FORMAX®

2200 Series
AutoSeal®

OPERATOR'S MANUAL
FIRST EDITION

CONTENTS

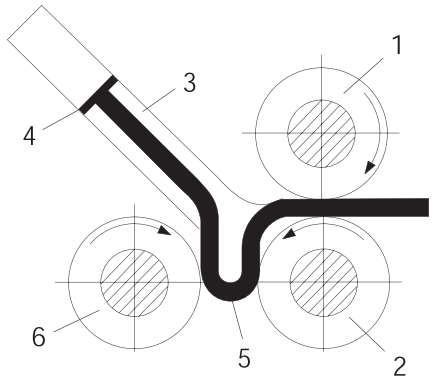
1. GENERAL

Function

The 2200 Series folder / sealer folds and seals many different pressure seal mailer configurations including, “C”, “Z”, “V” and custom folds. All of these fold configurations can automatically be selected from the control panel. The 2200 Series can also process several different sizes of forms. For configurations and / or paper sizes see listing under specifications below. There is a choice between suction- and flat pile feeders.

Fold Principle

The infeed rollers (1) and (2) transport the sheet to be folded into the fold plate (3).
As soon as it comes up against the adjustable stop (4), the sheet forms a buckle (5) because the infeed rollers keep on moving.
The loop gets bigger until the sheet is seized by rollers (2) and (6); this is where the actual fold occurs.
The rollers draw the folded sheet from the fold plate and the infeed rollers and move it on.



Sealing Principle

The clearence between the upper and lower rollers is enough to allow the documents to pass between the rollers while still appling enough pressure to activate the pressure sensitive glue.

2. SPECIFICATIONS

Hopper Capacity:

FD 2200	500 Sheets 24# (90gsm)
FD 2200	1,000 Sheets 24# (90gsm)
FD 2250	3,500 Sheets 24# (90gsm)*

* Capacity of up to 3,500 non-windowed forms. Forms with a traditional patch window are better suited for the FD2200 and FD2200-EX.

Paper Size:	Maximum W x L	Minimum W x L
FD 2200	11.5 x 25 in	2.75 x 4.75 in
FD 2200-EX	11.5 x 25 in	2.75 x 4.75 in
FD 2250	11.5 x 25 in	4 x 4.75 in

Variable Speed: Up to 40,000 sheets per hour – based on 11" Z-Fold (279mm)

Power: 208V, three phase, 20 Amp (Special 3 Phase Power Required)

Duty Cycle: Unlimited

Dimensions: 152"L x 30"W x 56"H (138" L w/ conveyor ext. closed) / FD 2250

Weight: Approx. 1,200 lbs (45 kg)

Delivery Requirements: Customer supplied automated pallet jack or fork lift is required for installation and setup

Certifications: UL applied for

3. PROPER HANDLING OF THE MACHINE

The 2200 Series Folder/Sealer line machines are built for folding and sealing pressure sensitive forms.
They are unsuitable for handling other materials such as foil, plastics and textiles.
The manufacturer / distributor is not responsible for damages resulting from such unsuitable applications. Responsibility lies alone with the user.

Reading the Operator's Manual and observing the conditions for inspection and maintenance are part of the proper handling of the machine.
Installation of the machine, i.e. assembling as well as electrical and pneumatic work should be carried out only by skilled personnel authorized by the manufacturer or his representatives. Additional instructions are provided for this purpose.

Repairs and service should be carried out only by skilled personnel authorized by the manufacturer or his representatives.
The interval between inspections including safety-related functions depend on the machine usage.
For regular one-shift-operation, two inspections per year is recommended.

The machine needs a flat surface for installation.
The machine weight should be considered when choosing a location for the machine.

The levelling screws in the undercarriage of the machine can compensate for an uneven floor to a certain degree.
To ensure stability during operation the machine should be secured by means of the levelling screws.

The line voltage must correspond to the voltages on the serial plate.

No harmful emissions are produced.

Read the Operator's Manual before working with the machine.

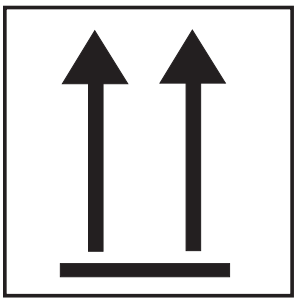
We recommend to carry out all operations and settings in the sequence mentioned in this manual.

The terms "right" and "left" in the following text always refer to the direction of paper travel. Therefore the left side is the operator side.

4. SAFETY INSTRUCTIONS

4.1 Safety Instructions for Transport and Set-Up

The following instructions and warnings are applied to the packing to ensure appropriate and safe transport:



Top! - Transport in upright position only!

Protect from humidity!

Fragile! - Handle with care!

Theses instructions and warnings must also be observed for transport within the users premises.

For transport to other premises resp. for return shipment the machines must be packed and provided with the same markings.

4.2 Fundamental Safety Instructions

Warnings and Symbols

The following symbols and designations are used in the manual to identify instructions of particular importance:

General instructions and special information how to use the machine most efficiently.

Instructions designed to prevent injury or extensive equipment damage.

Basic Operation

The machine has been built in accordance with state-of-the art standards and the recognized safety rules.
Nevertheless, operators and third parties may get injured when working with the machine, or damage to the machine and to other material property may result.
The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operator's manual.
Any malfunctions, especially those affecting the safety of the machine, should therefore be rectified immediately.

4.3 Cleaning and Maintenance

Regular and proper cleaning contributes to a long life of the machine and a consistent quality. Therefore it is important to clean the machine in regular intervals and above all to remove paper dust.
The interval between maintenance jobs depends on the workload.
It is recommended to clean the machine once a week.

Before cleaning the machine always pull the power plug!

Use the Formax recommended cleaner only for cleaning the fold rollers.

Do not use any solvents such as Acetone or Toluol. They would damage the nonmetal parts of the rollers.

Remove paper- or print powder dust from all fixed and moveable parts of the machine.

Clean the photodetector with a brush.

Use compressed air to clean the fold plates when paper with a high degree of powder has been folded. Carefully remove deposits in the control box with a vacuum cleaner.

Clean the air filter of the compressor and the pump using brushes or air.
The maintenance-free flat belt drive needs no lubrication of any kind.

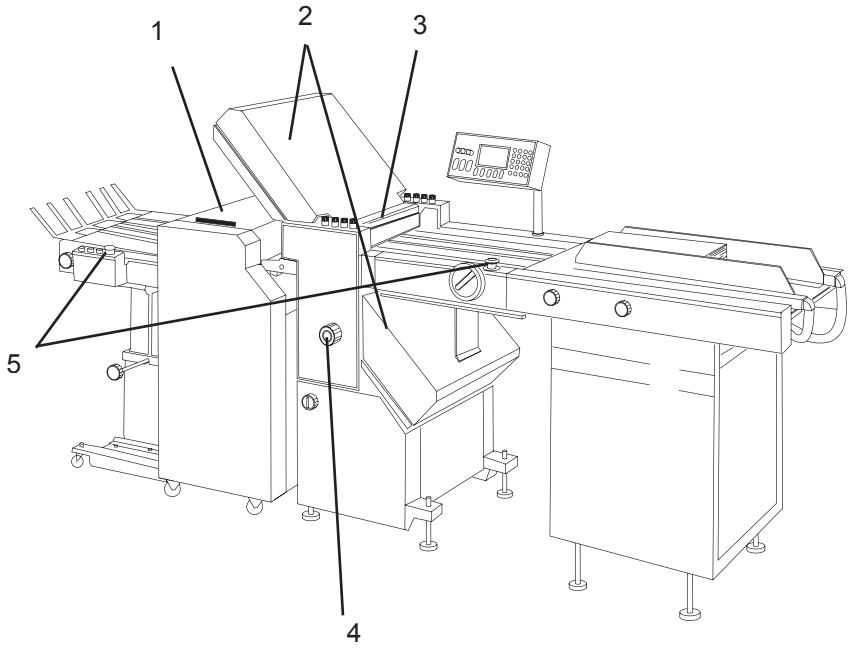
Sealer rollers should be cleaned weekly with Formax recommended cleaner to avoid toner build up.

5. SAFETY FEATURES

The 2200 Folder/Sealers are equipped with various safety features. They ensure the safety of the persons working with the machine.

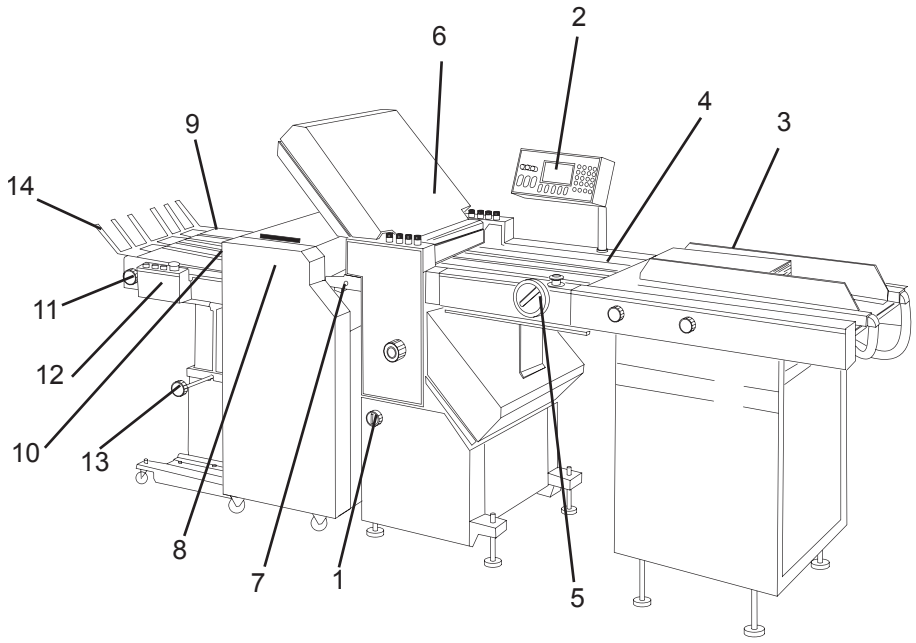
The following safety features are found on these machines:

1 Sealer rollers safty cover
2 Swing-up noise covers
3 Fixed cover at the fold roller infeed section
4 Safety handwheel
5 Emergency stop buttons



6. BASIC COMPONENTS OF THE MACHINE

1. Power Switch
2. Operator Control Panel
3. Paper Feeder
4. Register Table
5. Form Width adjustment Knob
6. Folder
7. Transfer Bridge
8. Sealer
9. Stacker
10. Stacker Wheels
11. Stacker Wheel Adjustment Knog
12. Stacker Control Panel
13. Stacker Height Adjustment Knob
14. Stacker Extension



7. ELECTRICAL CONNECTION

Operator panel, fold units and delivery are interconnected with cables.

Plugs and sockets allow variable connections.

Do not bend or twist the cables sharply or place heavy objects on them - they may get damaged!

When making or breaking any electrical connection, always first turn off the main switch or the safety switch on the folder. Non-compliance may cause damage to electronic components!

At the rear of the base of the fold unit you will find the sockets for connecting the various componets of the machine.

Buckle fold unit 1

1 Socket for the connection cable to the operator panel

2 Receptical for Sealer unit

3 Receptical for Sealer unit

4 Socket for the connection cable of the stacker table

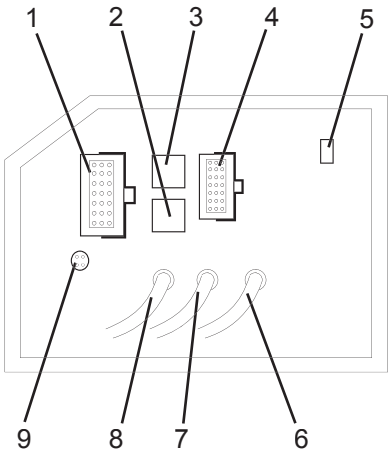
5 Reset switch

6 Power cord 400V

7 Connection cable of the feeder

8 Connection cable of the pump

9 Sealer Photo-eye



Plug connections are easily pulled or inserted by holding the plug with one hand and opening resp. closing the safety bracket with the other hand.

8. AIR FEEDER FD 2200 & FD 2200-EX

Principle of Operation

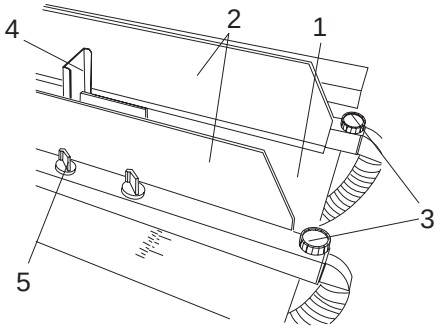
The air feeder consists of a feeder and a register table.
It is suitable for handling a wide variety of papers - uncoated papers as well as coated, freshly printed or thin papers.
The sheets are separated by air and vacuum.
Air is supplied from the bottom of the stack both on the left and right side, separating the paper in the stack which now floats in a cushion of air.
A rotating suction drum can then separate the sheets from the bottom of the paper stack.
This principle has the advantage that paper can be continuously reloaded with the machine running. There is no need to stop the machine.

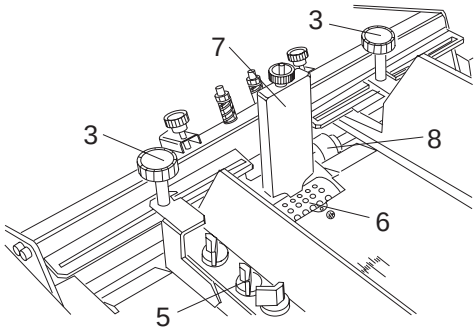
On the register table, a transport belt, which runs at an angle, moves the sheets against a register rail.

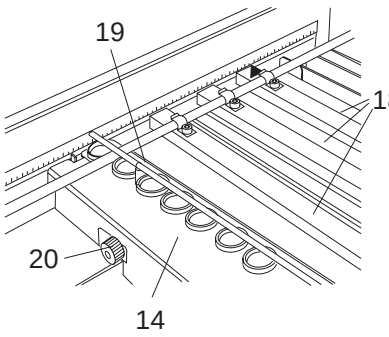
Description

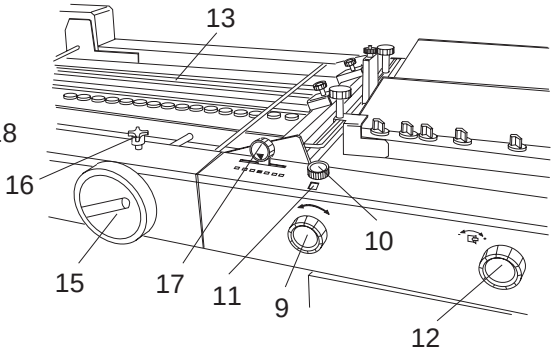
Components and operating elements of the air feeder :

1 Feed table
2 Air guides left and right
3 Knobs for adjusting the air guides
4 Rear paper stop
5 Air adjustment valves
6 Suction drum with suction segment
7 Front paper stop
8 Guide rollers
9 Lever for adjusting the suction segment
10 Lock screw
11 Window for adjustment of suction segment
12 Vacuum adjustment valve
13 Register table
14 Ball cage
15 Handwheel
16 Lock screw
17 Lever for adjustment of sheet gap
18 Hold-down bars
19 Alignment rail
20 Adjustment wheel for changing the infeed angle





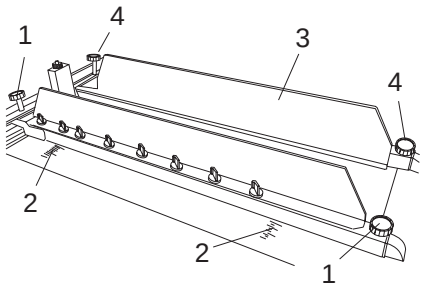




Setting the Format

When setting the format, care should be taken that the sheets are fed approximately from the center.

- Loosen the handles (1) by turning them counter-clockwise.
- Set the left feed guide to half sheet width with the help of the scales (2).
- Tighten the handles (1) again.
- Place a stack of about 50 sheets on the feed table.



- Slide the right feed guide (3) against the edge of the stack.

Make sure that the sheet does not actually touch the guide. There should be a gap of approx. 0.5 mm. The right and left feed guide should be parallel.

- Tighten the handles (4) at the right feed guide.

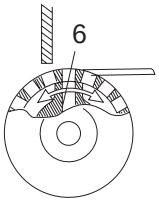
If the width of the paper is less than 7 cm, only one paper guide can be used.

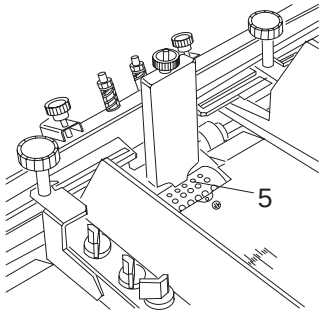
Setting the Sheet Separation

Sheet separation is achieved by the combined action of the rotating suction drum, the paper stop and the air.
Paper weight and type of paper have an influence on the setting.

Setting the Air

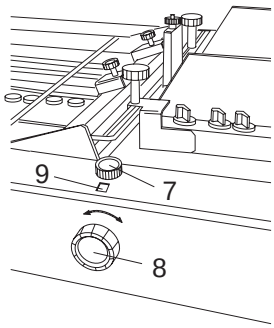
A suction drum (5) separates the sheets from the bottom of the stack.
This is achieved by the suction segment (6) inside the suction drum.
The angle of the suction segment with respect to the paper stop can be changed to suit different types of paper.



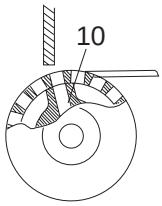


Basic setting

- Loosen the lock screw (7).
- Turn the knob (8) until the figure "6" on a red background appears in the window (9).
- Tighten the lock screw (7).



Now the suction segment is in its zero position (10).



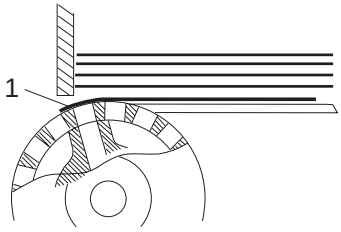
Most types of paper with a weight of 20 to 24 #can be separated in this position.
For different paper grades, other figures must be set in the window:
- Paper grades below 20# : 7 - 9
- Paper grades above 24# : 1 - 5

Setting for light paper grades:

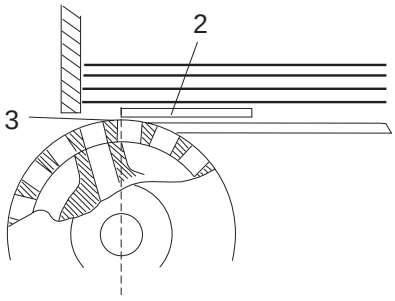
For running light-weight paper, first try the suction segment setting as described under "Basic Setting".
A steeper inclination is only necessary for special types of paper.

Light paper grades easily cling to the curve of the suction drum.
Therefore the suction segment must be tilted in direction of the paper stop.

The inclination of the suction segment in this direction has the effect that the paper is wrapped around the suction drum (1).
The sheets are easily separated from the stack and double sheets occur very rarely.

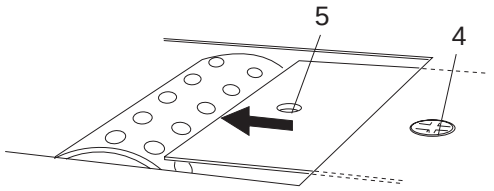


In the batch counting mode it may happen occasionally that a single sheet is fed during the interval time.
This is caused by the fact that the suction drum continues to turn during the interval time (although without vacuum). For light paper grades the friction between paper and suction drum may be sufficient for detaching a sheet.
To prevent this, a special plate (2) can be placed over the suction drum. This plate, which is pulled out of the feed table, can cover the suction drum to its highest point (3).
Sheets are no longer affected by the friction of the suction drum.



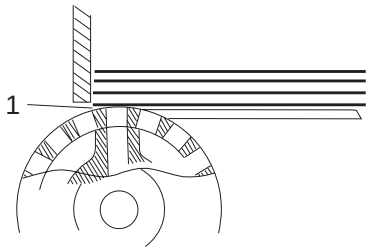
Proceed as follows to pull out the plate:

- Loosen the screw (4).
- Insert a screwdriver in the hole (5).
- Pull out the plate.
- Tighten the screw (4).



Setting for heavy paper grades

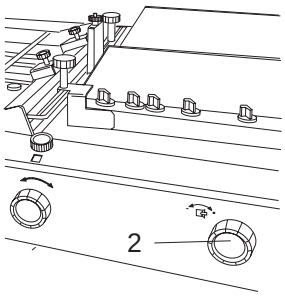
Heavy paper grades do not easily cling to the curve of the suction drum.
For this reason the suction segment must be tilted in direction of the paper stack.
The inclination of the suction segment in this direction has the effect that the paper is barely wrapped around the suction drum (1).
This is sufficient because heavier paper grades are more easily separated from the stack.



Vacuum:

Vacuum can be modified by means of a regulating valve (2). This is necessary because heavy paper grades require more vacuum than light paper grades.

The vacuum can be modified by turning knob (2).



Setting the vacuum:

For setting the vacuum, the machine must be turned on.

Exercise caution in the vicinity of rotating shafts and rollers!
Hair, loose garments and jewelery may get caught!
SERIOUS INJURY MAY RESULT!

Do not get close to rotating shafts and rollers while the machine is running and the noise-absorbing cover is open!
SERIOUS INJURY MAY RESULT!

Exercise caution in the vicinity of the perforating- and slitting knives!
They have sharp edges for proper function!
SERIOUS INJURY MAY RESULT!

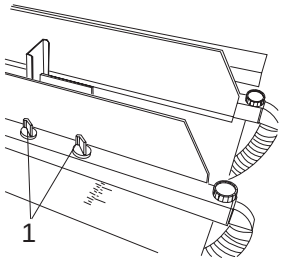
- Close the valve (2) for setting the minimum effect.
- Start the machine.
- Slowly open the valve (2) by turning the knob clockwise.
  Observe the sheet separation while doing this.

At first no sheets are pulled off the stack or they are pulled off irregularily.
The more the valve is opened, the smoother is the paper transport.

Make sure that much vacuum does not cause feeding of double sheets.

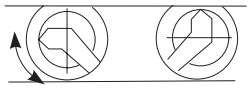
- Switch off the machine.

Air



- Open the valves (1) at both air brackets.

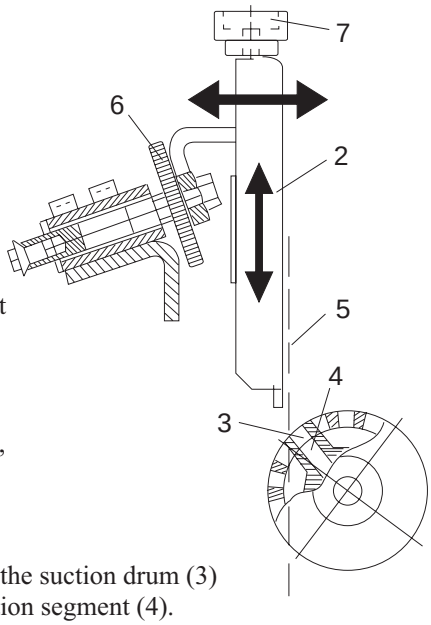
In most cases it is sufficient to open the second and the last valve (with respect to the format length).



closed open

Front Paper Stop

The position of the front paper stop (2) can be adjusted in a horizontal and vertical direction.



Adjusting the horizontal position:

The horizontal position of the front paper stop determines the suction point on the paper and in turn depends on the position of the suction segment in the suction drum.

The inclination of the suction segment must be set correctly before making the horizontal adjustment.

When the suction segment is adjusted, the horizontal position must also be changed accordingly.

- Turn the handwheel until the openings of the suction drum (3) are exactly above the openings of the suction segment (4).

- Adjust the horizontal position of the front paper stop in such a way that it forms a vertical line (5) with the leading edge of the suction openings.
  To achieve this, turn the knurled screw (6) counter-clockwise or clockwise.

Adjusting the vertical position:

The respective paper thickness is set by adjusting the vertical position of the front paper stop. Proceed as follows:

- Place a stack of about 50 sheets on the feed table.

- Start the machine.

Exercise caution in the vicinity of rotating shafts and rollers!
Hair, loose garments and jewelery may get caught!
SERIOUS INJURY MAY RESULT!

Do not get close to rotating shafts and rollers while the machine is running and the noise-absorbing cover is open!
SERIOUS INJURY MAY RESULT!

Exercise caution in the vicinity of the perforating- and slitting knives!
They have sharp edges for proper function!
SERIOUS INJURY MAY RESULT!

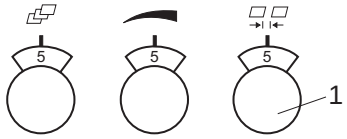
- By turning the knurled screw (7), adjust the vertical position of the paper stop in such a way that only one sheet is pulled off the stack.

Positioning the Paper Stack

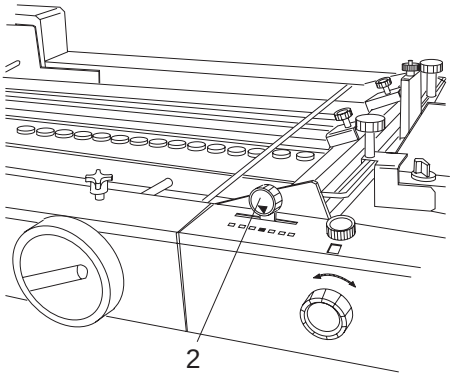
- Fan the paper stack well to avoid double sheets.
- Place the stack on the feed table.
- Position the rear paper stop. It prevents the paper from sliding off the table.

Sheet Gap

For normal folds the sheet gap should be set only via the potentiometer (1) on the operator panel.

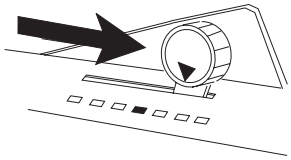


However, if small formats with a length below 8" are to be folded, the sheet gap can also be adjusted by means of a lever (2).



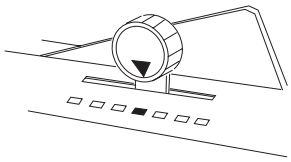
The adjustment changes the speed of the suction drum, i.e. different speeds of feeder and fold rollers result in different sheet gaps.
A smaller sheet gap increases the speed of the folder, independent of the cycle frequency.

Lever in right position:



Adjustment of small formats below a length of 8".

Lever in center position:



Setting for all "normal" folds.

The adjustment can be made with the machine running.

To increase the sheet gap, always use the potentiometer (1) on the operator panel, do not use the lever.

9. FLAT PILE FEEDER FD 2250

Principle of Operation

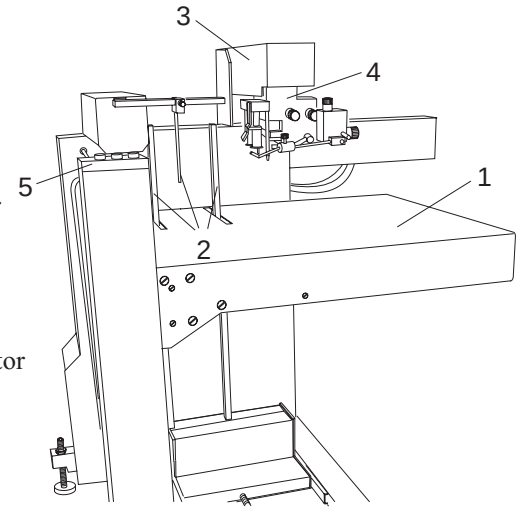
The flat pile feeder with rear edge separator is suitable for separating different kinds of paper, uncoated as well as coated, freshly printed or thin paper.

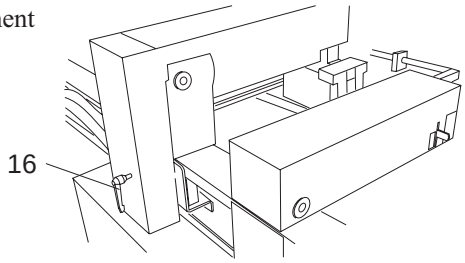
Sheet separation is done by vacuum and air from the top of the paper stack.
Air blowers separate the top sheets at the rear edge of the stack.
Sheet separators lift the uppermost sheet by approx. 3/4".
This opens the rear air nozzles and an uninterrupted stream of air is blown under the separated sheet.
The suction drum at the front edge of the stack grips the sheet and leads it onto the register table.

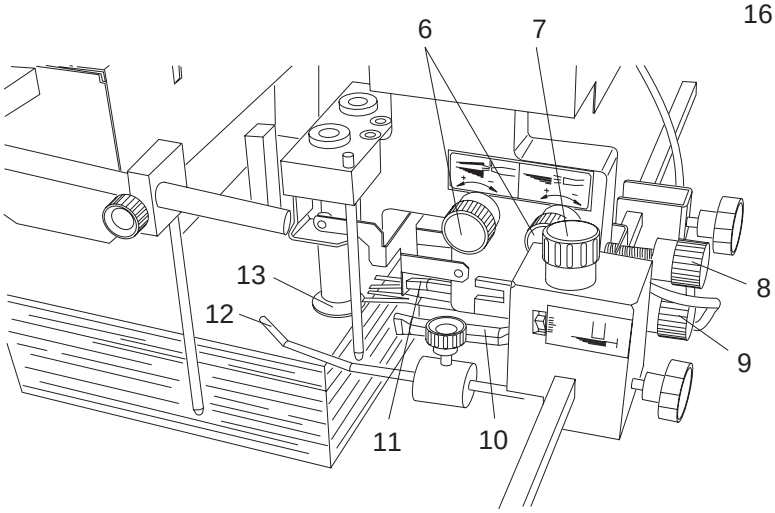
Description

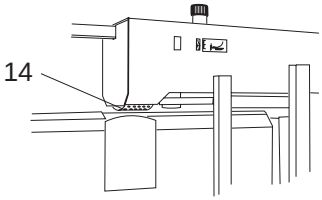
Components and operating elements of the flat pile feeder :

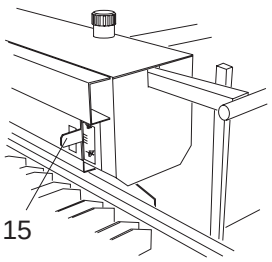
1 Pile table
2 Stacking stops
3 Carrier arm for rear edge separator
4 Rear edge separator
5 Operator panel
6 Valves for regulating the air flow
7 Sheet separator height adjustment
8 Knurled knob for rear edge separator
9 Knurled knob for stripper springs
10 Rear separator nozzles
11 Front separator nozzles
12 Hold-down rods
13 2 sucker cups
14 Suction drum with suction segment
15 Lever for adjustment of suction segment
16 Rear edge separator lock lever





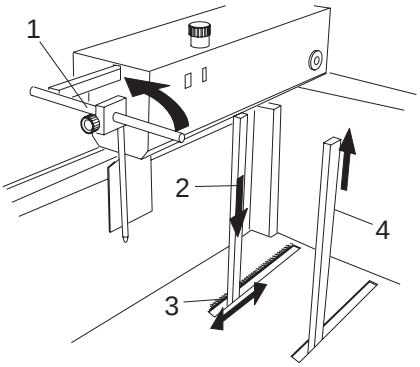






Setting the Format

- Tilt up the front stop (1).
- Push down the rear stop (2) and slide it to half the sheet width with the help of the scale (3).

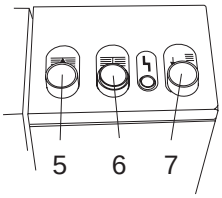


The second rear stop (4) can be pulled out. This is necessary, if, for instance, the rear edge separator is in this position when feeding smaller paper sizes.

Loading the Pile Table

- Turn on the main switch at the folder.
- Lower the pile table.

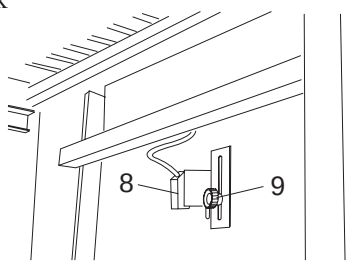
The operator panel of the flat pile feeder has three push-buttons for lowering and raising the pile table.



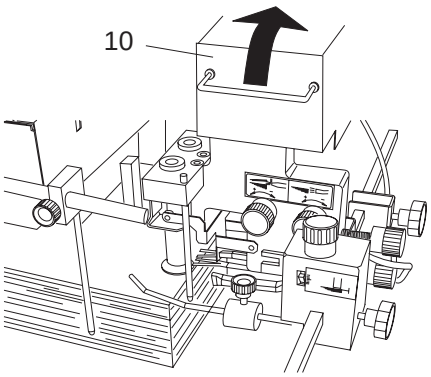
Button (5): Pile table up:
The pile table moves up automatically to the correct position.

Button (6): Pile table down:
The pile table moves down, but only as long as the push-button is pressed.

Button (7): Auto mode:
The feeder is designed in such a way that the pile table moves down automatically for reloading. This ensures that the loading height is always in an ergonomically favorable position.
The distance that the pile table moves down corresponds to the height of the paper stack that is being replenished.
The height adjustment is controlled by a photodetector (8). The photodetector can be adjusted by loosening a knob (9), thus making it possible to adapt the stack height to suit the operator.



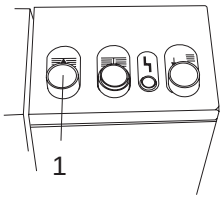
- Tilt up the rear edge separator (10).
- Load paper on the pile table.



Use the automatic stacking mechanism. Push button (7) after each reloading process. This will lower the table automatically.

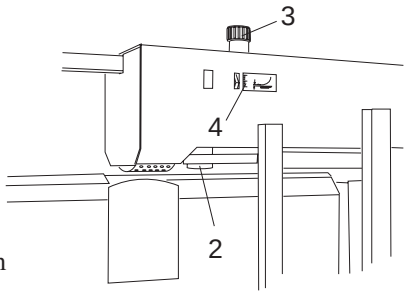
Moving the Paper Stack to Work Position

When the pile table is loaded, the paper stack must be brought to the work position.



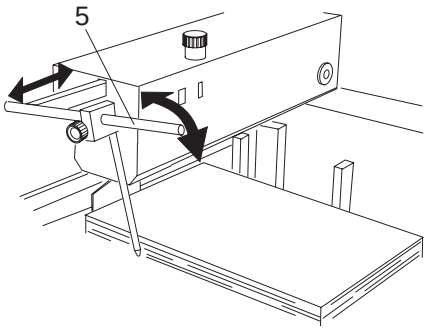
- Push button (1).
  The stack moves automatically to the correct position, controlled by the stack sensor switch (2).

The stack height switch is a capacitive sensor that reacts to the density of the paper stack. For this reason the gap between stack and suction drum can vary when the paper stack has reached the work position depending on the type of paper used.



The gap between stack and suction drum should be 8 mm.

- Set the gap to 8 mm by turning the setting screw (3).
  A scale (4) facilitates this setting.
- Lower the front stop (5) and slide it against the paper stack.



Air and Vacuum

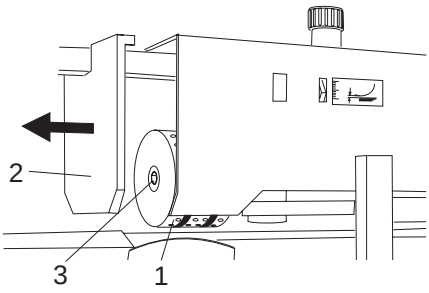
Turn on the pump at the operator panel before setting air and vacuum. The correct setting for air and vacuum can only be determined by running a few sample sheets after all adjustments have been completed.

Exchanging the Suction Drum

The suction drum (1) is equipped with two PUR-rings for reliable sheet detachment. If marks occur on sensitive or freshly printed paper, a different suction drum (accessory) can be used. This suction drum has a PUR-coating over the entire surface and consequently a higher coefficient of friction.

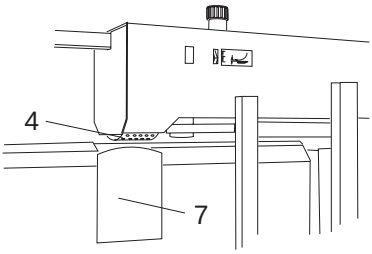
For installation of this suction drum proceed as follows:

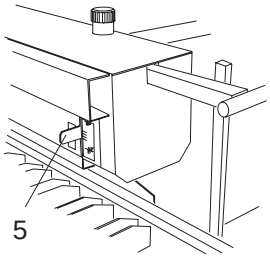
- Pull off the cover (2).
- Loosen the screw (3) and remove the suction drum.
- Install the PUR suction drum.
- Tighten the screw (3).
- Replace the cover (2).

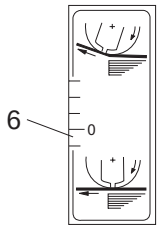


Adjusting the Suction Segment

The suction drum (4) separates the leading edge of the sheets from the stack. For this purpose there is a suction segment inside the suction drum.
The suction angle can be changed by adjusting the lever (5) to adapt suction point and suction area to different types of paper.
A scale (6) facilitates the adjustment.







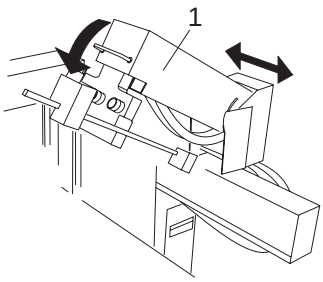
In most cases an adjustment is only necessary for light paper stock resp. paper with a downward curl.

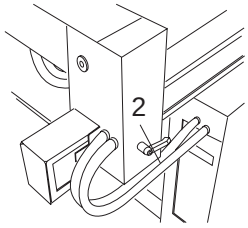
Fine adjustment is only possible with the machine running.

In connection with the adjustment of the suction segment, the height of the separator plate (7) can also be varied.

Setting the Rear Edge Separator

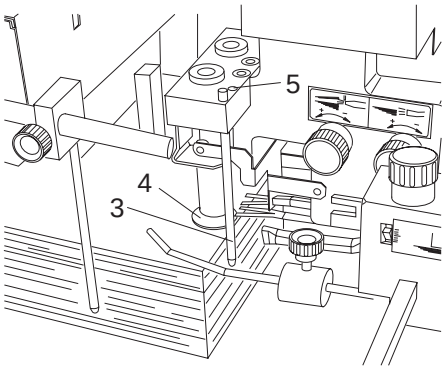
- Lower the rear edge separator (1).
- Loosen the lock lever (2).





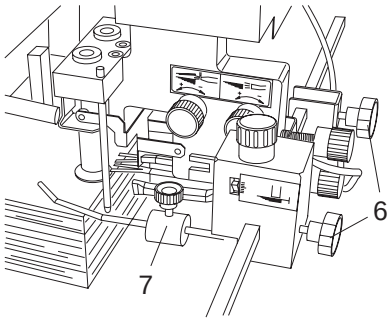
- Displace the rear edge separator in such a way that the stop rods (3) touch the rear edge of the paper stack.

The edges of the sucker cups (4) should be placed approx. 3-4 mm from the rear edge of the paper stack.



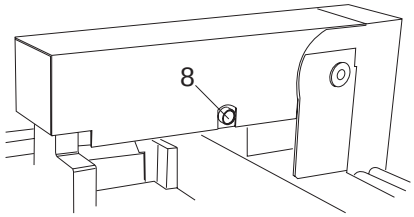
For light paper stock it is recommended to place the suckers even closer to the rear edge of the stack. This is achieved by moving the stop rods (3) to the next set of holes (5).

- Tighten the separating head by turning the lock lever (2) clockwise.
- Slide the left and right hold-down rods (6) towards the outer edge of the paper stack (approx. 1 cm inside the edge).
- Adjusting the pressure of the hold-down rods:
  Heavy paper grades: Slide the weight (7) up.
  Light paper grades: Slide the weight down.



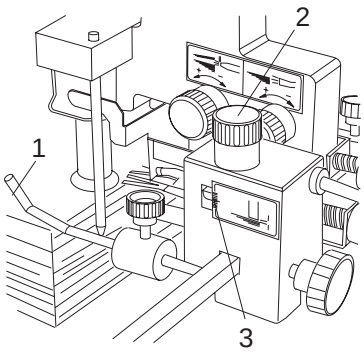
- Check whether the automatic height setting mechanism is switched on.

The automatic height setting mechanism can be switched on and off by pushing button (8). The illuminated button shows that it is active.



For smaller paper sizes or flat sheets the automatic height adjustment is often not needed and can therefore be switched off.

- Adjust the automatic height setting as follows:



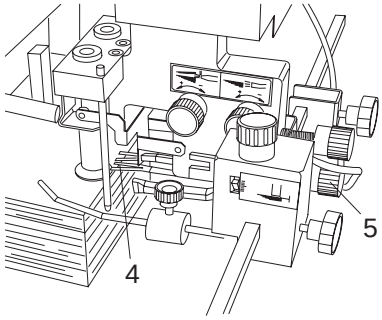
The left hold-down bracket (1) also serves as a height sensor controlling the height adjustment of the rear edge separator.
As a result, the gap between the suckers and paper stack remains always the same although sheets are pulled off continuously.
The basic position can be changed by means of a knob (2).
A scale (3) facilitates the adjustment.

Increasing the gap: Move indicator to the plus-range "+".
Reducing the gap: Move indicator to the minus-range "-".

Basic setting: Sucker cups should be 1-2 mm above the paper stack (with air turned off).

Adjusting the Stripper Springs

The stripper springs (4) should reach about 2 mm into the stack to prevent double sheets. The position of the springs can be adjusted by means of a thumb screw (5).



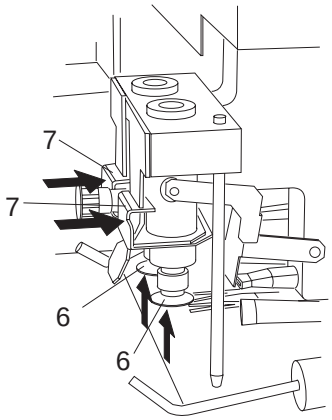
- Turn the thumb screw counter-clockwise: Springs move away from the stack.

- Turn the thumb screw clockwise: Springs move into the stack.

If double sheets occur, the stripper fingers must be adjusted in such a way that they reach further into the stack.

Making the Sucker Cups Inoperative

For short formats it is often advantageous to work without rear edge separators. In this case the sucker cups can be made inoperative.



- Move the sucker cups to the top position (6).
- Push the lock lever (7) backwards. This will lock the sucker cups in the top position.
- Switch off the automatic height setting mechanism.

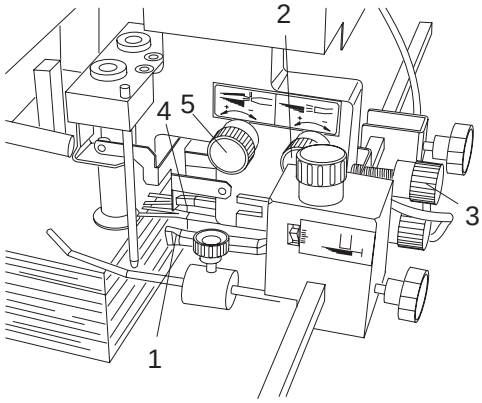
Now the air continuously separates the sheets from the rear edge.

Air

The air separates the rear edge of the paper stack by means of two rear separator nozzles (1). The volume of the air can be adjusted by means of a valve (2).
The effect of the air can be influenced by changing the angle of the rear separator nozzles. They can be pointed up- or downwards by turning a thumb screw (3).

- Air directed upwards:
  Turn the screw counter-clockwise.
  Too high: Double sheets may occur.

- Air directed downwards:
  Turn the screw clockwise.
  Too low: Sheets on top are not fanned properly.



Air volume and angle are set correctly when the top 10 - 15 sheets separate easily.

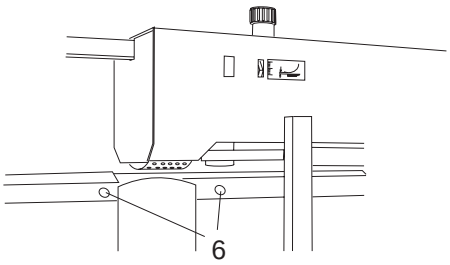
Use as little air as possible for proper function.

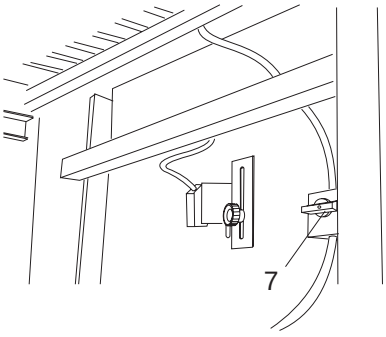
Another separator nozzle (4) is positioned between the rear separator nozzles.
It creates an air cushion under the separated sheet so that it attaches itself to the suction drum. The air volume can be adjusted by means of the valve (5).

Most setting elements are equipped with scales. For repetitive feeding jobs it is recommended to mark the settings at the scales.
The machine can thus be set-up more quickly.
Please note that the same result can only be reached if all conditions are the same.

To support the air cushion, front blowers (6) can be used.
They blow air under the leading edge of the sheets so that the sheets cling more easily to the suction drum.

The air volume can be controlled by means of a valve (7), which can be closed completely by turning it clockwise.



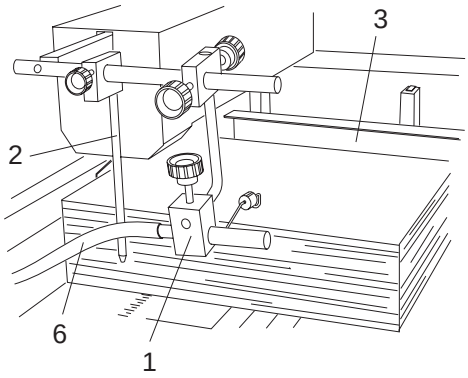


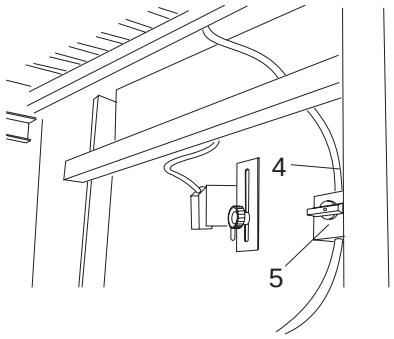
Additional Blower

An additional single blower (1) stabilizes the air cushion near the leading edge of the floating sheet. This is especially useful for long and narrow sheets.

The single blower (1) is positioned next to the front stop (2), while the stop plate (3) which comes with each single blower is pushed onto the rear paper stops.

When the single blower is used, the front blowers must be made inoperative.
For this purpose detach the hose (4) for the front blowers from the valve (5) and connect the air hose (6) of the individual blower in its place.



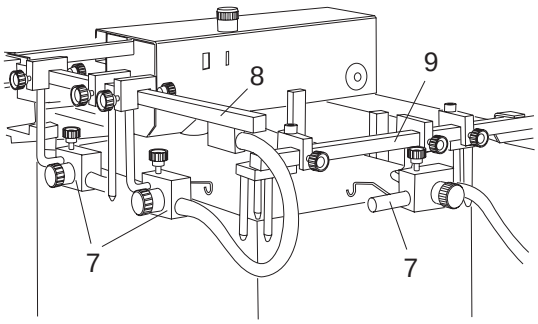


Side Blowers

The feeder can also be equipped with side blowers in the place of the rear edge separator (see separate mounting instructions).
By supplying air to the side and rear edge of the stack, the topmost sheets are detached so that separation through the suction drum is possible. Contrary to operation with the rear edge separator, the topmost sheet is not lifted.

The air nozzles (7) are attached to cross-bars at the side (8) and the rear (9) of the paper stack. For replenishing paper, the two cross-bars can be raised to provide access to the pile table.

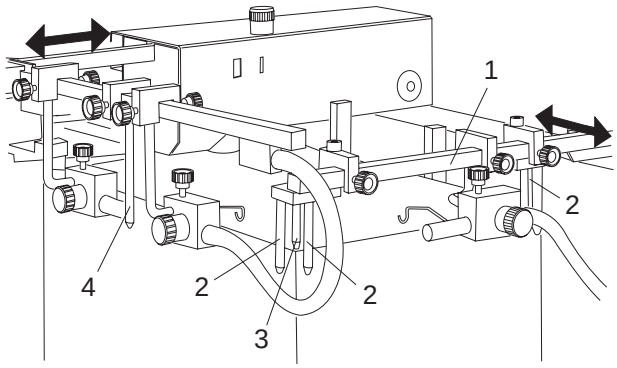
After the replenishing process the bars are returned to the working position.



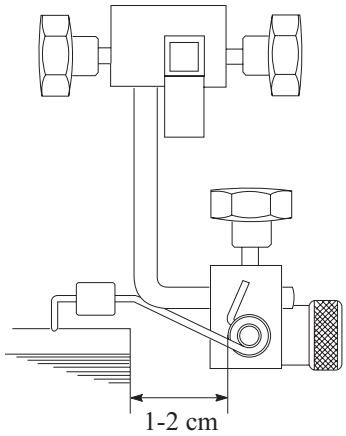
Format setting:

- Move the rear cross-bar (1) (secured with a clamp lever) in such a way that the sheet stop rods (2) are placed against the left- and right-hand side edge as well as against the rear edge of the stack.

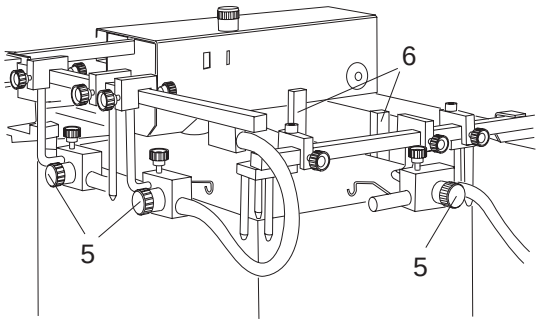
The weight rods (3) on the left- and right-hand side must touch the corners of the stack.



- Move the lateral cross-bar until the side stop (4) touches the stack.
- Adjust the air nozzles in such a way that they are approx. 1 to 2 cm away from the side - resp. rear edge.
- Adjust the angle of the air flow by turning the air nozzles so that about 10 sheets are separated.



The amount of air can be fine-adjusted by means of valves (5).

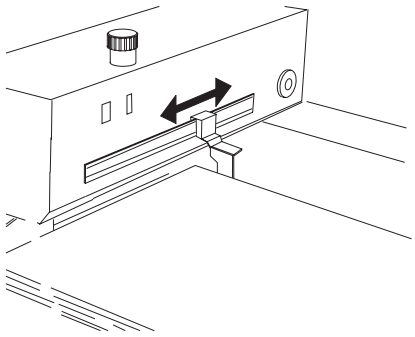


The air cushion must not be so strong that the sheets under the suction drum are compressed.

Place the stop plate on the rear stops (6) so that an air cushion is created.

A special side stop at the right-hand side is part of the "side blower" kit. This stop should be used when the paper tends to drift sideways.

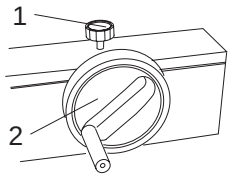
The side stop is attached to the arm of the suction wheel and can be moved sideways so that it can be set to the format width.



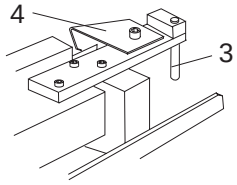
10. REGISTER TABLE

Setting the Format - Flat Pile Feeder

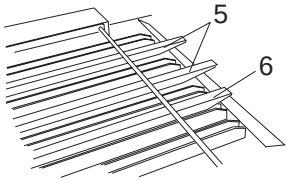
Register rail, ball cage and transport belt form one single unit and are adjusted together.



Make sure that the feeder is set to the correct format. Proceed as follows:



- Loosen the lock screw (1) of the register rail by turning it counter-clockwise.
- Turn the handwheel (2) until the paper stop pin (3) just touches the edge of the paper stack.
- Retighten the lock screw (1) by turning it clockwise.

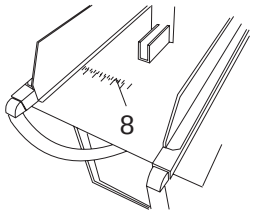


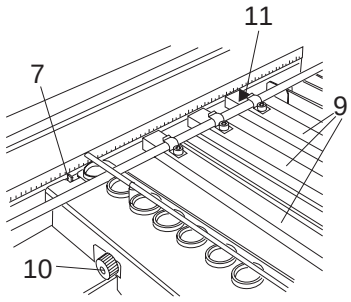
- Set the rear paper support (11) to paper width, using the scale and pointer.
- Distribute the hold-down bars (5) across the sheet width. Place one hold-down bar in front of the suction drum (6).

If the paper is less than 15 - 16 cm wide, the paper guide plate (4) must be removed.

Setting the Format - Air Feeder

- Loosen the lock screw (1) by turning it counter-clockwise.
- Set the alignment rail to the paper size by turning the handwheel (2).
  The scale at the fold roller infeed section (7) must show the same number as the scale on the feeder (8).



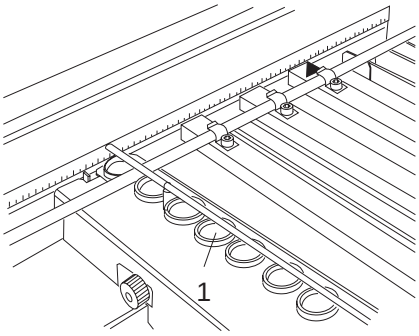


- Tighten the lock screw (1) by turning it clockwise.
- Distribute the hold-down bars (9) across the width of the sheet.

The infeed angle can be changed by means of the knurled screw (10) and the appropriate scale.

Type of Balls

The number and type of balls in the ball cage (1) depend on format and type of paper.



Always try to use as few balls as possible. Balls not needed for a particular job should be removed to avoid wear of the transport belt.

It is recommended to use the following balls:

Paper grades below 13 #: Plastic balls
Paper grades from 13 - 33 #: Plastic balls, every 6th should be a steel ball
Paper grades above 33 #: Mainly steel balls

In the infeed section (the first 4 to 6 balls) it is recommended to always use one or two steel balls.

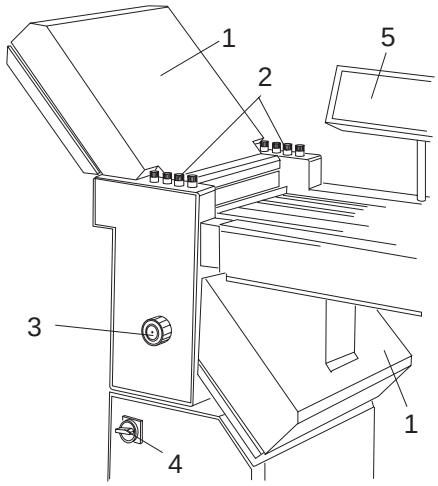
For very light paper grades every second ball opening should be left free.

11. BUCKLE FOLD UNITS

The buckle fold units have an infeed width of 15" (when inline with the sealer paper width is liminted to 11.5") and equipped with 4 automatic fold plates.
The automation of these fold plates comprises the automatic positioning of the fold plate stops and the automatic closing of the deflectors.
It is not necessary to remove the fold plates and to insert the deflectors when changing the fold.

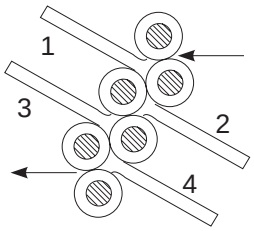
Description

1 Noise covers
2 Fold roller adjustment knobs
3 Handwheel
4 Main switch
5 Operator panel
6 Transfer bridge



Fold Plate Positions

In the fold unit there are four positions for the fold plates:



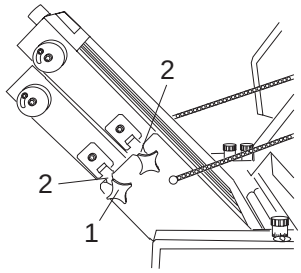
The fold plates are marked with a number. Care has to be taken that the fold plates are inserted in the correct positions, e.g. fold plate 1 in position 1, fold plate 2 in position 2, etc.

Installing the Fold Plates

The fold plates have one lock screw (1) each at the left- and right-hand side.

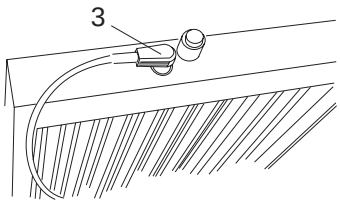
Insert the fold plates in such a way that the lock screws (1) fit in the recesses (2) in the frame of the fold unit.

Secure the fold plates by tightening the lock screws.



Connecting the Fold Plates

The electrical connection is done by means of special 90° plugs (3).
They are inserted at the front of the fold plates and secured by lightly tightening the threaded sleeve.



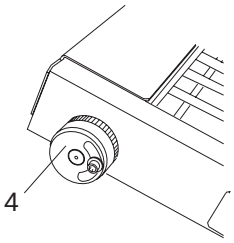
Make sure that the main switch is OFF before pulling or inserting the plug!

The number of the plug must agree with the number at the front side of the plate!

Setting Elements of the Fold Plates

- Knurled knob for angle corrections (4):

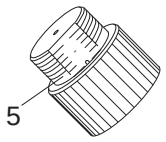
  By turning the knurled knobs it is possible to make angle corrections of the paper stop, for example, if the paper is out-of-square.

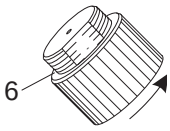


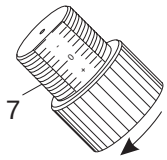
- Setting knob for adjusting the lower lip of the fold plates:
  The lower lip can be adjusted by means of a setting knob in order to increase or decrease the space for forming the buckle, depending on paper thickness and paper stiffness.
  A scale indicates the positioning of the lower lip.

  Basic position: "0" is flush with the top of the knob (5).
  Lower lip advanced: Small buckle space (6), setting knob "-"
  Lower lip set back: Large buckle space (7), setting knob "+"

  - Thin paper grades: Advance the lower lip, "-"
  - Heavy paper grades: Set back the lower lip, "+"

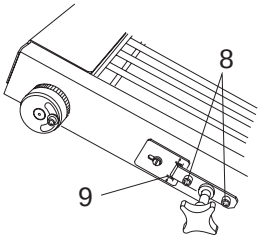






- Allen screws for changing the gap between the fold plate and the fold rollers:

  For difficult-to-handle paper it is possible to set back the complete fold plate by up to 4 mm.
  For this two Allen screws (8) have to be loosened at the left and right side of the fold plate.
  A scale (9) facilitates precise setting.



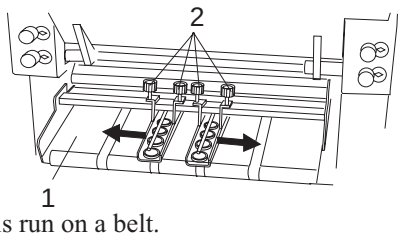
Setting the Fold Length

Setting the fold length and closing the deflectors is controlled by the computer.
The respective commands are entered on the operator panel (see paragraph 16.)

12. Transfer Bridge

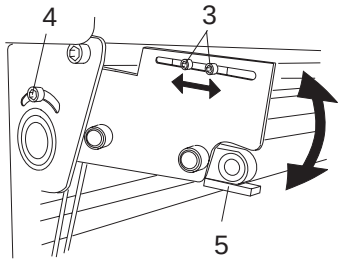
Transfer Bridge

Folders with two fold units are always equipped with a transfer bridge (1).
This bridge ensures the accurate transfer of the sheet onto the roller table.



Two ball cages guide the sheets.
Proceed as follows when changing the format:

- Loosen the clamp screws (2) by turning them counter-clockwise.
- Shift the ball cage in such a way that the balls run on a belt.
- Tighten the clamp screws by turning them clockwise.
- If necessary, the ball cages can also be moved in or out (loosen Allen screws (3) on both sides).



The angle of the bridge is adjustable and can therefore be adapted to the paper quality and the type of fold.

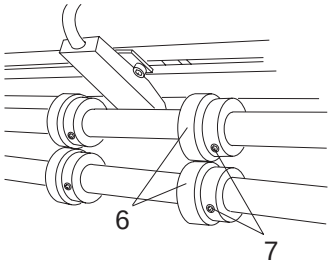
- Loosen the Allen screws (4) on both sides.
- Change the angle of the bridge.
- Tighten the Allen screws.

Make sure that the belts do not drag on the roller table!
Set the adjusting brackets (5) on both sides of the bridge accordingly.

Ejector Rollers

The ejector rollers on the delivery shafts must be set so that they are running on top of each other (6).

An adjustment is only necessary when the sheets are no longer guided properly after a change of format. To adjust:

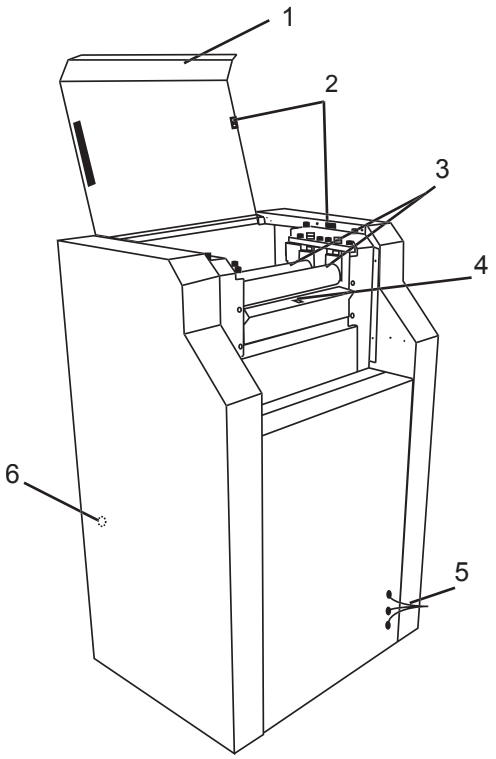


- Turn the handwheel until the set screws of the ejector rollers are visible (7).
- Loosen the Allen screws with a 3-mm Allen key.
- Shift the ejector rollers to the required position.
- Tighten the Allen screws.

13. SEALING UNIT

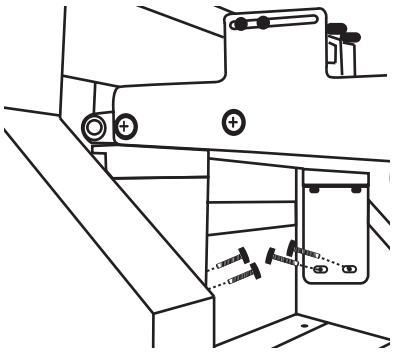
Sealer Basic Components

1 Plexi saftey cover
2 Cover open sensors
3 Sealing sollers
4 Photo-eye
5 Electrical output
6 Fuse (located on the back side)

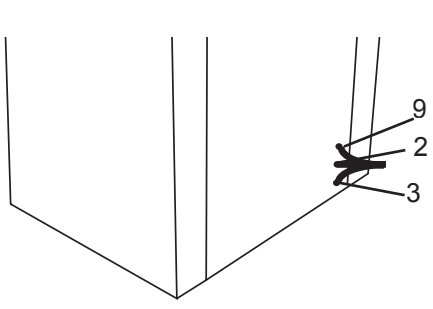


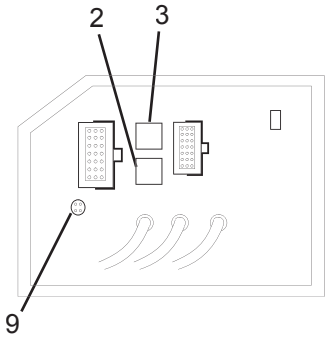
Installing Sealer

Align the sealing unit with the transport table and secure it in position with the thumbscrews. The plexi saftey cover must be closed or the machine won't operate.



Once the sealer is in position plug the electrical cables into the back of the folder unit in connectors 2,3 and 9





Connections to folder unit

14. STACKER

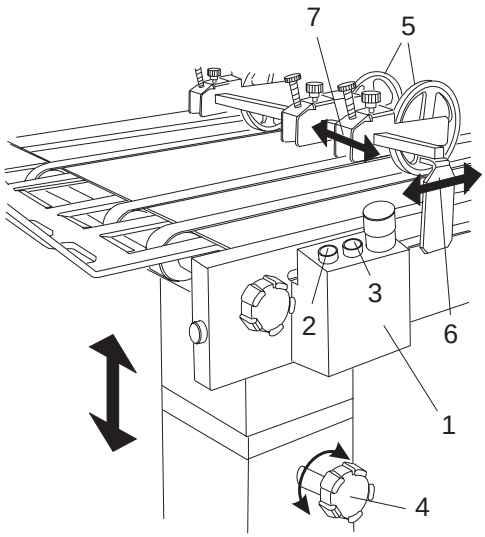
Stacker

The stacker is mobile. The height is adjustable by means of a gas-filled shock-absorber.

An additional control box (1) allows stopping and starting the machine (2) and paper feed (3) to facilitate setting the hold-down rollers.

Setting the Transfer Height

- Loosen the lock screw (4) by turning it counter-clockwise.
- Lift or lower the delivery table.
- Tighten the lock screw (4) by turning it clockwise.



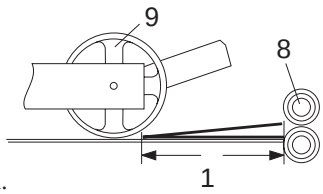
Setting the Format

The hold-down rollers (5) are needed for achieving a clean fanned delivery.
They prevent the folded sheets from opening up on the delivery belt.
The hold-down rollers are adjustable in two direction (6, 7).

When moving them sideways make sure that the rollers always run on a delivery belt.

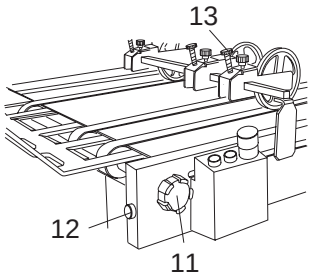
The distance between delivery shafts (8) and hold-down roller (9) should correspond to the sheet length of the folded sheet (10). To adjust, proceed as follows:

- Turn the setting wheel (11) to the left or to the right and shift the hold-down rollers to their new position.



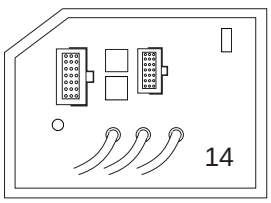
Pushing the button (12) will move the delivery belts for easy removal of sample sheets.

The pressure of the hold-down rollers can be changed by turning the knurled screws (13).
Choose less pressure for thin paper below 20 # and more pressure for paper above 39 #.



Electrical Connection

The electrical connection of the delivery section is made by plugging the connecting cable into the socket (14) in the last fold unit.



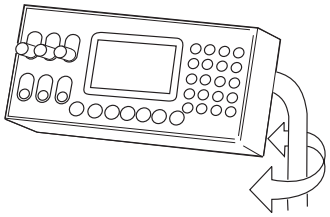
When making or breaking any electrical connection, always first turn off the main switch or the safety switch of the folder. Non-compliance may cause damage to electronic components!

15. AUTOMATIC SETTING

Operator Panel

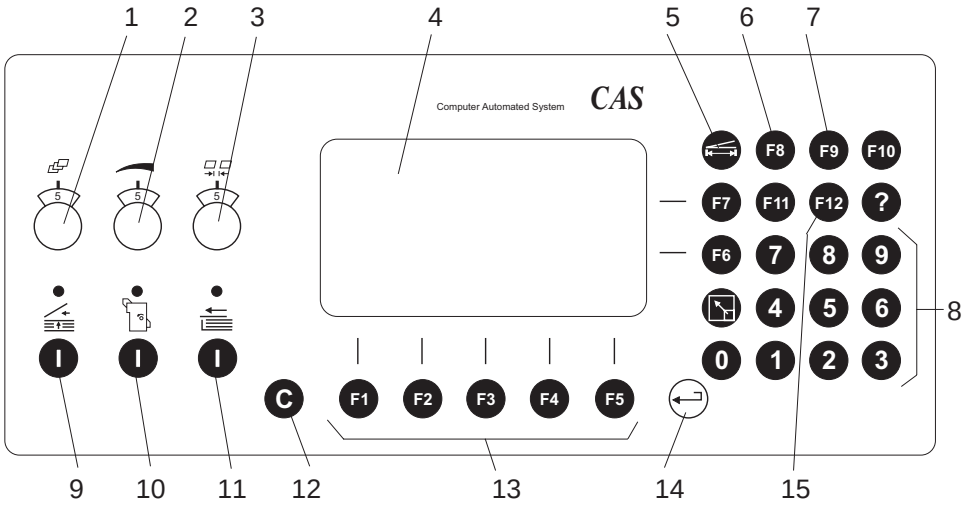
The 2200 Series machines are equipped with a central operator panel.
It is here where the communication between operator and machine takes place and where all the important settings and monitoring functions are carried out.

The swing-around operator panel can be moved to the position which is most convenient for the operator.



Description

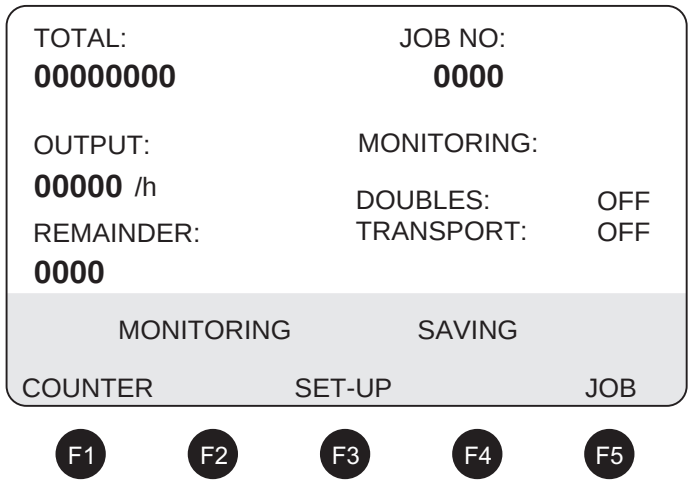
Setting elements and keys with the following functions:



1 Sheet gap in delivery section
2 Fold speed
3 Sheet gap on the register table
4 Display
5 Display of menu FOLD LENGTH
6 Display of menu ROLLER GAP
7 Measuring system / language
8 Keys for numerical input
9 Pump
10 Fold roller drive
11 Sheet gap
12 Return to BASIC menu
13 Function keys for displaying different menus
14 Confirmation of a value entered
15 Information for service technician

Description of the Display

The operator panel contains an LC-display.
After switching on the machine, the following message appears:



This display gives an overall view of the most important data.
For this reason the BASIC menu should always be called up when running the folder.

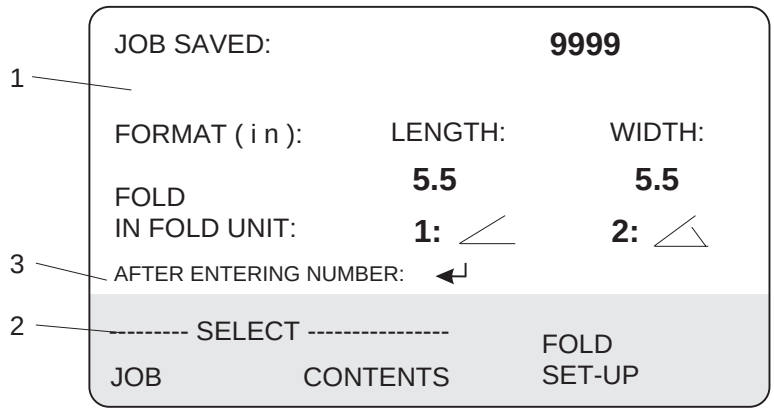
The displays for TOTAL, OUTPUT, REMAINDER, DOUBLES, TRANSPORT always refer to the actual folding job.
The JOB NO may refer to the actual folding job, but this is not necessarily the case.
When calling up the menu, the job number which was saved last or which was recalled from the memory is automatically displayed.
A job which was not saved cannot have an identification number and is therefore not displayed.

The following main menus can be chosen from the BASIC menu:

- COUNTER — Setting of total and batch counting
- MONITORING — Activation of double sheet detection and paper travel control
- SET-UP — Automatic setting of fold lengths / Input of setting informations
- SAVING — Saving of repetitive jobs
- JOB — Actual folding job

A number of function keys (F1 to F7) with arrows pointing to the headlines of the main menu are grouped around the display.
By pressing one of these keys, the selected main menu is displayed.

Each menu is divided into a light and a dark section.
Actual data is shown in the light section (1).
In the dark section (2), additional menus are displayed, which can also be called up by pressing the function keys.
The last line in the light section is the "command line" (3) and serves as an operator guide.
This "command line" is very important because it indicates which command must be carried out next.



The keys on the operator panel are secured against incorrect operation, which means that malfunctions caused by unacceptable inputs or accidental pressing of keys will be prevented. Keys that are not used are automatically made inactive.

To help you familiarize yourself with this new system, the commands of the most important settings are explained step by step on the following pages.
The sequence of the commands is shown by numbered input lines (4) so you will quickly understand the logic of the procedure.

Examples:

4

1.	Press key C	The BASIC menu is displayed.
2.	Press key F3	The SET-UP menu is displayed.

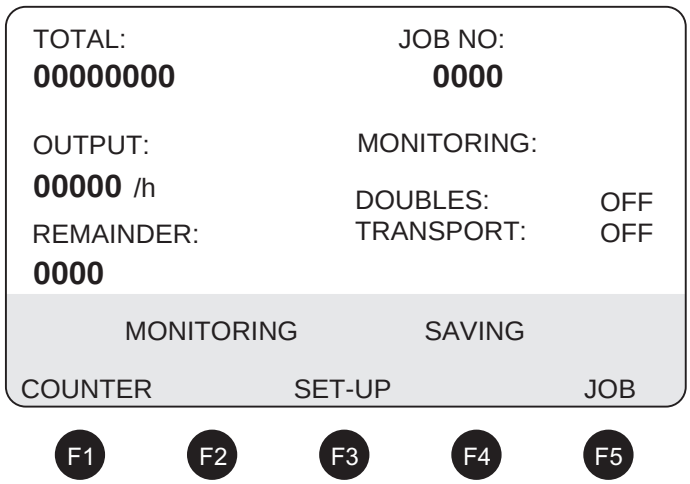
By following the sequence shown and observing the instructions, you will soon master the operation of the machine and benefit from the advantages of the computer control.

If you get confused while entering commands, simply return to the BASIC menu by pressing key C and start again.

The following operating instructions are arranged in such a way that all main menus are described, starting with COUNTER and finishing with JOB.

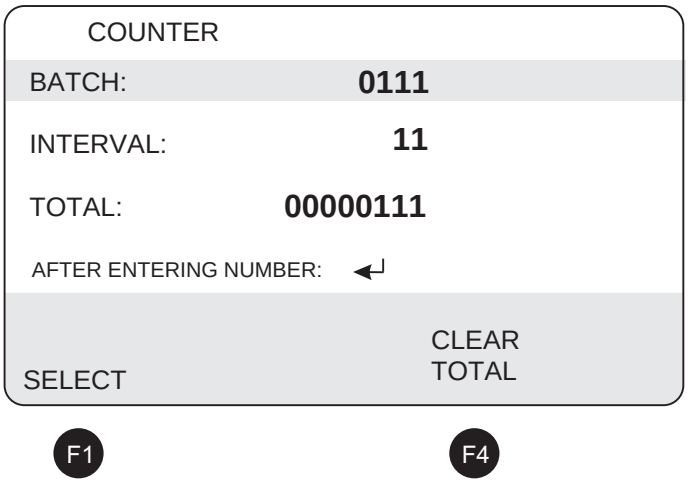
Setting the Counter - Main Menu COUNTER

1. Press key C — The BASIC menu is displayed.



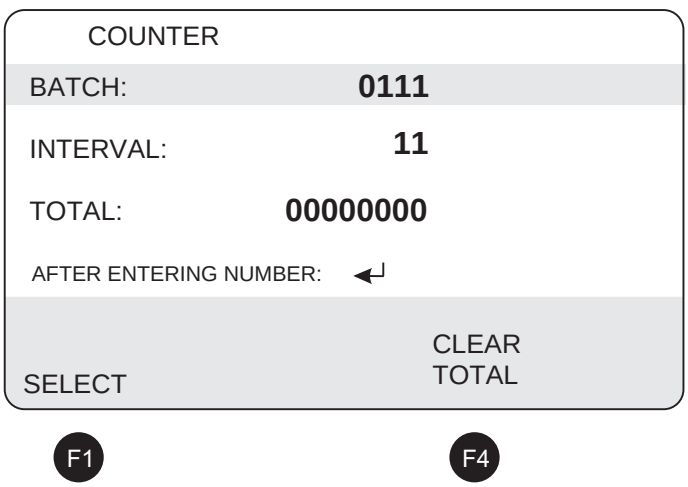
2. Press key F1 — The COUNTER menu is displayed.

The figures in the display refer to a previous folding job.



Clearing the Total Counter

3. Press key F4 — The total counter is cleared.



Setting the Batch Counter

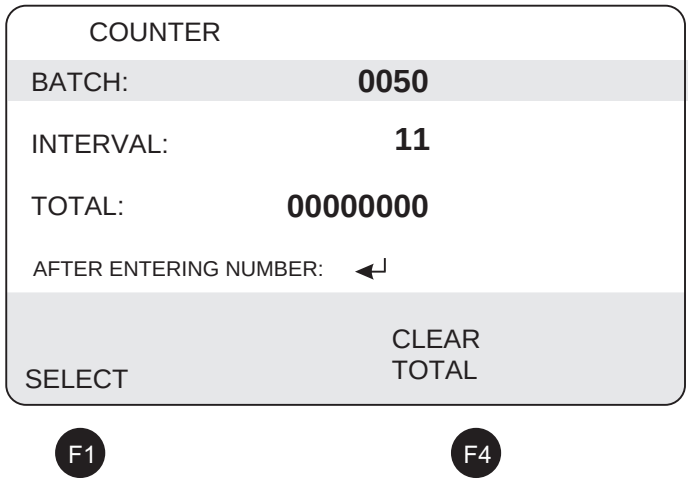
The dark background of the line BATCH means that the preselected number of sheets per batch can be entered.

The batch counter is used to mark a pre-selected number of sheets (batch) in such a way that it can be separated from the next batch.
This makes it easy to remove the individual batches from the delivery table.
The following data must be entered for batch counting:

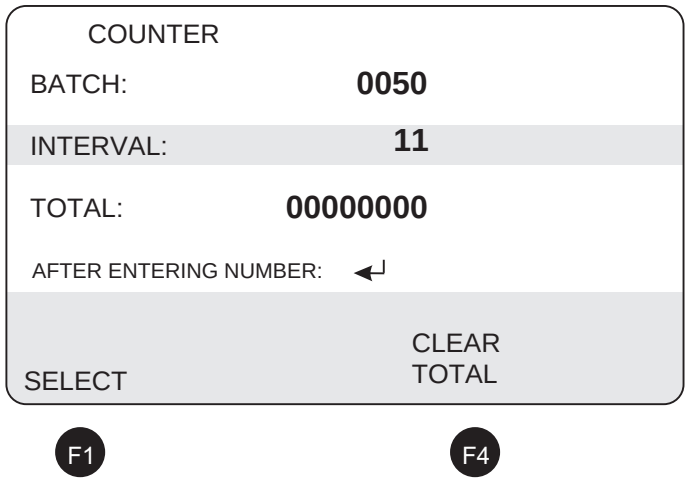
- the desired number of sheet per batch (preselection)
- the length of the gap (interval) between batches

Example: Batches of 50 sheets.

4. Enter the number of sheets (e.g 50) — The new BATCH is displayed.



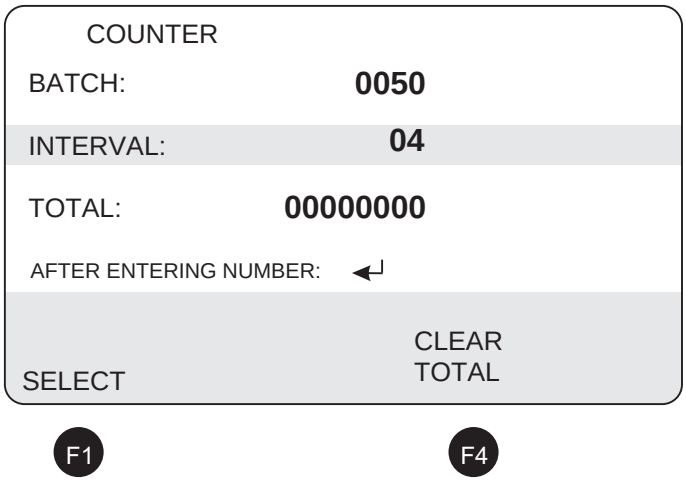
5. Press key ↵ — The new batch is saved.



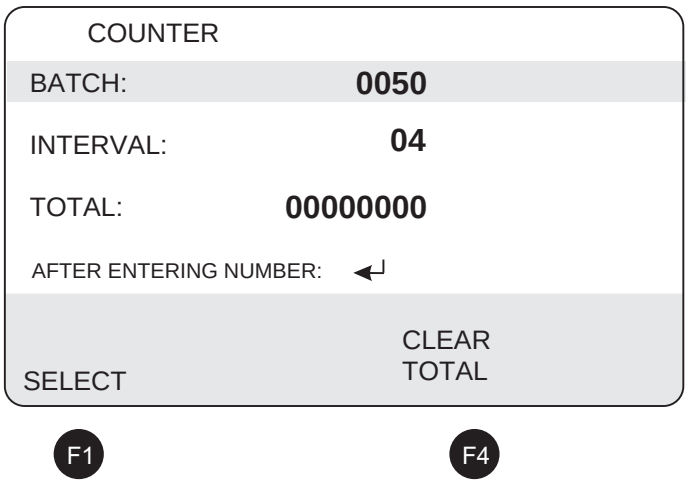
The dark background of the line INTERVAL means that the interval needed for batch counting can be entered.

Example: The gap between batches (interval) in the delivery section should be as long as it takes to feed 4 sheets.

6.	Enter the interval (e.g. 4)	The new INTERVAL is displayed.



7.	Press key ↵	The new interval is saved.



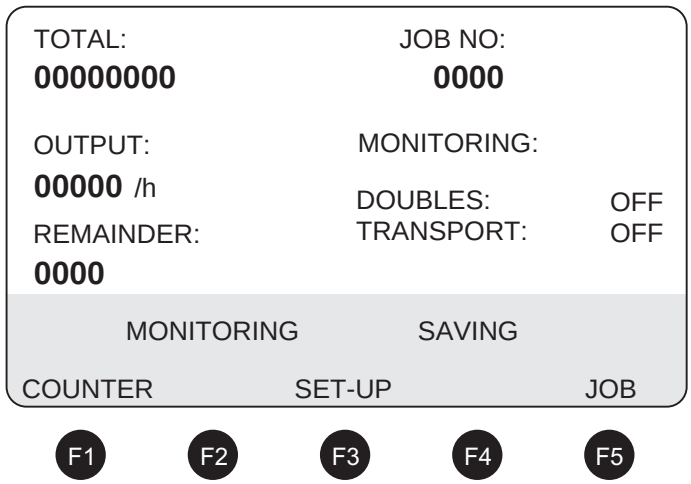
The dark background moves again back to the BATCH line. By pressing key F1 it is possible to alternate between BATCH and INTERVAL lines.

When batch counting is not used, enter "0" for BATCH or INTERVAL.

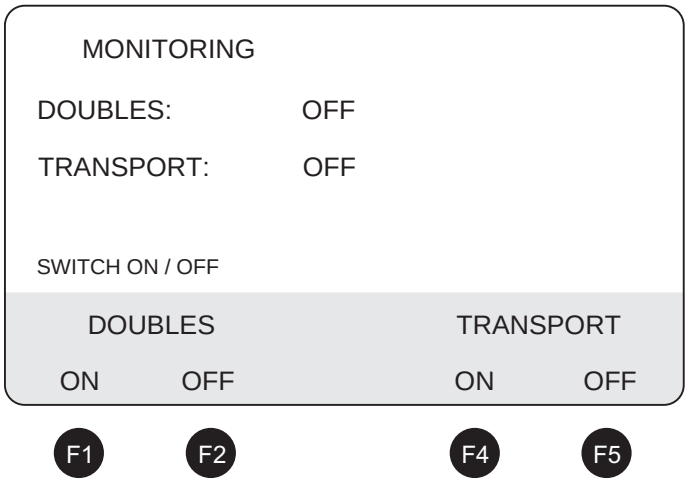
8.	Press key C	Back to BASIC menu.

Paper Transport Control, Double Sheet Detection - Main Menu MONITORING

1. Press key C — The BASIC menu is displayed.

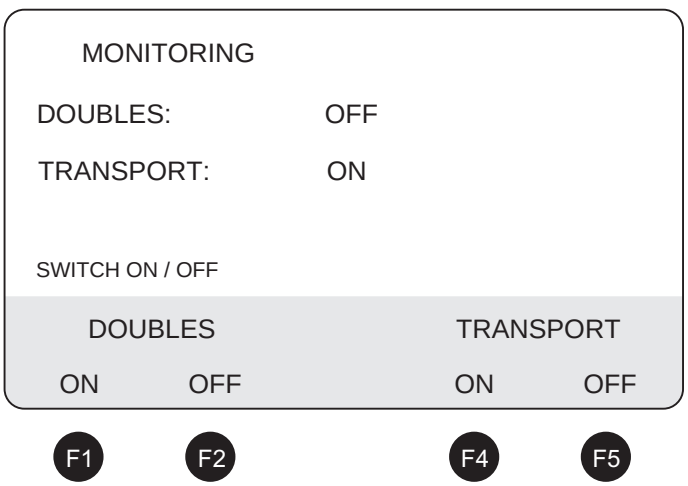


2. Press key F2 — The MONITORING menu is displayed.



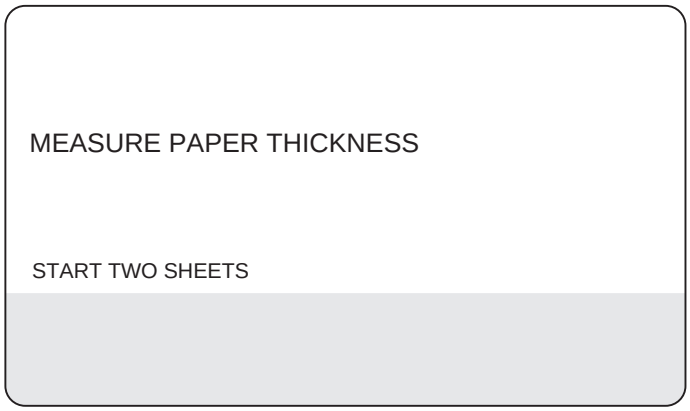
Paper Transport Control

3. Press key F4 — The paper transport control is active.



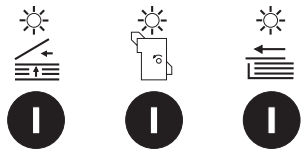
Double Sheet Detection

4. Press key F1

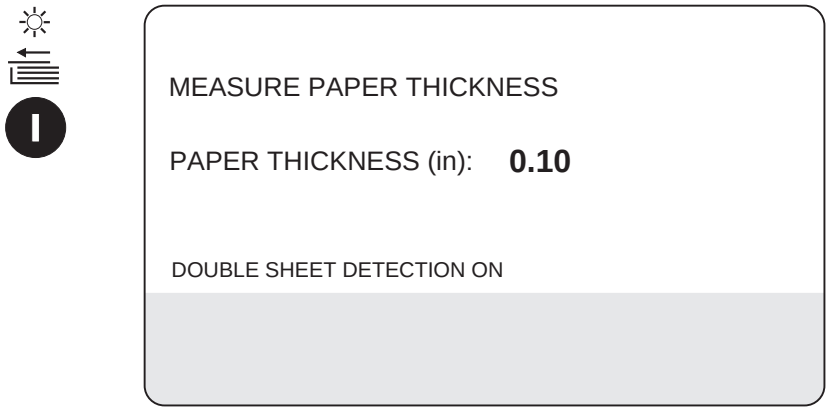


Prior to switching the machine on, it must be set-up and the feeder must be loaded with paper.

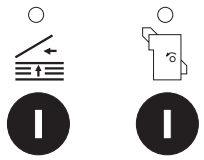
5. Switch on pump and main motor. Press the sheet transport key (1x).



6. Press the sheet transport key (1x). The paper thickness is displayed.



7. Switch off the main motor and the pump.



8. Press key C Back to BASIC menu.

If the double sheet detection or the paper transport control is to be deactivated, the CONTROL menu must be called up by pushing key F2 in the BASIC menu - then push key F2 or F5.

Setting the Fold Length - Main Menu SET-UP

The automatic setting of the 2200 Series makes it possible that all stops - driven by timing belts and servo motors - are set automatically to the position calculated by the computer.
The fold plates which are not used for a particular folding job are automatically closed by deflectors and always remain in the fold unit.

The fold plate stops can be set in three different ways:

1. **Automatic setting of pre-programmed standard folds**

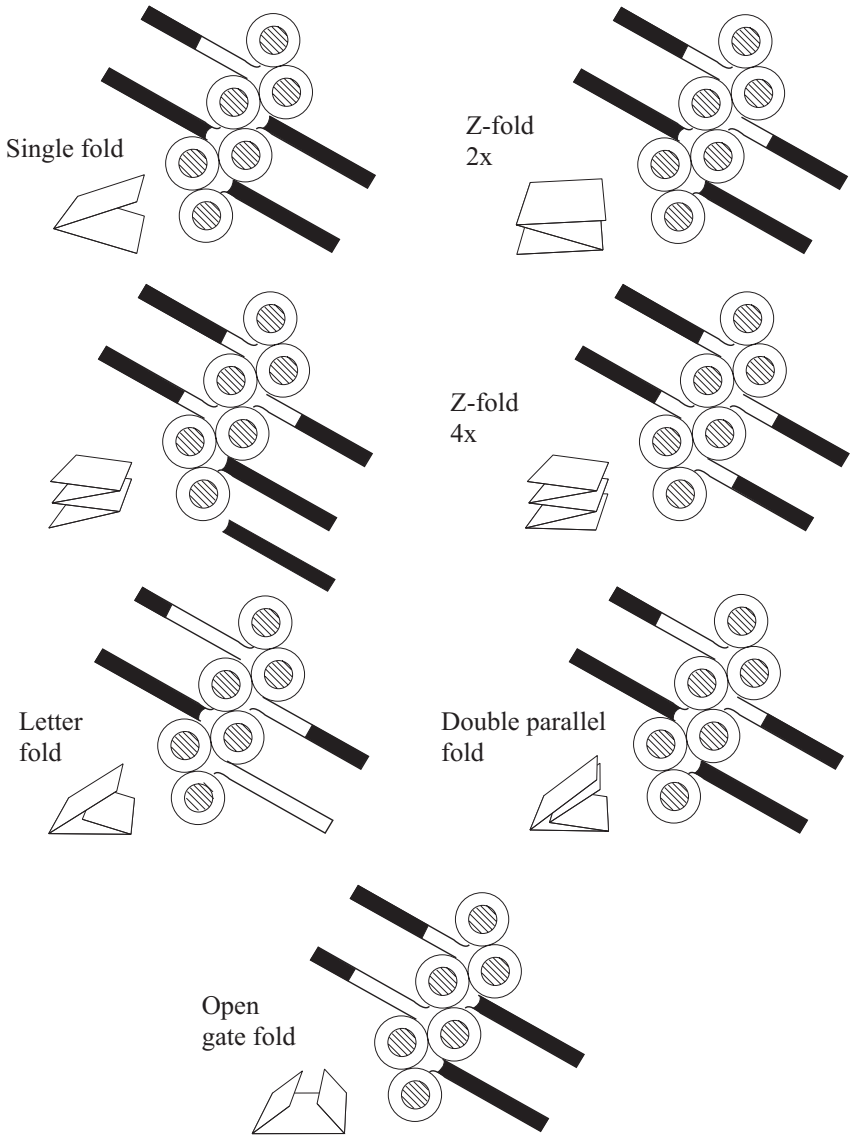
2. **Entering the fold lengths individually on the keyboard - Special folds**

3. **Calling up fold programs from the memory - Job saved**

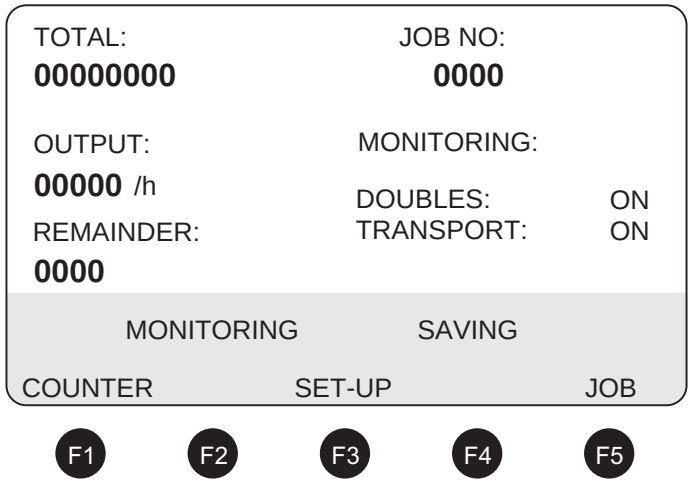
Standard Folds

For this type of setting, it is not necessary to make a sample fold by hand and to measure it. Just enter the required type of fold.

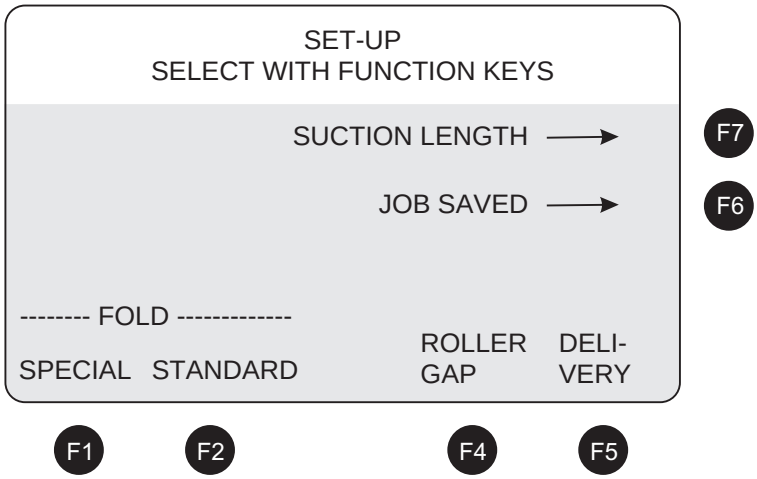
The following standard folds are permanently programmed in the software:



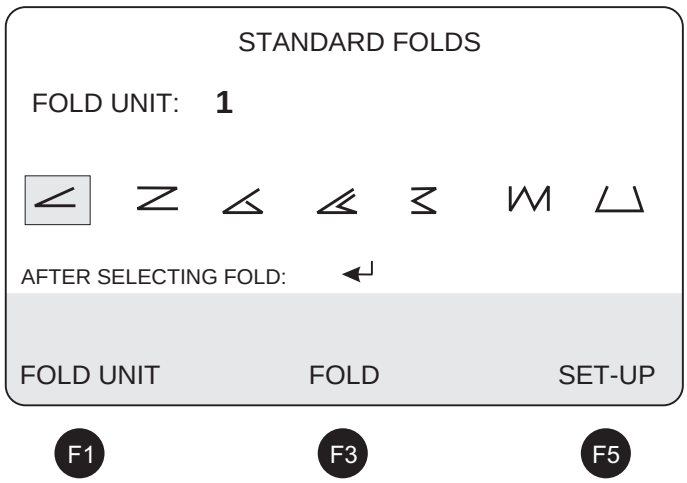
1. Press key C — The BASIC menu is displayed.



2. Press key F3 — The SET-UP menu is displayed.



3. Press key F2 — The STANDARD FOLDS menu is displayed.

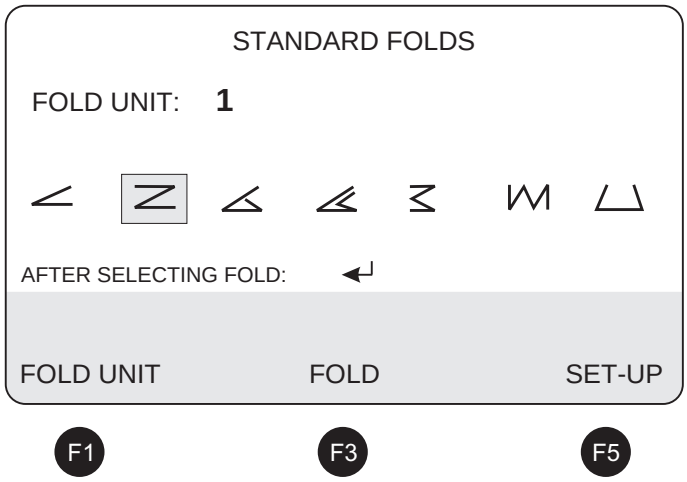


Pressing key F3 several times will shift the cursor (dark rectangle) from one symbol to the other.

Setting example: A DIN 11" x 17" sheet is to be folded as follows:

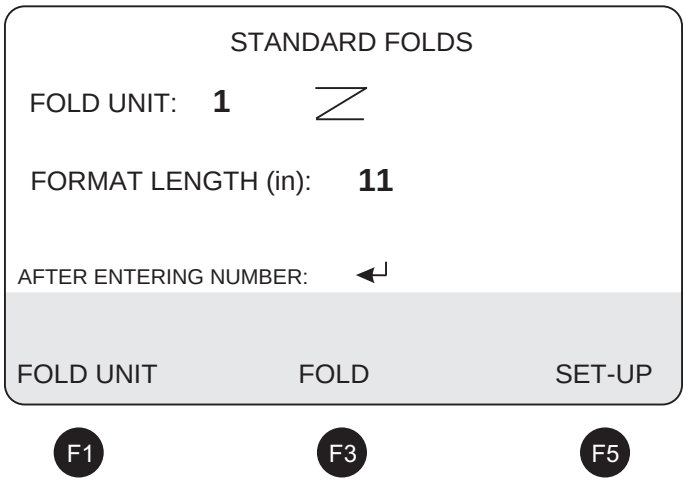
First fold unit: Z-fold  Second fold unit: Letter fold 

4. Press key F3 until the respective fold symbol for the first fold unit (Z-fold) is marked by the cursor.

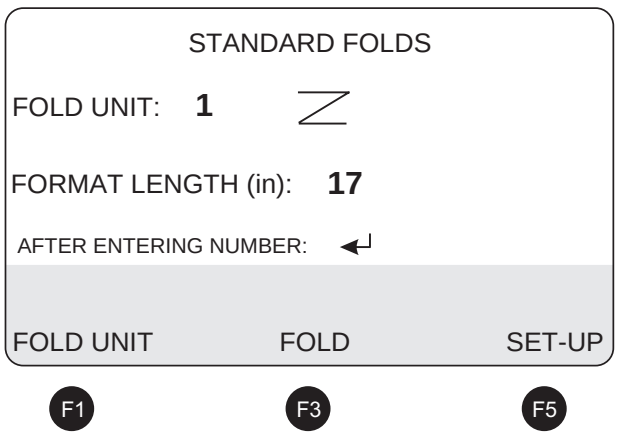


5. Press key ↵ The selected fold is confirmed.

The format length of a previous job is shown in the display.

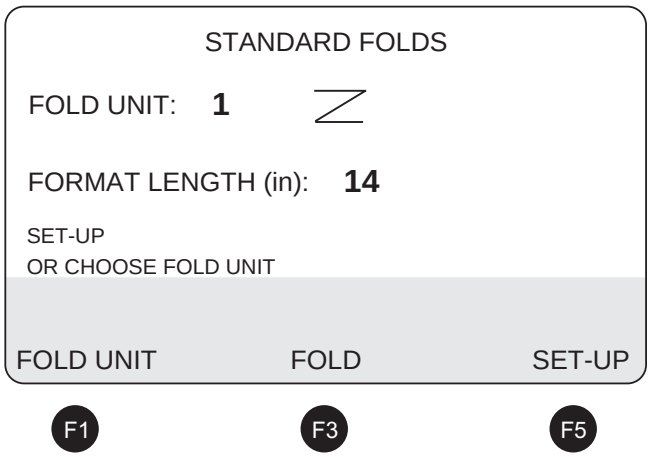


6. Enter the format length (17) The new format length is displayed.



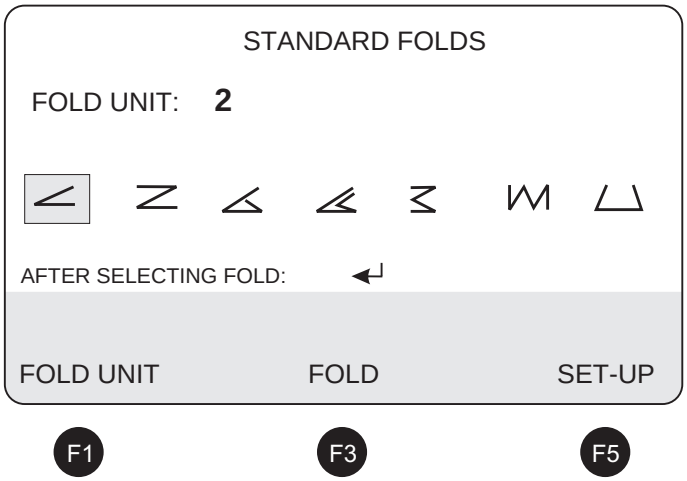
If a format is entered that cannot be handled by the machine because it is too small or too large, this is recognized by the computer and shown in the display.

7. Press key ↵ The new format length is saved.

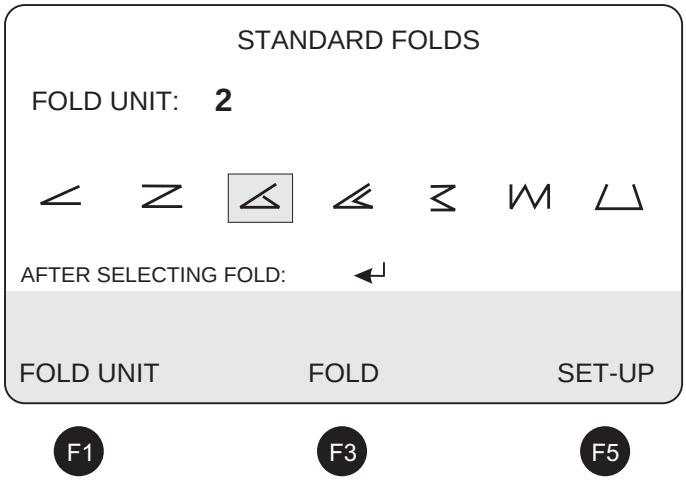


8. Press key F1 The second fold unit is selected.

Since, in our example, a letter fold is to be made in the second fold unit, the cursor must be shifted to the respective fold symbol.

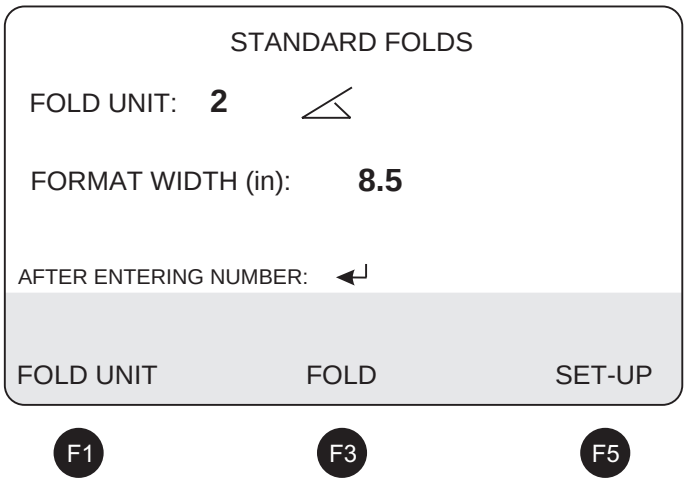


9. Press key F3 repeatedly until the respective fold symbol for the second fold unit (letter fold) is marked by the cursor.

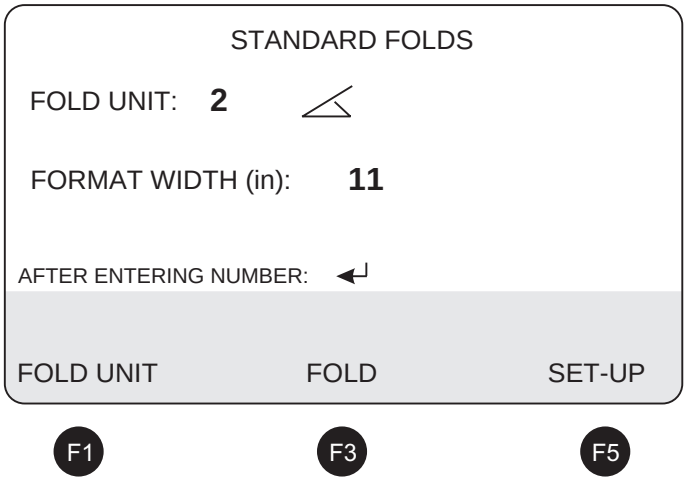


10. Press key ↵ The new format length is saved.

The format width of a previous job is shown in the display.

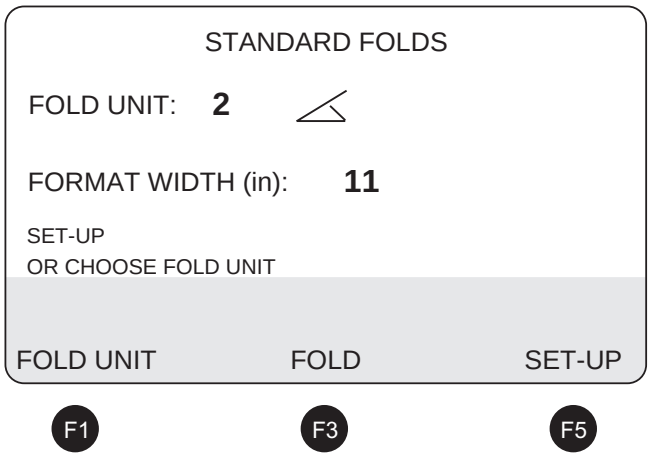


11. Enter format width (11) The new format width is displayed.

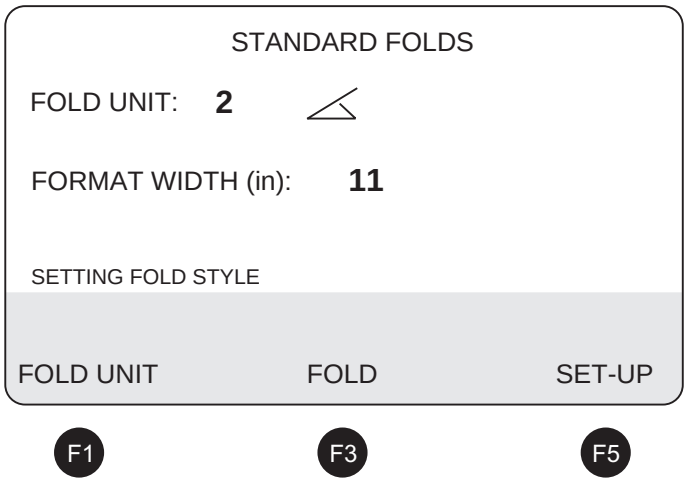


If a format is entered that cannot be handled by the machine because it is too small or too large, this is recognized by the computer and shown in the display.

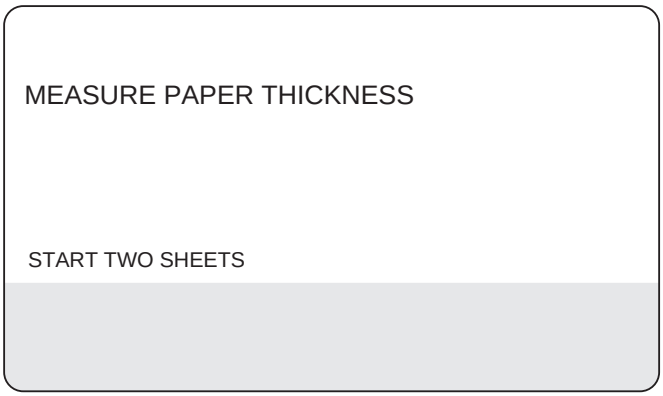
12. Press key ↵



13. Press key F5 The stops are positioned automatically and the fold plates not needed are closed by deflectors.

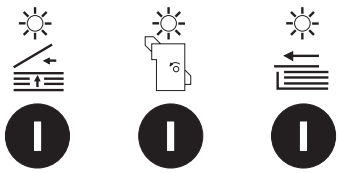


The display SETTING FOLD STYLE is flashing until the setting process is completed. Then the following message appears:

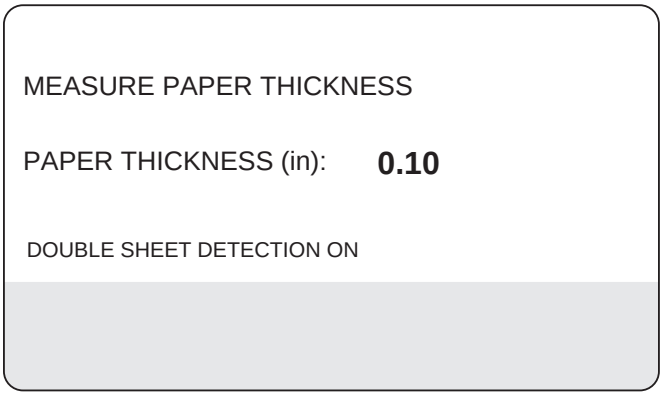


Prior to switching the machine on, it must be set up and the feeder must be loaded with paper.

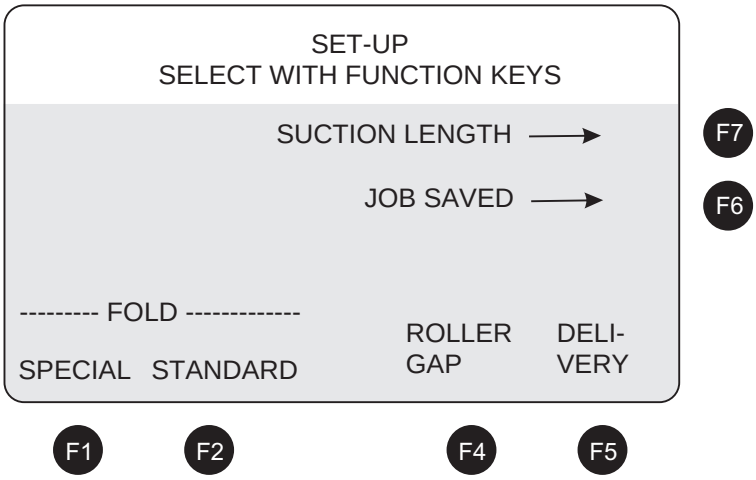
14. Switch on pump and main motor, press the sheet transport key (1x).



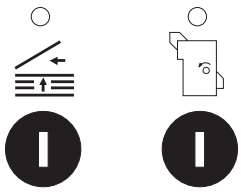
15. Press the sheet transport key (1x) The paper thickness is displayed.



After a few seconds the display returns to the SET-UP menu.



16. Switch off main motor and pump.

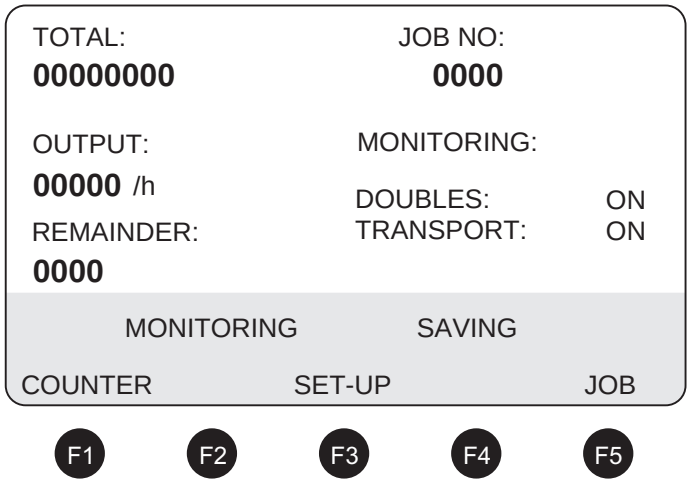


17. Press key C Back to BASIC menu.

Special Folds

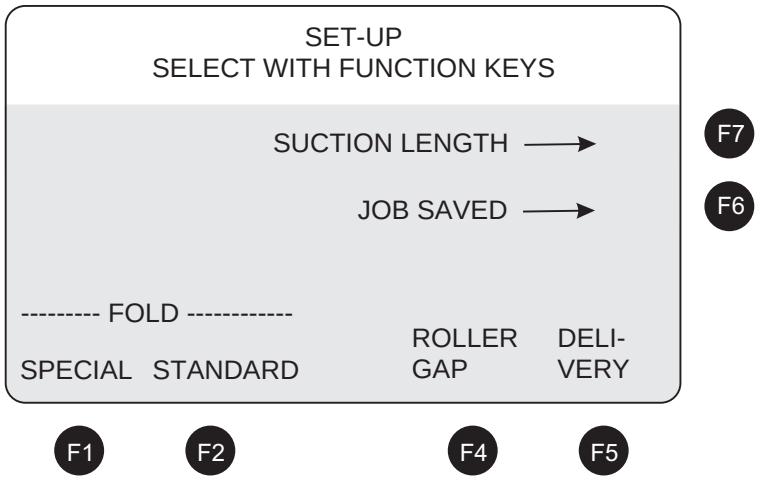
This kind of set-up resembles most the principle used in conventional folding machines because the fold length of each stop must be calculated or measured before setting. The actual setting, however, is done at the operator panel.

1. Press key C — The BASIC menu is displayed.

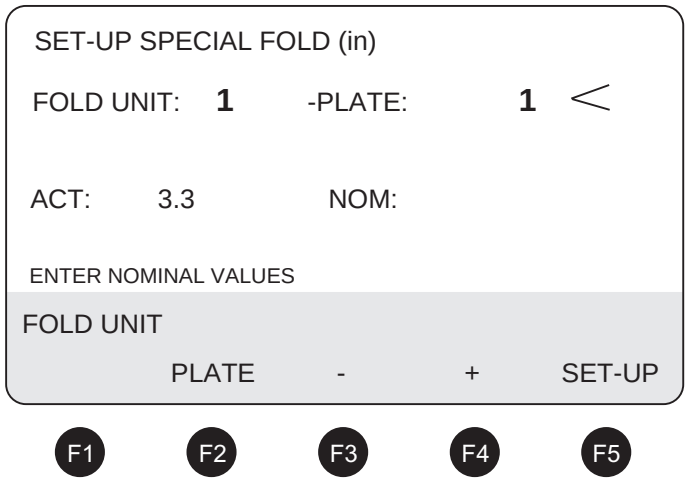


To enter the measurements for the fold lengths, e.g. to set the fold plate stops, the menu SET-UP must be called up via key F3.

2. Press key F3 — The SET-UP menu is displayed.



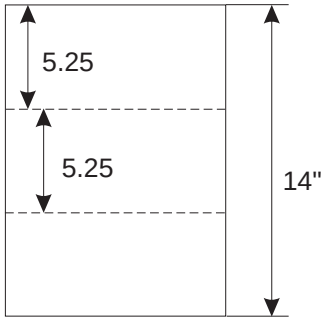
3. Press key F1 The SET-UP SPECIAL FOLD menu for fold unit 1 is displayed.



The display shows ACT (Actual) as the current fold length (e.g. 5.5) and the matching fold symbol, e.g. ≺, ≍ , ...

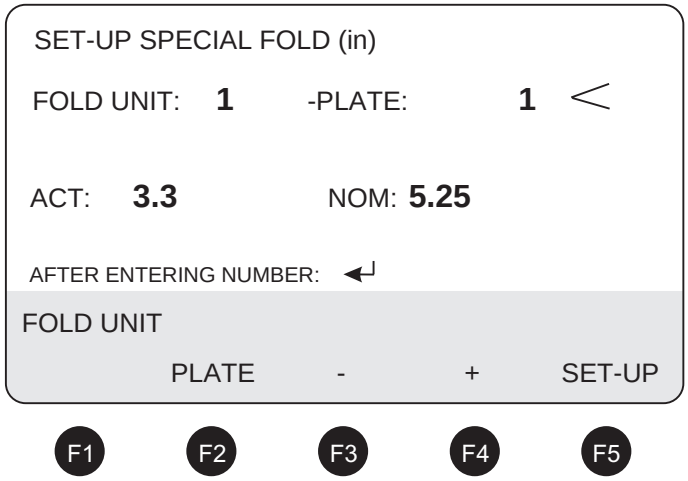
Example: A sheet in format DIN 8.5" x 14" is to be folded.

Example: Eccentric Z-fold ≍

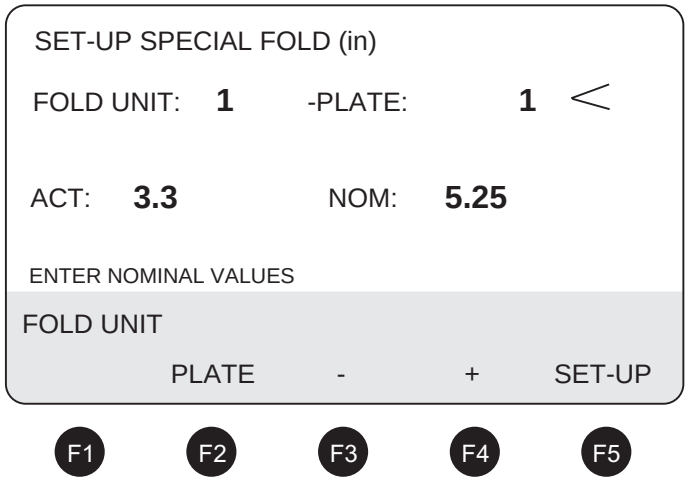


Example (Z-fold)		
	Fold plate 1:	5.25 in
	Fold plate 2:	5.25 in
	Fold plate 3:	0 in
	Fold plate 4:	0 in

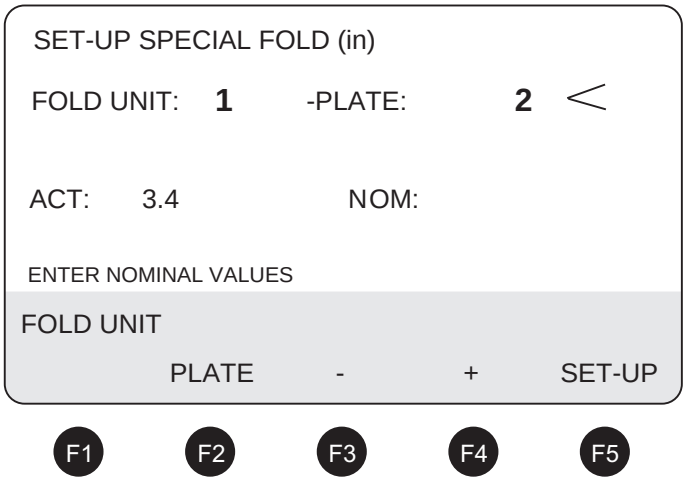
4. Enter the fold length for the first fold plate Example: 3.3



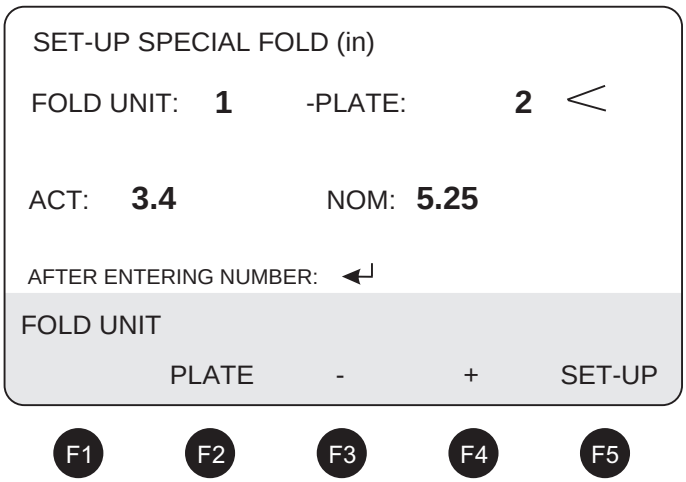
5. Press key ↵ The fold length is saved.



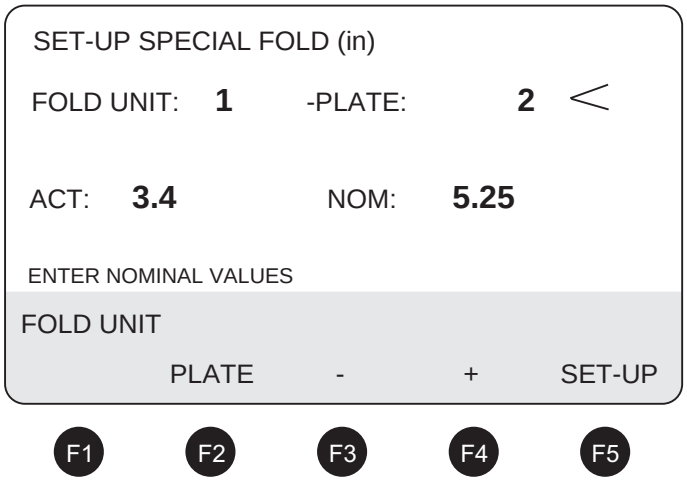
6. Press key F2 Fold plate 2 is called up.



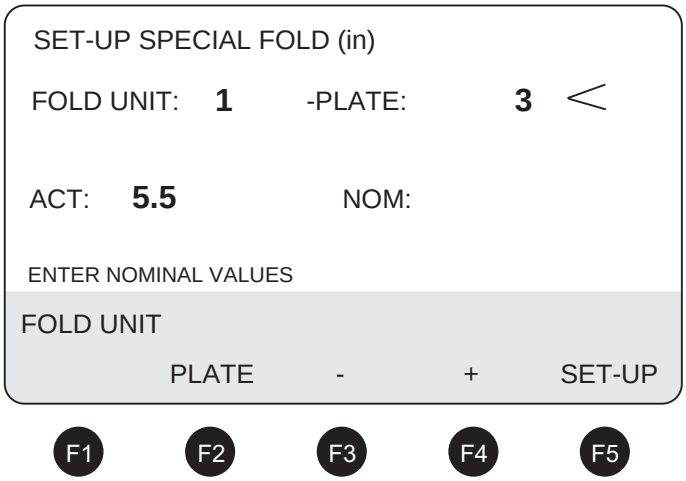
7. Enter fold length for the second fold plate Example: 3.4



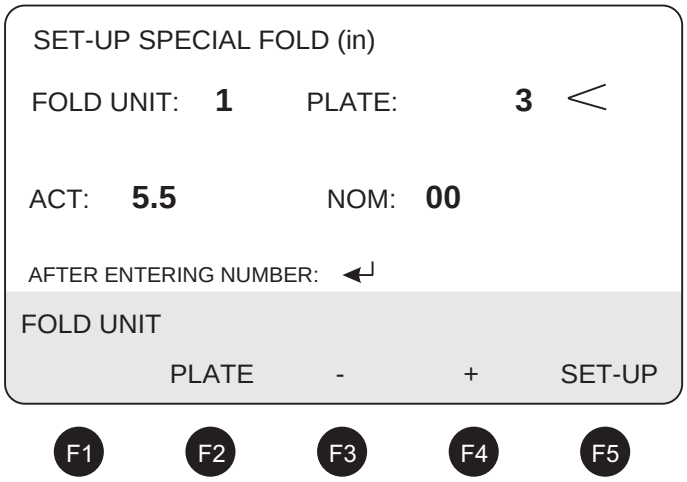
8. Press key ↵ The fold length is saved.



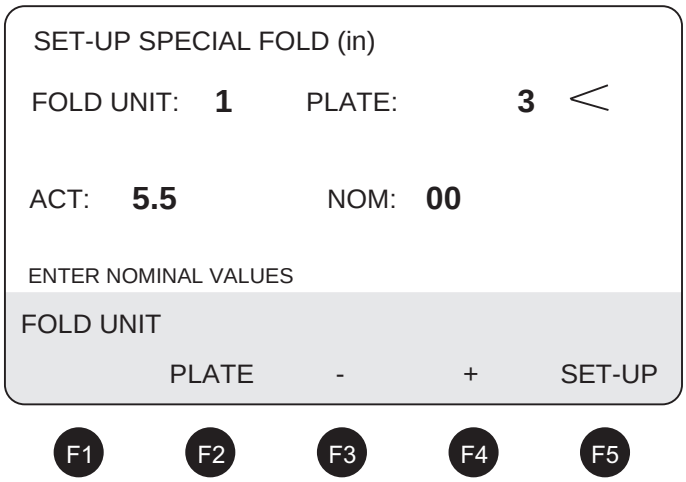
9. Press key F2 Fold plate 3 is called up.



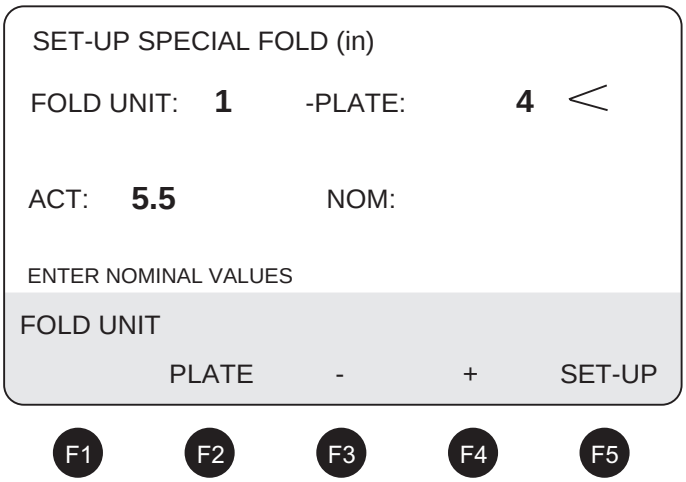
10. Enter fold length for the third fold plate Example: 0



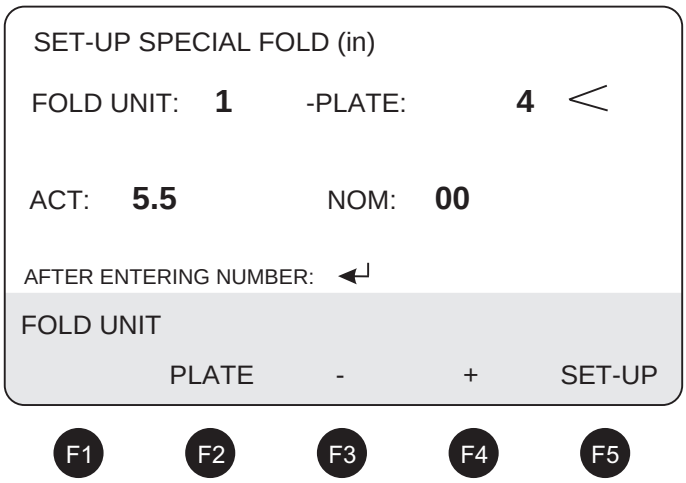
11. Press key ↵ The fold length is saved.



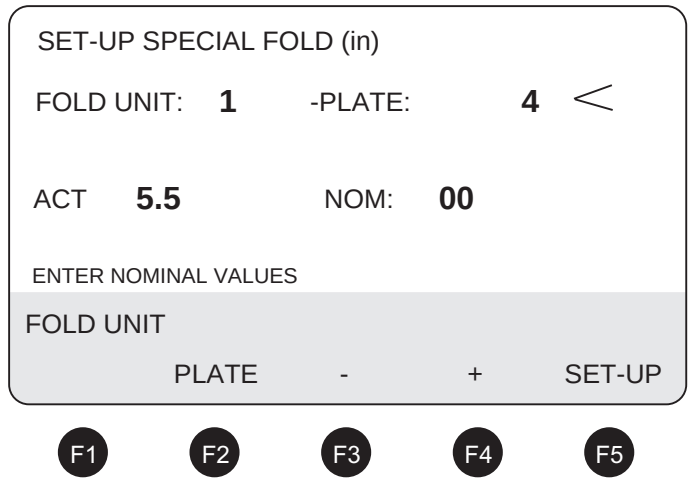
12. Press key F2 Fold plate 4 is called up.



13. Enter fold length for the fourth fold plate Example: 0



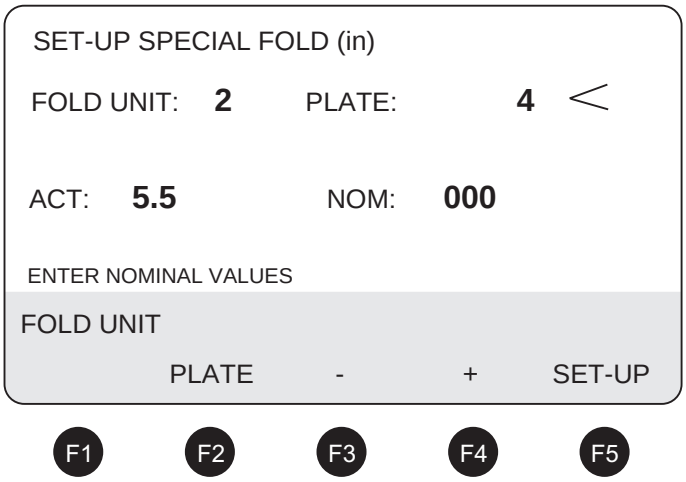
14. Press key ↵ — The fold length is saved.



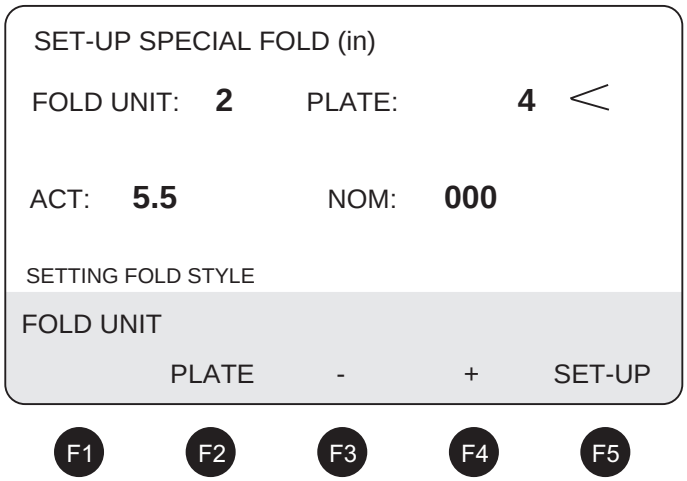
Now the fold lengths for all 4 fold plates of the first fold unit are entered.

26. Press key ↵ The fold length is saved.

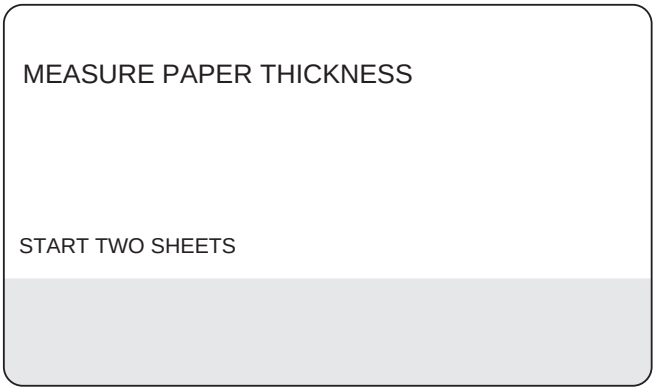
When all fold lengths have been entered, the next step is the command for automatic setting of the stops.



27. Press key F5

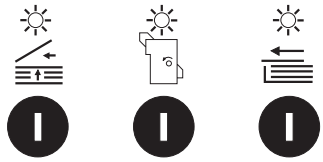


The display SETTING FOLD STYLE is flashing until the setting is completed. Then the following display appears:

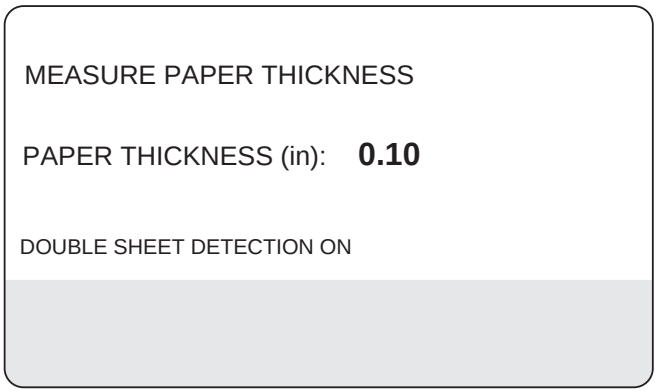


Prior to switching the machine on, it must be set up and the feeder must be loaded with paper.

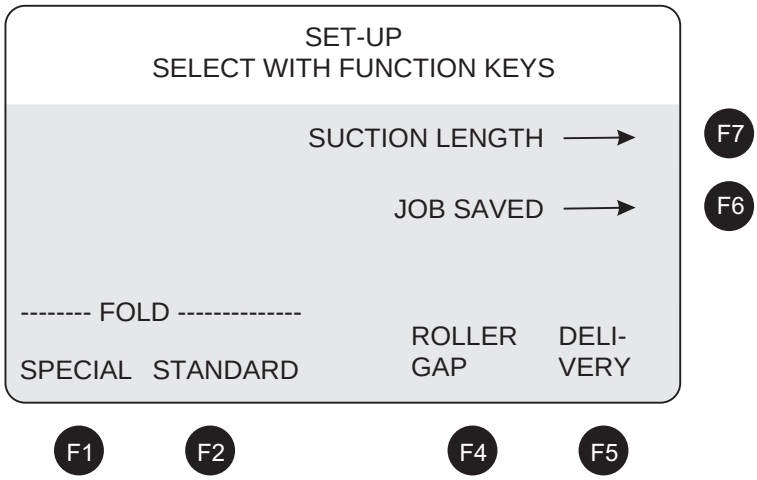
28. Switch on pump and main motor. Press the sheet transport key (1x).



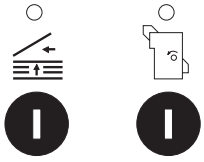
29. Press the sheet transport key (1x) The paper thickness is displayed.



After a few seconds the display returns to the SET-UP menu.



30. Switch off the main motor and the pump.



31. Press key C Back to BASIC menu.

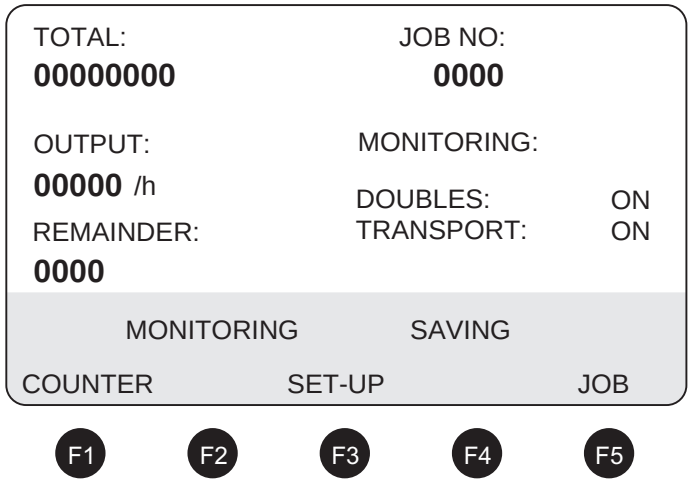
Job Saved

A job can be recalled from memory only when the identification number (memory- or job number) is known.

If the number is unknown, it is possible to display the contents of the memory and thus find the number.

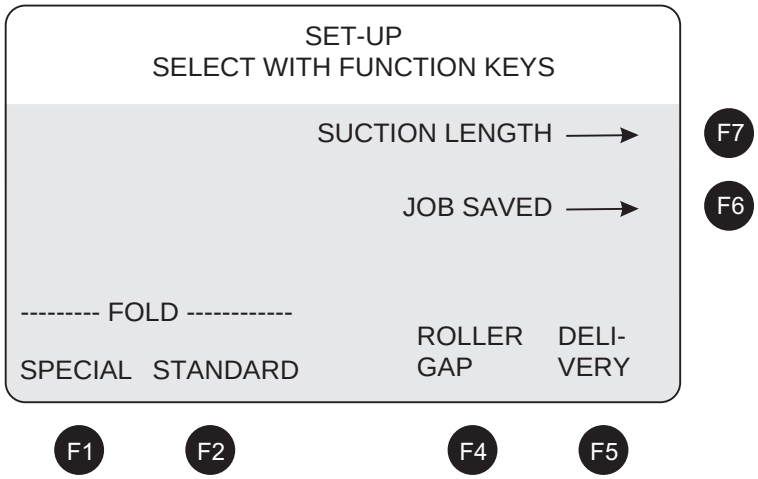
Entering the Memory/Job Number

1. Press key C — The BASIC menu is displayed.

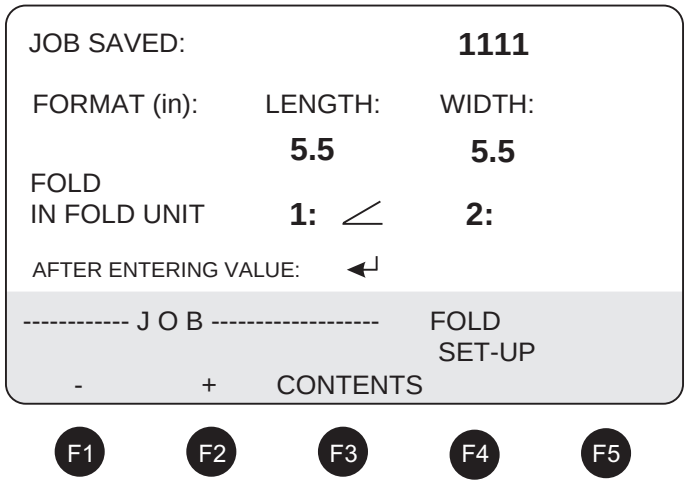


In order to set up a job from the memory, the SET-UP menu must be called up by pressing key F3.

2. Press key F3 — The SET-UP menu is displayed.

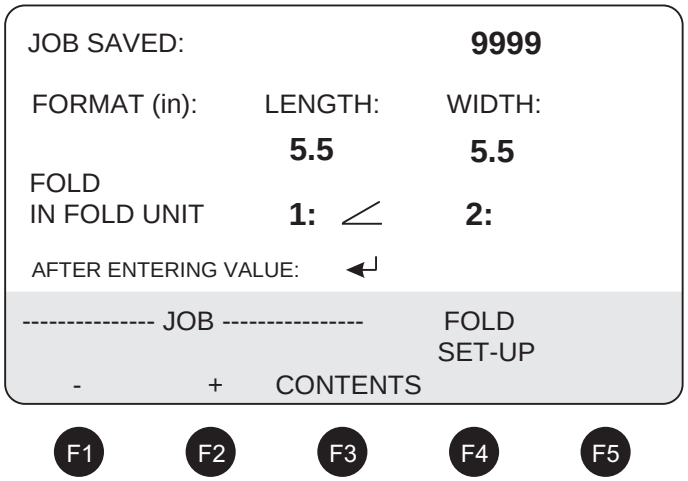


3. Press key F6 — The JOB SAVED menu is displayed.

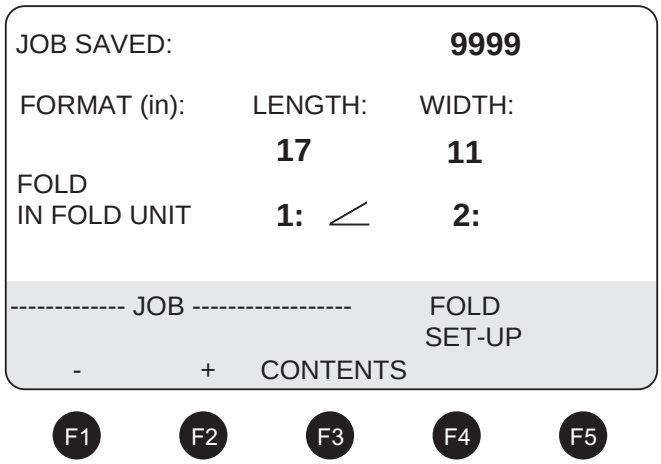


The display shows the number of the job which was last saved or recalled from the memory. Select the job by using the F1 or F2 with the number key pad.

4. Enter the job number — Example: 9999



5. Press key ↵ The format and fold are displayed.



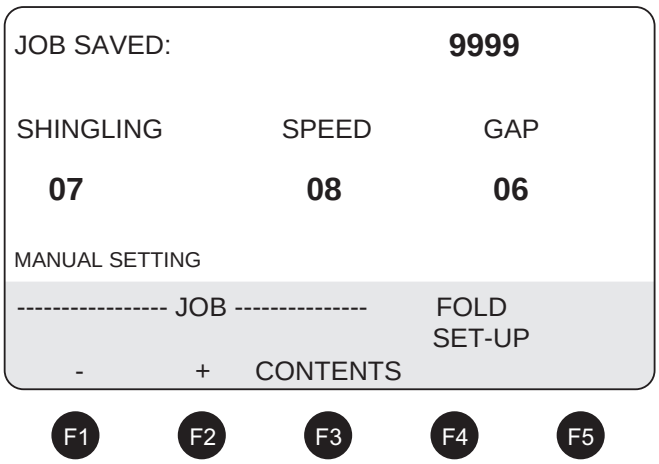
The next input depends on what values are to be taken over from memory:

- Fold lengths only ⟶ continue with key F5
  This key is pressed if the new job uses the same paper size and fold, but a ***different paper weight.***

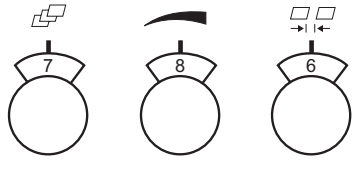
- Fold lengths, suction length as well as setting values for fanned delivery, fold speed, fold roller gap and sheet gap ⟶ continue with key F3
  This key is pressed if the new job uses the same paper size, fold and the ***same paper weight.***

The following example assumes that the new job uses the same paper weight and that all values have to be called up for that reason.

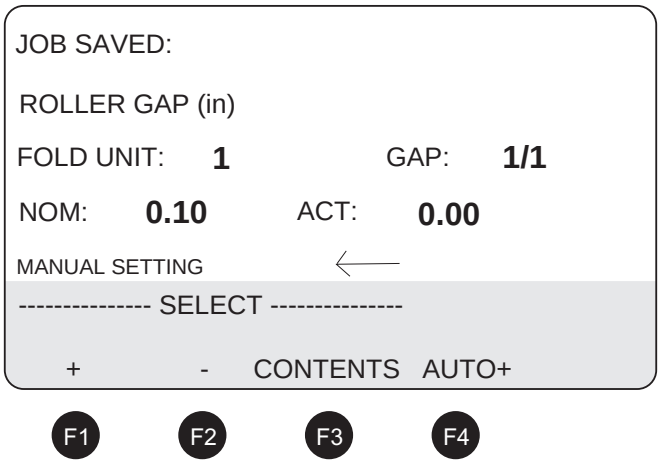
6. Press key F3 The CONTENTS menu is displayed.



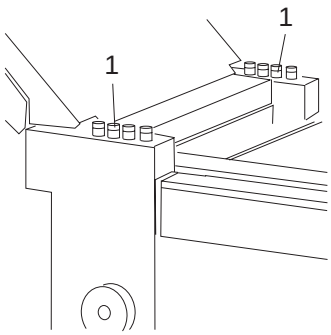
7. These figures must be entered manually by turning the knobs with the corresponding controls.



8. Press key F3 Display ROLLER GAP.



For correct setting of the fold rollers the ACT (Actual) value must be changed to the NOM (Nominal) value.
This is done by turning the setting knobs (1).



The displayed NOM corresponds to the value that was set during the saving process (individual corrections are taken into account).

All setting knobs have numbers so that the display message can be related to a specific fold roller.

The NOM and ACT values of the individual fold rollers can be displayed by pressing keys F1, F2 or F4.

Key F1 (+): Display of NOM and ACT value for the next roller (for example, advance from roller 2 to 3)

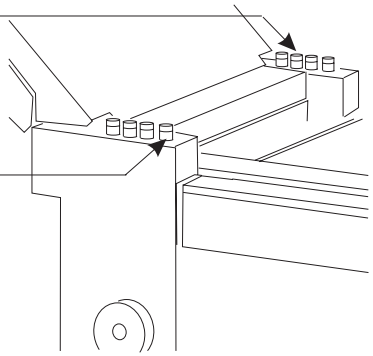
Key F2 (-): Display of NOM and ACT value for the previous roller (for example, return from roller 2 to 1)

Key F4 (AUTO+): Automatic advance of NOM and ACT to the fold roller, for which NOM and ACT do not agree

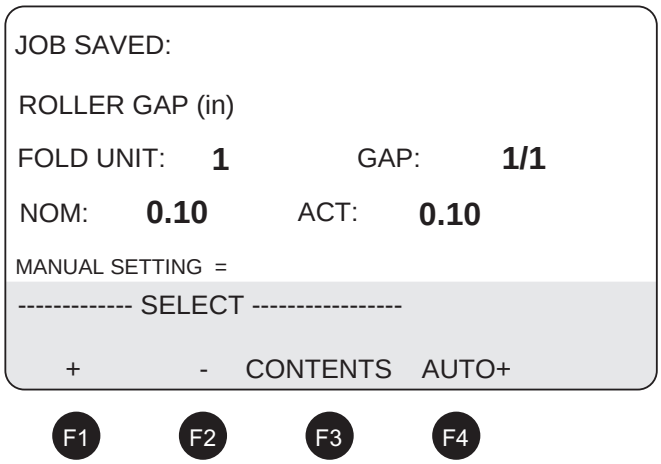
Description of the display messages:

GAP 5/2
5 Roller 5
2 Setting knob on far side

GAP 1/1
1 Roller 1
1 Setting knob on operator side



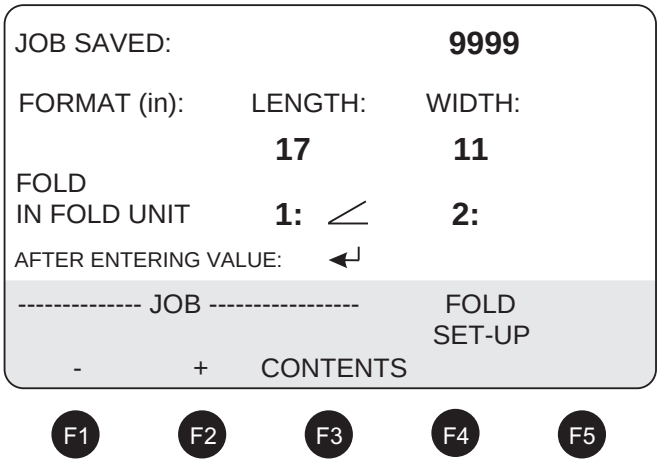
9. Turn setting knob 1 (operator side) on the first fold unit until ACT shows the same value as NOM.



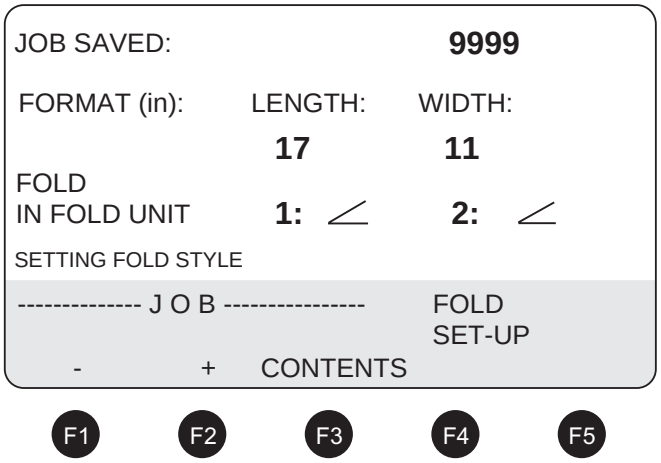
When the values agree, the symbol "=" appears in the command line.

All rollers can be called up and set by pressing keys F1, F2 or F4.
When the rollers in the first and second fold unit are set, the fold plate stops can be moved to their positions.

10. Press key F3

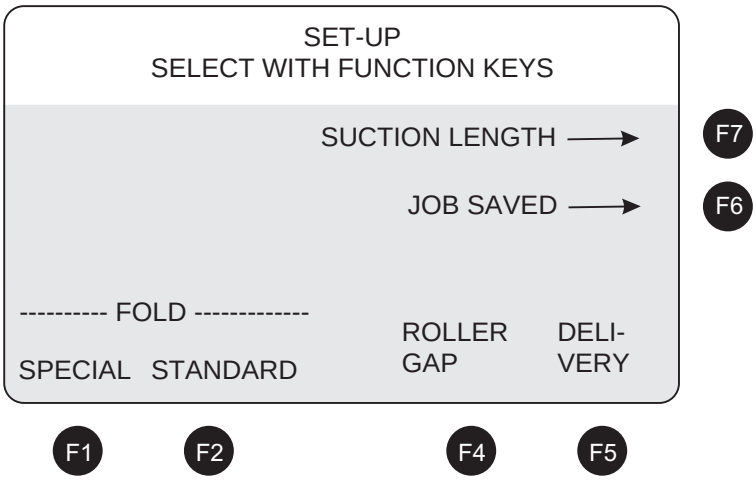


11. Press key F4 The fold plate stops and deflectors are positioned.



The line SETTING FOLD STYLE is flashing during set-up.

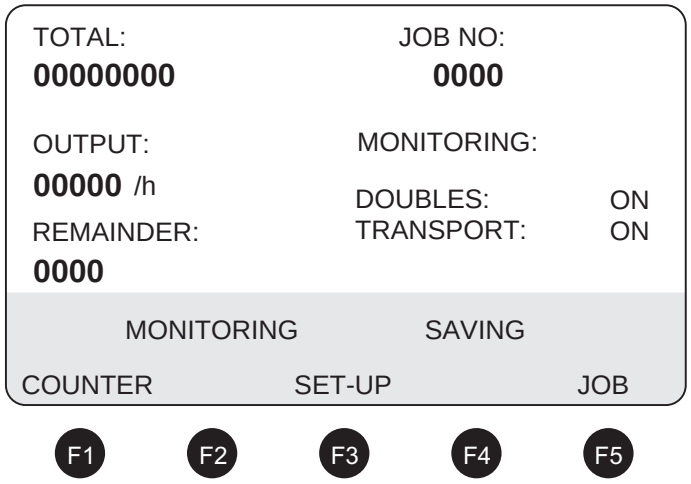
When the set-up is completed, this is signalled by a change of display:



12. Press key C Back to BASIC menu.

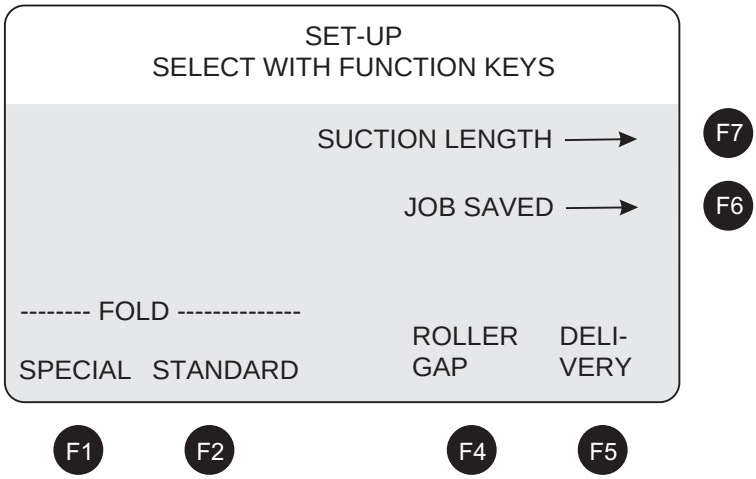
Displaying the Contents of Memory

1. Press key C — The BASIC menu is displayed.

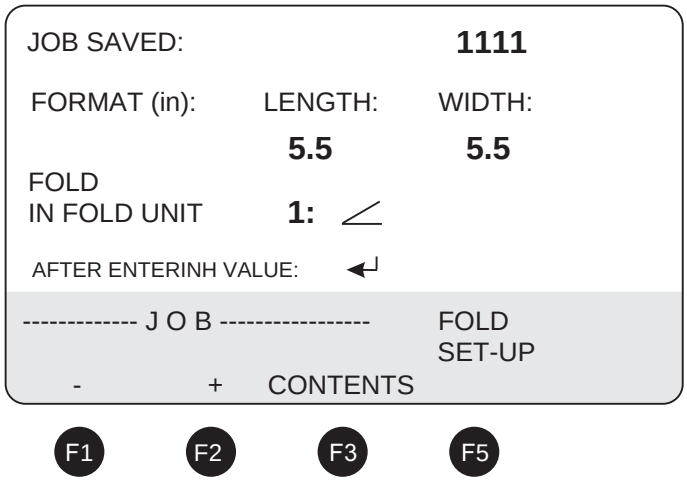


To recall a job from memory, the menu SET-UP must be called up by pressing key F3.

2. Press key F3 — The SET-UP menu is displayed.

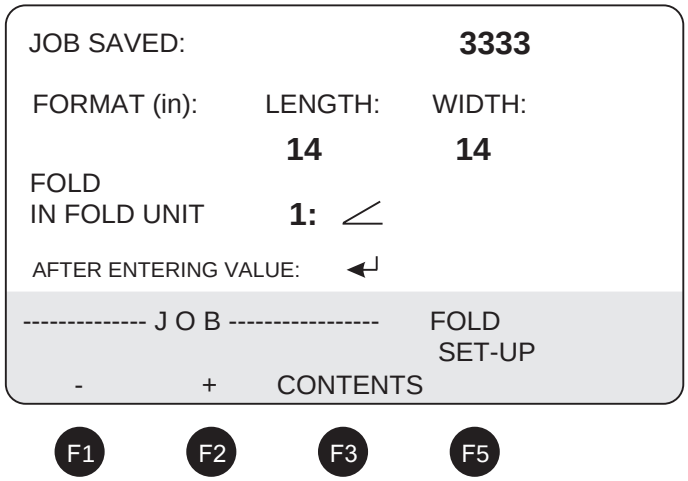


3. Press key F6 — The JOB SAVED menu is displayed.



4. Press key F1

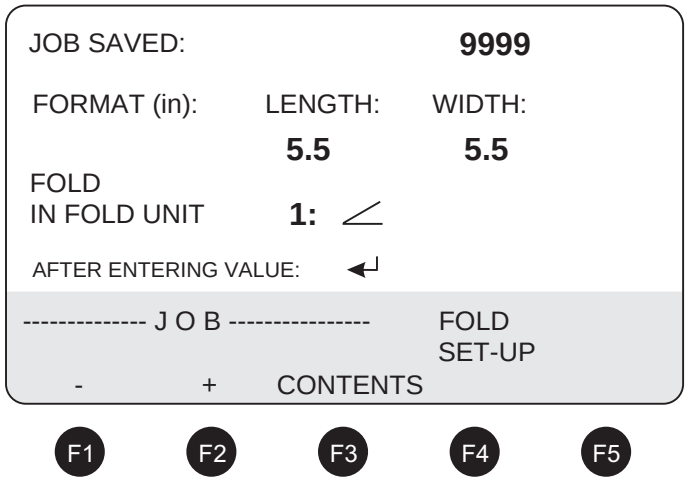
By pressing key F1 (JOB) several times, the memory number, the format and the fold type of each individual job are displayed, in the sequence in which the jobs were saved.



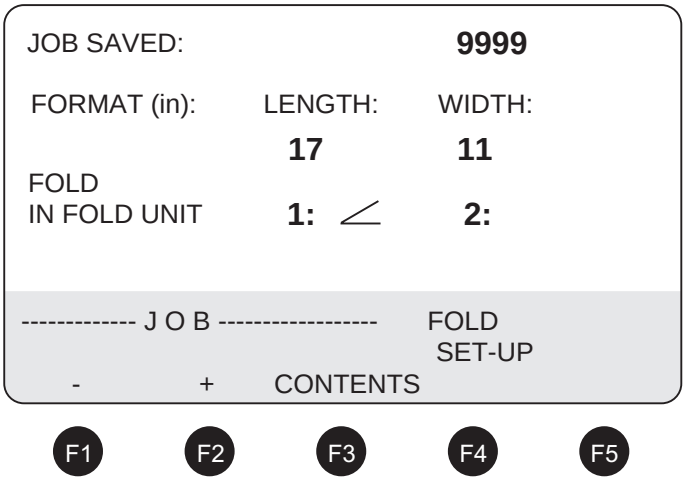
Once the job is found, it can be set up as follows:

5. Enter the identification number — Example: 9999

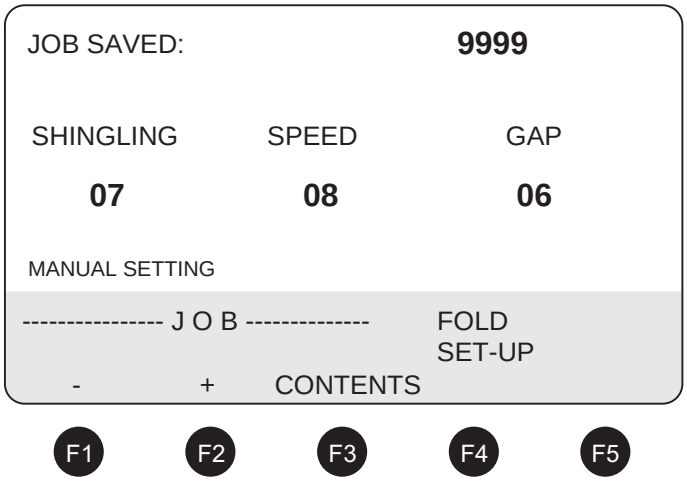
The length and width still refer to the previous job.



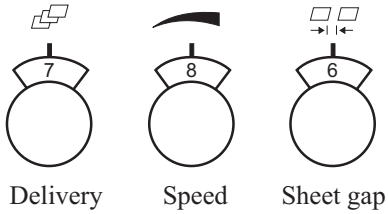
6. Press key ↵



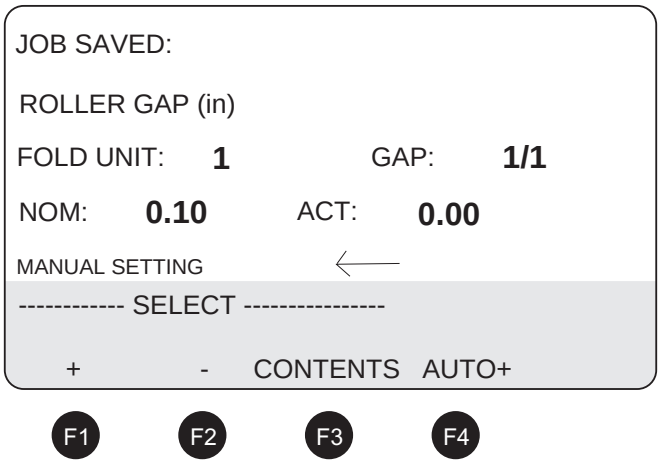
7. Press key F3 The CONTENTS menu is displayed.



8. These figures must be entered manually by turning the knobs with the corresponding controls.



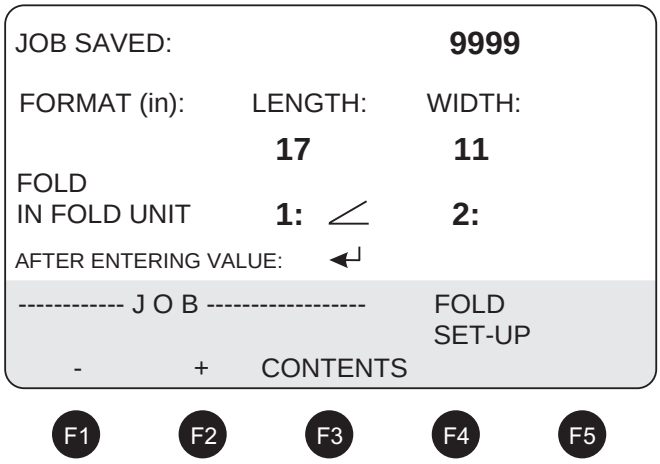
9. Press key F3



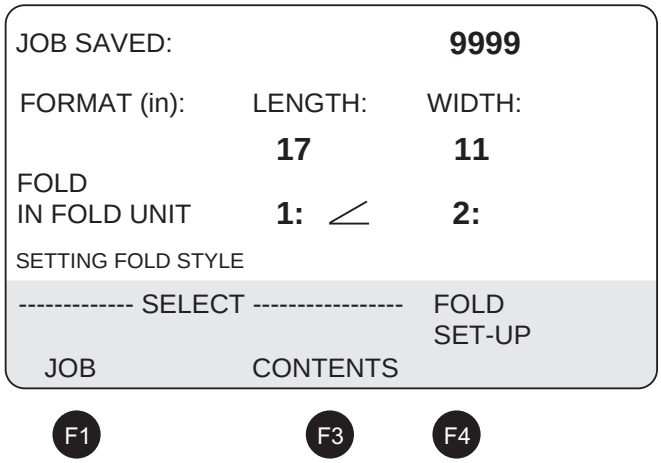
The fold rollers are be set by matching the ACTUAL and NOMINAL values (see Main Menu SET-UP / Job Saved steps 8-10).

When all rollers in the first and second fold unit are set, the fold plate stops can be moved to their respective positions.

10. Press key F3

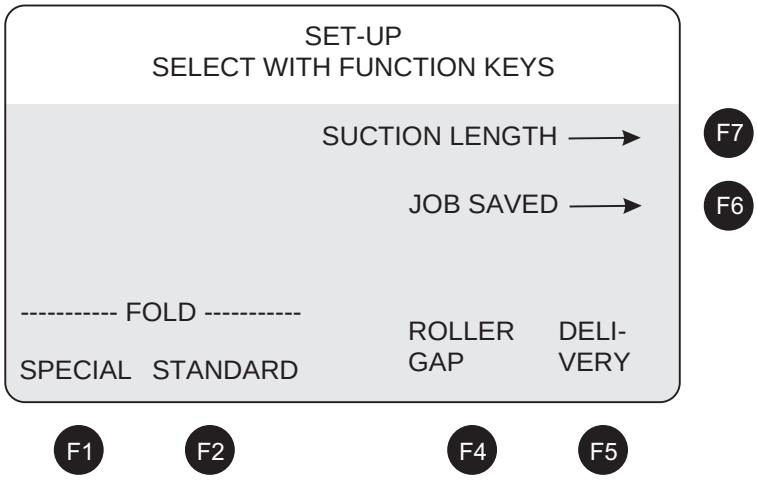


11. Press key F4 The fold plate stops and deflectors are positioned.



The line SETTING FOLD STYLE is flashing during set-up.

When the set-up is completed, this is signalled by a change of display:



12. Press key C Back to BASIC menu.

Setting of the Suction Length - Main Menu SET-UP

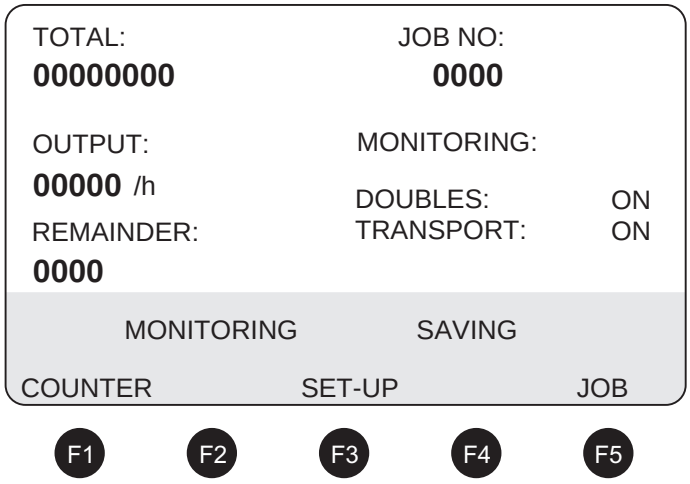
Adjusting the suction length for the flat pile feeder is necessary when format and type of paper of the new job differ considerably from the previous one.
The following rule applies:

- Short sheets, light stock: Short suction length
- Long sheets, heavy stock: Long suction length

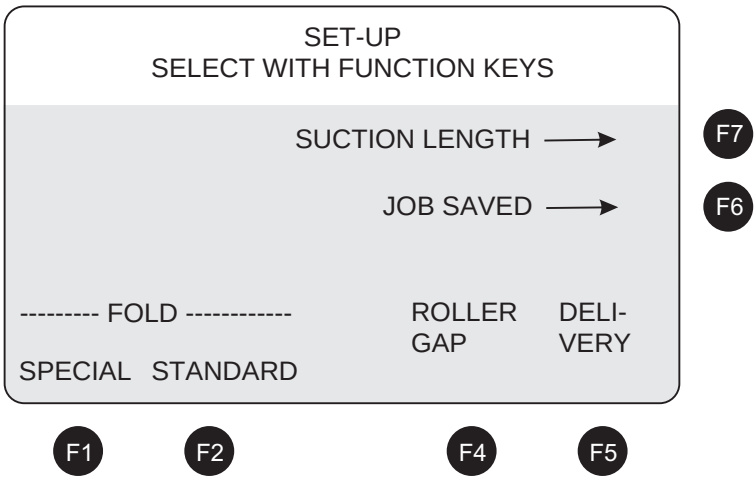
If, for instance, very short unfolded sheets are processed, it may happen that two sheets are fed during one suction cycle.
In this case a shorter suction length should be chosen.
When processing heavy stock, there is a possibility that it is not transported reliably to the register table. Here the suction length should be increased.

A minimum suction length of 20 mm and a maximum suction length of 250 mm can be set.

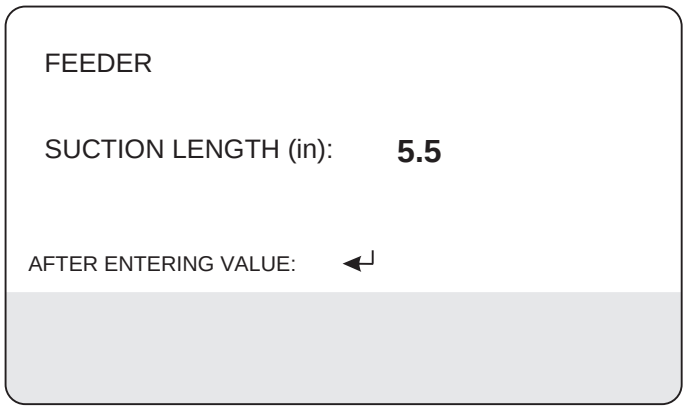
1.	Press key C	The BASIC menu is displayed.



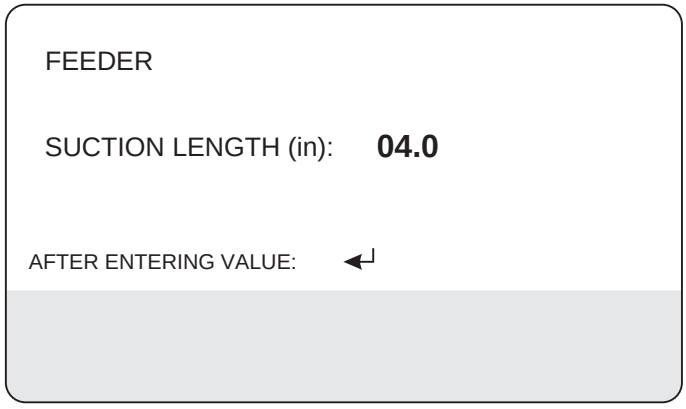
2. Press key F3 The SET-UP menu is displayed.



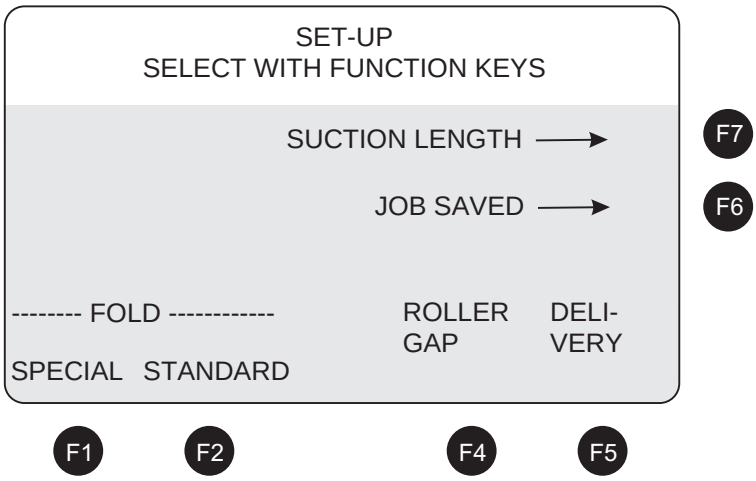
3. Press key F7 The suction length is displayed.



4. Enter suction length (4.0) The new suction length is displayed.



5. Press key ↵



If further adjustment is needed after running some sample sheets, this can be done by pressing key F7 again.

When the job is saved, the information about the individually modified suction length is also saved.
During the next set-up process the modified suction length is set automatically.

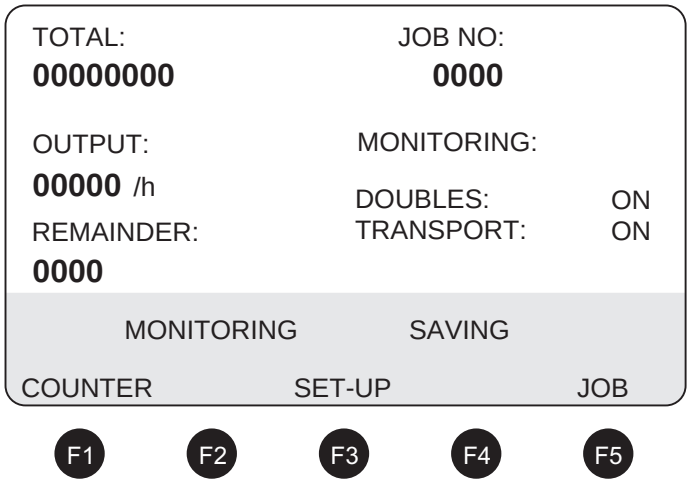
Saving of Job Data - Main Menu SAVING

There is memory space for 60 individual fold jobs. A 4-digit identification number makes it possible to find each job anytime later.

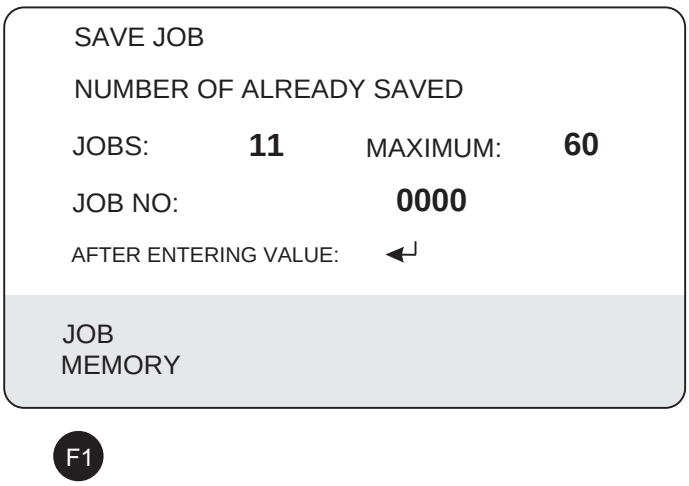
The job cannot be saved before all settings have been completed, i.e. when no further corrections are required for:

- Fold length
- Sheet gap
- Roller gap
- Speed
- Suction length
- Shingling

1. Press key C — The BASIC menu is displayed.

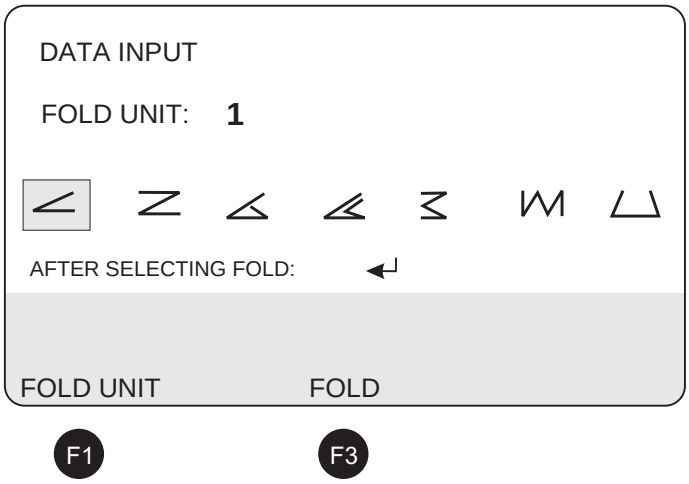


2. Press key F4 — The SAVE JOB menu is displayed.



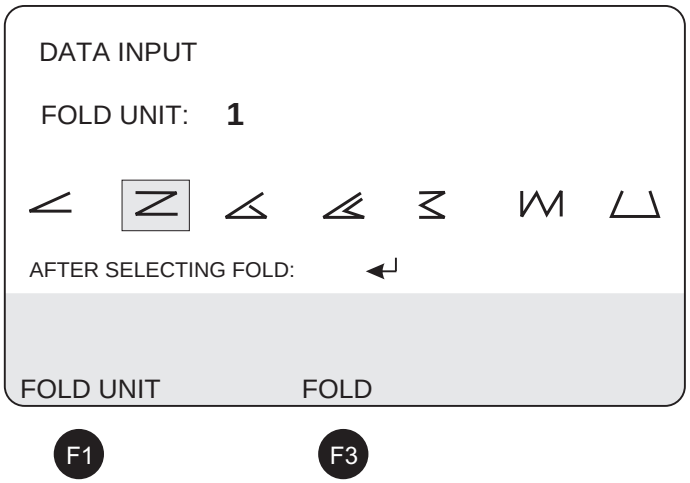
The display DATA INPUT only comes on when the job has been set up via the menu SPECIAL FOLDS.
When setting up via STANDARD FOLDS or JOB SAVED, the display DATA INPUT does not come on - type of fold and format have already been recognized. In these cases, continue with entering the job number (item 12).

3. Press key F3



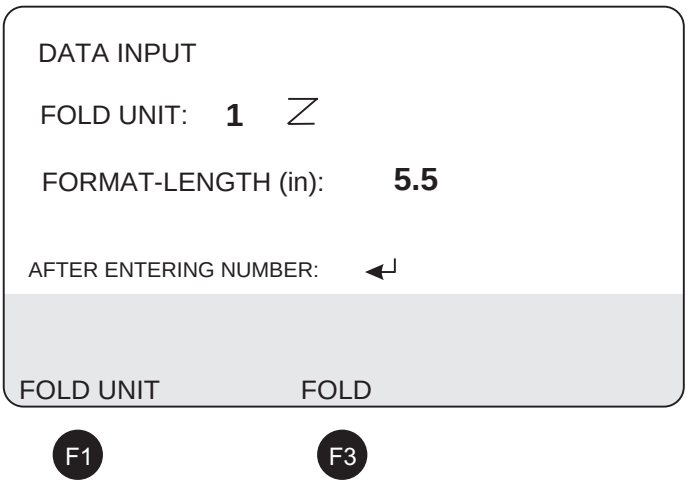
Since in our example a Z-fold was set up in the first fold unit, the cursor must be moved to the respective fold symbol.

4. Press key F3 until the respective fold symbol for the first fold unit (Z-fold) is marked by the cursor (dark rectangle).

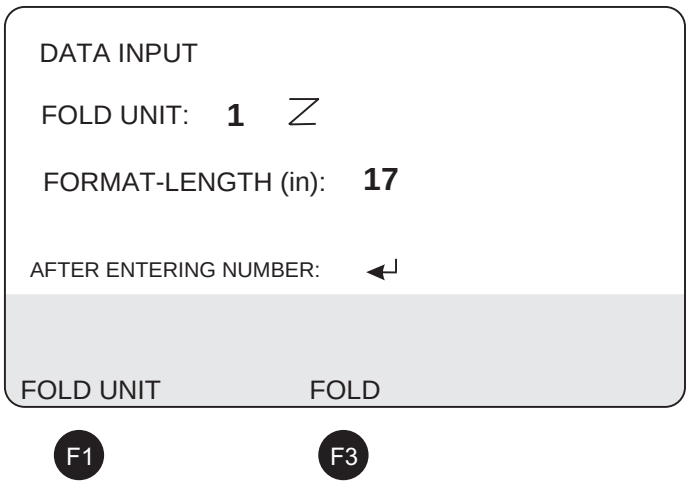


5. Press key ↵ The fold symbol is saved.

The format length of a previous job is shown in the display.



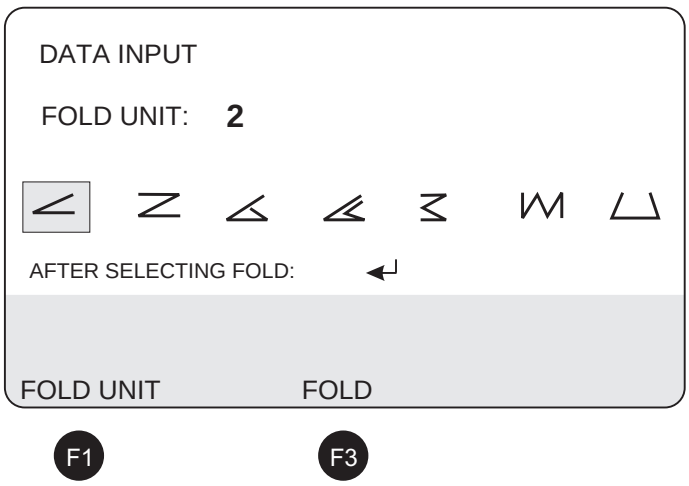
6. Enter the format length (420) The new format length is displayed.



Enter the format length for job which has been set up (example: 420).

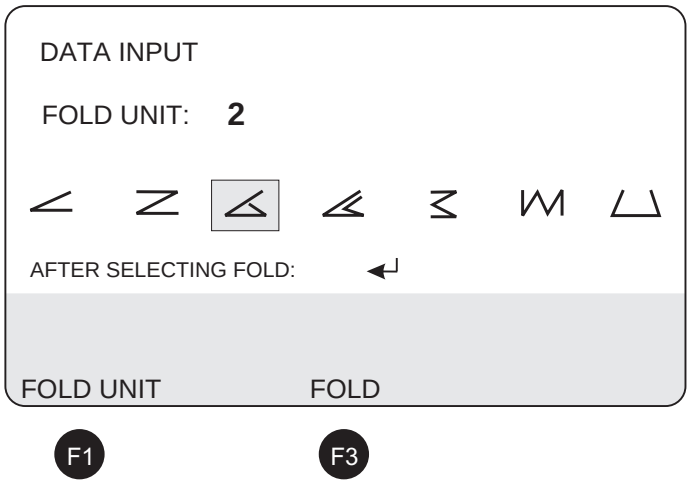
If a format is entered that cannot be handled by the machine because it is too small or too large, this is recognized by the computer and shown in the display.

7. Press key ↵ The second fold unit is called up.



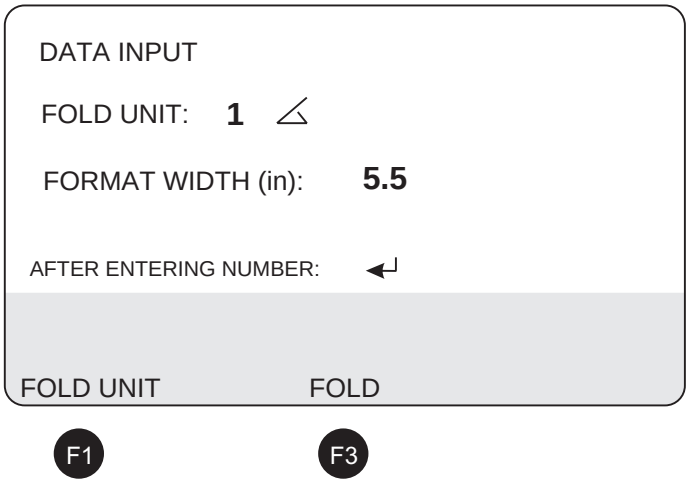
Since a letter fold was set up in the second fold unit, the cursor must be moved to the respective fold symbol.

7. Press key F3 repeatedly until the respective fold symbol for the second fold unit (letter fold) is marked by the cursor (dark rectangle).



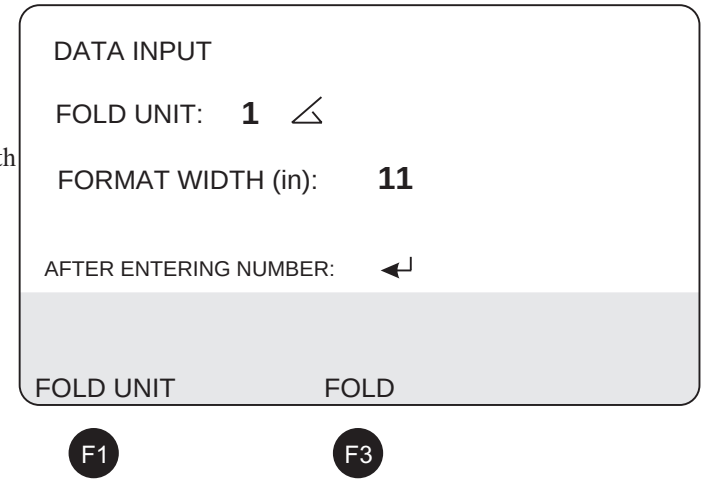
9. Press key ↵ The fold symbol is saved.

The format width of a previous job is shown in the display.



10. Enter the format width (297) The new format width is displayed.

Enter the format width for the job which has been set up (example: 297).



If a format is entered that cannot be handled by the machine because it is too small or too large, this is recognized by the computer and shown in the display.

11. Press key ↵

SAVE JOB
NUMBER OF ALREADY SAVED
JOBS: **11** MAXIMUM: **60**
JOB NO: **0000**
AFTER ENTERING NUMBER: ↵

12. Enter the identification number (e.g. 9999)

SAVE JOB
NUMBER OF ALREADY SAVED
JOBS: **11** MAXIMUM: **60**
JOB NO: **9999**
AFTER ENTERING NUMBER: ↵

13. Press key ↵

If the selected memory space is already occupied, the display will ask whether it should be overwritten.

SAVE JOB
NUMBER OF ALREADY SAVED
JOBS: **11** MAXIMUM: **60**
JOB NO: **9999**
OVERWRITE? ↵

If the memory space is to be overwritten, proceed as follows:

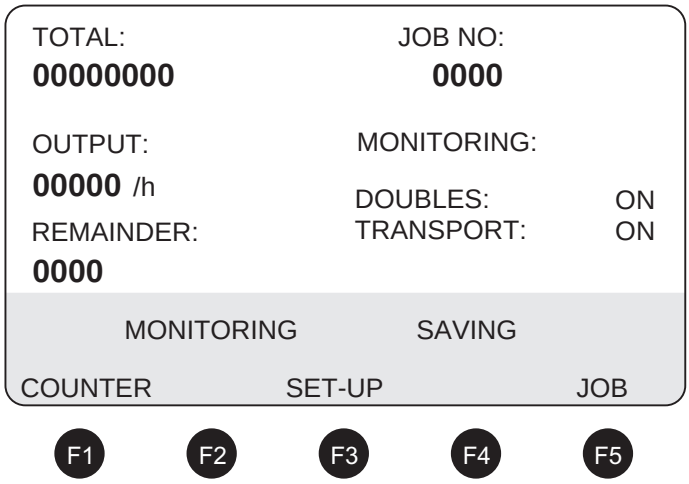
14. Press key ↵

SAVE JOB
NUMBER OF ALREADY SAVED
JOBS: **11** MAXIMUM: **60**
JOB NO: **9999**
SAVING COMPLETED

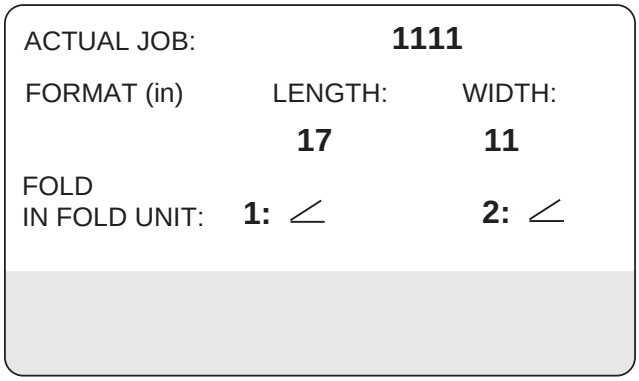
15. Press key C Back to BASIC menu.

Display of the Actual Job - Main Menu JOB

1. Press key C — The BASIC menu is displayed.



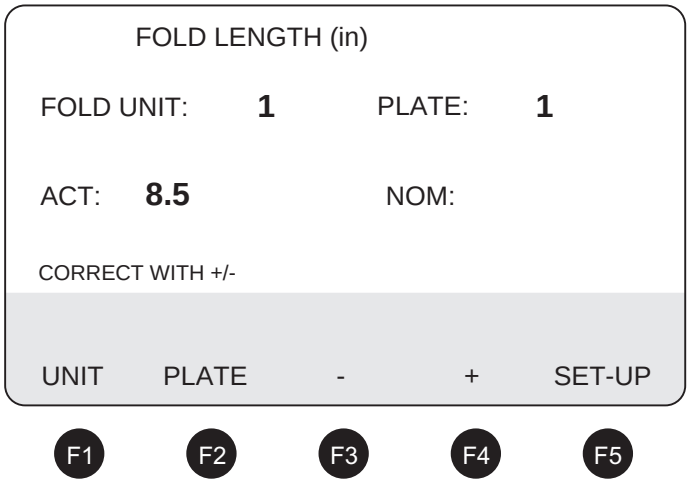
2. Press key F5 — Display of the actual job.



In this menu only the format and type of fold of the actual job are displayed. Settings cannot be made at this point.

Correction of Fold Lengths - Menu FOLD LENGTH

1.	Press key	The FOLD LENGTH menu is displayed.



In this menu, all necessary corrections of the fold lengths of a set-up job can be made.

Key F1 will switch from the first to the second fold unit and vice versa.

Key F2 will display the fold lengths of all fold plates.

Key F3 will reduce the fold length in steps of 0.25 mm.

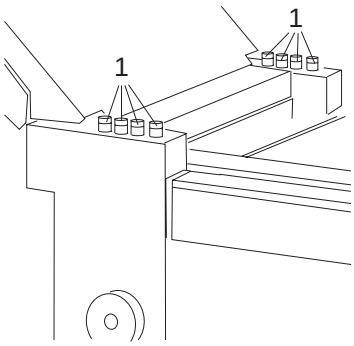
Key F4 will increase the fold length in steps of 0.25 mm.

Key F5 is inactive, because every correction is immediately transferred to each stop. Every change of 0.5 mm is displayed.

2.	Press key C	Back to BASIC menu.

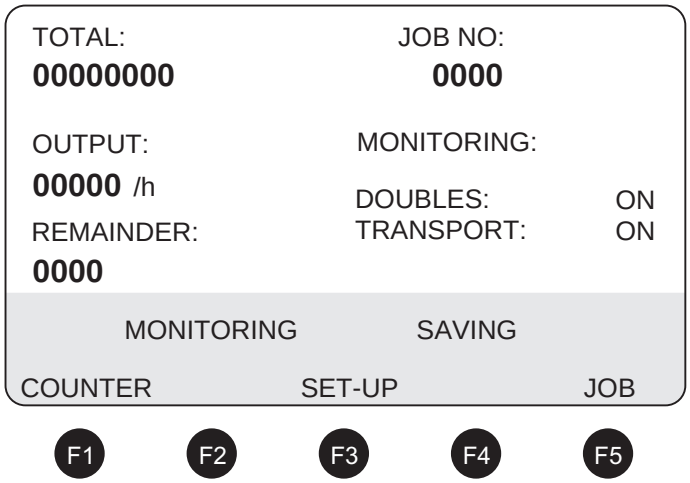
Setting the Fold Rollers - Menu ROLLER GAP

The fold rollers are set on the basis of information from the computer control.
The correct gap is calculated taking into account the selected type of fold and the paper weight and is then shown on the display.
This setting value must be transferred to the left and right setting knobs (1) associated with each fold roller.

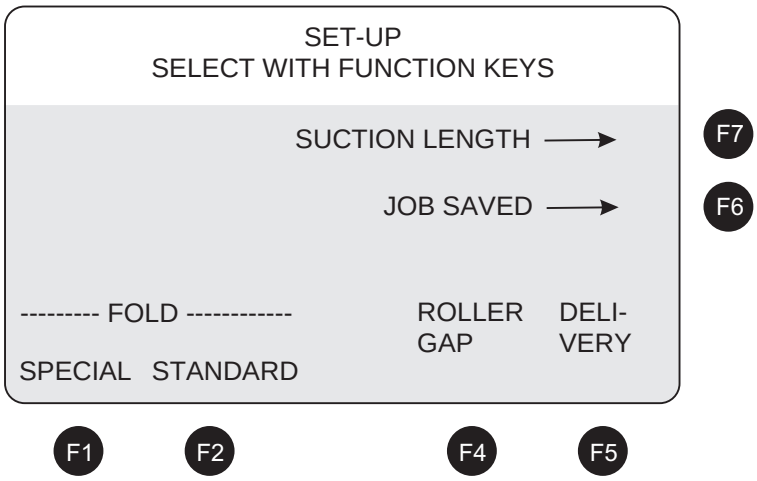


Before setting the fold rollers the fold lengths in all fold plates must already be set.

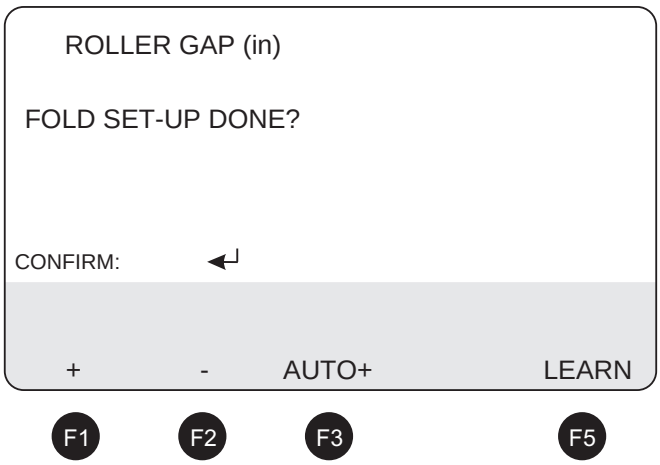
1. Press key C — The BASIC menu is displayed.



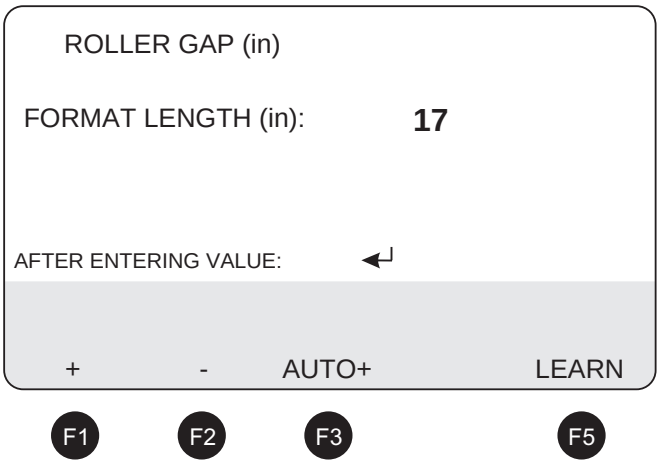
2. Press key F3 — The SET-UP menu is displayed.



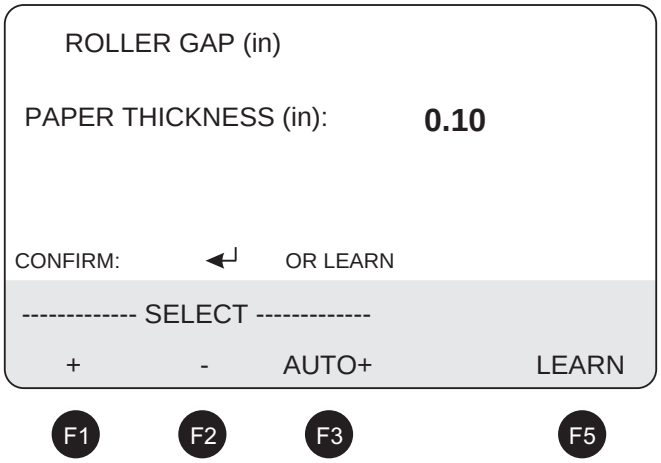
3. Press key F4 The ROLLER GAP menu is displayed.



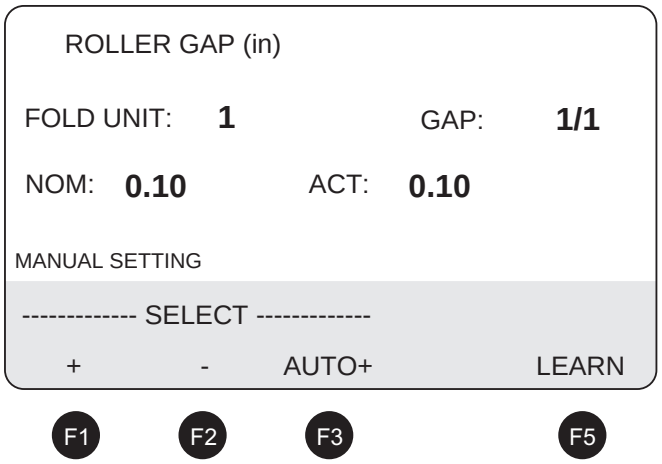
4. Press key ↵



6. Press key ↵

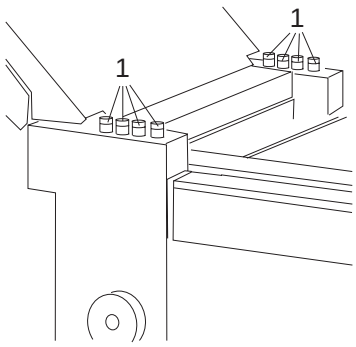


7. Press key ↵



The NOMinal value shown is the calculated value resulting from paper thickness and fold type.

For correct setting of the fold rollers the ACT (Actual) value must be changed to the NOM (Nominal) value. This is done by turning the setting knobs (1). All setting knobs have numbers so that the display message can be related to a specific fold roller.



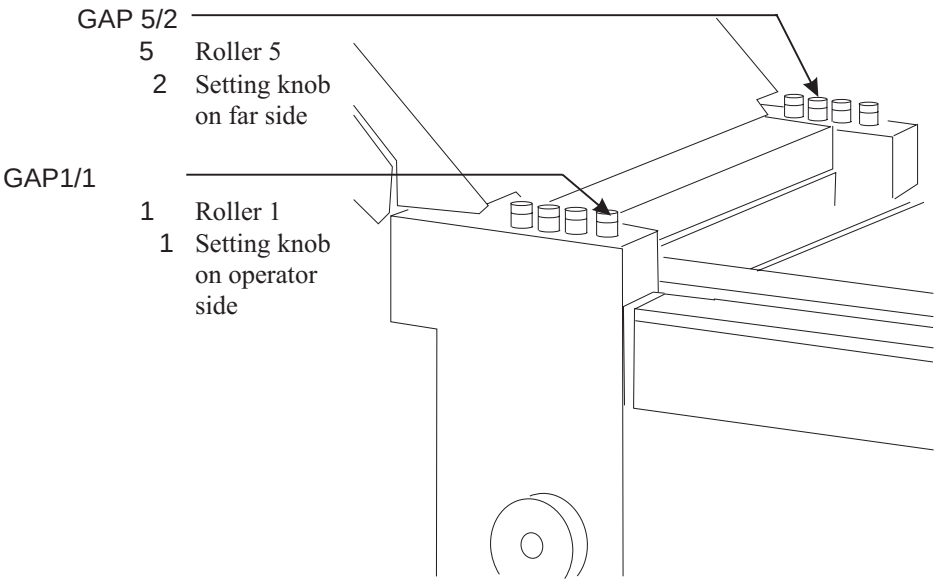
The NOM and ACT values of the individual fold rollers can be displayed by pressing keys F1, F2 or F3.

Key F1 (+): Display of NOM and ACT value for the next roller (for example, advance from roller 2 to 3)

Key F2 (-): Display of NOM and ACT value for the previous roller (for example, return from roller 2 to 1)

Key F3 (AUTO+): Automatic advance of NOM and ACT to the fold roller, for which NOM and ACT do not agree

Description of the display messages:



8. Turn setting knob 1 (operator side) on the first fold unit until ACT shows the same value as NOM.

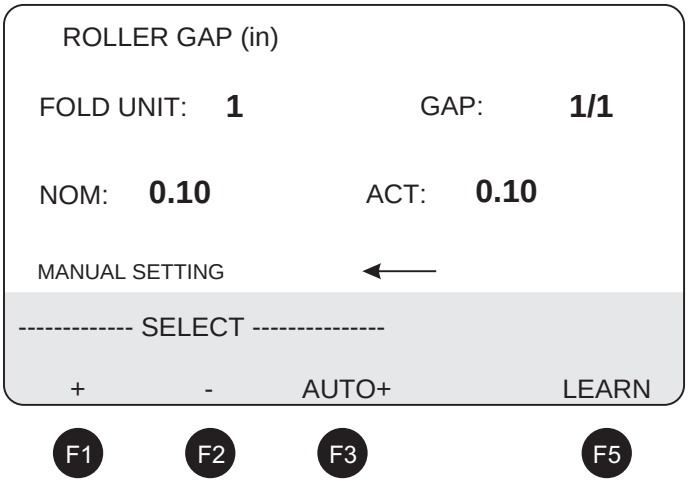
Repeat this procedure until all fold rollers are set.

9. Press key C Back to BASIC menu.

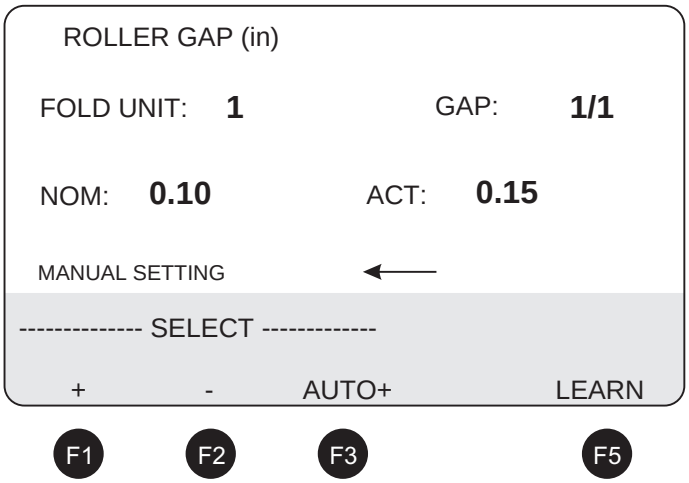
Individual Corrections

When trial folds show that the setting of the fold rollers should be improved, an individual correction is possible.

1. Press key F8 — Menu ROLLER GAP is displayed.



2. Correct the roller gap by means of the setting screws

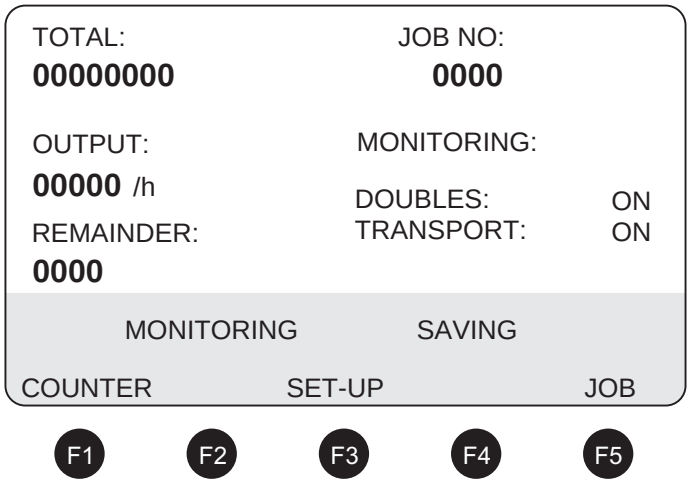


This means that individual corrections are possible for all roller gaps.
For repetitive jobs stored in the memory the corrected value will then be shown as NOMINAL value.

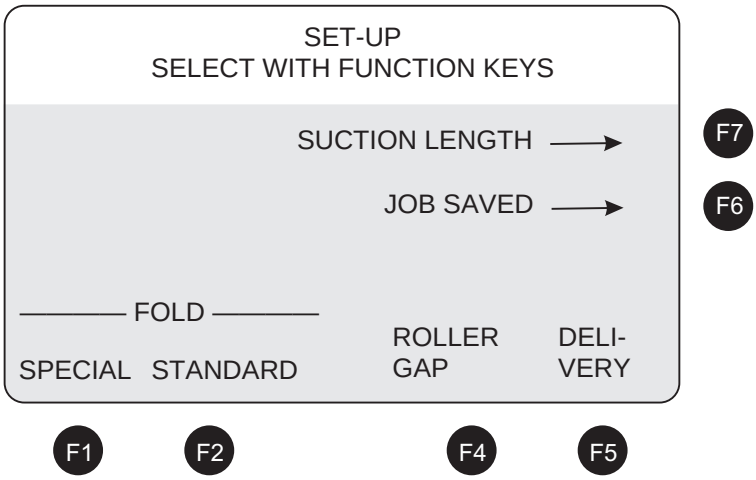
3. Press key C — Back to BASIC menu.

Setting the Delivery Rollers - Menu DELIVERY

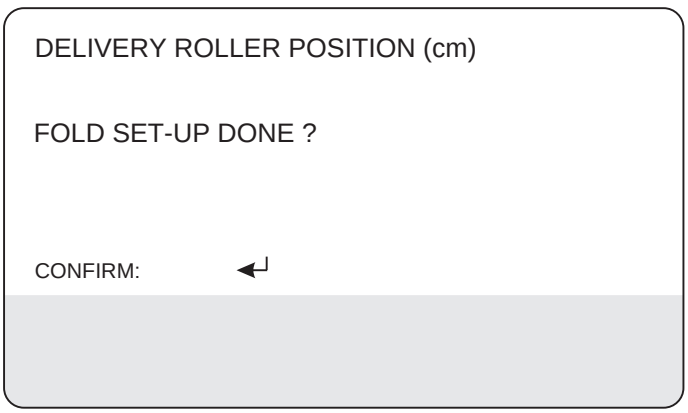
1. Press key C — The BASIC menu is displayed.



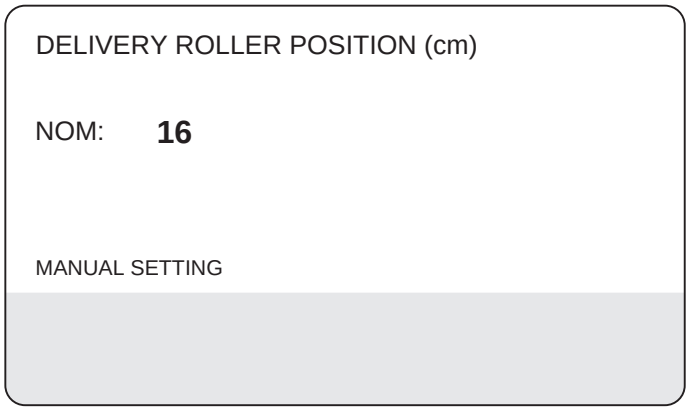
2. Press key F3 — The SET-UP menu is displayed.



3. Press key F5 — The DELIVERY menu is displayed.



4. Press key ↵

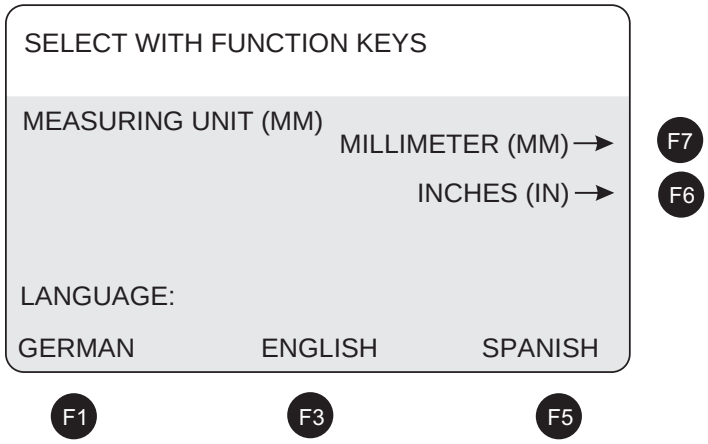


5. Set the delivery rollers to the format by using the scale.

6. Press key C — Back to BASIC menu.

Choosing the Measuring System and the Language

1.	Press key F9	The following display appears:



Use key F7 to switch from Inches to Metric.
Use key F6 to switch from Metric to Inches.

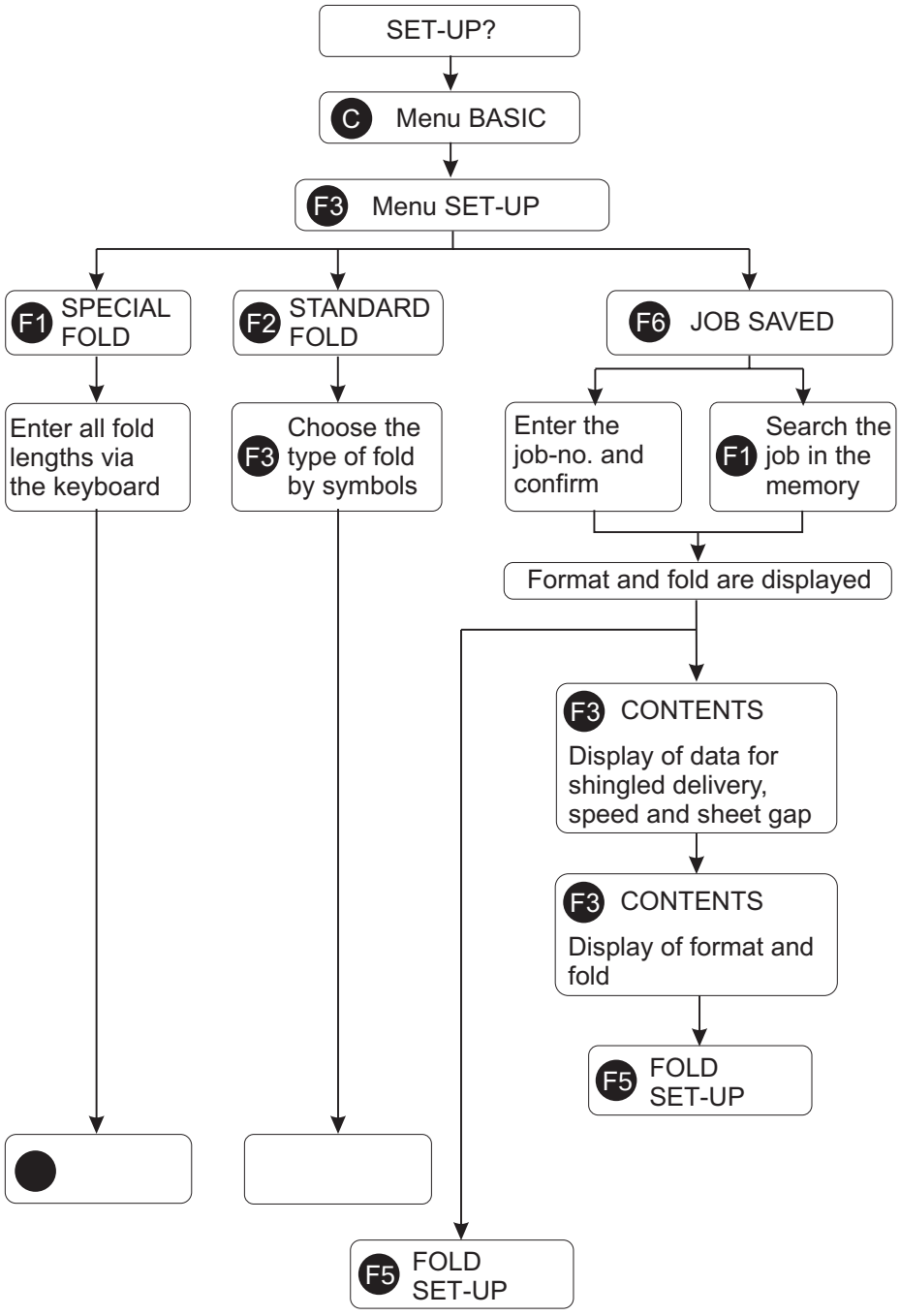
Press keys F1, F3 or F5 to choose a language.

2.	Press key C	Back to BASIC menu.

Fold Plate Setting: Three Methods

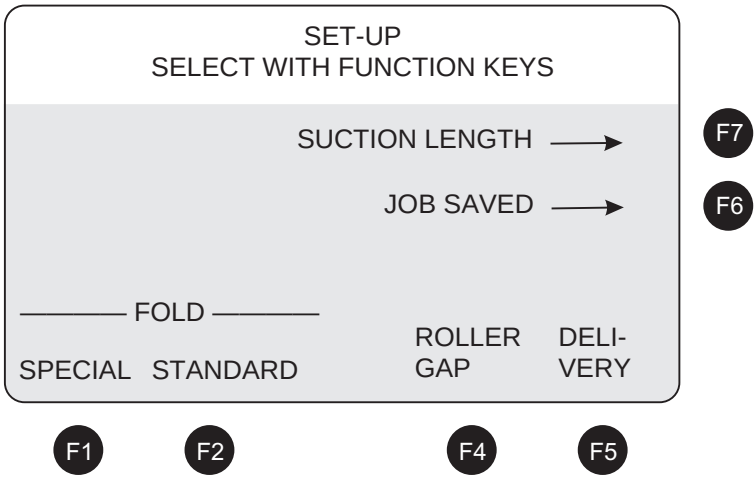
In the previous chapters we have described the different menus and their possibilities. It is, however, up to you to choose the menu for setting up a fold job.

The diagram that you find below shows the three possible ways which all produce the same result.



Roller Gap: Three Methods

Calling up the data for the roller gap must always be done from the main menu SET-UP. (F3)



1. Calling up the menu ROLLER GAP by pressing key F4.

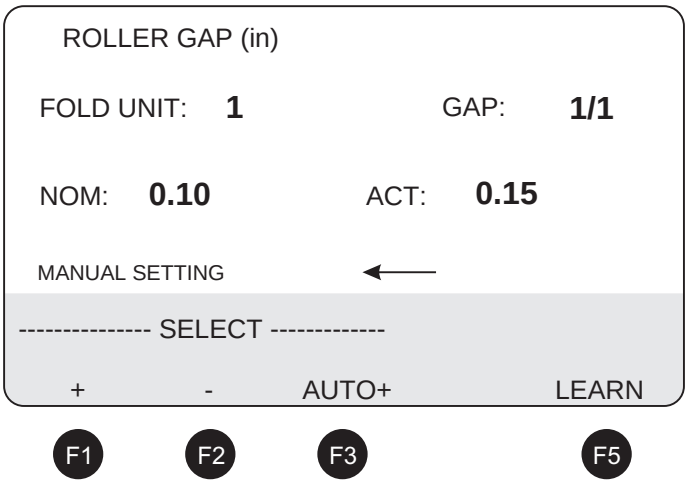
This should be done, when
- the set-up was made by entering the fold lengths (special fold)
- the set-up was triggered by marking the fold symbols (standard folds)

2. Calling up the menu JOB SAVED by pressing key F6.

This applies when
- the set-up is to be made by recalling a job from the memory

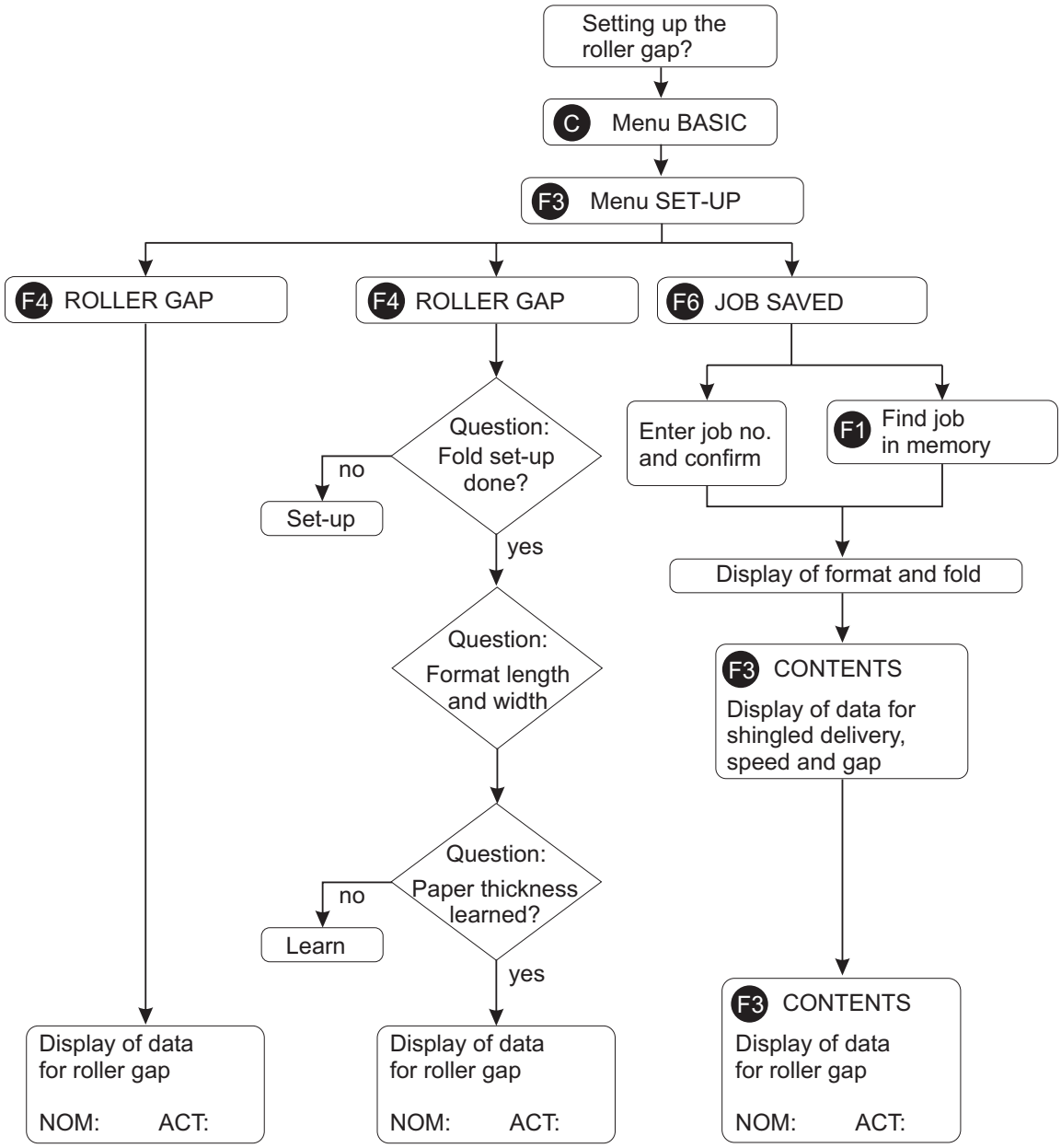
If a different paper is used for the job recalled from the memory, the data shown in the display cannot be used.
In this case the roller gap must be set via the menu ROLLER GAP.

3. Calling up the menu ROLLER GAP by pressing key F8.



In this menu, the roller gap setting can be corrected and displayed.

Different Possibilities for Displaying the Roller Gap:



Display of Malfunctions

The machine is equipped with an operator-convenient malfunction detection system. If malfunctions occur, they are identified by different sensors and the machine is stopped.
The display gives information on

1. Location of malfunction
2. Cause of malfunction
3. Measures to clear the malfunction

Examples for the identification of malfunctions:

ERROR SHEET GAP
WHEN FEEDING FROM FEEDER

→ INCREASE SHEET GAP
OR IMPROVE SHEET TRANSPORT
ON REGISTER TABLE

CONTINUE WITH KEY C

ERROR
SHEET TRANSPORT IN FOLD UNIT II

AT LEAST ONE SHEET WAS DELAYED

→ REMOVE CAUSE

CONTINUE WITH KEY C

ERROR
PHOTODETECTOR IN INFEED SECTION
FOLD UNIT I IS COVERED

→ REMOVE CAUSE

CONTINUE WITH KEY C

ERROR DOUBLE SHEET

→ REMOVE DOUBLE SHEET

CONTINUE WITH KEY C

STANDARD FOLDS

FOLD UNIT: **2**

WRONG ENTRY

MINIMUM: MAXIMUM:

ERROR FOLD UNIT 1

PAPER JAM → CHECK

DRIVE OR ENCODER

CONTINUE WITH KEY C

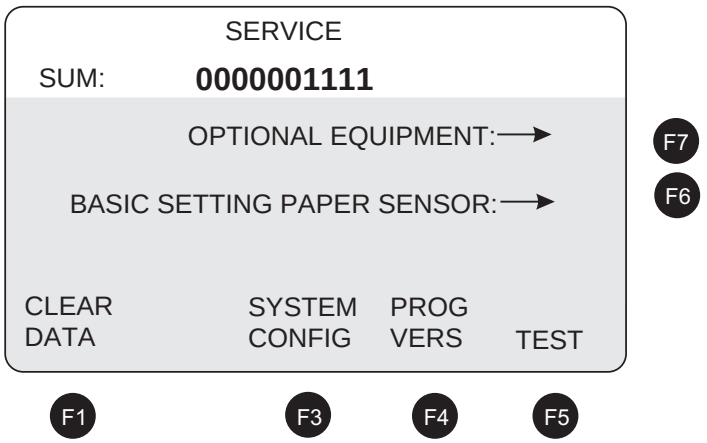
Check whether a paper jam has occurred. If this is not the case, the malfunction may have been caused by an error in the drive or the encoder.
If the motor starts briefly and the error display comes on again, the drive is working correctly. This means that the reason is a defect in the encoder.
If the motor does not start at all, the drive is defective.


Call a service technician.

Service Functions

The service menu can be called up by pressing key F12.
It is primarily used by the service technician.

1. Press key F12 — The SERVICE menu is displayed.

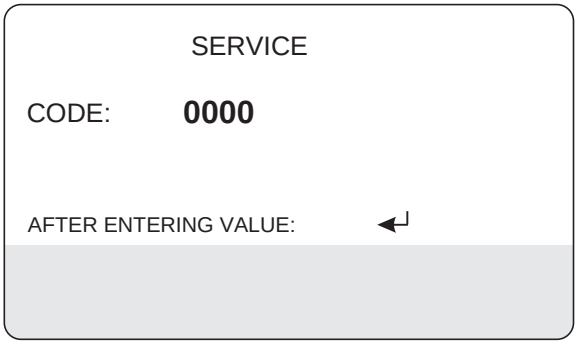


Data (F1) can only be erased by a service technician, this is why a special code number is needed.

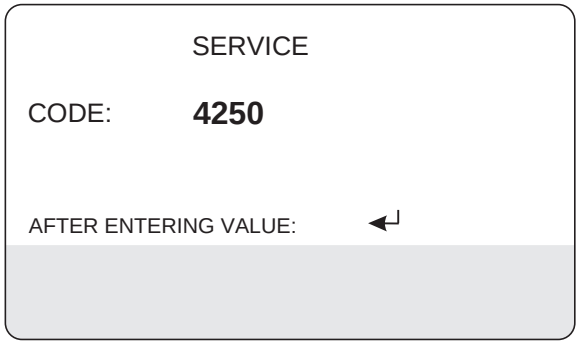
By pressing key F5, information about shingling, speed, gap, etc. can be shown in the display.
Pressing key F4 will show the program version.
By pressing key F3, a menu is called up where machine configurations can be changed. This is necessary if, for instance, the folder is equipped with a different feeder or a second fold unit.

2. Press key F3

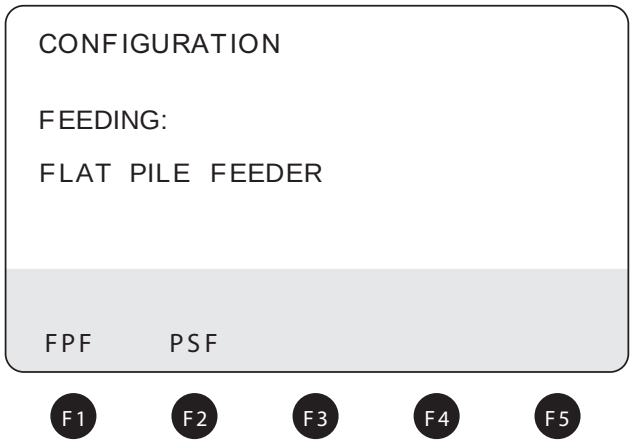
To prevent accidentally changing the machine configuration, a code number must be entered here. This code number is 4250.



3. Enter the code number — 4250



4. Press key F5



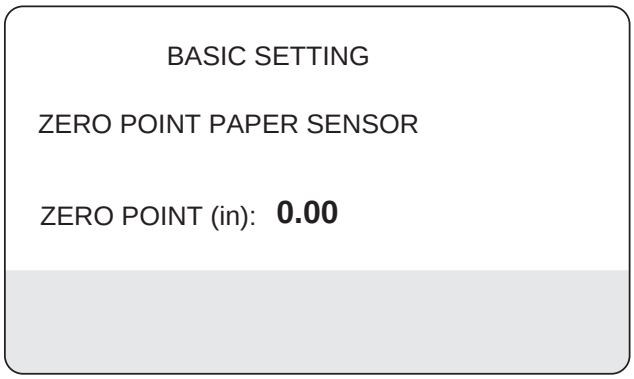
The type of feeder can be chosen by pressing keys F1 to F3.

5. Press key C Back to BASIC menu.

The service menu can also be used to check the basic setting of the paper thickness sensor.

1.	Press key F12	The SERVICE menu is displayed.

2.	Press key F6



The zero point of the paper thickness sensor is adjusted by the service technician when first installing the machine.
It is possible that the value changes slightly in the course of time, for example because the ambient temperature is not constant.
This has no influence on the function.

If, however, values above +0.30 or below -0.09 are displayed, the sensor must be readjusted. The instructions are part of the machine documentation that can be found in the control box.
This is indicated on the display when the double sheet detection is being activated.

3.	Press key C	Back to BASIC menu.

16. OPERATION AND TRIAL FOLDS

After all adjustments have been completed for a particular job, check the result by making a few trial folds.

Exercise caution in the vicinity of rotating shafts and rollers! Hair, loose garments and jewelery may get caught! SERIOUS INJURY MAY RESULT!

Exercise caution when running the machine with safety covers open and fold plates removed! Do not get close to the rotating fold rollers! SERIOUS INJURY MAY RESULT!

When making or breaking any electrical connection, always first turn off the main switch or the safety switch on the folder. Non-compliance may cause damage to electronic components!

Exercise caution at the delivery end of the fold unit! Do not get close to the rotating delivery shafts! SERIOUS INJURY MAY RESULT!

The operating sequence is as follows:

Place paper on the feed table.

Press key C or switch on main switch.

Set the **sheet gap in the delivery section** to the medium position by turning this knob.

Set the **folding speed** to the medium position by turning this knob.

Set the **sheet gap on the register table** to the medium position by turning this knob.

Switch on the **pump** by touching this key.

Switch on the **main motor** by touching this key.

Activate **sheet feed** by touching this key:

Brief touch:	Single sheet
Touching key for approx. 2 sec.:	Continuous feed

Switch off the machine in reverse order:

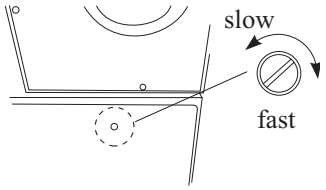
Sheet feed

Main motor

Pump

17. FINE ADJUSTMENTS AND CORRECTIONS

Speed of the 2nd Fold Unit



Fold Lengths

Fold variations may occur if the fold plate stops are not set accurately or if the folding speed is changed.
The fold is off across the entire width of the sheets.

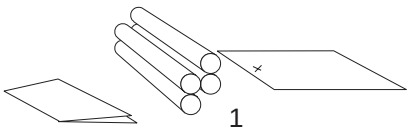
Press key and make the fine adjustment via the menu FOLD LENGTH.

A change in the folding speed also changes the fold length. Therefore the set-up speed must be maintained.

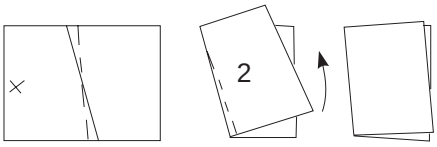
Skewed Folds

Skewed (out-of-square) folds occur when the paper is not fed at right angles with respect to the fold rollers. This can be corrected as follows:

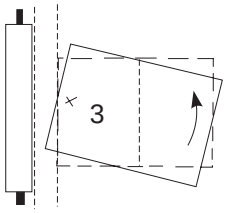
- Mark the leading edge of a sheet and feed it through the folder (1).

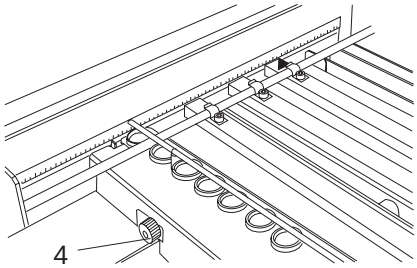


- To make the deviation more obvious, exaggerate the skewed fold by hand (2).



- Open the folded sheet and place it in front of the roller infeed section (3).
- By turning the adjustment wheel on the register table (4 the register rail must be adjusted in such a way that the leading edge of the paper is parallel to the fold rollers.



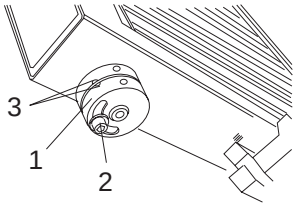


Out-of-Square Paper

If the paper is not cut precisely at right angles, the folded sheet may show "points".
By turning a setting knob, the fold plate stop can be made parallel to the out-of-square leading edge of the paper.

Make this correction only on the first fold plate.

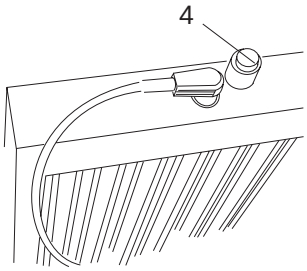
It is possible to change the parallelism of the stop by turning the knurled knob (1).



- Loosen the knurled knob by means of a 4 mm Allen key (2).
  The angle of the stop is changed by turning the two knurled knobs.
  The stop is parallel to the fold rollers when the two half-round marks (3) face each other.

Shadow Fold

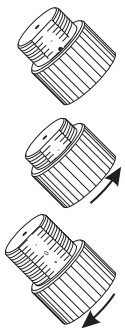
The lower lip can be adjusted by means of a setting knob (4)



Basic position:
The wide groove is flush with the top of the knob.

Lower lip advanced:
Small buckle space.

Lower lip set back:
Large buckle space.

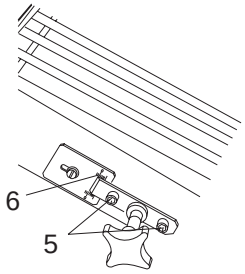


- Thin paper grades: Advance the lower lip by turning the knob counter-clockwise.
- Heavy paper grades: Set back the lower lip by turning the knob clockwise.

Accordion Fold

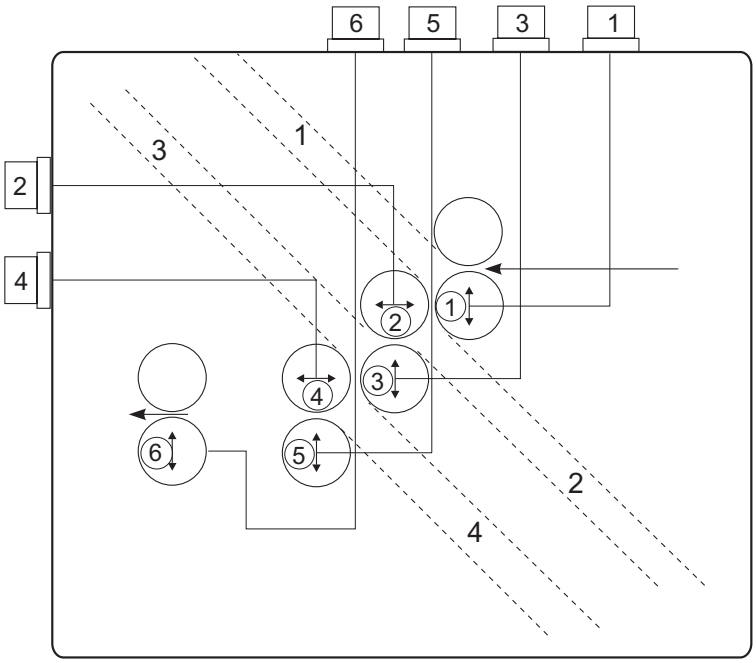
It is possible that heavy paper grades get stuck and form a so-called "accordion fold". In such a case the fold plates must be set back.

- Loosen the Allen screws (5) on both sides of the fold plate.
- Set back the fold plate by using the scale (6).
- Tighten the Allen screws.
- Change the fold plate stop by the same amount.



Creasing

When special types of paper are folded, deviations from the calculated and displayed NOMINAL values may become necessary.
Individual corrections can be made by means of the numbered setting knobs at each roller.
The fold rollers and delivery shafts with the matching setting knobs are arranged according to the following scheme:

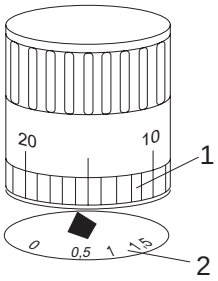


The layout sketch shows a fold unit with 4 fold plates.

The number on the setting knob corresponds with the fold plate bearing the same number.

Roller 1	is the	**feed roller**
Roller 2	makes the	**1st fold**
Roller 3	makes the	**2nd fold**
Roller 4	makes the	**3rd fold**
Roller 5	makes the	**4th fold**
Roller 6	is the	**delivery shaft**

The setting knobs are equipped with scales (1).
With their help settings with a precision of 0.01 mm are possible.
An additional scale (2) indicates adjustments in steps of 0.5 mm.
To increase the roller gap, turn the setting knob counter-clockwise.
To reduce the roller gap, turn the setting knob clockwise.
When the roller gap is changed by more than 0.5 mm, the values on both scales must be added.
Example: 0,5 (2) + 16 (1) = 0,66 mm



18. Troubleshooting Guide

Take the following precautions before correcting a malfunction:

Only service technicians should deal with electrical and electronical components!

Before removing covers and other safety devices, pull the power plug and secure the machine against unauthorized or unintentional use (warning sign).

Error	**see no.**				
Paper lift mechanism of flat pile feeder does not work	1	2			
Pump does not start	3				
Malfunction in feed section	4	5	6		
Fold plate stops of fold plates 1 to 4 do not move SETTING FOLD STYLE remains in display	7	8	9	10	
Stops and deflectors of fold plates 1 to 4 remain in base position (no fold) although a fold length was entered - 0000 remains in display	11				
Paper stop of one fold plate cannot be moved to another position	7	12			
Standard folds cannot be set - SETTING FOLD STYLE remains in display	7	13			
Paper is not transported into fold plate	8	10	14	15	
Motor of fold roller drive cannot be started	16	17			
Display shows DOUBLE SHEET	18	19			
Sudden machine stop	20	21	22		
Belts on delivery table do not move	23	24			
Pump and main motor cannot be switched off via keyboard	25				
Suction drum does not move	26				
The red jam warning light at the flat pile feeder comes on	27				

No:	Possible Cause:	Remedy:
1	Thermal overload protection on feeder has switched off	Remove front cover of flat pile feeder (hexhead nut M13) and set thermal overload protection to a higher value
2	Round plug between feeder and register table not plugged correctly	Check connection
3	Thermal overload protection in electrical compartment has switched off	Open electrical compartment in fold unit 1 (pull out drawer), set thermal overload protection to higher value
4	Photodetector 1 covered with paper or dirty	Remove paper or clean photodetector
5	Sensibility of photodetector 1 too low	Change sensibility by turning potentiometer on photodetector: Red light in LED must come on when a sheet covers photodetector
6	Photodetector 1 defective	Replace photodetector 1
7	Fold plate plug not connected properly	Switch off main switch. Check plug of fold plates for proper fit
8	Deflector mechanism jammed	Move fork to its base position
9	Gear motor for adjustment of paper stop is defective	Replace gear motor
10	Deflector jammed, does not return to base position	Clean bearing point, check deflector for easy movement
11	Fold plate stop jammed Display shows: 0000	Remove fold plate. Loosen Allen screws (2.5 mm wrench) on idler gear and manually move fold plate stop. Then move fold plate stop back to base position, all the way back, until deflector engages. Retighten Allen screws (see Adjustment of Fold Plates)
12	Gear motor for adjustment of paper stop jammed	Loosen mounting screws on gear motor and set fold plate stop manually by means of knurled screw
13	Fold plate stop jammed	Switch off main switch and then on again. Select correct fold plate depending on fold. Try to move fold plate stop out of base position via minus-key or by turning knurled screw

No:	Possible Cause:	Remedy:
14	Gap between fold plate and fold rollers not set correctly	Move fold plate to base position with the help of the scales
15	Fold roller gap too narrow	Increase fold roller gap by turning setting knob. Example: Turn scale at setting knob from 0.10 to 0.20
16	Delivery table plug not connected	Plug connection cable into adjacent fold unit
17	Voltage supply 30V in second fold unit defective	Replace fuse T4A
18	Different paper thickness	Re-adjust for paper thickness
19	Sheets from another folding job in stack	Remove sheet
20	Sheet gap too small	Increase sheet gap
21	Air flow too weak	Adjust air flow
22	Counting photodetector sometimes does not recognize sheets	Move photodetector to another position or check for proper function
23	Counting photodetector does not count	Check connections, clean photodetector
24	Drive belts in delivery section defective	Replace drive belts
25	Automatic setting of fold not yet completed	Wait until fold is set
26	Round belt in register table defective	Replace round belt
27	The safety switch for the feed table has been activated - the folder is not ready for operation	Lower the feed table to reset - the folder is again ready for operation