RAILS GLUING MACHINE

Type: AX-L-ICT

User’s Manual
Rev. 1.0
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IMPORTANT

It is important to read and understand the information contained within this manual before attempting to operate the machine. Aper Srl. shall not be held liable for damage resulting from misuse of the information presented within, and reserves the right to change the information contained within, without prior notification.
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This part of the Instruction Material is provided for the safe use of your equipment. It contains important information to help work safely with the unit and describes the dangers inherent in machinery. Some of these dangers are obvious, while others are less evident.

### Mandatory Information

All persons operating and/or working on the AX-L ICT should read and understand all parts of the Safety Instructions. This applies, in particular, for persons who only operate and/or work on the unit occasionally (e.g. for maintenance and repair). Persons who have difficulty reading must receive particularly thorough instruction.

### Scope of the Instruction Material

- The Instruction Material comprises:
  - Safety information
  - Operator Instructions
  - Electrical and Pneumatic diagrams

And may also include:
- A list of recommended spare parts
- Instruction Manual(s) for components made by other manufacturers
- The layout and installation diagram containing information for installation

### Intended Use

Our machines are designed and built in line with the state of the art and the accepted safety rules. However, all machines may endanger the life and limb of their users and/or third parties and be damaged or cause damage to other property, particularly if they are operated incorrectly or used for purposes other than those specified in the Instruction Manual.

### Exclusion of Misuse

Non-conforming uses include, for example, using the equipment for something other than it was designed for, as well as operation without duly installed safety equipment. The risk rests exclusively with the end user.

Conforming use of the machine includes compliance with the technical data, information and regulations in all parts of the complete Instruction Material, as well as compliance with the maintenance regulations. All local safety and accident prevention regulations must also be observed.

### Liability

The machine should only be operated when in perfect working order, with due regard for safety and the potential dangers, as well as in accordance with the Instruction Material. Faults and malfunctions capable of impairing safety should be remedied immediately. We cannot accept any liability for personal injury or property damage due to operator errors or non-compliance with the safety instructions contained in this booklet. The risk rests exclusively with the end user.

The Instruction Material should always be kept near the machine so that it is accessible to all concerned.
The local, general, statutory and other binding regulations on accident prevention and environmental protection must also be observed in addition to the Instruction Material. The operating staff must be instructed accordingly. This obligation also includes the handling of dangerous substances and provision/use of personal protective equipment.

The Instruction Material should be supplemented by instructions, including supervisory and notification duties with due regard for special operational features, such as the organization of work, work sequences, the personnel deployed, etc.

The personnel’s awareness of the dangers and compliance with the safety regulations should be checked at irregular intervals.

### Choice and Qualification of Personnel

Ensure that work on the machine is only carried out by reliable persons who have been appropriately trained for such work and who have not only been duly appointed and authorized, but are also fully familiar with the local regulations. Work on the machine should only be carried out by skilled personnel, under the management and supervision of a duly qualified engineer.

This not only applies when the machine is used for production, but also for special work associated with its operation (start-up and maintenance), especially when it concerns work on the pneumatic or electrical systems, as well as on the software system.

### Training

Everyone working on or with the machine should be duly trained and informed with regard to correct use of the safety equipment, the foreseeable dangers which may arise during operation of the machine and the safety precautions to be taken. In addition, the personnel should be instructed to check all safety mechanisms at regular intervals.

### Responsibilities

Clearly define exactly who is responsible for operating, setting-up, servicing and repairing the machine. Define the responsibilities of the machine operator and authorize him to refuse any instructions by third parties if they run contrary to the machine’s safety. This applies in particular for the operators of machines linked to other equipment. Persons receiving training of any kind may only work on or with the machine under the constant supervision of an experienced operator. Note the minimum age limits permitted by law.

### A Word to the Operator

The greatest danger inherent in our machines:

is that of fingers, hands or loose clothing being drawn into a machine by live, coasting or rotating tools or assemblies or of being cut by sharp tools or being hit by the lid of the pressurized glue container.

---

**ALWAYS BE CONSCIOUS OF THESE DANGERS!**
Safety Equipment on the Machines

All machines are delivered with safety equipment, which shall not be removed or bypassed during operation.

The correct functioning of safety equipment on machines and systems should be checked every day and before every new shift starts, after maintenance and repair work, when starting up for the first time and when restarting (e.g. after prolonged shutdowns).

If safety equipment has to be dismantled for setting-up, maintenance or repair work, such safety equipment shall be replaced and checked immediately upon completing the maintenance or repair work. All protective mechanisms shall be fitted and fully operational whenever the machine is at a standstill or if it has been shut down for a longer period of time.

Damage

If any changes capable of impairing safety are observed in the machine or its mode of operation, such as malfunctions, faults or changes in the machine or tools, appropriate steps must be taken immediately, the machine switched off and a proper lockout tagout procedure followed. The machine should be examined for obvious damage and defects at least once per shift. Damage found shall be immediately remedied by a duly authorized person before resuming operation of machine.

The machine should only be operated when in perfect working order and when all protective mechanisms and safety equipment, such as detachable protective mechanisms, emergency STOP systems, etc. are in place and operational.

Faults or Errors

The machine must be switched off and all moving or rotating parts allowed to come to a standstill and secured against accidental restart before starting to remedy any faults or errors.

Signs on the Machine

Safety and danger signs on the machine should be observed and checked at regular intervals to ensure that they are complete and undamaged. They should be clearly visible and legible at all times. Clothing, Jewelry, Protective Equipment

Long loose hair, loose-fitting clothes, gloves and jewelry, including rings, should be avoided in order to avoid injuries due to being caught, drawn in and wound up inside the machine.

Protective Eyewear

Protective eyewear that has been tested by the local authorities should be worn whenever there is a possibility of loose or flying objects or particles such as when cleaning the machine with compressed air.

Tools

Always count the number of tools in your possession before starting work on the machine. This will allow you to check that no tools have been left behind inside the machine. Never leave a tool in the machine while working.
Oils, Lubricants, Chemicals
Note the applicable safety regulations for the product used.

No Smoking, Fire, Explosion Hazard
Smoking and open flame (e.g. welding work) should be prohibited in the production area due to the risk of fire and explosions.

Workplace
A clear working area without any obstructions whatsoever is essential for safe operation of the machine. The floor should be level and clean, without any waste.

The workplace should be well lit, either by the general lighting or by local lights.

Emergency STOP
The emergency STOP buttons bring all machine movements to a standstill. Make sure you know exactly where they are located and how they work. Try them out. Always ensure easy access to the nearest emergency STOP button while working on the machine.

First Aid
1. Keep calm even when injured.
2. Clear the operator from the danger zone. The decision of what to do and whether to seek additional assistance rests entirely with you, particularly if someone has been trapped.
3. Give First Aid. Special courses are offered by such organizations as the employers’ liability insurance association. Your colleagues should be able to rely on you and vice versa.
4. Call an ambulance. Do you know the telephone numbers for the ambulance service, police and fire service?

Reporting and Fighting Fires
Read the instructions posted in the factory with regard to reporting fires and the emergency exits. Make sure you know exactly where the fire extinguishers and sprinkler systems are located and how they are operated. Pass on the corresponding information to the firemen when they arrive. Ensure there are enough signs to avoid fire hazards.

The following fire extinguishers may be used:

- Dry powder extinguishers, ABC fire-extinguishing powder.
- Carbon dioxide fire extinguishers to DIN 14461 for electronic components. Great care must be exercised when using carbon dioxide fire extinguishers in confined, badly ventilated rooms (see DIN 14406 and 14270).

Isolate the machine from the power supply if a fire breaks out. Do not use water on burning electrical parts until it is absolutely certain that they have been completely disconnected from the power supply. Burning oils, lubricants, plastics and coatings on the machine can give off gases and vapors that may be harmful to your health.

A qualified person should be consulted to repair the damage after a fire.
Electrical Power Supply

Before undertaking any maintenance or repair work on the machine, switch off the electrical power to the machine at the main source and secure it with a padlock so that it cannot be switched on again without authorization.

In practice, this may mean that the technician, electrician and operator all attach their own padlock to the master switch simultaneously so that they can carry out their work safely. Locking extension plates should be available for multiple locks if required. The primary purpose for a lockout/tagout procedure is to protect workers from injury caused by unexpected energizing or start-up of equipment.

Energy sources (electrical/pneumatic, etc.) for the equipment shall be turned off or disconnected and the switches locked or labeled with a warning tag. It is the responsibility of the employer to establish control procedures. Follow lockout/tagout procedures before, setup and/or any service or maintenance work is performed, including lubrication, cleaning or clearance of jams.

**CAUTION: THE MACHINE IS STILL NOT COMPLETELY DE-ENERGIZED EVEN WHEN THE MASTER SWITCH IS OFF**

- **Electricity** - The machine is always isolated from the electrical power supply whenever the master switch has been switched off. However, this does not apply for the power supply in the control cabinet, nor for equipment that does not draw its power via the master switch.
- **Pneumatic energy** - In addition to switching off the master switch, the air supply must also be disconnected and the machine checked to ensure it is depressurized before starting any work on the machine; otherwise the machine may execute uncontrolled movements.
- **Kinetic energy** - Note that some motors or spindles, for example, may continue to run or coast run on after being switched off.
- **Potential energy** - Individual assemblies may need to be secured if necessary for repair work.

Delivery of the Machine/Packaging

Note any markings on the packaging, such as weights, lifting points and special information. Avoid temperature fluctuations. Condensation may damage the machine.

Transport Damage

The packaging and machine must immediately be examined for signs of damage in transit. Such damage must be reported to the shipper/transporter within the applicable time limits. Contact Aper Srl. and/or your transport insurer immediately, if signs of damage are visible. Never operate a damaged machine.

Interim Storage

If the machine has to be stored temporarily, it must be oiled or greased and stored in a dry place where it is protected from the weather in order to avoid damage. A corrosion-inhibiting coating should be applied if the machine has to be stored for a longer period of time and additional precautions taken to avoid corrosion.
Transporting the Machine

Disconnect the machine from all external connections and secure any loose assemblies or parts. Never step under a suspended load. When transporting the machine or assemblies in a crate, ensure that the ropes or arms of a forklift truck are positioned as close to the edge of the crate as possible. The center of gravity is not necessarily in the middle of the crate. Note the accident prevention regulations, safety instructions and local regulations governing transport of the machine and its assemblies.

Only use suitable transport vehicles, hoisting gear and load suspension devices that are in perfect working order and of adequate carrying capacity. Transport should only be entrusted to duly qualified personnel.

Never allow the straps to rest against the machine enclosure and never push or pull sensitive parts of the machine. Ensure that the load is always properly secured. Before or immediately after loading the machine, secure it properly and affix corresponding warnings.

All transport guards and lifting devices must be removed before the machine is started up again. Any parts that are to be removed for transport must be carefully refitted and secured before the machine is started up again.

Workplace Environment

Our machines are designed for use in enclosed rooms: Permissible ambient temperature approx. 5 - 40 °C (40 - 104 °F). Malfunctions of the control systems and uncontrolled machine movements may occur at temperatures outside this range.

Protect against climatic influences, such as electrostatic charges, lightning strikes, hail, storm damage, high humidity, salinity of the air in coastal regions.

Protect against influences from the surroundings: no structure-borne vibrations, no grinding dust, or chemical vapors.

Protect against unauthorized access.

Ensure that the machine and accessories are set up in a stable position.

Ensure easy access for operation and maintenance (Instruction Manual and layout diagram); also verify that the floor is strong enough to carry the weight of the machine.

Local Regulations

Particular attention must be paid to local and statutory regulations, etc. when installing machines and the plant (e.g. with regard to the specified escape routes). Note the safety zones in relation to adjacent machines.

General Safety Instructions

The machine shall be switched off, come to a standstill and be secured so that it cannot be switched on again inadvertently before starting any maintenance work whatsoever. Use proper lockout/tagout procedures to secure the machine against inadvertent startup.

Remove any oil, grease, dirt and waste from the machine, particularly from the connections and screws, when starting the maintenance and/or repair work. Do not use any corrosive-cleaning agents. Use lint-free rags.

Retighten all screw connections that have to be loosened for the maintenance and repair work.
Any safety mechanisms that have to be dismantled for setting-up, maintenance or repair purposes must be refitted and checked immediately after completing the work.

- **Maintenance, Care, Adjustment**

  The activities and intervals specified in the Instruction Manual for carrying out adjustments, maintenance and inspections must be observed and parts replaced as specified.

  All pneumatic lines should be examined for leaks, loose connections, rubbing and damage whenever the machine is serviced. Any defects found must be remedied immediately.

- **Waste, Disassembly, Disposal**

  Waste products should be cleared from the machine as soon as possible as not to create a fire hazard. Ensure that fuels and operating lubricants, as well as replacement parts are disposed of in a safe and ecologically acceptable manner. Note the local regulations on pollution control.

  When scrapping (disassembling) the machine and its assemblies, ensure that these materials are disposed of safely. Either commission a specialist company familiar with the local regulations or note the local regulations when disposing of these materials yourself. Materials should be sorted properly.

- **Replacement Parts**

  We cannot accept any liability whatsoever for damage due to the use of parts made by other manufacturers or due to unqualified repair or modification of the machine.

- **Repair, Electrical**

  The power supply must be switched off (master switch off) and secured so that it cannot be switched on again inadvertently before starting any work on live parts.

  Those parts of the machine and plant on which inspection, maintenance or repair work is to be carried out must be isolated from the power supply, if specified. The isolated parts must first be checked to determine that they are truly de-energized before being grounded and short-circuit-ed. Adjacent live parts must also be isolated.

  The protective measures implemented (e.g. grounding resistance) must be tested before restarting the machine after all assembly or repair work on electric parts.

  Signal generators (limit switches) and other electrical parts on the safety mechanisms must not be removed or bypassed. Only use original fuses or circuit overloads with the specified current rating. The machine must be switched off immediately if a fault develops in the electrical power supply.

  The electrical equipment of our machines must be checked at regular intervals and any defects found must be remedied immediately.

  If it is necessary to carry out work on live parts, a second person should be on hand to operate the emergency OFF switch or master switch with voltage release in the event of an emergency. The working area should be cordoned off and marked by a warning sign. Only use electrically insulated tools.
Ventilation/Hazardous Gases
It is the end user's responsibility to ensure adequate ventilation is provided to exhaust any and all noxious or hazardous gases that may be present in the working environment.

Pneumatic Systems
Work on pneumatic equipment shall only be carried out by persons with training, knowledge and experience of pneumatic systems. Pressure lines shall be depressurized before starting any repair work.

General Liability
Liability for machine damage and personal injury is extinguished completely if any unauthorized conversions or modifications are undertaken. The machine must not be modified, enlarged or converted in any way capable of affecting safety without the manufacturer's prior approval.

Starting Machine Movements
Read the Instruction Manual carefully to establish which keys and functions start machine movements.

The end user has sole responsibility to enforce the use of safety procedures and guards on the machine. Any other safety devices or procedures due to local regulations should be retrofitted in accordance to these regulations and/or the EC Directive on the safety of machines.

Operator's position must always be readily accessible. Escape routes must always be kept clear and safety areas should be identified.

Safety should be a constant concern for everyone. Always be careful when working with this equipment. While normal safety precautions were taken in the design and manufacture of this equipment, there are some potential safety hazards.

Everyone involved with the operation and maintenance of this equipment should read and follow the instructions in this manual.

Operate the equipment only as stated in this manual. Incorrect use could cause damage to the equipment or personal injury.

It is the owner's responsibility to make certain that the operator reads and understands this manual before operating this equipment. It is also the owner's responsibility to make certain that the operator is a qualified and physically able individual, properly trained in the operation of this equipment.

Specific safety warning decals are located on the equipment near the immediate areas of potential hazards. These decals should not be removed or obliterated. Replace them if they become non-readable.
**ALWAYS**

ALWAYS keep safety shields and covers in place, except for servicing.

ALWAYS maintain a safe distance from people when operating.

ALWAYS operate equipment in daylight or with adequate working lights.

ALWAYS follow daily and weekly checklists, making sure hoses are tightly secured and bolts are tightened.

ALWAYS watch and avoid holes or deep depressions.

ALWAYS wear adequate eye protection when servicing the hydraulic system and battery.

**NEVER**

NEVER operate a poorly maintained machine.

NEVER allow persons to operate this machine without proper instruction.

NEVER put hands or feet under any part of the machine while it is running.

NEVER attempt to make any adjustments or repairs to the machine while running. Repairs or maintenance should be performed by trained personnel only.

NEVER work under the machine unless it is safely supported with stands, blocks or a hoist and blocks.

NEVER touch hot parts of machine.

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**DESCRIPTION**

The machine is set out as shown in the figure, and consists primarily of:

- Electrical panel and controls
- Pressurised adhesive container
- Supporting structure
- Input area for rail to be glued
- Gluing area
- Output area for glued rail

*Figure 5 Overview.*
Structure

The machine comprises a straight guide supported by three legs, on the guides are drive belts which move the rail through the three areas in sequence: input area, gluing area and output area. There are two alignment bars in the input area which straighten up the incoming rail. In the gluing area there is another structure, set at right-angles to the main one, which contains all of the gluing parts. Separated from the machine and connected to it via a cable and/or pipes, there is the electric panel and controls and the pressurised adhesive container.

Principle of operation

The machine in question is used to spread the adhesive over the rails which enclose the sides of the spring mattresses. The operator configures the operating parameters on the touch screen control panel. Then, the operator places a rail on the guide in the machine’s input area. Here, an optical sensor detects the presence of the rail and activates the machine’s operating cycle:

- the alignment bars tighten around the rail and position it as straight as possible in relation to the axis of the guide (this phase only occurs for the first rail processed, the bars do not then move until the processing width is changed);
- the drive belts move the rail to the gluing zone, where the rail stops against a plate (right-hand) which holds it in position. The belts stop, a piston descends and holds the rail in place;
- the right-hand plate moves away: on the end of the plate is a dispenser (also called an adhesive nozzle) which, running along the surface of the rail head, applies the adhesive to it;
- at this point, the right-hand plate and the left-hand plate are positioned according to the width of the rail as previously configured. The belts re-start and the dispensers positioned at the end of the plates apply the adhesive to the sides of the rail;
- when the whole rail has left the gluing area, it stops, the left-hand plate moves away, the rail moves backwards and stops against the plate.
- As with the first, the left-hand plate moves away and its dispenser, running along the head of the rail, applies the adhesive to it.
- Once the gluing has been completed, the belts move the rail to the output area and stop: the operator can remove the glued rail.

The machine can also be used to glue just the sides of the rail: in this case, the rail moves through the gluing area without stopping and the dispensers apply the adhesive onto to the sides of the rail. Similarly, the machine allows you to choose whether to glue the sides and just the head or just the tail.

To stop the adhesive from hardening and blocking the holes on the dispensers, there are two cups containing water. Once the machine has been inactive for a short time, the cups rise up via two pneumatic pistons and keep the dispensers immersed in water.

The machine has a number of different settings (time, speed, rate, etc.), all of which can be configured via the touch screen panel at the control station.
- **Processed product**

  An example of a glued layer and the final assembly is shown in the figure below.

  ![Processed product](image1)

  - **Figure 6** Processed product.

  ![Details](image2)

  - **Figure 6** Details.
The adhesive dispenser is an APER Srl product. See "Cleaning of dispensers" chapter.
**WARNING**

Moving parts can crush and cut. Keep hands clear while operating machine.

**DANGER: KEEP CLEAR - MACHINE STARTS AUTOMATICALLY**

Pressurised adhesive container

**Figure 7** Separate user and maintenance manual for the pressurised container.

**Figure 7** Details.
• Sensors and micro-switches

The machine has a number of sensors and limit switches which are used to detect the position of the pieces in certain important positions, etc.

Figure 8  Sensors.
Fixed guards to protect different moving parts

Figure 9 Fixed guards.
Indicator lights

In addition to the warning lights that appear on the touch screen panel, the machine has a column of lights, positioned on top of the electrical panel.

![Figure 10 Indicator lights.]

Electrical command and control panel

The machine’s electrical panel is located inside the cabinet placed on the floor and located to the side of the machine, as shown in the figure. Inside the panel are all of the devices required for the correct operation of the machine itself. The panel is opened using special keys.

![Figure 11 Electrical panel (See wiring diagrams enclosed with this manual).]

**CAUTION**

The keys must never be left on the panels

**NOTICE**

Do not obstruct the air inlets and outlets. Keep the filters clean.
- **Master switch - Lockout/Tagout**

The Master Switch for the electrical panel is located on the panel itself. To power up (activate) the machine, turn the master switch to the I-ON position (machine powered up), shown in the figure. To turn it off, turn it the other way to the 0-OFF position (machine powered off). The switch has a loop that is active with the switch in 0-OFF position. The loop allows the switch to be locked mechanically, using a padlock. This is used when carrying out maintenance or prevent the use of the machine.

![Master switch in I-ON position](image1) ![Master switch in 0-OFF position](image2) ![Loop](image3)

*Figure 12* Master switch.

- **Main controls and signals**

The main controls are located on the electrical panel. Some of the controls are buttons and are shown in the following figures, together with the selectors and the warning lights. The remaining controls are on the computer, with keypad, monitor and USB port.

![Touch screen panel](image4) ![Emergency stop button](image5)

*Figure 13* Controls and warning lights.
White light **LINE 24 VDC**: when illuminated, indicates that the machine’s voltage is 24 VDC and that the machine is powered on.

**START CYCLE** button: in AUTOMATIC mode, when this button is pressed, the machine is ready to operate.

**ENABLE DISPENSERS 1, 2, 3, 4 switches**: in position 1, the circuit which sends adhesive to the dispenser denoted on the label is activated. In position 0 (as shown in the figure), the adhesive is not sent. In general, position 0 (no adhesive) is used for conducting operating tests.

**START CYCLE** button: in AUTOMATIC mode, when this button is pressed, the machine is ready to operate.

**STOP CYCLE**: when the processing cycle is in progress, press this button to stop the cycle.

**EMERGENCY RESET** button: if pressed after having removed the cause of the emergency and having reset the emergency stop button (see relevant paragraph), the machine can restart. After it is pressed, the red EMERGENCY light switches off and the white 24 VDC LINE light is illuminated.

**Red EMERGENCY ON light**: when illuminated, it indicates that the machine is in emergency mode (an emergency stop has been triggered). It switches off after removing the emergency and pressing the EMERGENCY RESET button.

**MANUAL - AUTOMATIC switch**
In the MANUAL position (as shown in the figure), the machine is in manual operating mode and the manual controls are activated (see the touch screen panel chapter).
In the AUTOMATIC position, the machine can execute the processing cycle automatically, using the parameters configured via the touch screen and using the sensors’ signals.

*Figure 14 Description of controls.*
Emergency stop button

The machine has two emergency mushroom stop buttons, one located on the control panel and the other close to the centre of the machine. When activated (by pressing it), the emergency stop button shuts down the operation of the machine and discharges the compressed air circuit. The buttons used are red mushroom-head type, with a mechanical interlock; the contacts are forced positive opening type. The operator unlocks the button in question by pulling and/or turning the head.

The emergency stop control has priority over all other controls. To restart after an emergency stop press the EMERGENCY RESET button shown above and restart the cycle from the top, including the reset (see Operating Cycle).

⚠️ CAUTION
The emergency stops must not be used for normal stops. When activated, the operation of machine is interrupted.

⚠️ CAUTION
Check that the emergency stop button is working perfectly at the start of every shift. When this button is operated, the machine must cease operation.

Figure 15 Emergency Stop Button.
Touch screen control panel

The machine performs the processing cycle based on the commands programmed using the touch screen panel, located at the top of the electrical panel. The buttons are virtual and are activated by pressing them with a finger.

Description:

- Keys used to select the parts to be glued: touch to change setting
- HEAD, green = included
- TAIL, grey = excluded

Note: the sides of the foam rails are always being glued.
To change the width to be used, touch the desired width.

To change the value of the width, touch on the value and a numerical keyboard is displayed. Type in the new value and confirm by pressing RETURN.

To reset, move the switch to MANUAL mode, select the width for which the counter is to be reset and touch the eraser icon.

The width is the width of the rail and is written on its side.

Width 1, 2, 3: the green width is the one which is selected for processing.

The coordinates of the axes are shown.

Red = in movement
Green = reset

Counters for the number of product pieces for each width are displayed.

Dispensers all disabled (red). When the dispensers are enabled, the indicators turn green.

Key for manual controls (visible only when the selector is in the MANUAL position).

Key to exit the current page and return to the previous one.

Cycle selected (the figure shows manual mode).

“Reset” key, see Operating Cycle.

Key to display the operating parameters.
## Manual controls

In **MANUAL** mode, the initial reset is also carried out, as described in the Work Cycle.

**A** - Set the selector to **MANUAL**

**B** - and press the “hand” button

By touching a button, the part of the machine indicated by the label is activated. When the button is released, it shuts down.

For example, by touching **DISPENSER 1**, the adhesive is released from **DISPENSER 1**, when the button is released the supply of adhesive is shut off.

**C** - to access the manual controls page

Position and speed of the motors which move the guns towards the rail

**A** - When this button is pressed

**B** - the jog panel also appears with buttons to move the X and Y axes

Touch on an arrow button to move the axis

**Note:** the jog buttons are activated by touching the axis button (X or Y)
Operating parameters

The parameters are:

- Choice of measurement units (metric or imperial). To change, touch on “metric” and select the other measurement system.
- Operating width currently set. These are the same as those on the home page.
- A - When this button is pressed
- B - the first page opens with the operating parameters settings
- A - To change the numerical parameters, touch on the number
- B - and use the keypad which is displayed
- Touch here to exit without making any changes
A - By touching here again

B - the time parameters page opens

Delta: the alignment bar remains wider than the rail, in order not to hold it tight, otherwise it will not move along the drive belts. In this example, the operating width is 150 mm, the bar narrows to 165 mm.

Difference in width to which the adhesive dispensers are moved. In this example, the operating width is 150 mm, the dispensers are moved to 115 mm.

Advance distance at which the head and tail dispensers shut down.

Width to which the alignment bar is moved to after reset.

Gluing speed, the speed of the motors which move the dispensers.

Advance start-up of the dispensers prior to the start-up of the drive belt (0.20 secs). Used to ensure that the first section is glued.

Start-up delay for the machine from the moment that there is a rail on the sensor (0.8 seconds).

Shutdown delay for the dispensers when the sensor no longer detects the piece (0.40 secs). Used to ensure that the final section is glued.

In general, these parameters are changed only if the processing speed changes. And so on, each parameter has a description which describes its effect.
### Transport and moving

The machine in question has been assembled and packaged by the APER S.R.L. company. The dimensions and weight of the machine are:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (L)</td>
<td>4.5 m</td>
</tr>
<tr>
<td>Width (W)</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Height (H)</td>
<td>1.4 m</td>
</tr>
<tr>
<td>Weight (m)</td>
<td>kg</td>
</tr>
</tbody>
</table>

### Installation

- The environmental conditions must always comply with the following values:
  - Minimum temperature $\geq 5^\circ\text{C}$
  - Maximum temperature $\leq 40^\circ\text{C}$
  - Maximum relative humidity $\leq 50\%$ at 40°C. A higher relative humidity is permissible at lower temperatures (e.g. 90% at 20°C).
  - Maximum altitude 1000 m above sea level.

The machine and its parts feature supports of various types: feet, resting directly on the floor, wheels. The height-adjustable feet are adjusted using a suitable spanner.

---

**Figure 17** The feet of the machine.
Compressed air

The compressed air line must be connected using the special connector on the machine’s reducer filter unit.

**WARNING**
Set the pressure to the indicated value. Do not exceed the maximum value.

**NOTICE**
An upsteram valve should be fitted in order to isolate the machine from the source of the pneumatic energy supply.

**USE DRY, OIL FREE COMPRESSED AIR**
Input pressure to the regulator 6 bar

*Figure 20* Pneumatic connection.
### Securing of presser pressure regulators

The air pressure regulators for the pressers and other parts are secured by the system shown in the figure. The pressure is governed by the manufacturer (2 bar).

![Securing of presser pressure regulators](image)

The systems for securing the regulators are marked to show evidence of any tampering.

### Disconnection and bleeding of the circuits

To remove the compressed air supply and bleed the circuits of pressurised air:

![Disconnection and bleeding of the circuits](image)

Regulation of the pressure inside the adhesive container is described in the chapter on the filling of the container: please refer to it.
The machine can work with any suitable water-based adhesives (single or two component) for the types of materials to be glued; the figure shows the safety data sheet for a typical adhesive.

**CAUTION**

For other types of adhesive and any updates to existing safety sheets, etc., the user shall autonomously seek for updated information.

---

### Operating cycle

To remove the compressed air supply and bleed the circuits of pressurised air:

---

### Filling of the adhesive container

The adhesive container is pressurized.

---

**WARNING**

The following task to be carried out with the machine stopped.
To bring the pressure inside the container to atmospheric pressure:

**DANGER**
Pressurized container. Bring the pressure inside this container to atmospheric pressure prior to opening it. The cover may be ejected with force.

**CAUTION**
Hazardous Pinch Points. Keep hands clear.

- Wait until all of the air has left the container.

A - Unscrew the 4 wing screws which secure the cover

B - and remove the catches
Then:
- position the full adhesive bag;
- connect it to the pipe;
- insert the bag into the container and place the cover above the container;
- close the fastenings and screw up the wing screws to secure it;
- close the purge valve, reopen the compressed air valve and set the pressure (generally between 0.8 and 1 bar, max 2 bar).

⚠️ RESIDUAL HAZARDOUS CHEMICAL SUBSTANCES


### Enabling the machine

Before using the machine, check that the dispenser washer cups contain water (see the relevant chapter in the "Cleaning" section).

- **A** - Enable the machine by setting the master switch to I – ON
- **B** - EMERGENCY ON is illuminated
- **C** - Release the emergency stops
- **D** - and press EMERGENCY RESET
- **E** - EMERGENCY ON switches off and 24 VDC LINE switches on

### Reset

**WARNING**

Before resetting, check there are no people near the machine. Impose suitable safety distances. Wear full-length clothing, fastened down to the wrist.

- **A** - Set the selector to MANUAL
- **B** - Touch the “Reset” button
C - When prompted

D - press START to order a reset
 Otherwise press STOP
E - Press START the reset messages appear in sequence for the three axes (X and Y for the gluing plates and BAR for the alignment bar)

F - When the reset is completed, the following message appears

The axes for the machine are reset

---

**Automatic cycle**

Move the selector to AUTOMATIC  The machine is in automatic mode but it is not active (STOP)  In this phase, the operating parameters can be configured
Once the machine is configured (in this example, cycle completed with rail WIDTH 1, gluing on sides, head and tail):

Enable the dispensers which are to be used to apply the adhesive (in this example, all 4).

Press START CYCLE.

The machine is in automatic mode ready and with the 4 dispensers enabled.

At this point, the machine is waiting for the operator to load a rail into the input area:

The operative in charge of loading inserts a rail onto the input guide.
The optical sensor detects the presence of the rail and initiates the automatic processing cycle.

The alignment bar moves towards the rail and straightens its position without squeezing it. For the following rails, the bars remain in the same position. They only move if the width is changed.

The right-hand plate closes

The drive belts start up and the rail is moved into position up against the plate

The presser lowers and holds the rail in place
From the other side, output area:

- The plate moves away
- and the dispenser applies adhesive to the head of the rail
The two plates position the dispensers for the gluing of the sides

then the belts move the rail along and the dispensers apply adhesive its sides

and the presser lowers

When the rail has exited completely, it stops

The belts move the rail back until it stops up against the plate

the presser goes back up

and the left-hand plate moves away

the presser goes back up
The left-hand plate returns and the dispensers apply the adhesive to the tail of the rail.

After gluing, the rail permanently leaves on the output guide.

and, when it stops, the operator removes it.

**NOTICE**

If the cycle does not require the gluing of the head and/or the tail, ignore the relevant parts.
Repeat further other gluing cycles or end the processing cycle.

- **End of processing cycle**

When there are no more rails to be glued:

- **Automatic movements during the cycle: warnings**

During the automatic processing cycle, the processing parts make the movements automatically, controlled by the optical sensor signals which detects the presence or position of the rail.

After the machine has not been operating for a certain period of time (this time can be configured on the touch screen), the cups rise and immerse the dispensers in the water in the cups. This stops the adhesive from hardening and blocking the holes in the dispensers.

- **Routine maintenance**

Scope - Regular or repeated basic maintenance which generally does not require qualifications, authorisations or special equipment.

- **Preventive maintenance**

Scope - Maintenance carried out at pre-determined intervals or based on prescribed criteria and aimed at reducing the possibility of breakdowns or the impaired operation of a unit.

To correctly carry out preventive maintenance, regularly and constantly check that the machine is in good working order and carefully analyse any faults detected, meticulously noting them down on the enclosed maintenance form.

- **Tightening of the terminals**

The presence of loose connections in the supply circuits can cause overheating, with consequent operating problems or faults.

Any loose connections in the control circuits can cause control operating problems.

Loose earth or ground connections can increase the risk of electrical shock, therefore contributing to the generation of electromagnetic interference (EMI).

Check the tightening of all terminals and of the busbar, if present, and firmly tighten any loose connections.

Replace all components or cables damaged by heating and all broken earthing brackets and cables.
After disconnecting the machine from the power supply by removing the relevant plugs from the sockets, proceed as follows:

1. Open the door of the electrical panel using the special key;
2. Use suitable tools to tighten all of the threaded connecting terminals and check that the spring terminals are correctly attached;
3. Re-close the electrical panel door;
4. Connect the machine to its power supply;
5. Remove the padlock;
6. Disable the emergency stop button.

- **Regular inspection of the pipes**

It is necessary to regularly check the pipes, the connections and the other parts of the pneumatic circuit and the adhesive circuit, by means of a visual inspection. Pipes which are not intact must be immediately replaced.

- **Hoses**

Systems equipped with hoses must be regularly checked, in order to make sure that these are intact. Pipes which are not intact must be immediately replaced. As far as the timing of checks is concerned, take advantage of the work normally carried out on the machine (replacements, loading – unloading of raw materials, cleaning, etc.) to make these checks.

- **Checking and restoring the tension of the drive belts**

After first usage and at regular intervals, the tension of the belts may slacken. In this case, check it and restore the tension if necessary.
To tighten the belts:
• Use a spanner to hold the bolt in place;
• Use another spanner to turn the nut to tighten the belts;
• Turn alternately on each sides: the tension must be distributed equally on both sides to stop it from operating in an unbalanced way and thus avoiding unusual wear, damage and noise;
• Make a record of the work carried out immediately.

Cleaning of the air vents of the electrical panel

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Monthly or more often for use in harsh environments</th>
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Cleaning of the air vents of the electrical panel

- Remove the filters and grilles, then use compressed air to clean the air vents, the output vents, the filters and the grilles, working gently and without causing damage.
- If the filters are too dirty, replace them with similar or identical filters.
- Dispose of used filters in accordance with the local regulations.

Corrective maintenance, maintenance following a fault

Scope
Maintenance carried out after a fault has been detected aimed at restoring the component to a position where it can carry out the requested function.

Definitions

Fault
Loss of the component’s capacity to carry out the requested function.
Repair
Physical activity carried out to restore the requested capacity of a faulty component.

Spare part
Replacement component that should restore the function initially requested.

Operating check
Activity carried out after a maintenance operation to make sure that the component can carry out the requested function.

In the case of fault, the intervention can be only carried out by the manufacturer of the machine or by personnel specifically authorised by the manufacturer, only using original spare parts. Such personnel will implement the specific procedures necessary to carry out the repair.

When the repair is completed, they will check the operation of the machine and report their activity on the specific form attached to the user manual.

Monitors and screens
Read and follow these instructions and those provided by the manufacturers of the monitors and screens during their connection and use.

Operation:
- Do not expose the touch screen to direct sunlight and keep it at a distance from components which emit heat.

Maintenance:
- In order to protect the touch screen from possible damage, do not press excessively on the LCD panel.
- If necessary, clean the monitor with a slightly damp cloth, disconnect it from the power socket. The screen can be dried with a dry cloth when power supply is disconnected. Do not use organic solvents like alcohol or ammonia-based fluids to clean the monitor.
- If the monitor gets wet, wipe it with a dry cloth.
- If foreign substances or water get into the monitor, immediately power off and disconnect the power supply cable from the machine.
- In order to keep the monitor in good working condition and to use it for a prolonged period of time, use it in a workstation with the following environmental conditions:
  - Temperature: 5-40 °C    41-104 °F
  - Humidity: 20-80 % RH

■ Replacement of electrical devices

Replacements
To maintain the integrity of the equipment only use original spare parts.

Fuses
Replace the broken fuses only after the reasons of the breakage have been identified for certain sure.

Batteries
Replace the batteries regularly, as shown in the product manual, or if it shows signs of electrolyte leakage. Use suitable tools to remove the leaked electrolyte because most electrolytes are corrosive and can...
cause burns. Dispose of the used batteries according to the instructions provided with the new battery or as specified in the product manual.

**Warning lights**
Replace lights or ceiling lights that are not working and/or damaged, only using original spare parts.

**Photoelectric switches**
The lenses glasses of the photoelectric switches must be periodically cleaned with a dry cloth. Any reflective device used with the photoelectric switches must also be periodically cleaned. Do not use solvents or other detergents on the lenses or reflectors. Contact the manufacturer for replacement.

**Final inspection**
After industrial repair or maintenance, always check that the system operates correctly in controlled conditions, in order to prevent hazards if there are faults.

### Cleaning

**General instructions**
Cleaning must be carried out:
- daily after each use. The operation and service life of the machine also depend on how it is kept.
- if necessary before and during use.

Residues, dust, dirt or other materials present in the work area or on other parts of the machine must be removed, where necessary, using suitable tools and methods for the purpose (e.g. a suitable suction pump).

**ONLY USE DRY COMPRESSED AIR FOR COMPRESSED AIR CLEANING**

Any contamination of adhesive on the belts or in other parts of the machine and the surrounding areas must be removed using suitable methods and systems. These may depend on the nature of the materials used.

**Cleaning the dispensers**
The dispensers can be removed and cleaned of any adhesive residue.

For further details about cleaning of the individual parts of the machine, refer to the manuals of the respective manufacturers.
C - Remove the adhesive pipes  

Be careful when reassembling: do not swap over the dispensers or the pipes (there are identifying marks, however).

D - Unscrew and remove the two grub screws on the bottom

E - The adhesive can be removed from the holes by rubbing with a cloth or fingers. If this is not sufficient, use a 1 mm pin in the holes.

F - To clean inside, use a pipe cleaner and move it back and forth.

Put the dispensers back in place and tighten the knob. Repeat the same tasks for the other dispensers.

**Check the water level in the cups and cleaning**

Before using the machine, check that the dispenser washing cups contain water.
If the water is dirty, wash the cup and refill it with clean water.
If the water level is low, refill it with clean water.

At the end and before using the machine, reposition the cups in the centre of the respective mountings.
Automatic Machines for Foam Industry