



GRAPH PRO 48

PRODUCT

USER MANUAL



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GraphPro48

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Preface

Thank you for purchasing GoldstarCNC products. Please read the following precautions carefully after receiving your machine:

1. Read the following pre-installation precautions and check whether the installation environment of the machine is suitable to avoid unnecessary trouble during your installation and use.
2. Check the appearance and packaging of the machine to see if there is any damage.

If you encounter problems while using this product, please call our after-sales service.

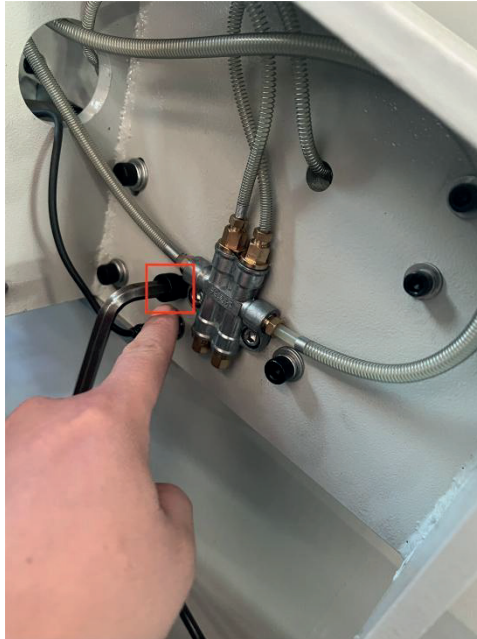
1. Delivery of the Machine.

To ensure that your machine can be used normally, please read the following before delivering the machine :

- 1.1. For your convenience in loading and unloading, please prepare a forklift before unloading the machine (recommended to be 3 tons and above).

***Please pay attention to our fixtures before running the machine! Before shipment, we will set two high-strength bolts on both sides of Y1 and Y2 to fix the machine's beams and columns to the bed, as shown below**

(only for machines without disassembling the gantry).



- 1.2. Place the machine tool in the designated position and level the four legs of the machine tool. (Note: The four legs must be leveled and cannot be deflected or suspended in the air).
- 1.3. The installation environment requires no water droplets, steam, or oily dust.
- 1.4. The floor is smooth, clean, solid and vibration-free.
- 1.5. There is no electromagnetic interference nearby.
- 1.6. The operating ambient temperature is $-5^{\circ}\text{C} \sim 35^{\circ}\text{C}$. When the ambient temperature exceeds 35°C , please install ventilation facilities. Relative humidity environment: $30\% \sim 75\%$.

-
- 1.7. The input voltage is AC380V/50/60Hz or AC220V/50/60Hz. Please connect the voltage indicated on the nameplate according to the instructions on the machine nameplate.
 - 1.8. Most machines will be packed in wooden boxes with plastic packaging inside. Please check the general condition of the machine before unpacking it.
 - 1.9. There may be wood dust or lubricating oil inside the machine because it is produced during factory testing.
 - 1.10. The weight of the machine may reach 1.2 tons or more. Please ensure that there is enough space to place the machine; and reserve a safe area for dust collector, vacuum pumps, control cabinets and other tools that may be carried.
 - 1.11. Please refer to the machine parameters, consider the weight of the site environment and electrical load, and whether the on-site wiring meets the requirements.
 - 1.12. Regarding the assembly of the machine, the weight of the machine is very heavy and requires 2 or more people to complete it. During the assembly process, you need to pay attention to personal safety and use appropriate tools to assemble the mechanical and electrical components of the machine.

1.13. The wiring of the line connection must be correct and firm; the connecting wire must not be damaged, squeezed, or twisted, otherwise a short circuit or open circuit may occur; the power plug must not be plugged or unplugged while the power is on; keep your hands dry before plugging or unplugging the plug to prevent safety accidents. Personnel involved in wiring must have corresponding abilities.

2. Machine overview.



* For reference only, please refer to the actual machine.

3. Machine identification.

There are many technical signs and safety signs on our machines. Please read the following overview. The information they contain is to ensure the safety of the machine operator and the stable and normal operation of the machine itself. (The color of the axial mark may be different, please refer to the actual machine).

X Y Z axis mark.



Emergency stop switch.



Please wear goggles.



Please wear earplugs/earmuffs
when working.



Machine operation danger
zone.



Be aware of electrical hazards.



Be safe.



Pay attention to high
temperature.



4. Important safety instructions.

Before disassembling this machine, please read this safety operation instruction carefully. Failure to pay attention to the following instructions may lead to electric shock, fire and other serious safety accidents. Do not change the factory settings of this machine at will. This machine is for specialized industries. settings, do not use it for purposes outside other industries, as this may cause machine failure; if you have any other questions, please contact us.

4.1. The machine itself has certain noise and safety hazards. Necessary safety protection measures cannot be ignored. Machine operators must undergo strict training and need to concentrate during operation. Pay

attention to personal safety and machine safety during operation.

- 4.2. The power supply voltage requirement of the machine itself is 220V/380V. Only professional personnel are allowed to perform electrical installation and maintenance work. Check the grounding condition of the machine, and the power supply needs to be cut off before installation and maintenance.
- 4.3. The tools must be installed and clamped to keep the cutter sharp. A dull tool will reduce the quality of the engraving and overload the motor.
- 4.4. The size of the processed materials should not exceed the machining range. Please cut off the power when not in use for a long time. There must be professional guidance when moving the machine.
- 4.5. Be sure to pass the water before using the water-cooled spindle.
- 4.6. Do not put your fingers into the working range of the tool, and do not remove the engraving head for other purposes. Materials containing asbestos must not be processed.
- 4.7. Please pay attention to the various warning signs on the machine and make correct judgments.
- 4.8. Do not wear clothes that may be entangled in the machine (high-speed rotation of the spindle may cause danger), do not be in the danger zone of the machine, and use the correct tools to complete the corresponding

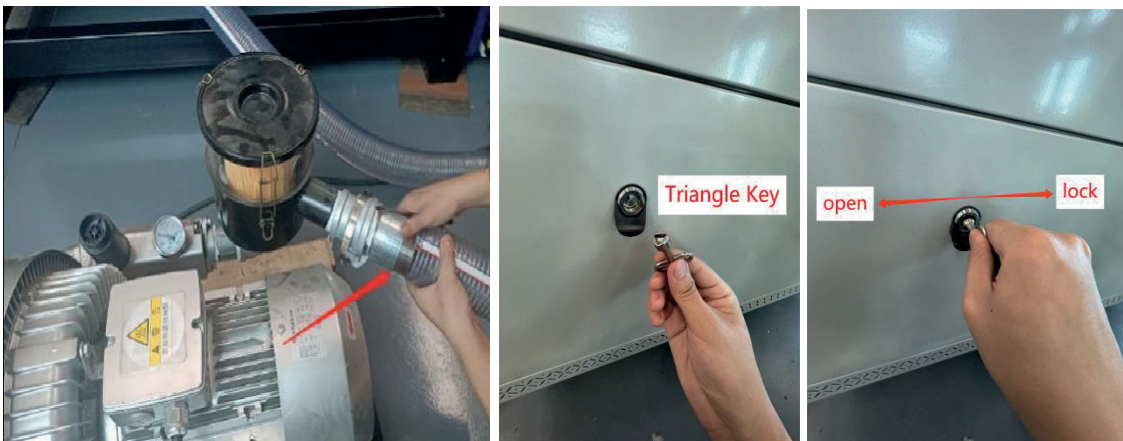
operations of the machine.

- 4.9. Do not wear clothes that may be entangled in the machine (high-speed rotation of the spindle may cause danger), do not be in the danger zone of the machine, and use the correct tools to complete the corresponding operations of the machine.

5. Installation Notes.

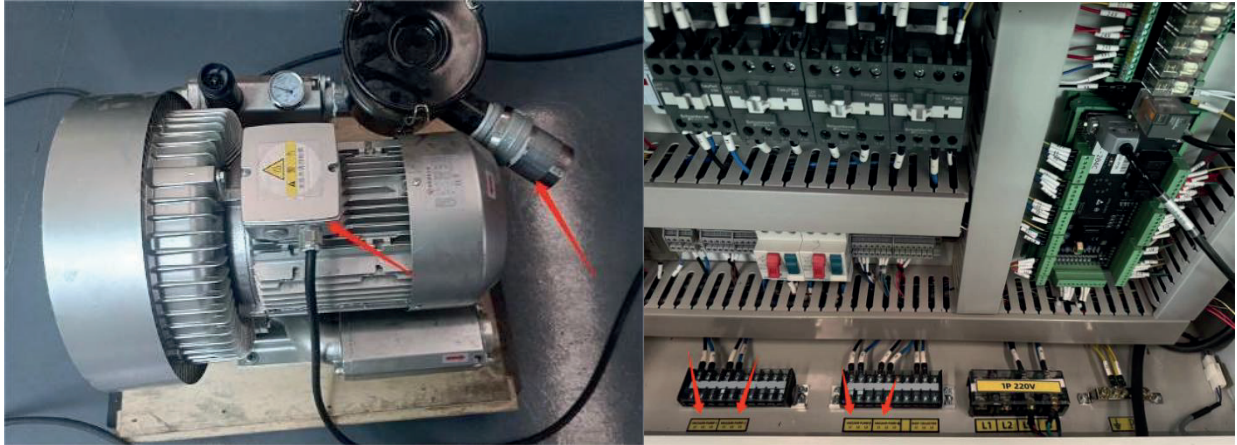
5.1. Vacuum pump installation.

- 5.1.1. After receiving the machine, take the vacuum pump out of the package and fix the steel wire pipe at the air inlet of the filter with a tightening tool.



- 5.1.2. Open the cover of the motor and connect it to the power supply, and connect the other end to the wiring of the vacuum pump

controlled by the engraving machine.

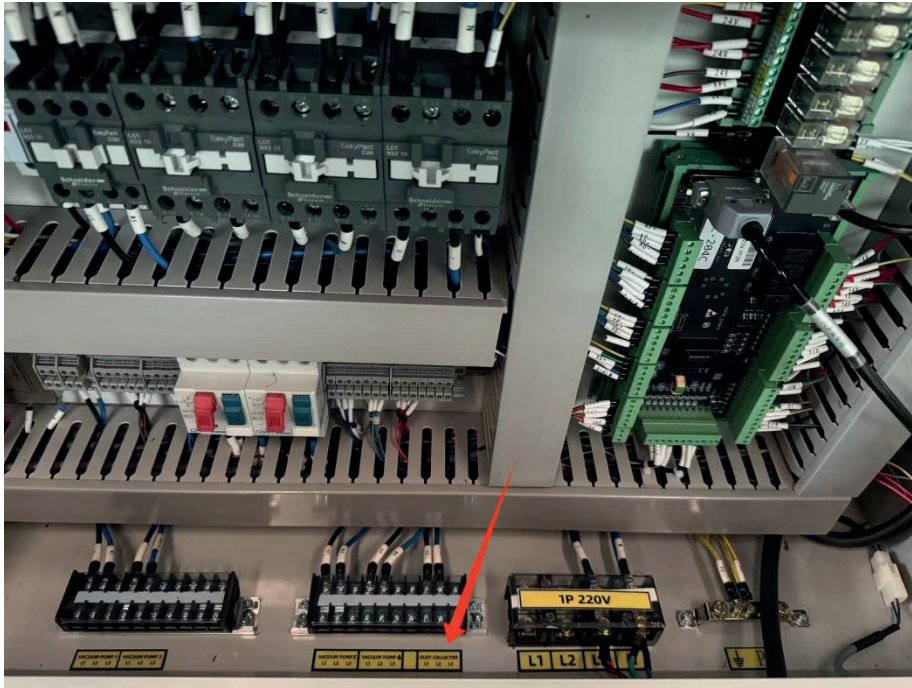


5.1.3. Pay attention to the cleaning of the filter during daily use.

5.2. Dust collector installation.

5.2.1. Take the dust collector package, install it according to the collector collector instructions, and place it stably.

5.2.2. Connect the power supply to the dust collector, and connect one end of the power supply to the electrical box the connection point of the dust collector.



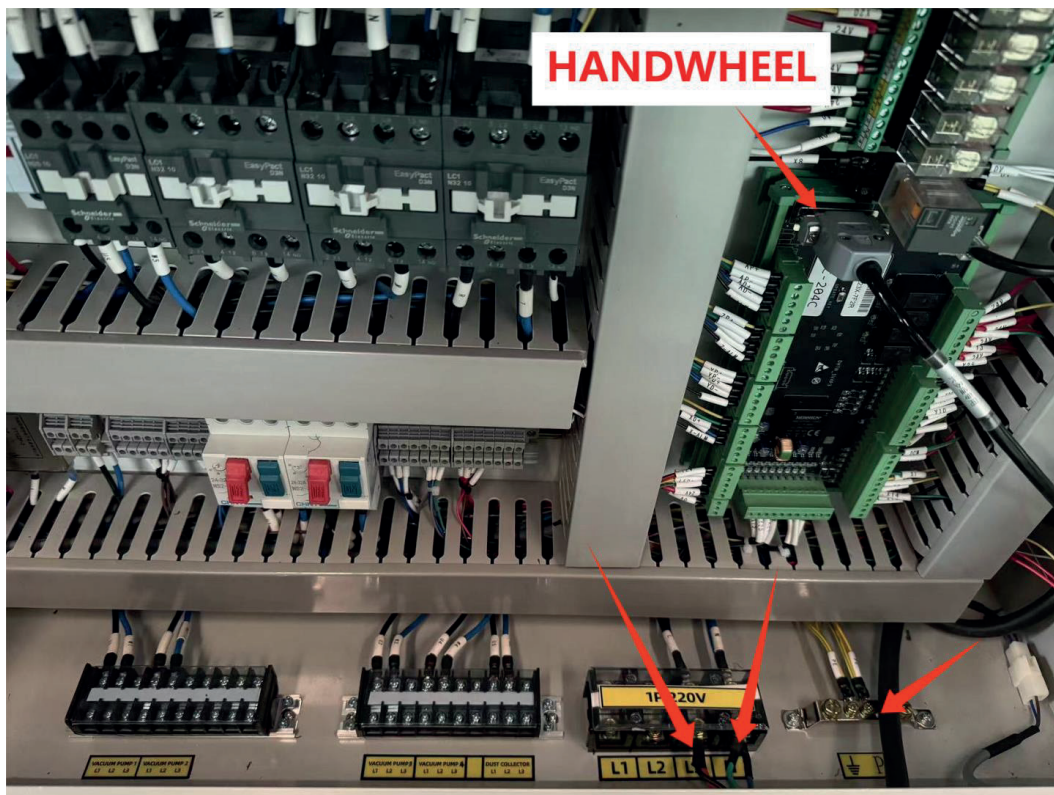
5.2.3. Connect one end of the vacuum hose to the machine's dust cover and the other end to dust collector.

5.3. Power and air supply installation.

5.3.1. Power supply.

*As shown in the picture (the voltage is subject to the actual order), connect the power supply. Be careful when connecting the power cord. The power cord with wire number L3 is the live wire, the neutral wire is N, and the ground wire is PE. Be sure to check the wire number. Corresponding connection, otherwise a short circuit will occur and burn the machine; the ground wire must be connected.

* Because damage may occur during transportation, we will temporarily remove the handwheel when shipping. Please install it yourself after receiving the machine.



5.3.2. Air source.

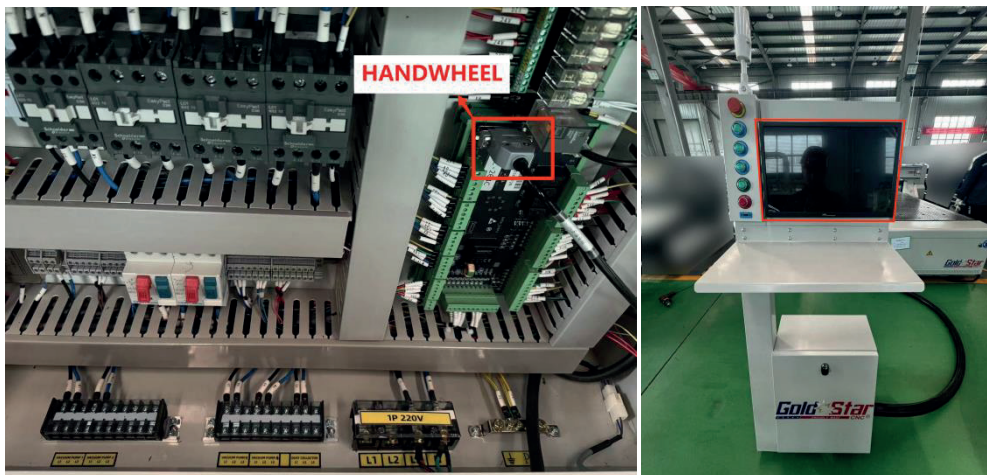
A clean air source should be connected and the air pressure should be



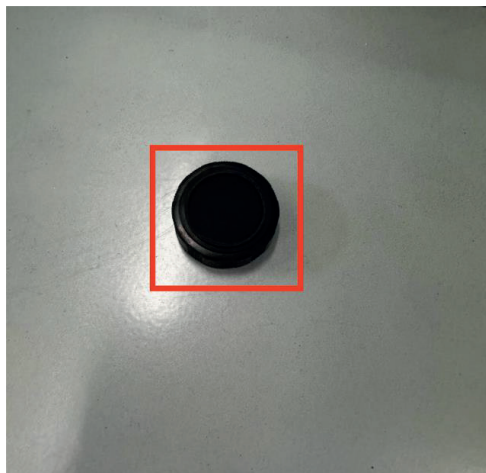
maintained at 0.6-0.8Mpa.

5.4. Installation of other accessories.

After all accessories are installed, you need to check whether the accessories are installed correctly and whether the clearance is appropriate, such as handwheels, monitors, etc.



* The CCD camera lens will be equipped with a protective cover when it is shipped. Please remove it after receiving the machine.



6. Preparation and operating instructions before machine operation.

6.1. Check air source.

After the air source is connected, the air pressure rises to 0.6-0.8 Mpa.





(the controller will issue a warning if the pressure is too small or too large).

6.2. Check auto lubrication.

Automatic lubrication will replenish oil every time the machine is turned on and every 240 minutes after startup. Each oil replenishment lasts for 30 seconds. (Please do not turn on and off the power frequently. Automatic lubrication will replenish oil every time the machine is turned on.) The parameters of automatic lubrication are set at the factory when the machine leaves the factory. The time has been set by our technical staff. Please do not change the settings at will. Also pay attention to regular inspection and



cleaning. If you have any questions, please contact us in time.

6.3. Power on.

Press the corresponding start button to choose to turn on the required function (* The vacuum pump must be turned on when setting the workpiece/work origin, otherwise there will be an error in the Z-axis height.),

When turning off the machine, you should turn off the computer first. Please do not turn off the power directly to avoid damaging the computer. When returning to work from a break, please do not forget to turn on the vacuum pump and dust collector. Pay attention to these details to ensure safety.

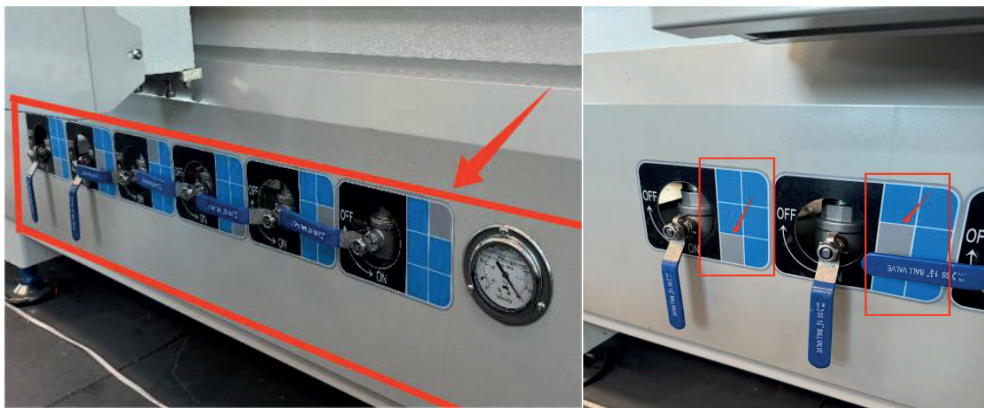


After the power is turned on, you can also judge the current status of the machine by observing the signal light. For example, the mechanical coordinates will be displayed in green when the zero return is completed, in orange during the zero return process, in red when there is a fault or when the emergency stop switch is pressed, etc., in accordance with the software status bar to determine the current machine status.

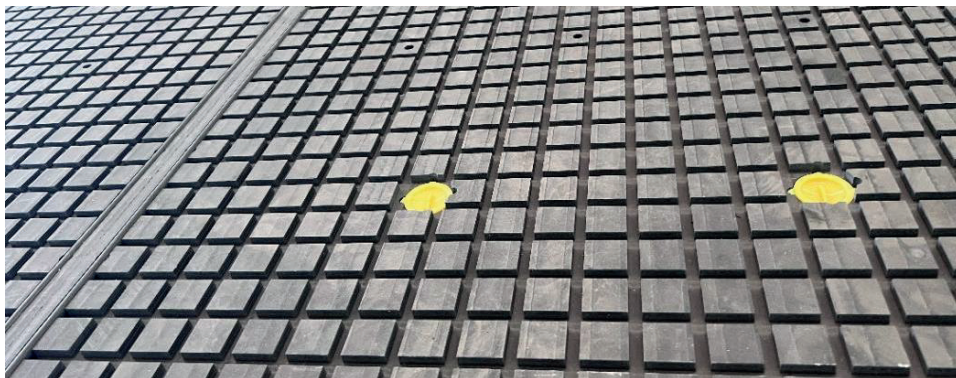


6.4. Material fixation.

6.4.1. The vacuum table is divided into 6 areas. Each valve corresponds to the corresponding area. The corresponding area can be opened according to the material.



6.4.2. Use the negative pressure of the vacuum suction table to adsorb the material to the surface of the vacuum suction table.



6.4.3. Find the fixed cylinder option from the main interface and raise the fixed cylinder. (Before performing this operation, perform the "all return to zero" operation).

T	1	G00 Rate	100		25000
S	20000	RPM	100		24000
		C+	Y+	Z+	<input checked="" type="radio"/> Continuous <input type="radio"/> H.W.Move <input type="radio"/> 0.01 <input type="radio"/> 0.05 <input type="radio"/> 0.1 <input type="radio"/> 0.5 <input type="radio"/> 1 <input type="radio"/> 5 <input type="radio"/> 10 <input type="radio"/> 100 >>
		X-	L	X+	
Fixed TS		Z-	Y-	C-	
H.W Guide		X->0	Y->0	Z->0	
		<input type="checkbox"/> Spindle <input type="checkbox"/> Spindle Lift <input type="checkbox"/> Dust Cover			Target Move
		<input type="checkbox"/> VibratingKnife ON/OFF <input type="checkbox"/> VibrationKnife Up/Down <input type="checkbox"/> Tool Storage <input checked="" type="checkbox"/> Positioning			Park
		Start F9		Pause F10	Stop F11
		Home F12			

7. User interface introduction.

If you are using this type of system for the first time, please read this manual carefully and **use the handwheel mode** to operate with caution; if you have relevant experience, please quickly find the information you need through the catalog.

*** Because it involves modified parameter settings, here we only introduce some common functions and basic operations of the machine to prevent mis operation caused by introducing too many functions and modifying the set factory parameters. However, this will be used in actual use. Please forgive me for the functions not introduced in this manual. If you need to use the functions not introduced in this manual, please use it with caution according to the actual situation. If you have any questions or suggestions, please contact us in time.**

Mechanical coordinate system.

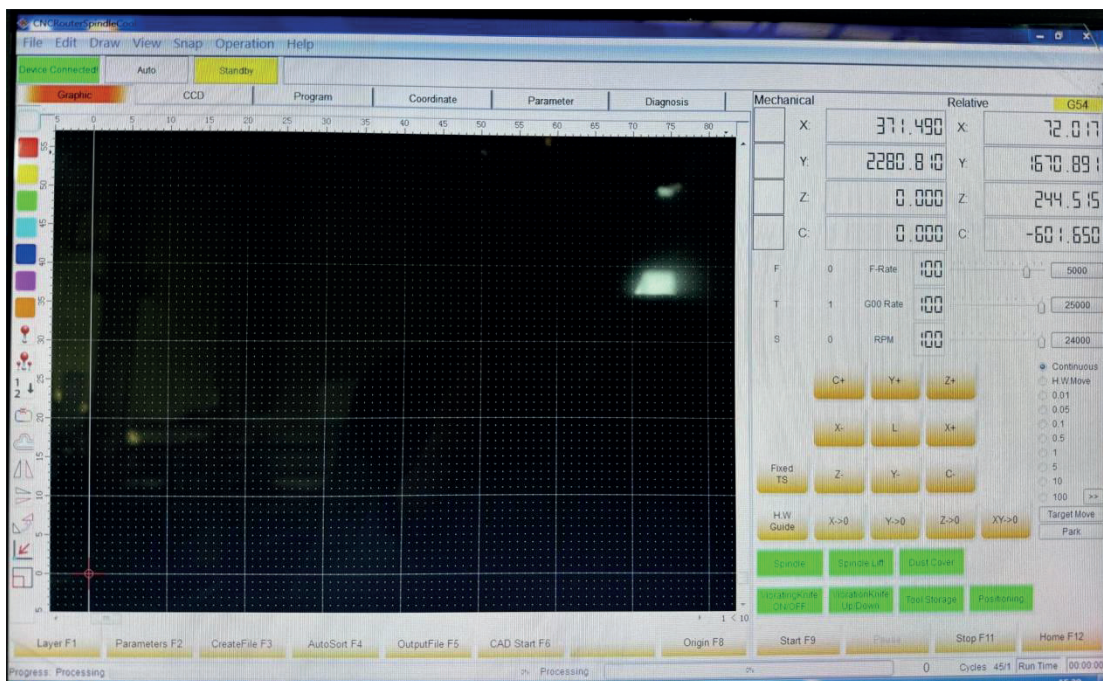
The mechanical coordinate system is a fixed coordinate system that has been set by our technical engineers, and its coordinate origin is always relative to the fixed position of the machine tool. Every time the power is cut off and restarted, or after an emergency stop of the system, the machine needs to return to mechanical zero.

Workpiece coordinate system.

The workpiece coordinate system is a new coordinate system established by selecting a known point on the workpiece as the origin (also called the program origin).

7.1. Software interface.

The software consists of title bar, menu bar, status bar, function selection bar, drawing toolbar, display area, file information area, display area, and machine tool control bar as the picture shows:



7.1.1. Menu bar: including file, edit, draw, view, capture, operation, and help options to complete different tasks.

7.1.2. Status bar: used to display the current status of the machine tool, including network connection status and processing status.

7.1.3. Window selection: includes graphic display, vision/CCD, program, coordinate system, parameter, diagnosis, automatic, manual, and

reference point function interface selection. Choose different windows according to different operations.

7.1.4. Drawing tools: After loading the graphics file (JPG.DXF), you can use this tool to make simple picture modifications. Including the drawing of straight lines, arcs, circles, multi-terminal lines and rectangles.

7.1.5. Layer selection: One file can be divided into multiple layers, and the entire layer file can be modified uniformly. This area also includes the selection of Mark points.

7.1.6. Processing options: including sequencing, starting point, compensation options.

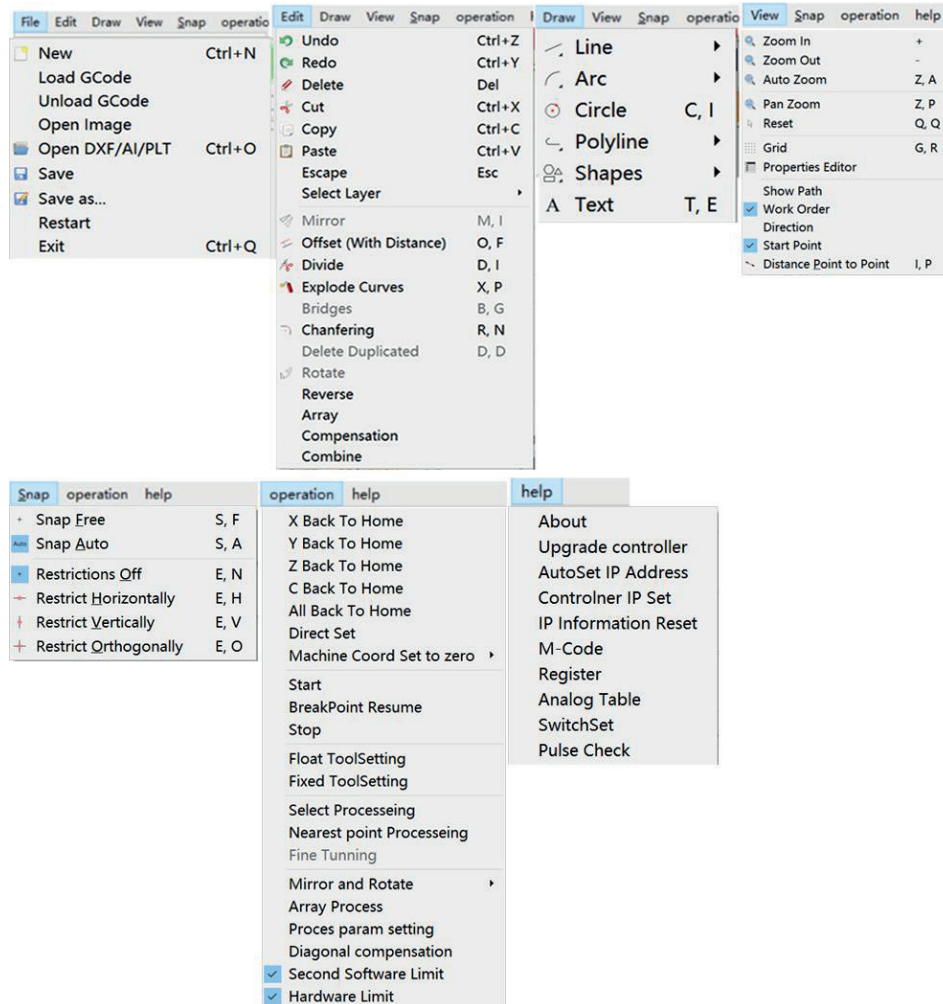
7.1.7. Function selection area: Selecting different windows will have different functions, click to operate.

7.1.8. File information: displays the basic information of the file. When loading and other operations, you can understand the work progress according to the progress bar.

7.1.9. Machine tool control bar: This interface can display machine coordinates and workpiece coordinates, real-time processing speed, current tool number and spindle speed. The corresponding speed can be controlled in real time through the feed override, G00 override (idle stroke), and spindle override sliding slider. Click the button

corresponding to each axis to manually control the movement of each axis and manually turn on the spindle and vacuum pump. And the start and pause of machine tool processing.

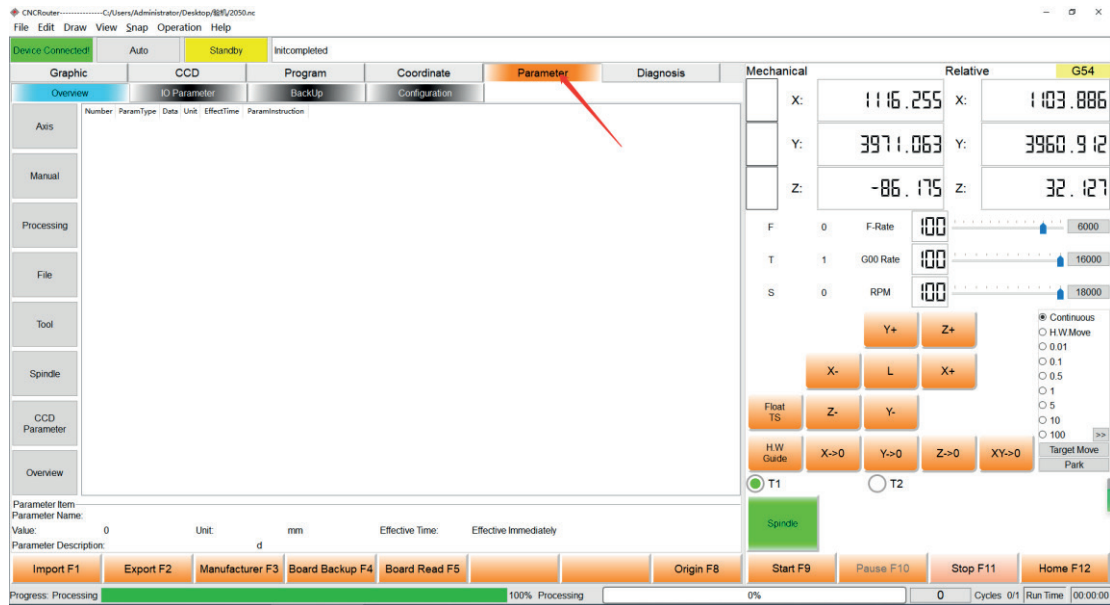
7.2. Menu List.



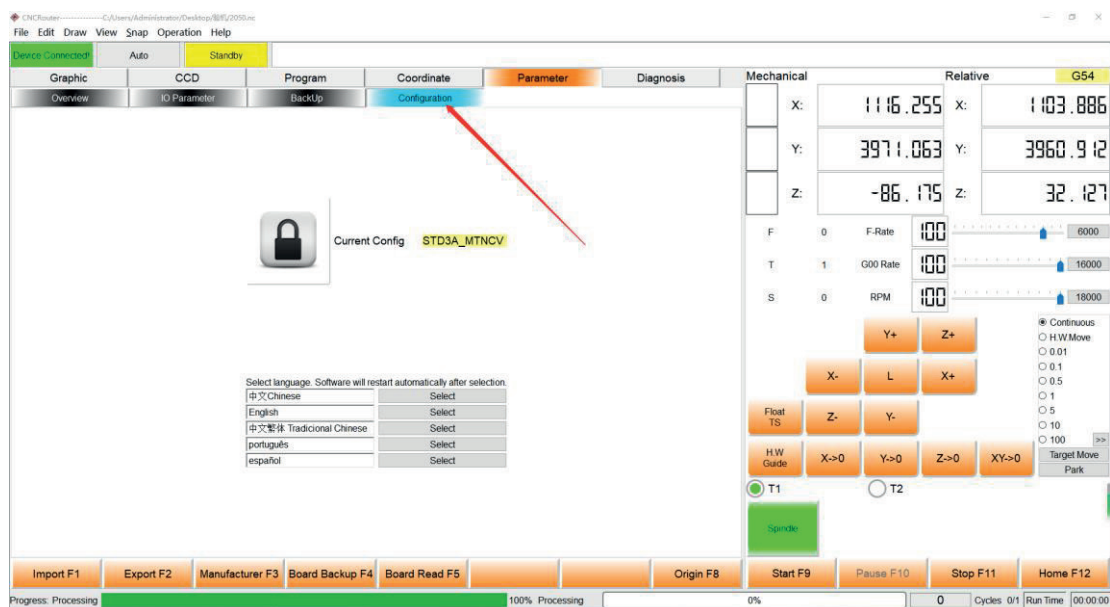
* Due to slight differences in software versions, the real machine menu options will have functions that are not shown in the menu options shown above. There are also some functions that are not commonly used in real machine operations. This is only for reference. Please refer to the actual machine menu.

7.3. Language settings.

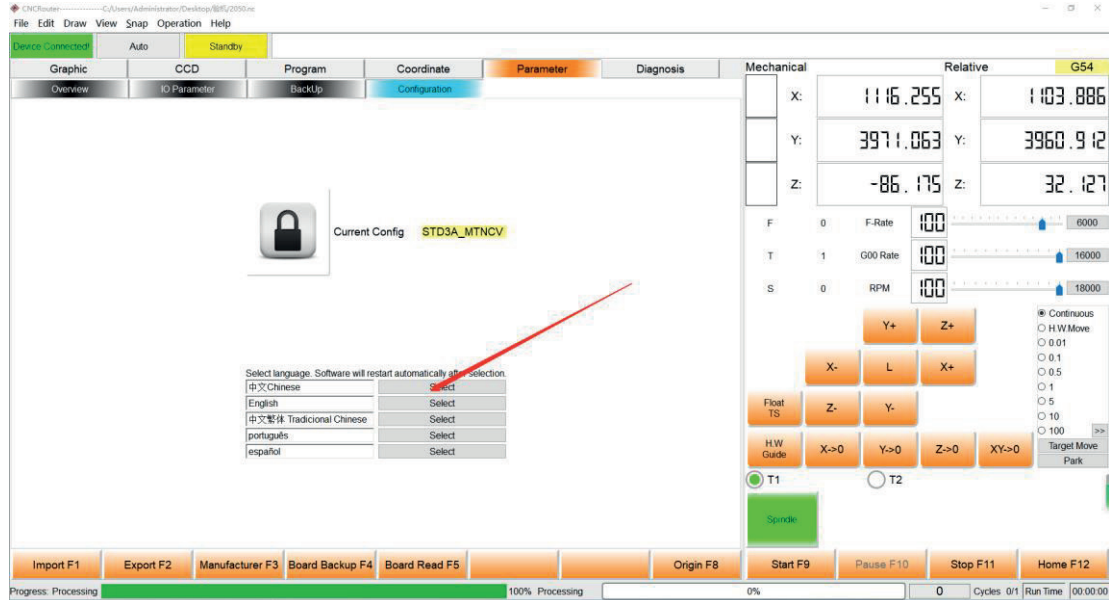
First click on parameters.



Click configure.



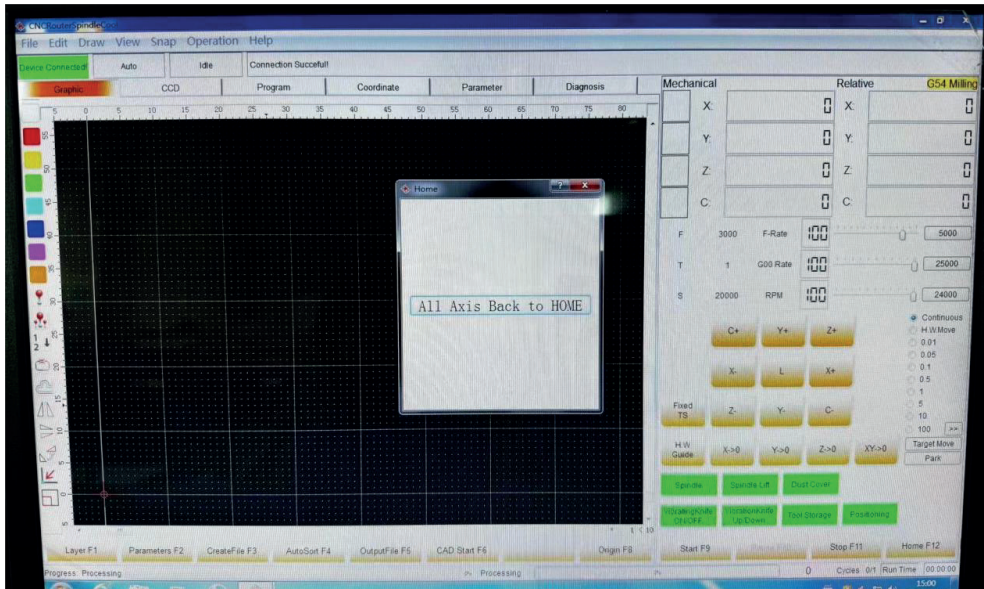
After clicking to select English, the software will automatically restart.



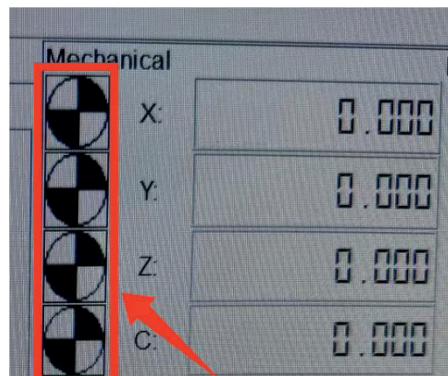
*Parameter configuration menu is used to set hardware related parameters. The settings have been completed by our technical engineers according to the equipment model. If the machine tool hardware, electrical parameters, etc. have not changed, no modification is required. If you need to modify the parameters, please contact us and make modifications under the guidance of the technical engineers.

8. Machine Operation.

8.1. Power on and return to origin.



Return to zero completion flag.



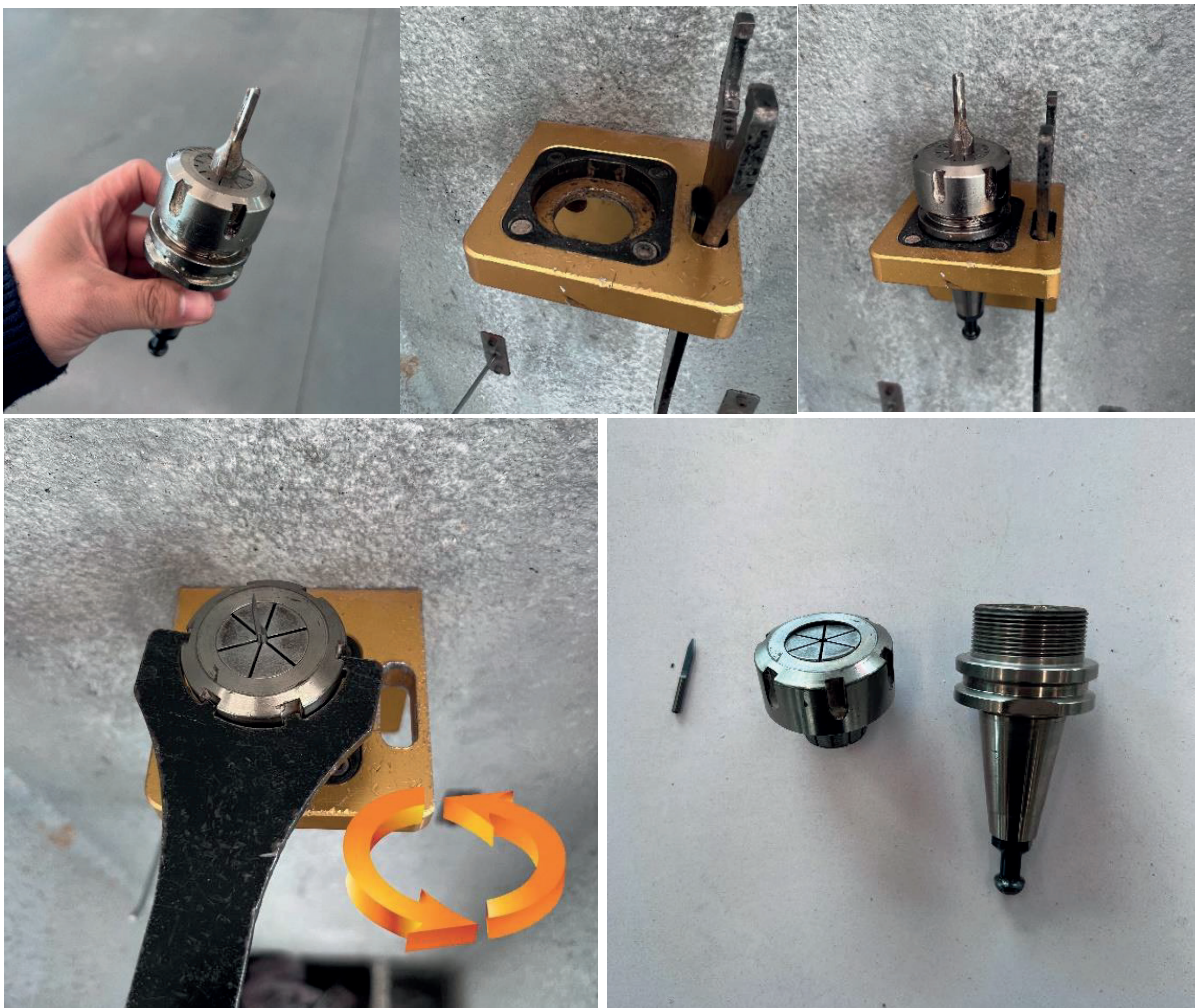
Every time you turn on the machine, you must press the confirmation button to return to the origin, and wait for each axis of the machine to return to the mechanical origin, otherwise the limiter will be ineffective. **When starting the machine for the first time, be sure to confirm whether the bolts fixing the**

Y1 and Y2 axes for transportation have been removed to avoid damaging the machine; if it does not return to the origin, the machine will continue to move beyond the maximum stroke, causing safety accidents such as tool breakage or bed damage.

8.2. Tool changing & tool setting.

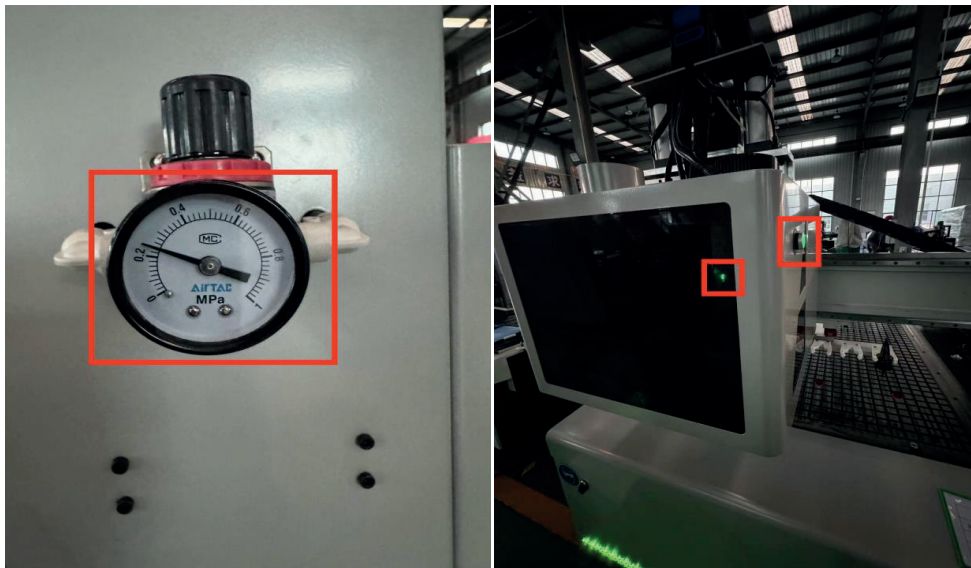
8.2.1. How to use the lock knife holder.

The locking tool holder is used to fix the tool changer handle to facilitate the removal of the tool on the tool handle. Place the tool changer tool handle upside down in the tool changer lock seat and use a spindle wrench to rotate counterclockwise to remove the nut on the tool changer tool handle.

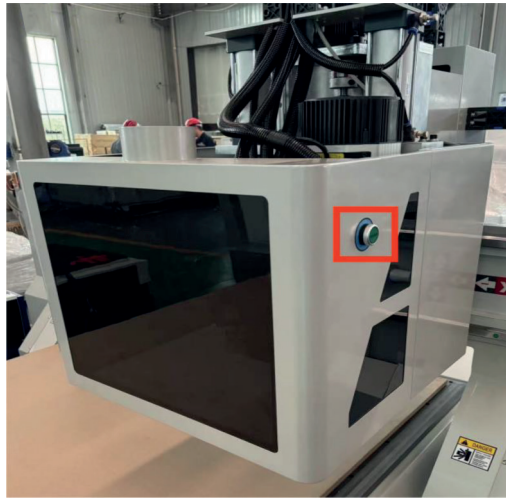
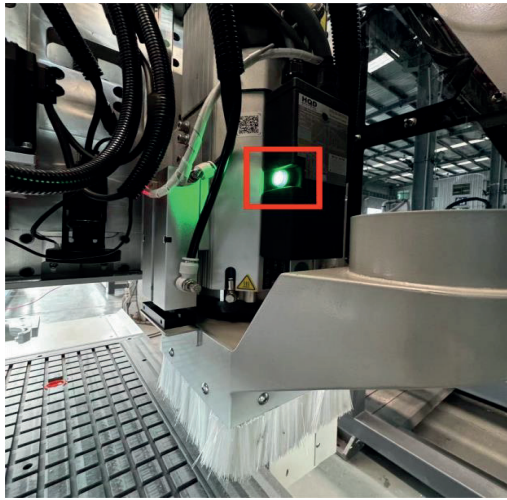


8.2.2. Manual tool change.

Spindle (T1-T8).

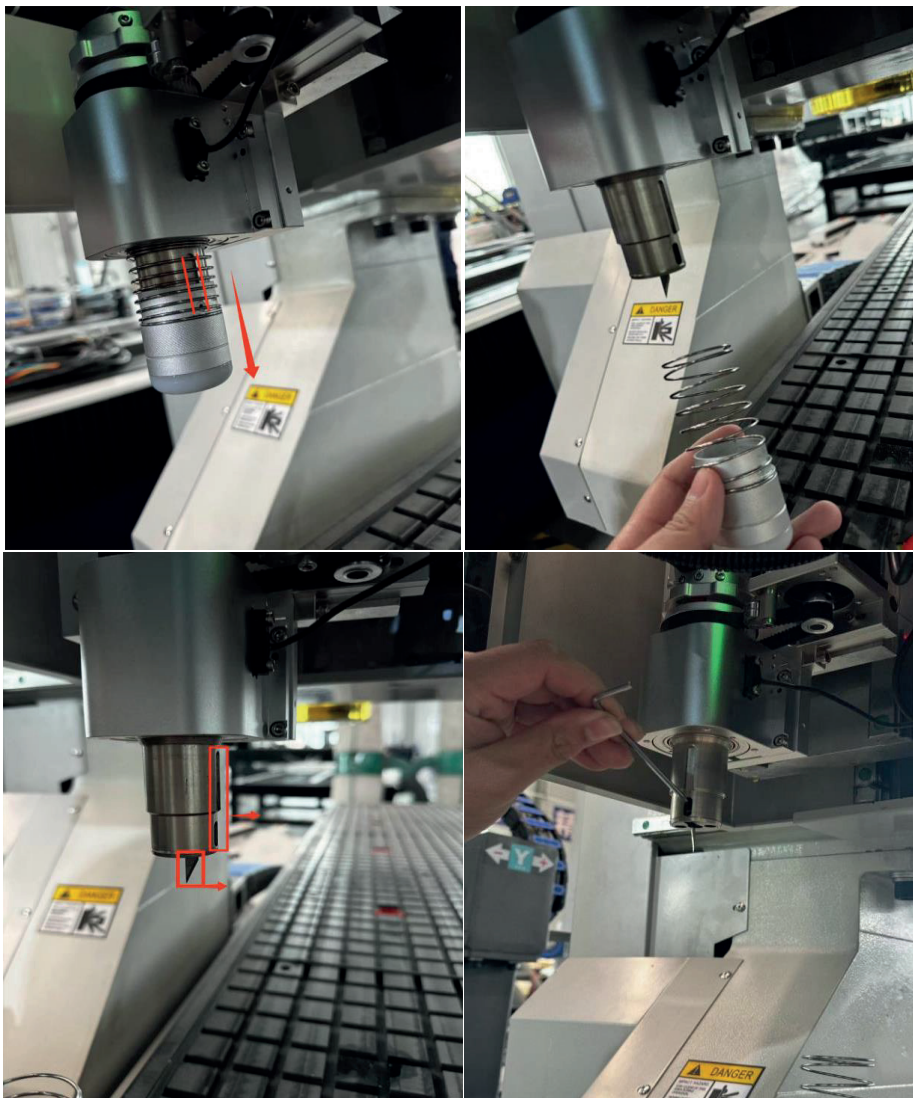


The air pressure required for tool change is controlled by the pressure regulating valve (it has been adjusted by our technical engineers before leaving the factory). The air pressure should be 0.2-0.4MPa and cannot be too high or too low, otherwise the system will sound an alarm; press the green tool change button to Change the tool.



8.2.3. Oscillating knife tool change.

When removing the oscillating knife guard, pay attention to the direction of the groove and wear gloves to prevent scratches. The blade should face the direction of the groove and be careful not to install it backwards. Use the hexagonal wrench that comes with the machine to disassemble and install it.

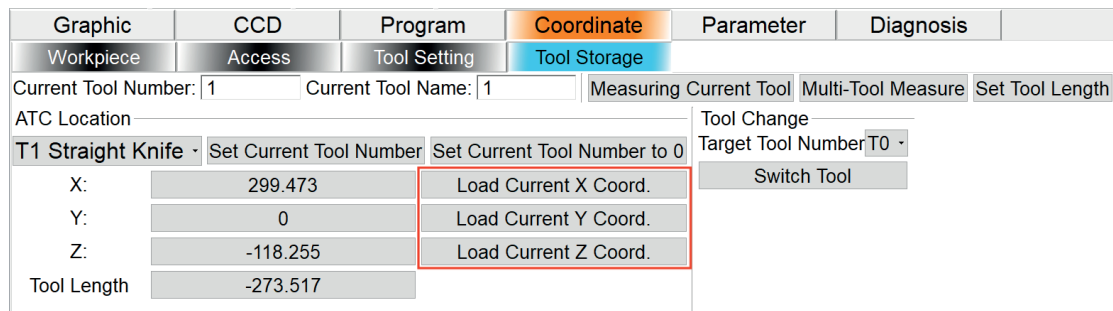


8.2.4. Use software to set and change tools.

Open **【Coordinate】** — **【Tool Storage】** interface, This interface can complete operations such as tool change, tool length measurement, tool magazine location setting, tool change, etc.; T9 is a oscillating tool and is not included in the tool change sequence. (* Please pay attention to the spindle tool currently used and avoid repeatedly placing tools on the tool holder, thereby damaging the machine. For example: Tool No. 3 is currently used, and the tool holder No. 3 in the tool magazine should not place the tool).

Note: Do not modify the mechanical coordinate parameters in this interface.

Modifications should be made under the guidance of technical personnel.



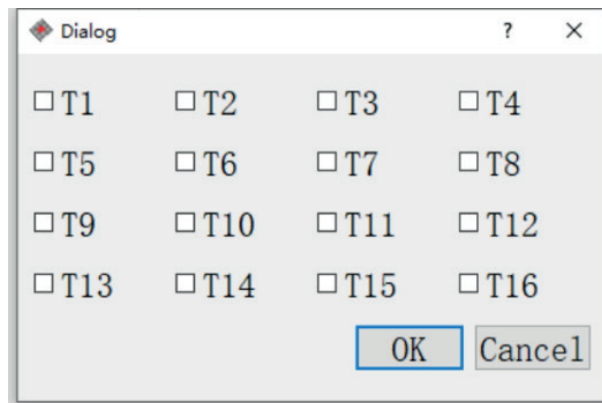
8.2.4.1. **【Current tool number】** : Used to display the tool number of the tool holder currently clamped by the spindle. The current tool number can also be viewed on the machine tool control bar.


8.2.4.2. **【Current tool name】** : Displays the number of the current tool, which can be changed according to the tools installed in each tool position of

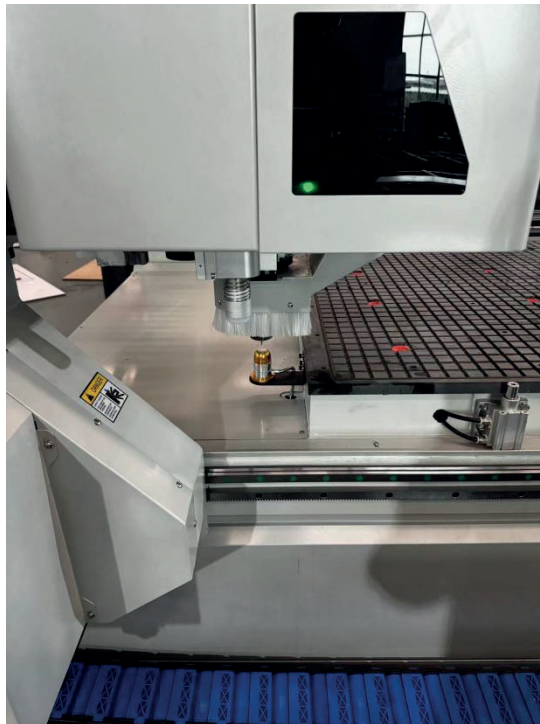
the machine. In the parameter list, just change the tool name corresponding to the tool number. Whenever a tool is replaced, the tool length needs to be measured. Supports single tool measurement and multi-tool measurement modes.

【Measure current tool】 : Only measure the tool length of the current tool.

【Multi-tool measurement】 : Measure the tool length of the selected tool number. The following dialog box will pop up, select the tool number that needs to be measured; the oscillating tool number is T9.



According to the needs, check the box that needs to measure the tool length, and then click **【OK】** ; The machine will start measuring the tool length of the selected tool.* Fixed tool setting  only the tool currently on the spindle is measured.



8.2.4.3. **【Tool magazine location】** : Here you can change the tool number of the currently clamped tool. In extreme situations, such as a power outage during tool change, etc., the actual tool number clamped by the spindle does not match the current tool number in the software. The current tool number needs to be set manually. The operation is as follows: (1)Open the tool number drop-down list and select the actual tool number on the current spindle; (2)Click **【Set current tool number】** . If there is no tool

clamped on the current spindle and it is tool zero at this time, click **【Set current tool number to 0】** complete the current tool number correction.

Note: Before using the machine, please ensure that the tool number recognized by the software matches the actual tool number, otherwise the tool magazine will be damaged.

8.2.4.4. When the machine leaves the factory, our technicians have set the tool handle positions of each tool number in the tool magazine to ensure that the tool changing action is completed safely and correctly. Here you can view and modify the tool magazine location. Do not click **【Load Current Machine Coordinates】**, Otherwise, the mechanical coordinates of the current spindle position will be set to the mechanical coordinates of the tool magazine position corresponding to the tool number.

Note: Do not change the location of the tool magazine at will, otherwise the tool magazine will be damaged.

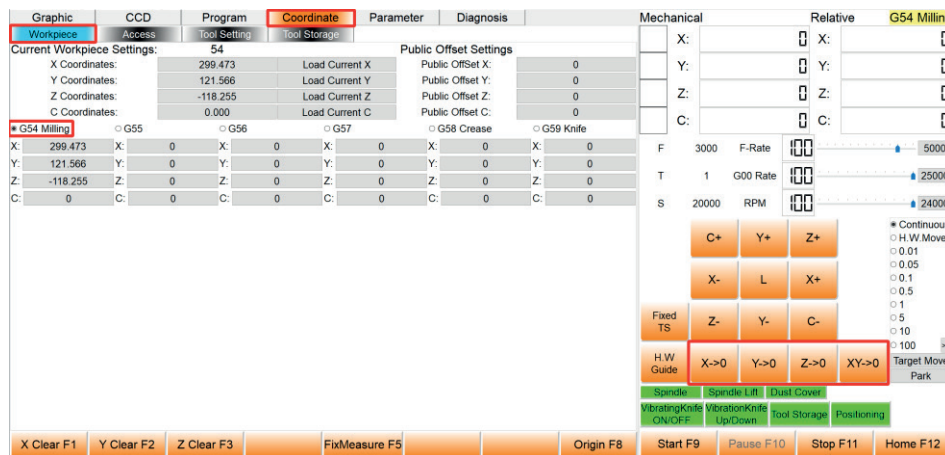
8.2.4.5. **【Set Tool length】** : This parameter does not need to be filled in manually. After using automatic measurement, the tool length data software will automatically set it.

Note: Please do not modify it at will, otherwise it will lead to inaccurate processing and other problems.

8.2.4.6. **【Tool change】** : When you need to manually change the tool, select the target tool number you want to switch in the **【Tool change】** column and click **【Switch tool】** , At this time, the machine will start the tool change action. After the tool change is completed, the machine will stop.

8.2.5. Set workpiece origin

Open **【Coordinate】** → **【Workpiece】** → **【G54 Milling】**



Move the tool head to the position on the material surface where processing needs to begin, and click as needed **X->0** **Y->0** **Z->0** **XY->0**

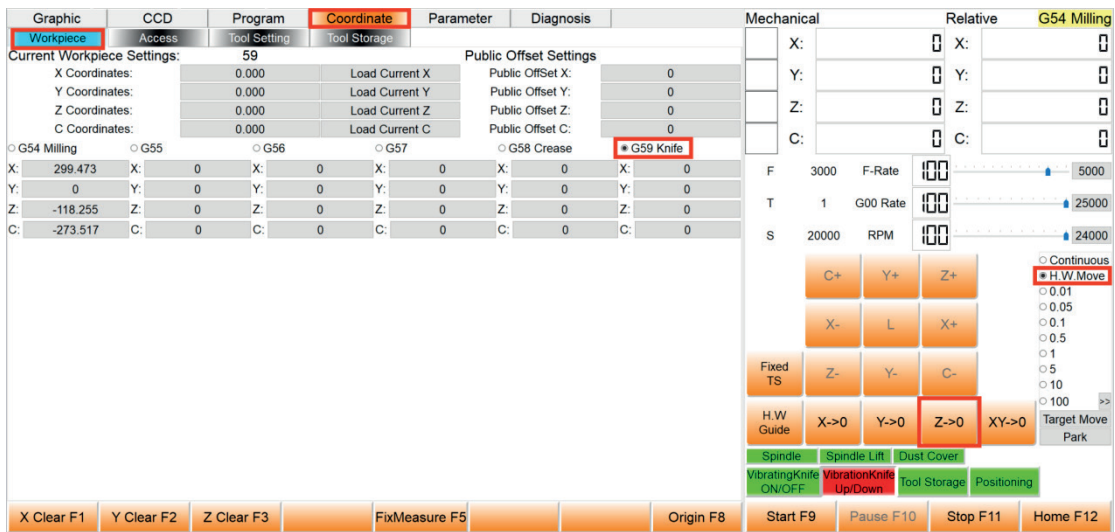
The workpiece coordinate origin setting is completed.



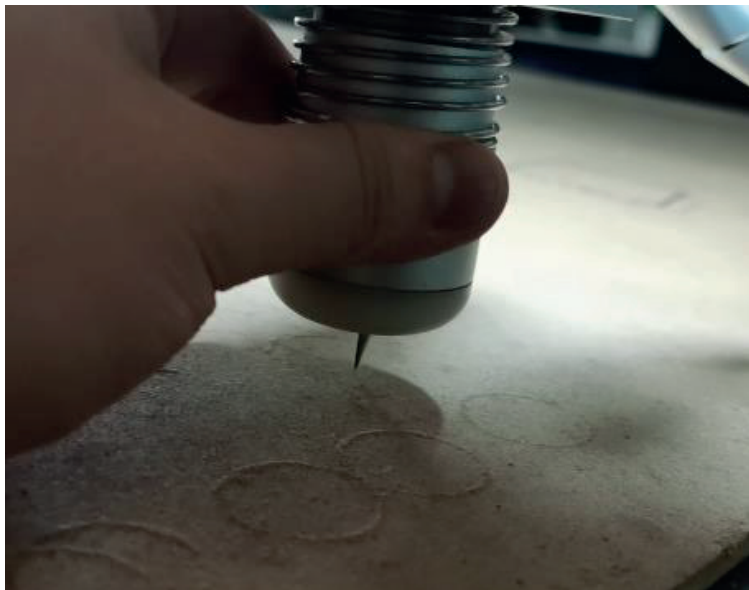
8.2.6. Oscillating tool setting.

Lower the oscillating knife and open it in sequence **【Coordinate】** →

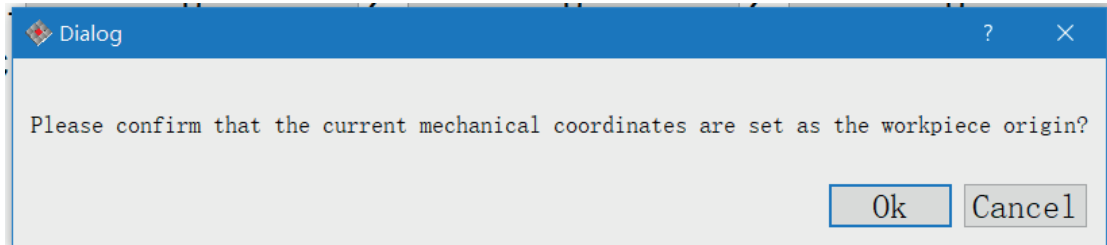
【Workpiece】 → **【G59 Knife】**



Switch to handwheel mode H.W.Move Move the oscillating knife to the material surface. **Please wear gloves to avoid scratches.*



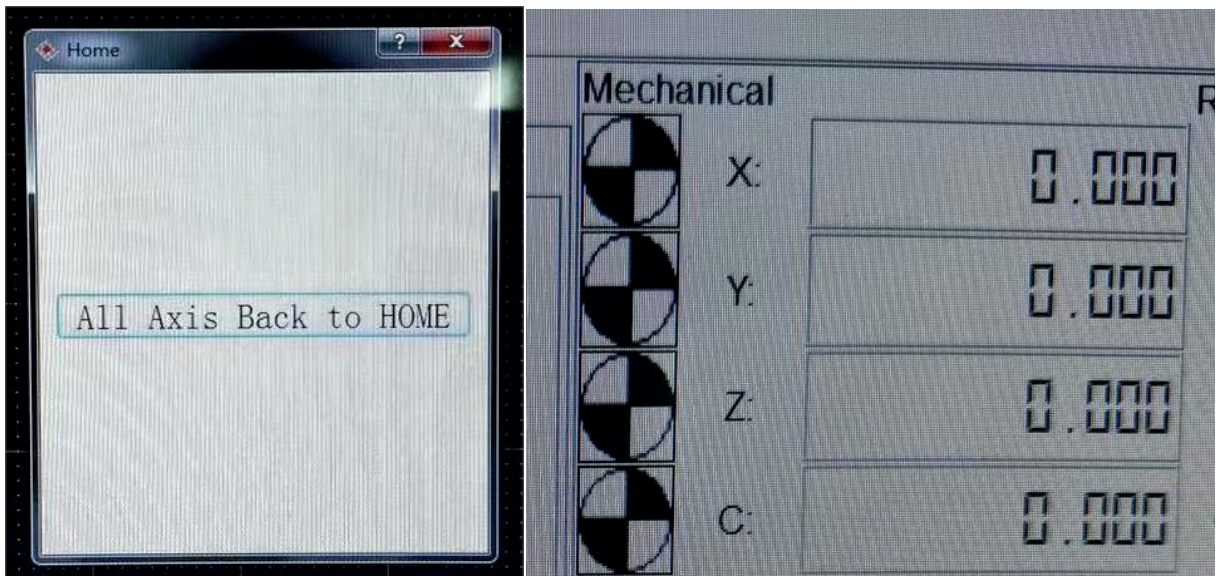
Click 



Click OK and the oscillating tool setting is completed.

8.3. Basic processing procedures.

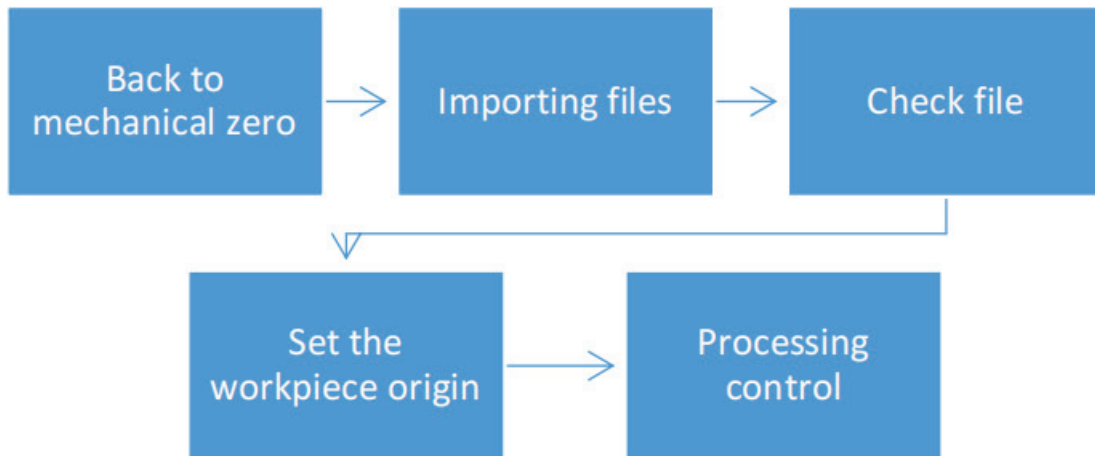
Before processing, mechanical zero return operation is required. Click [All Axis Back to HOME] on this interface, and the machine tool will immediately start the zero return operation. After the zero return is completed, the processing operation can be carried out.




(* Due to different languages and regions, the "G code file" editing software used is also different, so the "G code file" editing method will not be explained here. Please contact us if necessary).

***Please securely secure the material before proceeding with the operation.**


8.3.1. G code file processing.



8.3.1.1. Back to mechanical zero.


Open the software, open the [Operation] column of the software menu bar, and then click [All Zeros], the machine starts the mechanical zero return action, waiting for the zero return. After confirming that the machine origin is successful, the mechanical zero return completion flag will appear in the front axle return status bar of the corresponding axis .


8.3.1.2. Importing files.

Click **File** in the menu bar and click **Load G Code**. A Windows file selection dialog box will pop up. Find the path to save the G code file and open the file to complete the loading. At the bottom left of the program interface **Load** , You can also perform file loading operations, and the subsequent operations are the same as above.



After the file is processed, if there is no need for secondary processing, click **【Unload G Code】** on the menu bar **【File】** the currently loaded file will be unloaded.

8.3.1.3. Check file.

The **【3D】** interface under the **【Program】** age can simulate G code files. When loading is complete, click **【Simulation】** , You can simulate loading a G code file and view the line number corresponding to the G code file in the display interface.

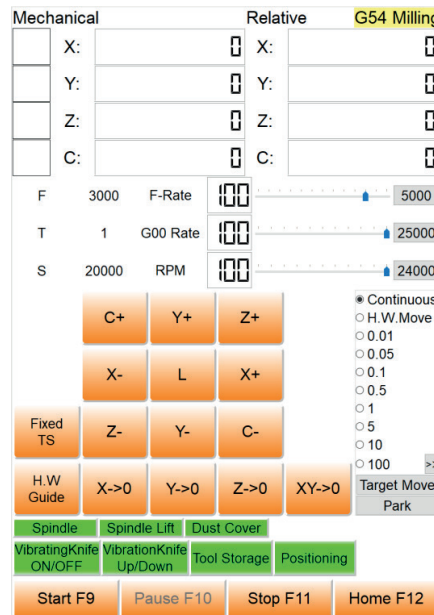
The **【File Management】** interface under the **【Program】** page can view the G code file, if you need to edit the file, click **【Edit File】** , to edit the file in the pop-up operation box.





8.3.1.4. Set the workpiece origin.

Set the origin of the workpiece according to the G code file, and set the tool to the surface or bottom of the material. Manually move the X-axis and Y-axis to the target position. Click **【XY to clear】** , to complete the X and Y axis coordinate settings of the workpiece origin. Manually move the Z axis for tool calibration. After lowering to the workpiece origin coordinates, click **【Z Clear】**  to complete the workpiece origin setting.

8.3.1.5. Processing control.

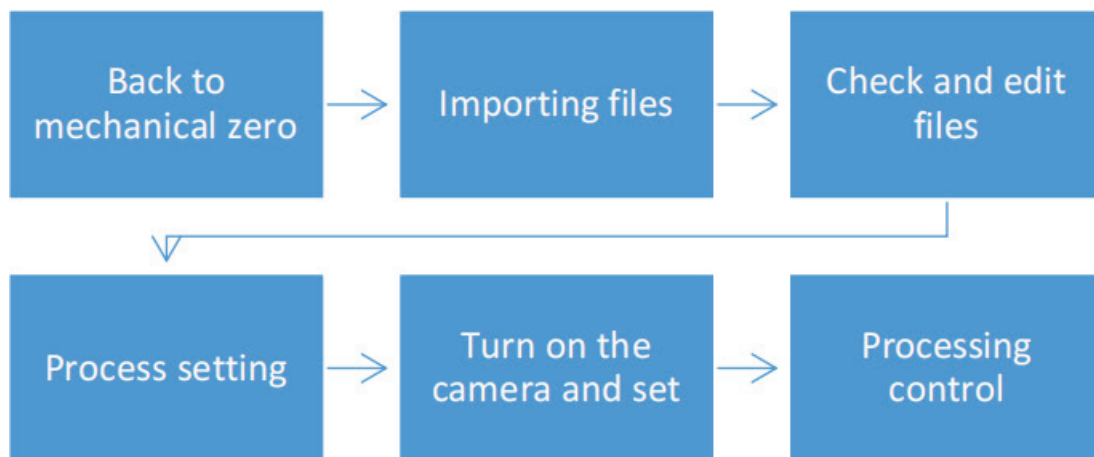
The control system can view the position information of each axis and perform simple control during processing. The control interface is as shown in the figure :




You can view the current speed, spindle speed and tool number on this interface. Move the slider to adjust the feed override, G00 override and spindle override. During the processing, the processing rate can also be controlled in real time by sliding the feed rate slider. You can check the progress of processing in the progress bar. Click **【Start】**  and the file will be processed from the beginning. Click **【Pause】**  to start processing from the place where the last processing stopped. Click **【Stop】**  and the software will immediately stop the current processing. When an alarm occurs and the problem is solved, click **【Home】**  to eliminate the alarm mark.

8.3.2. Oscillating knife processing.

The software supports the machine tool to be mounted with oscillating cutting equipment for cutting soft materials. The same as when using the spindle to cut, choose whether to use the CCD correction function according to your needs.




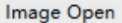
8.3.2.1. Back to mechanical zero.

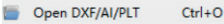
Open the software, open the [Operation] column of the software menu bar, and then click [All Zeros], the machine starts the mechanical zero return action, waiting for the zero return. After confirming that the machine origin is successful, the mechanical zero return completion flag will appear in the front axle return status bar of the corresponding axis .

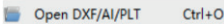

*** When using the oscillating knife, make sure that after returning to zero, the blade direction of the vibrating knife is in the same direction as the positive direction of the X-axis. Make the angle between the blade and the horizontal zero degree after the zero return operation.**

8.3.2.2. Importing files.






The system supports image editing and can directly import .JPG and .TIF files. After importing the file, the software will automatically extract the outline of the graphic and display it in the display interface.

Click **【File】**  on the menu bar and click **【Open Image】**  in the pop-up dialog box. After that, the file selection interface will pop up. Open the folder where the file is located and double-click the file. The software will automatically identify the graphic outline, that is, the processing path, and project it in the display window.

In addition to importing JPG files, you can also open edited files to improve production efficiency. Click **【Open】**  to pop up a dialog box and select a folder. Select a file that has been edited and saved in the past. The content of the file will be displayed in the window and can be processed after adjustment.



If contour generation has been performed, the export file is in DXF or PLT format.. You can use DXF or PLT format files for processing, Click **【Open】**  in **【File】**  in the menu bar to open this type of file. Open the file in the pop-up dialog box and the file will be displayed in the software for editing and processing operations.

8.3.2.3. Check and edit files.

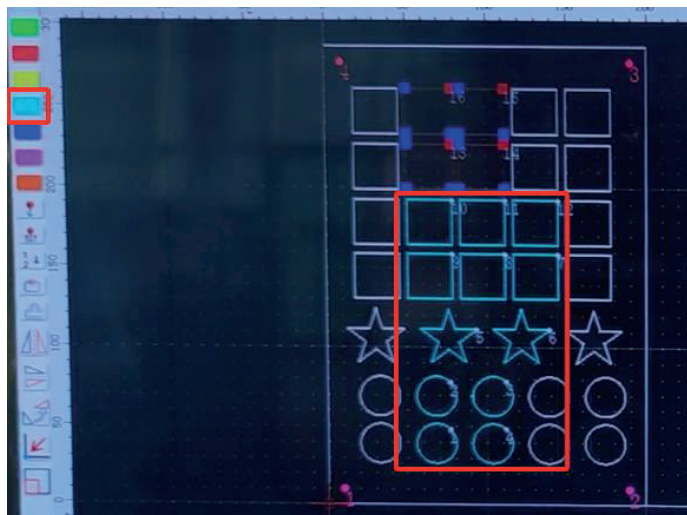
This part mainly involves three toolbars: drawing tools, layer selection interface, and processing selection. Drawing tools can be used to draw straight lines 、 arcs 、 circles 、 multi-terminal lines 、 rectangles  . The layer selection interface can adjust the processing parameters of each layer to meet the needs of processing multiple products



with different parameters at one time. A total of 7 layers are provided for selection.

Select the Mark point Mark  in the graphics display window, **When using the CCD edge patrol processing function, 4 Mark points need to be marked before normal processing can be performed. Click the mouse to select or frame the point on the image as the Mark point,, then click the Mark point Mark , repeat the operation, and complete 4 Mark points. In this way, setting the Mark point is completed.**

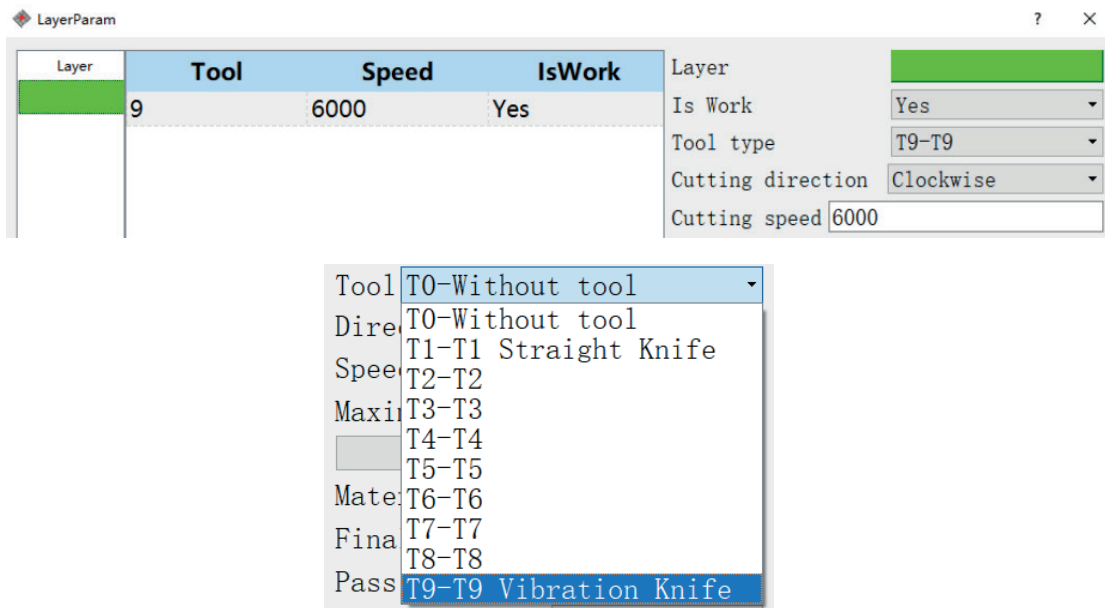
As shown below:



Select the image outline in the display window, and then click the layer selection window on the left to set the layer to which the primitive belongs.

8.3.2.4. Process setting.

When using a oscillating knife, should adjust the **【Tool Type】** in **【Layer Parameters】** , Click **【Layer】** Layer F1 under the Graphic interface and the dialog box shown in the figure below will appear:

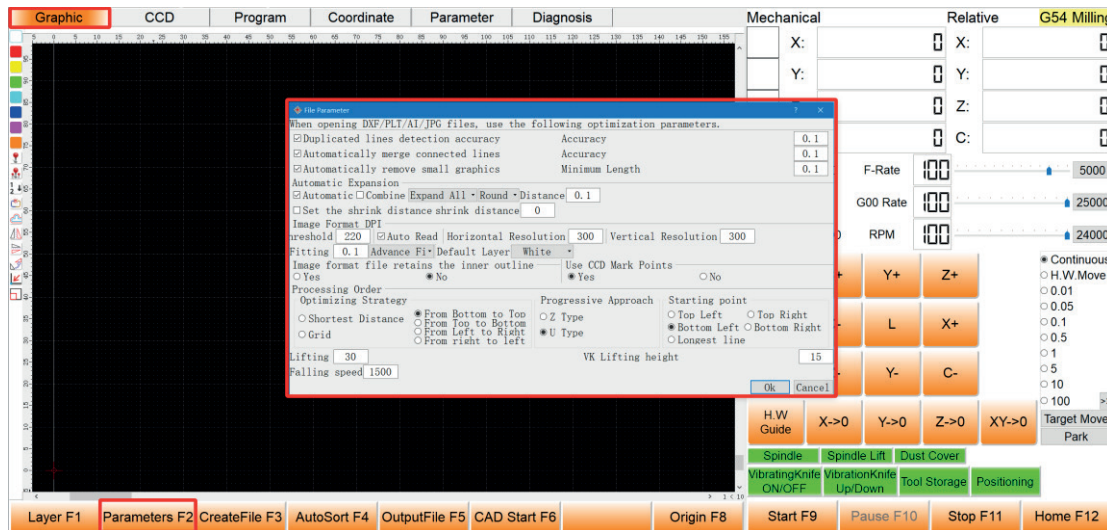


Change **【Tool Type】** to the tool number corresponding to the oscillating tool, In the set parameters, the tool number corresponding to the oscillating tool is one greater than the maximum tool number of the spindle tool magazine. For example, the machine spindle tool magazine capacity is 8, then the tool number corresponding to the oscillating tool is T9.


8.3.2.5. Process setting.

When performing CCD processing, you need to turn on the CCD calibration function and click **【Parameters】** **Parameters F2** at the bottom of the **【Graphics】**


Graphic page, A dialog box as shown below will pop up:



Click **【Use CCD Mark Points】** to **【Yes】** , At this time, CCD calibration will be performed before processing.If CCD calibration is not required during processing, click **【No】** .

When processing multiple products, after setting the layers that need to be processed, the software will automatically sort them. If you need to change the order of processing, you can also click **【Manual Sort】**  After clicking, there will be a circled number symbol next to the mouse. The starting number is 1. Then use the mouse to click on the first element you want to process. At this time, the workpiece becomes the first workpiece to be processed, and the number in the circle next to the mouse will change to 2. At this time, click on the next primitive

you want to process, and the processing sequence of this primitive will be the second one. By analogy, the sorting of the processing sequence of all graphics elements can be completed. During the re-sequencing process, the software will automatically plan the processing path according to the set rules, and use a white line to indicate the processing empty stroke.

Click **【Start Point Selection】** , in the processing selection column to customize the point from which the workpiece should be processed to meet the needs of more situations.


8.3.2.6. Turn on the camera and set.

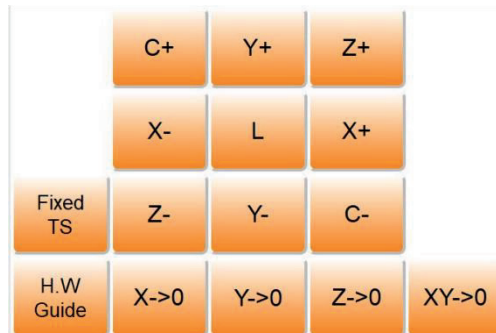
If CCD calibration is not required during processing, ignore this step.

The camera needs to be set up in CCD processing mode. Click the Vision/CCD column in the window selection bar.

The location is as shown in the picture :

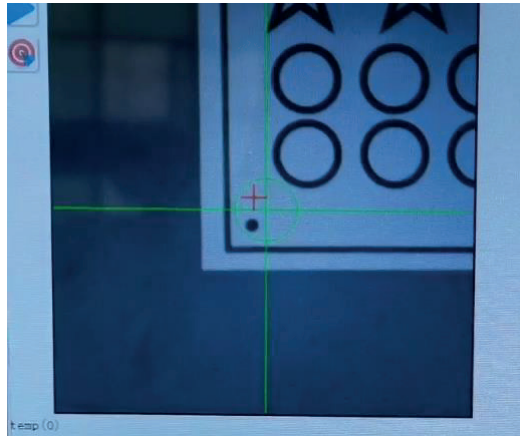


Click **【Open Camera】** , to start the camera and the image will be displayed in the display window.



Use the mouse on the machine console to move the window manually, or use the numeric keyboard shortcuts corresponding to each button. as the picture shows :

To move the X and Y axes, you need to align the camera with the Mark point in the lower left corner of the processing file (the system defaults to the lower left



corner, please adjust it according to your needs), and move the camera position so that the Mark point appears in the display window.

temp(0)

Camera Info Reaset


CCD Start Point


Start Point X Starting Point Y

Specified Point

Point X1	<input type="text" value="000.000"/>	Point Y1	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X2	<input type="text" value="000.000"/>	Point Y2	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X3	<input type="text" value="000.000"/>	Point Y3	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X4	<input type="text" value="000.000"/>	Point Y4	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign

* Check whether **Assign** has been locked. In the locked state, the automatic edge patrol positioning of the Mark point will be invalid and processing will be based on the locked coordinates.

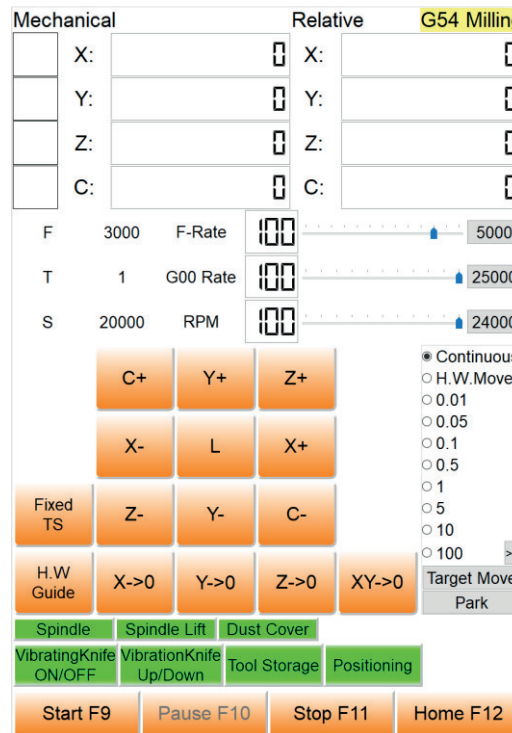
Click **【CCD Start F1】**  , in the lower left corner of the page. At this time, the system starts to automatically patrol the edges and start processing after positioning is completed.





After the first processing is completed, the software will automatically record the position of the first Mark point as the starting point for recognition, If the position of the processing material has not moved, you can click **【Move Start Point】**  to quickly return to the starting point of identification, The system automatically moves the camera to the starting Mark point position, eliminating the need to manually move the camera again, improving processing efficiency.

8.3.2.7. Processing control.

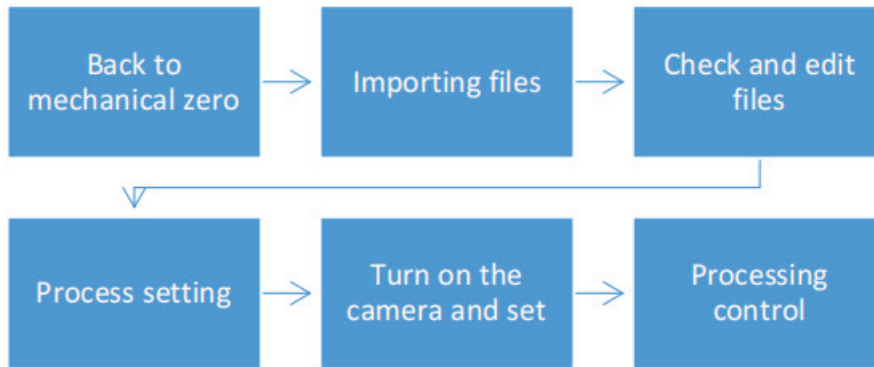
The control system can view the position information of each axis during the machining process and perform feed rate in real time to view the real-time speed of movement. Understand the processing status and respond to sudden changes in real time.

The processing progress can be viewed below, displayed in the form of a progress bar. The control interface is as shown in the figure :




You can view the current speed, spindle speed and tool number on this interface. Move the slider to adjust the feed override, G00 override and spindle override. During the processing, the processing rate can also be controlled in real time by sliding the feed rate slider. You can check the progress of processing in the progress bar. Click **【Start】**  and the file will be processed from the beginning. Click **【Pause】**  to start processing from the place where the last processing stopped. Click **【Stop】**  and the software will immediately stop the current processing. When an alarm occurs and the problem is solved, click **【Home】**  to eliminate the alarm sign.

8.3.3. CCD Machining.



8.3.3.1. Back to mechanical zero.

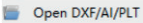

Open the software, open the [Operation] column of the software menu bar, and then click [All Zeros], the machine starts the mechanical zero return action, waiting for the zero return. After confirming that the machine origin is successful, the mechanical zero return completion flag will appear in the front axle return status bar of the corresponding axis .



8.3.3.2. Importing files.

The system supports image editing and can directly import .JPG and .TIF files. After importing the file, the software will automatically extract the outline of the graphic and display it in the display interface.






Click **【File】** **File** on the menu bar and click **【Open Image】** **Image Open** in the pop-up dialog box. After that, the file selection interface will pop up. Open the

folder where the file is located and double-click the file. The software will automatically recognize the graphic outline, that is, the processing path, and project it in the display window.



In addition to importing JPG files, you can also open edited files to improve production efficiency. Click **【Open】**  **Open DXF/AI/PLT**  to pop up a dialog box and select a folder. Select a file that has been edited and saved in the past. The content of the file will be displayed in the window and can be processed after adjustment.

If contour generation has been performed, the export file is in DXF or PLT format. You can use DXF or PLT format files for processing, Click **【Open】**  **Open DXF/AI/PLT**  in **【File】** **File** in the menu bar to open this type of file. Open the file in the pop-up dialog box to display the file in the software for editing and processing operations.

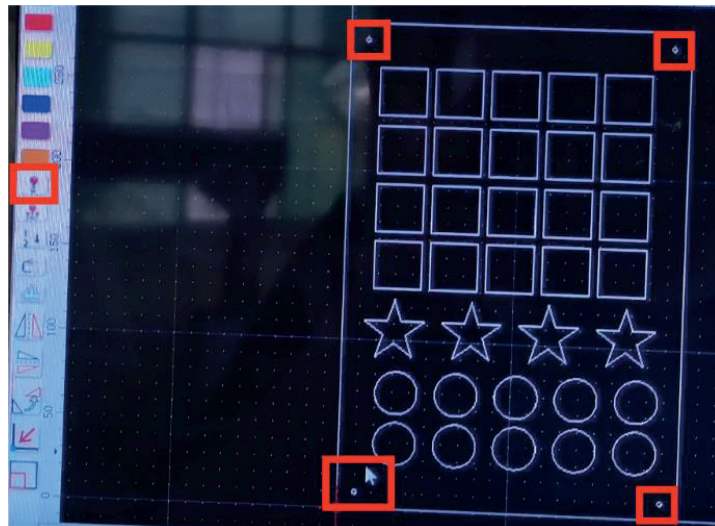
8.3.4. Check and edit files.

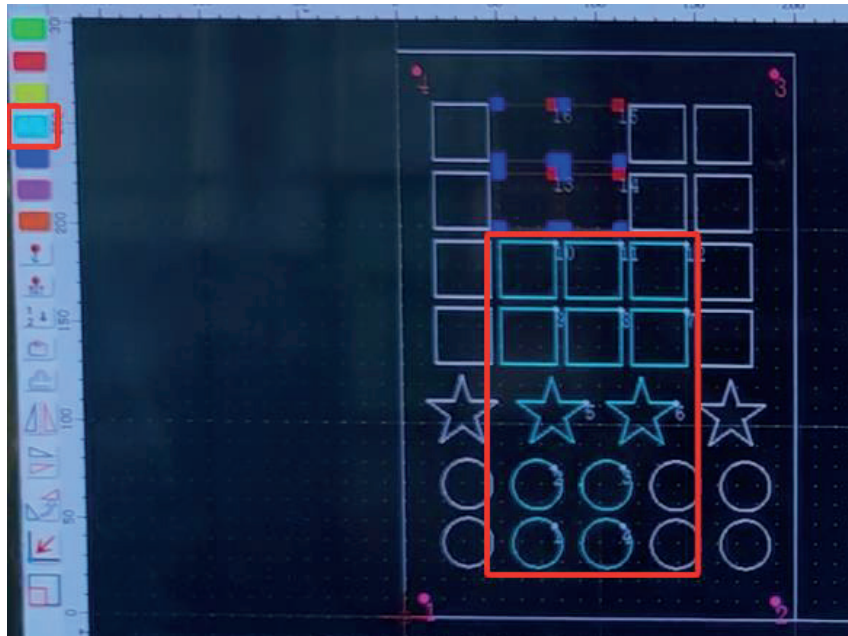
This part mainly involves three toolbars: drawing tools, layer selection interface, and processing selection. Drawing tools can be used to draw straight lines 、arcs 、circles 、multi-terminal lines 、rectangles . The layer selection interface can adjust the processing parameters of each layer to meet the needs of processing multiple products with different parameters at one time.



A total of 7 layers are provided for selection. Select the Mark  point in the graphics display window, **When using the CCD edge patrol processing function, 4 Mark points need to be marked before normal processing can be performed. ; Click the mouse to select or frame the point on the image as the Mark point, and then click Mark  point. Repeat this operation to complete 4 Mark points. In this way, setting the Mark points is completed.**

As shown below :

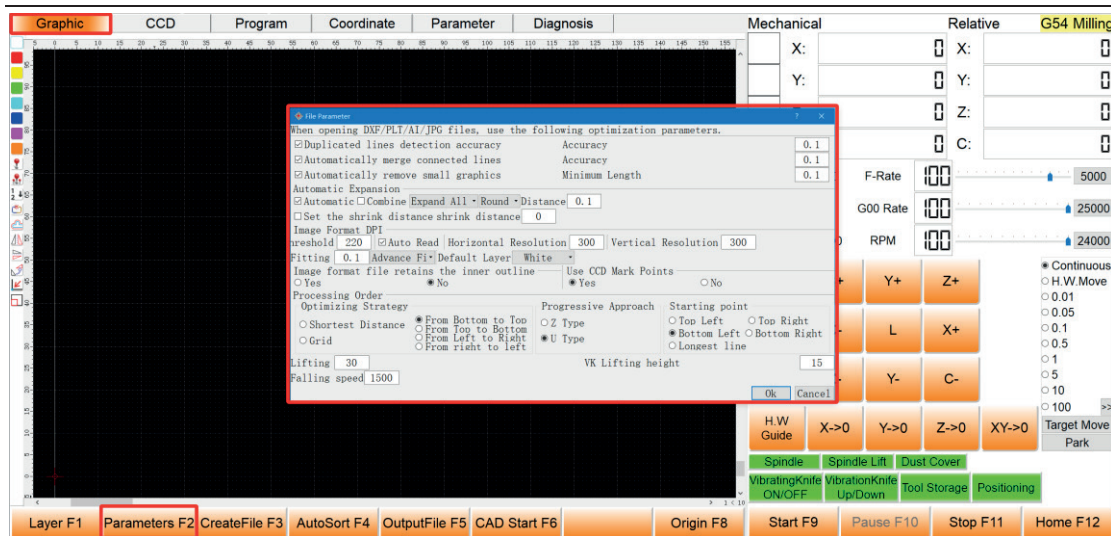





Select the image outline in the display window, and then click the layer selection window on the left to set the layer to which the primitive belongs.

8.3.5. Process setting.


When performing CCD processing, the CCD correction function needs to be turned on, Click **【Parameters】** **Parameters F2** at the bottom of the **【Graphics】** **Graphic** page, A dialog box as shown below will pop up :




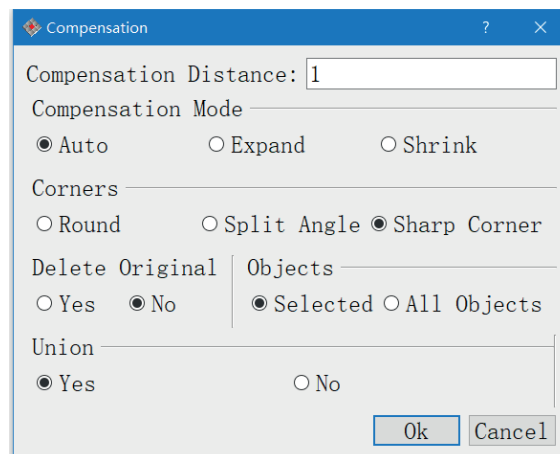
Click **Use CCD Mark Points** to **Yes** , At this time, CCD calibration will be performed before processing. If CCD calibration is not required during processing, click **No** .

When processing multiple products, after setting the layers that need to be processed, the software will automatically sort them. If you need to change the processing order, you can click **Manual Sort**  After clicking, there will be a circled number symbol next to the mouse. The starting number is 1. Then use the mouse to click on the first element you want to process. At this time, the workpiece becomes the first workpiece to be processed, and the number in the circle next to the mouse will change to 2. At this time, click on the next primitive you want to process, and the processing sequence of this primitive will be the second one. By analogy, the sorting of the processing sequence of all graphics elements can be completed. During the re-sequencing process, the software will automatically

plan the processing path according to the set rules, and use a white line to indicate the processing empty stroke.

Click **【Start Point Selection】** , in the processing selection column to customize the point from which the workpiece should be processed to meet the needs of more situations.

After selecting the workpiece, click **【Compensation】** , in the processing selection column to set external expansion and internal contraction for tool compensation. Set the frame as shown in the figure :

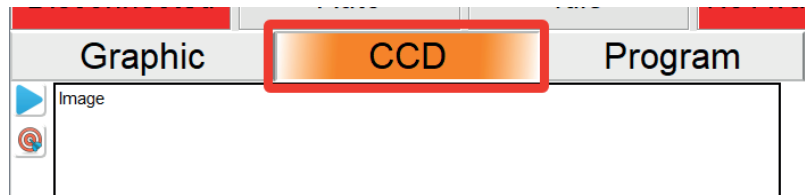



In this window, you can set the offset distance, offset mode, sharp angle mode, whether to delete the original image, etc. Please set according to the actual situation.

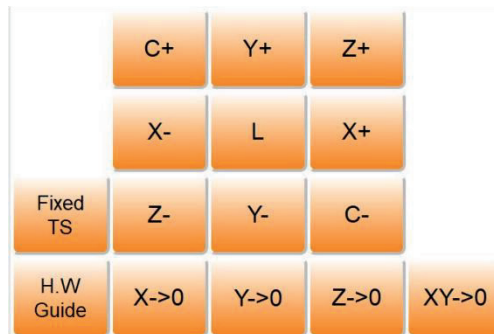
8.3.6. Turn on the camera and set.

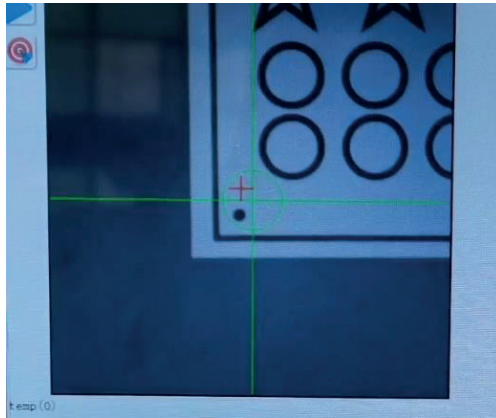
The camera needs to be set up in CCD processing mode. Click the Vision/CCD column in the window selection bar.

The location is shown in the picture :



Click **【Open Camera】**  , to start the camera and the image will be displayed in the display window. Use the mouse on the machine console to move the window manually, or use the numeric keyboard shortcuts corresponding to each button. as the picture shows :





To move the X and Y axes, you need to align the camera with the Mark point in the lower left corner of the processing file (the system defaults to the lower left corner, please adjust it according to your needs), and move the camera position so that the Mark point appears in the display window.

temp(0)

Camera Info Reaset

CCD Start Point

Start Point X Starting Point Y


Load Current Coord **Move Start Point**

Specified Point

Point X1	<input type="text" value="000.000"/>	Point Y1	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X2	<input type="text" value="000.000"/>	Point Y2	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X3	<input type="text" value="000.000"/>	Point Y3	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign
Point X4	<input type="text" value="000.000"/>	Point Y4	<input type="text" value="000.000"/>	Load	<input type="checkbox"/> Assign

* Check whether **Assign** has been locked. In the locked state, the automatic edge patrol positioning of the Mark point will be invalid and processing will be based on the locked coordinates.

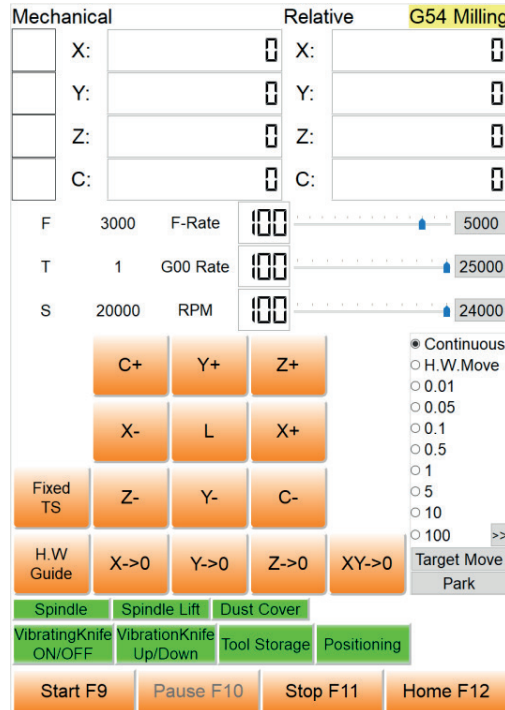
Click **CCD Start F1** **CCD Start F1**, in the lower left corner of the page. At this time, the system starts to automatically patrol the edges and start processing after positioning is completed.

After the first processing is completed, the software will automatically record the position of the first Mark point as the starting point for identification. If the position of the processed material has not moved, you can click **【Move Start Point】**  Quickly return to the starting point of recognition, the system automatically moves the camera to the starting Mark point position, eliminating the need to manually move the camera again, improving processing efficiency.

8.3.7. Processing control.

The control system can view the position information of each axis during the machining process, control the feed rate and spindle speed in real time, and view the real-time speed of movement and spindle speed. Use it to understand the processing status and respond to sudden changes in real time.

The processing progress can be viewed below, displayed in the form of a progress bar. The control interface is as shown in the figure:




You can view the current speed, spindle speed and tool number on this interface. Move the slider to adjust the feed override, G00 override and spindle override. During the processing, the processing rate can also be controlled in real time by sliding the feed rate slider. You can check the progress of processing in the progress bar.

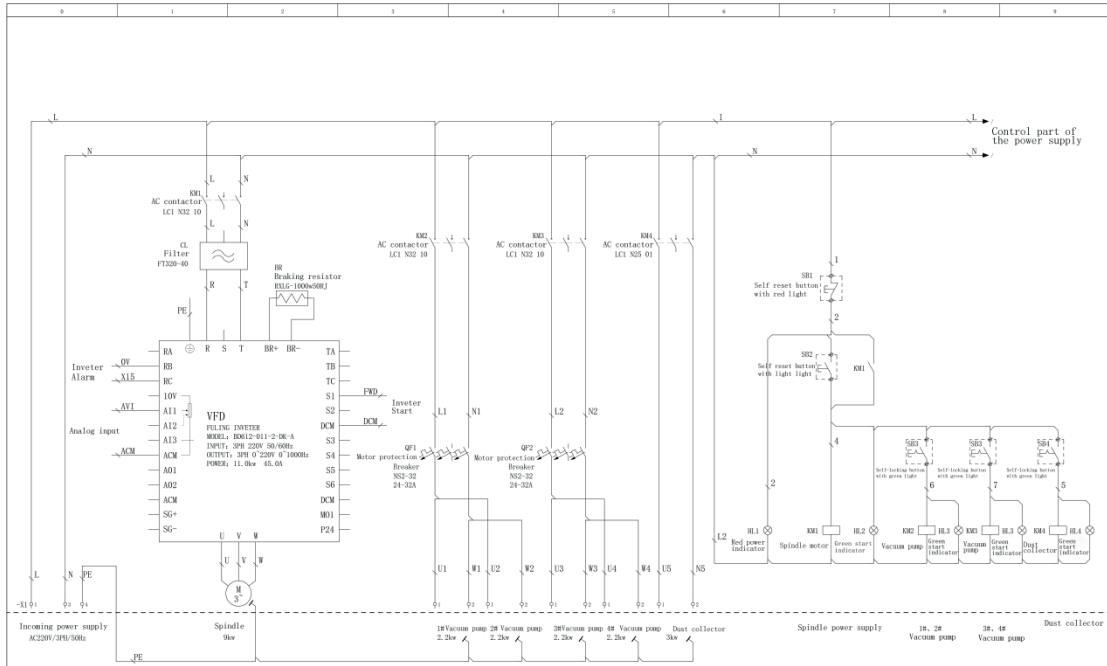
Click **【Start】**  and the file will be processed from the beginning.

Click **【Pause】**  to start processing from where the last processing stopped.

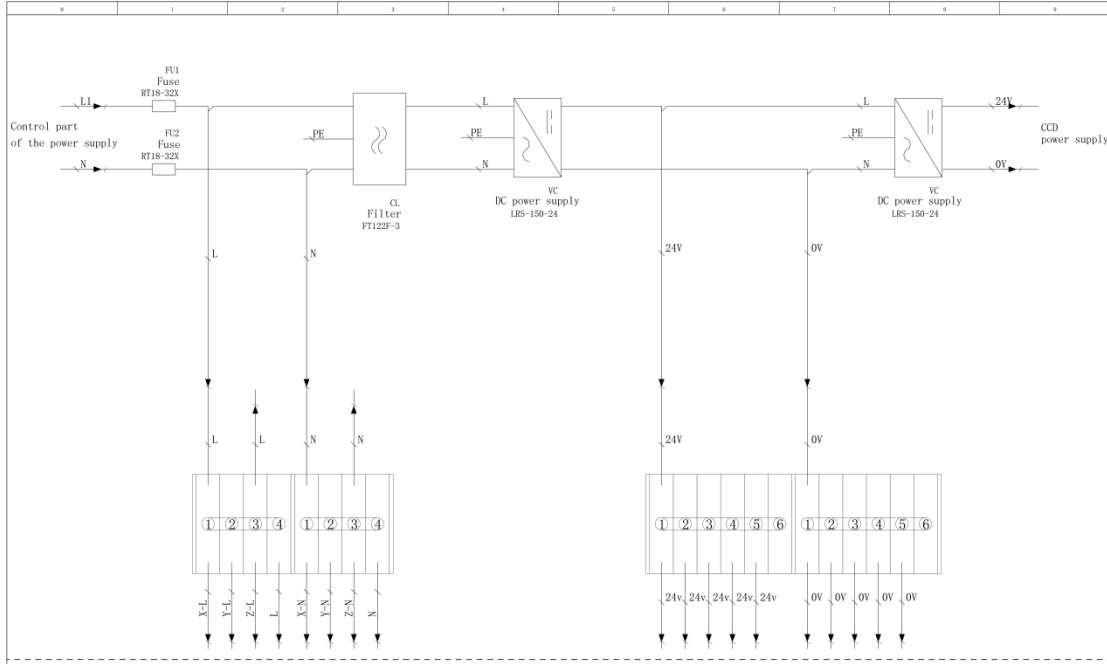
Click **【Stop】**  and the software will immediately stop the current processing.

When an alarm occurs and the problem is solved, click **【Home】**  to eliminate the alarm mark.

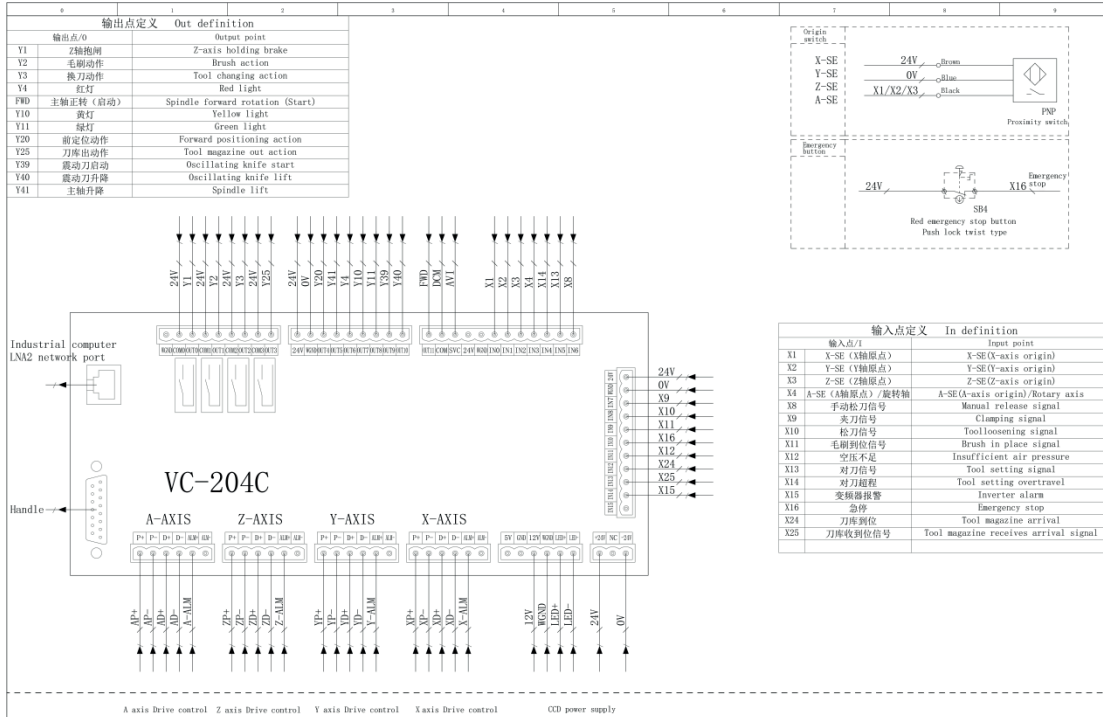
9. Electrical schematic diagram.



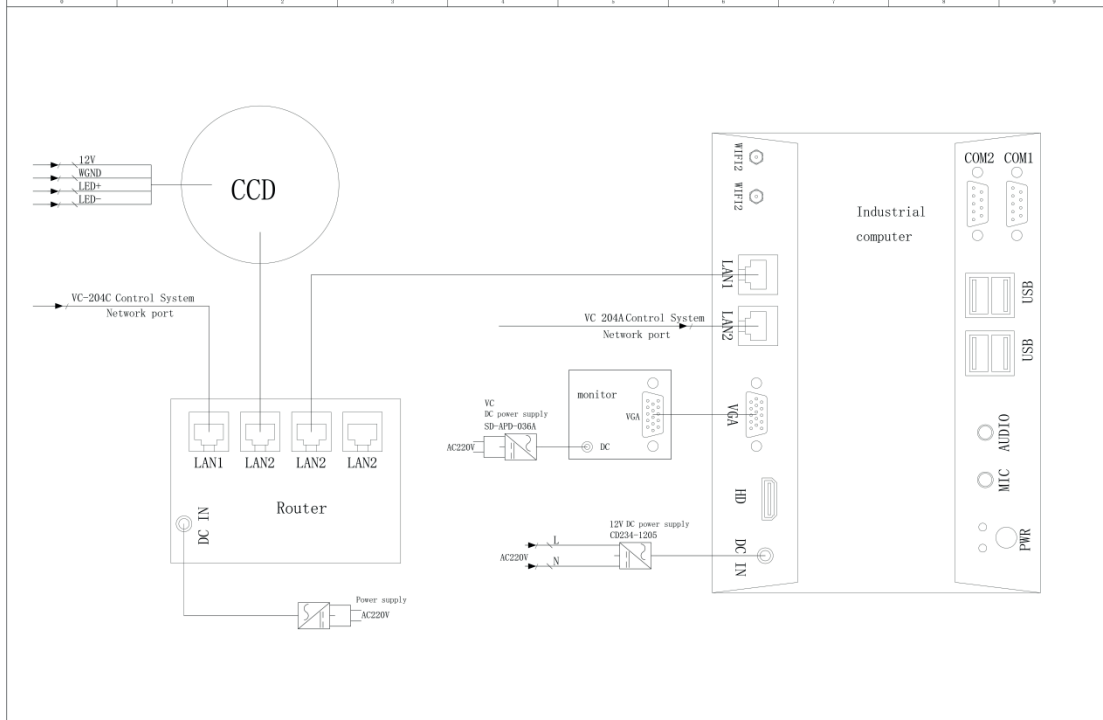
Date		Strong current control circuit		Power loop	
Profound		Spindle L1K inverter/Vacuum pump/Dust collector)			
Revise		Replace		Substitute	
Revise	Date	Name	Revise	Date	Page number
					Page 1/6

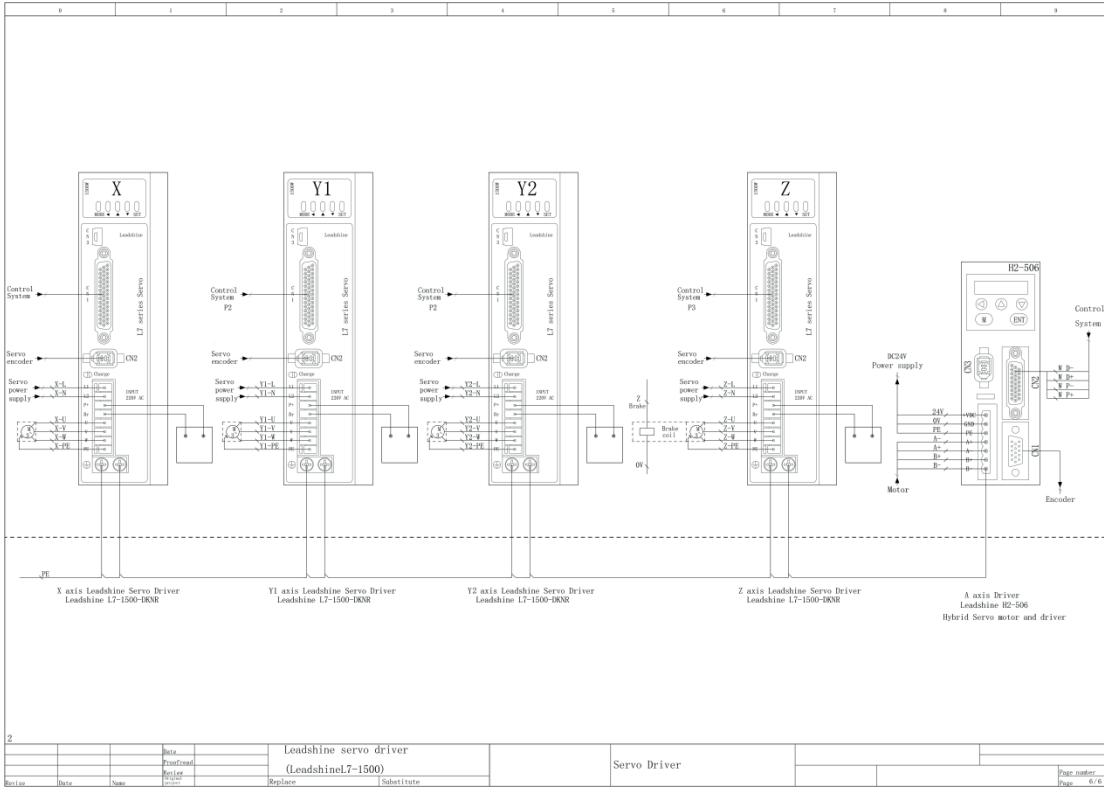
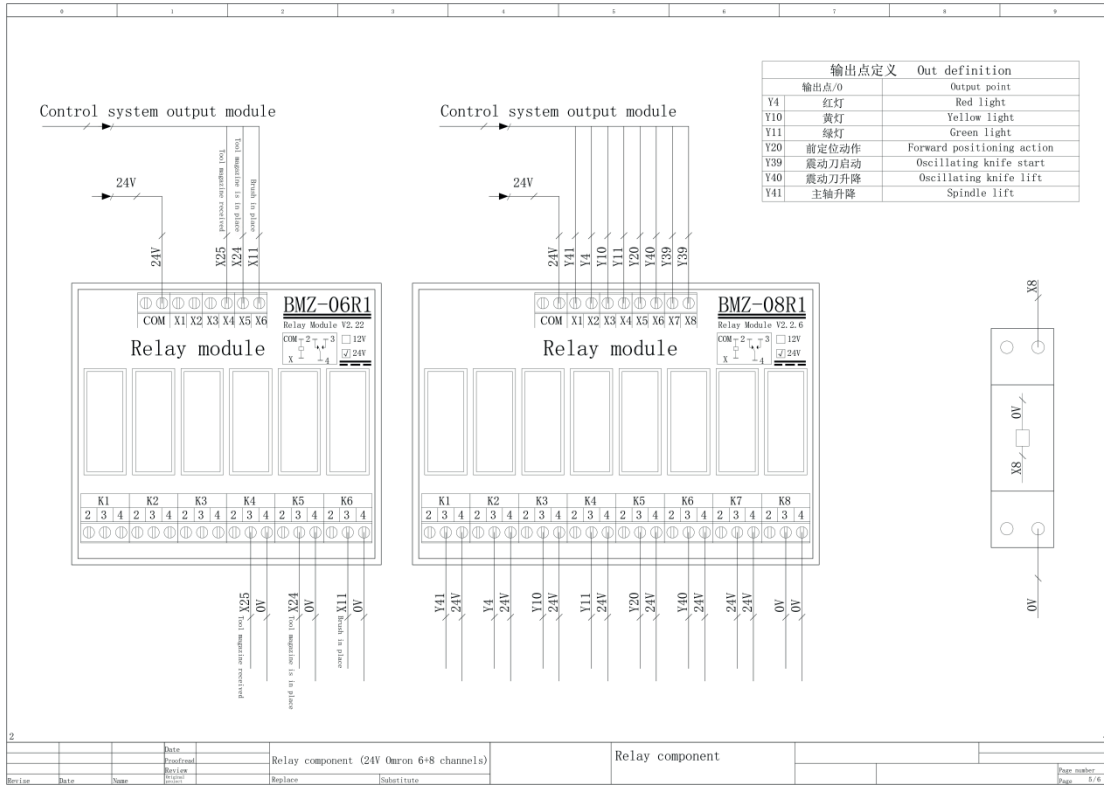


Date		Control power(AC220V+DC24V)		Control power	
Profound					
Revise		Replace		Substitute	
Revise	Date	Name	Revise	Date	Page number
					Page 2/6



Date		Control System (XINGDUOWEI VC204C)		Control System	
Revision	Date	Name	Replace	Substitute	Page number: 3
					Page: 3/6





10. Appendix.

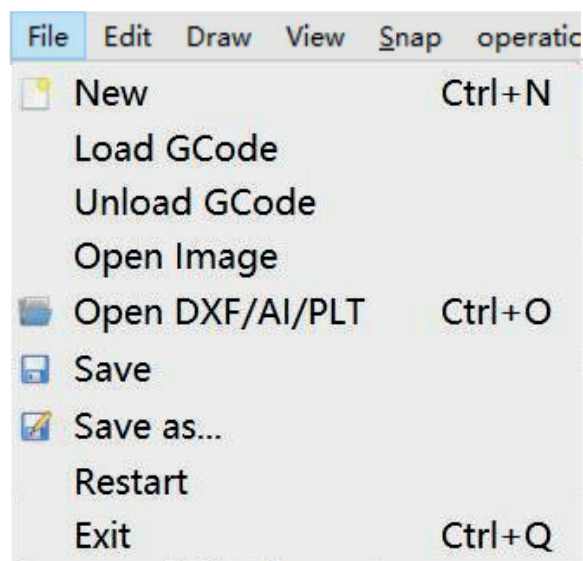
10.1. Software.

* Here we only introduce some common functions and basic operations of the machine. Some of the content will be simplified or skipped. However, in actual use, functions not introduced in this manual will be used. Please forgive me if you need to use functions not introduced in this manual. function, please use the handwheel to guide it according to the actual situation and use it with caution. If you have any questions or suggestions, please contact us in time.

10.1.1. Menu

10.1.1.1. File

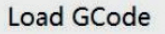
Click File in the menu bar, and the file operation tab will appear, as shown in the figure :






Various operations can be performed on files in this column.



***The name may be partially different due to version differences.**

10.1.1.1.1. G code file loading and unloading.

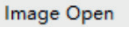
The software supports G code file processing. Click the **【Load G Code】**  option to load the file. Then the file selection interface pops up, find the path where the G code file is located, and double-click the file to load the file.

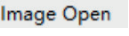
After processing, if you need to replace the G code file, you can click **【Load G Code】**  to overwrite the loaded file, and click **【Load File】** , at the bottom of the program window to achieve the same effect.

When you need to simply edit the G code file, you can click **【Edit】** , to pop up the editing interface and edit in this window. Please save after editing.

【Unload G Code】  can uninstall the currently loaded G code file. Click this button to uninstall. Can also click **【Uninstall File】** , at the bottom of the program window to uninstall the file.

10.1.1.1.2. Image format file opens.

【Open Image】  option can open image format files. Common ones include JPG and DIF files. can directly open the file of the changed type. Then click

【Open Image】 , and a file selection dialog box will pop up. Find the image format file we need to open and double-click to open it. Soft drop in the

open project will automatically extract the outline of the graphic. You can see the file loading process in the progress bar below. After loading is completed, the extracted graphic outline will be displayed in the display area for editing and other operations.

10.1.1.1.3. New.

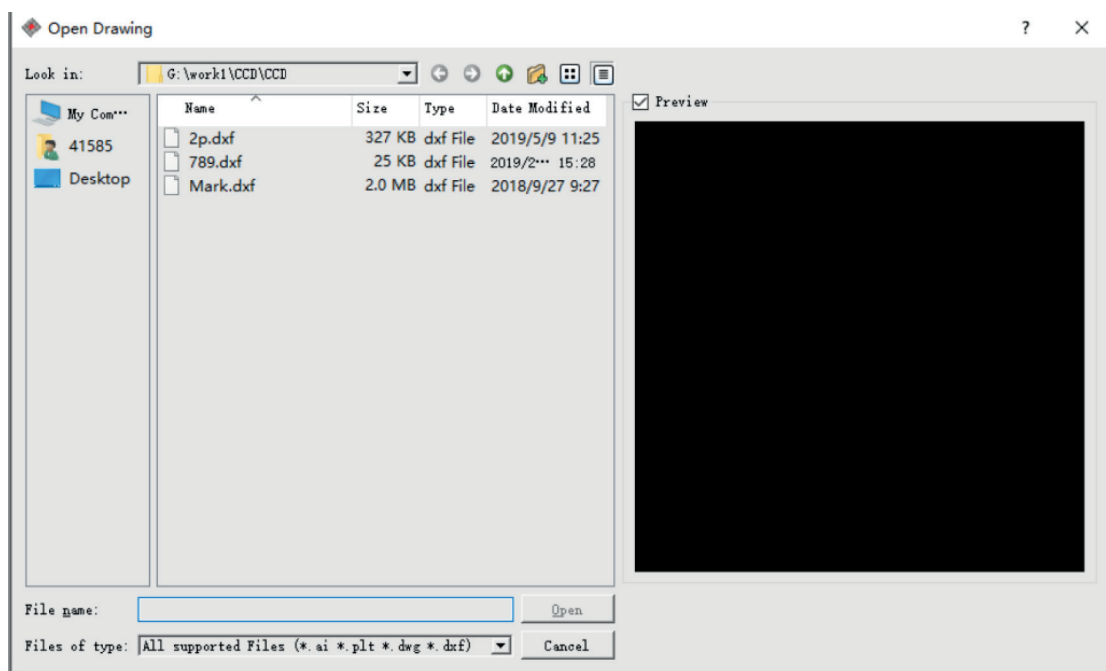
【New】  **New**  **Ctrl+N** option can recreate a blank file for editing.


Click to create a new file. You can use the shortcut key Ctrl+N to achieve this function.

10.1.1.1.4. Open.

【Open DXF/AI/PLT】  **Open DXF/AI/PLT**  **Ctrl+O** option can open .DXF files. You


can use the shortcut key Ctrl+O to achieve this function. After clicking, a file selection box will pop up. Find the file you want to open. Click and wait for a while to view the file in the preview area on the right. as the picture shows :






After confirming that the file is correct, click **【Open】**  **Open** , to load the file into the drawing window for editing. In this option, you can open previously saved files to reduce the workload when processing the same files again and improve work efficiency.


10.1.1.1.5. File Save.

【Save】  Save and **【Save as】**  Save As... are used to save the now edited completed file. Saved in DXF format.



When the file to be saved is edited for the first time, Click **【Save】**  Save, and a file selection dialog box will pop up. The selected folder is the target folder where the file wants to be saved. You can search in this directory when you need to open the file later. There is a file name window at the bottom of this window. In this window, you can customize the name of the file you want to save. You can name the file in the form of the product name or code to facilitate future file management.

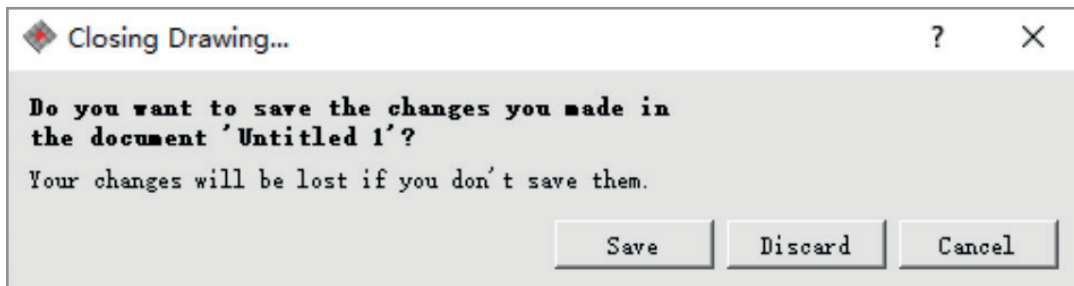
If the opened file is not edited for the first time, click **【Save】**  Save, and the file will be saved. And the file name and save path will not change.




【Save as】  Save As... different from saving, this function is to copy and save the file currently being edited to another selected folder without changing the file being operated. If you now add a graphic element to file A, click **【Save as】**  Save As..., save it in another folder, name it B, and then close the software. At this time, there is this straight line in file B but not in file A.

After clicking **【Save as】**  Save As..., a file selection dialog box will pop up for selecting the save path. You can also name the file in the file name window below.

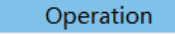
10.1.1.1.6. Exit.

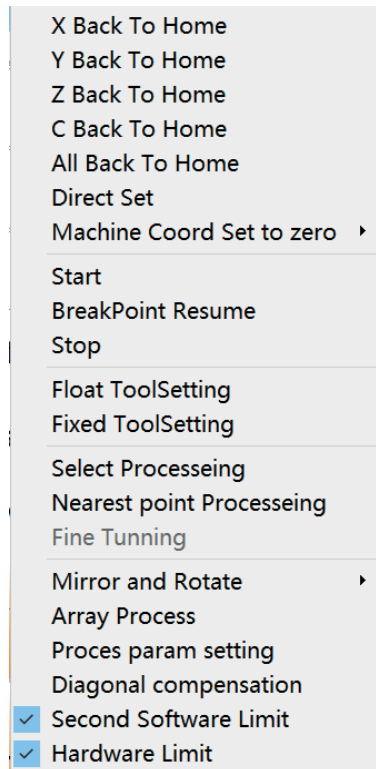
【Exit】   can exit the software and exit with one click. You can use the shortcut Ctrl+Q to achieve this function. If the edited file is not saved, a prompt dialog box will pop up asking whether to save it. as the picture shows :



If you need to save, please click **【Save】** , to save. The steps are the same as saving. After saving, the software will automatically exit. If the file does not need to be saved, please click **【Discard】** . The software will exit. If you clicked by mistake, you can click **【Cancel】** , Cancel the exit operation. The software will return to continue the operation.


10.1.1.2. Operating.

Click **【Operation】**  on the menu bar to open the operation menu, as shown in the figure :



10.1.1.2.1. Zero return operation.

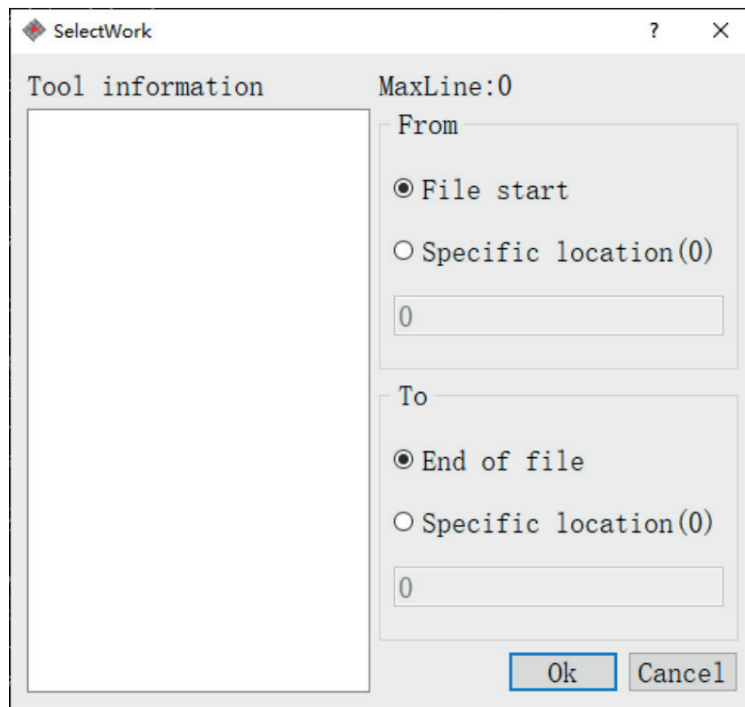
Click **【X Back To Home】** 、 **【Y Back To Home】** 、 **【Z Back To Home】** 、 **【C Back To Home】** 、 **【All Back To Home】** to complete the mechanical zero return of the corresponding axis and determine the mechanical origin.

*  in the lower right corner can also perform mechanical zero return.

10.1.1.2.2. Processing operation.

After the machine returns to zero, processing can be carried out. Click **【Start】** **Start** , and the machine tool will start processing. During processing, click **【Stop】** **Stop** to stop processing. If the last processing is not completed, click **【Breakpoint Resume】** **BreakPoint Resume** to continue processing from the last processing breakpoint.

You can select a section of the file for processing. Click **【Select Processing】** **Select Processing** , and the software will pop up the advanced processing selection interface, as shown in the figure :



Select the starting line of the file and enter the starting line number in the text box; you can also select the processing end line and enter it in the text dialog box. Click OK to complete the settings.

10.1.2. Graphic.

The opened file will be displayed on the black frame drawing in the center of the graphical display interface.


In this interface, the graphics after extracting the outline of the loaded graphics file can be displayed and edited. Process settings and processing management can be performed below. The graphical interface is as shown in the figure :




10.1.2.1. Processing options and editing.

Processing options:

【Layer selection】 : Select the graphic and modify the layer where the graphic is located through the layer selection bar on the left.

【Sort】 : After selecting the processing graphics, the software that needs to be processed will be automatically sorted. If you need to modify the processing sequence, you can click **【Sort】**  Open the function to modify the processing sequence. Click to start sorting. Click the graphics in sequence according to the processing order to complete the sorting. During sorting, you can view the serial number next to the mouse. Ability to exit sorting midway.

【Processing starting point】 : The software will automatically define the processing starting point when the processing file is selected, and customize the processing starting point according to needs. Select the graph and click **【Start Point Settings】**  to use this function to select a point as the starting point of the graph. Setup completed.

【Expand outward and contract inward】 : Select the graphic to expand outward and shrink inward.

Editing: Simple editing of graphics elements, mirror rotation, etc.


【Horizontal Mirror】 and **【Vertical Mirror】** : Mirror the selected primitive, and the axial symmetry line is the center line of the primitive. That is, after mirroring, the location of the primitive will not be changed.

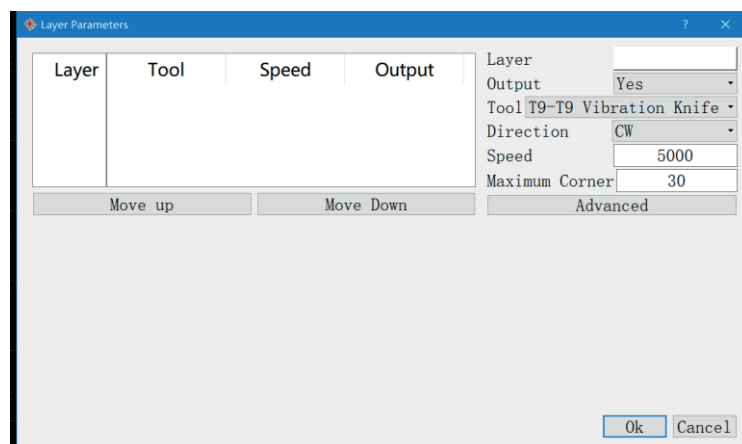
【Rotate】 : Rotate the selected primitive using the reference point of the center of the primitive. The rotation angles provided by this shortcut are three commonly used angles: 90, 180, and 270. The position after rotation does not change. If you need to perform more advanced rotation, you can use the rotation in the menu bar and use a more correct angle selection.

【Move】 : Move all selected primitives to the lower left corner without changing the relative position between each primitive.

10.1.2.2. File option.

Below the graphic display interface and CCD interface, there are **【Layer Parameters】**、**【File Parameters】**、**【Generate Loading】**、**【Auto Sorting】**、**【Output File】**、and **【CCD Processing】** .

【Layer parameters】 : Click **【Layer parameters】**  to set the parameters of each layer, and the property box will pop up as shown in the figure:



Click on the parameters in the middle of each layer to switch to the parameter settings of that layer. By setting interface parameters, a variety of processing techniques and processing sequences can be satisfied

【Layers】 : Used to view the currently selected layer.

【Whether to process】 : In this interface, you can set whether the software processes the layer. If you select No, the layer will not be processed. When the workpiece needs to be processed in multiple processes, select different layers for different processes and change the tool types of each layer to achieve multi-process processing settings.

【Cutting direction】 : Adjust the cutting direction according to the workpiece and tool, and choose the appropriate processing direction to achieve better processing results.

【Cutting speed】 : Used to set the relative movement speed between the tool and the workpiece during the cutting process. According to the actual material type and tool condition, the processing speed and processing quality are weighed to set the cutting speed.

【Cutting thickness】 and **【Feed times】** Set the cutting depth and the number of feeds according to the process requirements. The cutting depth/number of feeds is the depth of each feed. After selecting the layer, use **【Move Up】** 、 **【Move Down】** After completing the settings, click **【Confirm】** to save the current settings. If you need to give up editing, click cancel.

【File parameters】 : as the picture shows :

File Parameter

When opening DXF/PLT/AI/JPG files, use the following optimization parameters.

<input checked="" type="checkbox"/> Duplicated lines detection accuracy	Accuracy	<input type="text" value="0.1"/>
<input checked="" type="checkbox"/> Automatically merge connected lines	Accuracy	<input type="text" value="0.1"/>
<input checked="" type="checkbox"/> Automatically remove small graphics	Minimum Length	<input type="text" value="0.1"/>

Automatic Expansion

Automatic Combine Distance

Set the shrink distance shrink distance

Image Format DPI

Threshold Auto Read Horizontal Resolution Vertical Resolution

Fitting Advance Fi

Image format file retains the inner outline Use CCD Mark Points Yes No

Processing Order

Optimizing Strategy	Progressive Approach	Starting point
<input type="radio"/> Shortest Distance	<input type="radio"/> Z Type	<input type="radio"/> Top Left <input type="radio"/> Top Right
<input type="radio"/> Grid	<input checked="" type="radio"/> U Type	<input checked="" type="radio"/> Bottom Left <input type="radio"/> Bottom Right
<input checked="" type="radio"/> From Bottom to Top		<input type="radio"/> Longest line
<input type="radio"/> From Top to Bottom		
<input type="radio"/> From Left to Right		
<input type="radio"/> From right to left		

Lifting VK Lifting height

Falling speed

【Remove extremely small graphics】 : There may be noise during file recognition. Graphic noise is generally very small graphics. Enable this function by checking the box. The removal threshold can be filled in later. Tiny graphics smaller than this value will be removed during the loading process.

【Remove duplicate lines】 : When loading files, the software can delete duplicate line segments and enable this function by checking. You can fill in the removal threshold later. If the repetition length is greater than this value, the repeated line segments will be removed during the loading process.

【Merge connected lines】 : When loading a file, the software can automatically connect two line segments whose endpoints are very close to each other. Enable this function by checking the box. The removal threshold can be filled in later. The distance between the end points of the two line segments is less than this value. During the loading process, the next two lines will be connected.

【Automatic expansion】 : When loading a file, the primitives in the file will be expanded, and there is no need to perform manual expansion again. Enable this feature by checking the box. You can then fill in the expansion data, and the expansion distance will be this data.

【Image format DPI】 : Fill in this column with the DPI value of the graphic file, which can be viewed by opening the file properties box. The correct DPI parameter value must be filled in to make the loaded file size normal. Ensure normal processing.

【Whether the image format file retains internal lines】 : When the image file is loaded, the inner lines of the graphic will also be recognized, and you can choose whether to retain them according to your needs.

【Whether CCD processing】 : Select according to processing needs. When CCD edge patrol processing is required, please check the box, otherwise edge patrol positioning will not be performed during processing.

【Sorting strategy】 : This strategy is used to sort the selected processing primitives, and you can choose how to sort according to your own needs. Just click on the desired sorting method.

【Progressive method】 : Select the starting position of the next row of primitives after processing one row of primitives. The Z shape means that processing always starts from the set first direction; the snake shape means that the next row of workpieces starts from the primitive below the last primitive of this row.

【Starting point】 : Select the position where each primitive should be processed. Select before the option to process it in the corresponding way.

【Generate loading】 : The currently edited file to be processed can be generated into G code, which can be viewed in the **【Program】** column in the function selection column.

【Automatic sorting】 : The graphics selected for processing will be sorted by the software according to the file parameters.

【Output file】 : Generate a G-code file for the selected processing graphics and export it. After clicking, a file save dialog box will pop up. Select the save path and change the file name. Click OK and the file output is completed. If the file output fails, the software will prompt that the output failed.

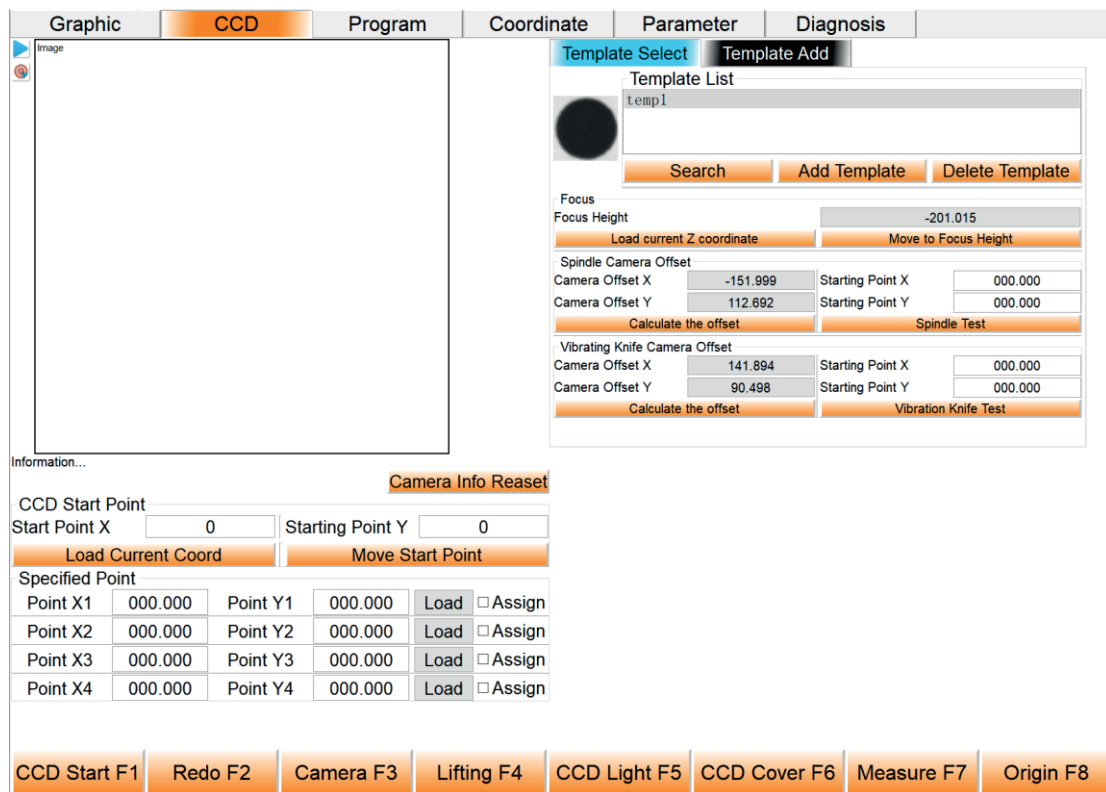
【CCD processing】 : After selecting the graphics to be processed as the processing layer, click **【CCD Processing】** and the machine will start processing. It should be noted that before performing this operation, the camera needs to be moved to the first Mark point, otherwise it will be unable to process and a warning will be issued because the Mark point is not recognized.

10.1.3. Vision/CCD.

The vision/CCD page can perform camera control, camera offset setting, camera focus height setting, identification point template management, image display, and cross test functions.

The camera projects the captured image to the left window. View the camera shooting position through this window, and move the camera to the Mark point through the machine tool console.

The vision/CCD interface is shown in the figure :



At the bottom of the page, you can control the CCD. Click **CCD** processing, and the software will recognize it and process it. Before processing, please ensure that the camera can identify the first Mark point. **Open Camera** to open the camera. **Close Camera** close the camera.

10.1.4. Program.

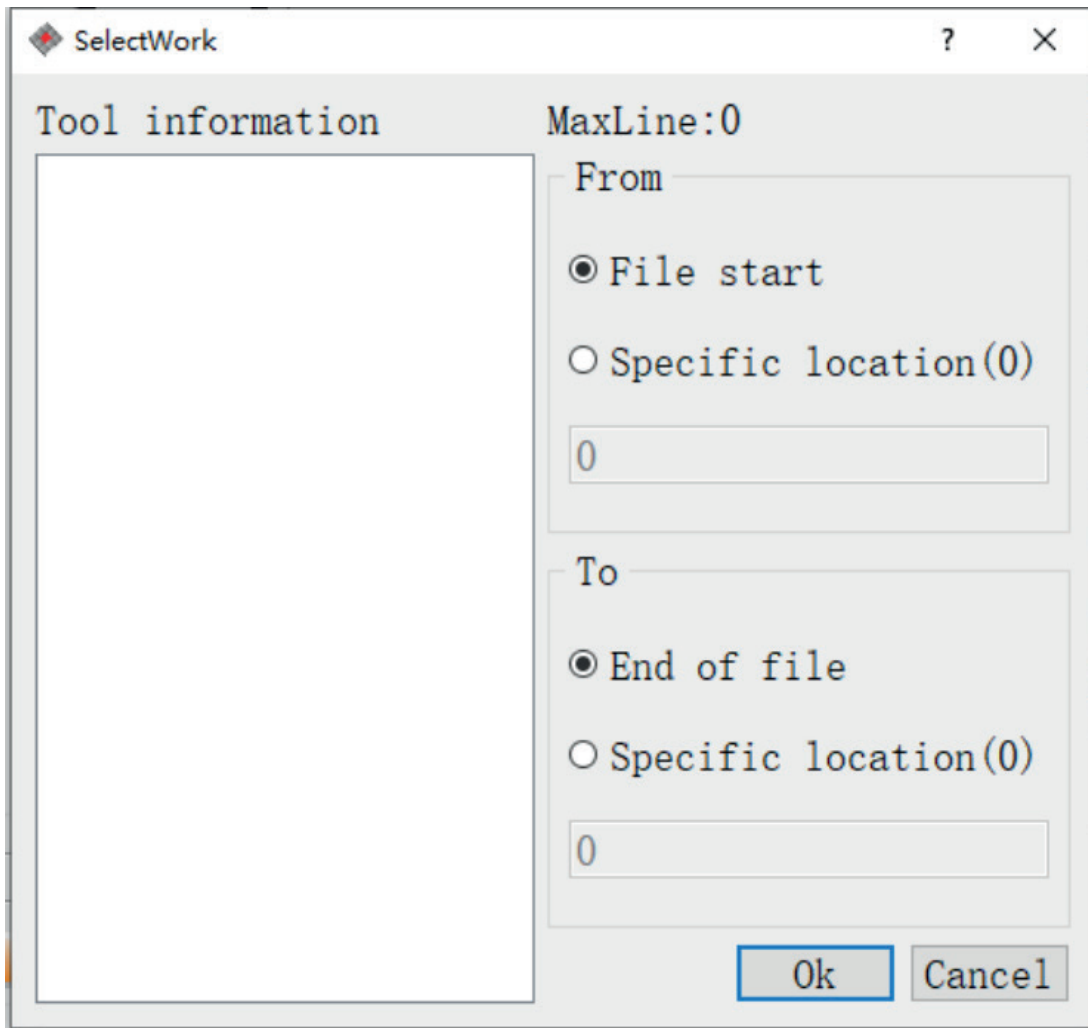
This page allows you to view, edit, simulate G code files, and customize the processing technology. It can also perform file management and bottom milling functions. Different functions can be used according to the actual situation to make processing more convenient and of higher quality.

【Load File】 below can load G code files. Click to pop up the file selection dialog box, select the file, and double-click to load the file.

Click **【Unload File】** to release the currently loaded file. After clicking, the software returns to the state of unloaded files.

【Simulation】 button can simulate the loaded file and display the visual view after simulation in the view interface.

【Select Work】 Click to open the selection processing interface, as shown in the figure :







Click **【Specify Line Number】** , to set the starting and ending line numbers respectively. Complete the processing of the specified program segment at one time.

【Edit File】 After clicking, a text editing window will pop up. You can edit and save the G code file again. Modifications here can make the operation more convenient.


10.1.4.1. 3D.

In this interface, you can simulate the loaded G code file and view the simulation results. After the G code file is loaded, click **【Simulation】** , below to simulate the article. The G-code will be visualized and can be viewed in the window.

On the left side of the view box, there is a list of view option buttons. The buttons here are used to view the simulation view from different angles to meet a variety of needs.

The first four are interface zoom and clear buttons. : **【Zoom out】**  ; **【Enlarge view】**  ; **【Auto scaling】**  ; **【Clean up simulation graphics】** 

The following six are six-sided views that will show the plan view. They are the upper perspective; the lower perspective; the left perspective; the right perspective; the front perspective; and the rear perspective. The next four buttons display the stereoscopic view. They are the lower left corner perspective; the lower right corner perspective; the upper right corner perspective; the upper left corner perspective.

【Information】  is the file information button. Clicking it will switch whether to display file information. Customers can choose whether to display file information according to their needs. This column can display the total number

of lines in the file, the total length of the stroke, the cutting length, the minimum and maximum values of the X-axis, Y-axis and Z-axis.

10.1.4.2. **G code.**

The loaded G code file can be viewed at the bottom of the 3D interface. If you need to edit it, click **【Edit File】** below to perform editing operations. During processing, the line number in progress will be pinned to the top of the interface.

10.1.4.3. **File Management.**

This interface can be used for batch file management, click **【File Dir】** **FileDir** , A folder selection box pops up. Select the target folder, and Softdown will automatically identify all supported software in the folder and display them in the file list below. On the right there are **【Load】**、**【Edit】**、**【New】**、**【Delete】**、**【Refresh】** .

After selecting the file, click **【Load】** , to open the selected file.If the selected file is a G code file, clicking **【Edit】** will pop up a convenient interface for editing.

【New】 will create a new NC file ; After selecting the file, click **【Delete】** , The target file will be deleted. Please operate with caution. ; If new files are added to the folder, click **【Refresh】** to refresh the files in the folder.

10.1.4.4. **Milling bottom.**

The bottom milling interface can perform cutting and bottom milling operations, and can perform square processing and circular processing. You can select according to your needs.

When using the cutting function, you can choose outer frame cutting or inner frame cutting. When cutting a square, change the length and width of the rectangle by clicking the number boxes next to the height and width; the X and Y starting coordinates below are the offsets compared to the origin of the workpiece; the tool diameter is the tool offset that needs to be set; The feed amount per time is the depth of processing once; the engraving depth is the processing depth after processing is completed. For example, if the feed amount is 1 and the engraving depth is 5, the workpiece will be processed 5 times, and the processing depth will be 1 each time.

When milling bottom, you can set the tool tip distance and click the number box at the back to change it. The set number should be smaller than the tool diameter; click on the top to switch between horizontal bottom milling and longitudinal bottom milling.

After the parameters are set, click **[Load File]** to load the file. After the loading is completed, the simulation can be performed on the 3D interface.

10.1.5. Coordinate.

On this page, you can set the coordinate system; save and select the workpiece coordinate system; set the public offset; and also perform tool setting operations.

10.1.5.1. Workpiece.

At the top of the interface, you can view the currently used workpiece origin coordinate information. Click Load Current Coordinates on the right to save the currently used workpiece origin coordinates to the selected workpiece coordinates.

In "Public Offset Settings" you can set the public offsets of the X, Y, and Z axes respectively. Through this option, you can offset during processing, which is convenient to use.

Below there are 6 groups of 10 pieces each, for a total of 60 workpiece origins to choose from. The origin of each workpiece can be set individually.

10.1.5.2. Access.

There are ten workpiece origins for setting in this interface. Click **【Save】** to save the workpiece coordinate system to the computer. You can also select the

workpiece origin on this page after reopening the software. Click **[Read]** to set the selected target coordinate system as the workpiece coordinate system used.

10.1.5.3. **Tool Setting.**

*** The tool setting menu is used to set the tool setting position. It has been completed by our technical engineers according to the equipment settings and does not need to be modified. If you have any questions, please contact us and make modifications under the guidance of technical engineers.**

10.1.5.4. **Tool Storage.**

The system supports tool changing actions. In this interface, operations such as tool changing, tool length measurement, tool magazine location setting, and tool changing can be completed.

10.1.6. **Parameter.**

This page can view and modify all parameters, import and export parameters, and back up parameters.

10.1.6.1. **Parameter overview.**

This page can view and modify all parameters. When you need to view parameters, you need to enter a password. The content of this section is closely related to machine debugging. It has been debugged by our technical engineers, so it will not be introduced. If you need to modify the parameters, please contact us and modify them under the guidance of our technical engineers.

10.1.6.2. **IO Parameter.**

On this page, you can modify the name of the input and output ports, IO number, trigger level, and speed per second. The relevant parameters are debugged by our technical engineers, so we will not introduce them. If you need to modify the parameters, please contact us and modify them under the guidance of our technical engineers.

10.1.6.3. **Backup.**

When the parameter adjustment is completed, click **【Save】** , enter the name in the pop-up dialog box, and click OK to complete the backup. You can find that the parameter just named in the parameter list on the left has been added. Click **【Restore】** , behind the parameters that need to be restored, and the software will restore the secondary parameters.

This parameter is backed up in another storage space on the computer and will not be deleted when the software is updated or uninstalled. Easy to save parameters.

10.1.6.4. **Configuration.**

Switch the model and software language in this interface.

10.1.7. **Diagnosis.**

This interface can view the status of each input and output port in real time to diagnose whether each port can be used normally.

When the input signal changes, the corresponding input signal will change color; click the output button, and the output port signal of the control board will change.

In the box below, you can view the historical status of software operation to facilitate problem finding.

10.1.8. **Machine control bar.**

This interface can view the mechanical coordinates and workpiece coordinates of the current position. During the movement of the machine, you

can view the real-time speed of the machine, the spindle speed and the current tool number.

During processing, you can adjust the processing speed in real time by sliding the slider next to the feed rate. Click on the digital display block behind to modify the default processing speed.

Adjusting the GOO magnification slider can adjust the machine's dry running speed; similarly, the spindle speed can also be controlled in real time through the slider.

This interface can manually turn on or off the spindle and vacuum pump. Click **【Spindle】** to switch the spindle status, click **【Vacuum pump】** to switch the vacuum pump status. Green is standby status, red is working status.


After loading the file, click **【Start】** , and the machine will start processing. During processing, click **【Pause】** and processing will be paused. Click **【Breakpoint Resume】** to continue processing from the stop. Click **【Stop】** and the software will stop the current processing.

When an error occurs, the software will automatically report an error and the upper status bar will turn red. After finding the problem and solving it, click **【Reset】** to release the alarm status of the software.

The machine tool can be manually controlled to move in all directions. Click the button, and the phase axis will move in the corresponding direction. Click the



center **【H/L】** button to switch to manual motion mode. H is high motion, and L is low speed motion mode. Adjustable manual parameters **【Manual High Speed】** and **【Manual Low Speed】** to customize the speed.

You can click the motion mode next to the machine tool control bar. The available modes are: continuous, handwheel, motion 0.01, motion 0.1, etc. You can click the button to customize the step size.

In addition, you can also enter a target position to move the machine tool there. Click **【Target Move】**  and a dialog box will pop up. Enter the coordinates of the target position and click OK. The machine tool moves to the target position. Click **【Stop】** and the machine will stop the current action.

When handwheel guidance is required, click **【 Handwheel 】** to enter handwheel mode. At this point you can control the machine through the hand wheel.

Various errors may occur during use. The software will automatically report an error and the upper status bar will turn red. Troubleshoot according to the error prompt displayed in the status bar above. After finding the problem and handling it, click **【Reset】** , to release the alarm state of the software. The status bar will also change from red to white.

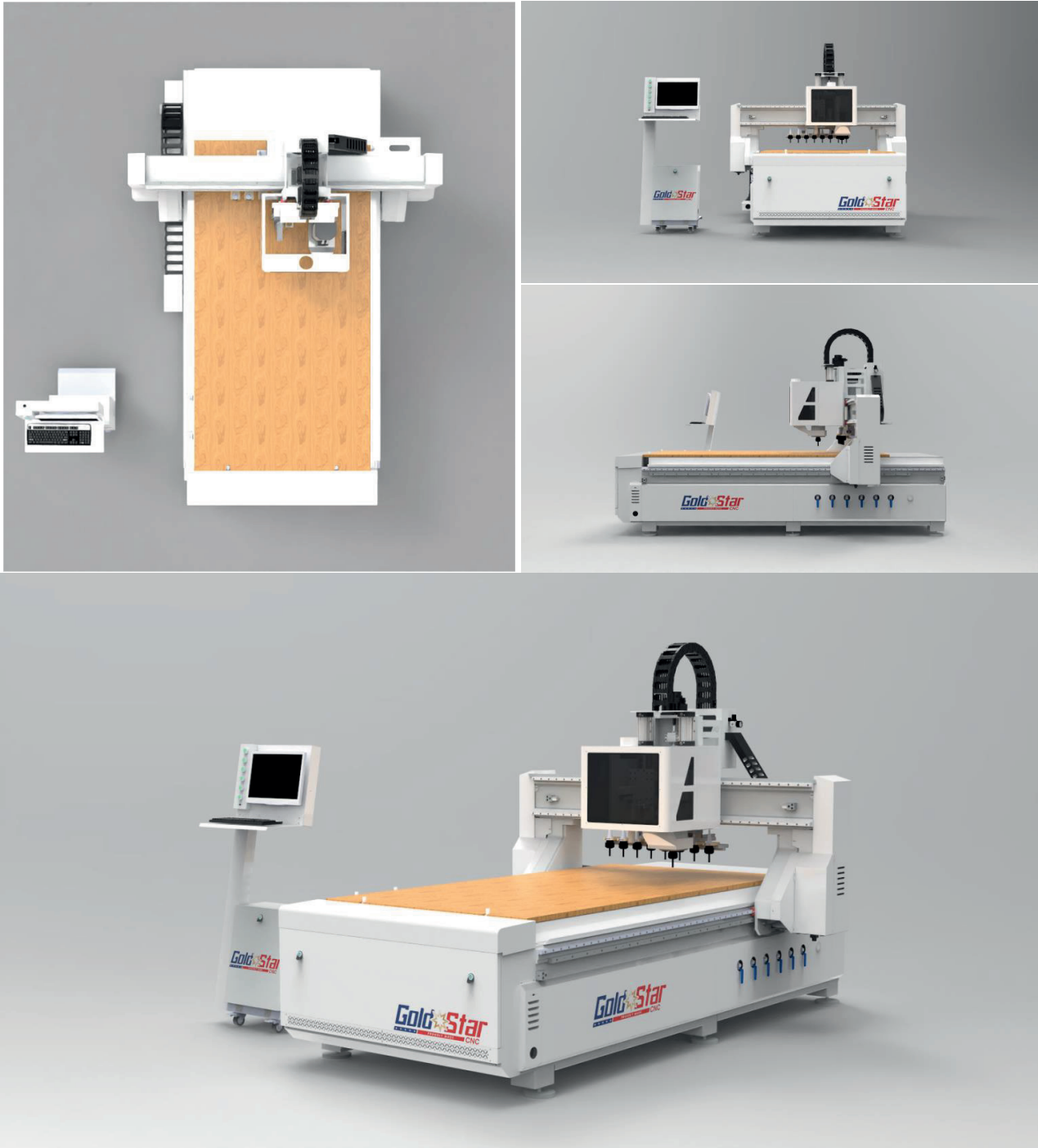
Click **【Z Clear】**  、 **【X, Y Clear】**  to set the workpiece coordinates and determine the processing position.

10.2. Shortcut list.

Hot key	Features	Hot key	Features
Ctrl + N	create new file	R、 R	Rounded Rectangle
Ctrl + O	Open DXF file	T、 E	Text
Ctrl + Shift +I	Import DXF files	+	Zoom in
Ctrl + Q	Exit	-	Zoom out
Ctrl + Z	Undo	Z、 A	Adapt to the window
Ctrl + Y	Redo	Z、 P	Drag
Delete	Delete	Q、 Q	Select
Ctrl + X	Cut	G、 R	Fence
Ctrl + C	Copy	I、 P	Two point distance
Ctrl + V	Paste	S、 F	Freed
Esc	End operation	S、 A	Automatic capture
M、 I	Mirror	E、 N	Close strict capture
O、 F	Offset	E、 H	Horizontal capture
D、 I	Interrupt	E、 V	Vertical capture

X、 P	Blast	E、 0	Orthogonal capture
B、 G	Bridge	PageUP	Anticlockwise rotation
R、 N	Chamfer	PageDown	clockwise rotation
D、 D	Remove duplicate lines	Numeric keypad 6	Manual X+ mobile
L、 I	Two-point line	Numeric keypad 4	Manual X-Mobile
A、 3	Three-point arc	Numeric keypad 8	Manual Y+ mobile
C、 I	Center circle	Numeric keypad 2	Manual Y-Mobile
P、 L	Polyline	Numeric keypad 9	Manual Z+ mobile
R、 E	Rectangle	Numeric keypad 1	Manual Z-Mobile

11. Machine preview.



* For reference only, this picture is a 3D model and does not include buttons, pipelines, etc. Please refer to the actual machine.

12. Equipment maintenance and upkeep.

12.1. Maintenance.

12.1.1. Do not make unauthorized changes to machines or electrical appliances if you do not understand them or do not authorize them, otherwise they may cause malfunction or damage.

12.1.2. Please turn off the power first during maintenance. If live inspection is required, professional electricians are required to perform it.

12.1.3. Regularly check whether the emergency stop button is functioning properly.

12.1.4. Please repair and replace parts in compliance with the specifications in the technical documentation.

12.1.5. The cooling and ventilation system of the CNC device should be cleaned regularly and the cooling fans on the CNC device should be checked regularly to see if they are working properly. Depending on the general situation of the workshop environment last year, inspection and cleaning should be done every six months or quarterly.

12.1.6. Frequently monitor the power supply voltage of the CNC system.

12.1.7.Prevent dust from entering the CNC device.

12.1.8.Maintenance of CNC system when it is not used for a long time. First of all, it should be noted that CNC machine tools should not be stored for a long time. The purchased machine tools must be put into production as soon as possible. If the CNC machine tool is idle for too long, the electronic components will get damp. Accelerate the degradation or damage of its technical performance. Therefore, when the machining center is idle for a long time, the CNC system should be maintained regularly.

12.2. Lubrication and maintenance.

12.2.1.The lubrication cycle depends on the working environment and machine working hours. Generally, the debris should be cleaned up after get off work every day. Lubricate all parts every week (32# lubricating oil) and lubricate high-speed idling. Vacuum pump lubricating oil should be added every 3 months. Please use the designated oil.

12.2.2.Ball screw screw lubricant, refuel once a week.

12.2.3.Spindle lubrication, refuel once a week.

12.2.4.Choose a lubricant, and the butter should not be too thick. The

lubricating oil should not be too thick or volatile.

12.2.5.Lubrication part: X and Y two-axis racks and slide rail sliders. Z-axis screw, track slider.

12.2.6.Rack lubrication: Before lubrication, remove the impurities in the rack first. If there are any impurities that cannot be removed, use a sharp object to pick them out, then inject lubricating oil and then gradually increase the speed for idling, that is, do not put the plate, and run the three axes.

12.3. Other maintenance.

12.3.1.The vacuum pump suction inlet filter needs to be cleaned daily to prevent debris from entering the vacuum pump.

12.3.2.The vacuum pump outlet filter needs to be cleaned once a week.

12.3.3.The degree of contamination of the vacuum pump oil should be tested every two months. If the oil becomes black and sticky, change the oil.

12.3.4.Clean electrical boxes with an air gun once a week to ensure electrical components are free from dust.

12.3.5.The mechanical sliding shaft part is usually kept smooth, and there is no sawdust or dust to hinder the operation.

12.3.6.The cooler filter should be cleaned daily to avoid reducing the cooling

effect.

12.3.7. Please keep the cooling fan filter in the electrical box clean from time to time to prevent dust from entering the electrical box and affecting the performance stability of electrical components.



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