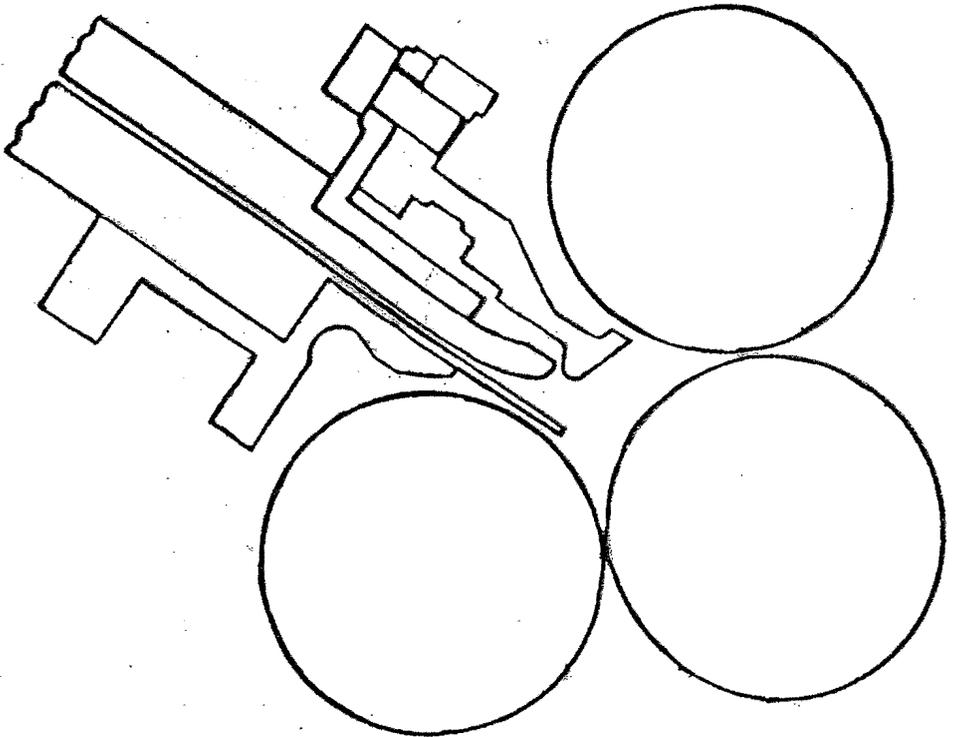


**MBO**

# Paper Folding Machines

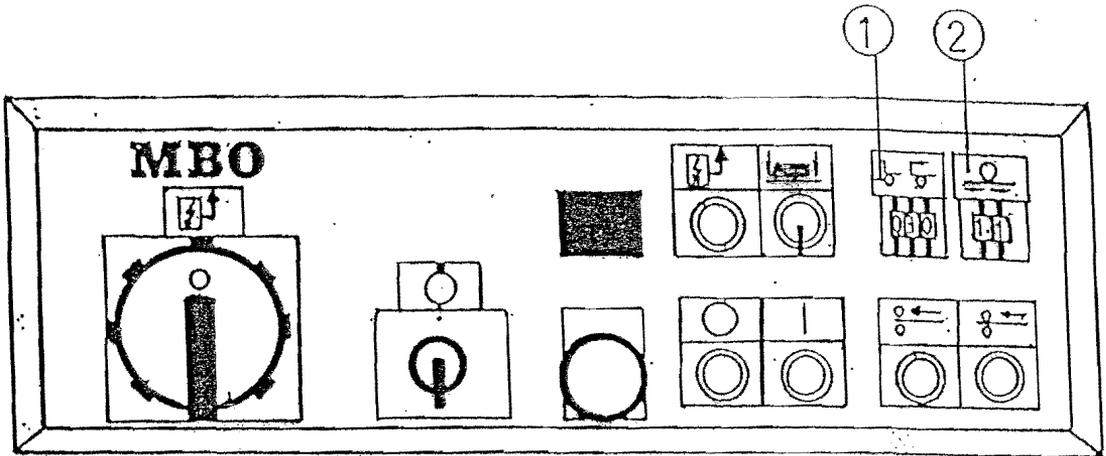


**Operation and  
Maintenance  
Manual**

**B 18**

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**MBO**



Instruction to set the two digital displays on the main control panel of B 18

- ① This (left-hand) display with 3 digits is to be used for setting the sheet gap. The distance you actually set on the display is the distance from the front edge of one sheet to the front edge of the next following sheet, i.e. sheet length and gap.

This distance is to be set in cm's into the display, and its equivalent must be made from the inch system into the metric system, by two.

Example: If sheet is 28" long and you require a gap of 4" = totalling 32"  
 $32" \times 5 = 160 \div 2 = 80$  cm's to be stored into

- ② This (right-hand) display with 2 digits is to be used to set the vacuum length, i.e. the length of vacuum of which the suction wheel is in contact with the sheet (in cm's). You usually set your display to approximately 1/3 of the sheet length. By use of the above cited example it would be 23 cm's. This setting may be used for all sheet sizes up from 20" to the maximum.

The MBO buckle folding machine B 18 has been developed to process paper sheets in the size from 10 x 15 cm's to 46 x 65 cm's (4" x 6" to 18" x 26") when pile feeder is used. The speed of sheet infeed may be adjusted without steps, since it varies according to the sheet size or type of fold.

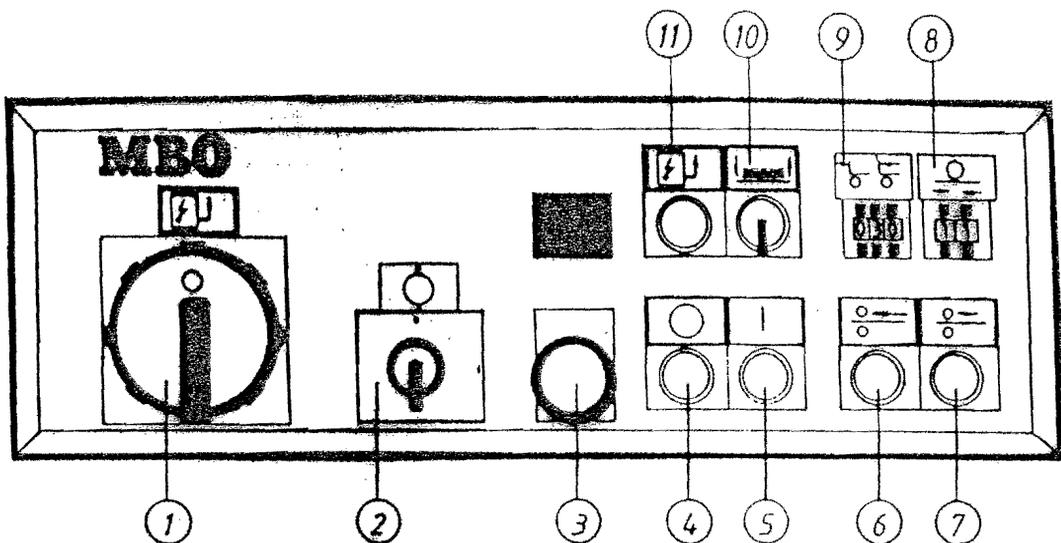
The basic machine consists of a pile feeder and the well-proved MBO lattice-type alignment table.

The parallel unit consists of four fast-setting buckle plates with fixed swing deflectors and new sheet stop adjustment, well-proven MBO spiral fold rollers with noiseproofed belt drive with caliper setting located on top of the machine, as well as solid knife shafts which may, due to plug bearings, quickly be replaced.

The 8-page unit consists of a mobile buckle folding unit with own drive, cross carrier and maximum working width of 46 cm's ( 18 " ), four buckle plates, etc. (as described above).

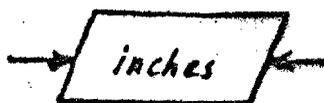
The 16-page unit is a X-knife folding unit with belt drive system and an electronically controlled knife. Its maximum working width is 46 cm's ( 18 " ). This unit may also be used as the 8-page unit and may be hooked onto the parallel unit. The motorized delivery may be hooked on and it has electronic speed control.

The following description of the machine (from the feeder to the delivery) is made in consecutive order to give to the operator a better understanding for the machine procedure.

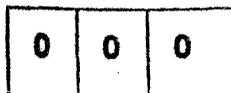


- ① = Main switch
- ② = Air pump
- ③ = Emergency stop
- ④ = Machine 'off' (stop)
- ⑤ = Machine 'on' (start)
- ⑥ = Pilot light for ⑦
- ⑦ = Sheet-feed-button
- ⑧ = Vacuum length
- ⑨ = Sheet-gap
- ⑩ = Pile lift up-down
- ⑪ = Pilot light for ①

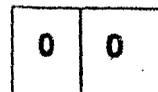
### Setting of Sheet Gap



sheet length



set



set

<i>inches</i>		
6	020	10
8	025	12
10	030	15
12	035	18
14	040	20
16	045	24
18	050	25
20	055	27
22	060	30
24	065	30
26	070	30
28	075	30
30	080	30

The self-contained pile table may be loaded from two sides and is controlled by an electric motor. The pile stop, which is located at the bearing block (right upper side) is to be set to the half of the sheet size by use of the scale. The right sheet guide bar (angled) behind the sheet stop is also mounted to this pile stop.

The pile table may be moved up or down by use of the selector switch, which is located at the control panel. The table is stopped in its lowest position by a limit switch (maximum height of pile is approximately 66 cm's). Now the sheets, which should be aerated sufficiently, may be pre-piled. Thereafter, turn the selector switch for UP-movement of the pile table (switch remains in this position). The height control, or rather turn-off of transport to the upper direction, is controlled by a microswitch. If the pile is approximately 10-12 mm's off from the suction wheel, he should stop. If the pile is uneven the distance may be changed by re-setting the height of the microswitch.

Then affix the left sheet guide bar (angled). This bar should be approximately 3 mm's off from side of pile in order to avoid squeezing of the top sheets and to aid good ventilation of the sheets. The microswitch, which is located on the rear end of the pile (centre) avoids floating of the sheets if they are excessively ventilated.

The two guide bars which are located on the left and right upper edge of the pile, may be adjusted in their height by knurled screws. These bars should be placed as deep as possible on top of the pile edges to avoid any leaking of the air blast and, furthermore, to make sure that the sheets are ventilated up to their rear end.

The air pressure- and vacuum pump is to be turned ON by use of switch no. 2 at the main control panel. Open the required air-clips, which are placed on the air tube at the front of the pile. The quantity of air should be proportioned in such a manner that approximately 5 to 10 sheets of the pile are thoroughly ventilated. The air tube may be adjusted up or down by twisting the knurled-head screw, which is located on the left side of the air tube. The air tube may also be tilted by use of the lever, which is also located on the left side of the air tube. You may carry out the following adjustments if the front edge of the sheet pile is bent down and to achieve a better result:

The conveyance of vacuum from the suction wheel is controlled by a disk which is placed behind the suction wheel. A red mark is located on this disk. The same marking is located on the housing beside the disk. If these marks are lined up the sheets are sucked by the suction wheel in their exact centre. A lever is located on the front left-hand side of the disk for adjustment of the exact suck-off position. If the sheet bends down you should turn the red mark towards the right (clockwise). The starting position for normal (even) pile is, when the 2 red marks below the suction wheel are lined up.

Double sheet control:

The double sheet control is located on front of the alignment table. A lever is located at the side of the double sheet

control which is to be used to insert a piece of paper below the feeler screw. This piece of paper is to be taken from the pile which is being processed. In order to exactly adjust the double sheet control you should turn ON the machine. Place one paper strip (from the pile which is to be processed) underneath the caliper, thereby preventing to interrupt the sheet infeed mechanism. If two paper strips are placed between the caliper and the lower fold roller, then the sheet infeed should interrupt (machine still keeps running). If a readjustment becomes necessary, this may be carried out by use of the knurled-head screw, in order to lift or drop the caliper, and to grant the necessary sensitivity.

Alignment table:

If a sheet is leaving the pile, it is running on the alignment tape. This tape carries the sheet towards the parallel unit to the side guide. You may adjust the side lay by using the two plastic screws which are located at the guiding block of the machine. Set the machine to one-half of the sheet size by use of the guiding shaft. This set-up should correspond with the setting of the pile stop at the pile table. You may use the fine adjustments for minor settings, which is located at the bearing block of the side guide. You may equip the ball rail with either plastic or steel balls to keep the sheets close to the side lay. The first five holes of the ball rail (from suction wheel to the machine) should always contain steel balls in order to exert sufficient pressure onto the sheet and to increase the speed of infeed. Now insert plastic balls

after the first five steel balls when you process light paper. Medium and heavy weight paper sheets require steel balls as much as necessary.

To achieve exact foldings in the 8-page unit, it is absolutely necessary that the sheets are inserted (infeed) in a right angle from the alignment table into the buckle plates of the 8-page unit. There is an adjustment at the side guide (close to the double sheet control) to set the guide into a corresponding angularity to the fold rollers. It requires that you loosen the plastic knob, which thereafter enables you to set the correct position at the eccentric bush.

#### Parallel unit:

The sheet is leaving the alignment table towards the parallel unit where it, due to the buckle plates and deflectors, obtains one or multiple folds. All buckle plates are bearing scale marks to set the sheet stops into the corresponding length of the fold, and which are equipped with swing deflectors which may be brought easily into their required position.

#### Buckle plates:

With buckle plate no. 1 + 2 you may achieve a folding length of approximately 21", with all other buckle plates approximately 14". The minimum size of product of each buckle plate is approximately 1.5".

How you ascertain which buckle plate is to be used:

Fold a sheet by hand of the job to be processed. Prepare the necessary folds which are required for this job. Check the imposition and determine the head and side lay of the sheet. Select the buckle plate(s) which are necessary for the required fold and adjust the buckle plate(s) in accordance to the hand-folded sheet.

Setting of buckle plates or deflectors:

After determining which buckle plate is required for a certain job, you set the deflectors into position. You lower the deflectors at the buckle plates which are not required, and you lift the deflectors of the buckle plates which are required. This occurs as follows:

Loosen the grip which is located at operator's side to set the buckle plates, respectively deflectors, into position. Each buckle plate has its own grip. You pull the buckle plate away from the fold rollers and "swing" the deflector into the required position.

Setting of the sheet stop:

The sheet stops may be adjusted by a handwheel in order to correspond to the different impositions within each range of the buckle plate. Set according to scale or marks.

Different types of setting:

This paragraph has been prepared to assist the machine operator. We have not made the attempt to show all kinds of folding impositions which can be made on the folder. If it appears to be necessary you may, in addition to those we are showing you, fold various types of impositions.

The buckle plates which are used at the parallel- and 8-page unit are marked as 1st, 2nd, 3rd and 4th. The calipers for setting the buckle plates and knife shafts are located on top of each subsequent side frame, and are numbered continuously.

Caliper no. 1 moves the fold roller no. 2, and caliper no. 2 moves the fold roller no. 3, and so forth.

To make the base setting of the fold rollers with the calipers you proceed as follows:

- a) draw back all buckle plates from the fold rollers
- b) insert a paper (equal to the sheets to be processed) below each caliper on both sides of the machine
- c) prepare a paper strip (2") with the same kind of paper which is to be folded, and insert it between the stationary fold rollers no. 1 + 2, however, staying away from both ends of the fold rollers approximately 3 1/2"
- d) turn the handwheel of the machine into the direction to which the sheets are usually running and, at the same time, feel the pull of the paper strip
- e) The pull-back of the paper strip should be lightly and never so strong that the paper strip tears off while you are turning the handwheel with one, and hold the paper strip with the other hand
- f) if you turn the adjustment knob clockwise, then the pull of the fold rollers decrease, if you turn the knob counter-clockwise; then the pull is increasing

- g) after this procedure has been carried out at all fold rollers including the knife shafts, you may set the scale of the calipers to 0-position by holding the caliper and turning the graduated collar to the 0-marking
- h) if it becomes necessary to increase or decrease the exertion of the roller pressure onto the paper sheet you may carry out minor readjustments by returning to the 0-setting previously made.

#### Illustration no. 1

##### Four pages parallel "buckle plate on top"

Caliper no. 1: insert single thickness of paper  
Caliper no. 2 - 6: insert double thickness of paper  
Sheet stop no. 1: adjust to 1/2 of the sheet length  
Deflectors no. 2 - 4: set into position

##### Four pages parallel "buckle plate at bottom"

Caliper no. 1 + 2: insert single thickness of paper  
Caliper no. 3 - 6: insert double thickness of paper  
Sheet stop no. 2: adjust to 1/2 of sheet length  
Deflector no. 1: set into position

(Two up or multiple up may be folded and cutted on the folding machine).

#### Illustration no. 2

##### Double parallel fold, 8 pages

Caliper n<sup>o</sup>. 1: insert single thickness of paper  
Caliper n<sup>o</sup>. 2: insert double thickness of paper  
Cliper no. 3 - 6: insert quadruple thickness of paper  
Sheet stop no. 1: adjust to 1/2 of sheet length  
Sheet stop no. 2: adjust to 1/4 of sheet length  
Deflectors no. 3 + 4: Set into position

Illustration no. 3 aParallel fold, 6 pages

Caliper no. 1 + 2: insert single thickness of paper

Caliper no. 3 - 6: insert triple thickness of paper

Sheet stop no. 1: adjust to 2/3 of sheet length

Sheet stop no. 2: adjust to 1/3 of sheet length

Deflectors no. 3 + 4: set into position

Note: This imposition requires that the operator is keeping a large sheet gap (see setting of sheet gap).

Illustration no. 3 bParallel fold, 6 pages

Caliper no. 1 - 3: insert single thickness of paper

Caliper no. 4 - 6: insert triple thickness of paper

Sheet stop no. 1: adjust to 1/3 of sheet length

Sheet stop no. 3: adjust to 1/3 of sheet length

Deflectors no. 2 + 4: set into position

Illustration no. 4Accordion fold, 6 pages

Caliper no. 1 + 2: insert single thickness of paper

Caliper no. 3 - 6: insert triple thickness of paper

Sheet stop no. 1 + 2: adjust to 1/3 of sheet length

Deflectors no. 3 + 4: set into position

Illustration no. 5Accordion fold, 8 pages

Caliper no. 1 - 3: insert single thickness of paper

Caliper no. 4 - 6: insert quadruple thickness of paper

Sheet stop no. 1 - 3: adjust to 1/3 of sheet length

Deflector no. 4: set into position

Illustration no. 6Accordion fold, 10 pages

Caliper no. 1 - 4: insert single thickness of paper

Caliper no. 5 + 6: insert quintuple thickness of paper

Sheet stop no. 1 - 4: adjust to 1/5 of sheet length

Illustration no. 7Parallel fold, 12 pages

Caliper no. 1: insert single thickness of paper

Caliper no. 2 - 4: insert double thickness of paper

Caliper no. 5 + 6: insert sextuple thickness of paper

Sheet stop no. 1: adjust to 1/2 of sheet length

Sheet stops no. 2 + 4: adjust to 1/6 of sheet length

Deflector no. 3: set into position

Illustration no. 8, 8 pages

Parallel section - adjust in accordance with illustration no. 1

Adjust 8-page section as follows:

Caliper no. 1: insert double thickness of paper

Caliper no. 2 - 6: insert quadruple thickness of paper

Sheet stop no. 1: adjust to 1/2 of sheet width

Deflectors no. 2 - 4: will be used

If at 8-page section " buckle plate at bottom " a fold is required, adjust as follows:

Caliper no. 1 + 2: insert double thickness of paper

Caliper no. 3 - 6: insert quadruple thickness of paper

Deflector no. 1: in position

Sheet stop no. 2: adjust to 1/2 of sheet width

Deflectors no. 3 + 4: in position

Illustration no. 9, 16 pages

Set parallel section as described in illustration no. 2, and adjust 8-page section as follows:

Caliper no. 1: insert quadruple thickness of paper

Caliper no. 2 - 6: insert octuple thickness of paper

Sheet stop no. 1: adjust to 1/2 of sheet width

Deflectors no. 2 - 4: in position

Illustration no. 10, 12 pages right angle

Set parallel section as described in illustration no. 3 b, and adjust 8-page section as follows:

Caliper no. 1: insert quadruple thickness of paper

Calipers no. 2 - 6: insert octuple thickness of paper

Sheet stop no. 1: adjust to 1/2 of sheet width

Deflectors no. 2 - 4: in position

Illustration no. 11, 12 pages accordion and right angle

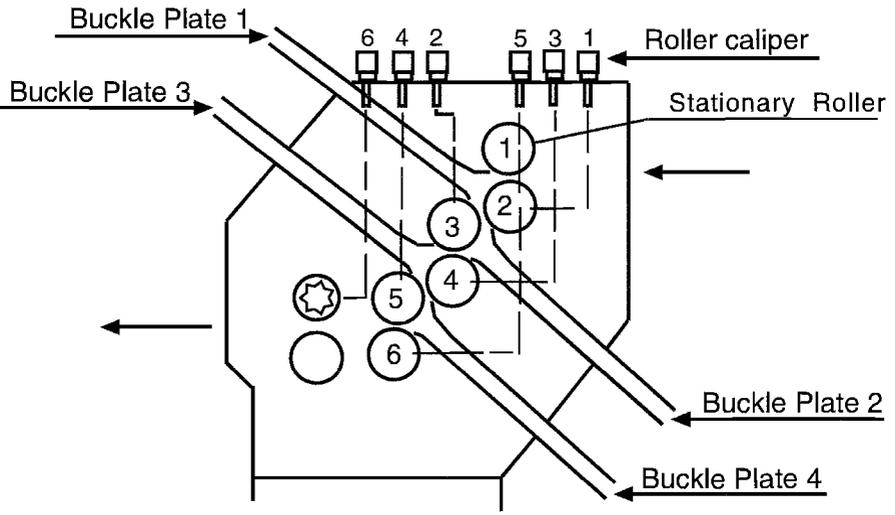
Set parallel section as described in illustration no. 4 and adjust 8-page section as follows:

Caliper no. 1: insert triple thickness of paper

Calipers no. 2 - 6: insert sextuple thickness of paper

Sheet stop no. 1: adjust to 1/2 of sheet width

Deflectors no. 2 - 4: in position



No. 7

12 Page, Parallel Fold

A diagram showing a 12-page parallel fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into six horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 10

12 Page, Parallel Fold, Right Angle

A diagram showing a 12-page parallel fold, right angle. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into three horizontal sections and two vertical sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 1

4 Page, Parallel Fold,

A diagram showing a 4-page parallel fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into two horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 4

6 Page, Accordion Fold

A diagram showing a 6-page accordion fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into three horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 8

8 Page, Parallel Fold, Right Angle

A diagram showing an 8-page parallel fold, right angle. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into two horizontal sections and two vertical sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 11

12 Page, Accordion Fold, Right Angle

A diagram showing a 12-page accordion fold, right angle. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into three horizontal sections and two vertical sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 2

8 Page, Double Parallel Fold

A diagram showing an 8-page double parallel fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into four horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 5

8 Page, Accordion Fold

A diagram showing an 8-page accordion fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into four horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 9

16 Page, Double Parallel Fold, Right Angle

A diagram showing a 16-page double parallel fold, right angle. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into four horizontal sections and two vertical sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 3

6 Page, Parallel Fold

A diagram showing a 6-page parallel fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into three horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

No. 6

10 Page, Accordion Fold

A diagram showing a 10-page accordion fold. On the left is a perspective view of the folded pages. On the right is a grid diagram consisting of a vertical rectangle divided into five horizontal sections. A small L-shaped corner symbol is in the top-left corner of the grid.

How to assemble and disassemble knife shafts:

The perforating-, scoring- (creasing), cutting- and trimming devices as well as the transport rollers are installed onto the knife shafts. These shafts are developed to the effect that they easily may be taken-off from the folding unit, if a new job becomes necessary.

To remove the knife shafts, loosen the hexogen screw inside the brassed housing, which locks the socket pin. While holding the knife shaft firmly with one hand, you pull the knob with the other hand. For taking the knife shaft out off the folding unit, you move it approximately 1 cm into the same direction.

The assembling occurs in the same nanner, however, just the other way. In order to prevent any axial (end) play, make sure that the screw is fitting into the slot, thus by pushing the polished hexogen screw.

How to assemble and adjust creasing knives:

Attach the creasing knife on a knife holder and hold it firmly by use of the swivel nut (bearing holes). A hooked spanner is designated for loosening and tightening this swivel nut.

If the creasing knife and the upper buckle plate is used for a job fold, this knife and the swivel nut must be mounted to the drive side on the upper knife shaft. If a fold job should be made in a lower buckle plate, the creasing knife must be installed onto the lower shaft and mounting the swivel nut to the operator side of the machine.

Place the transporting rollers (with radius) on both endings of the counter shaft. These rollers must be set into position on both sides of the creasing knives. By increasing or decreasing the distance between the rollers and the knives you may vary the depth of creasing.

How to install perforating knives:

By use of the same knife holders and the swivel nut, which are used for the creasing knives, you assemble the perforating knives onto the knife shafts.

The knife with its flat side must be assembled with the holder in such a manner, so that the sharp-edged side is placed into the direction to the swivel nut. By keeping the swivel nut into the direction of the drive side, the perforating knives should be installed onto the upper shaft.

The counter knife is made of hardened steel and has two sharp edges. One of these edges should be placed against the flat side of the perforating knife. Do not press them firmly together, they should touch themselves only lightly!

If both, the perforating- and the counter knife, are adjusted, then place the smoother onto the squared rod, which is located beyond the knife shaft.

Use a 15-toothed perforating knife for heavy and medium paper sheets, and for light paper sheets use a 12-toothed perforating knife.

See enclosure TM 35 for additional knives !

How to install cutting knives:

The cutting knife must be installed onto the upper knife shaft by use of the same holder, which is used for the scoring knives (see appendix " How to install and adjust

scoring knives "). The cutting knife should be installed in such a manner that the swivel nut is directed to the drive side. Once again, the lower (counter) knife is a hardened steel washer of sharp edges at both sides. One of the sharp edges should be placed against the flat side of the cutting knife. Do not press them firmly together, they should only touch themselves lightly.

How to install the centre bleed trim device:

To produce a centre bleed trim a special knife holder is used. Assemble the knife (with its flat side against the holder) as well as the required washers, and a second knife (with its flat side) into the direction of the swivel nut. The width of the holder is sufficient enough to produce a centre bleed trim of approximately 3/4".

The lower shaft requires two hardened steel collars. Each counter knife must be placed into such a position that it lightly touches the flat side of the cutting knife. The edge trim device may be fixed to the bar below the knife shafts. Place the steel stripper between the lower counter knives so that the paper waste is leaded off.

How you place creasing- and cutting knives as well as transport rolls into position:

Distribute the transport rolls in an equal distance to one side of the holder on the upper shaft and, furthermore, place the steel washers equally on the lower shaft. The transport rolls are serving for the purpose to guide the sheets after they have left the fold rollers. They also support the cutting, perforating or creasing of the sheet and lead them to the next unit (station) or to the delivery.

How you set the cross carrier's side lay of the 2nd folding unit.

This side lay may be set to each sheet size. A sheet, which had been folded at the parallel unit (1st folding unit), should be placed onto the cross carrier of the 2nd folding unit. Move the sidelay out- or inwards until the edge of the sheet rests approximately 1 cm inside the end of the cross carrier. Install the guides equally at the side lay throughout the width of the sheet coming from the first folding unit, so that the sheet is kept directly under the ball rail.

Install the aluminum smoother bars also throughout the width of sheet, to guide it equally into the fold rollers of the second folding unit.

The plastic and steel balls, which are delivered together with the cross carrier, have the same effect as those balls at the aligning table of the feeder. The quantity of the balls to be used and their distribution at the ball rail are depending on the weight, size and kind of paper which has to be processed.

In order to achieve an exact folding at unit 2, the guide of the cross carrier may be set by use of the angle adjustment. The small plastic screw is serving as a fixing device, and the knurled idler ring serves as an eccentric.

The sheets which are leaving the parallel unit to the cross

carrier may be supported, by making a height adjustment. The rear leg of the cross carrier is equipped with a guide roll, thus to be used to relief the exact positioning of the 2nd folding unit. Loosen the setting screw to set the cross carrier high or low, then lift or drop the complete cross carrier table and retighten the setting screw.

#### Delivery:

The delivery, which is delivered together with the folding machine, may easily be used at all exits .

When the job is finished, the folded sheets are leaded to the transport belt of the delivery. There are delivery rolls mounted onto a shaft which is placed above the delivery, and which may be adjusted in accordance with the different sheet sizes. These rolls stop the sheets and keep them on the delivery tape. In order to prevent that the sheets are falling into eachother (which may occur during folding of light paper sheets), the delivery may be replaced in its height. The speed of the delivery tape may be regulated by a D.C. motor. The speed may be regulated by use of the potentiometer (control button) which is located at the control cabinet. The operator may achieve the desired stream of the sheets by in- or decreasing the speed of the tape.

Two cables, i.e. 1 power supply and 1 control cable, are delivered together with the delivery. If the delivery is used in connection with the parallel section, these cables must be plugged into the dstinated sockets of the control cabinet. If the 2nd folding unit is to be used, the control cable remains at the control cabinet, however, then the supply cable

must be plugged into the 2nd folding unit.

### Summary

The quality and quantity of work which may be produced with the MBO folding machine, depends on the care of the operator during his adjustment and alignment works. Jam-up's or inaccurate foldings, which do not relate to the condition of the pile or mechanical faults, mostly occur due to inaccurate adjustments or setting. In such a case, the operator should investigate whether all adjustments or setting are in accordance with the Operating Manual.



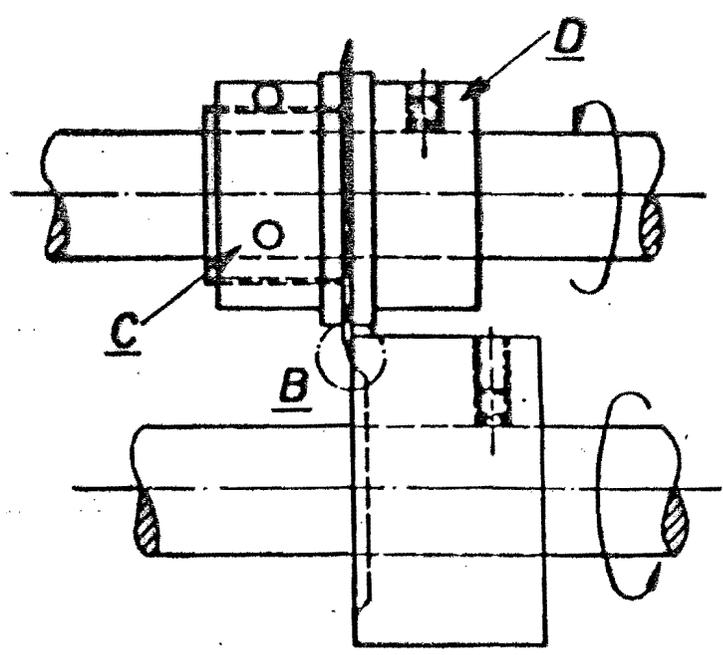
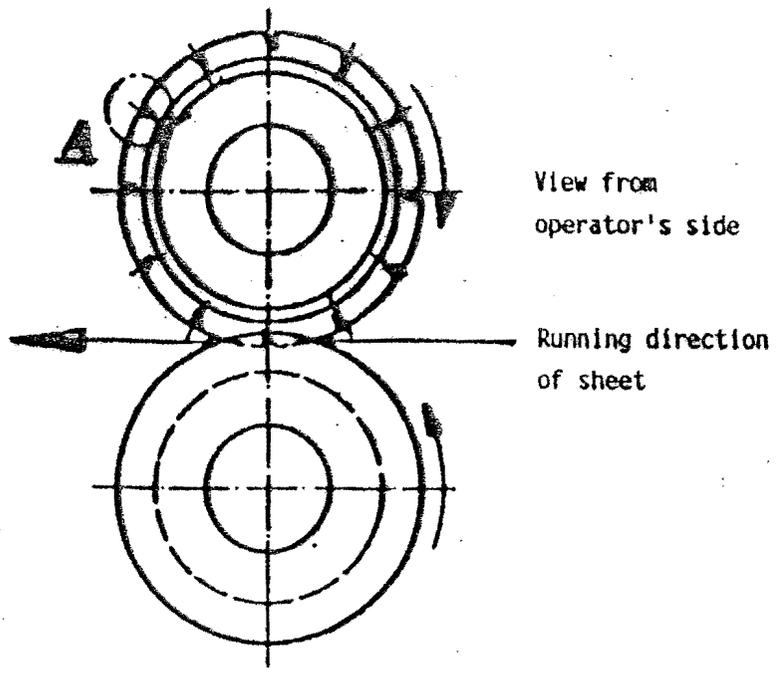
Caution:

If mechanical failure should occur, all repair works are part of qualified service personnel, and therefore must be executed by them or under their supervision only. Any disregard of this safety regulation may cause a damage to the machine. To avoid any kind of injuries do not, under any circumstances, attempt to work on or over the machine with tools of any kind while it is running.

Maintenance:

The entire machine is equipped with sealed ball bearings.





- A = At installation make sure that the teeth of the perforating knife are positioned correctly !
- B = The cutting edge of the perforating or cutting knife must sit close to the lower part of the cutting edge !
- C = The nut of the knife holder *D* must always be screwed on contrary to the running direction of the knife shafts !

X - knife folding unit:

The new, independent knife folding unit may be used either as crossfold or two-fold unit at the parallel unit (1st), or as threefold unit, at 8-page unit (2nd). The fold rollers and knife shafts, as well as the electric gear for the knife drive, are operated through the flat belts of the previous folding unit. The electric supply for the gear and control electronic are effected through the cable connection.

The setting of the fold rollers are carried out with the setting screws (1), which are located at the operator's side. The transport belt (2) carries the sheet to the sheet stop at crossfold unit (3). Minor corrections as well as angle differences may be levelled out with a setting wheel, which is located at the left side of the machine. According to the sheet size, place stop fingers (6) as much as possible on top of the two sheet stops (3 + 7). Side lays with fine adjustment (8) are used for lateral sheet guiding. A left turn of the grip (10), which is located at the electromagnetic clutch (11) effectuates the lowering of the knife (9), a right turn causes the lifting of it. By use of the lever (12) the knife may also be changed in its parallelism to the fold rollers. The knife shafts below the fold rollers may, by plug bearings, also be taken off like at the parallel unit. The stream delivery shall be hooked to the rear, if folding jobs are processed at parallel fold. When processing crossfold jobs, the stream delivery shall be hooked onto the left side of the machine. The sheets must always be guided below the knife, central to the buckle folding unit, if the X - knife folding unit is

used at the buckle unit of crossfold. In order to ensure a safe guiding of the sheet from the parallel unit to the ball rail at crossfold unit, a table delivery with yellow tapes must be installed onto the parallel folding unit. Remove the crossfold unit from the parallel unit, if big sheet sizes have to be processed. The rear edge of the sheet, which is underneath the ball rail, passes the yellow tape and falls onto the cross carrier.

#### Function:

The digital knife control activates the knife at the X - knife unit. If the sheet is passing the photocell, which is placed at the ball rail, it turns ON the electric control. An impulse counter now registers the distance of each cm, of which the sheet is away from the sheet stop. A figure must be set into the digital switch to activate the impulse counter. Please note the following instruction:

#### Setting:

Turn the setting wheel (5) to adjust the sheet stop (7). The sheet stop must be adjusted to the required sheet size according to the scale. A marking at the end of the sheet stop indicates a figure (base setting), which should be stored into the digital counter (14). Push the lever, which is located at the left side of the digital infeed to the UP position.

#### Example:

If you read 25 on the scale, store this figure into the digital infeed. The knife is activated immediately upon arrival of the sheet at the sheet stop.

Delay: If the sheet requires a longer period of time until its final reach of the sheet stop, you should store a higher figure - for example 30 - into the digital infeed, i.e. the sheet remains 5 cm longer at the stop point, wherefore the knife impulse is released 5 cm later.

Acceleration: To achieve a higher production, you should select a lower figure as used it for the base setting, for example 20 instead of 25, i.e. the knife impulse is effected 5 cm earlier, wherefore the knife activates 5 cm earlier.

Attention: The increase of speed from 2 cm to approximately 5 cm may be carried out at pre-perforated sheets. For acceleration or delay of the impulse you should always carry out the base setting at first, and thereafter the digital infeed. Make sure that the sheets are stopping at sheet stop before the knife is activated. If a lower figure has been stored, the knife moves before the sheet has reached the sheet stop.

Sheet examination:

The photocell also serves as examiner of bad folded sheets, double sheets or jam up's. If the digital infeed has reached 25, and if the sheet has still not passed the photocell, no impulse will occur and the machine turns OFF automatically.

Sheet control at parallel fold:

If you move the lever to the lower position, then the photocell serves as sheet control after the parallel fold. If the folded

sheet is 10 cm long, set the digital switch to 14. The machine is now running continuously until a sheet, which is not longer than 10 cm, passes the photocell. However, if a sheet is longer than 10 cm the machine stops automatically.

If such kind of control is not desired, set the digital switch to " 00 ".

- 1 Adjustment screw
- 2 Transport belts
- 3 Sheet stop angle
- 4 Scale
- 5 Setting wheel
- 6 Stop finger
- 7 Sheet stop angle
- 8 Side lay (adjustable)
- 9 Folding knife
- 10 Setting lever
- 11 Cpl. knife coupling
- 12 Locking handle
- 13 Sheet stop mark
- 14 Digital infeed

