



*INSTRUCTIONS FOR INSTALLATION, USE, AND  
MAINTENANCE*

# PSE-20/140 MP

(VERSION PSE-20/140 MP 05/12/2012)

MACHINE N°/SERIAL NUMBER :

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***TECHNICAL DOCUMENT  
DRYER AND IRONING MACHINE  
PSE-20/140 MP.***

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MIC 0017		10/04/01	Lay out drawing	PSE-20/140 MP
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MIC 0021		11/04/01	Panel control	PSE-20/140 MP
MIC 0022		13/04/01	Separation blades sensor	PSE-20/140 MP/DEL/MAX
MIC 0023		12/04/01	Side view	PSE-20/140 MP
MAX-0010	A	02/02/00	To clean the sensor	DEL, MAX, SYG

**For electric and spares parts drawings, please see the technical manual.**

## **1 GENERAL WORKING PRINCIPLE**

### **1.1 DESCRIPTION:**

- Minimum size: the machine has been designed to pass easily through an opening the size of a standard door (80cm).
- No special installation is needed. An electrical socket and an exhaust chimney are sufficient.
- Easy usage: loading and unloading of the laundry on the front side.
- Loading of the laundry by Nomex-Polyester straps.
- Ironing of the laundry by special Nomex fibre straps (patent by Pont de Nemours).

### **1.2 CONSTRUCTION**

- Steel plate soldered frame, protection from rust by a very resistant plate,
- Bodywork consisting of 2 plastic-covered sheet steel boxes,
- Closure of the boxes by plastic-covered click-on panels with locking screws,
- Housing out of steel plate and galvanised plate,
- Drying /ironing drum with a diameter of 20cm made of polished steel providing a very smooth contact with the laundry.

### **1.3 WORKING PRINCIPLE**

When the laundry is placed flat on the loading table at the front end of the machine, the laundry is automatically drawn towards the drying-ironing cylinder by the Nomex polyester loading strips.

Next, the passage of the laundry underneath the muffled pressure roll provides a first wringing action with constant self-regulated pressure that adapts itself to the thickness of the laundry by means of a system of compensating springs.

The drying-ironing is done by Nomex quality strips and a heater cylinder.

The tension of the strips may be adjusted by means of the flexibility spring mounted on a tension adjustment strip.

When it is dry and ironed, the laundry is automatically taken towards the unloading table by spring lamellae (release strips).

Thus, the laundry is delivered, dry, ironed, perfectly smoothed and with a perfect appearance and presentation.

#### **1.4 SECURITY**

- The security of the operator is assured by a plate located just behind the loading strips, thus preventing the operator from inserting his hand too far into the machine.

A light contact with this security plate **immediately stops** the machine.

This plate is the main emergency stop mechanism of the machine (and acts over its whole width).

- A second emergency stop (near the control panel) can also stop the machine

#### **1.5 HEATING**

- Electrical heating: obtained through several armoured resistors mounted on a steel plate support.

## **2 ASSEMBLY SCHEME**

### **2.1 CHARACTERISTIC OF THE ROOM**

An 80cm wide door is required to enter the machine.

Imperial measurements :

The machine must be installed in a very well ventilated room with correct lighting, with an ambient temperature strictly in the range from -10°C to +40°C.

Enough space must be left around the machine to be able to work properly:

- at least 5 to 10cm at the back for ventilation,
- between 60 and 80 cm on both sides for cleaning and maintenance,
- Sufficient space must be left in front for the operator to work correctly and without risk,
- The machine must be levelled correctly on a hard and stable floor,
- The floor must be able to resist at least 200 kg per m<sup>2</sup> in order to support the weight of this machine.

### **2.2 CONNECTIONS**

Imperial measurement :

- Electrical connections: The cable must have a cross section of at least 4X6 mm<sup>2</sup> or 5X4 mm<sup>2</sup> according to the voltage (240 V three-phase or 400 V three-phase).

In addition, the electrical wiring on the site must conform to the norms that are in force, and a differential circuit breaker (not supplied), suitable for the power of the machine, must be installed near to the latter.

### **2.3 VAPOUR EXHAUST**

The vapour exhaust is driven by an silent electronic fan (dynamically equilibrated) (flow rate: 300 m<sup>3</sup>/h).

The exhaust conduit, with a diameter of 80mm when leaving the machine, must be connected by the shortest possible route to a chimney that serves the purpose of evacuating the vapours from the dryer-ironing machine.

### **3      INSTALLATION INSTRUCTIONS**

**Note:** The machine may only be installed, adjusted and started up by a team of technicians from our company or by its accredited local representative. Likewise, it is strongly recommended that the client be present, in particular when starting up and during the first tests.

### **4      HANDLING AND UNPACKING**

Upon delivery, the machine must be in perfect condition and the packing material may not be incomplete or damaged. Respect the indications on the package (e.g.: FRAGILE; UP DOWN; ...)

Since the machine has a considerable weight and an impressive size (see further down), arrange for appropriate lifting and handling equipment in order to be able to work safely.

The machine must be handled using a lifting truck of sufficient capacity, and the truck forks must be placed at their maximum mutual distance to avoid toppling the machine.

The machine must be lifted at its centre (the centre of gravity must be on the axis).

Do not turn the machine over or let it drop, e.g. when unloading.

#### **NOTE:**

When lifting by slings (not recommended), the manipulation will be under the entire responsibility of the person handling the machine (since the machine may suffer deformation).

	<b>MACHINE ONLY</b>	<b>Land packing</b>	<b>Sea packing</b>
	L x l x H (mm)	L x l x H (mm)	L x l x H (mm)
	Weight kg	Weight kg	Weight kg
<b>PSE-20/140 MP-140</b>	1878x444x1054 180	2000*500*1200 190	2000x500x1200 220

## **5 FIRST START-UP**

- Verify that the machine is stable and level upon first start-up,
- Check that all connections and drains are correctly made,
- Check that the device is connected to earth correctly,
- Turn the circuit breaker with guard to position 1,
- Press the start-up button (green button),
- Check that the vapour exhaust fan turns in the right direction (cf. arrow on the motor),
- Check the direction of rotation of the loading strips (rotation towards the interior of the machine),

**Note:** Take care not to touch or come close to any moving parts.

- Mount all protection panels back on the machine,
- Check that the temperature of the assembly rises,
- Adjust the temperature in accordance with the laundry you want to iron,
- Perform ironing tests. The laundry must come out dry and perfectly smooth,

If this is not the case, increase the temperature.

***Note:***

Since the cylinder is waxed when it leaves the factory, carry out a first ironing test using old laundry.

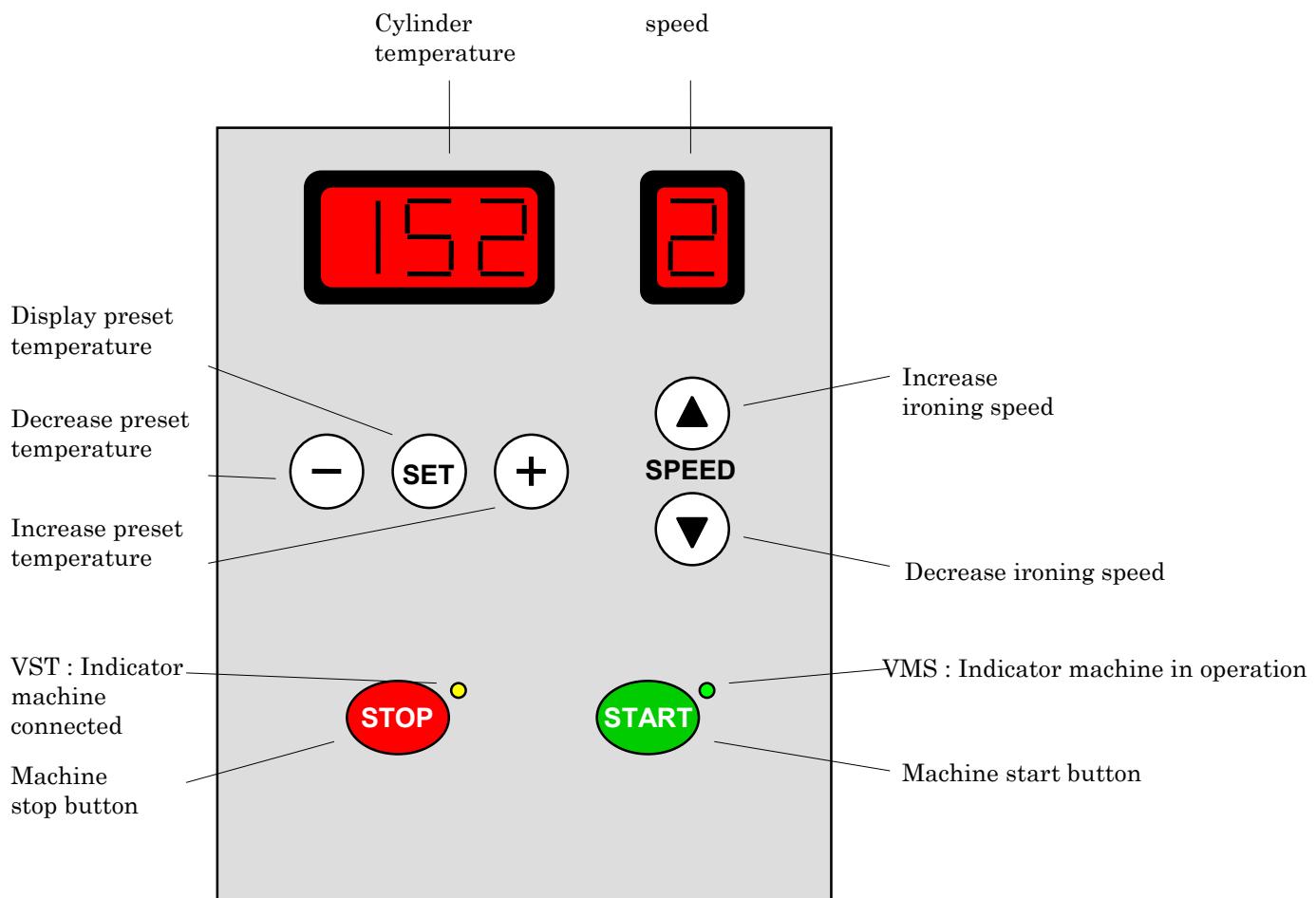
## 6 /MICROPROCESSOR EASY CONTROL

### 6.1 GENERAL

This microprocessor controls the drying and ironing machines TYPE MICRA / DELTA AND MAXIMA, manufactured by Fagor Industrial.

A single processor card is capable of controlling models that differ with respect to the cylinder diameter or the heating method (electrical, gas or vapour).

### 6.2 USER INTERFACE



## 6.3 USAGE OF THE MACHINE

### START-UP

To start the machine, press the START button:



- the indicators light up and show the current temperature and the preset speed (cf. chapter "Control of cylinder rotation")
- the indicator VMS lights up (VST is always on)
- the fan starts working
- the cylinder starts rotating
- after 15 seconds, the heating is authorized

### SHUTDOWN PROCEDURE

To stop the machine, press the STOP button.



The shutdown procedure depends on the current temperature.

- if the temperature is  $\leq$  automatic shutdown temperature TA (by default 80°C), the machine switches off.
- if the temperature is  $>$  temperature TA, only the heating is switched off. When the temperature drops below the temperature TA, the whole machine will switch off.  
During this time interval, the temperature indication and the VMS indicator will blink.

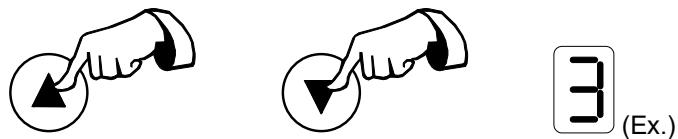
The value of TA may be programmed by the manufacturer or during the installation (see "Programming parameters").

## 6.4 CONTROL OF CYLINDER ROTATION

The cylinder motor is controlled by a speed regulator.

You may select 7 different factory preset speeds, while speed 0 is used for the optional SMART SYSTEM (FAGOR patent: speed adjustment according to humidity).

-The speed may be adjusted by the user when the machine is ON by pressing the two arrow keys « up » and « down ». The result is shown on the speed display.



The current selected value will even be recalled after a power interruption.

When the selected speed is not 0 upon starting the machine, the cylinder will rotate at speed 1 while the detected temperature remains below the operating temperature TF (130°C by default); once this temperature is reached, the programmed speed will be activated.

When the temperature drops below TF during the operation of the machine, **the speed will be readjusted**.

When the selected speed is 0, the cylinder will rotate at speed 0 (i.e. the speed required by the SMART SYSTEM), regardless of the temperature.

## 6.5 HEATING

### ELECTRICAL HEATING

Depending on the model, the electrical heating consists in modifying the current through one or two groups of resistors, controlled by the heating switches.

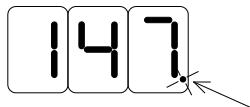
The choice between 1 or 2 resistors is made by setting a parameter (see "Programming parameters").

#### Heating by a single resistor group

When the machine is set up to work with a single resistor group, a special control function is activated (closing and opening the heating relay switch around the set point) in order to be able to achieve and maintain the preset temperature correctly and to avoid the thermal overshoot associated with this kind of heating.

It is therefore not an anomaly when you hear the heating relay switch switching frequently when you select this functionality.

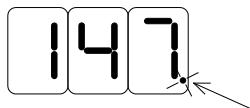
To show that the heating is activated, the decimal point of the temperature indication lights up.



#### Heating by two resistor groups

When the machine is set up to work with two resistor groups, the temperature regulation switches the first group just as if it were the only control group, while the second resistor group is operated continuously when the temperature is below the set temperature, and switches off when the set temperature is attained. The second group is again activated below a preset hysteresis (see "Programming parameters").

To show that the heating is activated, the decimal point of the temperature indication lights up continuously when both heating groups are on, and blinks when only one group is on.

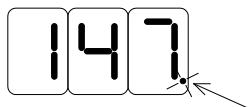


### GAS HEATING

When the heating is performed using a gas heater, the machine is fitted with a special electronic device that controls the ignition and working of the heater. The microprocessor controls the gas heater directly when the temperature is lower than the preset temperature.

The procedure for resetting the gas heater is given in the alarm section.

To show that the heating is activated, the decimal point of the temperature indication lights up.



In the section "Alarms" you will find what to do in case there is no flame.

## INDIRECT VAPOUR HEATING

When the heating is done using the indirect vapour method, the machine will not perform any heat regulation (and the temperature will be directly proportional to the vapour pressure of the vapour feed of the machine).

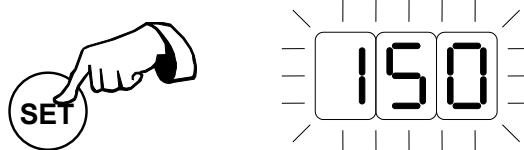
The microprocessor simply indicates the temperature of the cylinder but will not act on the heating itself.

## PROGRAMMING THE OPERATING TEMPERATURE

The operating temperature may be set when the machine is on, using the following procedure:

- . Press SET

The current set value blinks in the display



- . Use the + and – keys to change this value. Hold the key down to change the number rapidly.



3 seconds after releasing the + or – key, the displayed value is stored, after which the display again shows the current detected temperature.

**Programmable range:** 0...Tmax °C (32...Tmax °F)  
**Precision:** 1°C

The maximum value that the user may set (Tmax) is established by the manufacturer or during the installation using a special procedure. See "Programming parameters".

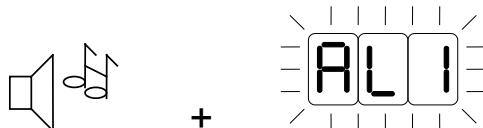
When the selected heating method is electrical, a special system is activated to reduce the overshoot of the heating, such that the preset temperature can be obtained within a range of plus or minus 5°C. This system switches the heating on and off repeatedly as the preset temperature is approached. Therefore, with this type of heating the sound of the relay switching on and off repeatedly is not indicative of a fault condition.

## 6.6 ALARMS

### INSUFFICIENT AIR FLOW (AL1)

This alarm is only activated when the card is set up to work with gas heating.

When the pressure valve in the chimney opens for 2 seconds or more, the buzzer is activated for 1 minute while the display shows "AL1".



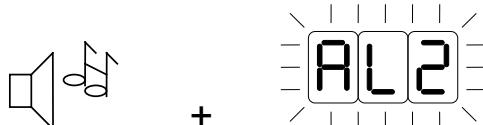
In this case, the heating is switched off. You should now check the direction of rotation of the fans (arrows indicated on the motor), if you have just installed the machine, or check your exhaust system (if the alarm stops when you disconnect the gas exhaust pipe on top of the machine, it is likely that your exhaust is too narrow or blocked).

The alarm is not activated during the first 10 seconds after starting the fan, in order to allow the air flow to settle.

The alarm is cancelled automatically when the pressure switch returns to its normal position or when the machine is switched off.

### SAFETY TABLET (AL2)

When the hand protection system is activated (safety tablet), the buzzer is activated for 1 minute and the display shows "AL2".



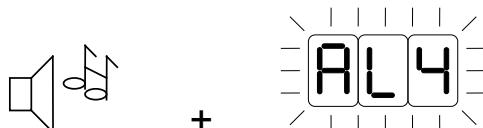
The machine switches off automatically.

**Attention: this device is for your safety. Do not override this safety device in order to avoid serious injury to the user!**

The alarm is cancelled by restarting the machine or switching the machine off and on.

### THERMAL WARNING FAN (AL4)

When the thermal relay of the fan is activated, the buzzer is activated for 1 minute and the display shows "AL4" :



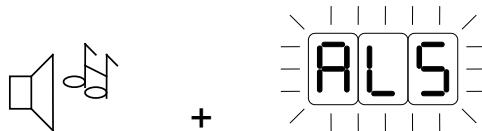
The fan and the heating are switched off, while the machine remains on.

The alarm is automatically cancelled when the machine returns to a normal situation (the thermal relay is closed) or when the machine is switched off.

Usually, this alarm is caused by dirt on the fan.

## SPEED REGULATOR ALARM (AL5)

When the speed regulator alarm is activated, the buzzer is activated for 1 minute and the display shows "AL5":



The machine switches off automatically.

The alarm is cancelled by restarting the machine or switching the machine off and on.

This fault condition may be due to an overload of the cylinder motor caused by a thick object inside the machine, or by dirt in the cylinder motor.

## NO FLAME (AL6)

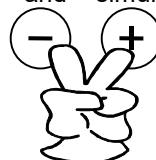
This alarm is only activated when the card is set up to work with gas heating.

When the burner is on or being ignited and the condition no flame occurs, the buzzer is activated for 1 minute and the display shows "AL6".



The command for ignition remains active and the machine remains on.

To try to re-ignite the burner, press the keys + and - simultaneously after the alarm stops.



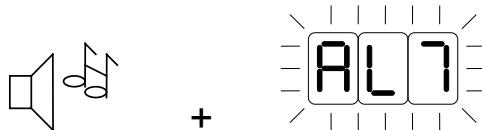
When the gas device cancels the fault indication, the alarm stops. If this reset fails, the alarm is activated again and one of the following fault conditions occurs:

- No gas supply: check that the manual valve of the gas feed is open
- The gas pressure is insufficient or the type of gas is incorrect (see the installation section)
- The ignition electrode is broken: replace it

To cancel the alarm without re-igniting the burner, stop the machine by pressing STOP.

## OVERHEATING OR SENSOR NOT CONNECTED (AL7)

If the temperature sensor is not connected or broken, or if it detects a temperature above **210°C** continuously for 2 seconds, the buzzer is activated for 1 minute and the display shows "AL7".



The machine still works and the alarm can be cancelled by switching the machine off.

## **7    INSTRUCTIONS FOR USE**

### **7.1   DAILY USE**

- Set the red circuit breaker to position 1,
- Press the start-up switch (the green button),
- Check the rotation of the strips,
- Choose an ironing speed between 1 to 7 (0 is for “SMART OPTION”)
- Adjust the temperature in accordance with the humidity and type of laundry you want to iron.

#### ***Important:***

The working temperature varies in accordance with the type of textile that is to be ironed. A safety thermostat, adjusted in the factory and located inside the machine, will control the temperature upon any possible malfunction of the regulation system. It is therefore not possible to set temperatures that are too high.

- When starting work, one must wait until the machine's cylinder has warmed up to a temperature that is close to the programmed temperature.
- When ironing small items of laundry, one must work over the whole width of the machine in succession in order to obtain a constant result and increase the life-span of the ironing strips, that may otherwise deteriorate rapidly.

**Important** : When the work is almost completed, push “STOP” button and the machine will stop automatically when the temperature will be equal at the programmed stop temperature (80°C normally).

**Of crucial importance** : never stop the machine when the temperature is equal to or higher than 80°C (this may cause damage to the strips).

Finally, isolate the ironing strips from the cylinder by introducing a thick and dry cloth (or a dry sheet folded double), passing it both over and under the latter.

Do not leave any humid laundry inside the machine. This will lead to the formation of corrosion on the cylinder.

Never leave any humid laundry in the machine, as this will cause corrosion of the cylinder.

## **7.2 PERIODIC MAINTENANCE**

Note: All maintenance must take place when the machine is stopped, the cylinder is cold and the circuit breaker is in position 0.

### **7.2.1 Every day, before starting up (the machine is cold and the cylinder is stopped)**

- Check that the stylus makes contact with the cylinder and verify visually that there is no dirt between the two.

To do so, press on the stylus with one hand.

### **7.2.2 Every week before starting up,**

- Clean the inward side of the stylus. To do so, rotate the stylus a quarter turn and wipe it clean with your hand, eliminating the fibres and fluff that may have accumulated on the stylus. Return the stylus to its original position,
- Remove the rear panel (fixed by two screws, use a hexagonal male 5 mm wrench), and check that the braids are present between the pressure roll and the guiding braids. If any braid is missing, it must immediately be replaced by a similar braid (a special high temperature braid supplied by our company)

**Note:** The braids are not stretched tight on purpose, do not tighten them after replacement since this will cause them to break prematurely.

### **7.2.3 Every 200 hours**

#### ***Cleaning:***

- Check that the stylus is clean by rotating it a quarter turn and then putting it back in place. Check that it presses on the cylinder correctly,
- Clean the vapour exhaust fan. Do not forget the ventilation casing and the exhaust conduits (in particular the corners),
- Clean the ventilation grids of the fan motor and the drive motor,
- Clean the cylinder and remove any stain (generally white) due to chalk or detergent residues,

- Clean the lamellae that release the laundry from the cylinder at the level of the reception table.

***Lubrication:***

- Lubricate the auxiliary roll bearing blocks using high temperature grease (all machine models)
- Likewise, lubricate the chains and drive wheels located on the right side of the machine.

***Adjustments:***

- Check that the loading strips have the right tension, they must be lightly stretched and wrap around the driving auxiliary roll without sliding.

To tighten these strips, unscrew the screws at the ends of the loading table and then slide the table.

- Check the tension of the ironing strips. In particular during the first period of usage, the strips have a tendency to lengthen slightly.
- In order to tighten them, just press on the two tension springs on each side and then adjust the tensors so that the ironing strips make sufficient contact with the cylinder in order to drag it along correctly without slipping even with laundry.

**Note:** Take care that the tension of each of the two tensors is identical. To check the symmetry of the adjustment, count the number of holes on the tension strip; this number should be the same on both sides of the machine.

Take care not to stretch the strips too much, since they may then deteriorate rapidly.

- Check the pressure of the pressure roll, which may not exert excessive force on the cylinder but must be well above it in order to provide a good quality ironing result, its function being the smoothing of the laundry.

**Note:** Take care that the tension of each of the two tension springs is identical. To check the symmetry of the adjustment, count the number of holes on the tension strip; this number should be the same on both sides of the machine.

- Check the tension of the driving chain (right side of the machine), the chain must not rattle since it may then jump loose. To tighten the chain, move the adjustable chain wheel along its rail.

### **7.3 PROCEDURE TO BE FOLLOWING UPON BREAK DOWN OR MALFUNCTION:**

- Power failure: take care, in case of a power failure (the machine is stopped with a hot cylinder) the ironing strips of the cylinder must immediately be isolated.

To do so, load a very wet (hardly wrung) thick cloth into the machine using the crank supplied for this purpose. Place the crank in the opening located at the top on the left panel of the machine.

- It is not possible to change the temperature: the thermostat is out of order. In this case you must contact the company or its local certified representative.

#### ***Other malfunctions:***

- When other malfunctions occur or when unusual sounds are heard (rubbing, banging...), cease work, contact the company and describe the anomaly in detail.

## **8      MAINTENANCE INSTRUCTIONS**

Prior to any intervention, the machine must be stopped, the cylinder must be cold and the circuit breaker must be in position 0.

Note: When the auxiliary loading roll is disconnected, all the axes of the auxiliary roll are locked in the bearing block on the right side of the machine, but on the left side the locking screws are purposely absent in order to allow for the expansion of the auxiliary roll.

### **8.1    Replacement of the loading strips:**

- Remove the 2 screws that fix the loading table,
- Unlock the axis of the auxiliary roll on the side of the left bearing block (2 pointed screws),
- Unroll about half a turn of adhesive strip,
- Push away the pin while maintaining the axis in place (pay attention to the direction in which this axis is mounted),
- Remove the axis by pressing it towards the left,
- Withdraw the used input table, and replace the strips with new ones,
- To mount the assembly, repeat the dismounting procedure in reverse order,
- Take care to glue the adhesive strip back on tight using neoprene glue,
- Check the distance between the end of the loading table and the cylinder. This distance must be at least 0.2",

**Note:** The strips must be replaced with a complete new set

### **8.2    Replacement of the ironing strips:**

- Remove the side panels,
- Slacken the tension blocks as much as possible,
- Move the clip of the ironing band forward to the auxiliary roll,

- Connect the old band to the new,

**Note the correct placement:** the Nomex side (darker), which is the side with the flap, must be towards the cylinder.

- Make the machine turn very slowly,
- Stop it at the position of the clip,
- Remove the old band,
- Insert the two extremes of the new band into the clips by moving the axis in between the clips,
- Repeat this operation for the other strips,
- Adjust the tension of the strips, if needed,

**Note:** The strips must be replaced with a complete new set

### **8.3 Replacement of the lateral rollers**

- Remove the side panels,
- Remove the fixation screws of the roller,
- Remove the crossbar from the used roller,
- Place a new roller on the crossbar,
- Put the new roller in its position.