Depending on the sheets tendency to roll the point of suction can be set forward or backward through lever **4**. The red markings **5** indicate the position.

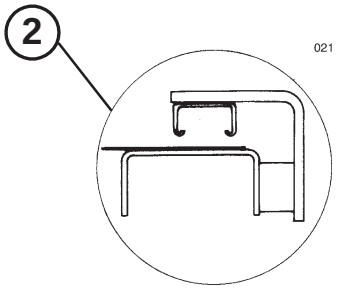


B 3.0 Register table with ball rail, double sheet control, sheet infeed control

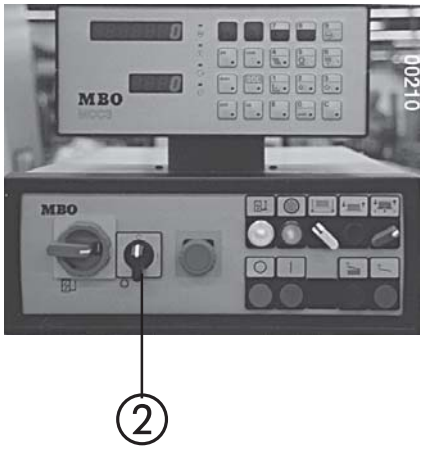
3.1 Ball rail

Loosen the knurled grip **9** to set the sidelay **7** to the appropriate size (1/2 of sheet width). Fine adjustments can be made through knurled grip **8**.
Opposite to the sidelay on the alignment table is the outer edge sheet guide consisting of a rail and guide plate **2** This should be adjusted with the knurled grip **1** so as to control the outside edge of the transported sheet.
Depending on the sheet width you may add additional smoother bars **3**.
The angle of the sidelay to the foldrollers may be adjusted through the knurled screw **6** and the excenter **5**.
Please note the setting indication by the double sheet detector **10**.
Depending on the quality of sheets, fill the ball rail **4** (light sheets=light/plastic balls, heavy sheets=heavy/steel balls, or a combination of plastic and steel balls). However, if you process oblong or eventually heavy sheets place the balls into two rows. In both cases, the first three holes of both rows must be fitted with steel balls to ensure a proper drive of the sheets from the suction wheel.





3.1.1 Vacu-Alignment (Option)



The Vacu-Alignment **1** has
a separate vacuum pump **3**.

ON/OFF position also occurs
through switch **2**.

Heavy or thick paper require more vacuum than light or thin paper.
The setting occurs at twist-grip **4**, scale **+/-**

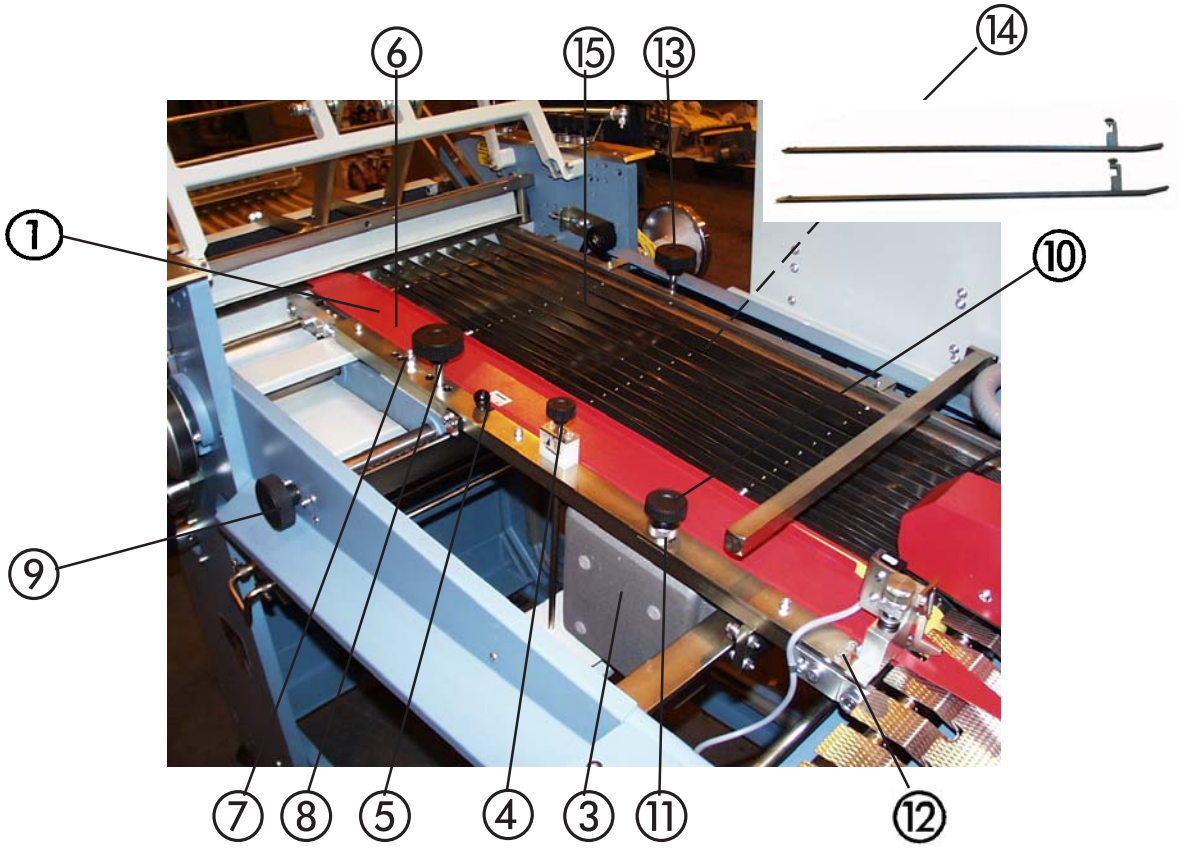
With ball knob **5** scale +/- the vacuum can be adjusted in the infeed area **6**.

Set the sidelay **7** through knurled grip **8** to ½ of sheet width at mm-scale.
The fine adjustment occurs through knurled grip **9**.

Angle to the foldrollers: loosen knurled screw **10**.
Settings to be made at excenter **11**, reading-off at scale **12**, **+/-**.

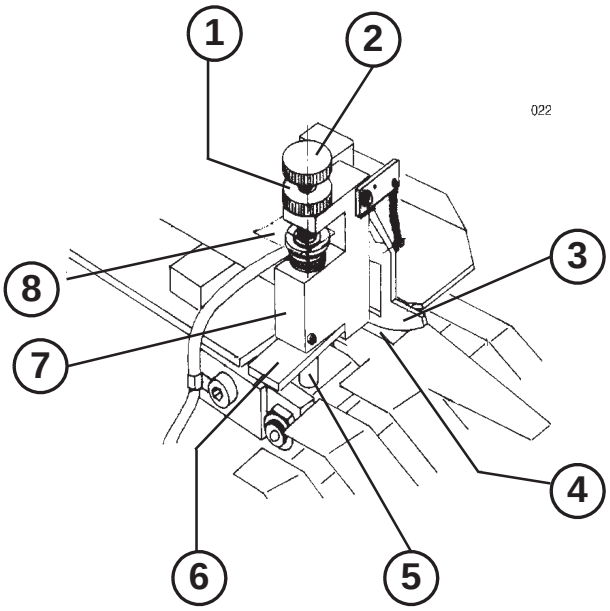
Set the guide plate with the rail **13** above it to such an extend that the paper edge runs between it.

The quantity of smoother bars **14** above the lattice fence **15** depend on the sheet width.



3.2 Double sheet control

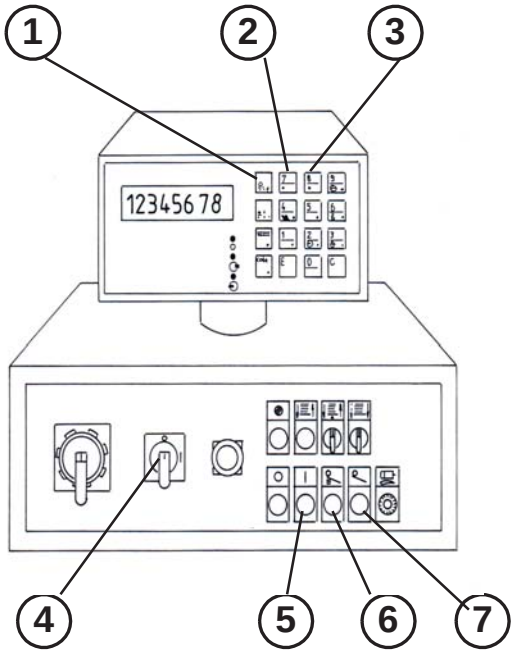
The double sheet control **7** operates electro-mechanically. To obtain setting press the lever **6** then insert a strip of paper between the pins and knurled screw **2**. Check by running the machine the distance between the transport roller **4** and the adjusting segment **3**.
If you twist the knurled screw **2** counter-clockwise the adjusting segment will move towards the transportation roller. In order to bring certain paper differences under control you may, depending on the paper weight, move the double sheet control upwards by twist the knurled screw approx. 1/4 clockwise.
If you check with two (double) sheets of paper the double sheet control must interrupt the sheet infeed, however, the machine will continue to run. If you check with a single sheet the machine run must continue and the sheet infeed must remain in ON position.
Tighten the knurled screw **2** after adjustment of double sheet control has been completed. Recheck your settings and, if necessary, readjust!



3.3 Sheet infeed

Automatic calibration of sheet gap and suction length

Start machine by pushing black button **5**, switch air pump **4** on.
Keep pressing soft touch button suction length **1** and press single sheet button **7**.
A single sheet will enter with a base suction length (machine specific). The suction length from the single sheet will be measured by the reflection light sensor **B2** at the suction wheel.
To increase or decrease the suction length for all following single sheets press soft touch button **1** together with + **2** or - **3**.
All following single sheets are new calibrated.
Touch white button sheet infeed **6** to complete calibration, sheet gap will be calculated based on the last sheet length meusured.
Suction length = 1/3 of full sheet length.
Sheet gap basic setting code 24 = 1 = sheet length + 1cm.
Sheet gap basic setting code 24 = 0 = 1cm.
Calibrated suction length and sheet gap allows reconfiguration, see chapter **8.2** and **8.3** in operating manual “MS-Steuerung”.



B 4.0 Parallel folding unit

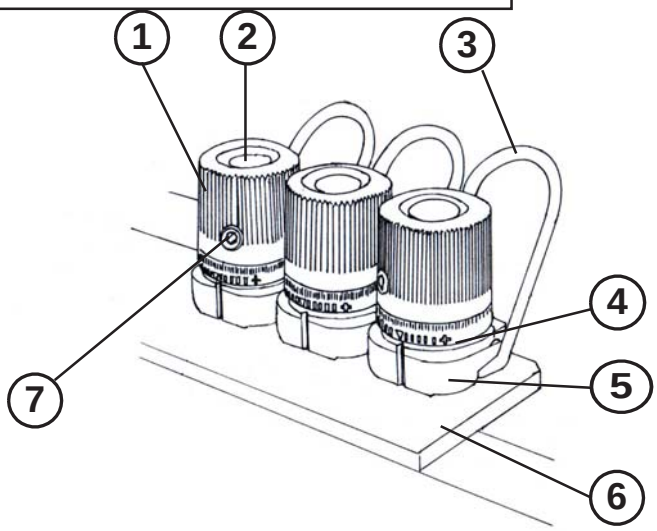
4.1 Setting of foldrollers

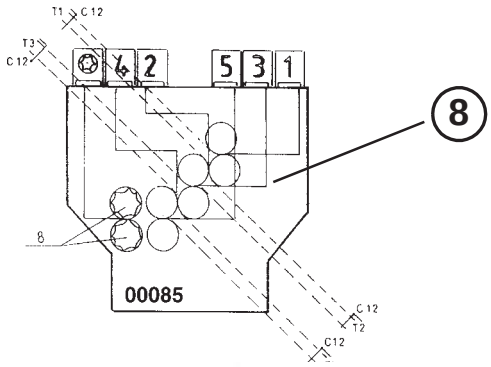
⚠WARNING

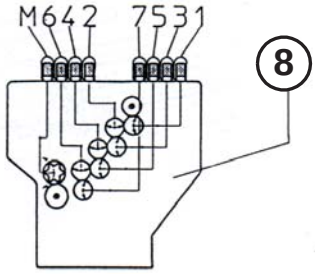
Danger before running machine elements.
Negligence can cause, bruise emerges at the hands.

- Never carry out foldrollers settings while the machine is still running. Machine must be switched **OFF** and push Emergency-Stop button.
- Please bear in mind that although you manually carry out foldroller setting danger exists of injuries to your fingers.

In order to achieve the required setting of the foldrollers you should press the lever **3** at caliper setting element **2** and insert a paper strip of the material to be processed between the pressure plate **5** and pressure bar **6**.
Thereafter, turn the handwheel of the machine and, in doing so, check whether the paper strip goes through the foldrollers, then adjust the knurled screw **1** to achieve an even pressure of foldrollers to paper strip at operators and operators opposite side. When you turn the knurled screw **1** clockwise, the pressure on the foldrollers becomes less, if you turn the knurled screw counter-clockwise, the pressure on the foldrollers has increased. After this basic setting reset the adjusting ring **4** to 0-position, in order to enable a quick readjustment of foldrollers into their original position. A slight tightening of locking screw **7** will secure it against unintended twisting. For setting of slitter shafts proceed in the same manner.
Depending on the kind of fold you may now insert the paper strip to achieve the desired paper gauge between the pressure plate **5** and the pressure bar **6**.
You will find instructions to set the most commonly parallel folds on pages **D1** - **D3**.
A scheme of foldrollers **8** indicates which elements belong to the individual pair of foldrollers. This scheme is also fitted as a diagram on the side frame of the machine.

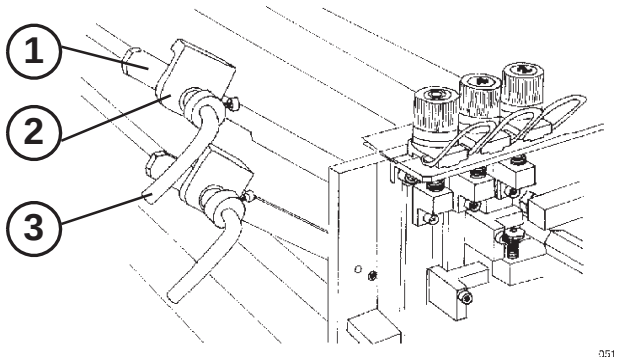






4.2 Buckle plates

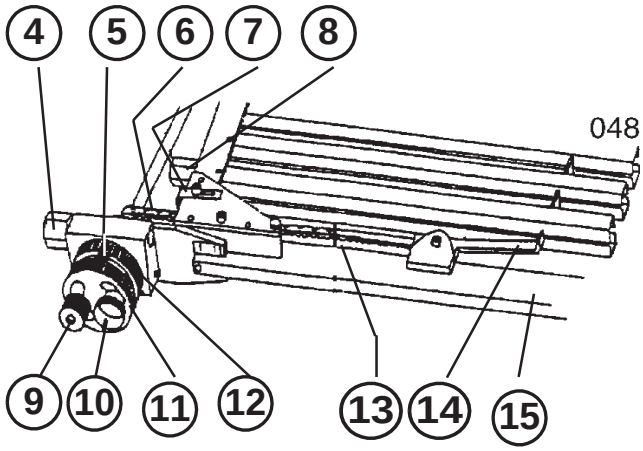
Insert the buckle plates **15** into the lateral supports **1**.
The buckle plate and the sheet deflector is set with their positioning pins into their lowest (basic) position with the rounded bolt **17**.
Lock them up on both sides through clamping lever **3** and clambs **2**.

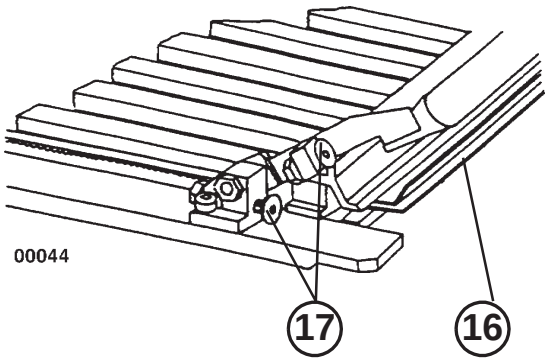


NOTICE

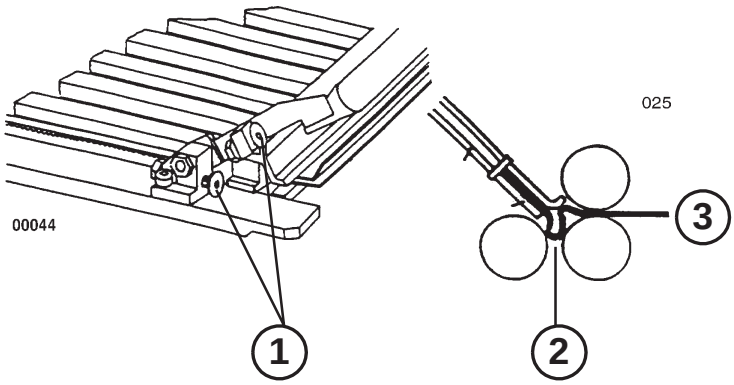
You should check that before locking the plates are locked, they are pushed forwards into the direction of the foldrollers and are resting on the rounded bolt!

After metal screw **9** has been loosened you may carry out the sheet length setting through handwheel **12**.
The size can be read-off at toothed belt **6** and the red indicator **7**.
When folding sheets which are not right-angled the angle of the sheet stop **14** may be changed if you loosen the plastic knurled screw **10** and twisting the frontal adjustment ring **11**.
The 0-position is shown by two markings on the adjustment rings **5**. When you loosen the hexagon screw **4** you may carry out fine adjustments without loosening the metal knurled screw. You may change the position of the lower infeed plate **8** through the metal hexagon screw **16**. A marking **13** is located laterally on the external buckle rails.
Remove the lower buckle infeed (off the foldrollers) for processing heavy papers.
Move the lower buckle infeed (towards the foldrollers) if you process sensitive papers.





When you change the setting screw **1** you may achieve a larger or smaller buckle space **2** between the lower buckle lip and foldroller:



small folding space for porous papers = turn screw to inner direction
large folding space for heavy papers = turn screw to outer direction or take buckle plate back

SAFETY FIRST

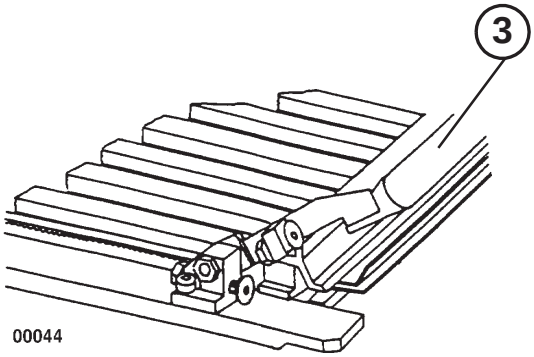
This setting should be made only in exceptional cases! It is absolutely imperative to reset to basic setting. If necessary, contact manufacturer or supplier for basic measurements.

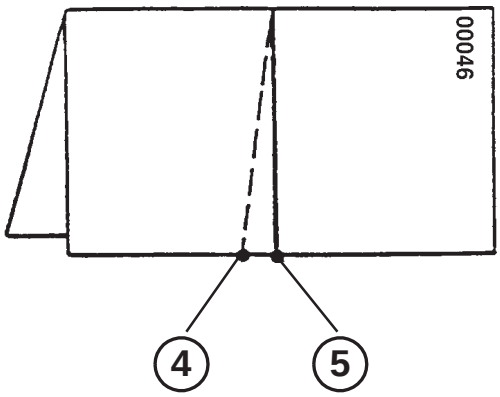
CAUTION

If the buckle plate has been set too deep the plate will damage the foldrollers.

4.3 Deflectors

The buckle plates which are not used for the individual type of fold are replaced by deflectors **3**.
In this case pull out the buckle plates and dislocate the installed deflectors.
Heavy (multiple) folded sheets may require an increase of the deflector area, for which purpose you should slightly pullout the buckle plates.
If the perforating or scoring line **4** are not square to the folding line **5** pull out the deflector or buckle plate at one side to correct perforating position.



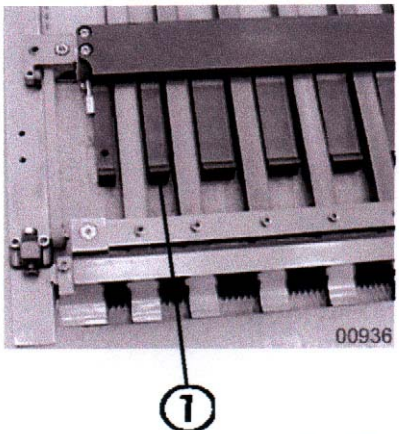


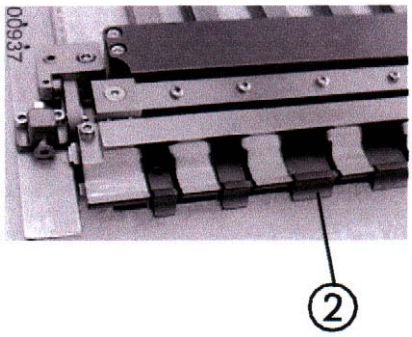
4.4 Combi buckle plates FTK (Option)

In this kind of buckle plate, the sheet stop can be used as a defector. Buckle plate/Deflector must not to be removed.

Sheet stop **1** is a deflector **2** too.

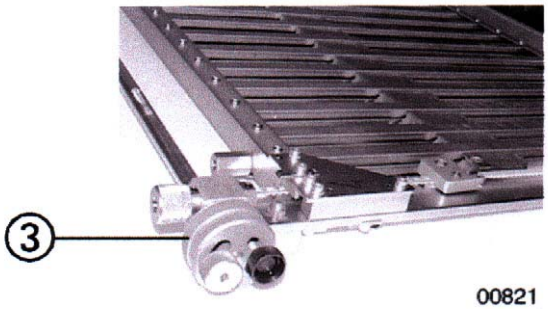
Funktion „Buckle plate“: See 4.2

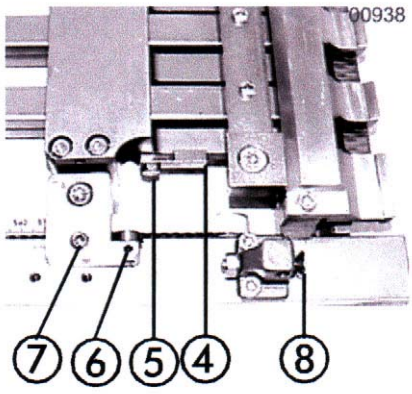




Funktion ”Deflector”:
Turn the sheet stop **1** with the adjustment ring **3** to lower position until the angle **4** stops.

For perforating,cutting, etc., pull the deflector at one side.
See 4.3 too.





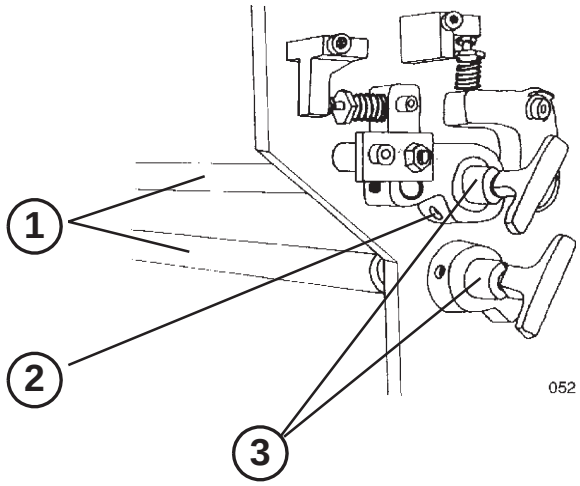
CAUTION -

2 may not have contact with the fold rollers!

- Do not make any alteration of the position from the screws **5**,**6**,**7** and **8**.

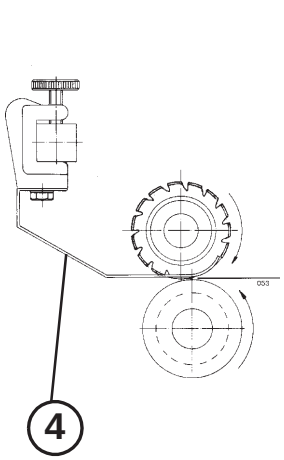
B 5.0 Slitter shafts

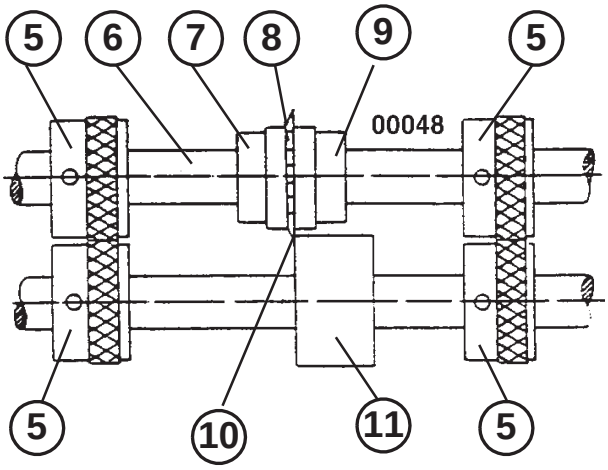
Both slitter shafts **1** which are fitted after each folding unit may easily be mounted and removed by plug bearings **3** enabling insertion of tools for perforation, scoring or cutting. For removal of the slitter shafts loosen the internal hexagon screw **2** which locks the plug bearing. Pull the plug bearing out of the slitter shaft while holding the slitter shaft with your other hand. Reinstallation occurs in the opposite sequence. However, push the plug bearing against the slitter shaft - to equalize an axial play - while you are locking the plug bearing with the internal hexagon screw.

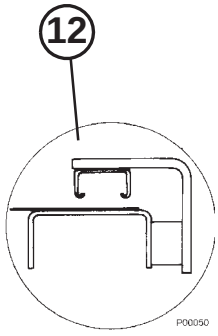


5.1 Perforating

To avoid creasing you perforate crossfold as well as for tear or punch perforation.
To use perforating or cutting knives, a knife shaft **9** as well as a counter knife (lower part) **11** is required. When loosening the nut **7** you may fit a knife **8** into the holder.
Some knives are split **12**, which enables you to install them without removing the shaft.
For proper installation the knife **8** should be adjacent to the ground side of counter knife **10**
Make sure that during the installation of the shaft that the nut **7** is opposite to the direction of the shafts rotation **8**. This guarantees that the nut does not become loose during rotation. The lock nut may also be retightened with a C-wrench.
Perforating knives with slanted teeth must be installed in such a manner that they enter with the obtuse angle first into the sheet. In doing so you may avoid jam-up of sheets between perforating knife and stripper **4**.
Depending on the sheet size you may use additional transport rollers **5**. Carefully read the attached knife list **TM 35/2** which indicates the knives you should use when processing different kind of papers and/or making different types of folds.

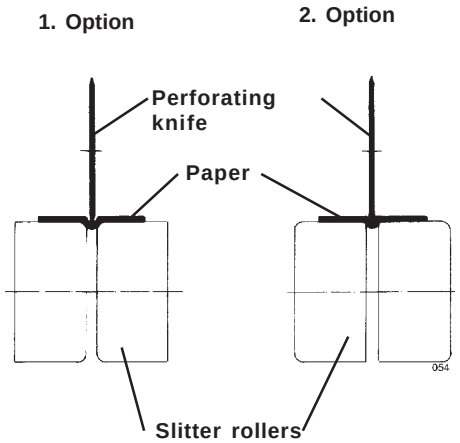






5.2 Special perforating knife (Option)

We are dealing here with a non-slotted, V-shaped and two-side grinded perforating knife of 0,06“ thickness.
This special perforating knife is employed on the knive shafts at folding unit I of buckle folding machines.
During perforation the sheet is also pre-scored.
This resultsin the dog ears at head side of cross-fold-unit (8-page-unit) being avoided.



There are two possiblities of installation:
1st between the scoring edges and
2nd between the slitter edges

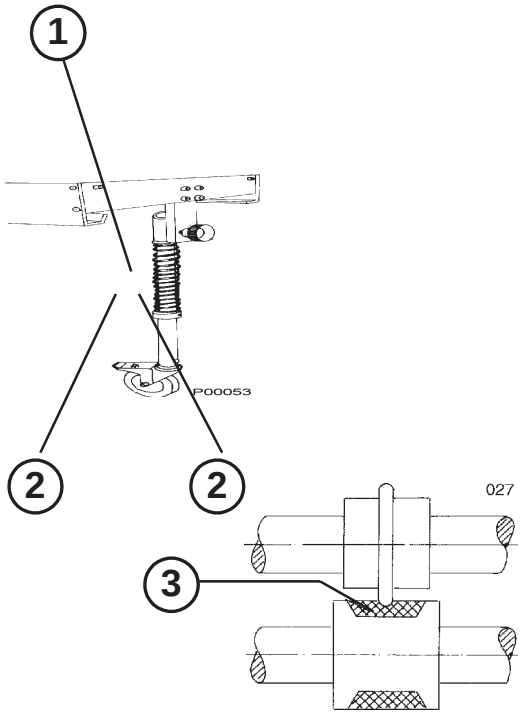
In any case, the slitter respectively scoring rollers shall not touch the perforating knives. Distance and method of installation should be adjusted to the product to be processed. It should be considered that the cut of the perforation is not as clear as usual, because the perforating knife does not touch the counter knives.

5.3 Cutting

Instead or in addition to a perforating knife you may use a cutting knife (mainly for cutting when running multiple production). Installation occurs in the same way.

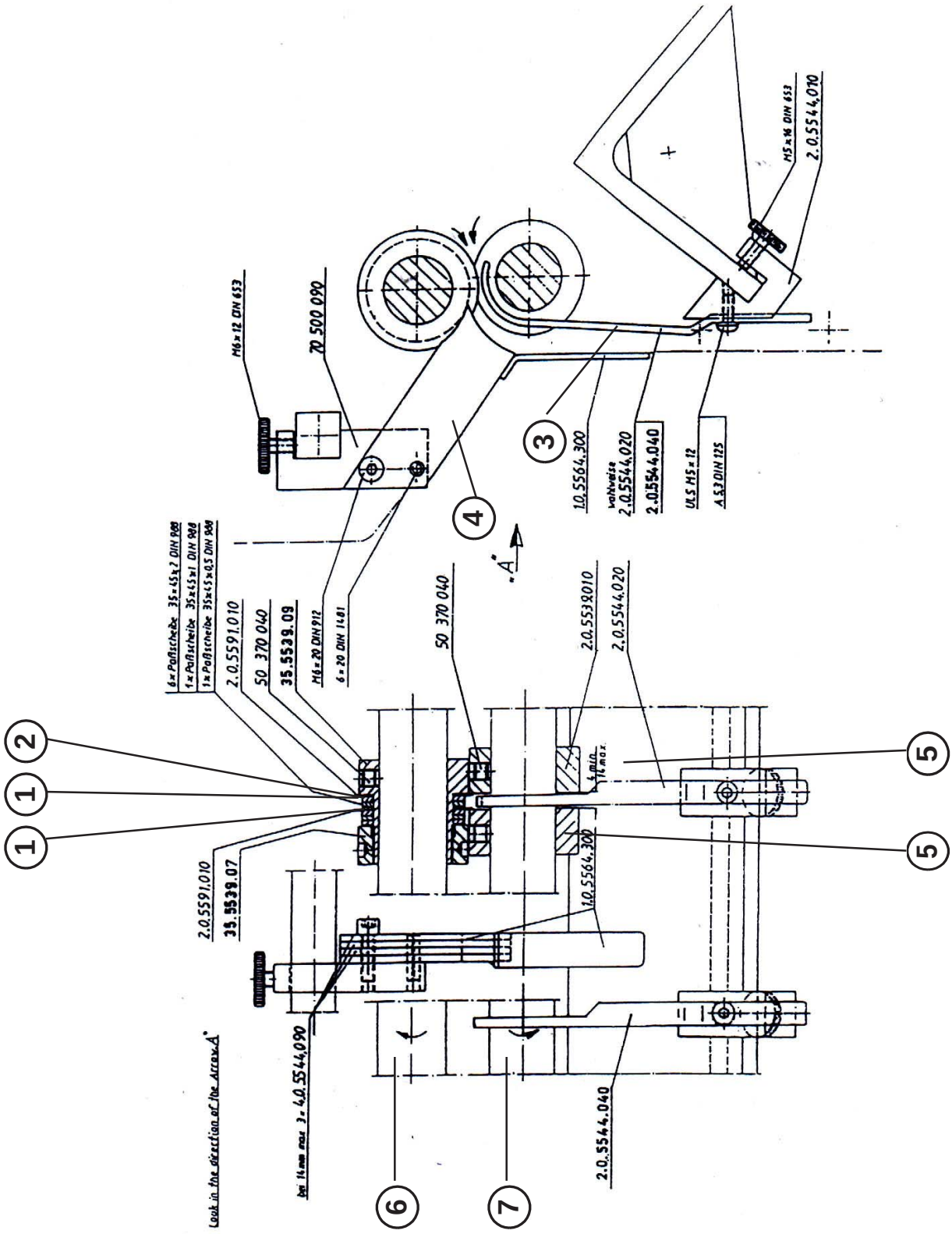
5.4 Scoring

A score should be made before a buckle fold. If this score has not been made it is not guaranteed that you obtain the fold in the desired place. Normally you should score with one scoring knife **1** which is placed between two control rollers or two counter knives **2** placed at the round side.
Alternatively, you may also score on the rubber part of the control roller **3**.
However, a scoring knife with a smaller external diameter must be used. Special scoring devices may also be used upon request.



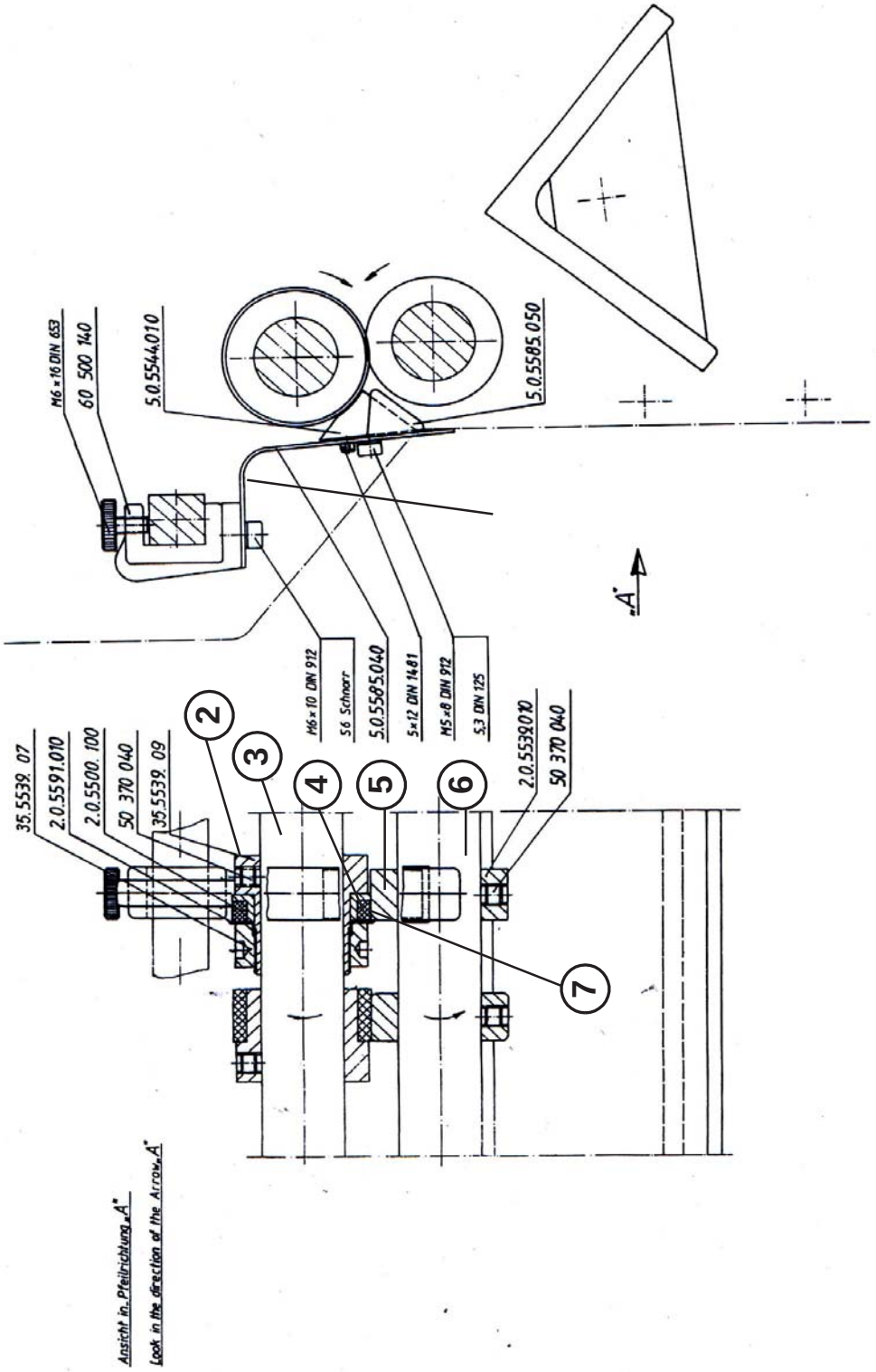
5.5 Gully cut

When carrying out this procedure you install the knife holder **2** onto the upper slitter shaft **7**. Insert two knives **1** with external cutting edge, place two counter knives **5** against them on the lower slitter shaft 6. Min. 4 mm to max. 5mm can be cutted off. In order to eject the paper shavings place strippers **3** and **4** between counter knives.



5.6 Edge trimming

Install the knife holder **2** which has rubber ring **4** and cutting knife **7** onto the upper slitter shaft **3**. You may place a control roller to the second rubber ring as additional guide. Stripper **6** should be used to guide paper cut-off between rubber ring and counter knife.



NOTICE

If you obtain angled cut or badly guided paper trim-off you may also install the knife folder onto the lower instead of the upper slitter shaft. Moreso, you may also install the knife with its cut edge into the direction of the folding product. However, it mostly depends on the paper thickness or running direction.
Experiences shows that the following alternative of installation reveals in the best result:
knife top, counter knife bottom, cut edge of top knife into direction of paper cut-off. Paper cut-off is guided by rubber ring.

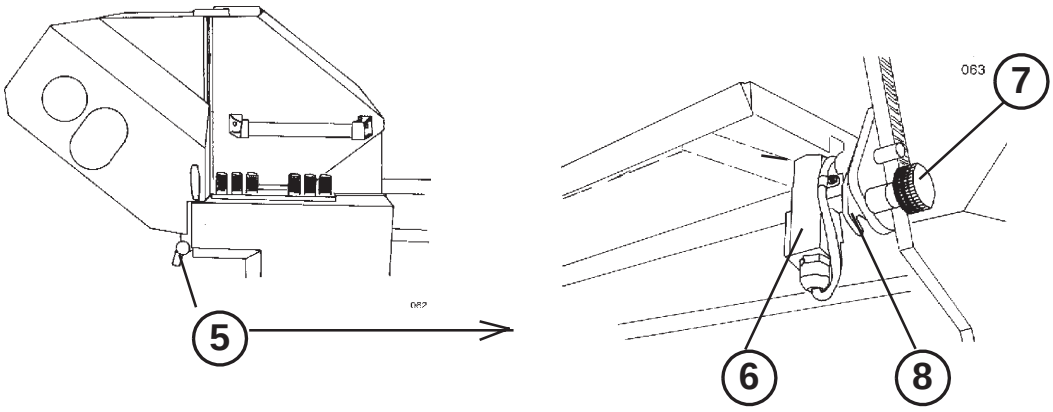
5.7 Slitter shaft guard

⚠WARNING

Danger before falling down of the opened protection hood.
Negligence can cause heavy injuries through bruise of body part.
Be sure that in work with opened noise hoods this is completely opened to the attack.

⚠WARNING

Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.
Report each audible/visible security-related change of the machine to the responsible for that in your business.

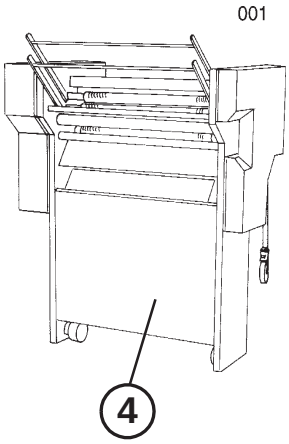


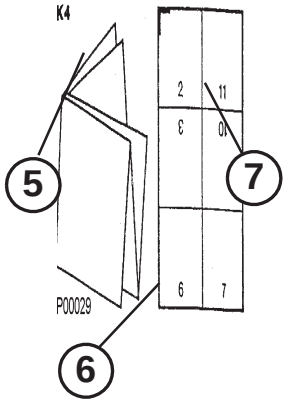
The flap **5** is a safety guard for the slitter shafts and it is electrically locked.
For insertion of other aggregates, regulate flat **5** , release knurled nut **7** , pull the grip **8** up and screw-in the knurled nut **7**.

B 6.0 Mobile buckle folding unit

6.1 Installation

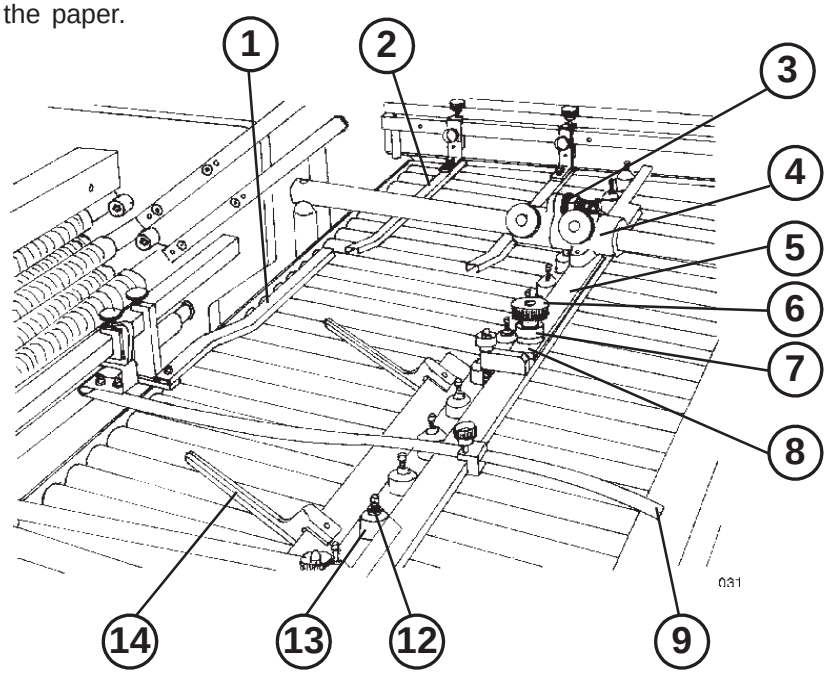
This unit **4** is normally placed crosswise to the previous folding unit. It is locked through a brake at foot **6**.
The infeed height of the register table **5** or its inclination may also be carried out through this foot, whereby knurled screw **7** is used for locking purposes.





6.2 Setting and sheet transportation

Set the sidelay **5** to the appropriate sheet size through the setting elements **4**.
Fine adjustments can be made via knurled nut **3**. The angle of the sidelay to the foldrollers can be changed via the knurled screw **6** or through the excenter **7**. Please note that a scale **8** has been fixed onto the sidelay.
The sheet should run with its end as close as possible to the edge of the mobile folding unit. In order to avoid any lifting of the sheet at the exit of the previous folding unit, smoother tapes **9** should be used. A safe infeed of the sheets underneath the ball rails are achieved if you use sheet holders **14**. Depending on the thickness of product, you may also adjust the infeed plate **1**, which may be carried out by the knurled screws .
In order to avoid any lifting of the sheets on the unit and to ensure a proper infeed of the sheet into the foldroller, you may also use smoother bars **1** and **2**. The height of these smoother bars is adjustable.
Plastic or steel balls which are positioned in a ball holder are used to transport the sheets on the register table (consider the inclination). The weight or quantity of these balls depend on the weight of the paper.



Light (porous) paper = plastic or less balls
Heavy paper = steel or more balls

A screw with a spring is located on top of this ball holder **12**. If you turn in this screw it will avoid the ball jamping during fast production.

You may place a stop switch to the exits of the folding units which will turn off the machine in case of jam-ups (optional).

The foldrollers, sheet deflectors, slitter shafts and noise damping device are used and adjusted as described previously.

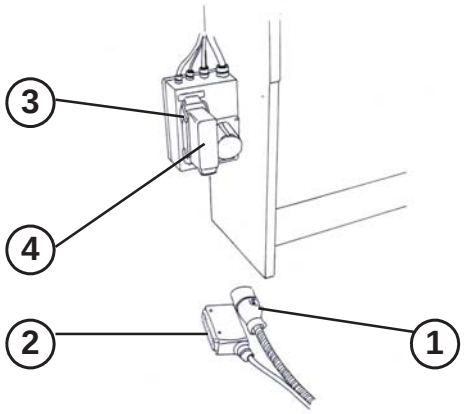
6.3 Electrical connection

⚠DANGER

Danger of electric tension.
Negligence can cause, heavy injuries or death.
Report damaged electrical connections to respnsible supervisor.

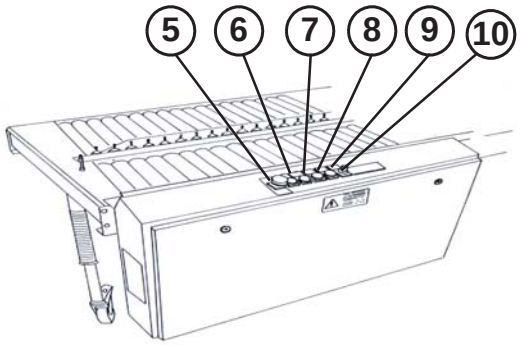
The electrical connection occurs through the cable with power plug **1** and control plug **2** at control cabinet of the previous folding unit.

A dummy plug **3** should be plugged into the control socket **4** for the control cable, if no subsequent folding unit or delivery is used.



6.4 Control panel

5 Red mushroom button for EMERGENCY-STOP
6 Red button for machine STOP
7 Black button for machine START
8 White button for SHEET INFEED
9 White button for SHEET INFEED one Sheet
10 Potentiometer for electronical speed regulation



6.5 Foldrollers and slitter shafts at subsequent folding units

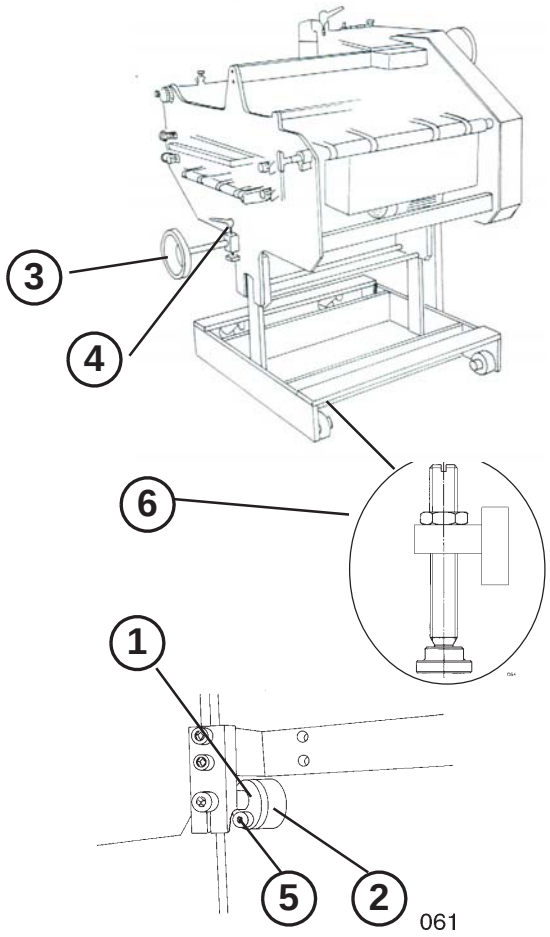
Settings of foldrollers and slitter shafts should be carried out as described under item **B7**.
You will find the **MBO** setting instructions of the most commonly folds under item **D1** - **D3**.

B 7.0 Mobile knife folding unit “X”

This new, independent knife folding unit “X” may be used as 2nd unit (crossfold) or 3rd unit (threefold). The drive of foldrollers and slitter shafts as well as the electro-magnetic knife coupling occurs through a flat belt.

7.1 Installation

The knife folding unit ”X” is moved to the individual exit each folding unit. Hook the centring pin 1 on the left and right of the unit ”X” into the bushing **2** of the previous folding unit. The unit ”X” can be adjusted in height with the hand wheel **3** and locked with the handle **4**. Tighten the centring pins **1** to the bushings **2**, with the two cylinder screws **5**.after than stabilise and level the unit ”X” with the two adjustment screws **6**.

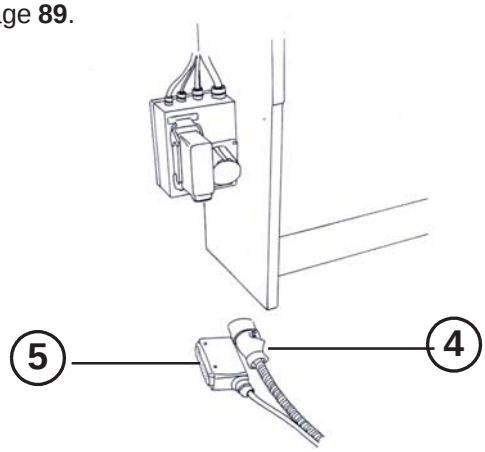


NOTICE

If the knife folding unit “X” has been bought separately it may become necessary to install a drive kit for this knife folding unit “X” - see description on page **89**.

7.2 Electrical connection

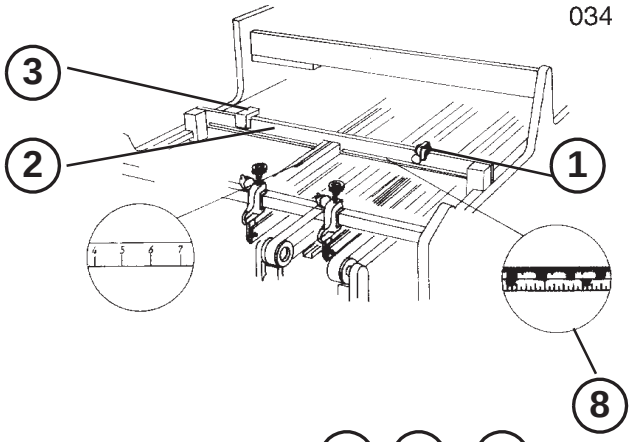
The electric connection occurs through the connection cable with power plug **4** and control plug **5** at control cabinet of the previous folding unit.

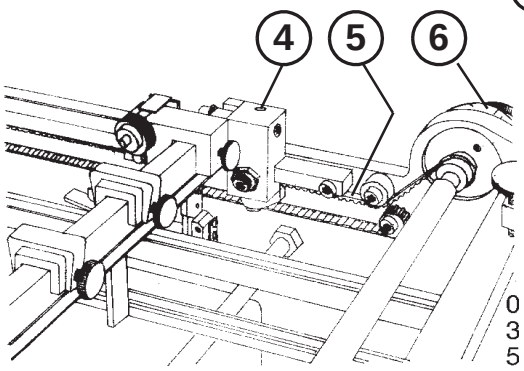


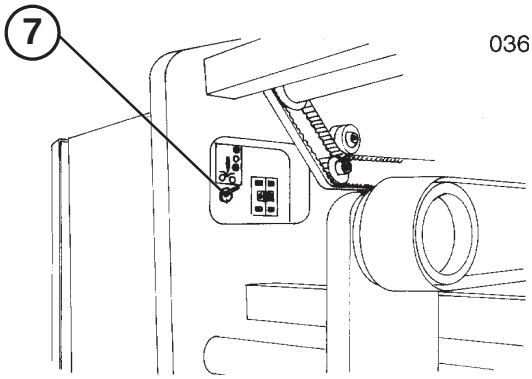
7.3 Setting and sheet transportation

7.3.1 Knife folding unit “X” as first crossfold

Set the sheet stop **2** through the central adjustment **6** to the sheet size. Measurements can be read-off at toothed belt **5** or through the marked indication at guide rail. Angular adjustments may be obtained through the central adjustment, as mentioned under item **4.2**, page **52** for buckle plates. In addition, the sheet stop may also be fixed through the hexagon screws **4** (if heavy sheets are processed).
If the sheet stop is not used you may lift it so that only parallel folded sheets will pass underneath.
Turn **OFF** coupling of knife, i.e. activate switch **7** to the middle position.
Move a sheet to the sheet stop and put the adjustable sidelay **3** with fine adjustment **1** to the sheet edge. Set the spring sidelay **2** to the opposite sheet edge. By means of a scale which is situated at the sheet stop **8**, you may pre-set the sidelays to the corresponding sheet size.



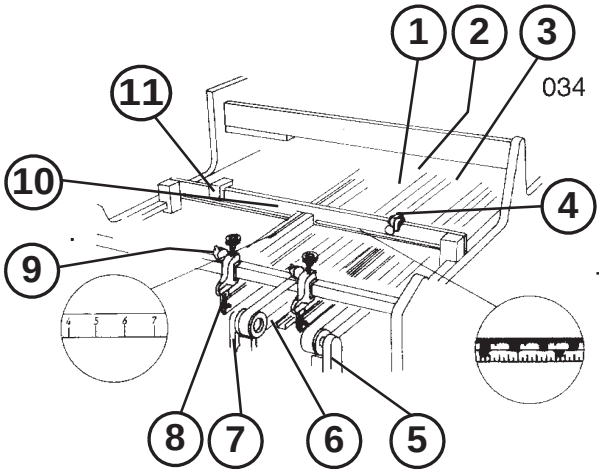


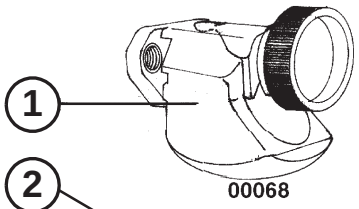


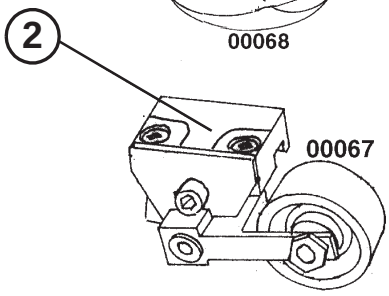
NOTICE

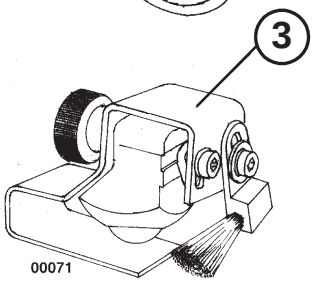
The sheet should run as close as possible to the sidelay. The spring sidelay should not guide the sheet to the fixed sidelay but rather to slightly hold against it.

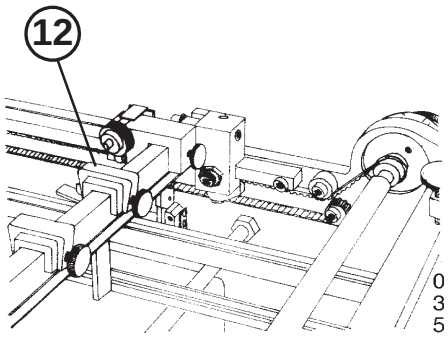
Set the transport belts to the sheet size whereby the external belts **5** should run near the sidelays (avoid any touch agains them). Do not reposition the inside (internal) belts **4** underneath the ball rail. Depending on the sheet size you may use guide rails **11** to avoid any distortion of the sheets. Ball holders **7** should be fitted to the inner ball rails **6**. Depending on the paper quality and machine speed you may use either light or heavy balls. In any case, use balls as less as possible to save the belts and the folded products. When the sheet has reached the sheet stop prevent it from bouncing back. For this purpose high-speed wheels **8** are used at the end of the sheets. The wheels should be positioned to such an extent that the rear edge of the sheet is levelled with the one wheel, and the other wheel is levelled with the transport belt. These high-speed wheels also garant a better control of the sheet at sheet stop during alignment at high speed production. In addition thereto, you should also place ball holders with brushes **3** onto the external ball rails. These ball holders should be placed into such a position that the ball runs in centre of the external transport belt and the brush is positioned on the sheets rear edge. The clearance between the tapes and bars is height adjustable by means of lever **9** (loosen locking screw!). Depending on the sheet size you may also use stop fingers **12** to prevent any buckling of the sheets **10**.











7.3.2 Knife folding unit “X” as 2nd crossfold (threefold)

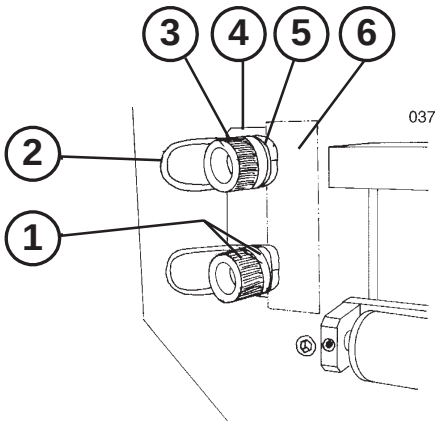
If this unit should be used as threefold unit (configuration 44X), i.e. after the 2nd folding unit, the sheets must run centrally beneath the folding knife in knife folding unit “X”. In order to ensure a safe transfer of the sheets from the 1st folding unit to the guide rail of the 2nd folding unit a conveyor table (option) must be installed on the exit of the 1st folding unit (see page **89**)

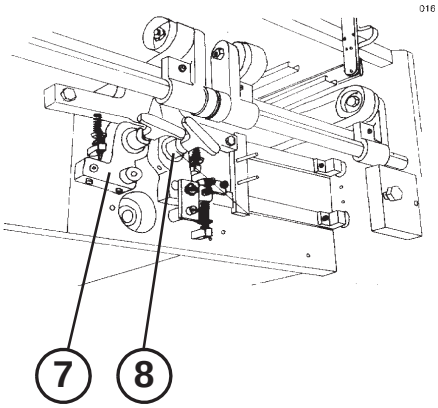
7.3.3 Foldrollers / Slitter shafts of the knife folding unit “X”

⚠WARNUNG

Danger of running machine parts.
Negligence can cause heavy personal injuries or extensive damages.

- Never carry out foldroller settings while machine is still running.
- Even manual foldroller setting by the handwheel.





In order to achieve the required setting of the rollers you should press the lever **2** at caliper setting element **5** and insert a strip of paper **4** between the pressure plate **6** and pressure bar. Afterwerds, turn the handwheel of the machine and, in doing so, check whether the paper strip goes through the foldrollers.
When you turn the knurled screw clockwise the pressure on the foldrollers becomes less, but if you turn knurled screw counter-clockwise, the pressure on the foldrollers has increased. After this basic setting, reset the adjusting ring **3** to 0-position in order to enable a quick readjustment of foldrollers into their original position. The setting of the slitter shafts occurs in the same manner. Depending on the kind of fold you may now insert the paper strip to achieve the desired paper gauge between the pressure plate and pressure bar.

The slitter shafts **7** of the knife folding unit “X“ are positioned beneath the foldrollers and are easily changeable through the quick setting elements **8** (see B5.0 on page **69**)

MBO setting instructions of the most commonly folds will follow on pages **D1-D3**.

7.3.4 Knife setting

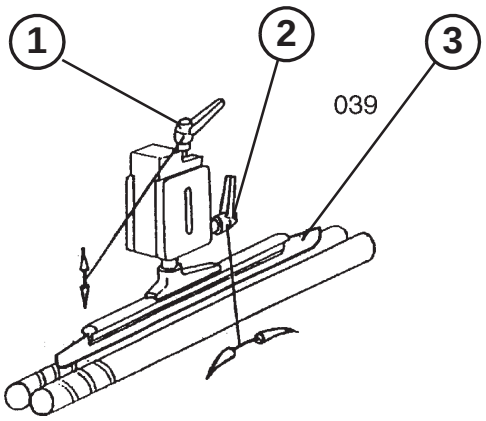
7.3.4.1 Depth setting of knife

When setting the knife 7.31 turn the handwheel manually so that the sheet is moved into the foldrollers by the knife.

SAFETY FIRST

To make sure that the sheet is taken correctly from the foldrollers, height corrections of the knife can be made, however, this depends on the thickness of product.

Such height corrections can be made through locking handle **1**. Clockwise turning of locking handle - knife moves upwards. Counter-clockwise turning of locking handle - knife moves downwards.



7.3.4.2 Horizontal knife setting

The precise setting of the knife into the horizontal position is responsible for an exact sheet infeed and the subsequent perforating of the sheet.

SAFETY FIRST

In order to avoid that the sheet is pushed too hard against the sheet stop you may change the horizontal knife position with locking lever **2**!

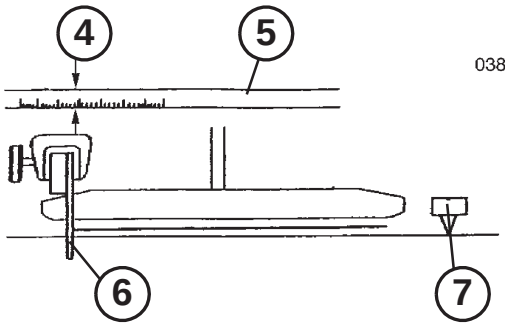
If the sheet is not pulled parallel into the foldrollers it means that the knife is not in a horizontal position. This can be noticed if the sheet, when it is pulled into the foldrollers, is pushed to strong against the sheet stop or if it runs off from the sheet stop. If the sheet is pushed too strong against the sheet stop you have to set the declination of the knife somewhat higher by clockwise turning the clamping lever. If the sheet is pushed off from the sheet stop you should set the knife deeper by turning the clamping lever counter-clockwise.
These settings can be carried out without
tools by using the locking handles.

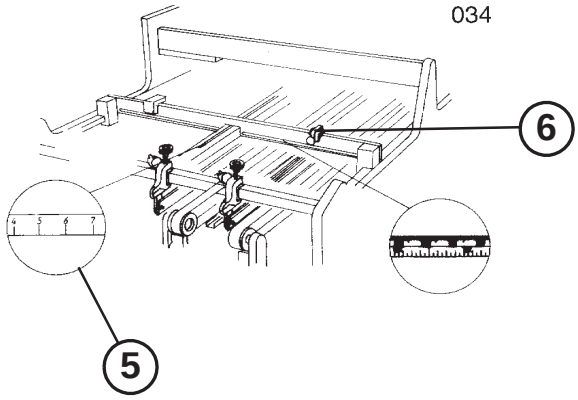
NOTICE

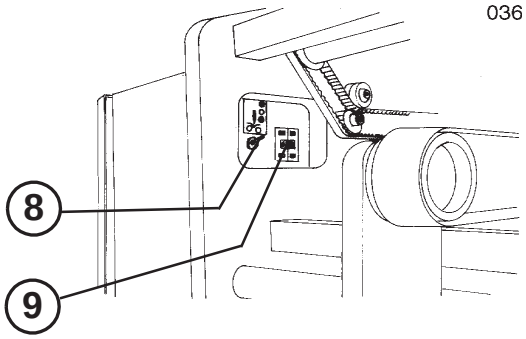
For extreme horizontal positioning the knife must be set completely higher, if necessary!

7.3.4.3 Knife control

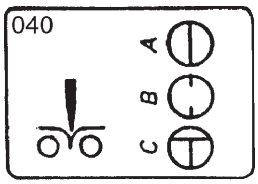
The folding knife operates independently. The knife motion is activated by a photocell with the passing sheet. Set the time of release as follows. Set the sheet stop (see **7.3.1,**page **77**) in accordance to the size of sheet. The upper part of the measurement scale **5** shows a value in cm **4**. This value is the path between the photocell **7** and the sheet stop **6**. Enter the value at main control panel through push buttons into the digital push button switch **9**, which are available for the individual folding knives. You may increase the cm-value, e.g. for longer sheet aligning underneath the knife, or decrease the value to achieve a higher rate of production, e.g. for perforated sheets. In addition, all photocells serve as a jam control, i.e. if a sheet is held underneath the photocell the machine will turn-off immediately. Moreover, each photocell may also be used as sheet length control. Enter the sheet length through the digital push button switch. However, if the sheet is longer than the entered value the machine will swtich off automatically.







7.3.4.4 Use of switch to turn the folding knife ON/OFF



The switch **8** near the digital push button switch **9** can be set for various procedures as follows:

turn switch to position A = machine ready for production
turn switch to position B = machine OFF e.g. during set-up procedures or production without knife
turn switch to position C = knife release, e.g. during set-up procedure if should be folded after it has been positioned.

B 8.0 Noise damping device

⚠WARNING

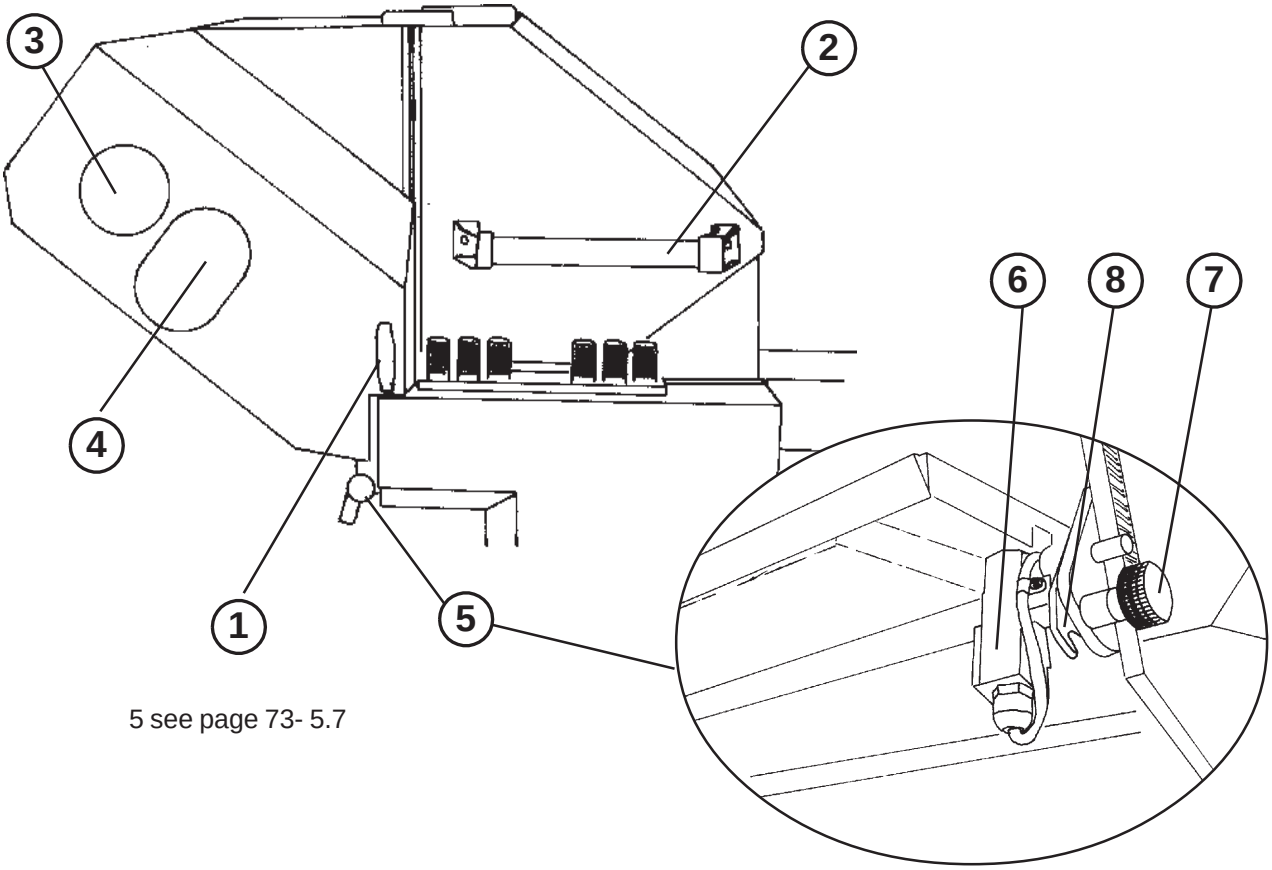
Danger of running machines part during the installation working.
Negligence can cause heavy personal injuries or extensive damages.

- Never grasp into the running machine in!
- Keep protection hood close during production.

⚠WARNING

Danger before falling down of the opened protection hood.
Negligence can cause heavy injuries through bruise of body part.

Be sure that in work with opened noise hoods this is completely opened to the attack.



5 see page 73- 5.7

Noise damping and protection device.
The noise hood consists of two parts for insertions or adjustments. Push the hood upwards by means of the grips **1** and **2**. Fine adjustments at buckle plates **1** and **3** can be made through the openings **3** and **4**.

B 9.0 Stream delivery

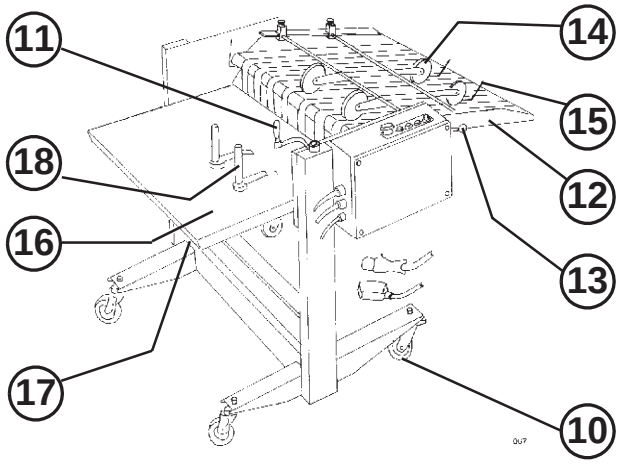
9.1 Mobile stream delivery A56

The mobile stream delivery may be placed at each exit (outlet) of a folding machine. Move the stream delivery into the required position and secure the caster wheels with foot brakes **10**. Use the hand crank **11** for height adjustments. A slight angle of the infeed table **12** is advisable and can be acheived using the lever **13**.

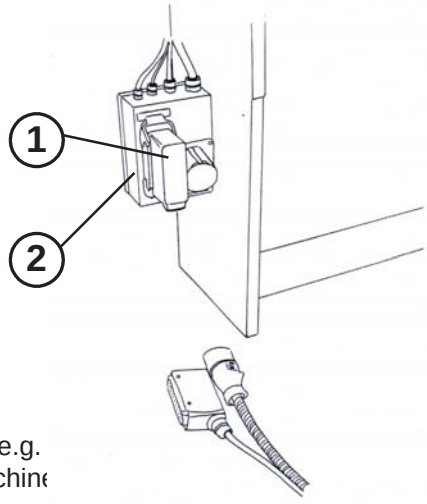
CAUTION

The infeed table must be held with your other hand when you activate the lever!

Since the tapes of the infeed table are fixed only the transport rollers **14** should be set in accordance to the sheet size. In order to guide the sheets underneath the transport rollers, fit rods **15** onto the frontal transport rollers. In case of multiple production affix the rear transport rollers onto the front rod. The folded sheets fall onto the collector sheet **16** which may be adjusted by a setting spindle **17** located beneath the collector sheet. Two moveable magnetic posts serve as sheet stop.



The electric power is supplied as descriped under **7.2** page **76.** The speed may be regulated through the potentiometer located at the terminal box of the stream delivery.



SAFETY FIRST

If the machine is operated without a stream delivery, e.g. ny plug **2** must be plugged into the control socket **1** “Machine

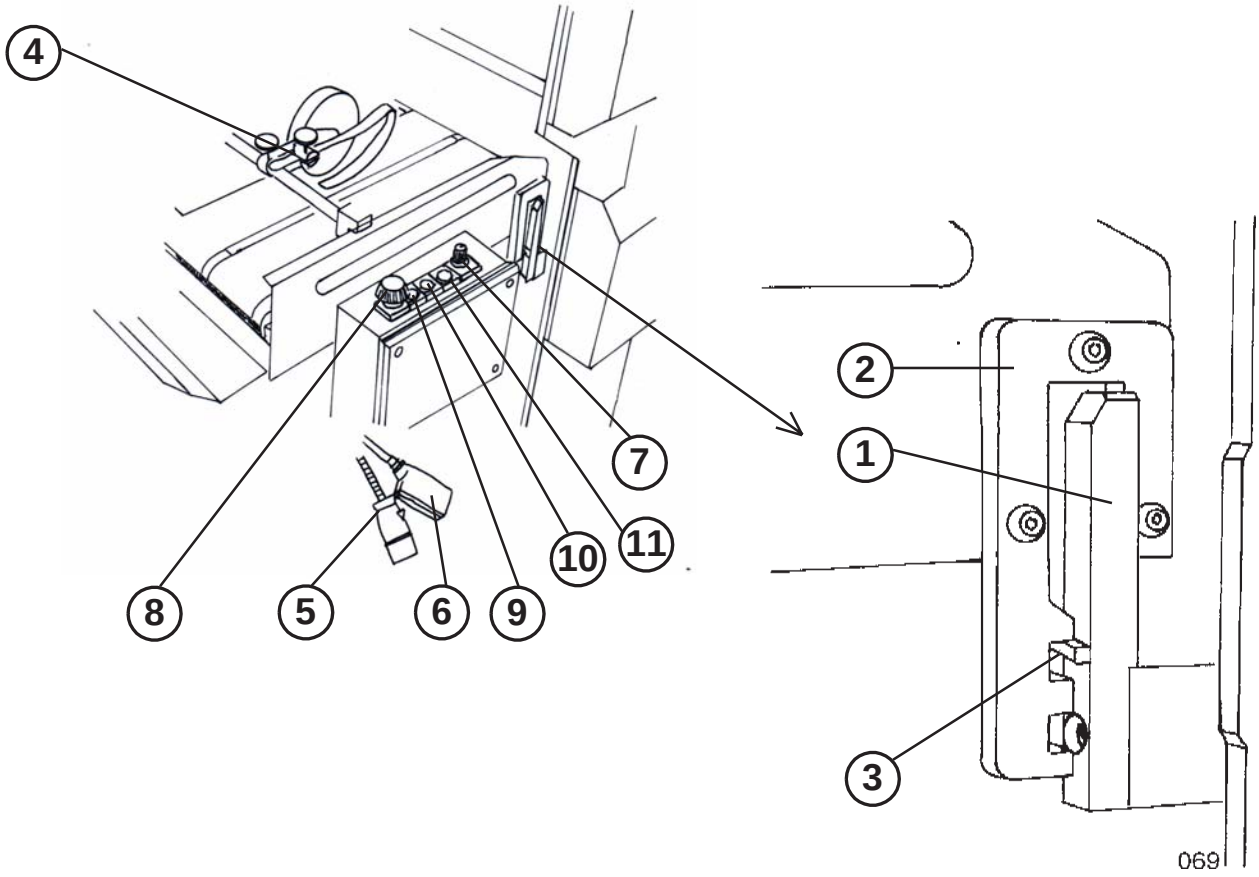
9.2 Hook-on stream delivery SE500/3

The deliveries SE500/3 can be suspended at unit I and II. They are suspended at the holder **1** and snapped-on in three different height position**3** with the Snap-On hoop **2**. The transport rollers should be set in accordance to the sheet size. The electric connection occurs through the connection cable with power plug and control plug **5** and **6** at control cabinet of the folding unit. The speed can be regulated through the button **7** located at the terminal box of the stream delivery.

8 Emergency stop
9 Red button MACHINE STOP
10 Black button MACHINE START
11 White button SHEET INFEED

SAFETY FIRST

If the machine is operated without a stream delivery (during set-up of the machine), a dummy plug must be plugged into the control socket "machine control" of the previous folding unit.



⚠WARNING

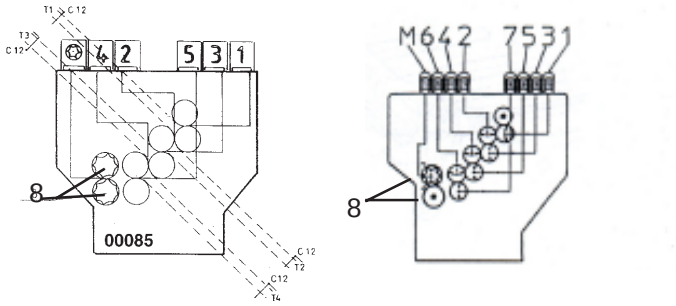
Danger of dump and slipping of the delivery.
Negligence can cause heavy personal injuries or extensive damages.
Be sure that the hook-on stream delivery is correctly positioned in support **1**

D10.0 Instructions to the use

D10.1 Setting instructions for the most commonly folds

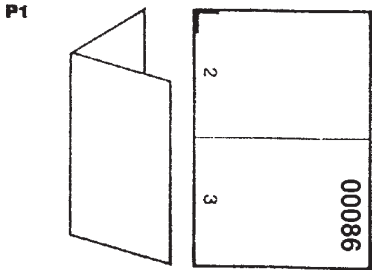
10.1.1 Parallelfold

1-5 = 1st - 5th set of foldrollers
8 = set of slitter shafts



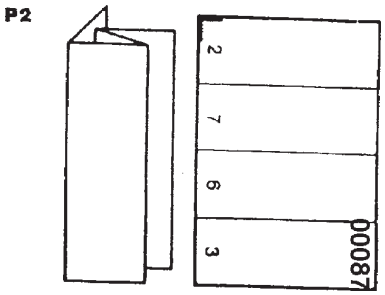
P1 **1 x parallel unit, i.e. 4 pages**

at 1, set for single paper thickness, and from 2 through 8, set to double paper thickness. Set sheet stop C12 at 1st buckle plate at 1/2 of sheet length. The buckle plates 2nd through 4th are replaced by sheet deflectors.



P2 **2 x parallel fold, i.e. 8 pages**

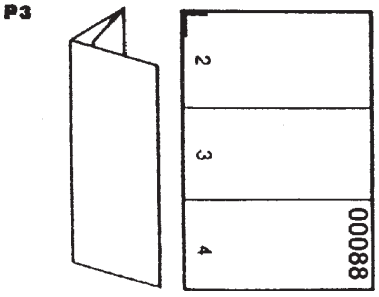
at 1 set for single, and at 2 set for double paper thickness, and at 3 through 8 set to quadruple paper thickness. Set sheet stop C12 to 1/2 of sheet length at 1st buckle plate and 1/4 of sheet length at 2nd buckle plate. Buckle plates 3 and 4 are replaced by sheet deflectors.



P3 **2 x parallel unit (letter fold), i.e. 6 pages**

I. with one top (T1) and one bottom (T2) buckle plate, set at 1 and 2 for single and at 3 through 8 for triple thickness of paper. Set the sheet stop C12 at 1st buckle plate to 2/3 of sheet length, and 2nd to 1/3 of sheet length. Buckle plates 3 and 4 are replaced by sheet deflectors.

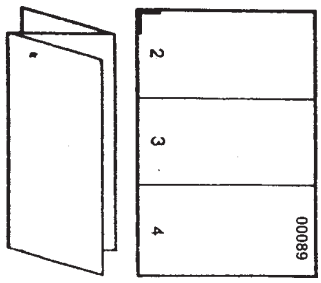
II. with two top buckle plates (T1 and T3), set at 1 through 3 to single and at 4 through 8 to triple thickness of paper. Set the sheet stop C12 at 1st and 3rd buckle plate to 1/3 of sheet length. Buckle plates 2 and 4 are replaced by sheet deflectors.



P4 **2 x parallel unit (accordian fold), i.e. 6 pages**

set at 1 and 2 to single thickness of paper, and at 3 through 8 to triple thickness of paper. Set sheet stop C12 at buckle plate T1 and T2 to 1/3 of sheet length. Buckle plates 3 and 4 are replaced by sheet deflectors.

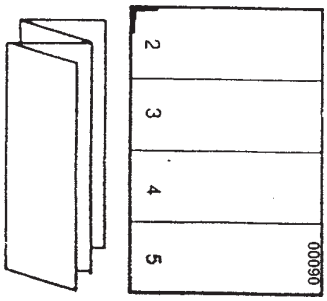
P4



P5 **3 x parallel unit (accordian fold), i.e. 8 pages**

set at 1 through 3 for single thickness and at 4 through 8 to quarduple thickness of paper. Set sheet stop C12 to 1/4 of sheet length of buckle plates 1st to 3rd. The 4th buckle plate is replaced by sheet deflector.

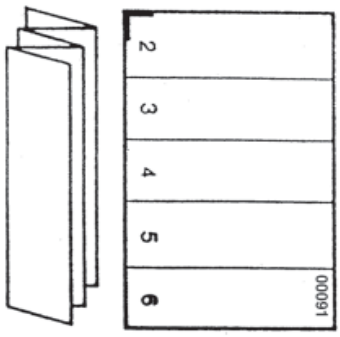
P5



P6 **4 x parallel unit (accordian fold), i.e. 10 pages**

set at 1 through 4 to single paper thickness and at 5 through 8 to fivefold thickness of paper. Set the sheet stop C12 to 1/5 of sheet length at buckle plate 1st through 4th.

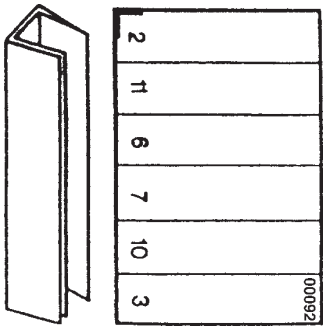
P6



P7 **3 x parallel unit (letter fold), i.e. 12 pages**

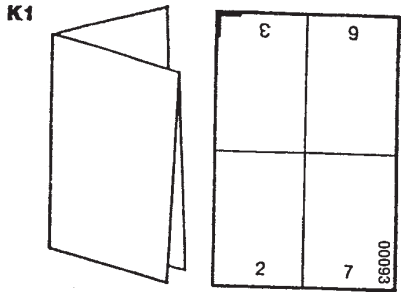
set at 1 to single paper thickness, at 2 through 4 to double thickness of paper and at 5 through 8 to sixfold thickness of paper. Sheet stop C 12 should be set 1/2 of sheet length at first buckle plate, and to 1/6 of sheet length at 2nd and 4th buckle plate. The 3rd buckle plate is replaced by a sheet deflector.

P7



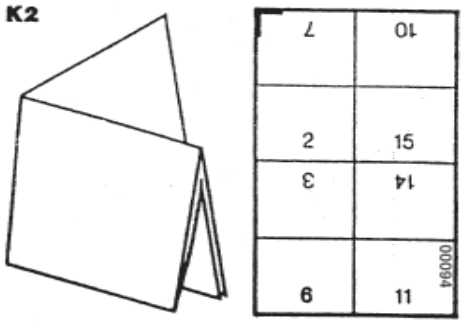
10.1.2 Crossfold

K1 **1 x parallel unit and 1 x crossfold unit (double folding), i.e. 8 pages**



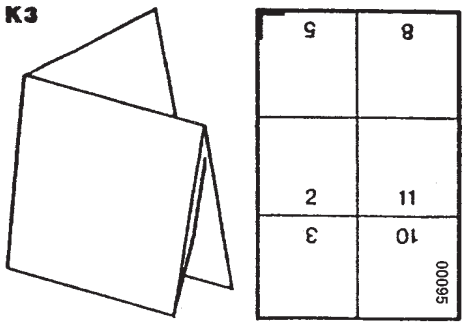
See item **P1** for setting of parallel section.
Setting of crossfold section:
set the foldroller 1 to doublefold, and the remaining foldrollers and slitter shaft to fourfold thickness of paper. Set the sheet stop of buckle plate at crossfold unit to 1/2 of sheet width.

K2 **2 x parallel unit and 1 x crossfold unit, i.e. 16 pages**



See item **P2** for setting of parallel unit.
Setting of crossfold unit:
set the foldroller 1 to fourfold, and the remaining foldrollers and slitter shaft to eightfold thickness of paper. Set the sheet stop of buckle plate at crossfold unit to 1/2 of sheet width.

K3 **2 x parallel unit (letter fold) and 1 x crossfold unit, i.e. 12 pages**

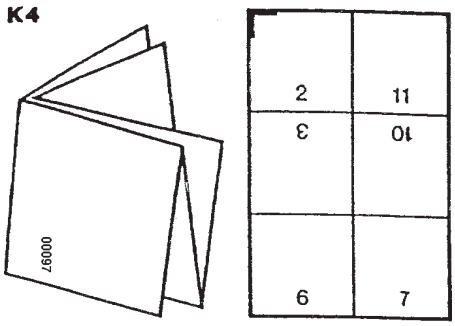


see item **P3/1** for setting of parallel section.
setting of crossfold section:
set the foldroller 1 to triplefold, and the remaining foldrollers and slitter shaft to sixfold thickness of paper. Set the sheet stop of buckle plate at crossfold unit to 1/2 of sheet width.

10.1.3 Threefold

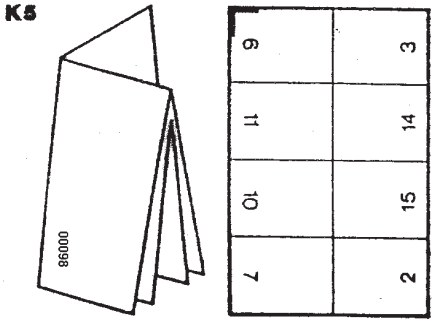
K4 **2 x parallel fold (accordian) and 1 x crossfold, i.e. 12 pages**

see item **P4** for setting of parallel unit.
setting of crossfold section:
set the foldroller 1 to threefold, and the remaining foldrollers and slitter shaft to sixfold of paper thickness and sheet stops at crossfold unit to 1/2 of sheet width.



K5 **1 x parallel unit, 1 x crossfold unit and 1 x threefold unit (threefold right-angle), i.e. 16 pages**

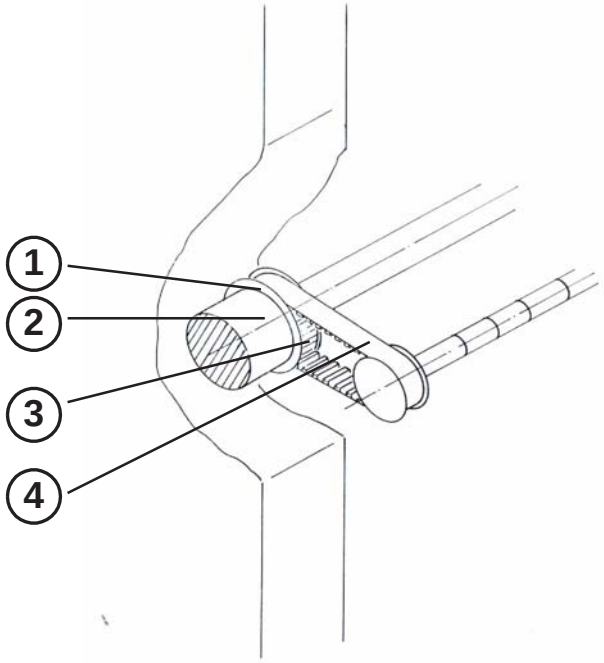
see item **K1** for setting of parallel and crossfold unit
setting of threefold section:
set the foldroller 1 to fourfold, and the remaining foldrollers and slitter shaft to eightfold of paper thickness and sheet stop at threefold section to 1/4 of sheet length.



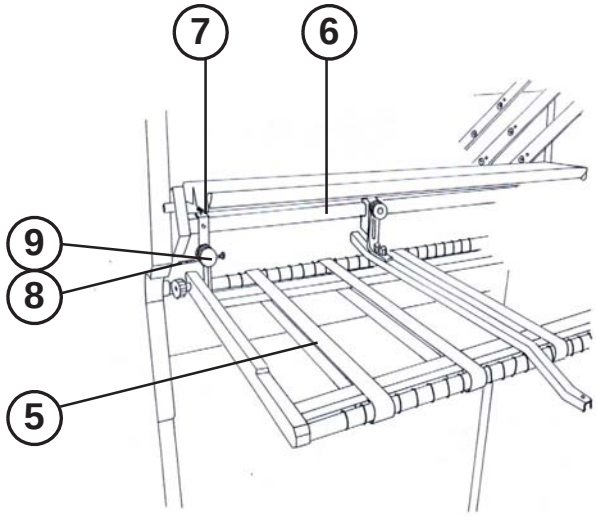
M 1.0 Installation instruction

1.1 Conveyer table for unit “X”

Fit the crown gear **1** on the shaft **2**, secure with the locking screw **3** and hook-on the tooth belt **4**.



Hook-on the conveyer table **5** on the bar **6** and cramp it with the two knurled screw **7**.
Tooth belt will be tensioned with the knurled screw **9**.



NOTICE

Distance screw **8** of the conveyer table must be placed on the side wall.
The range of the thooth wheels must coincident. If not, adjust the distance screw.

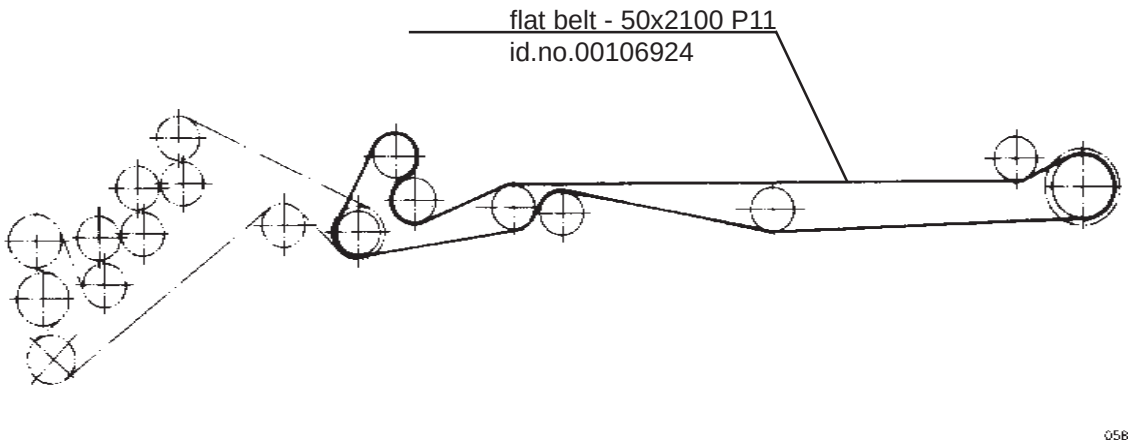
M2.0 Maintenance protocol

You can use this sheet (a copy) like a maintenance protocol or a checklist, but don´t forget the other checkpoints at item 4.2, page 52.

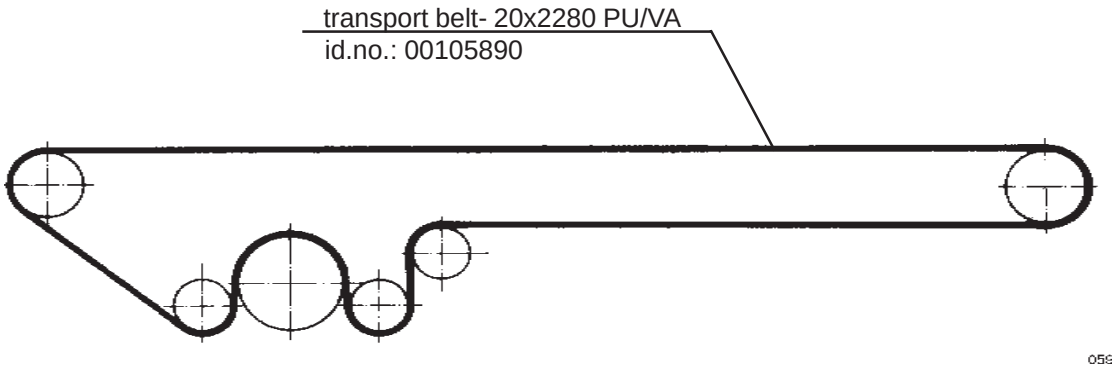
	Chapter -no.:	Operation	Intervall	Date	Signature
Maintenance	4.2.2	Feeder chain	every month		
	4.1.1	Register tape at register table	every month		
	4.1.2	Drive belt for suction wheel	every month		
	4.1.3	Drive belt for parallel unit-fold roller and slitter shafts	every month		
	4.1.5				
	4.1.4	Main drive parallel	every month		
	4.1.6	Drive belt on cross carrier register table-8pg and 16pg unit	every month		
	4.2.7	Cleaning filter cartridge	every 50 hours of operation		
	4.2.7	Exchange filter cartridge	every 6 month		
Lubrification	4.2.1	Main machine and alignment table	every month		
	4.2.2	Drive chain pile feeder	every month		
Cleaning	4.2.6	Fold rollers	when necessary		
		Sensors	every day		
		Cleaner roller	every day		
		Movable machine Parts	After each production		

M 3.0 Pulley and belt drive

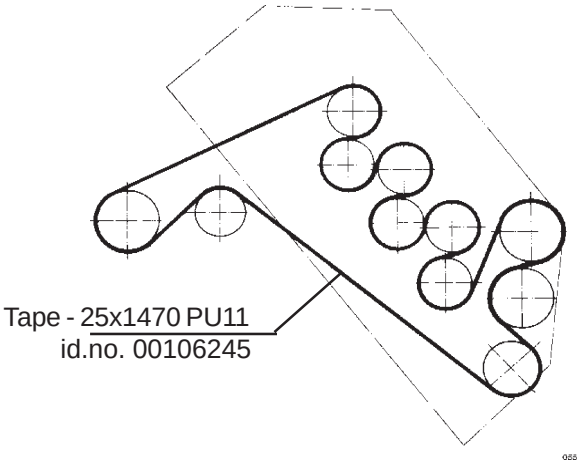
SUCTION WHEEL DRIVE



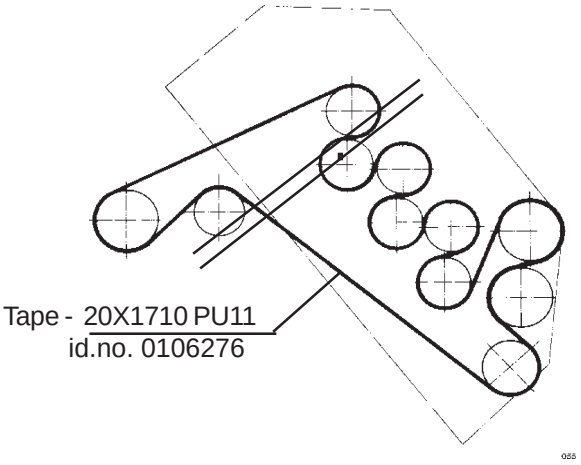
REGISTER TABLE DRIVE



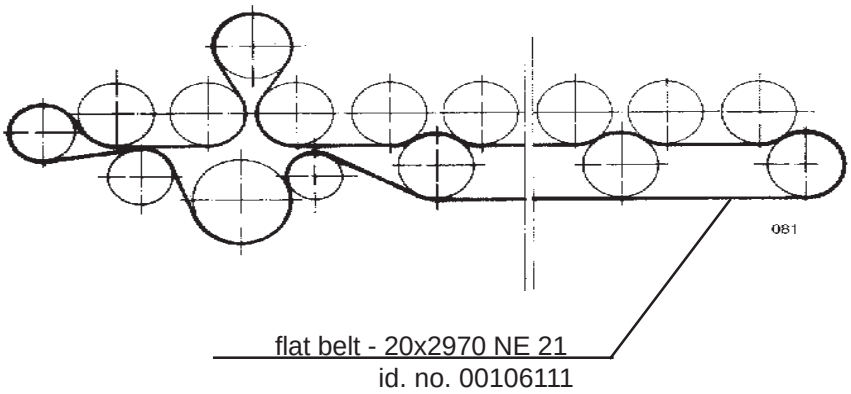
DRIVE BELT



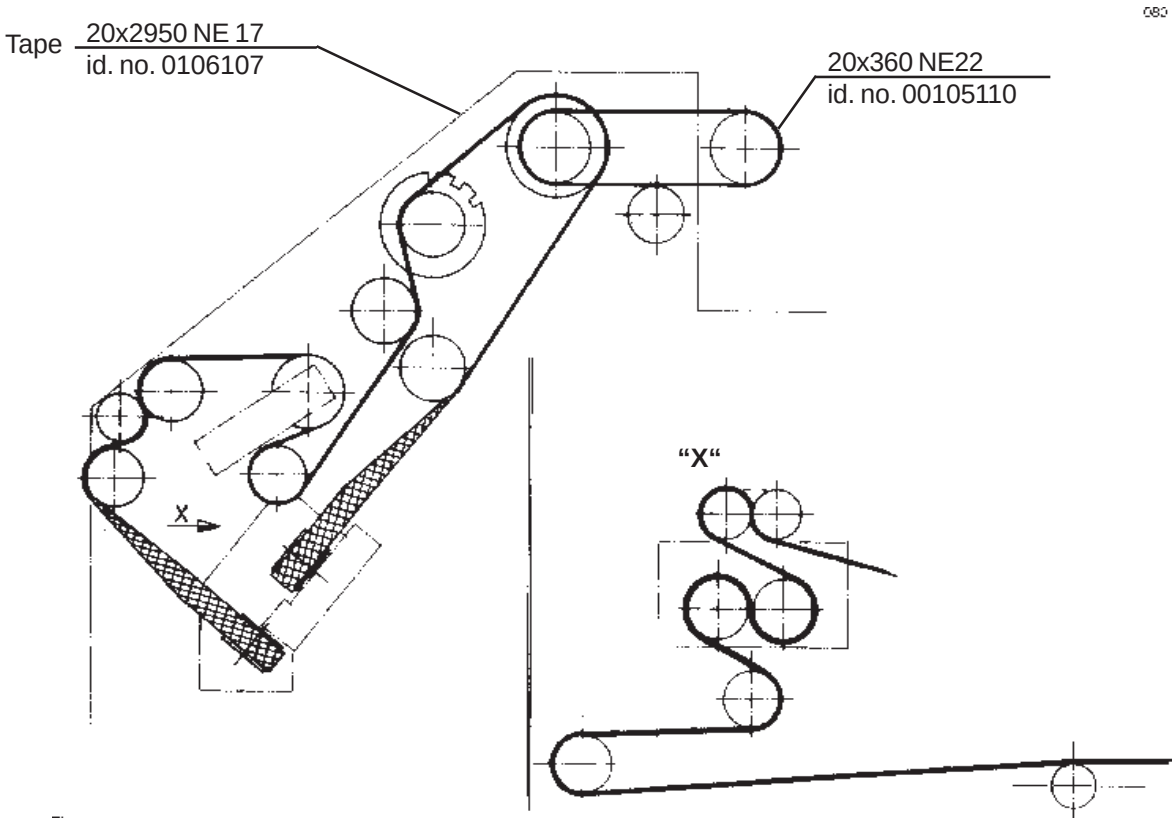
DRIVE BELT



ROLLER DRIVE BELT



DRIVE X-UNIT


Tape
20x2950 NE 17
id. no. 0106107
20x360 NE22
id. no. 00105110
X
"X"

M 4.0 Out of order

4.1 Statements for the storage

- Test the accomodations concerning the temperature and humidity. The ideal warehouse temperature isbetween 59- 82°F. As higher the humidity, higher the risk of corrosion.
- Notice the machine weight before selection of the accomodations.
- Prepare the transmissions and motors for storage. The prerequisites are different from case to case.For this reason, ask the supplier of the transmissions/motors and read the respective handling instructions.
- Clean the machine thoroughly of dirt and dust, however do not use water due to the risk of the corrosion.
- Use a forklift to carry the machine.
- Cover the machine with foil.

4.2 Environment and disposal

- Disposal old machine and there components according to environment laws:
  Ask for disposal possibilities to the municipal disposal services or private disposers.

Distinguish at the same time between:

- Annihilation (acts annihilation)
- Recycling (plastic packaging)
- Disposal (pollutant disposal).

4.3 Disposal of the old machine

Detoxify the old machine:

- over the supplier
- over a disposal and wrecking companys
- over the own firm

4.3.1 Disposal with order at the supplier

Give the order of the disposal to your supplier. . The old machine becomes either taken in payment or correctly dismantled and detoxified. This way you avoid all inconvenients of the process.

4.3.2 Disposal with order at a disposal and wrecking

You can transmit also the order to a nearby disposal and wrecking company, that are also trusted with this kind of disposal

4.3.3 Disposal over the own firm

You have the possibility to dispose the old machine in your own company and with own technical personnel.
Please, notice the fact that you may need a separate approval for the transport of waste as well as for the disposal. Let confirm in writing the lawful disposal.

4.4 Ground-water protection

Follow the valid regulations and laws of the avoidance of soiling of the ground-water:

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Fax: +49 (0) 71 91 / 46 – 34
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MBO Portugal

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