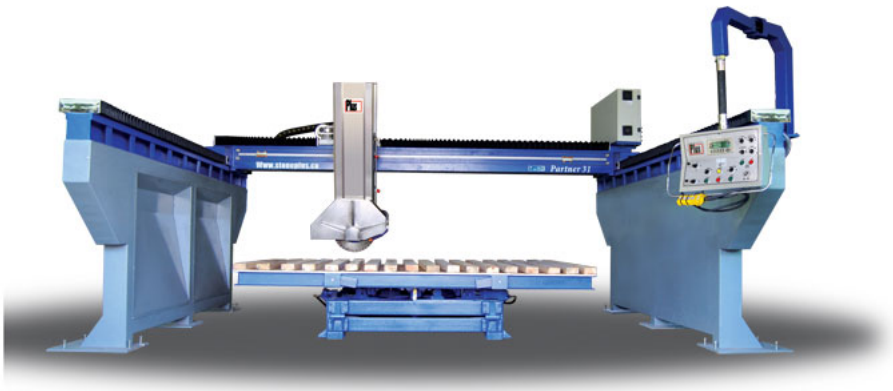
INSTALLATION

of

Bridge Cutter

P31



DOCUMENTS RELATIVE OF THE MACHINE:

BRIDGE CUTTER			
Type:	**P31**		
Disc Diameter:	**350mm-625mm**	Maxi. Cutting Thickness:	**160mm**
Voltage:	**380V**	Frequency:	**50HZ**
Phases:	**3**	Currency:	
Serial:		Production date:	

SUMMARY

1. THE MACHINE

A. Machine Description:

This B**ridge Cutting Machine P31** has rotating head, the additional work-table frame fixed to its metallic-feet and advanced operating program.

The main parts of this machine, the bridge and the cutting-head, are made by cast iron giving the long life, precision and corrosion resistance benefits, and enabling the machine able to sustain the vibration of high cutting speed.

The cutting-head can be rotated smoothly 0-45 degrees by hydraulic system. And its vertical movement is driven by a screw guiding with two cylinders. It can carry blade from diameter of from 350mm up to 625mm ensuring the cutting height up to 160mm.

The work-table can rotate automatically with stop at 0°, 45°,and 90°, as well as manual functionality be locked at any desirable angle by a portable controller, which the particular rotation degree can be showed on the text-display. And the rotation can be performed both clockwise and anticlockwise. Its enforced framework powered by two powerful hydraulic cylinders can easily bear and lift the heavy-load.

The machine has a program for the granite-cutting (step-cutting), and equipped with an optical lazar guide.

With the moving system of "V" track, the machine is able to move fast and smoothly. And with encoder, machine can assure the accuracy of cutting.

A full lubrication system ensures the machine can be easy maintained and kept in a good work condition.

All electric and electronic parts are well known brand, and with European safety standard the machine can be operated not only outstandingly but also safely.

Also with an intelligent program equipped a text-display the machine can be easily operated for many special applications.

B. Machine Mechanical, Electronic and Hydraulic Parts & Systems:

The surface preparation of the machine is starting with all the casting being sandblasted, cleaned, trimmed and then the two layers of paint (anti-rust paint and surface color paint) are applied.

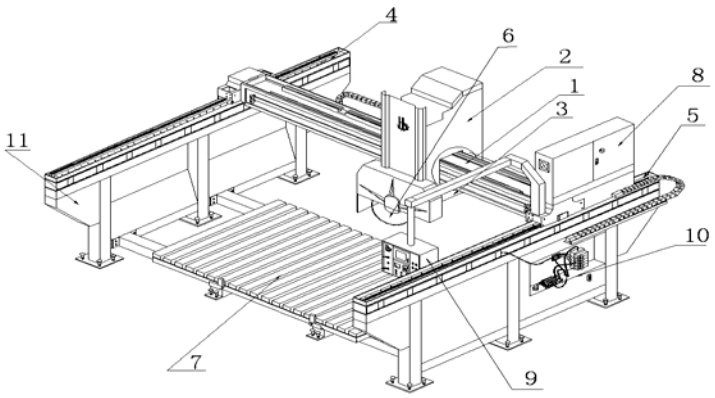


Figure 1

Detail parts showed in Figure 1:

1) The Bridge (No.1):

The bridge, moving on the "V" track and rollers at the oil bath longitudinal guides, is made of highly resistant cast iron for the maximum stability and duration, and a great absorbency of vibrations and noise.

The bridge moves, Y-axis, forward and backward.

2) The Cutting-head (No.2):

The construction of cutting-head is made of highly resistant cast iron as well.

This electronic operating cutting-head is set on the slide moving horizontally on the oil bath "V" track of

the bridge , X-axis, right and left;

And it moves vertically on a screw guided by two cylinders, Z-axis, up and down.

The cutting-head also could tilt 0-45° manually by a hydraulic system.

3) The Disc Motor/Main Motor (No.3)**:**

The main 18.5kw motor, which drives the blade directly, has a good waterproof characteristic.

4) The Longitudinal Guides (No.4 & No.5)**:**

The two longitudinal guides are welded on the bilateral metallic foot with gear-bar and "V"-track in oil bath, and are covered with the organ-covers protecting from the water and dust.

5) **The Diamond Blades** (No.6)**:**

The machine can carry the diamond blade diameter from 350mm up to 625mm, which can be normally found in the market, for the purpose of cutting marble and granite.

The blade should has a 50mm diameter of aperture and be in alignment.

The diamond blades are supplied by the Users.

6) The Work-table (No.7)**:**

The wooden-top work-table is made of U-steel frame with 600kg loading capacity.

It could rotate automatically at 0°, 45° and 90° clockwise and counterclockwise, as well as manually be locked at any degree by a portable controller. And the particular rotation degree could be showed on the text-display on the control-panel.

The table also is able to tilt from 0- 85° by two powerful hydraulic cylinders automatically and electronically.

7) The Master Electric Cabinet and Control Panel, etc.:

The master-electric-cabinet (No.8**),** contains electric equipments (such as inventors, PLC, etc.), is set over the right side of the longitudinal-guide.

The control-panel (No.9), includes a text-display and the operating buttons together with a manual work-table portable controller, is hooped over the right side of bridge.

The work-table control-box, contains the operating buttons, is set at the inner-side of the longitudinal-guide.

The guide-laser is 100mw at 635nm.

8) Hydraulic System (No.10)**:**

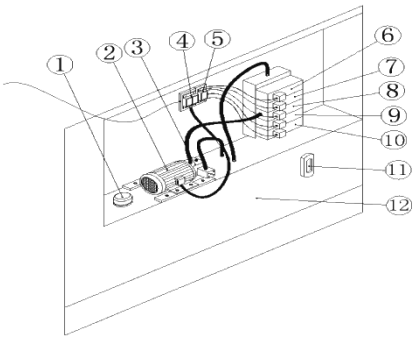


Figure 2

The hydraulic system is set at the outboard of the right metallic-foot over the oil-tank. The system is able to control the work-table tilting (by two hydraulic cylinders), rotating and position locking.

It contains (detail see Figure 2):

a) Motor (No.②)

b) Oil filter (No.①)

c) Oil level scale (No.⑪)

d) Cutting-head rotation solenoid value (No.⑥)

e) Work-table positions lock solenoid value (No.⑦)

f) Work-table rotation solenoid value (No.⑧)

g) Work-table lift/descend solenoid value (No.⑨)

h) Work-table brake solenoid value (No.⑩)

i) Oil tank (No.⑫)

9) Metallic Foot (No.11)**:**

The machine equipped with its own metallic-foot, of its frame is made of rectangle-steel, so it is very easy to install the machine.

C. Machine Major Parameters:

1) Blade diameter:	350-625mm
2) Cutting-head screw stoke:	320mm
3) Maxi. working dimension:	3200x200x160mm
4) Cutting-head tilting by hydraulic system:	45°
5) Main motor power:	18,5kw
6) Total power:	23.5kw
7) Work-table rotation degree:	360°
8) Work-table tiling degree:	0~85°
9) Overall dimension:	600x5000x3200mm
10) Gross weight:	8,000kg

D. Machine Guarantee:

The Sellers guarantee the quality and the specification of the goods according with the stipulation of the contract and provide the following service:

a) If the machine has problem in connection with the machine design or machine parts within 12 month after the delivery, the Buyers shall provide the necessary details of the problem and damaged part photos to the Sellers. Within 5-10 work days the Sellers shall send the parts at his own cost to the Buyers for the replacement.

a) In case in The Buyers do not follow the product manual book to operate the machine and it causes the damage of the machine, the Sellers will not take any responsibility for the damages. All cost of replacement should be on the Buyers account.

c) If the machine has the has problem in connection with the machine design or machine parts after 12 month from the delivery date, The Sellers shall have the responsibility to provide all necessary parts for the replacement, but all cost should be on the Buyers account.

E. Machine Identification:

The machine is identified by the **MACHINE MANEPLATE** which is fixed on the left shoulder of the bridge:

TYPE:	**BLADE MISMETER:.....mm**
BLADE RPM:.....	**CUTTING THICKNESS:.....mm**
POWER SUPPLY:.....	**TOTAL POWER:.....kw**
CURRENT:..... A	
SERIAL No.:.....	**PRODUCTION DATE:.....**
Production in China	**CE**

F. Customer Engineering:

To contact the customer engineering of STONEPLUS, the address is following:

202, E Building, Tefang Garden, 6 Haitian Road, Huli, Xiamen 361006 China.
Tel: 0086-592-5688806 Fax: 0086-592-5682877
Email: info@stoneplus.cn

Remember always indicate the following information:

-Type and model
-The serial number
-Production date

At your requests, our after-sales-service department is ready to help you regarding the machine assembling and operation, regarding the training how to use the machine and the problems you may have.

If you have any faults, before calling us**,** please look at this handbook in order to check if the problem can be solved just reading this manual.

2. GENERAL AND SAFETY INSTRUCTIONS

A. General Instruction and Warning:

1) With these instructions for use and the relative enclosures, STONEPLUS wants to provide the Users the information required for safety, handing, installation and disassembly, operation and maintenance, service of the machine;

2) Therefore this manual, due to its importance for what concerns safety, must be carefully read before using the machine and in case of doubts or problems;

3) These instructions for use, together with the enclosures and the wiring diagrams, are an integral part of the machine and must always go with it in case of machine displacements or when the property is transferred to third parties;

4) This manual describes the expected use of the machine;

5) Keep this manual in a safe place;

6) Spread the instructions to who related;

7) In the figures of this manual, some parts of the machine may not appear so as to make the descriptions simple and clear;

8) For any requirement and in particular for software maintenance interventions, apply directly to the After-sale-service Department of **STONEPLUS**

STONEPLUS reserves the right to make variations to the production and to the manual.

B. Safety Instruction:

1) Attention:

a) Before starting the machine, read this manual carefully by following completely all the safety specifications and directions indicated.

b) Failure to comply with the safety prescriptions and/or the improper use of the machine may cause injury to those present in the operating area.

c) Do not insert hands or any other part of the body near moving members.

d) The warnings do not eliminate the danger.

e) Strictly prohibit cleaning electrical parts and mechanical transmission parts of this machine with water or other liquid

d) Site staff shall press the emergency-stop-switch or shut down the master power supply switch immediately in the event of emergency during the production and debugging;

2) Mechanical Safety Notice:

a) Safe and reliable proposal shall be established for lifting and handling of the complete machine or the machine body. Lift and handle the machine shall be processed according to this manual. And the equipment, lifting tool and instrument used shall guarantee the safe and reliable lifting and handling.

b) If safety protection cover shall be disassembled for maintenance, please keep the removed parts in safe places where no hazards can be generated to other staff in site. Strictly prohibit stepping on safety, protection cover etc...

c) Except for stone for trial cut, strictly prohibit placing other objects on work-table and over side protective hood during production and debugging.

d) Non-working personnel shall not stay around machine during production and debugging.

e) Strictly prohibit touching gear transmission components, sprocket wheel transmission components and hydraulic transmission components with hands.

d) Handling of the product shall be strictly in accordance with safety system of this manual. Take care of other processes and take strict precautions against damage to operating person, product and equipment.

3) **Electric Safety Notice:**

a) Exercise regular inspection on earthling system to confirm whether it's reliable and effective in pursuance of the electrical safety system of post responsibility of manufacturer and this machine.

b) Operating staff of other machine who is no be trained shall not operate this one.

c) Don't touch electronic component of frequency converter immediately after it's switched off. For specific operation procedures, please refer to instruction book for frequency converter.

d) When system restores power supply, check whether supply indicator lights and release the emergency stop button on control panel before starting machine; otherwise, the main power supply of machine cannot be switched on;

e) Adjust speed from low to high when starting machine and observe whether there is abnormal. Shut down the machine immediately in the case of abnormity;

f) Shut down main power switch on main electrical cabinet and hydraulic pumping station after stop. Set platform level. After pumping station stops, press solenoid valve button repeatedly to depressurize oil pipes.

3. SAFTY AND PROTECTION DEVICES

A. Safety and Protection Devices:

The machine has sheet protections, in order to avoid the contact with the dangerous parts, and the several safety devices:

1) All rotating transmission parts are equipped with safety protection and dust-proof & waterproof devices:

a) Organ-cover on the bridge;

b) Organ-cover on the longitudinal guides;

2) Machine equipped with the emergency-stop-buttons, the proximity switches, the mobile stoppers and the fix stoppers, etc., to avoid the problem at the persons and at the machine:

a) **Proximity switches**:

The following figure indicates the proximity switches positions installed on the machine to accomplish safety functions against overloads and overruns in order to control the lifting/lowering, cut/return, forward/backward movements related to the programmed settings;

b) **Emergency-stop-button**:

There are two Emergency-stop-buttons on this machine to prevent any possible danger of person and machine:

- one is on the left side of control-panel;
- one is on the work-table control-box located at the inner-side of the right metallic-foot.

c) **Mobile stoppers**:

There are 2 mobile stoppers set on the bridge to prevent the cutting head left/right movement beyond the limit.

And there 2 mobile stoppers set on the rod along the right side of the cutting-head to prevent the cutting head up/down movement beyond the limit.

d) **Fixed stoppers:**

There are 2 fixed stoppers set on the outboard of the right side of longitudinal guide to prevent the bridge forward/back movement beyond the limit.

e) **Blade cover :**

The blade cover is able to protect from the water, noise

Make sure no safety, protection or control devices of the machine can be neutralized, removed or made inefficient, wherever they are located.

All protection and safety devices must always be kept in perfect and constant efficiency.

B. Assigned Personal:

a) Operator is the specialized person, who uses the machine daily, loads and unloads the products, does the dairy maintenance.

b) Technician is the specialized person who can carry out the maintenance on the machine.

c) Unauthorized persons who are not acquainted with the safety instructions shouldn't absolutely work on the machine and must not have access to the machine’s operating.

d) STONEPLUS technician is the qualified person, who has to assemble machine, train the Users and do the complex interventions.

C. Safety sign:

(a)  Pay attention to safety;

(b)  Be careful of electric shock;

(c)  No touch;

(d)  No stay;

(e)  No step;

(f)  Wear safety helmet;

(g)  Wear mask;

(h)  Wear safety goggles;

(i)  Wear ear protector.

4. RISKS

A. Residual Risks:

1) Risks of Transportation:

a) The handling operations may be dangerous for the persons in charge;

b) Only trained and competent personnel can be in charge of the handling;

c) During the handling, everything must be done with great care;

d) The choice and utilization of the means fit for the lifting and the handling of the machine is the customer's responsibility;

e) We strongly advise against using forklift to handling of machine, especially for the handling of the bridge;

f) Use cranes with a sufficient carrying capacity and the special supports equipped with the machine;

g) Pay great attention during the transport and the lifting, and make absolutely sure that the part of machine is always in balance.

2) Risks of Operation:

a) Even the machine has been conceived and produced integrating the safety in the design and construction, residual risk is still present during the operation;

b) The tool is protected as much as possible by the cover for blade. However a residual risk of ejection of tool parts and stones when an accidental breakage occurs is still present since it is not possible to protect it further;

c) Those who are in the danger zone must by very careful to the risks of crushing due to:

-Head approaching the side walls

-Blade approaching the working material

-Bridge displacement

-Table rotation and tilting

d) After shutdown, wait for approximate 5 minutes before working such equipment so that the relative condensers have the time to discharge the accumulated voltage;

e) Be ware of the danger of laser radiation. Do not fix your bare eyes on the beam or by means of an optical instrument. Adjustment of laser beam should be carried on from the opposite of laser beam;

f) Stay away from the working area and the work-table while machine in operation in order to avoid risks;

g) With a correct and mindful behavior the residual risks can be avoided.

B. Specific Risks:

1) **Danger zone and warning**:

a) Danger zone within which the possibility of accidents is high, because of: Shearing, Abrasion, Squashing, Impact. Unauthorized people forbidden;

b) Expected position of operator when control the table;

c) Expected position of operator position when control the bridge;

d) The machine must always be operated by a single person. A second operator may create real danger situations;

e) Do not stay in the danger zone during the working;

f) Be careful regarding the squashing between the fixed and mobile parts.

2) **Risks concerning with the materials**:

The machine must be used exclusively for the purposes for which it has been designed and built, i.e. for cutting stone material such as marble and granite by means of diamond blades sized as indicated in the specifications.

The machine can not be used in processing beyond the ability of the machine.

3) **Risks concerning the machine:**

a) Before starting the operation, make sure that the material to be cut is in compliance with those expected and set correctly by qualified personnel;

b) The maximum dimensions of the products loadable on the machine must not exceed the measures indicated in the technical data;

c) The person in charge that executes under its own exclusive responsibility the manual loading and unloading operation must wear proper protection (accident-prevention shoes, gloves, etc.) and prevent others from stopping or passing in the loading and unloading areas;

d) In order to have stability and to avoid anomalous structure stresses, the products should be placed having its center more possible near the table center.

4) **Risks concerning the tools:**

a) Do not use imbalanced blades;

b) The use of different tools and the treatment of material different from marble and granite may not be fit to the machine's characteristics and may compromise its safety utilization;

c) The blade must have gasket characteristics fit to the materials that the User wants to work. For the choice of the tool and of the best speed of rotation, the Users must consult its supplier of diamond blades;

d) In order to limit sound emissions, it is strongly advisable to use blades built with silenced core;

e) A wrong fixing procedure of the tool may cause serious danger to the operator.

5) **Risks concerning the starting of the machine:**

Before starting to work, the operator must always check that:

a) The machine is in good working condition;

b) The safety devices are inserted and efficient;

c) The interventions of periodical maintenance have been carried out regularly;

d) There is no one in the machine's ranger of action;

e) The power and water supply are regular;

f) The floor around and under the machine is clean;

g) No inflammable material must be present nearby;

h) During the automatic working, the operator must always be providing with personal protection devices: gloves and goggles (when entering the danger zone), soundproofing headsets, adherent working overalls without holds and gloves can avoid many accidents.

6) **Risks during the working:**

The machine must be immediately stopped if:

a) An unexpected movement of the machine has occurred;

b) An emergency danger condition occurs and is signaled;

c) The product is faulty;

d) The control systems and motors have working problems;

e) The vertical movement of the cutting-head slide is not normal but more noisy and slow;

f) Problems occur to the lubrication system or to the electric system;

g) Other faults are detected disturbing the normal operation of the machine;

h) When the machine is blocked or when abnormal conditions occur, the person in charge of maintenance must be called and the person in charge of the safety must be informed;

i) When measurements or adjustments are carried out, it is recommended that the red emergency-stop-button be pressed as an additional precaution.

C. Noise:

The constructor has adopted all the possible devices to reduce sound emissions during the machine operation:

-Main structures in cast iron, instead of metalwork

-Blade cover with acoustic insulation

The company using the machine must carry out on its own responsibility the noise detection in real working conditions by taking into consideration the lay-out of the machine in the factory, the kind of material treated and the kind of blade mounted.

D. Lighting of the Work Area:

a) The machine is not equipped with an autonomous lighting system;

b) The lighting of the machine and of work area must be preset by the User;

c) The lighting of the room where the machine is placed must ensure no dangerous situations would be generated in the working, loading and unloading areas due to lack of lighting or blinding glares.

5. TRANSPOTATION, PACKING, UNPACKING AND STOCKING

Usually the technicians of STONEPLUS install the machine. They also provide the main instructions for using the machine and carry out the testing.

If the customer intends to install the machine on his own, he needs authorization of STONEPLUS as well as all the required information.

The installation of the machine must always be carried out by qualified personnel.

A. Transportation and Packing:

The standard version machine, is usually packed in

FOUR main parts:

a) one piece of the bridge, which includes the cutting-head, the master-electric-cabinet and control-panel;

b) one piece of the left metallic-foot;

c) one piece of the right metallic-foot, which contains the hydraulic system;

d) one piece of work-table with its additional frame.

ONE piece of wood-box, which contains small machine parts and tools;

other machine accessories parts (details showed in the "**Packing List**");

and loaded in one 20' open-top container, properly tied with wires and fixed on the wall and floor of the container in order to avoid any damages during transportation.

B. Checking the Machine Reception and Unpacking:

1) Equipment management staff and professional mechanical and electrical engineers or professional installation and maintenance staff shall be on site during unpacking;

2) Inspect and check the machine and parts of machine according to the delivery bill and the packing list;

3) Verify the packaging before removing it;

4) While unpacking, it is advisable to check carefully the parts forming of the machine to see if anything is missing or if they have suffered any damage during transportation;

5) Special unpacking tools shall be used to avoid damage to machine parts;

6) For any damage or missing, inform immediately the local agent or directly contact STONEPLUS.

C. Lifting Mode:

The approximate weight of the machine is 8,500kg.

Make sure all parts should be in the absolute balance before the lifting.

1) Bridge (includes the cutting-head, the master-electrical-carbonate and control- pane) (Figure 3)**:**

Weight approximate 3,600kg;

Use cables (belt) hook at the balance point of bridge, where usually placed carton pieces or cloths to protect from the scoring of paint.

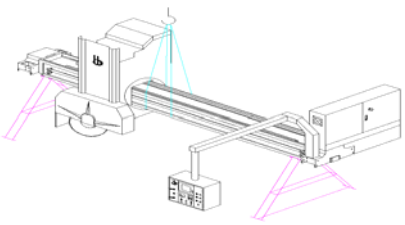


Figure 3

2) Work-table (Figure 4)**:**

Weight approximate 2600kg;

Use cables (belt) hook at the upper-frame of work-table.

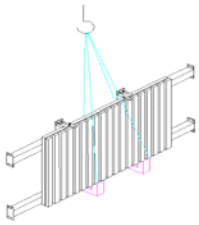


Figure 4

3) Right Metallic-foot (includes the longitudinal-guide, hydraulic unit and oil-tank) (Figure 5)**:**

Weight approximate 1,200kg;

Use cables (belt) hook at the two flat shoulder of the metallic-foot.

4) Left Metallic-foot (includes the longitudinal -guide) (Figure 5)**:**

Weight approximate 1,100kg;

Use cables (belt) hook at the two flat shoulder of the metallic-foot.

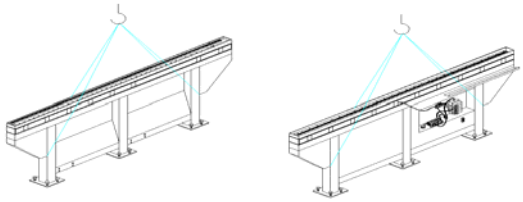


Figure 5

5) Wood-box (Figure 6)**:**

Weight approximate 100 kg;

Use cables (belt) hook from the bottom of the box.

Figure 6

D. Stocking:

If it is very necessary to keep the machine inactive for a temporal stocking:

1) Put the machine in a safe place, in door.

2) lay off a rust prevented waxy coating;

3) Cover it carefully with a sheet of polythene.

A long period of stocking (over 12 months) is not advisable.

6. ARRANGEMENT TO BE TAKEN CARE BY THR USERS

Before the installing of the machine, the Users must prepare the foundations, the electric and water connections and whatever is indicated in the "**Foundation Drawing"** of the machine that sent by STONEPLUS before starting the foundations works.

Preparation must be preset by the Users, specification and quantity as following:

a) Foundation of the machine;

b) Electric power supply, cable and air switch;

c) Water supply;

d) Lubricant, Hydraulic oil and engine oil;

e) Tool and other supplies.

A. Foundation of the Machine:

1) The machine is able to work correctly according to the technical and precision parameters mentioned only if it is properly and steadily fixed to the reinforced concrete base to be borne;

2) The machine "**Foundation Drawing**" indicates also the minimum distances from walls or obstacles to be observed in order to allow the machine execute all its movements and to be completely accessible for use and maintenance;

3) Before building the foundation, a preliminary check of the geological configuration for the ground on which the machine shall be installed must be carried out. From this point of view the foundation drawing are merely by way of indication and must be adapted to the nature of the ground;

4) The foundation is carried out according to the drawing must have drains and deep excavation screened;

5) For any problems or specific solutions concerning the foundations the purchaser must always contact the Engineering Department of **STONEPLUS**.

Build the foundation strictly observing the dimensions indicated in the drawing.

B. Electric Power Supply, Cable and Air Switch:

It's user's responsibility to prepare the following:

!) A main wall-type switch at the right of the machine properly sized according to the full-load current indicted at the beginning of this manual and on the CE marking plate;

2) The power supply cables;

3) The electric supply cables have to exit from the floor under the connection box as indicated in the related drawing;

4) The grounding system of the factory should look at the duty rules, pay attention to the wet environment;

5) The safety of the grounds of all the machine's groups must be checked regularly. The following elements are recommended:

-3Phs 380V 50Hz.with total power 22kw

-electrical cable (4 core >=16cm2) needed to connect to the wall switch

-an isolated air switch is needed

-the voltage (380V) and full load current (100A)

C. Water supply and water pipe:

1) The machine requires cooling water for the blade;

2) A water pipeline with main tap and normal pressure;

3) The water must be clean, and recycle clean water can be used;

4) Water supply must ensure the minimum capacity and pressure indicated in this manual;

5) Position as shown in the foundation drawing.

D. Equipment, Tool and Materials

1) Crane:

Available a 5 tons minimum capacity crane.

2) Blade:

A diamond blade diameter of 600mm with 50mm core.

3) Diamond planning wheel:

2 cm width, for leveling the wood-top of the work-table.

4) Lubricants, engine, hydraulic oil:

Prepare lubricants, engine and hydraulic oil as per types and quantities:

-No.30 (or No.20/No.40 depending on the working condition) lubricant oil: for longitudinal guides and bridge guide. Approximate 80kg

-No. 46 hydraulic oil: for the hydraulic unit 100kg

-Grease: For the table. About 2kg

5) Slab:

Slabs to be cut when testing the machine.

E. Temperatures:

Special precautions must be used for temperatures below zero so as not to damage the cooling device and for temperatures over 40 ℃ so as to ensure the correct operation of the electric and electronic equipment.

7. INSTALLATION AND DISASSEMBLY

A. Installation:

This machine has been set and divided into different compact parts which are supported by special stand for easy transportation and installation before delivery, and users shall not disassemble it at random to avoid impact on its accuracy.

Installation shall be conducted by professional technicians according to equipment procedure

Perform inspection as per required technical criteria after installation.

1) Mechanical part:

a) Work-table (includes the frame):

According the "**Foundation Drawing**" set up the work-table;

Adjust the height of steel-leg of work-table by screws and use the gradienter to ensure it is horizontal.

b) The metallic feet (include the hydraulic system):

Install the two-side of metallic feet, and put the one with hydraulic system at the right side;

Adjust the height of the metallic feet by screws to make their interconnecting pieces (4 parts) to fit close with the interconnecting pieces of the work-table (joint-screw-holes), then tighten the joint screws (16 pieces);

Use the gradienter and close-pipe to ensure the two metallic feet are in horizontal, parallel and perpendicular, and make sure the discrepancy of the distance of parallel should be not greater than 0,5 mm and of two diagonal should be not greater than 3mm;

Then use M16 blots (36 pieces) fix the metallic feet to their feet base and tighten them;

And recheck the work-table if it is in horizontal.

c) The bridge (includes the cutting-head, the master-electric-cabinet and the control-panel):

Loose the steel-belt that fixing the bridge and the support-legs, move away the bridge by crane. Please keep the support-legs in a safe place for any machine maintenance, displacement or relocation;

Put 4 pieces of roller-axis on the two side llongitudinal-guide;

Set the bridge on these 4 roller-axes and make sure the bridge is set in the correct position and eensure the good engagement of gear and racks on the two side llongitudinal-guide;

Check the bridge is parallel with the work-table;

Loosen the hexagonal nuts on the rotating body of the cutting-head make sure the cutting-head rotation body is free to move.

d) Blade:

Before mounting the blade loosen the blade blockage nut by turning the nut clockwise with key and remove the front blade flange;

Check the back blade flange offset with dial test indicator makes sure the discrepancy shall not be greater than 0.08mm;

Mounting the blade by inserting the blade on the shaft and put on the front flange, block the nut by turning it counterclockwise with key. Make sure the nut is well tight. And keep in mind that the lock direction is **counterclockwise.**

After installation of all mechanical parts, check whether conductor devices of electrical parts and hydraulic lines are damaged during transportation carefully and handle it on time if any.

2) Electrical part:

a) Introduce three phase AC 3 * 380V 50Hz power supply into master-electric-cabinet as required;

b) Plug in the machine electric connector to the power socket (see Figure 2, part④), which is at the outboard of the right metallic-foot. Make sure the connecting is firm;

c) Set all the proximity switches to their position and check they are workable;

d) Install the laser on the laser-base next to the right longitudinal-transmission-case and connect with wire, which need to plug in a socket inside of the master-electric-cabinet;

e) Check whether insulation resistance is greater than 0.5M Ohm;

f) Connect earth wire as required;

g) Check whether safety controls and electrical appliances are normal and effective;

h) Check whether the proximity-switch and the emergency-stop-buttons are connected and effective;

i) Check whether operation of display parameter setting PLC is normal;

j) Check whether 24V low-voltage circuit is separate from 220V and 380V circuits without confusion.

3) Hydraulic part:

a) Connect the hydraulic oil pipes of work-table to the solenoid valves of the hydraulic system which is set at the outboard of the right metallic foot, according to the preset number tag (see Figure 2, part⑥,⑦,⑧,⑨,⑩). Make sure connect with the same numbers and the connectors are firm;

b) Plug in the hydraulic system electric suppler line to its power socket (see Figure 2, part⑤), which is at the outboard of the right metallic-foot. Make sure the connecting is firm;

c) Check whether hydraulic pump operates normally and whether pressure is within 55-60MPa. The pressure can be adjusted up to 70Mpa for a heavy load;

d) Check each oil pipe is connected without blockage or oil leakage;

e) Check whether operation of 24V low voltage solenoid valves is normal;

f) Check the oil level scale (see Figure 2, part⑪) to ensure the oil tank has workable amount of oil;

g) Check whether pipelines are arranged orderly;

h) Hydraulic oil type is indicated in the "**Lubrication Table**".

B. Disassembly:

Should it be necessary to disassemble the machine firstly when remove it or transfer it to another location contact **STONEPLUS** for the required disassembly help and information.

The company who has last used the machine must dispose of it in compliance with the regulations in force by carrying out the following operations:

1) Disconnection the machine from the power system, the hydraulic system connection, the machine electric system and the water supply;

2) Complete empty all the fluids contained in the machine (in particular the lubricants);

3) Disassembly of the blade and any installed tools;

4) Tighten the hexagonal nuts on the rotating body of the cutting-head make sure the cutting-head is immovable, and tire-up the control-panel to the bridge, ensure properly fix theses parts without damages and risks before move out the bridge;

5) Preparation of the supporting and lifting stands of the bridge, then use crane move out the bridge, set it on the stands and tires up steel-belt;

6) After lift and transferred the bridge, then loose 16 pieces joint screws between the metallic feet and work-table additional frame, and move out the work-table away from the working-area;

7) Disconnect the two metallic-foot from the concrete base;

8) Packing all machine parts with plastic wrapping material to be stored in indoor.

Make sure not to disperse in the environment, even small residues that may cause accidents or pollution.

C. Re-installation:

Follow the instruction of installation.

8. OPERATION AND UTILIZATION

A. Operation Limits and Environment Limits:

1) Machine operating limits:

Be strictly working within the machine technical parameters.

2) Environment limits:

a) Clime:

The machine with standard equipment is able to work correctly in climatic conditions at most countries with environmental temperatures comprised between 0-40℃;

b) Electrical Power Supply:

The characteristics of the electrical power supply must correspond to those required by the machine. The voltage must fall within the tolerance values ±5% .

If such power supply stability is not guaranteed, arrange for a direct line from the general board of the laboratory to the machine and, if necessary, an automatic voltage regulator (A.V.R).

B. Preparation before trial run:

1) Perform overall check on all external connection parts and fasteners, especially on those which are removed during transportation, to confirm tight connection;

2) Fill the lubricating oil to each reducer, main spindle head, transmission parts, moving parts, gear engagement parts, gear worm engagement parts and slide plate contact parts as required;

3) Ensure good engagement of gear and racks on the two side llongitudinal-guide.

C. Power on inspection:

1) Switch on power supply;

2) Check whether each indicator lamp is normal;

3) Check whether emergency-stop-button are reliable and effective;

4) Check whether each proximity-switch is reliable and effective;

5) Check whether rotation direction of each motor is correct;

6) Check whether each operating button and knob are correct, reliable and effective;

7) Check whether hydraulic system can perform normal;

8) Check whether the work-table hydraulic cylinders can operate normally and work-table tilting operation is normal;

9) Check whether work-table rotation is normal;

10) Check all electrical circuits and mechanical transmission parts. Test individual part manually in turn and then run the entire machine for min.2h to test whether it runs smoothly without blockage;

11) After zero load trial run of complete machine proves safe and reliable, test whether program parameters of PLC are correct. Input setting parameters to PLC through touch screen and check whether display may show correct and effective.

D. Starting Procedure:

1) Turn on the main power supply;

2) Release the red emergency-stop-button on the control-panel;

3) Turn on the water circle.

F. Operation:

For machine detail operation please check the attached **"Operating Instruction".**

E. Stopping Procedure:

1) **Normal stop**:

a) Press the STOP button;

b) Turn off the water circle;

c) Turn off the power supply.

2) **Emergency stop:**

In case of danger, press the red emergency-stop-buttons.

F. Machine Position After Using:

Enable to start the machine right way, it is necessary that place the machine in a correct position before shut down the power:

1) leave the bridge at the far backward position;

2) Leave the cutting-head at the far left and up position;

3) Leave the work-table at 0°, and flat position or up position;

4) All power supply is off.

9. EXPECTED AND UNEXPECTED USE

1) **P31** has been designed and built to obtain marble and granite with diamond blades having proper characteristics;

2) Material different from the shown are not compatible with the machine and it could happen dangerous situations;

3) The machine is designed to work in industrial environments to be installed indoors;

4) The software of the machine offers the Users a simple and flexible use upon the appropriately instructed for the work to be done;

5) The constructor can give the necessary training support to the operators;

6) The operators must always be provided with personal protection devices: gloves and goggles (when entering the danger zone), soundproofing headsets or other personal soundproofing device, adherent working overalls without holds and gloves can avoid many accidents;

7) Wear anti-skid shoes because often the presence of dust and water make the floor around the machine slippery; the machine must always be kept clean.

8) The devices those are not required for the current working cycle cannot be activated by the operator. All the settings necessary to switch to another kind of working of the machine must be carried out by the person in charge of the adjustment;

9) The manufacturer refuses all responsibility for the failure of the machine in case of discrepancy with the precision standards, for accidents occurred during the machine operation deriving from an improper or different use from the technical specifications during the installation, assembly and adjustment of the machine and if the user has violated the utilization, service and repair rules of the machine.

10. MAINTENANCA, PERAIR AND CALIBRATION:

A. Notice:

1) Maintenance of electrical parts shall be made by special maintenance personnel with relevant qualification, and other persons shall not open the master-electrical-cabinet and other control panels in order to avoid hazard or damage to electrical control parts;

2) The User of machine shall ensure reliable supply voltage and wiring. It's suggested to use BVC * 10mm2 and 4-core cable as service wire;

3) Power service wire shall be equipped with circuit breaker to cut off power supply during maintenance to avoid electric shock;

4) When machine is not in use, cut off the general supply to ensure safety;

5) The master-electrical-cabinet, control-penal and hydraulic system of machine shall be provided with relevant waterproof measures to avoid damage to electrical control parts by water;

6) Please read this instruction carefully before operate this machine;

7) In case electrical parts of machine are damaged due to unsteady supply voltage of User, disoperation or lightning strike, it shall be of accident damage;

B. Daily maintenance and Service:

1) **Maintenance:**

a) Check and fasten the frame and driving members once every two months;

b) Check and fasten each protection cover once every half month;

c) Check and maintain electrical control system once every half month;

d) Maintenance of motor and bearing shall be made according to requirements of regulation;

e) Pull lubrication apparatus on rotation inner drum 5-10 times before operation every shift to inject lubricating oil to each position and fill lubrication apparatus with lubricating oil.

2) **Service:**

a) Exposed gear engagement shall adopt manual periodic lubrication with No.2 lithium based grease and the lubrication interval shall be half month or when there is no grease at gear engagement;

b) Gear case shall adopt manual periodic lubrication with grease and the lubrication interval shall be 12 months or when there is no grease in gear case;

c) Service of motor and bearing shall be made according to requirements;

d) For lubrication of other parts, please refer to "**Lubrication Table**".

C. Machine Cleaning:

1. Carry out the normal daily cleaning;

2. Remove the deposited working scrap;

3. Use water jet wash the working area where the dirt has built up;

4. Day the machine as soon as possible;

5. When washing the machine, be attention that does not direct the water jet on the any part of electric equipment, on the motors and reducers.

D. Table Lubrication:

The machine lubrication system showed on the following drawing.

1) Oil for guide: characterized by greasiness, adhesiveness, water proof, rustproof and anti foaming;

2) The flat guide: to obtain a 3mm-thick lubricant layer;

3) The prismatic guide: the lubricant exceeds the corner for 2mm;

4) Grease for bearing and bushings: lithium multipurpose type with 180 degree drop point and penetration, fit for difficult conditions, resistant to high and low temperatures, corrosion proof and rustproof;

5) Oil for hydraulic system: corrosion proof, wear proof, antifoaming, rustproof, air release and resistant to oxidation.

Lubricants are highly inflammable products, observe the indications on the package and be careful while working. Also mind the environmental safety.

Detail lubrication positions and requirements showed at "**Lubrication Table**"

11. ATTACHMENT OF DOCUMENT，DRAWING SAND TABLES

A. Operation Instruction (includes Electrical Schematic Diagram and Electrical Element List

B. Foundation Drawing

C. Lubrication Table

D. Packing List