Lilivis

ENG

LM-100

Lilivis Mill

User Manual



Notice

This device may fail due to electromagnetic waves generated by mobile phones, walkie-talkies, radio-controlled machines, etc. Stay away from devices that may affect this device.

The contents of this instruction manual have been carefully examined and are believed to be entirely accurate. However, Huvitz assumes no liability for any potential mistakes or omissions arising from the use of the information contained in this user manual.

Huvitz reserves the right to make changes to this device or device specifications at any time without notice, and may not update the changes herein.

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CONTENTS

1. Introduction 6

1.1 Main features 6

1.2 Classification 6

2. Safety information 7

2.1 Introduction 7

2.2 Safety symbols 8

2.3 Storage and installation precautions 9

2.4 Instructions about the maintenance 10

2.5 Precautions about the use 11

3. Configuration of the Lilivis Mill 12

3.1 Front 12

3.2 Rear 13

3.3 Milling room 14

4. Operation 15

4.1 Turning the Power On 15

4.2 Opening the window 15

4.3 Setting the milling burs for Normal mode 16

4.4 Setting the milling burs for Dual Sync mode 17

4.5 Motor spindle automatic warm-up 21

4.6 Ready to go 23

5. User interface 24

5.1 Main screen 24

5.1.1. Block information ① 24

5.1.2. Milling bur information ② 24

5.1.3. Job information ③ 24

5.1.4. Button for Setup Mode ④ 25

5.1.5. Button for Management Mode ⑤ 25

5.1.6. Button for Ready / Start ⑥ 25

5.2 Setup mode 26

5.2.1. Date 26

5.2.2. Network (IP) 27

5.2.3. Update 27
5.2.4. Preference 28
5.3 Management mode 29
5.3.1. Management of water tank & filter 29
5.3.2. Management of water pump 30
5.3.3. Management of milling bur 31
5.3.4. Management of Auto-cleaning 32
5.3.5. Management of spindle warm-up 33
5.4 Status LED's color guide 34
5.4.1. READY 34
5.4.2. MILLING 34
5.4.3. FINISH 34
5.4.4. ERROR 34
5.4.5. WATER TANK OPENED 34
6. General milling 35
6.1 Preparation for general milling 35
6.2 Mounting the block 37
6.3 Start milling 38
6.4 Checking the status of a milling 39
6.5 Milling complete 40
7. Remote milling 41
7.1 Preparation for 'Pre-Touch' 41
7.2 Mount the block 43
7.3 Starting the 'Pre-Touch' 44
7.4 Pre-Touch completed 45
7.5 Transferring job data from L-CAM 46
7.6 Milling Completed 48
8. Using L-CAM software 49
8.1 L-CAM Execution 49
8.2 Register Lilivis Mill in L-CAM 50
8.3 Setting Sync Mode in L-CAM 53
8.4 Importing L-CAM data (supported formats: STL files) 53
8.5 Editing L-CAM data 57

8.6 Export L-CAM data (transfer to Lilivis Mill) 60

9. System maintenance 63

9.1 Management of milling bur 63

9.2 How to replace the milling bur and renew the life of milling burs 65

9.3 How to mount and replace milling bur 69

9.4 Manage your preferences data 71

9.5 Other general management 72

9.6.1. Periodic management of users 72

9.6.2. Management of milling room drain 73

9.6.3. Water tank cleaning and replacement of the filter 74

9.6.4. How to remove residual water from pipes, water pumps and radiators 76

9.6.5. When using multiple water tanks (Optional purchase) 78

9.6.6. Cleaning the spindle nozzle 79

9.6.7. How to replace a window latch 80

9.6.8. Replacing the fuse 81

9.6.9. Exterior cleaning 81

10. Trouble guide 82

10.1 Error message 82

10.2 Troubleshooting 88

11. Specifications and Accessories 89

11.1 Accessory (Standard) 89

11.2 Specifications 91

11.3 Dimension 91

12. Service information 92

1. Introduction

Lilivis Mill is a Dual Spindle Chairside Dental Milling Machine suitable for One Day Prosthetic Treatment.

1.1 Main features

- A variety of block materials can be processed. (Ceramic, PMMA, Zirconia)
- Depending on the material, it is automatically processed using an appropriate processing method. (hereinafter referred to as milling)
- The TFT-LCD (7") and interface with touchscreen make it possible to use it easily and process intuitively.
- It supports automatic calibration function.
- External status LEDs allow you to see the milling process at a glance from a distance.

1.2 Classification

- Class A equipment
- Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.
- Level of protection against electric shock: Class 1 (grounded)
- Measurement Category : CAT II
- Pollution Level: 2

2. Safety information

2.1 Introduction

Safety is everyone's responsibility. The safe use of this machine is largely dependent upon the installers, users, operators, and managers. It is prerequisite to read and understand these specifications before installing, using, cleaning, fixing or revising. Fully understanding the whole instructions must be the first priority. For this reason, the following safety notices have been placed appropriately within the text of this manual to highlight safety related information or information requiring special emphasis. All users, operators, and maintainers must be familiar with and pay particular attention to all signs of Warnings and Cautions.

 **Warning**	"Warning" indicates the presence of a hazard that could result in severe personal injury, death or substantial property damage if ignored.
 **Caution**	"Caution" indicates the presence of a hazard that could result in minor injury, or property damage if ignored.
 **Memo**	This is used to emphasize essential information. Be sure to read this information to avoid operating the device incorrectly.

2.2 Safety symbols

The International Electrotechnical Commission (IEC) has established a set of symbols, which are listed below. This applies only to the instrument that has the certification symbol printed explicitly on the product label or sticker.

	I and O symbols on the power switch indicate the connection and disconnection of the power, respectively. (Les symboles I et O sur l'interrupteur d'alimentation indiquent la connexion et la déconnexion de l'alimentation, respectivement.)
	This symbol indicates safety caution. Before using the appliance, read the manual and fully understand the precautions in this regard. (Ce symbole identifie la prudence, le risque de danger. Assurez-vous de bien comprendre le fonctionnement de ce contrôle avant de l'utiliser. La fonction de contrôle est décrite dans le manuel de l'utilisateur ou de service approprié.)
	The triangle symbol informs the user of important instructions or warnings. The specific meaning of a symbol is determined by the design it contains. (Le symbole du triangle informe l'utilisateur d'instructions ou d'avertissements importants. La signification spécifique d'un symbole est déterminée par le dessin qu'il contient.)
	The prohibition sign warns you of what you should never do. The specific meaning of the prohibition symbol is determined by the design it contains. (Le panneau d'interdiction vous avertit de ce que vous ne devez jamais faire. La signification spécifique du symbole d'interdiction est déterminée par le dessin qu'il contient.)
	Indicates the safety grounding point connected to the chassis of the appliance. For safety purposes, apply a protective earth to the conduction part of the Class I appliance. (Indique le point de mise à la terre de sécurité connecté au châssis de l'appareil. Pour des raisons de sécurité, appliquez une terre de protection sur la partie conduction de l'appareil de classe I.)
	**Device disposal guidelines** 1. Devices bearing the above marking must comply with Euro Directive 2002/96/EC when disposed of. (Les dispositifs portant le marquage ci-dessus doivent être conformes à la directive euro 2002/96/CE lorsqu'ils sont éliminés.) 2. All electrical/electronic devices must be disposed of separately in accordance with the disposal regulations specified by the central or local governments. (Tous les appareils électriques et électroniques doivent être éliminés séparément conformément aux règlements d'élimination spécifiés par les administrations centrales ou locales.) 3. By disposing of used devices in bulk, we can prevent harm to the environment and people. (En éliminant les appareils usagés en vrac, nous pouvons prévenir les dommages causés à l'environnement et aux personnes.) 4. Detailed information on the disposal procedure for used devices can be obtained from the municipal government or the place of sale. (Des renseignements détaillés sur la procédure d'élimination des dispositifs usagés peuvent être obtenus auprès de l'administration municipale ou du lieu de vente.

2.3 Storage and installation precautions

This machine has been developed and tested in accordance with national and international safety standards. This ensures a high degree of safety for this device. Manufacturers are legally required to fully explain the safety of machine to users. Use of this machine in accordance with the manual is compulsory for safety. Therefore, please read and understand the instructions in the manual thoroughly before turning it on. For more information, please contact the dealer where you purchased your device.

For normal operation, this device should be used under the following environmental conditions:

- **Operation**
  Temperature : 10°C ~ 40°C
  Humidity : 30% ~ 90%
  Atmospheric Pressure : 800 hPa ~ 1060 hPa

- **Transportation**
  Temperature : -40°C ~ 70°C
  Humidity : 10% ~ 95% (without condensation)
  Atmospheric pressure : 500 hPa ~ 1060 hPa

- **Storage**
  Temperature : -10°C ~ 55°C
  Humidity : 10% ~ 95% (Without condensation)
  Atmospheric pressure : 700 hPa ~ 1060 hPa

⚠ Caution	
The device must be transported by at least 3 persons.	Install the appliance on a flat surface.
The device must be installed and used in accordance with the manual instructions. Switching on without loosening the transport fixture may cause serious abnormalities to the device	It should not be stored or installed in a potentially explosive location or in the presence of volatile chemicals such as alcohol or benzene, or flammable or explosive materials.
Avoid exposure to the sun or ultraviolet rays, or places with severe temperature fluctuations.	Avoid places where hot air balloons are close to you or places with high humidity and heat dissipation problems.
Avoid areas exposed to excessive shock or vibration.	Do not block the heat sink on the appliance.
Be careful not to allow dust or metal objects to enter the interior of the appliance.	

⚠ Warning	
Do not connect the AC power cord without the components of the machine fully connected. This will harm the device.	Do not pull on the cables of the appliance. If you want to open the cable, unplug it.
Do not operate the device with wet hands.	

2.4 Instructions about the maintenance

Caution	
The maintenance of the appliance by the customer must be carried out as described in the user manual or service manual	This appliance may only be repaired by a Huvitz service technician or an equivalent qualified person.
The manufacturer is responsible for the safety, reliability and performance of this device only if the following conditions are met: (1) if the installation is carried out in a reasonable space and in accordance with the provisions of this manual, and (2) if the device has been used and maintained in accordance with the procedures prescribed in this manual or the service manual.	The manufacturer is not responsible for any damage caused by unauthorized modification of this device. Unauthorized change of such apparatus becomes the factor which deprives you of right during the warranty period.
This appliance is used in conjunction with accessories provided by Huvitz. If the consumer intends to use an accessory from another manufacturer, the safety of the accessory must be verified and confirmed by Huvitz or the manufacturer of the accessory.	Install the appliance on a flat surface. Keep 15 cm from the wall
Used batteries must be disposed of in accordance with regulations. Otherwise, there is a risk of explosion	

Warning	
To reduce the risk of electric shock, this equipment must be connected to ground	To protect against the risk of electric shock, use IEC/UL certified devices for supplied accessories (power cords)

2.5 Precautions about the use

Caution

Do not use hot water for the water in the water tank.	Wipe the silicone spindle cover with a soft cloth. In case of damage, there may be a short circuit.

Warning

Always keep the window closed while milling. If the block breaks, the fragments may cause injury, and milling fragments may get into the eyes and cause damage.	Care must be taken not to touch any part of the user's body while the milling bur is rotating. Otherwise it may result in serious personal injury.
In any case, the machine must not be operated with the cover open. There is a risk of injury due to the internal unit operating at high pressure and high speed.	If any cracks are found, such as in the milling bur or on the bottom of the device, it should be stopped and serviced immediately. If it breaks during operation, foreign matter may spread due to high-speed rotation and cause serious injury
Before milling begins, it is imperative to make sure that the actual block matches the on-screen block. Failure to do so may result in damage to the bur or shorten the life of the milling bur	When checking or replacing milling bur, be careful as the milling bur is sharp and may injure your hands
You should always check that the water is flowing properly. Otherwise the life of the milling bur may be shortened due to poor cooling.	Fill the water tank with water within the indicator line. Lack of water can seriously affect milling quality. The dust generated due to lack of water can not only damage the user's respiratory system but also cause product failure.
The oil filter in the water tank must be used. Otherwise, the pipes may become clogged.	Be careful not to let cutting oil get into your eyes. Be sure to remove any remaining cutting oil from your hands with water after finishing the work.

Memo

The characteristics of the block to be machined vary depending on the manufacturer, so be sure to refer to the manufacturer's IFU.	

3. Configuration of the Lilivis Mill

3.1 Front



①	Milling Room
②	Status LED Bar
③	LCD screen
④	Power Button
⑤	Drawer

3.2 Rear



①	Power Switch
②	Power Inlet & Fuse
③	LAN Port
④	Ventilation Fan

3.3 Milling room



①	Spindle Assy (Left)
②	Spindle Assy (Right)
③	Block Holder
④	Window Cleaning Nozzle
⑤	Strainer & Drain

4. Operation

4.1 Turning the Power On

- Close the milling room window.
- Switch on the power switch.

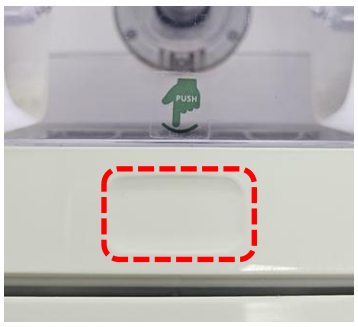


- As soon as the main screen appears, it initializes and moves to the standby position.

4.2 Opening the window

- When opening the window, please press the designated PUSH area to open it.



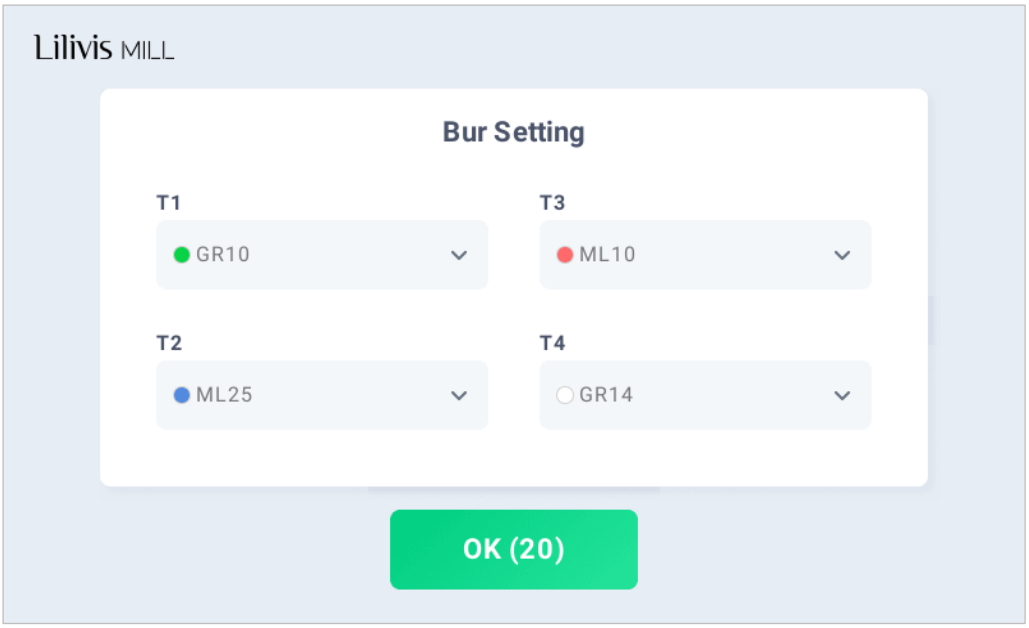


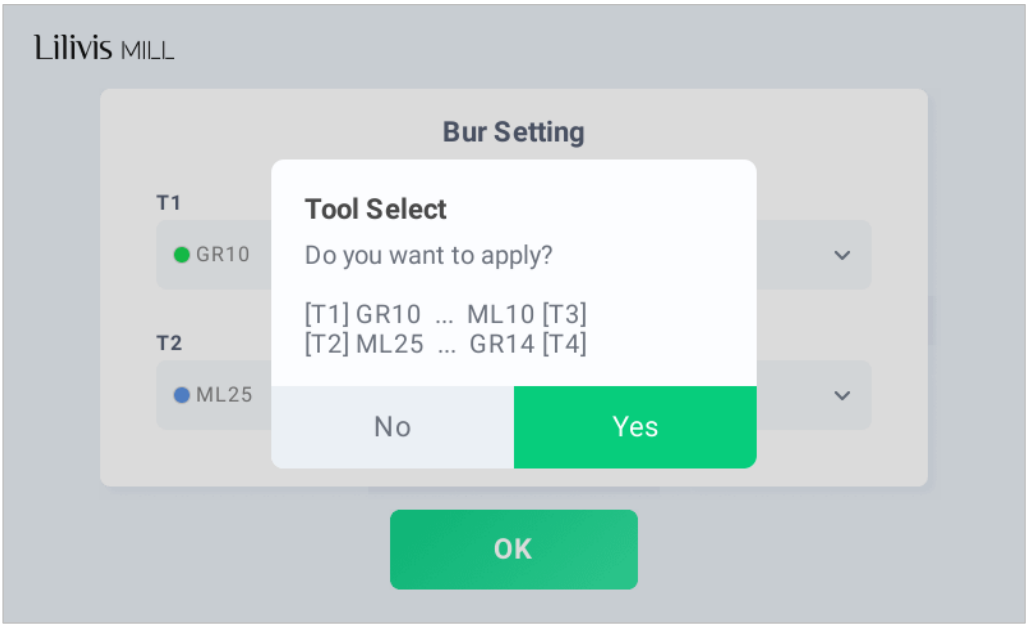
⚠ Caution

- If you press anywhere other than the designated PUSH area, it may cause damage to the latch.

4.3 Setting the milling burs for Normal mode

- Each time the power is turned on, check that the mounted milling burs match the Burs Setting screen.
- For Normal milling, select Quick Select > Normal.
- Confirm T1: GR10, T2: ML25, T3: ML10, and T4: GR14, and then press the 'OK' button.
- When the Tool Select confirmation message appears, verify the selected milling burs and press the 'Yes' button.



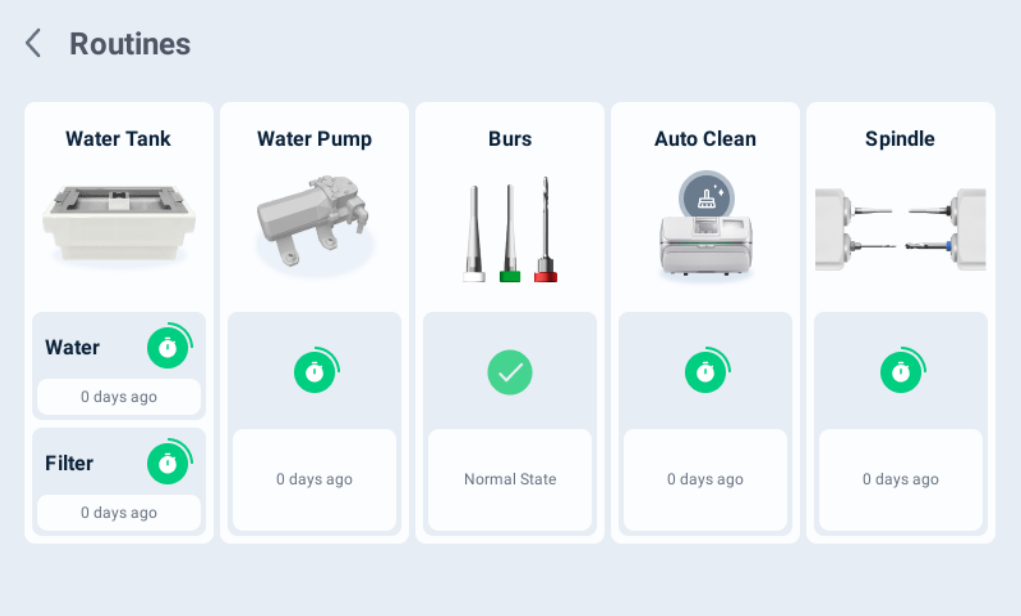


Memo

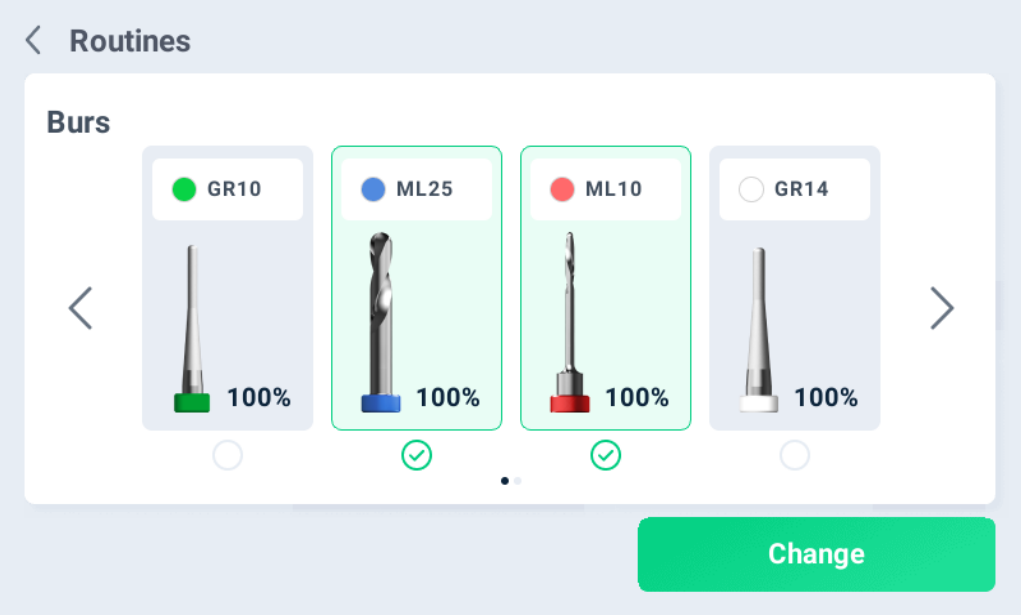
- In the following cases, the milling bur selection screen does not close automatically.
  - ✓ If there is an EMPTY item (tool selection is not available), it will not close automatically.
  - ✓ It does not close automatically if the user has changed the tool selection.
  - ✓ If the user presses the OK button and a confirmation message is displayed, it will not close automatically.

4.4 Setting the milling burs for Dual Sync mode

- If Dual Sync milling is required, press the maintenance button on the main screen and go to Routines > Burs.



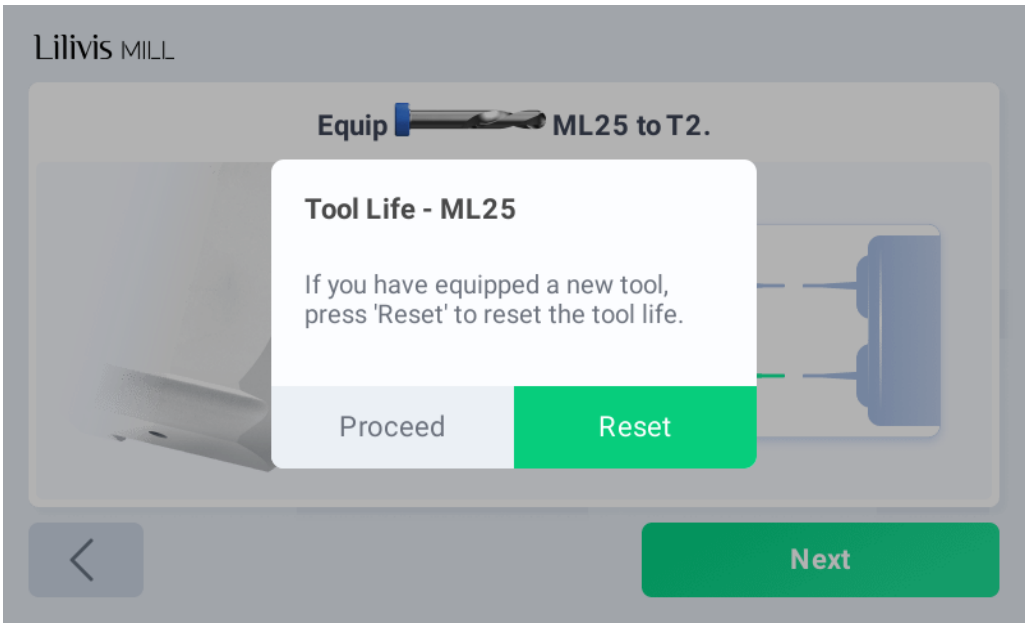
- Select T2: ML25 and T3: ML10, and then press the 'Change' button.



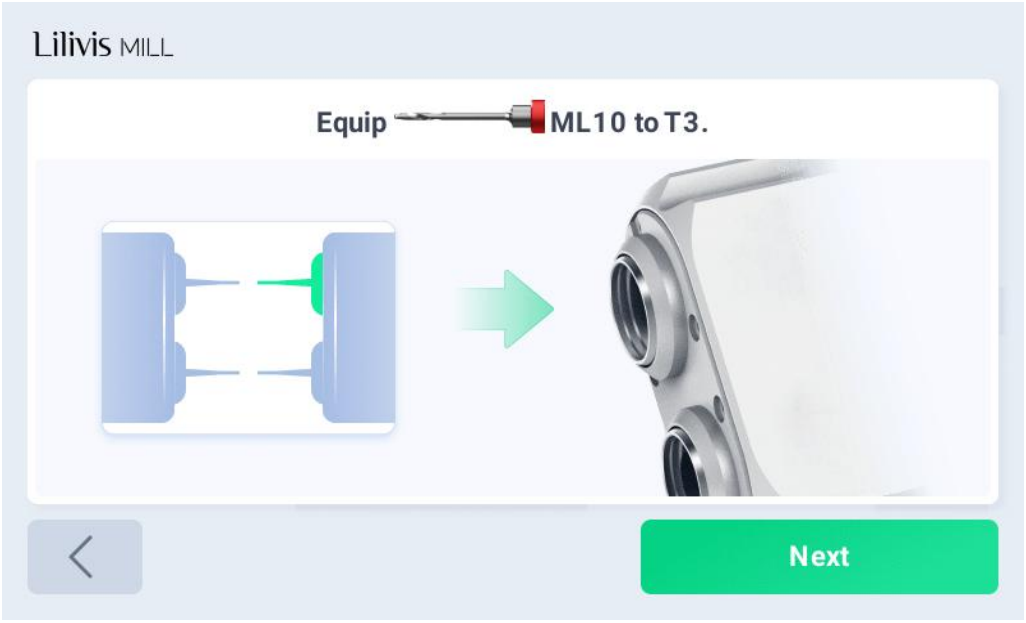
- Replace T2: ML25 (Blue) with GR18 (Yellow).



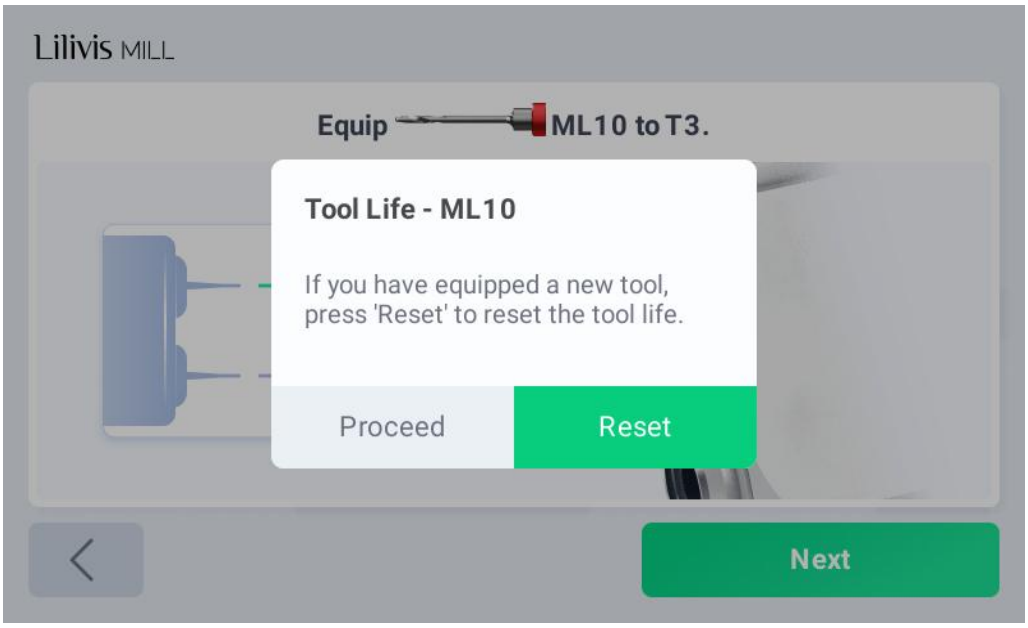
- In the Tool Life - ML25 message, press 'Reset' for a newly installed milling bur. Press 'Proceed' only to retain the existing milling bur and its tool life.



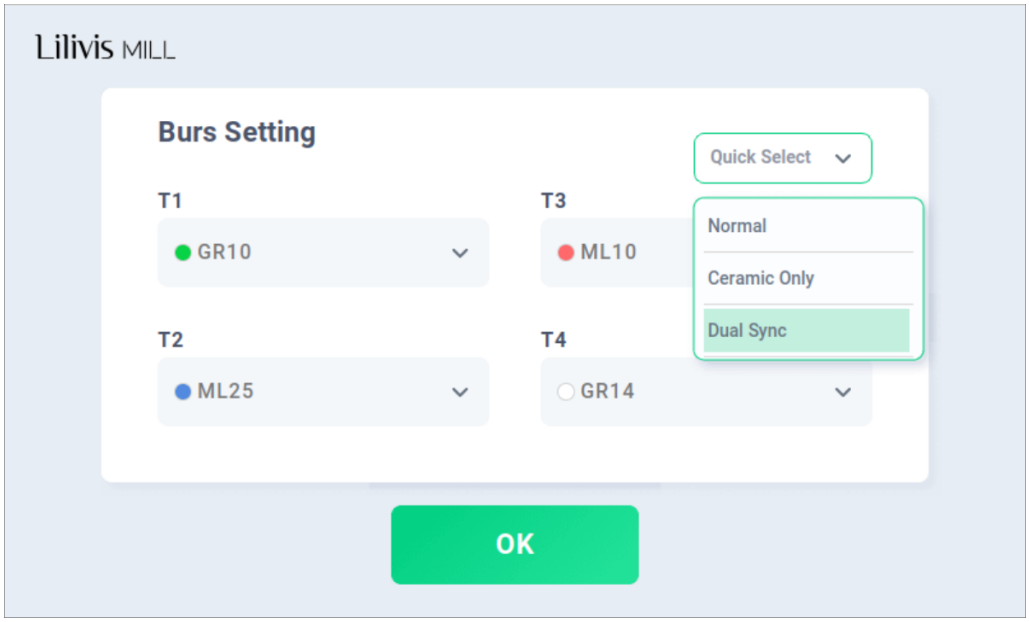
- Replace T3: ML10 (Red) with GR14 #2 (White).



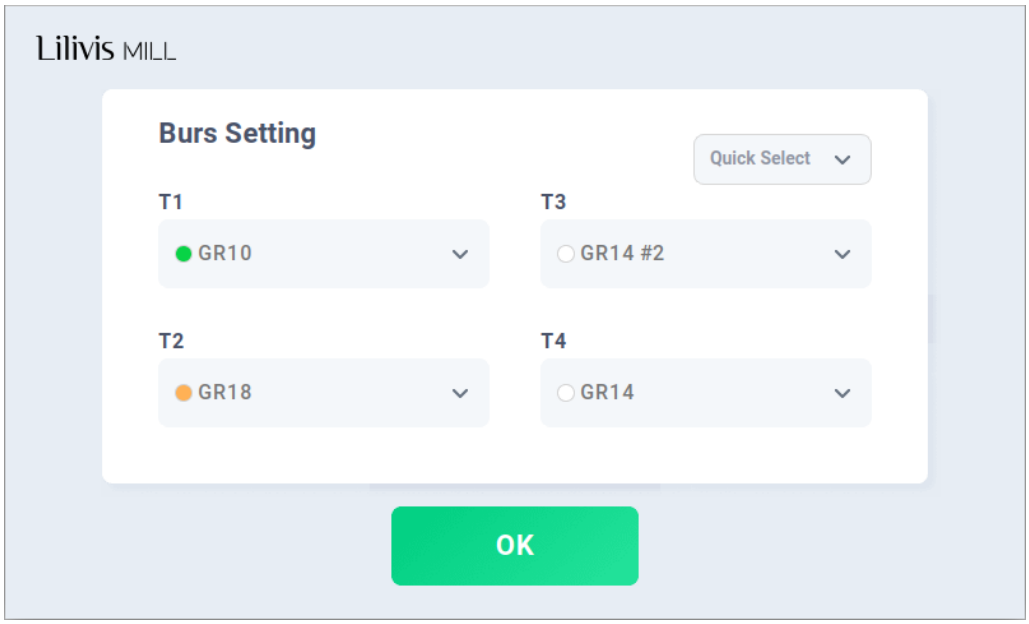
- In the Tool Life - ML10 message, press 'Reset' for a newly installed milling bur. Press 'Proceed' only to retain the existing milling bur and its tool life.



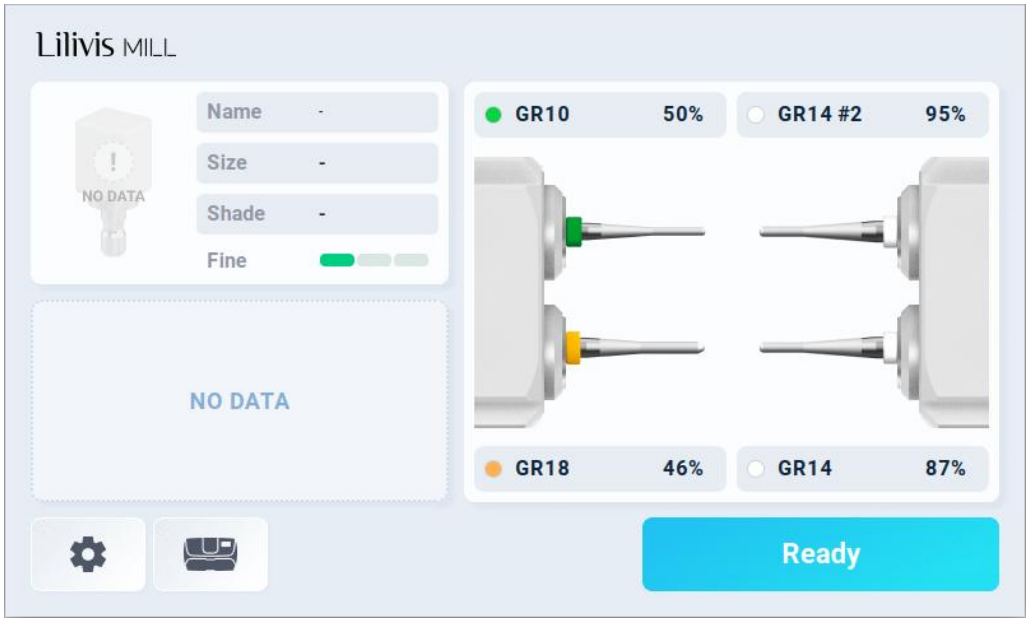
- Return to the Burs Setting screen. Open Quick Select and select Dual Sync.



- Confirm T2: GR18 (Yellow) and T3: GR14 #2 (White), and then press the 'OK' button. When the Tool Select confirmation message appears, verify the selected milling burs and press the 'Yes' button.



- On the main screen, confirm that T2: GR18 (Yellow) and T3: GR14 #2 (White) are displayed.



4.5 Motor spindle automatic warm-up

- Whenever the power is turned on, the machine checks the last spindle usage history and automatically performs a warm-up operation if the spindle needs to be warmed up.
  - Warm-up operation : Spindle rotation (Low RPM → High RPM), Water pump (Nozzle 1/2/3 injection)
  - Warm-up time : Approximately 10 minutes.
- The automatic warm-up operation is performed at most once per day.
- If the warm-up process is stopped by pressing the stop button or it is not finished properly, the automatic warm-up operation will be performed again the next time the power is turned on.



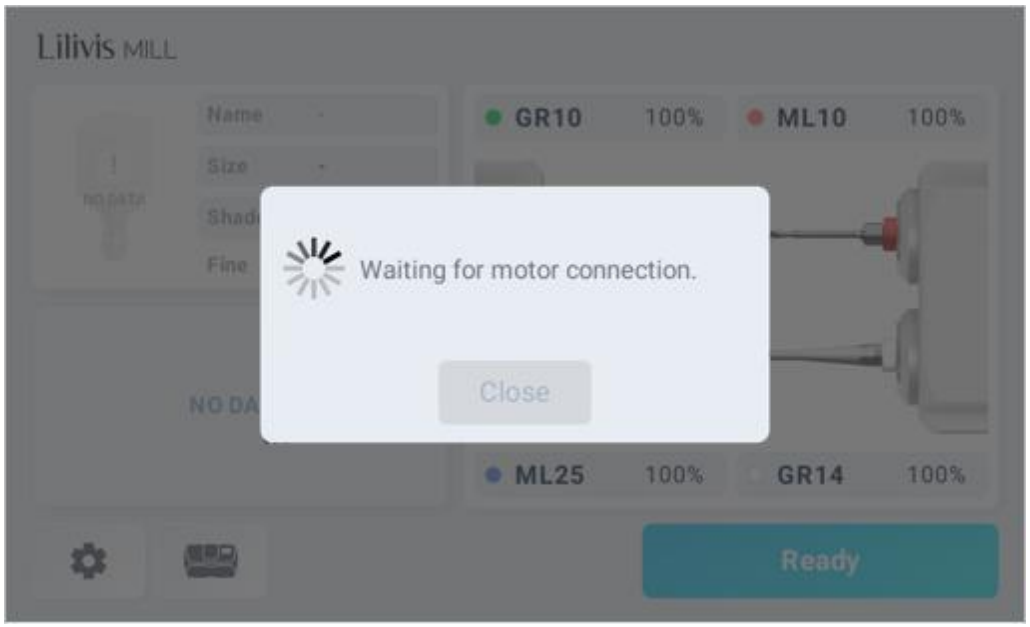
- After the automatic warm-up is completed, the motor initialization is performed and the warm-up window is

automatically closed.

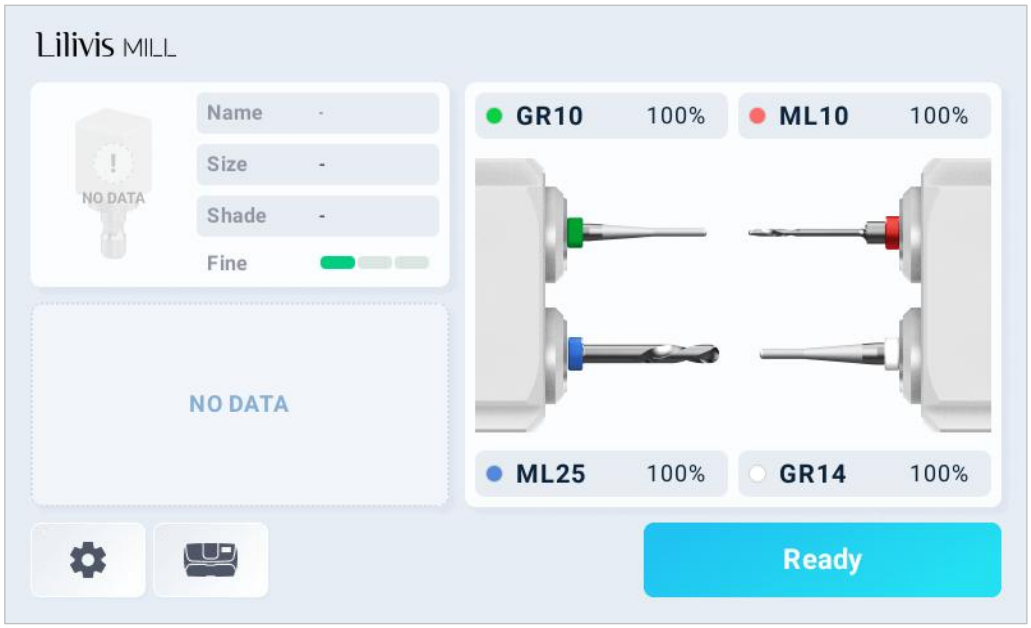


4.6 Ready to go

- Automatically check the connection status of electronic boards.

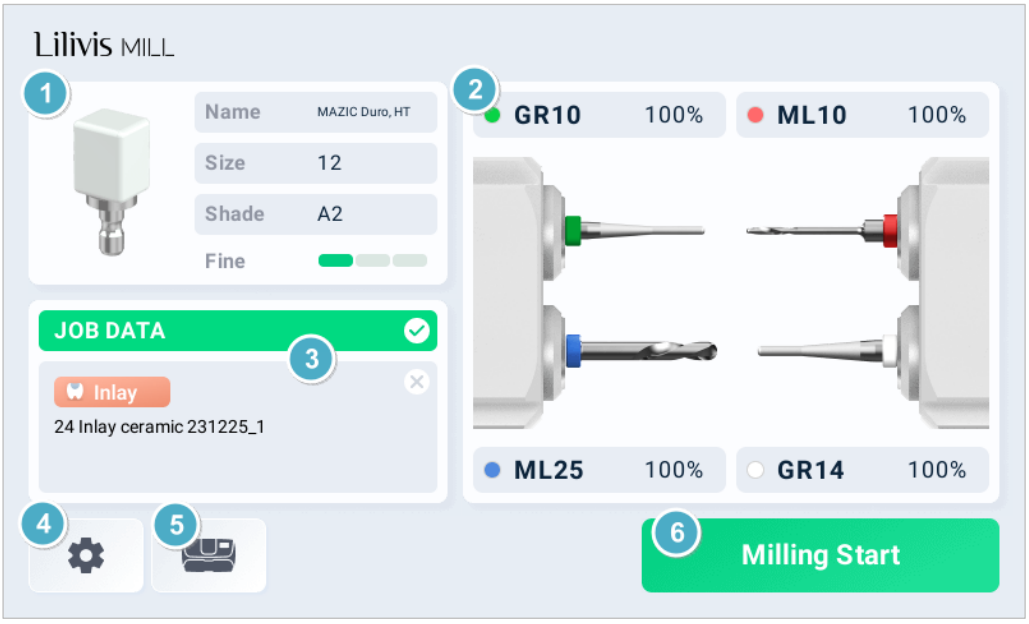


- After initialization movement, the main screen appears.
  - Ready status : Screen before receiving data from L-CAM.



5. User interface

5.1 Main screen



5.1.1. Block information ①

- After it is ready for milling, it displays the information of the block currently mounted on the machine.
- If the block information is different from the received job, a red warning icon is displayed
  : If you click the warning icon, you can see the block information specified in the received job
  : At the start of milling, a new block can be mounted.

5.1.2. Milling bur information ②

- Displays bur information that is currently mounted on the machine.
- Displays the bur's life information as a percentage
  : Burs that have reached the recommended replacement life are shown in red
- If the milling bur information for the received operation is different, it is shown in red
  : You can check the details by tapping on the red warning image.

5.1.3. Job information ③

- Displays the name of the job sent by L-CAM.
- If a job name is too long to be displayed on the screen and you cannot see the full name, you can tap and hold the area to see the full name.

5.1.4. Button for Setup Mode ④

- Go to setup mode.

5.1.5. Button for Management Mode ⑤

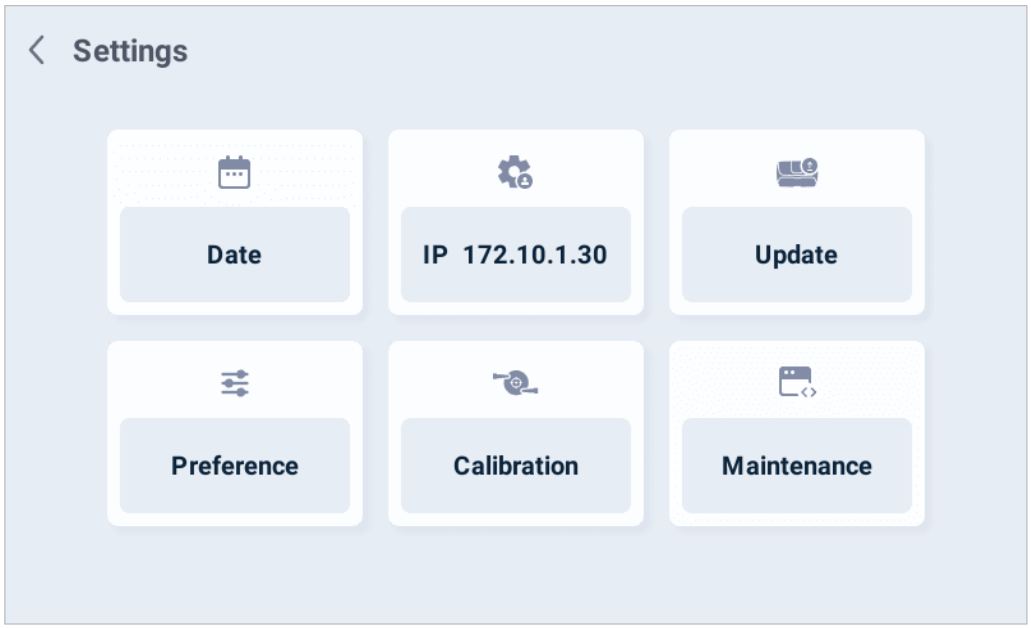
- It is a feature that helps you to conveniently manage your device periodically.
- If there is anything that needs to be maintained, the button will be marked with a red dot. You can enter the management mode and perform management.

5.1.6. Button for Ready / Start ⑥

- If there is no received data, it is marked as ‘Ready’, and if it is received, ‘Milling Start’.
- You can use ‘Ready’ button to perform operation such as block mounting and measurement in advance.
- You can start milling by pressing the ‘Milling Start’ button.

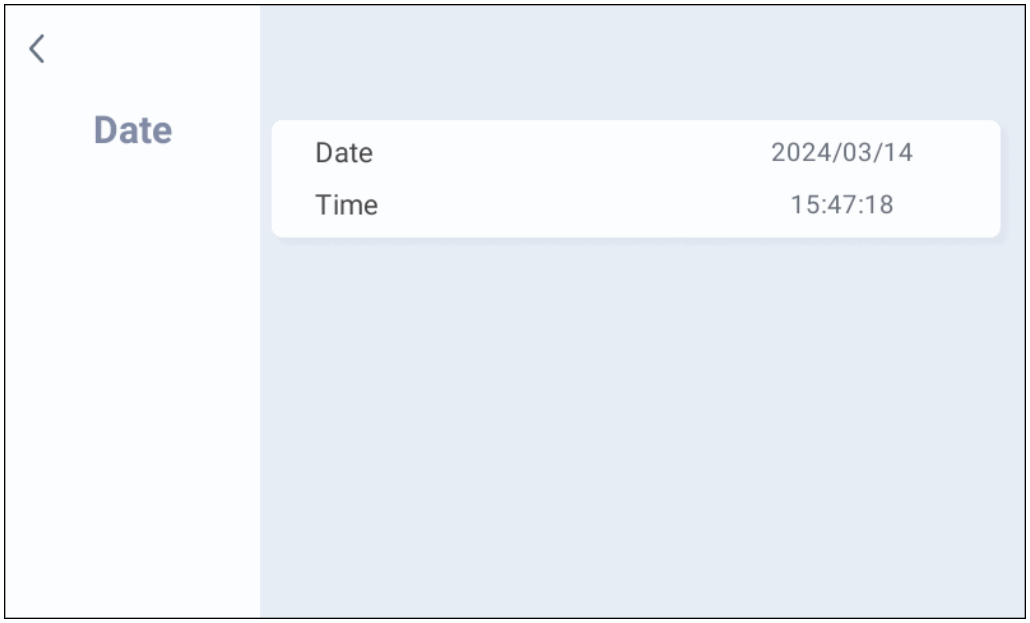
5.2 Setup mode

In the setup mode, you can check and change information related to the status of the machine.



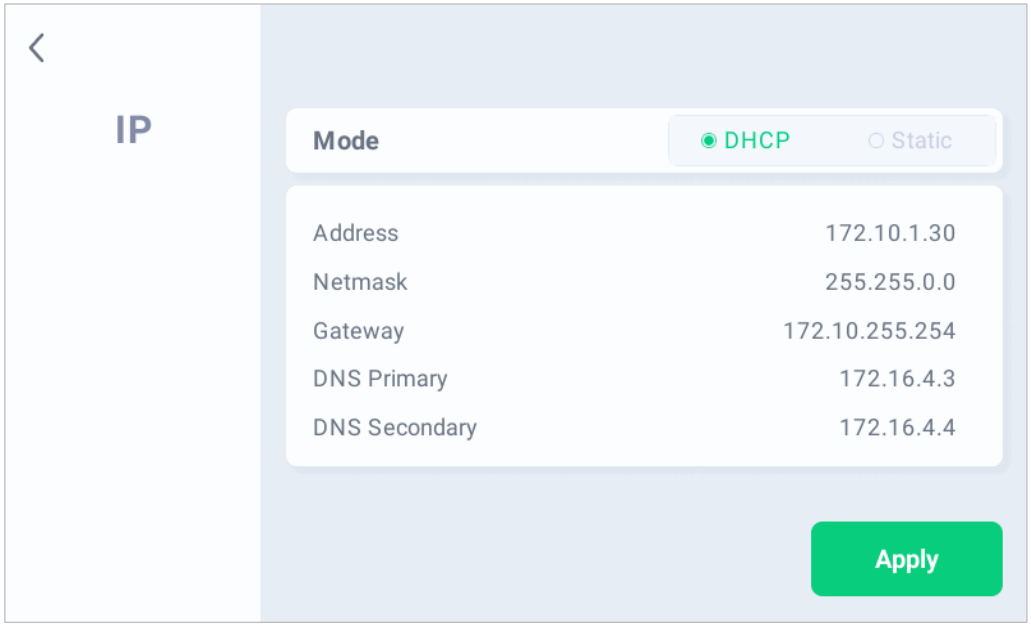
5.2.1. Date

- You can check the date and time on this screen.
- The date and time are automatically synchronized to be the same as those in the connected LAN environment.



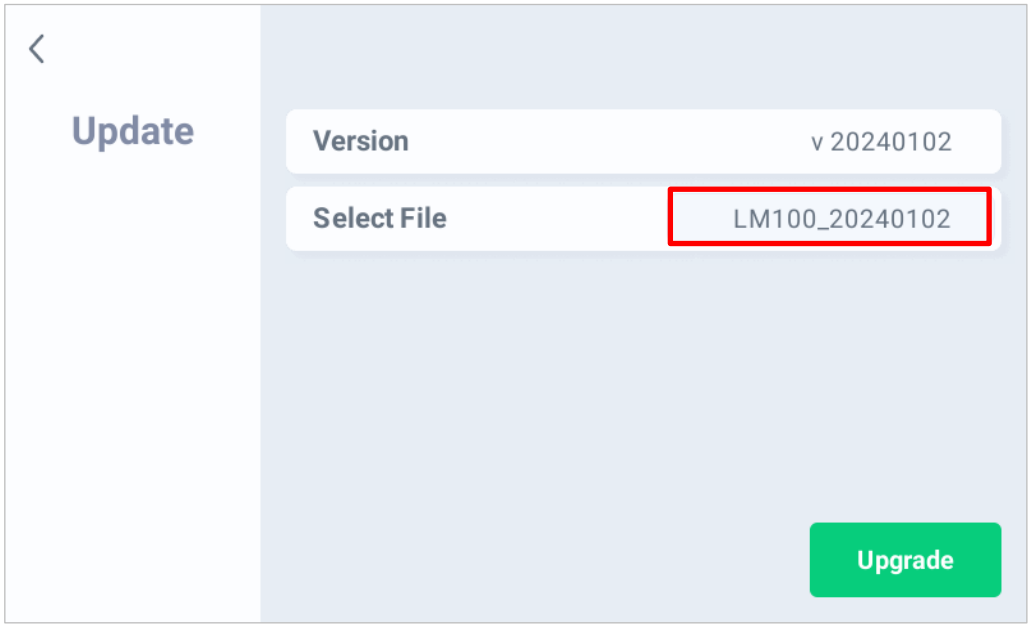
5.2.2. Network (IP)

- You can check and change IP-related information on this screen.
  - DHCP mode : An IP is automatically assigned from the connected LAN environment.
  - Static mode : You can specify a fixed IP.



5.2.3. Update

- You can check the current SW version and upgrade to the latest one.



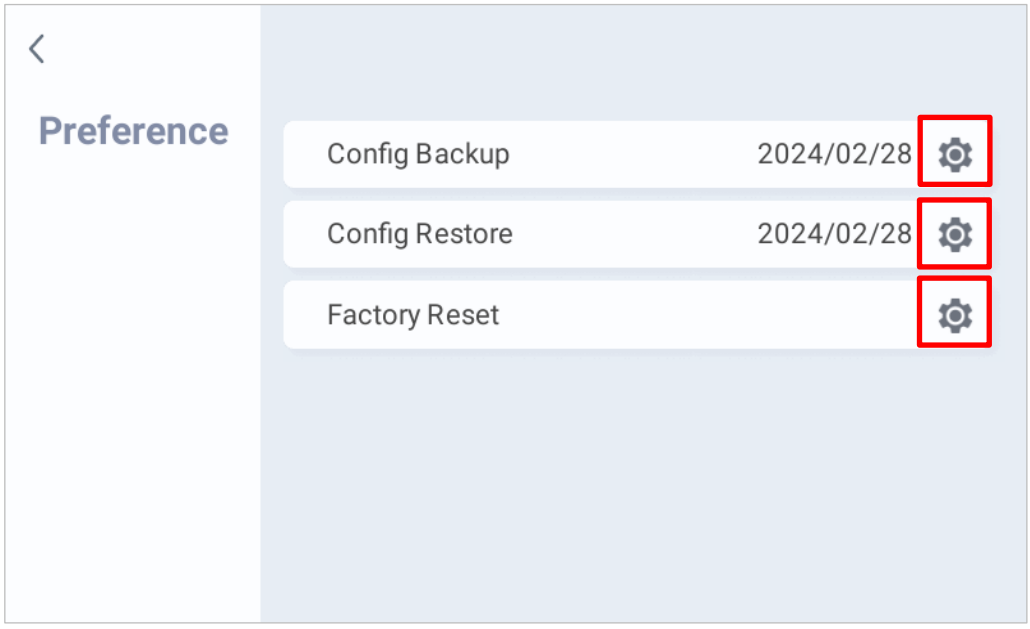
- You can check and select the software version saved in the USB memory by pressing the version name display area in the 'Select File' item
- Press the 'Upgrade' button to update the selected file.

⚠ Caution

- For best performance, we recommend using the latest software.
- If there are multiple software versions on a USB stick, you can select them to upgrade.
  1. Copy the software to a USB stick and insert it into the USB port on the front of the machine.
  2. When the USB stick is installed, the latest SW file name is automatically displayed on the screen, and the ‘Upgrade’ button is activated.
  3. You can check and change the SW version saved in the USB stick by pressing the SW file name area displayed on the screen.
  4. Press the ‘Upgrade’ button at the bottom of the screen to update the software.
  5. It takes approximately 50 to 60 seconds.

5.2.4. Preference

1. Config Backup : The machine saves the current configuration values to USB memory.
2. Config Restore : The machine restores the system to the configuration value saved in USB memory.
3. Factory Reset : The machine restores the system to factory default state.

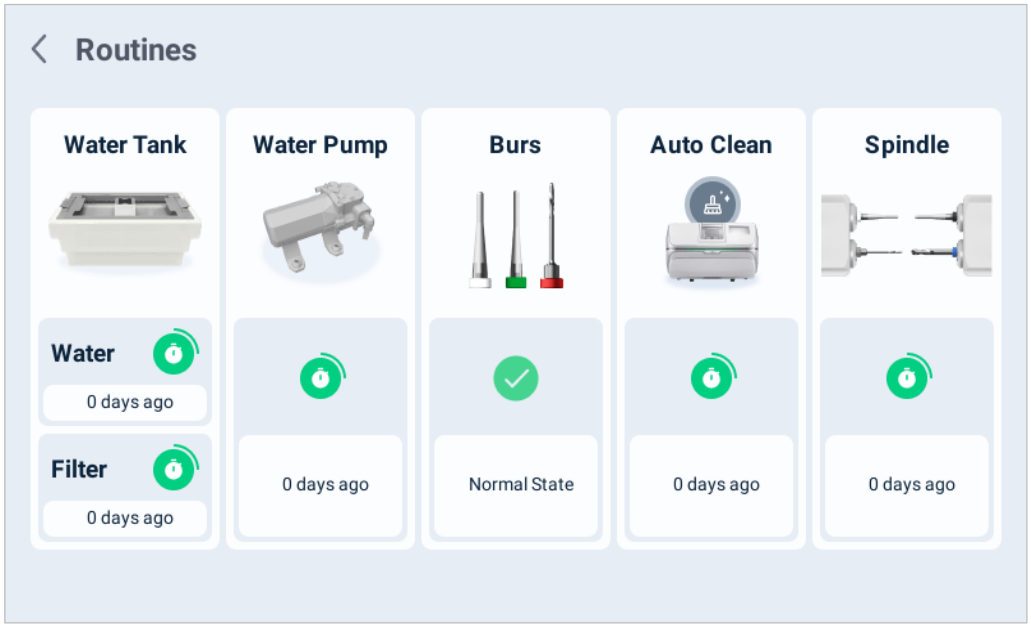


⚠ Caution

- ‘Config Backup’ and ‘Config Restore’ functions can be used when USB memory is connected.
- ‘Config Backup’ is created with a file name that includes time information, so it can be saved as many times as necessary.
- We recommend regular backup of the machine in its normal condition in case you accidentally modify data that directly affects machine performance, such as milling settings.

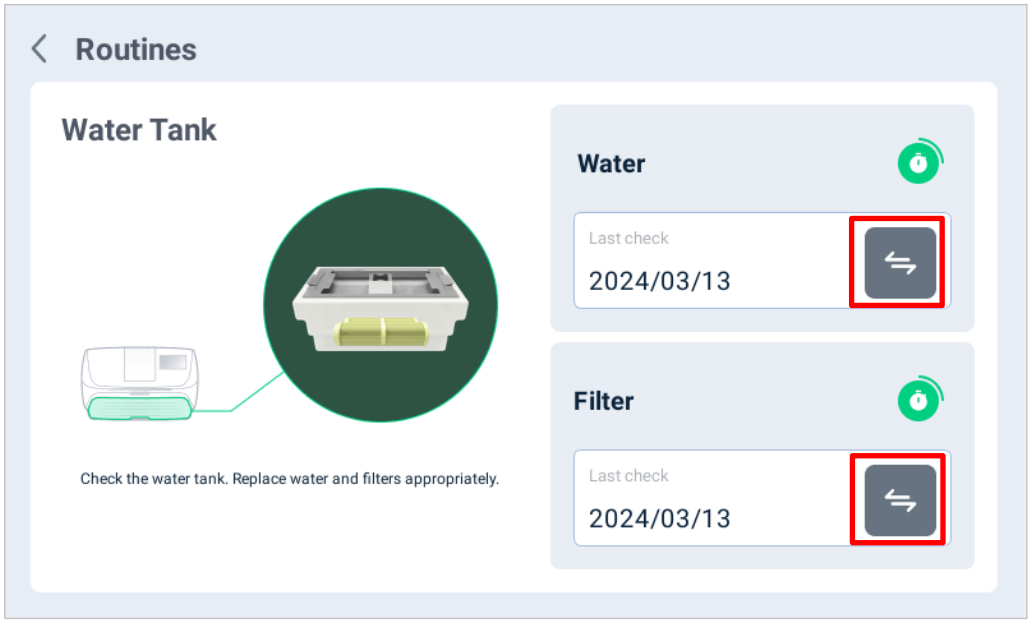
5.3 Management mode

- Management mode allows maintenance and periodic management of the machine.
- You can manage 5 main items as shown below.



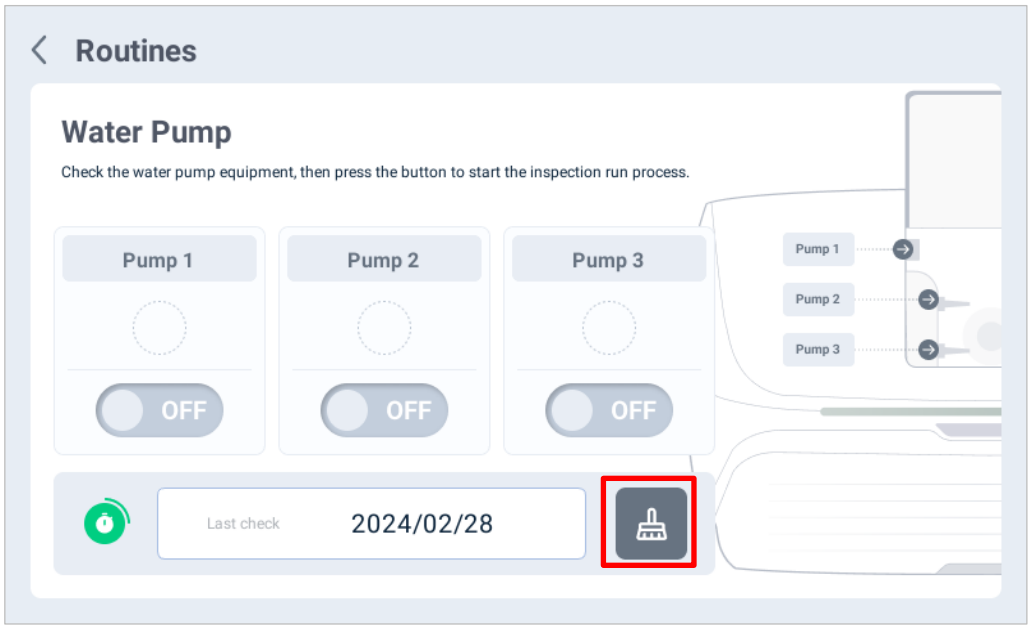
5.3.1. Management of water tank & filter

- The water tank and filter must be maintained periodically.
- After replacement maintenance, click the ‘Renewal’ button to update the last management date.
- Refer to the ‘9.6.3 Water tank cleaning and replacement of the filter’.



5.3.2. Management of water pump

- Water pumps need to be maintained periodically, especially in the following two cases:
  1) Purpose of filling water in pipes and radiator that have dried up due to the machine not being used for a long time.
  2) To check whether water comes out properly from the spindle nozzle. (☞ Refer to '9.6.6 Cleaning the spindle nozzle')
- You can perform automatic management by pressing the 'Renewal' button at the bottom of the screen and update the management date to the latest.
- You can use the 'On/Off' button on each pump to check whether sufficient water is sprayed from each nozzle.



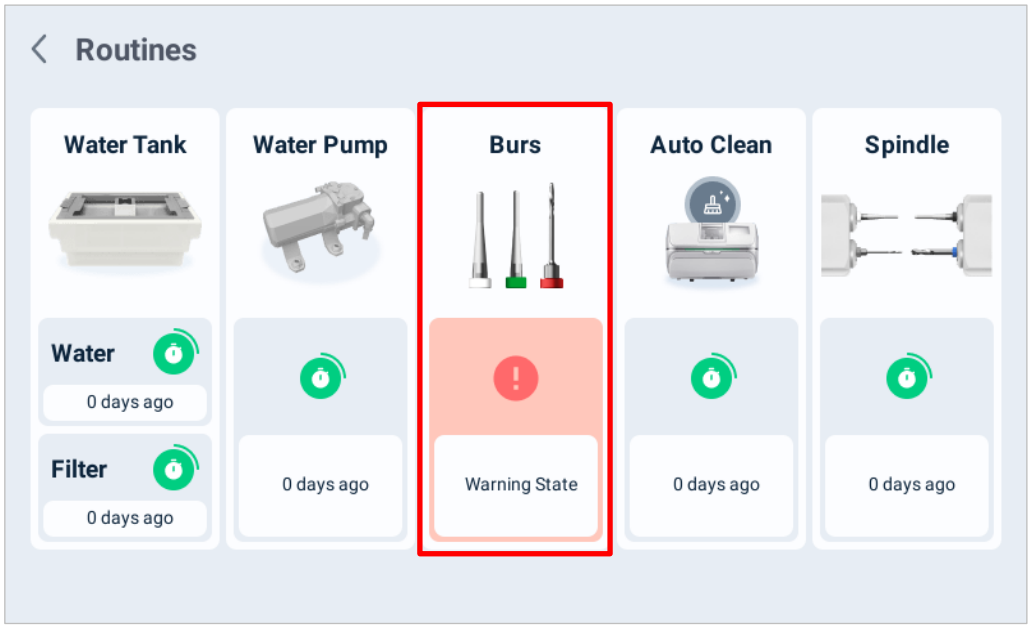
5.3.3. Management of milling bur

- As burs are consumable parts, lifespan management and periodic replacement are required to maintain milling size and quality.

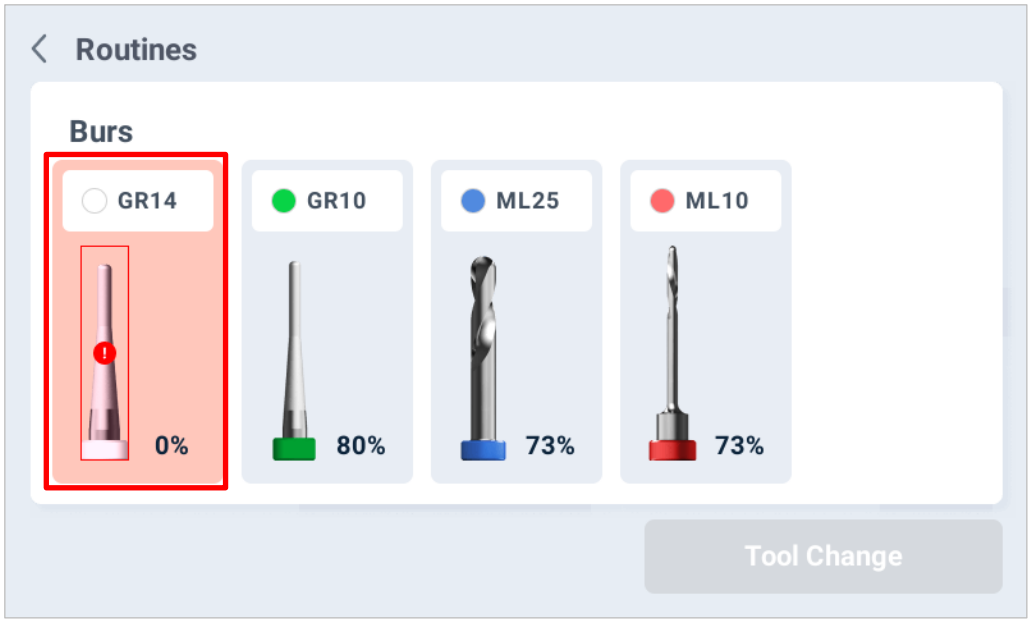
  ☞ Refer to '9.2 How to replace and renew the life of milling burs'

- The remaining life of the bur is expressed in %, and if replacement is necessary, it is indicated in red.

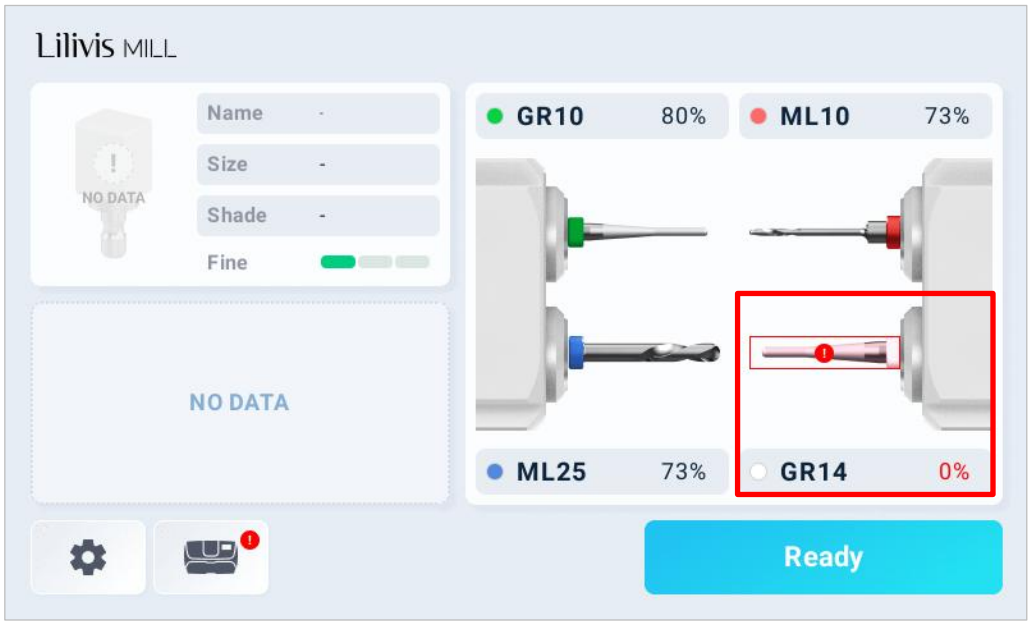
<Routine screen>



<Bur management screen>.

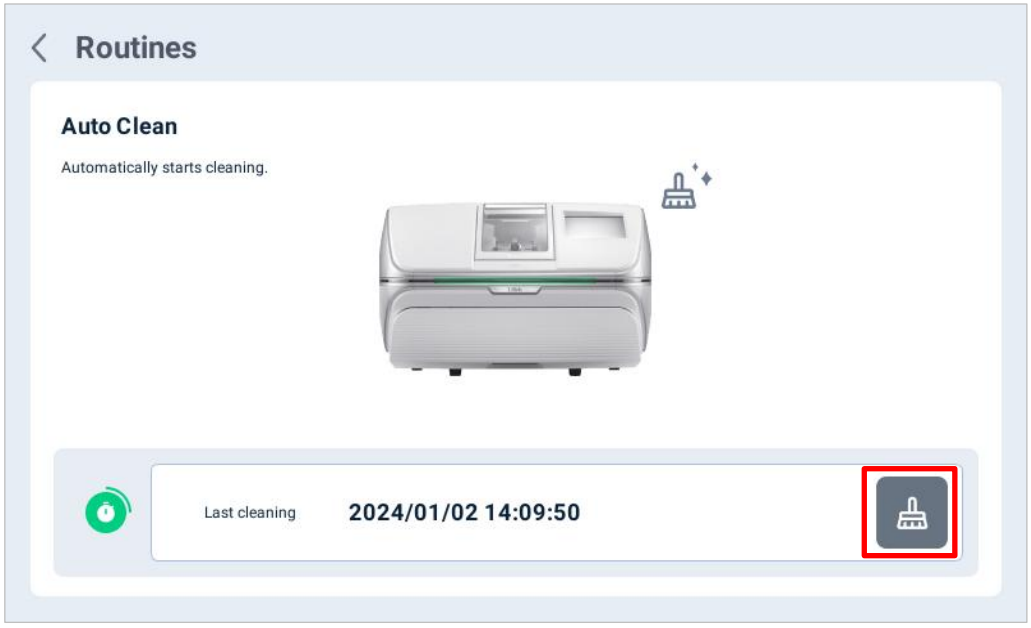


<Main screen>



5.3.4. Management of Auto-cleaning

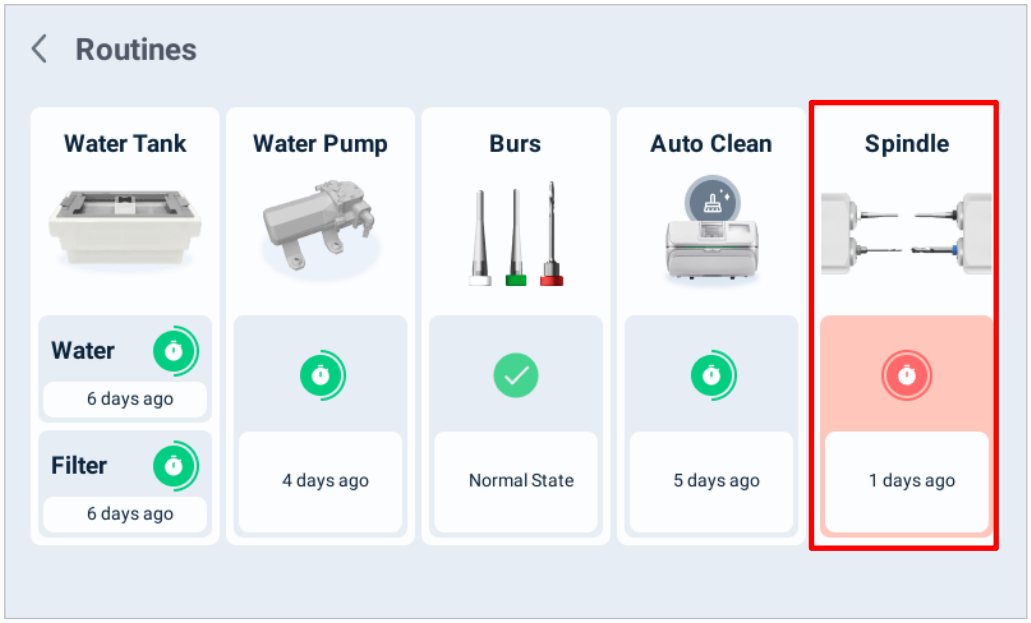
- The inside of the milling room must always be kept clean through periodic cleaning.
- When you press the 'Cleaning' button, the cleaning operation is automatically performed and the maintenance date is updated.



- After finishing the auto-cleaning operation, clean the strainer and drain (☞ Refer to '9.6.2 Management of milling room drain').

5.3.5. Management of spindle warm-up

- Periodic spindle warm-up is required to maintain the normal condition of the spindle.
- If spindle warm-up is required, it is indicated in red as shown below.



- Spindle warm-up increases sequentiallyfrom low RPM to high RPM, and the total progress time including water pump operation is approximately 10 minutes.



Memo

- If an error occurs and stops during the warm-up operation, please repeat the warm-up operation 2~3 times.

5.4 Status LED's color guide

5.4.1. READY

It's ready for milling. (White / White)

Milling Room LED
External Status LEDs

5.4.2. MILLING

It's being processed. Do not open the milling room window. (Purple / White)

Milling Room LED
External Status LEDs

5.4.3. FINISH

Processing is complete. (Purple / Green)

Milling Room LED
External Status LEDs

5.4.4. ERROR

An error has occurred. Check the error messages. (Red / Red)

Milling Room LED
External Status LEDs

5.4.5. WATER TANK OPENED

The water tank is open. (White / Blue)

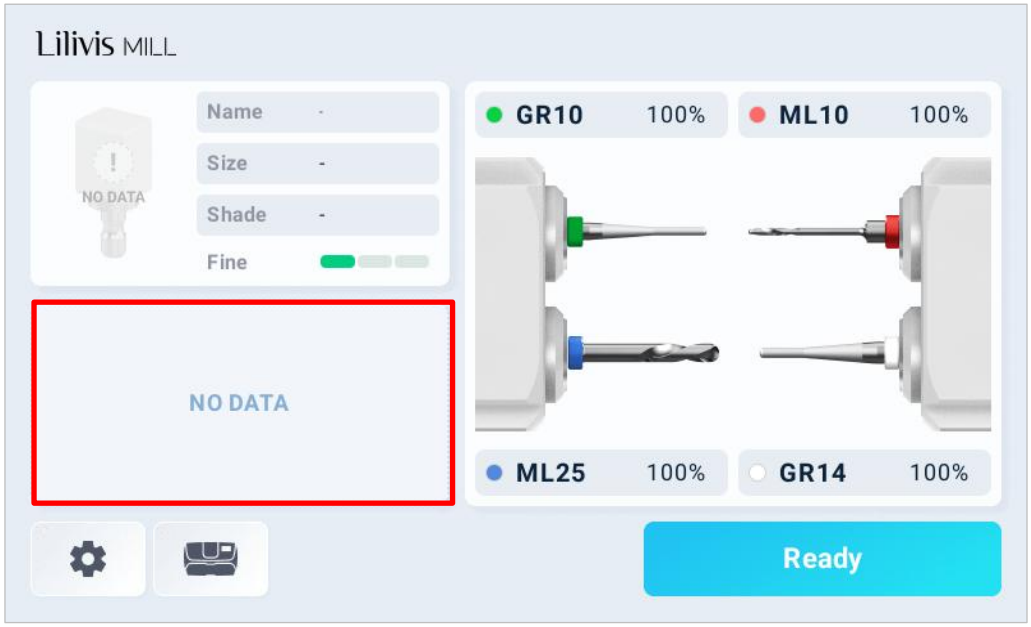
Milling Room LED
External Status LEDs

6. General milling

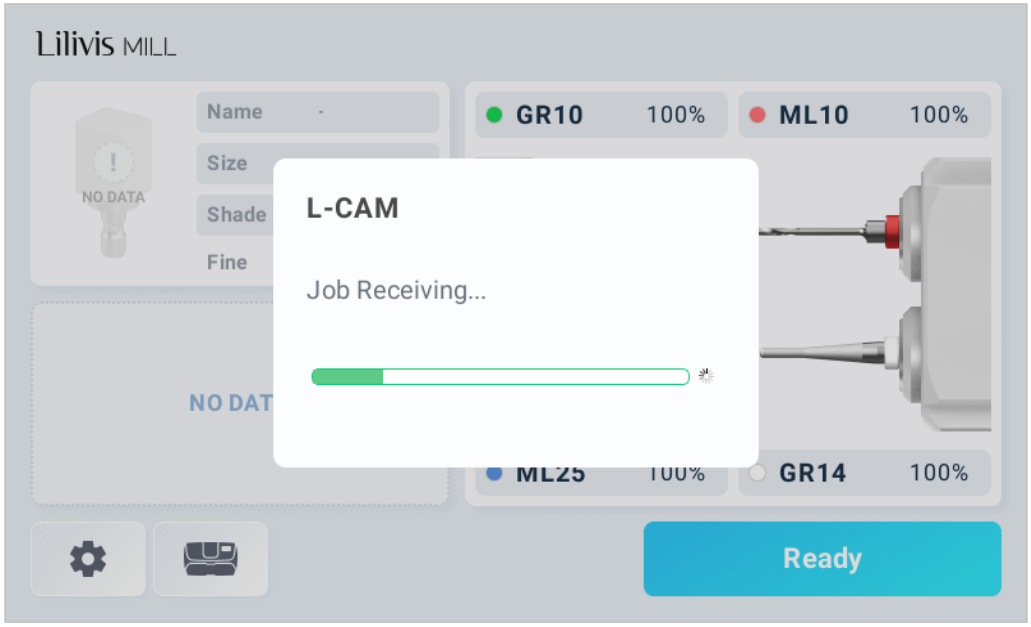
The general milling is way to start a job designed and transferred from L-CAM in Lilivis Mill.

6.1 Preparation for general milling

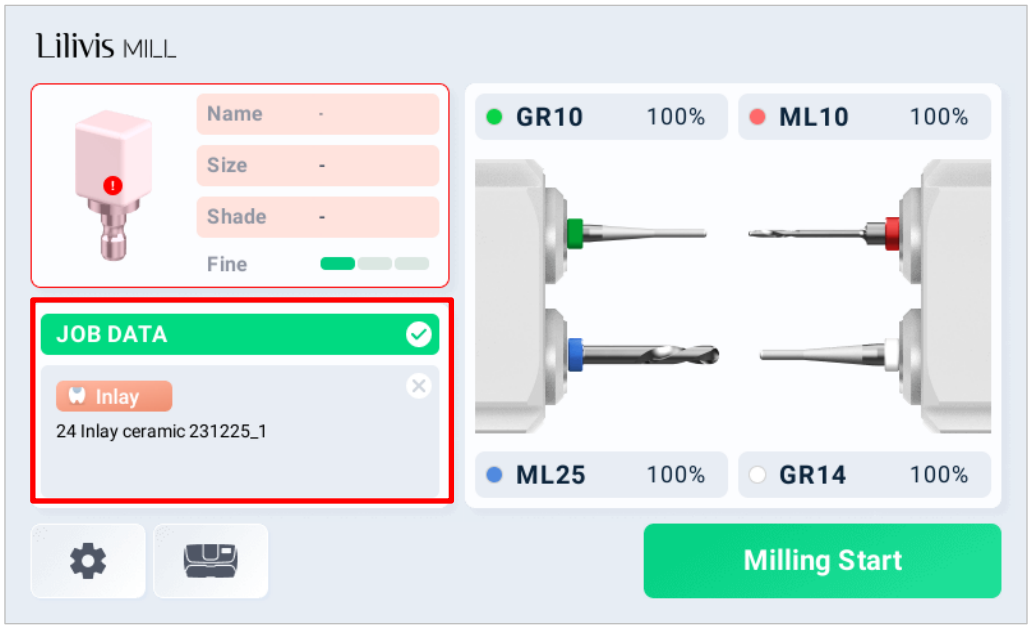
- Main screen : There is no job data.



- Receiving a job : Job data sent from L-CAM is being received.

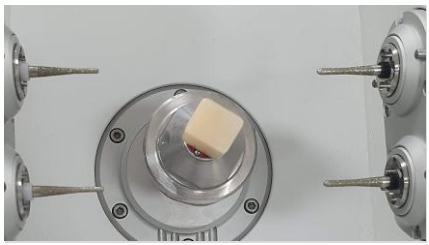


- Job received : The transferred job data is displayed on the screen.

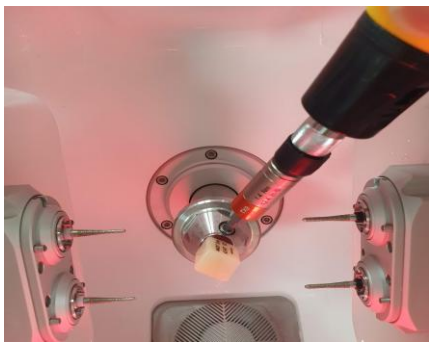


6.2 Mounting the block

1. Prepare the block for milling.
2. Open the milling room window.
3. Insert the block by aligning the groove with the block holder pin.



4. Fix the block by tightening the set screw with a torque driver until it clicks.

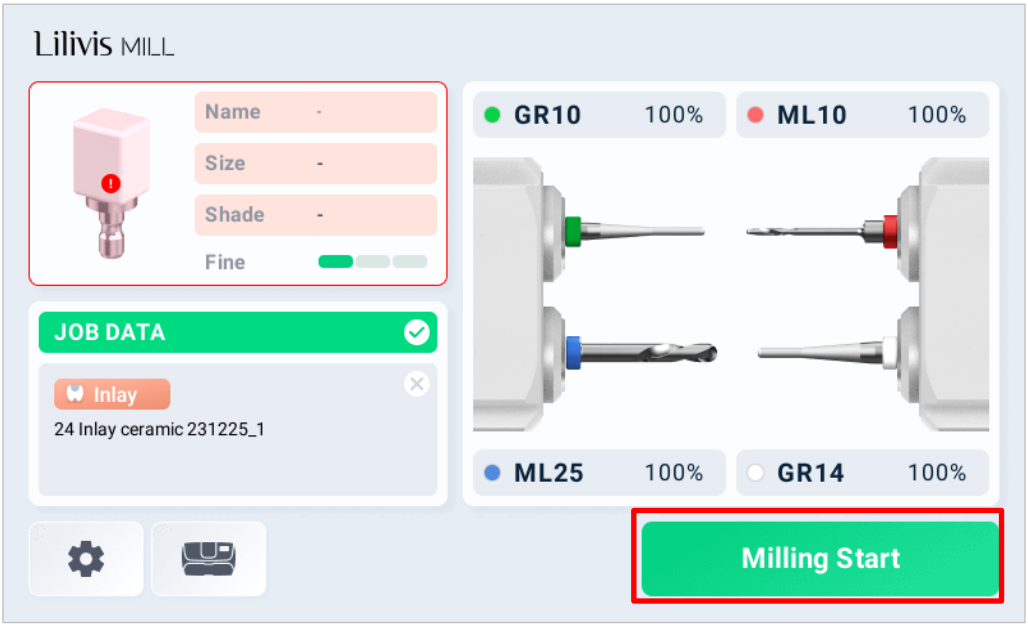


5. Close the milling room window.

> ⚠ **Caution**
>
> - Please use the torque wrench supplied with the product as an accessory.

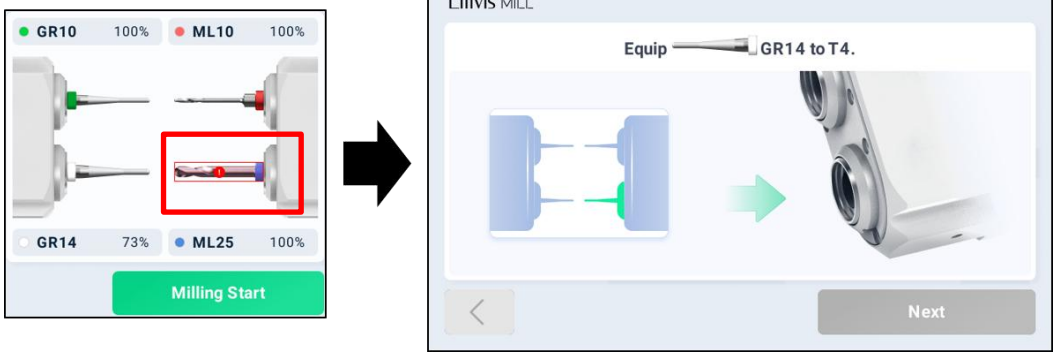
6.3 Start milling

- Click the 'Milling Start' button to start milling.



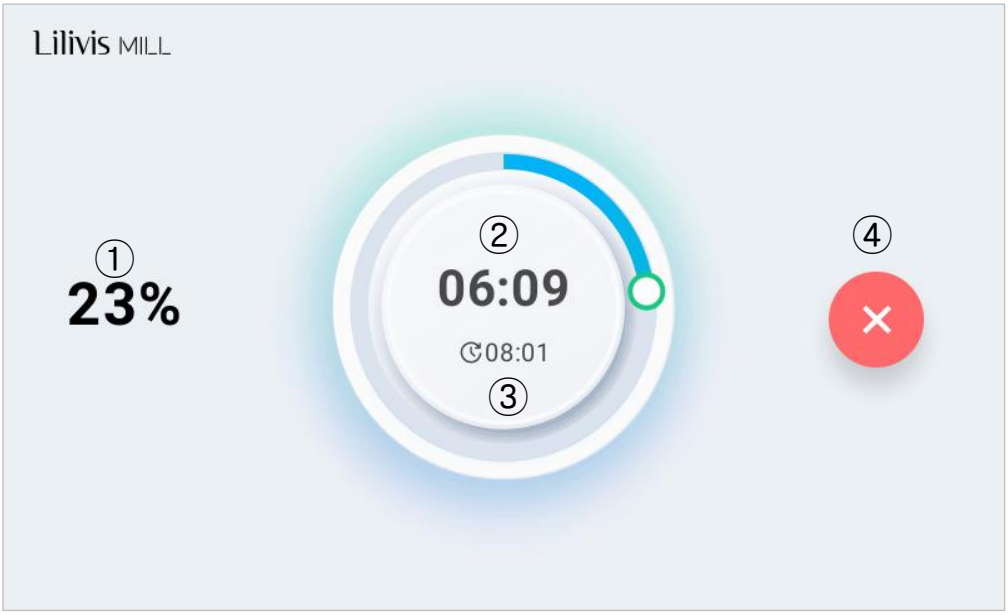
Caution

- If the bur transmitted from L-CAM and the bur mounted on the machine are different, it is displayed in red in the bur information window as shown below.
- If you start milling in such a state, the machine automatically enters bur replacement mode.



6.4 Checking the status of a milling

- You can check the progress and milling time.



①	A rate of progress
②	Remaining time (min:sec)
③	Total estimated time (min:sec)
④	Milling stop

Memo

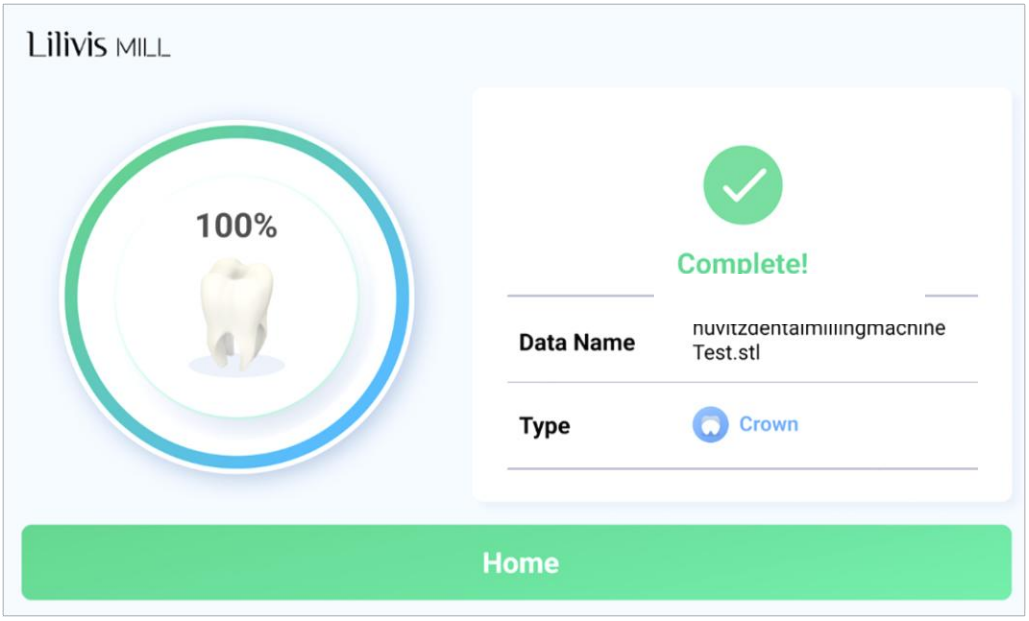
- The total estimated time is a calculated time and may differ from the actual time.

Warning

- Never open the milling room window while milling. As soon as the window is opened, all moving parts are immediately stopped, but the spindle rotating at high speed cannot be stopped immediately due to inertia, which may cause injury or cause coolant containing cutting oil to enter the eyes.
- Re-machining is not available for restorations that are stopped during milling.
- We are not responsible for any problems caused by milling while ignoring the bur replacement message.
- The (X) button does not replace the function of the emergency stop button. Turn off the power in case of emergency.

6.5 Milling complete

- Milling complete screen



,

- Press the Home button to return to the main screen.
- The finished job data is automatically deleted from the main screen.

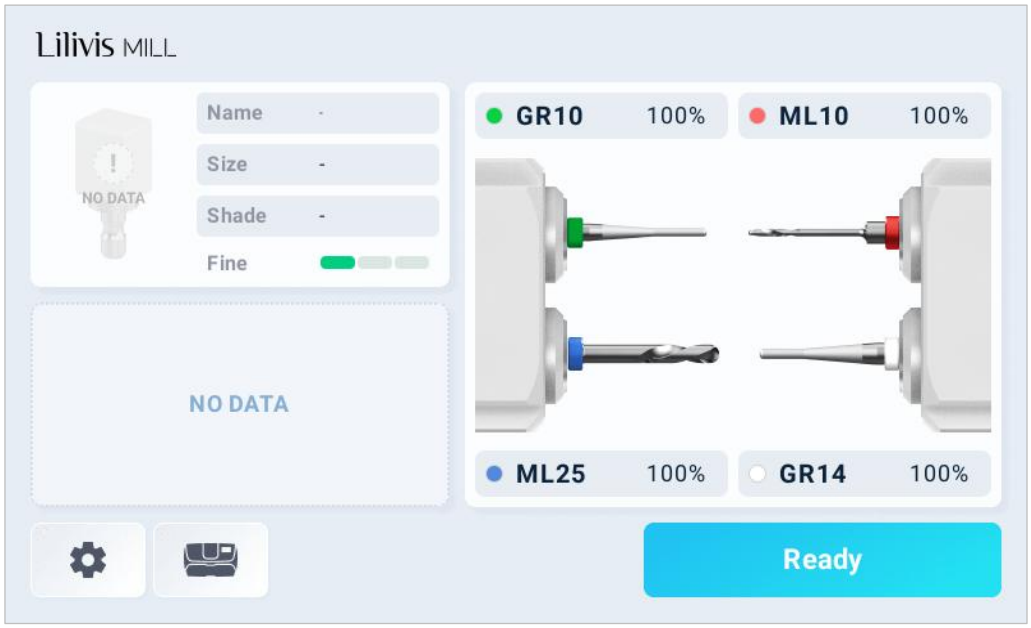
7. Remote milling

The remote milling method is a way to start milling remotely from L-CAM, which requires the block to be pre-mounted and measured using the Pre-Touch function.

7.1 Preparation for ‘Pre-Touch’

In the milling process, there is a process of touching the block with a spindle bur to measure the position and size of the mounted block. The function that performs this process in advance to use work time usefully was defined as ‘Pre-Touch’.

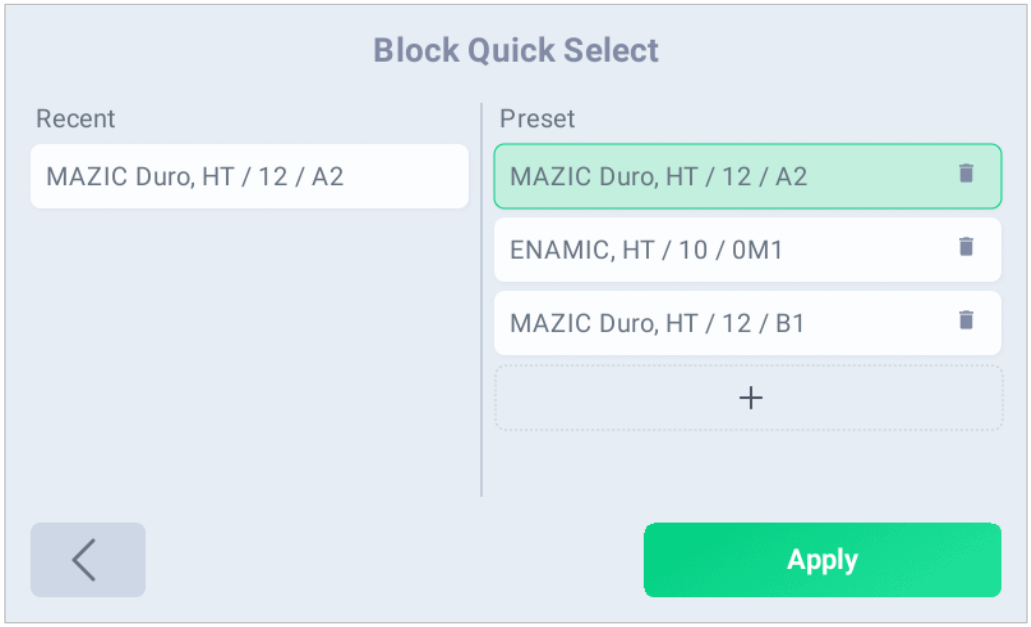
1. Press the Ready button.



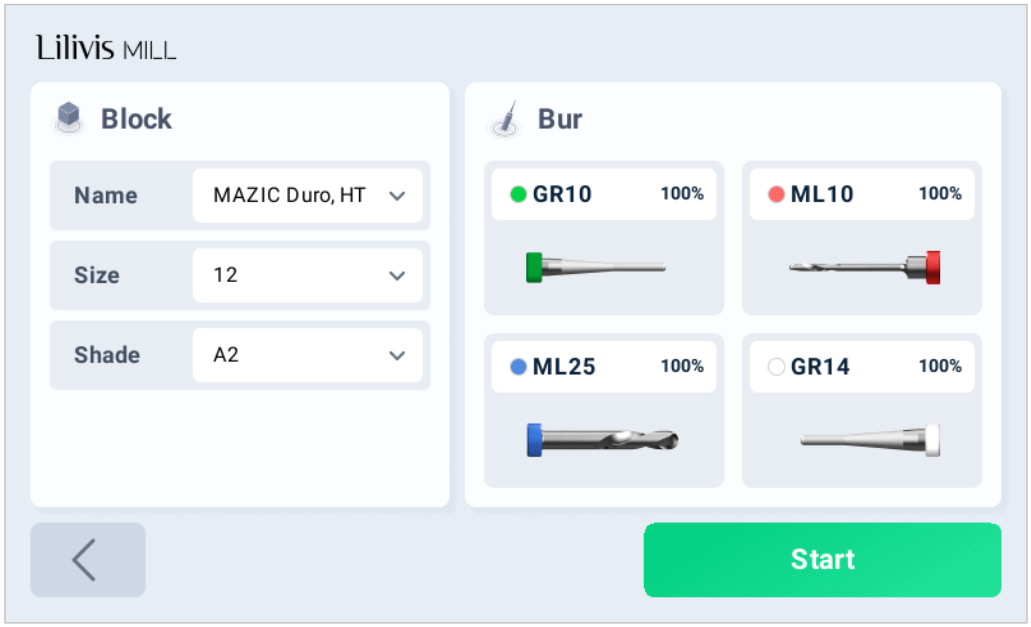
2. After selecting a block from the list of recently used one or presets, press the ‘Apply’ button.

   ☞ You can register a new preset using the ‘+’ button.

☞ Preset can be registered up to 5.

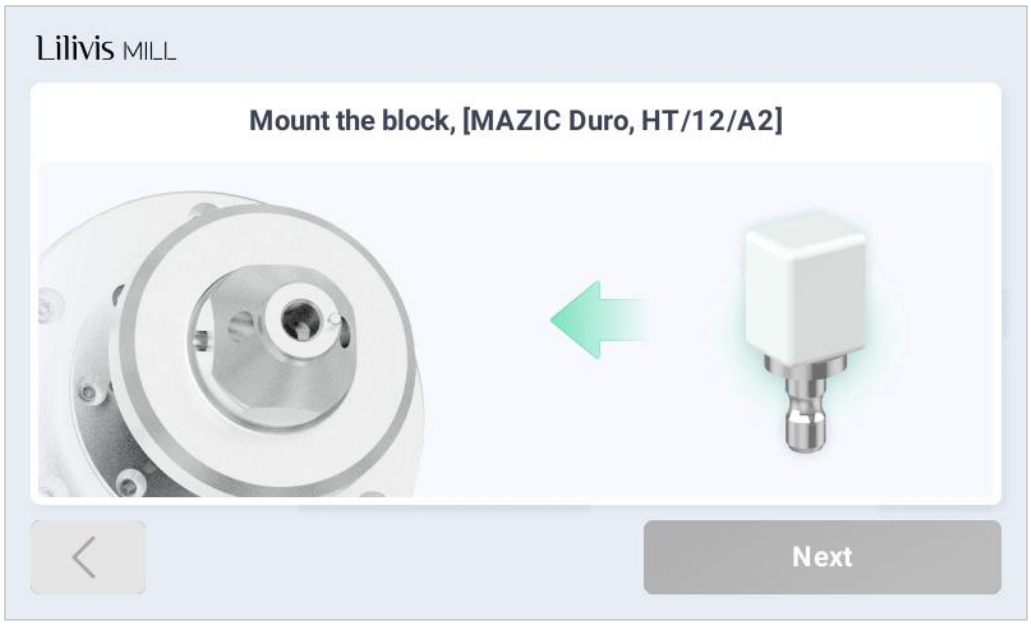


3. After checking the block and bur information on which to perform the ‘Pre-Touch’, press the ‘Start’ button.

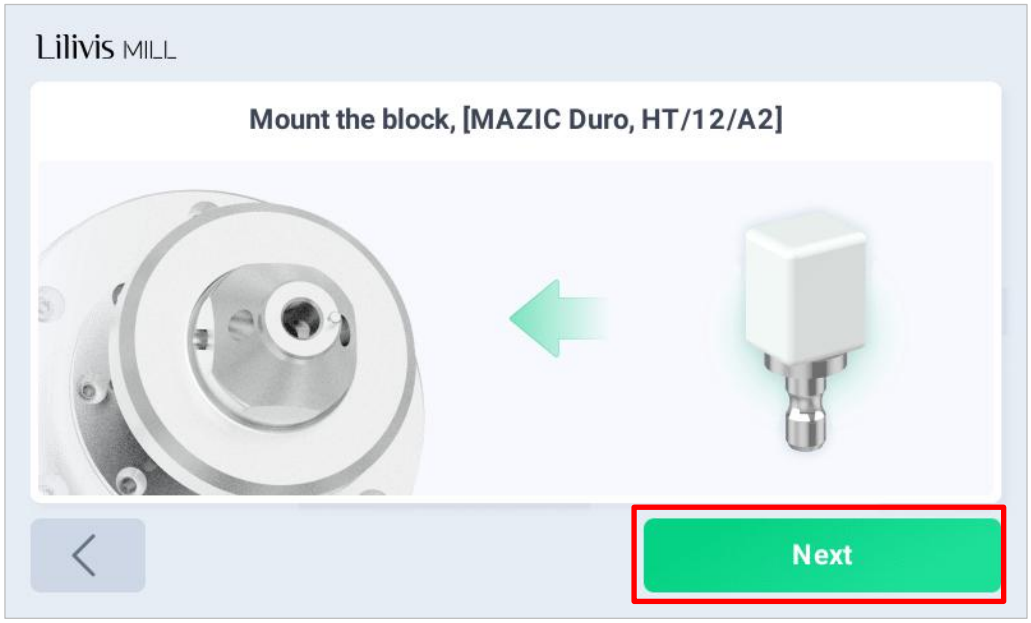


7.2 Mount the block

- After the initialization of the machine is finished and the ‘Next’ button is activated in green, start mounting block.

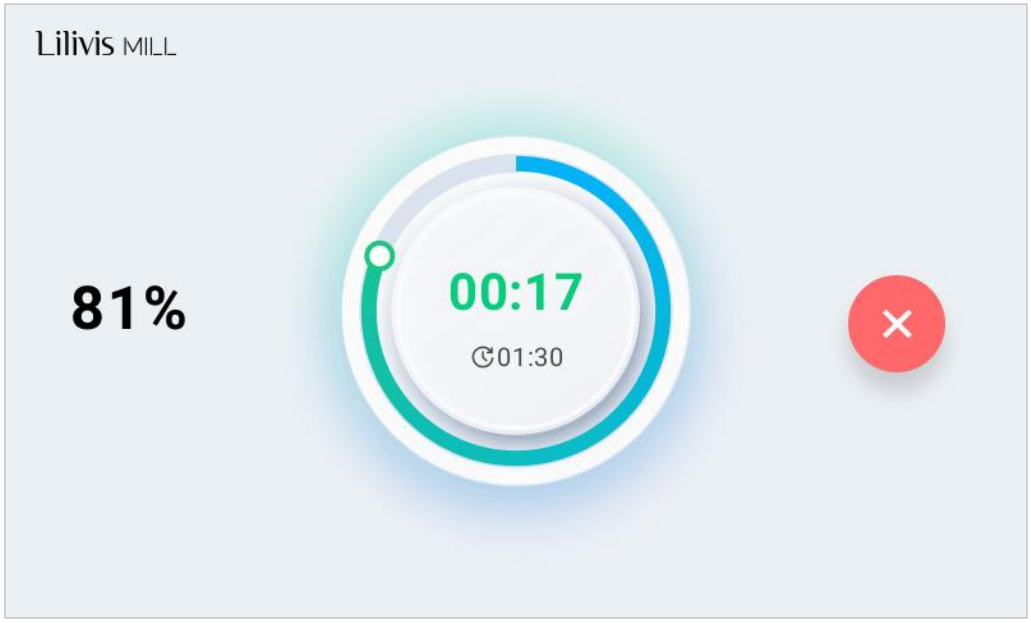


1. Open the milling room window.
2. Mount the block to be milled. (☞ Refer to ‘6.2 Mounting the block’)
3. Press the ‘Next’ button.



7.3 Starting the ‘Pre-Touch’

1. After initialization operation, measurement of the mounted block begins.
2. You can check the information such as progress and time.
3. You can stop the operation at any time by pressing the (X) button.
4. After finishing the process, it automatically ends with a beep sound.

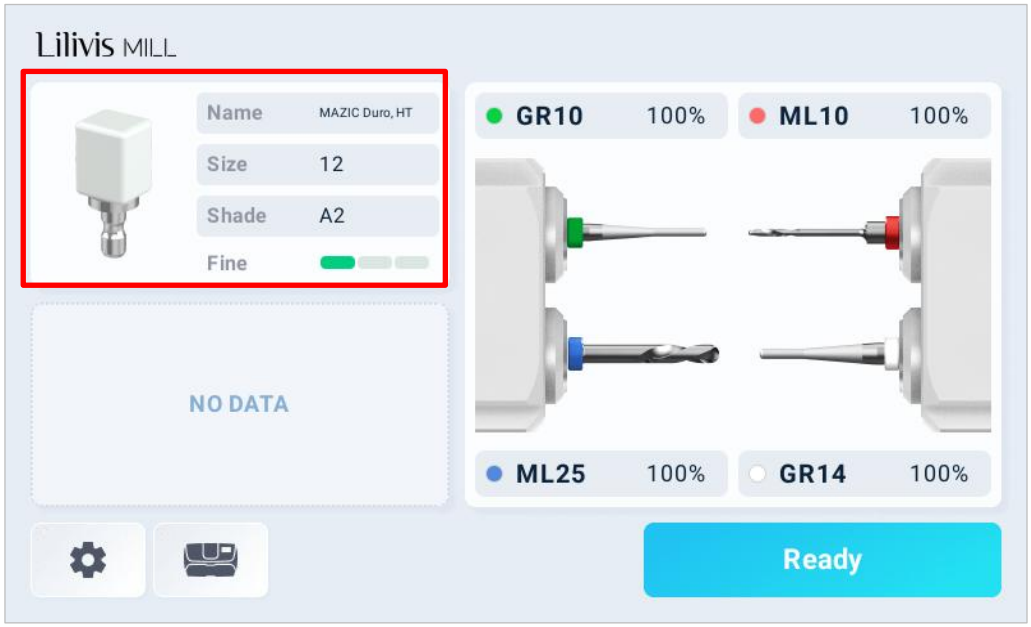


Memo

- The total estimated time is a calculated time and may differ from the actual time.

7.4 Pre-Touch completed

- After finishing the ‘Pre-Touch’, it automatically returns to the main screen.
- Check that information about the block is displayed in the block information window at the top left.



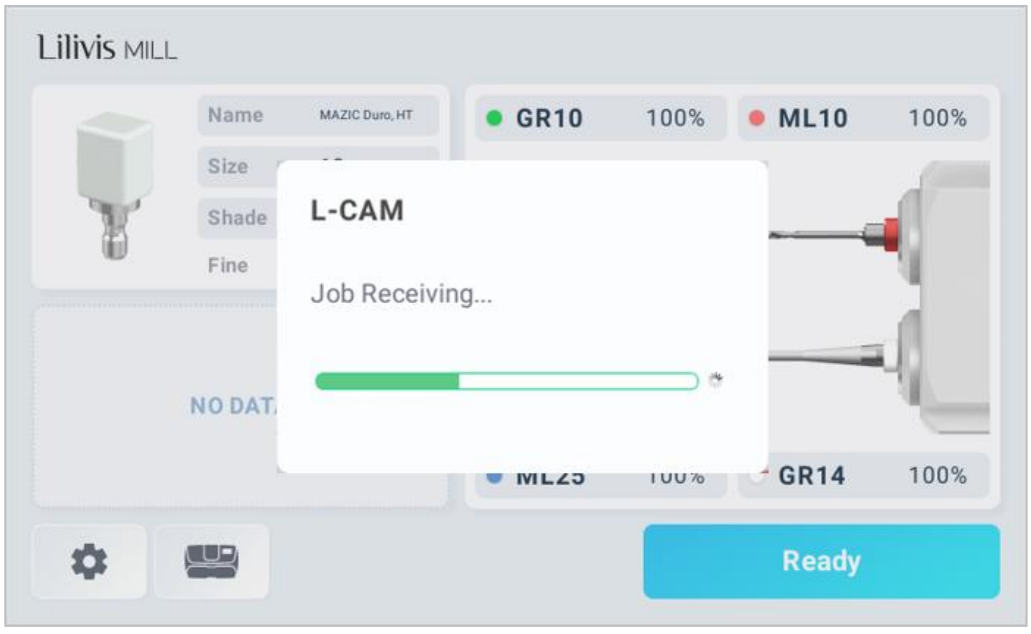
- Since ‘Pre-Touch’ has been completed, you can start milling remotely from L-CAM

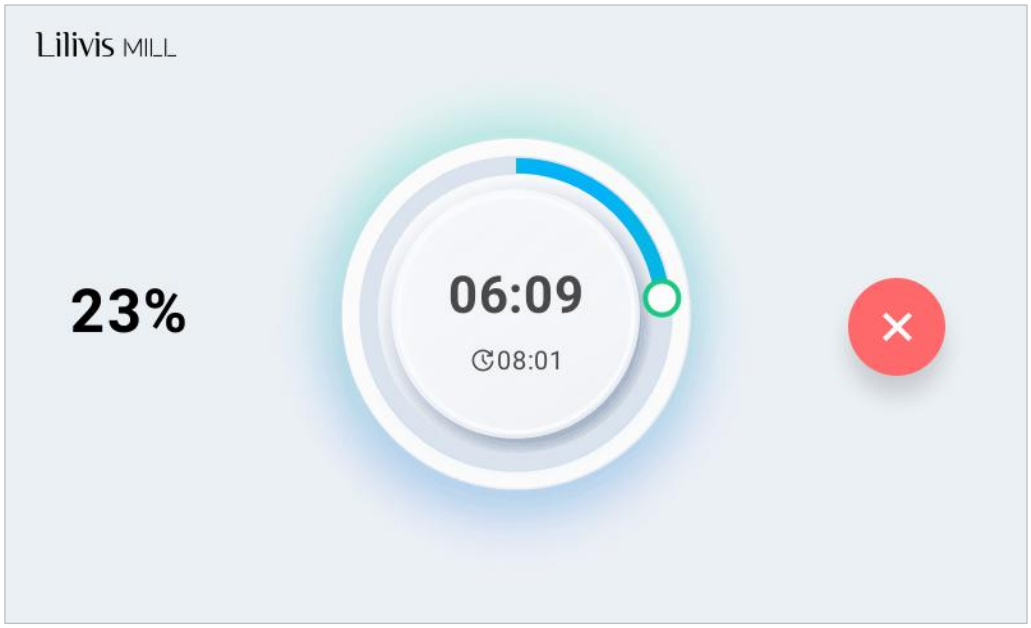
7.5 Transferring job data from L-CAM

- If the 'Pre-Touch' is completed normally in the machine, block information is displayed on the L-CAM screen as shown below, and you can see a message indicating that milling can begin.



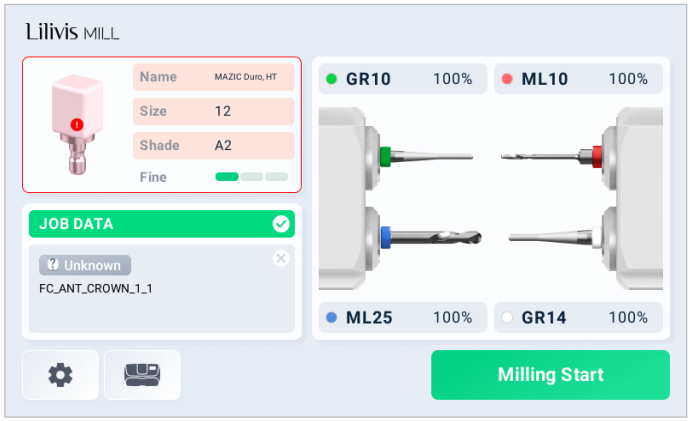
- L-CAM transmits the job data to the machine when you press the 'Start' button at the bottom of the L-CAM screen. After receiving the job data, the machine automatically starts milling.





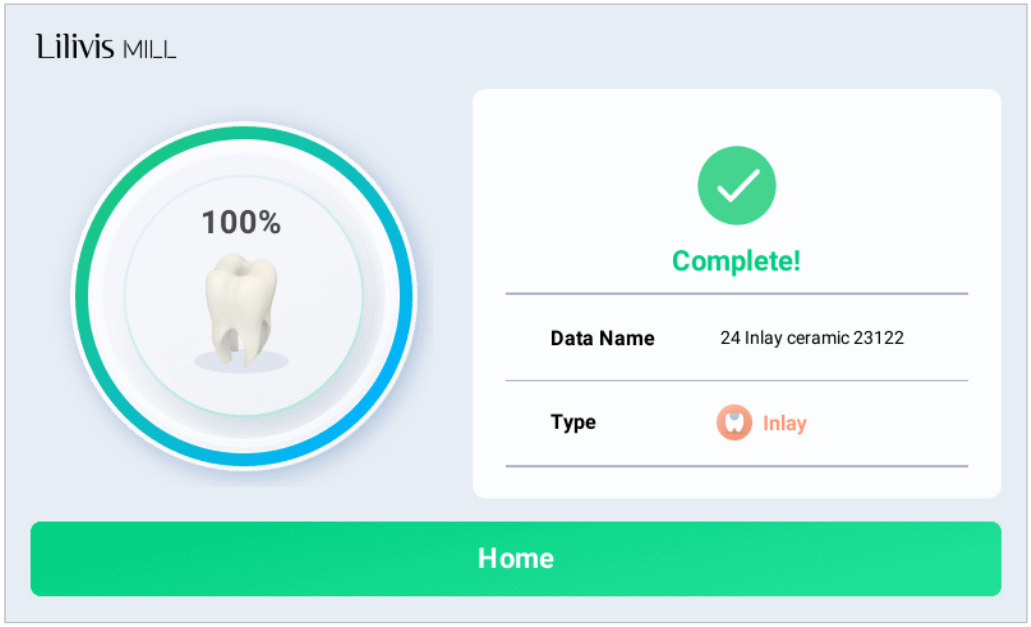
Memo

- If the pre-touched block and the transmitted block do not match each other, the machine automatically moves to the block insertion screen after receiving the data and requests replacement of the block.
- If the block information between L-CAM and the machine does not match, the block information window is displayed in red as shown below.



7.6 Milling Completed

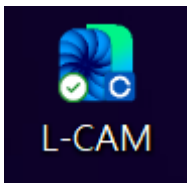
- Milling Complete: Milling is complete.



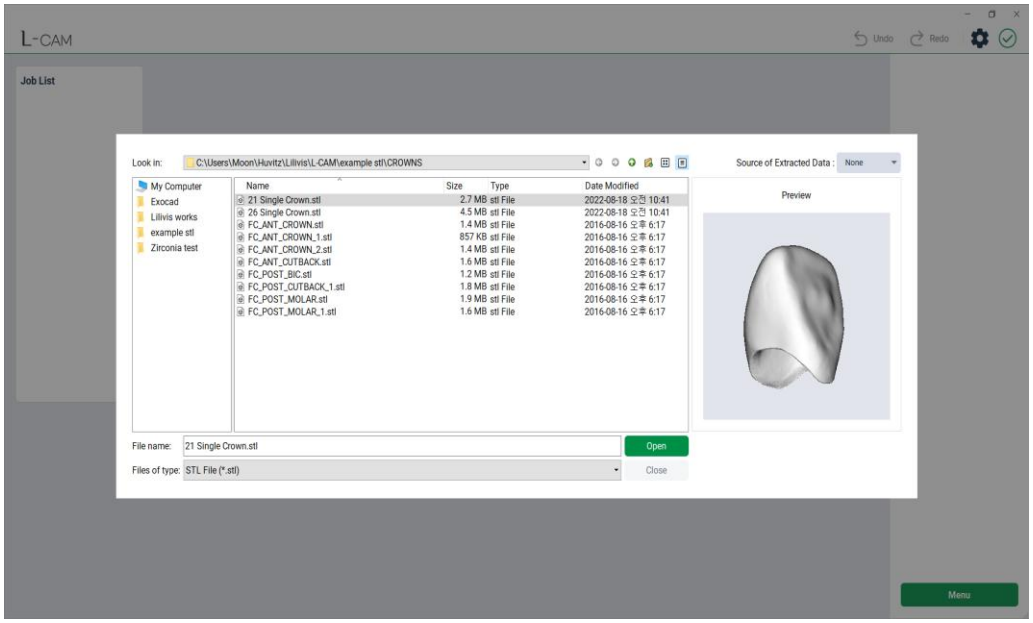
8. Using L-CAM software

8.1 L-CAM Execution

1. Run L-CAM.

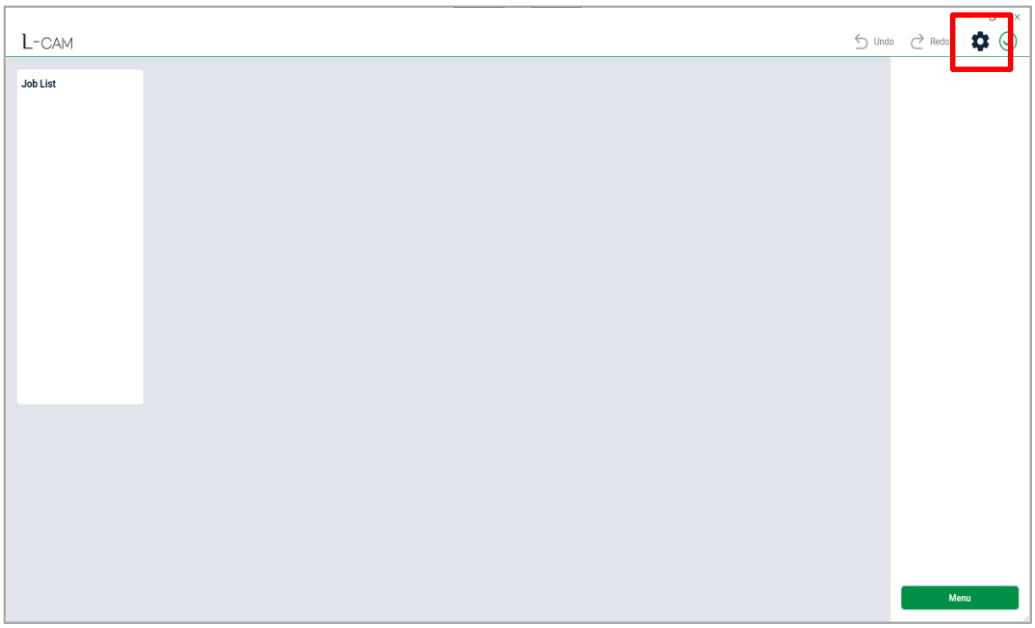


2. The main screen of L-CAM will appear, and the Import Data window automatically runs.
   You can now import the job data and continue editing and milling.

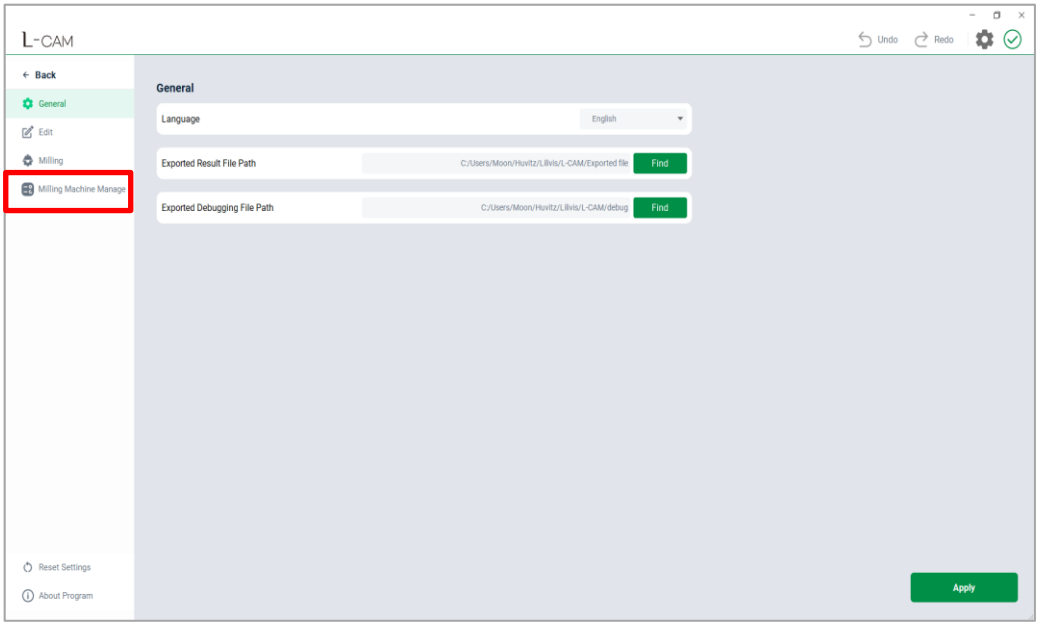


8.2 Register Lilivis Mill in L-CAM

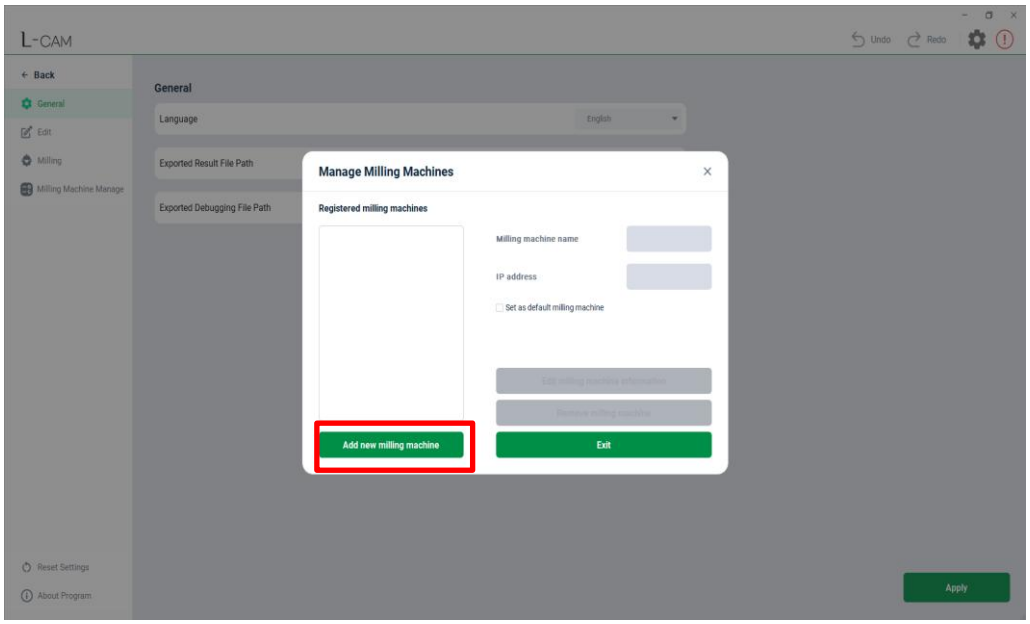
1. Close the Import Data window that automatically pops up by clicking the 'Cancel' button.
2. Press the setting button (gear shape) on the upper right corner to enter the settings screen.



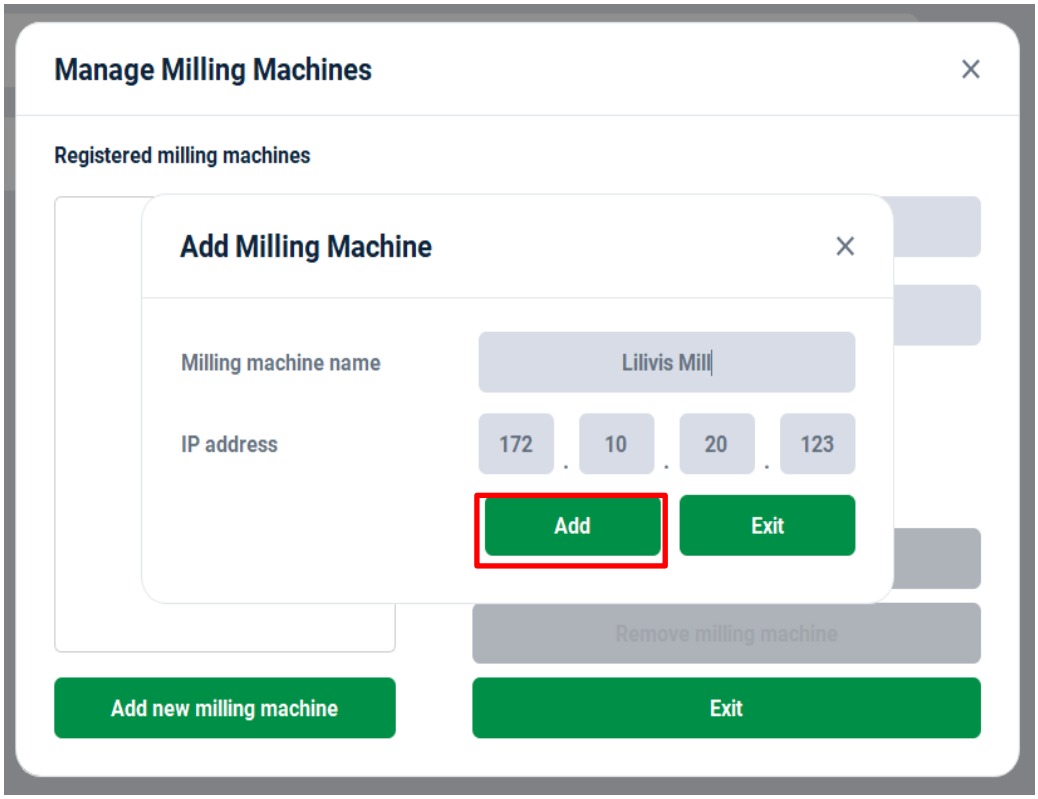
3. Press the 'Milling Machine Manage' button on the left side of the screen.



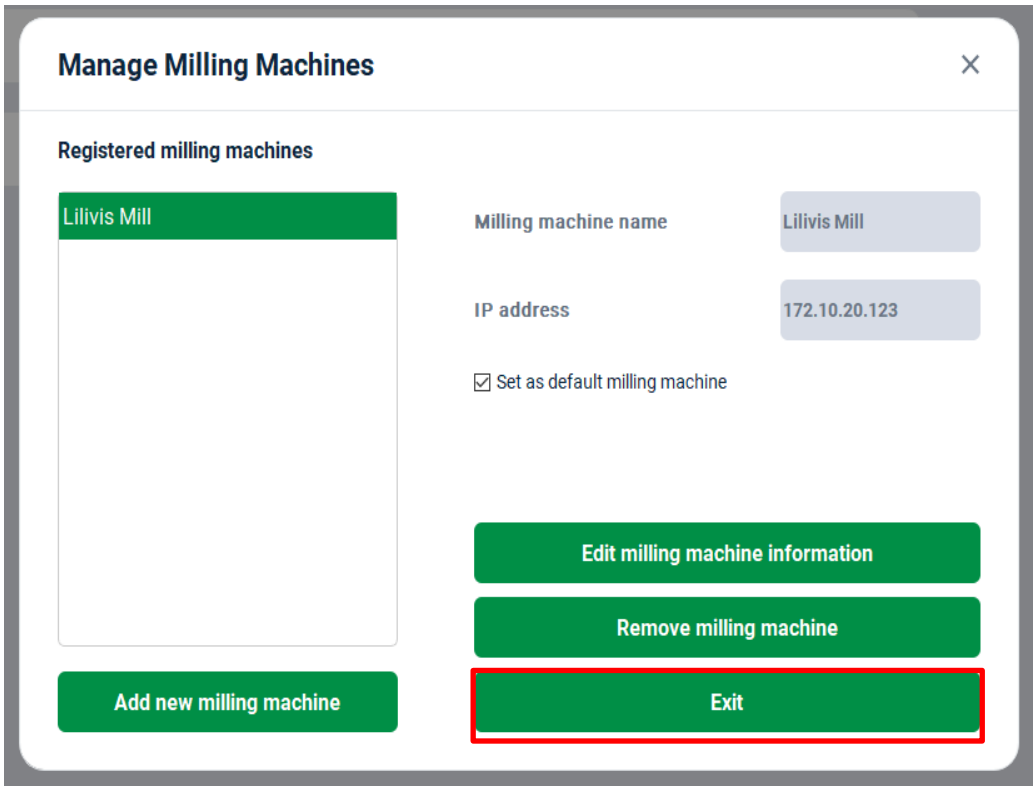
4. Click the ‘Add New Milling Machine’ at the bottom left of the pop-up window.



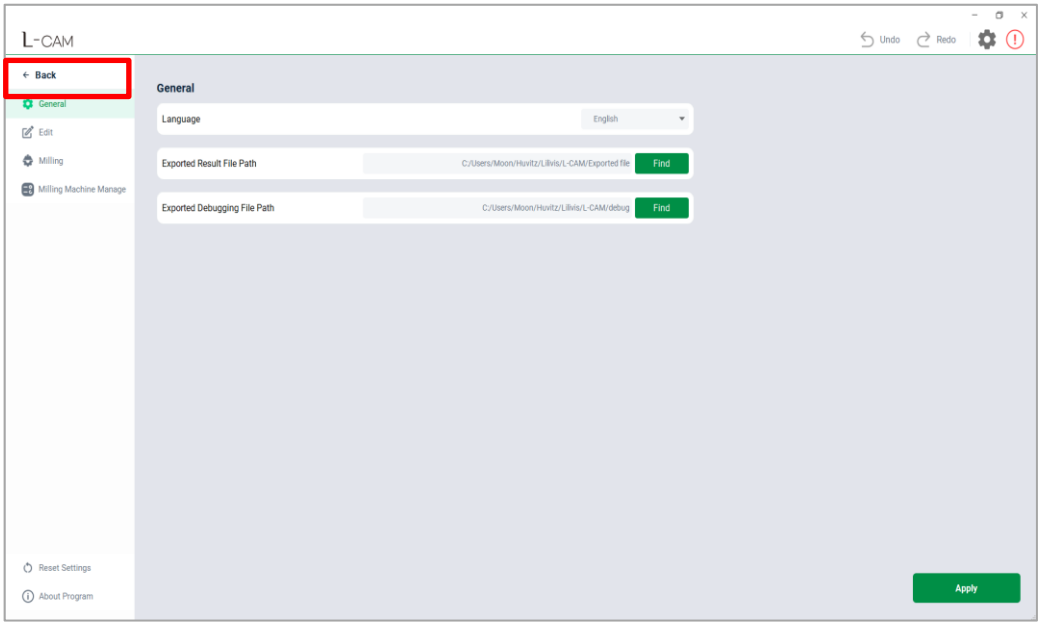
5. Enter the IP address and Machine name verified in Lilivis Mill and press the ‘Add’ button.



6. Lilivis Mill (Name is arbitrarily assigned) is registered. Close the window with the 'Exit' button.

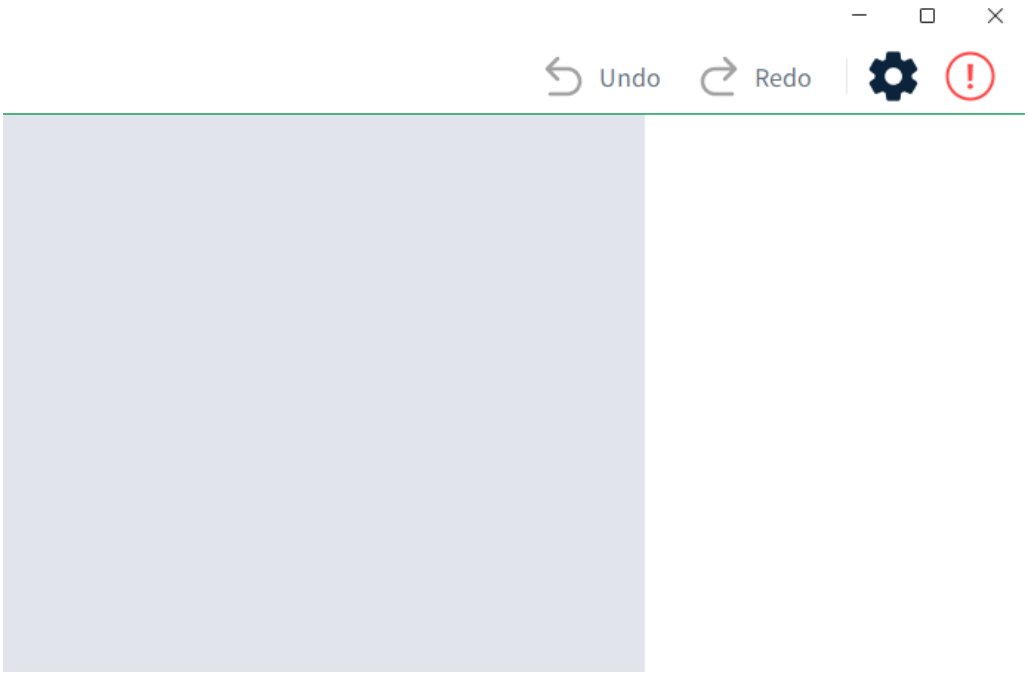


7. Return to the Lilivis Mill main screen via the 'Back' button on the left.

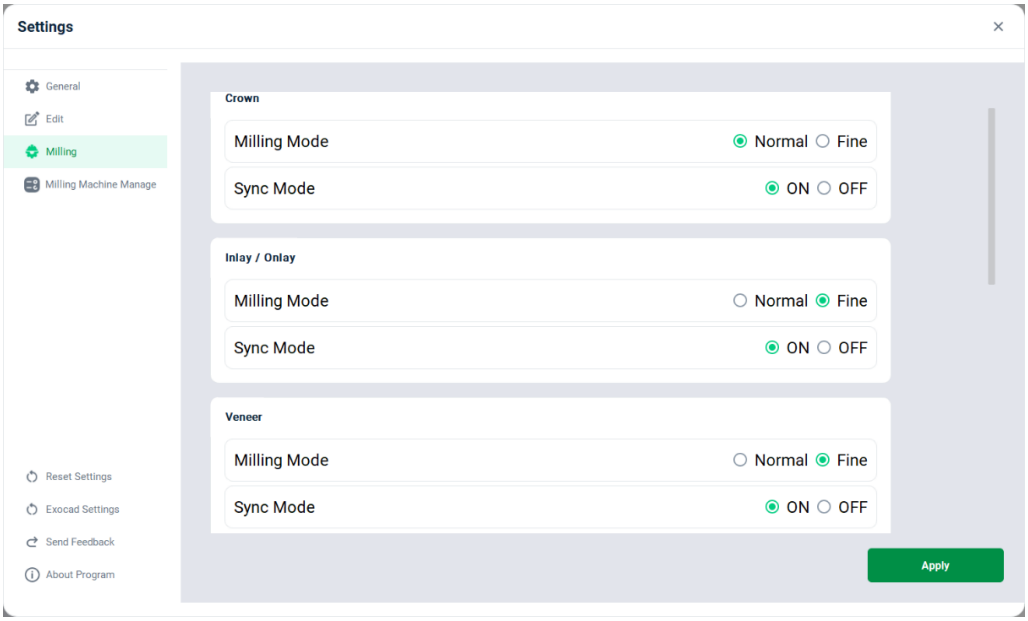


8.3 Setting Sync Mode in L-CAM

1. Before enabling Sync Mode in L-CAM, complete the Dual Sync milling bur setting described in Section 4.4.
2. Open L-CAM and click the Settings button in the upper-right corner.



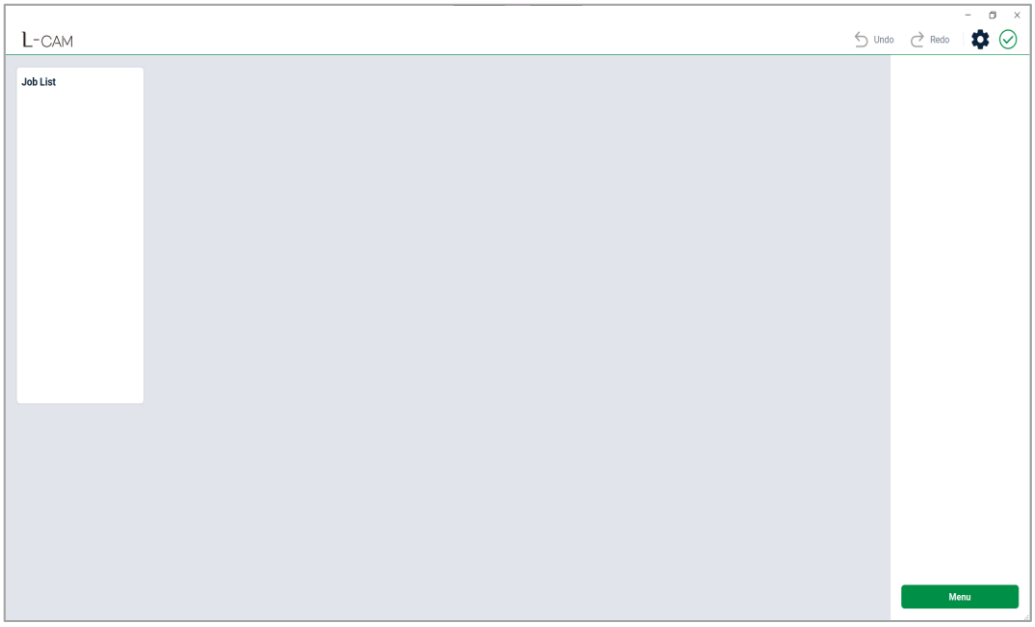
3. In the Milling tab, set Sync Mode to ON for each restoration type that will use simultaneous milling, and then press the 'Apply' button.



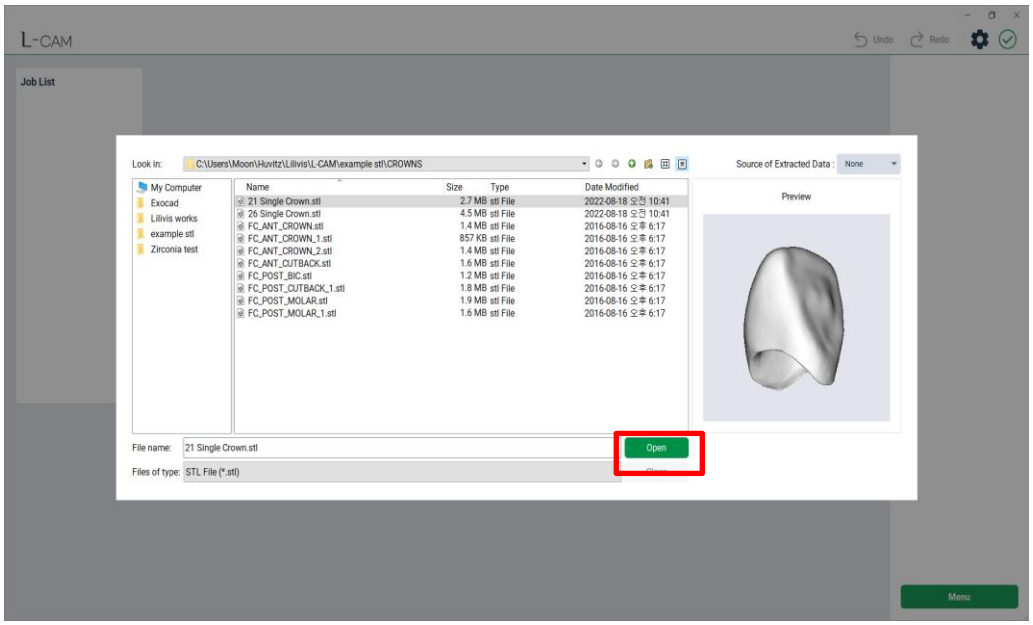
4. Confirm that the settings have been applied, and close the Settings window.

8.4 Importing L-CAM data (supported formats: STL files)

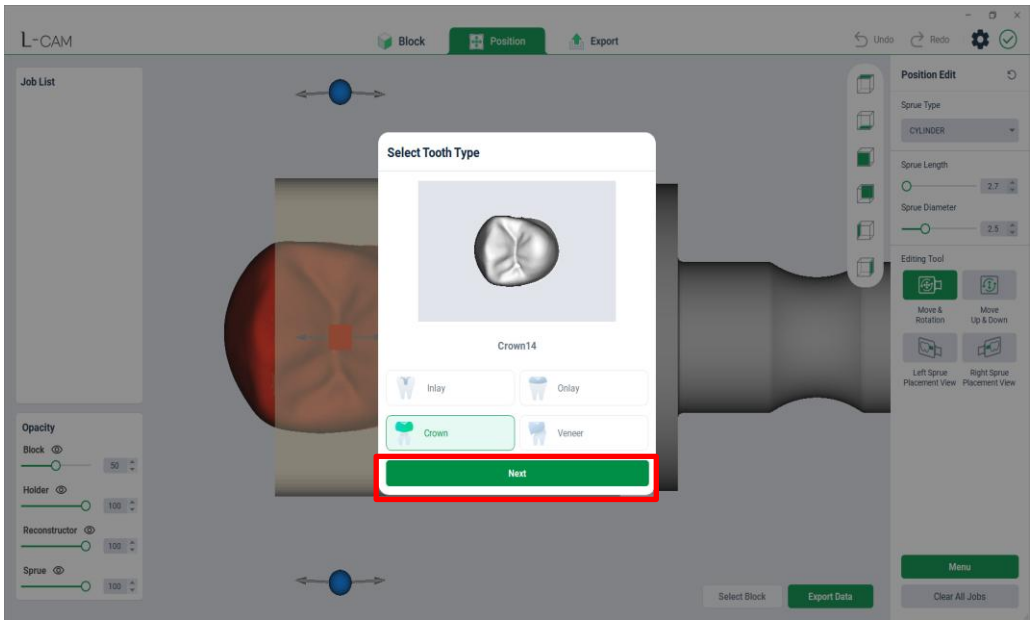
1. To register an STL file created in CAD as a new task, click the 'Menu' button in the bottom-right corner and then click the 'Open New Job' button.



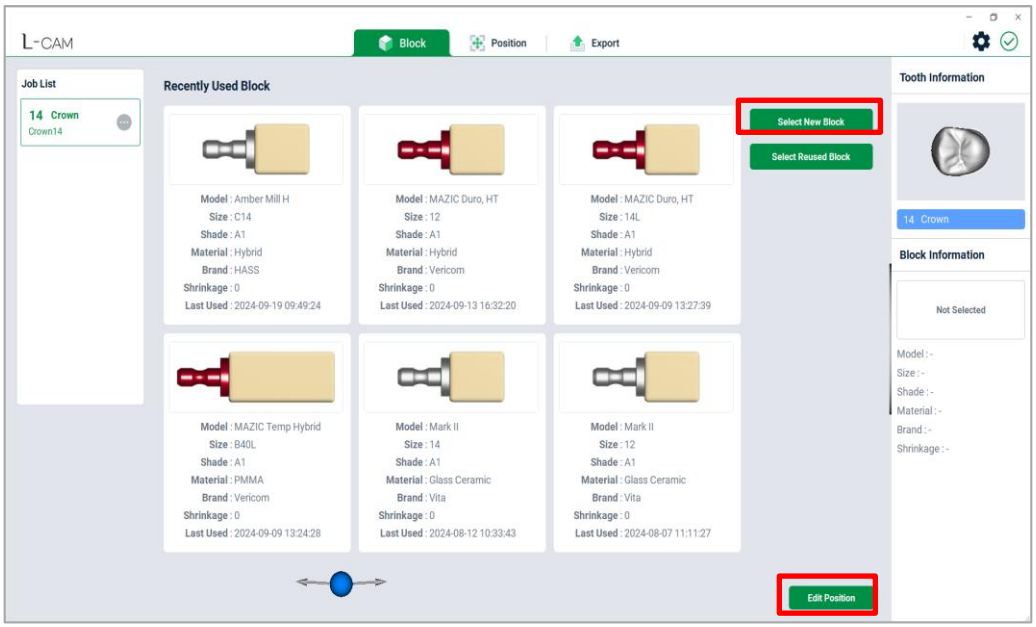
2. In the Import Data window, select the STL file and click the 'Open' button to proceed to the next step.
(Except for special cases, the 'Data Origin' in the top-right corner of the window should be set to 'None'.)



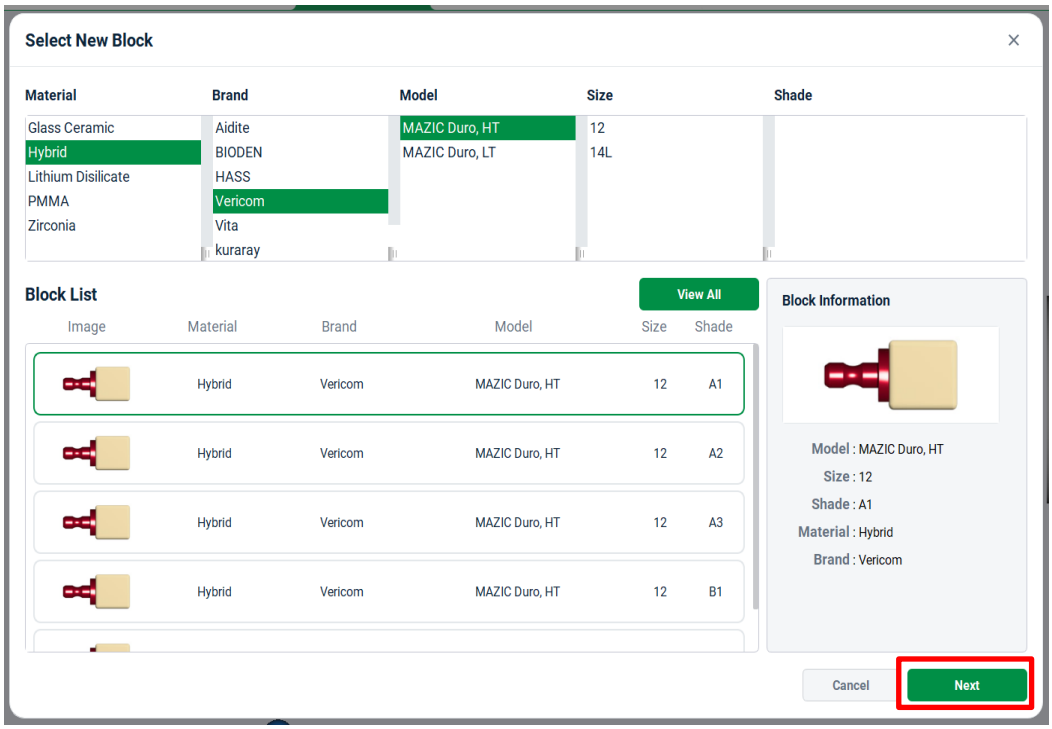
3. In the tooth type selection window, choose the desired tooth type and click the ‘Next’ button.



4. From the ‘Recently Used Block’ list, select the Block you wish to mill, then click the ‘Edit Position’ button. (If there are no recently used Blocks, click the ‘Select New Block’ button to move to the Block search and selection window.)

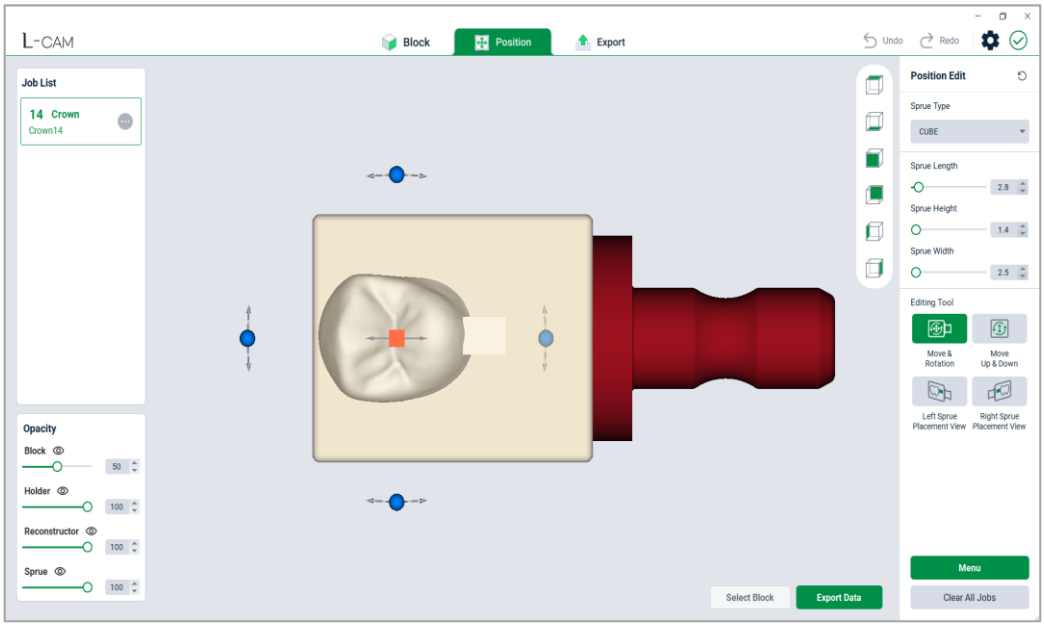


5. In the New Block search and selection window, choose the Block you wish to mill and click the 'Next' button.

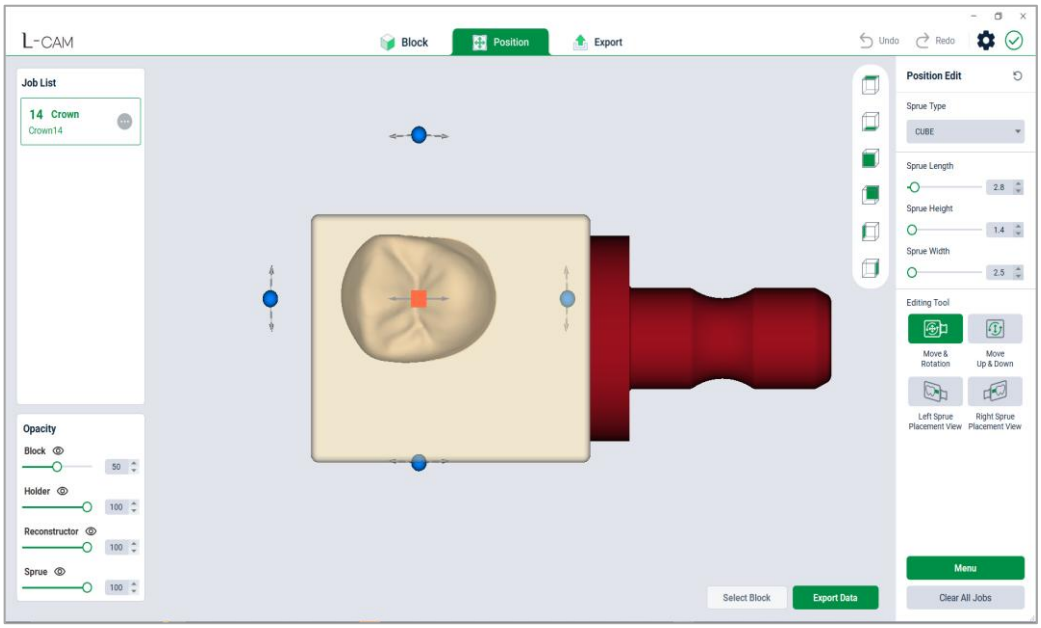


8.5 Editing L-CAM data

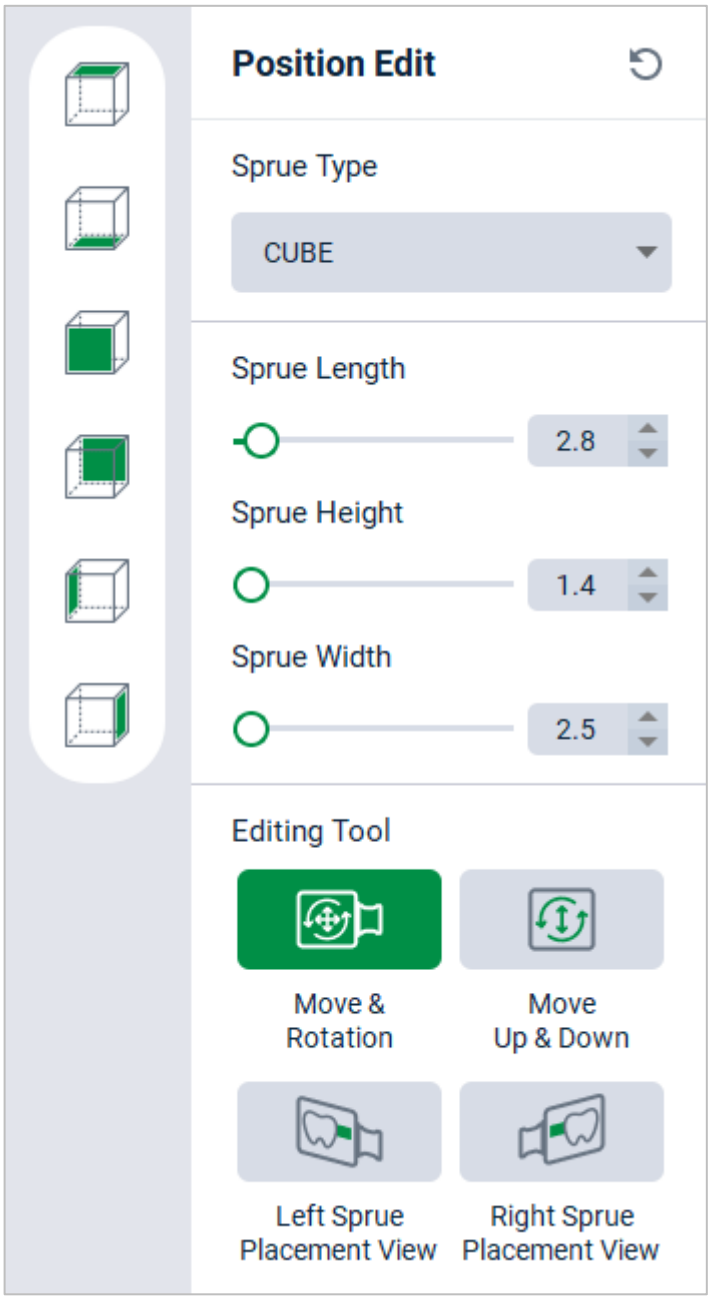
- This is the initial screen where auto-nesting has been completed.



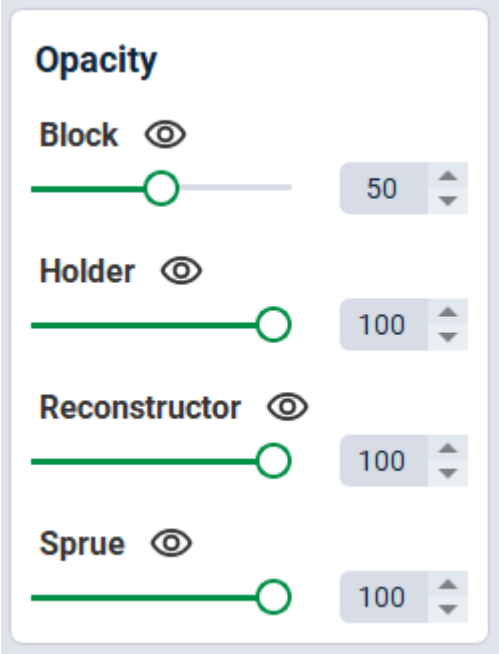
- Drag the restoration or sprue to the desired position using the left mouse button, or rotate it by dragging with the right mouse button to edit.



- In the right-hand editing panel, you can change the camera angle of the current task, adjust the type, length, and size of the sprue, and use editing tools to change the movement direction of the restoration.

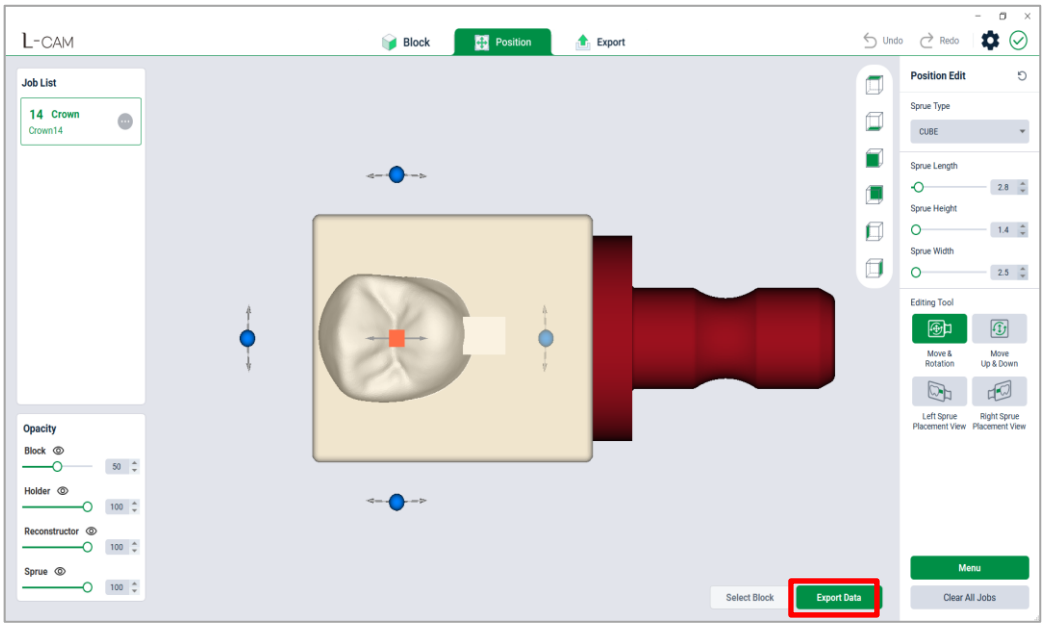


- If needed, use the slider at the bottom left to adjust the opacity of each part or toggle visibility on and off.

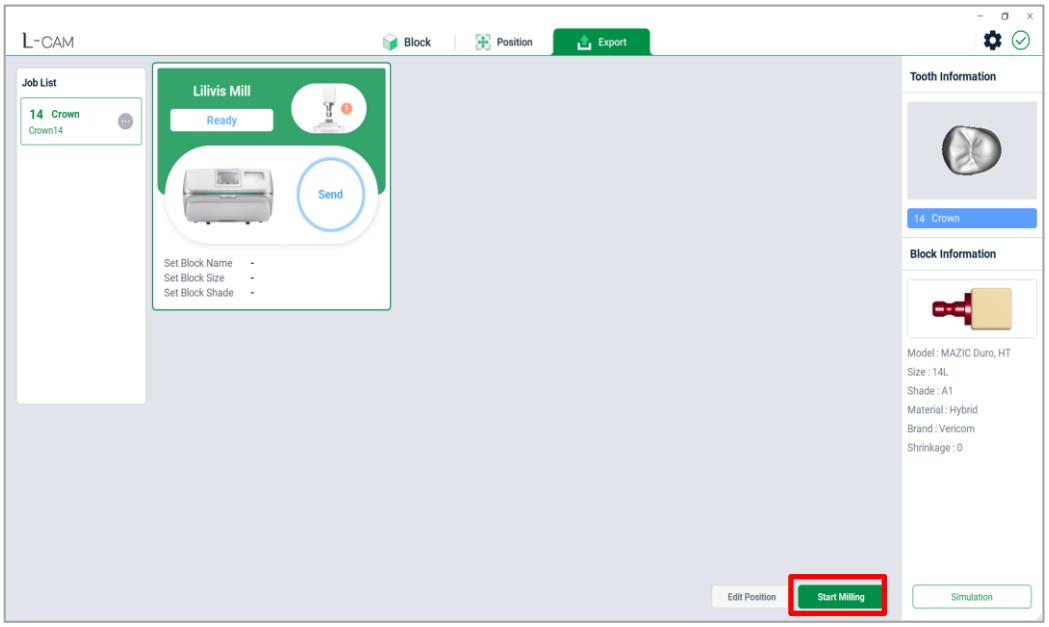


8.6 Export L-CAM data (transfer to Lilivis Mill)

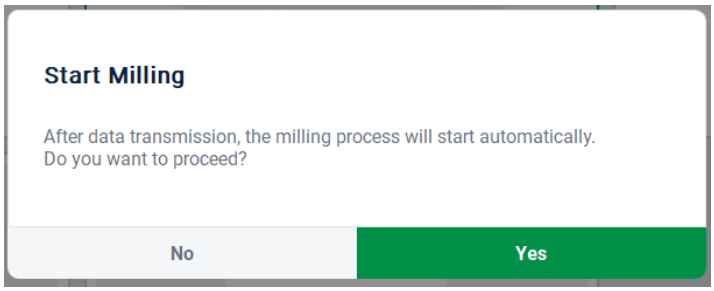
1. Press the 'Export Data' button to move to the next step after finishing the position editing.



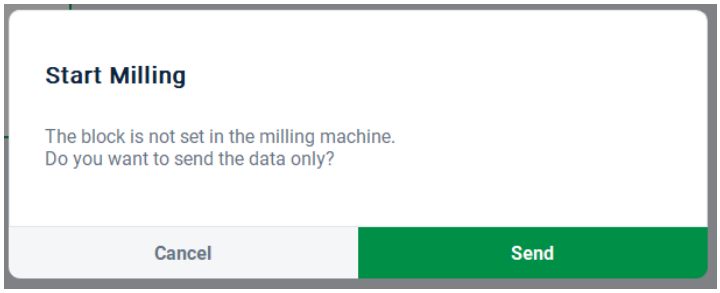
2. Select the machine what you want to mill among the connected machines and press the 'Start Milling' button. Device that can be transferred are displayed as '**Ready**,' and other machine can be additionally registered through the machine registration process. (up to 6 units)



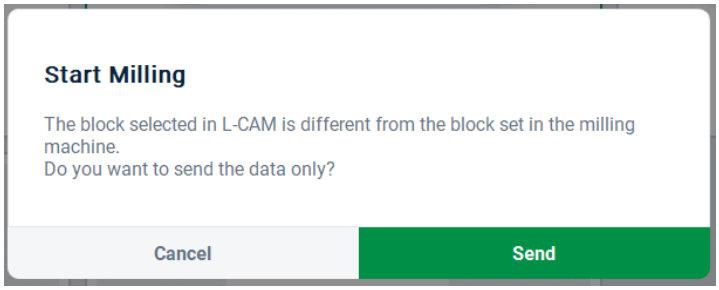
3. When you press the 'Start Milling' button, different pop-up message will appear depending on the machine status.
   - ✓ When the block has already been mounted through the 'Pre-Touch' function and set origin measurement has been finished.



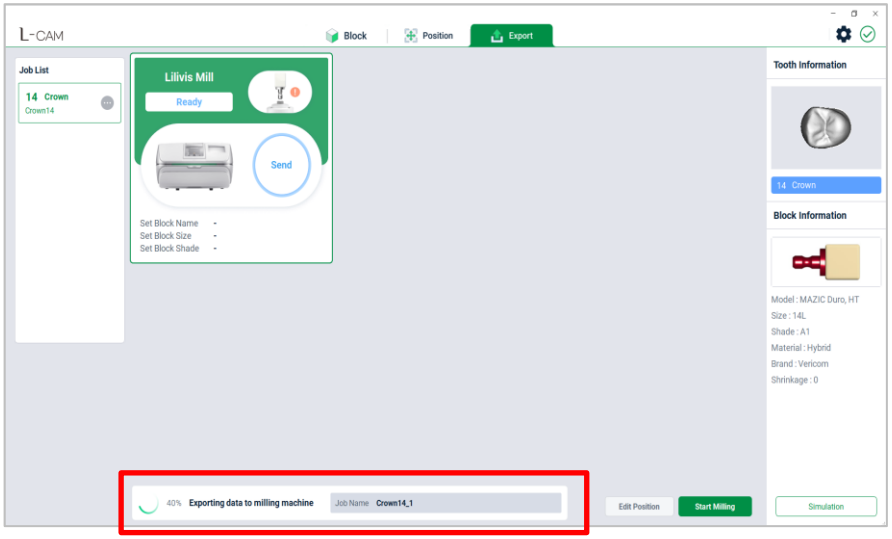
   - ✓ When only NC data is sent to the machine without a block mounted on the machine.



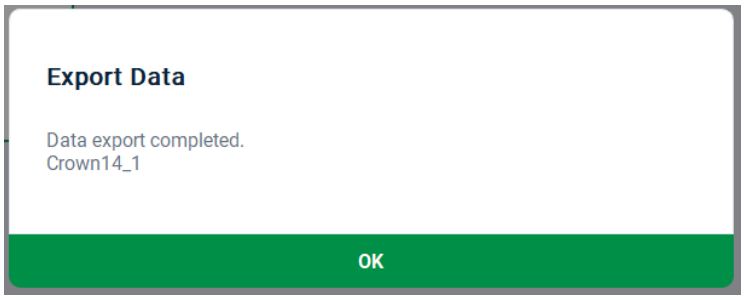
   - ✓ When the specification of the block mounted in the machine through the 'Pre-Touch' function and the block selected in L-CAM are different.



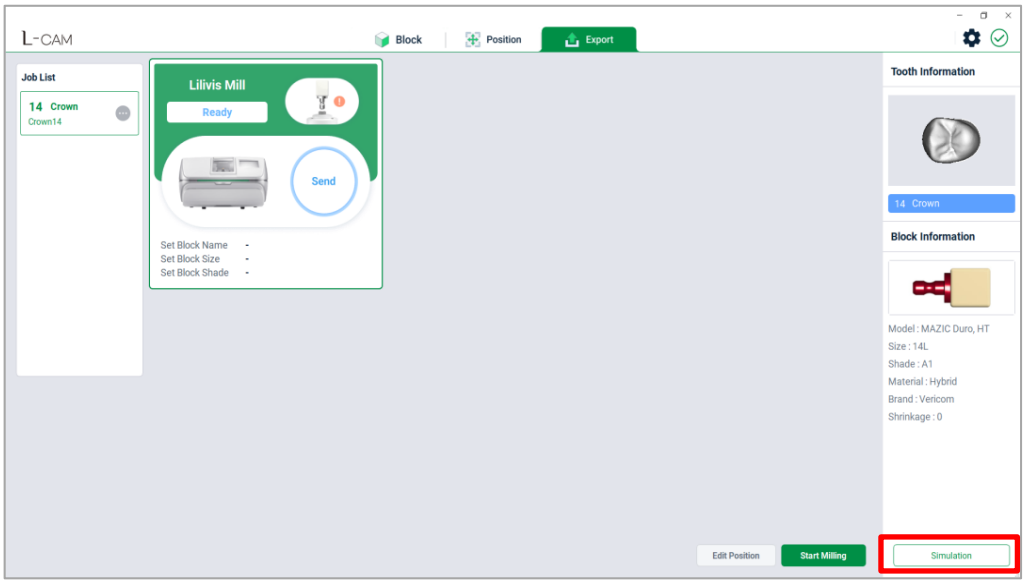
4. When the 'Send' or 'Yes' command begins, a data transfer progress window will appear at the bottom of the main screen.

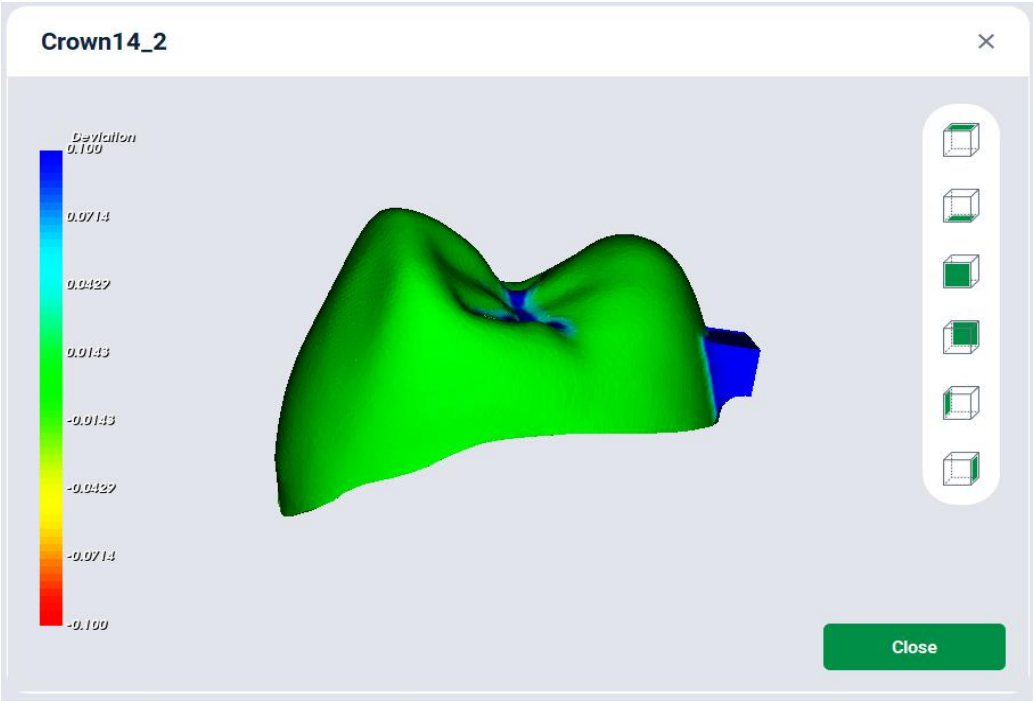


5. When the transfer is complete, the following message will appear and press the 'OK' to finish the transfer.



6. When you press the 'Simulation' button at the bottom right in the 'Export' stage, simulation result data for the editing job is provided and errors in the actual milling results can be checked.





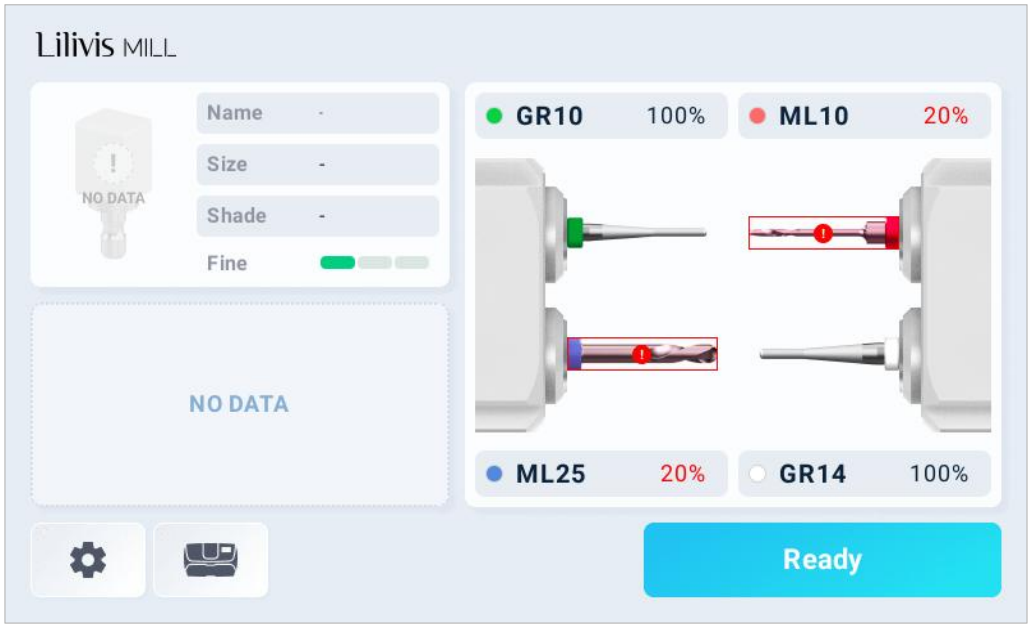
9. System maintenance

9.1 Management of milling bur

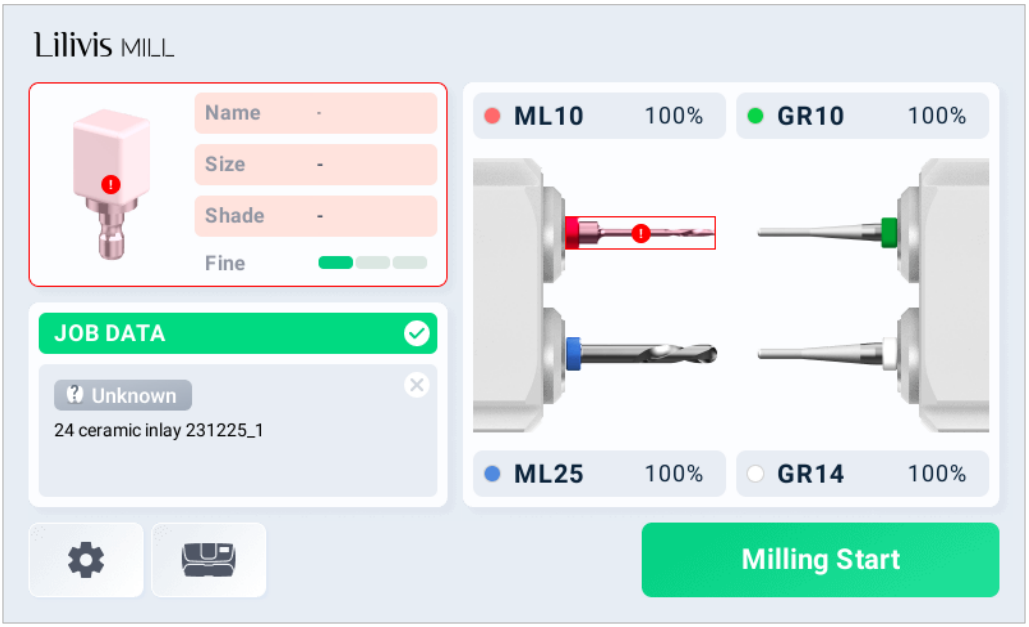
To achieve the best milling results, the milling bur must be maintained in optimal condition.
Bur replacement care is required in the following two cases:

1st. If the remaining life of the bur is low or its durability has expired, it must be replaced as there is a risk of milling failure due to breakage.
2nd. If the bur mounted on the machine and the bur required for the job received from the L-CAM are different, the bur must be replaced.

1. When the remaining life of the bur is insufficient or exceeds the recommended life,



2. When the currently mounted bur is not suitable for milling the received work data.

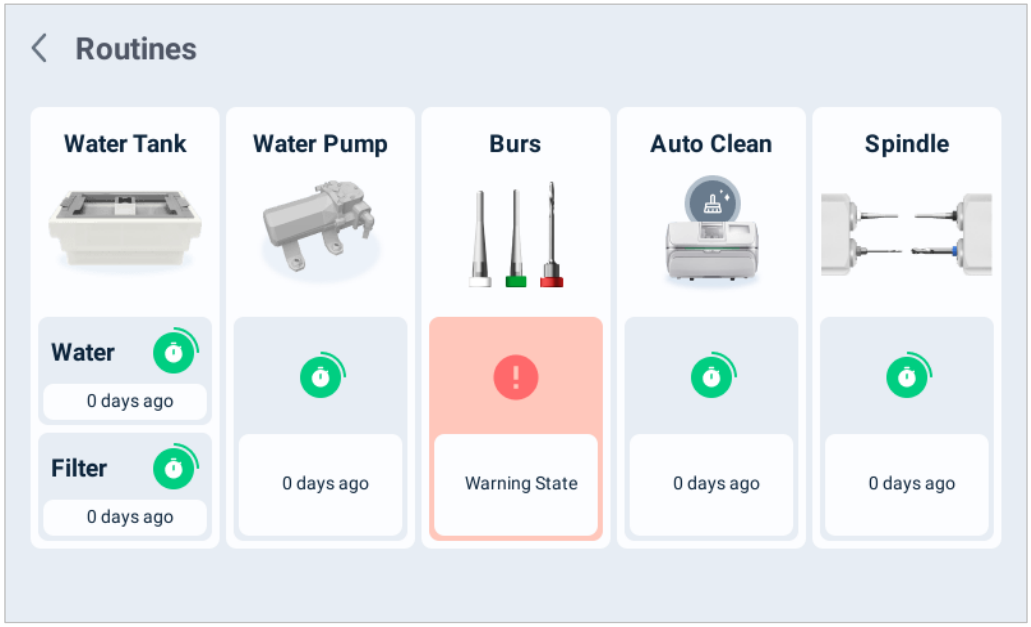


Caution

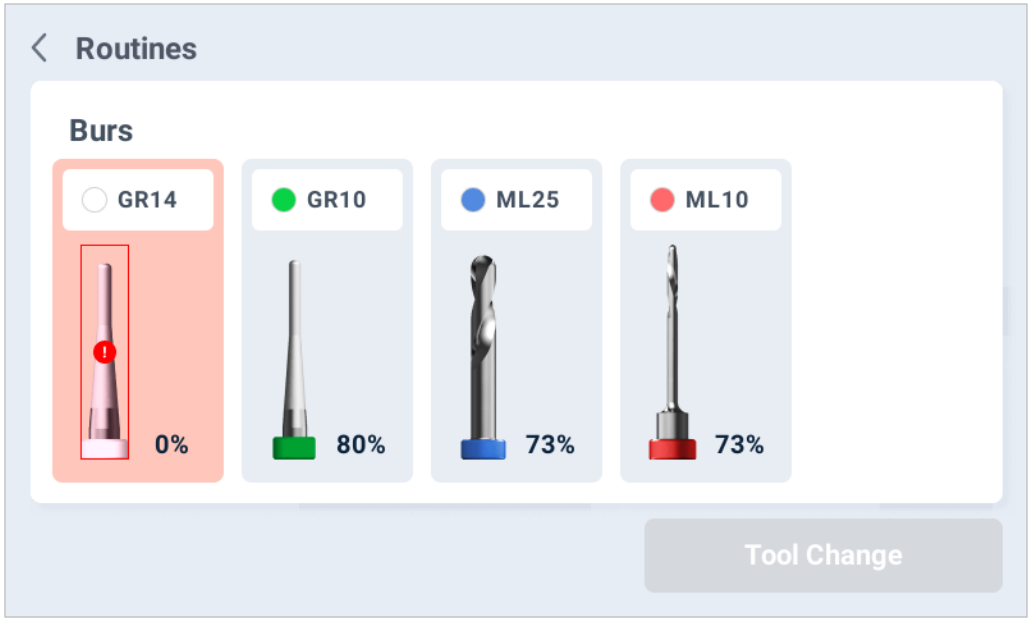
- For the correct replacement method and life management of milling burs, please refer to the following sections 9.2 to 9.3.
- When using Pre-Touch, the machine does not take into account the remaining life of the milling bur. Please use burs that have an appropriate life remaining.
- The milling bur life affects the size and surface quality of the milled results
- The cleanliness of the milling bur surface also affects the results, so always keep it clean.
- Do not use unsupported milling burs. This may seriously affect the machine and results.

9.2 How to replace the milling bur and renew the life of milling burs

- Select the ‘Burs’ item in routine management mode to enter the bur replacement screen.



- Select the bur to be replaced and click the ‘Tool Change’ button.



- Insert the appropriate bur, following the screen guide for the bur that needs to be replaced.

1. Bur No. 1 (top left)



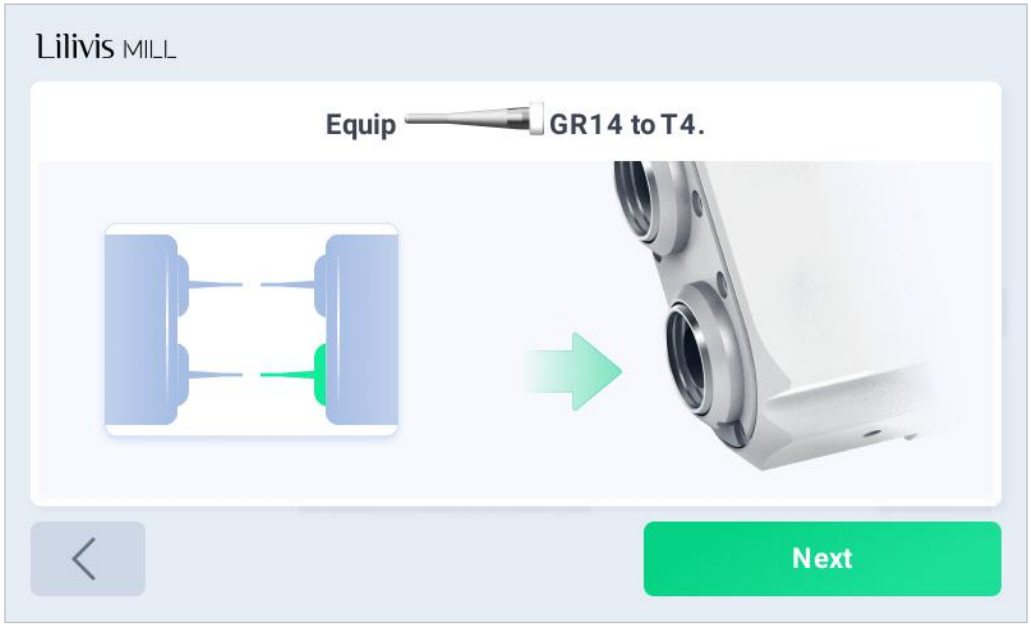
2. Bur No. 2 (bottom left)



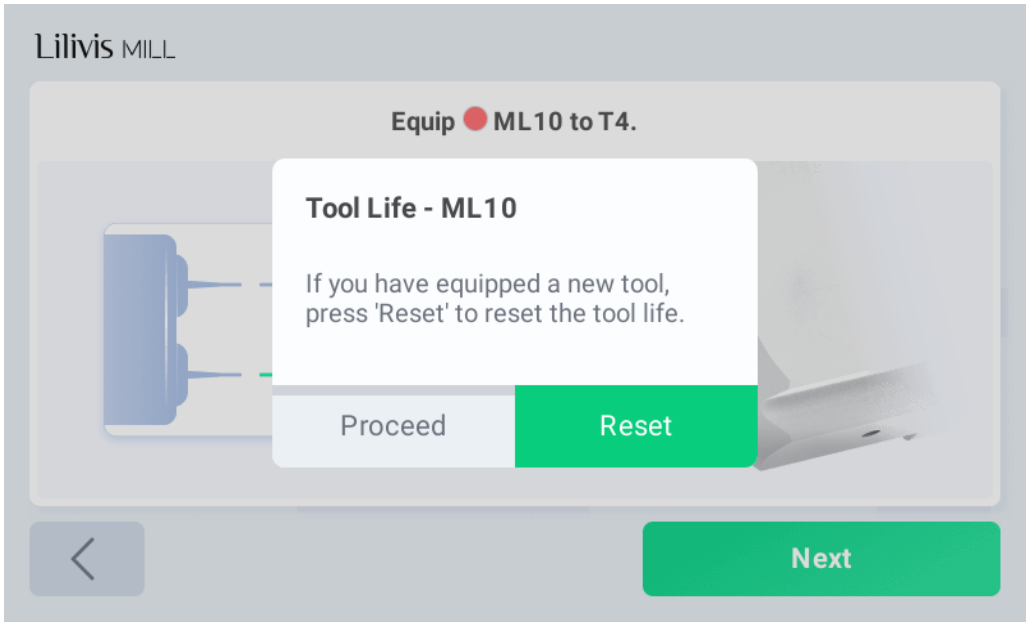
3. Bur No. 3 (top right)



4. Bur No. 4 (bottom right)



- Reset the lifespan after replacing the bur.



9.3 How to mount and replace milling bur

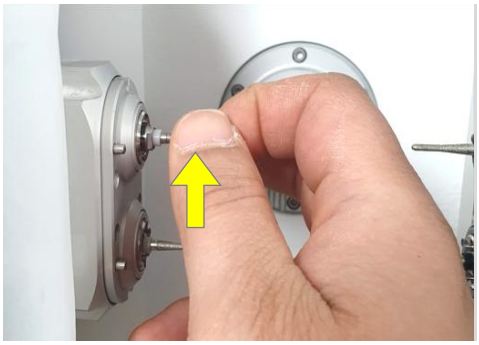
1. Insert the ‘Bur Locking Device’ into the bur to be replaced by aligning the groove of the ‘Bur Locking Device’ with the pin of the spindle.
2. Turn the ‘Bur Locking Device’ counterclockwise. (At least 7 rotations)




3. Remove the ‘Bur Locking Device’ and pull out the milling bur.
4. Clean the inside of the spindle using a cleaning brush.

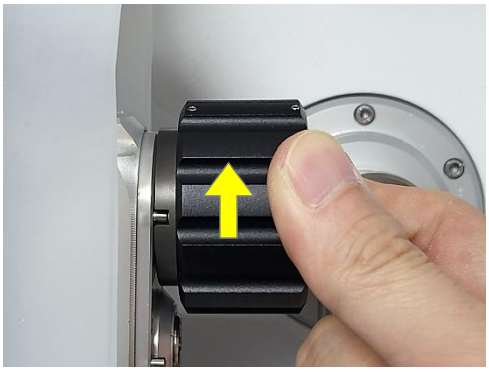



5. Insert the new milling bur into the spindle and turn it clockwise 2~3 times.

6. Insert the ‘Bur Locking Device’ and turn it clockwise so that the grooves of the device are inserted into the pin of the spindle.
7. Fix the bur by turning the ‘Bur Locking Device’ clockwise until you hear several clicks.



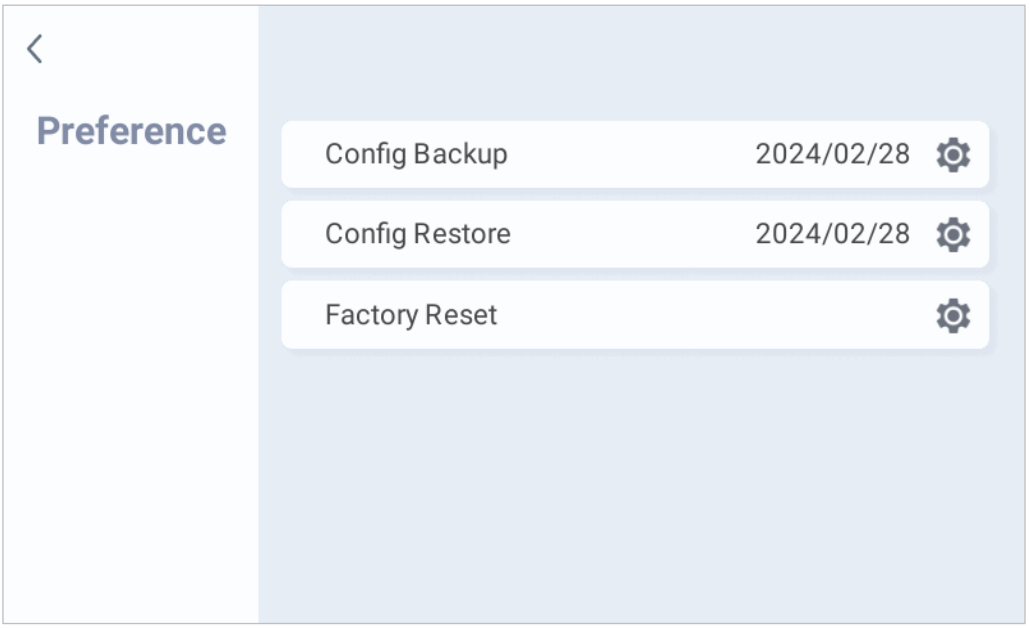


Caution

- To prevent rust or foreign substances from sticking, make sure to use a cleaning brush to clean the inside of the spindle every time you change the milling bur.
- Please be careful when changing milling bur as your hand may be scratched or hurt.

9.4 Manage your preferences data

- Back up or restore your preference data.



1. Config Backup : The machine saves the current configuration values to USB memory.
2. Config Restore : The machine restores the system to the configuration value saved in USB memory.
3. Factory Reset : The machine restores the system to factory default state.

Caution

- ‘Config Backup’ and ‘Config Restore’ functions can be used when USB memory is connected.
- ‘Config Backup’ is created with a file name that includes time information, so it can be saved as many times as necessary.
- We recommend regular backup of the machine in its normal condition in case you accidentally modify data that directly affects machine performance, such as milling settings.

9.5 Other general management

9.6.1. Periodic management of users

- In order to maintain the normal performance and service life of the device, it is necessary to carry out regular inspections at regular intervals.
- The water in the water tank should be checked daily to ensure that it is filled between the LOW-FULL indicator lines.

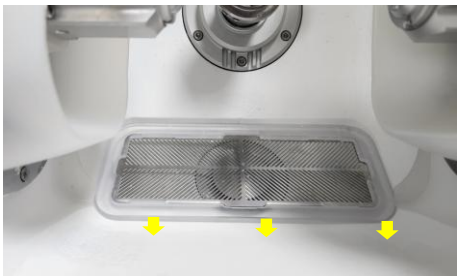
category	Milling room drain	Water tank	Water tank top tray	Filters
Cleaning cycle	1 x PMMA Every milling	One week or 50ea Every milling	Every day	One week or 20ea Every milling
Replacement cycle	-	-	-	per month or For every 250ea milling

9.6.2. Management of milling room drain

- Regular maintenance of the milling room is necessary to ensure normal operation of the machine.
- After each milling, always check the drain for any foreign matter or residue and remove it.
- PMMA milling residues are large particles and should be cleaned every 1 mill.



Upper strainer



Lower strainer (Separate using the display groove)



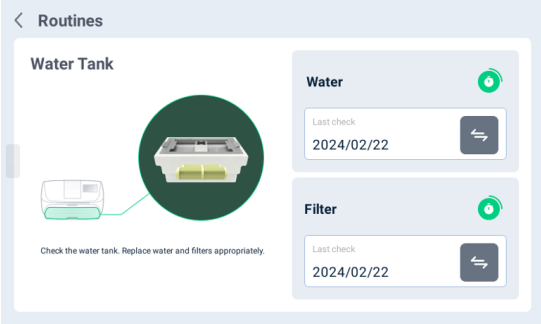
Drain

Caution

- Always keep the inside of the milling room clean.
- If you do not remove residue from the drain, water may overflow.

9.6.3. Water tank cleaning and replacement of the filter

1. Main screen → Routines Mode → Water tank Mode.



2. Separate the water tank from the machine.
3. Separate and clean the tray at the top of the water tank.

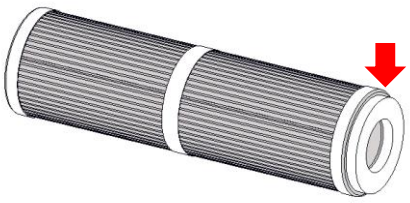


4. Empty the water in the tank
5. Separate the filters from the tank.
6. Clean the inside of the tank using a cleaning brush.
7. Separate the two sponges in the outlet using the tweezers, clean them, and reassemble them.



8. Insert the two filters sequentially starting from the right side (Sponge joint).
   ☞ Pay attention to the direction of filter insertion.



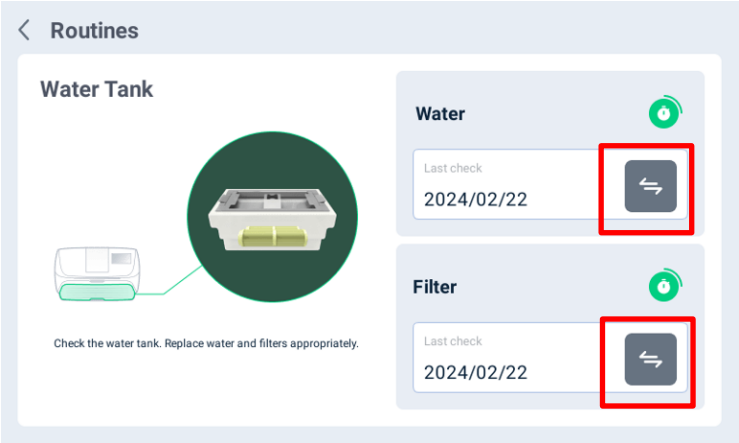


9. Fill the clean water up to the FULL indicator line (4.5L).

10. Reassemble the top tray of the water tank.



11. Place the water tank on the rail and push it until you feel it click into place.
12. Check that the status LED is not blinking and is on in white.
13. Click the “Update” button to update the “Last Check” date. (Water / Filter)



➢ If you replaced only the water, just click the water “Update” button.

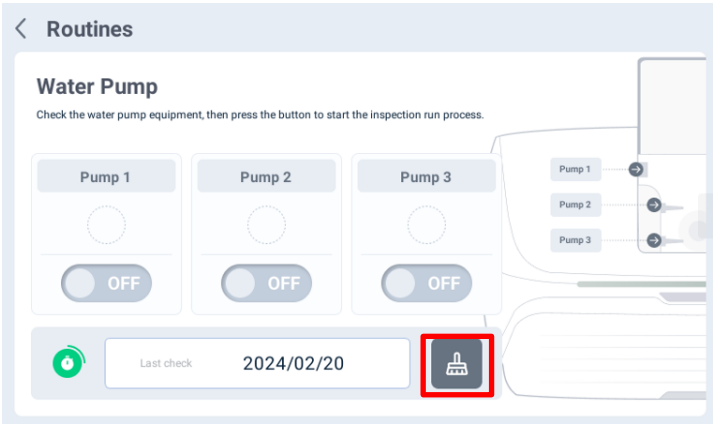
Caution

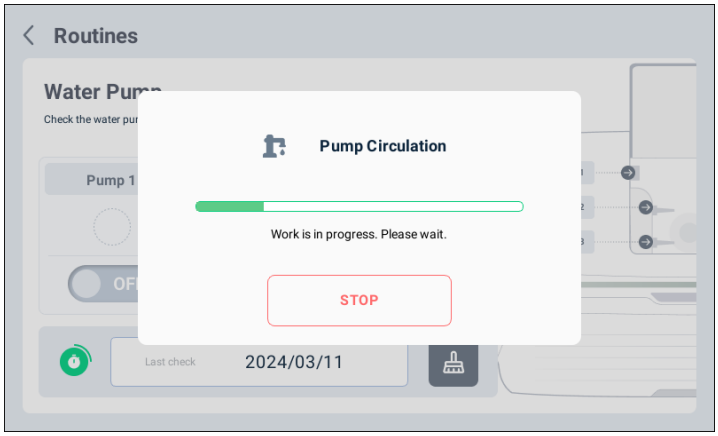
- Be sure to use the filter provided by Huvitz.
- If milling is performed without using a filter, the pipe may become clogged.
- Use of damaged filters is the main cause of pipe blockage, so regular maintenance is required.

9.6.4. How to remove residual water from pipes, water pumps and radiators

- Be sure to remove any water inside the machine, when transporting the machine
  - Inside of the pipes, water Pump and radiator
  - Inside of the water tank

1. Go into the 'Water Pump Mode' on routine screen. (Main screen ➔ Routine screen ➔ Water Pump)
2. Close the milling room door.
3. Click the brush button at the bottom of the screen to circulate the water.

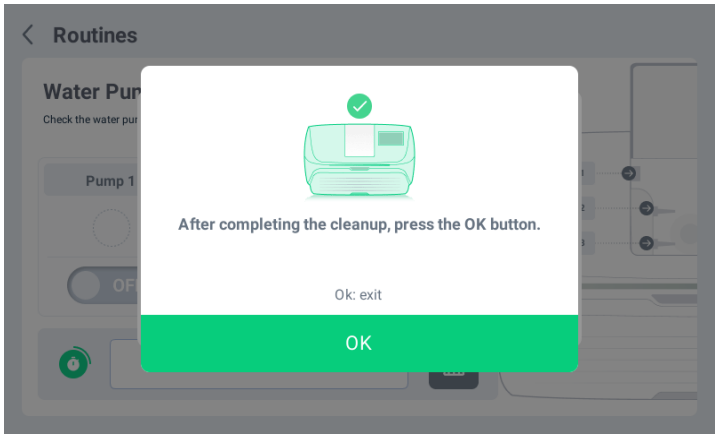




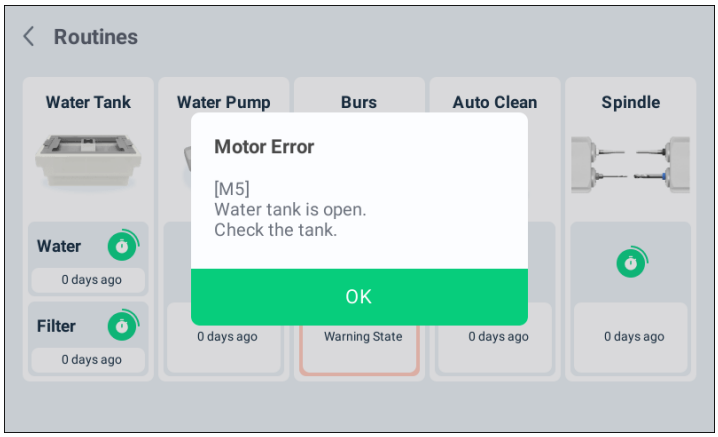
4. When the pump operates and water begins to circulate, pull the water tank slide forward to separate it from the machine.

   ☞ Water sprayed from each nozzle remains in the milling room.

5. Click the OK button on the screen when the water pump circulation is complete.



6. During the initialization movement, an error message will pop up on the screen indicating that the water tank is disconnected.
   Click the OK button to close the message.

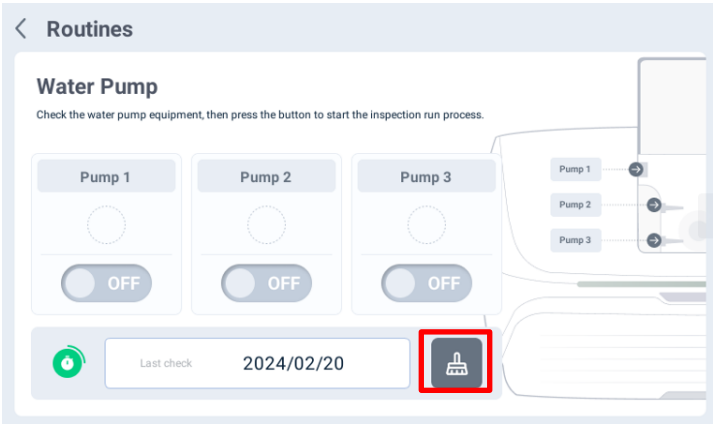


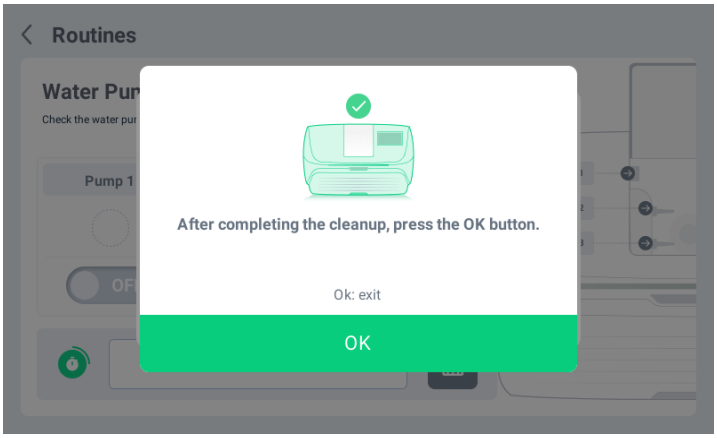
7. Reinsert the water tank and drain the remaining water in the milling room into the water tank.
8. Check the inside of the milling room and remove any foreign substances.
   Also, wipe off any remaining water on the inside of the milling room.
9. Separate the water tank again and empty the water in the tank. (Do not remove the filter)
10. Assemble the tray on top of the water tank.
11. Place the water tank on the rail and push it in until you feel it click into place.
    ☞ How to check normal insertion status : Status LED bar (Blue blinking → White)
12. Close the milling room window.

9.6.5. When using multiple water tanks (Optional purchase)

- Depending on the block material you want to mill, you can use two or more water tanks interchangeably.
  Ex.) WATER TANK1 (for ceramic) / WATER TANK2 (for zirconia)

1. When replacing the water tank, be sure to remove the any remaining water from pipes, water pump and radiator.
   ☞ How to remove remaining water. (Refer to '9.6.4' chapter)
2. Check the inside of the milling room and remove any foreign substances.
   Also, wipe off any remaining water on the inside of the milling room.
3. Remove the installed water tank (for ceramic) and insert the new water tank (for Zirconia) to be used.
   ☞ Place the water tank on the rail and push it in until you feel click into place.
4. On the water pump routine screen, click the brush button at the bottom of the screen to operate the pump to circulate the water in the tank. (Pipes, water pump, Radiator)
   ☞ Check whether water is sprayed correctly from the each outlet of Pump 1, Pump2 and Pump3.





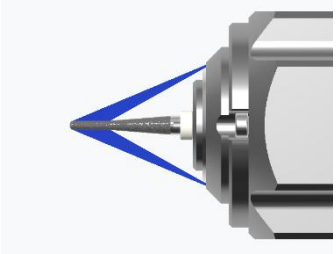
5. When the operation is complete, press 'OK' to exit.

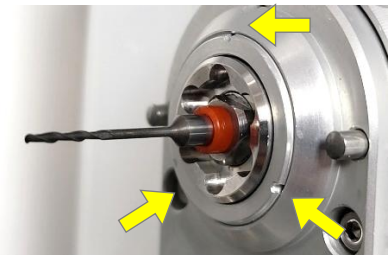
⚠ Warning

- If zirconia is milling with cutting oil included, there may be problems with the color expression of the zirconia.

9.6.6. Cleaning the spindle nozzle

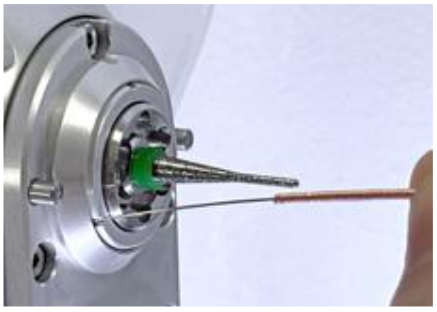
- Periodic nozzle cleaning and maintenance are required to ensure proper use of the equipment. Whenis it necessary to clean the spindle nozzle?
  - When the water stream cannot be sprayed to the end of the bur. (Blue position)
  - When three streams of water cannot be sprayed due to a blockage.





1. Referring to the nozzle position in the above picture, clean the nozzle by moving the brush so that the fine bristles can enter the nozzle hole.
   If the nozzle part is clogged with foreign matter, clean it several times using the 'Nozzle Cleaning Pin'.





2. Operate the water pump and check whether water is sprayed correctly from each nozzle.
   (Main screen ➔ Routine screen ➔ Water pump mode)

⚠ Caution

- Milling with a clogged nozzle can result in poor cooling and reduced tool life.
- The water spray nozzle is very small and invisible to the eye. Refer to the illustration and clean the brush bristles so that they can fit into the gaps in those locations.
- Never use an air compressor to clean the inside of the milling room and spindle rotating parts. Water may flow back or the pipes may become clogged, and water may seep into gaps in the air curtain, causing damage to the spindle.

9.6.7. How to replace a window latch

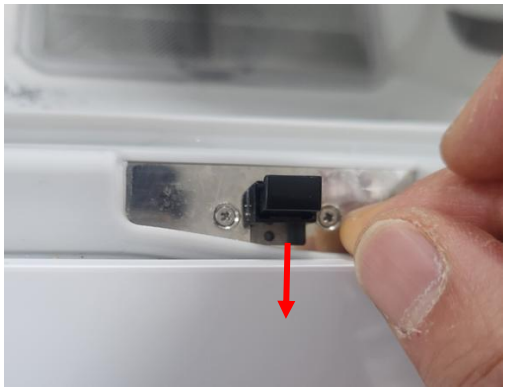
- If the window latch is broken, replace it with the spare latch included in the accessory.
- Replace the latch in the order below using the 1.5mm hexagon wrench included in the accessory.
- After replacement, check whether the milling room window operates normally,



1) Remove one bolt directly below the latch



2) Separate the block along with the bolt. (Use tweezers)



3) Separate the latch by moving it downward.



4) Remove the window latch and install a new one

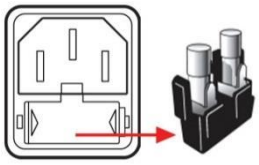


5) Checking mounting and orientation in the reverse order of disassembly

9.6.8. Replacing the fuse

When replacing a fuse, the following specifications must be observed, and be sure to unplug the power cord before replacing.

- 100-120Vac, 250V T6.3AL
- 200-240Vac, 250V T3.15AL



Warning

- The fuse must be used in accordance with the specified specifications, otherwise it may cause damage to the device or cause a fire.

9.6.9. Exterior cleaning

1. Be sure to unplug the power cord before cleaning.
2. The exterior cover and LCD panel should be wiped with a dry and soft cloth.

Caution

- Never use an air compressor to clean the inside of the milling room and spindle rotating parts. Water may flow back or the pipes may become clogged, and water may seep into gaps in the air curtain, causing damage to the spindle.
- When cleaning, do not spray the cleaning agent directly on the exterior cover. This may damage the appearance or erase the markings. If you use a detergent with strong chemical ingredients, it may cause discoloration or cracking of the machine's exterior, so be sure to use clean water.

10. Trouble guide

10.1 Error message

If an error message occurs, please check first and take action by referring to the table below. If the problem is not resolved, please contact your purchasing agent or Huvitz Co., Ltd.

Error Code	**2**
Situations and causes	When the STOP button is pressed during milling
action	• None

Error Code	**3 & 4**
Situations and causes	When the window is open
action	• Close the window • Check the window sensor(Limit Switch) and cable connection status.

Error Code	**5**
Situations and causes	When the water tank is open
action	• Close the water tank • Check the water tank sensor (Limit Switch) and cable connection status.

Error Code	**6**
Situations and causes	When the water pressure is low
action	• Check if the water in the tank is properly filled between the Low-Max indicator lines. • Cleaning the inside of the milling room and the water tank top tray. • After checking the filter, replace it if necessary.

Error Code	**8**
Situations and causes	When the window is opened during pump operation
action	• Spindle drive action is required through management mode. • Uses the motor spindle warm-up function.

Error Code	**102**
Situations and causes	When X(Right)-axis initialization is not completed properly,
action	• Check the X(Right)-axis sensor or motor connection

Error Code	**103**

Situations and causes	When Y-axis initialization is not completed properly,
action	• Check Y-axis sensor or motor connection

Error Code	**104**
Situations and causes	When Z(Right)-axis initialization is not completed properly,
action	• Check for Z(Right)-axis sensor or motor connection

Error Code	**106**
Situations and causes	When X(Left)-axis initialization is not completed properly,
action	• Check the X(Left)-axis sensor or motor connection

Error Code	**108**
Situations and causes	When Z(Left)-axis initialization is not completed properly,
action	• Check the Z(Left)-axis sensor or motor connection

Error Code	**109**
Situations and causes	When B-axis initialization is not completed properly,
action	• Check B-axis sensor or motor connection

Error Code	**111**
Situations and causes	T1 spindle motor rotation failure
action	• Check the cable connection of the T1 spindle motor. • Perform the “Spindle automatic warm-up” several times on the Routine screen.

Error Code	**112**
Situations and causes	T2 spindle motor rotation failure
action	• Check the cable connection of the T2 spindle motor. • Perform the “Spindle automatic warm-up” several times on the Routine screen

Error Code	**113**
Situations and causes	T3 spindle motor rotation failure
action	• Check the cable connection of the T3 spindle motor. • Perform the “Spindle automatic warm-up” several times on the Routine screen

Error Code	**114**
Situations and causes	T4 spindle motor rotation failure

action	• Check the cable connection of the T4 spindle motor. • Perform the “Spindle automatic warm-up” several times on the Routine screen

Error Code	**121**
Situations and causes	Hall sensor value error of the T1 Spindle motor.
action	• Check the cable connection of the T1 spindle motor.

Error Code	**122**
Situations and causes	Hall sensor value error of the T2 Spindle motor.
action	• Check the cable connection of the T2 spindle motor.

Error Code	**123**
Situations and causes	Hall sensor value error of the T3 Spindle motor.
action	• Check the cable connection of the T3 spindle motor.

Error Code	**124**
Situations and causes	Hall sensor value error of the T4 Spindle motor.
action	• Check the cable connection of the T4 spindle motor.

Error Code	**131**
Situations and causes	When the voltage of T1/T2 spindle motor is low,
action	• Check the 48V SMPS.

Error Code	**132**
Situations and causes	When the voltage of T3/T4 spindle motor is low,
action	• Check the 48V SMPS.

Error Code	**201**
Situations and causes	When overcurrent is detected during T1 spindle motor rotation.
action	• Check whether the correct bur for T1 spindle is installed. • After checking the bur life and wear, replace it with a new one if necessary. • Perform the “Spindle automatic warm-up” several times on the Routine screen.

Error Code	**202**
Situations and causes	When overcurrent is detected during T2 spindle motor rotation.
action	• Check whether the correct bur for T2 spindle is installed.

	• After checking the bur life and wear, replace it with a new one if necessary. • Perform the “Spindle automatic warm-up” several times on the Routine screen.

Error Code	**203**
Situations and causes	When overcurrent is detected during T3 spindle motor rotation,
action	• Check whether the correct bur for T3 spindle is installed. • After checking the bur life and wear, replace it with a new one if necessary. • Perform the “Spindle automatic warm-up” several times on the Routine screen.

Error Code	**204**
Situations and causes	When overcurrent is detected during T4 spindle motor rotation,
action	• Check whether the correct bur for T4 spindle is installed. • After checking the bur life and wear, replace it with a new one if necessary. • Perform the “Spindle automatic warm-up” several times on the Routine screen.

Error Code	**501**
Situations and causes	When the bur mounted on T1 is not suitable for milling,
action	• Check whether the bur mounted on T1 is correct • If necessary, change the bur.

Error Code	**502**
Situations and causes	When the bur mounted on T2 is not suitable for milling,
action	• Check whether the bur mounted on T2 is correct. • If necessary, change the bur.

Error Code	**503**
Situations and causes	When the bur mounted on T3 is not suitable for milling,
action	• Check whether the bur mounted on T3 is correct. • If necessary, change the bur.

Error Code	**504**
Situations and causes	When the bur mounted on T4 is not suitable for milling,
action	• Check whether the bur mounted on T4 is correct. • If necessary, change the bur.

Error Code	**601**
Situations and causes	When the block is not mounted correctly,
action	• Check whether the block is correctly inserted according to the position pin. • Check whether the mounted block matches the block information transmitted from L-CAM

Error Code	701
Situations and causes	An error occurred during the Set Origin movement of T3/T4 Spindle.
action	• Check whether the block to be milled has been inserted. • Check whether the bur is inserted into the T3/T4 Spindle. • Check whether T3/T4 bur is damaged.

Error Code	702
Situations and causes	An error occurred during the Set Origin movement of T1/T2 Spindle.
action	• Check whether the block to be milled has been inserted. • Check whether the bur is inserted into the T1/T2 Spindle. • Check whether T1/T2 bur is damaged

Error Code	4001
Situations and causes	When the general position range is exceeded during calibration,
action	• Check whether the calibration jig is inserted correctly. • Check whether the calibration pins are correctly inserted into T1 and T3.

Error Code	4101
Situations and causes	When calibration data cannot be applied before starting milling,
action	• Check the software version • Reboot the machine. (Off & On)

Error Code	7000
Situations and causes	When the window or water tank is open,
action	• Check that the window and water tank are closed.

Error Code	7001
Situations and causes	When the pump is trying to operate with the window open,
action	• Close the window • Check if the window sensor is normal.

Error Code	7700
Situations and causes	The spindle drive button was pressed repeatedly during test mode.
action	• Since the spindle is currently running, please wait a moment and try again.

Error Code	8000
Situations and causes	Motor Board is not connected
action	• Check the power and cable connection of the motor board.

	• Before replacing the motor board, check whether the ID has been set properly.

Error Code	**8003**
Situations and causes	If multiple commands are sent consecutively while the Lilivis mill is operating.
action	• Check for software updates for the Lilivis Mill and L-CAM.

Error Code	**8004**
Situations and causes	If multiple commands are received consecutively during the communication session.
action	• Check for software updates for the Lilivis Mill and L-CAM.

Error Code	**8005**
Situations and causes	If an NC file transfer is attempted while the Lilivis mill is in an error state.
action	• Send NC file after initializing the Lilivis Mill. • Check for software updates for the Lilivis Mill and L-CAM.

10.2 Troubleshooting

If a problem occurs without an error message, please check first and take action by referring to the table below. If the problem is not resolved, please contact your purchasing agent or Huvitz Co., Ltd.

Problem phenomenon	The LCD screen does not turn on even though the power switch is turned on.
Situations and causes	• When the power cord is not connected or the connection is poor, • When the fuse blows,
action	• Check input power and power cord connection. • Replace the Fuse.

Problem phenomenon	LCD screen touch does not work well
Situations and causes	When the LCD touch calibration value is abnormal.
action	Execute LCD touch calibration. (Engineer Mode or higher)

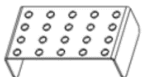
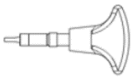
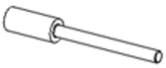
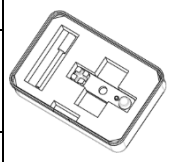
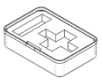
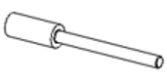
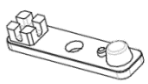
Problem phenomenon	The device has the wrong time
Situations and causes	The device's battery life is exhausted.
action	Replace the GUI board battery. (CR1220 Lithium Battery)

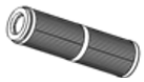
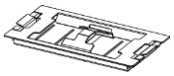
Problem phenomenon	Milling bur breaks
Situations and causes	• When the milling bur is not mounted correctly, • When milling bur wear is severe, • When there is not enough water in the water tank, • When the spindle nozzle is clogged,
action	• Check that the milling bur is mounted correctly. • Replace the milling bur. (Routine → Burs) • Make sure there is enough water in the tank. (Refer to ‘9.6.3 Chapter’) • Perform spindle nozzle cleaning. (Refer to ‘9.6.6 chapter’)

Problem phenomenon	Water is not spraying correctly from the spindle nozzle
Situations and causes	• When there is not enough water in the tank, • When there is a lot of debris in the drain strainer and water circulation is blocked, • When the filter in the tank is clogged, • When the spindle nozzle is clogged,
action	• Make sure there is enough water in the tank. (Refer to ‘9.6.3 Chapter’) • Cleaning the strainer in the milling room and top tray of the water tank. • Replace the filter. (Refer to ‘9.6.3 Chapter’) • Perform spindle nozzle cleaning. (Refer to ‘9.6.6 chapter’)

11. Specifications and Accessories

11.1 Accessory (Standard)

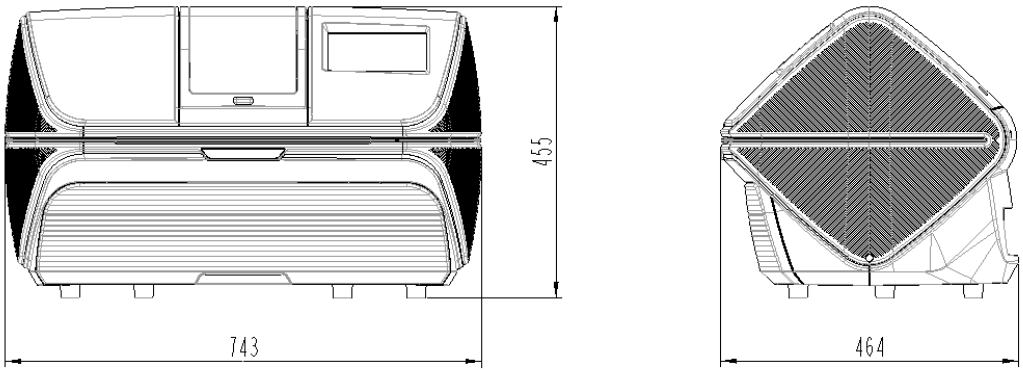
No.	Part name	Pictures	Quantity
1	Bur Locking Device		1
2	Bur holder		1
3	Torque driver set		1
4	Cleaning sticks		2
5	Grinding bur (GR10) (Green, Φ1.0)		2
6	Grinding bur (GR14) (White, Φ1.4)		3
7	Milling bur (GR16) (Gray, Φ1.6)		1
8	Milling bur (GR18) (Yellow, Φ1.8)		2
9	Milling bur (ML25) (Blue, Φ2.5)		1
10	Milling bur (ML10) (Red, Φ1.0)		1
11	Fitting Box (Case)	 	1
12	Cleaning Stick		1
13	Fitting Jig		1
14	XZ module locking screws (for packing)		2

15	Filter		4
16	Filter tray assy		1
17	Cleaning brush		1
18	Maintenance Guide Sheet		1
19	Power cord		1
20	Fuse		2
21	Nozzle cleaning brush		1
22	Nozzle cleaning pin		2
23	Twist brush		1
24	Window latch		2
25	Hex wrench (1.5mm) Replacement tool (window latch)		1
26	USB memory		1
27	Upper strainer		1
28	Lower strainer		1
29	Hexagon set screws		5

11.2 Specifications

Milling Type	Wet processing, Milling & Grinding method support (depends on material)
Spindle	4 Motors, Dual spindle
Spindle speed	Up to 50,000 RPM
Milling time	8~15 minutes (@ Normal mode grinding)
Types of restorations	Crowns, Bridges, Inlays, Onlays, Veneers
Block Material	Lithium Disilicate, Glass/Hybrid Ceramic, PMMA, Zirconia
Block Size	up to 40mm
Water Pump	Built-in
Water Tank Capacity	5L (without filter) / 4.5L (with filter)
size	743(W) x 464(D) x 455(H)
weight	61Kg
Consumption	100-120Vac 3A / 200-240Vac 1.5A, 50/60Hz

11.3 Dimension



12. Service information

If you encounter any problems with your device, please follow the steps listed below for service.

- First, depending on the problem you encounter, take action as mentioned in the break-fix guide in Chapter 10.
- If you have any other problems, please contact the dealer from whom you purchased the device.
- Be sure to check the model number and serial number of your device before contacting your dealer.
- The serial number is a unique number assigned to the device and can be found on the back of the device, and it is recommended to write it down in advance in the table below after purchasing the device.
- Please keep this manual as a record of your purchase and your purchase receipt as proof of your purchase.

Date of purchase	
Vendor Name	
Vendor address	
Vendor Contact	
Model No.	
Serial Number	

- If you can't get in touch with the dealer you purchased from, you can contact the customer service department of Huvitz directly.
- For contact information of the customer service department of Huvitz, please refer to the following.

Contact Huvitz Co., Ltd.

38 Burim-ro 170beon-gil, Dongan-gu, Anyang-si,
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