PLANMECA

Planmeca PlanMill® 35

EN

user's manual

The manufacturer, assembler and importer are responsible for the safety, reliability and performance of the unit only if:

- installation, calibration, modification and repairs are carried out by qualified authorised personnel
- electrical installations are carried out according to the appropriate requirements such as IEC 60364
- equipment is used according to the operating instructions.

Planmeca pursues a policy of continual product development. Although every effort is made to produce up-to-date product documentation this publication should not be regarded as an infallible guide to current specifications. We reserve the right to make changes without prior notice.

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Table of contents

1 Introduction

This manual describes how to operate the Planmeca PlanMill 35 as part of the Planmeca Chairside CAD/CAM solution.

NOTE

This manual is valid for the Planmeca PlanMill 35 software version 1.5.1.10. or later.

1.1 Indications for use

The PlanMill 35 is a dental milling unit intended for fabricating restorations from compatible dental materials.

2 Associated documentation

- Romexis 6 user’s manual
- Planmeca FIT solution user’s manual
- Planmeca PlanMill 35 installation manual

  Instructs how to install the components of the Planmeca Chairside CAD/CAM solution. This manual is for service personnel.
- Planmeca PlanMill 35 technical manual

  Instructs how to perform the maintenance, troubleshoot and repair tasks of the Planmeca PlanMill 35. This manual is for service personnel.

3 Symbols on product labels

The following symbols are used on various labels on the system.

Affixed to the system are product identification labels that contain identification and safety information. The following images show each safety and warning label and describe where on the apparatus each can be found. Be certain to read all product labelling.

NOTE

The labels may have changed since this manual was published.

NOTE

Label examples are not shown in their actual size.

Alternating current (Standard IEC 60417).

CAUTION (Standard ISO 15223-1).

Non-ionizing electromagnetic radiation

European conformity

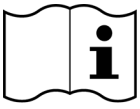
Manufacturer (Standard ISO 15223-1).

Date of manufacture (Standard ISO 15223-1).

OFF Power IEC 60417-5008.

ON Power IEC 60417-5007.

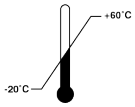
On/Off Power IEC 60417-5010



Consult electronic instructions for use (Standard ISO 15223-1).

Protective earth (ground) (Standard IEC 60417).

Humidity limitation (Standard ISO 15223-1).



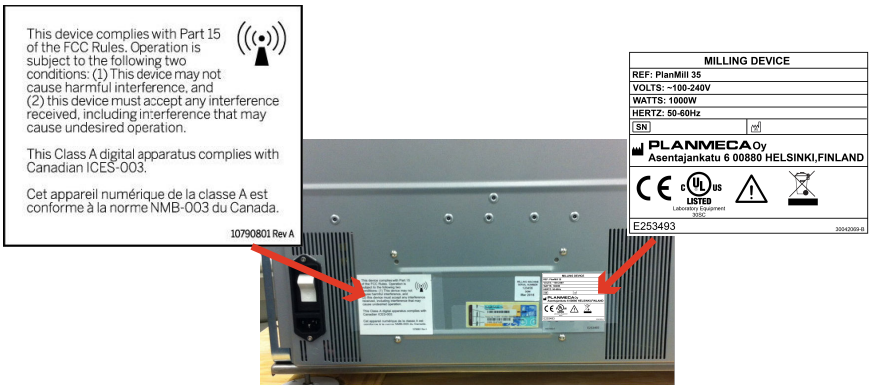
Storage temperature limits (Standard ISO 15223-1).

Operating temperature limit (Standard ISO 15223-1).

Separate collection for electrical and electronic equipment according to Directive 2012/19/EU (WEEE).

3.1 Product identification labels

The product identification labels affixed to the milling unit contain product identification and safety information. Read carefully all product labelling.



The milling unit serial number and Windows software keys are located next to the tank.

If any of the labels are missing or illegible, please contact Planmeca customer support for replacement labels.

Label examples are not shown actual size. The labels may have changed since this book was published.

Attention labels

Attention labels are located in numerous places on the Planmeca components. These labels direct you to specific safety entries in this user manual. Adhere to all such safety warnings at all times.

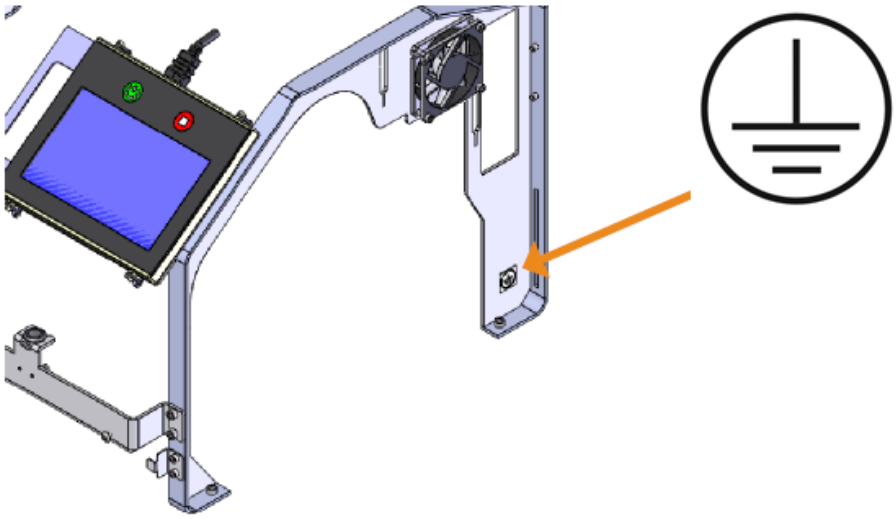
External components and connectors

When connecting external components to the system, attach only components that are recommended by Planmeca.

Connectors for attaching external devices conduct low voltages. Avoid touching the connector pins.

Protected earth ground label

The protected earth ground label is attached under the milling unit cover.



UL listing

UL Laboratory Equipment Listing IN ACCORDANCE WITH UL 61010-1

30SC

E253493v

4 Safety precautions

WARNING

Read and comply with all safety, warning, and instructional labels on the products. Failure to adhere to all safety warnings may result in personal injury, equipment damage, or data loss.

CAUTION

The milling unit weighs approximately 61 kg (135 lb). When lifting or moving the milling unit, follow the guidelines in section "Relocating milling unit" on page 11.

CAUTION

Always ensure the milling unit is on a surface capable of supporting its weight of approximately 61 kg (135 lb).

CAUTION

Use caution when handling the milling unit's cutting tools.

CAUTION

Before milling a restoration, ensure the milling unit has adequate milling fluid. Adequate milling fluid is required to prevent overheating and possible damage to the restoration blank and cutting tools.

CAUTION

Do not open the mill's cover while a milling operation is in progress. Doing so will result in the loss of data and restoration block; the milling process will have to be repeated.

CAUTION

This equipment is designed to be connected to a properly grounded electrical outlet. The use of power strips or extension cords is not recommended. If a power cord (other than the one provided with the equipment) is used for connecting to the power source, ensure it meets all of the following requirements:

- Detachable power supply cord
- Type SJT
- 18 AWG 3 conductor
- Rated 10 A or better
- For products outside of the United States and Canada, the power cord must be marked "HAR" or with a suitable agency marking from the country of intended use. The attachment plug and appliance coupler must be marked with a suitable agency marking from the country of intended use.

CAUTION

Do not use the products for any purpose other than its intended and labelled use.

CAUTION

To prevent electrical shock, do not open any sealed or user restricted access panels or connectors.

CAUTION

A detachable non-locking type power cord has been provided with this equipment as the disconnect device. Do not block access to the power cord. In case of emergency, remove power from the device by unplugging the cord at either end.

CAUTION

Do not block any of the product's cooling vents. Doing so may result in overheating and damage to the products and will void the product warranty.

CAUTION

When placing components, adhere to all clearances stated in “Minimum Clearance” in section "Technical specifications" on page 42 .

CAUTION

Do not make any unauthorised repairs or modifications to the system software or hardware. This includes installing unauthorised software on the computer system or altering or bypassing any safety switches or mechanisms.

CAUTION

Do not install or operate the products in an environment where an explosion hazard exists, e.g., high oxygen area.

CAUTION

Comply with all applicable regulations when disposing of waste materials.

CAUTION

Do not attach any equipment or devices to the products unless their use has been specifically authorised by Planmeca.

CAUTION

The wireless components in the products may be interfered with by other equipment, even if the other equipment is fully compliant with CISPR (International Special Committee on Radio Interference) emission requirements.

CAUTION

When possible, electrical equipment should not be used when adjacent to other electrical equipment. If adjacent use is necessary, the equipment should be observed to verify normal operation in the configuration in which it will be used.

CAUTION

When connecting the components, use only the cables supplied with the products. Failure to do so may result in increased electromagnetic emissions or reduced immunity to external electromagnetic emissions.

CAUTION

Ensure your products are properly maintained through periodic maintenance.

CAUTION

If you suspect equipment malfunction or failure, discontinue using the products and contact Planmeca Customer Support immediately. Do not attempt to make any repairs on the products.

CAUTION

The vacuum equipment (optional attachment) is not intended for use in wet conditions. To reduce the risk of electric shock, do not expose to excessive moisture, water, or rain. Do not operate the system in areas with excessive moisture. For use in Dry Milling Mode only.

5 Milling unit

5.1 Lid lights

The lid lights change colour based on the status of the milling unit.

Lid colour	Status of the unit	Description
Green	In Process	• Initialising/homing • Grinding a job • Block and Tool Length Detection • Tool changing • Performing any normal operation requiring lid to be closed
Green	Idle	Milling unit is initialised and ready to start
White	Idle	Lid is open
Blue	Maintenance	• Some operator interaction is required • Tool replacement • Collet/cap cleaning • Tank cleaning • Pump priming
Yellow	Fault	• Condition requiring operator intervention • All operation has stopped • Error message is displayed • May require re-initialise to clear fault • May require entering Diagnostic Console to diagnose problem.

5.2 Start-up

Before you begin

Ensure your air compressor is ON before starting the mill.

About this task

Follow these instructions to turn ON the milling unit.

Steps

1. Press the green button on the front panel.

   The initialising screen appears.
2. Close the lid firmly and wait for the software to finish loading.

NOTE

The software takes approximately 4–5 minutes to open. Do not manually open the software or it may cause errors.

Results

When the lid light turns green, the milling unit is ready to start a job.

5.3 Shutdown procedure

Before you begin

The milling unit should remain ON during the week. Turn it OFF at the end of the week.

About this task

Follow these steps to turn off the milling unit.

Steps

1. Touch the **X** in the corner of the main screen to exit.
2. Press **OK** on the appearing verification screen.

   The desktop for the operating system (Windows) appears.
3. Ensure that all milling unit motor movement has stopped.
4. Press and hold down the green power button for approximately 10 seconds.

   This process will prompt the operating system (Windows) to shut down.

Results

The screen and red button will go dark.

5.4 Relocating milling unit

About this task

WARNING

The milling unit is a heavy piece of equipment. Always follow these guidelines when relocating the unit.

At least two people are required for lifting the milling unit.

The milling unit is designed to operate on a level and stable surface in an environment free from excessive moisture or dust. When choosing a location for the unit make sure to adhere to all clearance requirements stated in section "Technical specifications" on page 42.

Steps

1. Ensure no milling operations are in progress.
2. Open the front access panel and remove the fluid reservoir.
3. Empty the fluid reservoir according to your approved material disposal protocols.
4. Turn OFF the milling unit.
5. Disconnect all power and data connections.
6. Move the milling unit onto a cart that is capable of supporting the weight of the milling unit.

   You are advised to use a suitable cart rather than moving the milling unit by hand. Lifting and carrying should be kept to a minimum.

7. Prepare to lift the milling unit.

   Stand close to the milling unit keeping your feet approximately shoulder width apart, one foot slightly in front of the other for optimal balance.

8. Squat down by bending at the knees, not at the waist, keeping the back as vertical as possible.
9. Firmly grasp the milling unit by the underside metal bottom plate located on each side of the unit, not by the plastic covers.
10. Using the legs, not the back, slowly begin lifting without twisting the body.
    - To minimise stress on the back, keep the milling unit as close to the body as possible. If you need to turn, turn by shuffling the feet, not by twisting the body.
    - If it is necessary to place the milling unit below waist level, follow these procedures in reverse order, keeping the back vertical and bending at the knees.
    - Be careful to avoid obstacles.

5.5 System information and upgrades

Software and hardware

The system software and hardware upgrades are initiated through Planmeca and authorised dealers only. Do not add or delete any software or hardware to/from the system without prior approval of Planmeca. Doing so may damage the system and will void the product warranty.

Milling unit software version

The milling unit software version number is displayed on the home screen.

When placing a call for service or support, you may be asked to provide the serial number, model number, software version number, or similar identifying data.

Checking serial number and model number

The serial number and model number of the milling unit are located on the label affixed to the rear of the unit see section "Symbols on product labels" on page 3.

6 Importing for milling

A patient must be created in Romexis to be able to import and send STL files to the milling unit.

See Romexis user's manual section *Patients module* for information on:

- Adding patients
- Searching and sorting patients
- Opening patients

See Romexis user's manual section *CAD/CAM module* for information on:

- Importing 3D models
- Exporting 3D models
- Opening and inactivating cases.

See Romexis technical manual on instructions how to permanently delete images from the Romexis database.

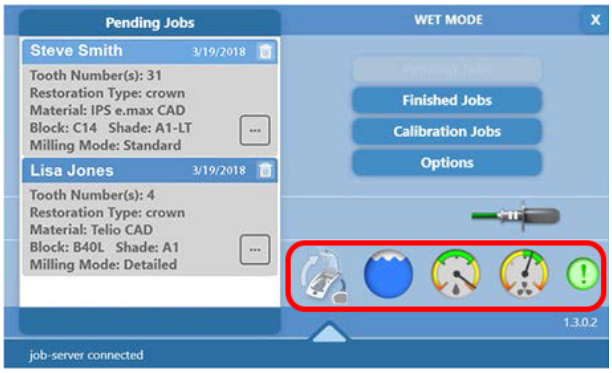
See Planmeca FIT solution user’s manual:

- Setting up restoration

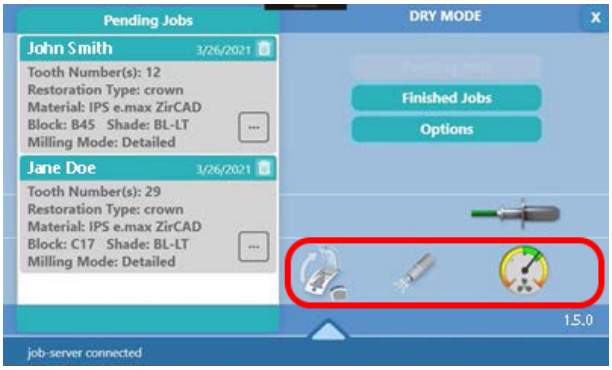
7 Operating milling unit

The symbols on the milling unit screen will vary depending on whether you are running Wet or Dry Mode. If your screen does not match the example shown, it may be because of the selected mode. See "Converting milling unit to dry mode" on page 19 or "Converting milling unit to wet mode" on page 22 for more information.

Pending jobs in wet mode



Pending jobs in dry mode



7.1 Selecting restoration for milling

About this task

The pending restorations are listed on the Pending Jobs screen. It is the default screen. The jobs are automatically deleted after 7 days.

Before making any selections on the touch screen wait until the lid lights of the milling unit turn green.

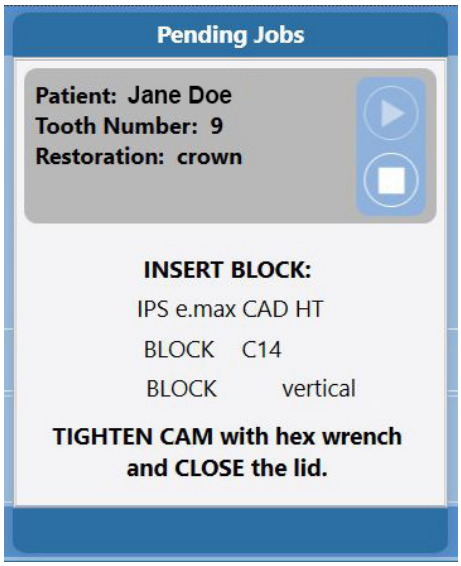
Steps

1. Scroll to find the desired milling job by dragging a finger up and down the restoration list.

2. Select the desired restoration by touching it.

Results

The system opens the lid and prompts you to insert the block that matches the material selected in the Design software.



What to do next

To return to the jobs list touch the **Stop** button.

7.2 Inserting blocks

About this task

Blocks can be inserted vertically or horizontally. The Insert Block screen specifies the block orientation.

Note that the notches face right in the examples below. If the notch is pointing to the left, you will not be able to insert the block. Round blocks use the vertical orientation of the mandrel.
The mandrel is the metal piece of the restoration block that is inserted into the milling unit to hold the block steady during milling.

Steps

1. Insert the block into correct position in the orientation specified by Insert Block screen.

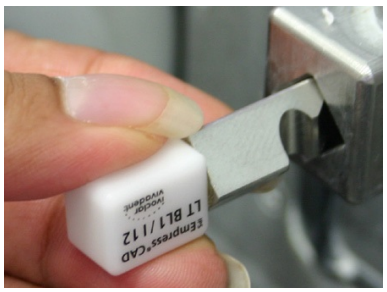
   Horizontal orientation

   The rectangular block faces up and the mandrel notch points to the top right. This side will usually have the printed label.

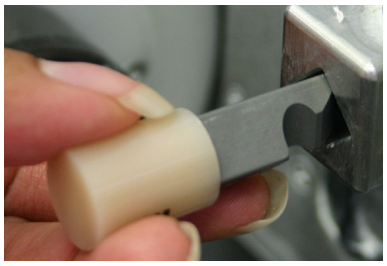
   

   Vertical orientation

   The narrow side of the rectangular block faces up, with the mandrel notch pointing to the bottom right.

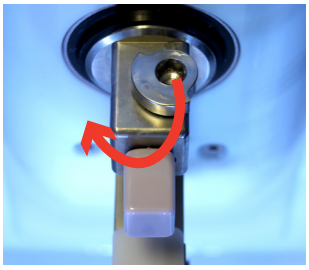
   

   The round blocks are inserted with vertical orientation.

   If the block cannot be inserted fully, loosen the cam by turning it 180 degrees counter-clockwise with the Mandrel T-Handle.

2. Insert the block in correct position and lock it in place by tightening the cam.



7.3 Milling zirconia

See the manufacturer's Instructions for Use provided with the zirconia blocks for processing instructions.

Scale Factor

Zirconia shrinks in the sintering oven. There are numbers on the side of the blocks. The milling unit asks for the scale factor before a zirconia block is milled. The system will increase the size of the restoration according to this number. This means you cannot test the fit of the restoration before sintering.

Wet versus dry mode

Zirconia can be milled either wet or dry. Dry mode is used exclusively for zirconia. Dry mode requires the vacuum kit with dry milling tools (sold separately). Longer tools are required to mill zirconia in wet mode: conical 12.6 and tapered 13.2. Wet mode zirconia also requires extra cleaning and processing. See below for details.

Wet mode

- Can mill any material
- Longer grinders / Wet tools required (conical 12.6 and tapered 13.2) for zirconia
- Clean the tank before and after milling zirconia
- Brown spindle cap

- Butterfly vent closed
- Strainer in grind chamber

Dry mode

- Zirconia material only
- Fluted cutters / dry tools required (fluted 1 mm and 1.6 mm)
- Vacuum required
- Blue spindle cap
- Butterfly vent open
- Plug in grind chamber

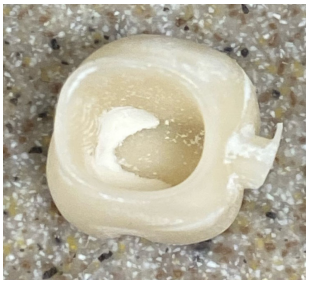
Cleaning dry milled zirconia restorations

After milling, use a fluffy brush, an explorer, and magnifying loupes to brush and lightly scrape any caked powder away. Ensure all powder is removed before air blowing and firing. If powder is still present during firing, it will adhere and solidify, making the restoration unusable.

CORRECT - Use fluffy brush, an explorer and magnifying loupes to clean any caked powder

CORRECT - Zirconia cleaned thoroughly before firing

INCORRECT - Zirconia NOT cleaned before firing, unusable



Cleaning the tank when milling zirconia in wet mode

When using the wet milling option, the milling unit will prompt you to clean the tank. It is necessary to clean the milling unit and change the water **before** milling zirconia. If the zirconia is contaminated with other materials, it can turn green when sintered. Cleaning after milling is recommended because the zirconia acts as a thickening agent with the water. It is not necessary to

clean in between sequential zirconia jobs, although the milling unit will ask if the tank is clean.

7.4 Converting milling unit to dry mode

About this task

Dry milling is used for zirconia blocks as follows.

Steps

1. Touch the Options button.
2. Touch **Convert Wet/Dry** to start the Mill Conversion wizard.
3. Follow the conversion wizard instructions.

   Note that the list below may not match the wizard order of operations.

   3.a. Touch **Dry**.

   3.b. Set the switch to DRY (on the left side of the milling unit).

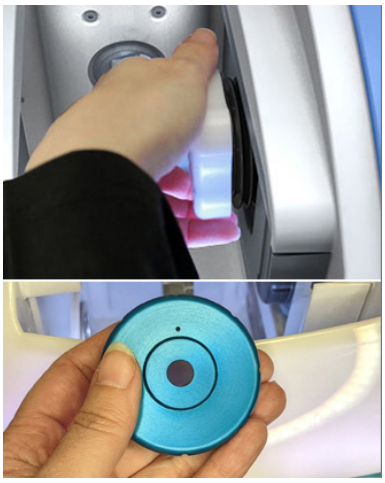
   

   3.c. Connect the vacuum hose (on the left side of the milling unit).

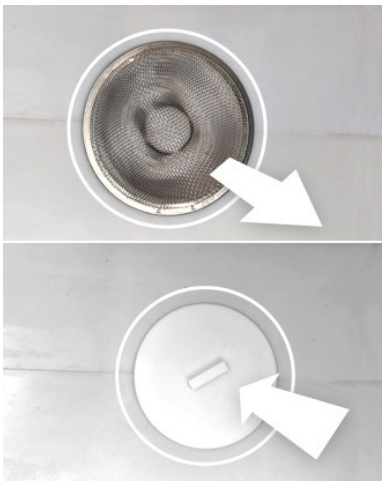
3.d. Empty the mandrel holder (if needed).

3.e. Replace the brown nozzle cap with the blue nozzle cap.

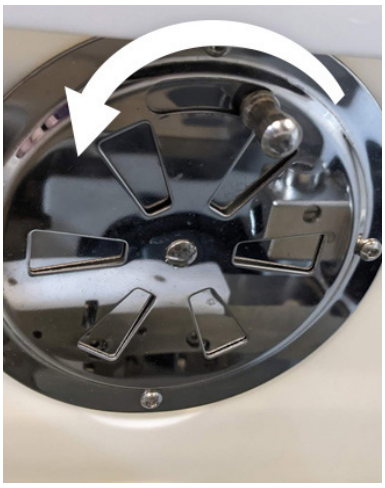


3.f. Dry the chamber and lid.

3.g. Replace the strainer with the drain plug.



3.h. Open the butterfly vent (shown closed) and close the lid.



4. Visually check the tool changer to ensure none of the tools were nudged out of place when you have performed any of the wizard steps.

   (This visual check is not part of the wizard:) Move tools back into place if needed.

5. Make sure that the vacuum control cable is plugged in.

   Ensure the flat part of the connector is facing up.

6. Check Tool Manager in the software to ensure there are fluted cutter tools in both sizes (1.0 mm and 1.6 mm) available.

7. Insert new tools if needed.

What to do next

See sections "Cleaning the grind chamber when milling zirconia in dry mode" on page 37 and "Replacing the vacuum filter bag and HEPA filter" on page 37 for information on dry milling maintenance.

7.5 Converting milling unit to wet mode

About this task

Wet milling is performed as follows.

Steps

1. Touch the Options button.
2. Touch **Convert Wet/Dry** to start the Mill Conversion wizard.
3. Follow the conversion wizard instructions.

   Note that the list below may not match the wizard order of operations.

   3.a. Touch **Wet**.

   3.b. Empty the mandrel holder (if needed).

   3.c. Replace the blue nozzle cap with the brown nozzle cap.

3.d. Disconnect the hose from the left side of the milling unit and use the brush attachment to vacuum the chamber.

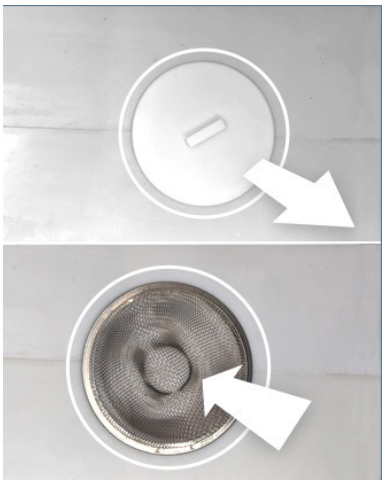
3.e. Touch the vacuum icon to turn the vacuum ON/OFF.

Vacuum ON

Vacuum OFF

3.f. Set the switch to WET (on the left side of the milling unit).

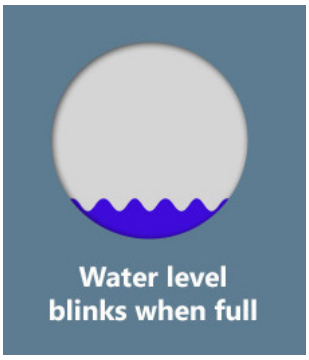
3.g. Replace the drain plug with the strainer.



3.h. Close the butterfly vent (shown open) and close the lid.

3.i. If the tank is dry, refill it with water/coolant mixture.

If the tank is partially full, add water.



4. Visually check the tool changer to ensure none of the tools were nudged out of place when you have performed any of the wizard steps.

   (This visual check is not part of the wizard:) Move tools back into place if needed.

5. Check Tool Manager in the software to ensure there are grinder tools in both types (conical and tapered) available.

7.6 Starting milling

About this task

Milling is an automated process that varies in length of time based on the restoration data.

Steps

1. Insert the block into the milling chamber (for detailed instructions see section "Inserting blocks" on page 15).
2. Close the lid firmly.

   The system checks the positioning of the block and begins generating the toolpath.

   Once the toolpath has been generated, the milling will begin and the milling time will be displayed.

   NOTE

   If there is a problem generating a tool path or if the milling unit times out see section "Troubleshooting/repair" on page 32 for assistance.

   When milling is completed, the lid automatically opens.
3. Remove the restoration and any debris and close the lid firmly.

   This allows the mill unit to prepare for the next job.

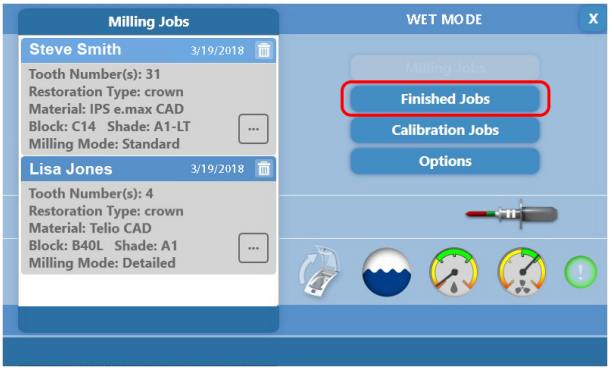
7.7 Remilling previous restorations

About this task

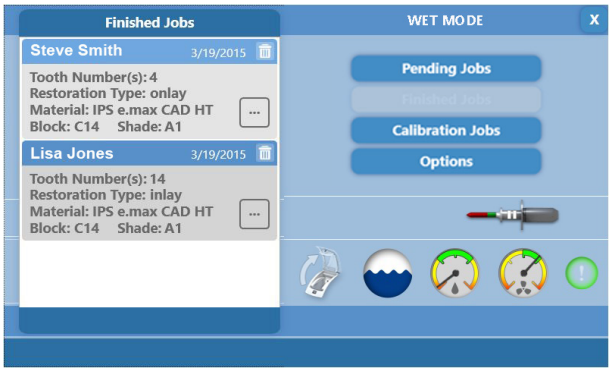
If desired, previously finished restorations can be remilled following these steps. Jobs are automatically deleted after 7 days.

Steps

1. On the main screen, touch **Finished Jobs**.



The Finished Jobs list appears.



2. On the Finished Jobs list select the desired restoration by touching it.
3. Start the job by touching the Play button.

If you want to select a different restoration, return to the restorations list by touching the Stop button.

4. Insert the appropriate block as prompted.

What to do next

The milling continues as usual, as described in section "Starting milling" on page 25.

7.8 Deleting jobs

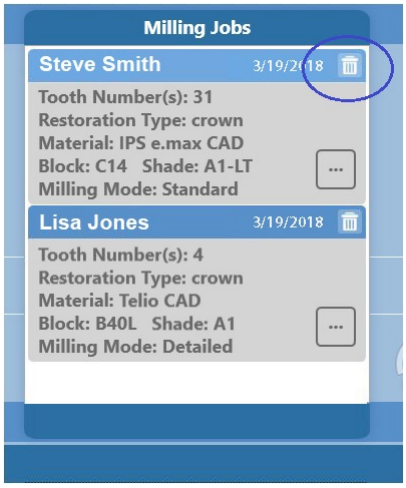
About this task

Follow these instructions when deleting a job.

Steps

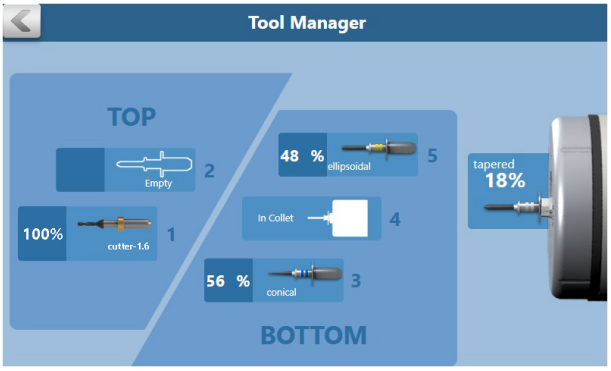
1. Click the trash can button next to the job.

   Note that deleted jobs cannot be recovered on the milling unit, but they can be resent from the design software.



7.9 Automatic tool changer

The mill's automated tool changer holds an array of grinding tools (wet milling) and fluted tools (dry milling). The tool changer switches between tools as the milling task demands.



Grinding tools (wet milling)

Ellipsoidal

Tapered

Conical

Long grinding tools (used for milling zirconia in wet mode)

Ellipsoidal

Tapered

Conical

Fluted tools (dry milling zirconia)

1.0 mm

1.6 mm

7.9.1 Tool status

The colour of the tool tip changes based on tool usage timer and measuring of tool length.

Change the tool when it turns red.

This icon indicates a tool is broken.

To fill the tool changer, exchange tool shapes, or to replace broken tools see section"Replacing / inserting tools" on page 29 for instructions.

7.9.2 Broken tools detection

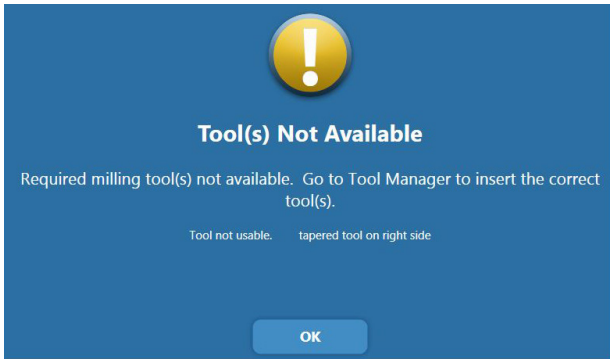
If a broken tool is detected during milling, the toolpath is suspended, and the tool length is checked to confirm the break.

- If the tool break is confirmed and a suitable replacement is available in the tool changer, the tool is automatically loaded, and the milling continues with no operator intervention required.
- If the tool break is confirmed but a suitable replacement is not available in the tool changer, the operator is prompted to load a replacement tool or abort the job.
- If the tool length is found to be normal, the milling continues with no operator intervention.

7.9.3 Replacing / inserting tools

About this task

If a needed tool is not already in the tool changer, the following message will appear.



Possible reasons for replacing a tool include:

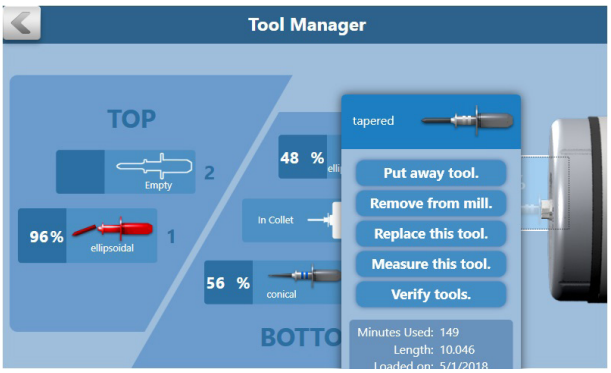
- Tool(s) needed for the restoration are not in the tool changer.
- Fill empty slots in tool changer.
- Replace a broken or worn tool.

Steps

1. On the main screen, touch **Options**.
2. Touch **Tool Manager**.
3. Touch the desired tool or empty slot to see more information and options.

   The tool or empty slot changes colour when selected.

4. Select the desired option and follow the on-screen instructions.



- Put in Spindle - move a tool from the tool changer to the nozzle
- Put tool away - move a tool from the nozzle to the tool changer
- Remove from the milling unit - take tool out of the milling unit and leave this spot empty
- Replace this tool - remove this tool from the milling unit and replace with a new one
- Measure this tool - calculate the length of the tool (grinding tools only)
- Verify tools - displays screen to visually inspect all tools and change tool types in the software if needed

When placing a new tool in the collet, ensure it is pushed all the way in (fully seated).

5. Hold the tool in place and touch **Next**.

   The system measures new tools and suggests a tool shape. Select a different tool type if necessary.

6. Close the lid firmly when finished.

7.10 Opening lid manually

About this task

To open the lid manually.

Steps

1. Press the Open lid button.

7.11 Generating reports

About this task

Follow these steps when generating reports.

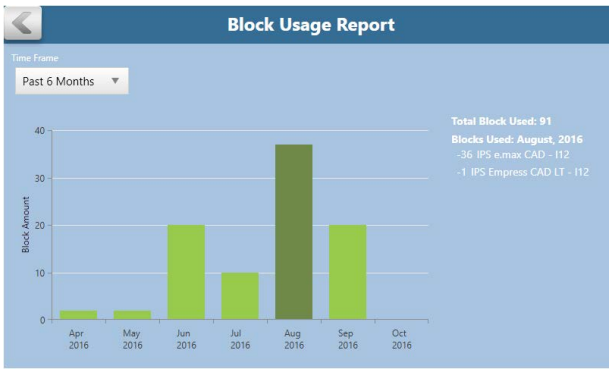
Steps

1. On the main screen, touch **Options**.
2. Touch **Reports**.
3. Touch one of the reports to view it.
4. Select the desired time frame.

5. In Block Usage and Tool Performance, touch a month on the graph to view detailed information on the right.

Block usage

- Graph represents the total number of blocks used each month.

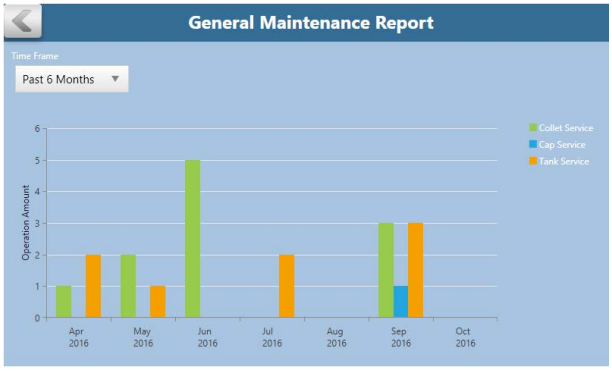


- The number of Total Blocks Used is in the selected time frame.
- To view the number of each block types used in a specific month, touch the desired month.

  The selected month displays in dark green.

Maintenance

The graph represents the amount of times the collets, caps, and the tank were serviced in the selected time frame

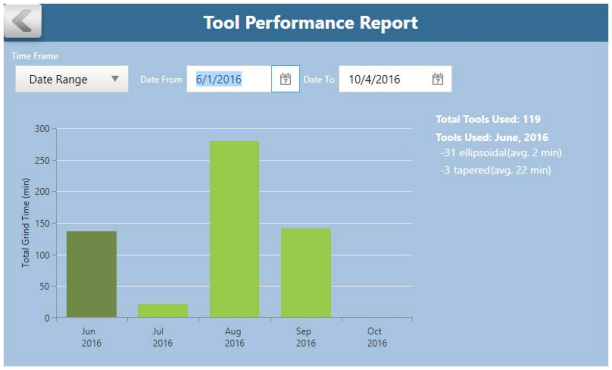


Tool performance

The tool performance graph represents the total grinding time per month.

The number of Total Tools Used is for the selected time frame.

Touch a month to see how many of each tool type was used that month and what the average grinding time was for each tool. The selected month displays as a dark green.



8 Troubleshooting/repair

If you have questions, please contact your local dealer.

Trouble	Probable cause	Corrective action
Milling unit does not turn ON.	Power cable is unplugged.	Verify that power cable is plugged into a live AC outlet.
	Power supply switch turned OFF	Set power supply rocker switch at rear of milling unit to ON position.
	Faulty ON/OFF switch	Call customer support.
Pump makes a fast thumping noise.	Dirty tank and/or filter	Clean the tank and filter.
Air failure message	Loss of air pressure	Ensure there is power to the office compressor.
	Air line loose	Secure air line from compressor to milling unit.
Water level low message	Low water supply in the tank	Fill tank with water.
	Faulty sensors	Clean or replace sensors (Call Customer Support).
Tool stuck in collet	Collet rusty or caked with ceramics	Remove tools manually. Done in the maintenance/command screen on the milling unit. (Call Customer Support for assistance).
	Tool jammed due to air pressure	Verify the supply air pressure 52–53 psig.
Not generating tool path	Incomplete information from the Job Server	Restart the milling unit.
Milling is not completing on the facial surface of an anterior tooth.	Restoration takes longer than normal	On the design software, change the block selection to Multi Block, but be sure to select the same block size. You can then insert a standard Empress LT or HT block of the same size. The milling unit makes multiple passes on Multi blocks while other materials use a single pass.
There’s an unpleasant odour.	Improper cleaning of the milling unit. Normal weekly changing of the milling unit's circulation system coolant should be all that's required to keep the tank clean and effective.	A bleach flush can effectively correct the problem. Have bleach on hand and ready, then call Customer Support for help with the process.

Trouble	Probable cause	Corrective action
Priming Error or Fluid Pressure Error	Priming Error or a Fluid Pressure Error can occur if the milling unit's water pump has been idle for a long time.	If an error occurs when the milling unit attempts to start the water pump, use the following steps to add water to the pump: **Open the front door of the milling unit.** An extended hose is located to the right of the tank.  **Carefully uncoil the hose.** **Remove the plug.** The plug is tight, you may need pliers to gently remove the plug. 

Trouble	Probable cause	Corrective action
		Start and run the tank cleaning wizard – stopping at the step when you fill the tank. **BEFORE you close the lid after filling the tank, pour water into the end of the hose until it is a few inches from the top.** **Continue holding up the hose and close the lid.** You should hear the pump start running and Pump Priming should appear on the screen. **While the pump is priming, continue adding water to the hose until you see some water enter the grind chamber from the nozzle cap.** **Reinsert the plug into the hose and allow the priming sequence to continue.** The water should start to flow into the grind chamber and pressure build as the pump becomes fully primed. **Repeat the priming sequence if not successful on the first attempt.** Leave the plug installed in the hose for the priming retry. **After priming completes successfully, coil the hose back up, close the door on the front of the milling unit, and exit the tank cleaning wizard.**

9 Preventive maintenance and cleaning

9.1 Routine mill maintenance

Cleaning cycle: Most offices will need to be cleaned weekly. The more you mill, the more frequently you must clean.

The milling unit must be cleaned more often when e.max or zirconia blocks are used.

Cleaning the chamber and replacing milling fluid are required to ensure proper operation of the milling unit.

9.2 Status/maintenance icons

Wet mode icons

- Open lid
- Water level
- Water pressure
- Air pressure
- Collet and tank cleaning - this icon is green when maintenance is not needed. The icon changes to red when the collet or tank needs cleaning

Dry mode icons

- Open lid
- Vacuum ON/OFF
- Air pressure

9.3 Cleaning milling unit surfaces

Steps

1. Wipe the surfaces with damp paper towels.

NOTE

Do not spray or pour liquid directly on the touch screen.

9.4 Cleaning tank

About this task

The tank and filter should be cleaned once a week to prevent mould growth or build-up of ceramic material and to ensure optimal circulation. High volume offices need to clean the tank and filter more frequently.

When the tank is scheduled to be cleaned, the Collet and Tank Cleaning icon turns red.

Steps

1. Touch the Collet and tank cleaning icon.
2. Touch **Tank** on the pop-up menu.

3. Follow the on-screen instructions.

9.5 Refilling milling fluids

About this task

When the water level is too low to continue milling the water level icon appears.

Add water to the tank before starting your next job.

Steps

1. Pour 3.8 l (1 gallon) water to a pitcher.
2. Blend 90 ml (3 oz) of the coolant liquid into the water.
3. Slowly pour the water (up to 3.8 l/1 gallon) into the chamber and watch the fill indicator.

   Stop when it blinks green.

What to do next

Continue with the normal milling procedure.

9.6 Zirconia mill maintenance

Zirconia can be milled wet or dry. If using the wet milling option, it is necessary to clean the milling unit and change the water before milling zirconia. If the zirconia is contaminated with other materials, it will turn green when sintered. Cleaning after milling is recommended because the zirconia acts as a thickening agent with the water. It is not necessary to clean in between sequential zirconia jobs, although the milling unit will ask if the tank is clean.

9.6.1 Cleaning the grind chamber when milling zirconia in dry mode

About this task

NOTE

This procedure is included in the dry-to-wet Milling mode wizard. Additional grind chamber cleaning is not required, but may be desired when running sequential zirconia jobs.

Steps

1. Disconnect the vacuum hose from the milling unit.
2. Attach the vacuum brush to the end of the hose.
3. Touch the Open lid icon if the lid is closed.
4. Touch the Vacuum icon to start the suction.
5. Use the brush attachment to vacuum inside the grind chamber.
6. Touch the Vacuum icon to stop the suction.
7. Detach the vacuum brush from the end of the hose.

9.6.2 Replacing the vacuum filter bag and HEPA filter

About this task

The *Service filter* alert flashes slowly when the bag needs to be replaced and is solid when the HEPA filter needs to be replaced. See the Jet-Stream manual for more information if needed.

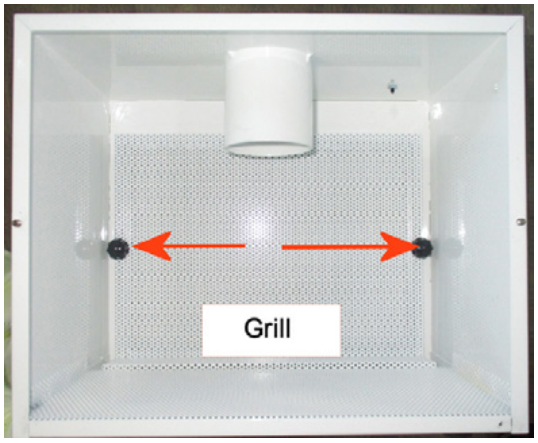
Steps

1. Unfasten the 2 thumb wheel nuts that secure the left side panel and remove the panel.

2. Slide the filter bag downward off the inlet collar and remove.

   Proceed to Step 6 if you are only replacing the bag.

3. Remove the two thumb screw nuts on the grill and lift it out.



4. Remove and replace the HEPA filter.

5. Screw the grill back into place.

6. Slide the new filter bag upward onto the inlet collar and put the panel back in place with the thumb wheel nuts.

9.7 Nozzle cap and collet cleaning

About this task

Cleaning cycle: As needed.

Over time, residue from the milling process may build up in the nozzle cap and/or on the collet. The build-up inhibits coolant delivery and/or reduces the nozzle's tool holding capability. To reduce residue build-up replace the fluid regularly.

Clean the collet and nozzle cap when the icon turns red or the tools "walk" (do not stay flush with the nozzle) during a restoration.

The Collet and tank cleaning icon changes to red when the collet or nozzle cap is scheduled to be cleaned.

Follow these steps to proceed with cleaning.

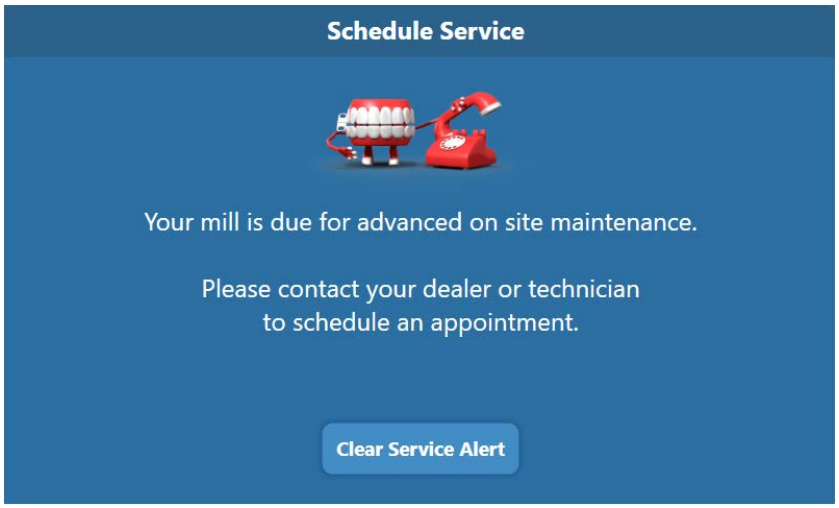
Steps

1. Touch the icon to see the pop up menu.

2. Touch **Caps** or **Caps/Collets** to proceed with cleaning.
3. Select the Guided or Advanced wizard.
4. Follow the on-screen instructions.
5. Close the lid firmly when finished.

9.8 Scheduled service

This reminder appears when it is time to schedule your on-site maintenance (after 120 jobs milled). This message is a reminder only and will not prevent you from using the milling unit.



Do not click **Clear Service Alert** until after the service has been done. Clicking this button will reset the timer and may cause you to schedule your next service prematurely if the technician is not able to perform the maintenance immediately after the button has been pushed.

To schedule on-site maintenance please contact your local dealer.

9.9 Maintenance checklist

PlanMill® 35 Milling Maintenance Checklist

Keep this document for your records. Procedures with the water symbol 💧 are for **w**et **m**illing only.

Daily Procedures:
- Check tool wear
- 💧 Wipe milling chamber dry
- Clean debris from chamber
- 💧 Leave lid open

Weekly or 3 hrs Milling:
- 💧 Run Clean Tank Wizard
- 💧 Dry internal mill areas

Every 2 Weeks or 9 hrs Milling:
- Clean nozzle cap

Every Month or 30 hrs Milling:
- Clean collet & collet shaft
- Verify all internal aspects have been thoroughly cleaned

Every Year or 120 Jobs Milled:
- You will be prompted to schedule service with Planmeca Customer Support. Do NOT remove the warning prompt until the machine has received maintenance. Call your local dealer to schedule your on-site maintenance.

MONTH ______

	Week 1	Week 2	Week 3	Week 4	Week 5
Water					
Strainer					
Collet					

MONTH ______

	Week 1	Week 2	Week 3	Week 4	Week 5
Water					
Strainer					
Collet					

MONTH ______

	Week 1	Week 2	Week 3	Week 4	Week 5
Water					
Strainer					
Collet					

MONTH ______

	Week 1	Week 2	Week 3	Week 4	Week 5
Water					
Strainer					
Collet					

NOTE: Material types and heavy use will increase the maintenance frequency!

QUESTIONS? Contact your local dealer.

PLANMECA

10 Technical specifications

The following table lists the technical specifications of the Planmeca PlanMill 35.

NOTE

The components use standard electrical current and do not need to be attached to a water supply or drain.

Technical specifications

Feature	Details
Model type	Planmeca PlanMill 35
Electrical ratings	100–240 VAC, 1000 W, 50–60 Hz
Air requirements	50–130 psi, minimum 1.5 cfm, filtered, dry air
Data connection requirements	Cat 5 Ethernet cabling
Storage conditions	-20°C to +60°C
Operating conditions	Indoor use only 15°C to 35°C Maximum 90 % non-condensing relative humidity
Transient overvoltage category	II per IEC 60364
Maximum altitude	2,000 metres (6,562 feet)
Pollution degree	2
Dimensions	445 mm (17.5 in.) tall 661 mm (26 in.) wide 508 mm (20 in.) deep
Minimum required clearances	Sides 51 mm (2 in.) Rear 25 mm (1 in.) Top 305 mm (12 in.)
Weight	61 kg (135 lb)

Patents

(US) 7670272; 7789601; 10888968

(EU) 512009; 460084

(Japan) 1297134

10.1 Applicable standards

Electrical and mechanical safety

- UL 61010-1
- CSA C22.2 No 61010-1
- IEC/EN 61010-1

EMC

- IEC/EN 61326

Packaging and environmental

- ISTA 3 Series

10.2 Additional standards

Additional standards

- ISO 14971
- EN ISO 14971
- EN ISO 13485
- ISA 13485

European directive

- 2006/42/EC for Machinery
- 2014/30/EU for EMC
- 2002/96/EC for WEEE
- 2011/65/EU for RoHS

10.3 Approvals

- North America: Product Safety Mark (NRTL) – UL C/US
- International: CB Scheme Test Certificate (U/L)
- Quality system Certifications: ISO 13485 Registered Firm

Licensing

The use of the Planmeca hardware and software is subject to the license agreements accompanying the product. If the owners have any questions, they should contact Planmeca After Sales.

Warranty and support

To avoid risking the warranty and support of the milling unit, follow carefully the instructions provided in this manual. Technicians should refer the owners to the user manual’s safety warnings so that they do not void their warranties.

Contact the local dealer for technical assistance with the milling unit.

PLANMECA

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