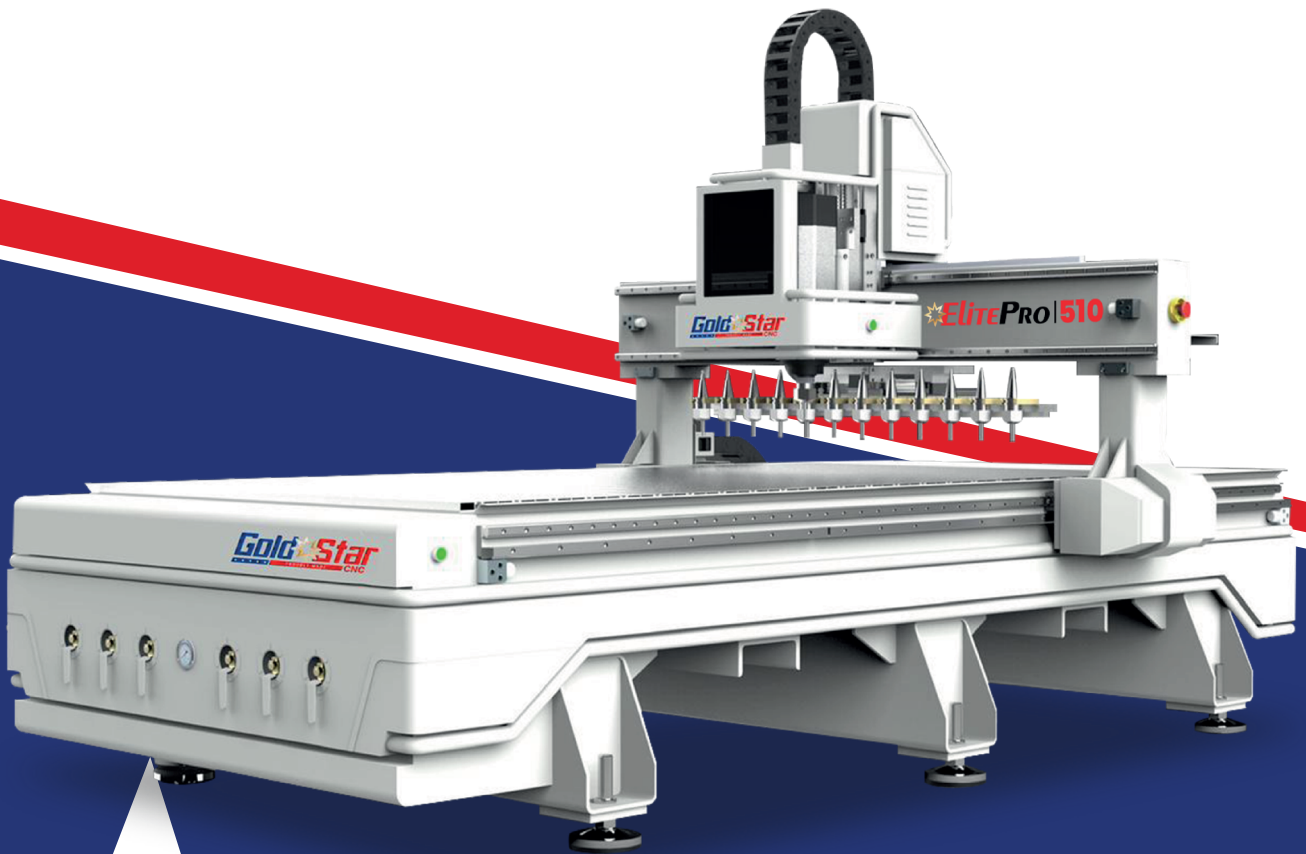




ELITE PRO 510

PRODUCT USER MANUAL



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Preface

Thank you for purchasing the products of Goldstar CNC. 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.

1.	Delivery of the machine	5
2.	Machine overview	7
3.	About the machine identification	8
4.	Important safety instructions	9
5.	Installation Notes.....	11
5.1.	Vacuum pump installation.....	11
5.2.	Dust collector installation.....	12
5.3.	Power and air supply installation.....	13
5.3.1.	Power supply.....	13
5.3.2.	Air source	14
5.4.	Installation of other accessories.....	15
6.	Preparation and operating instructions before machine operation	16
6.1.	Check air source	16
6.2.	Check automatic lubrication	17
6.3.	Power on.....	18
6.4.	Material fixation.....	20
7.	Operating system description.....	21
7.1.	Main screen introduction	23
7.2.	Boot interface.....	25
7.3.	F1 Operator panel	26
7.3.1.	Processing panels.....	28
7.3.2.	Move bank number	29
7.3.3.	Work order selection	31
7.3.4.	Status reset	33
7.3.5.	Breakpoint regression	33
7.3.6.	Clear the list.....	34
7.4.	F2 Program editing	35
7.4.1.	Load and execute processing.....	36
7.4.2.	Deleting rows	36
7.4.3.	Graphical auxiliary input.....	36
7.4.4.	File management.....	38
7.5.	F3 Offset/setting.....	46
7.5.1.	Workpiece coordinate system	47
7.5.2.	Tool settings.....	53
7.5.3.	Automatic tool setting	56
7.5.4.	Relative coordinate clearing.....	57
7.5.5.	Clear relative coordinates.....	57
7.6.	F4 Processing monitoring	58
7.6.1.	Screen description.....	59
7.6.2.	Load program editor	64
7.6.3.	Graphical simulation display	64
7.6.4.	MDI input	65
7.6.5.	Processing information/settings.....	66

7.6.6.	Wear setting	66
7.6.7.	Processing record form	67
7.6.8.	Clear accumulated time.....	68
7.7.	F5 Maintenance	69
7.7.1.	Alarm display.....	69
7.7.2.	Network settings	70
7.7.3.	Rapid diagnosis	73
7.7.4.	Extended parameter bits.....	75
7.7.5.	System settings.....	76
7.7.6.	Language settings	78
8.	Tool change/tool setting	79
8.1.	How to use the locking tool holder.....	79
8.2.	Manual tool change	80
8.3.	Use software to set/change tools.....	81
8.4.	Set the workpiece origin.....	86
9.	Basic processing procedures.....	88
10.	Machine preview	94
11.	Maintenance and maintenance of equipment.....	95
11.1.	Maintenance.....	95
11.2.	Lubrication and maintenance	96
11.3.	Other maintenance	97

1. Delivery of the machine

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

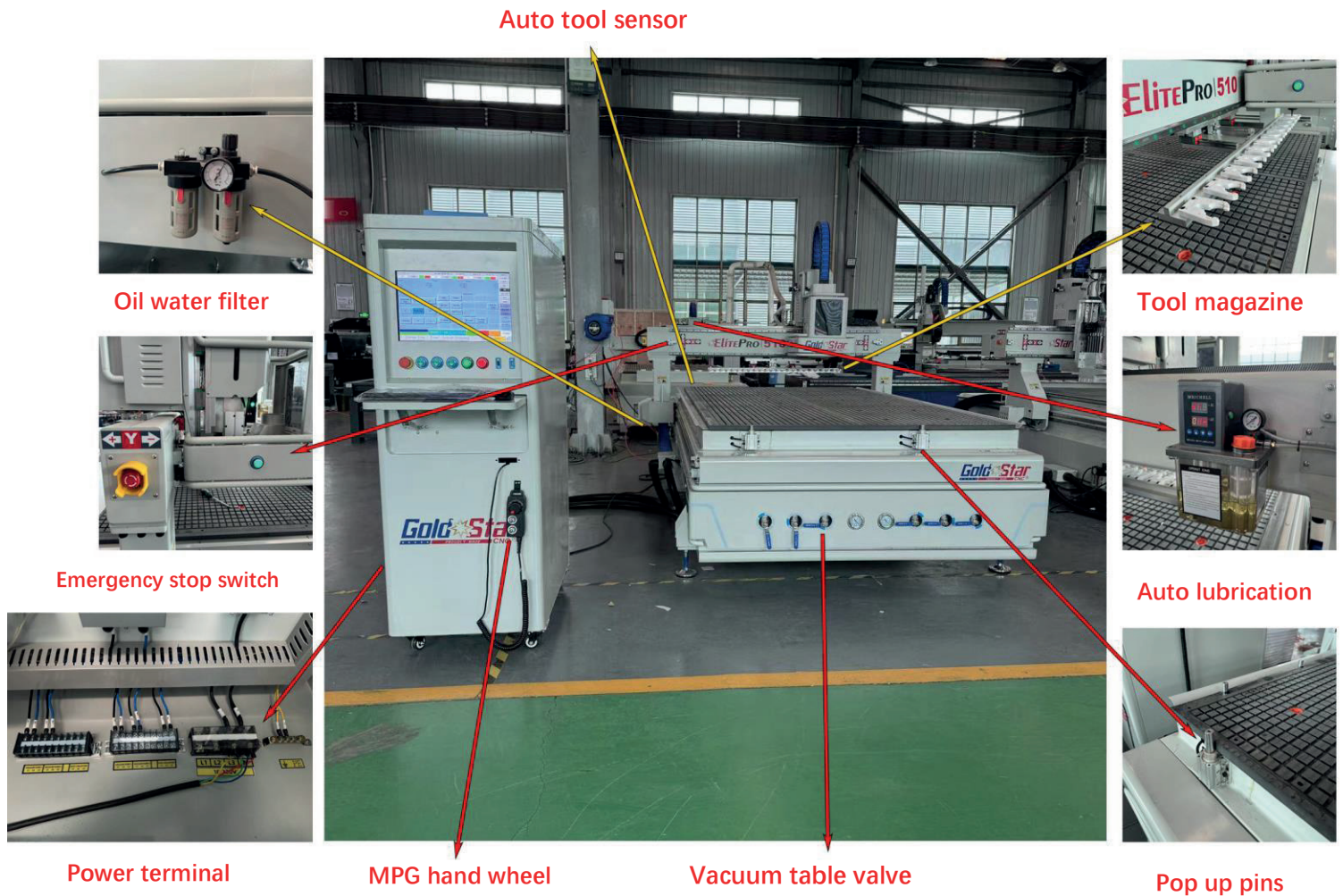
For the convenience of loading and unloading, please prepare a forklift before unloading the machine (recommended to be 3 tons or above).

*** 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 must be flat, clean, solid and free of vibrations.
- 4) There must be no electromagnetic interference nearby.
- 5) The operating ambient temperature is 23°F ~95°F. When the ambient temperature exceeds 95°F, 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



* 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   
- Emergency stop switch 
- Please wear goggles when working 
- 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 assembling this machine, please carefully read the operating and safety instructions provided below. Ignoring these instructions may result in electrical shocks, fires, and other serious accidents.

We advise against modifying the factory settings of this machine on your own.

- 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 380V/220V. 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.

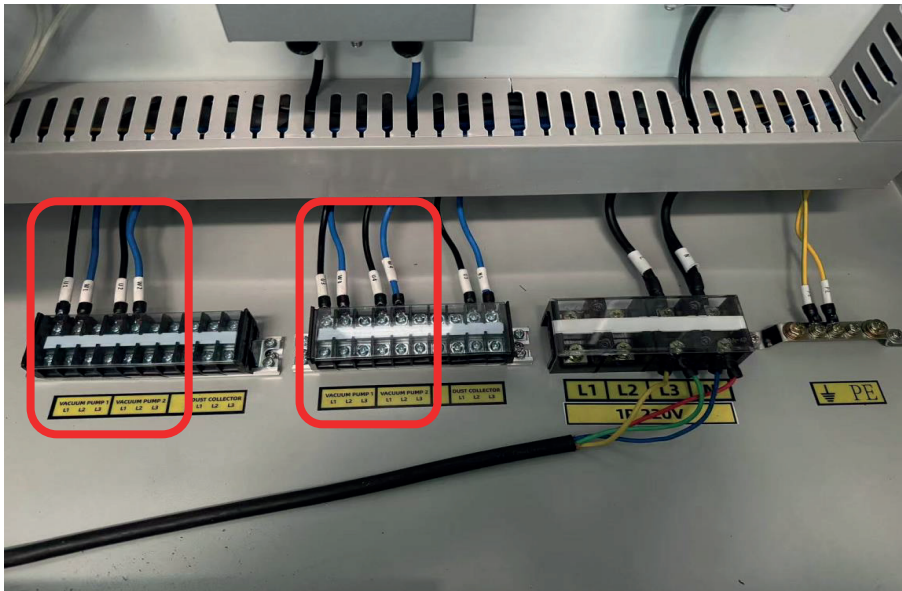
Please cut off the power when not in use for a long time. There must be professional guidance when moving the machine.

- 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

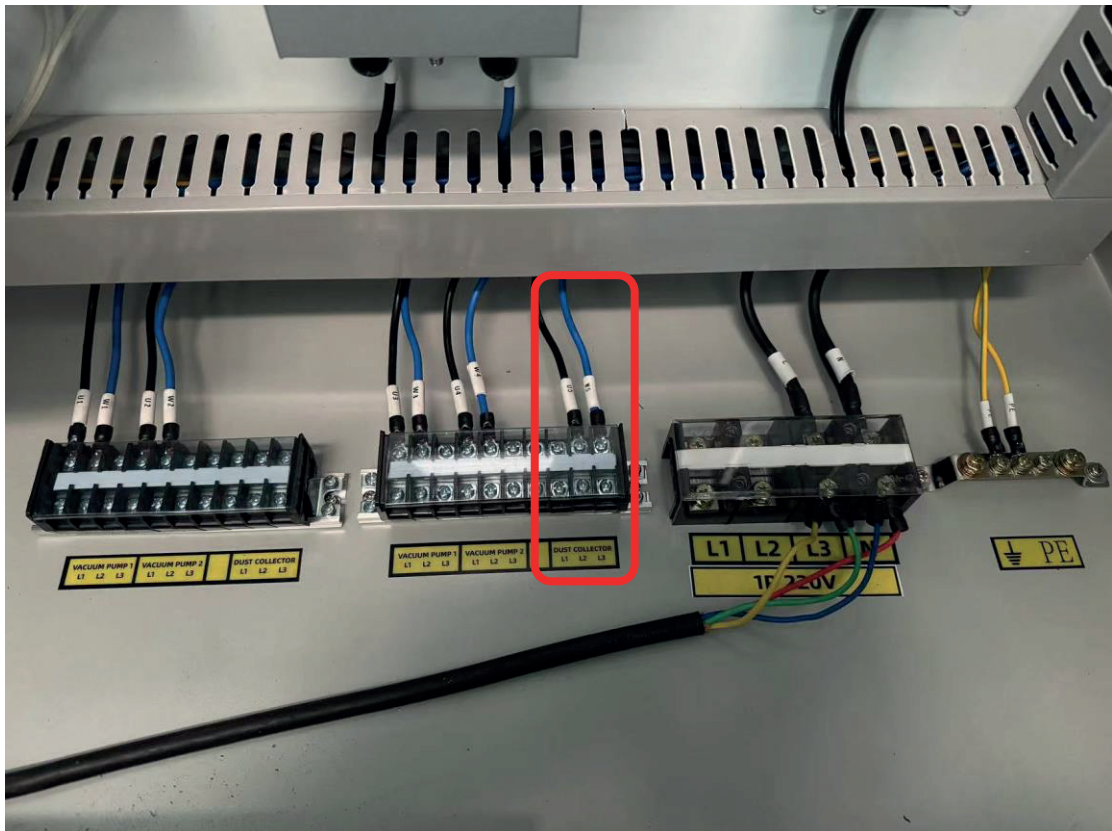
- ① After receiving the machine, take the vacuum pump out of the package and fix the steel wire tube at the air inlet of the filter with a tightening tool.
- ② Open the cover of the motor and connect it to the power supply, and connect the other end to the wiring of the vacuum pump controlled by the engraving machine. Refer to the figure below to connect the power supply (the voltage and terminals are subject to the actual machine).



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

5.2. Dust collector installation

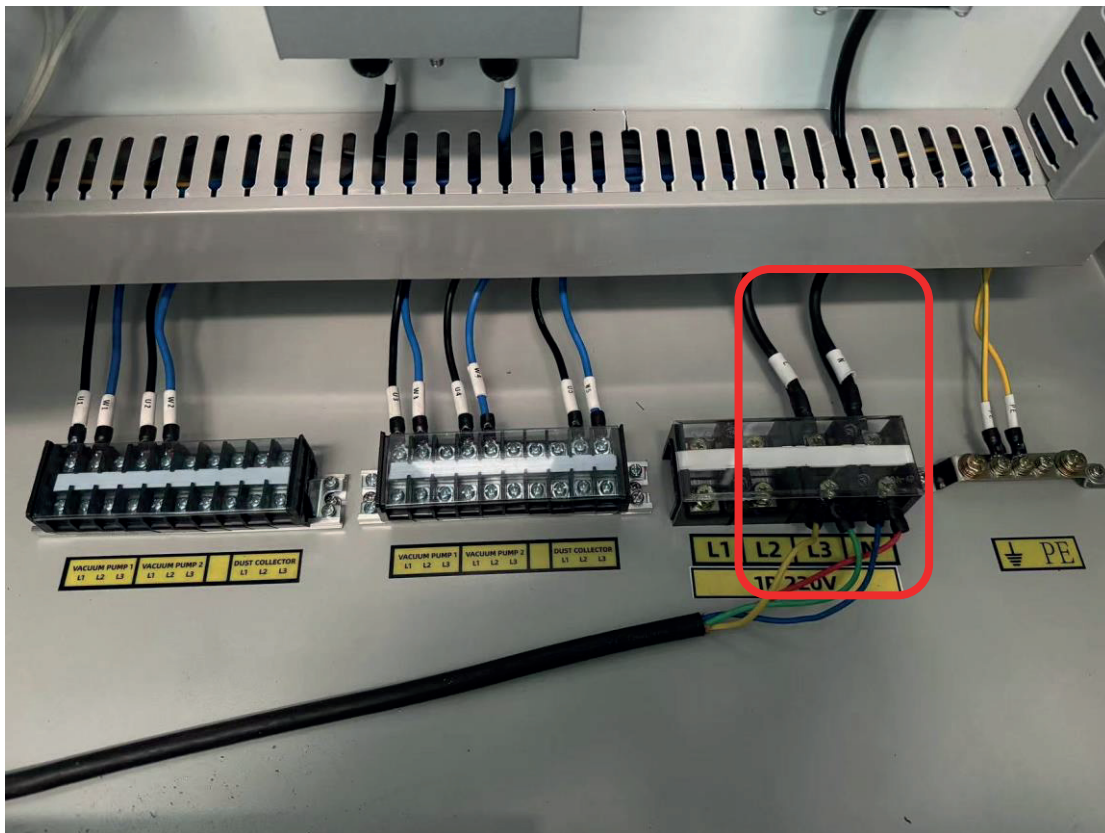
- ① Take the vacuum cleaner out of the package, install it according to the vacuum cleaner instructions, and place it stably.
- ② Connect the power supply to the vacuum cleaner, and connect one end of the power supply to the electrical box-vacuum cleaner connection. Refer to the figure below to connect 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 vacuum cleaner.



5.3. Power and air supply installation

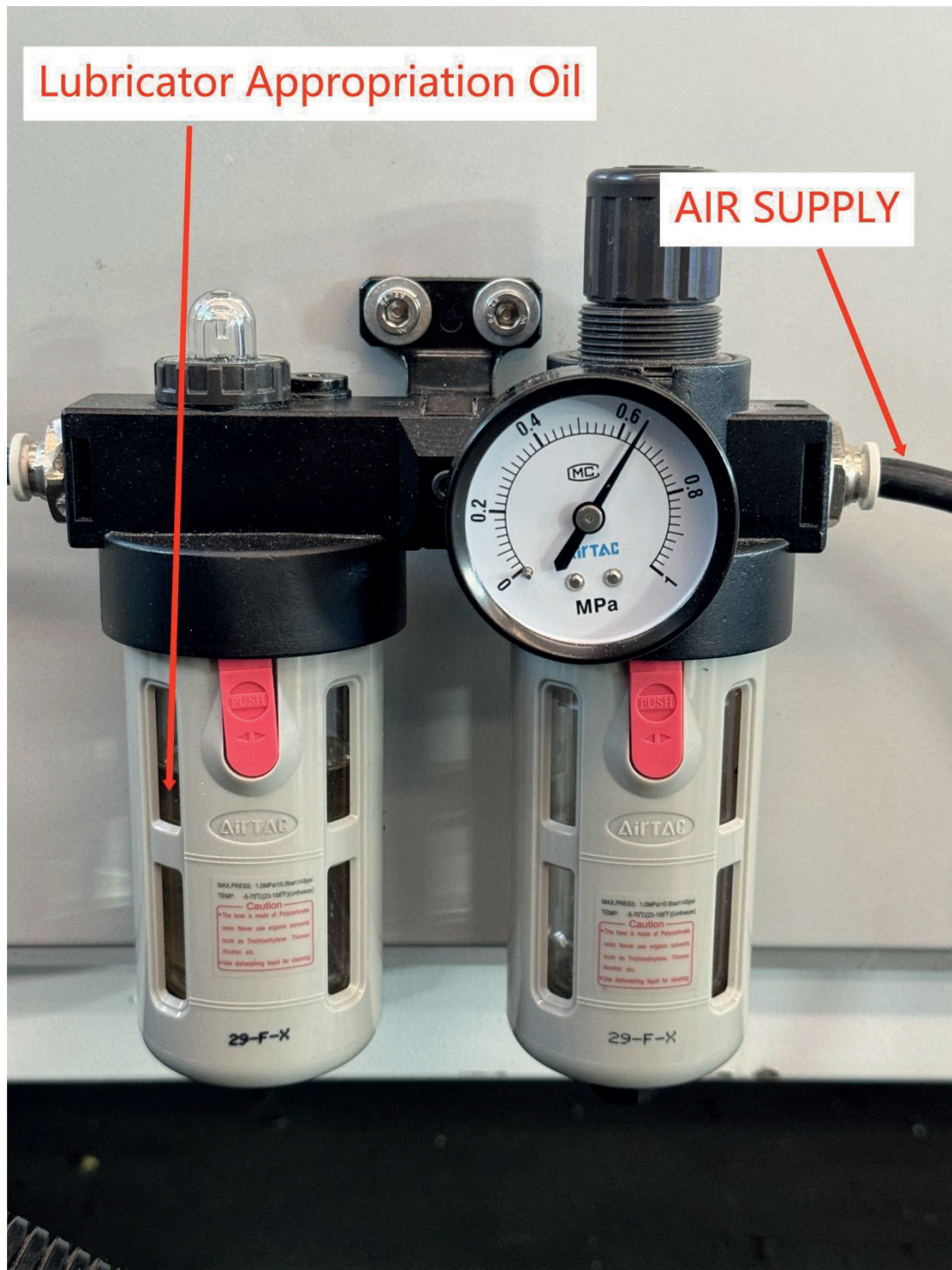
5.3.1. Power supply

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.



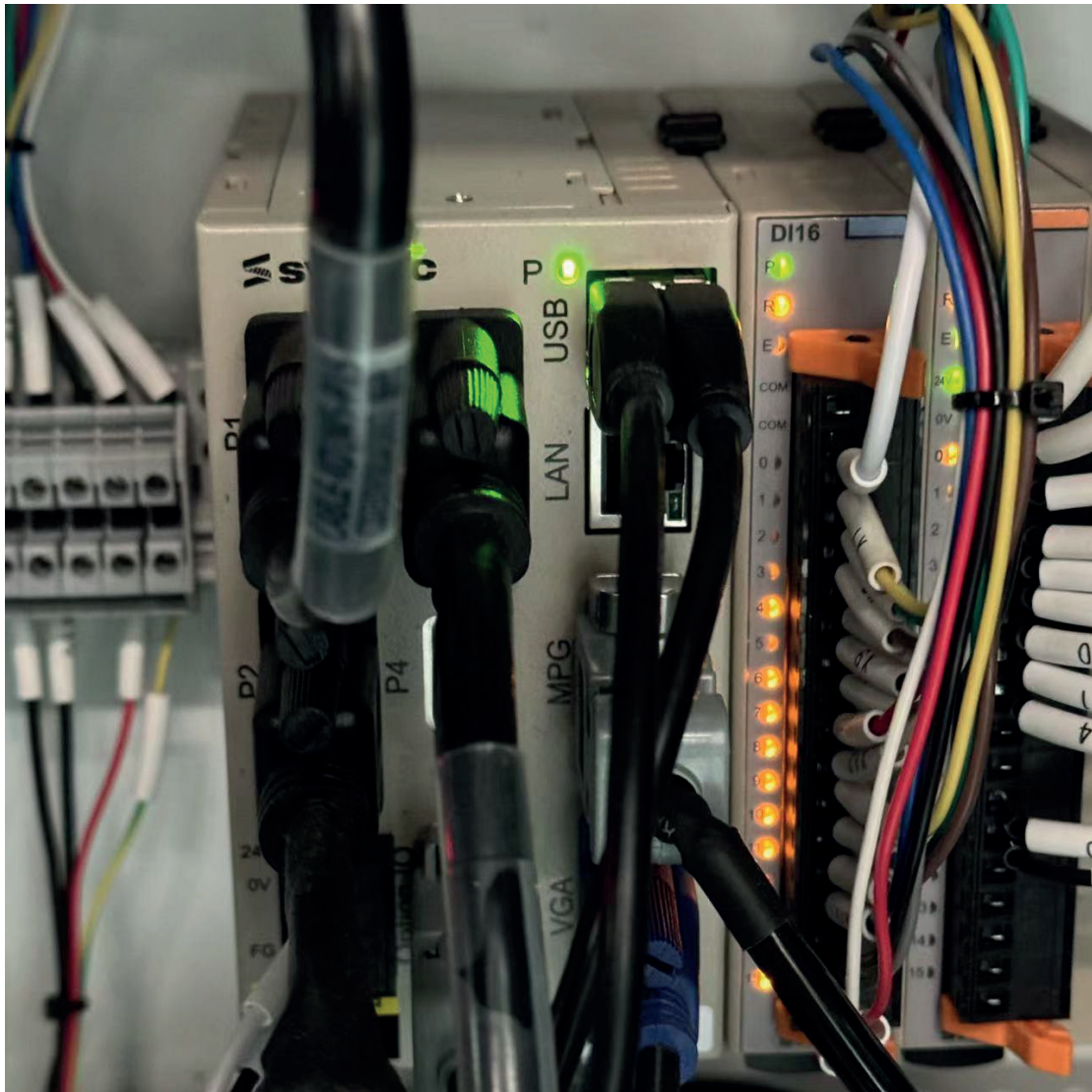
5.3.2. Air source

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 and whether the gaps are appropriate.



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 is too low or too high).



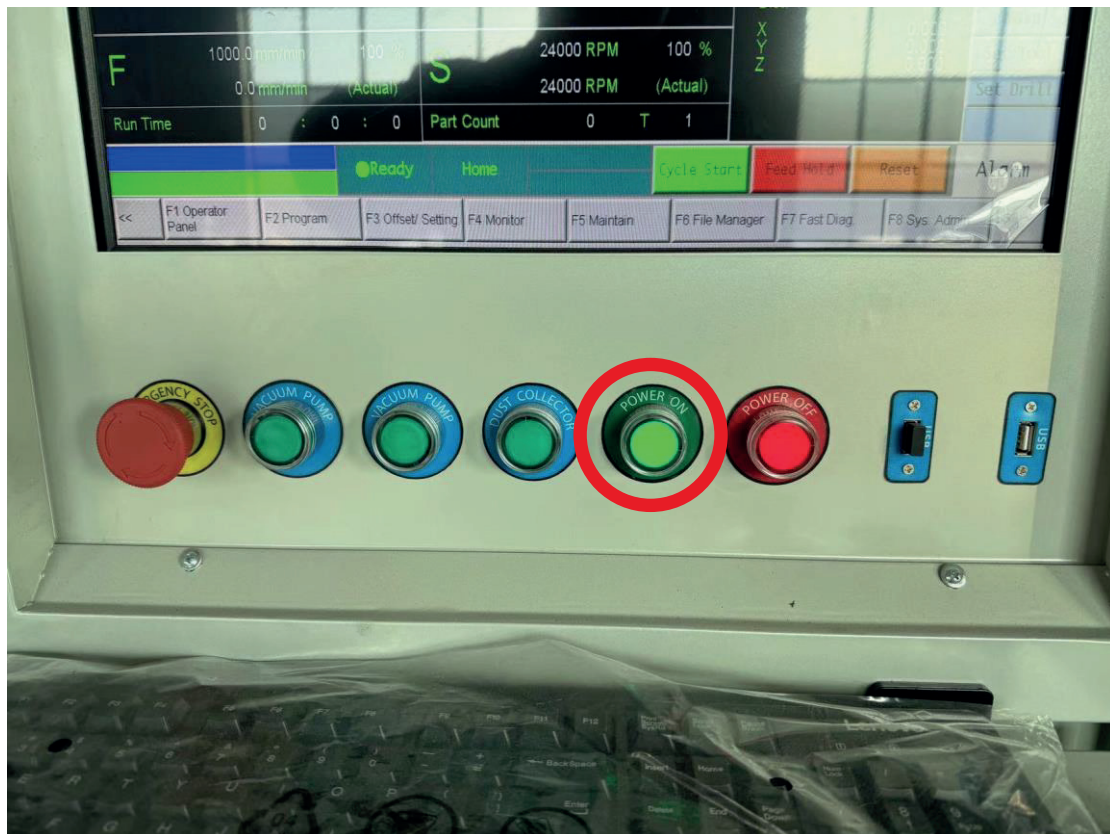
6.2. Check automatic lubrication

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 on the control chassis 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.

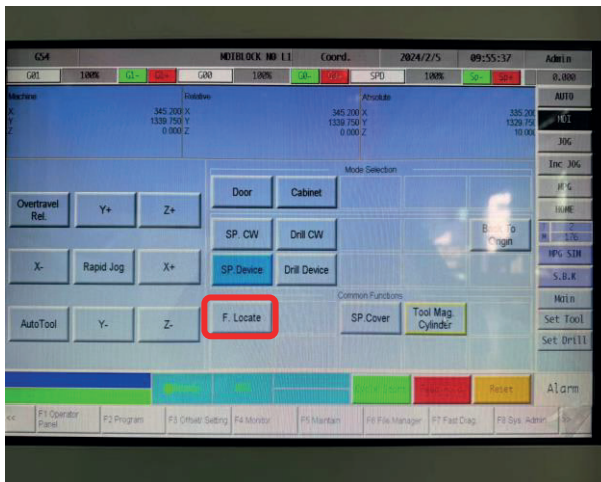


6.4. Material fixation

- 1) The vacuum table is divided into 6 areas. Each valve corresponds to a specific area of the work surface. Depending on the material selection, specific areas can be activated or deactivated accordingly. (No need to open when using T-slot).



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



7. Operating system description

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.

Due to the involvement of modified parameter adjustments, we only present here some common functions and basic machine operations to avoid malfunction caused by introducing too many functions and modifying factory-set parameters. However, these instructions are intended for real-world use.

We apologize for any functions not included in the manual or the need to modify certain parameters. If you need to use functions not presented in this manual or modify parameters, please use the steering wheel to carefully guide the operation according to the actual situation or do so under the guidance of a technical engineer. If you have any questions or suggestions, please contact us promptly.

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 workpiece origin).

7.1. Main screen introduction



Screen section description :

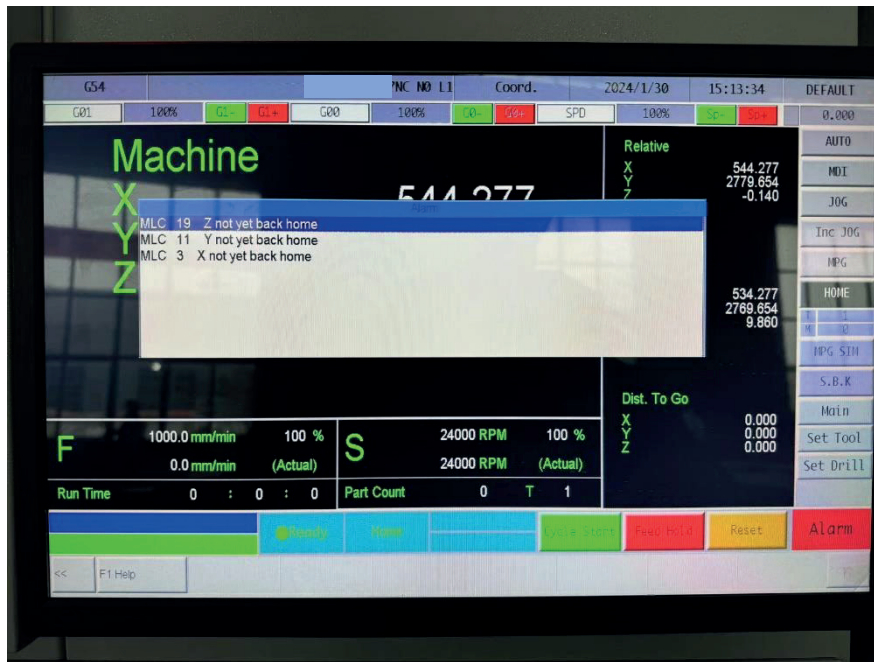
Serial number	Screen content	Description
1	Mode selection	<p>No matter how the screen is switched, the following information will always be on the background main screen and can be observed and operated at any time.</p> <ul style="list-style-type: none"> · AUTO, Switch to automatic mode. · MDI, Switch 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 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. 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 processing sequence and work stations.
 - Operator login and logout.
 - WorkingList form.
 - Graphic simulation viewing.
- Among them, the preset station 1 is G54 and 2 is G55.
- The processing status is preset as unprocessed, open, and processed.

The information displayed by Workinglist 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: 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 process 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

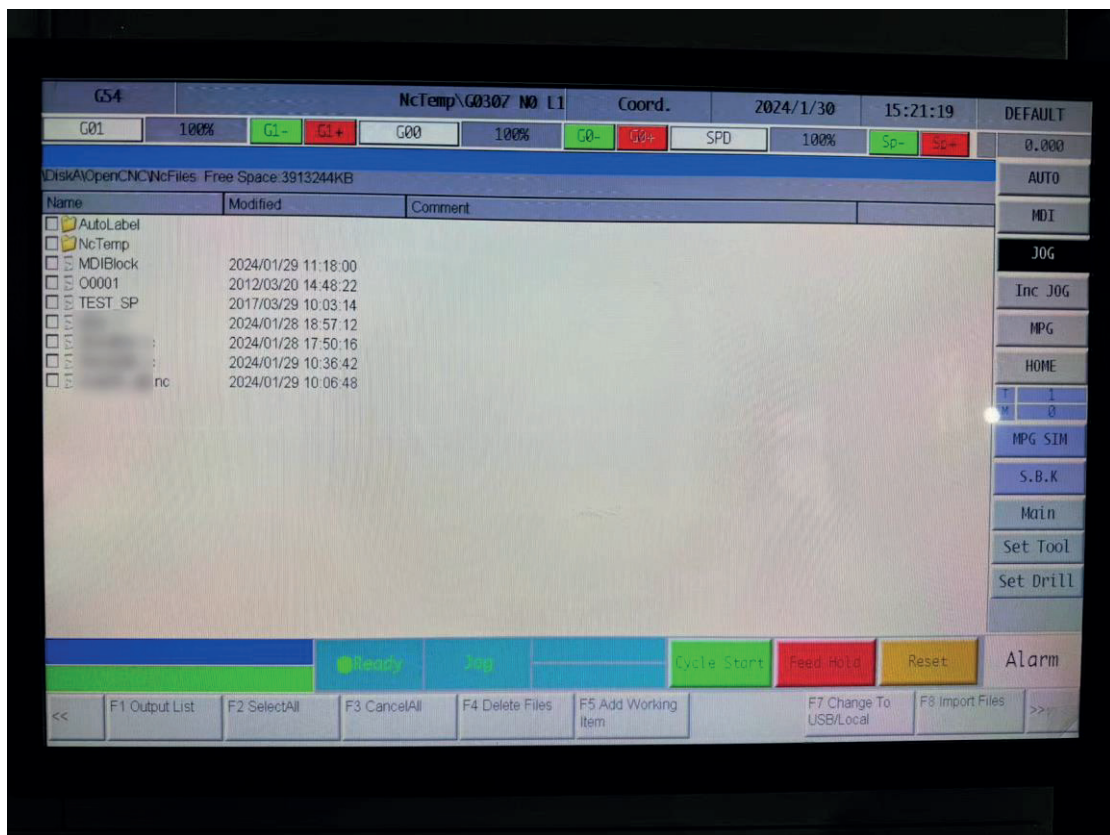
Path: **F1 Operator Panel**→**F2 Move Line Number**→**F1 Move Up**

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 work list 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 the file 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 the file 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 system and 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. Status reset

Path: **F1 operator panel → F4 status reset.**

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

7.3.5. Breakpoint 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 editing



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. Deleting rows

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.

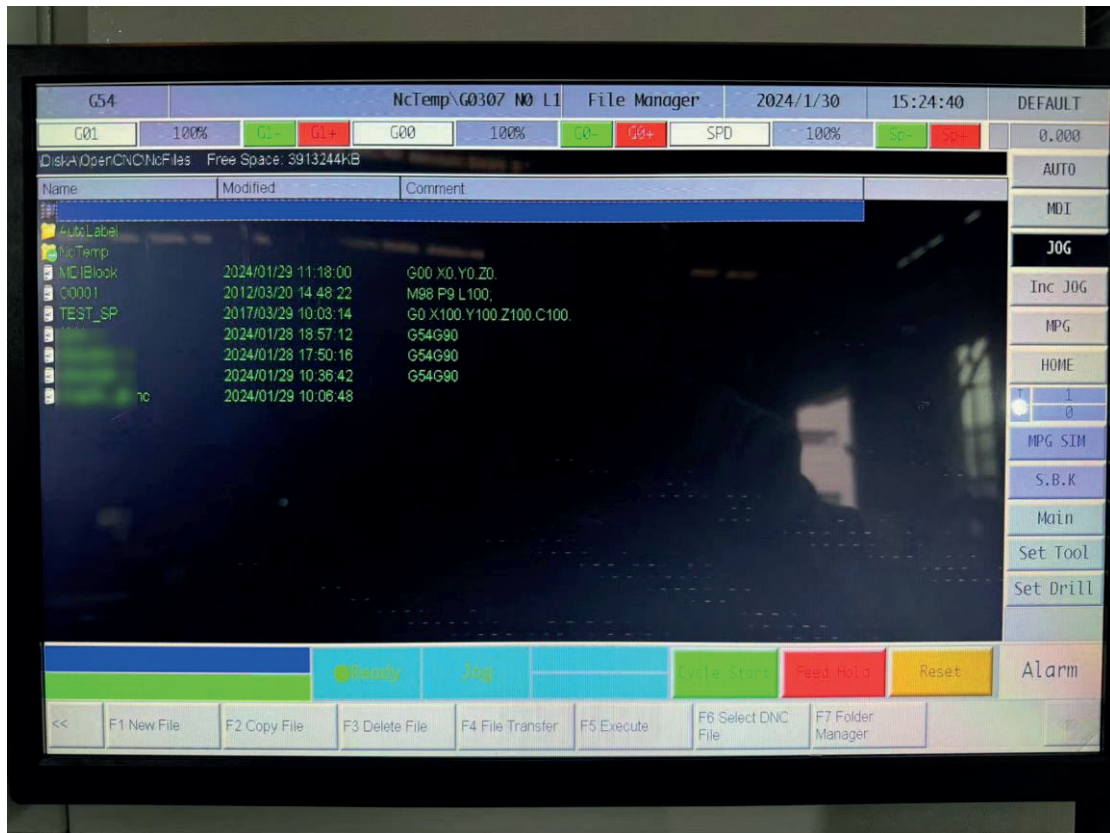
Edit loop

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:

The default file format is without an extension. If you want to create a file with an extension, such as *.NC, just enter *.NC when setting the file name.

The length of the file name (including file extension) cannot exceed 31 characters.

Path: F2 program editing → F8 file management → F2 copy file

Description: This button can copy the file currently selected by the cursor.

Instructions

- ① Use the direction keys [↑] [↓] to select the file to be copied
- ② After selecting, click **「Copy File」**
- ③ In the pop-up dialog window, enter the file name of the new file

* Notice:

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

Delete Files

Path: F2 program editing → F8 file management → F3 delete files

Description: This button can delete the file currently selected by the cursor.

Instructions

After clicking **「Delete File」** a file selection box will appear in front of all files on the **『File Management』** page. Use the arrow keys **【↑】 【↓】** to select the file you want to delete.

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.
 - Cancel selection: Cancel all marked files.
 - Delete files: delete all marked files.
 - Delete all files: Delete all files in the disk area.
- * **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 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 marked files and folders from external disk to internal disk.
- Select: Press this button to mark files. You can mark multiple files at the same time, or you can cancel marked files.
- Select all: Mark all files.
- Cancel selection: Cancel all marked files.
- Change disk drive: External disk can be changed.

Instructions

- ① After clicking 「**File Import**」 a file selection window will pop up.
- ② Default external disk is USB Disk.
- ③ If you want to change the file input source, click 「**Change Disk Drive**」 switch the cursor to the external disk option, use the direction keys **【←】** **【→】**, move the cursor to the external disk option where you want to input files, and type **【Enter】**, you can change the left block to the file structure of the external disk.
- ④ Use the direction 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 files to be imported, click 「**Copy**」 and all 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 restrictions

- ① Folders cannot be imported into subfolders of \DiskA\NcFile.
- ② If the entered folder item contains subfolders and you want to import \DiskA\NcFile, you will be prompted with "Subfolder detected. Please note that the contents of the subfolder will not be imported.

File output

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

file output

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

Screen description

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

- **USBdisk**
- **DiskA**
- **Network**
- **USBdisk2**

The lower left is the internal disk of the controller, where the processing files are currently stored.

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

Sub-function key description

- **Copy**: Export marked files and folders from internal disk to external disk.
- **Select**: Mark files, you can mark multiple files at the same time, or you can

cancel marked files.

- Select all: mark all files.
- Cancel selection: Cancel all marked files.
- Change disk drive: external disk can be changed.
- Switch focus to input and output: switch between internal disk and external disk.

Instructions

- ① After clicking 「**File Import**」 a file selection window will pop up.
- ② Default external disk is USBDisk.
- ③ If you want to change the file output address, click 「**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 external disk file structure.
- ④ Press 「**Switch focus to input and output**」 to switch the focus from the external disk to the internal disk, and the opposite is also true.
- ⑤ If you want to switch to the external disk folder, use the direction keys **【↑】** **【↓】**, move to the target folder, and type **【Enter】** .
- ⑥ Use the direction keys **【↑】** **【↓】** to select the file to be output in the internal disk.
- ⑦ Move to the file to be output, press 「Select」 or type "Space" to mark the file **【Space】** to mark the file.
- ⑧ After marking all files to be imported, click 「**Copy**」 and all marked files

and folders will be output 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」** key, 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 no G54~G59.10 is set in the NC program, the system defaults to G54.
- External coordinate offset: 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 pre-solving.

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

- Modifiable: ready or not ready.
- Unmodifiable: During processing and pre-solution, 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 position.
- 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 front 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 relative coordinate of the X-axis 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 Teaching]
- ⑤ Change the X-axis coordinate of G54 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 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 current X-axis auxiliary point 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 [Auxiliary Coordinate Teaching] .

- ⑤ Change the X-axis coordinate of G54 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 the entered instruction value).

Instructions

- ① Move the cursor to the workpiece coordinate system to be modified.
- ② Enter the value to be taught.
- ③ Click [Incremental 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

- ① The current X-axis coordinate of G54 is 5.000
- ② Move the cursor to the X-axis coordinate of G54.
- ③ Type 10.000.
- ④ Click [Incremental input]
- ⑤ Change the X-axis coordinate of G54 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 Type 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 type 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, and the tool length compensation of the line 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.

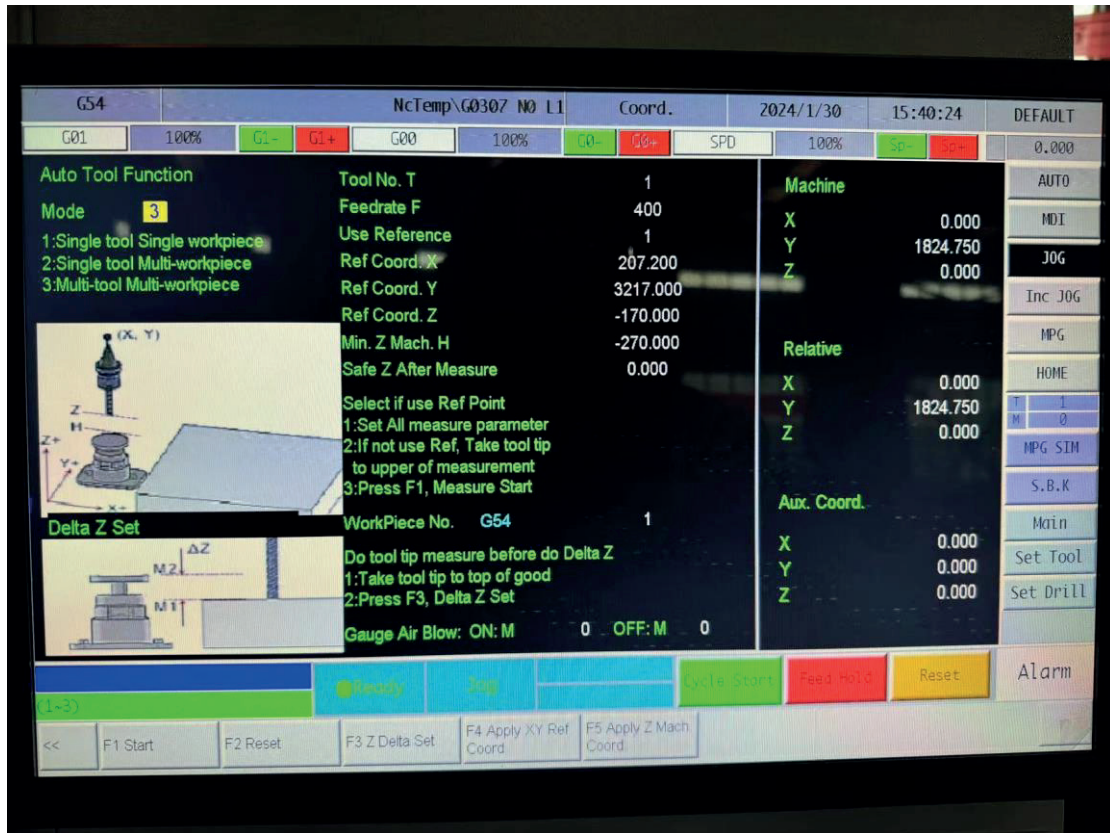
Tool number information

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

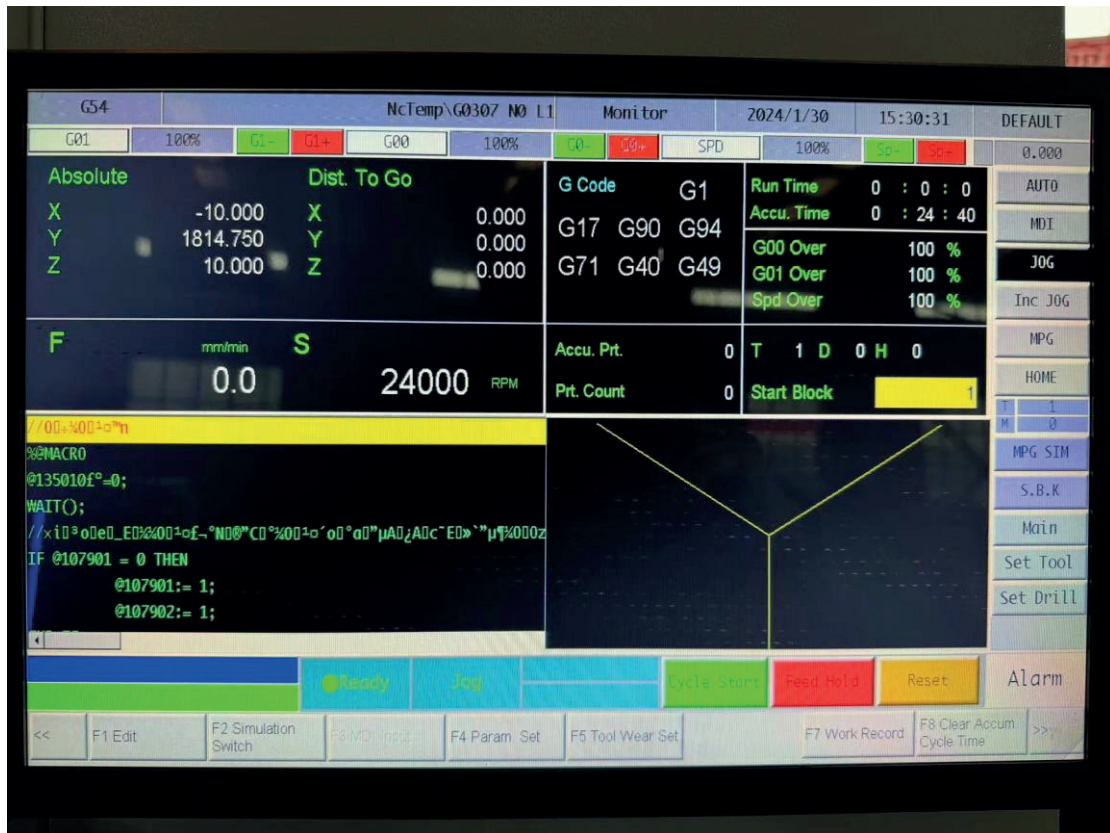
Path: F3 Offset/Setting→F7 Clear all relative coordinates

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

Description: This function key group provides 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.

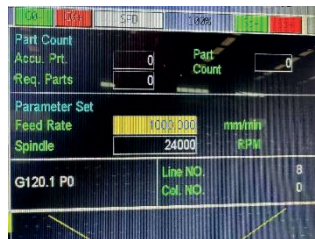
F3: MDI input

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

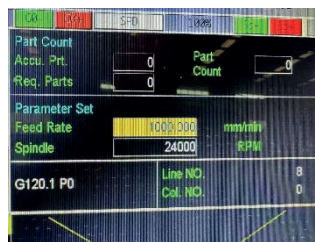
F4: Processing information settings

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

Switch screen one: breakpoints, processing parameters, number of workpieces



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

G Code ① G1	Run Time ② : 0 : 54
G17 G90 G94	Accu. Time ③ : 12 : 55
G71 G40 G49	G00 Over 100 %
	G01 Over ④ 100 %
	Spd Over 100 %
Accu. Prt. ⑤ 0	T 1 D C ⑧ 0
Prt. Count ⑥ 0	Start Block ⑦ 1

- 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 Cumulative processing

Current total processing time.

④ Magnification

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

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.

Number of workpieces

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

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.

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

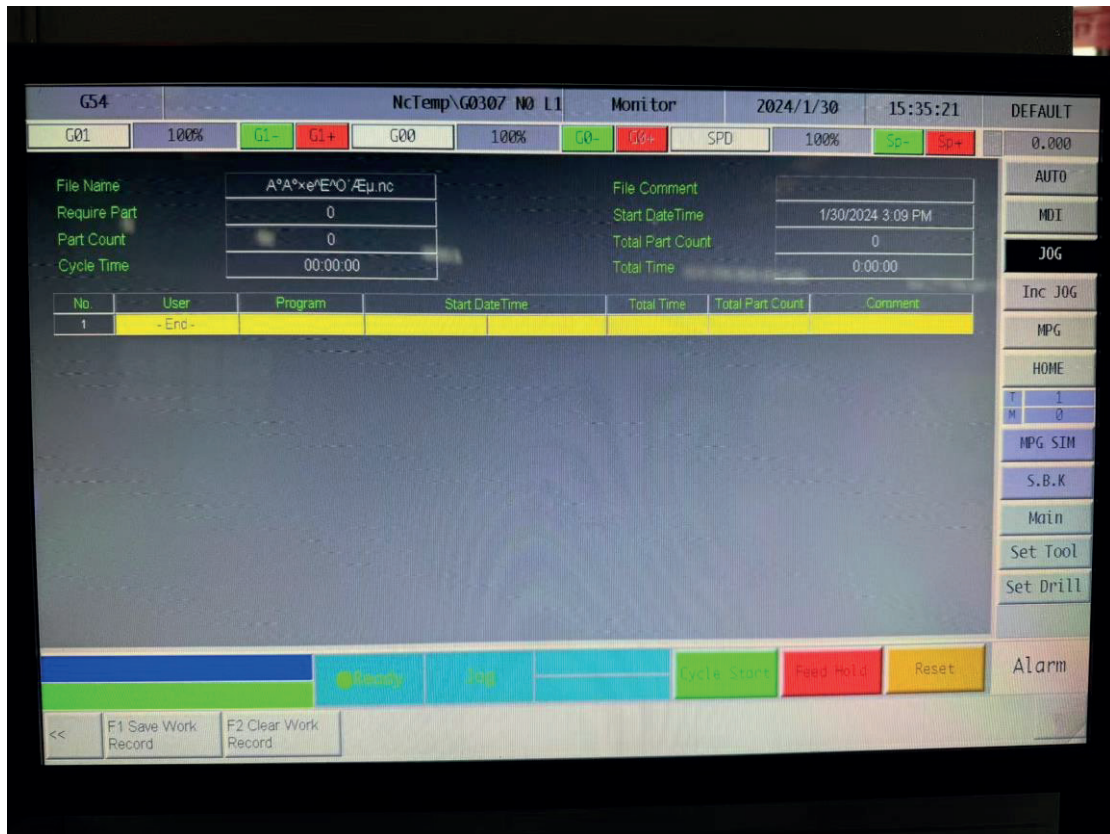
Wear: Small size adjustment of tool length.

* **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, 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.

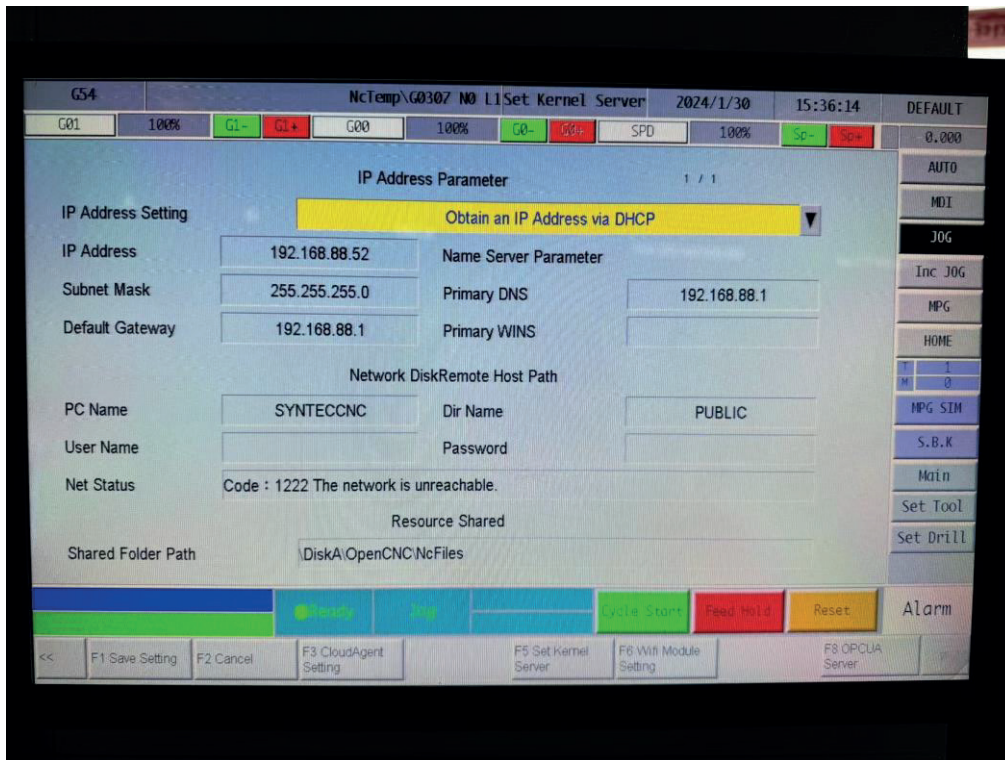
Save alert

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 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).

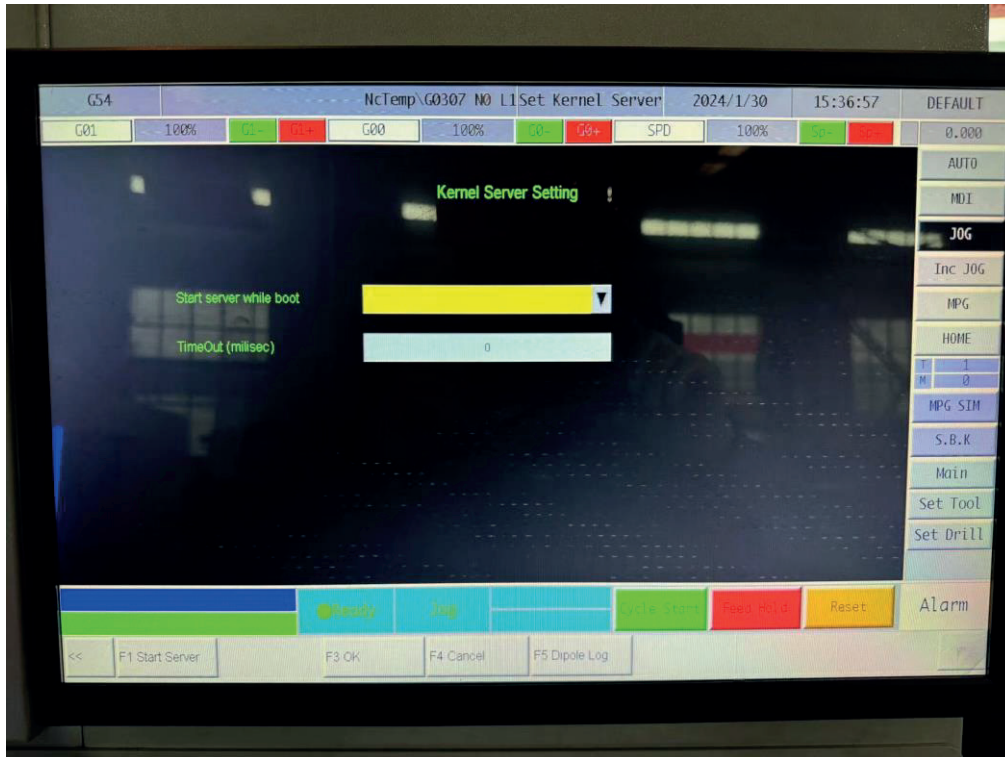
⑥ User name

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..

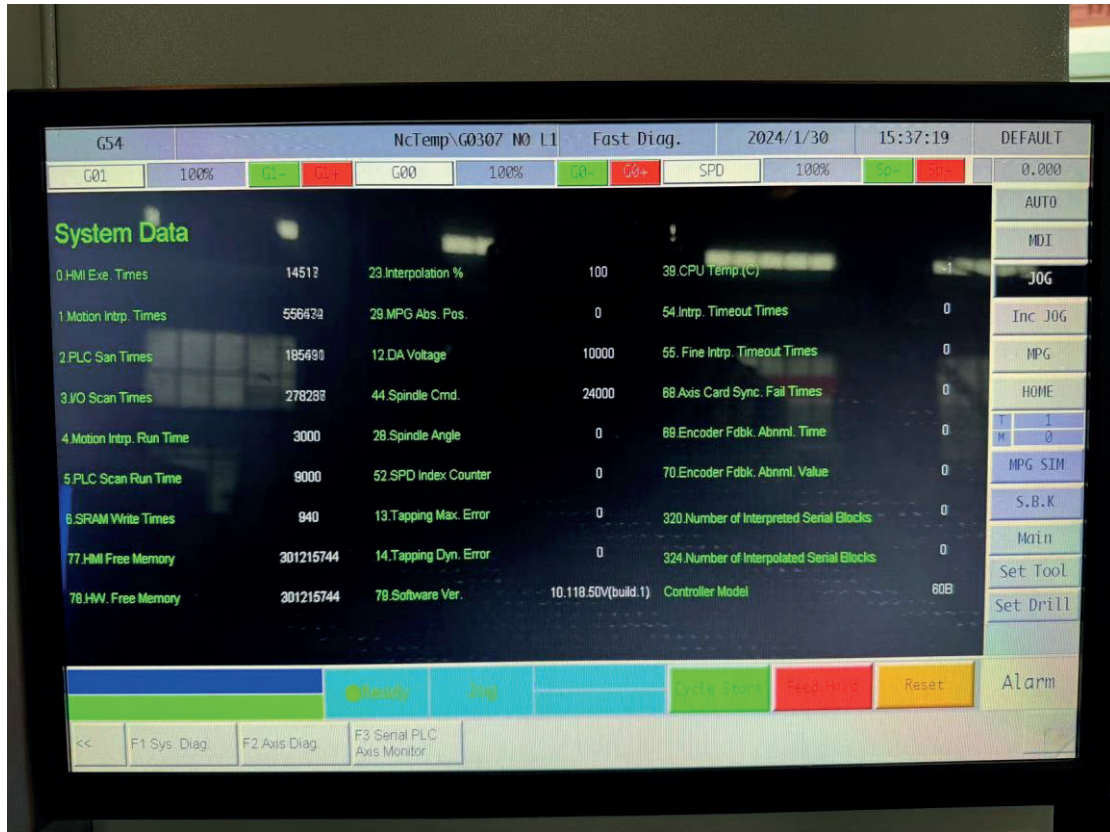
Start server

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

Server

Description: Start the core server immediately.

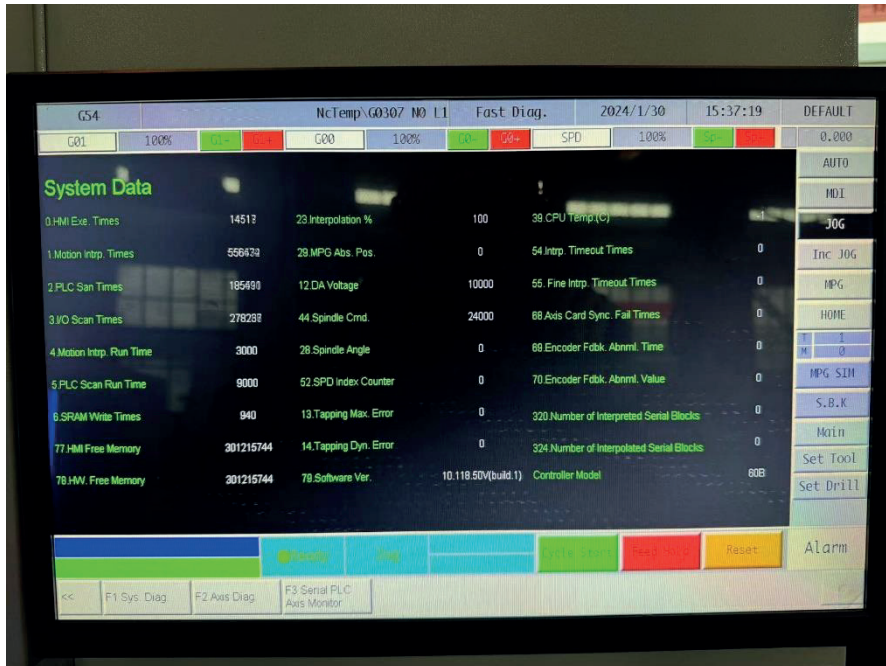
7.7.3. Rapid diagnosis



Path: **F5 Maintenance**→**F3 Quick Diagnosis**

Description: Display simple diagnostic information of the system.

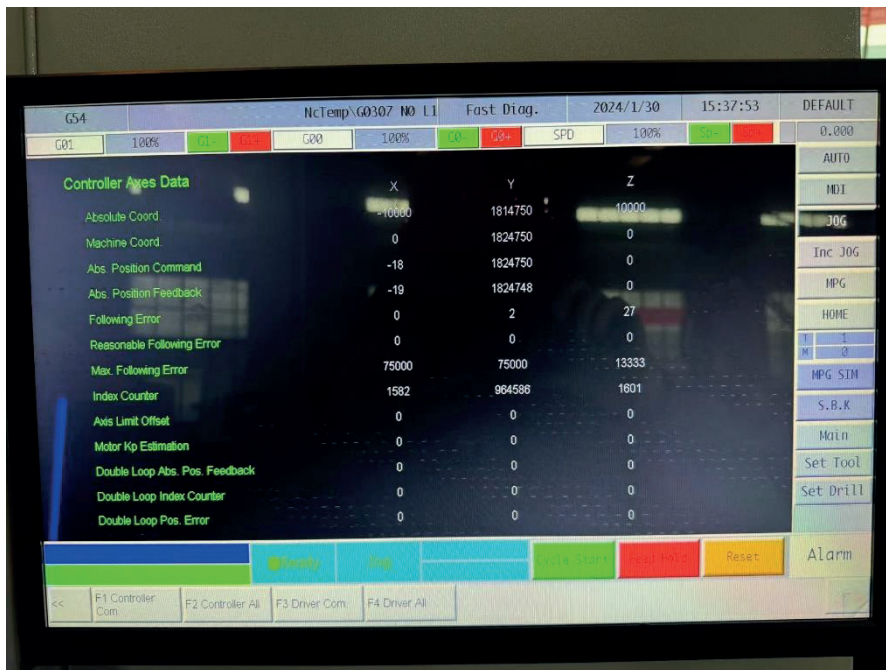
System information



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

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

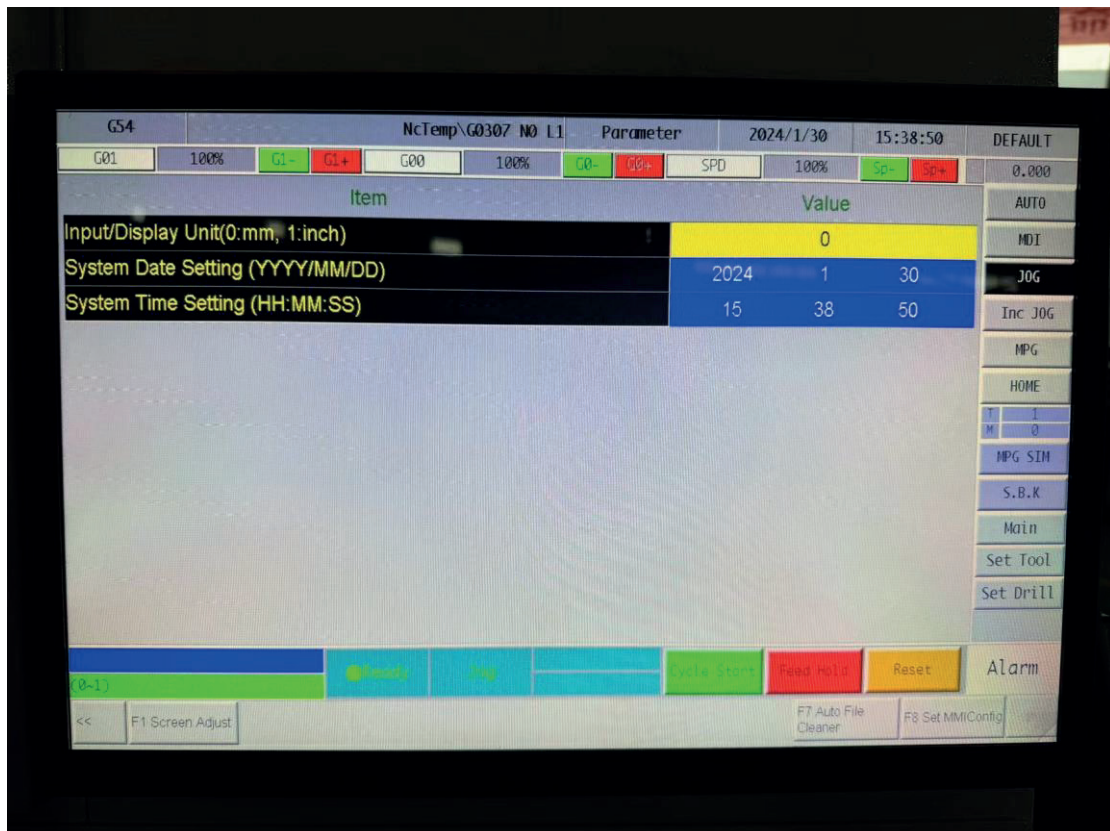
Axial information



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

- 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 bits.
- ⑤ The string file name corresponding to the annotation is ParamExt_RBit_(L).xml.
- ⑥ (L)=COM/CHT/CHS/ 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

- 13) Use the direction keys **【↑】** **【↓】** **【←】** **【→】** to move the cursor.
- 14) 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.

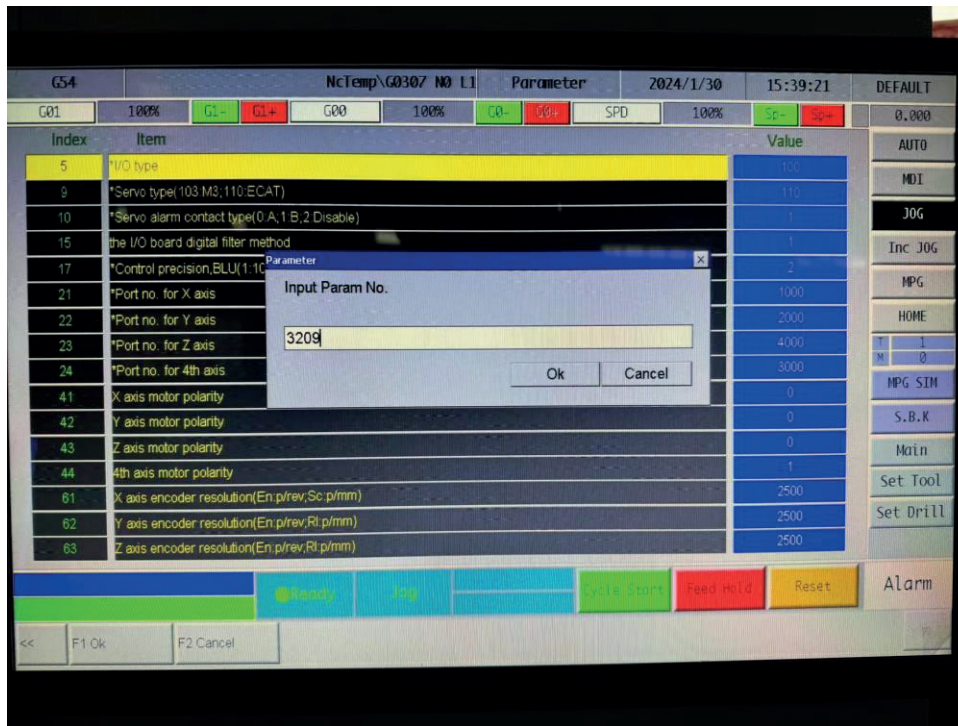
Note: After setting, you need to restart your computer to take effect.

System time setting

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

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

7.7.6. Language settings



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

jump to parameter number.

Enter [3209] to select 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 locking 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.

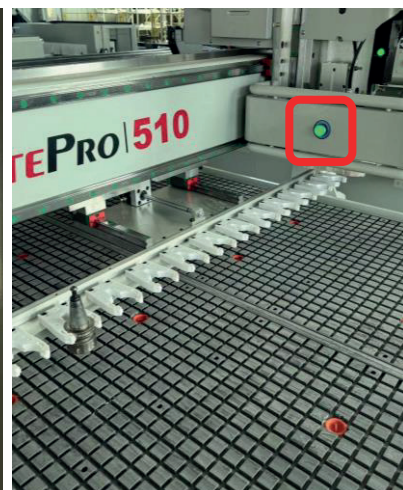
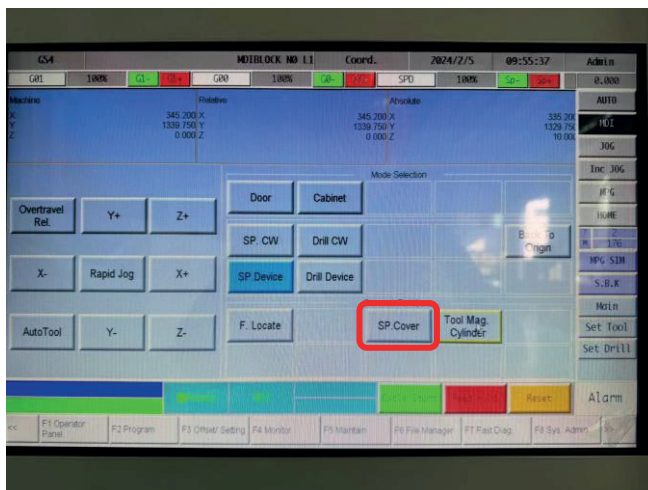


8.2. Manual tool change

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.

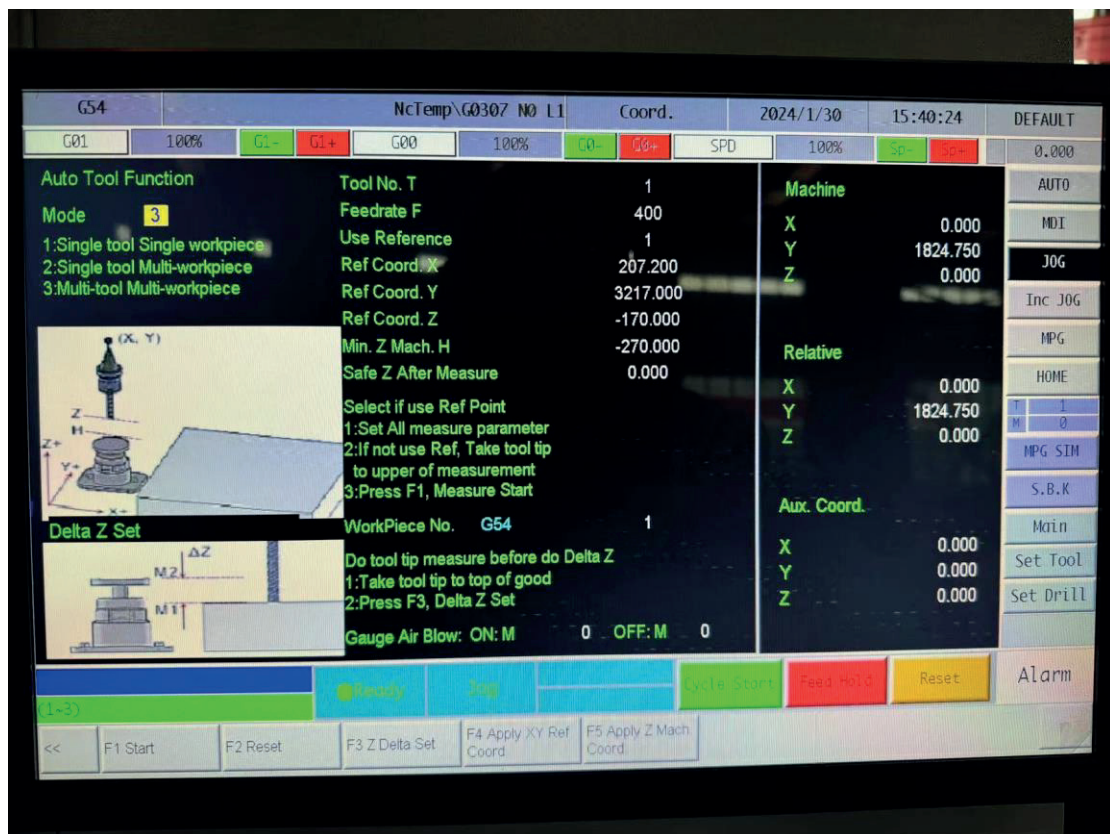


In the "main interface", press the spindle brush, raise the brush, and press the green tool change button to change the tool.



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 (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 lowest 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: 1: G54, 2: G55, 3: G56, 4: G57, 5: G58, 6: G59, 7: G59.1...
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.

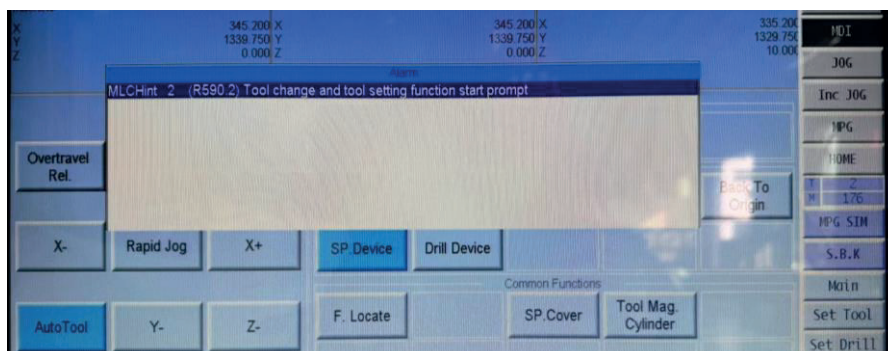
Method 2 (recommended): MDI mode tool change/tool setting (fast multi-tool).



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

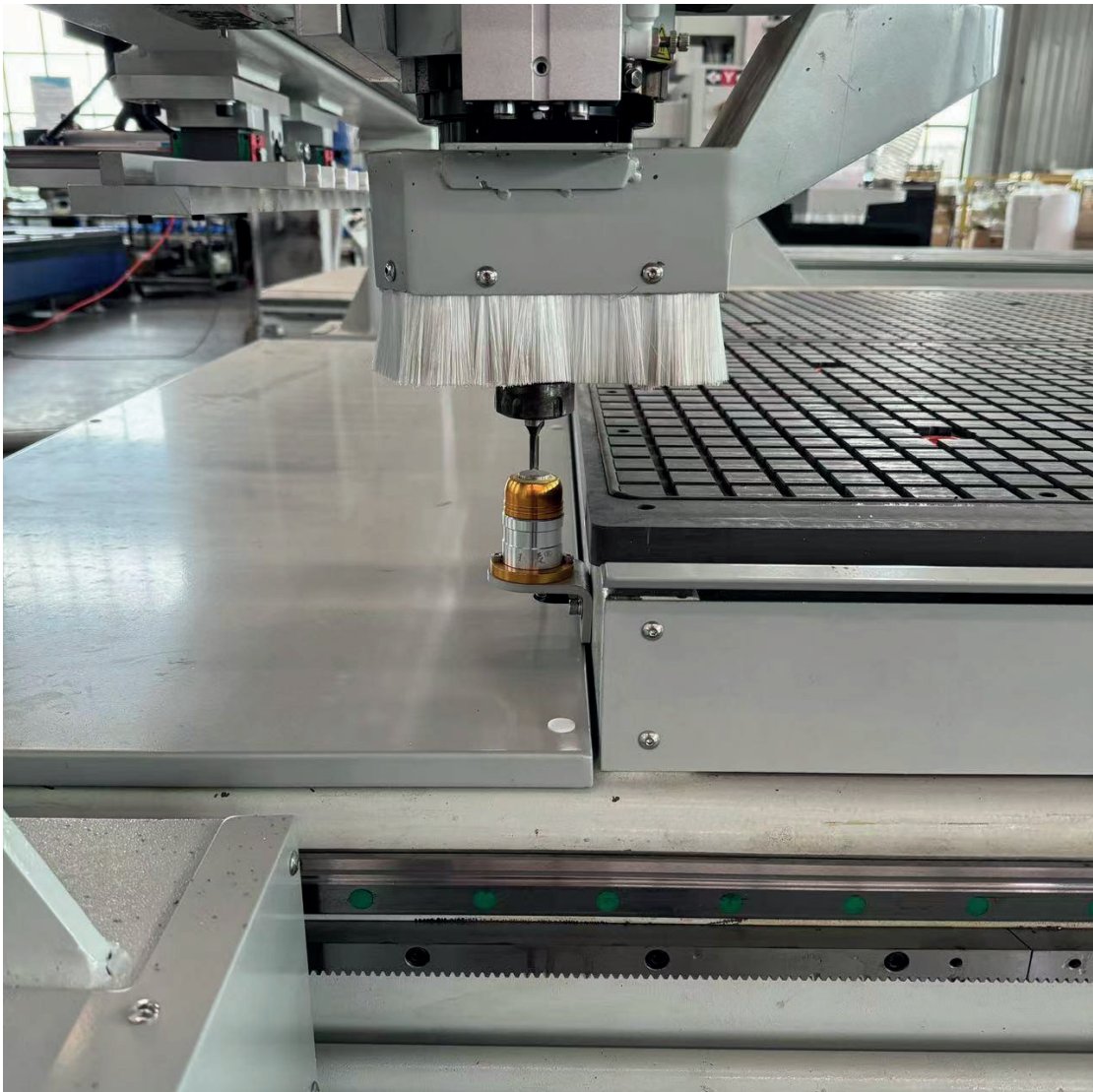


side of the main page (do not press the Tool Changing and Tool Setting key if tool setting is not required).

* When the tool setting and tool changing function alarm reminder appears, press ESC on the keyboard to close it.

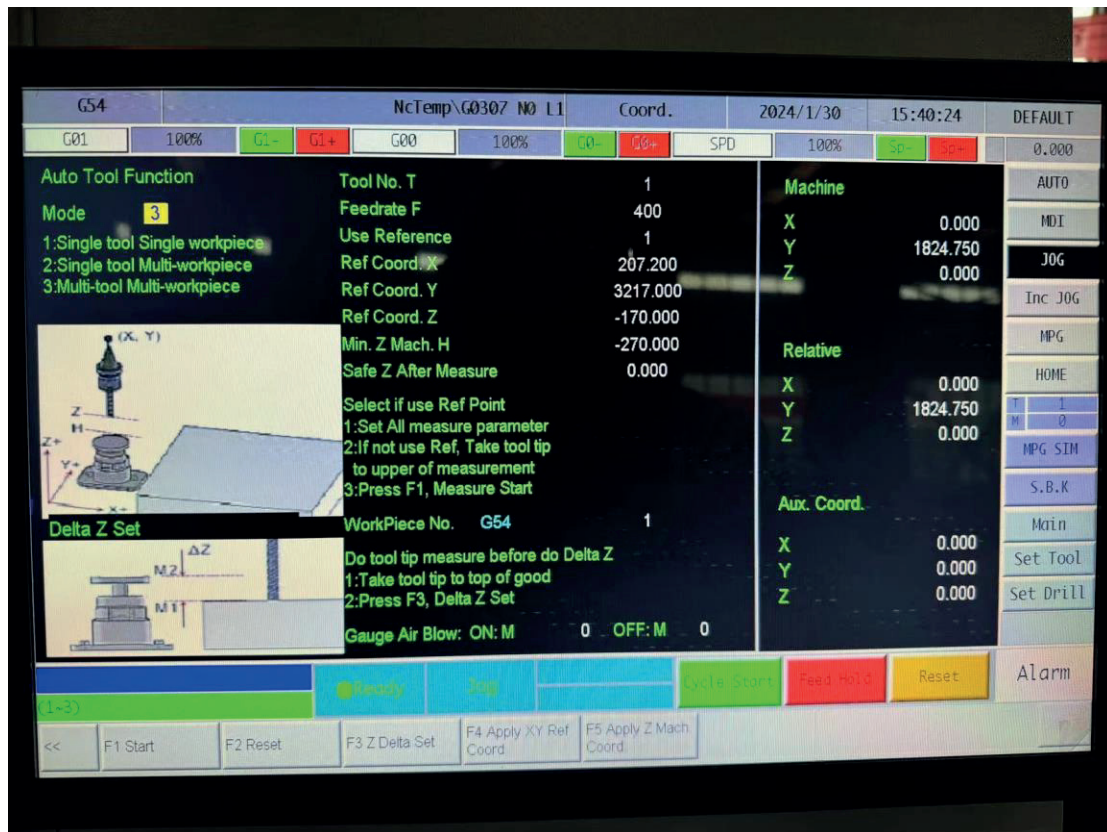
2. After entering the tool number **T**** that requires tool setting and tool change (**you can enter multiple**) on the keyboard on the right side of the screen, press [F1 **OK**] , and the edited program will be stored in the MDI Block.

3. “MDI ” mode, click **Cycle Start** to use the code edited by MDI to perform multi-tool tool change/tool setting.



Coordinate System] Click [F1 Mechanical Coordinate Teaching] select [OK], , and 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



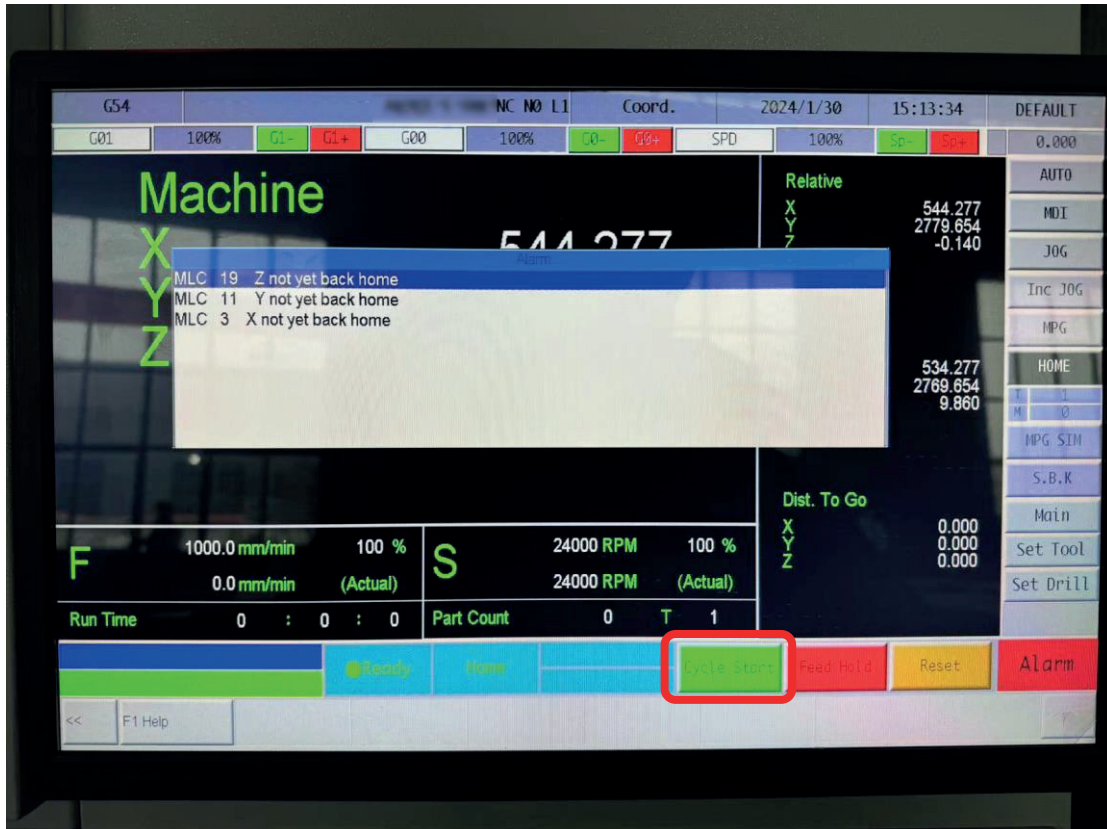
Press F1 to turn off the alarm. In HOME mode, click Cycle Start. Each axis of the machine will automatically return to the mechanical origin, and the machine tool will immediately start the zero return operation. After the zero return is completed, the processing operation can be carried out.

* 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.

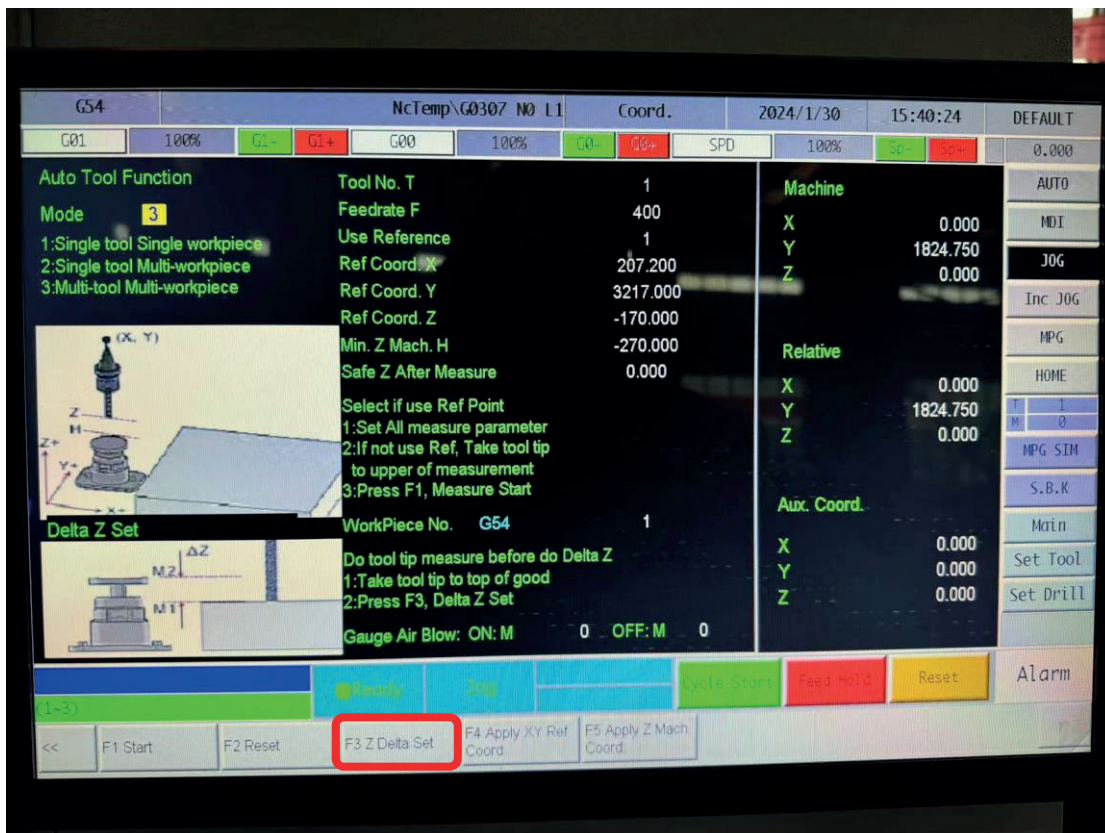
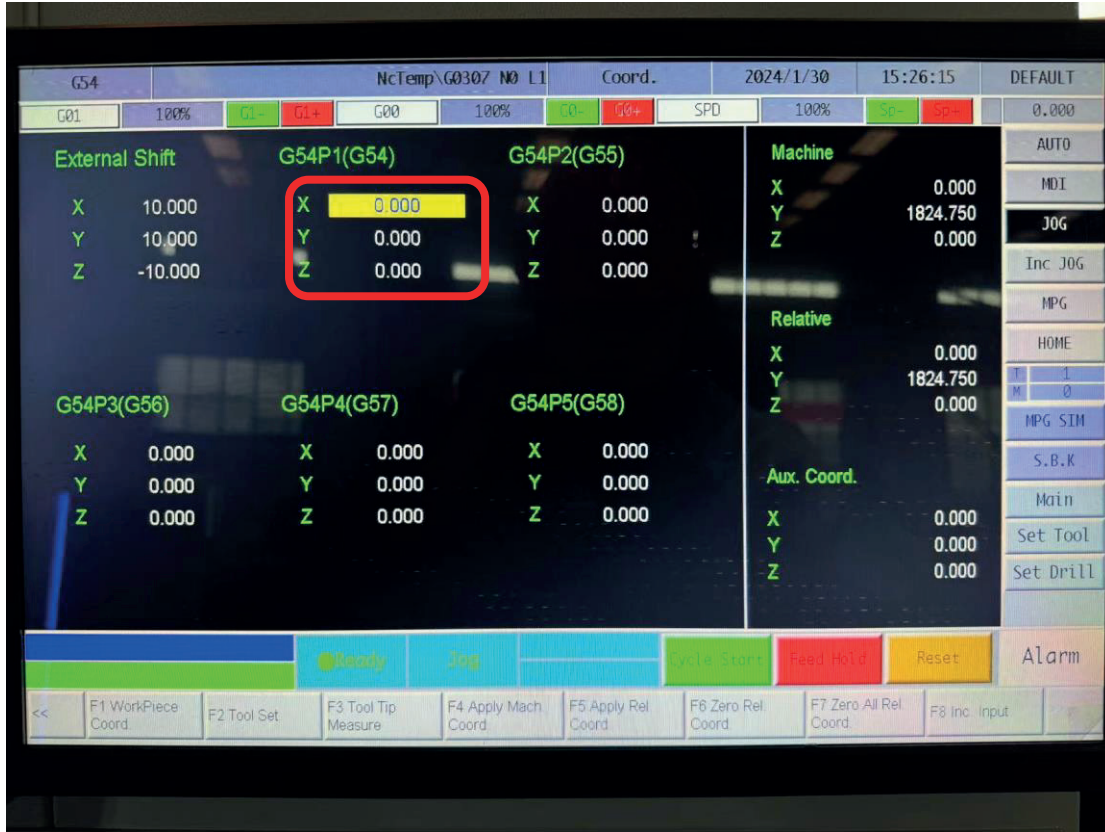
Specific steps

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

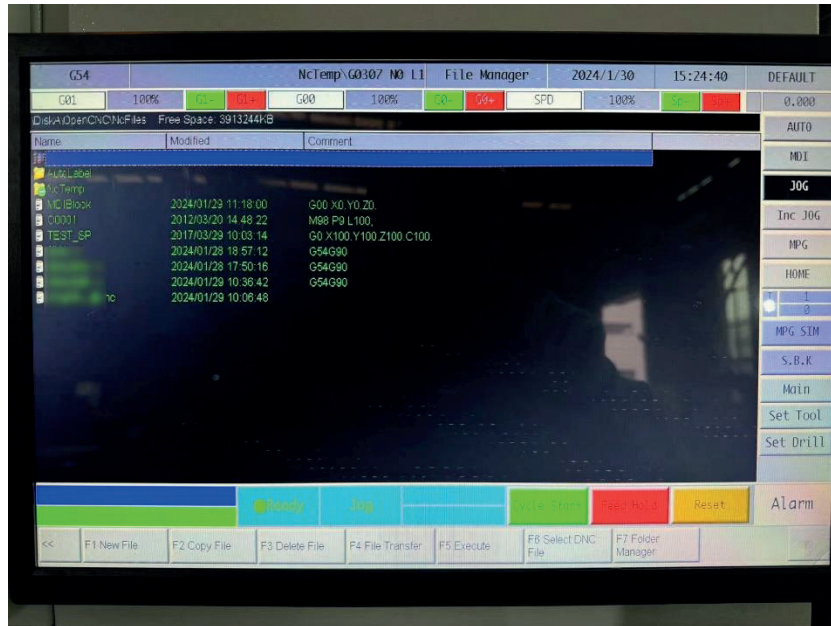


2. Perform tool change/tool setting and set the workpiece origin.





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).

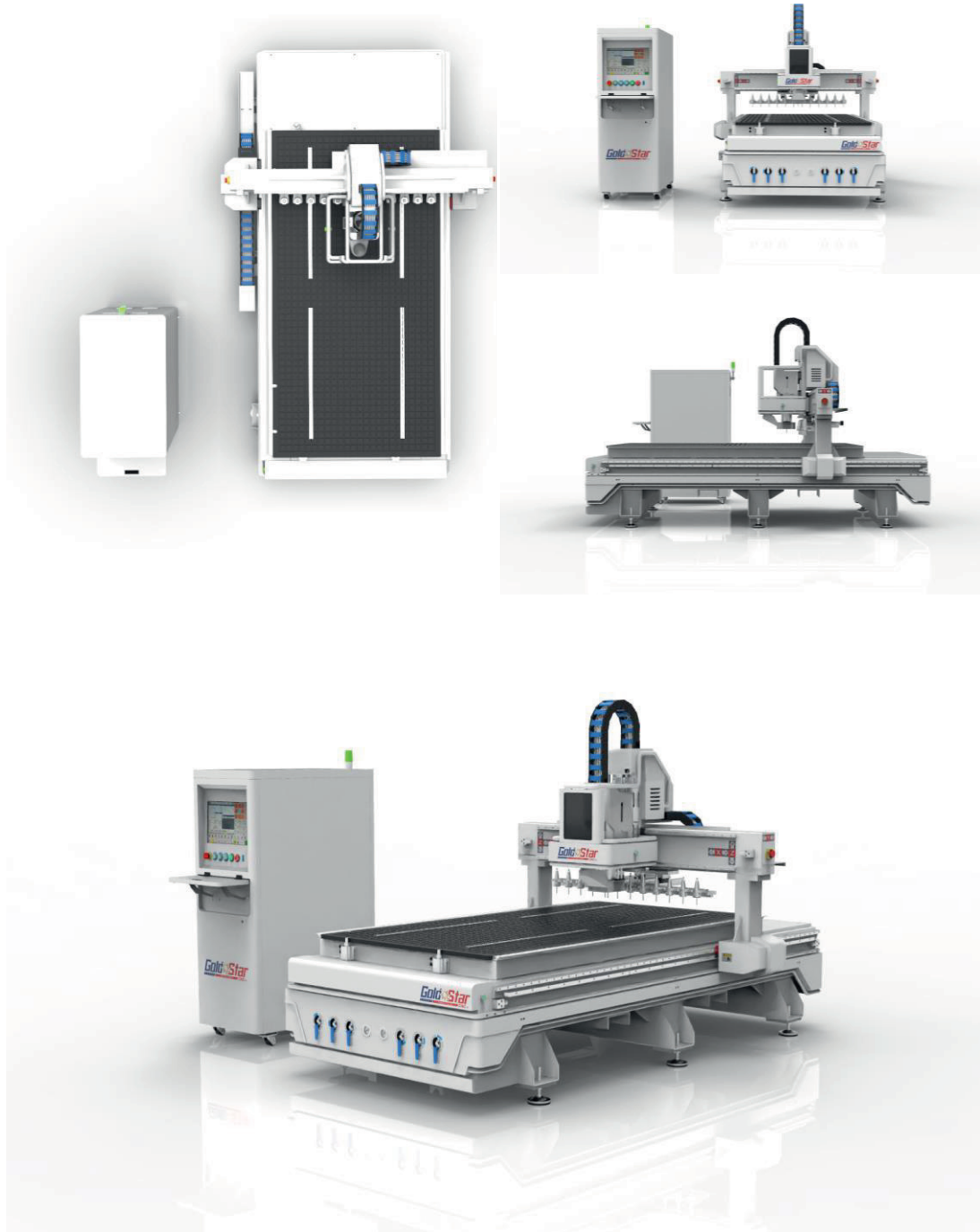


4. After double-clicking “ESC” to return to the main page, click Cycle Start to run the processing file.

* 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 presented in this manual or modify some parameters in actual use, please do so under the direction and supervision 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, vacuum brackets, etc. Please refer to the actual machine.

11. Maintenance and maintenance of equipment

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) Prevent dust from entering the CNC device.
- 8) Maintenance of the CNC system when it is not in use 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.

11.2. Lubrication and maintenance

- 15) 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.
- 16) The lubricating oil of the ball screw's cutter screw should be lubricated once a week.
- 17) Spindle lubrication, refuel once a week.
- 18) Choose lubricant, the butter should not be too thick. The lubricating oil should not be too thick or volatile.
- 19) Lubrication part: X and Y axis racks and slide rail sliders. Z-axis screw, track slider.
- 20) 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.



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