

MX3815C-K CNC TENONING MACHINE

OPERATION MANUAL

NO.:



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 danger. 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 describe some regulations to operate machine safely. Before operation, all parts of this manual must be fully understood.



1-1. GENERAL SAFETY REGULATIONS

Miss-operation 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 attempting 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. QINGCHENG shall not be responsible for any accident and loss caused by miss-operation, misuse or abuse. Users shall be responsible for these risks and losses.

This machine shall be operated or maintained only by authorized, trained and appointed personnel. These personnel 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.

Before operation, every authorized personnel 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.

While stopping the machine, the tools, feeding rollers and the drive units will not stop immediately. Dangers may still exist during this period. When open the safety shield or safety hood, please be aware of the rotating parts of this machine. Note! Never touch cutting tools, feeding rollers and their driving devices before they come to a complete stop.

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

While hoisting the machine, make sure the hoisting equipments are capable of the weight of the machine.

Please check the machine's each connecting bolt after the machine working for a period of time. If you find the bolt loosening, please tighten it up so as to avoid accidents.



1-2. PRECAUTIONS OF MACHINE

The machine can do 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, cant 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 everyday and before starting machine operation.

All the safety devices being dismounted 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 QINGCHENG 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.

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).



1-3. SAFETY RULES FOR ELECTRICAL WORKS

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

Before touch any movable parts, make sure the main power is cut OFF and will not be started accidentally.

Only qualified electricians are allowed to perform the maintenance of electric system.

The machine must connect earth wire, avoid electric leakage.

After reinstalling or repairing electrical parts, all the safety devices (like the resistance of ground connection) should be tested again.

Signaling devices (limit switches) and other electrical parts should never be damaged or removed from the safety devices.

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.






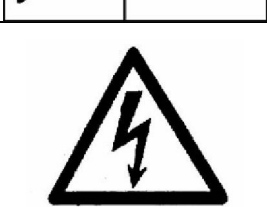
Never use aluminum wires or cables.

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

QINGCHENG 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.

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 same important as the labels listed below.)

Label	Explanation
	<p>High voltage power supply here.</p> <p>Do not open.</p> <ul style="list-style-type: none"> • Cut OFF the power supply for repairing and maintenance. • Never touch any parts inside the cabinet with wet hand.
	<p>Never approach moving parts and rotating tools.</p>
	<p>Ear protection must be worn.</p>
	<p>Protection glass and masks must be worn.</p>
	<p>Never touch rotating tools, feeding wheels/rollers and driving devices.</p>
	<p>Electric shock danger!</p>

1-5. NOISE LEVEL

The noise emission of this machine is over 85 dB while processing work pieces. It is necessary for operators to wear ear protection plugs or caps. Also, please be aware the following statement:

Statement on the emitted noise:

1. /A/ weighed level of noise pressure at idle

$$L_{pA} = 82\text{dB}$$

$$\text{Indefiniteness } K = 2\text{dB}$$

2. /A/ a measured level of acoustic power at the working place.

- planer machine – $L_{WA} = 100\text{dB}$
- thickness machine – $L_{WA} = 111\text{dB}$

$$\text{Indefiniteness } -K = 2\text{dB}$$

At 95% probability

'These figures quoted are emission levels and are not necessary safe working levels. Whilst there is a correlation between the emission and exposure levels, this can not be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the workforce include the characteristics of the work room, the other sources of noise etc. i.e. the number of machines and other adjacent processes. Also the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk.'

NOTE

Before starting operation of the machine, all involved personnel must read through this manual and fully understand this manual. The supervisor shall be responsible for this.

II. MAIN FEATUERS AND SPECIFICATIONS

2-1. Technical specifications

Max. Width of horizontal tenon	140mm
Max. Thickness of horizontal tenon	80mm
Max. Width of vertical tenon	80mm
Max. Thickness of vertical tenon	80mm
Max. Diameter of circular tenon	Φ80mm
Max. Depth of tenon	70mm
Diameter of Cutter	Φ30mm
Speed of main spindle	8500r/min
Power supply	3Ph/ 380V /50Hz
Main motor power	3kW
X spindle motor power	1.0kW
Y spindle motor power	1.0kW
Adjusting angle of work table (front)	20°
Pressure of air supply	0.6MPa
Weight	1000Kg
Overall dimensions	2150×1300×1780mm

The request of safety:

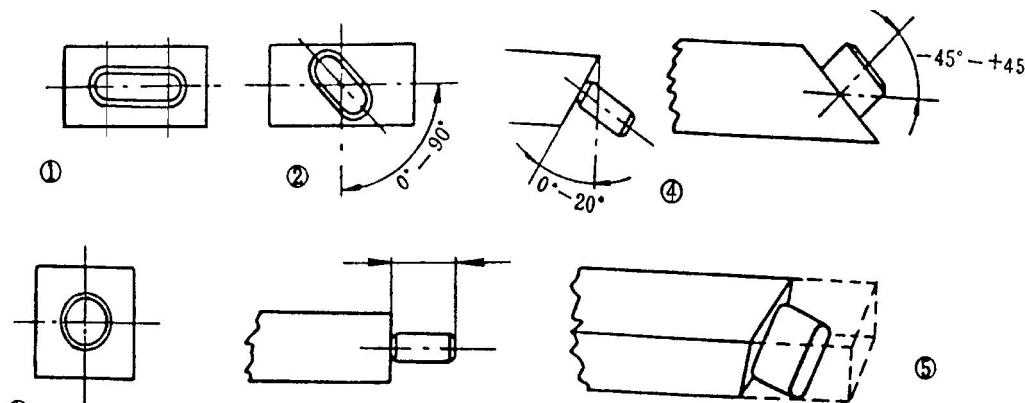
When operate the machine, the specification of the work piece must strictly observe the technical parameter of this operation instruction, strictly prohibit working exceed the specification. Otherwise if there is any machine and person safe accident, our company will assume no liability for these.

2-2. GENERAL FEATURES

This machine is widely used in processing tenon and the mass production of solid wood furniture, such as dinner tables and chairs.

Main features:

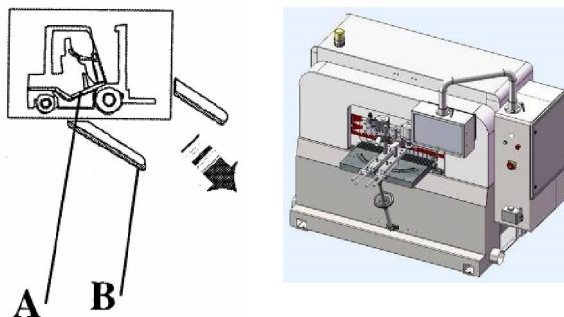
- The machine use specific CNC system which is high automatic. It is easy and quick for amending the tenon's size and it also reduce operation intensity. Provides high accuracy, easy operation & maintenance, well designed structure, safety and reliability, along with lower noise and convenient adjusting.
- The servo-motor is used for profiling. It makes the operation smooth and reliability. Speed step-less is available according to the material quality of working wood and feeding speed.
- Transmission is easy、stabilization、compact structure、small power and high revolving speed so the tenoning is high quality, the machine has high efficient.
- The cutter adopts a hard alloy composite head, ensuring a long service life, high wear resistance and well sharpening. The whole process of tenoning and chamfering can be performed at a time.
- This machine can machine tenons of different shape, such as horizontal tenon, oblique tenon, plane oblique tenon, solid oblique tenon and roundness tenon (See the follow picture). It can process tenons horizontally and vertically.



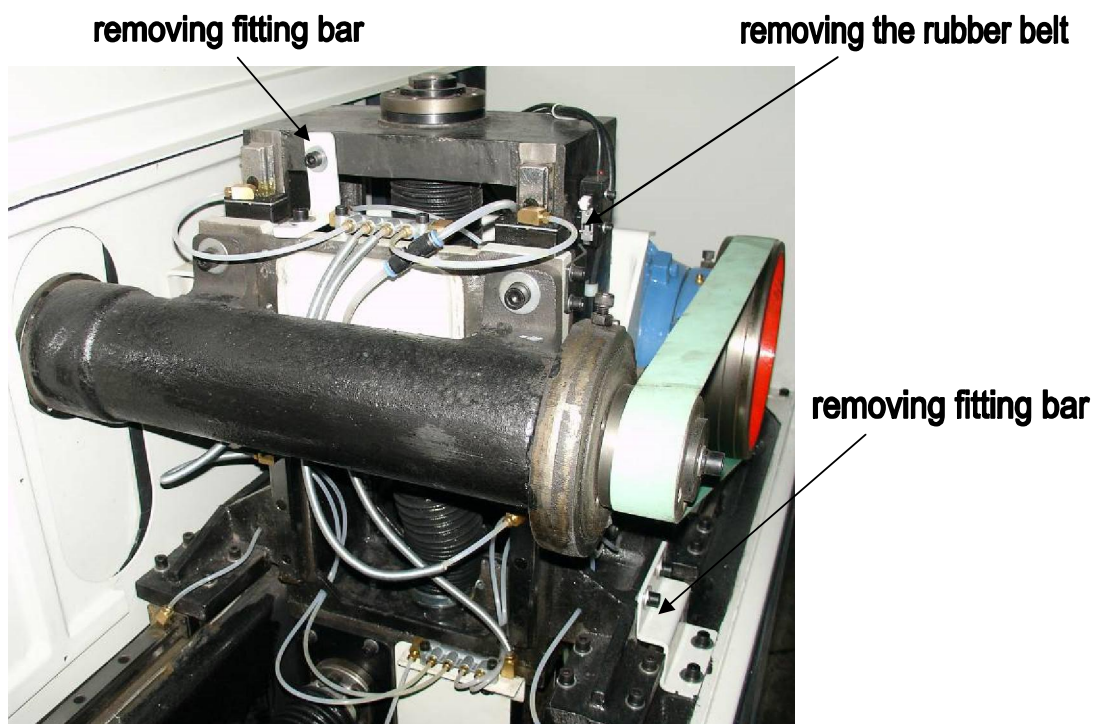
- ☐ horizontal tenon ② oblique tenon ③ roundness tenon
 ④ plane oblique tenon ⑤ solid oblique tenon

III. INSTALLATION AND TEST OF MACHINE

1. The machine can be carried by forklift. When carrying, drop down slowly, avoid damage the machine.
- Provide for a fork lift truck A with the respective load capacity, corresponding to machines weight.
- The fork B of the truck should be positioned to the machine as shown the following picture.



2. Place the machine on reliable and level ground.
3. Use spacers to keep the machine feet contact the ground reliably. Level the work table. Make sure no vibration of the machine.
4. Remove the fitting bar which is used during the transportation firstly. Then the machine can be electrified and ventilated (please see the picture).



5. Remove the anti-rust oil from metal parts. Never use inflammable dissolvent. Never dismount any part from the machine. Check the machine if it is good.
6. Electric connection (see electric diagram)
 - This machine adopts 3-phase, 4-wire, AC380V, 50Hz system. The electric control system was properly set before shipment.
 - Users shall add a 40A air switch at the power inlet line. Cut OFF the power while performing maintenance or taking breaks.
 - Users shall prepare four 4mm² cooper core wire to connect the power source and ground wire to the electric cabinet. Make sure the ground wire is reliably connected.

NOTE: Electric connection must be done by specialty electrician person who is familiar with local power utilization regulation.

Generally, please ensure the follow environment condition:

- 1) Electric system: 3 PH, AC380V $\pm 5\%$, 50Hz $\pm 2\text{Hz}$
- 2) Ambient temperature: 0℃ \sim 45℃
- 3) Ambient humidity: Below 90% and no condensation
- 4) Ambient air condition: No abnormal dust, salinity, acidic or active gas.
- 5) Avoid direct light and heat radiation
- 6) No vibration
- 7) Height above sea level: Below 1000m.
- 8) Transport and storage temperature: -25℃ \sim +55℃ (Maximum 70℃ for temporary storage less than 24h)

7. Connection of the air sources (See the drawing below)

- 1) Connect the compressed air pipe to the pneumatic device. Maximum pressure of the air source is 8kg/cm². The diameter of the inlet pipe is 8mm. Only dry, filtered and lubricated air could be used.
- 2) 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.
- 3) For adjustment, pull out the pressure adjusting knob and turn it clockwise to increase the pressure. After adjustment, push down the adjusting knob.



8. Connect the dust suction hood

There is two dust suction pipe in the front and below of machine which are to connect with vacuum cleaner.

The external diameter of dust suction hood is $\phi 120\text{mm}$, wind speed is 25~30m/sec. The wind speed of dust suction device is about 2000~2500M³/hour.

Before start-up this machine, must first start the dust suction device.

9. After electric connection well, confirm if the machine is running well;

- 1). Connect the external air source of the machine, and ensure the air pressure is enough;
- 2). Connect the external power supply, and turn on the power switch of the machine;
- 3). Turn on the control system key switch, and check if the touch screen is normal to start; if not, please turn off the machine power, then adjust the power source phase (any two phases in the three phases).

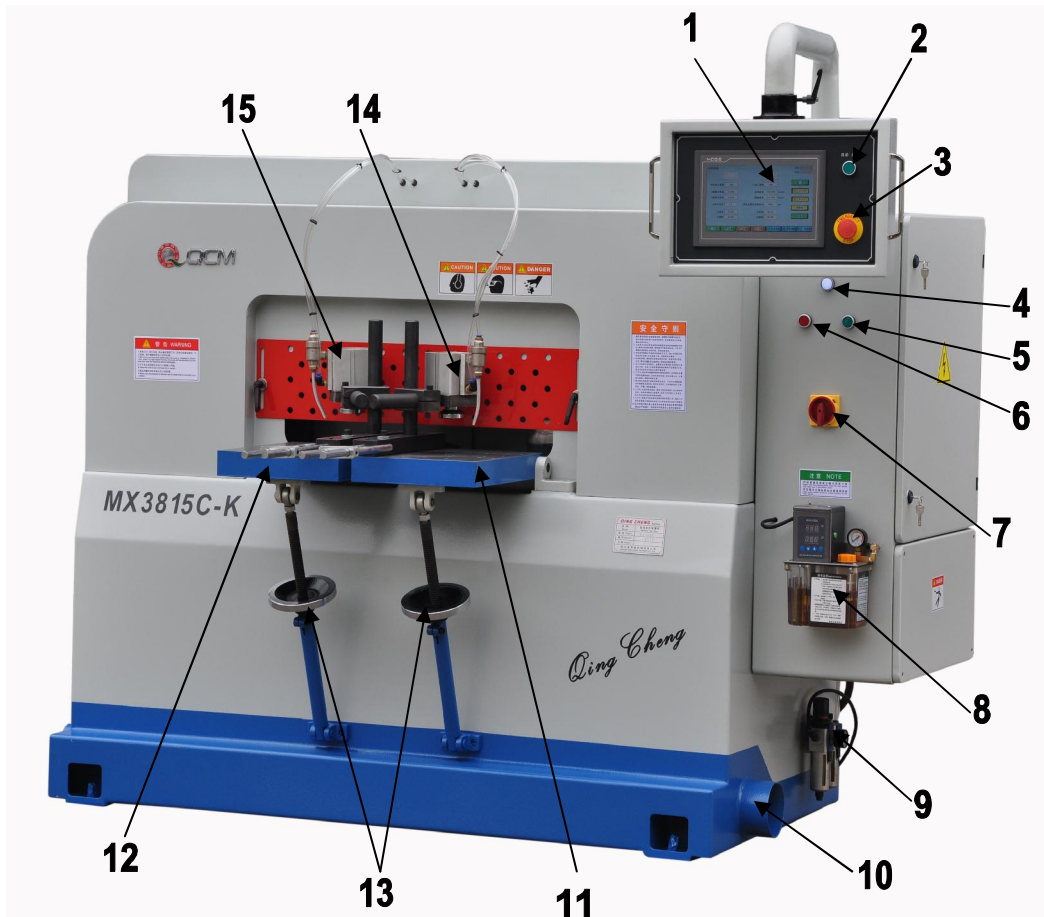
Because the machine has a phase sequence protection relay, if the power supply phase sequence is incorrect, the touch screen will not work properly.

- 4). After the machine connects the power supply, start up the spindle motor by manually, observe if the rotation direction is right.

Note: please read the instruction of CNC system carefully.

IV. MACHINE FIGURE AND MAIN OPERATION PART

4-1 MACHINE FIGURE



1. CNC system operation panel
2. Automatic Start-up button
3. Emergency Stop Button
4. Power light
5. System Start Button
6. System Stop Button
7. Switch of electrical source
8. Electric Lubricating pump
9. The filtering/adjusting/lubricating device
10. Dust suction port (Left & right)
11. Right Working Table
12. Left Working Table
13. Lean-adjusting lever
14. Right pressuring pneumatic cylinder
15. Left pressuring pneumatic cylinder

V. ADJUSTMENT METHOD

1. Adjusting the angle of the work table (front)

To machine the tridimensional inclined tenons, the work table should be adjusted for inclination.

Firstly, unfasten the lock bolt below the adjusting hand-wheel. Then rotate the hand-wheel for adjustment and fasten the lock bolt again after adjustment finished.

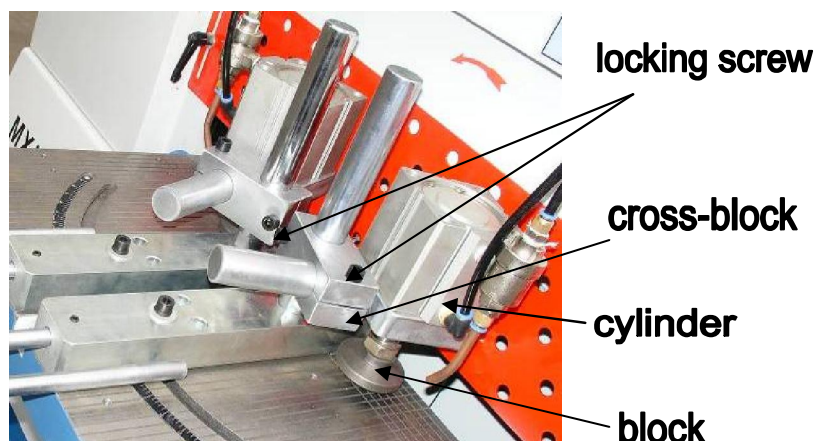


2. Adjusting the guiding rule

On each work table there is a guiding rule, the position of which should be adjusted according to the different position of the tenon. The work-piece must cling to the guiding rule while loading. The guiding rule is composed of a base and a movable rule. The movable rule can move within the hole of the base to satisfy work-piece of different length. For machining plain inclined tenons, unfasten the lock bolt of the base and turn the rule for a proper angle.

3. Adjusting the pressuring pneumatic cylinder

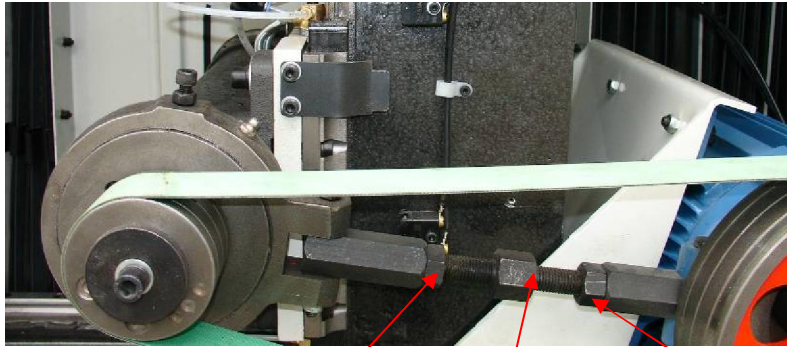
According to the different size of work-piece, you need adjust the pressuring pneumatic cylinder. Firstly, loose the two inner hexangular screws which is on the cross-block, then move the pressuring pneumatic cylinder's support and adjust the height of cylinder (Note: Before the machine working , there must be 5~10mm clearance between the pressure block and the work-piece, or they pneumatic cylinder will not pressure the work-piece firmly.) After adjusting, please tighten the screw again.



4. Adjust the tension of the belt

The belt should keep proper tension while running.

Open the rear-cover of the machine and then loosen the right threading and left threading nuts, after that, rotate the connecting bar between the motor and the spindle to make the belt keeping proper tension. After adjusting, please tighten the right threading and left threading nuts again.



left threading nut adjusting bar right threading nut

5. Adjusting the depth of the tenon

The depth can be adjusted through the adjustment of the composite cutter which is composed of two cutters, one for machining the head of the tenon and the other for the shoulder. You should adjust the spacer ring between the two cutters to change the relative distance to keep the depth requirements.

Safety rules need attend during working:

1. Because the cutter is rotating in high speed, the hand of operator must be far away from his working region.
2. When air source pressure is below 0.5MPa, forbid to open the machine
3. When the work-piece is not clamping fastly, you can not start working, and you must stop the machine and clamp the work-piece.
4. When operation, the length of work-piece which hold out the work table should not exceed the scope of the cutter's cutting area. The max tenon of mating cutter is 40mm. If the depth of tenon is more then 40mm, you need order new cutter.
5. When operator leave, must turn off the power source and confirm if the movement parts is in the condition of whole stop.

VI. HMI screen instructions

1. Feature

- 1) TFT color LCD;
- 2) 50 sets of memory processing size to choose from, read, stored and other functions;
- 3) To provide mortise compensating and tenon bit offset, and the adjusting fast and accurate;
- 4) Mechanical motion picture, the whole show; alarm recording function, abnormal information notification.

2. Size control accuracy: $\pm 0.1\text{mm}$

3. Machine work environment and use requirements

- 1) Indoor use only, away from other sources to avoid machine abnormal vibration.
- 2) Do not use the machine in explosive situations, such as the presence of flammable gases, vapors or dust serious place.
- 3) Do not use the machine in temperature or high humidity environment, which may lead to condensation of water inside the machine, causing the equipment damage.
- 4) Do not use sharp objects (such as nails, metal tools, etc.) to touch the surface of the man-machine interface, in order to avoid damage it.

4. Safety precautions when operating

- 1) When the machine is powered, it is prohibited to reach into the machine inside.
- 2) Air pressure requirements $\geq 0.4\text{MPa}$. Lower than the specified pressure may cause the pressing is not tight to causing accidents.
- 3) When the machine is powered down, left and right cylinder automatic under pressure, please pay attention to safety.
- 4) In order to avoid incorrect size mechanical operation, causing danger. The non-professionals are not allowed to change or operation arbitrarily

5. Operation instruction

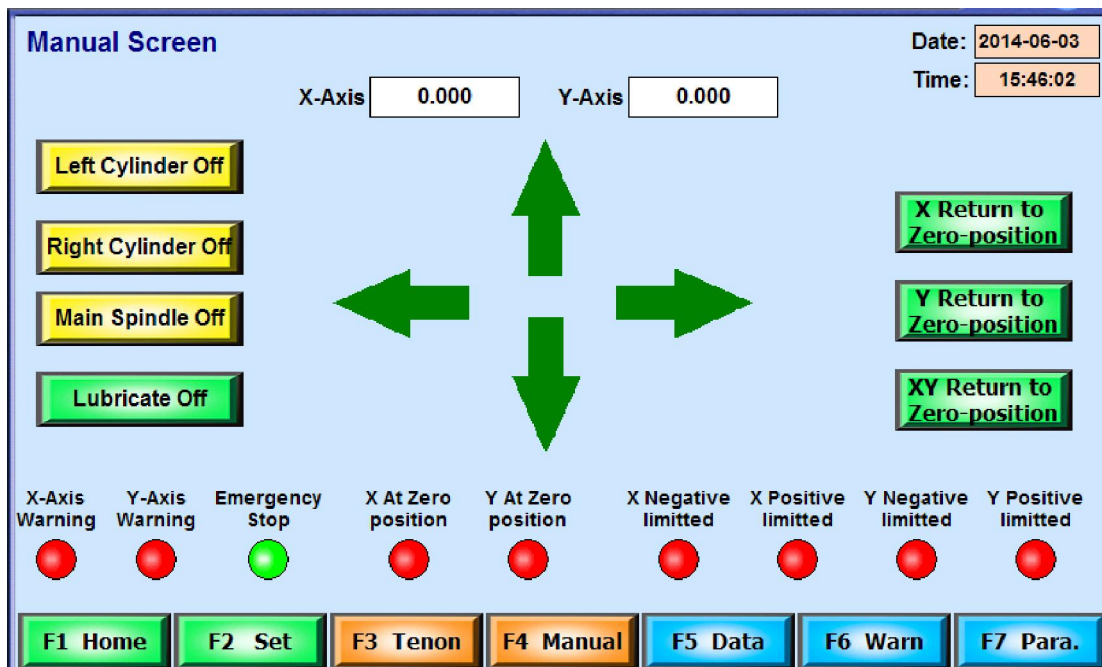
5.1 Connect the power source

Connect the external power supply, and turn on the main power switch, the power indicator light; Open the "control system power supply" key knob, man-machine interface screen lighting, the screen displays as follows: F1 home screen:



5.2、Power phase correction

You must check if the power line sequence is correct when the machine connect the power source firstly. In [F1 home] press the [F4 manual operation] icon to switch to the manual screen, showing the following screen:



Press [Main spindle off] button to confirm spindle running up , then press [spindle drive] button, in the process of spindle stop watch spindle rotation direction is correct (from the operating position to observe the spindle should be counter clockwise rotation); if it is not the correct must replace the input power supply phase sequence. (three phase of the two phase)

Warning: if the operation is not correct, it is necessary to make sure the electric power has been shut down when you correct the power supply line.

5.3 Instructions for the operation authority of machine

In order to facilitate the production management, this machine control system set up three kinds of operation authority: the operator, the manager, the manufacturer. Provide different access to the use of personnel.

Junior: operator who just can use the data, but cannot modify. Junior staff can be able to operate: [F1 Home], [F3 tenon], [F4 manual], [F5 data], [F6 warn]. This is the default level for the system.

Intermediate: manager. This level of personnel can set parameters for the product. The manager can operate the junior function, and also can do [F2 set] screen.

Top: manufacturer. This level of people can view and modify all the function (Note: this level is not open to the user). The step from the operator to the manager is:

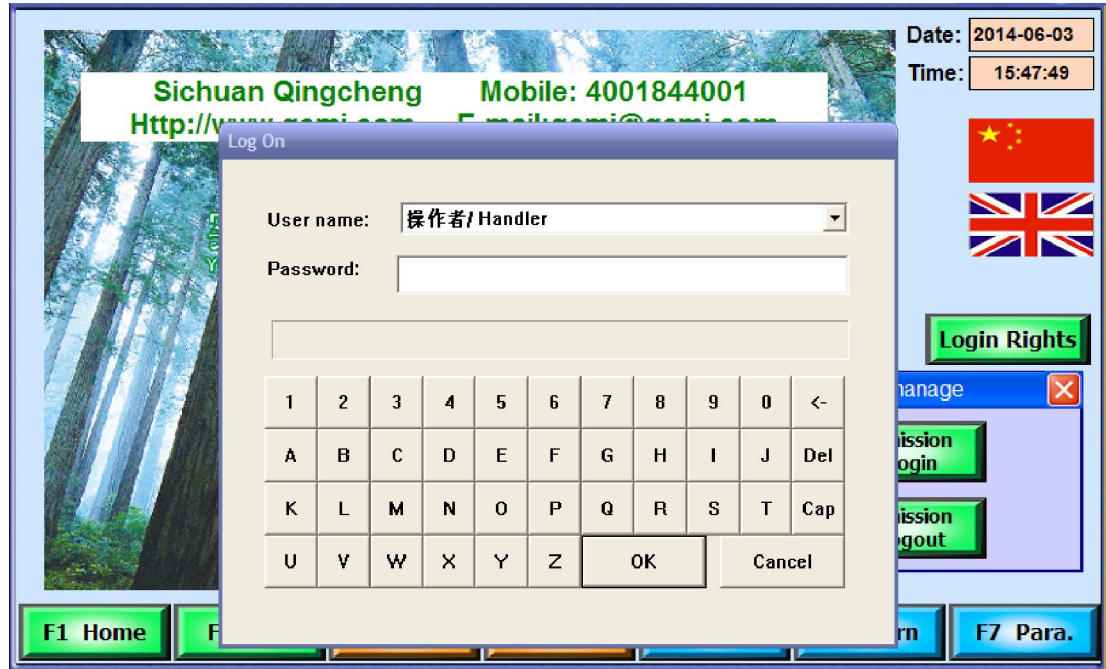
- Come into **【F1 Home】** :



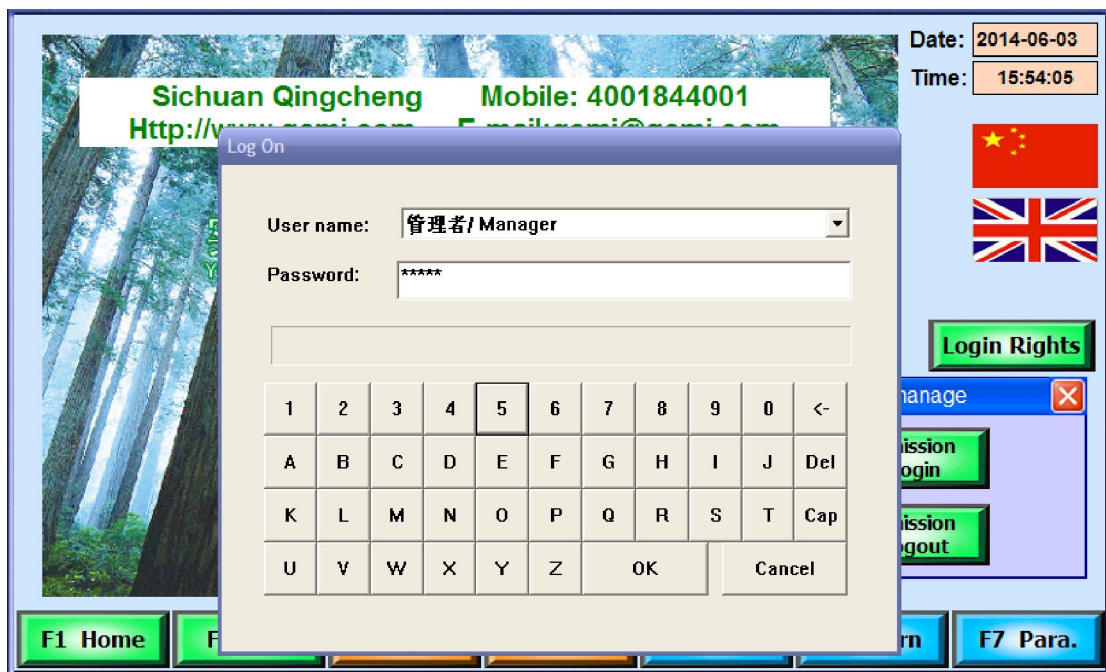
- 、Click **【Login rights】**



③、Click 【permission to login】 in 【permission to manage】 picture :



Click 【User name】 , as following:



□、Click [manager], and then click on the password area, click on the "12345", and finally to click the Enter. At this time, the login screen disappears, the operation level becomes the management level, and you can do the [F2 set].

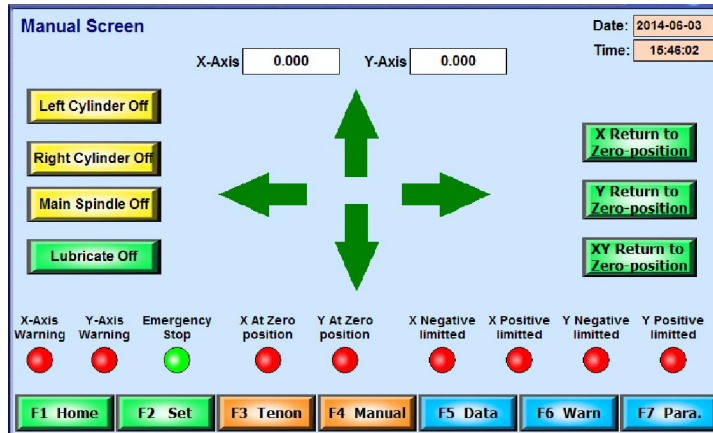
□、Exit the manager level and return to the operator level:

In [F1 home] interface, click [login right] icon, pop up [right management] screen, then click [exit].

5.4. Assembly and disassembly tool

In [F4 manual] screen, press up, down, left and right arrow keys make the milling cutter axis to moving to the right position, and then you can start the assembly and disassembly of the milling cutter.

In order to ensure the safety, you must make sure that the machine is power off when you replace the cutter. At the same time, the rotation direction of the cutter axis must keep same with the milling cutter's direction.



After the milling cutter axis move to suitable position, the tool insert to the groove from the end cover hole of the main shaft (e.g. screwdriver), to prevent the rotation of the spindle. Please see the right picture.

5.5. The milling cutter axis return the zero position

When you replaced the cutter or press the emergency stop button to reset, the milling cutter shaft must to return to zero. Each shift, it is the 1st step to perform to return zero position.

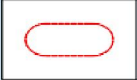

When you do the return to "zero operation", please switch to the [F4 manual], press [X return to zero-position] so that the X axis back to the zero point, and then press [Y return to zero-position] so that the Y axis back to the zero point., Or press [XY return to zero-position], the X and Y axis return to zero-position at the same time.

5.6、Operation and management of processing work piece

In [F1 home] interface, click [manager] to login, click [F2 products] to enter the product settings screen:

Product-setting Screen I

Current File No. Date: Time:

	
Left-wood Width <input type="text" value="30.00"/>	Right-wood Width <input type="text" value="40.00"/>
Left-wood Thickness <input type="text" value="20.00"/>	Right-wood Thickness <input type="text" value="28.00"/>
Left-tenon Width <input type="text" value="20.00"/>	Right-tenon Width <input type="text" value="32.00"/>
Left-tenon Thickness <input type="text" value="10.00"/>	Right-tenon Thickness <input type="text" value="14.00"/>
Left-tenon Radii <input type="text" value="5.00"/>	Right-tenon Radii <input type="text" value="7.00"/>
Left-angle of rotation <input type="text" value="0.0"/>	Right-angle of rotation <input type="text" value="20.0"/>
Horizontal Move Of Left-tenon <input type="text" value="0.00"/>	Horizontal Move Of Right-tenon <input type="text" value="0.00"/>
Vertical Move Of Left-tenon <input type="text" value="0.00"/>	Vertical Move Of Right-tenon <input type="text" value="0.00"/>

Buttons: **Read Para.**, **Save Para.**, **Compensation setting**

Footer: **F1 Home** **F2 Set** **F3 Tenon** **F4 Manual** **F5 Data** **F6 Warn** **F7 Para.**

{Current File No.} is the document number, ranging from 1 to 50; when the work-pieces on the left & right working table is qualified, you can choose a digital file to click [save Para.] save parameters. When the work-piece is processed by the same type in future, you just need to choose the corresponding file number and click [Read Para.], and the parameters are read out to be processed.

The left & right working table can process different tenon, the left and right work-piece can be different.

Take the left working table work-piece setting as an example:

{ **left-wood width** } 、 { **left-wood thickness** } is the section size of the work-piece,

The unit is MM.

{ **left-tenon width** } 、 { **left-tenon thickness** } is the section size of the tenon, the unit is mm;

Note: tenon width ≤ wood width, tenon thickness ≤ wood thickness;

{ **left-tenon radii** } , the unit is mm; Note: the radii of tenon ≤ 1/2 tenon thickness. When the radii of tenon = 1/2 tenon thickness, it is Oval tenon;

When the radii of tenon = 0, it is Square tenon;

When the width of tenon = tenon thickness = 2 times tenon radii, it is round tenon;

{ **left-angle of rotation** } , 0~90°. This parameter is required for processing the oblique tenon.

{ **Horizontal move of left-tenon** } 、 { **Vertical move of left-tenon** } , the unit is mm; These two values need to be corrected according to the relative position of the tenon.



When the two values are 0, the center of the tenon is the work-piece center in theory. When the tenon need offset on the section of work-piece, you just need to change the two values.

For the left working worktable, Horizontal direction: the tenon is far away from the fence, the horizontal offset is positive;

Vertical direction: the tenon is far away from the working table, the vertical offset is positive;

The right working table work-piece setting is same with the left one.

(2)、After setting , Click **【F3 Tenon】** to try to work , as following :

Maching Screen				Date:	2015-10-22
				Time:	14:50:15
				RESET	
Preset Product Quantity	100	Finished Product Quantity	0	Left-table On	
X-Axis Position	0.000	Line Speed	30.000 mm/s	Right-table Off	
Y-Axis Position	0.000	Arc Speed	30.000 mm/s	Single-cycle	
Product No.	3	Unilateral Multi-cycle pressing-delay	4000 ms	Left Normal	
Left-tenon Width	20.00	Right-tenon Width	32.00	XY Return to Zero-position	
Left-tenon Thickness	10.00	Right-tenon Thickness	14.00		
F1 Home F2 Set F3 Tenon F4 Manual F5 Data F6 Warn F7 Para.					

Click **【Left-table On】** and **【Single-cycle】**, { **Line Speed** }、{ **Arc Speed** } are stted to a smaller value. Put the work-piece on the left working table, and adjust the left pressing cylinder to right position. And click the “automatic start” , The spindle motor will start firstly , then the pressing cylinder will press down, the milling cutter will close to the work-piece from the zero position. The milling cutter rotates around the work-piece a round, the cutter return the zero position, then the pressing cylinder return back and the spindle motor stop .

Click **【right-table On】** and **【Single-cycle】** , and to try to make the tenon on the right working table.

Check the tenon size, go to the **【F2 set】** , click the **【compensation setting】** :

Product-setting Screen II				Current File No.	3	Date:	2014-06-03
						Time:	16:58:48
Left-tenon Width Compensation	0.00	Right-tenon Width Compensation	0.00	Read Para.			
Left-tenon Thickness Compensation	0.00	Right-tenon Thickness Compensation	0.00	Save Para.			
Horizontal Distance Between Cutter & Left-workpiece	76.000	Horizontal Distance Between Cutter & Right-workpiece	76.000	Return			
Vertical Distance Between Cutter & Left-worktable	45.000	Vertical Distance Between Cutter & Right-worktable	45.000				
F1 Home F2 Set F3 Tenon F4 Manual F5 Data F6 Warn F7 Para.							

When the tenon width is smaller than the setting value, {tenon width compensation} is positive. On the contrary, if the tenon width is bigger than the setting value, the compensate is negative; {tenon thickness compensation} setting method is same.

Usually, please do not change these parameters : {Horizontal Distance between Cutter & work-piece} and {Vertical Distance between Cutter & work-piece}

After setting , return 【F3 Tenon】 , try again to check the each parameters.

(3)、After testing , you can start to work in mass production. Click 【F3 tenon】 :

Maching Screen

Date: 2016-10-22
Time: 14:57:13

RESET

Left-table On

Right-table On

Multi-cycle

Left Normal

XY Return to Zero-position

F1 Home F2 Set F3 Tenon F4 Manual F5 Data F6 Warn F7 Para.

Diagram 1: A rectangle with a red oval inside, representing a work-piece.

Diagram 2: A red oval, representing a tenon.

Parameters:

Preset Product Quantity	100	Finished Product Quantity	0
X-Axis Position	0.000	Line Speed	50.000 mm/s
Y-Axis Position	0.000	Arc Speed	50.000 mm/s
Product No.	3	Unilateral Multi-cycle pressing-delay	4000 ms
Left-tenon Width	20.00	Right-tenon Width	32.00
Left-tenon Thickness	10.00	Right-tenon Thickness	14.00

In {Preset Product Quantity} , input the work-piece quantity;

Click 【reset】 , {Finished Product Quantity} is zero;

{Line speed} 、 {arc speed} can be gradually increased after the operator is familiar the machine.

Click 【Left-table on】 、 【right-table on】 、 【left Normal】 and 【multi-cycle】 , click“automatic start”, the two working tables can alternate work. When the quantity of {Finished Product Quantity} is same with the {preset product quantity} , the machine will stop automatically.

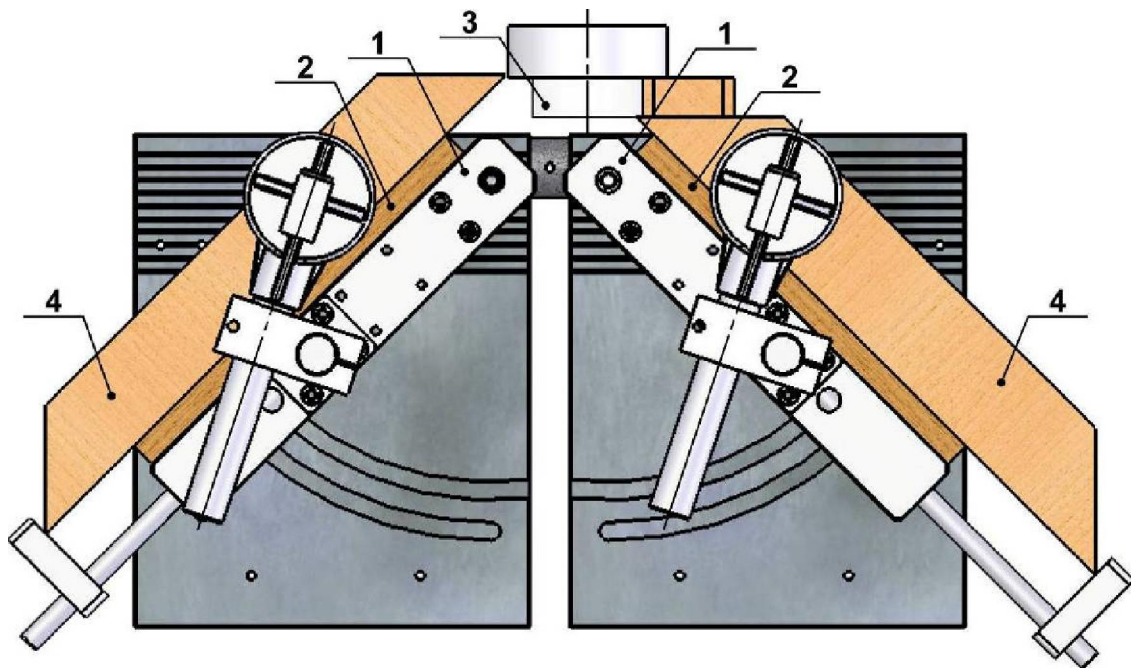
In the processing, we must quickly press the "emergency stop" button when there are emergencies.

{unilateral multi-cycle pressing-delay} is working in the situation when you just use 【multi-cycle】 for **one working table**. Firstly, you should set the value bigger, when you are familiar the machine, you can gradually reduce it.

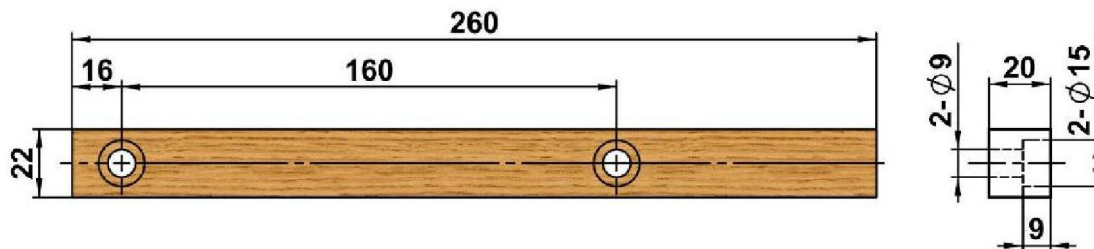
(4)、The instruction for 【left normal】 and 【left optimization】 :

To effectively solve the left working table work-piece breakes, when the users mill 45 degree oblique tenon (as shown below). The machine set [left normal] and [left optimization].

Firstly, in order to avoid the work-piece on the working table and the "tenoning cutter 3"colliding when the "work-piece 4" is been processing in another working table. The use has to install "spacer bar 2" inside of "fence 1". Please see the following picture; it is the size of the spacer bar. Then, please adjust well the fence, pressing cylinder and so on.



1.fence 2.spacer bar 3.tenoning cutter 4.work-piece



spacer bar: 2pcs.

The spacer bar will be made by the hard wood by the user, one machine need two pcs.



Click **【F2 set】**, set the tenon parameters what you need, then click **【F3 tenon】**, to choose **【Left-table on】**, **【right-table on】**, **【left optimization】**, press" automatic start", the machine can start to work.

Maching Screen				Date:	2016-10-22
				Time:	14:59:32
				RESET	
Preset Product Quantity	100	Finished Product Quantity	0	Left-table On	
X-Axis Position	0.000	Line Speed	50.000 mm/s	Right-table On	
Y-Axis Position	0.000	Arc Speed	50.000 mm/s	Multi-cycle	
Product No.	3	Unilateral Multi-cycle pressing-delay	4000 ms	Left Optimize	
Left-tenon Width	20.00	Right-tenon Width	32.00	XY Return to Zero-position	
Left-tenon Thickness	10.00	Right-tenon Thickness	14.00		
F1 Home		F2 Set		F3 Tenon	
F4 Manual		F5 Data		F6 Warn	
F7 Para.					

Note: 1, the operation should adjust the Y axis to the above position of work-piece surface firstly in [F4 manual operation] screen, and then press the "automatic start" button for processing.

Note: 2, in order to avoid milling cutter to cut too much, the work-piece must be pre- cutted 45 degree angle before you mill tenoner.

(5)、Click **【F5 Data】** :

Data List Screen				Date:	2014-06-03
Left-wood Width	30.00	Right-wood Width	40.00	Time:	17:10:54
Left-wood Thickness	20.00	Right-wood Thickness	28.00	Current File No.	3
Left-tenon Width	20.00	Right-tenon Width	32.00		
Left-tenon Thickness	10.00	Right-tenon Thickness	14.00		
Left-tenon Radii	5.00	Right-tenon Radii	7.00	 	
Left-angle of rotation	0.0	Right-angle of rotation	20.0		
Horizontal Move Of Left-tenon	0.00	Horizontal Move Of Right-tenon	0.00		
Vertical Move Of Left-tenon	0.00	Vertical Move Of Right-tenon	0.00		
Left-tenon Width Compensation	0.00	Right-tenon Width Compensation	0.00		
Left-tenon Thickness Compensation	0.00	Right-tenon Thickness Compensation	0.00		
Horizontal Distance Between Cutter & Left-workpiece	76.000	Horizontal Distance Between Cutter & Right-workpiece	76.000		
Vertical Distance Between Cutter & Left-worktable	45.000	Vertical Distance Between Cutter & Right-worktable	45.000		

F1 Home	F2 Set	F3 Tenon	F4 Manual	F5 Data	F6 Warn	F7 Para.
---------	--------	----------	-----------	---------	---------	----------

In {Current File No.}, input different file number or point arrow keys to the right or left, you can access to the stored parameters; Then , return to [F2 set] screen to read the data for processing.

5.7、shut down the machine

When the work is finished, close the power switch of the control system, so that the human machine interface is cut off, and the power switch of the machine tool is switched off. Clean the table and the surrounding environment.

VII. ELECTRICAL SYSTEM

This machine adopts three phases 380V/50Hz alternating current power source to supply power, before using this machine, you should adopt four copper cables which the section is 4mm² to connect power source well. The earth wire should be connected reliability. We suggest that you install an electric source switch which the capacity is 40A in the side of electric source. When you don't use the machine or do the electrical maintenance, cut off electrical source.

7.1 Electrical control instruction

1). Close the electrical box's door, and then close the exterior electric current and air source and then turn on the main electric switch. The indicator light HL on the electrical box is lighting.

2). Turn on the switch SA1 (on the operation panel), the computer is powered.

If the touch screen cannot work normally, please turn off the power supply and change the machine's power sequence.

3). When you start up the CNC system, the machine shows "F1" homepage.

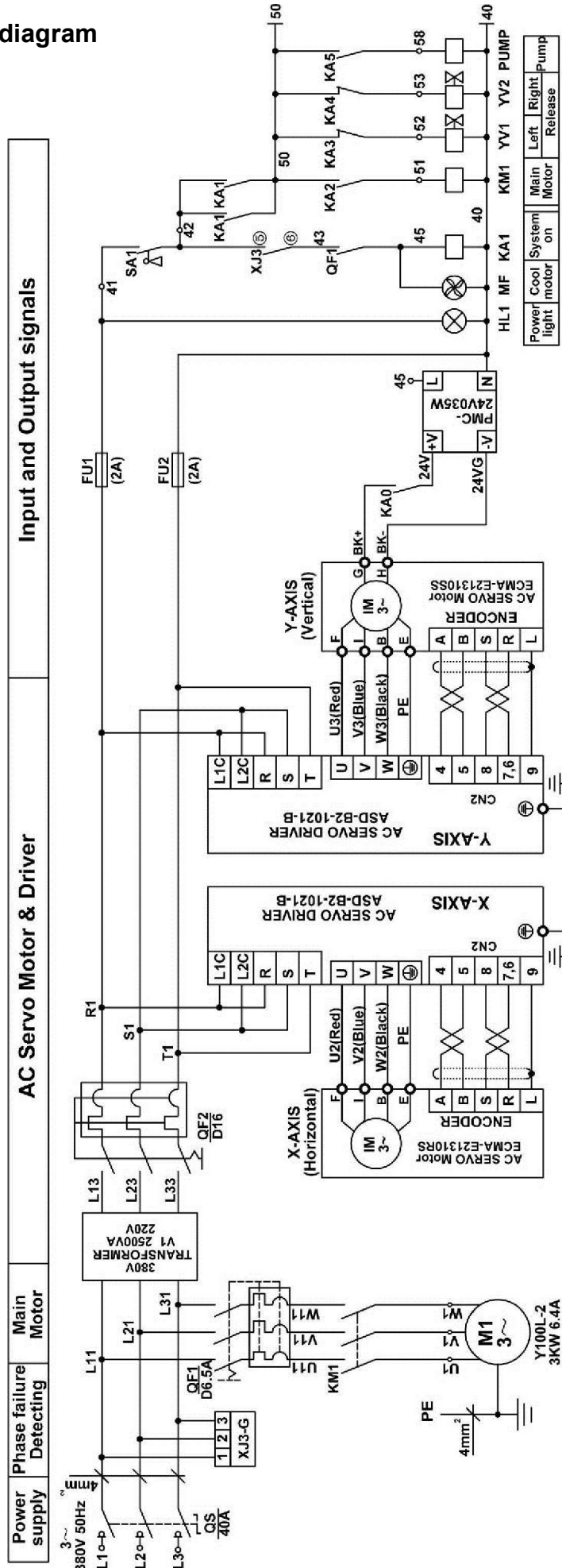
According to the work-piece, you should adjust the cutter and pressuring device, and then, the machine shows the "F2 produce setting" page. Please set the relevant technical parameter. Then the machine will show the "F3 start" page. Please machine the test piece firstly. If it is ok, you can do the quantity production.

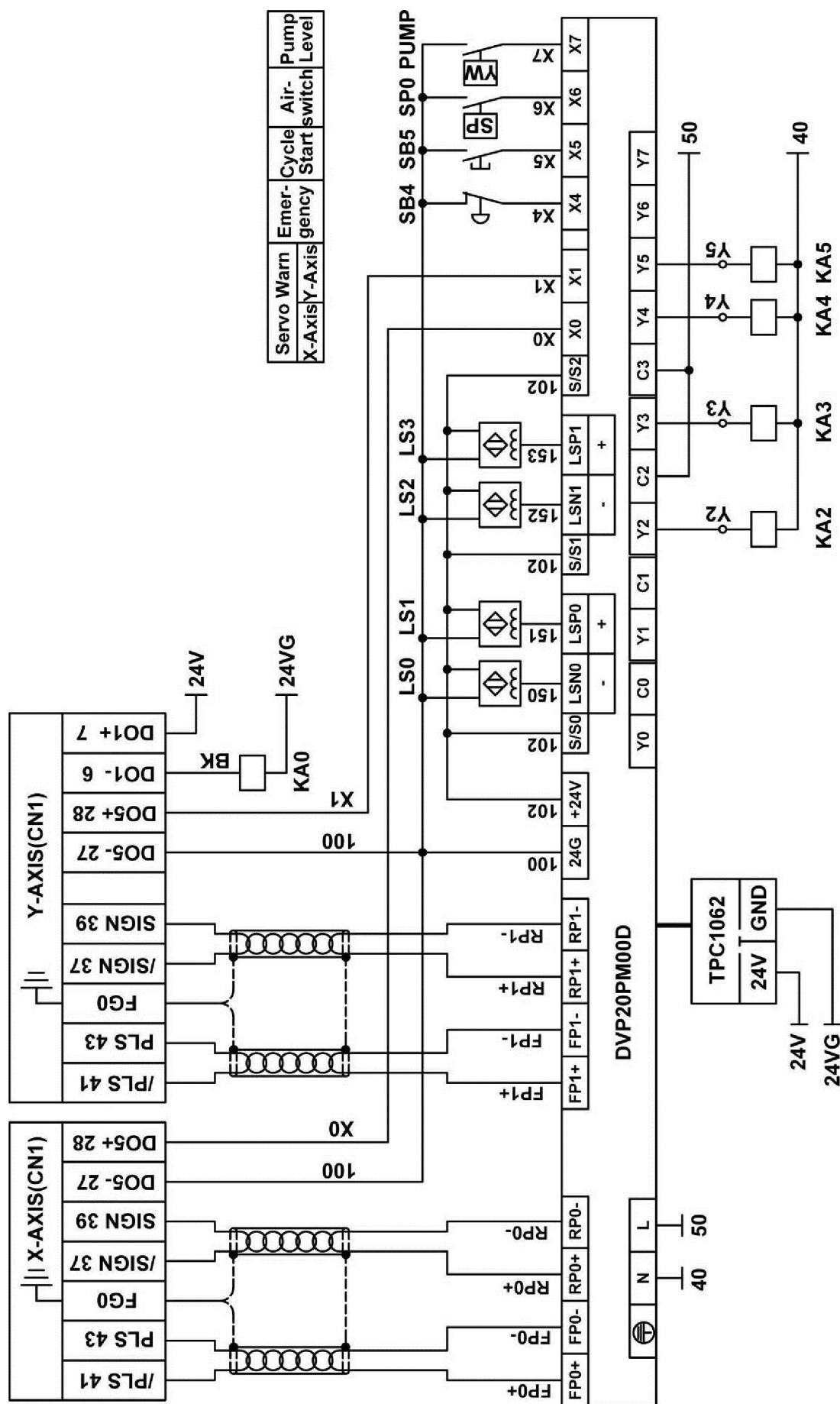
About the operation of CNC system, please read the instruction of VI.

When operating electrical equipment, please follow the items below:

- (1) The operation on the electric system must be performed by skilled electricians only.
- (2) While mechanic or electric failure occurs, restart the machine only after the causes of the failures are checked out and the failures are eliminated.
- (3) The parameters of the electric system are set appropriately before leaving factory. Please do not change them without intention.
- (4) Please check the condition of the connection points of the electric system regularly, not less than once three months.
- (5) While the motor is running, please check the temperature of the motor regularly and eliminate any possible failure immediately.

7.2 Electric diagram





VIII. LUBRICATION

Performing lubrication maintenance periodically is the necessary method to keep the working accuracy and service life of the machine. Users must strictly execute the following instructions checking the machine's condition periodically and performing correct lubrication.

1) Before everyday using, you should check the tank stock of motor driven lubrication pump, if the oil is not enough, you must supply oil in time. If the oil is not enough when using, feeding will stop, you must supply lubrication oil in time. When you supply lubrication oil, must keep clean, don't make impurity sneak into the tank.

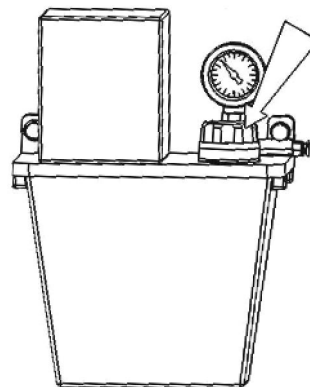
Suggest using the fellow lubrication oil with this machine:

Name	ISO specification	Viscosity cst@40℃	Branch			
			China oil	Mobil	ESSO	SHELL
Lubrication oil	VG-68	68	Slide machine oil Slide 68	Vectra No.2	Febis K68	Tonna T68

The storage of lubrication oil must keep clean, forbid using when pollution.

Forbid using recycle oil.

First take down oil-hold cover which is indicated by arrows, then pour the lubrication oil into the tank, 80% of the tank is ok.



2) Adjust the oil supply of electric lubricating oil pump

The machine adopts the inner reservoir micro- oil lubrication oil pump. The quantity of the oil supply can be changed by adjusting the intermittent time.

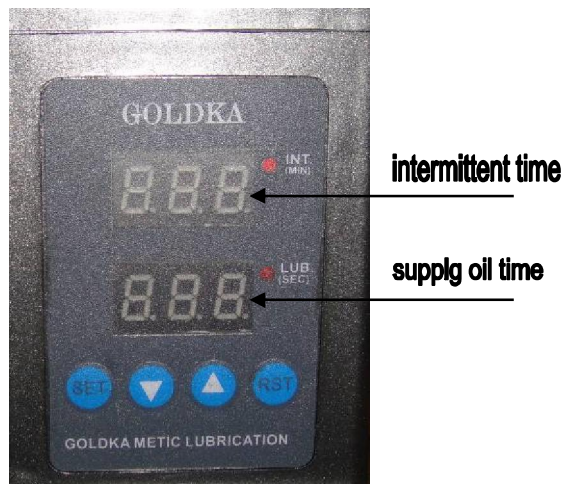
The adjustment must be strictly in accordance with the following steps to operate (please refer to the oil pump use manual):

Press the "set" button for a few seconds until 1st digital of the "intermittent time" position began to flicker and press "▲", "▼", to change values. When the value is what you need, press the "set" button. Then you can start to set the 2nd and the 3rd digital. It is the same with the 1st one.

After setting the "intermittent time", you can set the "supply oil time". The way is same with the setting "intermittent time"

The oil pump will be operated by the new "intermittent time" and "supply oil time".

The "intermittent time" is set to 60 minutes, "supply oil time" is set to **8 seconds**, in general,



please do not arbitrarily adjust the setting .

The lubrication pump also has the function of lack of oil and power. If there is no oil in the oil tank of the oil pump, the machine will stop automatically.

3) Lubrication grease of cutter spindle (Import and advanced lubricating grease)

Every 500 working hours, supply grease from oiling seat which is in the back end of cutter spindle pendulum seat to the rolling bearing. Make the oil to be put to be bearing sufficient; if the oil is put too much, it will make the rolling bearing warming, make the oil overflow.

Suggest using the fellow lubrication oil with this machine:

Name	Use	Viscosity cst@40℃	Branch			
			China oil	Mobil	ESSO	SHELL
Lubricating grease	Bearing	NLGI No.2	Multiple-effect slide grease No.2	Mobilux2	Estan No.2	ALvania No.2

- 4) You must keep the filtering/adjusting/lubricating device have the enough lubricating oil.
Please use the oil of 32# (ISO VG-32)

IX. TROUBLE AND TROUBLE SHOOTING

9-1. Machine and electric trouble shooting

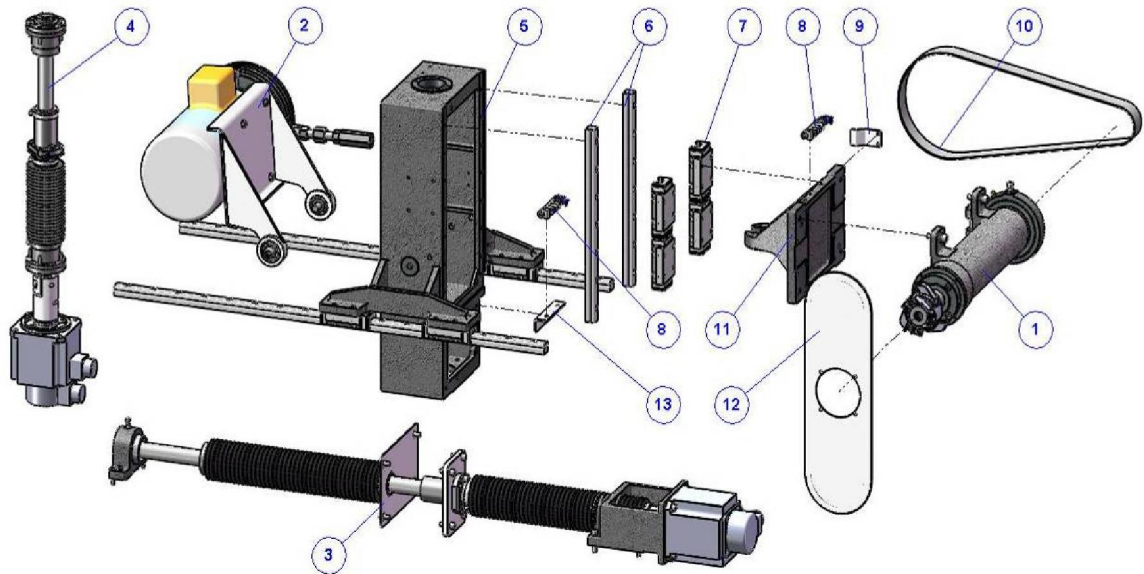
No.	Failure	Cause	Method
1	Electrical indicator light is not bright	a) There is no voltage on the electrical wire b) Control transformer fuse wire fusing c) Control electric source is not opened	a) main line voltage is too low or at least lack of 1 phase b) Check the initial classification fuse wire of transformer c) Open the control electric source
2	The touch screen cannot work	a) The main switch don't work b) the spindle motor is over-loading and the control loop is disconnected. c) the control system is not working	a) change the main switch b) Reset the heat protector of the spindle motor c) press "system start" button
3	Automatic position is not working	1) CNC is not working 2) Air source has no air pressure and don't work. 3) Lubricating pump is short of oil 4) Emergency stop button is pressed 5) X or Y axle servo drivers is abnormal	1) Check the CNC system and reset it. 2) Check air supply pressure 3) keep the Lubricating pump has the enough oil 4) Rotate and reset emergency stop button 5) Solving the problem and re-start the machine
4	Work table stops in machining	No signal is inputted to the micro-computer controller. CNC system is not working	Reset the CNC system
5	Noise and vibration	(1) Milling cutter is too blunt. (2) Machine is un-plane (3) Install foundation is not solid. (4) The springing of belt is too large	(1) Shaping the milling cutter. (2) Level up the machine. (3) Check and eliminate this phenomenon and reinforce it (4) Tension or change the belt

9-2. Machine trouble shooting

No.	Failure	Cause	Method
1	Serious vibration	(1) The machine is not placed stably. (2) The work table cutter feeding buffer unit is not adjusted well.	(1) Check the machine and place it stably. (2) Adjust the buffer unit under the two work tables.
2	Noise	(1) Cutters are not installed well. (2) The main spindle bearings is damaged	(1) Install the cutters correctly and adjust its balance. (2) Change the bearings.
3	The machined tenon is damaged	(1) drunkenness and tremble of the main spindle (2) The teeth of the cutters are blunt. (3) Cutting speed is too high.	(1) Eliminate the axial drunkenness and jamming of the main spindle through insertion. (2) Sharpening the cutters. (3) Lower down the cutting speed.
4	Anomaly of the machined tenon	The die collar unit looses.	(1) Tighten the die collar unit. (2) Eliminate the space of the up and down guide rails of the die collar.

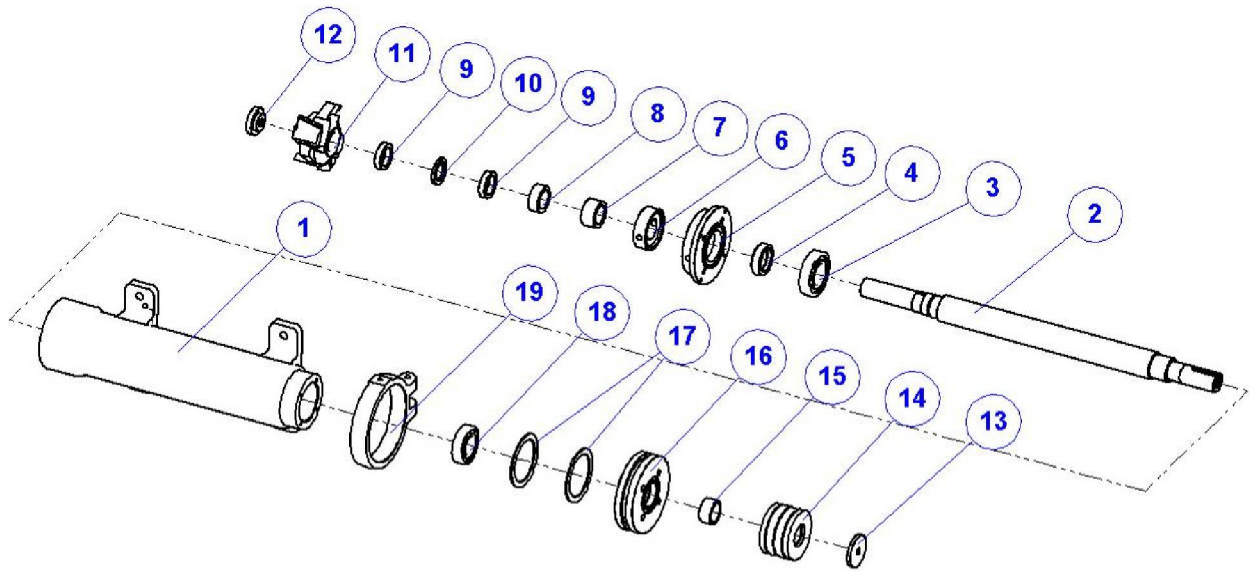
X. EASY DAMAGE PART AND SPARE PART

1). Main spindle and swing mechanism



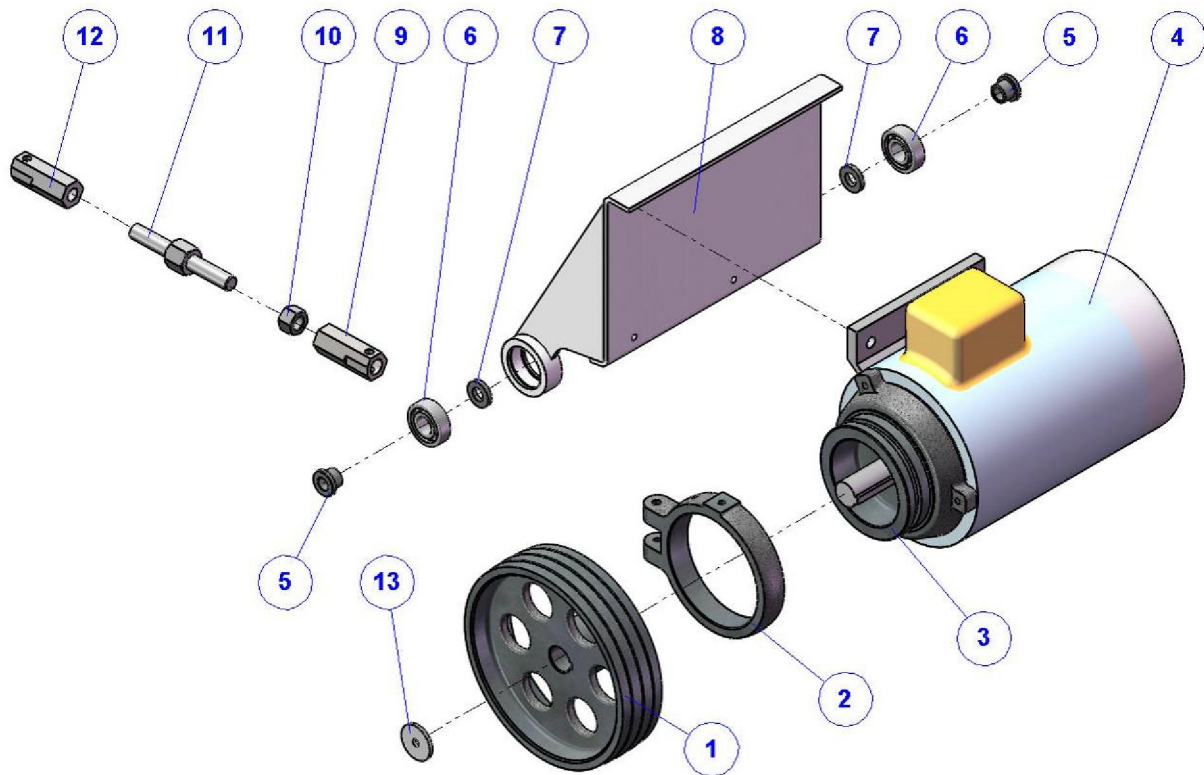
No.	Code No.	Name	Qty.	Remark
1	MXK3815B-03-01-00	Saw spindle units	1	
2	MXK3815B-03-02-00	Motor units	1	
3	MXK3815B-03-03-00	Horizontal adjusting spindle parts	1	
4	MXK3815B-03-04-00	Vertical adjusting spindle parts	1	
5	MXK3815B-03-05	Main sliding seat	1	HT250
6	R160526431 ,416	Straight guide	2	
7	R165322420	Sliding block	4	
8	TH-3-8	Connecting block M8×1	2	
9	MXK3815B-03-09	Vertical limited bar	1	Q235A
10	40×1300×δ1.5	High-speed plain belt	1	
11	MXK3815B-03-06	Main spindle lifter sliding panel	1	HT200
12	MXK3815B-03-08	Plate	1	Q235A
13	MXK3815B-03-11	distributor plate for lubricating	1	Q235A

2). Main spindle units



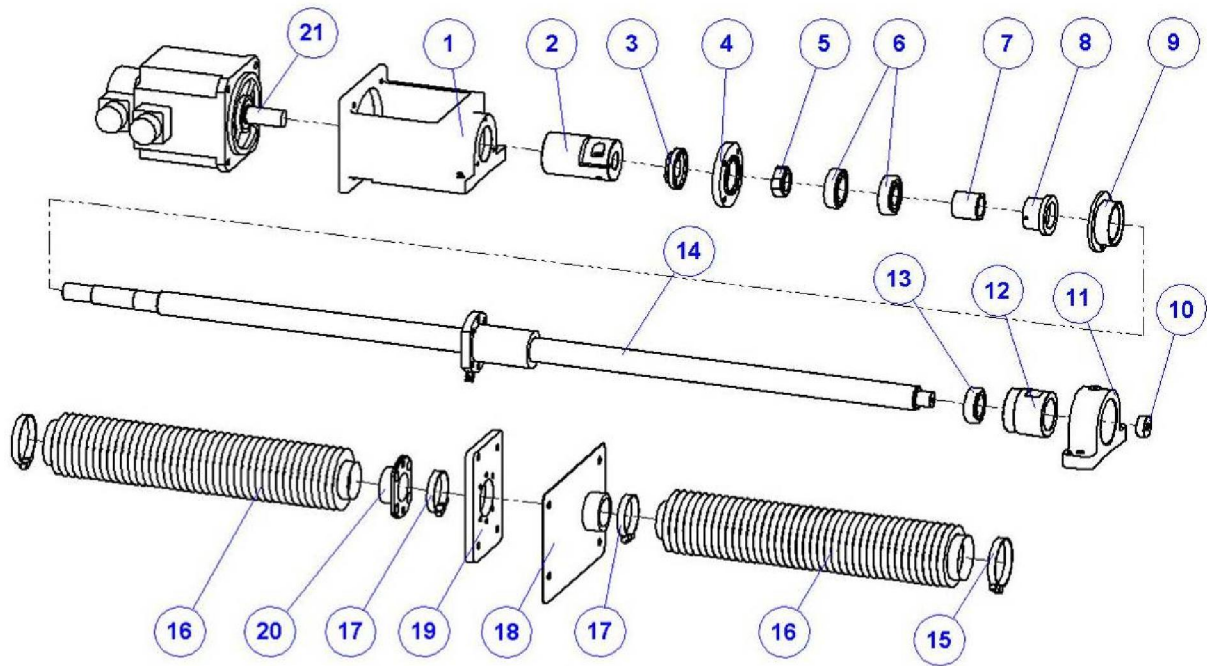
No.	Code No.	Name	Qty.	Remark
1	MXK3815B-03-01-01	Saw spindle seat	1	
2	MXK3815B-03-01-02	Main spindle	1	
3		Deep groove ball bearing 6207-ZZ	1	
4	MXK3815B-03-01-05	Lock nut	1	
5	MXK3815B-03-01-03	Front-end cover	1	
6	MXK3815B-03-01-04	Retaining ring	1	
7	MX3810-02-01-05<4>	Bushing (L=23)	1	
8	MX3810-02-01-05<3>	Bushing (L=17)	1	
9	MX3810-02-01-05<2>	Bushing (L=10)	2	
10	MX3810-02-01-05<1>	Bushing (L=5)	1	
11	MXK3815B-03-01-11	cutter	1	
12	MXK3815B-03-01-10	Main spindle rail	1	
13	MBQ523A-03-04-05	Retaining ring	1	
14	MXK3815B-03-01-07	pulley	1	
15	MXK3815B-03-01-08	bush	1	
16	MXK3815B-03-01-06	Rear-end cover	1	
17	φ87×φ69×δ0.6	Washer D90	2	
18	6206-ZZ	Deep groove ball bearing	1	
19	MXK3815B-03-01-09	Swing ring	1	

3). Main motor units



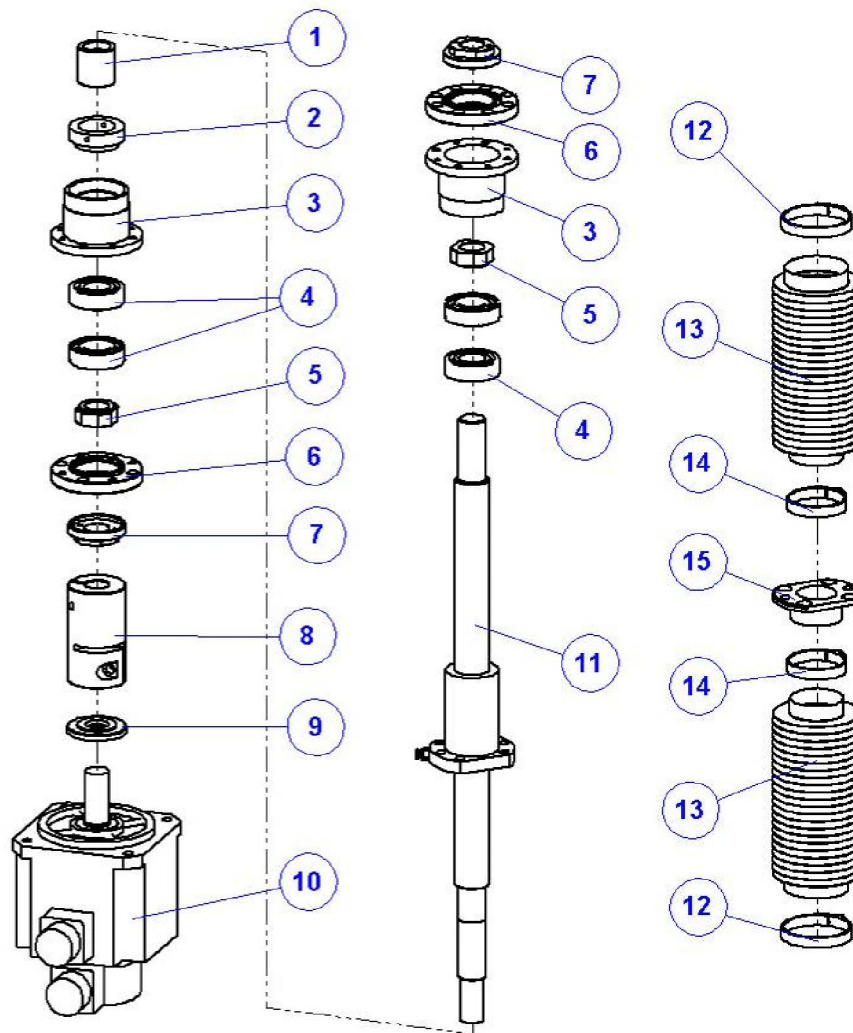
No.	Code No.	Name	Qty.	Remark
1	MXK3815B-03-02-01	pulley	1	
2	MXK3815B-03-01-09	Swing ring	1	
3	MXK3815B-03-02-03	Front cover	1	
4	Y100L-2-B3-3.0KW	3PH AC motor	1	
5	MXK3815B-03-02-04	bush	2	
6	6204-2RS	Deep groove ball bearing	2	
7	MXK3815B-03-02-05	Bush ring	2	
8	MXK3815B-03-02-02	Motor cover	1	
9	MX3810-02-07<1>	Nut (left threading nut)	1	
10	MJ153-10-24	Left threading nut	1	
11	MXK3815B-03-02-06	tensioning pole	1	
12	MX3810-02-07<2>	Nut (right threading nut)	1	
13	CZDQ-04	Washer $\phi 40 \times \phi 8.5 \times 4$	1	

4). Horizontal spindle units



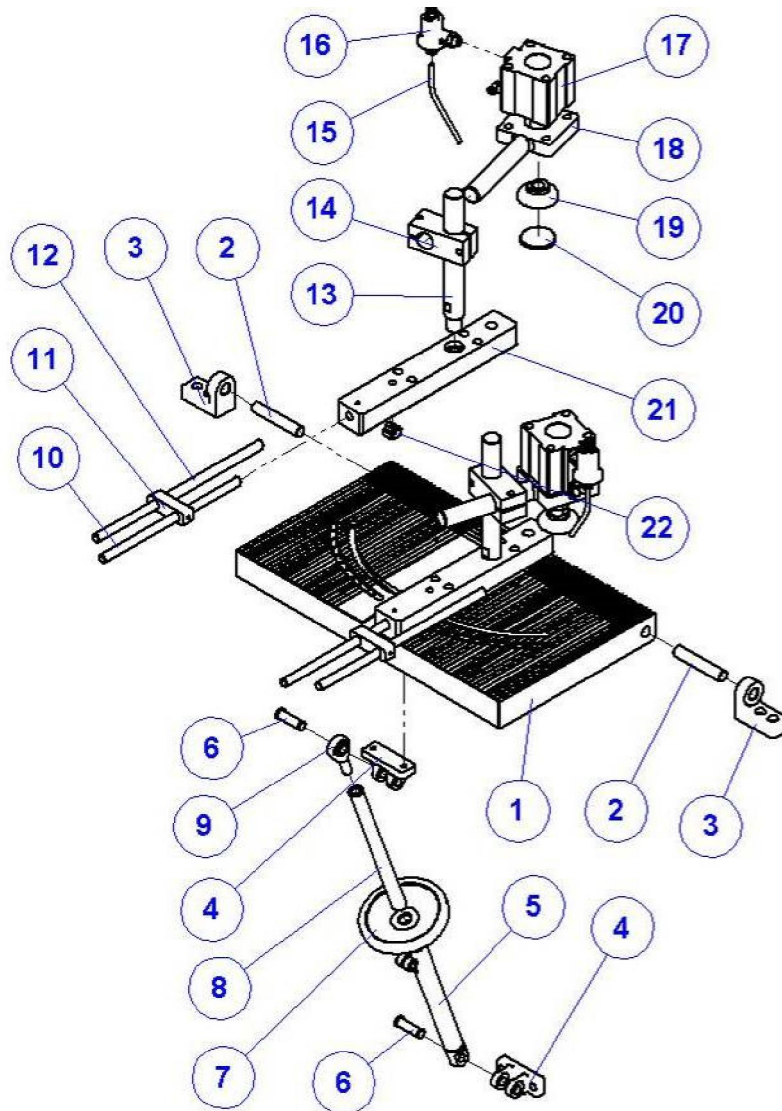
No.	Code No.	Name	Qty.	Remark
1	MXK3815B-03-03-01	Fixing seat	1	
2	MXK3815B-03-03-11	Coupling	1	
3	MXK3815B-03-03-03	Nut for dust proofing	1	
4	MXK3815B-03-03-02	Front-end cover	1	
5	MXK3815B-03-03-04	Lock nut	1	
6	S7205	Angular contact ball bearing	2	
7	MXK3815B-03-03-07	bush	1	
8	MXK3815B-03-03-06	Dust-proofing cover(inter)	1	
9	MXK3815B-03-03-05	Dustproof cap	1	
10	MXK3815B-03-03-10	Retaining ring	1	
11	MXK3815B-03-03-08	support	1	
12	MXK3815B-03-03-09	Bearing bush	1	
13	6204-2RS	Deep groove ball bearing	1	
14	MXK3815B-03-03-15	Spindle	1	
15		hoopφ55~75	2	
16	MXK3815B-03-03-14	Dust-proofing cover	2	
17		hoopφ40~60	2	
18	MXK3815B-03-03-13	Dust-proofing plate	1	
19	MXK3815B-03-03-12	Support plate for nut	1	
20	MXK3815B-03-03-16	Interface for dust-proofing cover	1	
21	130ST-M06025LFB	Servo motor	1	

5). Vertical spindle units



No.	Code No.	Name	Qty.	Remark
1	MXK3815B-03-03-07	bush	1	
2	MXK3815B-03-04-04	Dust-proofing cover(inter)	1	
3	MXK3815B-03-04-01	Bearing bush	2	
4	S7205	Angular contact ball bearing	4	
5	MXK3815B-03-03-04	Lock nut	2	
6	MXK3815B-03-04-02	Bearing cap	2	
7	MXK3815B-03-03-03	Nut for dust proofing	2	
8	MXK3815B-03-03-11	coupling	1	
9	MXK3815B-03-04-03	Nylon washer	1	
10	130ST-M04025LFB	Servo motor	1	
11	MXK3815B-03-04-06	spindle	1	
12		hoopφ55~75	2	
13	MXK3815B-03-04-05	Dust-proofing cover	2	
14		hoopφ40~60	2	
15	MXK3815B-03-03-16	Interface for dust-proofing cover	1	

6). Work table device



No.	Code No.	Name	Qty	Remark	No.
1	MXK3815B-02-01	Work table	12	MXK3815B-02-17	Limiter bar
2	MXK3815B-02-02	spindle	13	MXK3815B-02-11	Support
3	MXK3815B-02-03	Support seat	14	MX3810-04-11	Cross bar
4	MXK3815B-02-04	Swing seat	15	MXK3815B-02-14	tube
5	MXK3815B-02-07	Screw bush	16	Quick exhaust valve	QVA10
6	MXK3815B-02-05	Swing spindle	17	SDA-80×50	cylinder
7	MXK3815B-02-08	Adjusting hand-wheel	18	MXK3815B-02-12	support
8	MXK3815B-02-06	Adjusting spindle	19	MXK3815B-02-13	Pressing bar
9	SABJK16S	Outer threading jointer bearing	20	Φ60×6	Rubber washer
10	MXK3815B-02-18	Limited bar	21	MXK3815B-02-09	plate
11	MXK3815B-02-16	Chuck plate	22	MXK3815B-02-10	T-type nut

SICHUAN QINGCHENG MACHINERY CO., LTD.

PACKING LIST

MX3815C-K CNC TENONING MACHINE

No.	Name	Specification and earmark	quantity	
1	Machine	MX3815C-K	1	
2	Tenon cutter	MXK3815Bxd	1 set	With machine
3	Washer for main spindle	ø5(1pc),ø10(2pcs), ø17(1pc)		With machine
	Iron tool box contain the follow parts			
(1)	Double open end spanner	8-10,13-15,16-18	1 piece every mode	
(2)	Hexagon ring spanner	1.5~10	1 set	
(3)	Cross head driver	150	1 piece	
(4)	Grease gun	100	1 piece	
(5)	Washer for main spindle	ø23	1	
(6)	T-Shape key		2	
(7)	Key of electrical box		1	
(8)	Hexagon screw	M12×30-8.8	2	
(9)	Operation instruction		1	
(10)	certificate of compliance		1	

Packer:_____ Inspector:_____ Date:_____

CONFORMITY CERTIFICATE

NAME: CNC TENONING MACHINE

MODEL: MX3815C-K

NO.: _____

**THIS MACHINE HAS PASSED TESTS OF THE TECHNICAL
NORMS. THE ACCURACY AND CAPABILITY IS IN
ACCORDANCE WITH THE REQUIREMENTS OF PRODUCT
STANDARD. PERMIT TO LEAVE FACTORY.**

**PRODUCT STANDARD CODE: GB12557-2000
GB/T14384-1993**

FACTORY DIRECTOR:

QUALITY CONTROL DIRECTOR:

INSPECTOR:

DATE:

