

User's Guide

English

Plastic bending machine

AFF 135



Plastic bending machine

AFF 135



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2 TECHNICAL DATA

type		AFF 135
Assembly		
Control unit	Max.	1
Upper heating element	Max	1
Pressure bars		1
Electrical		
Control unit	Voltage	220 – 240 V AC
	Power	520VA
	Fuse	2,5 AT x2
Timer unit	Voltage	220 – 240 V AC
	Power	5VA
	Fuse	2,5 AT x2
connection		CEE 7/4 16A 2P+A
Network connection		CEE 7/4 16A 2P+A
Network circuit breaker		Max. 16 A
Pneumatic		
Air		Unlubricated clean dry air
Maximum		6 bar
Minimum		5 bar
Operating pressure		6 bar
Coupling		Quick action coupling
Mechanical		
Gradation of stop		0-500 mm
dimensions	[LxWxH]	850 x 1510 x 380 mm
weight		200 Kg
Functional		
Bending width		1350 mm
Sheet thickness		0,2 - 1 mm
Temperature element	Max	220 °C
Ambient		
Temperature		18-30 °C
Humidity of the air		50-80 % (no condensed)
Miscellaneous		
set of socket screws keys		1 set [1½, 3, 5 mm]
Spare fuse		4 x [6.3x32 2,5 AT]

3 CONTENTS

2	Technical data	2
3	Contents	3
4	Introduction	4
5	Description of the machine	5
6	Safety instructions	6
7	Safety precautions	8
8	Legend	9
8.1	Summary	9
8.2	Air/Timer Unit	10
8.3	Timer Unit	10
8.4	Control Unit	11
9	Installation	12
9.1	Assembly	12
9.2	Connecting air/timer unit	12
9.3	Connecting foot switch	12
9.4	Connecting compressed air	12
9.5	Connecting power	12
10	Operation	13
10.1	Preperation	13
10.2	Switching on heating element	13
10.3	Setting temperature	13
10.4	Setting cycle time	13
10.5	Foot switch	14
10.6	Setting air pressure	14
11	Adjustment	15
11.1	Safety precautions	15
11.2	Pressure bar	15
11.3	Upper element height	15
11.4	Stop	16
11.5	Angular stop	16
12	Maintenance	17
12.1	Safety precautions	17
12.2	Lubrication points	17
12.3	Profiles	17
12.4	Water seperator	17
13	Fuses	18
	Annexes	19
A	Options	19
	Accessories	19
B	Equipment	20
	Service and warranty	21

4 INTRODUCTION

Congratulations on purchasing Shannon's plastic bending machine AFF 135. Read this guide completely before installing and using the machine.

We want to keep in contact and to know how you find the AFF 135. We are always willing to advise on the use of the machine and its accessories.

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5 DESCRIPTION OF THE MACHINE

The **Shannon AFF** bending machine is a semi-automatic machine for the production of large series of items with a single bend for the plastic sheet processing industry.

- o The machine has one heating element. The temperature of which can be adjusted by electronic controls.
- o The heating element which is mounted in the pneumatically operated top frame is adjustable in height in respect of the working surface.
- o The workpiece can be heated from one side by contact, reducing the production cycle time and making it possible to bend sheet up to 1 mm thick.
- o The top frame is switched on independently of the control unit and is controlled by an adjustable timer.
- o The working surface is made of scratch-resistant solid core material to support the plastic sheet.

When heated, thermoplastics become so flexible that they can be shaped. When a plastic sheet is heated to its softening point in a narrow zone, it can be bent to any angle desired.

The bending radius is determined by the width of the heated zone. The zone is determined by the thickness of the material and the type of heating element.

Every plastic has its specific softening point. By coordinating the temperature, heated zone and the heating time all kinds of thermoplastic can be processed.

6 SAFETY INSTRUCTIONS



To ensure safety when using the machine you should read this User's Guide carefully and follow the safety instructions closely



Attention!

The machine contains a section where there is a risk of trapping.



Attention!

The machine contains parts, which are hot. Touching them will cause burns.



Allow hot parts to cool sufficiently (at least 10 minutes) before touching them.



Never touch the heating elements when the machine is in operation.

Always wear close-fitting clothing.

Be particularly careful of sleeves and always tie back long hair.



Never leave objects on the working surface.

The machine may only be used for heating narrow zones in flat plastic sheet.

Any other use could lead to very hazardous situations or cause damage to the machine!

The plastic sheets that have to be bent may never be thicker than 1 mm.



Before commissioning and servicing always check the connection cable and plug for defects.



When servicing switch off the machine and remove the plug from the socket.

Before use always check that all the pressure bars and heating elements in the top frame are firmly attached.

Never operate the machine if anyone is standing close behind or beside it.

Never introduce objects or material into the machine from the rear.

Never leave the machine unattended without switching it off.

7 SAFETY PRECAUTIONS

EMERGENCY STOP

There is an emergency stop button (C) at the front of the air/timer unit, which can be reached by the operator from the normal working position.

Pressing the emergency stop button switches off the timer and the top frame lifts up. The button remains pushed in.

Resetting of the emergency button comes to pass by turning the button to the right.

The machine is ready to use again.

ONLY USE THE EMERGENCY STOP BUTTON WHEN:

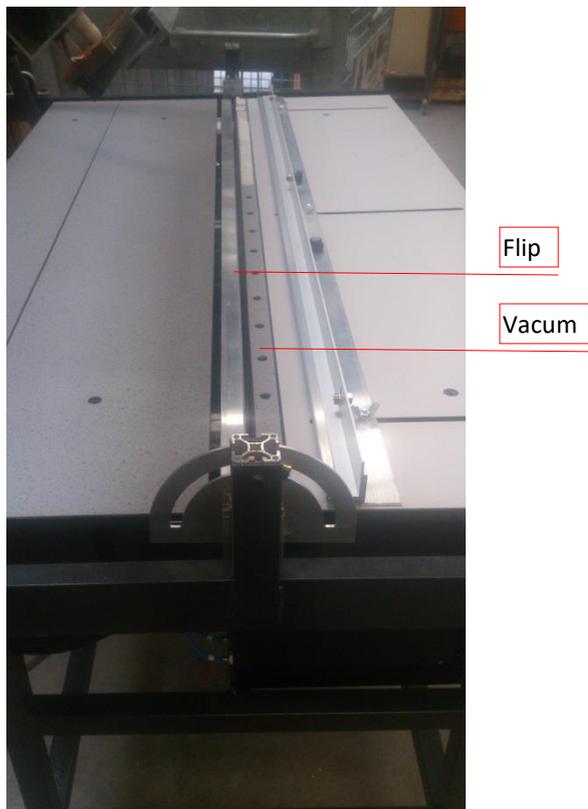
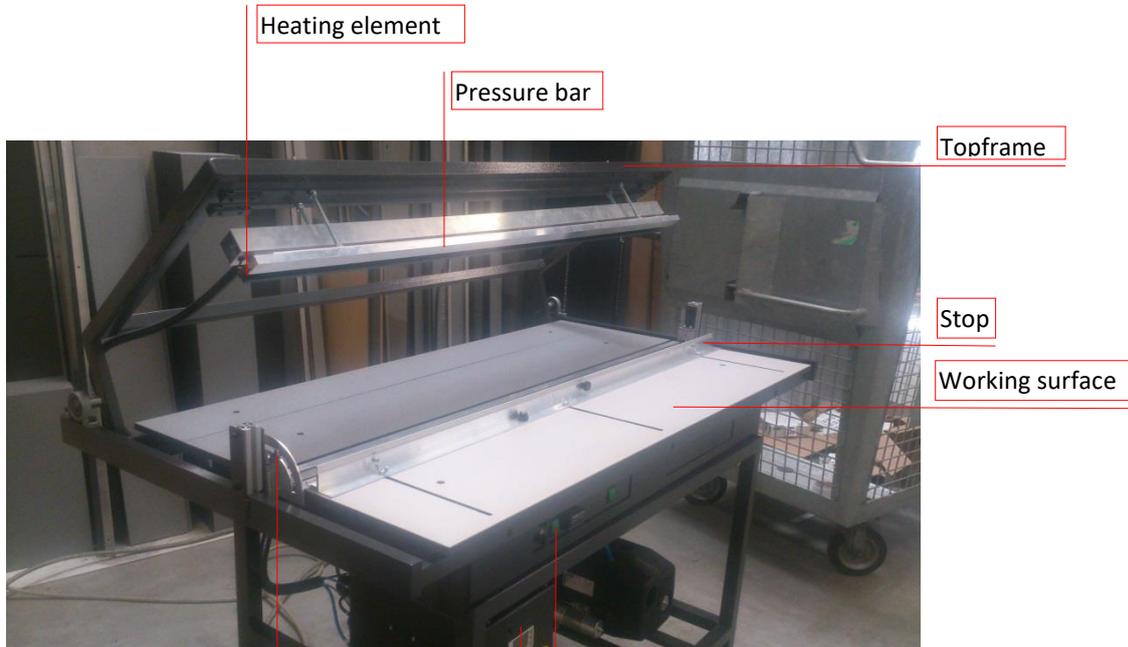


- Risk of trapped limbs.
- Defects in the timer, so the machine fails to open after the pre-set time.
- An outbreak of fire or situations involving a risk of fire.
- Any situation that might present a risk to people or animals.
- Any other situation, that might present a risk or cause, damage to the machine and/or objects.

8 LEGENDA

8.1 SUMMARY

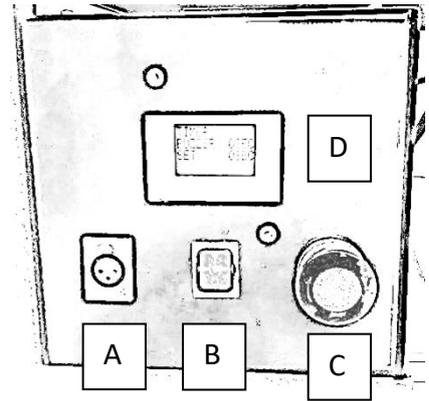
The legenda of the entire machine.



8.2 AIR/TIMER UNIT

The air/timer unit is a combined unit for the control of the topframe and to set the cycle time.

The machine closes, when the foot switch is used. The timer will start when the machine is proper closed. The machine opens again when the time reached its value. The plastic sheet is then held into place by a vacum system, and the flip is turned to bend the plastic sheet automatically. The angle in which the sheet it bent can be set manually (See 13.5). While the sheet is bent, cool air is blown onto the crease to cool the sheet. The timer will then reset back to zero



- A. Connection foot switch
- B. On/off switch
- C. Emergency button
- D. Timer unit

8.3 TIMER UNIT

Button	Function
Esc	cancel
+	increase value
-	decrease value
OK	confirm
▶	move right
▼	move down
▲	move up
◀	move left



There are three numbers on the screen. From E to G the number means that

- E. The time that the machine is closed. The time will start when the machine is entirely closed.
- F. The time that the flip is in the turned position, and the sheet is being cooled.
- G. The number of times the cycle has been repeated.

8.4 CONTROL UNIT

The control unit contains an electronic controller that can be used to set the temperature of the element (see **10.3**)

- H. On/off switch.
- I. Temperature adjustment.
- L. Fuses.



9 INSTALLATION

9.1 ASSEMBLY

1. Remove packaging and blocking of top frame.
2. Place the machine on a level floor with sufficient space around and above the machine.
3. Ensure there is adequate ventilation and lighting at the workplace.
4. Avoid draughts, in order to prevent uneven heating.

9.2 CONNECTING AIR/TIMER UNIT

1. A black tube that is coming out of the machine has three air tubes. Connect the tubes to the corresponding number of the air/timer unit (at the backside).
2. The black tube contains a gray wire which splits into a blue and brown 1, with an iron mantle. Connect the mantles with the red plugs which come out of the air/timer unit (at the backside).
3. On the left side (Below the working surface) you'll find 2 air tubes. Connect these air tubes to the corresponding numbers of the air/timer unit (at the left side)

9.3 CONNECTING FOOT SWITCH

Connect the plug of the foot switch on the corresponding socket (a) at the front side of the timer unit. See 10.2

9.4 CONNECTING COMPRESSED AIR

1. Check that the heating element and pressure bar in the top frame are firmly attached.
2. Using a quick-action coupling connect the left of the machine to your compressed air system or compressor.
3. There is a vacuum pump in the underframe which contains a blue air tube. Connect this tube to the opening at the underside of the working surface (right above the pump)

9.5 CONNECTING POWER

1. Check that all switches of the control units are in the 0-position.
2. Put the plug into the socket.

10 OPERATION

10.1 PREPARATION

1. Check that the air pressure is connected.
2. Clear the working surface.
3. Check that the heating element is connected to the control unit.
4. Check that all the upper heating element and pressure bars are firmly attached to the top frame.
5. Make sure to tape off the vacuum cups that will not be used, using the masking tape provided with the machine. This ensures the material stays sucked to the working surface.

10.2 SWITCHING ON HEATING ELEMENT

1. Switch on control unit with switch(H) (see 8.4).

10.3 SETTING TEMPERATURE

The temperature of the element can be set using the temperature control.

1. Press button B to enter the temperature setting
2. TO increase the temperature, push button B
3. To decrease the temperature, push button C
4. Press button A to exit the temperature setting, or wait 30 seconds.
5. Check if the heating element warms up (do not touch the element, due to risk of burning yourself)



10.4 SETTING CYCLE TIME

The time during which the machine is closed to heat the plastic sheet can be set on the timer unit.

At first use of the machine, set E = 3 and F = 5 (see 10.3)

1. Switch between values with the ▼/▲ buttons.
2. Increase or decrease the value with the +/- buttons
3. Cancel the value with the "ESC" button
4. Confirm the value with the "OK" button

10.5 FOOT SWITCH

The top frame is served by pressure on the pedal of the foot switch.

10.6 SETTING AIR PRESSURE

The pressure for the system is adjusted by the factory on the right value (6 bar).

11 ADJUSTMENT

11.1 SAFETY PRECAUTIONS



Always take the following safety precautions before adjusting the clamp bars:

1. Ensure that the upper heating element and pressure bars are firmly attached.
2. Switch off the heating elements (switch **H**).
3. Clear the working surface.
4. Allow the heating elements to cool for at least **10** minutes.

11.2 PRESSURE BAR

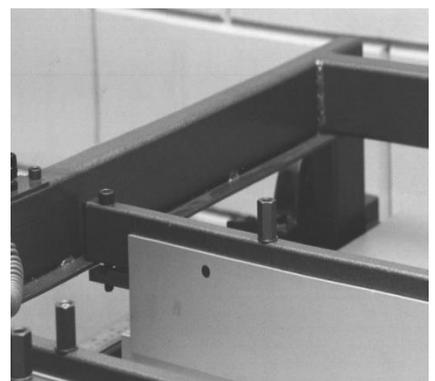
1. Disengage the air connection.
2. The top frame will then slowly lower while air escapes.
3. Loosen the socket head screws on the support bar clamps of **ONLY** the pressure bar one turn. The heating element is to be kept into place.
4. Hold the pressure bar at the sides, left and right, and slide it into the desired position. Move the support bar parallel to the front of the top frame.
5. Tighten the support bar clamps again.
6. Switch on the machine again as in Section 12.



The upper heating elements and pressure bars may fall out of the top frame if they are loose or not properly attached.

11.3 UPPER ELEMENT HEIGHT

1. Set the timer (**E**) to at least **160** sec. (see 10.3). With this time setting the machine will remain closed for long enough to adjust the element height.
2. Place a test piece of the plastic to be processed on the working surface.
3. Lower the top frame (foot switch).
4. Adjust the height of the filament using the adjusting nuts on the upper heating elements.
5. Adjust the height so that the element only **just** touches the plastic (the element must touch the plastic, but not push it down).
6. Open the top frame by pressing the emergency stop (**C**).
7. Reset the emergency stop.
8. Adjust the timer (**D**) again.
9. Start the machine again as in section 12.



11.4 STOP

1. Loosen the nuts on the stop one half turn.
2. Slide the stop into the desired position.
3. Hold the guide parallel to the front of the machine.
This stops the clamping blocks from binding.
4. Tighten the nuts.



Always ensure that the stop is placed in such a way that heating elements or pressure bars cannot hit the stop as they are lowered.

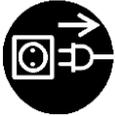
11.5 ANGULAR STOP

1. Loosen the nut on the protractor.
2. Slide the nut into the desired position.
3. Tighten the nut.
4. Run the machine with a piece of test plastic, to check if the set angle is accurate enough.

12 MAINTENANCE

This machine needs little maintenance. Remove loose dirt once in a while.

12.1 SAFETY PRECAUTIONS



1. Switch of the regulating unit (Switch **A**).
2. Clear the working surface.
3. Disengage the air connection.
4. Remove the plug from the socket.

12.2 LUBRICATION POINTS

The following points should be lubricated with a drop of oil or grease once a year:

1. Bearing cilinder: underside.
2. The lubrication point can be accessed from the rear of the machine.
3. Bearing cilinder: upperside.
4. The lubrication point can be reached by removing the solid core strips on the middle of the machine.

12.3 PROFILES

The heating element works more effectively when it is clean. Remove dirt and deposits from the heating elements regularly. Blow away loose dirt and brush them clean.

12.4 WATER SEPARATOR

Check if there is water in the water separator and remove it if necessary. The water separator is situated on the left side of the air/timer unit. If there is water in the glass holder, it should be drained off.

1. Disengage the air connection.
2. The top frame will lower slowly.
3. Hold a container under the nipple and slowly open the nipple. All the water will then run out of the glass holder.
4. Close the drain nipple by hand.
5. Switch the machine on again as described in Section 12.

13 FUSES

A maintenance engineer should **always** be alerted when a fuse blows. Do not replace the fuse until the short circuit has been corrected.

SAFETY PRECAUTIONS

Before replacing a fuse always take the following safety precautions:

1. Switch the control unit off (Switch A).
2. Remove plug from socket.

FUSES CONTROL UNIT

1. Open the fuse holder (L) by pushing it in and turn to the left. The fuse will come out.
2. Verify and replace the fuse (if necessary) in the reversed order.

N.B. Fuse **6,3x32mm; 2,5 AT**.



A. OPTIONS

Service contract

Shannon BV offers you the possibility to close a service-contract.

Accessories

Shannon BV can supply various accessories and production equipment for the processing of plastic sheet.

AFF Heating element

Easily replaceable heating element for the **AFF** machines.
Different contact-back sizes are available.

Working width of reducing set

Working width of reducing set for heating one or more zones per bending line.

Foilbending profile

A contact profile with anti-stick coating suitable for bending thin sheets from 0.3 - 2 mm.

Profile lengths:	500, 650, 1.000 en 1.250 mm
Ridge widths:	1 to 10mm
Number of ridge widths:	single and double
Special versions :	on request

B. EQUIPMENT

B.1 FLAME POLISHING EQUIPMENT

To provide a glossy finish to edges, holes and slots in clear acrylic sheets up to 12 mm. thickness.

B.2 DIAMOND POLISHING MACHINES

To professionally provide a glossy finish to edges of acrylic sheet up to 20 mm thickness.

With ground guiding and speed adjustable system.

Also available special developed frame for stable processing of long plastic sheets.

Various machines are available.

B.3 PLASTIC BENDING MACHINES

Bending machines

Type HR	Standard ; 1 regulating unit and 1 underreflector with heating wire that is adjustable in height Working lengths; 500, 1.250, 2.200 and 3.000 mm.
Type HRT	Standard ; 2 regulating units and 2 underreflectors with heating wire that is adjustable in height. Reflectors and stop adjustable with scale calibration. Easily extendable up to 4 regulating units with 4 underreflectors. Working lengths; 650, 1.250, 2.200 and 3.000 mm.
Type HRK	Standard ; 4 regulating units and 4 adjustable under reflectors with heating wire that's adjustable in height. 2 upperreflectors, pneumatic pressuresystem and stop, all adjustable. Easily extendable up to 4 regulating units with 4 under- and 4 upperreflectors. Working lengths; 650 and 1.250 mm.
Type HRP/S	Standard ; 4 regulating units and 2 adjustable under reflectors with heating wire that is adjustable in height. 2 upperreflectors, pneumatic pressuresystem and stop, all adjustable. Easily extendable up to 4 regulating units with 2 under- and 2 upperreflectors. Working lengths; 2.200 and 3.000 mm.
Type HRP	Standard ; 4 regulating units and 2 adjustable under reflectors with heating wire that is adjustable in height. 2 upperreflectors, pneumatic pressuresystem and stop, all adjustable. Easily extendable up to 8 regulating units with 4 under- and 4 upperreflectors. Working lengths; 2.200 and 3.000 mm.
Type HRT/D	Standard ; automatic feed- and transport system for equal heating of big productions. 2 regulating units and 2 adjustable underreflectors with heating wire that is adjustable in height. 2 adjustable parallel stops. Can also be used as a normal HRT machine. Easily extendable up to 4 regulating units and 4 underreflectors. Working length; 3.000 mm.

Type **HRP/D**

Standard; automatic feed- and transport system for equal heating of big productions.
4 regulating units and 2 adjustable underreflectors with heating wire that is adjustable in height.

2 upperreflectors, pneumatic pressure system, rollers and parallel stops, all adjustable.
Can also be used as a normal HRP machine

Easily extendable up to 8 regulating units with 4 under- and 4 upperreflectors.

Working length; **3.000 under** and **2.000 mm. upper.**

Type **FBM**

Standard; automatic bending- and transportsystem for big productions of thin foils
(0,4 to 1 mm.)

2 regulating units with 2 upperreflectors with an adjustable distance between from 45 mm. up to 420 mm.

Also provided with a vacuum feed system

Working lengths; **650** mm.

Special versions on request.

SPECIAL VERSIONS ON REQUEST.

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