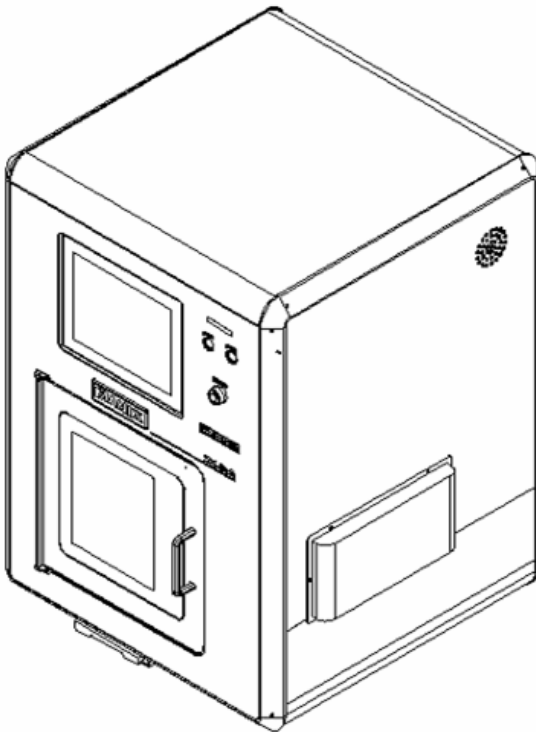


MANIX
machine tools



ZX-4SA

User's Manual

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BASIC FUNCTIONS

PRIOR TO THE USE

- This user manual records precautions and safe measures for your sufficient safety and precautions. Careless preparation and operation can be a cause of unexpected accidents during the operation.
- Please read all instructions and understand all details before you use the machine.
- The user manual is explained based on default setting values of the product.
- It is a program that is not provided by Manix. The warranty is not applied during the machine operation.
- Do not shock the equipment excessively.
- Check the power grounding condition and power imbalance (due to high-frequency effect) frequently.
- Make sure that the rubber feet under the table are correctly fixed to hold the equipment firmly.
- Make sure that the surrounding temperature of the installation place is maintained at 2°C to 32°C.
- Make sure that the pneumatic gauge scale of the air unit is in a range of 0.5 to 0.6MPa.
- Make sure that the parts are not damaged during cleaning and do not use an air blower.
- Be careful to avoid computer virus while using USB memory sticks or local area networks.
- PC controller should be terminated normally.
- Internal data can be damaged if PC controller is turned off abnormally or due to power outage.
- The condition of tool blade wear due to processing should be checked.

CHECKPOINTS BEFORE INSTALLATION

- Avoid direct sunlight.
- Keep the ambient temperature within the range between 0 C and 35C.
- Maintain the humidity under 75% and keep from being frozen.
- Provide a repair area.

INPUT POWER

- Have electric work performed by a specialist.
- The machine must be free of any electrical noise source, such as electric welder and electric spark machine (The controller can be malfunctioned by the noise).
- The capacity of the input power must be sufficient (The voltage drop (if any) affected by other devices may cause malfunction).

DETAILS ABOUT POWER SOURCE

- Keep the source voltage at 220 Vac \pm 10 %.
- Use a circuit breaker with the capacity of about 2 KW.
- Only allow the voltage drop under 10 % within 0.5 seconds.
- Frequency range of 50/60 Hz \pm 1 Hz, Momentary power failure not more than 10 ms.

THE POWER INPUT MUST BE INDEPENDENTLY FROM THE MAIN BREAKER TO A SOCKET.

EARTH

- To prevent an accident by short circuit and the malfunction of the controller by electrical noise, Earth must be installed in any case.

COMPRESSED AIR

- Compressed air is required for the automatic tool change of spindle, air sealing, purge, etc.
- The compressed air must be clean and dry, The compressed air containing dust or humidity may shorten the life of the machine.
- Set a line filter, dryer and others between the compressor and the machine.
- Adjust the pressure of the compressed air into the set value of 6 Bar.

PREPARING OPERATION

- Supply the source power.
- Clear the emergency stop condition by turning the emergency stop button of the control switch to the right direction.
- Turn the front power switch on.
- Click the display screen.
- Check the input status.
- Return to the origin.
- Run the warming-up program.

(Inspection of spindle rotation for each step; Noise check; operation status of Z-axis sensor, cutting oil and dust collector, replacement of ATC, dimension stability)

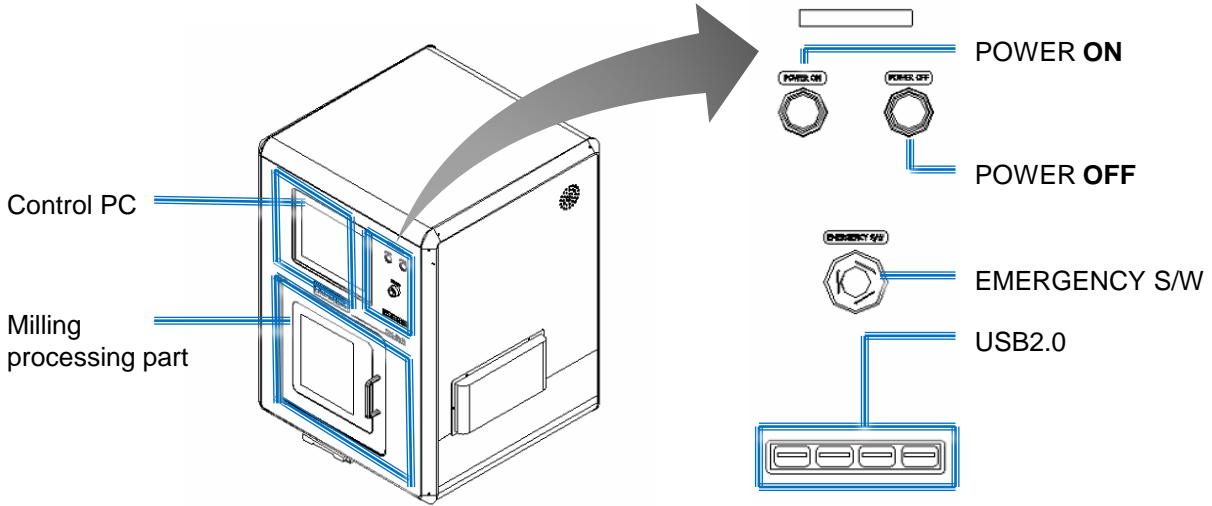
- Ready for the operation

HOW TO TURN THE MACHINE OFF

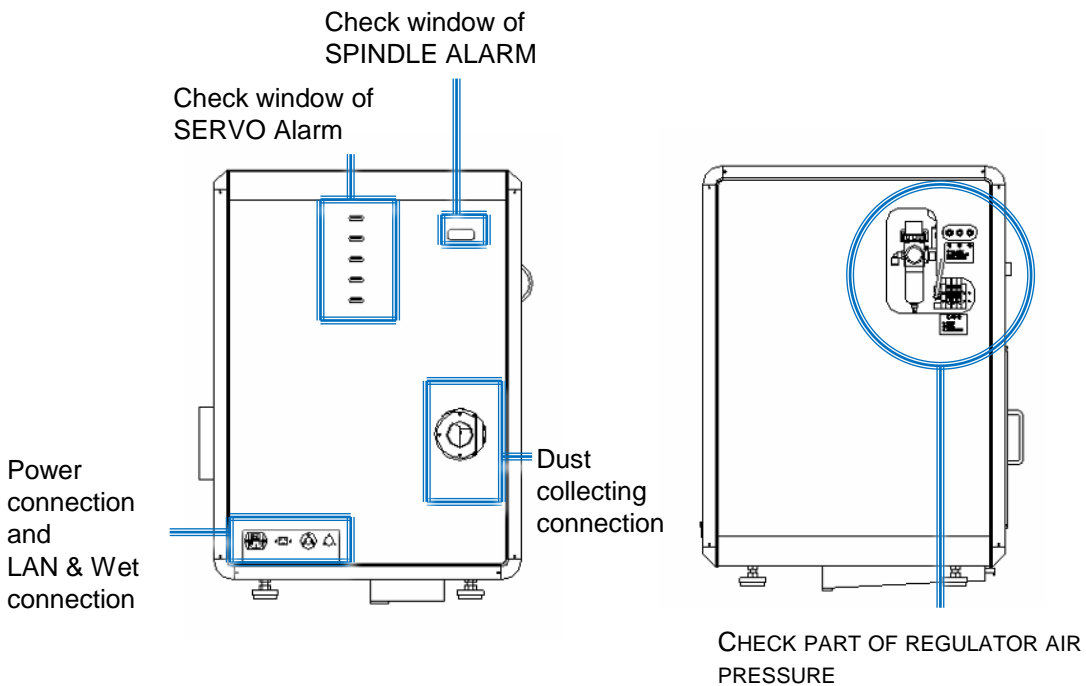
- Press the emergency stop and close the display screen..
- Since the PC controller is working, you must turn the machine off after normally closing Window (If turning the machine off first, a fatal problem may occur in your PC.)

NAMES OF THE PARTS

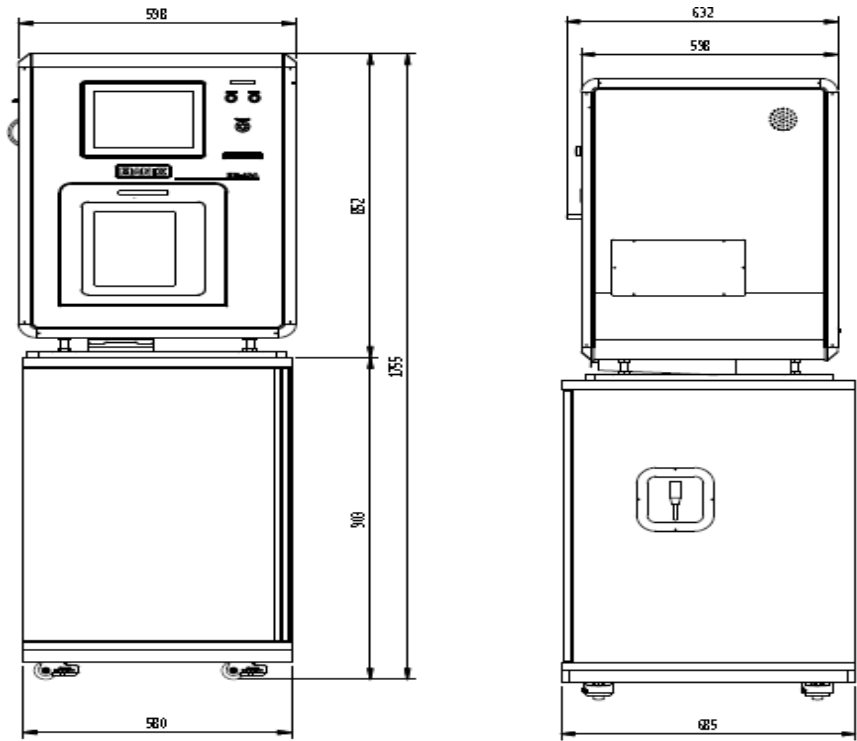
FRONT PART



REAR PART



DIMENSION



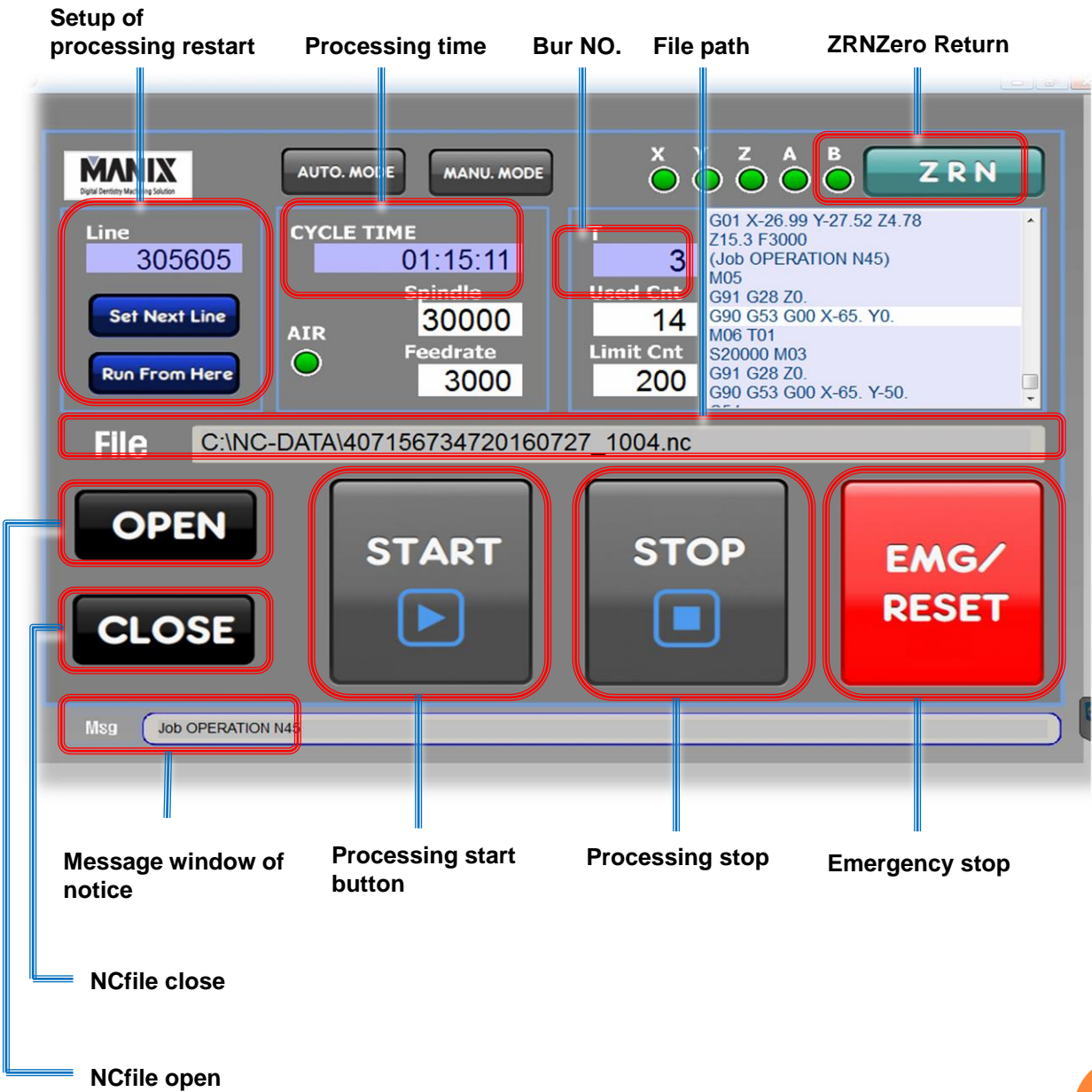
Specification

Milling type	-Water type
Spindle	·30000RPM, 500W
Dimension	· 598mm x 598mm x 834.6mm (Table: 580 x 685 x 903)
Weight	· 146kg (Table: 50kg)
Tool Poket	· 6ea
Air pressure	· 0.6MPa
Power supply	· 220V 5A
Table	· Included

EQUIPMENT OPERATION

CONTROLLER SCREEN LAYOUT

AUTO.MODE



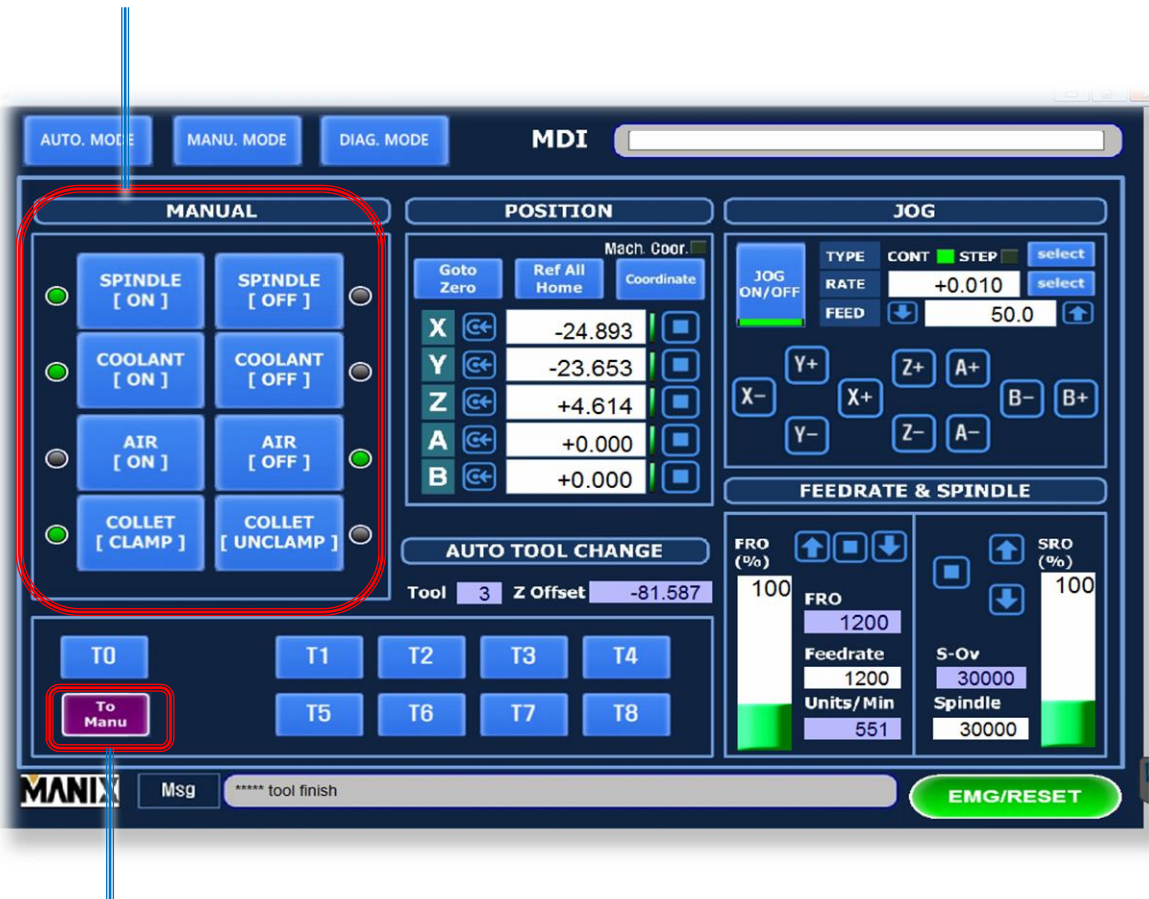
CONTROLLER SCREEN LAYOUT

MENU.MODE

(DISPLAYED UPON THE MENU MODE BUTTON INPUT BESIDES THE LOGO)

Equipment manual operation

(Spindle rotation, Dust collecting ON&OFF , Spindle bur manual operation)



Reset of Tool No.

CHECK AGAIN PRIOR TO START

- Check whether air pressure is 0.6Mpa or higher.
- Check whether blade wearing is not found in the tool(Bur) .
 - Check whether number is positioned at the right location.
- Check whether the material is fastened safely.
- Check whether the material is selected according to the design.
- Check the NC-DATA file name.
- **Check whether T No. is matched with the current spindle connected bur.**

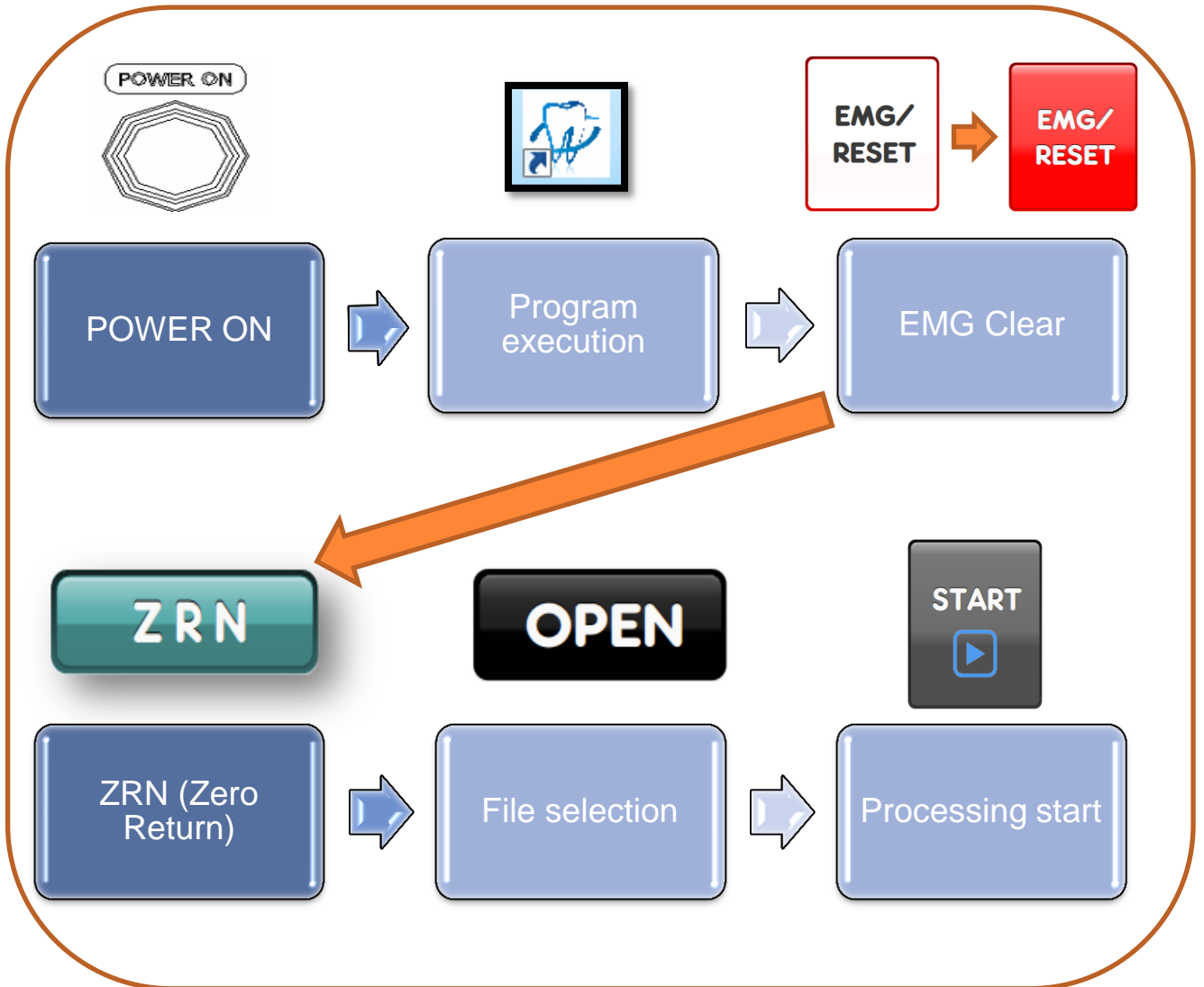
CHECK AGAIN AFTER START

- Check whether spindle is rotated.
- Check whether processing is started with right tool (bur) .
- Check whether it is moved to the CAM setup calculated position.
- Check whether dust collector and cooling water are operated normally.

PROCESSING START



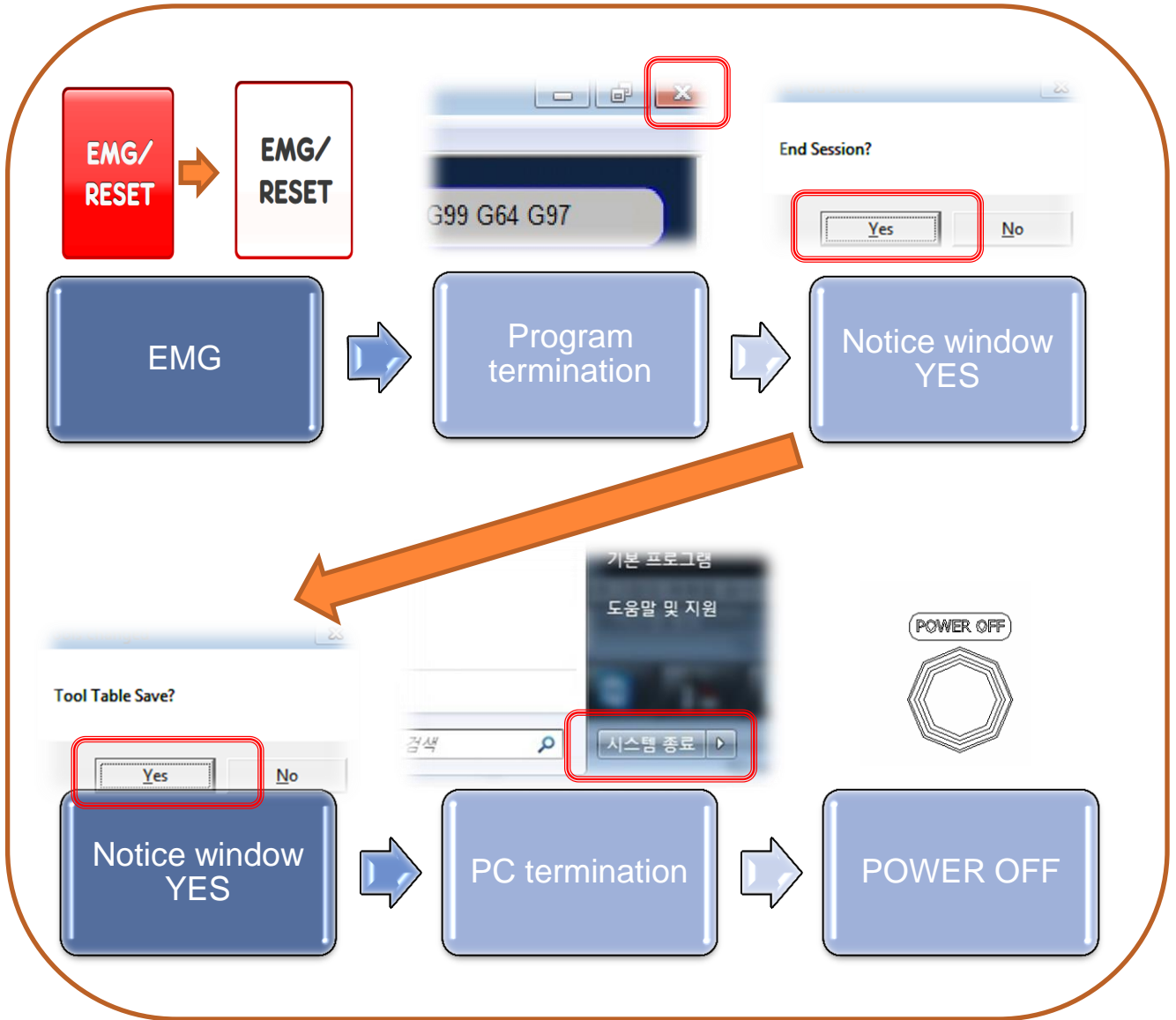
PROCESSING PROGRESS IS IMPORTANT ACCORDING TO THE ORDER.



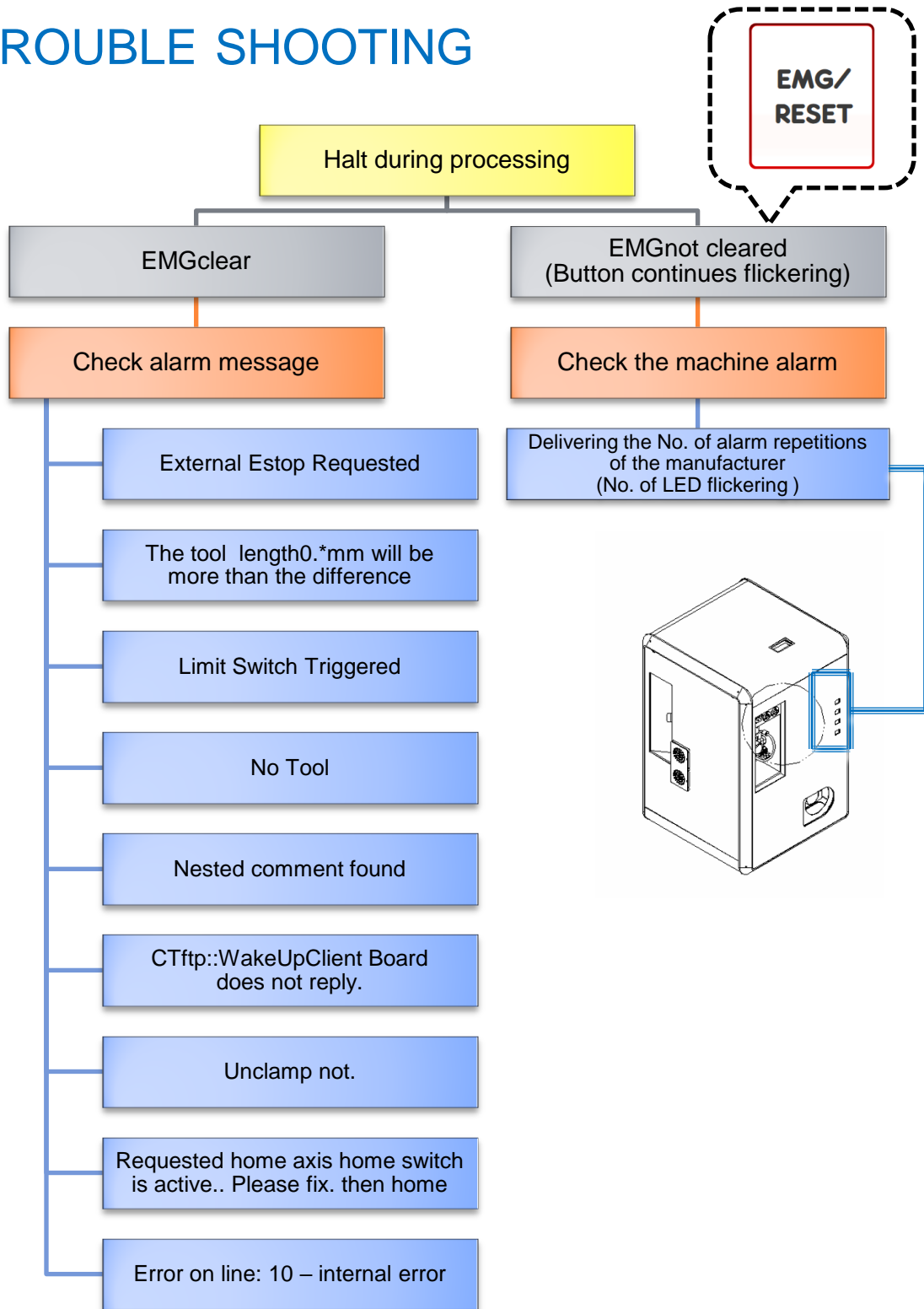
PROCESSING TERMINATION



PROCESSING PROGRESS IS IMPORTANT ACCORDING TO THE ORDER.



TROUBLE SHOOTING



Q&A

External Estop Requested

- **Communication is blocked while popping up alarm message if non-compliant conditions are met when PC and NC exchange data to progress processing.**
 - When EMG/RESET button is pressed.
 - Feeding which is out of the Soft limit .
 - ↳ EMG/RESET clear and connection and then fed in the opposite direction
 - Upon the alarm with other symptoms, alarm is clear and then check the symptom is reproduced after reprocessing.

The tool length0.*mm will be more than the difference

- **Tool (Bur) length error.**
 - Check the wear condition at the bur.
 - ↳ If crack is found or coating is peeled off, bur is replaced
 - Foreign matters found in the sensors or defects are found.

Limit Switch Triggered

- **Feed shaft OVER**
 - Arrived at the limit position of X, Y, and Z feed axes.
 - ↳ Lamp that is lit at the status in the logo-> DIAG.MODE is checked and fed in the opposite direction

Q&A

No Tool

- **Alarm going off upon error of more than tool length error during Bur measurement(sensing).**
 - Tool breaking.
 - Despite that bur is found in the tool rest, check the collet in the main axis during alarm .
 - └ Loosening is expected at the collet that holds the tool in the spindle.
 - When no bur is found in the tool rest (fall during rotation etc..)

Nested comment found

- **Problem is found in NC DATA file.**
 - Occurred when duplicate “()”parenthesis or special characters are included
 - The parenthesis is removed from the name and the NC file is brought from the note and the parenthesis should be removed in the name part at the upper end.

CTftp::WakeUpClient Board
does not reply.

- **Communication is not done between MM3 program and the machine.**
 - Occurred during program execution without power applied to the machine
 - Occurred during power applied during program execution or after program execution

Q&A

Unclamp not.

- **Occurred during bur replacement when bur is not placed in the tool rest**
 - Check whether air pressure in the compressor is within the appropriate range. Occurred when air pressure is insufficient.
 - When the tool is used excessively, that is, recommended number of milling quantities is exceeded, tool may not be removed from the spindle in the main axis due to the applied physical force.

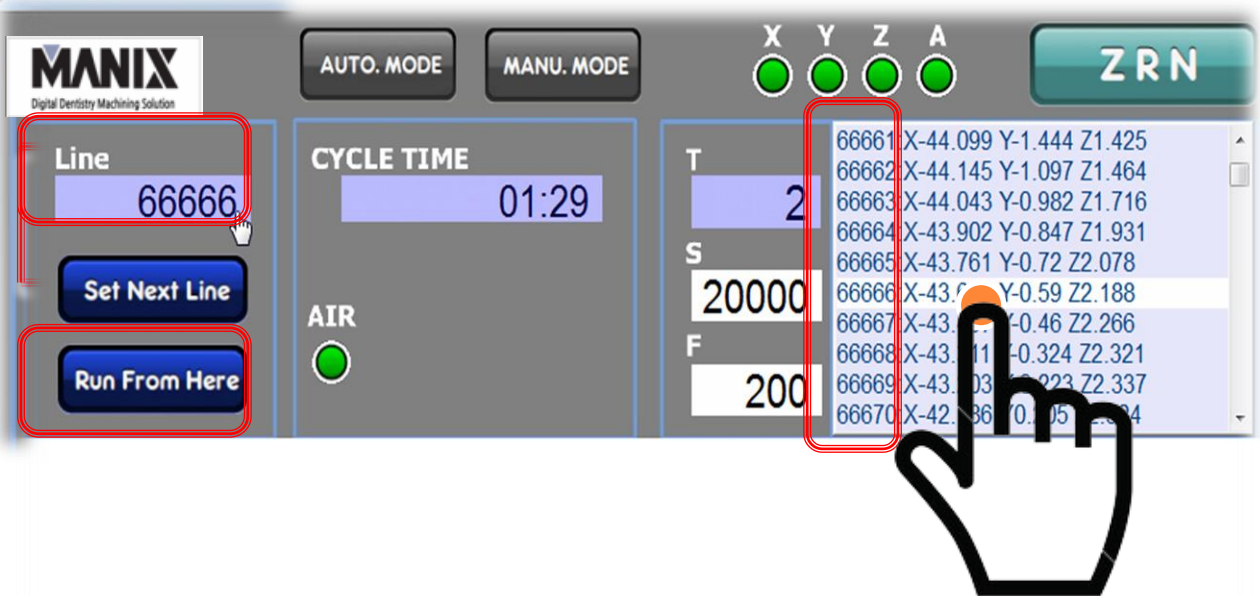
Requested home axis home switch is active.. Please fix. then home

- **Occurred when zero return ZRN is not done**
 - Zero return is done sequentially in the order of X, Y, Z, and A. If Xgreen light is lit, the Y axis is suspicious and XYZ light is lit, it means the A axis is abnormal. If the suspicious axis is moved manually in the JOG mode, alarm is clear but take care of collision. Please contact the company if operation is not familiar. .

Error on line: 10 – internal error

- **Connection to the controller is blocked.**
 - Re-connected via rebooting of machine power

RESTART OF PROGRAM AFTER ALARM GOING OFF



Number indicated upon double click

Program is re-run based on the line indicated by 66666 upon alarm or suspension during operation.

1. Input the number stopped at the input tool that is created when the line is clicked.
2. Click the button **Run From Here**
3. When stopped at the corresponding position, push the **START** button
4. Click the OK button displayed at the pop-up window
5. Once simulation is done one time at the processing position, it is stopped at the upper end.
6. If the simulation position is correct, then **START**

MACHINE CARE

○ Bur

The bur used for the processing of Zir is composed of a set of ZX5W-Z1, Z2 and Z3 and must be replaced if air chipping occurs..

- The milling of the bur must be only performed with the original bur provided by the manufacturer.

The use of a bur provided by the third party may cause spindle related problem, and the warranty service will be void.

- Frequently check the wear condition of the bur with eye or by sound and if necessary, change..

○ Compressor Compressor helps to maintain a pressure at 0.6MPa or higher.

- For compressors, direct connection to the machine is recommended.
- Oil should be removed once a week.

○ Dust Collector

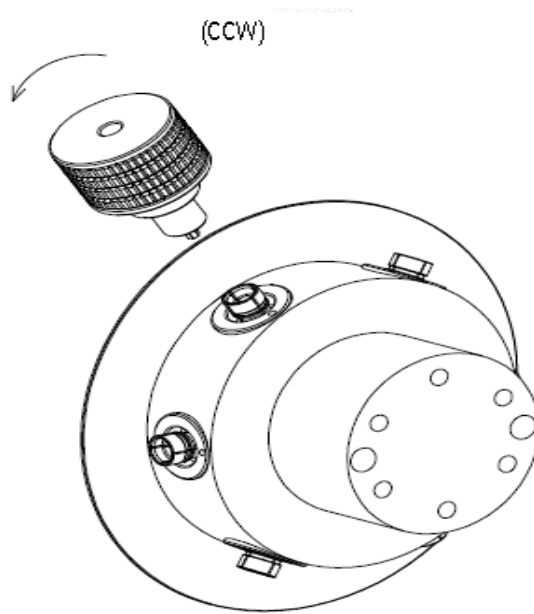
- The dust collector must be always be droven when processing.
- No use of the dust collector will affect on the precise part of the machine and may reduce the life of the machine..
- **In addition, the long term inhalation of the fine dust generated in processing may cause respiratory system damage. Please use the dust collector in any case.**
- Perform the regular cleaning approximately once per week, if necessary.
- It is recommended to replace the dust collector at least every six months.
(Please contact us)

○ Inside the Milling M/C

- The fine dust accumulated on the collet and ATC parts in the front end of the spindle must be removed with the dust collector or a cleaner before operating the machine.
- Since the dust accumulated on the moving parts reduces the life of the machine, lightly sweep the sensor part or the fine gaps with a small brush and then remove with a cleaner.
- It is recommended to clean once a day.

APPENDIX

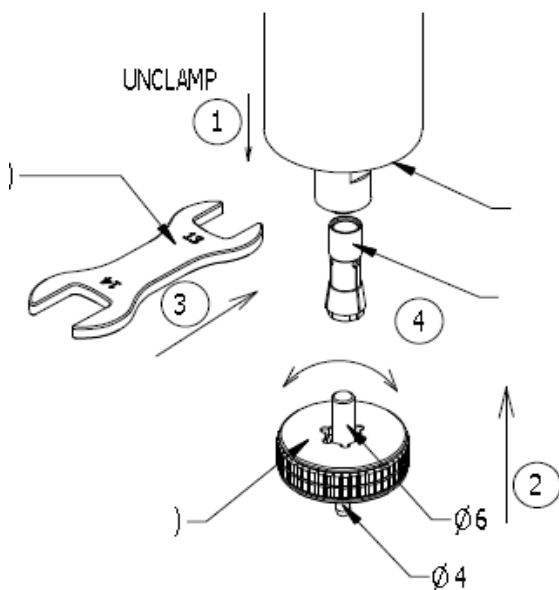
○ How to adjust the loose ATC tool holder.



After turning the tool holder to the left direction to the end with a dedicated tool, adjust it with a processing tool.

○ How to Disassemble and Clean Spindle Collet

Since the spindle collet is a precise produce, it must be cleaned regularly.



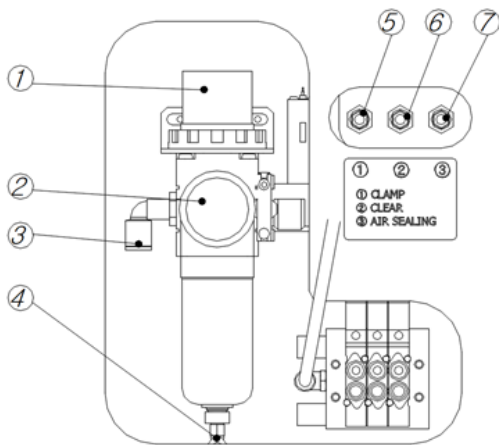
Disassembling procedure

- ① Press the Unclamp button in Menu mode.
- ② Insert a collet disassembling tool with the same diameter as the sunk diameter of the tool.
- ③ Grasp a dedicated spanner.
- ④ Turn the spanner to the left as shown in the figure.

Blow the inside of the spindle in air, wipe it cleanly and then wash and dry the disassemble collet. After that, apply oil to its outside.

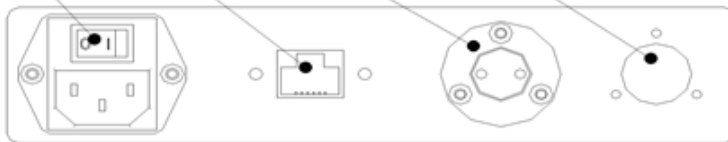
Finally, turn the collet to the left with the collet disassembling tool. Tighten the collet to the end until it is locked.

○ Air Unit Part



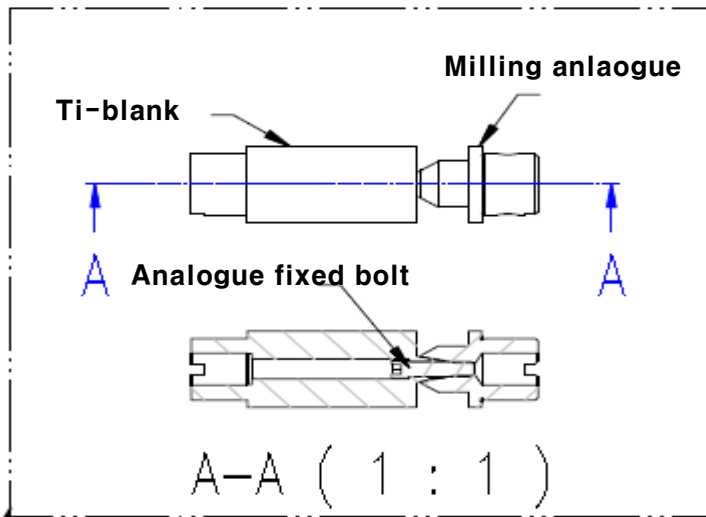
No.	Name	Details
1	Air pressure control handle	Control air pressure by lifting up the handle and turning clockwise or counter clockwise.
2	Air pressure window	Set the air pressure to 6 bar.
3	Air input	Air inlet
4	Auto drain hole	Automatically drain water when there is water in air line.
5	Spindle tool clamp	Spindle tool clamp SOL
6	Spindle purge	Spindle purge
7	spindle air sealing	Spindle air sealing

○ Power supply and connector part

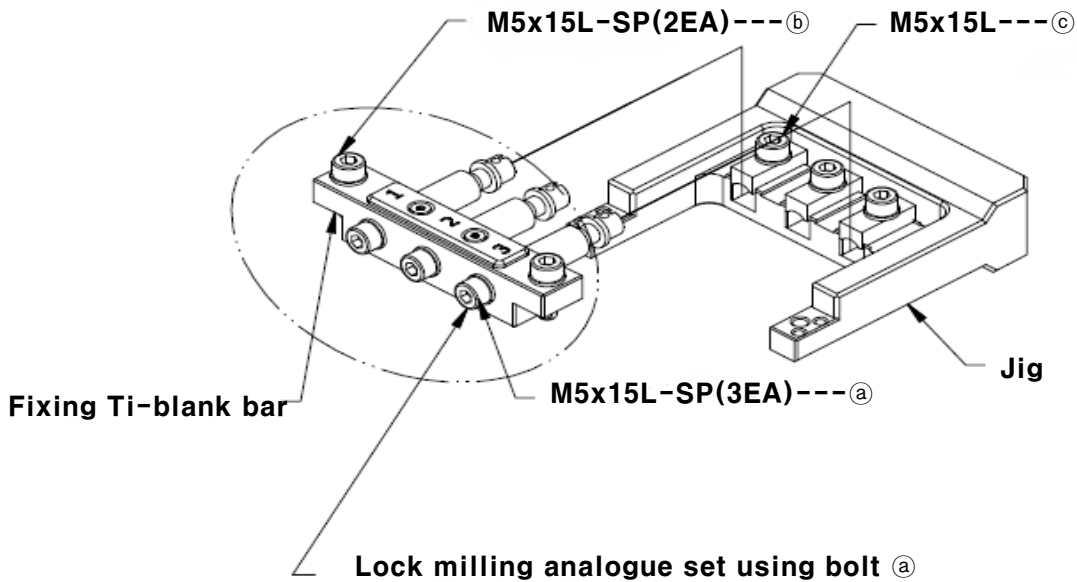


No.	Name	Details
1	Main power supply On/Off	Main power supply On/Off
2	LAN	LAN for data transfer
3	2P connector	Connector for dust collection
4	Spare	Option

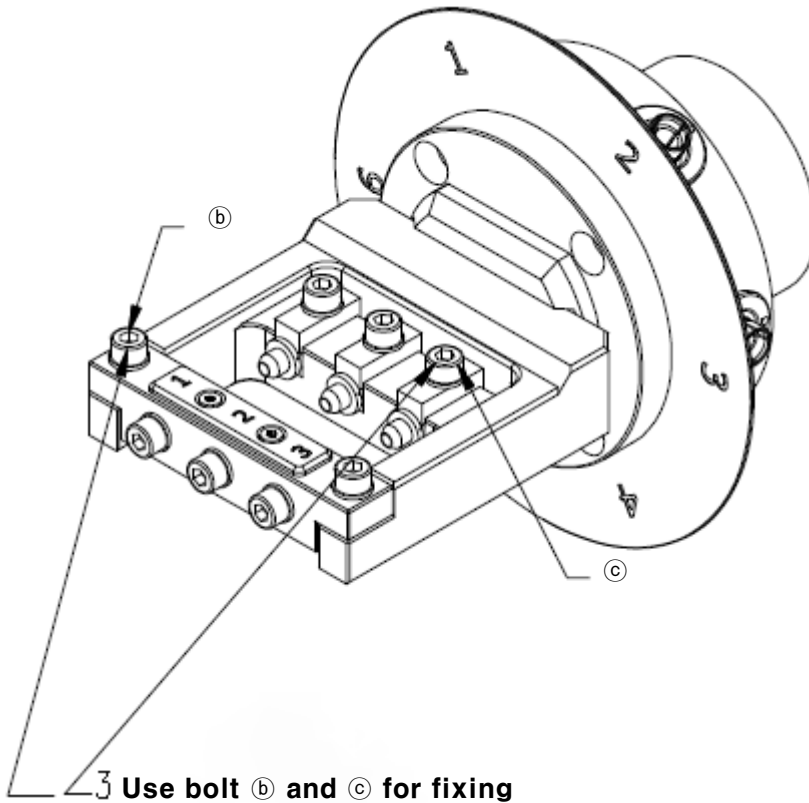
- How to mount 3 multi jig materials
- How to fix when use milling analogue.



Lock Ti-blank and Milling analogue (use of torque wrench is recommended)



- 4SA jig



○ How to Disassemble Wooden Packing(For Export)

- Since the wooden packing is manufactured with a base and a cover, loose 10 - 12 bolts fixed in the bottom border and then lift the cover up.
(The length of the hexagon part of the bolt use is 8 mm, untighten the bolt with a box spanner)

