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Equipment for Stone Processing

EPR3500 USER MANUAL

CUSTOMER	
SERIAL N°	
MODEL	
DATE	

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Preface

Congratulations, you have just bought an EPR3500.The EPR3500 Edge Polishing machine is a good combination of mechanical, electrical and software advanced technology.

The EPR3500 is designed to be simple, convenient and user friendly. The machine software is based on recipes to create and polish different shapes on the edge of the stone, the operator after aligning the stone with the stone alignment bar (Stopper), can easily select the recipe to grind and polish and the machine will do the rest.

To facilitate, we, the constructor, have included a manual of our product. We advise you to read this manual carefully, it contains useful information about installation, use and maintenance ofyour machine. It will result in longer life and easier use.

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1. GENERAL INFORMATIONS

1.1. Constructor.

The company AitalMAC has been constituted by Mr. Romeo Toniolo, which has a long-time experience in designing and constructing of machines for working of natural stones. After years of searching and tightening contacts with producers and trading companies all around the world it is just acquired technological know-how which represents the best warranty for the AITALMAC'S customers.

1.2. General description

EPR3500 is anEdge Polish Robot.

Machine characteristics:
The modelEPR3500is made of welded steel with a final coating of epoxide painting enamel, Only the top beam that mounts the pneumatic cylinders to hold down the working parts is made of a combination ofextruded aluminum and steel plates, this type of frame reduces vibrations and improves accuracy and longevity.
The machine is composed of 5 axis in total, the X axisis the movement of the machine head along the table, it is moved by a servo motor of 7.5Nm, the transmission is on rack and pinion andthe maximum speed is 70m/min. TheY axis is the movement of the main motor slide closer and farther away from the table,theZ axis is the movement of the main motor slide below and over the table, both X and Y are moved by servo motors, the transmissions are on ball screws and the maximum speed is 4m/min. The A axis is the tilting movement of the main motor, moved by servo motor the transmission is on a high precision harmonic drive. The B axis is the rotation of the tool change,moved by servo motor the transmission is a high precision gearbox. The brushless servo motor system and the high precision transmissions ensures the accuracyof the machine.
The main motor (AitalMac) is a 2.2kw direct driven spindle motor, with an aluminum body, the spindle shaft can retract and extend pneumatically,the cooling of the motor and of the tool is done by the water feed through the center of the spindle shaft, the motor RPM speed is controlled by inverter to a maximum of 3000RPM.
The chains and cables used on EPR3500 machines are specially customized for the high-speed movement of machines.
All sensors used on the EPR3500are watertight.
The electric control box is installed on the left side of the machine, there is a monitor with user friendly Aitek's software interface
The water for the cooling of the toolswitches on and off automatically.

1.3.Certification "CE"

The EPR3500 is designed to operate correctly in an electromagnetic atmosphere of industrial type and is equipped with all the mechanical and electrical safety protections in conformity with the following European CEE rules and regulations:

Directive machines 2006/42/EC
Directive low tension 73/23 CEE
Directive Electro-magnetic compatibility 89/336 CEE - 2004/108 EC
EN ISO 12100-1 : 2003 - EN ISO 12100-2 : 2003 - 89/391/EEC - 89/656/EEC (Machine safety)
EN-60204-1:2006 - EN-60204-11:2000 (Electric equipment safety)
2006/95/EC (Low tension electricity)
CE/108/2004 (Electromagnetic compatibility)

EN-55011 (CEI 110-6) (Limits and methods of measure of characteristics of radio disturb of industrial, scientific and medical apparatuses (ISM)
EN-61000-4-2 / 4-4 / 4-6 (1996)
EN 61800-3 (1996)

Results of all tests make part of the technical dossier;AitalMAC will disclose this documentationonly against special request.
The machine is delivered with the CE mark exposed.

1.4. Warranty

The warranty of the machine is 1 (one) year from the date of the effective installation by AitalMAC's or third-party engineers. In case of eventual faults or defects on material or manufacture the customer has to inform the producer or the relevant sale agent about the problem by registered letter immediately. If the complaint is accepted from the producer – he will replace and/or repair the components (the machine or its parts). In the warranty are not included expenses for disassembling, assembling, sending of parts, and expenses regarding the producer's engineer (food, accommodation, trip). The reparation of the respective component does not mean reopen of the warranty period for the all machine (only in case of replacing of the machine). The producer is not responsible for damages brought about from customer or third party due to wrong handling with the machine. From the warranty are excluded parts which were accidentally damaged during the transport, during the lifting and placing of the machine, due to wrong connection to the electrical feeding line (these are included if those operations are provided by the producer). From the warranty are excluded components mechanically or atmospherically worn due to insufficient maintenance or unforeseen or forbidden use. The producer is not responsible for not authorized modifications or repairs. The validity of the warranty is subordinated to the corrected execution of the maintenance like described in this manual. For components supplied from third party valid warranties of third party.
This warranty covers only parts of CNC machine with brand Aitalmac sold by Aitalmacand its subsidiaries, affiliates, authorized resellers, or country distributors.
The term "CNC Machine" is limited to the hardware components, does NOT includeapplications or programs, thirdparty products or devices without the Aitalmac brand.
The warranty period starts from the date of purchase, as indicated from the taxdocument or other such document.
In order to receive assistance in warranty, it may be required to provide proof ofpurchase.
To the extent permitted by local law, new machinery and any product or replacedcomponent, may contain new materials or used with equivalent performance andreliability. Any replaced product or part will have same functionality or at least equal tothe original product or component replaced. Replacement parts are warranted to befree from defects in materials and workmanship for a period of 6 months if greater thanthe remainder of the period of warranty of the machine in which they are installed.
If during the warranty period Aitalmac is notified of defects in the machine covered bythis warranty, Aitalmac will repair or replace the product, but if Aitalmac requires thedefective component to be returned, Aitalmac will have no obligation to repair, replaceor refund until the defective part is returned.
In the case of recurring failures of components, Aitalmac at its sole discretion candecide whether to replace the product with one same or equivalent in performance orrefund the purchased price.

Exclusions

This limited warranty does not apply to consumables or to products which have beenremoved of serial number or have been damaged or rendered defective due toaccidents, misuse, intentional misuse, contamination, virus infection, impropermaintenance or calibration or inadequate or other external causes;
Such as software, interface, parts or supplies not provided by Aitalmac, improperpreparation or maintenance on the site where the machine is installed, loss or damagein transit, or to modifications or assistance by unauthorized persons.
For CNC machines, the use of tools of third parties does not affect this warranty or any assistance contract with Aitalmac. However, if the fault or defect were attributable tothe use of thirdparty tools, Aitalmac will charge the standard time costs and that of thematerials for the intervention.
As a precaution against corruption or loss of data, back up periodicallythe data stored on hard drivers or other storage devicesAitalMAC is not responsible for damage to or loss of any programs, data, orthe restoration of any programs or data other than the factorysoftware fromAitalmac.

Limitations of Warranty / Local Laws

Aitalmac makes no other warranty or condition of any kind, whetherexpress or implied warranties or conditions of merchantability,satisfactory quality, and fitness for a particular purpose. Aitalmacexpressly disclaims warranties and conditions not expressly stated in thiswarranty statement. Any implied warranties imposed by law are limited tothe duration of the applicable warranty period.
Some states do not allow time limitation on implied warranties, or the exclusion orlimitation of incidental or consequential damages for products intended for theconsumer, nor the rights of the consumer. In such states or countries some of theexclusions or limitations in this warranty may not apply to the purchaser.
This warranty is applicable and may be enforced in all countries in which Aitalmac or anauthorized service center Aitalmac offer service in warranty, it being understood,however, that the availability of the service and the time of intervention may vary fromcountry to country and may be subject to legislation in the country of purchase. Fordetails contact the service center Aitalmac or an authorized representative.
This limited warranty gives the purchaser specific legal rights, which may vary from stateto state and country to country. For exact rights the buyer is obliged to acquaintthemselves with the legislation in force in the state or in the country of affiliation.
the warranty terms contained in this statement, except to the extentallowed by law, do not exclude, restrict, or modify but are in addition tothe mandatory rights applicable to the sale of this product to thepurchaser/final client.

Limitation of Liability

To the extent permitted by law, the remedies provided in this warranty are the sole andexclusive remedies available to the buyer.
These terms and conditions supersede and cancel any prior contract or statements,including those found on sales documentation by Aitalmac or opinions provided onbehalf of Aitalmac to the purchaser in relation to the purchase.
To the extent permitted by law, except for the obligations specifically setforth herein, in no event Aitalmac be liable for any damages caused by theproduct or the failure of the same, including any direct, indirect, special,incidental or consequential damages, whether based on contract, tort,and other legal interpretation and regardless of Aitalmac that has beenadvised of the possibility of such damages. Aitalmac shall not be liable forany claim of reimbursement made by third parties or made by the purchaseron behalf of third parties.

Software Technical Support

Technical support for the software Aitalmac and third-party software preinstalled byAitalmac is available at Aitalmac using different contact methods, including electronicmedia and telephone, for five years from the date of purchase.
How to contact Aitalmac:
In case of need for warranty service or technical support during the warranty period,contact your local assistance Aitalmac. The addresses found at:http://www.aitalmac.com.
When you call Aitalmac or an authorized service center Aitalmac you must have available the model name and code of the product, any error messages and the type ofoperating system.
After reading the user manual and maintenance!

1.5. Settlement of customer's expenses

On the base of documentation by constructor (if there is no another agreement between customer and constructor) customer has to provide on his expenses following:

- Preparation of the hall – basement, drainage (see chapter 2.3.),
- Water supply in conformity of norms in the country of use, (see 2.4.),
- Supply of electricity in conformity of norms in the country of use, (see 2.5.)
- #000 Grease for grease pump

1.6. Assistance centre

CNC machines can get service ONLINE.

AitalMAC has the assistance centre just in its residence. For every help or information contact sale agents of AitalMAC in your country to ensure the assistance centre which is close to you or contact directly the head office of AitalMACCompany. Agents will help you detect and solve all problems; retailer or constructor will require dates of product marked on the label (see 4.10.) on the machine.
If the machine needs the intervention of a technician, Aitalmac can provide thetechnical staff that might be prepared personal of the dealer or distributor or authorizedthird parties.
The machine has no parts that are not replaceable by the customer himself, all parts areeasy to replace.
Aitalmac does not consider correct for anyone in the distribution network, to add costs tothe machine sales value, for assistance services.
Aitalmac considers proper to assist with technical staff if required, but for a fee, duringor out of warranty.

1.7. About manual

The Customer must read with extreme attention all information written in this manual. Exhaustive study of manual, preparation, installation and right use of the machine constitute the base of the good relationship between constructor and producer.

- **Purpose of the manual**
  The purpose of the manual is to give the customer all necessary information so that he would be able to install and work with the machine by his own in the most independent and sure way. It comprises inherent technical information, information about function of the machine, security and maintenance.

NOTE: Before starting of whichever operation on the machine the customer must read carefully contained instructions in this manual. In case of any doubts on the corrected interpretation the constructor must contact producer or sale agent for necessary clarifications.

- **Addressees of the manual**
  The manual is appointed to the operator of the machine and to the customer's technician as well. The customer must explain carefully function of the product to both of them.

NOTE: The constructor is not responsible for any of damages eventuate from insufficient perusing of this manual.

- **Conservation of the manual**
  The manual is not printed but is saved in the CNC computer; the manual must be conserved in the machine. It is recommended to make another copy of this manual (with attachments) and keep it in a safe place in office.

NOTE: The machine does not have to be yielded to thirds party without informing the constructor. (The constructor must verify that the machine respect all norms in the country of use at the moment of the cession in case of incident. All parties, which have contracted the machine, are incumbent in pecuniary penalty).

2. INSTALLATION

2.1. Transport and store

- **While transporting the machine beware:**
  - The machine axes are all locked and cannot move.
  - The machine is always straight loaded,
  - The carriage is blocked (you can use strings),
  - The machine is standing always on a dry place,
  - The machine is nailed with steel to the floor so it cannot move.

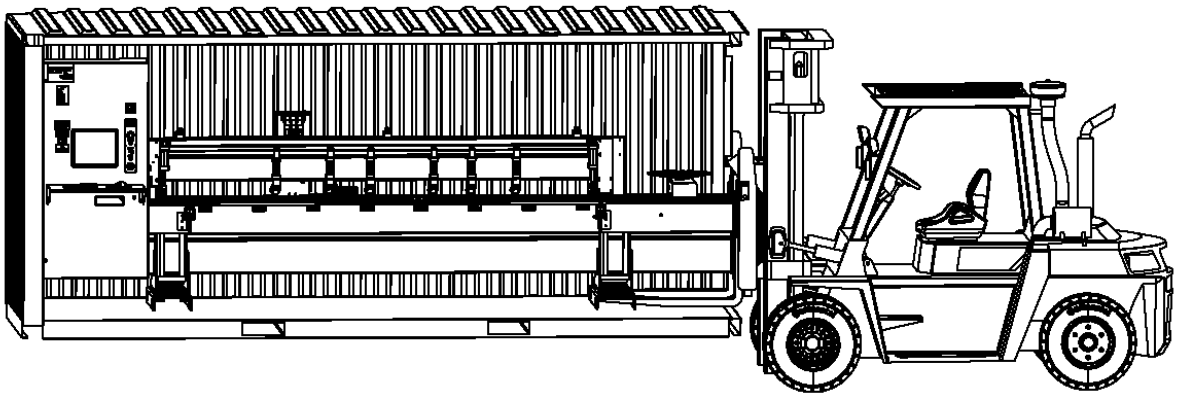
- **While lifting the machine beware:**
  - Your lifting equipment is rated for2500 kg or more,
  - You are using only the lifting points,

- When the strings are tight you will not damage any part of the machine.
- Use forklift truck, from the side only when extracting machine from the container.
- When using a forklift truck, see if the machine rests straight while lifting.

- **While storing the machine beware:**
  - The machine is stored on a dry and clean place,
  - All the guides and the moving parts are greased with a special grease to store metal parts.
    Do not store the machine outside.

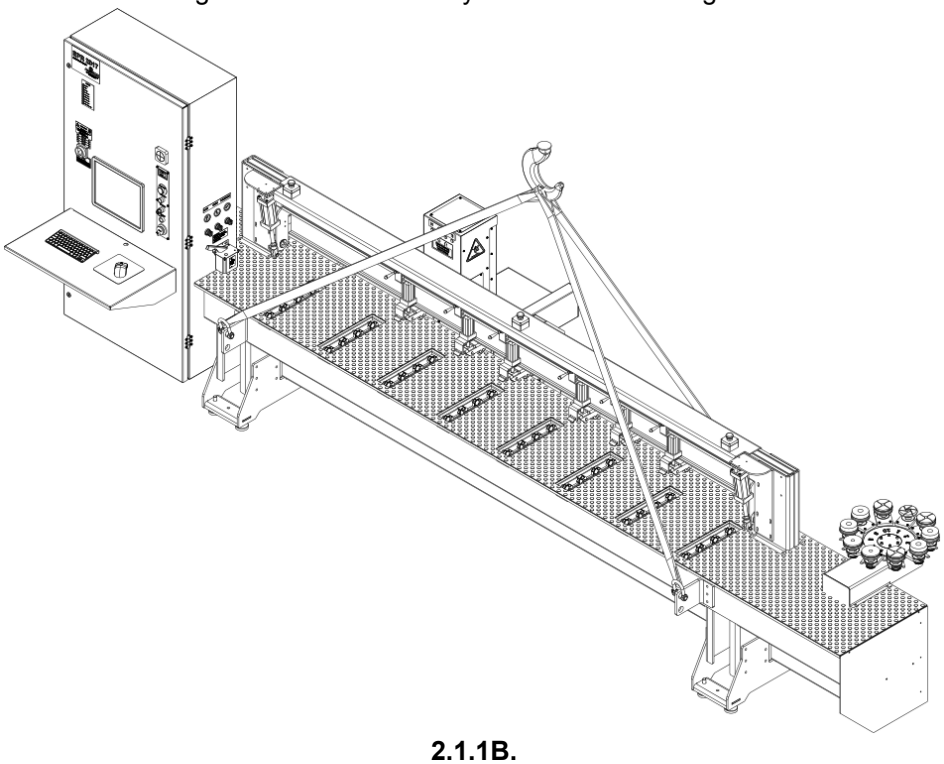
2.1.1 Lifting and handling

Place container on the floor, remove the turnbuckles fixing the machine to the container, and extract the machine from the container using a forklift (2.5Ton at least) till the machine is out enough to be lifted with a crane(see Figure 2.1.1A.).

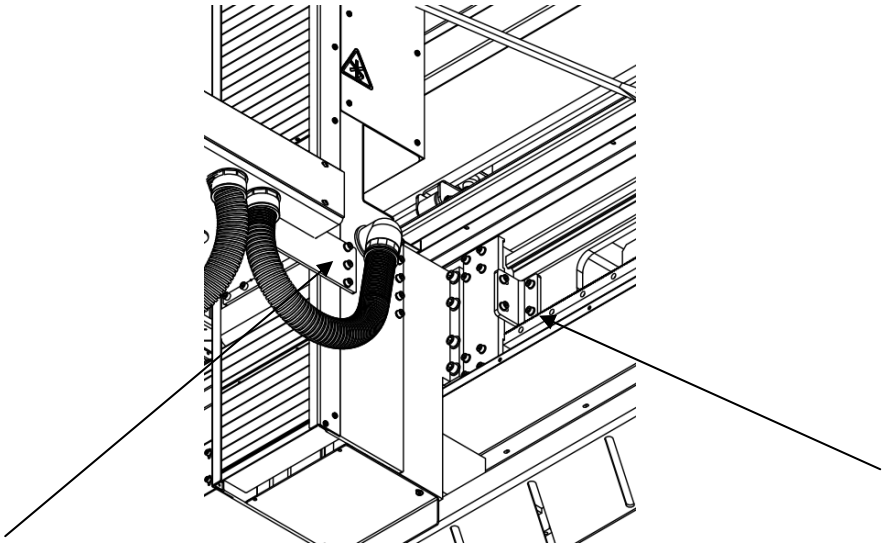


2.1.1A.

Before lifting the machine, the X axis protective bellows of the machine must be removed and fixed on both sides of the machine. Move the head to the middle position of the machine and fix the head (see Figure 2.1.1C) to prevent the head from moving during lifting and transportation.Mind that your lifting chain can withstand the weight of the machine. Pay attention to the height of the machine after lifting.



2.1.1B.



2.1.1C.

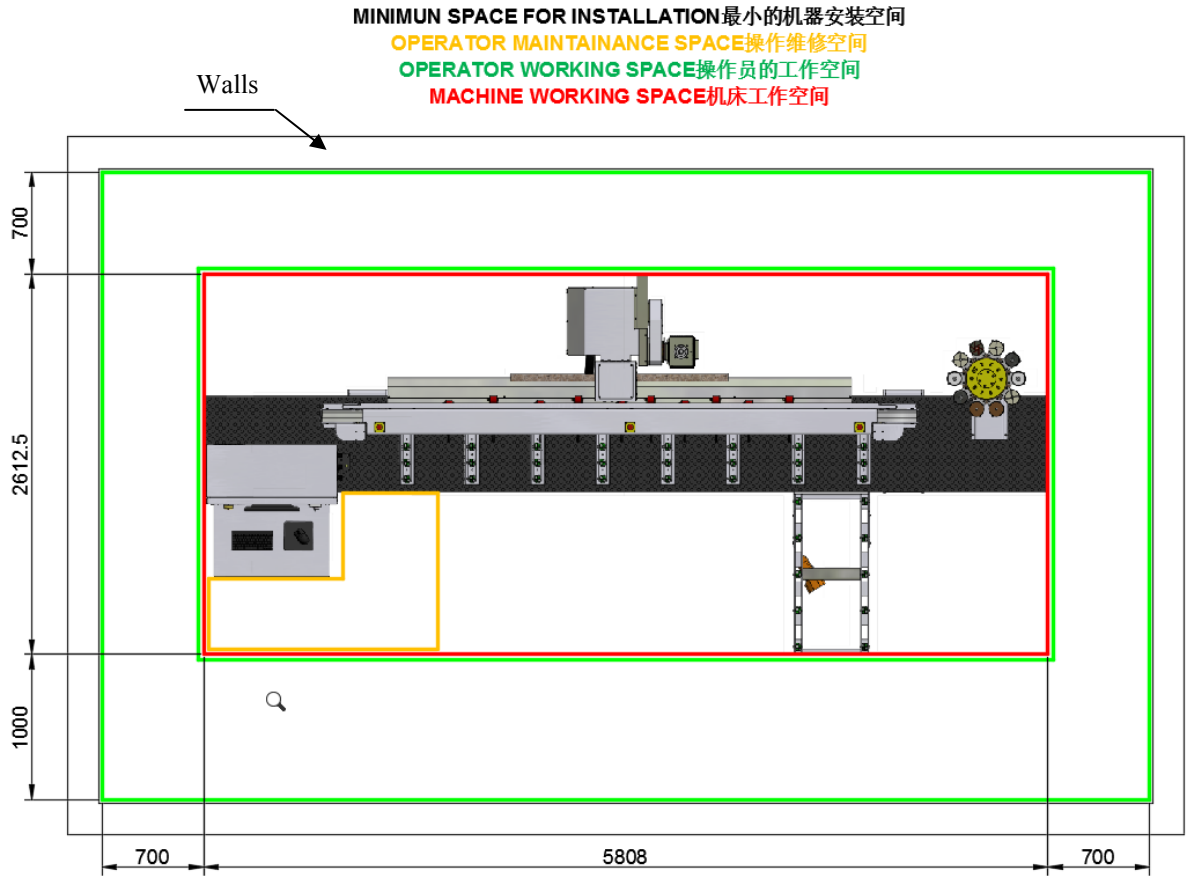
2.2. Placing + environmental conditions

The machine does not demand particular environmental conditions. It must be installed indoor – in production hall. The hall has to be illuminated, ventilated and provided with flat concrete pavement. To place the “EPR3500” study the designs 2.2.A.and 2.2.B., make sure that the electrical box door can be opened to do maintenance.

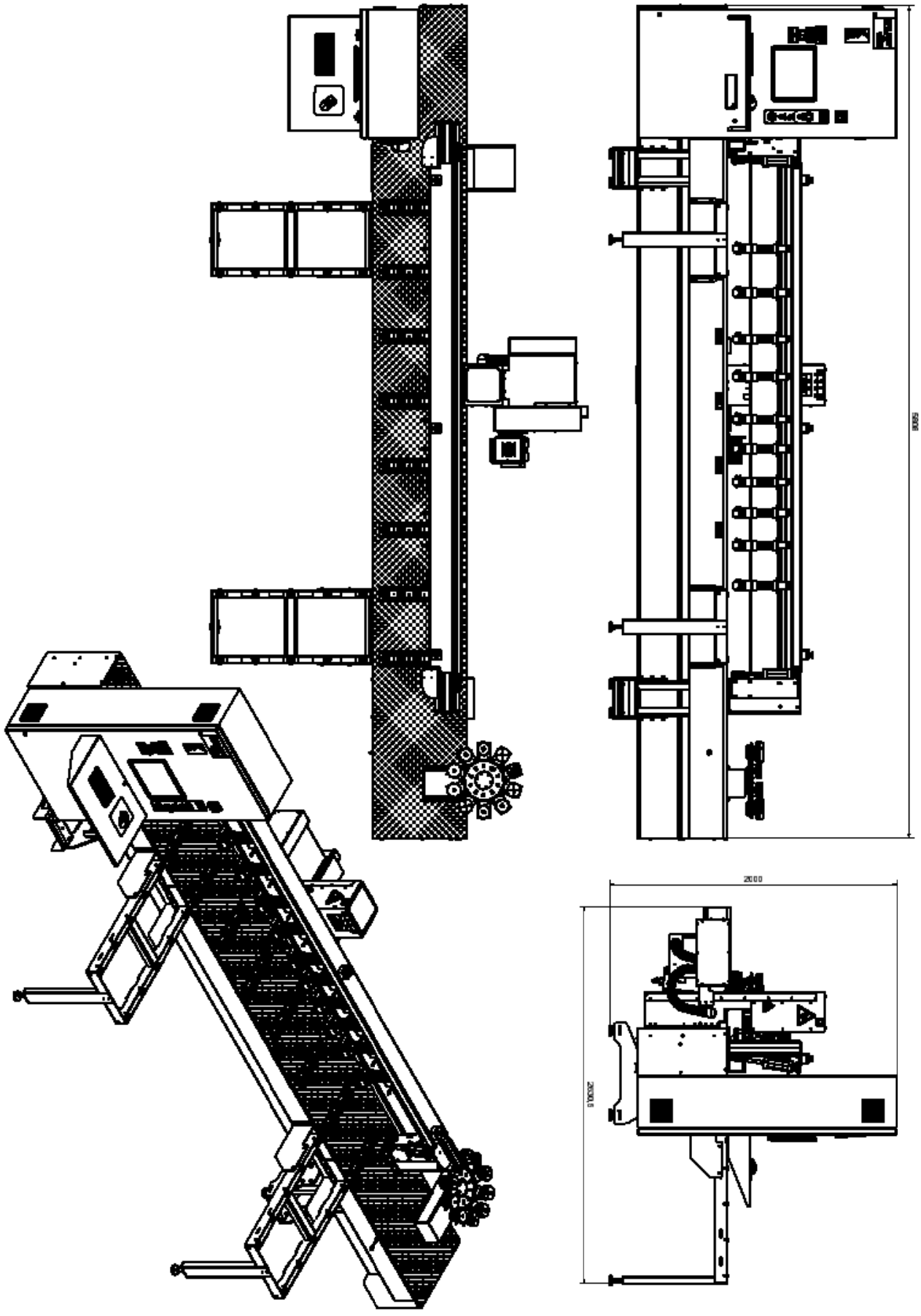
Machine has to be stable on the floor, check that it does not move aroundbecause of working vibrations.

The minimum temperature of the hall does not have to be less than 4/5 °C (40 F); the maximum temperature does not have to exceed 40 °C (104 F).

NOTE: Never expose the machine to direct solar beams. If the temperatures exceed the standards contact the technical service.



2.2.A.



2.2.B.

2.2.1. Lighting system

The lighting system in production hall must respect the norms EN 12464 the lighting of workplaces or ISO 8955 the customer need to make the light night system for the machine at norms. It has to provide good visibility in every part of the machine. It must eliminate reflections, which would be dangerous during operating. The lighting system has to ensure good visibility of the display and the emergency button.
On special demand the working zone can be equipped with one ulterior source of light.

2.2.2. Vibrations

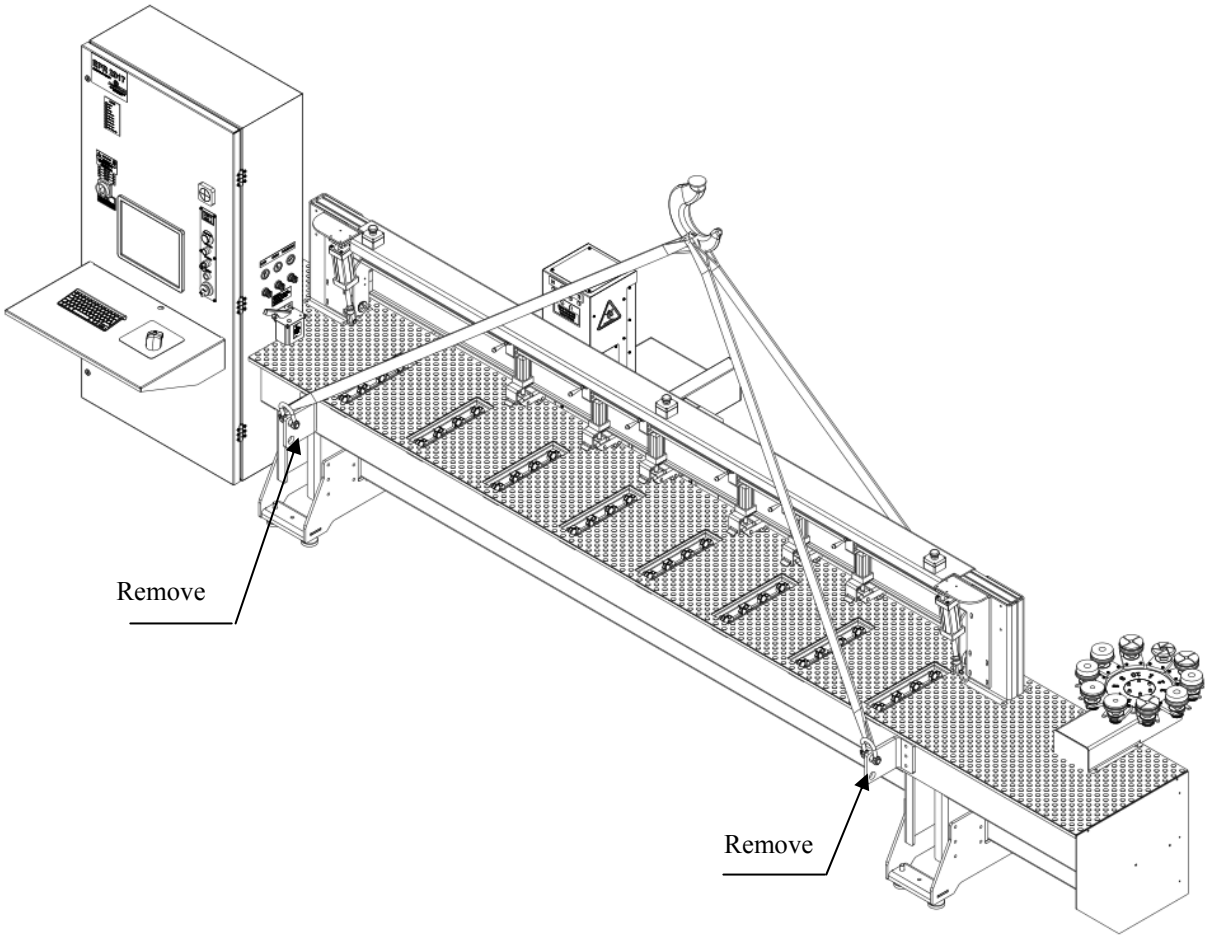
In consistent and correct way using of the machine, vibrations are not in such levels to create dangerous situations.

2.2.3. Sonorous emissions

The machine is designed to avoid or reduce the level of sonorous emission maximally. The level of emitted acoustic emission in the workplace does not exceed 85 dB. The measured value for the machine is 83.9 dB and declaration constant K = 4 dB.
NOTE: values of indicated noisiness are levels of emission and they do not represent real operating levels necessarily.

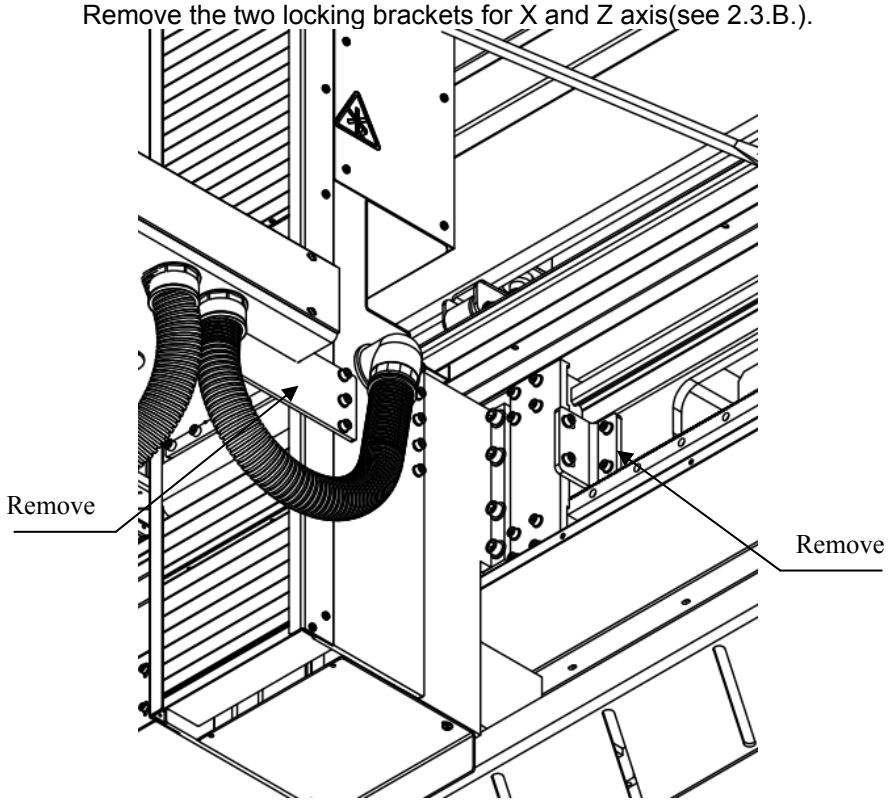
2.3.Machine Installation Leveling

Remove the X axis locking brackets and locking screws on both sides you used to lift the machine.



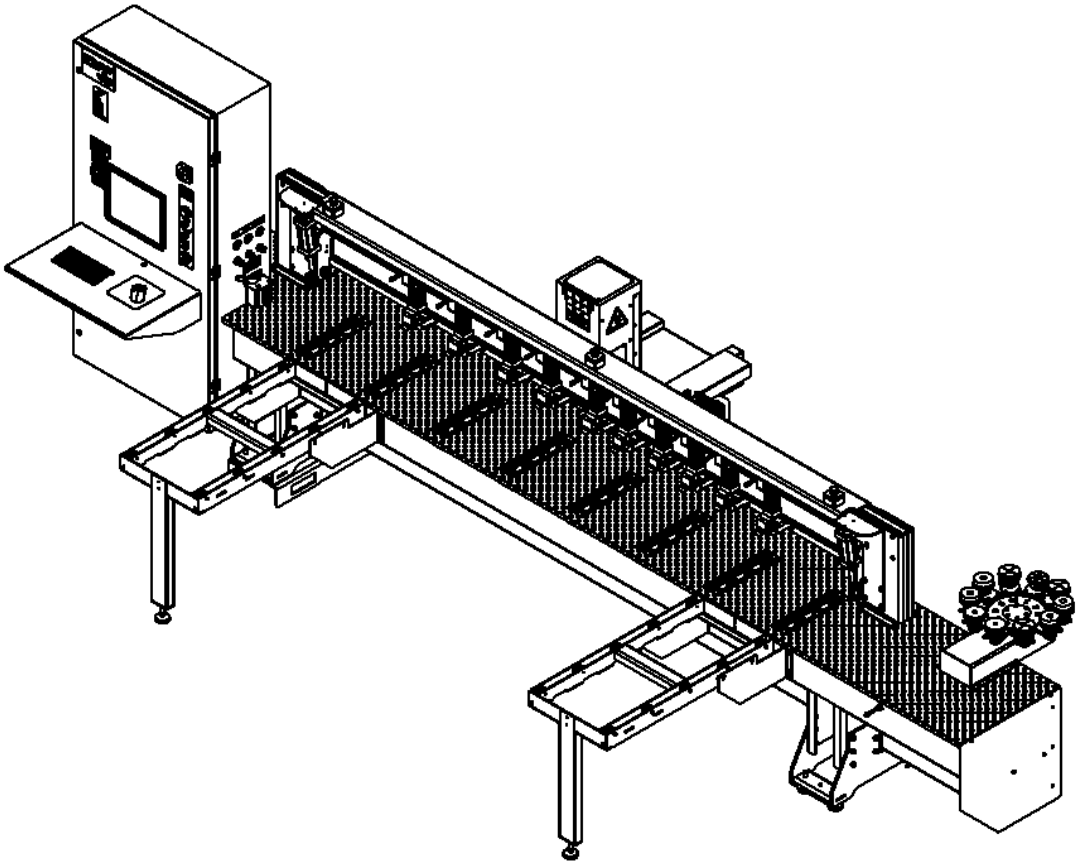
2.3.A.

Remove the two locking brackets for X and Z axis(see 2.3.B.).



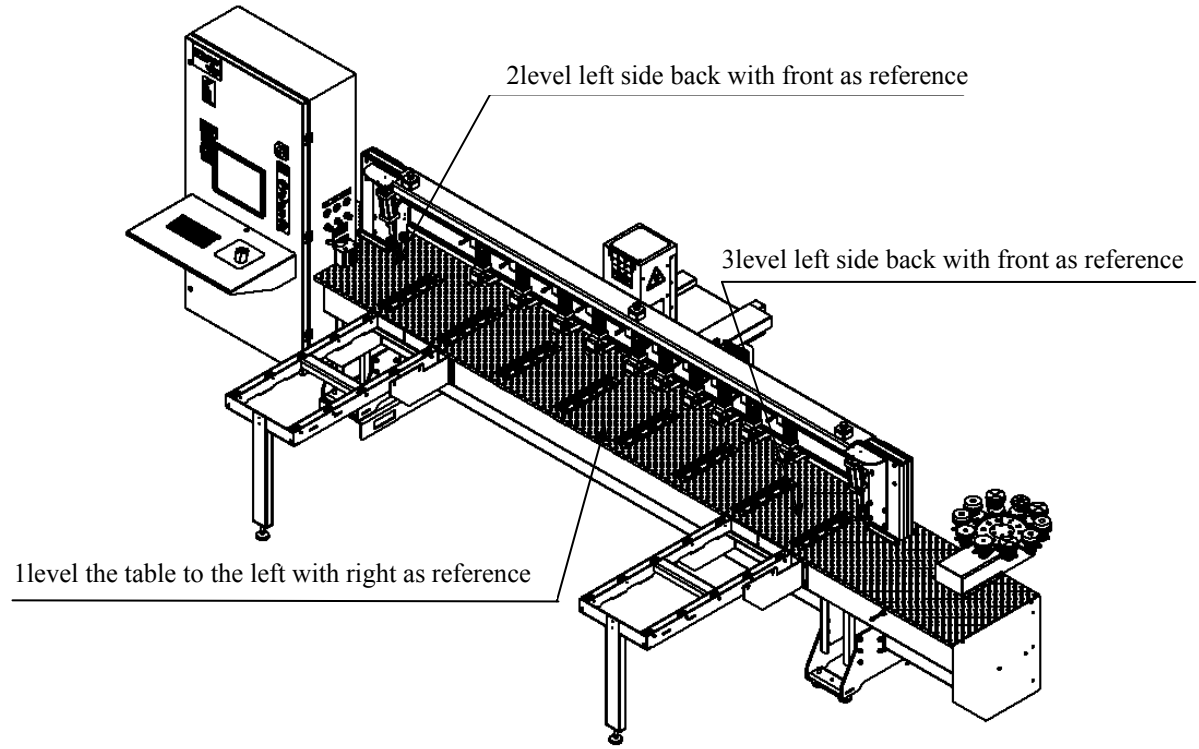
2.3.B.

Mount the X axis protective bellows, install two table extensions and install the desk for theelectrical box. Assemble and mount tools in the tool change.
After the installation, you will see the machine as shown below (see 2.3.C).

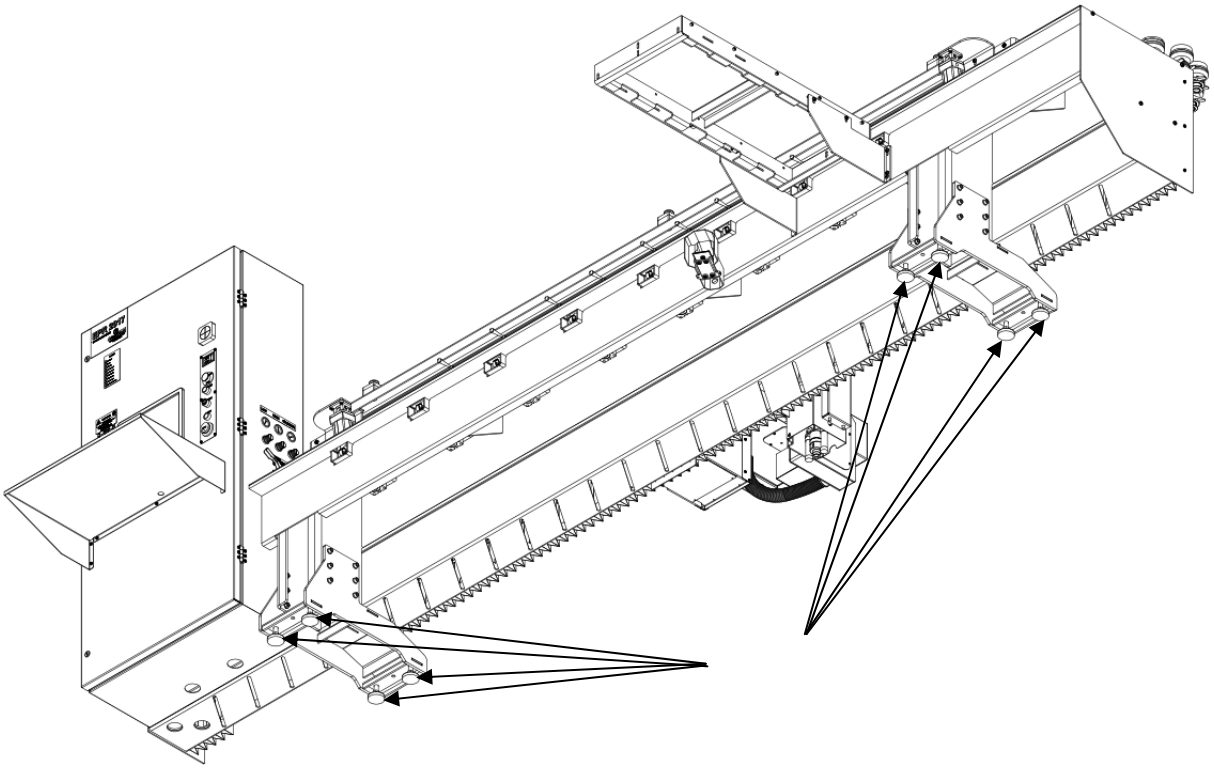


2.3.C.

Use the level to level the machine using the table surface as reference, use hydraulic jack to help you lift machine if needed, Adjust the level of the machine by adjusting the screws inside the foot(see 2.2.F.)follow instruction in the picture (see 2.2.E.).



2.2.E.



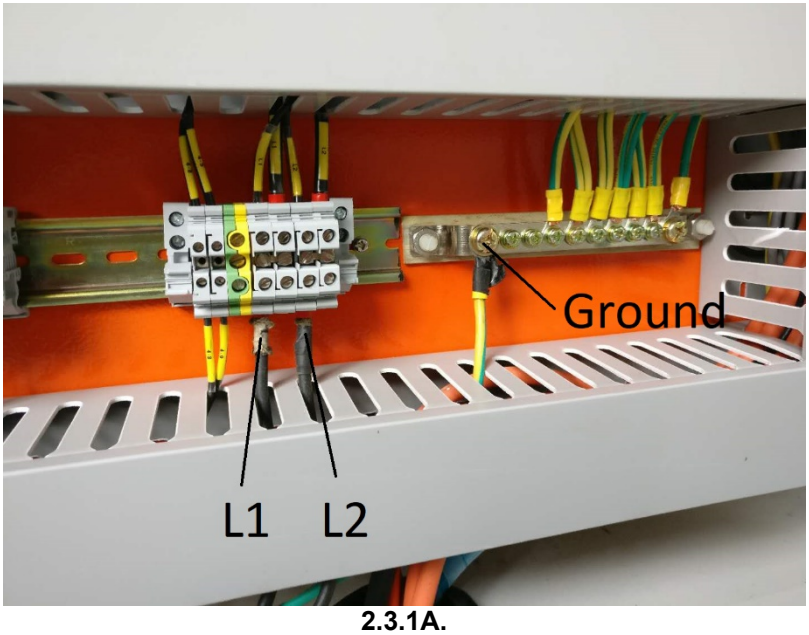
2.2.F.

Connect electrical power (chapter 2.3.1)
Connect water (chapter 2.4)
Then power on the machine (check chapter 3 of this manual).
If you encounter problems please check attached troubleshooting.

Machine is now leveled and safe to operate to work with, please refer to the CNC and CAM software manuals to learn how to program the machine.

2.3.1 Electricity

The EPR3500 can be powered by single phase 220V with neutral and ground, or 2 phase 110V with ground.



2.3.1A.

The main power supply has to be connected on the bottom right of the electrical panel.

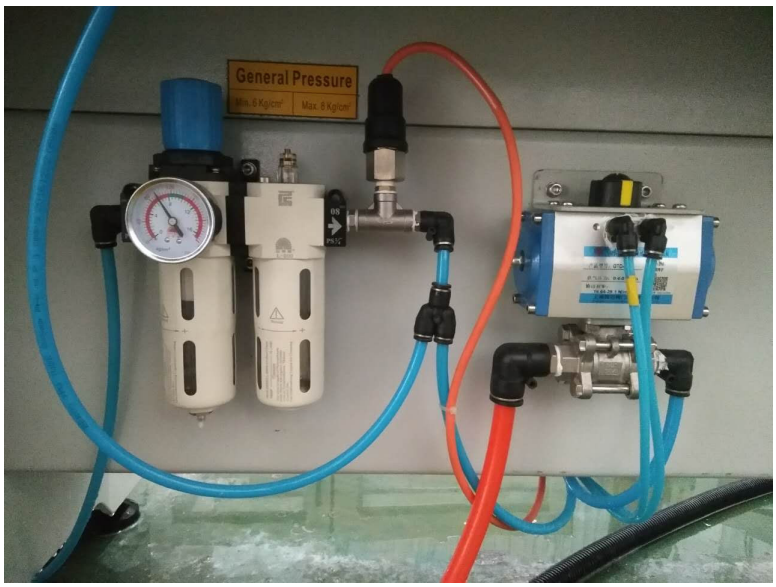
In case of single phase 220V connect the220V phaseto L1, the neutral to L2and the ground on the ground bracket.
In case of two phases 110V connect the two phases to L1 and L2, and the ground on the ground bracket.
Check power input to be from 220 V ±10%.
Always check the machine label to calculate proper amperage of machine to mount proper safety devices according to regional regulations, please trust label printed Voltage and Kw over this manual.
Before connecting the supply cable check that the main switch in electrical box is OFF and main supply is OFF.
The power source must have a residual current device according to local security law (normally 0,03 Ampere)
It is recommended to connect the machine to a separated ground, such as a 20mm ground rod into the ground.

ATTENTION: If the main motor round reverse, or the oil pump does not function properly even though it has been filled with oil, it is necessary to invert two of three cables of phases.

ATTENTION: Only the electricians can open the box and execute maneuvers or repairs

2.4 Water and Air Connection

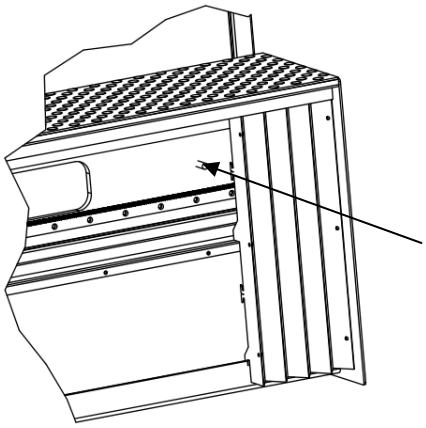
The machine main water supply has to be hooked up to the water valve, which is located under table of the machine on the right side of the electrical panel.



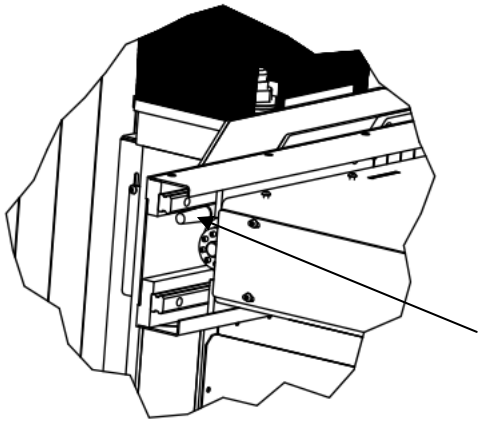
Make sure your connections are in conformitywith the local laws of security.
Connect the water directly to the water valve of the “EPR3500”.
The thread is a 1/2"female thread.
Water pressure: minimum 11Kg/cm2, maximum 2Kg/cm2.
The air supply is connected on the air pressure regulator on the left side of the water valve, the thread is 1/4” female thread.
Air pressure:minimum 6Kg/cm2 maximum 8Kg/cm2

2.5 Sensor placement

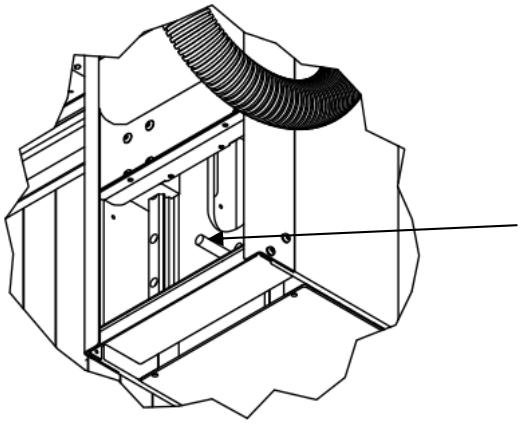
This is an explanation of where all the homing sensors on the machine are located
Joint0 X Sensor (remove the right bellow of X axis to access)



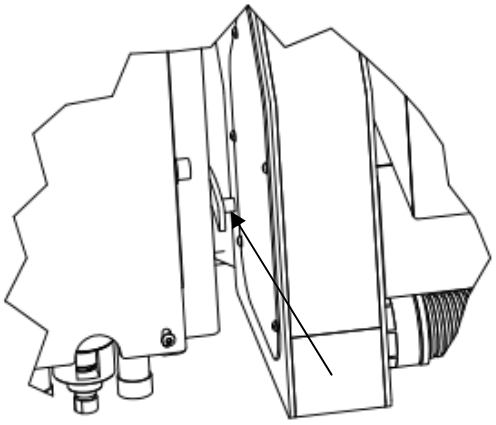
Joint1Y Sensor (remove thestainless-steel cover of Y axis to access)



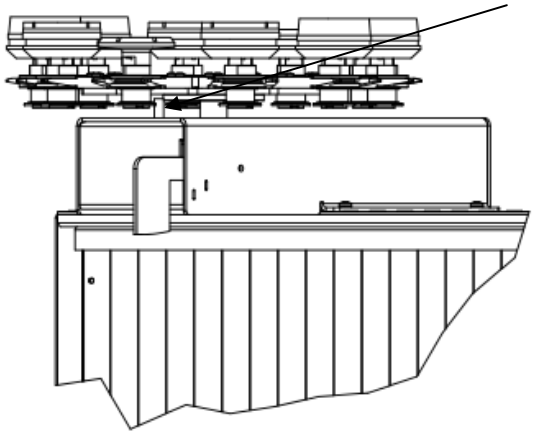
Joint2Z Sensor (Under the head, remove the bottom bellow of Z axisto access)



Joint3A Sensor (on the side of the spindle, open covers to access)



Joint4B Sensor (under the tool change carousel, need to take off the tool change bottom cover to access)



3. PUT TO USE

3.1. Preliminary controls

Installation and the first start of the machine have to be tracked or executed from AitalMAC technician. In the best way the technician of AitalMAC should collaborate with the technician of the customer who will have therefore possibility to acquire a maximum of information for working with the machine and maintenance subsequently. Before starting the machine it is necessary to make following checks to avoid errors or incidents during the starting of the machine:

- Check if the machine is not damaged after shipment or placement,
- Check (with a multi-tester) interconnection between the electrical box, control panel and other connections,
- Check connections of all external sources (water, electricity), check for leaks,
- Check the free movement and eventual free spin of all mobile parts of the machine.
- Make sure all axis can move and move in the right direction like indication on machine, contact factory if machine does not move properly.
- Check the correct function of X Y and Z the sensors (located where picture show paragraph 2.5), sensors are proximity sensors, use a metallic object and place it in front of the sensor to trip it, see in the machine CNC manual interface when the sensor trip a joint error will appear on screen. Contact factory if sensors are not tripping.

Turn the main-switch turn the “enable key” (see 3.3 (5)) on and push the “power” button (see 3.3(2)). If the power button does not lightplease check fuses inside electric panel.
Power on the Computer with the computer on/off switch (see 3.3), the EPR3500 program will start soon after the system is booted.

Press the switch on button on the interface  , if you are not able to move the machine and you are welcome by a “Joint0 on limit switch” error message, is because one of the limit sensors is on the limit, Joint0 will be X, Joint1 Y and Joint2 Z, to move the machine out of the limit, simply click the override limits check box on the right side of the interface, then press switch on button on software interface  , you will now be able to move the machine out of the limit with the axis buttons in manual page.

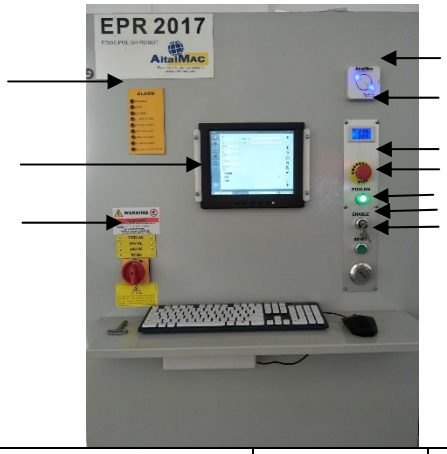
3.2. Switch on and home position

Before you start first working on the “EPR3500”, you have to find the machine home position by pressing the“Home All”button on the manual interfaceof theEPR3500 software.The machine will move Y axis first to be clear of any stone, then all other axis will move ad find each home position with the homing sensors, beware if machine was shut down during a tool change, move Z down manually to be able to move Y safely when homing.Please home the machine after any alarm shows up other than water alarm, after any accident where the machine is hit or hits anything, and after every reboot.

3.3. Description of the control board

Computer on/off switch
USB interface
Alarm
Volt-ammeter

Emergency stop
ScreenPower button
Enable key
Reset
General-switchSpeed control wheel



	(1) Screen		(2) POWER BUTTON to give power to the machine, the light indicate that the power is on
	(3) EMERGENCY STOP for stop the machine in emergency cases (on the control panel)		(4) General switch I\O selector for turn on and off the machine from the electric panel
	(5) Enable Key, to enable and disable machine motion, turning this key to the left (off) will turn off the machine and the power on button, and you will not be able to switch on the power until the key is to the right (on)		(6)Speedcontrol wheel for machine movements

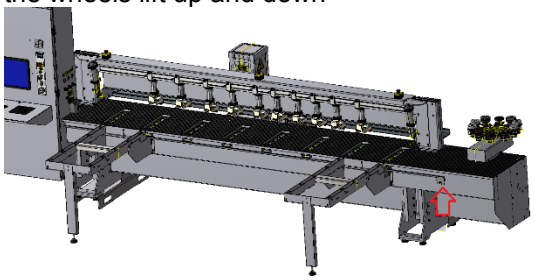
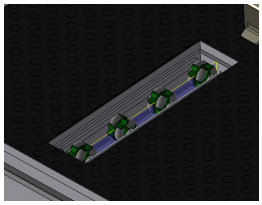
3.4. Starting the machine

- **Starting the machine.**

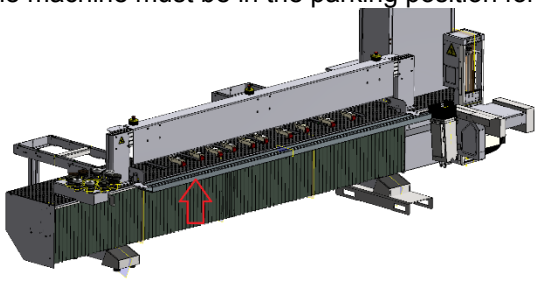
Switch on the PC turn the key to the right (on) and press the POWER ON button on the computer box (see 3.3)
Wait for the EPR3500 program to openand show you the manual page.
Click the switch on button on interface, and Home All.

3.5. Working with the machine

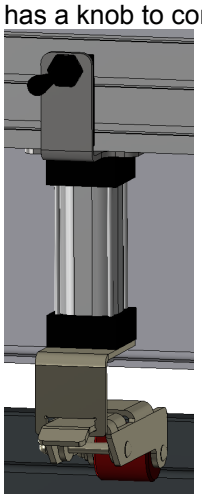
The operator of the machine does not require any particular technical ability, it is recommended for the operator to have polished stone manually and understanding the concept of different tool grits and different material tools, the operator must read carefully and understand the CNC program manualand watch carefully the video tutorials available online.
The machine was designed and constructed to shape and polishedges with flat tools on kitchen tops and vanity tops, to do this it's necessary to make a recipe for each tool to be used to shape and polish the edge of the stone, once the recipe is done it can be selected and started from the programs list.
First load the stone on the machine, use the retractable wheels to facilitate sliding of the stone on the machine table, there is a bar under the table that acts on a knob on the side of the machine to make the wheels lift up and down

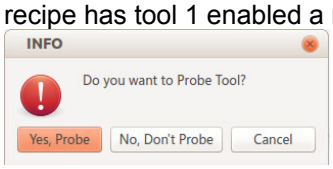
make sure the alignment stopper is down, use stopper button in manual page to control the stopper (the machine must be in the parking position for the stopper to work)



then you can push the stone to the stopper to line it up with the machine, once the stone is lined up lower the retractable wheels, then lower the cylinders to hold the part firmly to the table, each cylinder has a knob to control it.



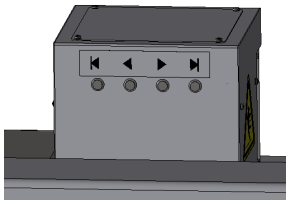
Then from the manual page then lift the stopper back up.From the automatic page select the recipe you would like to execute, you can click on the tool numbers to enable (green) disable (red) and apply manual tool change (yellow) on each of the tool recipes,when ready press start on the right side, if the recipe has tool 1 enabled a message box asking you if you want to probe will appear



If you choose ‘Yes probe’, the machine will pick up tool number 1 if not already loaded, then it will go to the probing position and probe the tool height, then the machine will move out and turn ready for manual probing of the stone length.
If you choose ‘No probe’, the machine will pick up tool number 1 if not already loaded, then the machine will move out and turn ready for manual probing of the stone length.
If you choose ‘cancel’ the machine will be stationary and wait for further input in the automatic page.

If tool 1 was not included in the recipe, another message will appear, this time asking if you really want to work this recipe, if Yes is selected the machine will pick up the first tool of the recipe if not already loaded, then the machine will move out and turn ready for manual probing of the stone length.
If you choose ‘cancel’ the machine will be stationary and wait for further input in the automatic page.

Once in the automatic page if you wish for the machine to probe the stone automatically, press the ‘auto probe part’ button, a window will pop up to ask you if you want to start after probe, say yes to start recipe execution after probing, no to probe the part and stop.
Alternatively, if you want to probe the part manually, in the case that not the whole length of the part has to be shaped, use the buttons on top of the head



The two buttons in the middle allow you to move X back and forth, if you did not cancel the tool will be in working height so you can see where the tool is going to work, then you press the left most and right most buttons to define the limits in between which the machine will work, after the limit is defined you can press start the recipe will be executed in between the limits.

3.6. Stopping the machine

Stopping the machine during automatic process

Press the Esc button on your keyboard to stop the machine (this will only work if the EPR3500program is active) or press the stop button on interface.
In case of emergency push the emergency button (3.3 (3))

Stopping the machine when finish working

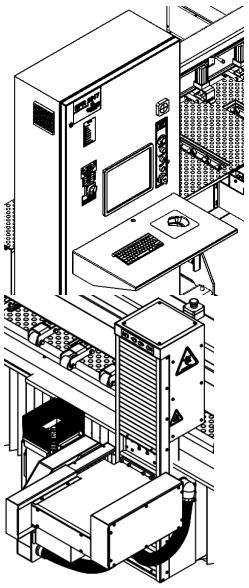
To stop the machine, use the emergency button (3.3 (3))then close taps (water and air supply). Then shut down the PC and turn off the main switch on the electrical box. If there is a risk that ambient temperature will go under 5°C (40 F) it is recommended to leave the machine on to avoid damage of electronic cards.

4. INTERPRETATION OF TERMS

4.1. Main switch

The main switch on the electrical box has to be switched on to start the EPR3500.You must power off the switch in order to open the door of the electrical box.

4.2 Control panel

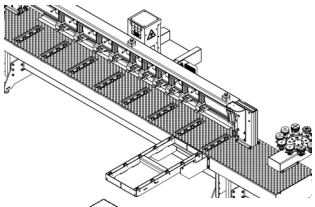


The control panel with his monitor isthe operator interface with the machine, provided with EPR3500program.
On the panel there is also an Emergency button, to press in case of emergencies, the machine enable key, and the power on button of the machine, on top of the emergency there is the power on button for the CNC controller, and on top of the screen you can find the alarm lights.

4.3. Head

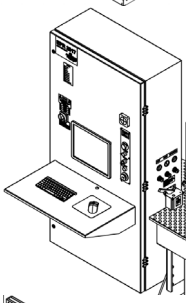
The head of the machine is the central part of the machine, the up and down movement of the head is the Z axis, the left and right movement is called X axis, and the back and forth movement is Y. A spindle motor is mounted on the machine head, and the spindle motor is equipped with automatic tool change capability and a pneumatic retraction and pressing system.the rotation of the main spindle motor around the X is called the A axis.

4.4. Table



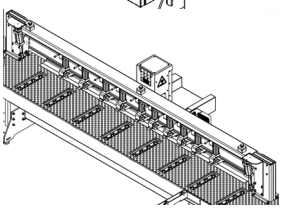
The table is in welded steel then milled flat, it is covered in black, the table has retractable wheels to help sliding the stone for proper alignment.

4.5. Electrical box



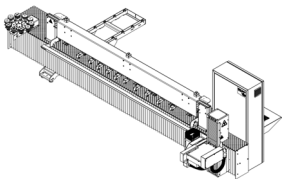
The electrical box is mounted in the left side of the machine,inside you can find all electricalcomponents of the machine, you should keep the door locked, and open only after properly powering off the machine from the main switch.

4.6. Pneumatic cylinder



10 pneumatic cylinder to hold the stone in position are included in the machine, they can be moved manually according to the position of the stone, and they are locked and released easily trough a manual knob valve.

4.7. Stopper

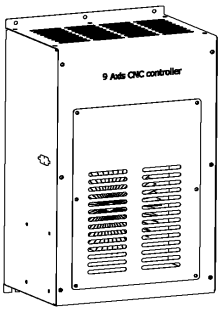


One long stopper is mounted on the bridge. This stopper allows the operator to align the stone with the machine to allow precise edge shaping.

4.8. Tool carousel

Included in the machine a tool carousel with 10 tool holders. The carousel is designed for fast tool change and it can spin 360°.

4.9. 9 Axis CNC controller



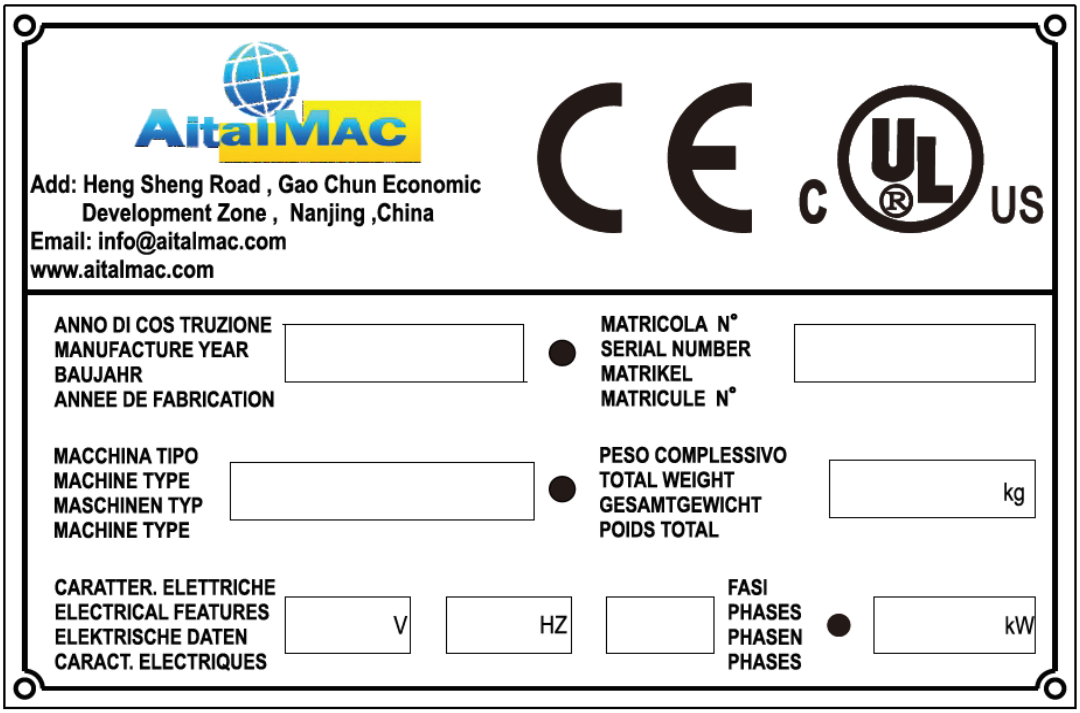
The9 Axis CNC controller is located inside the electrical box, it controls the whole machine, and displays the interface on the machine monitor

4.10. Grease pump for machine automatic lubrication

Use appropriate pump to fill the grease pumpwith #00 or #000. The machine will pump grease regularlywhen spindle is on.Please read carefullythe labels attached to the grease lubrication system before pumping new grease in.

4.11. Label

The label with data regarding the machine is situated on the right side of the EPR3500 electrical box. There are marked data which producer will ask for in case of complaint.



5. OPERATION

EPR3500 is controlled by software. Here, you can program all kinds of straight edges, place the stone you need to work on the table, and the head on the machine will polish the stone edge according to your programmed recipe.

5.1. Auto emergency

The auto emergency starts automatically and the machine controls it.
There are following auto emergency functions:

- The security stop of X (Joint0), Y (Joint1),and Z (Joint2) axis by sensors. If the axis reaches the limit positions the security sensor stop the machine in all its functions. The machine may stop also if the sensor is damaged.
- Driver alarms, all axis and spindle will stop the machine if in alarm.

The alarms are displayed with alarm lights on theEPR3500control box, each alarm has a red light signal the alarm state.

These alarms:
Emergency
Power
AirPress
X Driver Alarm
Y Driver Alarm
Z Driver Alarm
A Driver Alarm
B Driver Alarm
Spindle Driver Alarm

Will send the machine software in emergency state; the alarm must be fixed before continuing.
-Emergency alarm is on when the emergency button has been pressed,
- Power alarmis on when the key is not on the ON position, or the Power on button has not been pressed yet.
-DriverAlarms are the motor driver alarms, check the driver screen for more information on alarms, and consult troubleshooting.
-SpindleDriveralarm is the spindlemotor inverter alarm; please check the inverter for more information on the alarm and consult troubleshooting.
-Air Alarmis on when the air pressure is lower than 4-5 Kg/cm2.

The other alarms lights are only warning and will not stop the machine.

5.2. Manual emergency

The operator controls manual emergencies. If the operator notices any anomaly in function of the machine during the working he has to immediately stop the machine. In case of emergency press always any one of the emergency stop buttons (see 3.3 (3)). After finding and solving the cause of the problem the operator can restart the machine again (see 5.3.).

5.3. Restoration

To restart the machine, unblock (turn) the emergency stop button.
If the emergency situation come up while working it is necessary to Home again the machine, after home has been done,normal machining can be continued.

5.4. Reparations precautions

Attention: In case of detection of any anomaly or problems first of all check that the operator follows all instructions in this manual. In case of real problems all reparations have to be executed immediately

after finding the problem or anomaly to avoid increasing of problems or breaking of other components. In case of any reparation is necessary to switch off the main switch.

6. SAFETY

SAFETY DEVICES AND SAFETY INSTRUCTIONS:

6.1. Presuppose use

The machine is designed and constructed to shape and polish marble and granite, and synthetic quartz materials that replicate stone.
Thanks to easy programmable software with which the machine is supplied, operator can preset all necessary operations in short time.

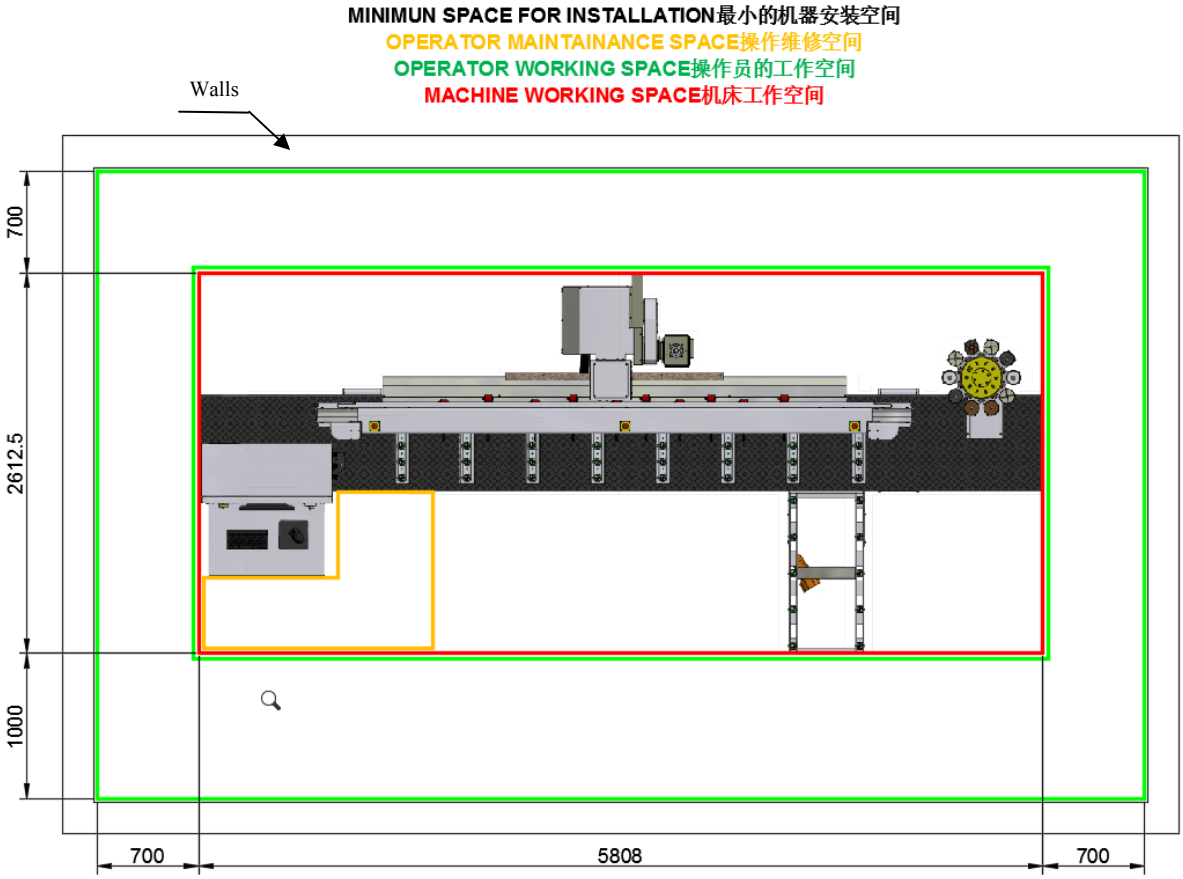
6.2. Forbidden use

The machine does not have to be used:

- For uses different from those present in chapter 6.1.
- In explosive, aggressive atmosphere or where is high concentration of powders or oil substances in the air
- In place with risk of fire
- In place with inclement conditions
- In place with electromagnetic radiation
- In place which not allow safe operating of the machine
- For machining of not suitable materials.

6.3. Dangerous zones

There are zones inside the machine, which contain shifting parts. It is dangerous to occur in this area during working in automatic mode (see 6.3.A.).

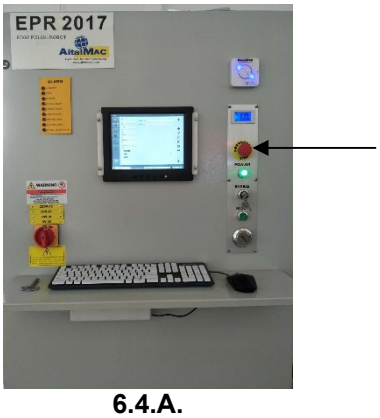


6.3.A.

6.4. Arrest functions

Functions of arrest of the machine are following:

- The main switch - general interrupting 3.3 (4)
- Emergency button3.3 (3)
- Key 3.3 (5)



6.4.A.

6.5. Security work

The EPR3500 is developed to eliminating all risks correlated to its use. But it is no possible to eliminate risks of eventual accidental contacts between the machine and hands of operator. Correlated residual risks would be cause of unskilled or uninstructed operator, they are following:

- Position - due to not correct position of the operator during operating the machine.
- Tangling up - due to incorrect working dress (or not opportunely adapted).
- Training - due to lack of the training regarding operating of the machine.

NOTE: To reduce all consequences of the aforesaid dangers is always necessary to follow all instructions in the manual in scrupulous way.

6.6. Residual risks

During the normal cycle of working and the maintenance the operator is exposed to some residual risk, which, for the nature of operations, cannot be totally eliminated.

6.7. Before you start:

- a new operator must always read the manual and get safety instructions from an experienced user,
- check always the electric connections on eventual damages,
- do always the daily checks before starting the machine,
- check always the safety devices:
  - Is the machine clean?
  - Nobody during repair or maintenance took off a piece of the machine?

6.8. Working:

- when operating machine beware you are alone in the machine vicinity,
- do not leave the machine when working automatically,
- look out for alarm lights on the electrical panel

6.9. After working:

- clean always the machine and his environment properly,
- switch off the machine with the main switch always when you stop working,

6.10. The workshop:

- the machine has to stand immovable,
- avoid cables and hoses being in the way.

6.11. Equipment:

- wear always safety shoes when use the machine,
- wear always safety gloves while loading and unloading the table,
- wear always safety gloves while controlling a work piece,
- wear always ear protectors while working with the machine

6.12 operator

The machine is constructed so that one operator can work with it.

- The operator has to be informed about all information necessary for operating the machine and trained for it.
- The operator has to study the manual carefully and understand it clearly.
- The operator has to be able to understand and interpret designs and outlines in manual correctly.
- The operator has to know all hygiene and technical norms and norms for safely working on the machine.
- The operator has to know the work environment of the machine.
- The operator must have experiences in work with natural and synthetic stone.
- The operator has to know what to do in case of emergency (where provide aids, how to use them).
- The operator must have adequate technical preparation.

7. TECHNICAL DATA

TECHNICAL DATA	EPR3500	
Min. Polish wheel diameter	mm	100
Max. Working length	mm	3500
Max. Working thickness	mm	70
Overall dimension	mm	5808*2612*2000
Travel in **- X axis**	mm	3800
Travel in **- Y axis**	mm	240
Travel in **- Z axis**	mm	480
Max rotation of **-A axis**	deg	180
Max inclination of **-B axis**	deg	any angle
Tool change positions	number	10
Main Motor Power	KW	2.2
	Poles	4
Main Motor Speed	rpm	0-3000
Max speed	m/min	0 - 70
Total Weight	Kg	2500(2.5 Ton)
Water consumption	L/min	10-20
	gal/min	1.5-2
Airpresurerequired	Kg/cm2	6
Max. Install Power	KW	16

8. SCHEMES

8.1 Electrical Schemes

Attached after the manual

8.2. Setting of motors drivers

Attached after the manual

9. SPARE PARTS

Attached after the manual

10. MAINTENANCE

Note: never use graphite grease to lubricate any part of the machine.

10.1. Cleaning

For clean the machine is necessary to obey all following points:
- use always protecting glasses, mask, and jackboots during purification of the machine,
- in case of using special cleaners or products (petroleum) use always protecting gloves,
- never use thinners or solvents on rubber parts of the machine,
- in case of using water for washing do not use hot water and keep out of electrical parts

ATTENTION: Before washing always unlink the machine from electrical source. Never wash the control board or interior of the electrical box with water. Do not wash the bellows the bridge or the head with water

Daily purification

After working switch off the machine and wash the table with water (use pressure pipe).
- clear away stone dust and abrasives from the table,
- clear carefully the floor under and around the machine,

10.2. Check EVERY DAY:

- THE TABLE:
  - see if the table is clean because the dirt on the table can damage the work piece.
- WATERLEAKS

10.3. Water

- check the main connection,
- check the water valve.

10.4. Electrical system

- check the main electrical-connection,
- check the electrical box on waterproof,
- check place where the display is mounted on waterproof,
- check all the functions of the machine,
- Check if the cables are on the right place, if there is no damage, replace in case of damage,

10.5. Mechanical parts

LUBRICATION:
- Tweak a couple of times the oil pump on the side of the machine.
- Check that the rails are lubricated, and are not rusted, if water is getting to the rails fix leaks

MAIN MOTOR:
- check the electric connection on waterproof

PAINTING
- Control if there is damage of paint, repair it.
- Rub all the painted parts in with petrol, it will avoid rust and the dirt will not stick to the paint.

PROTECTORS:
- check the protection cover of the head,
- check the bellows, they are protecting the ball bearing way,

11. DISMISSAL

By renewal of the oil the dirty oil has to be collected carefully (also in case of leaks) and send to a specialized company to recycle.

By total dismissal of the machine, it can be send back to the constructor who will take care of the dismantling and recycling.