



THUNDER

PRODUCT USER MANUAL



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Thunder

The Thunder CNC Router offers advanced features, providing exceptional precision and efficiency for a variety of applications in your workshop. Its robust design and cutting-edge technologies ensure consistent results and smooth operation, making it ideal for any demanding work environment.

This machine is equipped with innovations that optimize productivity and ease of use. It presents a combination of power and advanced technology that allows for maximum efficiency in every project, raising production standards.





PREFACE

Thank you for purchasing our product.

***Please read the following notes
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 for your installation and use.

2

Check the appearance and packaging of the machine to see if there is any damage.

* Some technical parameters involved in this manual are subject to change without further notice.

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THUNDER



1. Delivery of the machine

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

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

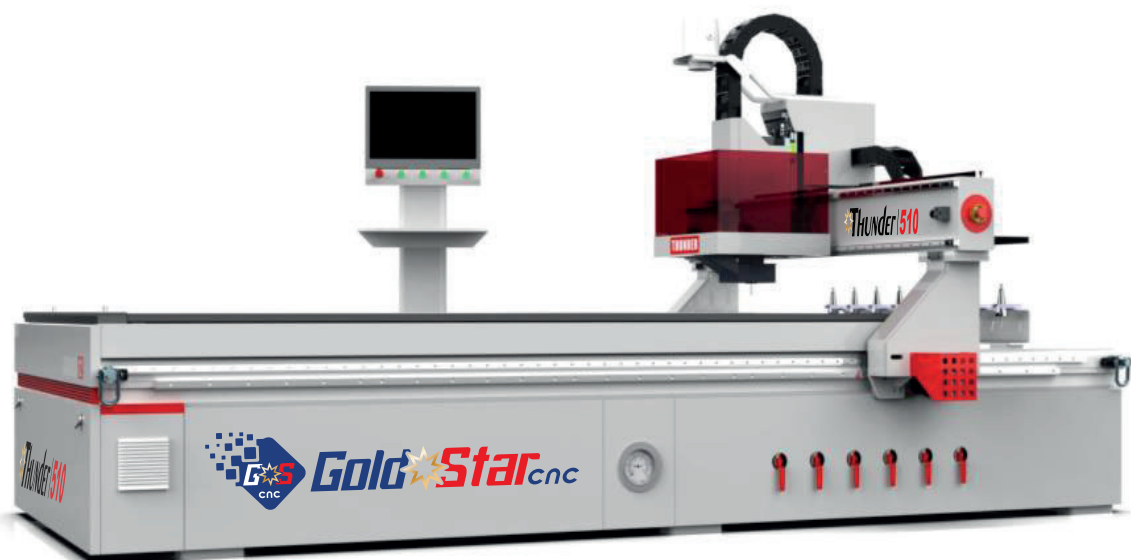


Due to the large size of the machine, we will remove the gantry and other components when shipping.

- 1) 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).
- 2) The installation environment requires no water droplets, steam, or oily dust.
- 3) The ground is flat, clean, solid, and vibrating-free.
- 4) There is no electromagnetic interference nearby.
- 5) The operating ambient temperature is 41 °F (5 °C) ~ 95 °F (35 °C). When the ambient temperature exceeds 95 °F (35 °C), please install ventilation facilities. Relative humidity environment: 30% ~ 75%.



- 6) 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.
- 7) Some machines will be packed in wooden boxes with plastic packaging inside. Please check the general condition of the machine before unpacking it.
- 8) There may be wood dust or lubricating oil inside the machine, which is generated during the factory testing process.
- 9) Please ensure there is enough space to place the machine and reserve an area for vacuum cleaners, vacuum pumps, control cabinets, and other tools that may be carried.
- 10) 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.
- 11) 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.
- 12) The wiring of the line connection must be correct and firm; the connecting line must not be damaged, squeezed, or twisted, otherwise, a short circuit or an open circuit may occur; the power plug must not be plugged or unplugged while the power is on; keep hands dry before plugging or unplugging the plug to prevent safety accidents Personnel involved in wiring must have corresponding abilities.



2. Machine overview



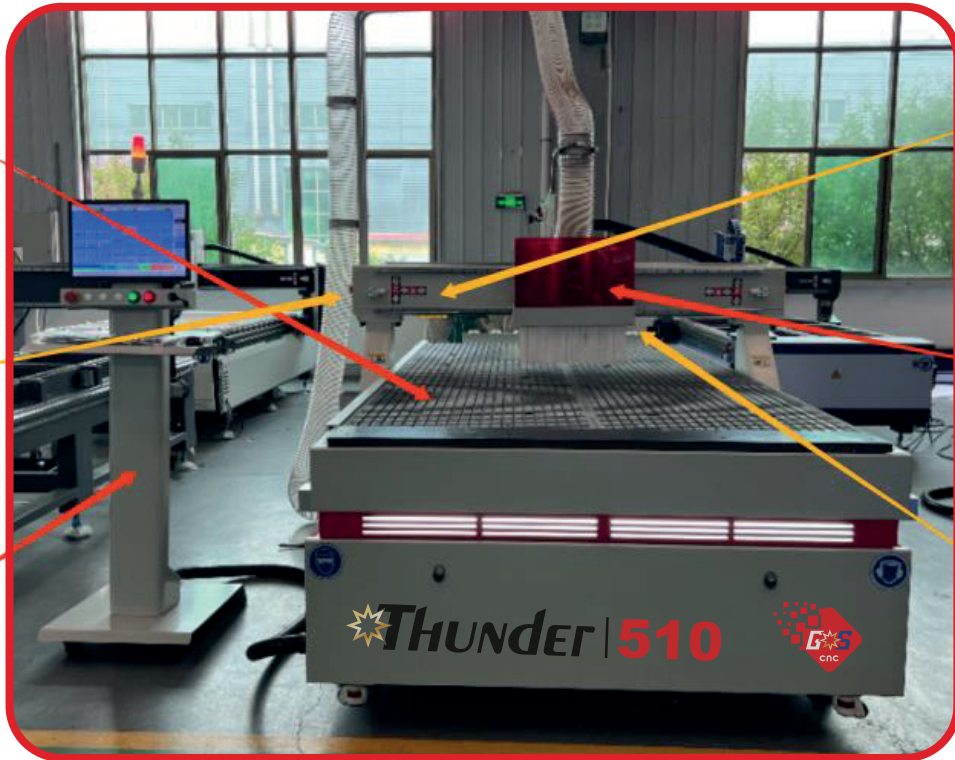
Vacuum table



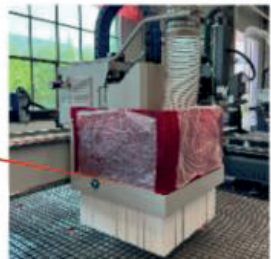
Emergency stop switch



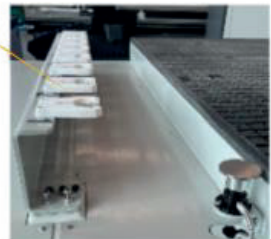
Control console



Auto lubrication



Spindle cover



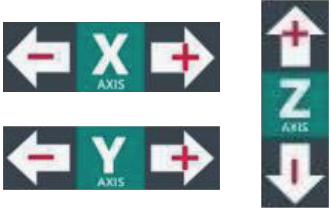
Tool Magazine and Tool Sensor

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

3. About the 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



The diagram shows three coordinate axes: X, Y, and Z. The X-axis is horizontal with left and right arrows, the Y-axis is horizontal with left and right arrows, and the Z-axis is vertical with up and down arrows. Each axis is labeled 'X AXIS', 'Y AXIS', and 'Z AXIS' respectively.

Emergency stop switch



The icon is a red circular button with a white emergency stop symbol (a circle with a diagonal line) and the words 'EMERGENCY STOP' written around the top edge.

Please wear goggles when working



The icon is a blue circle containing a white silhouette of a person's head wearing safety goggles.

Please wear earplugs/earmuffs when working



The icon is a blue circle containing a white silhouette of a person's head wearing earplugs or earmuffs.

Machine operation danger zone




The sign is rectangular with a yellow background and black text. It features a warning triangle icon, the word 'DANGER', and a hand icon pointing away from a hazard zone. The text includes: 'IMPACT HAZARD', 'KEEP CLEAR OF THE OPERATING AREA', 'DO NOT REACH INTO THE MACHINE WHILE IT IS RUNNING', and 'DO NOT TOUCH THE ROTATING PARTS'.

Be aware of electrical hazards



The sign is a yellow triangle with a black border and a black lightning bolt symbol in the center.

Be safe



The sign is a yellow triangle with a black border and a black exclamation mark in the center.

Pay attention to high-temperature



The sign is a yellow triangle with a black border and a black symbol of three wavy lines above three horizontal lines, representing heat.

4. Important safety instruction

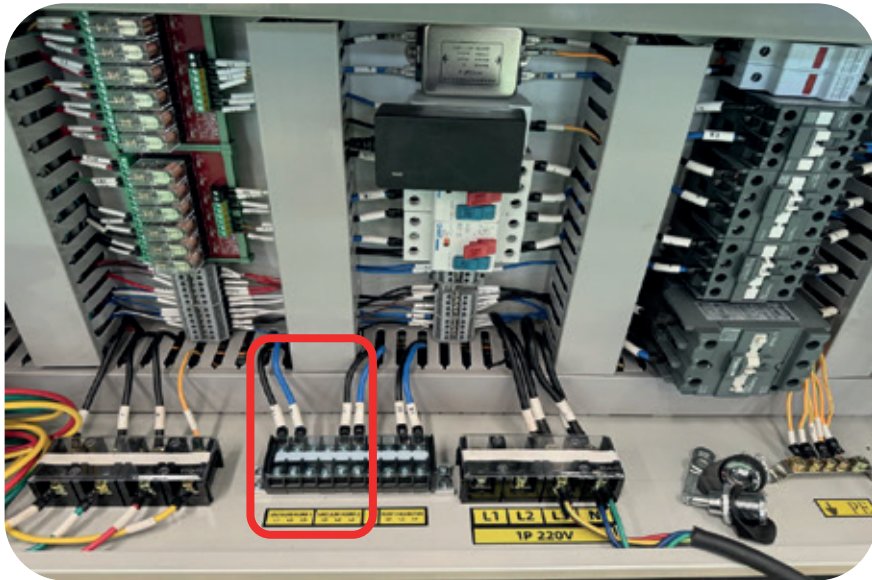
Before assembling this machine, please read this safety operation instruction carefully. Failure to pay attention to the following instructions may lead to electric shock, fire, and other serious safety accidents. Do not change the factory settings of this machine at will. This machine is designed for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

- 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.
- 2) The power supply voltage requirement of the machine itself is 240V Monophase 60Hz & 240. Three-phase 60 Hz. 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.
- 3) The cutter must be installed and clamped to keep the cutter sharp. A dull cutter will reduce the quality of the engraving and overload the motor.
- 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.
- 5) Be sure to pass the water before using the water-cooled spindle.
- 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.
- 7) Please pay attention to the various warning signs on the machine and make correct judgments.
- 8) Do not wear clothes that may get entangled in the machine (the high-speed rotation of the spindle will 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.
- 9) Avoid damage to the power cord caused by moisture or external foreign objects.

5. Installation Notes

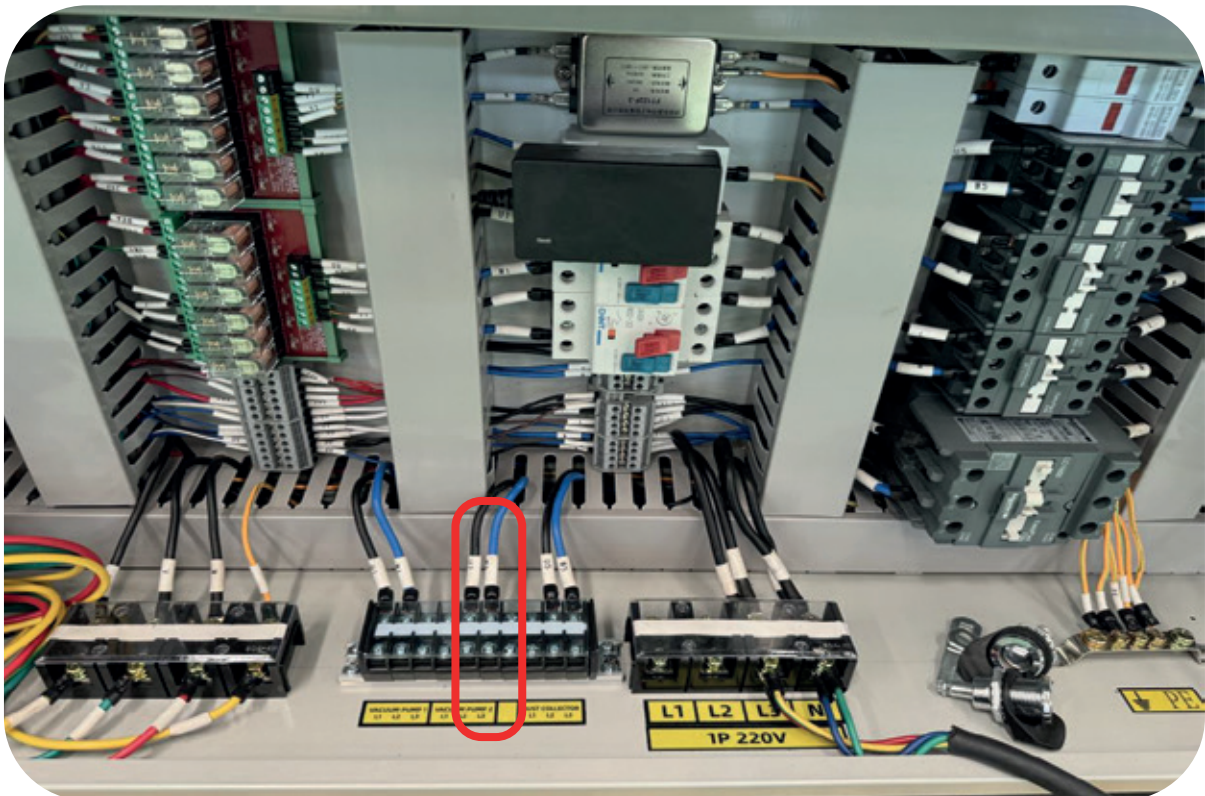
5.1. Vacuum pump installation

- After receiving the machine, take the vacuum pump out of the package and fix the steel wire tube at the air inlet of the filter with a tightening tool.
- 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. Refer to the figure below to connect the power supply (the voltage and terminals are subject to the actual machine). In actual use, connect the vacuum pump circuit to the aviation plug at the rear of the bed.
- Pay attention to the cleaning of the filter during daily use.



5.2. Dust collector installation

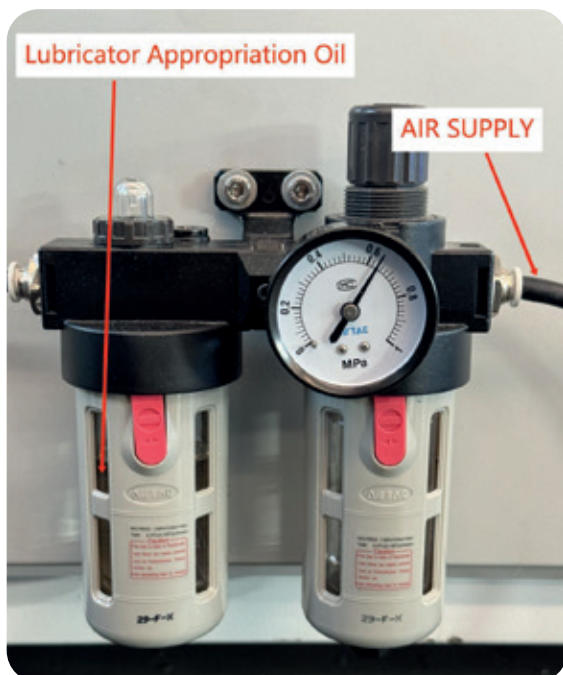
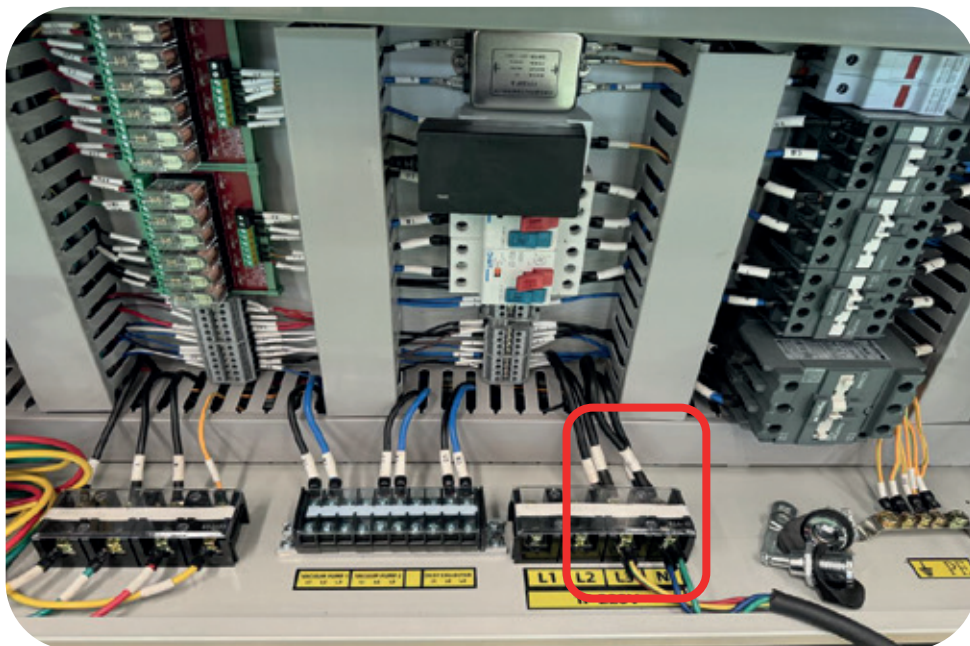
- Take the dust collector out of the package, install it according to the dust collector instructions, and place it stably.
- Connect the power supply to the dust collector, and connect one end of the power supply to the electrical box-vacuum cleaner connection. Refer to the figure below to connect the power supply (the terminal is subject to the actual machine). Connect one end of the vacuum hose to the machine's vacuum hood and the other end to the dust collector.



5.3. Power and air supply installation

5.3.1. Power supply

- Refer to the diagram below to connect the power supply (the voltage and terminals are subject to the actual machine). When connecting the power cord, be sure to pay attention. The power cords with wire numbers L1, L2, and L3 are live wires, the neutral wire is N, and the ground wire is PE. , please confirm that the wire numbers are connected accordingly, otherwise a short circuit will occur and burn the machine; the ground wire must be connected to ensure safe operation.



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.



6. Preparation and operating instructions before machine operation

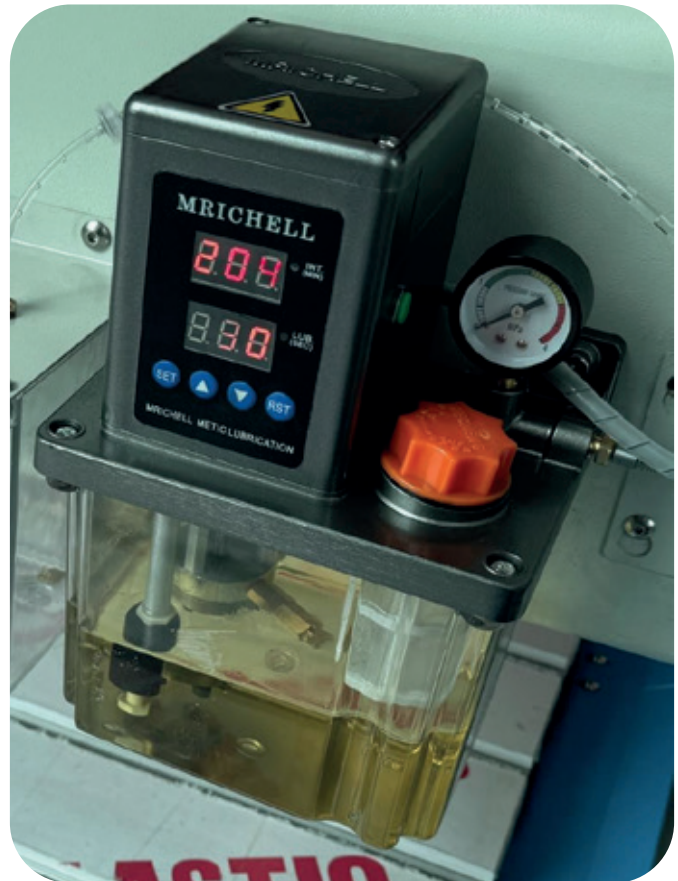
6.1. Check air source

After the air source is connected, the air pressure rises to 0.6-0.8 Mpa (the system will sound an alarm if the pressure too low or too high).



6.2. Check automatic lubrication

Automatic lubrication will replenish oil every time the machine is turned on and every 240 minutes after starting the machine. Replenish oil for 30 seconds each time (please do not turn on and off the power frequently. Automatic lubrication will replenish oil every time you turn on the machine). The parameters of automatic lubrication have been set by our technicians when the machine leaves the factory. Please do not change the settings at will please 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 of the control box to turn on the power and start the control system.

After the power is turned on, you can judge the current status of the machine by observing the signal light. For example, the execution of processing programs, MDI mode, etc. will be displayed in green, the standby display will be displayed in orange, the alarm or pressing the emergency stop switch will be displayed in red, etc., in conjunction with the software status bar. Determine the current machine status.

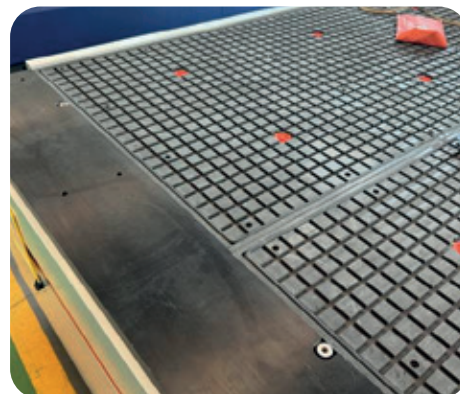


6.4. Material fixation

1. The vacuum adsorption table is divided into 6 areas. Each valve corresponds to the corresponding area of the work surface. The corresponding area can be opened according to the material selection.



2. Press the positioning cylinder button from the main interface to raise the positioning cylinder to facilitate fixing the material position.



7. Operating system description

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

* Because it involves the modified parameter settings, here we only introduce some common functions and basic operations of the machine to prevent the introduction of too many functions from causing misoperation and thus modifying the factory parameters that have been set. However, in actual use, functions not introduced in this manual may be used or some parameters may need to be modified. Please forgive me. If you need to use functions not introduced in this manual or need to modify parameters, please use the handwheel to guide the operation carefully according to the actual situation or operate under the guidance of a technical engineer. If you have any questions or suggestions, please contact us in time.

Mechanical coordinate

The mechanical coordinate system is a fixed coordinate system that has been set by our technical engineers. Its coordinate origin is always relative to the fixed position of the machine tool. Every time the power is off and restarted, or the system is stopped, the machine needs to be returned to the mechanical zero point.

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 workpiece origin).

7.1. Main screen introduction



Screen section description :

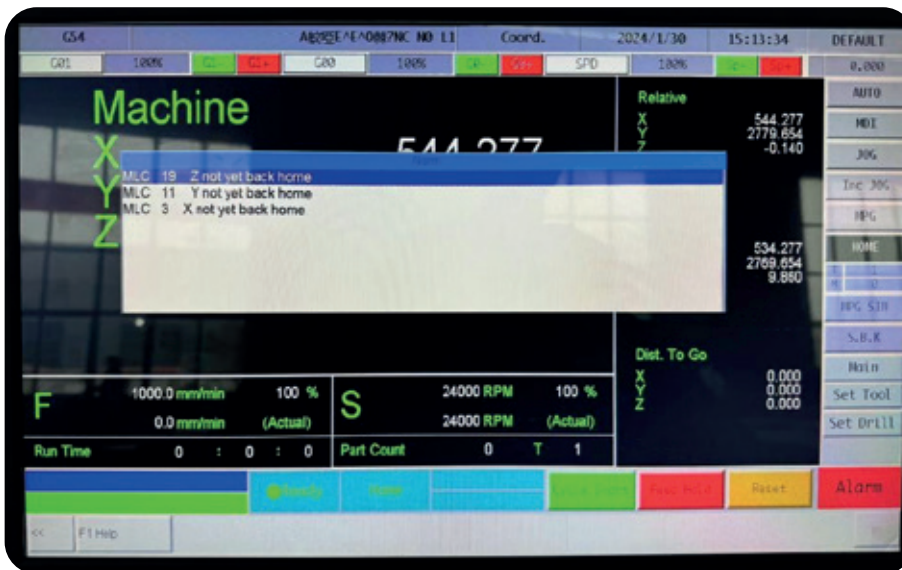
Serial number	Screen content	No matter how the screen is switched, the following information will always be on the background main screen and can be observed and operated at any time.
1	Mode selection	<ul style="list-style-type: none"> • AUTO, Switch to automatic mode. • MDI, Switch to MDI mode, the MDI input pop-up window will pop up, and the screen will switch to F4 processing monitoring. • JOG, Switch to continuous inching mode. • INJOG, Switch to incremental jogging mode. • MPG, Switch to handwheel mode. • HOME, Switch to the origin search mode.
2	Handwheel simulation	<ul style="list-style-type: none"> • After clicking, press the upper left corner of the keyboard and the box will turn green, and you will enter the handwheel simulation mode. • Click again to cancel.
3	Single section execution	<ul style="list-style-type: none"> • After clicking, the box in the upper left corner of the button will turn green, and the single block execution mode will be entered. • Click again to cancel.

4	Reset	<ul style="list-style-type: none"> Trigger reset action.
5	Main interface	<ul style="list-style-type: none"> After clicking, switch directly to the main interface manual panel. Axial movement buttons, peripheral control buttons, and other value-added functions can be placed here.
6	Magnification adjustment	<ul style="list-style-type: none"> G00 magnification adjustment, 0%, 25%, 50%, 100%. G01 magnification adjustment, 0%,10%, 20%,150%. Spindle speed magnification adjustment, 0%, 10%, 20%,120%.
7	Processing information	<ul style="list-style-type: none"> Date. Time. Login Username. Workpiece coordinate system, G54, G55... The name of the currently executing program. The current execution line number.

Main interface/manual panel



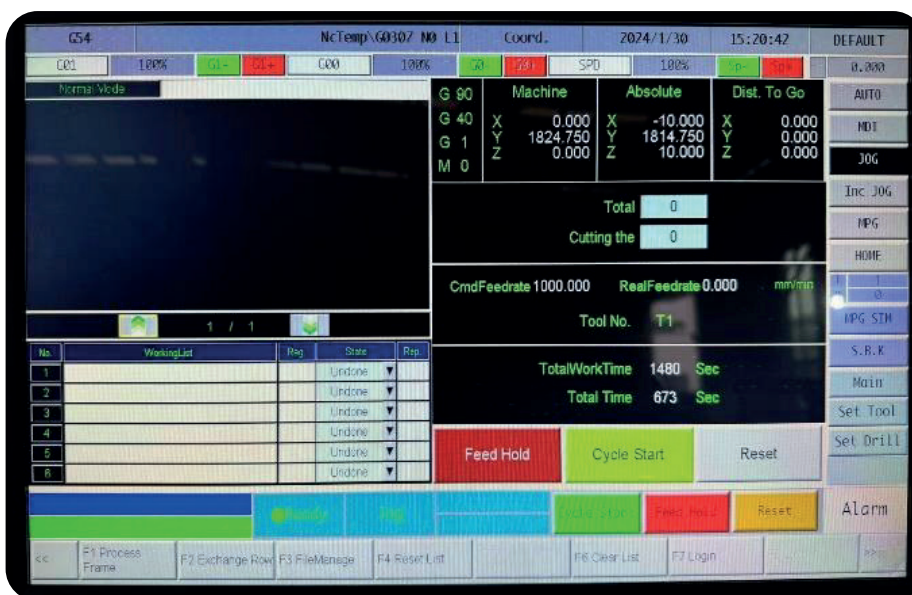
7.2. Boot interface



Press F1 to turn off the alarm. In HOME mode, click Cycle Start. Each axis of the machine will automatically return to the mechanical origin, and the machine tool will immediately start the zero return operation. After the zero return is completed, the processing operation can be carried out.

****Every time you turn on the machine, you must confirm that there are no obstructions around the machine, follow the above operations 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. 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.***

7.3. F1 Operator panel



Path: F1 Operator Panel

Explanation

- The operations required by the operator for production are concentrated in F1.
- During processing, all processing operations can be completed only in F1.
 - Select a work order.
 - Execute processing.
 - Adjust the processing sequence and work station.
 - Operator login and logout.
 - Working List form.
 - Graphical simulation viewing.
- Among them, the preset station 1 is G54, and the station 2 is G55.
- The processing status is preset as unprocessed, open, and processed.

The information displayed in the Working List is:

Sequence number	NC file name	Station	Processing status
1	00001.nc	1	Crude
2	00002.nc	2	Crude

7.3.1. Processing panels



Path: **F1 operator panel** → **F1 processing panel**

File page button: Page up and down the file list.

Station: Display single station/double station status.

Processing status status: The processing status of the corresponding plate is displayed. Click the drop-down button to modify the processing status of the plate. (Unprocessed, whole, labeling, pushing, processing completed).

Current processing quantity: Displays the total number of files processed and which file is currently being processed.

Processing graphics preview: Display the graphic simulation corresponding to the current processing file.

7.3.2. Move bank number



Path: F1 Operator Panel→F2 Move Line Number

Description: Used to adjust the order of the list after the list is generated.

Move up

Path : F1 Operator Panel→F2 Move Line Number→F1 Move Up

Description: Used to move a single NC program up after the list is generated and processed it in advance.

Operation method

- ① Click to select the processing program that needs to be moved.
- ② Click the function key to move the program.
- ③ You can click multiple times to move continuously.

Move Downward

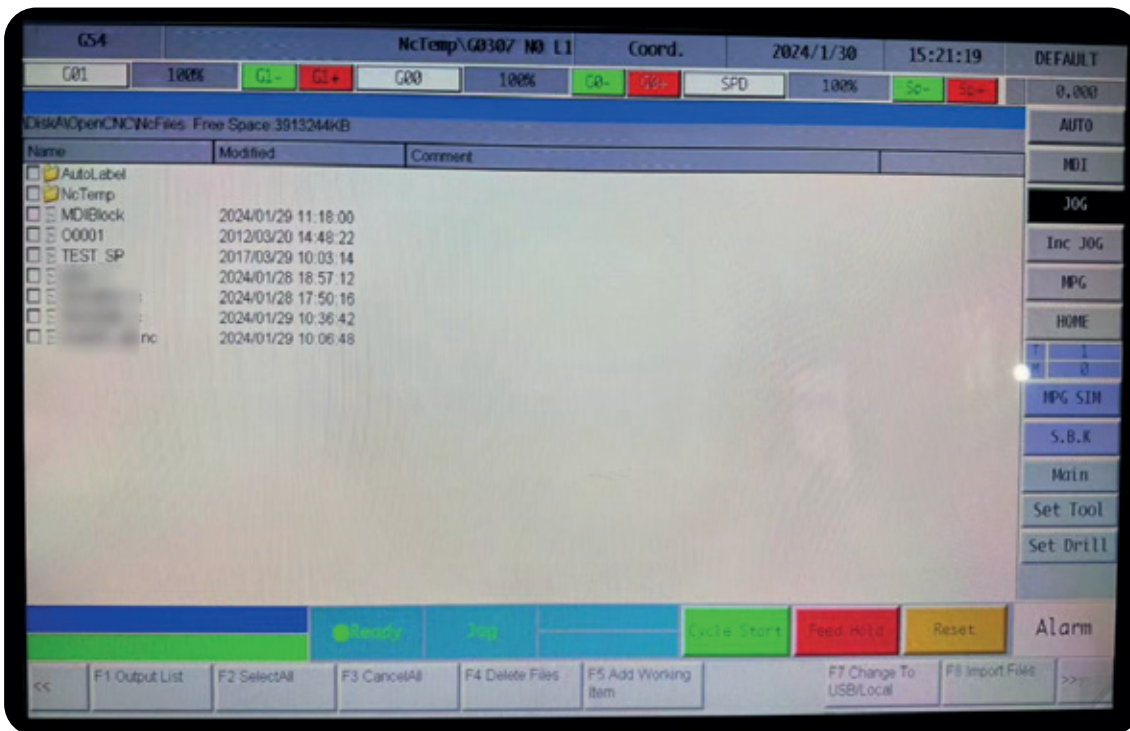
Path: F1 Operator Panel→F2 Move Line Number→F1 Move Up

Description: Used to move a single NC program downward after the list is generated to postpone processing.

Operation method

- ① Select the processing program that needs to be moved.
- ② Function key movement program.
- ③ Click multiple times to move continuously.

7.3.3. Work order selection



Path: F1 operator panel → F3 work order selection

Description: Used to generate processing lists and import files.

F1 output work list

Path: F1 operator panel → F3 work order selection → F1 output work list.

Description: After selecting the processing program, generate a work list.

Operation method

- 1) Select the required processing program (you can directly click the folder) or select the xml list file.
- 2) Click the output worklist function key.

Select all F2 files

Path: F1 operator panel → F3 work order selection → F2 file selection all.

Note: When selecting files, you can select all files at once.

Operation method

Click the File Select All function key and all programs and labels will be selected (excluding folders).

F3 deselects all

Path: F1 operator panel → F3 work order selection → F3 deselect all

Note: When selecting files, you can deselect all.

Operation method

Click the Cancel Select All function key to cancel all selected programs and labels.

F4 deletes selected files

Path: F1 operator panel → F3 work order selection → F4 delete selected file.

Note: After selecting files, you can delete the selected files.

Operation method

- ① Select files to be deleted.
- ② Click the delete selected file function key, and all selected files will be deleted.

F5 appends work list

Path: F1 operator panel → F3 work order selection → F5 append work list.

Note: You can continue to add content to the existing work list.

Operation method

- ① Select files to add.
- ② Click the append work list function key, and the selected file will be appended to the original list.

F7 Switch (USB/System)

Path: F1 operator panel → F3 work order selection → F7 switching device (USB/system).

Description: This button can switch the file management screen between the system and the USB.

F8 import file

Path: F1 operator panel → F3 work order selection → F8 import file

Description: This button can import files from USB into the system.

7.3.4. Satus reset

Path: F1 operator panel → F4 status reset

Note: The processing status of all files has changed to "Unprocessed".

7.3.5. Bakpoint regression

Path: F1 operator panel → F5 breakpoint return

Explanation:

- Processing is interrupted. You can click this button to continue the processing program.
- Do not click the breakpoint multiple times in succession, otherwise the status bar will be blank.

Operation method

- ① Click the power-off return function key, a pop-up window will pop up, click Confirm.
- ② After the system enters the processing monitoring screen, confirm the breakpoint position, enter the breakpoint, and start processing.
- ③ After processing is completed, return to the work list screen and continue subsequent processing.

7.3.6. Clear the list

Path: F1 operator panel → F6 clear list

Description: Clear all the lists.

7.4. F2 program editor



Path: F2 program editor

Note: The control system provides program editing function, and program editing actions can be performed under this function key.

Instructions

- ① Use the direction keys [↑] [↓] [←] [→] to move the cursor.
- ② Use [Page Up] [Page Down] to switch between the previous and next pages.
- ③ Use [Home] [End] to quickly switch to the front or back of the line where the cursor is located.

④ Use the shortcut key **【Prog File】** to quickly switch between the 『Program Editing』 and 『File Management』 pages.

7.4.1. Load and execute processing

Path: F2 program editing → F1 load program processing

Description: This button can designate the program being edited as a processing program and switch the screen to the 『Processing Monitoring』 page.

* Note that this button is invalid during processing.

7.4.2. Delete row

Path: F2 Program Edit → F2 Delete Line.

Description: Delete the row where the cursor is currently located.

7.4.3. Graphical auxiliary input

Path: F2 Program Edit → F3 Graphic Auxiliary Input

Note: When editing a program, because the system provides many G codes, and the parameter definitions of different G codes are also different, a graphic auxiliary input function is provided to illustrate with pictures, so that G codes can be easily edited.

Insert loop

Path: F2 Program Edit → F3 Graphic Auxiliary Input → F1 Insert Loop

Instructions

① In the current editing program, move the cursor to the place where you want to add a loop, click "Insert Loop", and follow the instructions of the graphical auxiliary input to select the loop to be inserted and set the required arguments.

② Press 「OK」 after editing is completed, and the edited loop will be added to the next line where the cursor of the program currently being edited is located.

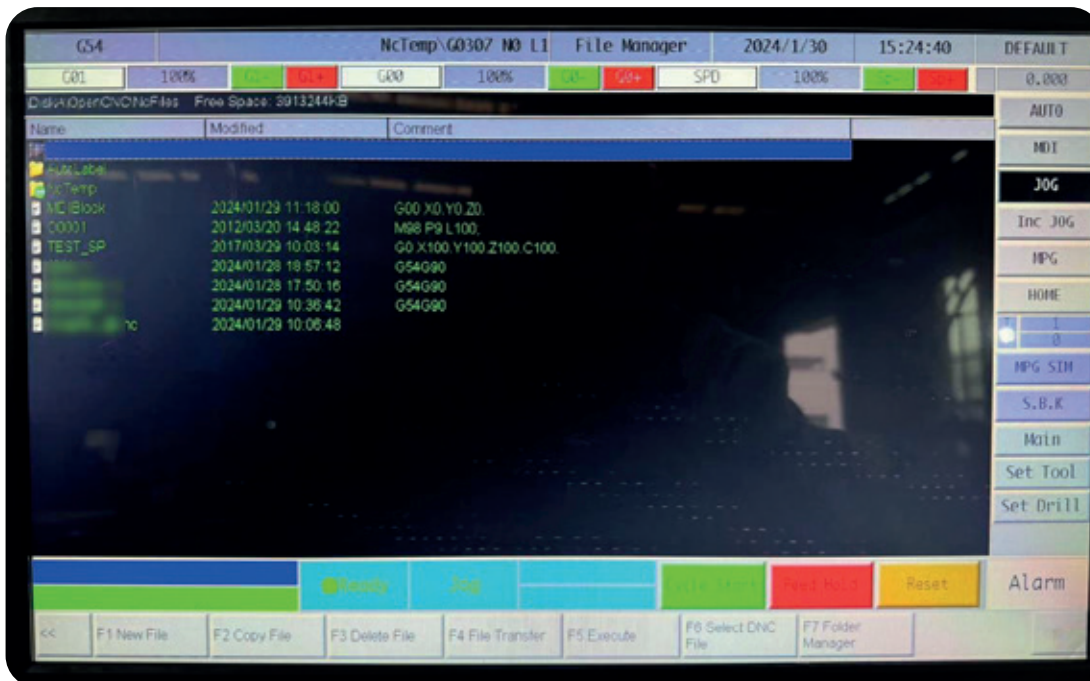
Edit loop

Path: F2 program editing → F3 graphics auxiliary input → F2 editing loop

Description: Edit the loop where the current cursor is located.

Operation instructions: Move the cursor to the modified loop and press 「Edit Loop」. The loop content at the cursor position of the program currently being edited will be substituted into the graphical auxiliary input screen. You can re-edit the loop and then press Confirm to modify the loop.

7.4.4. File management



Path: F2 program editing → F8 file management

Explanation :

- This button can perform file management functions on all processing files in the specified drive letter of the system installation configuration.
- The system processing main program and its subfolders are marked by arrow icons.
- The sorting method can be set through the [File List Sorting Method] in the HMI parameter setting screen.
- When entering this screen, all files may not have been added to the list. The screen will flash during the adding process but will not affect the operation. The 『Select All』 button will not be enabled until all files are added.

Instructions

- ① Use the direction keys [↑] [↓] to move the cursor.
- ② Use [Page Up] [Page Down] to switch between the previous and next pages.
- ③ Press the [ENTER] key and the file designated by the cursor will be designated as the editing file. The program content of the file will be displayed on the screen, and editing actions can be performed.

Open new document (file)

Path: F2 program editing → F8 file management → F1 open new file

Description: This button can add a file. The newly added file will be designated as the file currently being edited.

Instructions

Click「Open New File」and a dialog window will pop up. Enter the file name of the new file.

* Notice:

- ① The default file format is without file extension. If you want to open a file with a file extension, such as *.NC, just enter *.NC when setting the file name.
- ② The length of the file name (including the extension) cannot exceed 31 characters.

Copy files (archives)

Path: F2 Program Edit → F8 File Management → F2 Copy File Description: This button can copy the file currently selected by the cursor.

Instructions

- ① Use the arrow keys [↑] [↓] to select the file to be copied.
- ② After selecting, click「Copy File」.
- ③ In the dialog box that pops up, enter the name of the new file.

* **Notice:**

- ① The default file format is without file extension. If you want to open a file with a file extension, such as *.NC, just enter *.NC when setting the file name.
- ② The length of the file name (including the extension) cannot exceed 31 characters.

Delete Files

Path: F2 Program Edit → F8 File Management → F3 Delete File Description: This button can delete the file currently selected by the cursor.

Instructions

After pressing「Delete File」, a file selection box will appear in front of all files on the『File Management』Use the arrow keys [↑] [↓] to select the file to be deleted.

Sub-function key description

- Select: Mark the files to be deleted. You can mark multiple files at the same time or cancel the marked files.
 - Select all: Mark all files.
 - Deselect: Deselect all flagged files.
 - Delete files: Delete all marked files.
 - Delete all files: Delete all files in the disk volume.
- * Note: Files currently being processed and files currently being edited cannot be deleted.

File transfer

Path: F2 program editing → F8 file management → F4 file transfer

Description: Perform file exchange between the controller and external folders.

File (file) input

Path: F2 program editing → F8 file management → F4 file transfer → F1 file input

Description: Input external folders or files into the controller.

Screen description

Above is the external disk option, you can choose the following options:

- USBDisk.
- DiskA.
- Network.
- USBDisk2.

The lower left corner shows the file structure of the external disk volume.

The lower right corner shows the processing files currently stored on the internal disk of the controller.

Sub-function key description

- Copy: Import the marked files and folders from the external disk to the internal disk.
- Select: Press this button to mark a file, you can mark multiple files at the same time, and you can also cancel the marked files.
- Select All: Mark all files.
- Deselect: Deselect all marked files.
- Change disk drive: You can change external disks.

Instructions

- ① After pressing "File Input", a file selection window will pop up.
- ② Default external disk to USB Disk.
- ③ If you want to change the file input source, press「Change Disk Drive」, switch the cursor to the external disk option, use the arrow keys [←] and [→] to move the cursor to the external disk option where you want to input the file, and press [Enter] to change the left block to the file structure of the external disk.
- ④ Use the arrow keys [↑] [↓] to select the file to be imported.
- ⑤ Move to the file to be imported, press「Select」or type【Space】 to mark the file.
- ⑥ After marking all the files to be imported, press「Copy」and all the marked files and folders will be imported from the external disk to the internal disk.

* Please note that all files in the folder will be copied.

Copy Folder Restriction

- ① The folder cannot be imported into the subfolder of \DiskA\Nc File.
- ② If the folder you input contains subfolders, and you want to import \DiskA\NcFile, it will prompt "Subfolders detected, please note that the contents of the subfolders will not be imported".

File Output

Path: F2 Program Edit → F8 File Management → F4 File Transfer → F2 File Output

Description: Export the controller file or folder to an external folder. Screen Description

The above is the external disk option, you can select the following options:

- USBDisk.
- DiskA.

- Network.
- USBDisk2.

The lower left is the controller's internal disk, which contains the currently stored processing files. The lower right side shows the file structure of the external disk volume.

Sub-function key description

- Copy: Export the marked files and folders from the internal disk to the external disk.
- Select: Mark files. You can mark multiple files at the same time or cancel marked files.
- Select All: Mark all files.
- Deselect: Deselect all marked files.
- Change disk drive: You can change external disks.
- Switch focus to input and output: switch between the internal disk and the external disk.

Instructions

- ① After pressing 「File Input」, a file selection window will pop up.
- ② Default external disk to USB Disk.
- ③ If you want to change the file output address, press 「Change Disk Drive」, switch the cursor to the external disk option, move to the external disk where you want to output the file and type **[Enter]** to change the left block to the file structure of the external disk.
- ④ Press 「Switch focus to input and output」Switches focus from external disk to internal disk and vice versa.
- ⑤ If you want to switch to an external disk folder, use the arrow keys **[↑]** **[↓]** to move to the target folder, and then press **[Enter]**.
- ⑥ Use the arrow keys **[↑]** **[↓]** to select the file to be exported from the internal disk.
- ⑦ Move to the file you want to export, press 「Select」 or type **[Space]** to mark the file.
- ⑧ After marking all the files to be imported, press 「Copy」 and all the marked files and folders will be exported from the internal disk to the external disk.

* Please note that all files in the folder will be copied.

Load and execute processing

Path: F2 program editing → F4 file management → F5 loading and execution processing

Description: This button can designate the file where the current cursor is located as the current processing file, and at the same time switch the screen to the 『Processing Monitoring』 screen.

Instructions

- ① Use the direction keys **[↑]** **[↓]** to select the file. After selecting, press the 「Load and Execute Processing」 button, and the selected file will be designated as the processing file.
- ② The screen switches to the 『Processing Monitoring』 page.

*Note: This button is invalid during processing.

7.5. F3 offset/setting



Path: F3 Offset/Set

Explanation:

- Create a group under this function to perform offset function settings and function settings.
- You can use the shortcut key [Offset/Setting] to quickly switch pages in this group.

7.5.1. Workpiece coordinate system



Path: F3 Offset/Setting → F1 Workpiece Coordinate System

Explanation:

- This function key can switch to the 『Workpiece Coordinate System』 page to set the workpiece coordinate system.
- If there is no G54~G59.10 set in the NC program, the system defaults to G54.
- External coordinate offset: coordinate system that acts on all coordinate systems (G54~G59.10).

Instructions

- ① Use the direction keys [↑] [↓] [←] [→] to move the cursor.
 - ② Use [PageUp] [PageDown] to switch between the previous and next pages.
- * Note: After setting the coordinate system of the finished workpiece, you need to set the tool length compensation again.

Modification time

External bias:

- Modifiable: ready or not ready.
- Cannot be modified: Processing and reconciliation

Workpiece coordinate system (G54P1(G54), G54P2(G55), ..., G54P100)

- Modifiable: ready or not ready.
- Cannot be modified: during processing and unprocessing, and must be modified to the workpiece coordinate system in use.

* When it cannot be modified, a warning window will pop up.

Mechanical coordinate teaching

Path: F3 Offset/Setting → F1 Workpiece Coordinate System → F1

Mechanical Coordinate Teaching

Description: Set the workpiece coordinate coefficient value where the cursor is currently located to the current corresponding mechanical coordinate value.

Instructions

- ① Move the machine to the target location.
- ② Move the cursor to the workpiece coordinate system to be modified.
- ③ Click 「Mechanical Coordinate Teaching」.
- ④ The workpiece coordinate coefficient value where the cursor is located will be changed to the corresponding mechanical coordinate value.

Operation example

- ① The current X axis mechanical coordinate is 5.000.
- ② The current X axis coordinate of G54 is 0.000.
- ③ Move the cursor to the X axis coordinate of G54.
- ④ Click 「Mechanical Coordinate Teaching」.
- ⑤ The X axis coordinate of G54 is changed to 5.000 .

Relative coordinates teaching

Path: F3 Offset/Setting → F1 Workpiece Coordinate System → F2

Relative Coordinate Teaching

Description: Set the coordinate coefficient value of the workpiece where the current cursor is located to the corresponding current relative coordinate value.

Instructions

- ① Move the machine to the target position.
- ② Move the cursor to the workpiece coordinate system to be modified.
- ③ Click 「Relative Coordinates Teaching」.
- ④ The workpiece coordinate coefficient value where the cursor is located will be changed to the current corresponding relative coordinate value.

Operation example

- ① The current X axis relative coordinate is 5.000.
- ② The current X axis coordinate of G54 is 0.000.
- ③ Move the cursor to the X axis coordinate of G54.
- ④ Click 「Relative Coordinates Tutorial」.
- ⑤ The X axis coordinate of G54 is changed to 5.000.

Auxiliary coordinate teaching

Path: F3 Offset/Setting → F1 Workpiece Coordinate System → F3 Auxiliary Coordinate Teaching

Explanation:

- Set the workpiece coordinate coefficient value where the current cursor is located to the corresponding current auxiliary point coordinate value.
- The coordinate value of the auxiliary point will only have a numerical value after using the centering function.

Instructions

- ① Use the centering function to calculate the numerical value of the auxiliary point coordinates.
- ② Move the cursor to the workpiece coordinate system to be modified.
- ③ Click 「Auxiliary Coordinate Teaching」.
- ④ The workpiece coordinate coefficient value where the cursor is located will be changed to the corresponding auxiliary point coordinate value.

Operation example

- ① The coordinate of the front X axis auxiliary point is 5.000.
- ② The current X axis coordinate of G54 is 0.000.
- ③ Move the cursor to the X axis coordinate of G54.
- ④ Click 「Auxiliary Coordinate Teaching」.
- ⑤ The X axis coordinate of G54 is changed to 5.000.

Incremental input

Path: F3 Offset/Setting → F1 Workpiece Coordinate System → F4 Incremental Input

Description: Change the workpiece coordinate coefficient value where the cursor is currently located to (the value where the cursor is located + the entered teaching value).

Instructions

- ① Move the cursor to the workpiece coordinate system to be modified.
- ② Enter the value to be taught.
- ③ Click 「Increment input」.
- ④ The workpiece coordinate coefficient value where the cursor is located will be changed to the value where the cursor is + the value input by the teaching.

Operation example

- The current X-axis coordinate of G54 is 5.000.
- Move the cursor to the X-axis coordinate of G54.
- Type 10.000.

- Click 「Increment input」.
- The X-axis coordinate of G54 is changed to 15.000.

Mechanical incremental teaching

Path: F3 Offset/Setting → F1 Workpiece Coordinate System → F6 Mechanical Incremental Teaching

Description: Change the workpiece coordinate coefficient value where the cursor is currently located to (the current corresponding mechanical coordinate value + the entered teaching value).

Instructions

- ① Move the cursor to the workpiece coordinate system to be modified.
- ② Enter the value to be taught.
- ③ Click 「Mechanical Incremental Teaching」.
- ④ The workpiece coordinate coefficient value where the cursor is located will be changed to the current corresponding mechanical coordinate value + the value input by the teaching.

Operation example

- ① The current X axis mechanical coordinate is 5.000.
- ② Move the cursor to the X axis coordinate of G54.
- ③ Enter 10.000.
- ④ Click 「Mechanical Incremental Teaching」.
- ⑤ Change the X axis coordinate of G54 to 15.000.

7.5.2. Tool settings



Path : F3 Offset/Setting → F2 Tool Setting

Explanation

- This function key can switch to the correction setting and perform various correction settings.
- (Tool tip + tool radius wear compensation) is the actual G41/G42 compensation amount.
- (Tool length compensation + tool length wear compensation) is the actual G43/G44 compensation amount.

Parameter Description

- Radius: G41/G42 tool radius Dn compensation. (not diameter).
- Radius wear: small tool radius adjustment.
- Tool length: G43/G44 tool length Hn compensation.
- Tool length wear: small size adjustment of tool length.

Instructions

- ① Use the direction keys [↑] [↓] [←] [→] to move the cursor.
- ② Use [PageUp] [PageDown] to switch between the previous and next pages.
- ③ Input method.
 - Generally use the absolute input type to input tool tip or tool length compensation.
 - Generally use incremental input form to input tool radius wear compensation or tool length wear compensation.

④ Absolute input.

- Type **[A]** and press **[ENTER]**.
- The value where the cursor is located will be set as 「input value」.

⑤ Incremental input.

- Type **[I]** and press **[ENTER]**.
- The value where the cursor is located will be set as 「input value」+「current value where the cursor is located」.

⑥ Measurement input.

- Type **[Z]** and press **[ENTER]**, the tool length compensation of the line where the cursor is located will be set to the current Z-axis 「relative coordinate」value.
- Press F2 to input mechanical coordinates. The tool length compensation of the row where the cursor is located will be set to the current Z-axis 「mechanical coordinate」value.
- Press F2 for relative coordinate input. The tool length compensation of the line where the cursor is located will be set to the current Z-axis 「relative coordinate」value.

Clear Z-axis relative coordinates

Path: F3 Offset/Setting→F2 Tool Setting→F1 Clear Z-axis relative coordinates

Description: Clear the current Z axis value in relative coordinates.

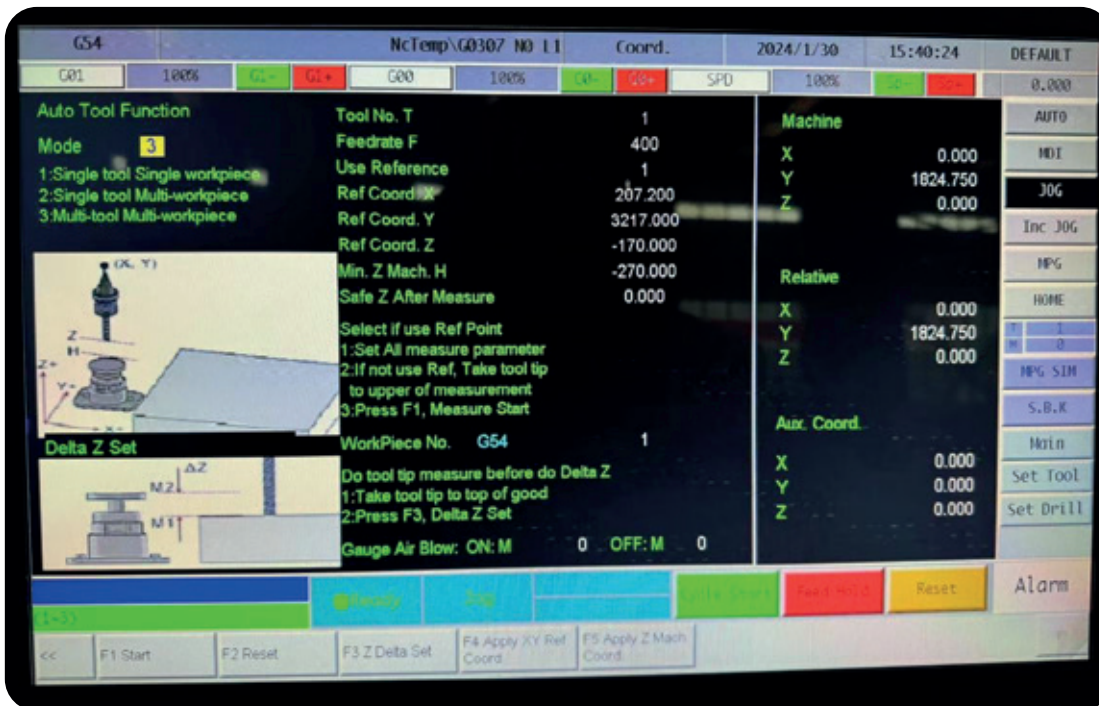
Tool number information

- Path: F3 Offset/Setting→F2 Tool Setting→F7 Tool Number Data

Tool life management

- Path: F3 Offset/Setting→F2 Correction Setting→F8 Tool Life Management

7.5.3. Automatic tool setting



Path: F3 Offset/Setting→F3 Automatic Tool Calibration

Explanation:

- The machine is equipped with a tool setter. By setting relevant parameters, the machine can be controlled to move to the position of the tool setter for automatic tool measurement.
- According to different situations, it is divided into the following measurement methods:
 - Single tool, single workpiece.
 - Single tool for multiple workpieces.
 - Multiple tools and multiple workpieces.

7.5.4. Relative coordinate clearing

Path: F3 Offset/Setting→F6 Relative Coordinate Clear

Description: Return the value of relative coordinates to zero.

Operation method: After entering the axis to be calculated, click this button.

Operation examples

- ① The X axis relative coordinate value is 10.000.
- ② After typing [X], click 「Clear Relative Coordinates」.
- ③ Then the X axis relative coordinate value will be changed to 0.000.

7.5.5. Clear relative coordinates

Path: F3 Offset/Setting→F7 Clear all relative coordinates

Description: Return the values of all relative coordinates to zero.

Operation example

- ① The current relative coordinate value of the X-axis is 10.000 and the relative coordinate value of the Y-axis is 5.0000.
- ② Click 「Clear all relative coordinates」.
- ③ Then the X-axis relative coordinate value will be changed to 0.000, and the Y-axis relative coordinate value will be changed to 0.000.

7.6. F4 processing monitoring



Path: F4 processing monitoring

Note: This function creates a group to provide the necessary information for monitoring during processing.

Function key description

F1: LoaderEdit

Description: Load the current processing file into the program editor for editing, and switch the screen to 『Program Edit』.

F2: Graphical simulation display

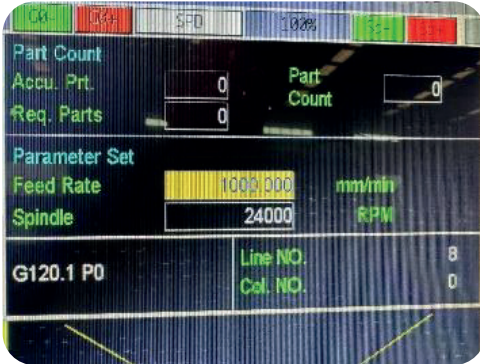
Description: Display graphic analog components.

F3:MDI input

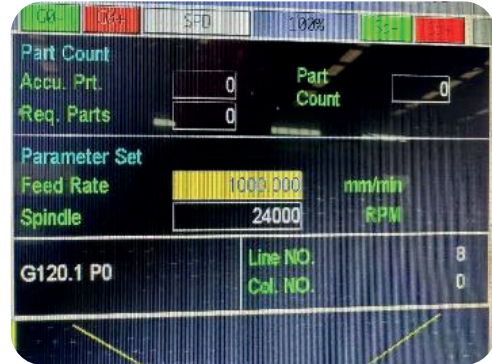
Description: In MDI mode, edit the program executed by MDI (open this mode on the right side of the main screen).

F4:Processing information settings

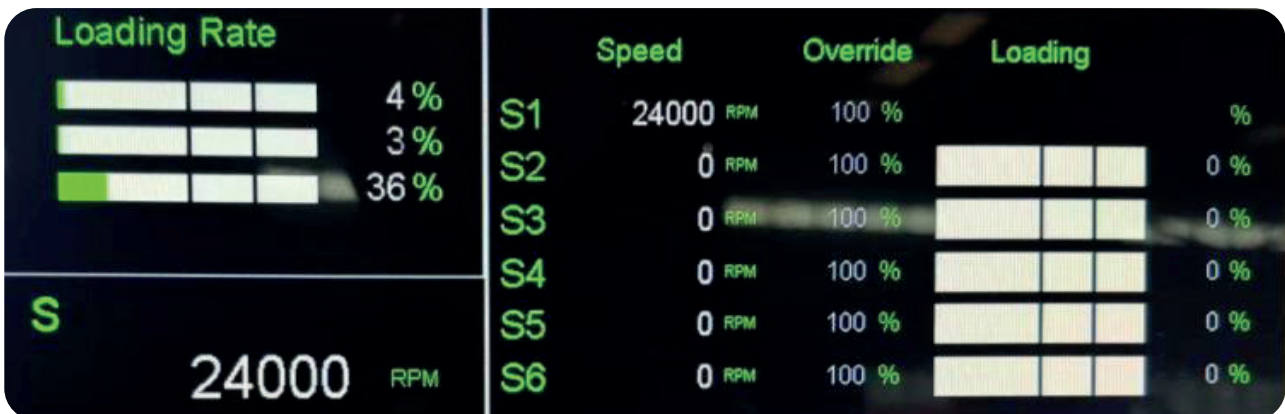
Description: Switch the display between related 「Processing Information 」and 「Processing Settings 」.



Switch screen two: G code status, time, magnification.



Switch screen three: spindle speed, magnification, load rate.



F5:Wear setting

Description: Display the tool wear setting page.

7.6.1. Screen description

Machine monitoring area

This area will display the current machine information:

- Absolute coordinates.
- Processing remaining distance.
- Feed speed.
- Spindle speed.

Program code monitoring area

- This area will display the programs currently being processed.
- The yellow light bar will indicate the current block of program execution.

Processing information display area

Explanation:



- This area overlaps with the 「Processing Setting Area」.
- Use 「Processing Information/Settings」 to switch the display.

Screen description

① G code status

- Display the G code currently executing in the system.

② Processing time

- The single processing time of the current workpiece.
- The calculation will be reset when the program starts.

③ Accumulated processing

- Current total processing time.

④ Magnification

- G00 magnification.
- G01 magnification.
- Spindle magnification.

⑤ Total number of processes

- Total workpieces processed by the machine.
- The system will not automatically perform any zeroing action.
- When manually returning to zero, please press 「Processing Information/Settings」, switch to 「Processing Settings Display」, and set 「Total Number of Workpieces」 to 0.

⑥ Number of workpieces

- Every time processing is executed, calculation will start from zero.
- Display the number of workpieces currently processed.

⑦ Starting block

The starting block of processing can be set.

Instructions

n: Specify the starting section as the nth line.

L+n: Specify the starting section as the nth line.

N+n: Search for the line number where N+n is located and specify this line as the starting line.

- T+n: Search for the line number where T+n is located and specify this line as the starting line.
- If the specified line number exceeds the maximum number of lines in the program, specify the last line of the program.
- Return method of the starting section.

⑧ Processing tool information

- T.
- 4 code display.
- Code 2 is the tool number currently being executed.
- The last two digits are the correction number of the tool currently being executed.

Processing setting display area

Explanation

- This area overlaps with the 「Processing Information Area」.
- Use 「Processing Information/Settings」 to switch the display.

Screen description

① Interruption point serial number

- Display the sequence number when the program was last interrupted (N).

② Break point line number

- Displays the line number where the program was last interrupted (L).

③ Spindle speed

- Set the spindle speed.
- Can be set during processing and responds immediately.

④ Feed speed

- Set the feed speed.
- Can be set during processing.
- It will be changed after all the sections you want to solve are executed.

⑤ Total number of workpieces

- Set the total number of pieces processed by the machine.
- The system cannot be reset to zero automatically and can only be reset to zero manually.

⑥ Number of workpieces

- Set the current number of pieces processed by the machine.
- When changing the processing file, the workpiece counter will be reset to zero.
- When the set M code is executed (parameter 3804 can specify the M code), the workpiece counter will automatically increase by one, and the single piece processing time will be reset to zero.
- When the required number of workpieces is reached, it will automatically enter the pause state.

⑦ Number of required workpieces

- Set the upper limit of the number of processed pieces.
- When the number of workpieces reaches the number set by the required number of workpieces, an alarm window will pop up and processing will be suspended.

Graphic analogy area

Explanation

- This area can display the tool movement trajectory of the current processing file.
- Use 「Graphic Analog Display Switching」 to switch the display.

7.6.2. Load program editor

Path: F4 processing monitoring → F1 loading program editing

Description: Load the current processing file into the program editor for editing, and switch the screen to 『Program Edit』.

* **Note:** This button can be executed during processing, and the screen will switch to "Program Editing", but the current processing file cannot be edited.

7.6.3. Graphical simulation display

Path: F4 processing monitoring → F2 graphic analog display

Explanation:

- Select whether to display the graphic analogy function.
- The 「Graphic Adjustment」function can only be performed in the 「Graphic Analog Display」state.

7.6.4. MDI input

Path: F4 processing monitoring → F3 MDI input

Description: Edit the program executed by MDI.

Instructions

- ① Switch mode to 『MDI』.
 - ② After clicking 「MDI Input」 the editing window will pop up.
 - ③ After editing the MDI program, press 「OK」, and the edited program will be stored in the MDI Block.
 - ④ In the 『MDI』 mode, execute Cycle Start to process the program edited by MDI.
-

* **Note** that this button is only valid in "MDI" mode.

7.6.5. Processing information/settings

Path: F4 processing monitoring → F4 processing information/settings

Description: Switch the display between 「Processing Information Area」 and 「Processing Settings」.

7.6.6. Wear setting

Path: F4 processing monitoring → F5 wear setting

Explanation

- Set tool wear.
- Actual tool length = tool length + tool wear.

Parameter Description

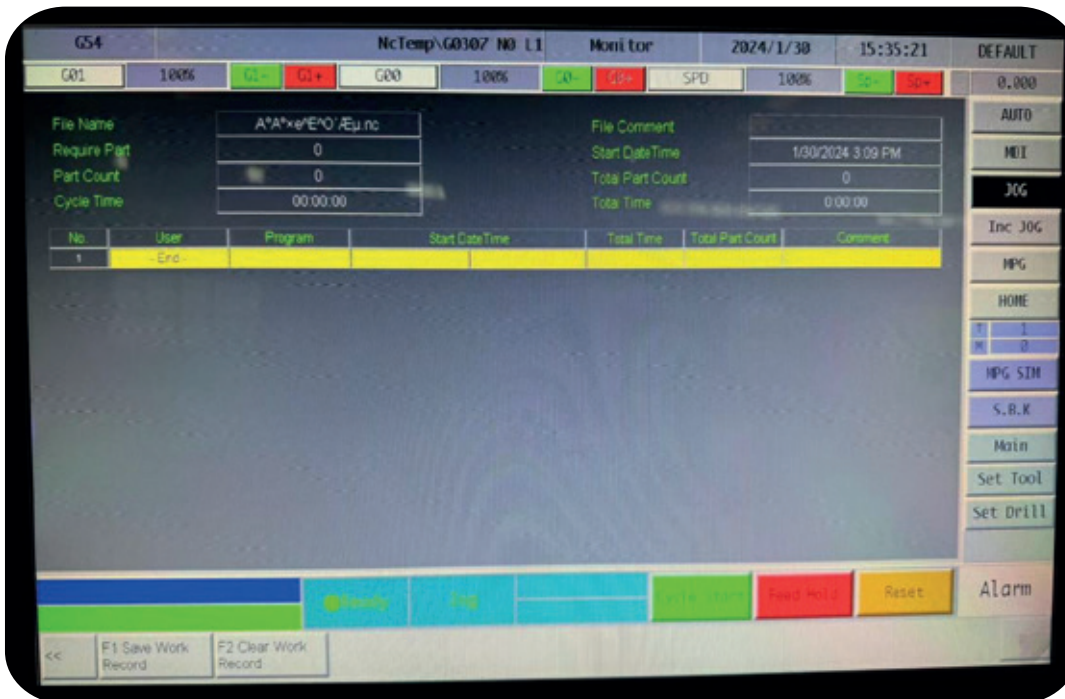
Wear: Small size adjustment of tool length.

***Note** that after setting the tool length, the corresponding wear will be reset to zero.

7.6.7. Processing record form

Path: F4 processing monitoring → F7 processing record form

Display screen



This form can view the current processing records and export the processing records to an external disk. It can record up to 500 sets of execution processing files.

Table record content:

Serial number, user (authority management), program name, start time and date, total processing time, number of output workpieces, and program comments.

7.6.8. Clear accumulated time

Path: F4 processing monitoring → F8 clear accumulated time

Description: Return the accumulated processing time to zero.

7.7. F5 maintenance

Path: F5 Maintenance

Description: This function page can display system alarms, network settings, quick diagnosis, PLC parameter byte settings and software version information.

7.7.1. Alarm display

Path: F5 Maintenance → F1 Alarm Display

Description: This function page can display system alarms.

Existing alerts

Path: F5 Maintenance → F1 Alarm Display → F1 Existing Alarm

Description: Display the alarm content currently occurring in the system.

Historical Alerts

Path: F5 maintenance → F1 alarm display → F2 historical alarm

Description: Display the alarm content that has occurred in the system in the past.

***Note that not all alerts will appear in historical alerts, for example: MACRO alerts**

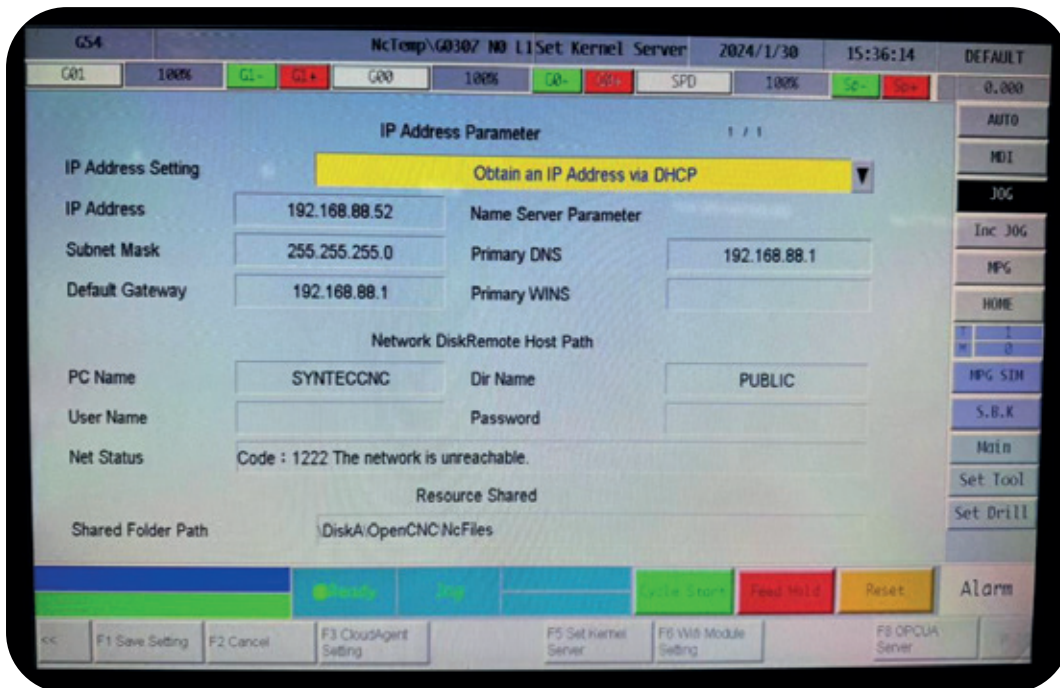
Save alert

Path: F5 maintenance → F1 alarm display → F3 storage alarm

- Save all alarms in the currently displayed alarm page to an external disk volume.
- For example, if the current page stays at「Existing Alarms」, this function can save existing alarms to an external disk volume.
- Default file name for exported files.
 - Existing alerts: Actalm.txt
 - Historical alerts: Histalm.txt



7.7.2. Network settings



Path: F5 Maintenance → F2 Network Settings

Description: Set the network connection settings of the system.

Parameter Description

① How to obtain an IP address

When using a jumper, please select 「Directly specify IP address」.

When using a network cable, please select 「Specify IP address via DHCP」 and skip the 「IP Location」 and 「Subnet Mask」.

② IP address

- Enter the IP address available in the domain.

③ Subnet mask

- Enter the subnet mask for the IP address.
- Need to be consistent with the settings on the PC.

④ Personal PC name

- Enter the name of the PC to be connected.
- Need to be consistent with the settings on the PC.

⑤ Shared directory name

- Enter the name of the folder shared on the PC (needs to be consistent with the settings on the PC).

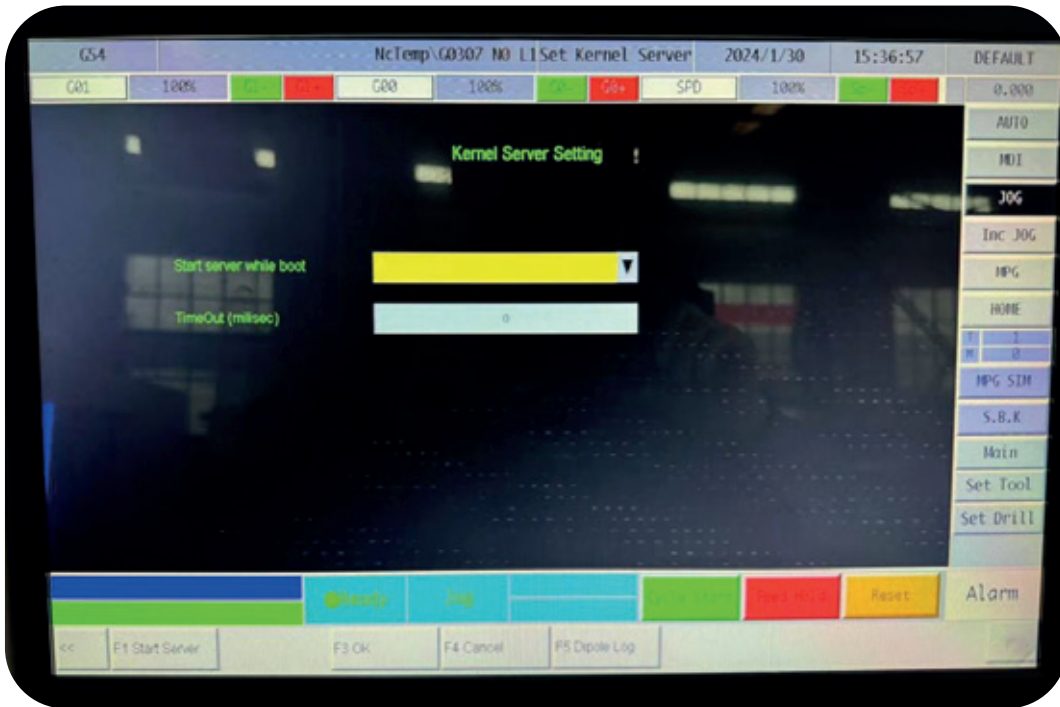
⑥ User name

- If the folder shared by the network disk drive is not protected by an account and password, no settings are required. Otherwise, set the corresponding account and password.

⑦ User password

- Same as 「Username」.

Core server settings



Path: F5 Maintenance → F2 Network Settings → F5 Core Server

Description: Set core server-related functions.

Parameter Description

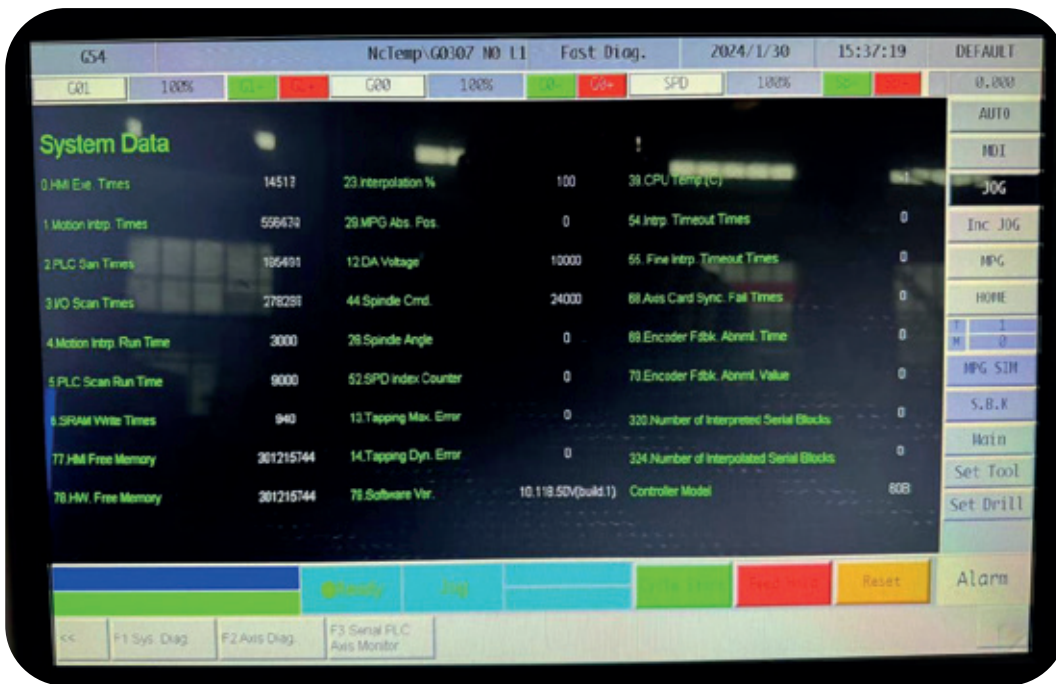
- Whether to start the server when booting.
Set whether to start the core server at boot time.
- Timeout time (milliseconds).
Sets the acceptable timeout when a connection to the core server fails.

Start server

Path: F5 Maintenance → F2 Network Settings → F5 Core Server → F1 Start Server

Description: Start the core server immediately.

7.7.3. Rapid diagnosis



Path: F5 Maintenance → F3 Quick Diagnosis

Description: Display simple diagnostic information about the system.

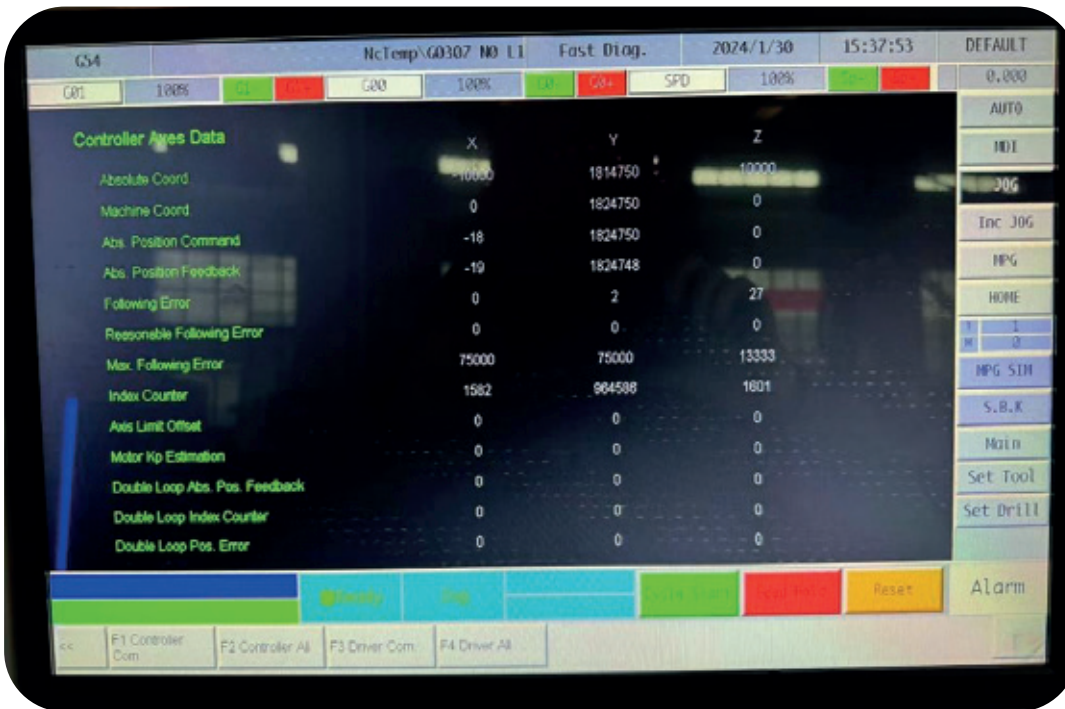
System information



Path: F5 Maintenance → F3 Quick Diagnosis → F1 System Information

Description: Display simple diagnostic information about the system and spindle.

Axial information



Path: F5 Maintenance → F3 Quick Diagnosis → F2 Axial Information

Description: Display axial simple diagnostic information.

7.7.4. Extended parameter bits



Path: F5 Maintenance → F4 Extended Parameter Bit

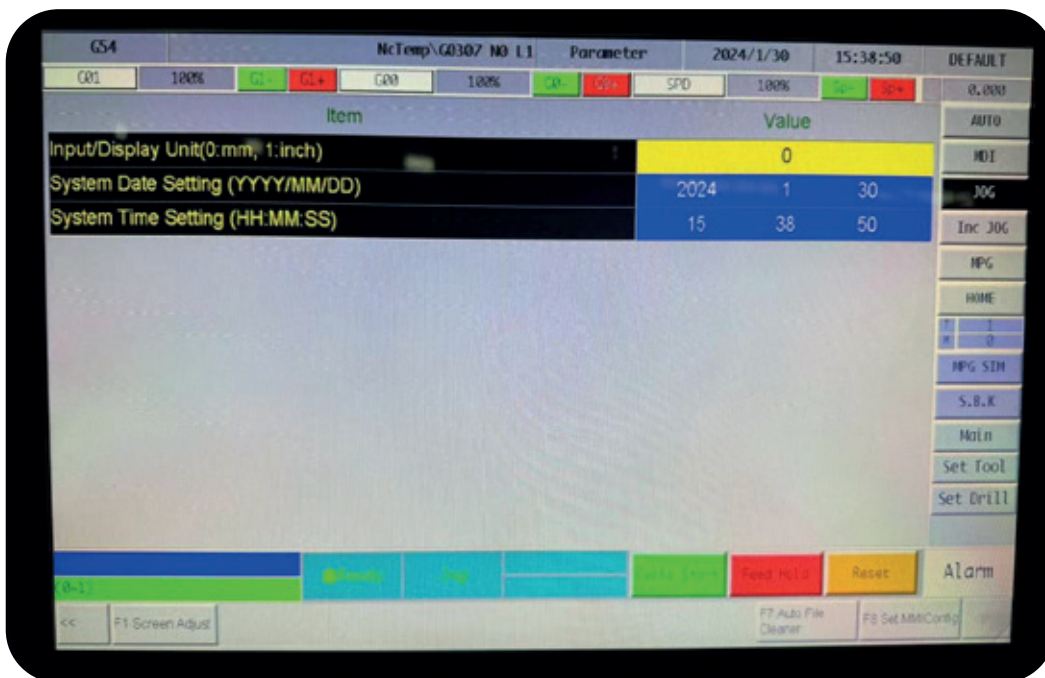
Explanation

- The controller provides a total of 20 sets of registers R81~R100 for use, each register has a 16Bits setting function.
- These 20 sets of registers can be used to provide control flags for self control of specific PLC functions.
- If the value of the extended parameters (Pr3401~Pr3420) exceeds 0~65535, the parameter register cannot be set on this screen.

Instructions

- ① Use the direction keys [↑][↓][←][→] to move the cursor.
- ② Use [PageUp][PageDown] to switch between the previous and next pages.
- ③ Only [0] or [1] can be entered.
- ④ Annotations can be made for each bit.
- ⑤ The string file name corresponding to the annotation is ParamExt_RBit_(L).xml.
- ⑥ (L)=COM/CHT/ Multilingual.

7.7.5. System settings



Path: F5 Maintenance → F5 System Settings

Description: This function page can be used to set the system environment.

Instructions

- ① Use the direction keys [↑][↓][←][→] to move the cursor.
- ② Use [PageUp][PageDown] to switch between the previous and next pages.

Operating mode settings

Explanation

- Set the system to metric or imperial.
 - 0:Metric
 - 1:Imperial

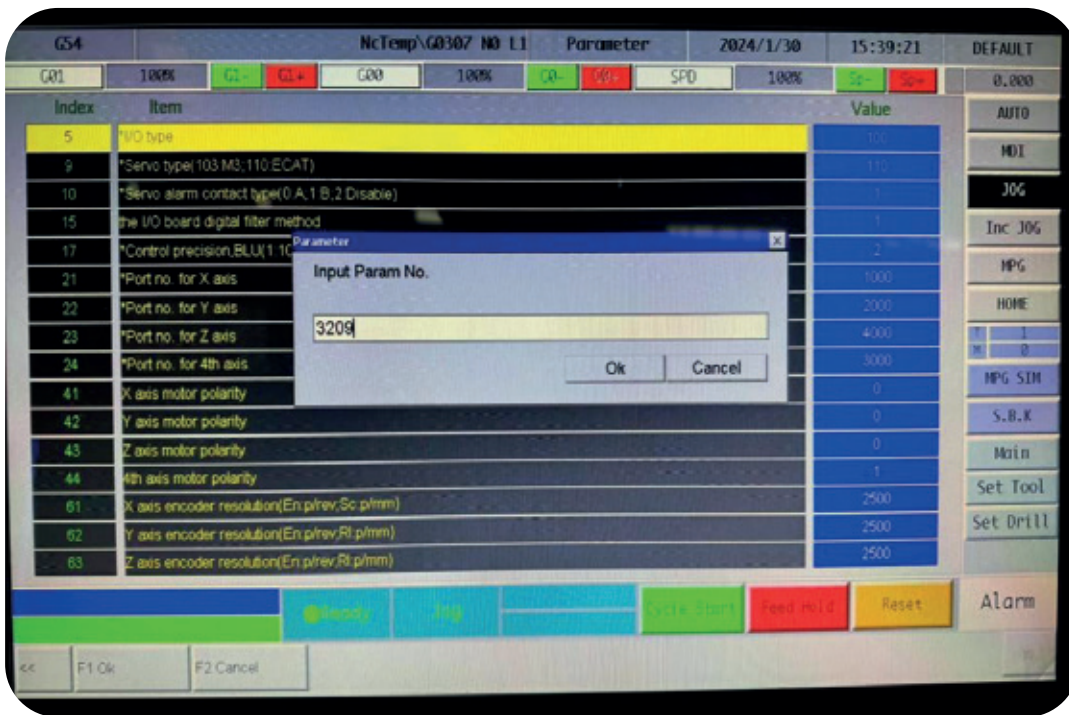
Note: After setting, you need to restart your computer to take effect.

System time setting

Note: The format for inputting 「date」 is YYYY/MM/DD.

- YYYY is the year.
- MM is month.
- DD is day.
- The input format of 「time」 is HH/MM/SS.
- HH is hour.
- MM is minutes.
- SS is seconds.

7.7.6. Language settings



Path: F8 parameter list in the main interface → F3 parameter list → F5 jump to parameter number

Note: Enter「3209」to enter the language number that needs to be changed. After confirmation, the system will pop up a security reminder. Enter the password「520」and click Confirm to complete the modification.

***Note:** This interface can not only set the language but also various parameters. Please do not change other parameters. If necessary, please operate under the guidance of technical personnel.



8. Tool change/tool setting

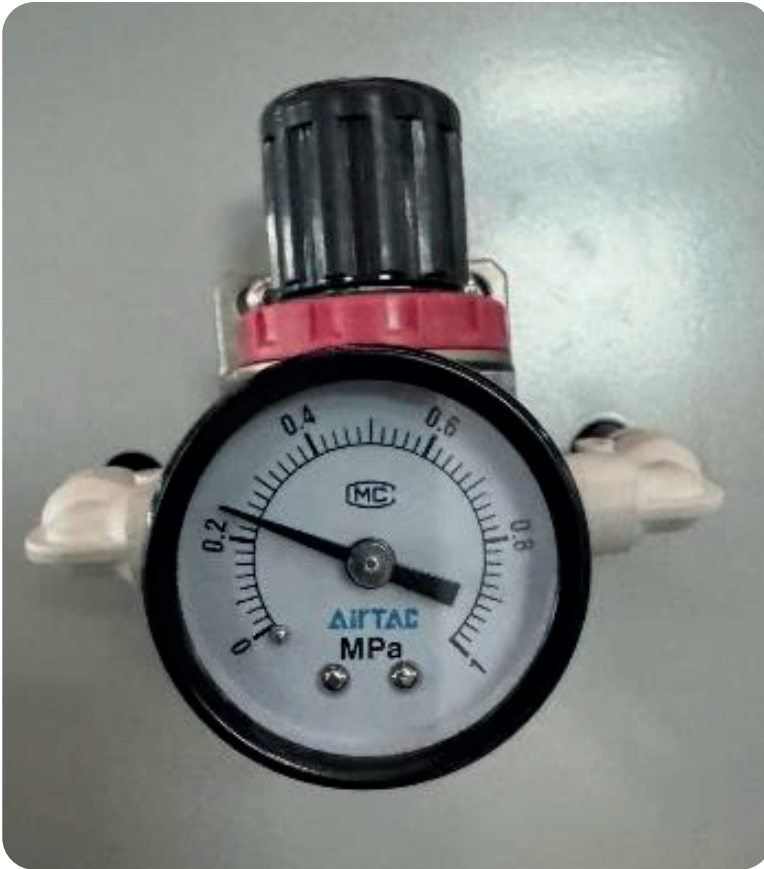
8.1. How to use the lock tool holder

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. Manual tool change

The air pressure required for tool change is controlled by the pressure regulating valve (the adjustment has been completed 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.



In the "main interface", press the spindle brush, raise the brush, and press the green tool change button to change the tool.



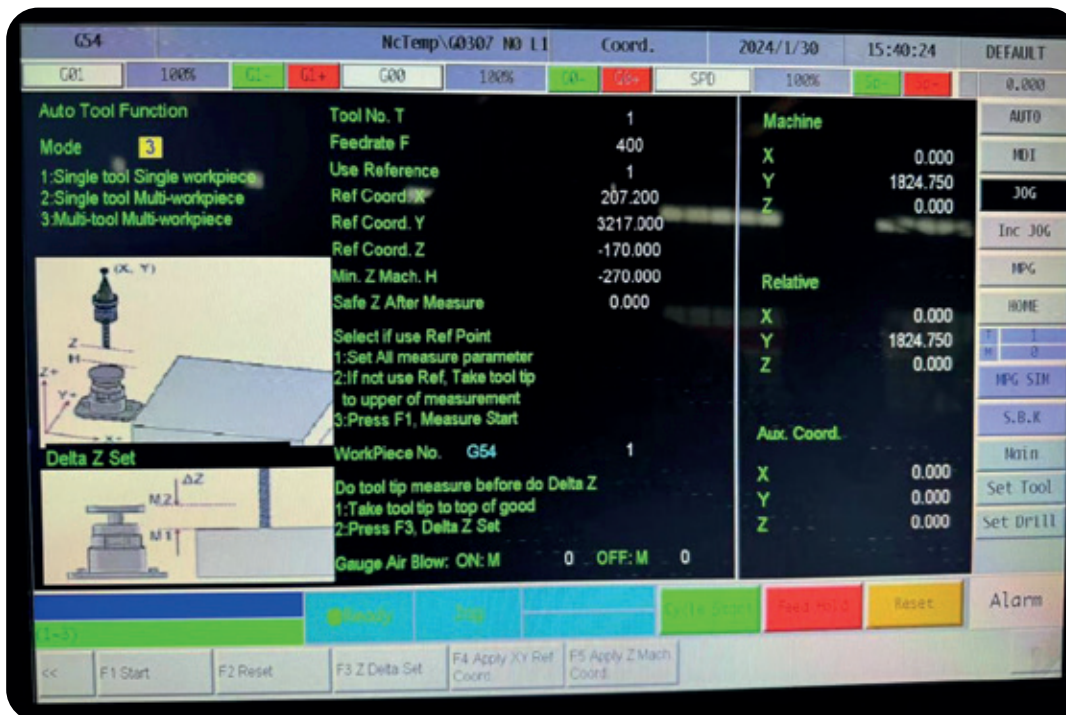
8.3. Use software to set/change tools

Method 1: Open the F3 [Offset/Setting] → [F3 Automatic Tool Setting]

Interface

In this interface, you can complete operations such as tool change, tool length measurement, and Z drop setting (only valid for the tool on the current spindle).

*(*Please pay attention to the spindle tool currently in use and avoid repeatedly placing tools on the tool holder, thereby damaging the machine. For example: tool No. 3 is currently used, and the tool should not be placed in tool holder No. 3 in the tool magazine).*



Instructions

1. In the knife setting screen, set the 「Measurement Mode」 in the upper left corner to 3.
2. Enter the target tool number to be calibrated into 「Enter the target tool number to be calibrated into」 (make sure the current tool number is consistent with the spindle).

***The following parameters parameters (3-6), have been set before the machine leaves the factory. You can use the handwheel guidance mode without modification to directly execute [Automatic tool setting start] to test whether the position has changed. If anything happens during the process, you can press [Automatic tool setting interruption] or emergency stop, stop automatic tool setting, and modify parameters under the guidance of a technical engineer.**

3. Set the speed of the first dip and each pull back during automatic tool setting in 「Measurement Speed F」.
4. Please set 「Use reference point coordinates」 to 1, then move the XY axis to align the tool with the center of the tool setter, and press [XY reference point teaching]. The confirmation window will pop up and select 「Yes」, The current machine base The mark will automatically fill in 「X direction reference point X」 and 「Y direction reference point Y」.

5. Move the cursor to 「Z direction reference point Z」, and directly set the starting position of the Z axis downward tool setting, or move the Z axis to the position of the Z direction starting point, and then press 【Z axis machine teaching】, to set the Z axis. Fill in the axis coordinates with 「Z direction reference point Z」.
6. Move the cursor to 「Z axis minimum mechanical coordinate H」, use 【Z axis mechanical teaching】or directly set the lowest point at which the Z axis can descend during automatic tool setting.
7. After making the above settings, please switch the mode to automatic execution mode and click 【F1 to start automatic tool setting】. At this time, the system will automatically change the tool to the target tool number, and then start automatic tool setting.
8. If anything happens during the process, you can press 【Automatic Tool Setting Interrupt】or emergency stop at any time to stop automatic tool setting.
9. After the automatic tool setting is completed, the Z-axis coordinate when the tool tip touches the tool setting instrument will be automatically stored in the specified tool length compensation table.
10. Manually bring the tool tip to any workpiece surface, then set the 「drop setting number」, press 【Z-axis drop setting】, the drop value between the tool presetter and the workpiece surface will be filled in the specified workpiece coordinate system The Z-axis coordinate of the workpiece coordinates and the Z-axis are now set.
11. Drop setting number: 11:G54G54, 22:G55G55, 33:G56G56, 44:G57G57, 55:G58G58, 66:G59G59, 77:G59.I ...
12. If there are tool setting requirements for other tool numbers or workpieces, you can also use the MDI mode to complete automatic tool setting for multiple tools and workpieces.

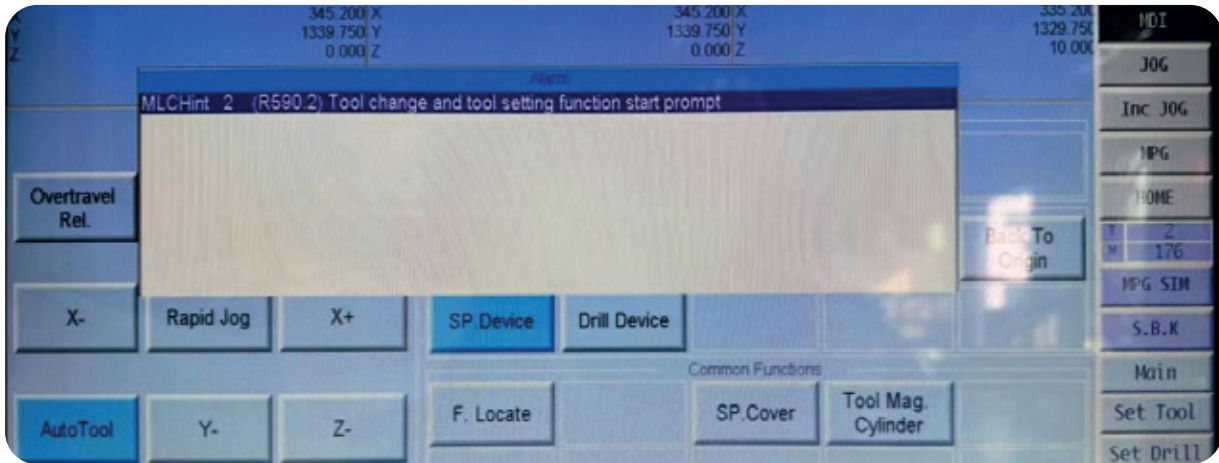
Method 2 (recommended): MDI mode tool change/tool setting (fast multi-tool).



Path: F4 Processing Monitor → F3 MDI Input (you need to click the "MDI" mode on the right side of the main page first).

Instructions

1. Click the "MDI" mode on the right side of the main page, and then click the "Tool Changing and Tool Setting" button in the "Main Interface" on the right side of the main page (do not press the Tool Changing and Tool Setting key if tool setting is not required).



- * When the tool setting and tool changing function alarm reminder appears, press ESC on the keyboard to close it.**
2. After entering the tool number T** that requires tool setting and tool change (you can enter multiple) on the keyboard on the right side of the screen, press「F1 OK」, and the edited program will be stored in the MDI Block.
 3. In "MDI" mode, click Cycle Start Start, Cycle Start to use the code edited by MDI to perform multi tool tool change/tool setting.



8.4. Set workpiece origin

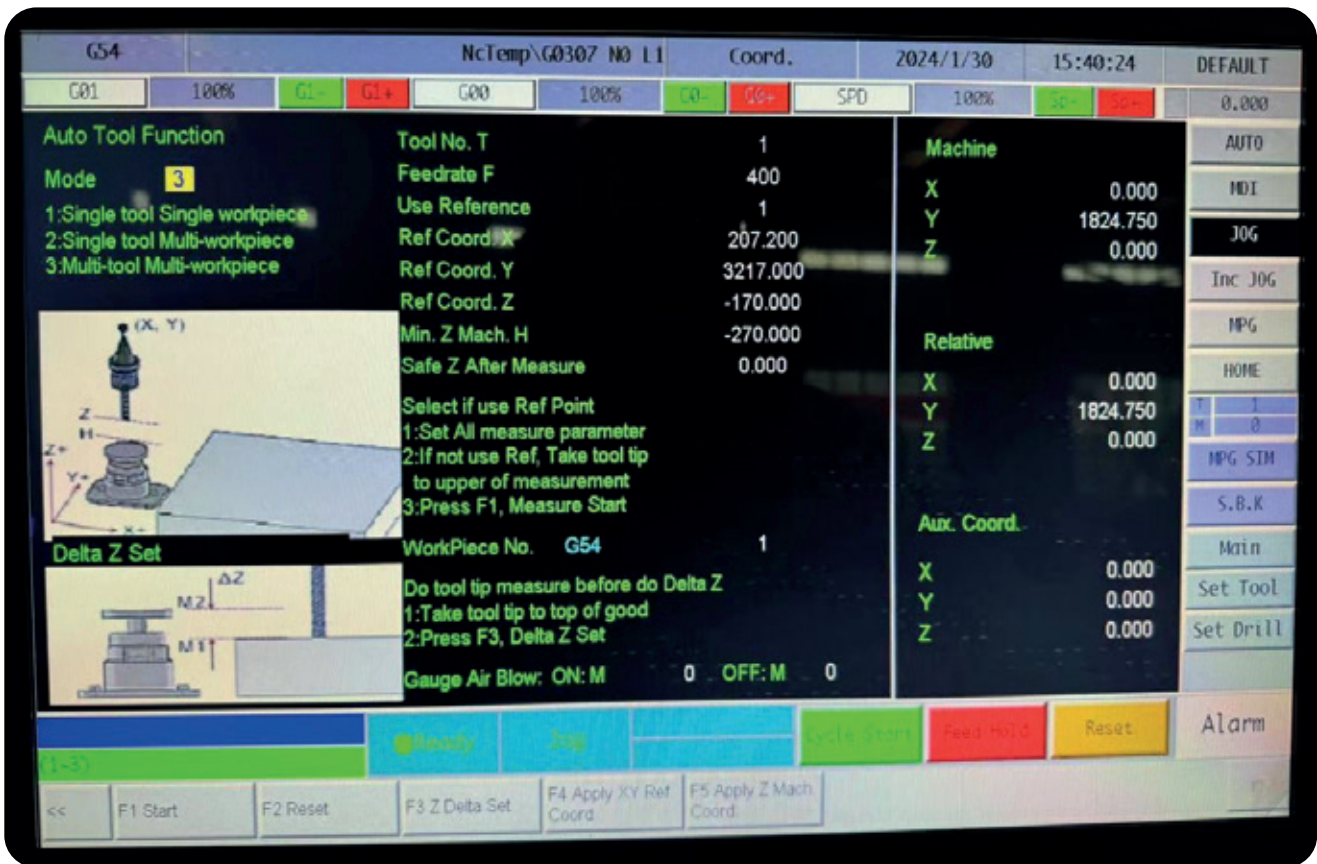
1. First, click "Spindle Brush" in the "Main Interface" to raise the spindle brush.

2. Move the tool head to the position on the material surface where processing needs to begin.

3. Open F3 Offset/Setting → F1 workpiece coordinate system, use the keyboard to input and use the direction keys [↑] [↓] [←] [→] Move the cursor to the G54 coordinate X axis or click the mouse to select 「Workpiece Coordinate System」 Click 「F1 Mechanical Coordinate Teaching」, and select 「OK」. The X-axis workpiece origin is set Move the cursor to the G54 coordinate Y axis and perform the same operation to set the Y-axis workpiece origin. (The Z-axis value in the screen is for debugging and cannot be used as a reference).



Finally, after 「F3 Offset/Setting」clicks 「F3 Automatic Tool Setting」and then clicks 「F3 Z-axis drop setting」 the Z-axis workpiece coordinate origin setting is completed. (The Z-axis value in the screen is for debugging and cannot be used as a reference).



9. Basic processing procedures

Boot interface

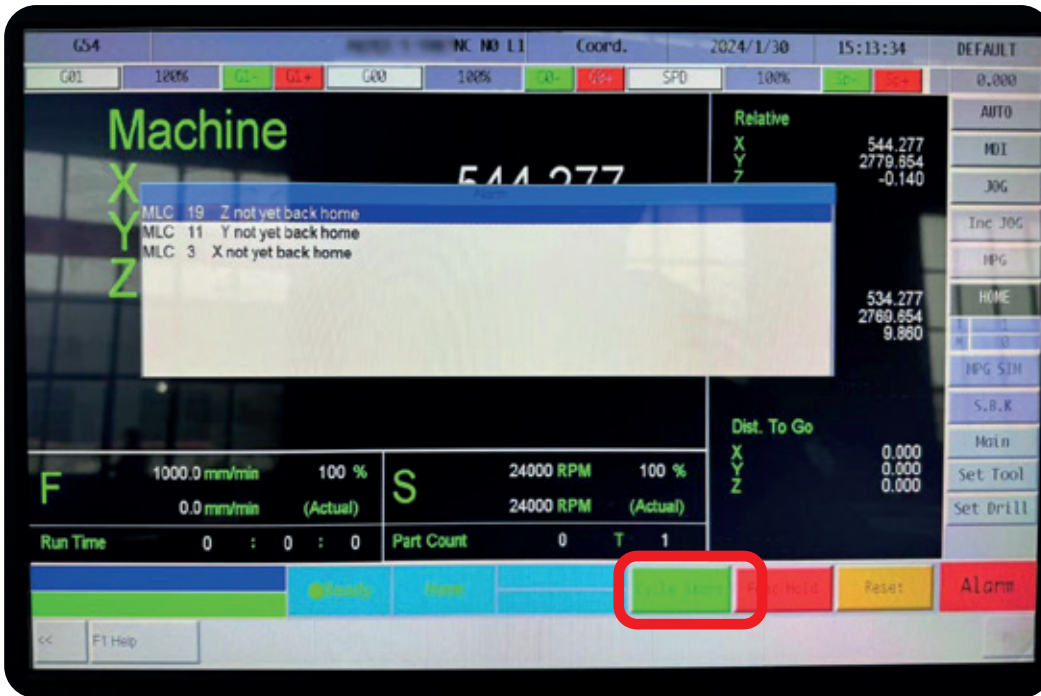


Press F1 to turn off the alarm. In HOME mode, click Cycle Start. Each axis of the machine will automatically return to the mechanical origin, and the machine tool will immediately start the zero return operation. After the zero return is completed, the processing operation can be carried out.

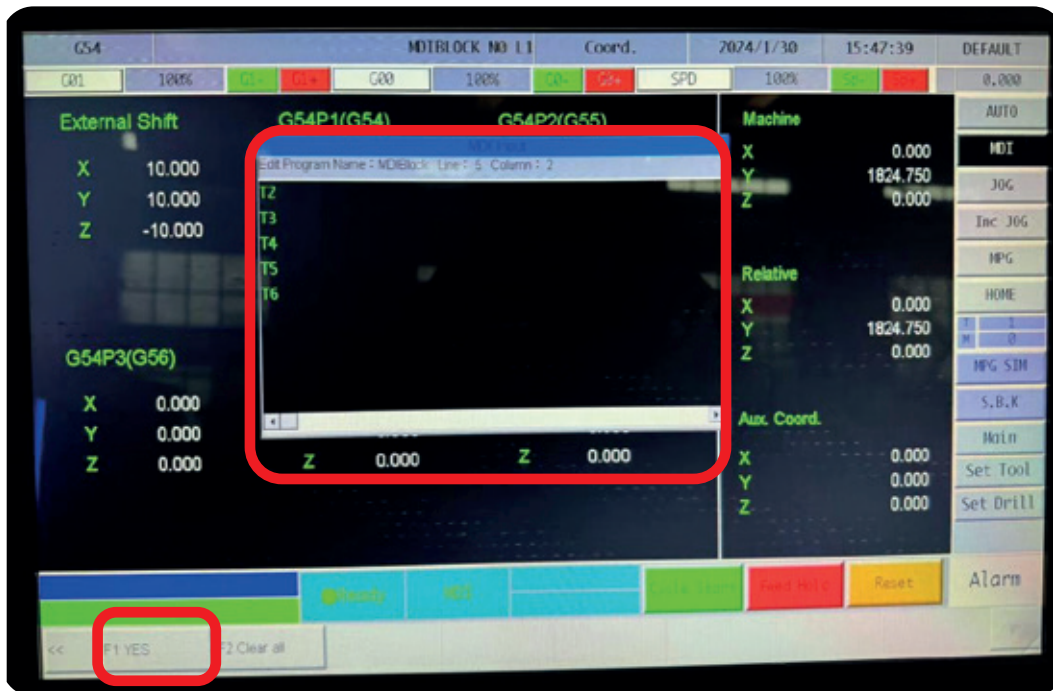
- * Every time you turn on the machine, you must press the confirmation button to return to the origin, and wait for each axis of the machine to return to the mechanical origin, otherwise the limiter will be ineffective. If it does not return to the origin, the machine will continue to move beyond the maximum stroke, causing safety accidents such as tool breakage or bed damage.

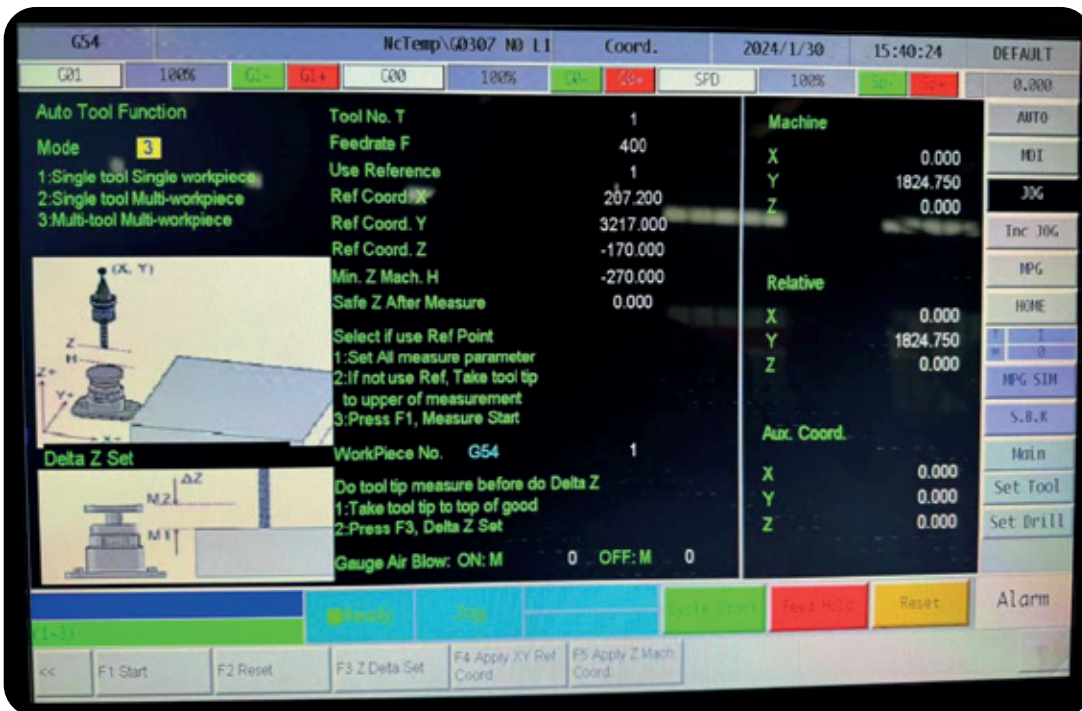
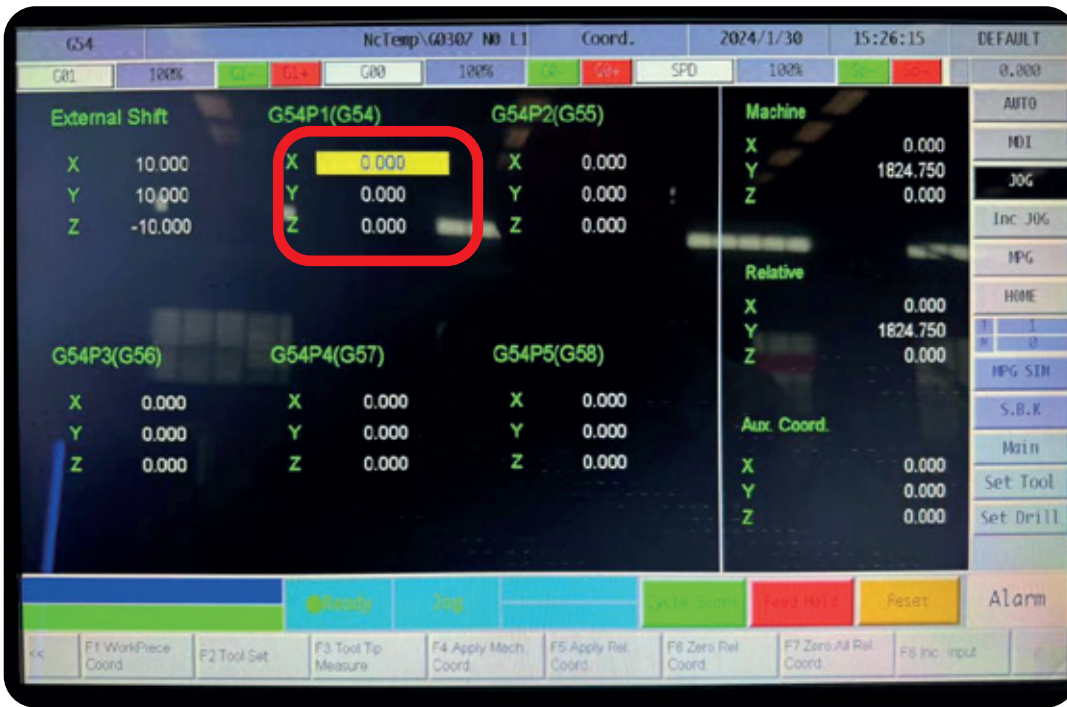
Specific steps

1. Before starting the machine, return all axes to zero.

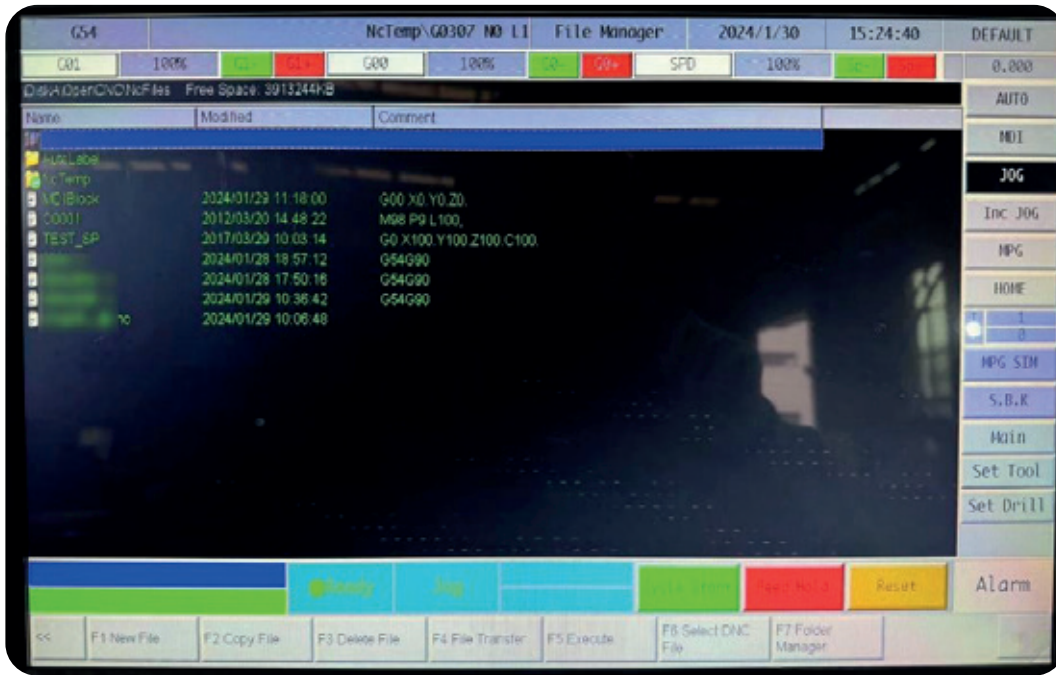


2. Perform tool change/tool setting and set the workpiece origin.





3. Insert the U disk and click in sequence: F2 program editing → F8 file management → F4 file transfer → F1 file input, click on the file you want to use → **click copy**, press "ESC" to return after completion, check the file location (copy in the root directory , otherwise the file will not be read).

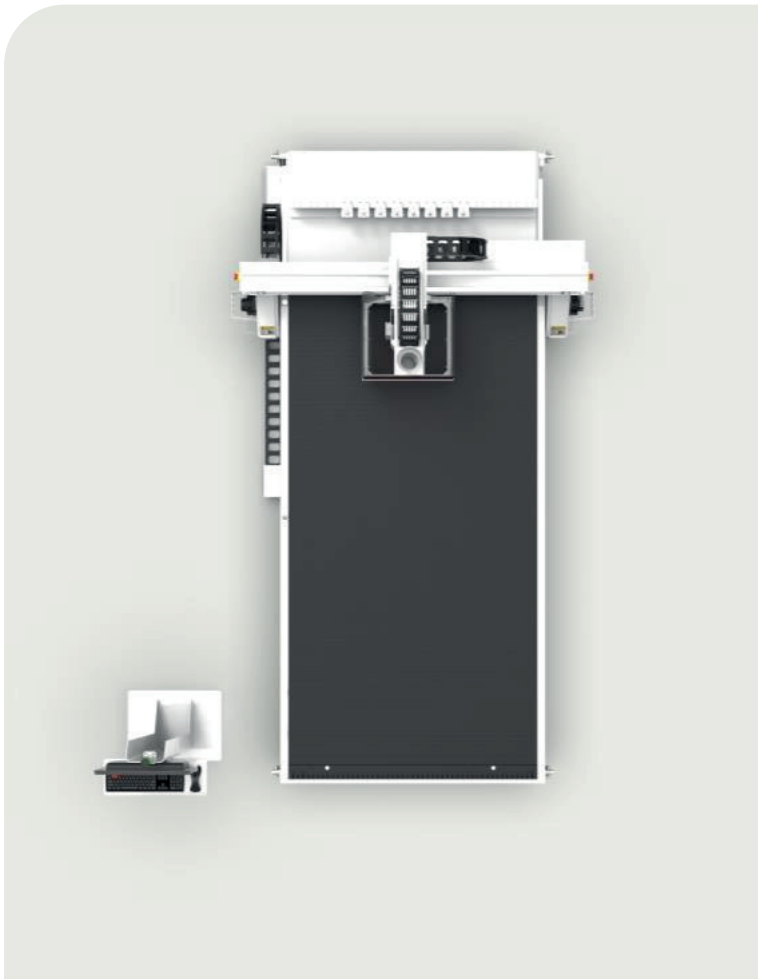


4. After double-clicking “ESC” to return to the main page, click Cycle Start to run the processing file.

* If there are any uncertainties, please use the handwheel guidance mode. If you find a problem, press the emergency stop button and the machine can stop at any time.

The above are the basic operating instructions for processing. If you need to use functions not introduced in this manual or modify some parameters in actual use, please forgive me. When you need to use functions not introduced in this manual or modify parameters, please be cautious according to the actual situation. Operation, or operation under the guidance of technical engineers. If you have any questions or suggestions, please contact us in time.

10. Machine preview



* This picture is a 3D model, which does not include all buttons, pipelines, dust holders, etc. Please refer to the actual machine.





* This picture is a 3D model, which does not include all buttons, pipelines, dust holders, etc. Please refer to the actual machine.

11. Equipment maintenance and upkeep

11.1. Maintenance

- 1) If you do not understand the machine or electrical appliances or do not have authorization, please do not make any changes, otherwise, it may cause malfunction or damage.
- 2) Please turn off the power first during maintenance. If live inspection is required, professional electricians must perform it.
- 3) Regularly check whether the emergency stop button is normal.
- 4) Please repair and replace parts in compliance with the specifications in the technical documentation.
- 5) The heat dissipation 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.
- 6) Frequently monitor the power supply voltage of the CNC system.
- 7) 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 sealed for a long time. The purchased machine tools should be put into production as soon as possible. If the CNC machine tools are idle for too long, the electronic components will be damp. Accelerate the degradation or damage of their technical performance. Therefore, when the machining center is idle for a long time, the CNC system should also be regularly maintained.

11.2. Lubrication and maintenance

- 1) The lubrication cycle depends on the working environment and machine working hours. Generally, the debris should be cleaned up after getting 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.
- 2) The lubricating oil of the ball screw's cutter screw should be lubricated once a week.
- 3) Spindle lubrication, refuel once a week.
- 4) Choose lubricant. The butter should not be too thick. The lubricating oil should not be too thick or volatile.
- 5) Lubrication part: X and Y-axis racks and slide rail sliders. Z-axis screw, track slider.
- 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 the three axes Break in.

11.3. Other maintenance

- 1) The vacuum pump suction filter needs to be cleaned daily to prevent debris from entering the vacuum pump.
- 2) The vacuum pump outlet filter needs to be cleaned once a week.
- 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.
- 4) Clean the electrical box with an air gun once a week to ensure that the electrical components are not disturbed by dust.
- 5) The mechanical sliding shaft part should always be kept smooth, with no sawdust or dust impeding its operation.
- 6) The cooler filter should be cleaned daily to avoid reducing the cooling effect.
- 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.



More information
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(786) 400-0910

