



H. WINTER HOLZTECHNIK
Leipzig

OPERATION INSTRUCTION

WINTER CNC Zinkenfräse Typ 500



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INTRODUCTION

Thank you very much for selecting our machines. This manual will give you a detailed instruction of operation, maintenance and safe working. Please keep this manual carefully. Before operating, operators must read this manual carefully to ensure safety.

If you meet any problem during operation or of this machine itself, please contact local distributors or contact us directly. You will get the fastest and sincerest service. If you have any good suggestions on this machine or have different points on this instruction book, please directly inform us. We will give our attention to them and give you sincere appreciations.

NOTE: STATEMENTS AND DIAGRAMS IN THIS BOOK ARE FOR ILLUSTRATION ONLY. WE RESERVE THE RIGHTS TO MAKE FURTHER IMPROVEMENTS ON TECHNOLOGY, SPECIFICATIONS AND DIMENSIONS.

Symbol:



Danger----This symbol means there is a big danger. If don't notice this danger and adopt corresponding precautionary measure, it may cause serious injuries and deaths.



Warning— This symbol means there is a possible existence dander. If don't adopt corresponding precautionary measure, it may cause serious injuries and deaths.



Caution---- This symbol means there is a dangerous condition. It may cause bodily injury, machine damage or products loss.



Notice---- This symbol means the announcements which is connected with operation or using

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I. SAFETY PRECAUTIONS

Safety precautions describes some regulations to operate machine safely. Before operation, all parts of this manual must be fully understood.



1 、 GENERAL SAFETY REGULATIONS SAFETY PRECAUTIONS

Disoperation may lead to serious accidents and hazards to personnel. Users must follow the safety regulations below with extra attention.

To prevent accidents, read through this manual carefully before installation, operation or maintenance. Ignoring this point may lead to hazards to personnel safety.

Note: This machine is not allowed to be used out of its functions. Never use this machine before fully understanding its functions and use.

Hazards may arise from misuse, abuse, operating by personnel without adequate knowledge or operating by untrained or irresponsible personnel. WINTER shall not be responsible for any accident and loss caused by disoperation, misuse or abuse. Users shall be responsible for these risks and losses.

1) This machine shall be operated or maintained only by authorized, trained and appointed personnel. These operators must fully understand the possible hazards. Any personnel without good health or clear head are not allowed to operate this machine or stay near this machine.

2) Before operation, every authorized operator must read through this manual carefully, fully understand all the contents and be responsible for safety. This shall be recognized with signature by all the personnel taking part in operation.

3) While operation, any personnel except operator are not allowed to stay near this machine.

4) Responsibilities must be clearly assigned to operators for adjustment, changing tools, operation and maintenance. Operators are obligated to operate this machine under safe conditions.

5) While hoisting the machine, make sure the hoisting equipment's are capable of the weight of the machine.

6) Please check the bolt and screws periodically.

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1.2. PRECAUTIONS OF MACHINE

The machine uses for tenoning. If you want the machine to do other uses, please consult to manufactory. The process material must be standard type timber or wood, the sizes must be in conformity with the required specifications and parameters of the machine.

Cutter, feeding device and driving device have safety loophole from slow down running after machine stopped to machine stop running, cannot ignore. When open the protective hood and protective cover, notice the machine also has idling, don't touch the running cutter, feeding device and driving device.

Regularly inspect and clean all the safety instruction labels. Replace the labels that could not be read clearly from certain distance by new labels. Inspect all the safety devices every day and before starting machine operation.

All the safety devices being dismantled for installation, changing tools, repairing or maintenance must be kept in place again before starting the machine.

While performing maintenance, all the covers, hoods and shields are not allowed to be opened until the power is turned OFF and all the movable parts (cutting tools, feeding rollers etc.) come to a complete stop. Never dismount, change or damage any parts of the machine and safety devices without permission.

Apply only origin WINTER spare parts to the machine. We are not responsible for any loss or trouble caused by applying other spare parts or changing the machine without permission.

Wearing loose clothes, long hair, watches or ornaments may cause accidents (such as: being entangled by the moving parts). Therefore, operators must wear appropriate clothes, cap and take off the watch and ornaments.

Keep the vicinity of the machine clean and tidy. Trash (like oil stain or wood pieces) and obstacles may affect the safety of operation. Operators must wear safety goggles, safety veil and earplugs. Keep hands from in-feed area.

The machine just can work only in the case of a suction device to open; When the suction device working for the dust and dirt, please use the appropriate vacuum tube, and keep the enough air velocity and gas flow rate.

While the work piece is stuck during feeding, stop the feeding operation immediately. Before inspection, make sure the power is turned OFF and will not be started accidentally, and all the movable parts come to a complete stop, then doing the trouble shooting. Before leaving the machine, make sure the power is OFF and the machine will not start accidentally (by locking the main switch or posting up a notice).

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1.3 SAFETY RULES FOR ELECTRICAL WORKS

Be aware of the following safety instructions while doing works in the control cabinet:

- ① Before touch any movable parts, make sure the main power is cut OFF and will not be started accidentally.
- ② Only qualified electricians are allowed to perform the maintenance of electric system.
- ③ The machine must connect earth wire, avoid electric leakage.
- ④ After reinstalling or repairing electrical parts, all the safety devices (like the resistance of ground connection) should be tested again.
- ⑤ Signaling devices (limit switches) and other electrical parts should never be damaged or removed from the safety devices.
- ⑥ While opening the electrical cabinet, be aware that the internal terminators may have electric current and there is risk of electric shock. Before making sure the safety, never touch them.

NOTE:

The connection between the main switch and the power supply must be reliable.

Never use aluminum wires or cables.





BVR power cable is recommended. Use additional metal sleeve at the end of the cable and securely tighten it.

WINTER shall not be responsible for the damage of main switch caused by incorrect connection of power supply or the power cable not being connected reliably.

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1.4、 SAFETY INSTRUCTION LABELS

- Safety labels are attached on the machine and device for safety instructions and drawing attention for particular risks. Carefully read these labels and follow the instructions described there. Always keep the labels clean.
- Some typical labels are listed below. (Labels not listed here are some important as the labels listed below.)

Label	● Explanation
	<ul style="list-style-type: none"> ● High voltage power supply here. Do not open. ● Cut OFF the power supply for repairing and maintenance. ● Never touch any parts inside the cabinet with wet hand. ● Failure to do this may cause seriously hurt or death.
	<ul style="list-style-type: none"> ● Keep distance to rotating tools.
	<ul style="list-style-type: none"> ● Never touch rotating tools, feeding wheels/rollers and driving devices. .
	<ul style="list-style-type: none"> ● Electric shock danger!

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2、 MAIN FEATUERS AND SPECIFICATIONS

2.1、 SPECIFICATIONS

Working width.....	500mm
Working thickness.....	12-25mm
Main spindle speed.....	18000r/min
Qty. spindle.....	1
Space between tenoners.....	ajustable
Total power.....	3.0kW
Main spindle power.....	1.1kW
X-Axis Motor.....	0.75kW
Y-Axis Motor.....	0.75kW
Cutting period.....	3-30s

Processing: dovetail tenon, straight tenon and mortise, oblong, waist, irregular tenon and mortise

Overall Dimensions.....	170×75×125cm
Weight.....	600kg

Because of the request of safety:

When operate the machine, the specification of the work piece must strictly observe the technical parameter of this operation instruction, strictly prohibit working exceed the specification. Otherwise if there is any machine and person safe accident, our company will assume no liability for these.

2.2、 Characteristics of machine

The machine is developed according to the requirements of solid wood furniture manufacturing industry. The machine is making the high precision CNC dovetail tenoner. The machine is stable performance, high processing efficiency, and cost-effective. By setting different processing data, the machine can machine many kinds of tenoners. It is the ideal equipment of the solid wood furniture manufacturing. This machine has the following main features:

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- a、
X Y axis adopts imported linear guide, ball screw drive. It has the advantages of flexible movement and stable performance.
- b、
The powerful servo motor makes the moving stable and reliable. According to the workpiece material, the feeding speed can be adjusted.
- c、
In the touch screen, you can set and modify the data. The operation is easy, convenient and fast. No special training operator to work the machine.
- d、
The double working-position and each one is equipped with two pressing cylinder. It ensures the stability of the press and good processing quality.
- e、
The machine can process a variety of tenon, such as the dovetail tenon, straight tenon and mortise, oblong tenon, waist tenon, irregular tenon and mortise. It can adapt the requirements of conventional wooden components.

3、 INSTALLATION AND TEST OF MACHINE

- 1、 The machine can be transported by forklift. (The wood pad must be used in the contact face between the hoisting rope and machine, so it cannot damage the machine). Please pay attention to keep the balance of the machine. When the machine down close to the ground, it is necessary to slow down, and strictly prohibits fast landing, so it cannot damage machine.
- 2、 Put the machine on a solid ground.
- 3、 Make the machine bottom smooth, adjust the working platform to reach the level.
- 4、 Demolishing of fixed fittings, then you can start to connect electricity and air work.
- 5、 Use the soft wet cloth with the oil to remove anti-rust oil on the surface. Do not arbitrarily remove any parts in wipe. Check whether the parts of the machine are damaged, loose and other anomalies in transit and eliminated in time.
- 6、 Connect the power supply (see electrical schematic diagram)
 - ① Electric system: 3 PH, AC 380V $\pm 5\%$, 50Hz $\pm 2\text{Hz}$. Electric control system has been adjusted well when it is delivered from factory.

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- ② The machine is required to install an air switch with 40A at the machine's power supply. When you don't use or for electric machine maintenance, thus cutting machine power supply.
- ③ User is required to prepare 4 pcs of 4mm² copper wires which must connect the power supply, ground wire to the electrical cabinet and pay attention to the ground wire should be reliable connection.

The cable connection shall be performed by qualified technicians.

Requirements on the operation conditions:

Electric system: 3 PH, AC 380V $\pm 5\%$, 50Hz ± 2 Hz

Ambient temperature: 0°C ~ 45°C

Ambient humidity: Below 90% and no condensation

Ambient air condition: No abnormal dust, salinity, acidic or active gas.

Avoid direct light and heat radiation

No vibration

7、 PNEUMATIC CONNECTION

Connect the compressed air pipe to the pneumatic device. Maximum pressure of the air source is 8kgf/cm². The diameter of the inlet pipe is 8mm. Only dry, filtered and lubricated air could be used.

The air triplex is the filtering/adjusting/lubricating device, connecting the air source and machine, commonly set to 0.5-0.6MPa. Always keep proper amount of lubrication oil in it.

For adjustment, pull out the pressure adjusting knob and turn it clockwise to increase the pressure. After adjustment, push down the adjusting knob.



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8、 Preparation of dust collection devices

Connect the suction hoods of the machine to the dust collection devices with suction pipe. The diameter of the suction hood is $\Phi 80\text{mm}$.

The dust collection devices must produce air velocity of 25-30m/s on each suction outlet and Air amount needed for dust collection is 500~ 600 m³/h

Before you start the machine, you must start the dust collection devices.

9、

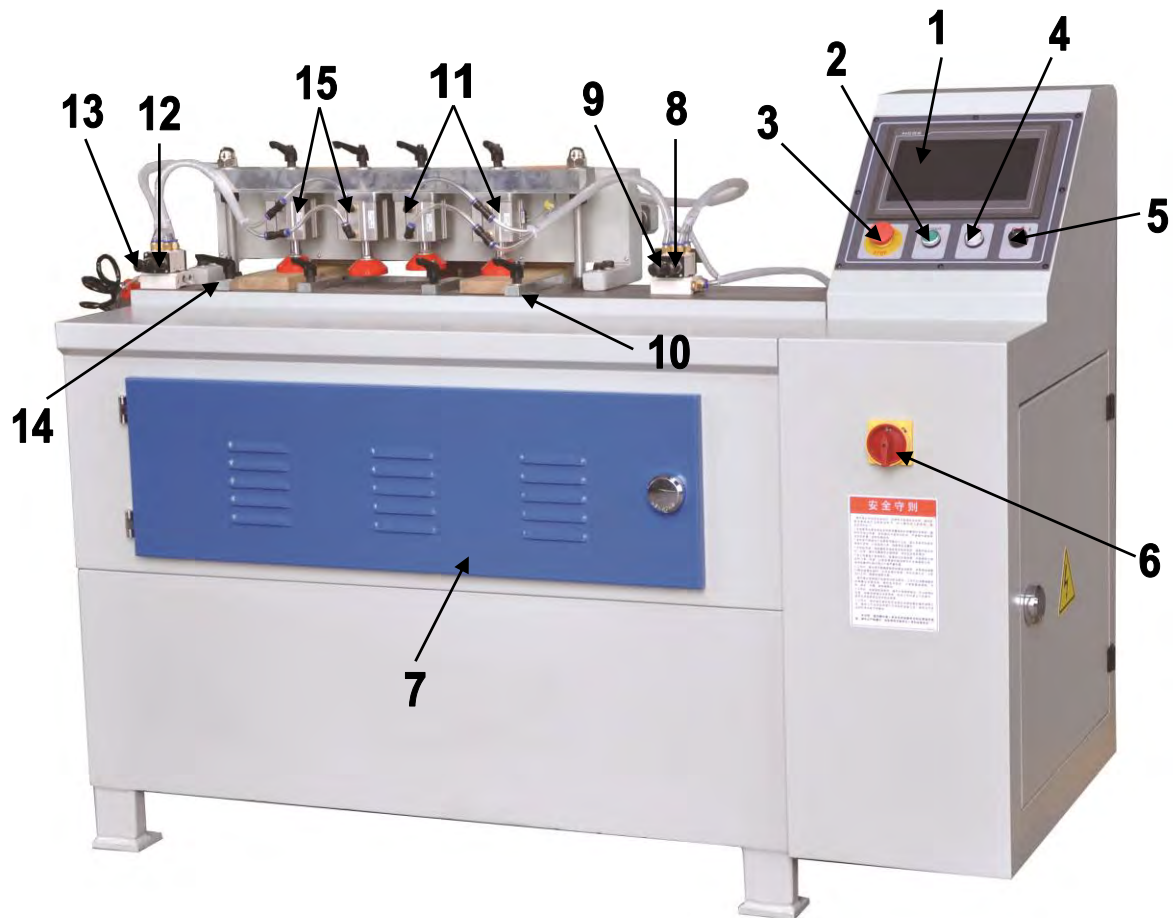
Check the machine working after finishing all connection:

- ① Connect the external source of the machine to ensure the pressure of the air source is enough;
- ② Turn on the external power source of the machine and turn on the main power switch of the machine
- ④ To power the machine control system; and make sure the light on the touch screen is lighting.
- ⑤ After finishing all connection, start the spindle motor, seeing the rotation direction is consistent with the logo, or you need to adjust the power line phase (two phases in a three phase).

Please refer to the fifth chapter of the machine operator instructions.

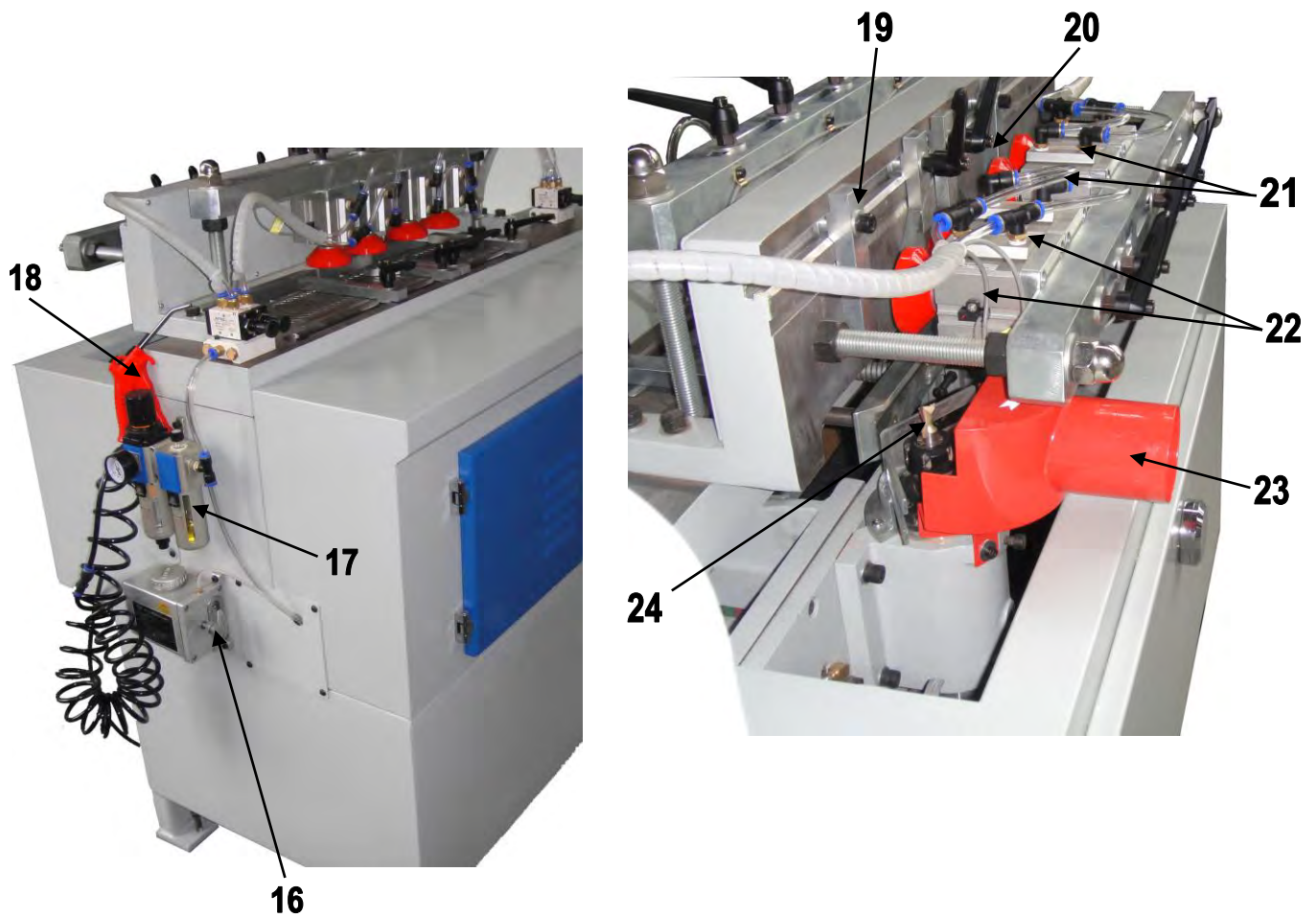
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4、 MACHINE PICTURE AND MAIN OPERATION PART



- 1、 CNC human-machine interface
- 2、 "auto start" button
- 3、 "emergency stop" button
- 4、 power indicator light
- 5、 power key switch for control system
- 6、 power switch
- 7、 front cover
- 8、 right back pressure valve
- 9、 front upper pressure valve in right side
- 10、 right horizontal baffle
- 11、 upper pressure valve in right side
- 12、 front upper pressure valve in left side
- 13、 rear pressure valve in left side
- 14、 left horizontal baffle
- 15、 upper pressure valve in left side

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- 16、 Manual filling pump
- 17、 Pneumatic FRL: valve, filter, lubricator
- 18、 Dust gun
- 19、 right vertical baffle
- 20、 left vertical baffle
- 21、 rear pressure cylinder in left side
- 22、 rear pressure cylinder in right side
- 23、 dust absorption pore
- 24、 cutter

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5、 Machine Human-machine screen operation instructions

1、 Characteristic

- TFT true color LCD display;
- The machine can provide compensation of tenon shape, and deviation of the tenon position; The debugging is fast and accurate;
- mechanical action, the whole display; Alarm logging, abnormal information notice.

2、 Size control precision: $\pm 0.1\text{mm}$

3、 Working environment and application requirements of machine:

- Only indoor, away from other vibration sources to avoid abnormal vibration of the machine.
- Do not use in areas where is a risk of explosion, such as the presence of flammable gases, vapors or severe dust.
- Do not use the machine where the temperature in a large change or high humidity environment, which may lead to condensation of water inside the device, resulting in damage to the device.
- Do not use sharp objects (such as nails, metal tools, etc.) to touch the surface of the human-machine interface, so as to avoid damage to the surface of the man-machine interface.

4、 Safety precautions during operation:

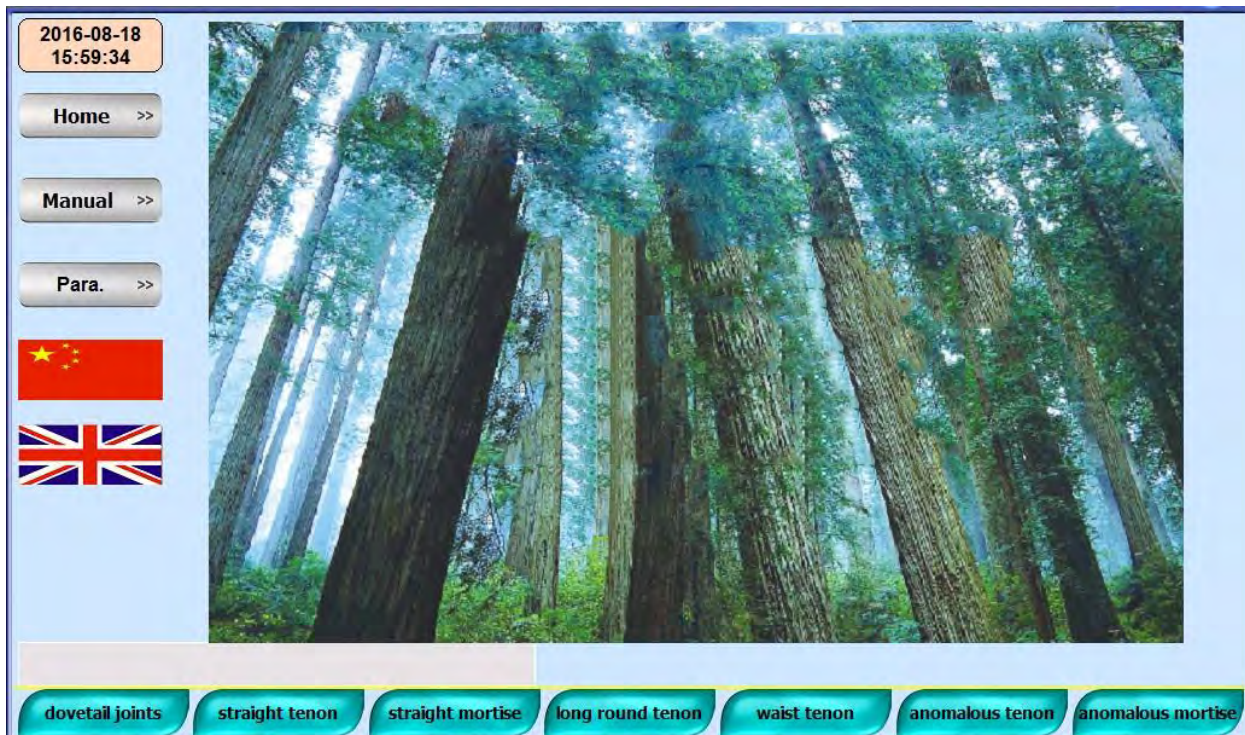
- During the machine working, shall not touch the part which is turning tool, feeding device and driving device.
- air pressure requirements are $\geq 0.4\text{MPa}$. Below the prescribed pressure may cause accidents.
- Nonprofessionals do not arbitrarily change the machine, or it may be cause the wrong mechanical operation and cause danger.

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5、 operation declaration

5.1、 System connect the electrical power

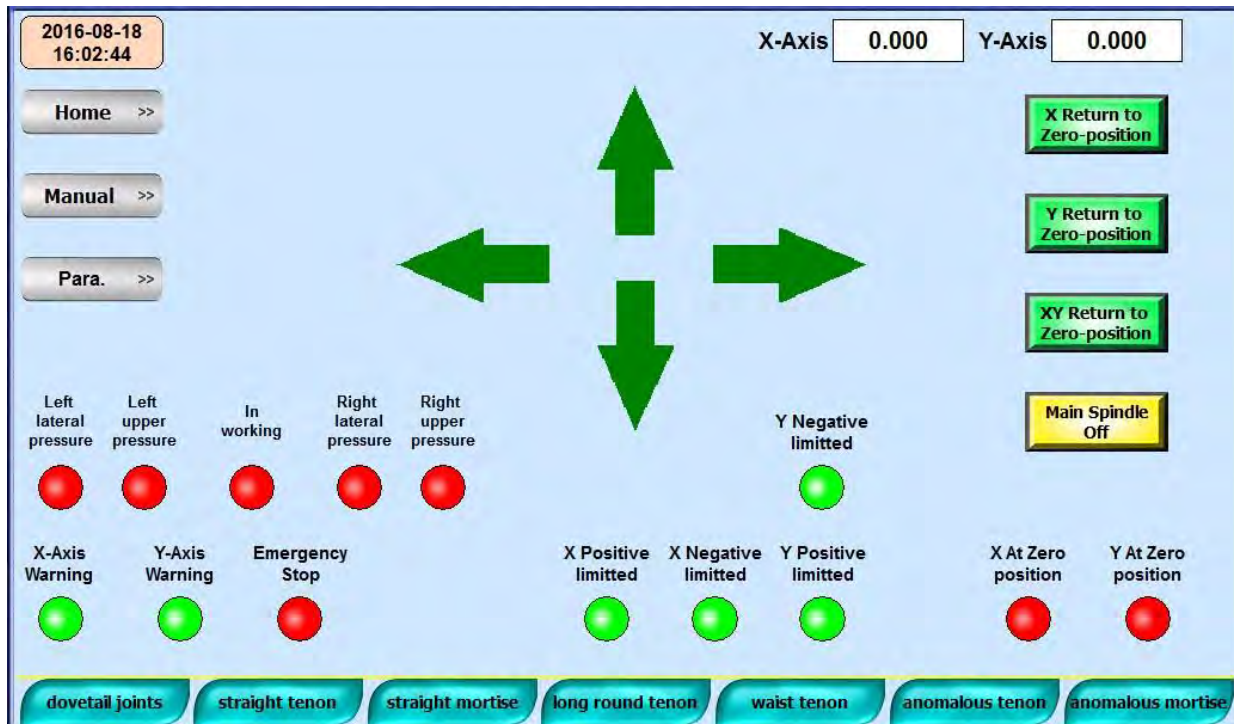
Connected to the external power supply, and turn on the machine main power switch, the power indicator light is lighting; turn on the " power supply for Control system " button, the human-machine interface screen is lit; display the following [home] screen:



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5.2. Adjust the power phase sequence

When the machine connects the electricity in 1st time, you must first check if the power supply into line phase sequence is correct. Under the "home page", press "inching operation" icon to switch to manual screen, display the following screen:



Click the above button, **【Main spindle off】**, after the main spindle is running, click on the [main spindle on] button again, in the process of spindle stop, check if the main spindle running direction is correct (from the top of the tool to observe the spindle, it should be run counterclockwise). If it is not correct, you must change the power phase sequence. (as a two phase of the three-phase)

Warning: if the mechanical operation is not correct, you can change the power supply into line after power in line of the machine has been turned off.

5.3. Install and remove the tool

Under the **【 inching operation】**, click the up and down, left and right arrow keys, make the milling spindle to move to the right place for installing and removing of the milling cutter.

In order to ensure safety, you have to change the cutter after you turn off the power in line.

After the milling spindle moves to the right place, insert



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special u-shaped fork from the main shaft end cover slot to prevent the spindle rotation, then you can start to installing and removing of the milling cutter. Counterclockwise is relaxing, clockwise is locking. After locking, you must remove the U –shaped fork.

5.4、 milling spindle back processing zero

When replacing knives or press emergency stop button to reset, the milling spindle need to go back to zero. Each shift, you must firstly do a back to zero when you start the machine. Back to zero operation, please switch to the "inching operation", press 【X return to zero- position 】 and 【Y return to zero- position 】, or press 【 XY return to zero- position】, make X and Y axis back to zero at the same time.

5.5、 each processing status screen

each tenon shape screen Common parameters instruction:

X coordinates and Y coordinates: Show the current position of the tool (zero point);

preset number: The number of scheduled to processing。

Actual number: the machine in a loop will automatically add 1.

Actual number: equal to the preset number, mechanical action, must according to the actual number "reset" button will reset after the action. When the actual number is equal to the preset number, the machine is not working, you must press [back to zero] and make the actual number back to zero

Linear speed: when the machine processing speed in a straight line.

Arc speed: when the machine processing speed in an arc line.

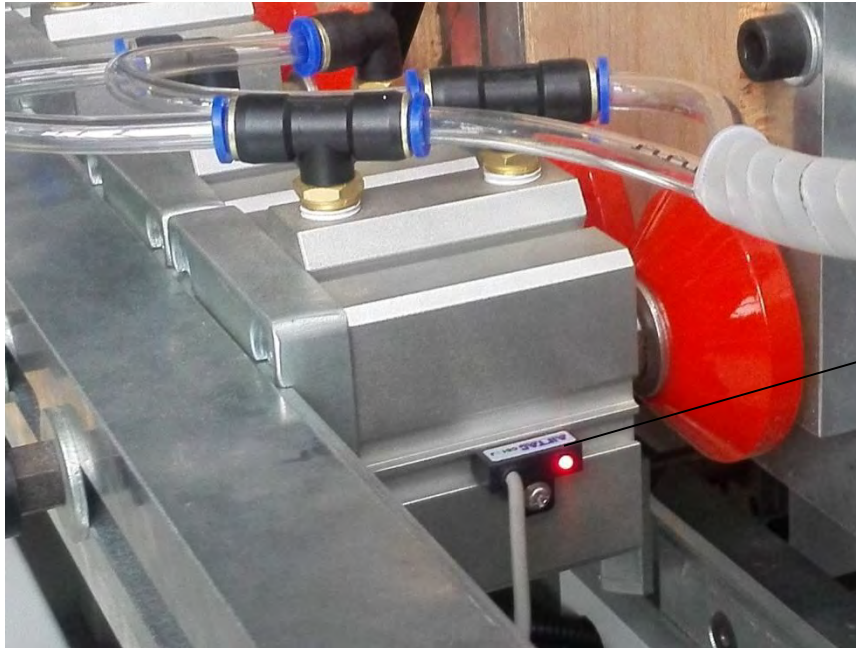
Note: you should choose small value in processing; choose the reasonable processing speed according to the bearing capacity and the processing effect of the cutting tool;

Single/multiple cycle: the initial should choose single processing, after the samples are qualified, you can choose multiple cycle processing.

You can choose the dovetail, straight tenon, straight mortise, long round tenon, waist tenon , anomalous tenon and anomalous mortise and input the reasonable processing parameters, then you can work out the corresponding products.

Before processing, you can check whether the workpiece is pressed by cylinder according to inductive switch which is on the pressing cylinder. When the workpicec is pressed in good station, the inductive switch light is lighting, and tool will enter the station for processing. Please accord to the thickness to adjust the position of the induction switch.

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感应开关

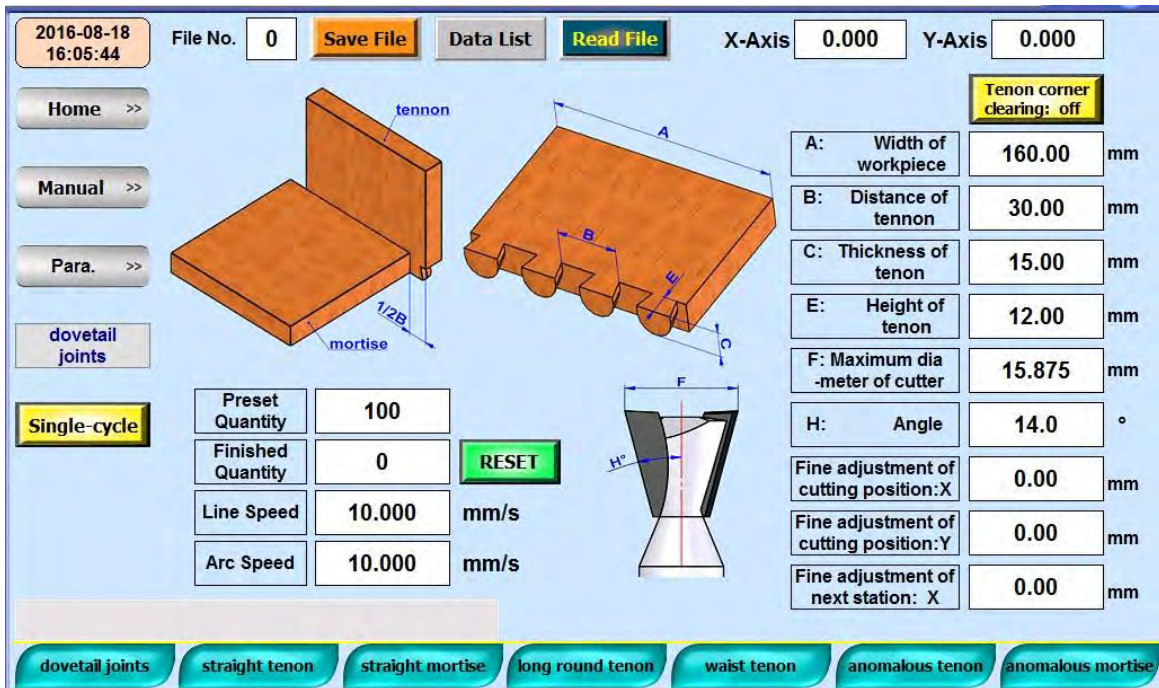
In processing station, you cannot press the hand valve to make the cylinder loose. You can lose and reload workpiece when the processing is finished.

After taking the vertical workpieces must first hand before seized artifacts, then loosen the pressure.

After the working, when you need to taking out the vertical workpiece, you should hold the workpiece by hand, and then loose the pressing cylinder. Otherwise the workpiece easy to fall off and the workpiece may be stuck

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5.5.1 dovetail joints processing



The screenshot shows the CNC control interface for the Zinkenfräse Typ 500. It includes a top status bar with date/time (2016-08-18 16:05:44), File No. (0), and X/Y-axis coordinates (0.000, 0.000). The main area features a 3D model of a dovetail joint with dimensions A through H. A table on the right lists the following parameters:

A:	Width of workpiece	160.00	mm
B:	Distance of tenon	30.00	mm
C:	Thickness of tenon	15.00	mm
E:	Height of tenon	12.00	mm
F:	Maximum diameter of cutter	15.875	mm
H:	Angle	14.0	°
Fine adjustment of cutting position:X		0.00	mm
Fine adjustment of cutting position:Y		0.00	mm
Fine adjustment of next station: X		0.00	mm

Additional parameters shown include Preset Quantity (100), Finished Quantity (0), Line Speed (10.000 mm/s), and Arc Speed (10.000 mm/s). A 'RESET' button is also visible. The interface includes navigation buttons like 'Home', 'Manual', 'Para.', and 'dovetail joints'. A bottom menu bar offers various joint types: dovetail joints, straight tenon, straight mortise, long round tenon, waist tenon, anomalous tenon, and anomalous mortise.

tenon position fine-tuning X: Adjust the distance between tenon and edge of the workpiece. The value is increasing, the tenon is far away from the Reference edge (the direction of the workpiece) tenon position fine-tuning Y: Adjust the distance between tenon and edge of the workpiece. The value is increasing; the thickness of tenon is decrease.

Bottom station fine-trning X: When alternative processing, adjust the left side tenon relative to the distance to the reference edge

Notes for processing dovetail joints:

- 1、 Please use the dovetail cutter, according to the need to adjust the height of the knife, and input the measured tenon height value; Input the correct cutter diameter and angle which show in the nameplate. [tip: by modifying the top diameter of cutter, increase will tighten (top diameter increase and tenon will become bigger, the motiser will become smaller); reduce the top diameter will become loose].
- 2、 Firstly, put the standing wood and then put the laying one, then press them. The standing wood and laying wood should keep 1/2 tenon distance. (adjusting the fence on the workstation)
- 3、 Tenon distance greater than 2 times (tool top diameter-TAN (tool angle) * Tenon high).

the item for the Workpiece positioning when the dovetail joints left & right alternating machining the right vertical baffle position has been adjusted when delivery from factory, usually do not

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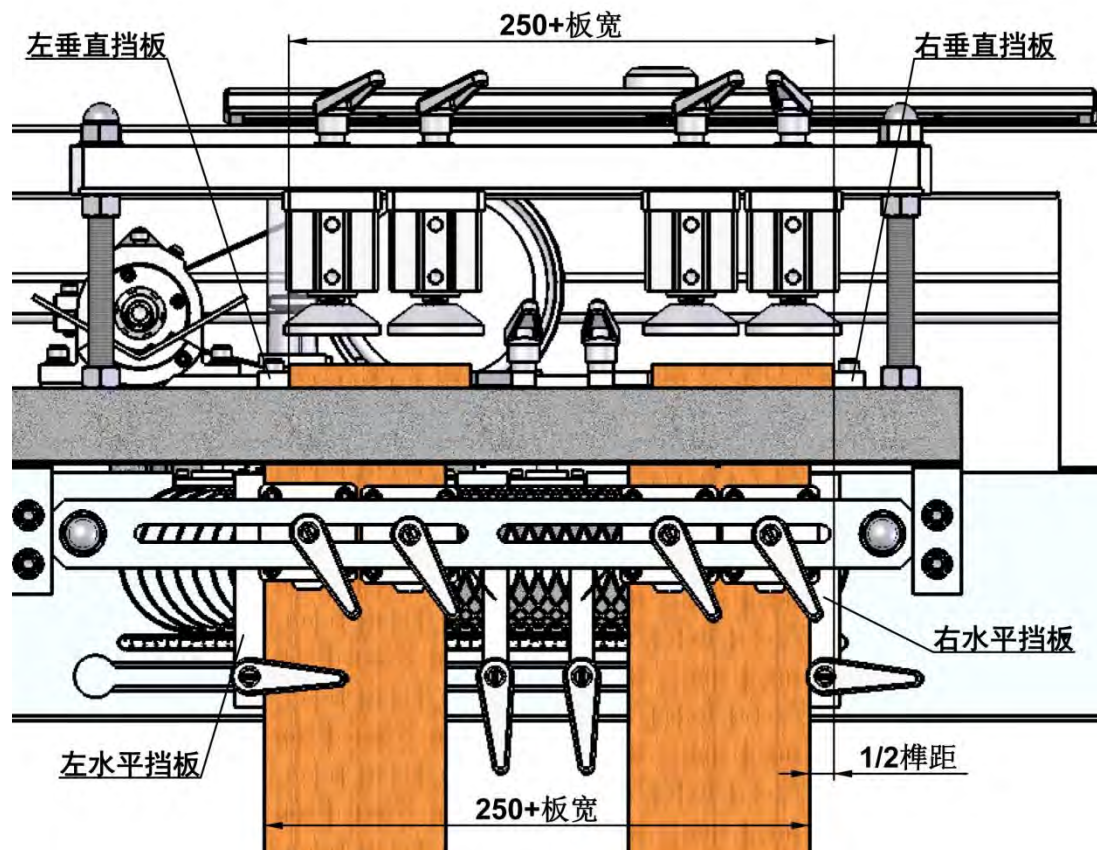
move;

Between the Right horizontal baffle and right vertical baffle keep staggering 1/2 tenon;

The distance between the two vertical baffle inside is 250mm + wood width;

The distance between the two horizontal baffle inside is 250mm + wood width;

Please see the picture:



左垂直挡板 :Left vertical baffle

右垂直挡板 :Right vertical baffle

左水平挡板 left horizontal baffle

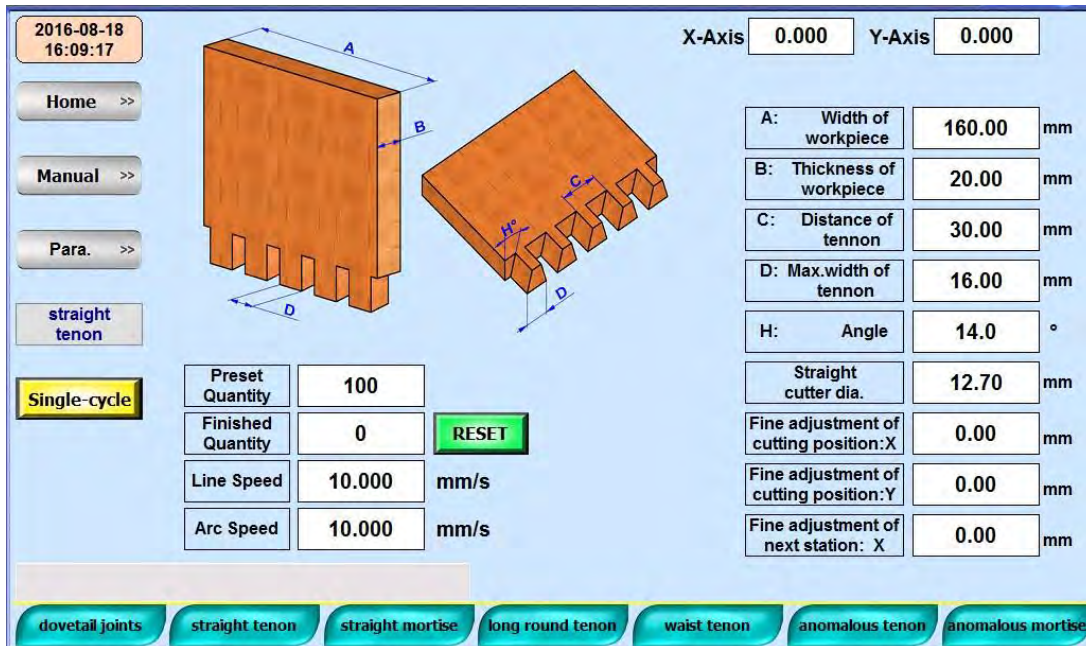
右水平挡板 right horizontal baffle

1/2 榫距 1/2 tenon distance

250+ 板宽 250+ wood width

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5.5.2 straight tenon processing :



2016-08-18 16:09:17

Home >>

Manual >>

Para. >>

straight tenon

Single-cycle

Preset Quantity: 100

Finished Quantity: 0

Line Speed: 10.000 mm/s

Arc Speed: 10.000 mm/s

RESET

X-Axis 0.000 Y-Axis 0.000

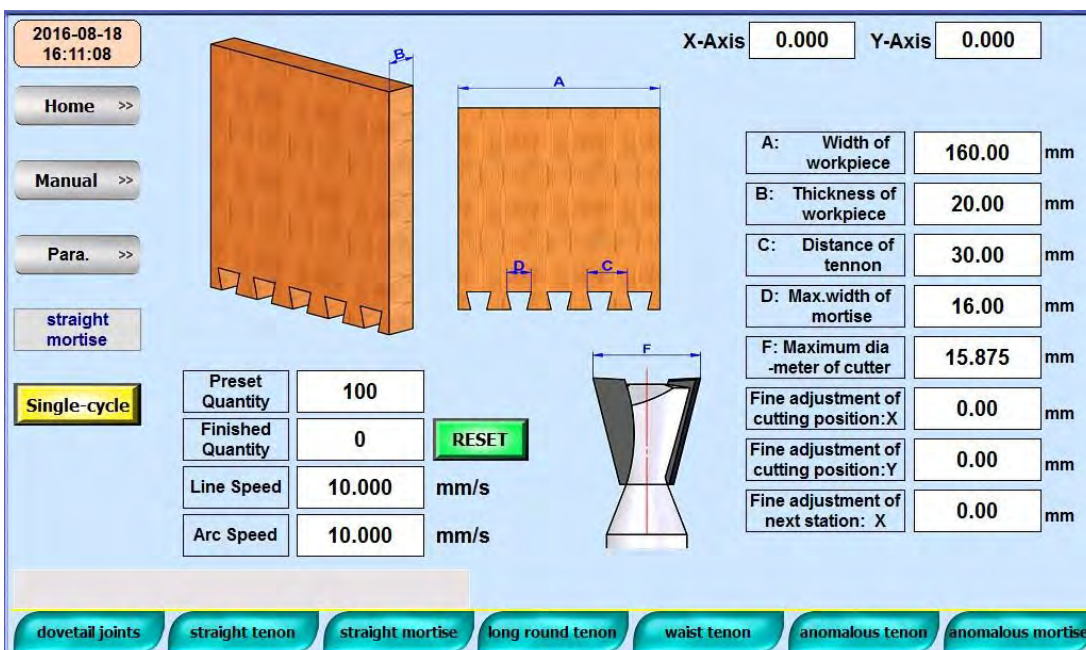
A: Width of workpiece	160.00	mm
B: Thickness of workpiece	20.00	mm
C: Distance of tenon	30.00	mm
D: Max.width of tenon	16.00	mm
H: Angle	14.0	°
Straight cutter dia.	12.70	mm
Fine adjustment of cutting position:X	0.00	mm
Fine adjustment of cutting position:Y	0.00	mm
Fine adjustment of next station: X	0.00	mm

dovetail joints straight tenon straight mortise long round tenon waist tenon anomalous tenon anomalous mortise

Note for straight tenon processing

- 1、 Processing the tenon, please use straight knife, and workpiece should be vertical put, the angel is that dovetail joint cutter 's angle.
- 2、 The big head is smaller than the big groove width 0.5 mm.
- 3、 The tenon position fine-tuning X need to be same as the mortise's settings

5.5.3straight mortises processing:



2016-08-18 16:11:08

Home >>

Manual >>

Para. >>

straight mortise

Single-cycle

Preset Quantity: 100

Finished Quantity: 0

Line Speed: 10.000 mm/s

Arc Speed: 10.000 mm/s

RESET

X-Axis 0.000 Y-Axis 0.000

A: Width of workpiece	160.00	mm
B: Thickness of workpiece	20.00	mm
C: Distance of tenon	30.00	mm
D: Max.width of mortise	16.00	mm
F: Maximum dia-meter of cutter	15.875	mm
Fine adjustment of cutting position:X	0.00	mm
Fine adjustment of cutting position:Y	0.00	mm
Fine adjustment of next station: X	0.00	mm

dovetail joints straight tenon straight mortise long round tenon waist tenon anomalous tenon anomalous mortise

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Note for straight mortise processing

- 1、 Processing straight mortise, please use the dovetail cutter and tenon distance is bigger than the cutter top diameter.
- 2、 The workpiece should be put vertically.

5.5.4 Long round tenon processing:

2016-08-18
16:13:10

Home >>

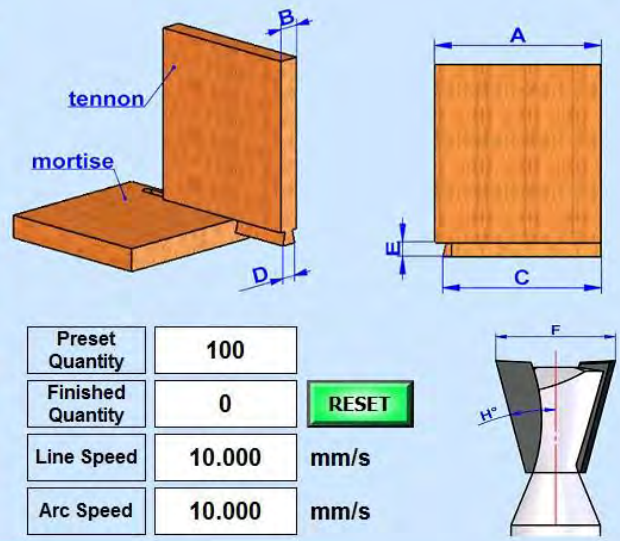
Manual >>

Para. >>

long round tenon

Single-cycle

Process Tenon



X-Axis	0.000	Y-Axis	0.000
A: Width of workpiece	160.00	mm	
B: Thickness of workpiece	25.00	mm	
C: Width of tenon	120.00	mm	
D: Max.width of tenon	18.00	mm	
E: Height of tenon	12.00	mm	
F: Maximum diameter of cutter	15.875	mm	
H: Angle	14.0	°	
Fine adjustment of tenon position: X	0.00	mm	
Fine adjustment of tenon position: Y	0.00	mm	
Compensate tenon	0.00	mm	
Fine adjustment of next station: X	0.00	mm	
Fine adjustment of mortise position: X	0.00	mm	
Fine adjustment of mortise position: Y	0.00	mm	

Preset Quantity	100	
Finished Quantity	0	RESET
Line Speed	10.000	mm/s
Arc Speed	10.000	mm/s

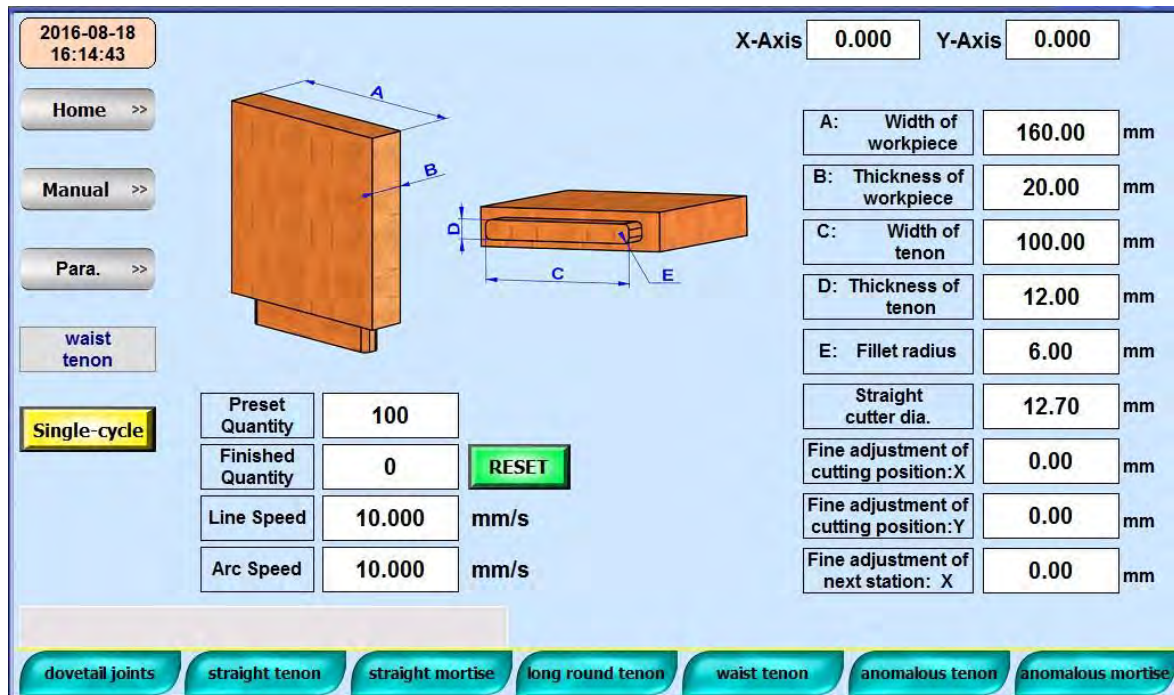
dovetail joints
straight tenon
straight mortise
long round tenon
waist tenon
anomalous tenon
anomalous mortise

Note for Long round tenon processing:

- 1、 Processing long round tenon should use dovetail cutters.
- 2、 by selecting the processing of public tenon and processing of public tenon choose male and female, separate processing, the public tenon vertical placement, the mother tenon horizontal placement. When the parameters of the tenon > width of workpiece, the mortise is groove.
- 3、 the public must be greater than tenon thick tip diameter of the tool.

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5.5.5 waist tenon processing



2016-08-18
16:14:43

Home >>
Manual >>
Para. >>
waist tenon
Single-cycle

X-Axis 0.000 Y-Axis 0.000

A: Width of workpiece	160.00	mm
B: Thickness of workpiece	20.00	mm
C: Width of tenon	100.00	mm
D: Thickness of tenon	12.00	mm
E: Fillet radius	6.00	mm
Straight cutter dia.	12.70	mm
Fine adjustment of cutting position:X	0.00	mm
Fine adjustment of cutting position:Y	0.00	mm
Fine adjustment of next station: X	0.00	mm

Preset Quantity	100	
Finished Quantity	0	RESET
Line Speed	10.000	mm/s
Arc Speed	10.000	mm/s

dovetail joints straight tenon straight mortise long round tenon waist tenon anomalous tenon anomalous mortise

Note for waist tenon processing

- 1、 Processing waist tenon should use straight cutters
- 2、 When the fillet radius is 0, the tenon is square tenon; When the wide and thickness of tenon is same and fillet radius is 0, tenon is square; When the wide and thickness of tenon is same and fillet radius = 1/2 tenon width = 1/2 tenon thickness, tenon is circular.
- 3、 The process is single pole at one time. If some places are not cutted, please reset reasonable parameters or replace a bigger cutting tools to solve.

CNC Zinkenfräse Typ 500

5.5.6 anomalous tenon processing

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16:16:27

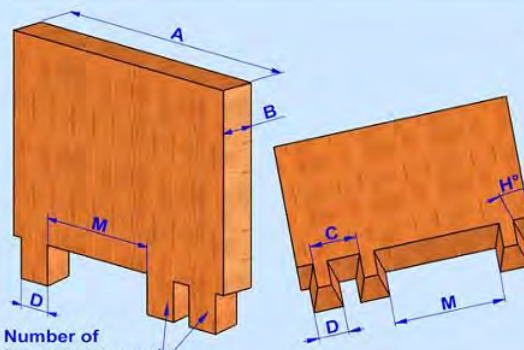
Home >>

Manual >>

Para. >>

anomalous tenon

Single-cycle



Number of tennons reserved

X-Axis 0.000 Y-Axis 0.000

A: Width of workpiece	160.00	mm
B: Thickness of workpiece	20.00	mm
C: Distance of tenon	30.00	mm
D: Max.width of tenon	16.00	mm
H: Angle	14.0	°
Straight cutter dia.	12.70	mm
Fine adjustment of cutting position:X	0.00	mm
Fine adjustment of cutting position:Y	0.00	mm
Fine adjustment of next station: X	0.00	mm
Reservation of right tennon	2	pcs
M: Spacing	80.00	mm

Preset Quantity	100	
Finished Quantity	0	RESET
Line Speed	10.000	mm/s
Arc Speed	10.000	mm/s

dovetail joints
straight tenon
straight mortise
long round tenon
waist tenon
anomalous tenon
anomalous mortise

Notes for anomalous tenon processing

1. When you make the anomalous tenon, please use straight cutter. Angle is the same with the dovetail cutter's Angle which is used for processing anomalous tenon.
2. The workpiece is put vertically. And the width of the tenon is smaller than the groove width 0.5mm

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5.5.7 anomalous mortiser processing

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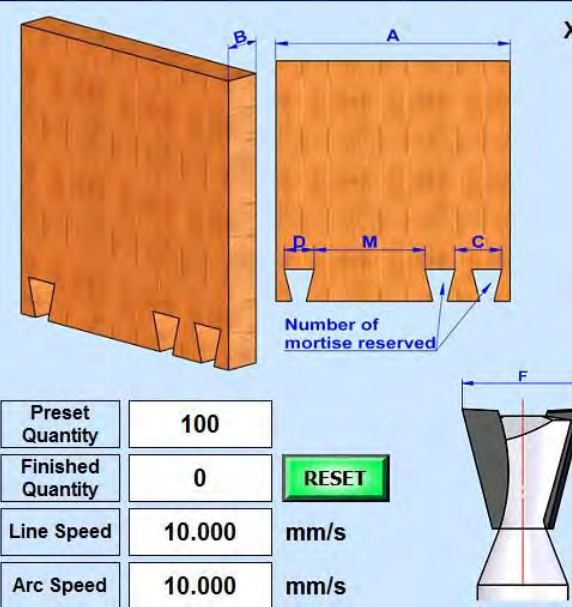
Home >>

Manual >>

Para. >>

anomalous mortise

Single-cycle



Number of mortise reserved

X-Axis 0.000 Y-Axis 0.000

A: Width of workpiece	160.00	mm
B: Thickness of workpiece	20.00	mm
C: Distance of tenon	30.00	mm
D: Max.width of mortise	16.00	mm
F: Maximum diameter of cutter	15.875	mm
Fine adjustment of cutting position:X	0.00	mm
Fine adjustment of cutting position:Y	0.00	mm
Fine adjustment of next station: X	0.00	mm
Reservation of right mortise	2	pcs
M: Spacing	80.00	mm

Preset Quantity	100
Finished Quantity	0
Line Speed	10.000 mm/s
Arc Speed	10.000 mm/s

RESET

dovetail joints straight tenon straight mortise long round tenon waist tenon anomalous tenon **anomalous mortise**

Notes for anomalous mortiser processing

- 1、 When you make the anomalous mortiser, please use dovetail cutter, and the mortises distance is bigger than the cutter's top diameter.
- 2、 The workpiece is put vertically.

5.6、 Power off

- II. After completion of work, close the key switch of control system power supply, make the man-machine interface turning off, and the same time, and please turn off machine power switch. Open the front door of machine cover, clean up the sawdust on the surface of the guide rail; clean work surface and the surrounding environment.

6、 ELECTRIC SYSTEM

The machine adopts 3 phase 50Hz/380V AC system. The electric control system is set properly before shipment. Users should prepare four copper core strand cables of section area over 4 mm² to connect the power source. Make sure the earth cable is connected reliably. Users must add an air switch of 20A capacity to the inlet of the power source, by which to cut OFF the power for reset or maintenance.

6.1、 Electrical control instructions (see P7)

(1) Close the door of the electric cabinet and connect the power supply and gas source. Turn ON the key switch. The power indication lamp HL1 (on the operation panel) will light.

(2) Turn on the key switch SA1 (on the operation panel), make the Man-machine interface electricity.

(3) After electrify, into the "home page" of the initial interface; Going into the Tenon type interface to adjust the cutter and pressing device according to the requirements and set the relevant processing parameters. After that, you can try one, if it is good qualified, then you can do mass production.

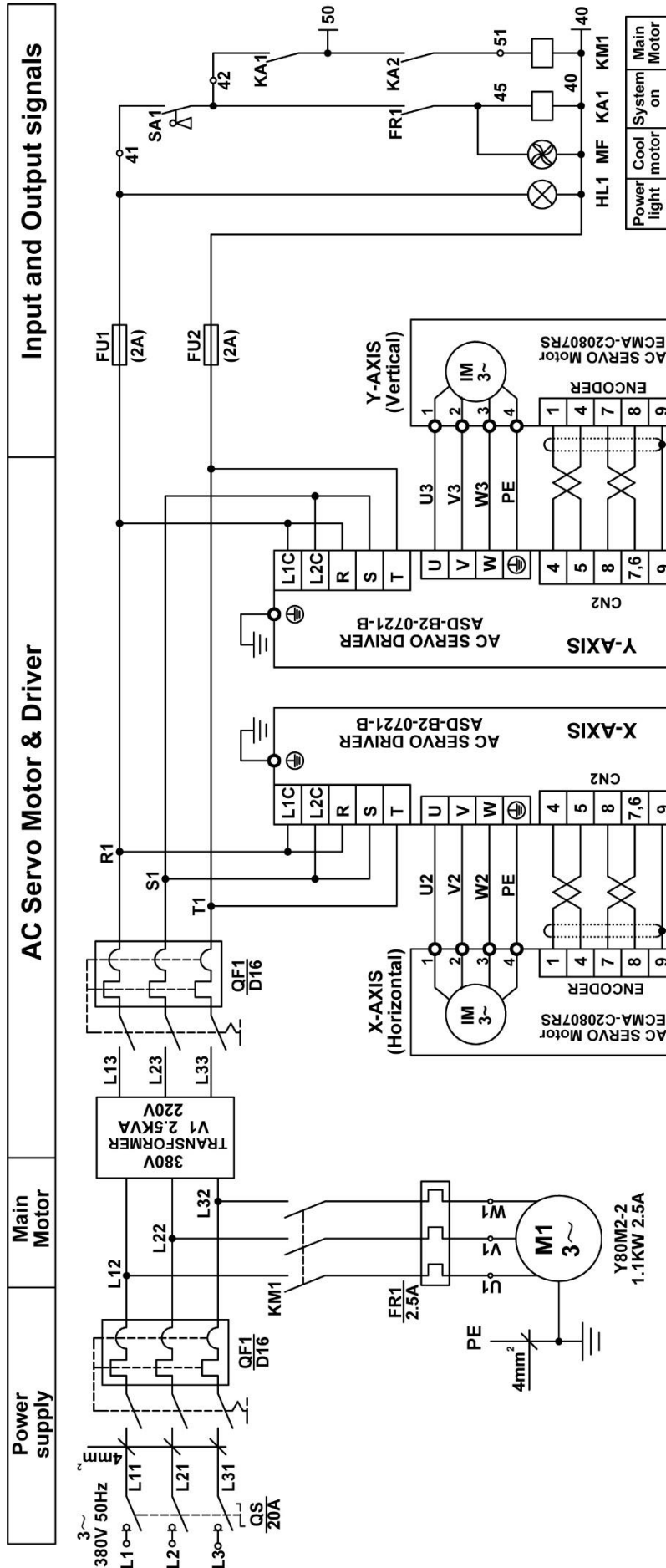
Please read the 5th part to study the detail of operation.

The following precautions must be exercised with extra care in electric operation:

- ----All the electric work must be performed by skilled electric technicians.
-
- ----If mechanical or electrical failure occurs, start the machine again only after the cause is found and the failure is eliminated.
-
- ----The electric parameters have been properly set before shipment. Never change the parameters without consulting your WINTER representative.
-
- ----Check the connecting point of the electric system periodically, at least once three months.
-
- ----Check the temperature of the motor regularly while the motor is running and eliminate any possible trouble.
-
- ----Clean off the chips and dusts in the electric cabinet periodically.

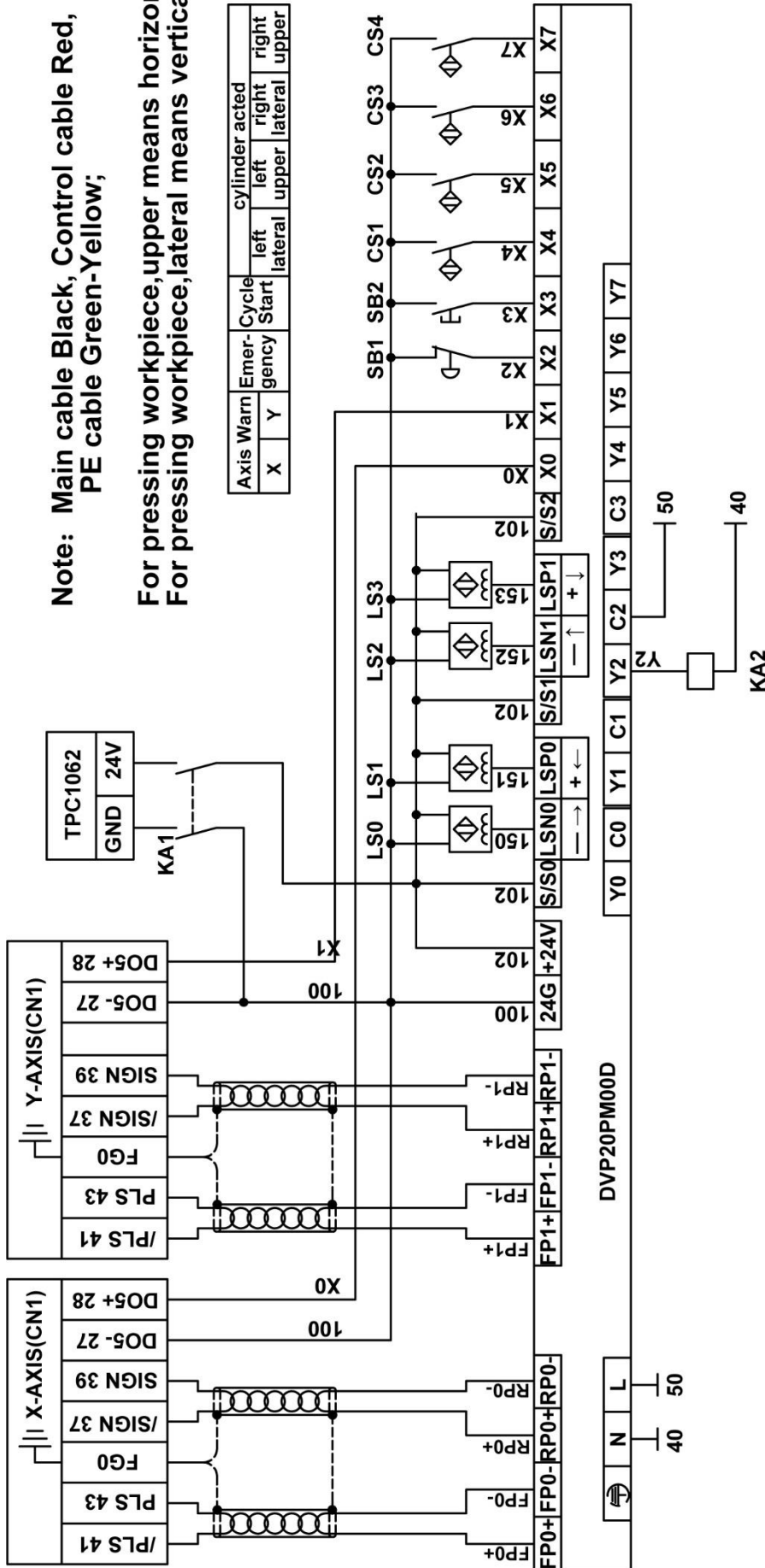
CNC Zinkenfräse Typ 500

6.2、Electrical schematic diagram



CNC Zinkenfräse Typ 500

Note: Main cable Black, Control cable Red, PE cable Green-Yellow;
For pressing workpiece, upper means horizontal.
For pressing workpiece, lateral means vertical.



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7、 Daily maintenance

For machine maintenance regularly, is the only way to keep the machine durability and stability.

- 1、 Please clean the sawdust on the machine worktable and in sides often, especially on the guideway.
- 2、 Each shift, you should pull out the oil pump handle, and then loose it, the oil pump will automatically filling. When the machine is working, you should check the stock tank, if the oil is insufficient, you have to add oil in time.



注油手柄

3. In the Air Treatment FRL, there must keep the right amount of lubricating oil. Please use # 32 (ISO VG - 32) lubricating oil.

8, diagnosis

8.1、 Mechanical and electrical fault diagnosis

	malfunction	Possible Causes of Failure	Troubleshooting
1	The power indicator does not light	A) The line power switch is not turned on B) no voltage control circuit C) Control circuit breakers trip	A) Turn on the line power switch B) The main line voltage is too low or at least one phase is missing C) Reset the circuit breaker

CNC Zinkenfräse Typ 500

2	The display unit is not illuminated	A) The control system is not started B) The spindle motor is overloaded and the control circuit is disconnected C) switching power supply is bad	A) Turn on the control system power key switch B) Reset the spindle motor thermal protector C) Replace the switching power supply
3	Auto does not work	A) The display unit does not respond B) The emergency stop button is pressed C) X or Y axis servo drive alarm	A) Check the screen and the motion controller connection B) Rotate and reset the emergency stop button C) Remove the alarm and then restart the power
4	Work table does not appear during machining	A) parameter input value, the limit switch action B) the material is not clamped, folder sensor switch does not shine	A) Re-enter the reasonable parameters B) clip the material, or re-adjust the sensor switch position
5	Machine noise and vibration	1, milling cutter too blunt 2, the machine is not smooth 3, the installation base is not solid 4, the belt is too large	1, grinding cutter 2, pad-level machine tools 3, check to exclude this phenomenon and reinforcement 4, tension belt or replace the belt

8.2、 Workpiece fault diagnosis

	Common malfunctions	cause of issue	Method of exclusion
1	Vibration is too large	(1) machine is not installed unstable (2) table feed buffer is not adjusted	(1) re-check the installation. (2) the middle of the lower two buffers to adjust the table, until the smooth so far.
2	Noise	(1) install the knife is not correct (2) spindle bearing bad	(1) re-install the knife, correct balance. (2) replace the bearings.
3	Processing tenon collapse	(1) spindle vibration, jitter (2) knife edge blunt (3) cutting speed too fast	(1) check the spindle rotation and the main axis to move the card, and be eliminated (with pad). (2) sharpening tools. (3) slow down the cutting speed.
4	The tenon is irregular	Slide rail loose, insufficient lubrication	Eliminate rail clearance.