Equipment for Stone Processing

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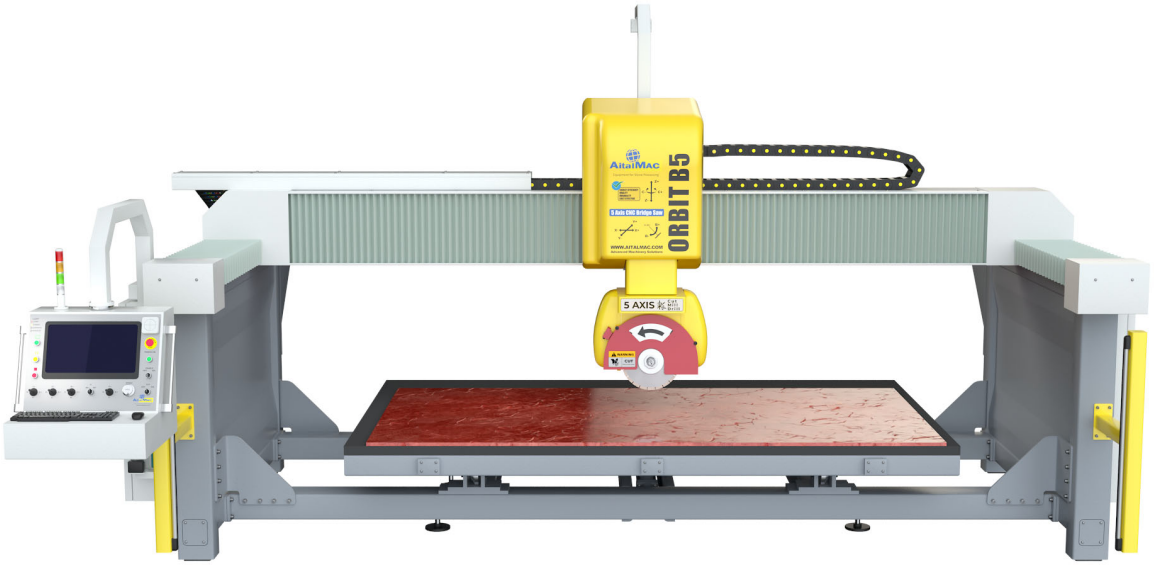

ORBIT B5 USER MANUAL

CUSTOMER	
SERIAL N°	
MODEL	
DATE	

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Preface

Congratulations, you have just bought ORBIT B5 CNC Bridge Saw. B5 is the latest product of our company. The appearance of the machine is stable and firm, and the sealing of the working space of the machine is safer.

The design of software is simpler, more convenient and more humanized. It is a new integrated software. I/O design let customer be more intuitive about the operation of the machine. When the worker use machine, it is more convenient for users to observe the operation of each part of the state, more convenient troubleshooting.

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

AitalMac

May ,2020

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1. GENERAL INFORMATIONS

1.1. Constructor.

The company AitalMAC has been constituted by Mr. Romeo Toniolo, which has big, long-time experiences 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

ORBIT B5 is a stone processing CNC Bridge Saw

Machine characteristics:
On the model ORBIT B5 the X and Y rails are made of Aluminum, the table of the machine is made of welded steel hot galvanized with a final coating of epoxide painting enamel, the upper side of the machine is made of powder coated welded steel.
The X Y Z B and C axis motors are AC brushless motor close-loop.
The Main Motor is a direct drive spindle with aluminum frame, it is compact in size but powerful, it has flanges to mount a blade Max Diameter 500mm, and a ½ attachment for drills and bits.
The cable-drag chain and the electric cables used on the mod. ORBIT B5 is purposely made for a use at high speed, and are resistant to dust and wear and tear.
All sensors used on the mod. ORBIT B5 are watertight.
The power electric box is positioned on the leg; the box is equipped with a 9 axis CNC controller, on the front side of the machine there is a monitor with user friendly software interface.
The water circuit for the cooling of the blade switches on and off automatically, when the machine rotates the B axis to 90 degrees the water will flow to the center of the spindle to enable cutting with drills or bits mounted on the ½ attachment on the spindle.
The machine is provided with an oil pump to lift the table up and down.

1.3. Certification "CE"

The CNC model ORBIT B5 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 documentation only 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 Aitalmac and its subsidiaries, affiliates, authorized resellers, or country distributors.
The term "CNC Machine" is limited to the hardware components, does NOT include applications or programs, third party products or devices without the Aitalmac brand.
The warranty period starts from the date of purchase, as indicated from the tax document or other such document.
In order to receive assistance in warranty, it may be required to provide proof of purchase.
To the extent permitted by local law, new machinery and any product or replaced component, may contain new materials or used with equivalent performance and reliability. Any replaced product or part will have same functionality or at least equal to the original product or component replaced. Replacement parts are warranted to be free from defects in materials and workmanship for a period of 6 months if greater than the 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 by this warranty, Aitalmac will repair or replace the product, but if Aitalmac requires the defective component to be returned, Aitalmac will have no obligation to repair, replace or refund until the defective part is returned.
In the case of recurring failures of components, Aitalmac at its sole discretion can decide whether to replace the product with one same or equivalent in performance, or refund the purchased price.

Exclusions

This limited warranty does not apply to consumables or to products which have been removed of serial number or have been damaged or rendered defective due to accidents, misuse, intentional misuse, contamination, virus infection, improper maintenance or calibration or inadequate or other external causes;
Also to software, interface, parts or supplies not provided by Aitalmac, improper preparation or maintenance on the site where the machine is installed, loss or damage in 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 to the use of third party tools, Aitalmac will charge the standard time costs and that of the materials for the intervention.
As a precaution against corruption or loss of data, back up periodically the data stored on hard drivers or other storage devices Aitalmac is not responsible for damage to or loss of any programs, data, or the restoration of any programs or data other than the factory software from Aitalmac.

Limitations of Warranty / Local Laws

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

Limitation of Liability

To the extent permitted by law, the remedies provided in this warranty are the sole and exclusive 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 on behalf of Aitalmac to the purchaser in relation to the purchase.
To the extent permitted by law, except for the obligations specifically set forth herein, in no event Aitalmac be liable for any damages caused by the product 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 been advised of the possibility of such damages. Aitalmac shall not be liable for any claim of reimbursment made by third parties or made by the purchaser on behalf of third parties.

Software Technical Support

Technical support for the software Aitalmac and third party software preinstalled by Aitalmac is available at Aitalmac using different contact methods, including electronic media 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 of operating 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.)
- Grease for grease pump, and table for the machine.

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 AitalMAC Company. 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 the technical staff that might be prepared personal of the dealer or distributor or authorized third parties.
The machine has no parts that are not replaceable by the customer himself, all parts are easy to replace.
Aitalmac does not consider correct for anyone in the distribution network, to add costs to the machine sales value, for assistance services.
Aitalmac considers proper to assist with technical staff if required, but for a fee, during or 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.

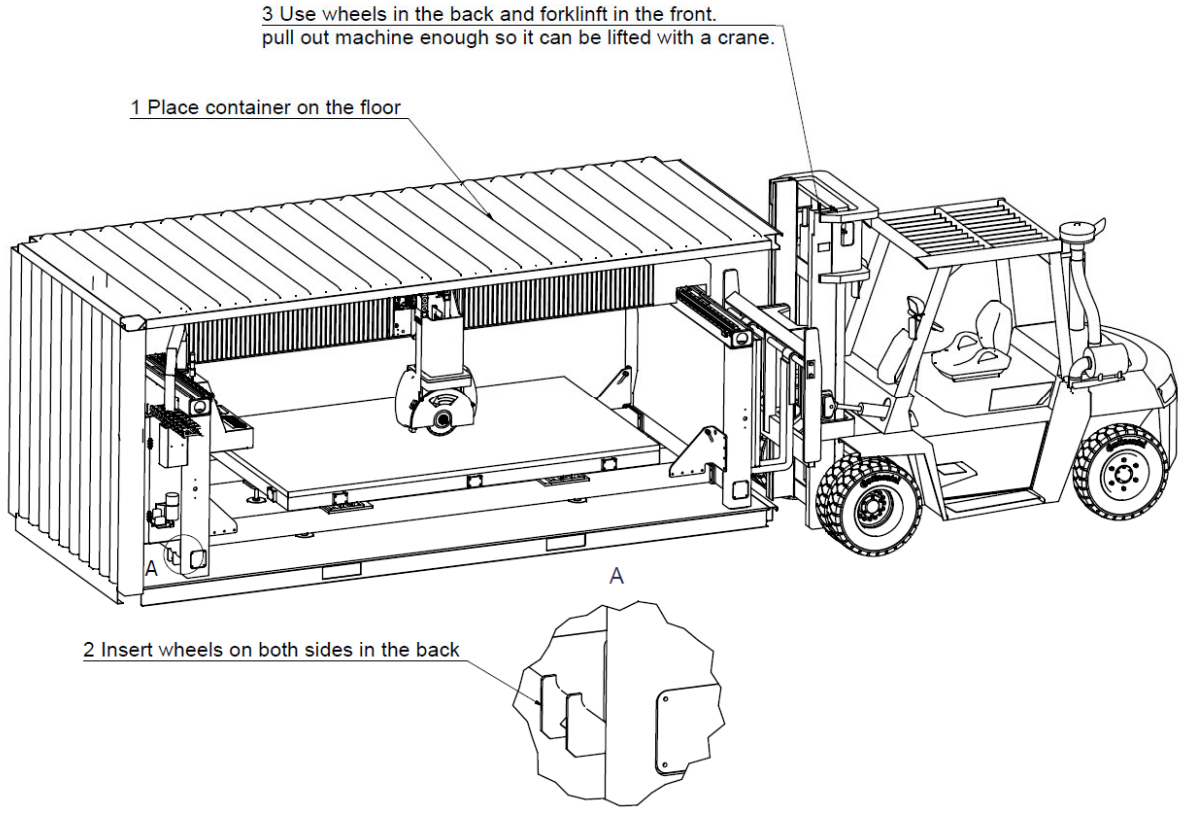
- **While lifting the machine beware:**
  - Your lifting equipment is supporting 5500 kg,
  - You are using only the lifting points,
  - When the strings are tight you will not damage any part of the machine.
  - Use forklift truck, from the side only when extracting machine from the container.
  - When 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.

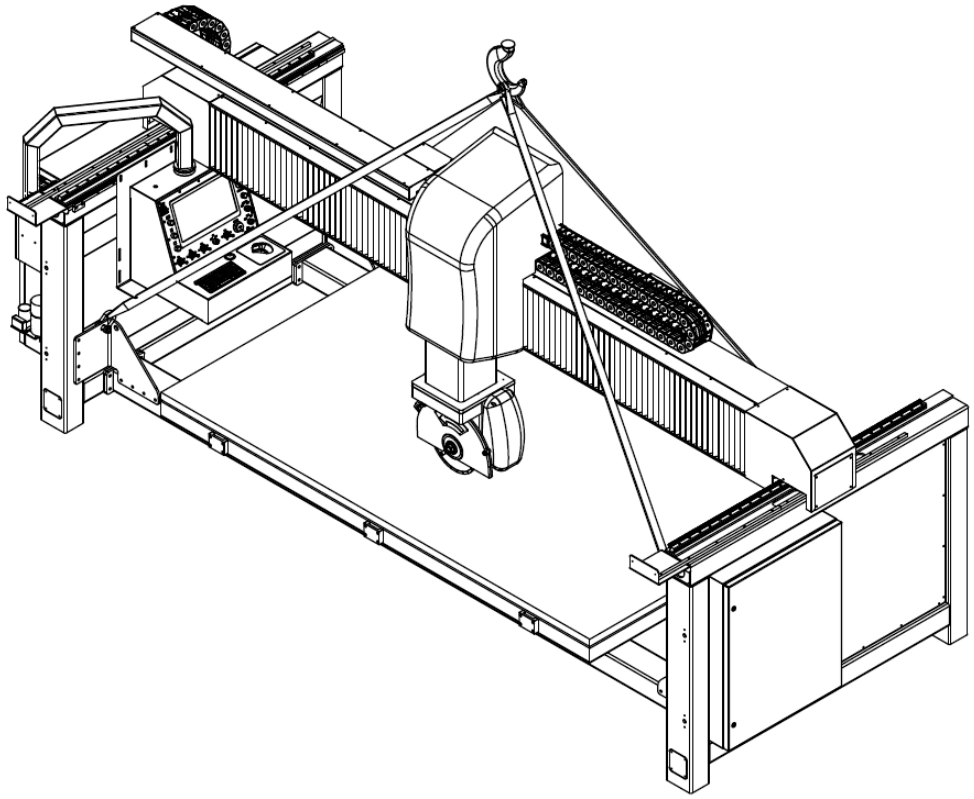
2.1.1 Lifting and handling

Place container on the floor, remove the turnbuckles fixing the machine to the container, lift the back of the machine with provided hydraulic jack and install wheels on the back of the machine, and extract the machine from the container using a forklift (5.5Ton at least) till the machine is out enough to be lifted with a crane



2.1.1A.

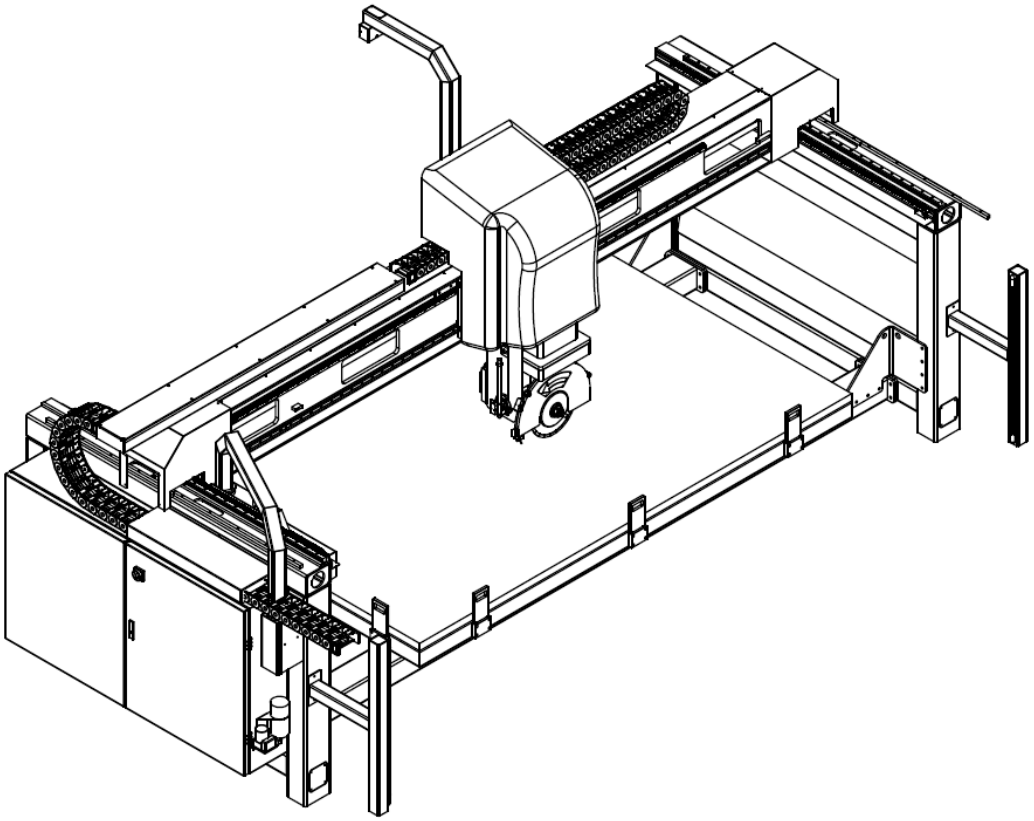
Use the appropriate hooks and holes to lift the machine with appropriate crane, be sure that your lifting belt or chain can hold the weight and see if the machine rests straight while lifting.



2.1.1B.

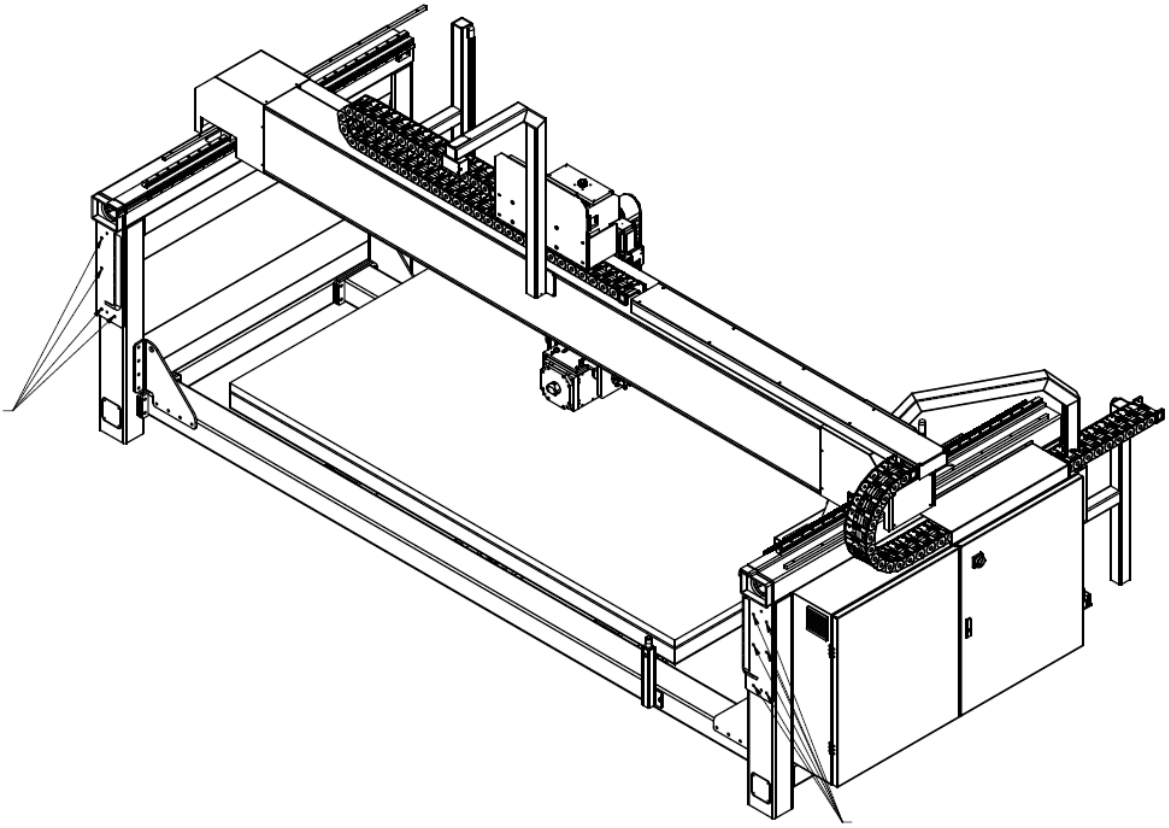
2.2 Machine Installation Leveling

Install the cameras and light screen sensor.



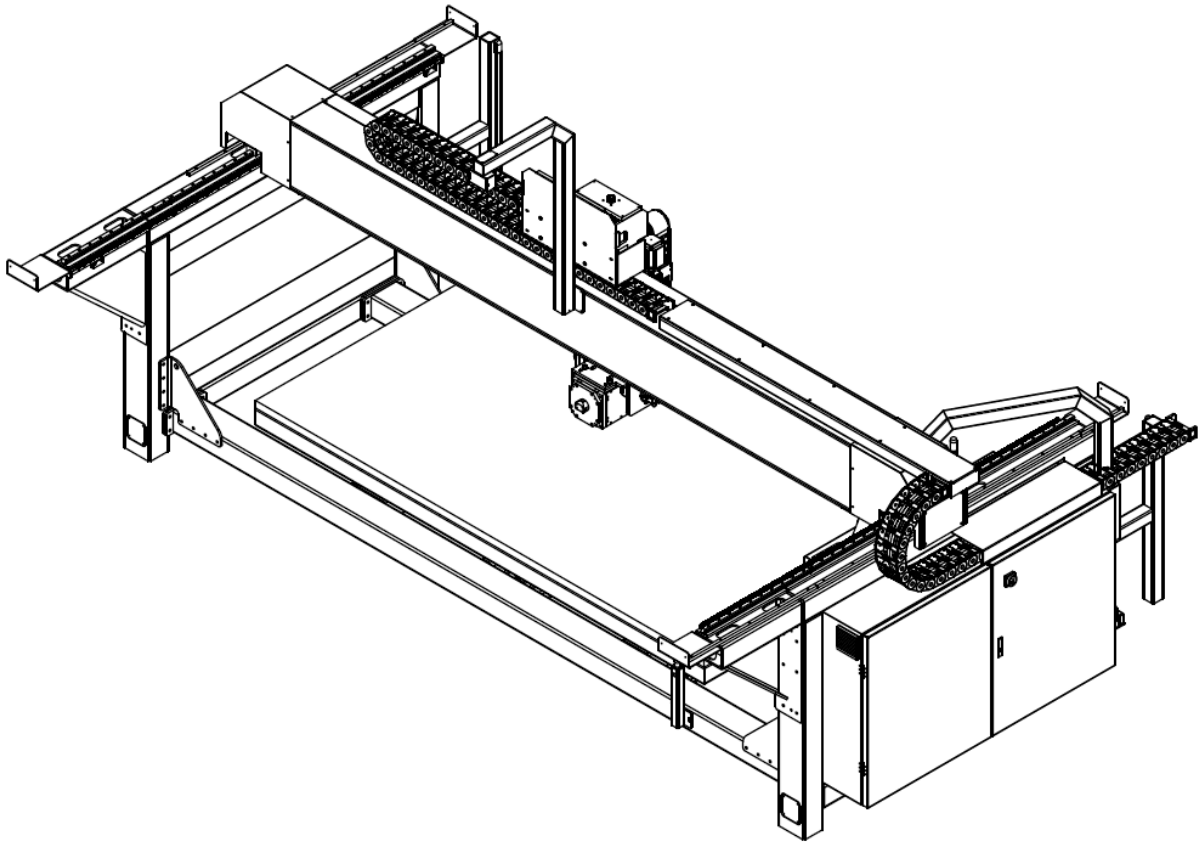
2.2.A.

Fit the back frame on both sides of the machine, and slide rail, rack, screw
Install screws in the picture below, these are the middle parts of the back frame and the main machine.
Insert bolts and washers like in this picture but do not tight them yet (see 2.2.B.)



2.2.B.

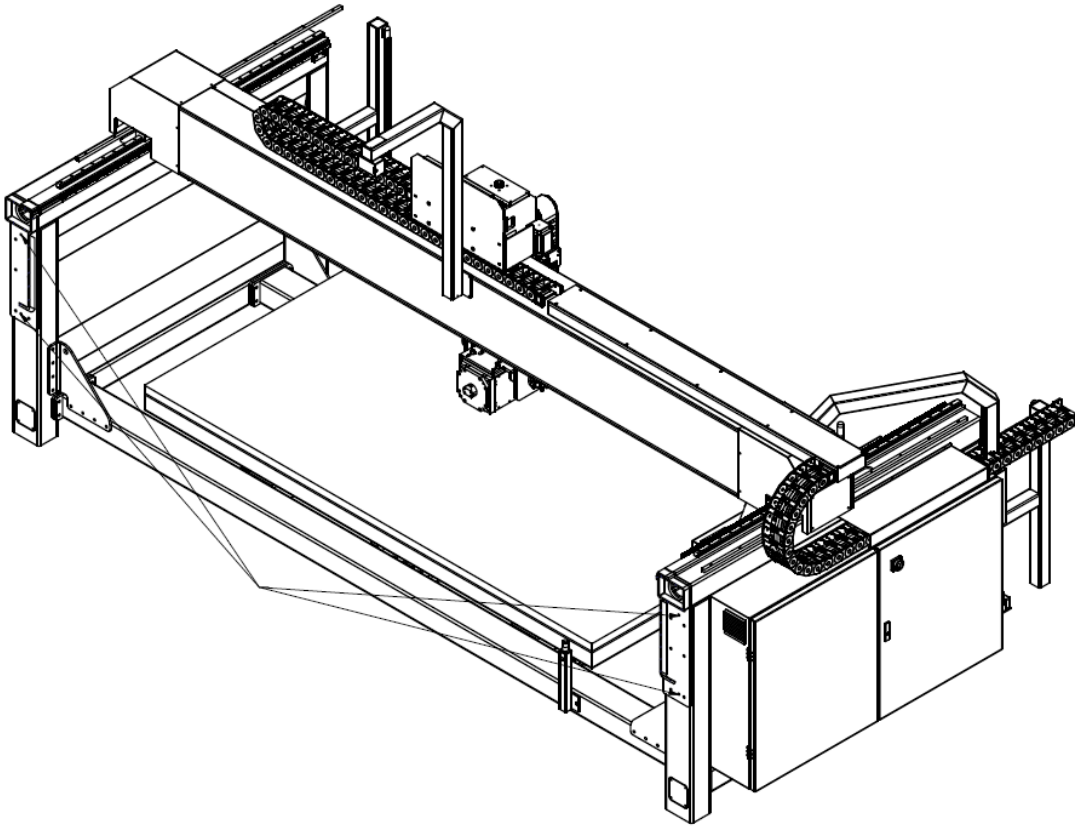
After the installation, you will see the machine as shown below



2.2.C.

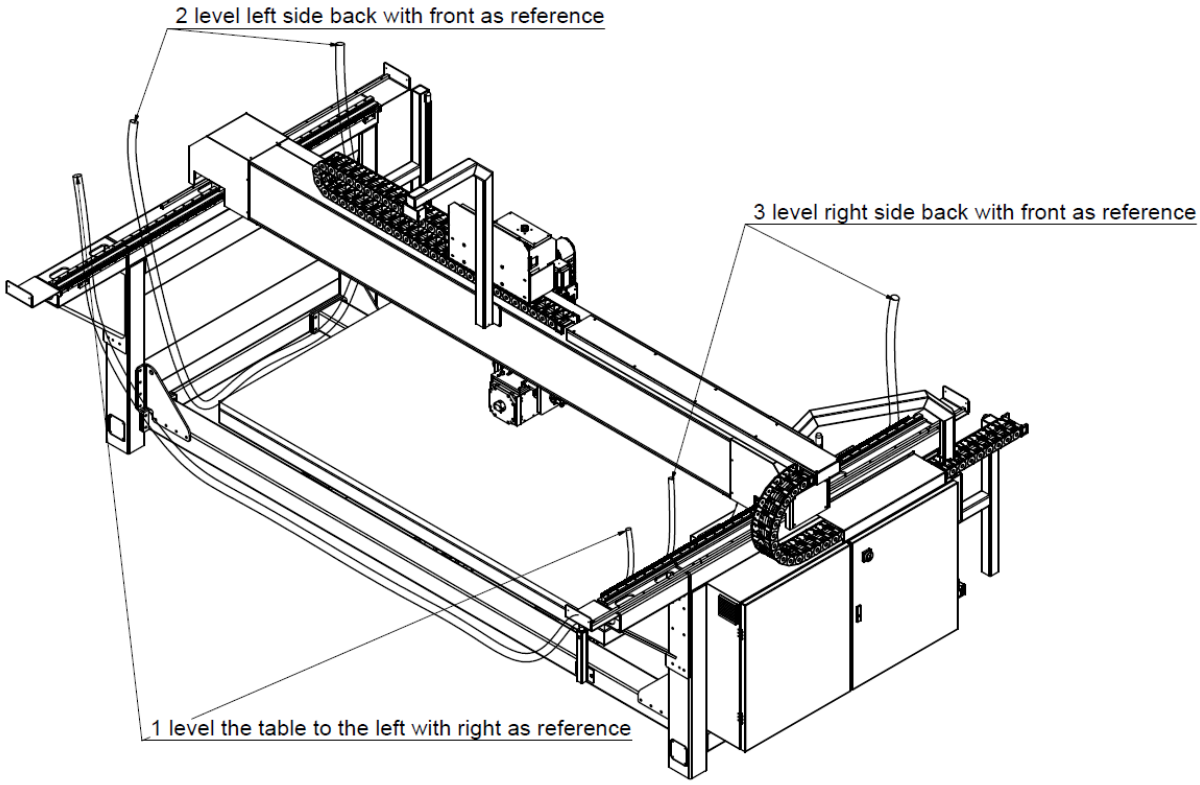
Find the four taper pins that were packed with machine

Look the two sides of the machine, find holes for the taper pins (see 2.2.D.), and hammer the taper pin inside to adjust perfectly the position, do this for the other holes.
After that, tight the screws that you left not tight (see2.2.B.)

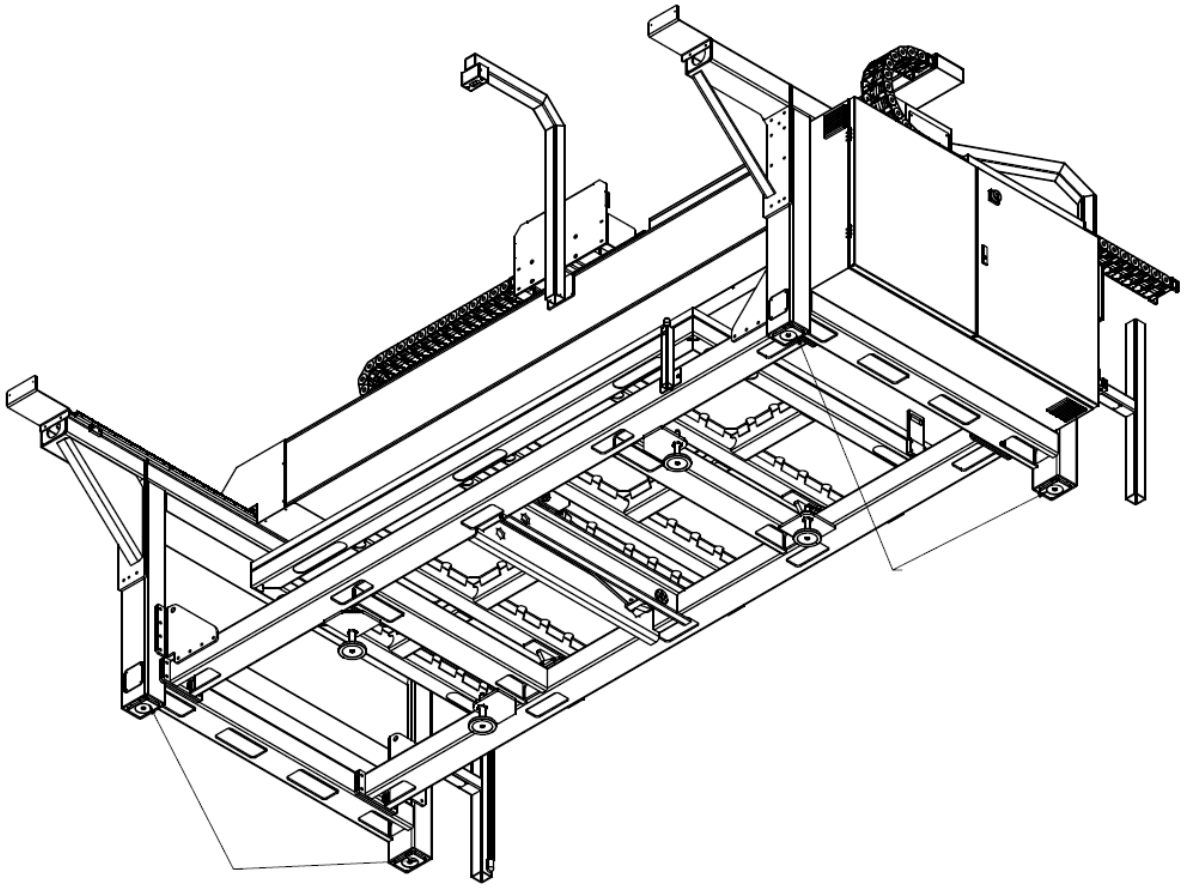


2.2.D.

Use water level tube 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.).

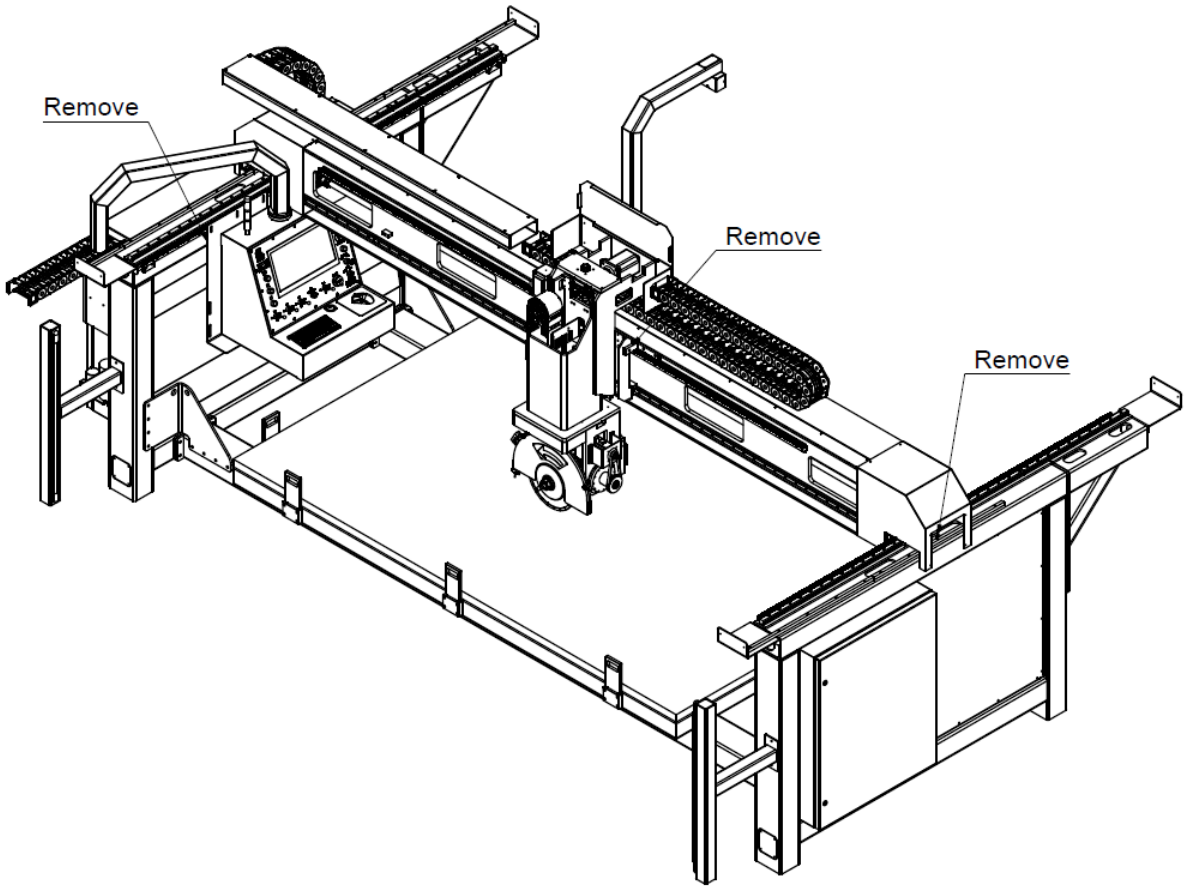


2.2.E.



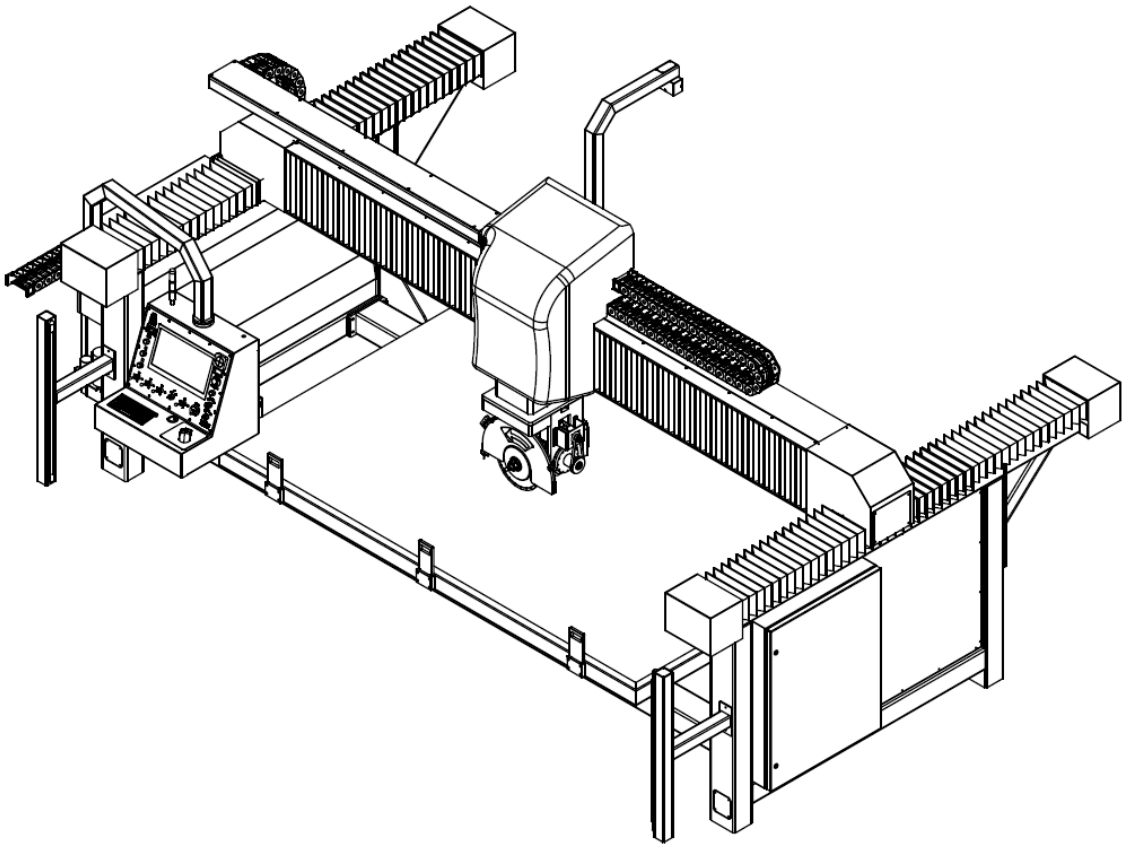
2.2.F.

After the machine is level, remove the X axis locking brackets used to fix the head of the machine, fix the X bridge, and fix the computer box.



2.2.G.

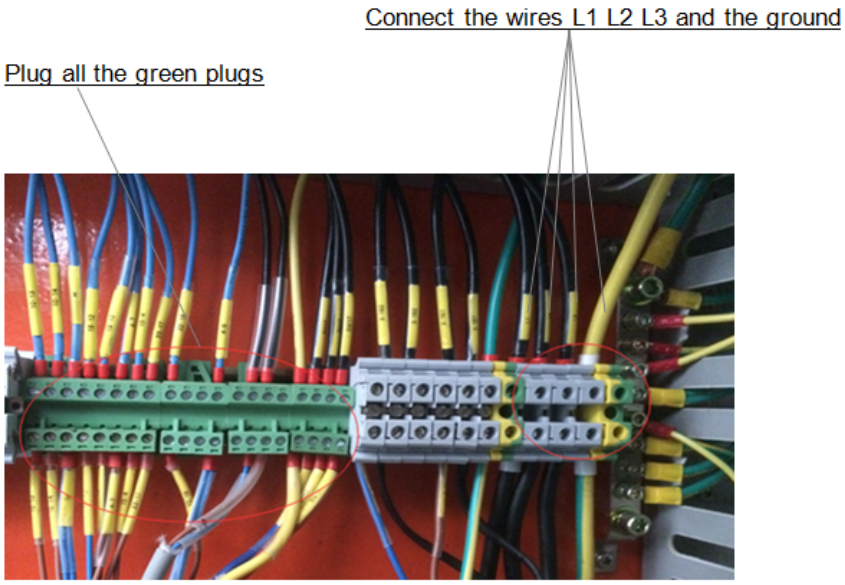
Install all cover and bellows. After the installation, you will see the machine as shown below.



Connect electrical power (chapter 2.2.1)
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.

2.2.1 Electricity

Find and plug all the green plugs for power, make sure the cables on the bottom and top plugs are numbered the same.



2.2.1A.

The main power supply cable (Orange), passes through the X axis cable chain, and connects to the machine here inside the front leg of the machine, the cable extends for 5m outside of the machine to allow connection to a main power supply.

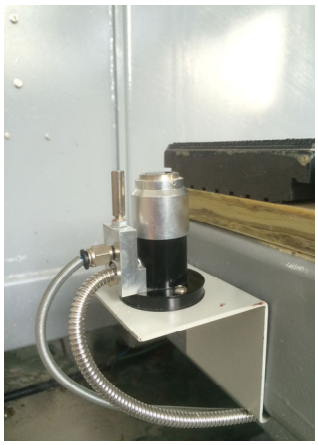
Connect the 3 phases L1 L2 L3, and the ground (PE green/yellow).
If for any reason you need to replace the cable of the machine, please make sure the cable is flexible and can work with cable chains, and make sure it's the same size or bigger than the one supplied.
Check power input to be from 220 V ±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

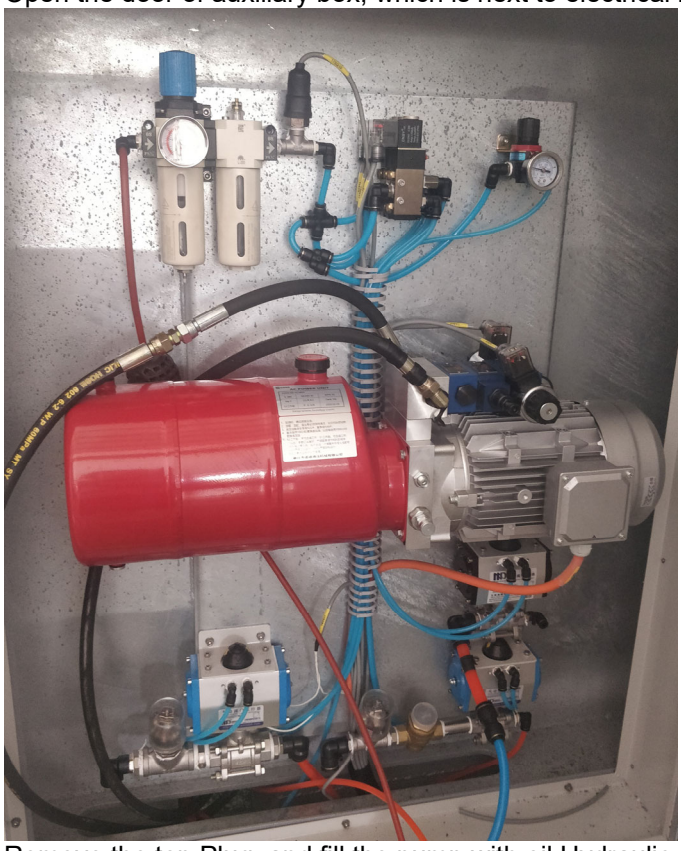
2.2.2 Position measuring instrument

Position measuring instrument installed on the back of the right side of the table, when install machine, Fix the removed screws at this position.



2.2.3 Hydraulic Pump and Oil

The Hydraulic pump is situated on the right side of the machine in auxiliary box.
Open the door of auxiliary box, which is next to electrical box, you will see it.



Remove the top Plug, and fill the pump with oil Hydraulic oil 46 (not supplied with machine), the plug is has a level gauge, use it to fill the pump properly; do not fill the pump completely full.

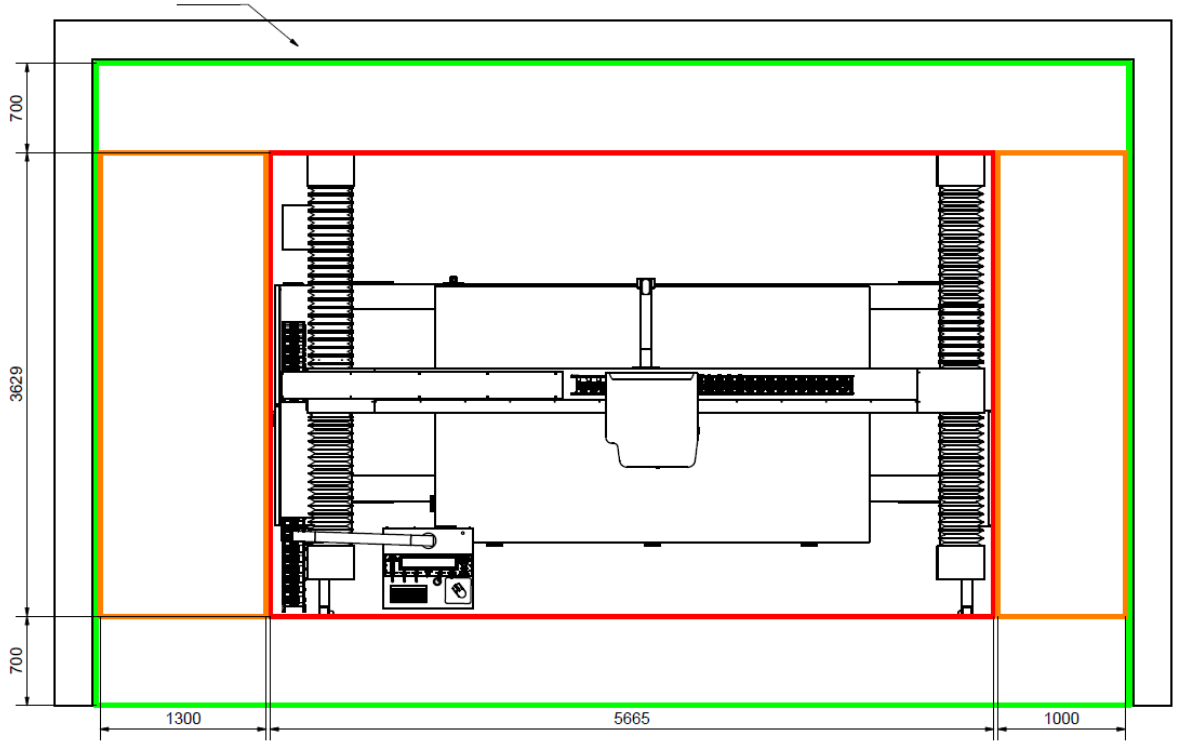
2.3. Placing + environmental conditions

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 “ORBIT B5” study the designs 2.3.A.and 2.3.B., make sure that the electrical box door can be opened to do maintenance.

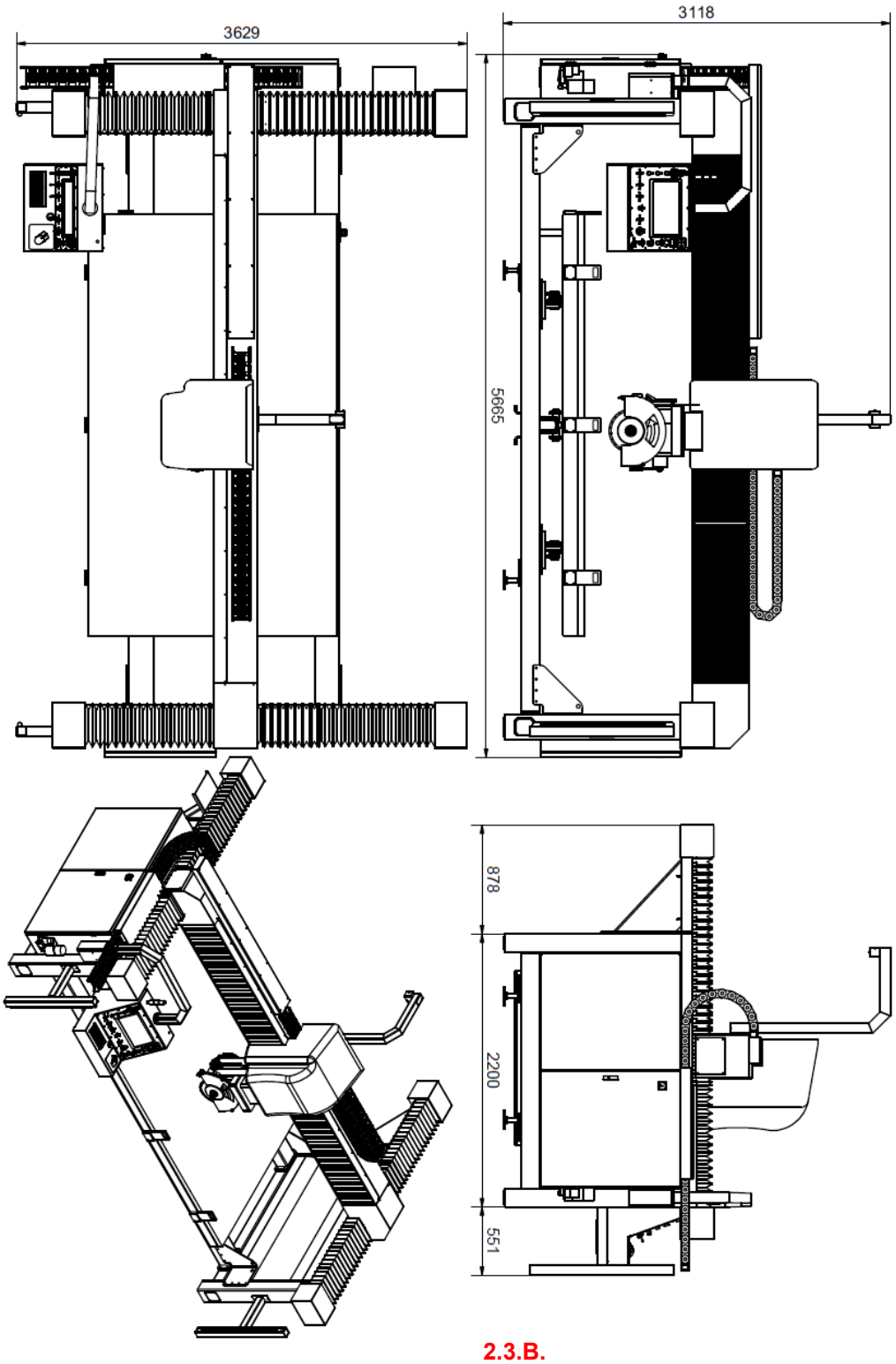
Control if the “ORBIT B5” is not moving while working..
The minimum temperature of the hall does not have to be less than 4/5 °C (40 F); the maximum temperature does not have to exceed 40 °C (104 F).

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

MINIMUM SPACE INSTALLATION
OPERATOR MAINTAIN SPACE
OPERATOR WORKING SPACE
MACHINE WORKING SPACE



2.3.A.



2.3.B.

2.3.1. 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 parts 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.

2.3.2. Vibrations

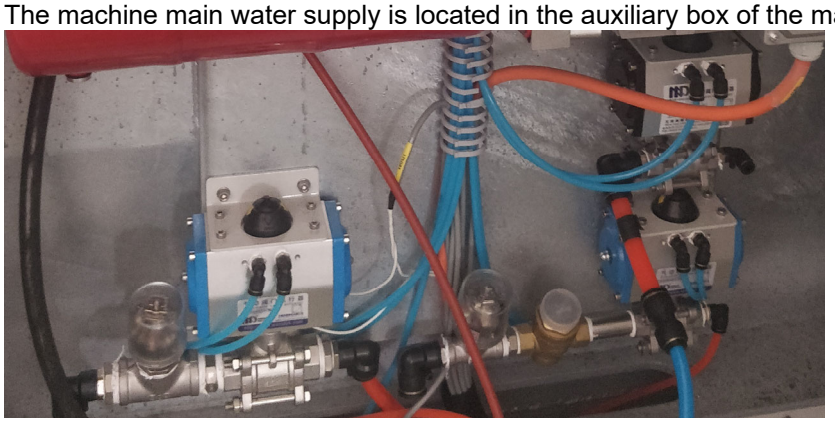
In consistent and correct way using of the machine, vibrations are not in such levels to create dangerous situations.

2.3.3. 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.

2.4 Water Connection

The machine main water supply is located in the auxiliary box of the machine.

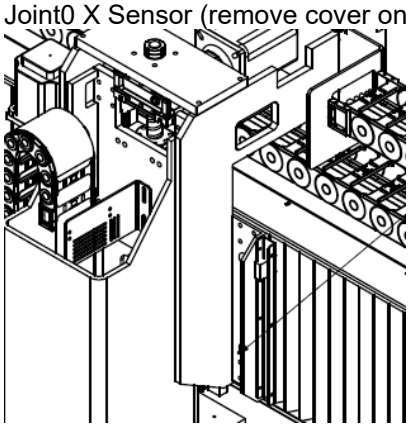


Make sure your connections are in conformity with the local laws of security.
Connect the water directly to the water valve in auxiliary box of the “ORBIT B5”.
The thread is a half inch NPT female thread.
Water pressure: minimum 2 bar, maximum 4 bars.

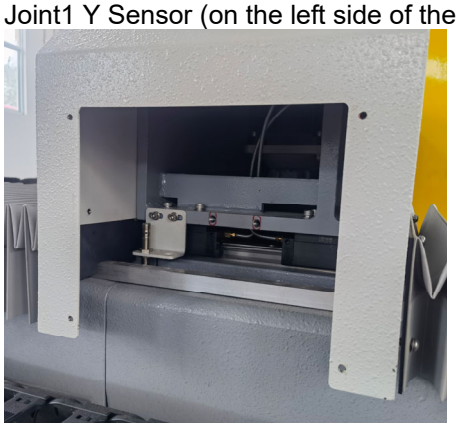
2.5 Sensor placement

This is an explanation of where all the homing sensors on the machine are located

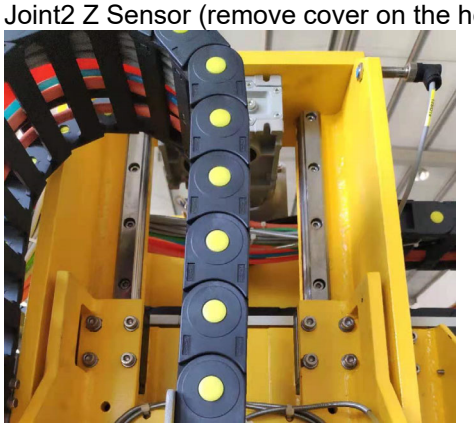
Joint0 X Sensor (remove cover on the head to access)



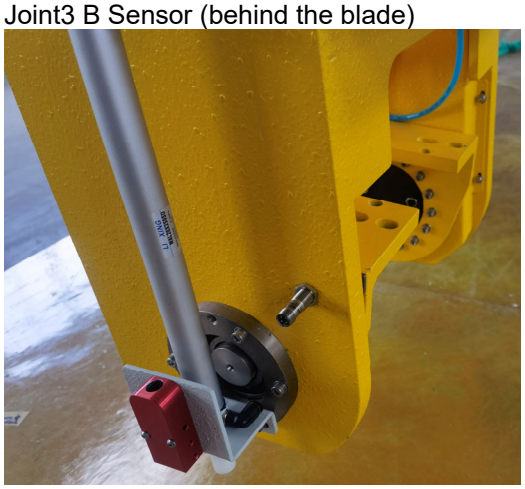
Joint1 Y Sensor (on the left side of the machine)



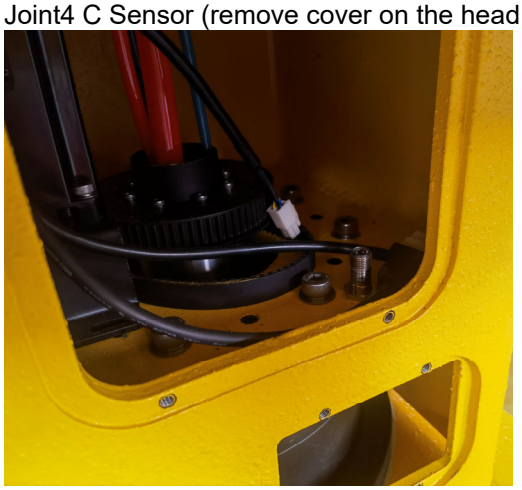
Joint2 Z Sensor (remove cover on the head to access)



Joint3 B Sensor (behind the blade)



Joint4 C Sensor (remove cover on the head 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 putting in the function 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 moves wrong.
- Check the correct function of all the sensors (located where picture show paragraph 2.5), sensor 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 there will be an arrow next to the displayed axis position. Contact factory if sensors are not tripping.

Turn the main-switch turn the “key” (see 3.3 (5)) on and push the “power” button (see 3.3 (2)). If the power button does not light please check fuses inside electric panel.
Also power on the PC, and double click on the Orbit B5 shortcut on the desktop to open the machine control program.

Press the switch on button on the interface Switch on , 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, Joint 3 is B, Joint 4 is C, to move the machine out of the limit, simply click the override limits check in JOINT part of manual page, then press switch on button on software interface Switch on , you will now be able to move the machine out of the limit, by clicking Select axis combo to choose one the axis and moving over with the MOVE+ or the MOVE- buttons.

3.2. Switch on and home position

Before you start first working on the “ORBIT B5”, you have to find the machine head position by pressing the “switch on” button on the main interface of the ORBIT B5 software .The device inside the machine will help the machine find its current position and the machine need not move. The home button is used after the machine has been used many times so that the location where the machine “switch on” button found is slightly deviation from the actual position. Press home button, the head will go up so that the Z axis can home, after Z has been homed all other axis home together. Machine will find home exactly.

3.3. Description of the control board

	(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) Tcp Knob,to enable and disable machine have many shaft linkage function, turning this knob to the left (off) will turn off the function and The machine move in one axis, and you will not be able to have Multi-axis motion until the knob is to the right (on)

	(7) AUTOMATIC BUTTON for enter the automatic functions		(8) PAUSE BUTTON for enter suspend state.
	(9) BUTTON for stop automatic		(10)Speed control button for the movement of each axis
	(11)		(12)
	(13)		(14) Angulation knob of B axis, there are three angles of choice，0° 45° and 90° . When the knob is rotated to 45 degrees, the B axis will rotate 45 degrees downward

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)
Open the CNC program and open the manual page.
Click the switch on button on interface.

3.5. Working with the machine

The operator of the machine must have pre knowledge of a CAD program, the operator must read carefully and understand the CAM and CNC programs manuals, and watch carefully the video tutorials in the machine PC.
The machine was designed and constructed to cut kitchen tops and vanity tops, to do this it's necessary to design the shape of the sink in a CAD program and save it as a DXF file (Draftsight a free CAD program is provided in the machine PC), then import the DXF in the CAM program, and setup the blade cuts to cut out your designed parts, then export the cuts g-code.
Open the CNC application and home the machine, from the automatic page load and start the vacuum
Use the table up and down buttons in manual page under table tab to lift table and load the stone, then lower the table, and start the cut out g-code to let the machine cut the stone automatically.
The stone can alternatively be cut with manual operations from the CNC application only, or with simple X and Y cutting pages also in the CNC application to cut lines only.

3.6. Stopping the machine

Stopping the machine during automatic process

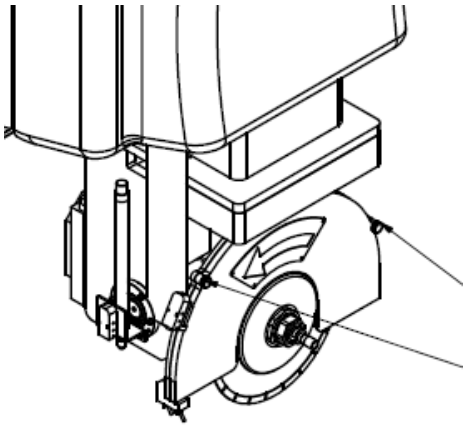
Press the Esc button on your keyboard to stop the machine (this will only work if the Orbit B5 program is active), or press the stop button on interface.
In case of emergency push the emergency button (3.3 (3))

Stopping the machine when finish working

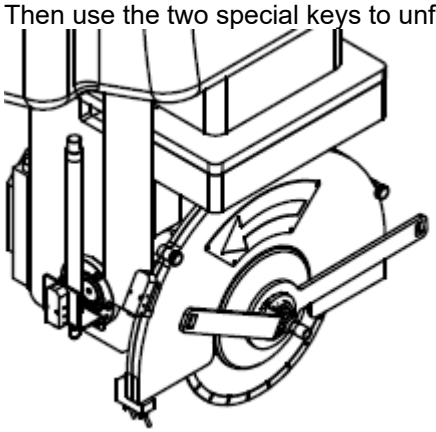
To stop the machine use the emergency button (3.3 (3)) then close taps (water and air supply). Then shut down the PC and turn off the main switch on the electrical box. If there is a risk that ambient temperature will go under 5°C (40 F) it is recommended to leave the machine on to avoid damage of electronic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

3.7. Manually change tool on machine

To manually change blade tool please unfasten the knobs holding the cover for the blade, and take off the cover.



Then use the two special keys to unfasten the nut (counterclockwise)



Once the nut is unfastened, pull out the flange and the blade, and load the new blade, the blade mounting shaft diameter is 50mm, once the new blade is loaded, put back the flange, fasten back the nut, and mount the cover and lock it with its knobs.

4. INTERPRETATION OF TERMS

4.1. Main switch

The main switch on the electrical box has to be switched on to start the ORBIT B5.You must power off the switch in order to open the door of the electrical box.

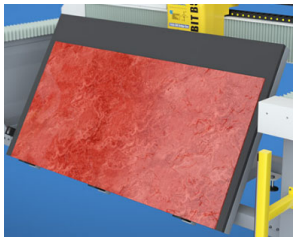
4.2 Control panel

The control panel with his monitor is the operator interface with the machine, provided with Pegasus and ORBIT B5 programs.
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. On left of the screen there are three colors of buttons. The green button is automatic button. The yellow button make the machine enter suspend state. The red button is used to stop. There are also controls at the bottom of the screen. The angulation knob of B axis knob is in the center. Speed control button is on the left of TCP knob.

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 back and forth movement is called Y axis, and the spinning of the head around Z is called C axis, the inclination of the blade up to 90 degrees is called B axis.
On the machine head is mounted the spindle or main/blade motor, on which the diamond blade is mounted to cut stone.

4.4. Table



The table is in welded steel, but it will be covered in either wood cement or rubbers or plastic materials according to customer discretion, the table can be lifted up to allow easy loading of the stone slab.

4.5. Electrical box

The electrical box is mounted in the left side of the machine, inside you can find all electrical components of the machine, inside you will find also the 9 axis CNC controller, you should keep the door locked, and open only after properly powering off the machine from the main switch.

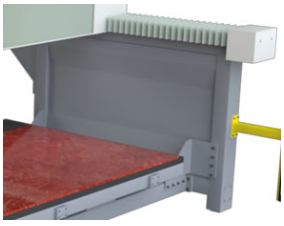
4.6. Auxiliary box

The auxiliary box is in the right side of the machine. The auxiliary box has hydraulic pump, water connection, air pressure meter, the lubrication system and so on. Some auxiliary equipment of the machine is inside.

4.7. Bridge or X bridge

The bridge of the machine is supported by the shoulders, the head of the machine slides to the left and right on the bridge, this movement is called X axis which is controlled by joint 0 motor.

4.8. Y rails, or Y ways

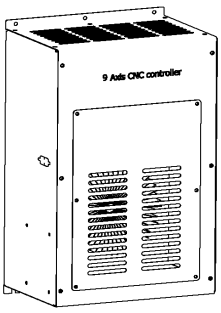


The Y rails are located up the two sides of the machine, and on the shoulders of the machine slide forward to backward, creating the Y axis movement.

4.9. Feet

The feet of the machine are the parts that four on the floor .The machine have six feet. There is screw inside the foot that can adjust the length of the foot. The machine placed throughout the ground level is not necessarily identical, so adjust the height of the foot makes the machine frame and the table horizontal.

4.10. 9 Axis CNC controller



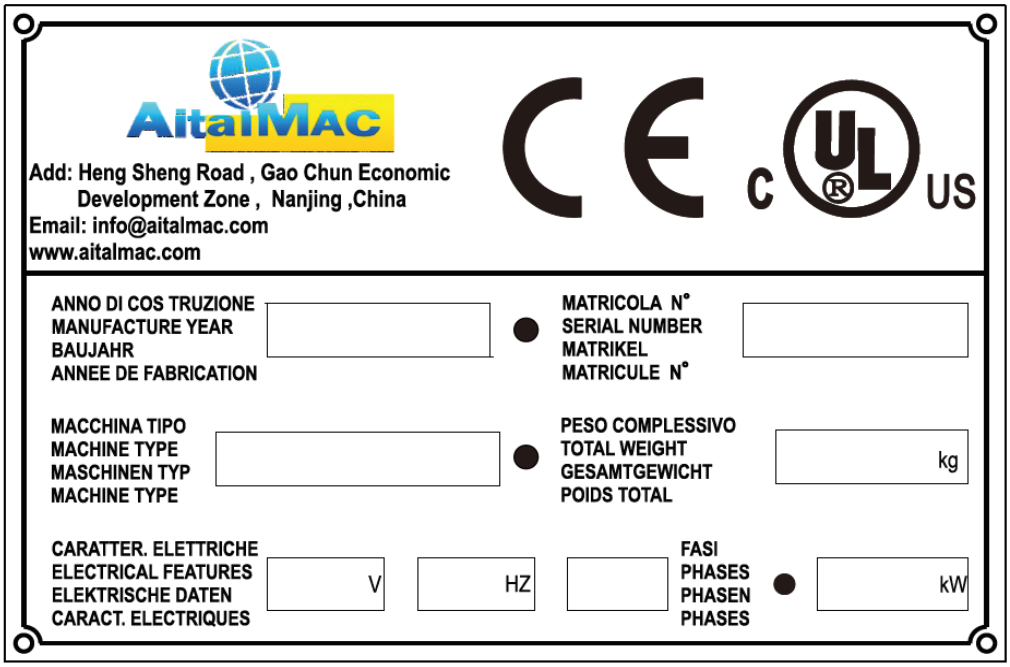
The 9 Axis CNC controller is located inside the electrical box, it controls the whole machine, and sends the interface on the machine monitor

4.11. Lubrication

Use a professional machine to put grease into the grease system and machine will pump grease regularly when spindle is on. The Orbit B5 program has been set how to pump grease. Caution Labels are attached to the grease lubrication system. Please read it carefully.

4.12. Label

The label with data regarding the machine is situated on the right side of the ORBIT B5, on the top of the electrical box. There are marked data which producer will ask for in case of complaint.



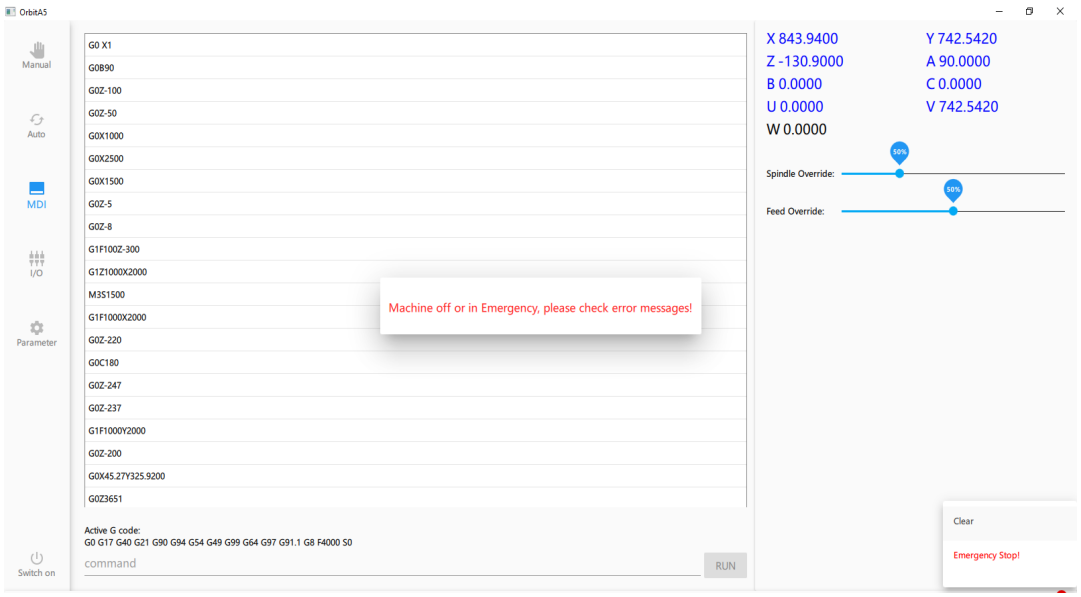
5. OPERATION

The ORBIT B5 can be operated from the CNC only in Manual or Simple linear cut mode, or it needs to be programmed i to process fully automatic job. The CAD (DraftSight or any CAD) is used to draw the shapes the machine has to work. The CAM (AitekCAM or any other CAM with appropriate post processor) is used to program the cuts on the CAD shapes, and saves them as g-code. The CNC program is used to play this g-code on the machine, the CNC program can also move the machine in manual, or start simple linear cuts.
Parts on the ORBIT B5 sit on the machine table; the parts are located on the table either by measuring off the table and use the table in the CAM as reference, or by acquiring the location with the laser pointer on the machine. Optionally the machine can be mounted with a camera that will photograph the parts and display their location in the CAM interface.

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), Y1 (Joint1), Y2 (Joint7) 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 on the alarm message in the CNC program, each alarm has the alarm reminder message to signal the alarm state. The Alarms are displayed in the CNC program interface in the form of presentation information. If appears alarm message, the alarm is active.
These alarms:
Emergency Stop
Power Off
X Driver Alarm
Y1 Driver Alarm
Y2 Driver Alarm
Z Driver Alarm
C Driver Alarm
B Driver Alarm
Spindle inverter Alarm
Air Alarm
Hydraulic Pump Thermical Alarm
485 Card1 Communication Lost
Ethernet Card Communication Lost
PCI Card Communication Lost

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, or the key is not on the ON position, or the Power on button has not been pressed yet.

-Pump motor Alarm is the thermic alarm of the oil pump motor, if this is on turn off the machine, open the electrical panel, and reset the thermic, if the alarm keeps coming back contact technical assistance.

-Driver Alarms are the motor driver alarms, check the driver screen for more information on alarms, and consult troubleshooting.

-Spindle inverter alarm is the blade motor inverter alarm; please check the inverter for more information on the alarm, and consult troubleshooting.

-Air Alarm is the air pressure alarm. Generally, the air pressure is lower than the normal air pressure setting range, air alarm will have. Check whether the air pressure valve has been opened or the normal range value is set correctly. The normal air pressure setting range is 5-8 bar.

-485 Card1 Communication Lost is 485 communication problems. Restart computer and check it. If also like before, the device may be broken contact technical assistance.

-Ethernet Card Communication Lost comes on when the communication has problem. Restart computer. If the problem still exists, find technical support

-PCI Card Communication Lost is PCI communication problems. Restart computer. If the problem still exists, find technical support

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

-Table opened alarm comes on when the table is opened, it will prevent the axis from moving, but it will allow the table down button to be pressed, it is also still possible to home, so that the table down button can be enabled.

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 emergency stop button (see 3.3 (3)) on the control board. 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, the operator can start the g-code from the beginning. Or make a new program that excludes the already processed cuts.

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 has 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 make necessary operations required for machining 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

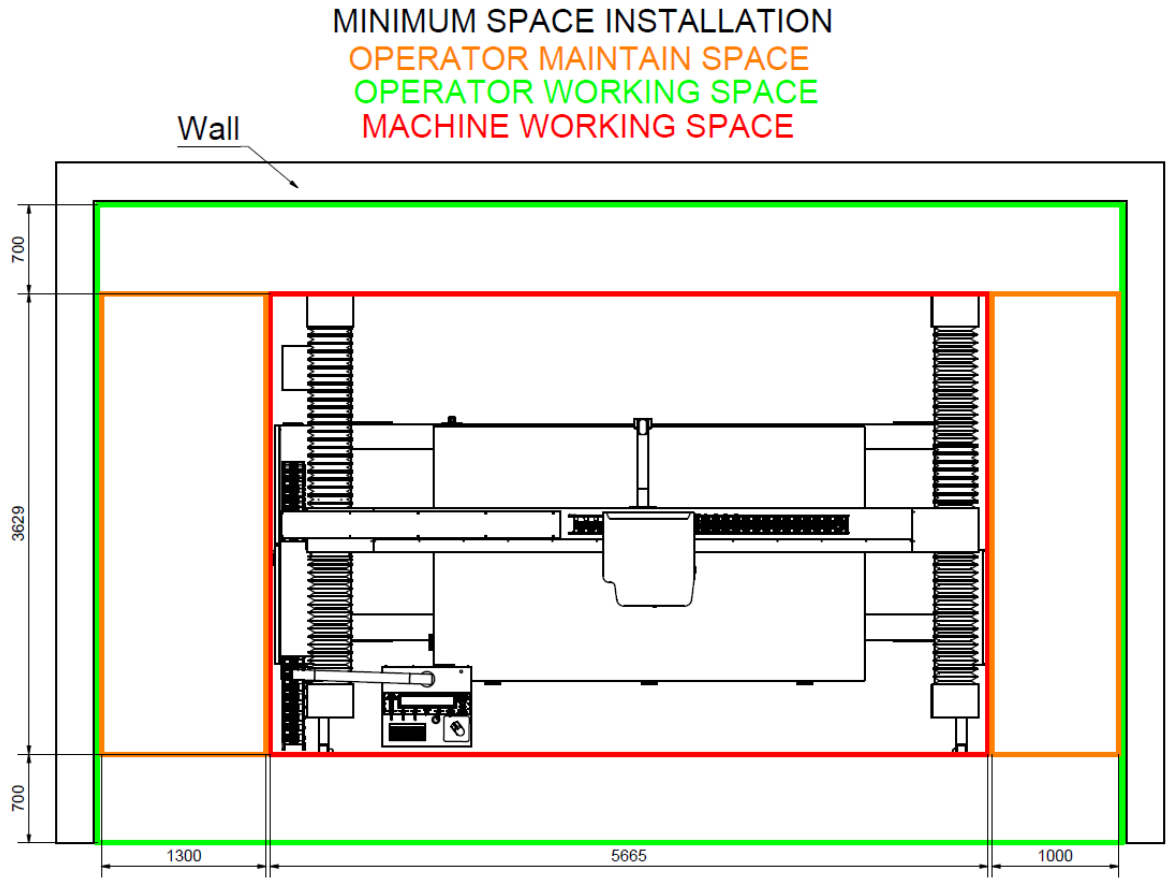
The machine does not have to be used:

- 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.).

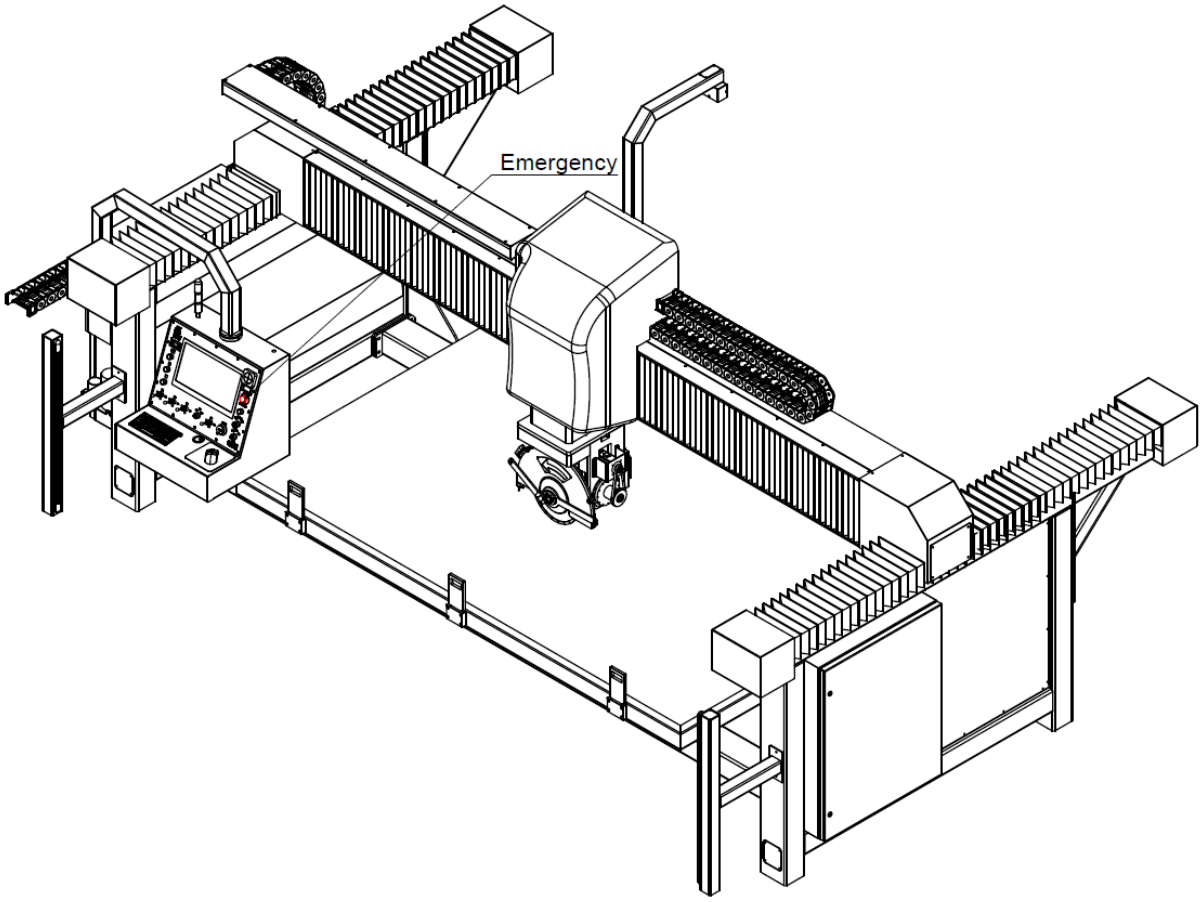


6.3.A.

6.4. Arrest functions

Functions of arrest of the machine are following:

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



6.4.A

6.5. Security work

The ORBIT B5 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 habituate 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?
  - Is the remote control on the right place?

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 the signal of main SIGNAL-LAMP
  WHITE: the machine is in line,
  YELLOW: the machine is in standby,

GREEN: the machine is in automatic function and working!
RED: the machine has stopped, there is a problem!
ALL OFF: CNC OFF!

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

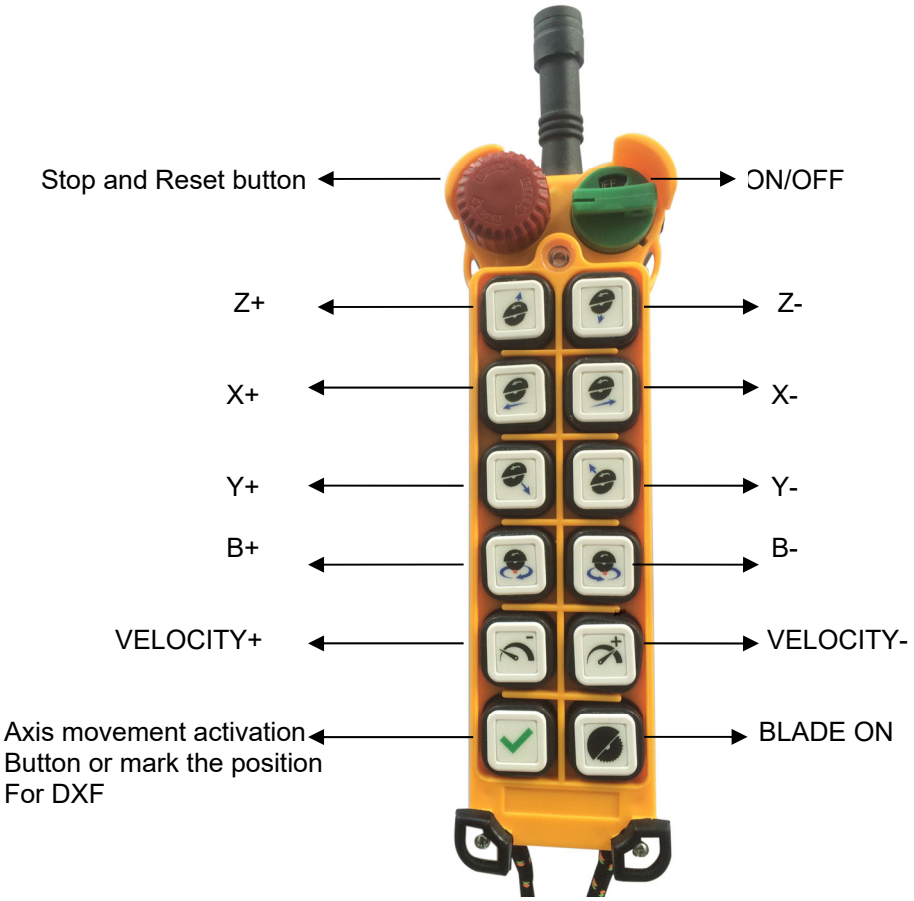
6.12 operator

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.

- **Remote control**

On a standard “ORBIT A5” is mounted one remote control



The remote control is wireless, the remote control is functional only when CNC program is open and in manual page, there are two knob on the top of the remote control. One is red, the other is green. When you rotate the green knob, the remote control will be on or off. After turning on the remote control power button, you cannot move the machine immediately. Press the  button to activate the remote control. Then you can move machine. When you want the machine to stop, press the red button, and the function of the red button is the stop button. When you want to move the machine again, rotate the red button to reset. The red button pops up. Then Press the  button to activate the remote control. The panel of remote control has 8 movement buttons. There are four moving axis XYZB, each axis has two directions.  button are used for adjusting speed. The remote buttons can be used to cut manually, look at the blade from the front.

8. TECHNICAL DATA

TECHNICAL SPECIFICATIONS		
Max. Cutting Disc Diameter	mm.	500
Min. Cutting Disc Diameter	mm.	220
Max. cutting thickness (vertical)	mm.	150
Max. cutting thickness (45 degrees)	mm.	70
Cutting Stroke of the Disc - X axis	mm.	3550
Vertical Travel of the Cutting Disc - Z axis	mm.	350
Head Travel Distance - Y axis	mm.	2400
Cutting Disc rotation - A axis	degrees	0-400
Cutting Disc tilt - B axis	degrees	0-90
Cutting Disc Hole Diameter	mm.	50
Cutting Disc Flange Diameter	mm.	180
Cutting Disc Motor	kW	15 (water coolant)
Spindle speed	rpm	0-8000
Variable cutting and return speed	m/min	0 - 36
Overall Dimension (Length / Width / Height)	mm.	5700 x 3600 x 2700
Total Weight	Kg.	5000
Water consumption	L/min	15 - 25
Water pressure required	BAR	2-3.5
Compressed air required	L/min	--
Air pressure required	BAR	--
Max. Install Power	kW	20

9. SCHEMES

9.1 Electrical Schemes

Attached after the manual

9.2. Setting of motors drivers

Attached after the manual

10. SPARE PARTS

Attached after the manual

11. MAINTENANCE

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

11.1. 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,

11.2. Check EVERY DAY:

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

11.3. Water

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

11.4. 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 the remote control functioning and the cable for damages,
- Check if the cables are on the right place, if there is no damage, replace in case of damage,

11.5. 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,

12. 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.