

## B115 B118 B120 Ms control


pages
Safety ..... 1－3
General description ..... 4
Speed chart ..... 5
Control panel ..... 6
Setting sheet gap and suction length ..... 7－8
Pile feeder（drowings） ..... 9
Pile feeder description and instructions ..... $10-12$
Double sheet control ..... 13
Alignment table（lattice and register）drawings ..... 14
Alignment table instructions ..... 15
Buckle picte folding depths ..... 16
Setting the buckle plates（drowings） ..... 17
Setting the buckle plates（description） ..... 18
Fold roller setting ..... 19
Impositions／common folds ..... 20－23
Slitter shaft drowings ..... 24
Setting perforator ..... 24A
How to install knives／perforators ..... 25－26
2nd／ 8 page unit（drawing） ..... 27
2nd／ 8 page unit settings ..... 28
Delivery ..... 29
Maintenance ..... 30
Peforator，Knife and score list／part numbers ..... 31－32
Soleniod cleaning／suction drum ..... 33
Super score（cover score） ..... 34－35
Edge trim device ..... 36
Center bleed device ..... 37
Multiple perforator／score device ..... 38
Punch knife perforating device ..... 39
$X$ unit drawings ..... $1 \times$
$X$ unit settings and explanation ..... $2 X-4 X$
Tapes and belts list ..... Bl

CHECKING FOR BAD SHEETS, JAM DEIECTOR:
The photo-cell also serves as a control for incorrectly folded sheets, doubles of "jams". If the photo-cell is not cleared by the passing sheet when 25 is reached then an impulse will not be given to the knife and the machine will switch itself off.

## -JAM" DETECTOR WITH PARALLEL FOLD:

If you put the toggle switch ( 6 ) in the down position ( $C$ ). (drawing below) the photo-cell is used for controlling the sheets passing straight through / under the knife. Knife does not operate. If the folded sheet is $4^{-1}$ in length (1Ocm) set the digital switch on $\operatorname{z14}$ and the machine will keep running. The machine will only stop if a sheet longer than $4^{-1}(10 \mathrm{~cm})$ passes under the photo-cell or a sheet is stopped under it, ("jam up"). If you do not wish to use this setting then set the digital switch to "OO".

## SWITCH POSITIONS:

A. Knife operates.
B. Knife does not operate.
C. Straight through imposition (knife fold not required) or ready position to "set-up" sheets for knife fold.


## ATTENTION！

When the main switch is turned off．the cabinet is not completely without voltage

The ATTENTION－label on the electrical cabinet states that the cabinet is not completely without voltage．


DO NOT operate your MBO－folder with any of the guards removed or with any of the safety devices disconnected， bypassed or out of order．

DO NOT wear loose clothing around the machine and keep longer hair securely tied up．Remember that these machines are designed to grip and hold material and move it at high speeds．

DO NOT attempt to make any adjustments on the machine while it is in motion，unless adjusting device or controls are provided and the adjustment is specifically mentioned as a running adjustment．

If a mechanical failure should occur，or if adjustments appear to be necessary that are not part of the normal operator＇s procedures，shut the machine OFF．Get assistance from your MBO service representative．

DO NOT，under any circumstances，aftempt to work on or over machine with tools of any kind while it is running．

Should a problem develop that appears to be electrical in nature，shut the machine OFF．Turn OFF incoming power to your machine．Secure the services of an electrician or your local MBO service representative．

The now self-timing knife folding " $X$ " unit can be used either atfached to the paraliel folding unit as a 8 page section or to the 8 page second unit after the fold plates. The folding rollers and knife shatts as well as the electric clutch for the knife motion are driven by a belf from the preceding folding unit. The electric supply to the clutch as well as the electronic controls are made by cable connections. The fold roller perforator shaft adjustments are made at the operators side by caliper settings. Four transport tapes (8) move the sheet to the sheet stops (7). which is adjusted according to the scale at the left side of the machine (2). In accordance to the sheet size use sufficient stop fingers (7) attached to the sheet stop bar (1). For the final positioning of the sheet the side guides (6), have to be set, one on each side. The height of the tolding knife (31) can be adjusted by the handle (32) situaled on the top of the clutch assembly. Turning the handle COUNTER CLOCKWISE moves the knife neater to the rollers. CLOCKWISE moves it farther away. The knife may also be moved horizontaly, (perpendicular to the fold rollers) (tips the knife from front to back). This operation is done by turning handle (33). It may be necessary to adjust the knife to correct a "crooked" perforator / knife cut.

The slifter shafts under the fold rollers can be removed by means of plug bearings like in the other folding units.

The stacker / delivery is positioned facing the operator. (operators side).
If the " $X$ " unit is used on the 8 page unit the sheet MUST always run in the center of the 8 page unit, (if a half fold is processed). For that purpose a conveyor system is used with yellow belts / tapes to convey the sheet to the center and under the side lay. This unit is attached to the parallel unit by "hooks" and locking screws. When running a large sheet the 8 page unit MUST be moved away from the parallel unit. This will enable the tail of the sheet to clear the conveyor.

The above folding machines were developed for folding sheets in sizes as specified in their respective data sheets using pile or continuous teeders (see page 1 A ). The running speed can be regulated continuously from 200 to 8000 inches / minute depending on the machine and can be varied according to size of the sheet or kind of fold.

The basic machine is supplied with a pile feeder and the well proven MBO features of:
-Lattice-type alignment table.

- Four (4) fast setting fold plates with attached swinging deflectors and a new sheet stop adjustment.
- Combination polyurethane-steel spiral rollers with new gearless and noiseless belt drive and caliper adjustment at the top of the machine.
- Solid, quick change. easily removeable knife shafts equipped with plug bearings.

The 8 page station is a roll-away buckle folding unit with it's own drive, quief running cross carrier roilers and tour (4) plates as described above.

The 16 page section is also a roll-away buckle unit as described above, but with $12^{\prime \prime}$ or $15^{-1}$ working width and four (4) fold plates.

The knife unit ${ }^{-1}$ can be used on the parallel or the 8 page buckle unit of the Bll5-Bll8-BI2O as an 8 page or 16 page folding unit. The knife is selt-timing by a photocell and is independent of the feeder.

The standard delivery is a hang-on motorized stacker delivery with electronic speed control. The newer B115-8118-B12O tolders use a mobile motorized stacker as optional.

To give the operator a general understanding of the working of the machine, the following description is made in the sequence of the adjustment of the machine from feeder to delivery.


Front view


Rear view


## Sheet infeed control

Teach in ${ }^{-1}$ of suction length and sheet gap.
Make sure the machine is RUNNING by pushing the GREEN start button.
Turn on the START Switch for the pump.
When the button suction length (2) is pushed and the single sheet infeed button is activated at the same time, a single sheet is provided with defined basic suction length (machine relating). When activating the buttons suction length (2), as well as +(4) or ( 6 ) all subsequent single sheets will increase or decrease the suction length respectively.
The sheet length of all subsequent single sheets are measured anew through the photocell B 2 at suction wheel
The "teach in" is finished and the suction length \& the sheet gap is determined onto the basis of the last measured sheet length by activating the button stream sheet infeed.
Suction length $=1 / 3$ of sheet length.
Sheet gap at operation mode $1=$ suction length +1 cm (front edge-front edge).
Sheet gap at operation mode $0=1 \mathrm{~cm}$ (rear edge -front edge).
The suction length and sheet gap may be altered at a later time.

## Alteration of Suction Length

Activate button suction length (2).
The suction length will be indicated in the 8 -digit display.
When you push the button suction length (2) jointly with the buttons + (4) or (b). you may increase or decrease the suction length.
input sequence $=3-99 \mathrm{~cm}$.
The batch counter mode is automatically switched over to 3 seconds after releasing the button suction length.

## - Notice: The suction length will be reset automatically to $1 / 3$ of the sheet length when the "feach in" for suction length and sheet gap is started.



1-Main switch
2 = Air pump switch
3 - Emergency stop button
4 = Pilot light for ( 0 )
$5=$ Machine off (stop)
$\delta=$ Machine on (run)
$7=$ Sheet feed buttion (continuous)
$8=$ Single sheet control (MS)
9 = pile up - down
$10=$ On button and Pilot light tor 9 $\mathfrak{n}=$ Control light for main switch

## Super Score

These drawings will help you to install the scoring device for cover stock．
The method shown will alleviate most（not all）cover stock crocking problems that normally occur when using other methods of scoring．

PLEASE remember to score INTO the fold（see drawings below）．


Reverse Scoring


If the sheet cuts in half，it may be necessary to use both of the spacers（ 1 mm and $0,5 \mathrm{~mm}$ ）．If the sheet still cuts in halt，back off the roller pressure a little．Put one piece of thinner stock under the slitter shaft roller calipers．It is NOT recommended to open the scoring device $2 \mathrm{~mm}(1 \mathrm{~mm}+2 \times 0.5 \mathrm{~mm})$ otherwise cracking may re－occur

It is not necessary to purchase the whole accessory．If you have an edge frim device or center bleed，you may use some of these parts．

The rubber tires，spacers and score blades WILL fit on a standard perforator／knife holder on the T65－75／B26－3O／B123 machines．The B16－2O／T49－55／B23 standard perforator／knife holder has less thread width，so if will NOT be possible．

## Pile Feeder

## Pile Feeder B115-118-12O

The self-contained pile table may be loaded from two sides and is controlled by an electric motor. The pile stop (14), which is located at the bearing block (rightside, off operators side) is to be set to half of the sheet width 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 2710 and pilot light buttion $=11$ which is located on the main control panel. The table is stopped in the proper position by a limit switch as the paper is loaded and aerated. The EASY LOAD switch automatically lowers the feed table until the table reaches its lowest position (maximum height of the pile is approximately 66 cms or $26^{\circ}$ ). There after turn the selector switch for up movement of the pile table, (switch remains in this position). The height control in the up direction is controlled by a microswitch if the pile is approximately $1 / 2$ below the suction wheel ( 40 ) it should stop, when the pile is uneven the distance may be changed by re-setting (18) the height of the microswitch. The scale (17) will let you see where the micoswitch is positioned. Items (24) are small weights that can be removed from the sheet hold backs. The weight required is dependent on the paper. The rubber caps (23) can also be removed. Back stops (19) are positioned at the back of the pile.

Then affix the left sheet guide bar (angled)(21). This bar should be approximately $3 \mathrm{~mm}-1 / 8^{n}$ away from the side of the pile, in order to avoid squeezing the top sheets and to aid good ventilation of the sheets. The microswitch, which is located on the rear end of the pile (center) hinders floating of the sheets if they are excessively ventilated.

The guide bars (21) which are located on the left and right upper edge of the pile, may be adjusted in their height by knurled screws (25). These bars should be placed as deep as possible on top of the pile edges to avoid any leaking of the air blast and, futhermore, to make sure that the sheets are ventilated up to their rear end. Position side guide pin (20) to stop sheets from running into the side guide.

It is possible to aerate both ends (front, nearest blower tube and rear, pile height) of the pile with the 2 side air blowers (30-33). The front airbar blast can be regulated with controls ( 36 and 37), increase or decrease the amount of blow. One control does I side only.

## Maintenance



The solenoid requires periodic cleaning. Spray powder can cause the piston to stick or mal-function. If the machine refuses to feed or constantly feeds with no sheet separation when the BLUE feeder twion is pressed. PLEASE check and clean the solenoid, (DO NOT OIL), before calling for a fechnician.

## Air and vacuum pump

The air pressure and vacuum pump are tumed $O N$ by use of switch $z 2$ at the main control panel. Open the required airclips, which are placed on the air tube (30) at the front of the pile. The quantity of air should be proportioned in such a manner that approximately 5-10 sheets of the pile are thoroughly ventilated. The air tube may be adjusted up or down by twisting the knurledhead screw (34), which is located on the lett side of the air tube. The air tube may also be tilted by use of the lever (35), which is also located on the left side of the air tube. You may carry out the preceding adjustment it the front edge of the sheet pile is bent down to achieve better results.

B115-B118-812O
The conveyance of vacuum from the suction wheel (40) is controlled by a disk which is placed behind the suction wheel. A red mark is located on this disk. The same mark is located on the housing beside the disk. When these marks are lined up, the sheets are sucked by the suction wheel vacuum in their exact center. A lever (42) is located on the front left hand side of the disk for adjustment of the exact vacuum contact position. If the sheet bends down you should move the lever to the right (clockwise). The starting position for a normal (even) pile is when the 2 red marks behind the suction wheel are lined up.

B115-8118-812O
To increase or decrease the amount of vacuum turn the screw (43) on the block next to the vacuum hose, clockwise for more vacuum and counter clockwise for less vacuum.


All scores, slitters and perforators measure $13 / 8^{\prime \prime}$ ( 35 mm ) internal diameter. Scores, slitters and punch perforators are closed. ALL other perforaters are split. Inch measurements, cut lengths and bridge width dimensions are approximate.


## Delivery

The delivery (hang on or mobile) which is delivered with the folding machine may easily be used at all exits. When each sheet is finished folding they exit onto the delivery. There are wheels mounted to a round bar and they can be adjusted depending on the finished sheet size. To prevent the sheets (signatures) from inserting into one another, the wheels must be positioned correctly along with the height of the delivery. The speed of the belts (driven by a DC. motor) can be regulated via a potentiometer on the operators control panel on the delivery.

Two cables, one power supply (5) and one control cable (6) plug into the previous unit ( 7 and 8 ). If the delivery is used in conjunction with the parallel unit then these cables MUST be plugged into their respective sockets on the underside of the main control panel on the parallel.

If you are using an 8 page and 16 page section then the delivery unit power and control cable will plug into the sixteen page control panel.

## Summary

The quality and quantity of work which may be produced with the MBO folding machine depends on the care the operator gives the mochine. "Jam-ups" or inacurrate folding which do not relate to the condition of the pile or mechanical faults, mostly occur due to incccurate adjustments or settings. In such cases, the operator should investigate whether all adjustments or settings are in accordance with the operators manual.

## 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 have scales to set the sheet length of the fold．You may bring the swinging deflectors up or down（depending on which buckle plate／plates you require to use）．

## Buckle Plates

## Fold Plates depths in inches

| Parallel | 8 Page | 16 Page |
| :--- | :--- | :--- |
| $\# 1=18^{\prime \prime}$ | $\# 1=131 / 2^{\prime \prime}$ | $\# 1=$ |
| $\# 2=18^{\prime \prime}$ | $\# 2=131 / 2^{\prime \prime}$ | $\# 2=$ |
| $\# 3=1312^{\prime \prime}$ | $\# 3=1312^{\prime \prime}$ | $\# 3=$ |
| $\# 4=1312^{\prime \prime}$ | $\# 4=131 / 2^{\prime \prime}$ | $\# 4=$. |

$$
\text { Minimum size on each buckle plate is approximately } \mathrm{I}^{-} \text {. }
$$

## Speed Control

At the lower front of the parallel unit section is a hand adjuster（black＂star＂ knob）．This controls the speed of the machine（each unit has one of these adjusting knobs）．To increase the running speed turn the＂star＂knob clockwise and to decrease speed turn it counter clockwise．


## How to ascertain which buckle plate to use

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 / plates which are necessary for the required fold / folds and adjust the buckle plate / plates in accordance with the hand folded sheet. See pages 20-23. for common folds.

## Setting the buckle plates and deflectors

After determining which buckle plate is required for the job, you set the deflectors in position. Lower the deflectors on the buckle plate / plates which are not being used and lift the deflectors on the buckle plate / plates which are required.

## THIS OCCURS AS FOLLOWS:

Loosen the plate lock-up lever (13) to release the buckle plate from the holder (14). Pull the buckle plate away from the fold rollers and "swing" the deflector into the position required. Reposition the buckle plate and tighten the plate lock-up lever.

## Setting the sheet stop

The sheet stops are adjusted with a small surrated handwheel ( 21 ) on the operators side of the machine on the top of the buckle plate. These are adjusted for the correct fold length within the range of the buckle plate settings. Set according to the belt scale (17) and plate indicator (18). Micro adjustments can be made with knob (23).
"Skew" adjustments are made by releasing knob (20) and furning outside surrated handwheel (21). A mark on each surrated wheel (21 and 22) will tell you if the sheet stop is set correct. If both marks line up then the sheet stop in straight.

## Adjusting the back plate lip

At the top of the fold plate on both sides is a hexegon adjusting screw (24). Turn both screws clockwise to raise the lip and counter clockwise to lower it. You may check the adjustment by the scales (red marks, 26) on the plate rails.

## How to install perforators／knifes on knife shafts

The scoring（creasing）．perforating，cutting and other devices as well as the transport rollers are installed onto the knife shafts（40）．These shafts with their piug bearing（42）features may easily be removed and installed in the folding unit when it is necessary．

To remove the knife shafts，loosen the socket head screw（41）．This is located in the bronze bushing on the operators side of the machine．While holding the knife shaft firmly with one hand，pull the knob with the other．To remove the shaft．pull it towards you so that the pins on the knife shaft（on the off－operators side）are free from their housing．

To reinstall the shafts，reverse the procedure．Make sure that the pins are located in their housing and the plug bearings are PUSHED all the way in．

## How to install and adjust the scoring blades

Attach the scoring blade on the knife holder（3－5）and hold it firmly by use of the locking screw－ring．$A^{-} C$ wrench is used for loosening and locking this ＂ring＂．NORMALLY ONLY HAND TIGHTENING OF THIS RING IS NECESSARY

If the scoring blade and upper buckle plate are being used then this holder must be mounted with the－ring－facing the drive side（off－operator side）of the machine on the upper knife shaft．If a fold is processed using the bottom （ $\sim 2$ ）plate then the scoring device must go on the bottom shaft and the＂ring＂ MUST face the operator．
There are exceptions to this rule but．．．．．．．．．MAKE SURE YOU UNDERSTAND THEM．
Place the transport rollers with the＂rounded＂edges towards the score blade one either side．Opening and closing the gap between these rollers will result in a＂heavy＂or＂light＂score．This will be dependent on the thickness of the paper and how many folds．

Failure to install any knife shaft accessories correctly can result in damage to the accessory and shafts！


Four page parallel $t l$ plate
Caliper =1 $\qquad$ ..insert I thickness of paper
Calipers $\# 2$ to $\ddagger 6$ $\qquad$ insert 2 thicknesses of paper Sheet stop $=1$ $\qquad$ .adjust to $1 / 2$ of sheet length Deflectors $\# 2-z 4$....Set in position/ plates closed

Four page parallel $=2$ plate
 $\qquad$ insert 1 thickness of paper Calipers $\pm 3$ to $\pm 6$ ....insert 2 thicknesses of paper Sheet stop $\quad 42$ $\qquad$ .adjust to $1 / 2$ of sheet length Deflectors $\pm 1,2,4$......set in position / plates closed


2 up or multiple may be folded and cut on the slitter shatt

## Illustration $\# 2$

Double parallel fold 8 pages, $\# 1 \& \pm 2$ plates
Caliper $=1$ $\qquad$ insert 1 thickness of paper
Caliper $=2$ $\qquad$ insert 2 thicknesses of paper Calipers $\pm 3- \pm 56$..........insert 4 thicknesses of paper Sheet stop $\boldsymbol{= 1}$ Adjust to $1 / 2$ of sheet length
Sheet stop $\pm 2$ $\qquad$ Adjust to $1 / 2$ of sheet length Deflectors $2 \pm 3 \&=4$....Set in position / plates closed



## Illustration $\# 5$

Accordion fold 8 pages

Caliper $\pi 1$ to $\# 3$ $\qquad$ insert 1 thickness of paper Calipers 54 to $\pm 6$ $\qquad$ insert 4 thicknesses of paper Sheet stops $\# 1$ to $\# 3$ $\qquad$ .adjust to $1 / 2$ of sheet length Deflectors 54 $\qquad$ Set in position/ plate closed


## Illustration $\$ 6$

Accordion fold 10 pages
Calipers $\# 1$ to $\# 4$ $\qquad$ insert thickness of paper Calipers $\# 5$ \& $\# 6$ insert 5 thicknesses of paper Sheet stops $\# 1$ to $\# 4$ $\qquad$ adjust to $1 / 5$ of sheet length

## Illustration 77



Parallel fold 12 pages
Caliper $\Rightarrow 1$ $\qquad$ insert 1 thickness of paper
Calipers $\# 2$ to $\# 4$ insert 2 thicknesses of paper
Calipers $m 5$ \& $\pm 6$ insert 6 thicknesses of paper Sheet stop $\boldsymbol{z l}$ $\qquad$ adjust to $1 / 2$ of sheet length Sheet stops $\approx 2$ \& $\mp 4$ adjust to $1 / 6$ of sheet length Deflectors $\# 3$ Set in position/ plates closed


## Illustration $\boldsymbol{\nabla 8}$

Parallel section/ unit adjust in accordance with illustration $z 1$ The adjustments below are for the 8 page section / unif

Caliper $=1$ $\qquad$ insert 2 thicknesses of paper Calipers $z 2$ to $\# 6$ ..insert 4 thicknesses of paper
Sheet stop $\quad$ 피 $\qquad$ adjust to $1 / 2$ of sheet length
Deflectors $\# 2$ - $\mp 4$ .Set in position/ plates closed


