



Planmeca PlanScan® & Planmeca PlanCAD® Easy

user's manual

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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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1 INTRODUCTION

The Planmeca PlanScan scanner is a digital impression scanner for CAD/CAM of dental restorations intended for dental offices or laboratories.

The system comprises a Planmeca PlanScan digital impression scanner and Planmeca PlanCAD Easy software.

The Planmeca PlanScan scanner takes digital impressions which can be sent via Planmeca Romexis Cloud to Planmeca or a certified laboratory for design and milling or exported to a third party.

NOTE

The Planmeca PlanScan scanner is not indicated for orthopaedics or any indication beyond dentistry.

This manual is valid for Planmeca Romexis software revision 4.1.1.R or later.

The Planmeca PlanScan scanner requires Planmeca Romexis software revision **3.4.0.R** or later.

NOTE

The Planmeca PlanCAD Easy is available under license.

This User's Manual describes how to use the Planmeca's optical impression system for recording topographical characteristics of teeth, dental impressions, or stone models by digital methods for use in computer aided design and manufacturing of dental restorative prosthetic devices.

NOTE

Some of the screenshots may have been taken in earlier software versions and may not exactly match your screen.

NOTE

**FOR US USERS:
Federal law restricts the Planmeca PlanScan scanner to sale by or on the order of a health care professional.**

NOTE

Throughout the manual, important notes and items of interest are formatted like this example.

1.1 Indications for use

The Planmeca PlanScan scanner is an optical scanner for computer-aided design and manufacturing (CAD/CAM) of dental restorations. It is used for recording topographical characteristics of teeth, dental impressions, or stone models by digital methods for use in computer aided design and manufacturing of dental restorative prosthetic devices.

1.1.1 Contraindications

The system is not indicated for orthopaedics or any indication beyond dentistry.

2 ASSOCIATED DOCUMENTATION

- Planmeca Romexis User's Manual (publication number 10014593)

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

If any of the labels are missing or illegible, please contact Planmecca After Sales for replacement labels.

NOTE

The labels may have changed since this manual was published.

NOTE

Label examples are not shown in their actual size.



Attention: consult accompanying documents
ISO 7010-M002



Catalogue number



Class 2 electrical product



Date of manufacture



DC current



European conformity



General mandatory action



General warning

450 nm, 4.95 mW CW
EC/EN 60825-1:2007

Laser information

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT



Laser warning



Manufacturer



Serial number



Standby IEC 60417-5010



Type B Applied Part IEC 60417-5840



UL Laboratory Equipment Listing
IN ACCORDANCE WITH UL 61010-1

3.1 Labels on scanner



4 SAFETY PRECAUTIONS

The user must read and comply with all safety, warning, and instructional labels on the Planmeca products.

Ensure your Planmeca products are properly maintained through periodic maintenance. If you suspect equipment malfunction or failure, discontinue using the products and contact Planmeca Technical Support immediately. Do not attempt to make any repairs on Planmeca products.

Warning denotes something that can cause personal injury to the patient or the user.

Caution denotes something that can cause damage to the equipment.



WARNING

Failure to adhere to all safety warnings may result in personal injury, equipment damage, or data loss.



WARNING

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



WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



WARNING

The scanner's Thunderbolt cable may only be used with computers that have an appropriate NRTL listing mark for ITE or Laboratory Equipment or a Listing Classification mark for Medical Equipment.



WARNING

The Planmeca PlanScan scanner is a high precision Class 2 laser scanning instrument. Always store the scanner in its holder when not in use. To prevent damage or misalignment, do not drop or strike the scanner. Follow all stated precautions when using the scanner.



WARNING

To prevent electrical shock, do not open any sealed covers or connectors with user restricted access. In case of emergency unplug the scanner from the computer port and/or unplug the computer power cord from the wall or from the computer.

**WARNING**

The Planmeca PlanScan scanner is designed to be used with the tip connected to the scanner. The connector pins on the scanner are energized when the tip is removed. To ensure safety of the user and patient, do not touch the pins when the tip is removed.

**WARNING**

The Planmeca PlanScan is a Class 2 Laser Product and will not present any safety hazards under normal operation. Always observe safe laser practices. Project the laser only onto surfaces or materials as directed by Planmeca instruction material. Avoid shining the beam directly into the eye. Use the laser product only as described in this manual.

**WARNING**

Do not make any unauthorized repairs or modifications to the system software or hardware. This includes installing unauthorized software on the host computer system or altering or bypassing any safety switches or mechanisms. Changes or modifications not expressly approved by Planmeca could void the user's authority to operate the equipment.

**WARNING**

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

**WARNING**

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

**WARNING**

The wireless components in the Planmeca 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.

**WARNING**

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.

**WARNING**

When connecting the Planmeca 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

Comply with all applicable regulations when disposing of waste materials from the Planmeca products.

CAUTION

Medical electrical equipment requires special precautions regarding EMC (Electromagnetic Compatibility). The Planmeca products must be installed and placed into service according to the EMC information provided in the documentation that accompanies the Planmeca products.

CAUTION

Portable and mobile RF (Radio Frequency) communications equipment can affect medical electrical equipment.

CAUTION

In case of emergency unplug the scanner from the computer port and/or unplug the computer power cord from the wall or from the computer.

CAUTION

After using the scanner on a patient, clean the scanner according to the cleaning instructions found in section 26 "CLEANING / PREVENTIVE MAINTENANCE" on page 98.

CAUTION

Do not hold the scanner in a way that will cover the cooling vents.

CAUTION

Do not immerse the scanner base in liquid or expose the Planmeca products to conditions outside the operating conditions, see section 27 "TECHNICAL SPECIFICATIONS" on page 101. Clean the scanner according to the instructions in section 26 "CLEANING / PREVENTIVE MAINTENANCE" on page 98.

CAUTION

Ensure your Planmeca products are properly maintained, see section 26 "CLEANING / PREVENTIVE MAINTENANCE" on page 98.

CAUTION

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

CAUTION

Read and comply with all safety, warning, and instructional labels on the Planmeca products.

5 SYSTEM REQUIREMENTS

Planmeca Romexis software revision **4.1.1.R** or later.

5.1 Software and hardware upgrades

System software and hardware upgrades are initiated through Planmeca only. No software or hardware should be added to or deleted from the Planmeca systems without prior approval of Planmeca. Doing so may result in damage to the system and will void the product warranty.

6 SYSTEM OPTIONS AND DEFAULT SETTINGS

Individual tabs are used for creating the restoration: *Setup, Scan, Margin*. The tabs are dynamic. The choices you make on each tab affect the options available on that and the related tabs. The typical restoration utilizes the tabs from left to right.

Some system configurations will restrict the use and access of individual tabs.

6.1 Screenshots

You may wish to save an image of the screen for communicating with associates or Planmeca.

To take and save a screen-shot:



On your keyboard, press the **Windows** and **Print Screen** (or Prt Scr) keys.

The computer takes a screenshot and saves it in the folder *Libraries > Pictures > Screenshots*.

The screen shots are automatically numbered. You can rename them if desired.

6.2 Turning on / off the system

Press the power button to start the laptop.

The Windows 8 Start screen appears.



On your keyboard, press the **Windows** key to make the standard desktop appear if desired.



Once the desktop is visible, double-click the Planmeca Romexis icon.

The following warning may appear from Windows: Do you want to allow the following program to make changes to this computer?

Click **Yes**. This is a normal safety feature of Windows.

The software opens to the Home screen.

6.3 Relocating the laptop and/or scanner

The laptop can be unplugged and moved as needed. The software does not need to be shut down. The scanner can be disconnected at any time.

Scanning should not be done when the battery is low. If the computer has to shut down before the model is generated, you will lose your scans. Make sure the laptop is plugged in during scanning to keep the scanning from slowing down.

6.4 Removable tip

The scanner comes with a removable tip.



WARNING

The Planmeca PlanScan scanner is designed to be used with the tip connected to the scanner. The connector pins on the scanner are energized when the tip is removed. To ensure safety of the user and patient, do not touch the pins when the tip is removed.

The tip can be removed by pressing the green button (locking mechanism) and pulling the tip out.



To reattach, insert the tip to the scanner so that the green locking mechanism comes through the hole on tip and you hear a click.

6.5 Scanner holder

The scanner comes with a standalone holder.



7 GETTING STARTED

7.1 Starting the software



Double-click this button on your desktop to start the Planmeca Romexis software.

7.2 Planmeca Romexis license activation

The functions in the Planmeca Romexis application are controlled by license and user rights. In order to use the application the license must be activated.

NOTE

Depending on the installed license and user rights the functions described in this manual can vary.

7.2.1 Automatic online activation

Planmeca Romexis license has not been activated.
Days left to activate license: 30

Automatic activation

Licensed to

First name

Last name

Email

Manual activation

[Privacy Policy](#)

A dialogue requesting for activation will pop up when Planmeca Romexis Client is started (until activated) after new and updated Planmeca Romexis server installations. A period of 30 days is given to activate the Planmeca Romexis license.

When connected to the Internet activate the license by filling in user name and email address.

7.2.2 Manual activation

Planmeca Romexis license has not been activated.
Days left to activate license: 30

Automatic activation

Manual activation

1. Go to Planmeca Romexis license activation page at <https://activate.planmeca.com/romexis/>

2. Type or copy and paste the following key to the activation web site:

3. After activation, type or paste the activation key from web page to the text box below.

[Privacy Policy](#)

When there is no fixed Internet connection available the license can be manually activated using a mobile, for example. If manual activation is selected the following dialogue appears. Follow the instructions in the dialogue and web page.

NOTE

Use the end customer details, not the dealer's.

PLANMECA

Planmeca Romexis - Manual Licence Activation Page

End Customer Details Required Fields

Licensed to

First Name

Last Name

E-Mail Address

Installation ID

Enter 25 character Installation ID from Planmeca Romexis
Format: #####-#####-#####-#####



Installation ID

GENERATE ACTIVATION ID

Activation ID

Copy the following Activation ID to Planmeca Romexis

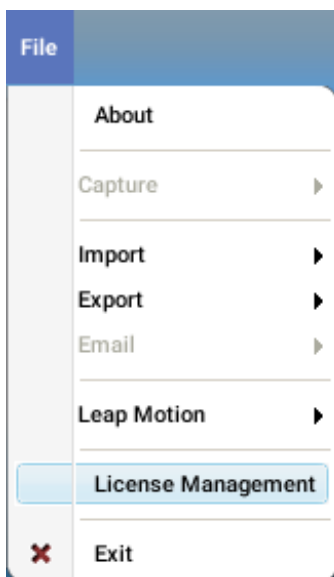
Activation ID

Planmeca Oy
+358 20 7795 500
www.planmeca.com

Privacy Policy

7.2.3 Transferring license to another installation



If transferring the license from one Planmeca Romexis server installation to another it must be first released from the current workstation.

To release the license select **License management** from the *File* menu.

Romexis Product License is activated.

In order to move this license to different environment, you have to release the activated license.

License can be released by user with administrator privileges.

Romexis is licensed to: 'Planmeca Product Development'

You can deactivate the Romexis License with working Internet connection

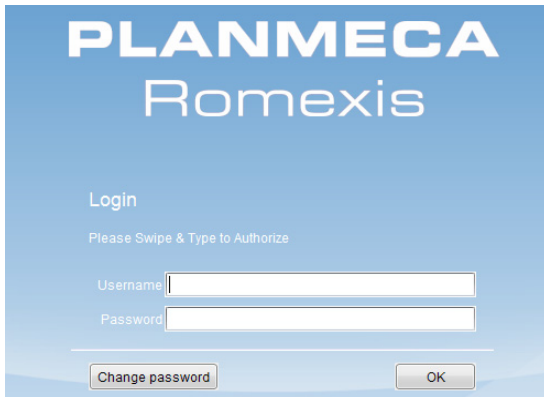
License activation times left: 1

Release license

8 LOGGING IN TO PLANMECA ROMEXIS



1. Click this button on your desktop.



A login window opens.

NOTE

The appearance of the *Login* window may differ from the view below depending on the settings configured by your administrator.

2. Type your user name and password and click **OK**.

The Planmecca Romexis application opens in *Patient* module.

Default Provider (sysadm) - Licensed to: Planmecca

The name of the current user is shown in the title bar.



To login as different user click this button.



To logout click this button. All currently opened files will be closed.

NOTE

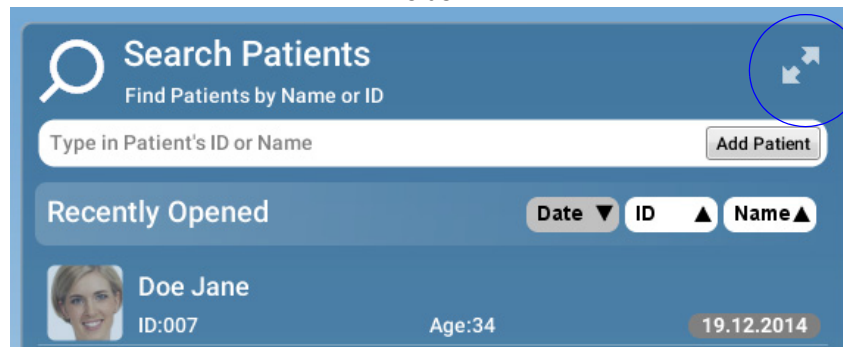
If you are trying to log in while another user is currently logged in, all patient records are closed but the current views will be stored and shown when the patient is next accessed by the user. This allows authorized personnel to view and modify patient status using their own credentials. If you logout no views will be stored and the patient data will be opened with default view when accessed next time.

9 MANAGING PATIENTS

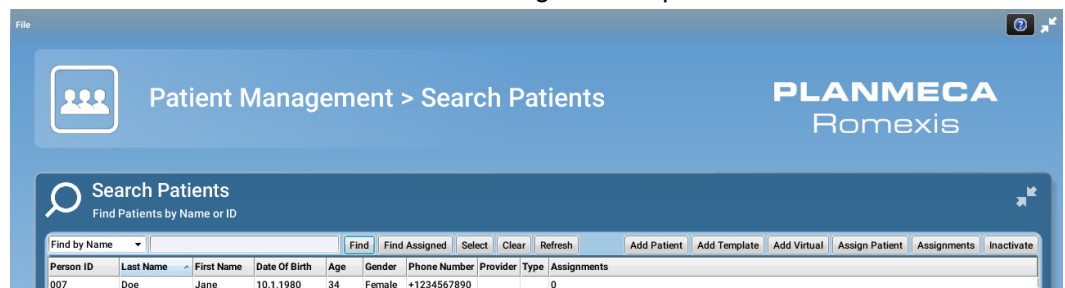
9.1 General

9.1.1 Expanding search fields

Click on the arrow on the top right corner of any of the fields.



The full dialogue view opens.



9.1.2 Sorting patients

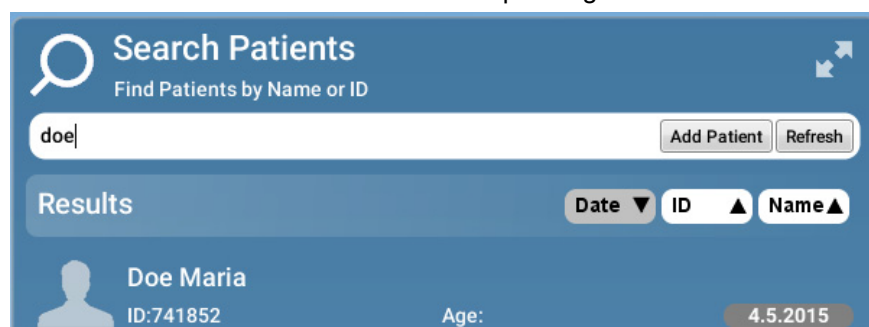
Patients in the patient list can be sorted by date, ID or name by clicking these buttons.



9.2 Searching patients by name or ID

Start entering the name or the ID in the search field.

The software automatically returns patients corresponding to the entered search term.



To search patients by a captured image, see section 9.7 "Searching patients by image" on page 20.

9.3 Inactivating patients

Open the full dialogue view of the *Search Patients* field.



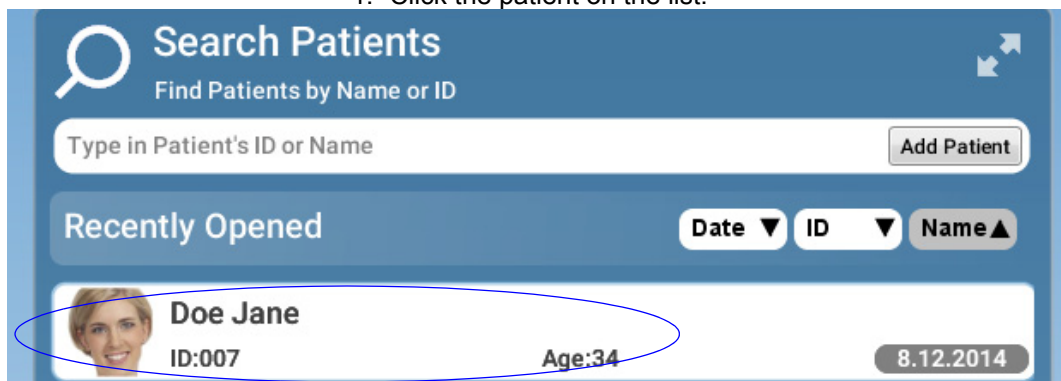
Inactivate

To remove a patient from the patient list select the patient and click the **Inactivate** button.

All patient information with images are preserved in the Planmeca Romexis database. To restore patient data see section "Reactivate and empty trash" in the Planmeca Romexis technical manual (10037884).

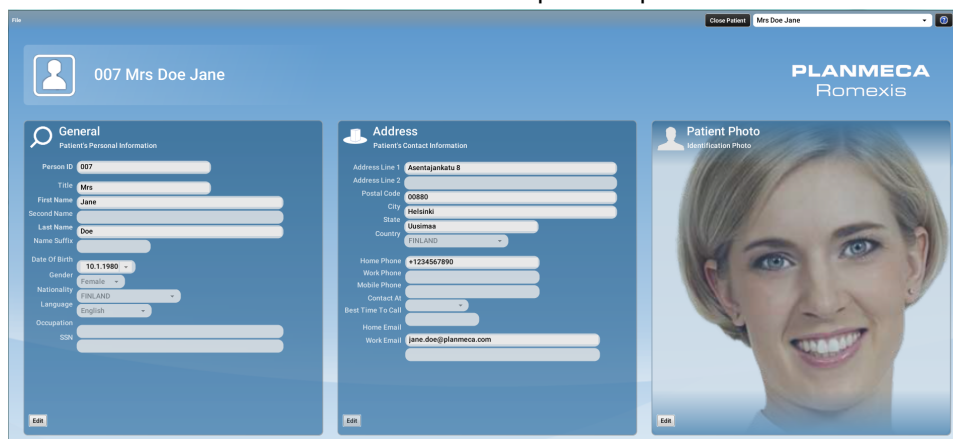
9.4 Managing patients and images

1. Click the patient on the list.

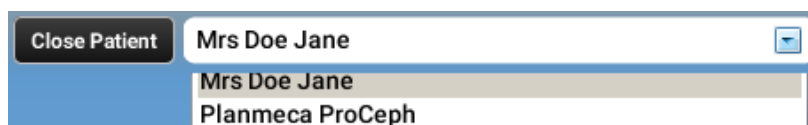


If the access reason for accessing the patient is requested select the appropriate reason and click **OK**. The reason for opening a patient record is saved and displayed in the dental record under the patient case history.

The selected patient opens in *File* module.



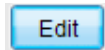
Several patients can be open but only one is displayed at a time.



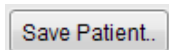
To close the active patient click the **Close patient** button.

9.4.1 Editing patients

1. Click on the patient you want to edit to open it.



2. Click the **Edit** button on the field you want to edit and modify the desired information.



3. Click the **Save Patient** button.

9.4.2 Adding patients

1. To create a new patient click the **Add patient** button.

2. Enter the necessary information and add a photo if desired.
The obligatory fields are *Patient ID*, *First name* and *Last name*.

3. To save the patient into the database click the **Save patient** button.

To view the newly created patient on the list perform new search.

Adding template and virtual patients

Template and virtual patients can be used for educational purposes.

The supervisors can create template patients with specific medical/dental history and images to simulate possible patient cases. The cases can then be copied into virtual patients and assigned to individual students to work on. Thus each of the students have their own virtual patient(s) but with a shared clinical case.



Click this button on the *Search patients* field.

Template patients

Click the **Add template** button.

Virtual patients

1. Select the template patient from the patient list.
2. Click the **Add virtual** button. The name of the student can be included in the name e.g. *Jane's Child Patient*.

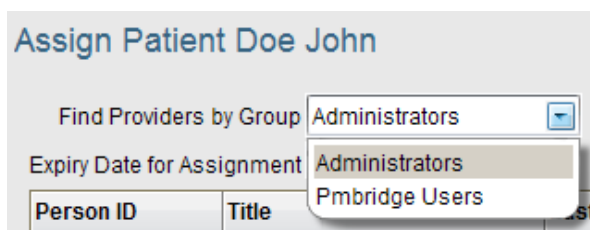
To distinguish template and virtual patients from real patients *Template* or *Virtual* can be added in the *Type* column.

9.4.3 Assigning patients

1. Open the full dialogue view of the *Search Patients* field.

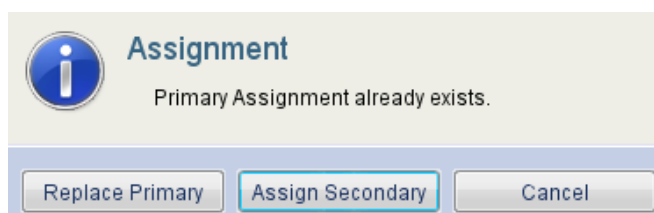


2. Select the patient you want to assign from the patient list and click the **Assign patient** button.
3. Choose the provider you want to assign the patient to.



Click **OK**.

A patient can have one primary provider and several secondary providers. If a patient already has one provider and the **Assign patient** button is clicked the following dialogue appears.



Assignments

- To reassign the patient to a new primary provider click the **Replace primary** button.
- To assign the patient to a secondary provider click the **Assign secondary** button.

To view the provider(s) assigned to the patient click the **Assignments** button. The assigned providers appear in the patient list.

9.5 DICOM worklist

The DICOM worklist search can be used to query and retrieve patients from a central patient archive.

Search can be filtered by scheduled imaging modality or date range.

When selected, a patient is automatically added to the Planmeca Romexis database if not already registered. If a near match exists in the database the user will be asked on how to proceed.

9.6 DICOM query / retrieve (optional)

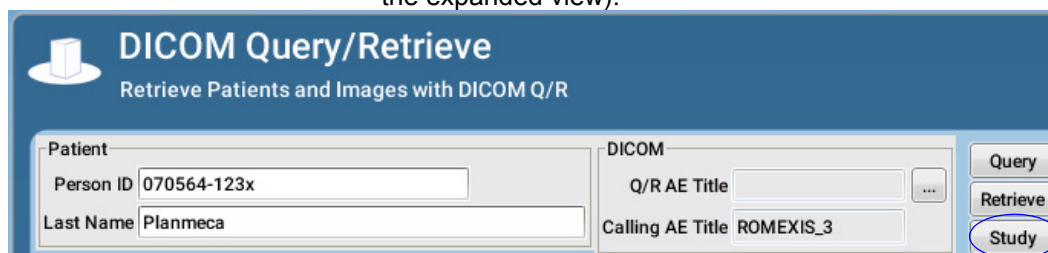
The DICOM Query Retrieve is used for retrieving images from DICOM PACS servers. The images can first be queried and then selected for retrieval to the local storage.

The retrieved the images can be processed independently of the remote server.

To send processed images back to the DICOM PACS server use DICOM Storage, see section 11 "DICOM STORAGE (OPTIONAL)" on page 25 for more information.

To list images for a patient, click the **Query** or **Retrieve** button.

To retrieve the selected images, click the **Study** button (in the expanded view).



DICOM Query/Retrieve
Retrieve Patients and Images with DICOM Q/R

Patient
Person ID: 070564-123x
Last Name: Planmeca

DICOM
Q/R AE Title:
Calling AE Title: ROMEXIS_3

Query
Retrieve
Study

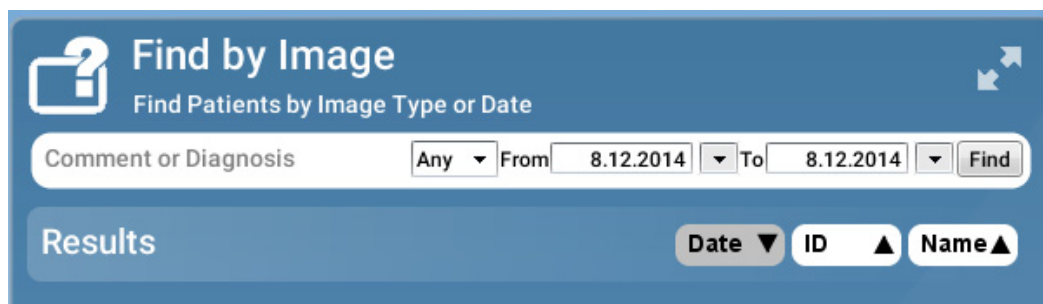
9.7 Searching patients by image

Patients can be searched by image comment or diagnosis, image type, and date.

Enter or select the desired search term and click **Find**.

The patients that match the search criteria appear in the list.

To open the patient click the patient on the list.



Find by Image
Find Patients by Image Type or Date

Comment or Diagnosis: Any From: 8.12.2014 To: 8.12.2014 Find

Results

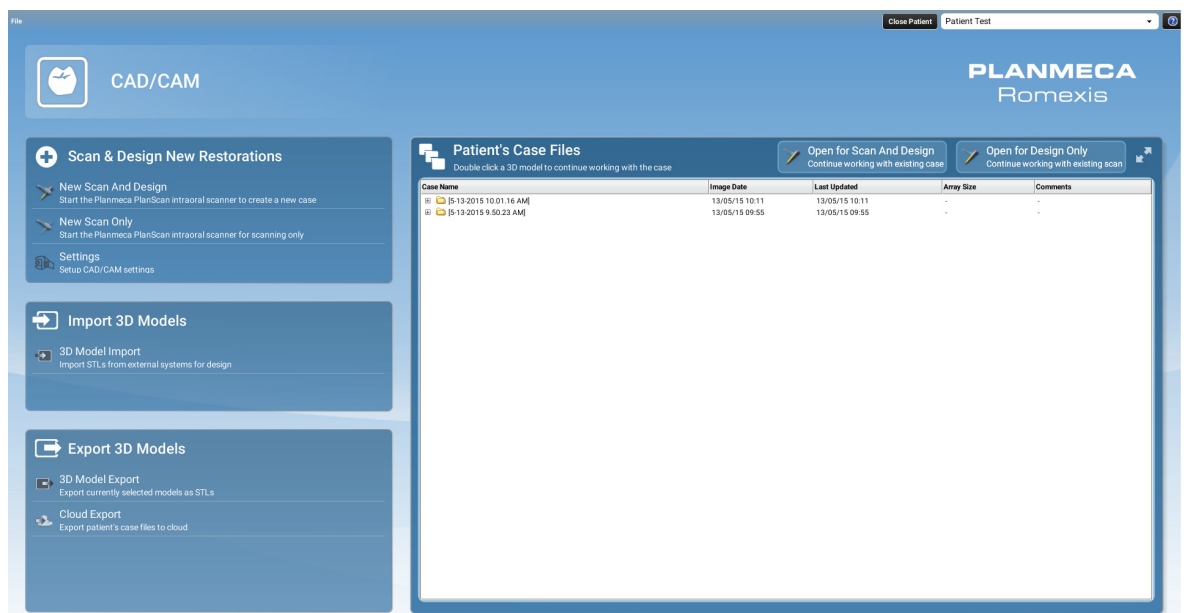
Date ▼ ID ▲ Name ▲

10 PLANMECA ROMEXIS CAD/CAM MODULE



Planmeca Romexis CAD/CAM module offers an environment for working with digital impressions and restorations. The existing digital impressions can also be used for designing restorations in the software. The digital impressions and designed restorations can be paired with CBCT volume in Planmeca Romexis's 3D Implant Planning module to support implant simulation.

All data are automatically stored into Planmeca Romexis database and organized into cases to be exported to another system or sent to a certified laboratory for design and milling using Planmeca Romexis Cloud service (see section 24.3 "Downloading cases from Planmeca Romexis Cloud service" on page 93 for more information).



10.1 Accessing the CAD/CAM module

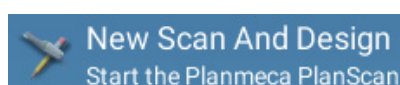
1. Connect the Planmeca PlanScan scanner to your computer by connecting the scanner's connector to the computer's Thunderbolt port.



The Planmeca Romexis software automatically recognizes the scanner.

2. Click the **CAD/CAM** module button.

10.2 New scan and design



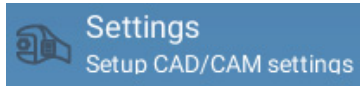
Select this option for starting a new scan and design session.

10.3 New scan only



Select this option for scanning only.

10.4 Settings



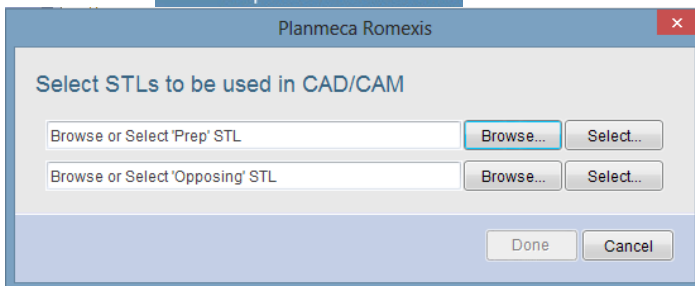
To adjust the CAD/CAM settings click this button. The *Settings* window opens. For detailed description on settings see section 10.4 “Settings” on page 22.

10.5 Import 3D models



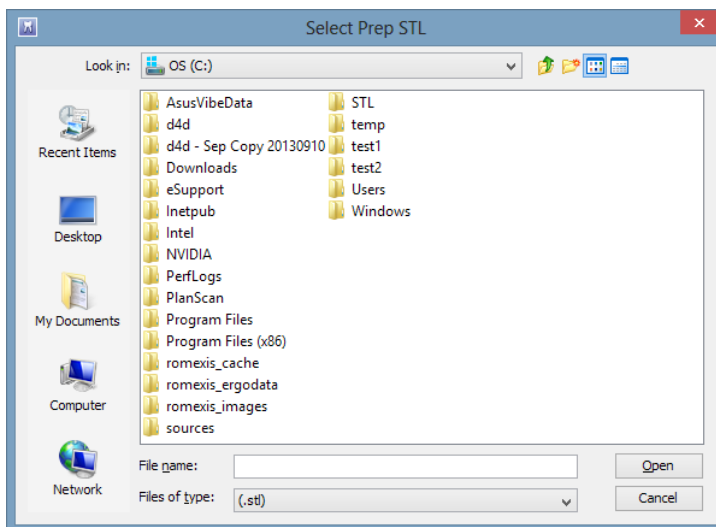
Click **3D model import**.

The following window opens.



You can import models either from an external source (A) or from Planmeca Romexis 3D module’s *Volumes* tab (B):

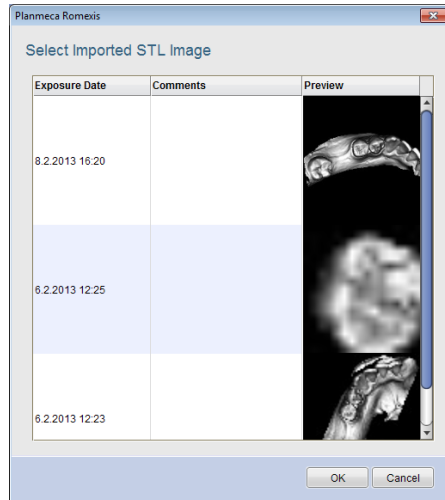
- To import models from an external source (A):
 1. Click **Browse**.
 2. Go to the folder from where you want to import the models.
 3. Select the files and click **Open**.



NOTE

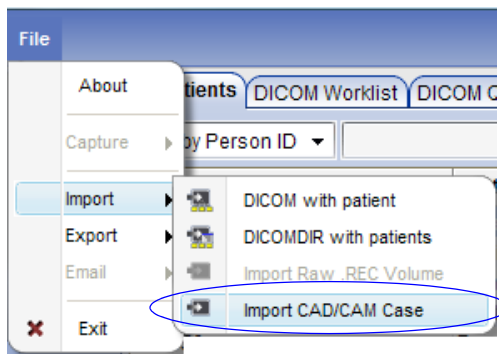
Both prep and opposing models must be imported.

4. When both models have been imported click **Done**.
The imported files will appear in the *Setup* tab of the Planmeca PlanCAD Easy.



- To import models from the Planmeca Romexis 3D module's *Volumes* list (B):
1. Click **Select**.
 2. In the following window select the file to import and click **OK**.
The imported files will open in the *Setup* tab of the Planmeca PlanCAD Easy.

10.6 Importing CAD/CAM cases



To import entire cases go to *File* menu and select **Import CAD/CAM case**.

The cases imported via *File* menu are E4D compatible.

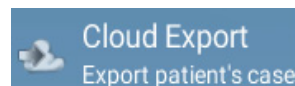
10.7 Exporting 3D models

10.7.1 3D Model Export



To export models as STL files select them from the list and click **3D model export**.

10.7.2 Cloud Export



To export case files to Planmeca Romexis Cloud select them from the list and click **Cloud export**. For more information on how to use the Cloud service, see section 24.3 "Downloading cases from Planmeca Romexis Cloud service" on page 93.

10.7.3 Send to iRomexis



To send models to iOS select the files from the list and click **Send to iRomexis**. For more information on how to use the Planmeca iRomexis see section "Send to iRomexis" on page 84.

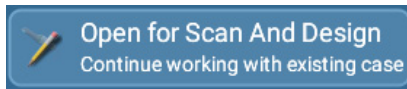
10.7.4 DDX export



To export cases using DDX export select the cases from the list and click **3D model export**.

10.8 Working with existing cases

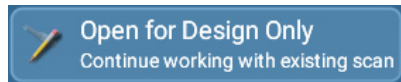
10.8.1 Open for scan and design



To open an existing case for a new scan and design select the case from the list and click **Open for scan and design**.

The case opens in Planmeca PlanScan scanner's *Scan* tab.

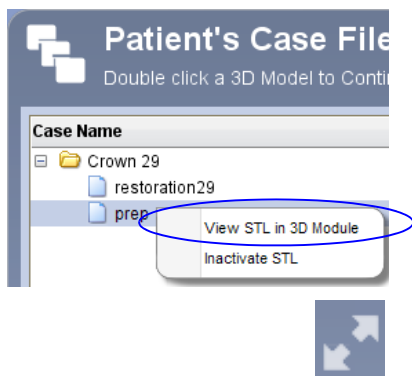
10.8.2 Open for scan only



To open an existing case for design e select the case from the list and click **Open for design only**.

The case opens in Planmeca PlanScan scanner's *Scan* tab.

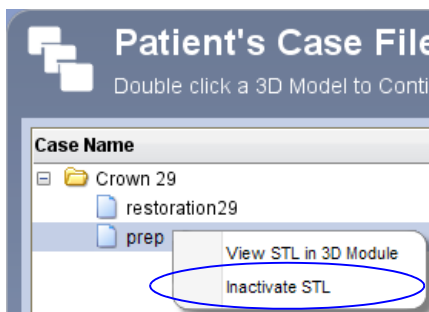
10.8.3 Viewing STL files in 3D module



Right-click on the case and select **View STL in 3D Module**.

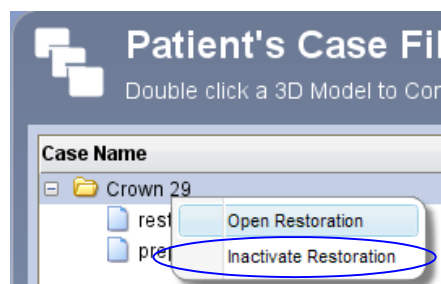
By clicking this icon on the top right corner of the *Patient's Case Files* window you can extend/reduce the window size.

10.8.4 Inactivating scans (STL files)



To inactivate a scan (remove) from the patient's case files right-click on the file and select **Inactivate STL**.

10.8.5 Inactivating restorations



To delete a case right-click on the case and select **Inactivate restoration**.

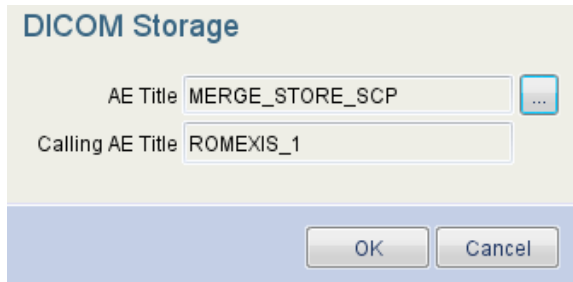
To reactivate or permanently delete a case from the database see section 25.2 "Reactivate and empty trash" on page 96.

11 DICOM STORAGE (OPTIONAL)

With DICOM Full license images can be sent to a remote DICOM application, i.e. DICOM image archive PACS. DICOM Storage needs to be configured in the *Admin* module before the DICOM storage can be used, see section "DICOM storage setup" in the Planmeca Romexis technical manual (10037884).



1. Open the image you want to store.
2. Click the **DICOM storage** button.
3. Click **OK** in the opening dialogue.



To check the status of storage transaction, use the *Image Properties* dialogue.

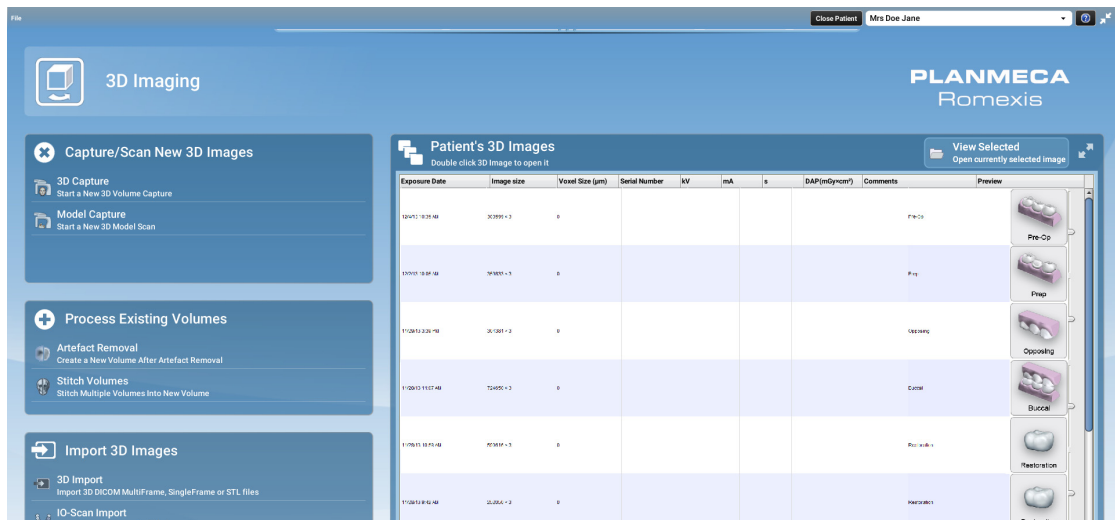
DICOM Storage Commitment is also shown in the *Image Properties* dialogue next to the storage status. When DICOM Storage is enabled, storage of a single image can be cancelled in the *Image Properties* dialogue.

NOTE

Images can also be automatically stored after capturing, see sections "DICOM configuration" and "External communication" in the Planmeca Romexis technical manual (10037884).

12 SCANS AND RESTORATIONS IN 3D MODULE

All scans and designed restorations will automatically appear in the in the 3D module volumes list.



To open a scan/restoration for viewing and further processing double-click on it.

To view the properties of a scan/restoration, see section 20.2.1 "Image properties" on page 81.

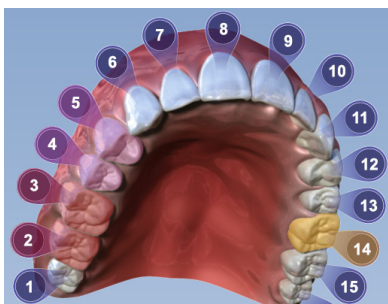
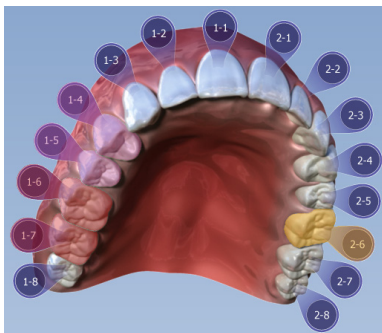
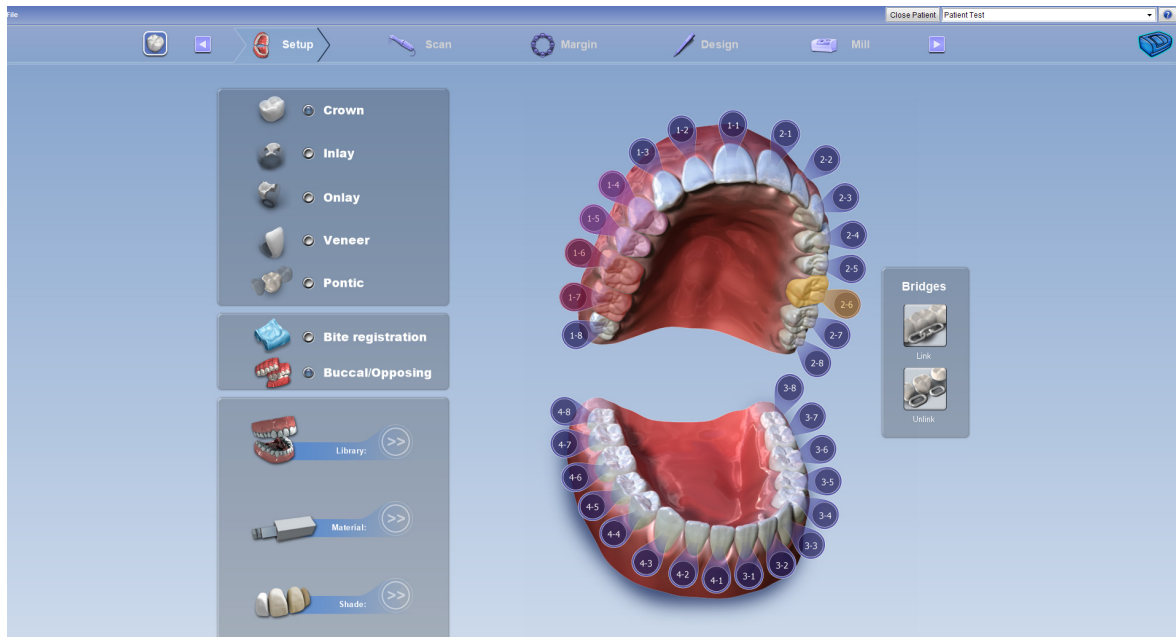
To move a scan/restoration to another patient, see section 20.2.2 "Moving volume to other patient" on page 82.

To inactivate a scan/restoration, see section 20.1.1 "Inactivating files" on page 80.

13 SETUP

Before starting the scanning you need to select the following settings:

- Type of restoration (crown, inlay, onlay, veneer or pontic)
- Occlusal scanning method
- Tooth library
- and
- Restoration material (type and shade).



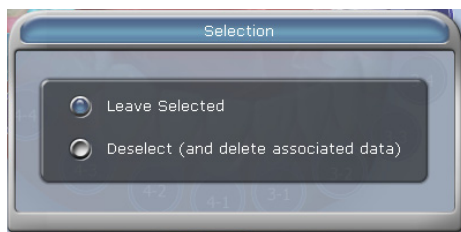
You can select between

- FDI (ISO) two-digit FDI World Dental Notation and
- Universal Numbering System adopted by the ADA (American Dental Association).

The numbering system can be set in Planmeca Romexis Configuration application, for more information see Planmeca Romexis Technical manual (publication number 10037884).

1. Select the restoration site by clicking on the tooth / teeth on the anatomical model.

The currently selected tooth shows in orange.

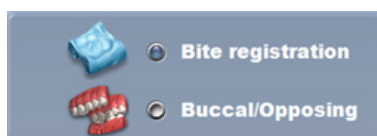


If you accidentally select a wrong tooth right-click the tooth. In the opening menu select **Deselect**.

If no teeth have been selected the jaws of the anatomical model will close. To enable selection place the cursor over the model.



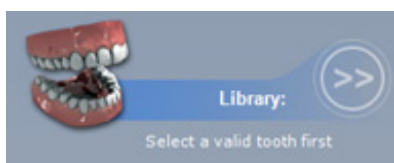
2. Select the type of restoration by clicking on the appropriate restoration type on the left (crown, inlay, onlay, veneer or pontic).



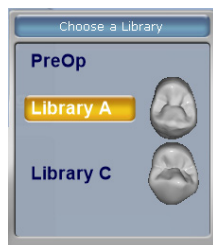
3. Select the opposing scan type

NOTE

The majority of Planmeca Romexis Cloud recipients will require Buccal/Opposing cases. Bite registration cases can only be sent to recipients using Planmeca PlanCAD Easy system.

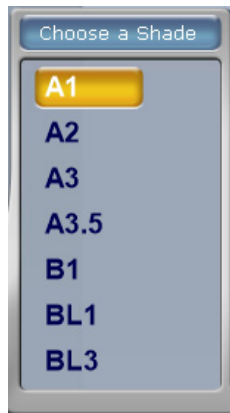
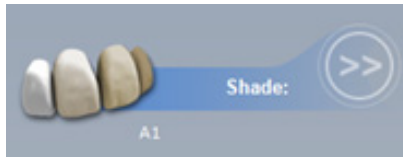


4. Select tooth library. For more information see section 13.1 "Smile design" on page 29.



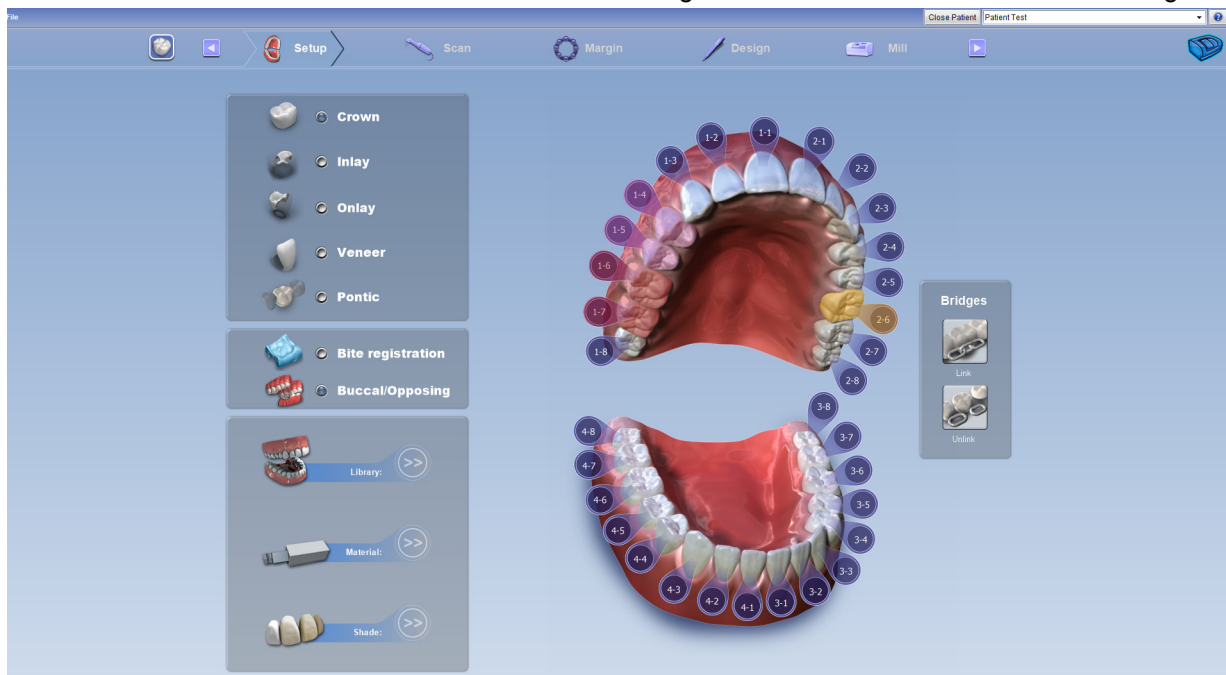
5. Select material. For more information see section 14 "USING SCANNER" on page 30.





6. Select shade for the restoration. (A1 selected in this example)

- 7. If setting up a bridge select all the teeth you want to use for the bridge by clicking on the tooth numbers.
- 8. Select the correct restoration type (crown or pontic).
- 9. Link the restoration as a bridge by clicking the **Link** button and clicking on the first and the last tooth of the bridge.



10. To proceed to scanning click the **Scan** tab button.

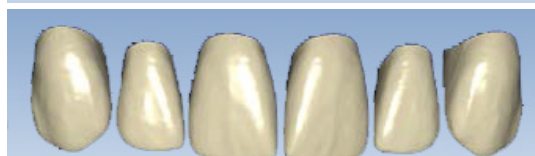
13.1 Smile design

The facial pictures below show the anterior library options grouped by type.



Round-Round

Teeth 7 (1-2) through 10 (2-2) are Anterior A1.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



Square-Round

Teeth 7 (1-2) through 10 (2-2) are Anterior A2.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



Square-Round

All teeth are Library C.



Square-Square

Teeth 7 (1-2) through 10 (2-2) are Anterior A2.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



Cutback A4

For further processing in dental laboratories.

The lingual pictures below show the anterior library options grouped by type.



Round-Round

Teeth 7 (1-2) through 10 (2-2) are Anterior A1.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



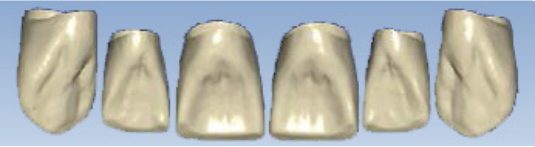
Square-Round

Teeth 7 (1-2) through 10 (2-2) are Anterior A2.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



Square-Round

All teeth are from Library C.



Square-Square

Teeth 7 (1-2) through 10 (2-2) are Anterior A2.
Teeth 6 (1-3) and 11 (2-3) are from Library A.



Cutback A4

For further processing in dental laboratories.

14 USING SCANNER

NOTE

This section does not apply to cases that are imported from another scanning system.

The scanner captures the restoration site with a laser system and delivers live images to the screen. As you take multiple snapshots, the system creates a composite image of the restoration site, revealing any areas that need further scanning.

14.1 Connecting the scanner to the laptop

NOTE

On upgraded Planmeca PlanCAD Easy carts, the scanner connector plugs directly into a new port on the Planmeca PlanCAD Easy cart.

Properly connecting and disconnecting the scanner will prevent damage to your devices.

1. Attach the connector of the scanner into the adapter as illustrated.
2. Make sure the end is fully seated and a confirmation sound has been given from the Planmeca PlanCAD Easy.



14.2 Disconnecting the scanner



When removing the scanner, hold the scanner connector with one hand and the adapter with the other hand. Gently pull them apart to disconnect. Leave the adapter attached to the computer.

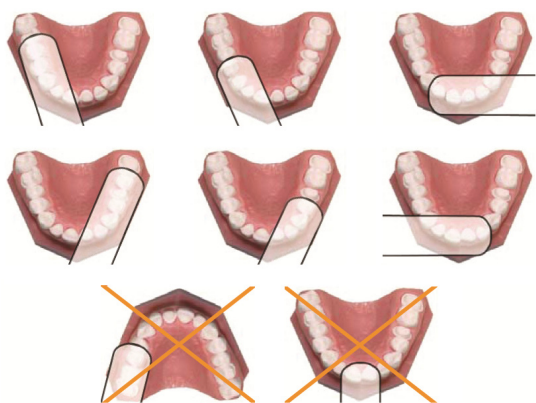
14.3 Scanner indicator lights

The LED lights on the scanner button can be read as follows:

- **Green** - Ready for use. Scanner is connected, but not actively scanning.
- **Blue** - Laser ON. Scanner is actively scanning.

If scanner light is not illuminated, the scanner is not ready or it is not connected.

14.4 Positioning the scanner



1. Position the scanner along the mesial-distal axis with the tip of the scanner pointing towards the distal. The axis follows the curve of the arch.

The pictures show correct and incorrect positions along the arch.



2. Rest the tip of the scanner gently on the teeth during scanning to give you the correct focal depth for the scans.

15 SCANNING

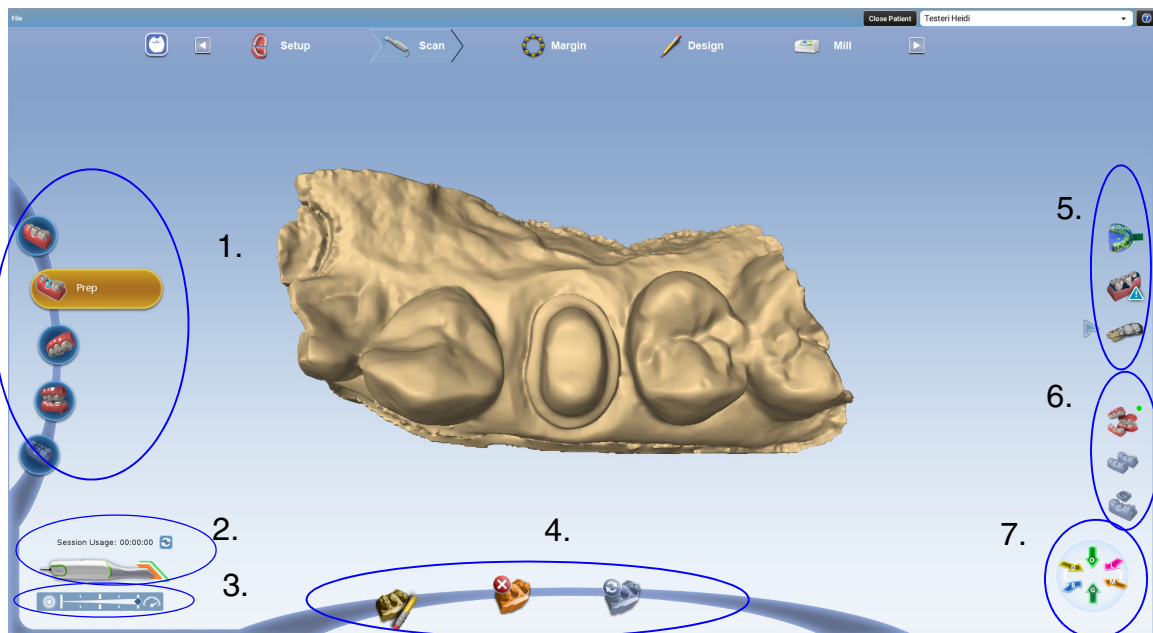
15.1 Scan tab

The scan tab contains the following elements:


1. Scan type selection tools (see section 15.2 “Scanning overview” on page 34.

The scan type selection tools can also be used with the dental unit foot control. For detailed information see your dental unit’s User’s manual.

2. Scanner tip total usage time counter
3. Accuracy optimization slider
4. Model editing tools
5. View editing tools
6. Alignment tools
7. View modes



15.1.1 Scanner tip total usage and session usage time counter

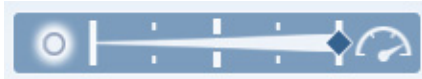
Total Usage: 00:08:47
 Session Usage: 00:03:13 

When laser is activated the total usage time for individual tips is shown on the lower left corner of the screen. The session usage counter shows the usage time for the ongoing scanning session



To reset the counter to zero click the **Reset** button.

15.1.2 Accuracy optimization slider



Use the slider to adjust the scanner accuracy according to the current scanning type.

- Move the slider to the left for scanning small details and body scan scanning.
- Move the slider to the right for full arch and basic scanning.

15.1.3 Model editing tools



Eraser tool

Use this tool to remove unnecessary data like extra teeth, tongue, cheek, etc. of the scanned model. The tool can also be used to erase a misalignment or a part of the model that you wish to rescan without starting over.



Delete all data

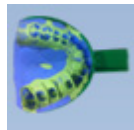
Use this tool to delete all 3D data in the current model.



Restore data

Use this tool to restore all data erased after scanning.

15.1.4 View editing tools



Impression model view

Click this button to change between the impression model view and normal view.



Data density view

This view mode represents the density of data captured during scan.



ICE view

NOTE

For intraoral cases only.

This mode renders actual scan images for a clear view of margins, dentition and tissue.

Click this button to toggle between ICE view and stone view.

NOTE

You can zoom and rotate the model while creating or editing the margin.

15.1.5 Alignment tools



The buccal and opposing teeth will be automatically aligned. The successful alignment is indicated with the green point on the top right corner of the alignment button. In case the alignment is not successful see section 15.12.1 "Aligning buccal data" on page 52.

15.1.6 View modes



Select from the following view modes by clicking the arrows:

- O = occlusal
- L = lingual
- M = mesial
- G = gingival
- B = buccal
- D = distal

15.2 Scanning overview

To capture the image of a tooth/teeth (pre-operative or wax-up), preparation, opposing teeth, buccal bite, and/or bite registration scan the restoration site with the scanner.

Scanning the restoration site requires proper site preparation, correct placement and movement of the scanner, and a sufficient number of scans to ensure adequate digitalization of the restoration site. The basic work-flow is described below.

1. Select the desired scanning mode:



- **Pre-op** - For using the patient's existing dentition or a wax-up as the pre-op model for creating the restoration.
- **Prep** - For scanning the prepared site of the restoration. All free flowing blood, saliva, and residue should be removed from the preparation site before scanning.
- **Opposing** - For scanning the teeth on the opposite arch of the preposition.

NOTE

To ensure good alignment scan the same number of teeth as there is in the preparation model.

- **Buccal** - For scanning the buccal view of the preparation, adjacent and opposing teeth.
 - **Bite** - For defining the occlusal anatomy of a bite registration. This button is active when Bite Registration is selected.
2. Shield the site from strong extraneous light sources (dental lights, sunlight, etc.).
 3. Activate the laser by clicking the button on the scanner. The live image will be displayed on the screen.
 4. Place the scanner so that the camera is centred over the occlusal of the restoration site.

NOTE

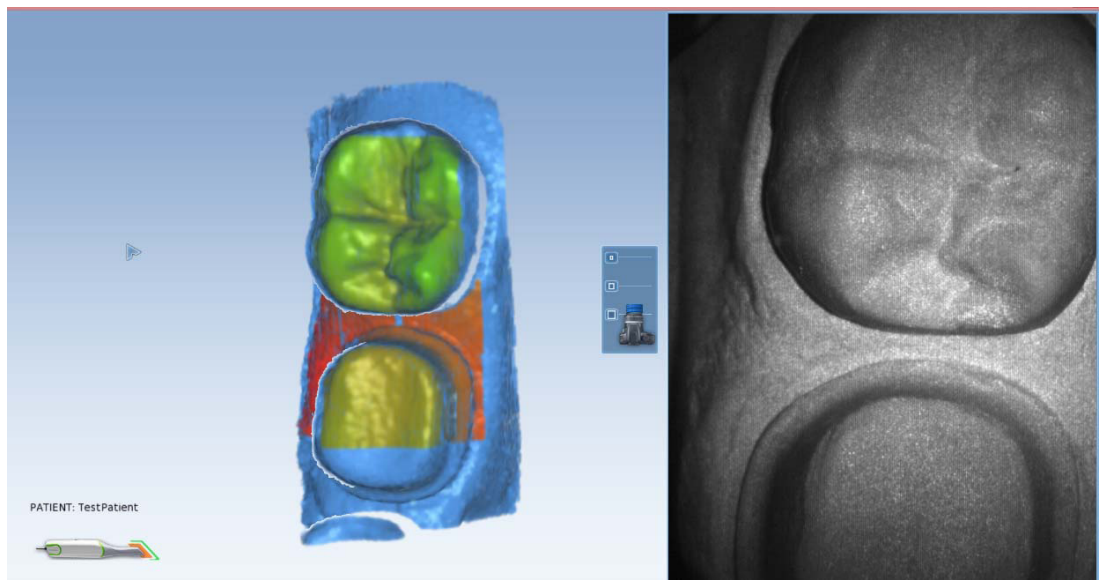
The system assumes that the first scan is taken from the occlusal. Ensure the first scan is taken at a 90 degree angle to the occlusal surface. If the first scan is not optimal, delete it and retake it.

5. Follow the scanning goals below, (see "Goals:" on page 39)
6. Continue scanning until the composite model is fully formed.
7. Deactivate the laser by clicking the button on the scanner
8. Click **Generate Model** or press **M** on the keyboard to finish the model.
9. Evaluate the model and make adjustments as needed.
10. Select the next scan type.
11. Repeat the steps above.
12. When finished with scanning click the *Margin* tab or click the **Next** button.

GENERATE MODEL

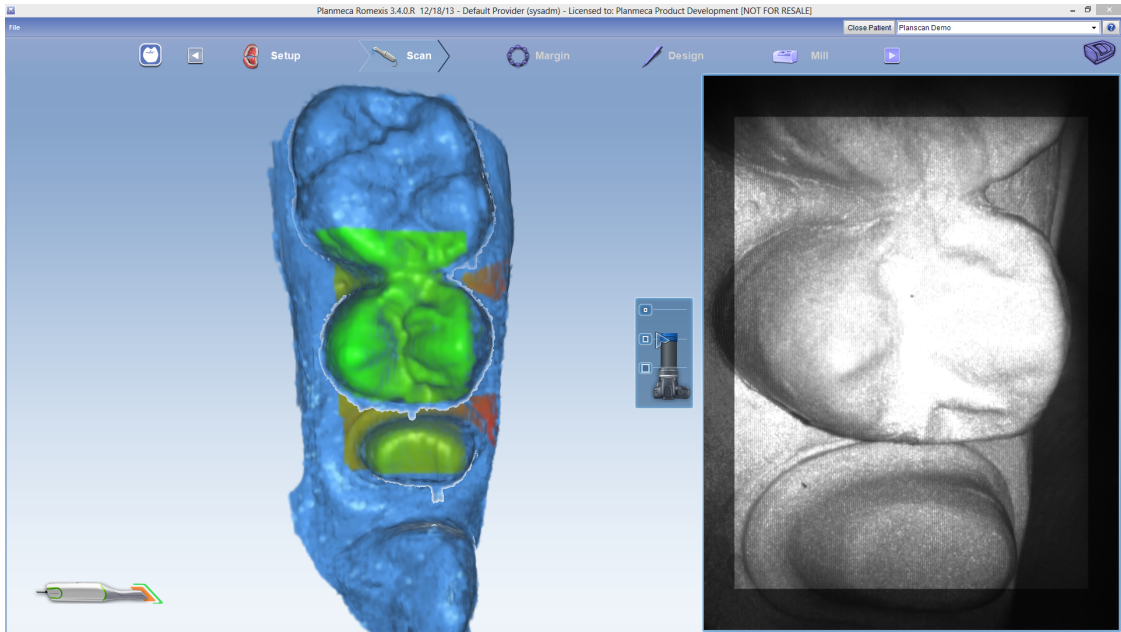
The green colour indicates the scanning distance is correct and that the scanning is successful.

Red and orange colour on the scanned area indicate the limit of a reading range.



13. Continue scanning the opposing teeth by clicking the **Opposing** button.
14. Start scanning, for detailed instructions see section 15.2 "Scanning overview" on page 34.

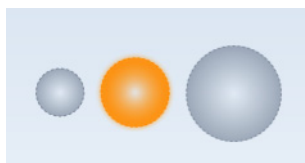
The scanned restoration site shows live on the screen.



To adjust the size of the FOV (field of view) see section 15.4.2 "Adjusting the scanning field of view" on page 42. The opposing scan looks like this.

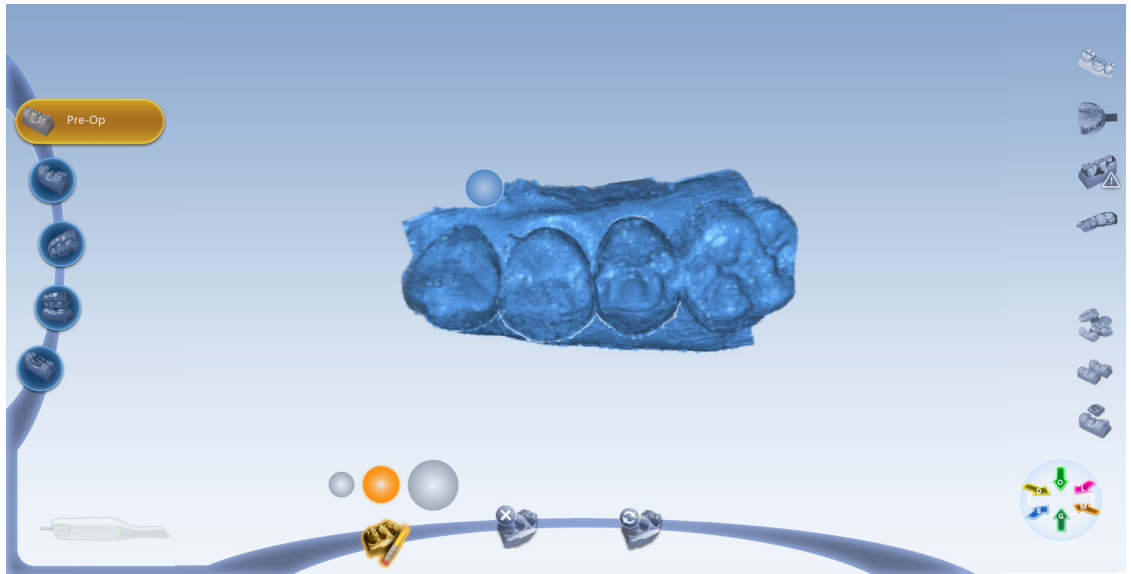


15. If necessary remove the extra material from the scan by using the **Eraser** tool.



The size of the eraser can be selected by clicking the appropriate eraser ball.

16. To start erasing press and hold down the left mouse button while moving the mouse in the area you want to erase.

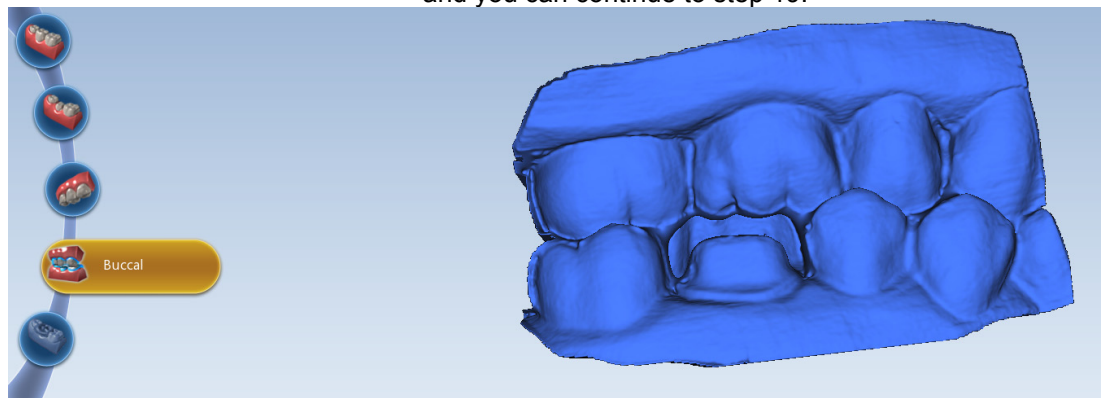


17. Continue to buccal scanning by clicking the **Buccal** button.
18. Start scanning as instructed in section 14.4 “Positioning the scanner” on page 31.

The live image shows on the screen.



The buccal and opposing teeth will be automatically aligned. The successful alignment is indicated with the green point on the top right corner of the alignment button and you can continue to step 19.



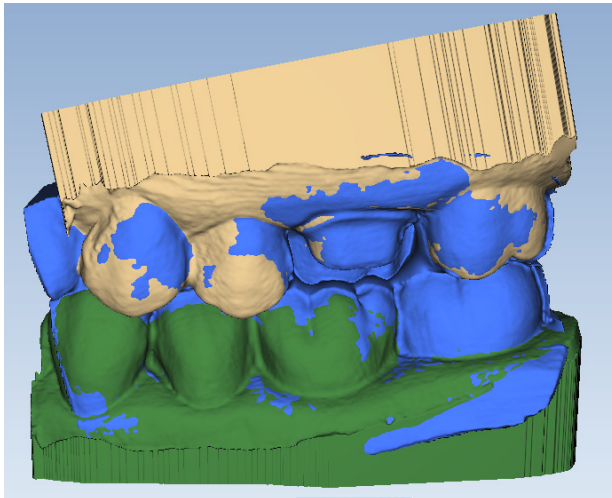
If the alignment is not successful you can realign the models as follows:



- Click the **Alignment** button.
- Drag and drop the buccal model (blue) over the prep (beige) model's matching dentition.
- Drag and drop the opposing model (green) over the buccal model matching dentition.



The successful alignment is indicated with the green point on the top right corner of the alignment button.



19. To exit this task and to return to the main screen click the **Alignment** Button

To exit the software click this button on the top left corner of the window.



The image is automatically saved to Planmeca Romexis.

15.3 Scanning a basic posterior preparation



Goals:

- 100% of the prep and interprox. contact areas
- 90% of the adjacent teeth
- Good axial data (buccal and lingual) for design 2-3 mm gingival tissue on buccal and lingual

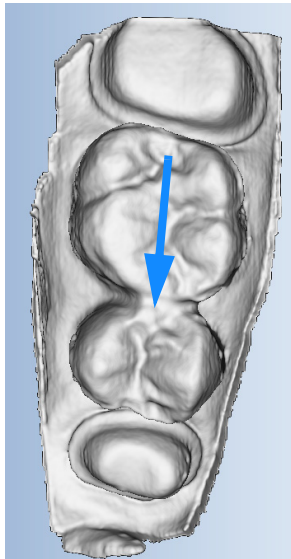
NOTE

Make sure the first scan is taken at a 90 degree angle to the occlusal surface. If the first scan is not optimal, delete it and retake it.

The first scan is the most important scan because it determines the default orientation.

The angle of the first scan should be an occlusal scan.

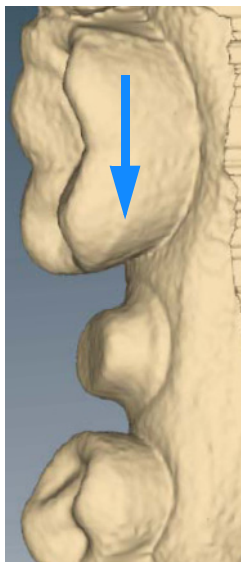
15.3.1 Occlusal scan



1. The first scan is of preparation
2. Keep the scanner parallel to the occlusal table.
3. Take overlapping scans and move in half-tooth (or less) increments.

The last occlusal scan is the centre of the mesial proximal neighbour.

15.3.2 Clockwise rotation scan



The right side of the scanner is stronger because of how the laser is reflected. That is why you always want to rotate to the right before going to the left.

1. Use small rotations over the mesial proximal neighbour to create overlapping scans as you transition from occlusal scans to a clockwise rotation.
2. Scan along the right side of the teeth. Rotate the scanner to almost 90° from the occlusal table.
3. Watch as your model builds to see any areas that might require a different rotation or angle.

15.3.3 Distal adjacent tooth scan

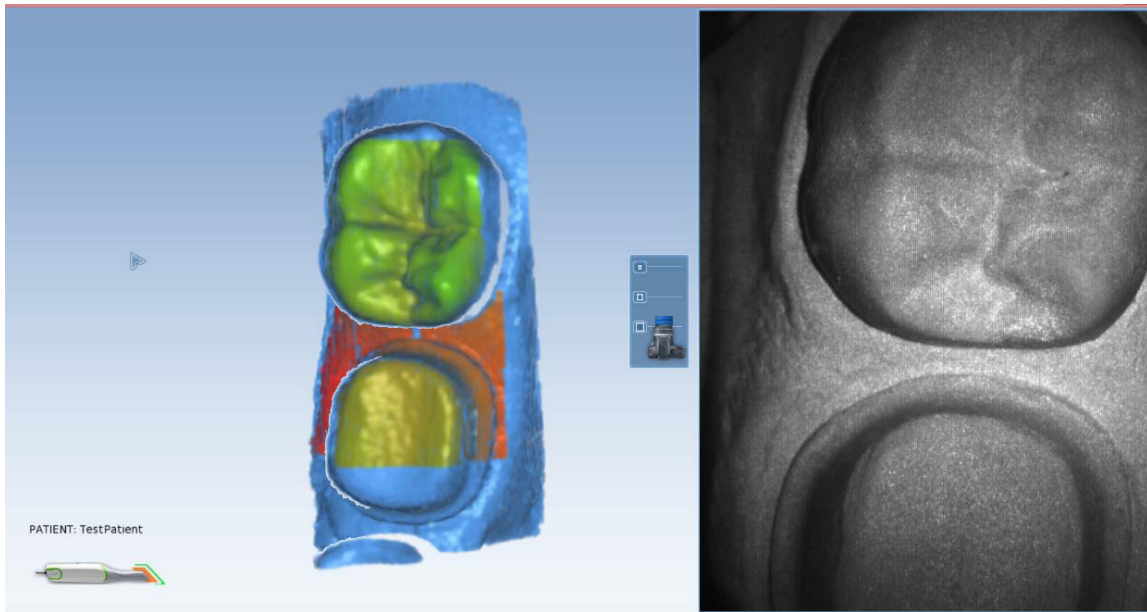


Rotate in small increments across the distal adjacent tooth until you reach the left-hand side. This enables you to capture the occlusal data as you shift from one rotation to the other.

15.3.4 Counter-clockwise rotation scan

1. Scan from the distal to the mesial along the left-hand side of the teeth.
2. The last scan is of the mesial neighbour.

The system displays a model based upon the scan data. The Live View appears on the right and the model builds on the left. Watch the model building on the left to see what information has been captured and where you need to move the scanner.



If you have moved too far and the system needs data overlap the system changes the Live View to orange.

The most recent scan added to the model is displayed with a colour coding to indicate the focal distance of the data added.

- **Green** - close to the tip
- **Yellow/Orange** - middle of the range
- **Red** - end of the range (far away from tip)


NOTE

Any colour shown means the scanner is capturing data. The colours only correspond to the focal distance.

The building model rotates to match the Live View.

3. To stop scanning click the button on the scanner.

A raw data model is displayed.



4. To create the 3D model click **Generate Model** or press **M** on the keyboard.

NOTE

If you exit without generating the model, the scans will be lost.



5. To evaluate the model for low data click **Data density view**. For more information see 15.5.1 “Checking the model for missing data” on page 43.

15.4 Scanning options

15.4.1 Adjusting live view window size

While the Live View is active, the window size can be adjusted. By default, the Live View is large enough to fill the height of the scanning window. To make it smaller, place the mouse cursor on the left edge of the Live View. Right-click and drag the window to the desired size.

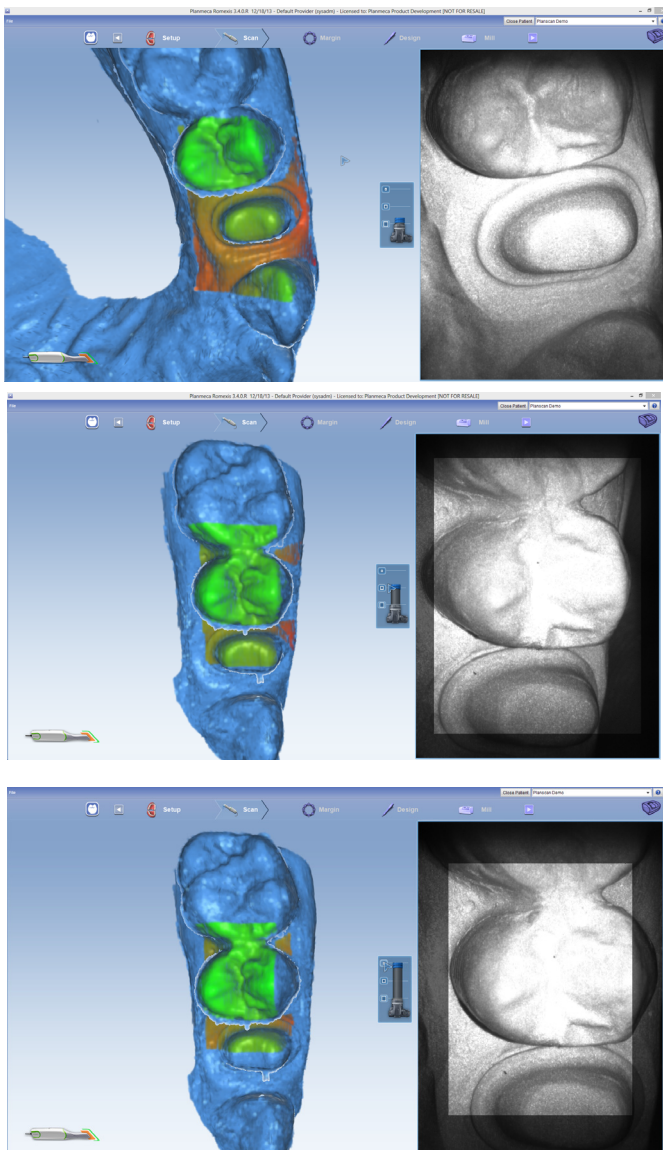
The Live View will return to the default size next time it is activated.

15.4.2 Adjusting the scanning field of view



The scanning area can be reduced if tongue, cheek, instruments, etc. are interfering with your scans. Most clinical operators do not change the Field of View.

Click and drag the Field of View indicator to the desired setting.

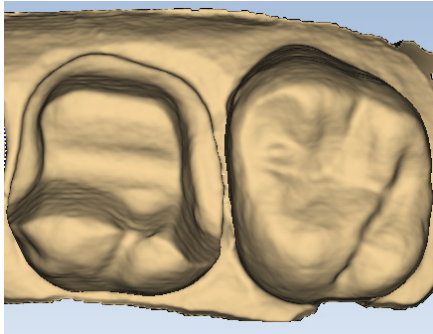


15.5 Evaluating the model

15.5.1 Checking the model for missing data



1. Click **Data density view**.



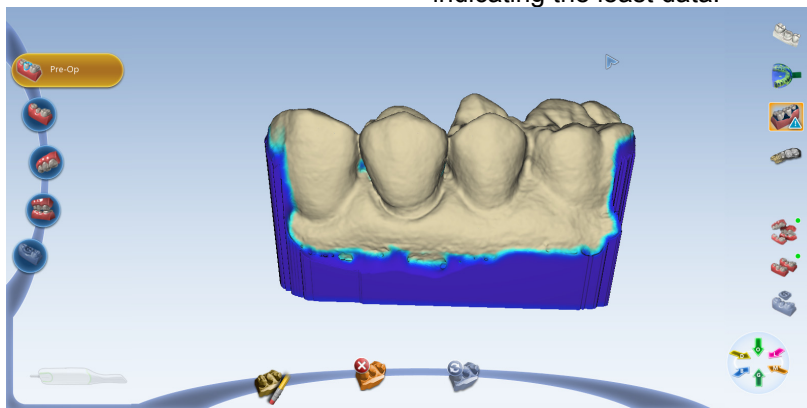
Your model should resemble this.

The adjacent teeth are important in designing the restoration. Ensure there is enough detail, approximately 90%, to align the restoration with its neighbours.

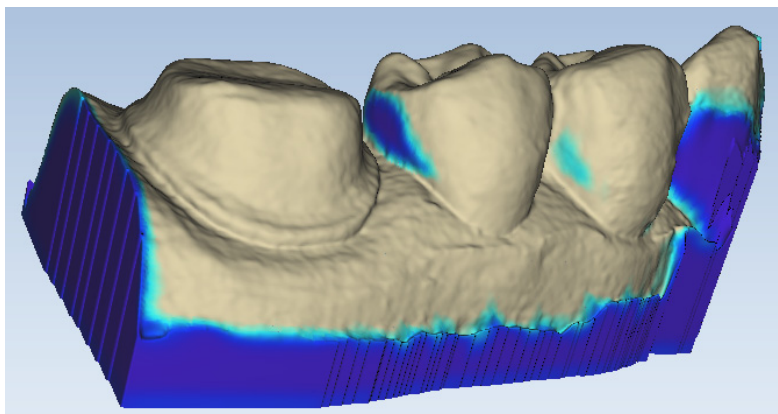


2. If not already activated click **Data density view**.

The model refreshes with the dark blue and purple areas indicating the least data.



3. Rotate the model to analyse it.



4. Rescan the dark areas on your restoration site and interproximal contact areas.

Check if the key areas are missing data:

- Look for coloured areas on the prepared tooth, especially on the margin.
 - The adjacent teeth should have good data on the interproximal contact area, occlusal surfaces, and of the lingual and buccal contours.
 - Data below the height of contour is not as crucial on the adjacent teeth.
5. If areas lack detail, take additional scans and ensure the surface lacking detail is within the circle.

With a couple of additional scans, the example is greatly improved.



6. To return to the normal view click **Data density view** again.
7. When finished with scanning click the *Margin* tab or the **Next** button.

15.6 Using eraser tool

The eraser tool can be used to remove unnecessary data like extra teeth, tongue, cheek, etc. It can also be used to erase an area that needs to be rescanned. If you spot a problem (i.e. the margin is partially hidden by cord or tissue), you can erase that area, correct the problem on your model or intraorally, then rescan just that area. You do not have to start over.

NOTE

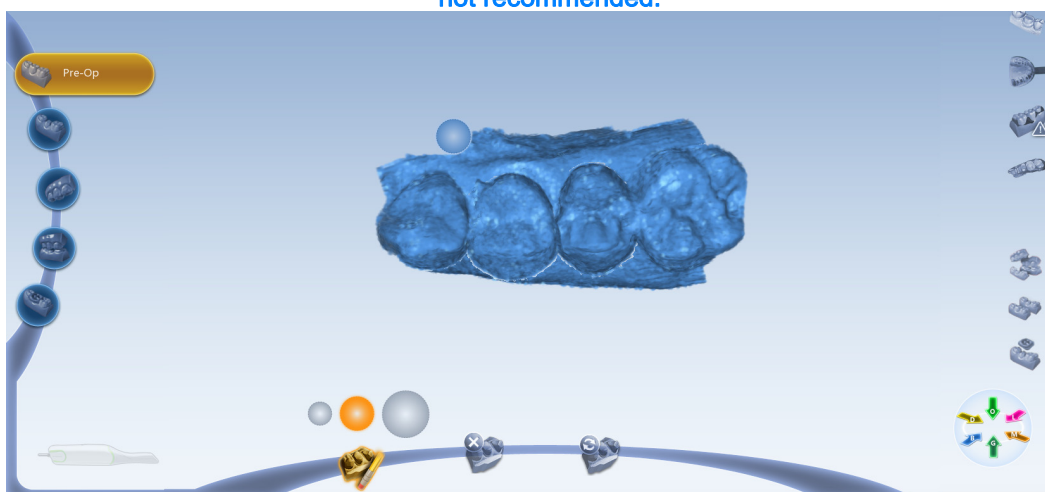
Be sure to erase and rescan **ALL** modified areas.

The Eraser can also be used in the Pre-op and Bite Registration Time Saver tools (see the following sections).

Click the **Eraser tool** to deactivate it and regenerate the model.

NOTE

Keep some of the buccal or lingual data when erasing. If you disconnect the two halves of the model, half of the model will disappear. It is also recommended that you not delete multiple teeth in a row. Large gaps in the model is not recommended.



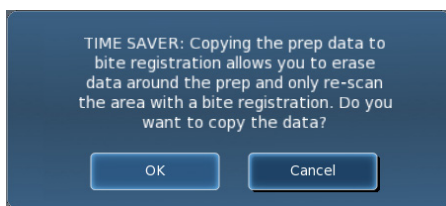
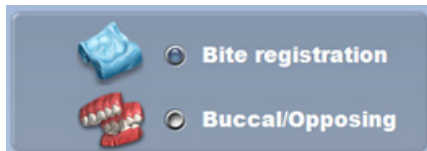
15.7 Scanning occlusal

The occlusion can be evaluated and designed using:

- Bite registration
- Buccal bite and opposing dentition
- Pre-op (a wax-up or existing anatomy before preparation)

NOTE

Cases being sent via Planmeca Romexis Cloud usually need to be Buccal/Opposing cases.



1. On the *Setup* tab, select Bite Registration or Buccal/Opposing.

If you are scanning a pre-op, leave the default to Bite Registration.

2. Select **Buccal/Opposing**.

The system will allow you to use a Time Saver method of copying the model. In certain scenarios, this enables you to duplicate a model under another heading.

You can then erase the data that needs to be replaced and take fewer scans than if you are doing a completely new scan.

- Pre-op model can be copied into Prep model
- Prep model can be copied into Bite Registration

The instructions below assume that you will use the Time Saver method. You always have the option of simply doing a full scan for each model type.

15.8 Scanning a bite registration

A bite registration can be used to optimize occlusion for proper alignment with the opposing tooth. Scan the preparation, ensuring there is enough detail of the adjacent dentition and/or gingival tissue in your preparation scans to align the bite registration scans.

After scanning the preparation, prepare the bite registration.

Keep the following recommendations in mind as you prepare bite registrations:

1. Place the bite registration material so that it completely covers the preparation surface:
 - The bite registration material should not cover the adjacent teeth. If it does, trim to the interproximal after the material sets.
 - There must be sufficient data of the adjacent teeth in the scans of the preparation and the bite registration in order for the two models to align.
 - Ensure there are no gaps between the bite registration material and the adjacent teeth.
2. Ask the patient bite down firmly or press the articulated model down firmly for the impression.

3. If trimming of the bite is needed to expose more of the adjacent teeth, trim the bite in the mouth. If you remove and replace it, the bite registration material may not seat properly.

15.8.1 Scanning



Goals
100% occlusal data

1. On the *Setup* tab, select **Bite Registration**.
2. On the *Scan* tab, click **Prep** and scan the preparation model first.
3. Click **Bite**.

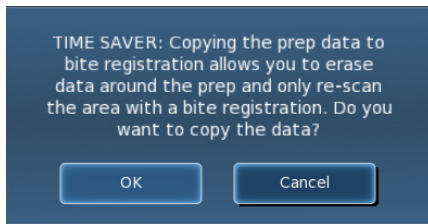
A Time Saver message appears. It only appears when the preparation is scanned first. The time saver option allows you to duplicate the preparation model and use the same data for the bite registration model.

NOTE

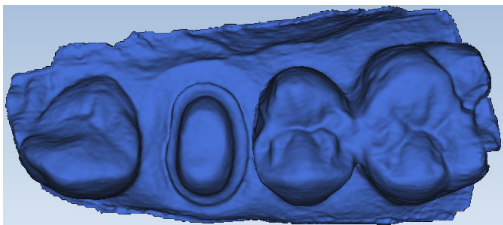
Time Saver cannot be used with Impression Mode.

If you do not wish to use the Time Saver option, the bite registration and adjacent teeth can be scanned on their own.

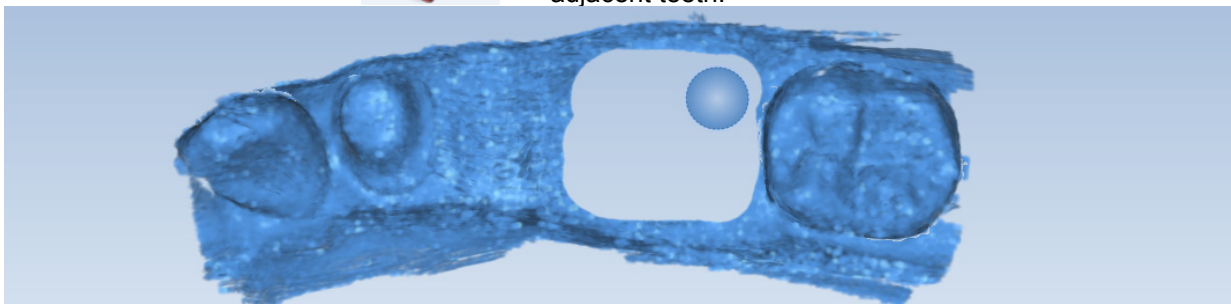
4. To use the Time Saver click **OK**.

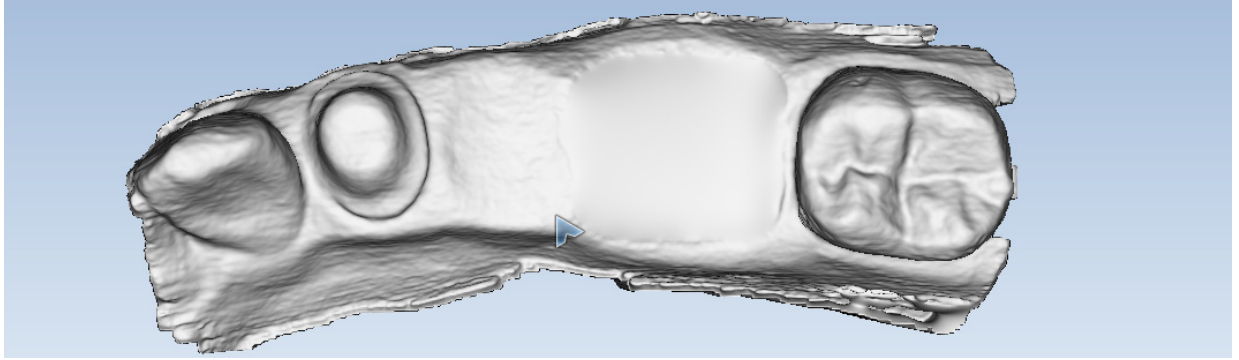


A copy of the preparation model is created in the bite registration model colour.



5. Click the **Eraser Tool**.
6. Erase the preparation and the marginal ridges of the adjacent teeth.





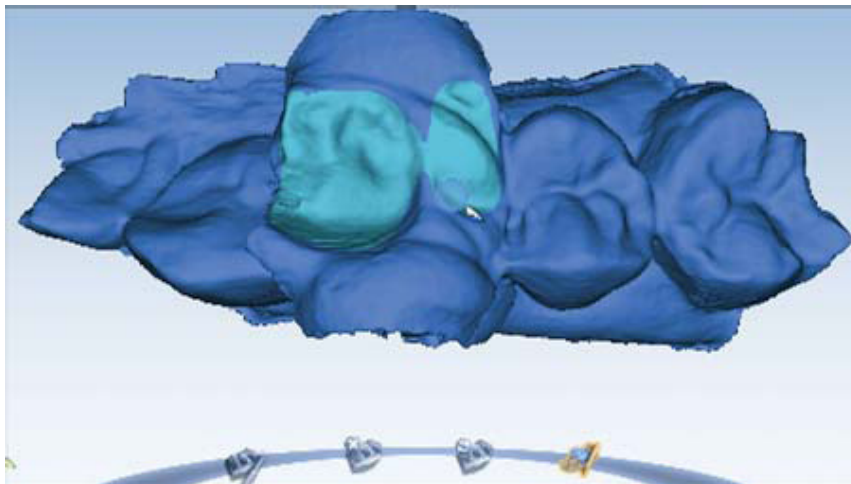
7. Re-click the tool to deactivate it.
The model is smoothed where the data has been erased.
8. Activate the scanner.
9. Begin scanning with the occlusal of one of the adjacent teeth. Once you have established where you are, you can begin to scan the bite registration data.
10. Scan the occlusal of the bite registration material and any of the adjacent tooth data that was removed and is not covered by the bite registration.

15.9 Selecting the bite registration



Highlight the opposing dentition to designate which areas of this model should be used for occlusion.

1. Click **Bite Selection** at the bottom of the screen. This icon only appears on the Scan Bite screen.
2. Click and drag to highlight the areas of the opposing dentition that would come into contact with the restoration.

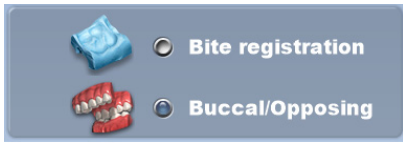


3. Click Bite Selection again to deactivate it.

NOTE

If you made a mistake and need to start over click **Reset**.

15.10 Scanning opposing teeth

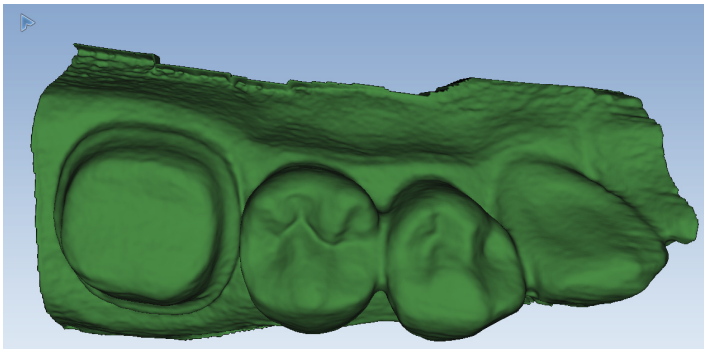


The opposing teeth are scanned to acquire bite information for the proposal.

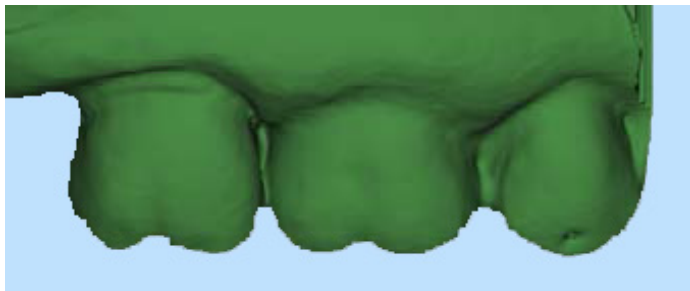
1. On the *Setup* tab, select **Buccal/Opposing**.
2. Click the *Scan* tab.
3. Click the **Opposing** button.
4. Starting with an occlusal view, scan the occlusal surfaces of the opposing dentition. Include the same number of teeth as the preparation model. Ensure there is good cusp tip data on both the lingual and buccal sides.
5. Roll to the buccal and scan the buccal side of the opposing dentition. Include gingival data, do not stop halfway down the tooth.

You should see

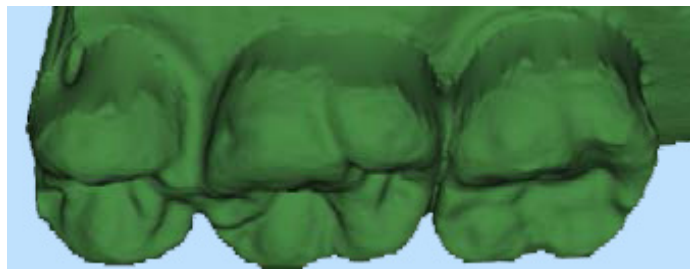
- Good occlusal data



- Good buccal data



- Good lingual cusps



Lingual axial data is not needed.

6. Erase extra data from the opposing model.

15.11 Scanning buccal bite



The buccal bite is scanned to align the preparation model with the opposing model.

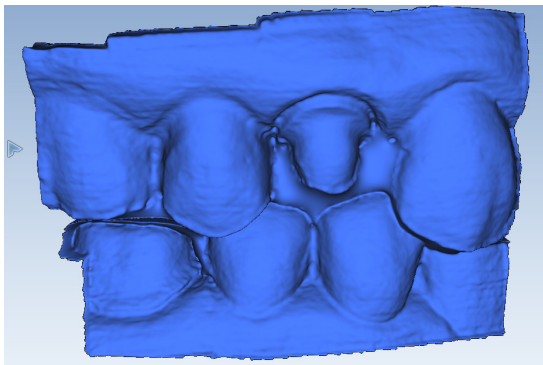
1. Click **Buccal**.
2. Press the articulated model down firmly or have the patient bite down firmly.
3. Tell the patient not to move while you are scanning. If they shift during the scanning, the alignment may be incorrect.

NOTE

Position the scanner tip against the inside of the cheek while the patient's mouth is open. When the scanner is in place, ask the patient to close and bite down firmly. Tell them not to move during scanning. Keeping the scanner tip against the cheek and not rubbing against the gingiva during scanning is typically more comfortable for the patient.

4. Place the scanner at a 90° angle to the teeth.
5. Scan the sides of the teeth that were captured in the preparation and opposing models. Ensure some gingival data is captured.
6. Click **Generate Model** or press **M** on the keyboard.

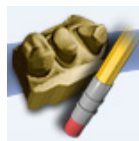
GENERATE MODEL



The system generates the model and attempts to align to the other scanned models. The software should automatically align the models. If the Align Buccal is red, see below for instructions on how to manually align the data.

When the scan is successful:

- There is good data on the buccal sides of the teeth.
- Intraoral scans will most likely have the tongue in the background.
- Model scans will have space filler in the gaps.



7. Erase any excess data from the model using the **Eraser tool**.

15.12 Model alignment

There are no tools to rotate the models. It is important to start your scanning in the same orientation for each scan. Rescan the model if you scanned something in backwards.

The alignment icons are on the right side of the screen. There is a different icon for each alignment type:



- Buccal bite



- Pre-op



- Bite registration



The system attempts to automatically align the models as they are generated. A green dot means the scans are aligned. A red dot means they are not aligned.



To view the alignment click the icon

All of the alignment icons have a **Refresh** button.

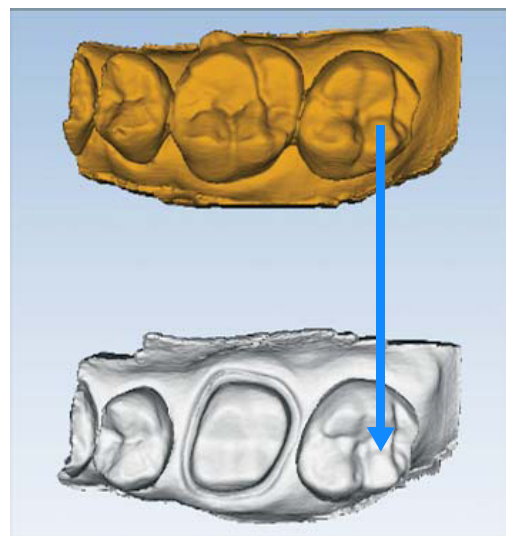
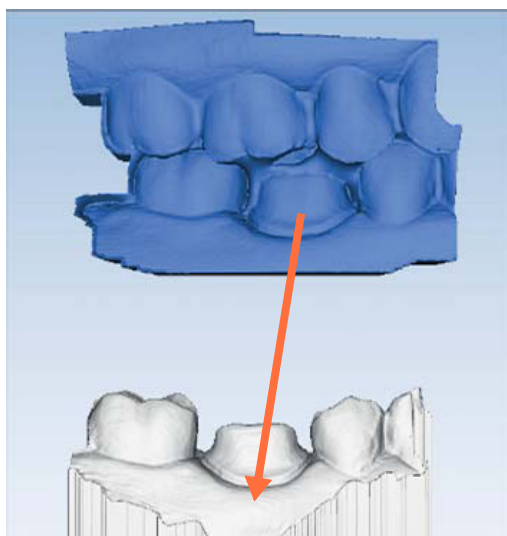
To reset the alignment and manually align the models click **Refresh**.

Automatic alignment should be used in most cases.

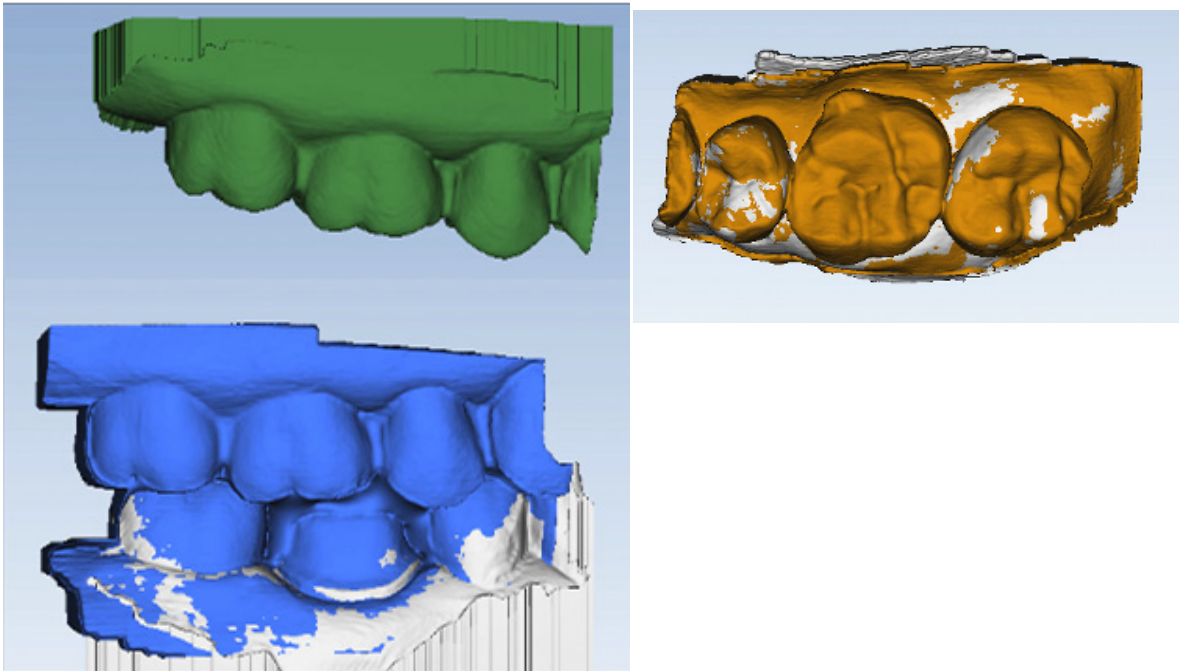
If there is extra data that might be interfering with the scans (tongue, cheek, etc.), try trimming the extra data before manually aligning.

The buccal bite has an extra *Show/Hide Buccal* option which enables hiding the buccal bite model and evaluate the opposing and prep models.

To align the models, drag and drop the buccal bite, pre-op, or bite registration over the prep model.



The models will snap into place or will return to their original positions.



In Buccal/Opposing cases, the opposing model appears after the prep and buccal bite are aligned.

To match the buccal bite model click and drag the opposing model.



To access the menu options at the top or to return to scanning, deactivate the selected Alignment icon. You cannot proceed if the Alignment icon is active (orange).

15.12.1 Aligning buccal data



The buccal bite should automatically align. When the alignment is successful the spot in the top right corner of the **Align Buccal** button is green.

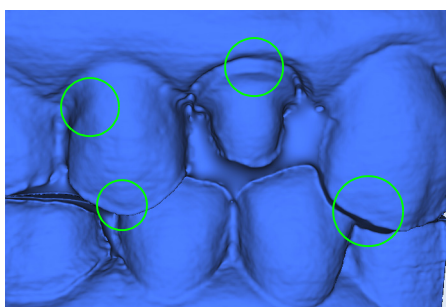
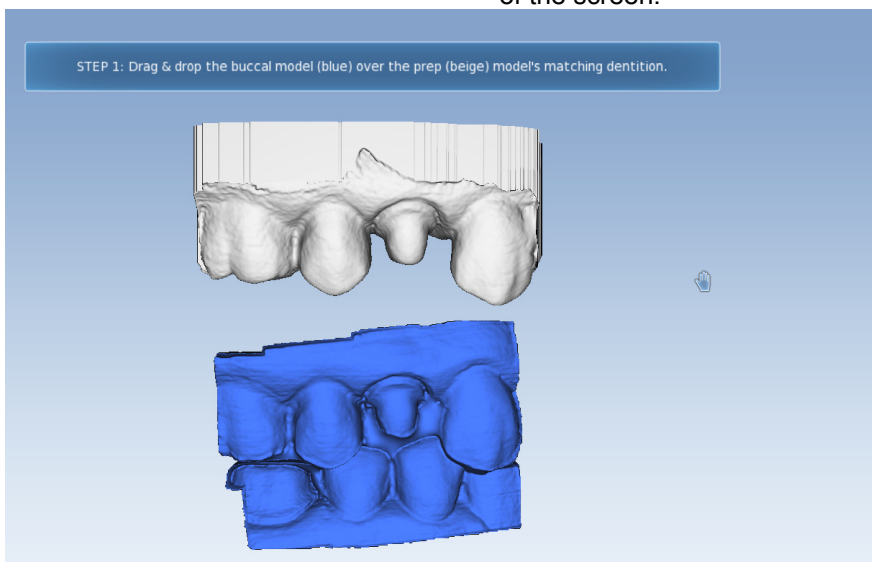


If the alignment is not acceptable the spot in the top right corner of **Align Buccal** button is red. In this case you can manually realign the data.

To designate the position of the three models (preparation, opposing, and buccal bite) in relation to each other proceed as follows:

1. Click **Align Buccal**.

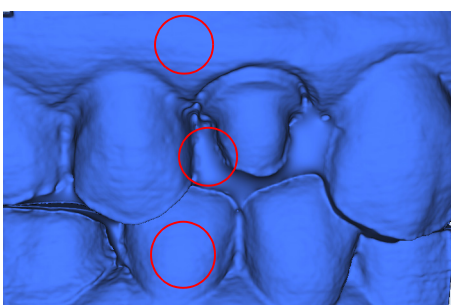
The preparation and buccal bite model appear. If the preparation is an upper tooth, the preparation model appears at the top of the screen. If the preparation is a lower tooth, the preparation model appears at the bottom of the screen.



2. Look for a distinctive feature on both models.
3. Click directly on a distinctive feature in the buccal bite and drag the model until the pointer is directly over the same distinctive feature on the preparation model.

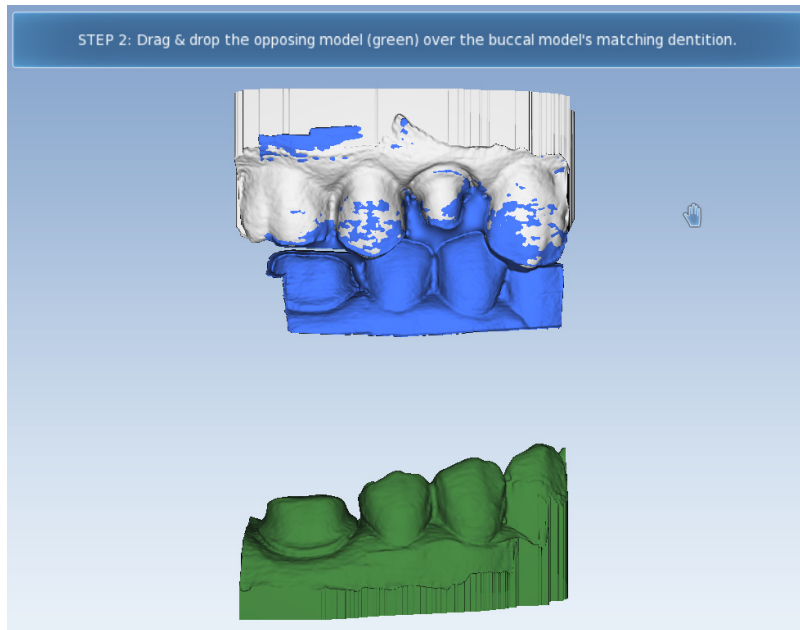
As you drag the buccal bite model down, it will disappear behind the preparation model. It is important to know the point that you grabbed and drag it to the same point on the preparation model.

Distinctive features can include a cusp tip, groove, unique gingiva, etc.

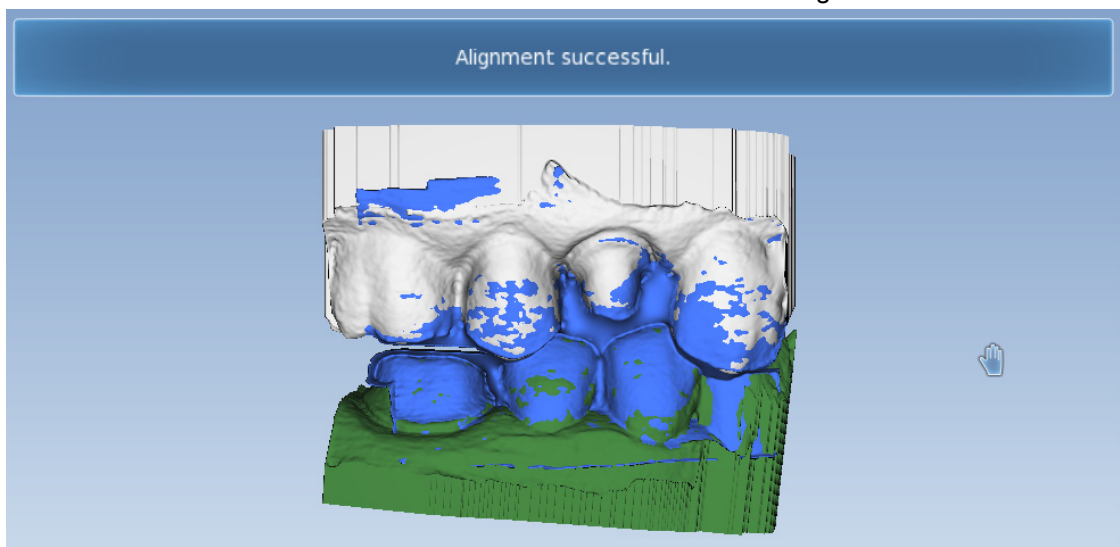


Do NOT click on smooth/round parts of the model or the model base.

The buccal bite model snaps into place and the opposing model appears.



- Click directly on a distinctive feature in the opposing model and drag the model until the mouse is directly over the same distinctive feature on the buccal bite model. The opposing model snaps into place. Your alignment should resemble the following.



If the system is unable to align the drag and drop points that you selected, the models will go back to their original positions. Try again.



To view the alignment with the buccal bite model removed click **Show/Hide Buccal**.



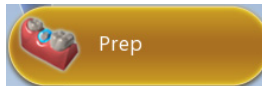
If you are not satisfied with the alignment, click **Reset** to start over.

If a model has become tilted, it may be difficult to align. Click **Reset** to start over.



Click **Align Buccal** to deactivate it and return to the scan options if desired.

15.13 Scanning a pre-op



Use Pre-op when you want to scan a pre-operative tooth or a wax-up. Pre-op scans can be used in combination with the Library tooth or can be used as a template, like a bite registration.

1. On the *Scan* tab, click **Pre-op**.

Scan the pre-operative tooth or wax-up with the same scanning techniques used for the prepared anterior or posterior tooth.

2. Prepare the tooth.
3. On the *Scan* tab, click **Prep**.

A Time Saver message appears. This message only appears when the pre-op is scanned first. The Time Saver option allows you to duplicate the pre-op model and use the same data for the preparation model.

NOTE

Time Saver cannot be used in conjunction with Impression Mode.

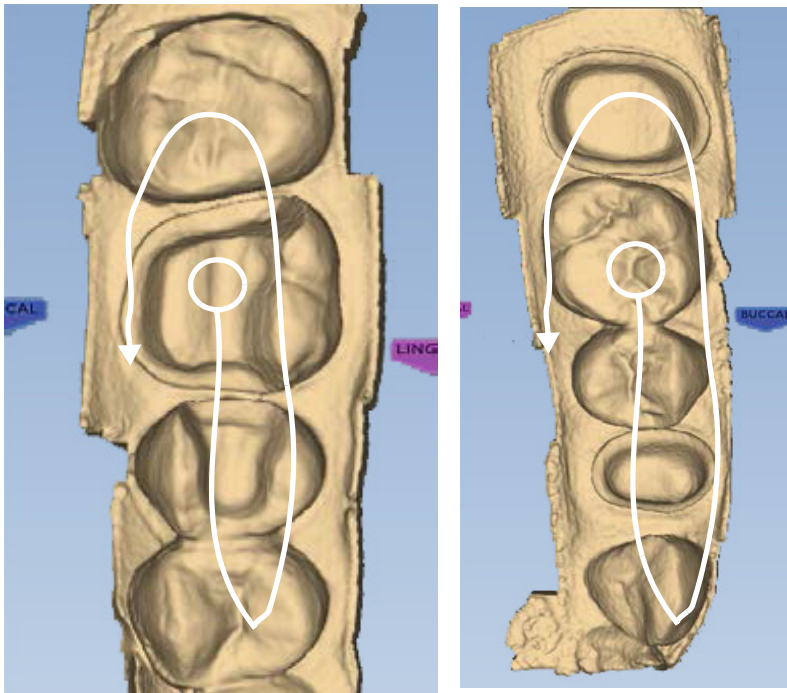
4. Click **OK** to use the Time Saver.
If you do not wish to use the Time Saver option, the preparation and adjacent teeth can be scanned on their own. The following instructions assume the use of the Time Saver option.
A copy of the pre-op model is created in the preparation model colour.
5. Click the **Eraser Tool**.
6. Erase the tooth that has been prepared and the marginal ridges of the adjacent teeth.
7. To deactivate the Eraser Tool re-click it. The model is smooth where the data has been erased.
8. Activate the scanner and begin the scans with the occlusal of one of the adjacent teeth. Once you have established where you are, you can begin scanning the preparation.
9. Scan the entire preparation and any of the adjacent tooth data that was removed.
10. Click **Generate Model** or press **M** on the keyboard.

15.14 Scanning multiple restorations

In scanning multiple restorations, the basic scanning technique is expanded to encompass the extra preparation(s).

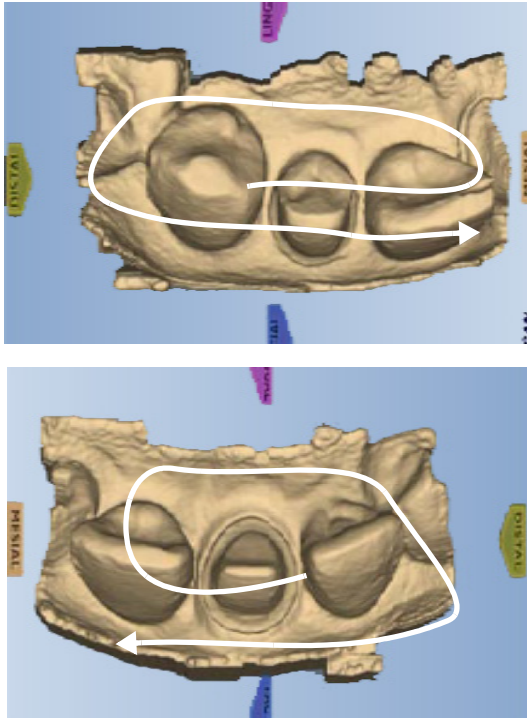
1. Select the tooth number for the first preparation and then select a preparation type, material, and shade.
2. Click the *Scan* tab.
3. Repeat for each prepared tooth.
4. Start on the most distal preparation.

Two examples of multiple restoration models shown below.



The basic scanning pattern is expanded to encompass the extra preparations and any teeth in between.

15.15 Scanning an anterior



The scanning pattern for anteriors is similar to the posteriors. Since there is more varying data on the lingual side, it is recommended to scan the linguals before the occlusals.

Anterior teeth are often very similar to each other. To lower the chances of misalignment follow the suggested scanning steps. The scanning method is the same for all anteriors.

When scanning intraorally, it may be more comfortable to have the scanner tip pointing towards the mesial instead of the distal. In this case, the surface indicators on the model will be incorrect until the orientation is changed.

1. Start on the **Prep** and scan the occlusal of the prep and the mesial proximal.
2. Rotate to the lingual and scan the prep and proximals.
3. Rotate across the distal proximal to reach the facial side.
4. Scan the facial side.

Watch the model as it processes to ensure the scans are applied to the correct area. Anterior teeth are often very similar to each other. Following the suggested scanning steps lowers the chances of misalignment. The scanning method is the same for all anteriors.

When scanning intraorally, it might be more comfortable to have the scanner tip pointing towards the mesial instead of the distal. In this case, the surface indicators on the model will be incorrect until the Orientation is changed.

Optional additional scans

Evaluate your model. When you have long and straight anterior teeth, additional facial scans are sometimes needed to capture all of the data.

With the proximal or preparation in the centre of the circle, take 2 to 3 scans as you gradually rotate down the facial side of the tooth.

For optimal design, more scans of the proximals may be desired. To evaluate the model



5. Click **Data density view** to verify the integrity of your model.
Rescan any dark areas on the preparation or proximals.
6. When finished with scanning click the **Margin** button.

Alternate scanning pattern

To roll back and forth over the straight and long anterior teeth you might use a “saddle” pattern. This pattern can help avoid misalignments when scanning very similar teeth.

15.16 Scanning multiple anteriors

When scanning multiple anteriors and crossing the mid-line, start the scanning with the highest tooth number (Universal) or higher quadrant (ISO) to get the correct orientation.

In intraoral scanning it is sometimes more comfortable to scan with the scanner tip pointing towards the mesial instead of the distal. There are a couple of options for dealing with this situation.

- Take the first scan with the scanner pointing in the correct direction. Turn the scanner around to a more comfortable position and retake the first scan.

Watch the model as it applies the second scan and ensure the scan is placed correctly. This will not work if there is insufficient data for the system to recognize the two scans as the same position. If the second scan aligns correctly, continue scanning in the normal pattern.

When crossing the mid-line, lingual scans are recommended for more data and fewer flat surfaces. After you turn the scanner around, pay attention to where the system places the next scan. Repeating a previous scan can help the system recognize that the scanner has been turned around. If the scan is placed in the wrong area, there may not be enough data on your model to turn the scanner around and more scans will be required.

- Take the first scan of the higher tooth number with the scanner pointing towards the mesial or start with a lower tooth number. In this case, the surface indicators will be incorrect until you reach the *Margin* tab. On the *Margin* tab, turn the model around when setting the Orientation.

15.17 Scanning impressions

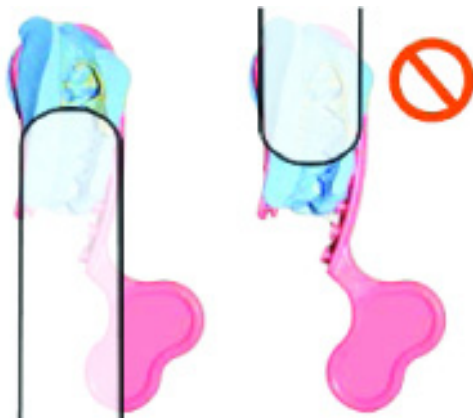


NOTE

Any impression material can be used. The system does not require a particular colour or type of material.

Remove the excess impression material so that the scanner can get closer for scanning.

15.17.1 Positioning the scanner



NOTE

The Buccal/ Opposing scan option cannot be used with impression scanning. Use the impressions to create an articulated model.

Ensure the tip of the scanner is pointing towards the distal so that the orientation of the model will be correct.

Due to the nature of impressions, the normal positioning of the scanner may not be able to capture all of the walls of the impression. You can also tilt the scanner up or down to achieve the necessary point of view.

15.17.2 Scanning

See section 14.4 “Positioning the scanner” on page 31 for positioning.

NOTE

Be careful not to squeeze or otherwise distort the impression while scanning.

1. Select **Prep** if it is not already selected.

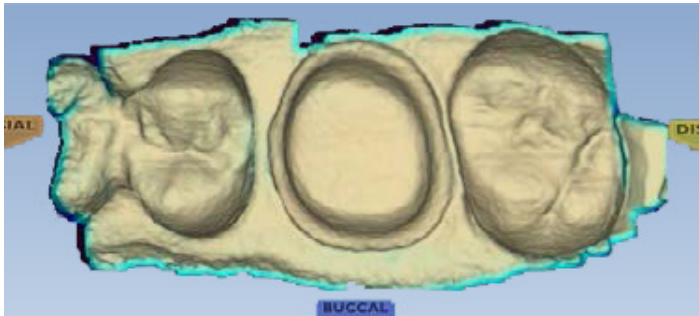
NOTE

Do NOT select **Scan Bite Registration**, which resembles an impression.

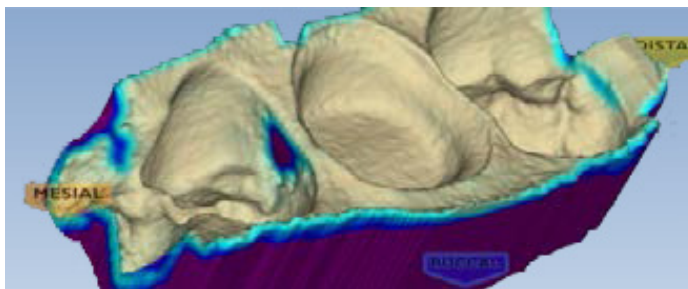
2. Use the same scan pattern as for an intraoral or a model scan.

NOTE

From the occlusal view, the impression can give the optical illusion of looking like a regular model.



3. Rotate the model to see all of the impression. Be sure to check the contact areas on the proximal teeth.



4. If there are areas that need additional scans, such as the mesial interproximal area shown above, take extra scans.
5. Click **Data Density View** to deactivate it.



6. Click **Impression Mode** to invert the model into the normal view. All other tabs will use the inverted model of the impression for creating the proposal.



7. Click the **Margin Tool** button and continue with the normal procedure for drawing the margin and designing the proposal.

16 ORIENTATION

Orientation is the selected model position for Autogenesis to propose the new restoration. Autogenesis in turn uses this set position as a starting point for cusp height and marginal ridges based on the adjacent teeth.

The first scan determines the initial positioning of the model.

Orientation affects two major aspects:

- Design - Orientation plays a large part in Autogenesis and determining that the anatomy aligns with the adjacent teeth.
- Milling - The path of insertion determines the Orientation needed for milling. In order for a restoration to mill out properly, the margin and axial walls must be visible from the occlusal view.

In most cases, these two factors can be accomplished with one Orientation and will only need minor adjustment. There are situations when greater adjustments to Orientation are required.

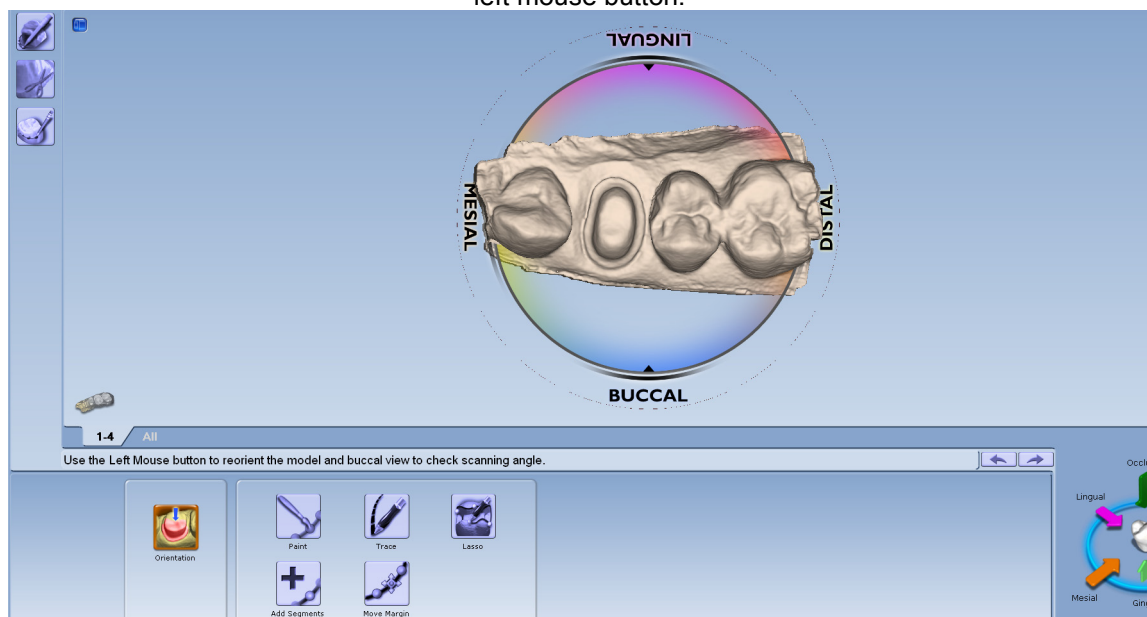
16.1 Intraoral scanning examples

- Tooth position and size of the patient's mouth can sometimes make it difficult to get a perfectly positioned first scan.
- Depending on an anterior tooth's placement and whether you are right or left handed, it may be necessary to point the scanner in the wrong direction. If the tip of the scanner is pointing towards the mesial instead of the distal, then the surface indicators on the model will be incorrect until the Orientation is changed, see section 16.7 "Rotating the model" on page 66.

16.1.1 Model or impression scanning

If you accidentally scan a model or impression backwards (with the scanner pointing towards the mesial), see 16.7 "Rotating the model" on page 66. Only the preparation model can be turned around. If you scanned a pre-op, buccal bite, bite registration, or opposing model backwards, then they must be rescanned. When the *Margin* tab is selected, Orientation is automatically activated. The model displays with the Orientation Circle.

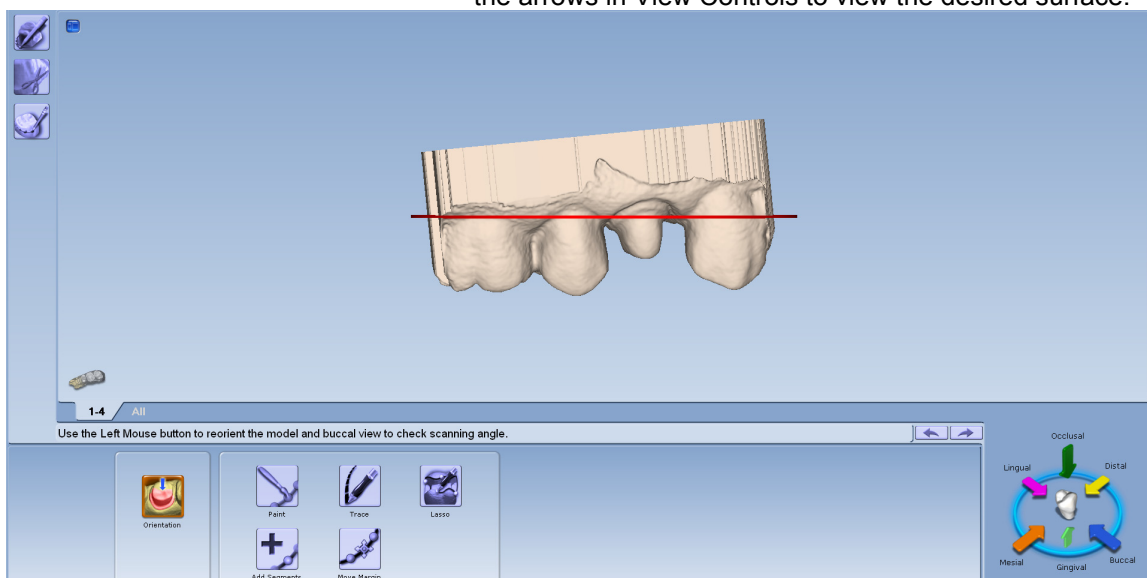
When Orientation is active, the model is rotated using the left mouse button.



16.2 Viewing the model

In Orientation, the model displays with a circular graphic labelling the mesial, distal, buccal, and lingual surfaces. Zoom out to see the buccal and lingual labels, if desired.

The model should also be evaluated from the sides. Click the arrows in View Controls to view the desired surface.

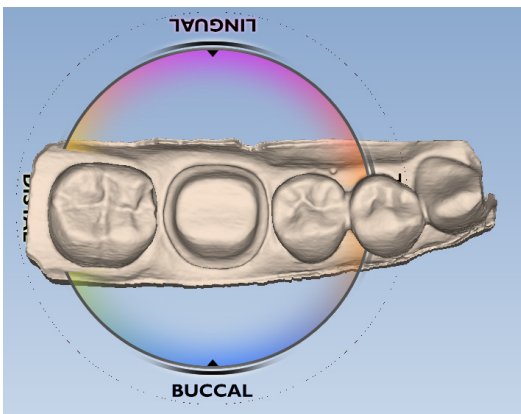
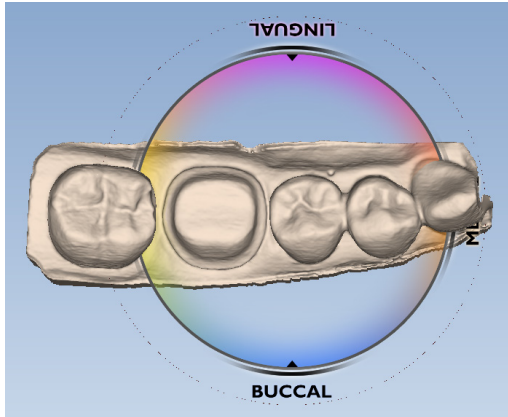


16.3 Moving the central point

The central point of the orientation circle is the middle of the screen, which may or may not be the location of your prep. If the central point is not on your preparation, it can be a little confusing when rotating the model.

It is not necessary to centre the model on the preparation, but it can be helpful if you are new to rotating a 3D model or if you have multiple preparations. The example below shows a preparation with no distal neighbour, so the prep is not in the middle of the screen.

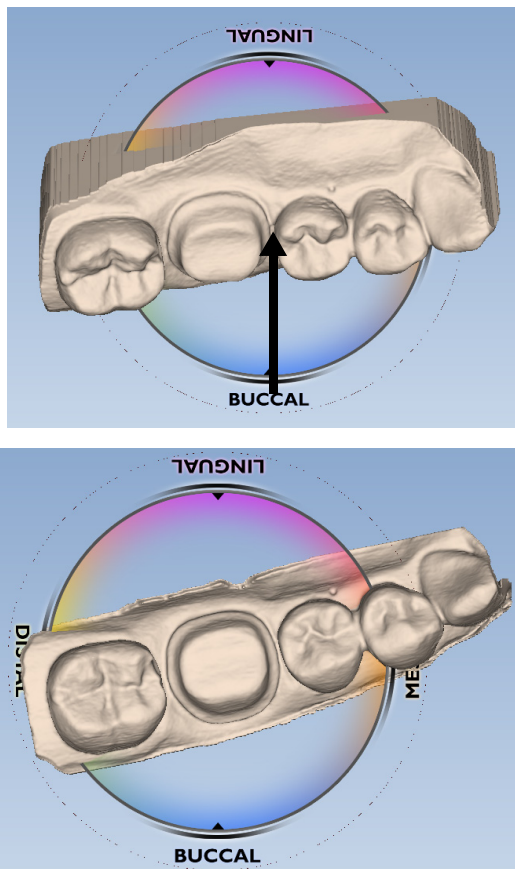
To move the model so that your preparation is centred, hold down the mouse scroll wheel and move the model. The circle graphic moves with the model, but you can see the model moving in relation to the tabs at the top of the screen.



When the scroll wheel is released, the circle graphic refreshes and moves to the centre. Repeat as necessary.

16.4 Single restorations

16.4.1 Occlusal view



If the scanner was not parallel to the preparation on the first scan, the model will be tilted. In this example, the model is tilted to both the buccal and mesial sides.

The occlusal view is good for buccal/ lingual adjustments.

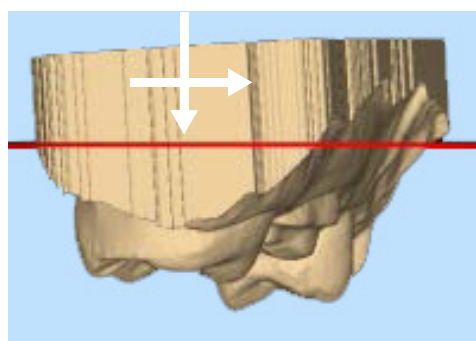
1. Position your mouse near the Buccal label on the circle graphic.
2. Hold down the left mouse button and move the mouse straight up.
3. Rotate the model until it has a good buccal/ lingual alignment.

You should be able to see the occlusal tables clearly and the same amount of data on the buccal and lingual sides of the adjacent teeth. The central grooves need not to be aligned.

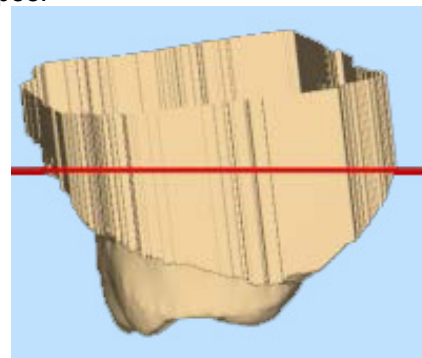
16.4.2 Distal view

The distal or mesial view is good for mesial/distal and occlusal/gingival adjustments.

1. Click the Distal arrow in View Controls.
The distal view is sometimes obscured by high distal data. Tilt the model up or down to see the cusps of the adjacent teeth.
2. Evaluate the cusp heights of the adjacent teeth. Align your cusps and axial walls according to the Curve of Spee.



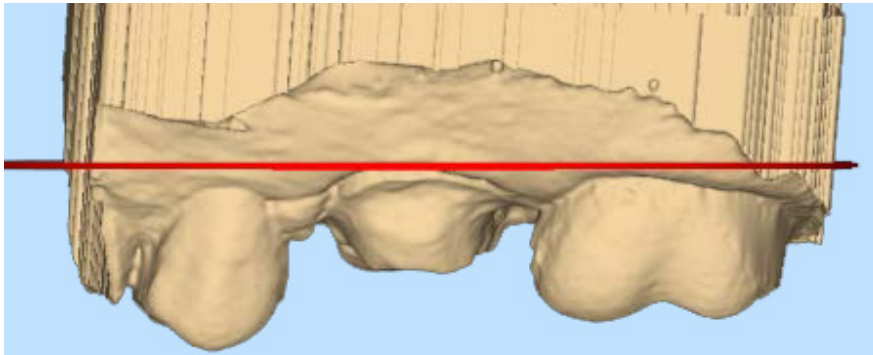
Before



After - proximal cusp tips and axial walls are aligned

3. Click **Buccal** or **Lingual** to view from the side.

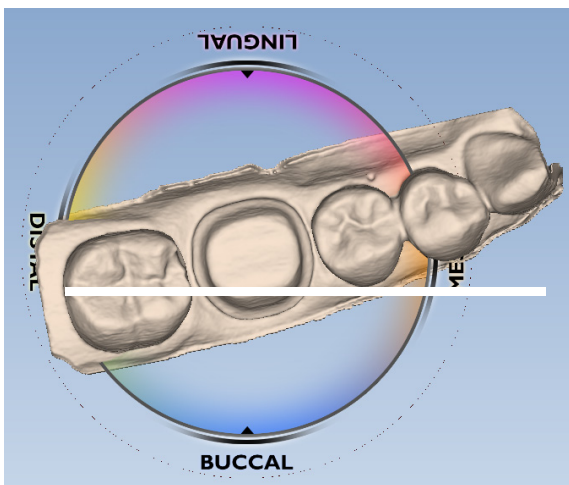
Use the red line as a guide to evaluate the marginal ridge alignment of the adjacent teeth. In this example, the alignment is good.



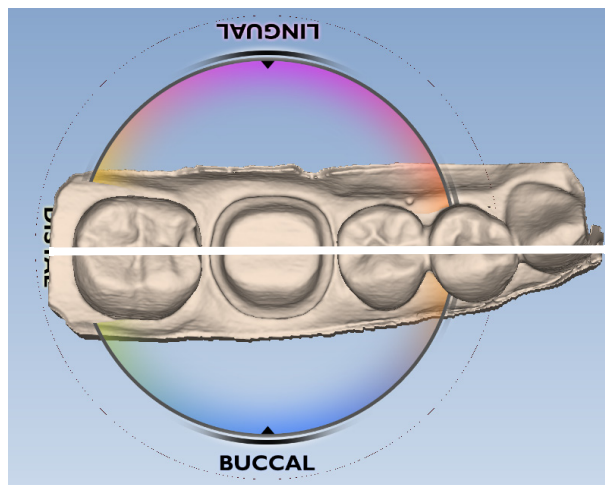
If necessary you can return to the Occlusal or Distal view to make adjustments. You do not want to adjust the orientation from the buccal or lingual point of view because it is easy to accidentally change the mesial/distal alignment at the same time.

4. Click **Occlusal**.
5. From the occlusal, ensure the model is straight across from mesial to distal.

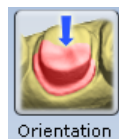
You can imagine a straight line going from the mesial to the distal.



INCORRECT



CORRECT



6. When satisfied, click **Orientation** to accept changes.

Orientation can be reactivated and altered at any time. If Autogenesis has already been applied, be sure to go to the Tooth Libraries screen and reapply the library tooth for the new orientation. See "Apply the changes" on page 103 for instructions.

16.5 Verifying orientation

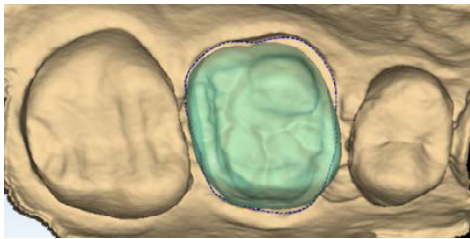
After the Margin is drawn and edited, the Preview Library button appears, see "Preview library" on page 74 for more information. This is an optional step that displays an example proposal that has not been aligned with the adjacent teeth. The position of the preview tooth is based on the Orientation. It can be used to evaluate and adjust the Orientation.



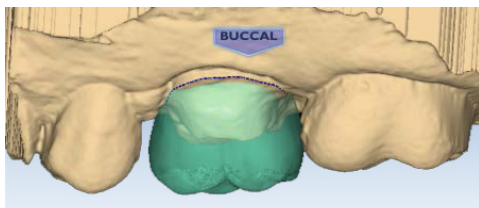
1. Click **Preview Library**.

A green tooth appears above the margin. If this is a partial restoration, the preview tooth may be significantly smaller.

With Preview Library activated, you can activate Orientation and evaluate the overall alignment of the model.



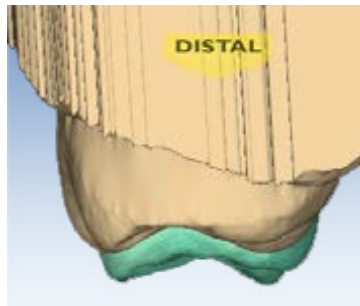
2. From the occlusal, check that the central groove is in alignment.



3. From the buccal, check that the marginal ridges are parallel to the marginal ridges of the adjacent dentition.

NOTE

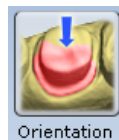
The preview tooth is usually higher than the adjacent teeth. The proposal will drop down to align with the adjacent teeth during Autogenesis.



4. From the distal, check that the cusp tips are in parallel alignment

Since the preview tooth usually sits higher than the adjacent teeth, it will not follow the curve of spee.

If necessary make changes to the orientation.



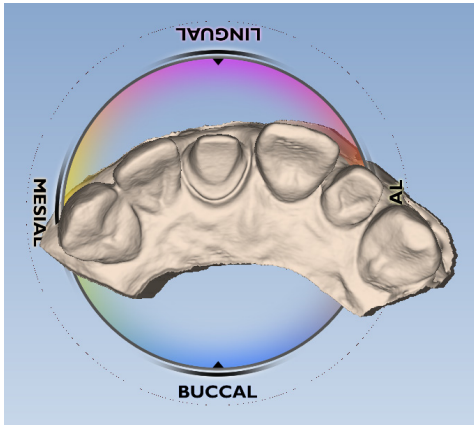
5. When satisfied with the alignment, click **Orientation** to accept the current position.

16.6 Resetting the orientation



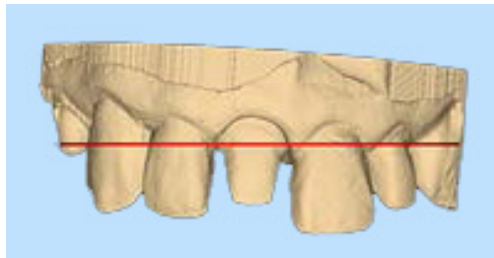
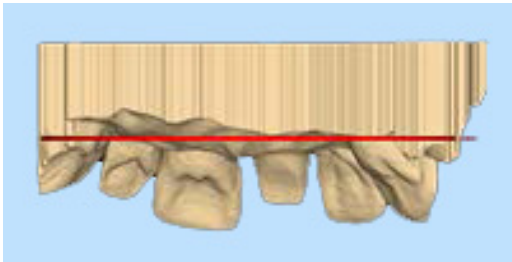
The Orientation can be reset at any time. If there are multiple restorations, the Reset will only affect the tooth of the currently selected tab. Clicking **Reset** moves the model into position based on the first scan.

16.7 Rotating the model



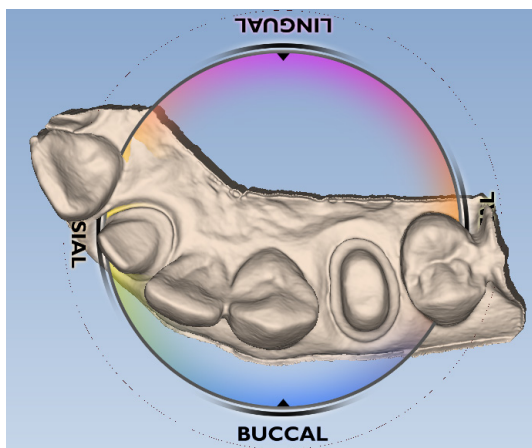
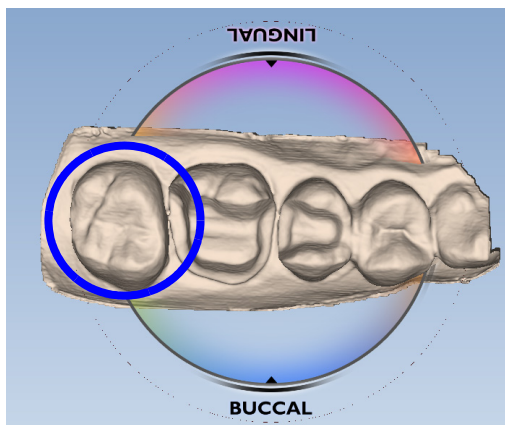
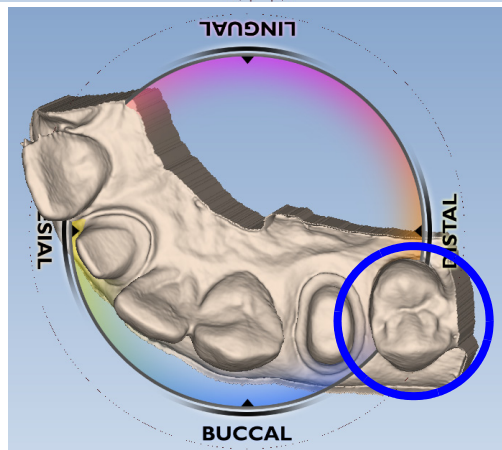
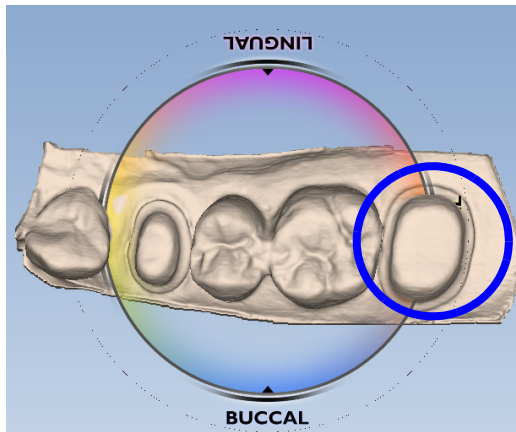
If the scanner is not pointing towards the distal on the first scan, the surface indicators will be backwards. This is easily fixed with Orientation.

1. Click the **Facial** arrow.
2. Click and drag the mouse in a sideways motion multiple times to turn the model around.



3. Continue with the normal Orientation work-flow.

16.8 Multiple restorations



A different Orientation is assigned to each restoration. The curve of spee affects the orientation of each restoration.

The default orientation is based on the first scan. In the case of multiple restorations, the basic scanning technique starts with the distal proximal neighbour.

See “Scanning Multiple Restorations” on page 78 for more information.

Default Orientation is based on the first scan (circled in blue).

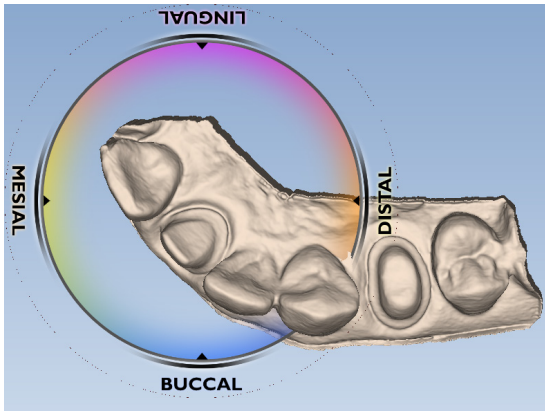
The system displays the model with the lingual side facing the top of the screen.

The tooth number tabs are in the same left-to-right order as the teeth on the model. The model rotates around the central point of the orientation circle. The model can be moved so that an individual preparation is at the centre of the circle.

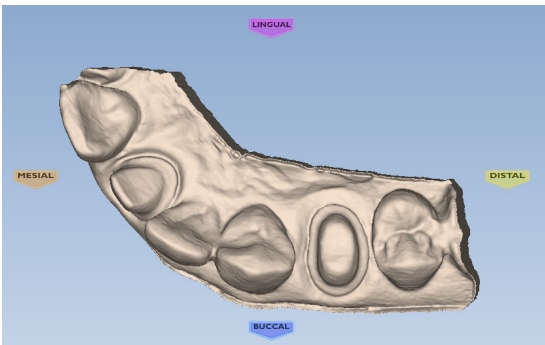
This is an optional step which can make it easier to alter the orientation for each restoration.

1. Click and hold down the scroll wheel.
2. Drag the model until the first tooth is centred in the middle of the screen.

The circle moves with the model, but you can see the model moving in relation to the tabs at the top of the screen.



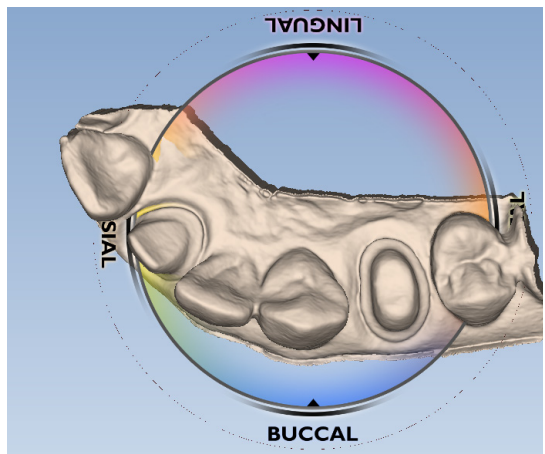
When the scroll wheel is released, the circle graphic refreshes and moves to the centre.
Repeat as necessary.



3. To get the correct Orientation for the first tooth rotate the model.
4. When satisfied, click **Orientation** to accept.

NOTE

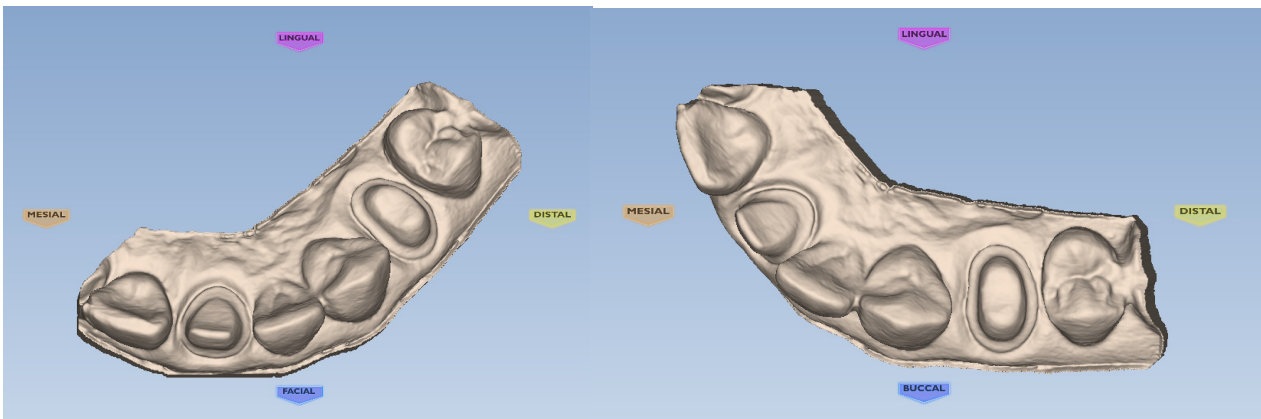
If you cannot use the distal or mesial view to make the adjustments due to the length of the model or the misalignment of the teeth, make all of the adjustments from the occlusal view.



5. Click the tab for the next tooth.
The model reorients back to the original orientation. If you click back on the previous tab, the model will shift to the path for that tooth.
6. While on the second tab, click **Orientation** to designate the orientation for the second preparation.
7. Drag the model so that the second preparation is centred.
8. Rotate the model to the correct orientation.
9. Click **Orientation** to accept.
Clicking on each tooth's tab moves the model to that tooth's orientation.

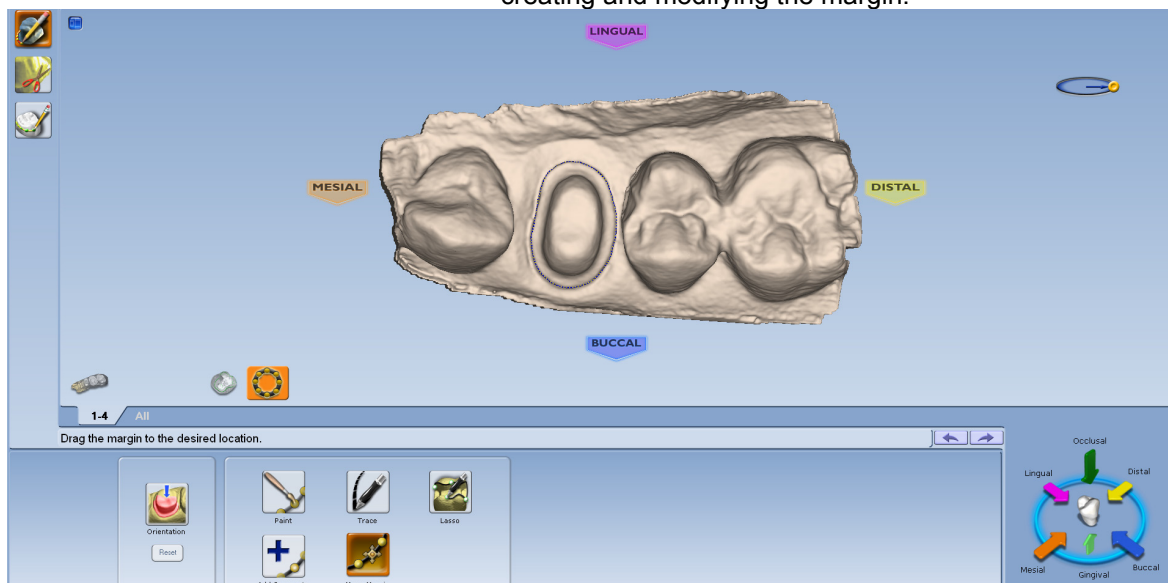
NOTE

The model is centred on the original central point regardless of which tooth you have selected.

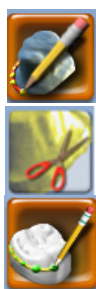


17 MARGIN

The *Margin* tab contains quick and easy-to-use tools for creating and modifying the margin.



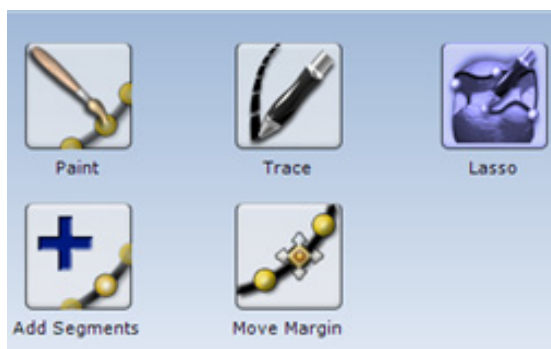
There are three tool groups on the *Margin* tab.



- Margin tool set
- Selection Area
- Pre-op Editing

Additionally there are a set of tools affecting the view on the *Margin* tab which will be called here as Margin view tools.

17.1 Margin tool set

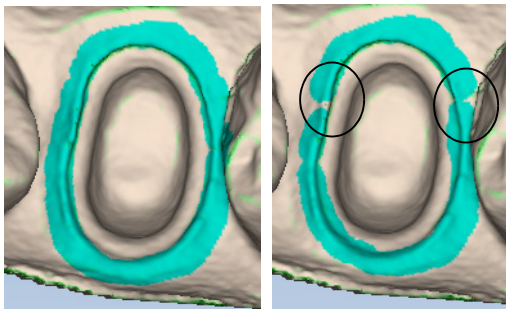
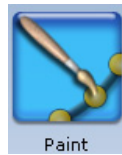


You can use the following tools to draw and adjust the margin:

- **Paint** - Create the margin using a broad brush stroke.
 - **Trace** - Draw the margin by clicking along the edge.
 - **Lasso** - Draw the margin by marking several points along the edge
- After the margin is created, it can be edited using one or both of the following:
- **Add segments** - Replace existing segments of the margin.
 - **Move margin** - Adjust the outline of the existing margin.

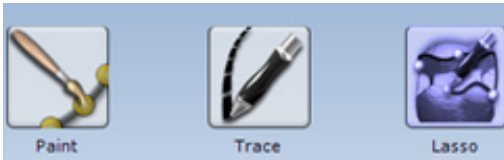
17.1.1 Using the margin tools

Paint tool



Acceptable

Not acceptable



The **Paint** tool is recommended for drawing supragingival margins.

1. Click the **Paint** icon.
2. Draw the outer margin edge by pressing and holding down the left mouse button while dragging the mouse around the scanned preparation.

The margin doesn't have to be perfect, but gaps must be avoided.

3. Click the **Paint** button again.

The system automatically draws the margin.

To delete the margin and start over, click **Paint**, **Trace**, or **Lasso** button.

Trace tool

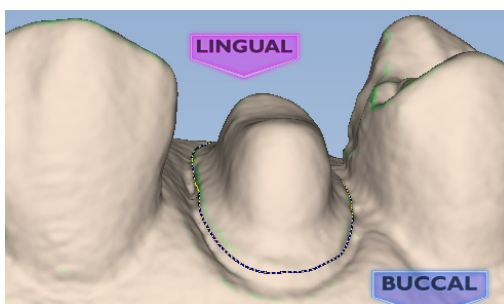


The **Trace** tool can be used on any margin, but it is especially recommended for equigingival and subgingival margins.

1. Click the **Trace** button.
- To highlight high contour areas in green click **Show features**.
2. Zoom in and rotate the model until there is a good view of the margin.
3. Position the **Trace** tool in the middle of the green high contour indication on the margin.

NOTE

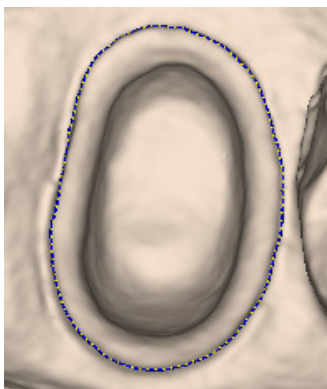
Show Features is recommended as an aid in finding the edge of the margin, it is not necessary for using the **Trace** tool. Draw the margin in the middle of the green high contour indication.



4. Click on the margin. A dot appears as the starting point.
5. Draw the margin in the middle of the green high contour indication.

To draw the margin using the Trace tool you may either:

- Click along the margin in small increments. The system creates straight lines between each click.
- or



- Draw a continuous line by holding down the left mouse button. To stop release the mouse at any time. This requires a steady drawing hand with the mouse and is not recommended for beginners.

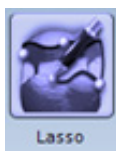
If desired, you can switch between clicks and drawing of continuous lines.

6. Finish the margin by clicking on the starting point.

The system automatically changes the trace line into a margin line.



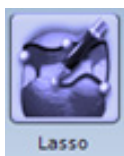
Trace



Lasso

7. To delete the margin and start over, click the **Trace**, or **Lasso** button.

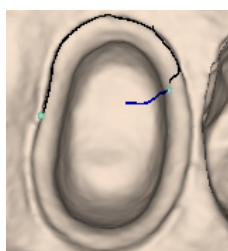
Lasso tool



Lasso

The Lasso tool is recommended for partial restorations and supragingival margins with a sharp edge.

1. Click the **Lasso** button.
2. Click along the margin at large intervals. The system creates a line along the edge between each click.



NOTE

If the Lasso tool is having trouble finding the margin, you can change the ICE Margin Mode to Texture Only.

The starting point and the most recent point clicked appear as blue dots.

3. Click to accept the previewed segment.
4. To finish the margin click the starting blue dot.

To delete the margin and start over, click the **Trace**, or **Lasso** button.

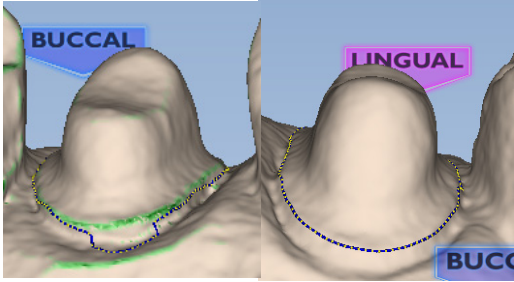
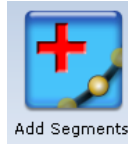


Trace



Lasso

Add segments tool



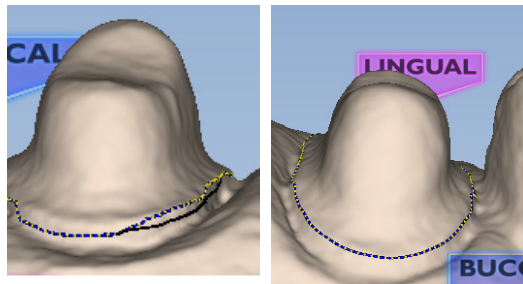
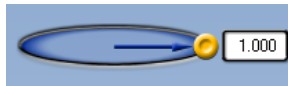
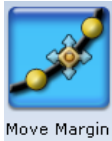
Use the Add Segments tool to redraw a portion of the margin.

1. Click the **Add Segments** button.
2. Start by clicking on a portion of the margin line that is acceptable.
3. Then, click to add new points across the gap in the line. A line traces where you click. To create a curve use multiple clicks.
4. Click **Add Segments**.

The system redraws the margin and removes the unacceptable section.

Repeat as needed.

17.1.2 Move margin tool



Use the Move Margin tool to drag and drop a section of the margin into a new position.

1. Click the **Move Margin** button.
2. Position the pointer on the margin; click and hold down the mouse button.

NOTE

You can change the tool's area of influence by dragging the yellow button to increase or decrease the size of the ellipse.

3. Drag the margin onto the margin shelf and release the mouse button.
- The system automatically redraws the margin in the new location.
4. Repeat as needed.

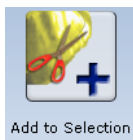
17.2 Selection area tool

When the margin is drawn on an inlay or onlay, the message *Please define a selection region...* appears. If you do not want this reminder to appear in the future, select **Do not show this message again**.



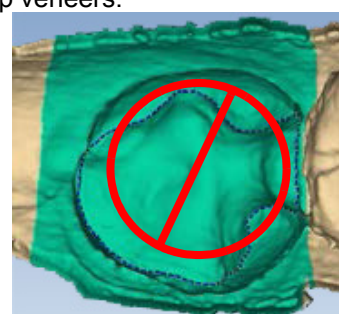
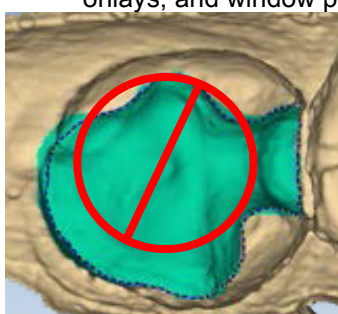
1. Click **Selection area** button.

The *Selection Area* window opens and the selection area tools options appear at the bottom of the screen.



2. Click **Add to Selection**.
3. Click and drag a circle around the entire tooth.

After you let go, an area is highlighted. Do not go too far beyond or short of the natural tooth or the proposal will be distorted. This process is recommended for inlays, onlays, and window prep veneers.

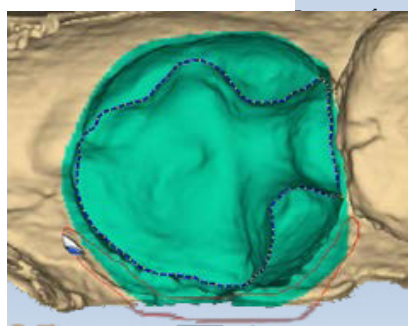


4. When you are satisfied with the Selection Area, click **Margin Tool** to edit the margin.

17.2.1 Remove from selection



1. Click **Remove from Selection**.



2. Click and drag the mouse to select the areas that you want to remove.
3. Repeat as needed.



4. When finished, click **Margin Tool**.



5. Click **Hide Model** to view your trim region.

NOTE

Hide Model is only available on the *Margin* tab when a *Selection Area* tool has been designated.

17.2.2 Reset



To remove the Selection Area and start over, click **Reset**.

17.3 Margin aids

View ICE Preparation



NOTE

For intraoral cases only.

Use View ICE Preparation to toggle between ICE view and stone view.

Show Features



The **Show Features** tool can be used to highlight high contour areas in green for finding the margin edge on supragingival preps, inlays, and onlays.

Toggle margin

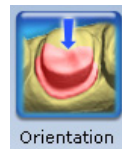


Click **Toggle Margin** to show or hide the margin and to verify the margin has been correctly drawn.

Preview library



To display a preview of the library tooth on top of the preparation click **Preview Library**.



The size of the preview tooth is based on the margin. The tooth may appear smaller on partial restorations. The preview tooth is positioned according to the Orientation.

To use the library tooth as a guide for changing the model's alignment click **Orientation**.

Assigned tooth number (for multiple restorations)



On multiple restoration cases, the tooth number is assigned to each preparation when the margin is drawn.

1. Click the desired tooth number tab.
2. Draw and edit the margin for the selected tooth number.
3. Select the next tooth number.
4. Draw and edit the margin for the selected tooth number.

Drawing the margins is how the tooth number is designated for each preparation.

If the wrong tooth number is selected when a margin is drawn, the margin must be marked again on the correct tooth tab.

NOTE

See section 18 "BRIDGES" on page 76 on how to draw pontic margins.

17.4 Margin tab settings

17.4.1 ICE margin mode



NOTE

For intraoral cases only.

ICE Margin Mode determines which view the system uses to create the margin curve when using the **Lasso** tool.

1. Click **Settings**.
2. Click **ICE Margin Mode**.

The default setting, *Normal*, means that the system uses both the stone and ICE view to determine where the Lasso line should appear.

3. Select *Texture only* to indicate that the system should ignore the stone model and focus on the differences in the ICE view. If View ICE Preparation is deactivated, this setting returns to Normal mode.
4. Click **Save** to save the changes or **Cancel** to exit without saving.

18 BRIDGES

A bridge is made up of two or more restorations that are connected.

Bridge cases are unique in that they are designed as individual teeth and milled as one unit.

This chapter assumes familiarity with multiple restoration cases and other intermediate to advanced topics. Refer to other chapters for more information.

18.1 Tooth preparation for bridges

Ensure the preparations for the abutment teeth are not angled in different directions. If one is pointed towards the lingual and the other towards the buccal, there may be problems with path of insertion and over-milling.

NOTE

Cantilever and Maryland bridges are not supported.

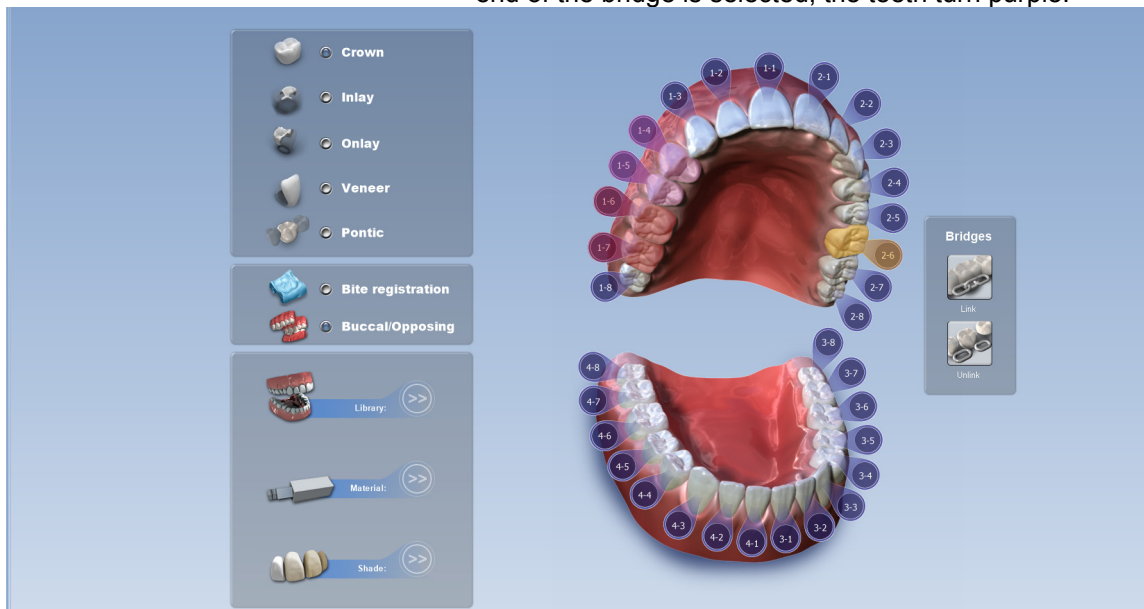
18.1.1 Designating a bridge

1. On the *Setup* tab select each tooth that is part of the bridge - the abutment(s) and the pontic(s).
2. Select the restoration type for each tooth.
3. Click **Link**.



The cursor changes to a chain symbol.

4. Click the mesial and distal teeth of the bridge. After each end of the bridge is selected, the teeth turn purple.



The teeth are now designated as a bridge.

5. Select the first tooth in the bridge and designate the Library, Material, and Shade. The material and shade is duplicated on the other teeth in the bridge when you click on them.

- Select the remaining teeth in the bridge and designate the Library. The library must be chosen for each restoration before you can continue to the *Scan* tab.

NOTE

If Library, Material and Shade are chosen before linking the bridge. The software will replace the Material and Shade of the remaining restorations with that of the highest tooth number after the link.

Multiple bridges can be created on the same arch. Repeat the steps above to create another bridge.

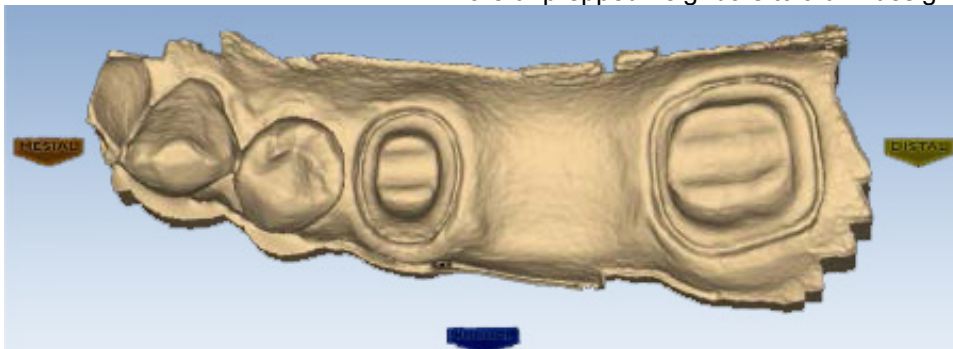
18.1.2 Unlinking a bridge



If there is an error in how the bridge was linked, click **Unlink** and click on any of the teeth in the bridge.

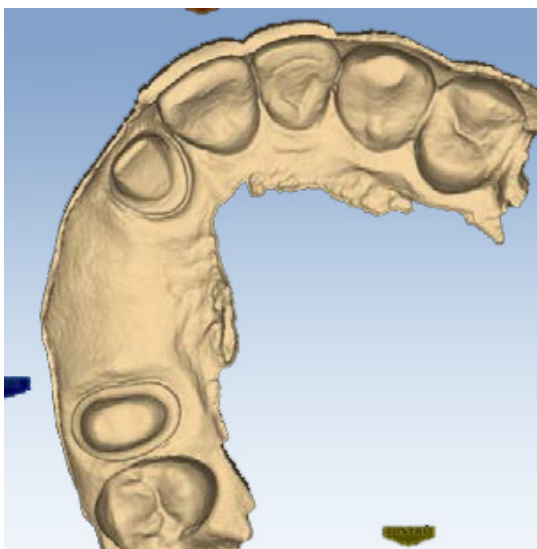
18.2 Scanning bridges

The scanning procedure for a bridge is the same as that for a multiple restorations case. Scan the prepped teeth, the edentulous area, and two unprepped neighbors or more unprepped neighbors to aid in design.



NOTE

Scanning more teeth on anterior bridges will aid in the smile design.



18.3 Bridge orientation

Set the Orientation for each tooth tab. Good alignment will aid Autogenesis with the design.

18.4 Drawing pontic margins

A margin is drawn for each tooth in the bridge.

1. Click the tooth number tab for each abutment and draw the margin on the selected tooth.

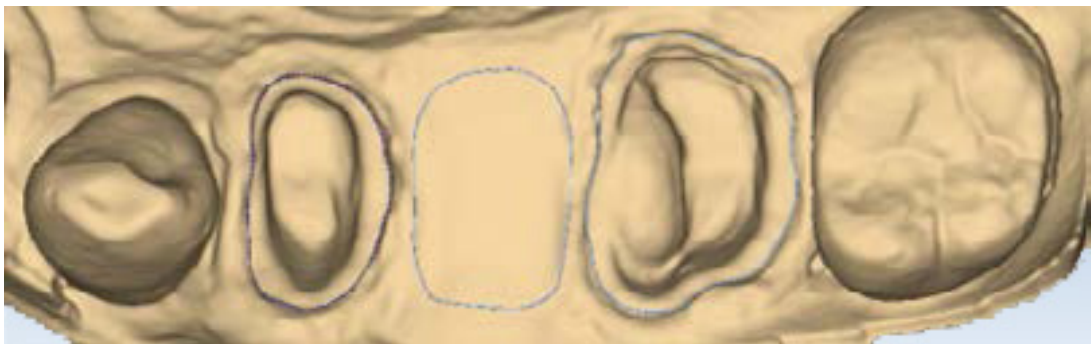
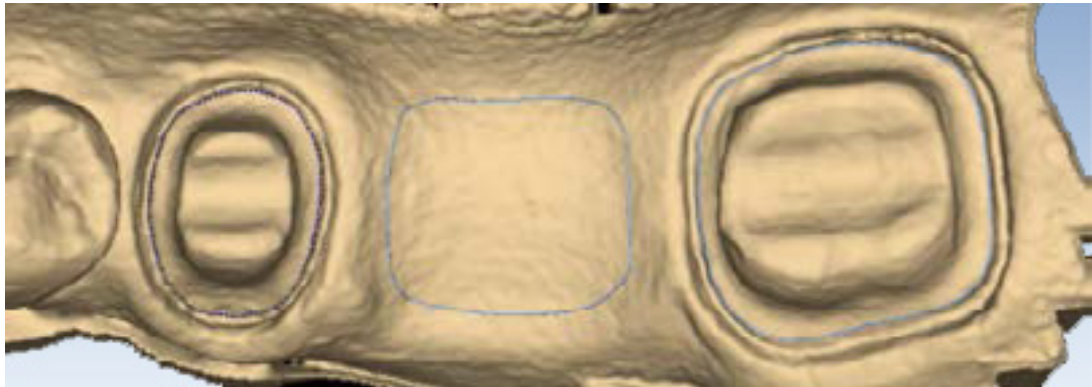
An edentulous space does not technically have a margin. The margin is drawn to aid the design process.

2. Click **Trace** and designate the position and extension of the base of the pontic on the gingival tissue to fit the appropriate contour.



NOTE

Do not go too far down the curve of the gingival tissue or you may not be able to fit the bridge in the block.



19 SETTINGS



The settings window can be accessed by clicking the **Settings** button in the Planmeca Romexis CAD/CAM module.

You can scroll to left and right between the settings categories by placing the mouse cursor over the arrow. To select the settings you would like to modify clicking on the category button.

To restore factory default settings click **Restore Factory Defaults**.

To save the new settings click **Save** or to exit without saving click **Cancel**.

19.1 Version



Displays the software and imaging systems software version.

19.2 Reset warnings



You can select the option *Do not show these messages again*. If a new operator is using the system, you may want to reactivate these warnings.

19.3 Network settings



This screen should be used only under supervision of a customer service representative. These settings are pre-configured and should not be changed.

19.4 Tab related settings



The settings related to the tasks performed in the current tab can be accessed by clicking the **Settings** button on the top right corner of the window.

To select the settings of a specific category click on the button.

These screens contain preference settings that modify the default behaviour of the software. The settings are based on each screen. Use the arrows to scroll right or left. Click a category to select it. Selected categories display in the bottom of the screen.

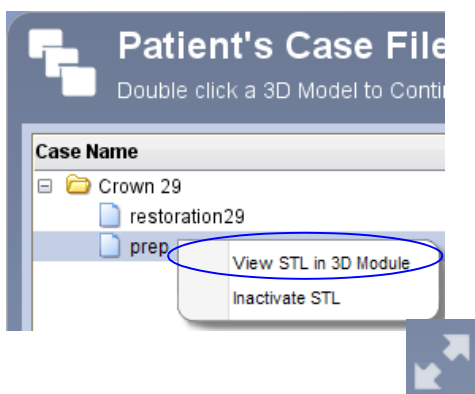
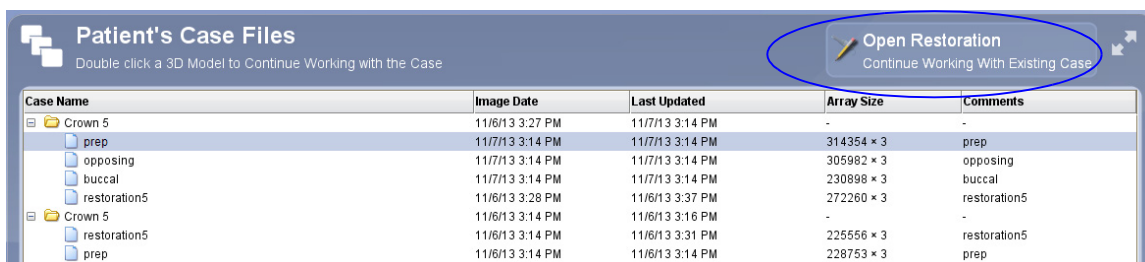
20 MANAGING CASES



All data are automatically stored into Planmeca Romexis database and organized into cases which can be exported to another system or sent to a certified laboratory for design and milling using Planmeca Romexis Cloud service (see 24 “SENDING AND RECEIVING CASES VIA PLANMECA ROMEXIS CLOUD” on page 91

20.1 Patient’s case files

To open an existing scan or restoration (crown, inlay, onlay etc.) double-click on a case on the list or click the **Open Restoration** button

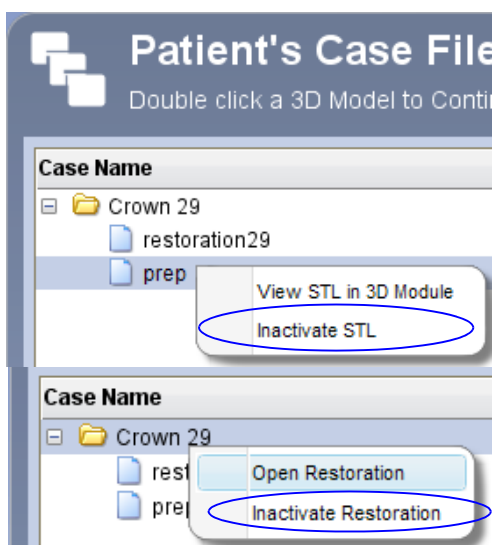


The case opens in the *Setup* tab of the Planmeca PlanScan scanner.

To open a case in *3D module* right-click on the case and select **View STL in 3D Module**.

By clicking this button on the top right corner of the *Patient’s Case Files* window you can extend/reduce the window size.

20.1.1 Inactivating files

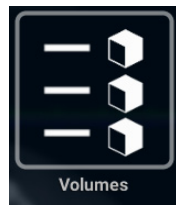


To inactivate an image (stl file) from the patient’s case files right-click on the file and select **Inactivate STL**.

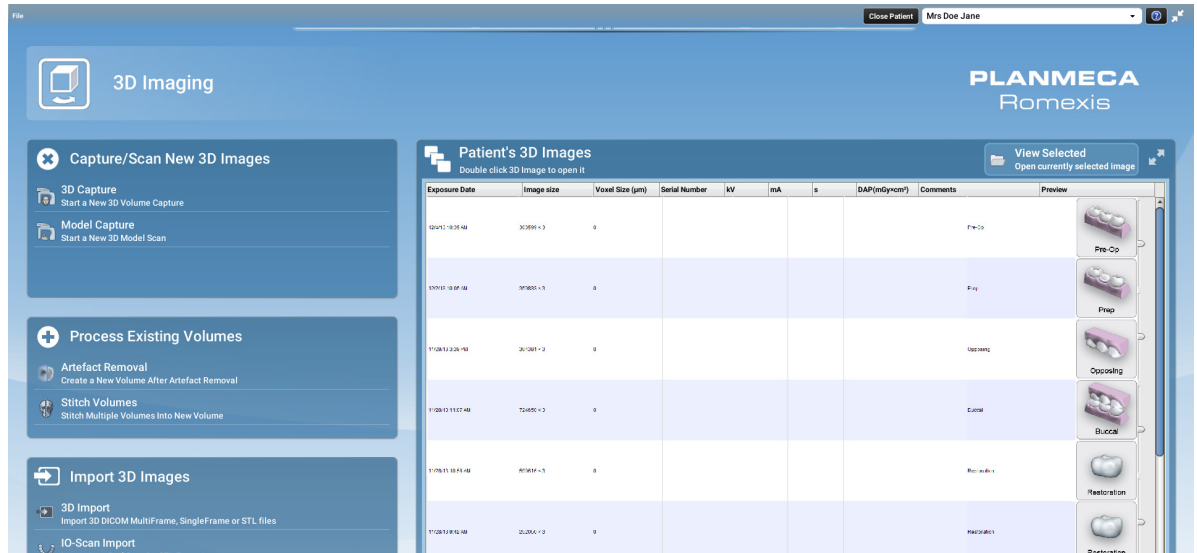
To delete a case from the patient’s case files right-click on the case and select **Inactivate restoration**.

To reactivate or permanently delete a case from the database see section 20.3 “Inactivate” on page 82.

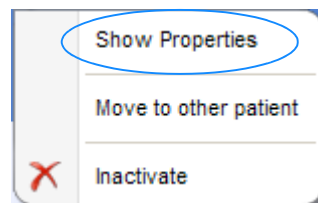
20.2 Scans and restorations in Planmeca Romexis 3D module



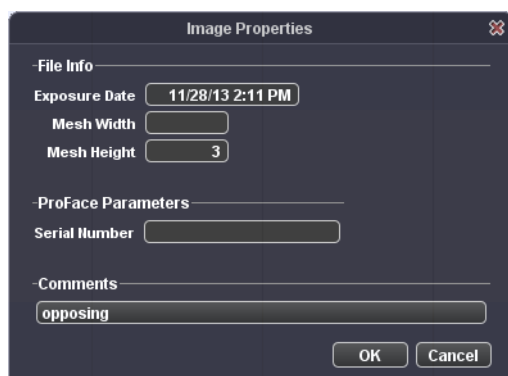
All scans and designed restorations will automatically appear in the 3D module's *Volumes* view.



20.2.1 Image properties

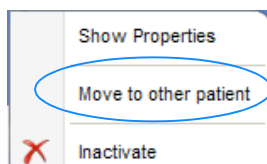


Right-click on a scan/restoration in the *Volumes* tab and select *Show properties*.



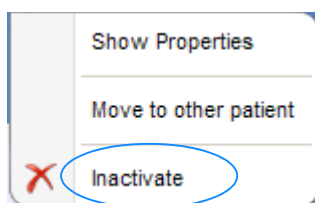
In the following window you can view image file information and added comments.

20.2.2 Moving volume to other patient

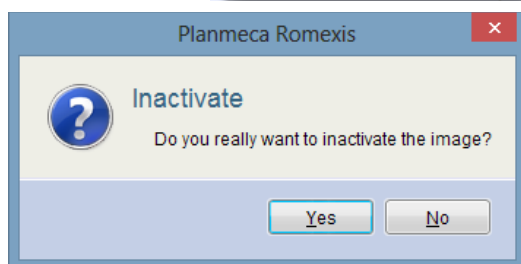


1. Right-click on a volume in the *Volumes* tab and select *Move to other patient* (see the image above).
2. Select or enter the search criteria.
3. Select the patient and click **OK**

20.3 Inactivate



Right-click on a volume in the *Volumes* tab and select *Inactivate* (see the image above).



To remove the scan from the list select **Yes**.

The volume is moved to *Trash* folder from where it can be permanently deleted or returned to its original location.

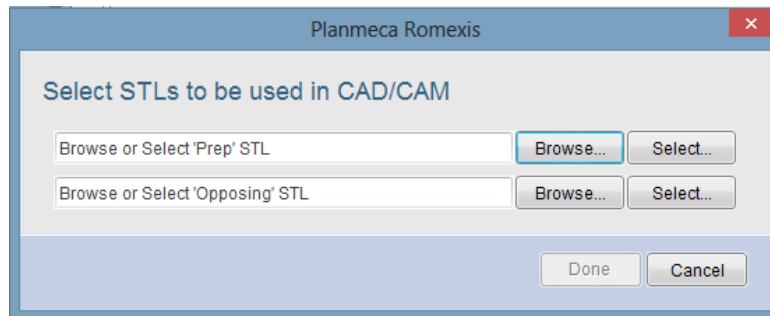
On how to access the *Trash* folder see section 25.2 “Reactivate and empty trash” on page 96.

21 IMPORTING SCANS AND RESTORATIONS



Click **3D model import**.

The following window opens.



You may import models either from an external source (A) or from Planmeca Romexis 3D module's *Volumes* tab (B):

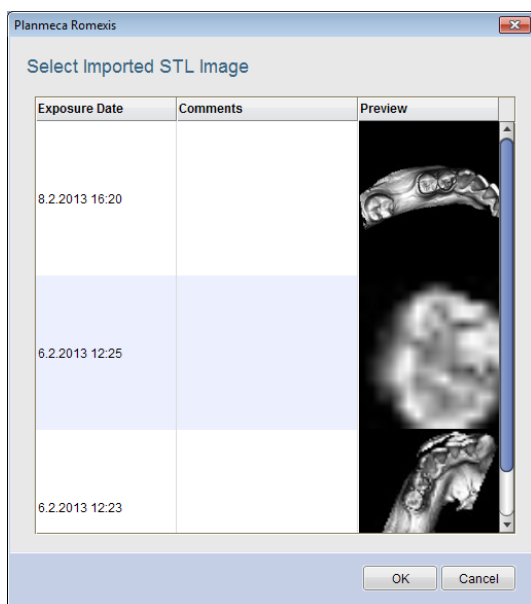
- To import models from an external source (A):
 1. Click **Browse**.
 2. Go to the folder from where you want to import the models.
 3. Select the files and click **Open**.

NOTE

Both prep and opposing models must be imported.

4. When you have imported both models click **Done**.
The imported files will appear in the *Setup* tab of Planmeca PlanCAD Easy.
- To import models from the Planmeca Romexis 3D module's *Volumes* list (B):
 1. Click **Select**.
 2. Select the file to import and click **OK**.

The imported files will open in the *Setup* tab of the Planmeca PlanCAD Easy.



22 EXPORTING SCANS AND RESTORATIONS

3D model export



To export scans and restorations select them from the list and click **3D model export**.

Cloud export



To export scans and restorations via Planmeca Romexis Cloud select them from the list and click **Cloud export**. For more information on how to use the Cloud service, see 24 “SENDING AND RECEIVING CASES VIA PLANMECA ROMEXIS CLOUD” on page 91.

Send to iRomexis



To send scans and restorations to iOS click **Send to iRomexis**.

Planmeca iRomexis application is designed for viewing of 2D and 3D images acquired with Planmeca X-ray units with Apple iPhone and iPad devices.

Planmeca iRomexis is designed to work with Planmeca Romexis desktop software and it has integrated 2D and 3D image viewer with 3D surface rendering. Images acquired using Planmeca Romexis desktop software can be accessed on the local network.

Planmeca iRomexis is compatible with Planmeca Romexis version 2.6.R or later. Planmeca iRomexis is available as a free download at Apple iTunes App Store.



Planmeca Romexis is now compatible with iOS5 and iOS6 on iPad.

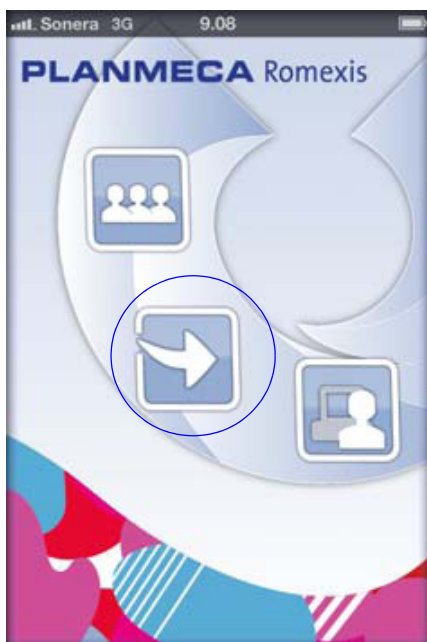
NOTE

As a generic viewing application Planmeca iRomexis mobile application is not suited for diagnostic purposes. It is, however, an excellent tool for communicating a diagnosis made at Planmeca Romexis desktop workstation.

Connecting Planmeca iRomexis to server

To search patients and view images on the local Planmeca Romexis server, a wifi connection to the server must be established. To establish a connection proceed as follows:

To access the Server configuration touch the Arrow button in the Planmeca iRomexis main menu.





Adding a new server connection

Click on the **Add New Server** field.



In the Add New Server dialogue enter the following information:

- Server Name for Planmeca Romexis server connection
- Planmeca Romexis Server IP Address
- Login Name
- Login Password
- Set as default

If you have multiple servers configured, you can set the respective Planmeca Romexis server as default.

It is possible to add multiple Planmeca Romexis server connections to the server list.



3. To test the server connection click on the **Test Server Connection** button*.

NOTE

Make sure the firewall does not block the connection to the port 8083 which is used for the communication to Planmeca Romexis server.

NOTE

Make sure the class server is enabled in the Planmeca Romexis Server. On how to enable the class server see 25.3 "Class server" on page 97.



Adjusting user interface and database settings

Click on the **Settings** button in the Planmeca iRomexis main window.

The following settings can be configured:

- Show / Hide Image Dates
- Show / Hide image comments in the image list.
- Store patients locally in the iRomexis.
- Store images locally in the iRomexis.
- Use black image background instead of grey one.
- Delete all local patient and image information in the iRomexis.



Viewing and browsing images

To view patients and images click on the *Patients* field in the Planmeca iRomexis main window.

Viewing Images stored in the iRomexis

In the Patients view, click on the *Local* tab to see the patients stored in Planmeca iRomexis database.



Viewing Images Stored in the Local Planmeca Romexis Server

Click on the *Server* tab to see all patients on the connected Planmeca Romexis server.

In order to view patient's images, select a patient by clicking on the patient list => Patient data is transferred to iRomexis.

Browsing images

After selecting a patient browse the image list by sliding the screen up and down with your finger.

Opening images

To open an image click on the image thumbnail.

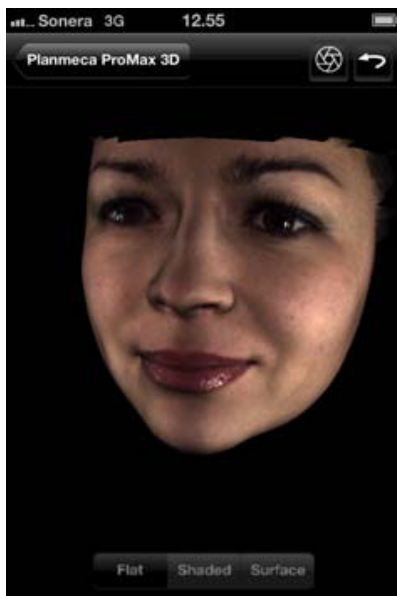
Viewing images

Rotate the image by moving two fingers on a circular orbit on the screen.

Zoom in / out by moving two fingers towards / away from each other on the screen.



Browse through a 3D image stack by using the slider on the right side of the screen.



Change the rendering type for face images between **Flat**, **Shaded** and **Surface** at the bottom of the screen.

Image processing tools



To store a snapshot of the current image to the Camera Roll [of the iPhone/iPad] click on the camera button.



To reset the image to its original state click on the Reset View button.



To make distance measurement on the image click on the Measure button. Touch the screen with two fingers at the same time and drag them to the end points of the desired measurement.



Click on the Brightness and Contrast button and move your finger up and down on the screen to adjust brightness and left and right to adjust contrast.

23 COMBINING MODEL TO A 3D VOLUME



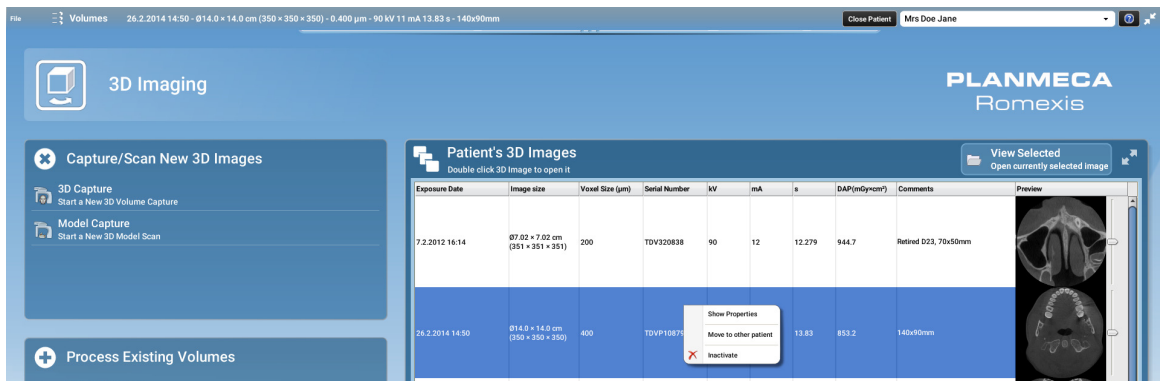
A model can be combined to a 3D volume in Planmeca Romexis 3D module's *Volumes* view.

To access the view click the **3D** module button and select the *Volumes* tab.

23.1 Opening a 3D volume

In the *Volumes* view the patient's images are listed and the thumbnail is displayed.

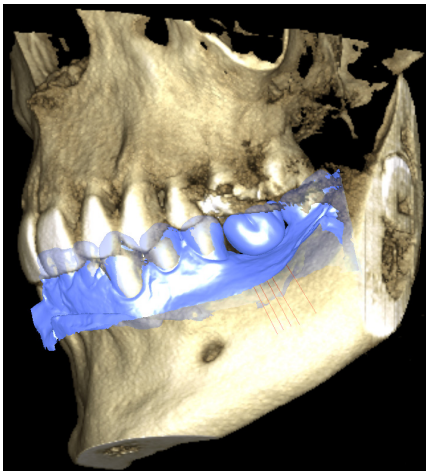
To open a 3D volume double-click the volume on the list.



To show volume properties right-click on the volume and select **Show Properties**.

To inactivate volume right-click on it and select **Inactivate**.

23.2 Importing intraoral scans to 3D volumes



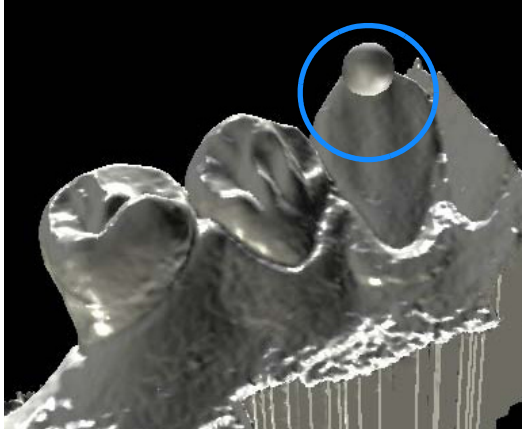
1. Open the 3D volume you want to match with the surface model.
2. Start matching by clicking the **IO-Scan Import** button.
 - To match a *new* surface file select *Browse*
 - To match an *existing* surface model from the patient's Volumes list use *Select*.
3. Orient CBCT volume and surface model to comparable positions:
 - To **rotate** the image, press and hold down the left mouse button while dragging the image
 - To **pan/move** surface model and crop CBCT, press and hold down the right mouse button, while dragging the image.
 - To **pan/move** CBCT volume press and hold down the middle mouse button while dragging the image.
 - To **zoom in/out** the image use the mouse wheel.
4. Right-click on 3 common landmark points in the surface model and CBCT rendering.
5. Start by selecting a landmark in the surface model and then in the CBCT and so forth.

NOTE

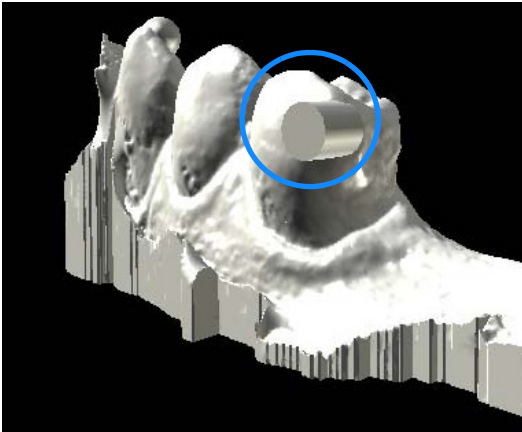
By rotating the models you can select landmarks on any side of the anatomy.

To undo and repeat the previous step click the **Back / Repeat** button.

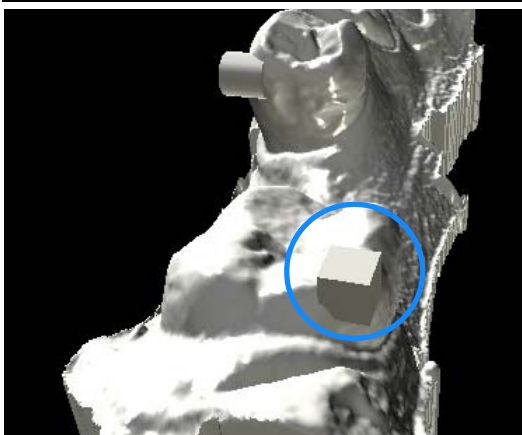
Ideally the landmarks should be placed on corners of occlusal and buccal or distal and mesial or distal surfaces. Landmarks are indicated as follows:



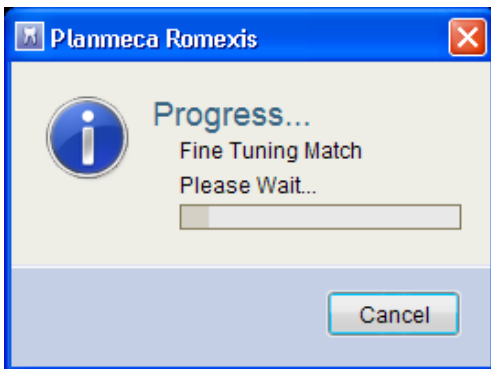
- 1st landmark: sphere



- 2nd landmark: cylinder



- 3rd landmark: cube



6. To finish positioning click **Done**.

Planmeca Romexis will automatically match the surface model to the CBCT volume.

7. The following options are available

- Direction buttons to orient the CBCT rendering to default positions
 - Set Crop to limit the anatomy that is used for matching the surface model to the CBCT.
 - Threshold to adjust the CBCT rendering bone surface
- The imported surface models can be found in the Implant list where there colour can be modified, (see section List of added implants in the Planmeca Romexis User's manual).

Additionally the following options can be selected:

- Allow Scaling

When enabled, Planmeca Romexis will stretch the surface model to achieve better fit with the CBCT volume. Note that this may alter proportions of the surface model.

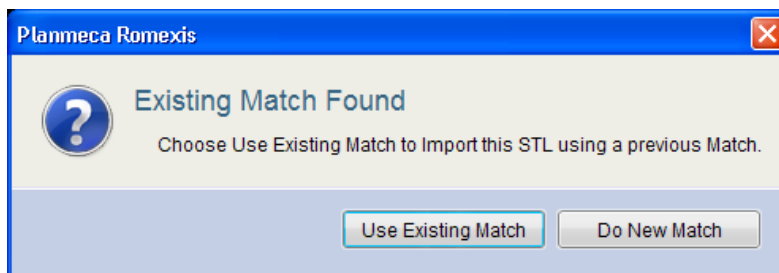
- Fine Tune Match

When enabled, Planmeca Romexis will analyze the anatomy around each control point and uses the actual anatomy for best possible fit.

When disabled, Planmeca Romexis will minimise the deviation between the three control points in each data to get the closest fit with no additional analysis.

8. To import crown(s) repeat the above process starting from step 2.

9. To use the same match for crown placement as for the surface click **Use Existing Match** button.



The crown will be automatically placed into the exact same area where it was placed in the crown planning software.

24 SENDING AND RECEIVING CASES VIA PLANMECA ROMEXIS CLOUD

Planmeca Romexis Cloud is a subscription based service that is integrated into Planmeca Romexis and can be used to transfer images and documents between Planmeca Romexis users. All transfers are encrypted and are always appointed from user to user (both using Planmeca Online account), eg. users cannot see each other's cases.

24.1 Planmeca Romexis Cloud user requirements

NOTE

The information regarding cloud users and requirements are subject to change. For latest information see [Planmeca Online website](#).

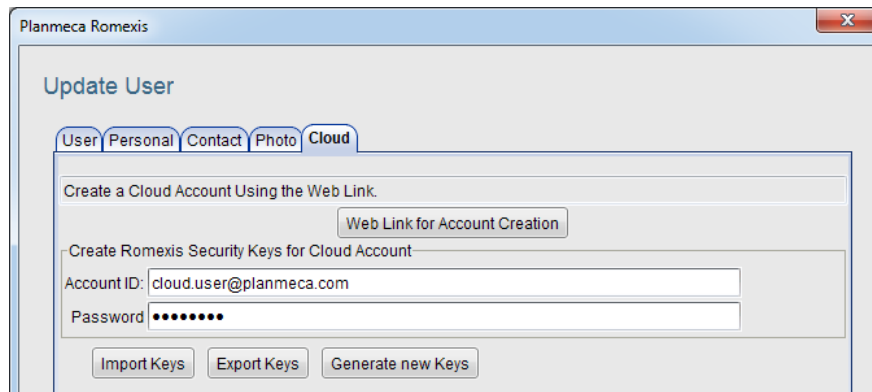
Planmeca Romexis Cloud subscribers

	Casual user	Planmeca Online account holder	Planmeca Romexis Cloud subscriber
Internet access and e-mail address required	X	X	X
Download Planmeca Viewer + image packages from e-mail links	X	X	X
Replace DVDs with online transfers	X	X	X
Secure transfer and storage of patient data in the Cloud	X	X	X
Automatic notifications of new cases by e-mail.	X	X	X
Free Planmeca Online account		X	X
Planmeca Romexis 3.1.0.R or newer		X	X
Download cases directly in Planmeca Romexis		X	X
Manage received cases in Planmeca Romexis		X	X
Subscription to Planmeca Romexis Cloud (monthly fee, credit card required)		X	X
Send cases (images + documents) to other users directly in Planmeca Romexis			X
Manage sent cases in Planmeca Romexis			X

24.2 Cloud (user account setup)

To start using the Planmeca Romexis Cloud service for sending and receiving cases you will need a user account. The user account identifies each user globally when sending and receiving cases. It is also used for establishing a secure private-public key encryption for all data transferred through Cloud. An additional fee-based service subscription may be required to use certain features such as sending new cases.

1. To create an account click the **Web link for Account Creation** button.



2. Enter your account ID and password in the respective fields.
3. When successfully logged into the cloud for the first time, your private keys will be created in the Planmeca Romexis database.

To access the cloud from another computer you need to move your private key to that computer using the Export Keys and Import Keys buttons before logging into the cloud.

If for some reason you have lost access to the private keys click the **Generate new Keys** button. A new private key will be generated in the Planmeca Romexis database.

NOTE

Generating new keys will invalidate all previously received cases as the private key information required to decrypt them no longer exists.

NOTE

To prevent any unauthorized person from accessing your cases in the cloud make sure to protect the private key after it has been exported.

Use the **Update** button to modify user information.

Use the **Inactivate** button to inactivate the user in Planmeca Romexis.

NOTE

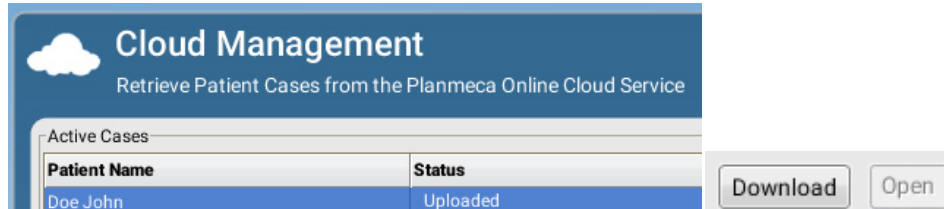
On how to configure the Planmeca Romexis Cloud application see "Downloading cases from Planmeca Romexis Cloud service" on page 93.

24.3 Downloading cases from Planmeca Romexis Cloud service

NOTE

For downloading cases in Planmeca Romexis a cloud user account is required. On how to setup an account see section "Cloud (user account setup)" in the Planmeca Romexis technical manual (10037884).

Select the case on the *Active Cases* list and click **Download**.



The download progress is shown in the *Cloud Management* field.

Once the download is completed the case can be opened.

Open the case by selecting it and clicking **Open**.

The cases can be opened in Cloud Management at any time.

The status of the sent (Case History) and received (Active Cases) cases is shown.

24.4 Deleting sent cases

Select the case on the list and click **Delete**.

Case History						
Patient Name	Status	Receiver	Creation Date	Creation Time	Download Date	Download Time
Doe John	Uploaded		28.2.2013	11:47		
Fracture Left Molar	Downloaded		6.2.2013	15:27	6.2.2013	15:42
Korhonen Eija	Uploaded		18.2.2013	16:16		
Osku First	Downloaded		6.2.2013	15:31	6.2.2013	15:37
Planmeca ProMax	Uploaded		6.2.2013	15:21		

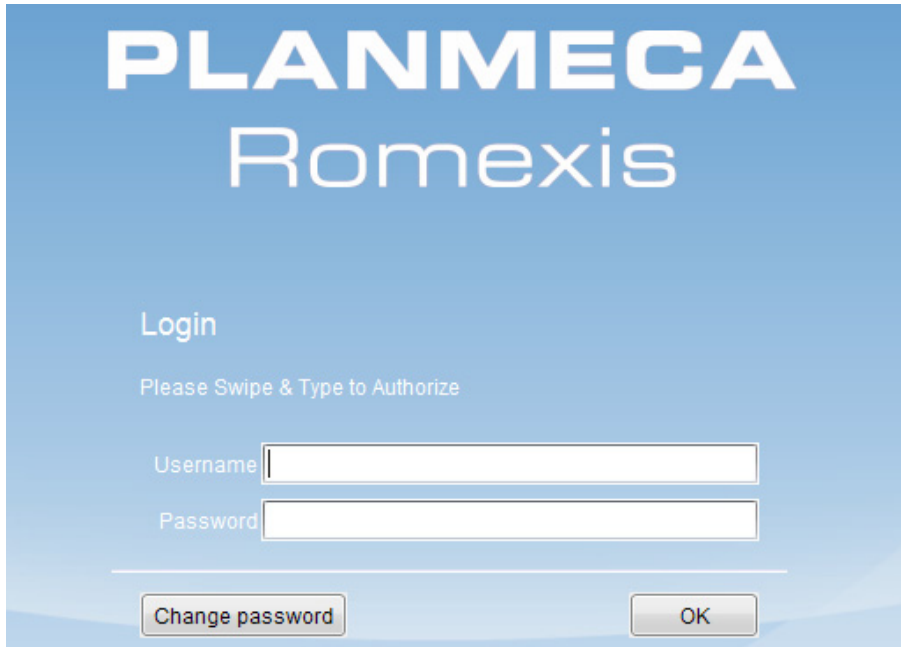
24.5 Managing cases in Planmeca Romexis Cloud

Sent and received cases can be managed in the *Cloud Management* tab. You can view the status of all the sent (Case History) and received (Active Cases) cases and also delete any sent cases.

Case History						
Patient Name	Status	Receiver	Creation Date	Creation Time	Download Date	Download Time
Doe John	Uploaded		28.2.2013	11:47		
Fracture Left Molar	Downloaded		6.2.2013	15:27	6.2.2013	15:42
Korhonen Eija	Uploaded		18.2.2013	16:16		
Osku First	Downloaded		6.2.2013	15:31	6.2.2013	15:37
Planmeca ProMax	Uploaded		6.2.2013	15:21		
Planmeca ProMax 3D	Downloaded		6.2.2013	11:33	13.2.2013	14:55
Planmeca ProSensor	Uploaded		17.2.2013	0:59		
Testing 3D	Downloaded		6.2.2013	14:57	6.2.2013	15:43

25 CONFIGURATION

1. From the Windows Start menu select *All programs > Planmeca > Romexis Configuration*.
2. Log in to the Planmeca Romexis Configuration application by entering your user name and password in the respective fields and click **OK**.



PLANMECA
Romexis

Login

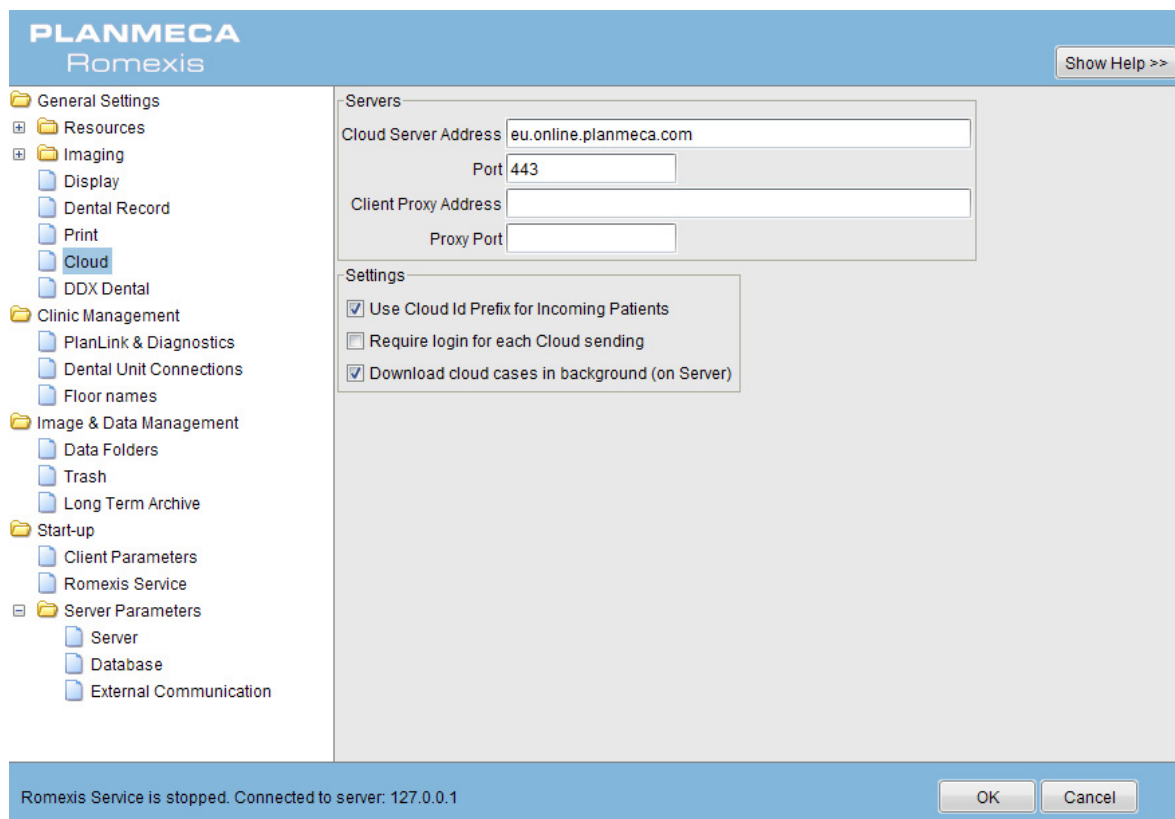
Please Swipe & Type to Authorize

Username

Password

25.1 System configuration for Planmeca Romexis Cloud

In cases where the Planmeca Romexis Client workstation is behind a firewall, a firewall proxy server IP and port can be configured in the Planmeca Romexis Configuration application under *General Settings > Cloud > Servers*, as follows.



Configure the Cloud server as follows:

Cloud Server Address: eu.online.planmeca.com

Port: 443

In cases where Planmeca Romexis Client workstation is behind a firewall that blocks outgoing connections, a firewall proxy server IP and port should be configured as follows:

Client Proxy Address:

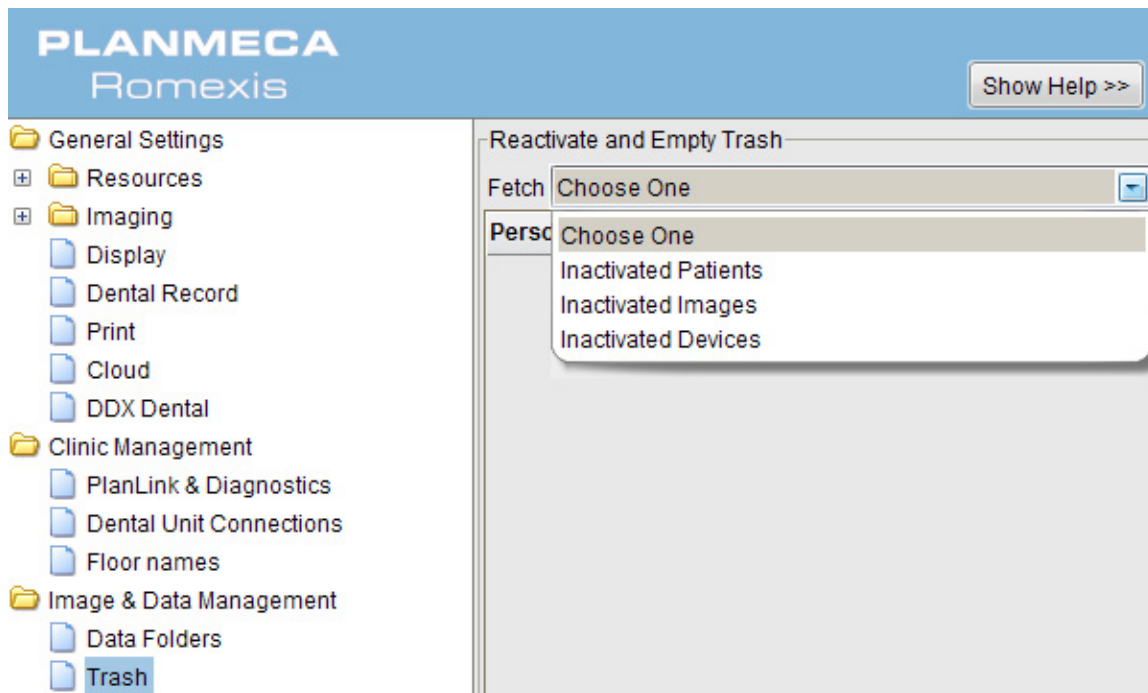
IP of the proxy server that proxies HTTPS connections

Proxy Port:

Port of the proxy server that proxies HTTPS connections

25.2 Reactivate and empty trash

To search the trash for inactivated patients, images and devices select the suitable alternative from the drop-down menu.



Reactivate

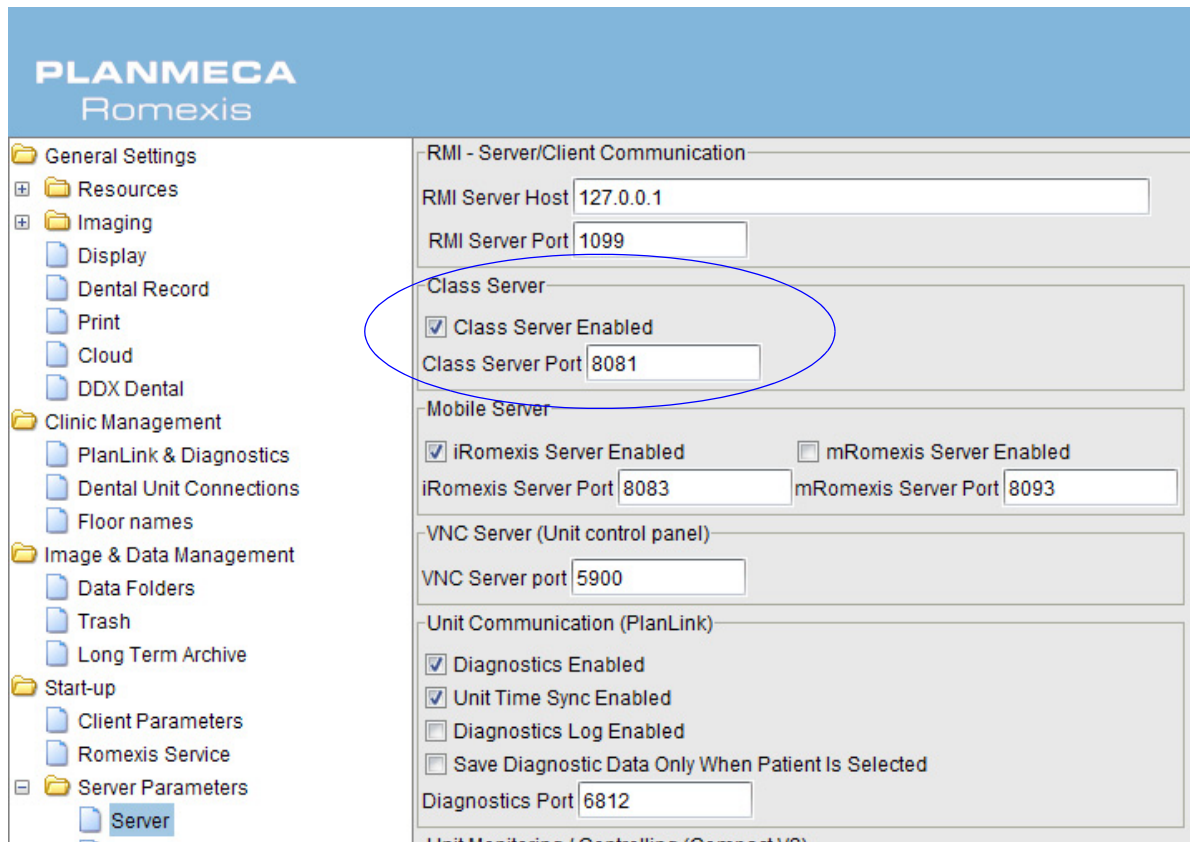
To reactivate patients, images or devices select the appropriate alternative from the list and click the **Reactivate** button. The selected items are restored to Planmeca Romexis.

Empty Trash

To permanently delete patients, images, attachments or devices from the Planmeca Romexis database click the **Empty Trash** button.

25.3 Class server

In order to test the server connection the *Class Server Enabled* option must be selected.



The screenshot displays the PLANMECA Romexis configuration window. On the left is a tree view of settings categories, and on the right is a configuration panel. The 'Class Server' section is highlighted with a blue oval, showing the 'Class Server Enabled' checkbox checked and the 'Class Server Port' set to 8081.

PLANMECA Romexis

- General Settings
- Resources
- Imaging
 - Display
 - Dental Record
 - Print
 - Cloud
 - DDX Dental
- Clinic Management
 - PlanLink & Diagnostics
 - Dental Unit Connections
 - Floor names
- Image & Data Management
 - Data Folders
 - Trash
 - Long Term Archive
- Start-up
 - Client Parameters
 - Romexis Service
- Server Parameters
 - Server

RMI - Server/Client Communication

RMI Server Host: 127.0.0.1
RMI Server Port: 1099

Class Server

Class Server Enabled
Class Server Port: 8081

Mobile Server

iRomexis Server Enabled mRomexis Server Enabled
iRomexis Server Port: 8083 mRomexis Server Port: 8093

VNC Server (Unit control panel)

VNC Server port: 5900

Unit Communication (PlanLink)

Diagnostics Enabled
 Unit Time Sync Enabled
 Diagnostics Log Enabled
 Save Diagnostic Data Only When Patient Is Selected
Diagnostics Port: 6812

26 CLEANING / PREVENTIVE MAINTENANCE

To guarantee the scanner's proper operation, it must be checked and serviced once a year by a qualified Planmeca service technician.

26.1 Scanner tip

NOTE

For intraoral scanning systems only.



The following instructions are for the removable tip of the scanner, not for the entire scanner. See instructions below for cleaning the base of the scanner.



WARNING

Do NOT autoclave tips with no temperature symbol.



WARNING

Do NOT place in ultrasonic cleaner.

26.1.1 Cleaning

Use a disinfectant wipe to remove any visible debris on the scanner tip

and/or

rinse the tip for 2 minutes under running tap water to remove the rest of the debris.

After cleaning continue with chemical disinfection *or* autoclaving, see the sections 26.1.2 "Chemical disinfection" and 26.1.3 "Autoclaving" below.

26.1.2 Chemical disinfection

Before performing chemical disinfection clean the tip as instructed in section 26.1.1 "Cleaning" above.

1. Immerse the tip in chemical disinfectant for manufacture recommended disinfection time.
2. Remove the tip from the chemical disinfectant.
3. Rinse the tip according to the disinfectant manufacturer's instructions.
4. Wipe water off the mirror using optical wipes.
5. Pack individually (for example in an autoclave pouch) and store for later use.

26.1.3 Autoclaving

Before autoclaving clean the tip as instructed in section 26.1.1 "Cleaning" above.

NOTE

Look for the temperature symbol engraved on autoclavable tips. Only the tips with the temperature symbol can be autoclaved.

1. Clean the surface of the mirror by using a cleaning tissue or an optical cloth with a small amount of alcohol to gently remove any residue. Dry the mirror with a dry cleaning tissue, a gauze pad, or a dry optical cloth.
2. Individually pouch each scanner tip using an autoclave pouch.
3. Place one to three pouches per tray.
4. Select the wrapped instruments cycle on the autoclave.

All tips can be autoclaved in 134°C autoclave cycle according to the standard EN13060.

NOTE

Autoclave cycle names differ among manufacturers. Reference your manufacturer's manual to select the cycle for sterilizing wrapped instruments.

5. Autoclave the pouched tip.
6. Store in pouch for later use.
7. Prior to scanning check that the scanning tip mirror is clean and dry. If necessary you can clean the surface of the mirror as instructed in step 1 above.

26.2 Cleaning the system

NOTE

For intraoral scanning systems only.

NOTE

Protect the keyboard with a disposable barrier.

NOTE

Before and after each use, clean all areas of the scanner.



WARNING

Before and after each use, follow these instructions to disinfect the PlanScan scanner. Do not substitute any other cleaning solution or procedure. Never use any paint thinner, solvents, or harsh chemicals.

NOTE

Use only a non-woven sponge or pre-moistened germicidal cloths that have been saturated with a hospital grade disinfectant when cleaning the PlanScan scanner.

1. Using a clean, non-woven sponge that has been saturated with a hospital grade, TB-rated germicide or pre-moistened germicidal cloths, apply the germicide to the entire surface of the scanner base, scanner holder, mouse, mouse-pad, and any other surfaces that you touch that were not covered by a disposable barrier. Do not spray the germicide directly on the items and do not submerge the scanner or mouse in the germicide.
2. Follow the germicide manufacturer's instructions.

27 TECHNICAL SPECIFICATIONS



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Electrical Ratings	12Vdc, 12W
Storage conditions	-29°C to 38°C (-20°F to 100°F)
Operating conditions	20 °C to 28 °C (67.5 °F to 82.5 °F) < 90% non-condensing relative humidity Maximum altitude 2,000 m (6,562 ft)

Dimensions

Scanner with tip	48 x 53 x 276 mm (1.9 x 2.1 x 10.9 inches)
Scanner without tip:	48 mm x 53 mm x 188 mm (1.9 x 2.1 x 7.4 inches)
Scanner tip	40.5 x 49 x 123 mm (1.6 x 1.9 x 4.8 inches)

Weight

Scanner with tip:	544g (19 oz)
Scanner base:	516g (18 oz)
Scanner tip:	28g (1 oz)

Cables

When connecting components, make sure you use only the cables provided with the system. The following cables were provided with the scanner:

- Scanner Connecting Cable: IEEE 1394b Fire Wire Cable, Length 2M, shielded
- Firewire to Thunderbolt Adaptor Cable: Shielded, Length 0.2M

27.1 Applicable standards

27.1.1 Product safety



ANSI/AAMI ES60601-1:2005
IEC 60601-1, 3rd Edition

27.1.2 EMC

IEC 60601-1-2
US FCC CFR 47, Part 15

27.1.3 Laser product safety

IEC 60825-1

27.1.4 Packaging and environmental

ISTA Class 2A

27.1.5 Bio-compatibility

ISO 10993

27.1.6 European standards

EN 60601-1:2006
93/42/EEC Medical Device Directive
EN 60601-1:2006 Safety of Medical Electric Equipment
EN 60601-1-2 Electromagnetic Compatibility
EN 60825-1 Safety of Laser Products
EN ISO 14971:2012 Risk Management
EN ISO 13485 Quality Management Systems
EN ISO 10993: Biological Evaluation of Medical Devices

27.1.7 Canadian standards

CAN/CSA C22.2 No. 60601-1:2008
SOR-98-282 Canada Medical Device Regulations
ICES-001 ISM Radio Frequency Generators

27.1.8 US Food and Drug Administration

US FDA CFR 21 Part 1040.10 Laser Products
US FDA Laser Notice 50
CFR 21, Part 820
FDA Class II Special Controls for Computer Assisted Design and Manufacturing of Dental Restorations

27.1.9 International standards

ISO 14971:2007
ISO 13485:2003

27.2 Approvals (all systems)

North America

Product Safety Mark (NRTL) - UL C/US

International

CB Scheme Product Safety Test Certificate (UL)

CB Scheme EMC Test Certificate (NEMKO)

CE Mark

Quality system certifications

ISO 13485 Registered Firm

CMDCAS (Canada)

Japan GMP

Complies with FDA performance standards for laser products, except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This ISM device complies with Canadian ICES-001. (Cet appareil ISM est conforme à la norme NMB-001 du Canada.)



WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

27.3 Optical specifications

CAUTION

Using controls, making adjustments, or performing procedures in a manner other than specified in this documentation may result in hazardous radiation exposure.

Laser Class^a	Class 2
Output	4.95 mW
Wavelength	450 nm
Beam divergence	10 degrees

a. Laser product classified to standard IEC/EN 60825-1:2007-03 Ed. 2.0

The scanner's laser projection system utilizes a divergent beam powered by a non-accessible laser source with a maximum power output of 200 mW. The scanner incorporates design features that prevent exposure to any hazardous levels of laser radiation in normal operation modes and in any reasonable fault conditions.

27.4 External components and connectors

When connecting external components to Planmeca system, attach only components that have been tested to comply with IEC 60601-1 or UL 60950.

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

Internal fuse

The scanner contains an internal fuse. For changing the fuse please contact your local Planmeca sales representative.

27.5 UL listing



UL Medical Equipment Listing

MEDICAL - GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI ES60601-1 (2005)

CAN/CSA C22.2 No. 60601-1:2008

EN 60601-1 (2006)

IEC 60601-1-2

IEC 60825-1

30SD

28 SCANNER EMC INFORMATION

28.1 Guidance and Manufacturer's Declaration – Electromagnetic Emission

The Planmeca PlanScan scanner is intended for use in the electromagnetic environment specified below. The customer or the user of Planmeca PlanScan scanner should assure that it is used in such an environment.


Emission test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The Planmeca PlanScan scanner uses RF energy only for its internal function. Therefore its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment
RF emissions CISPR 11	Class A	The Planmeca PlanScan scanner is suitable for use in all establishments, other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonics emission IEC 61000-3-2	Not applicable	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Not applicable	

28.2 Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The Planmeca PlanScan scanner is intended for use in the electromagnetic environment specified below. The customer or the user of Planmeca PlanScan scanner should assure that it is used in such an environment.

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment -guidance
Electrostatic discharge (ESD) IEC 61000-4-2	+/- 6 kV Contact +/- 8 kV Air	+/- 6 kV Contact +/- 8 kV Air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient / burst IEC 61000-4-4	+/- 2kV for power supply lines +/- 1kV for input/output lines	Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	+/- 1 kV differential mode 2 kV common mode	Not applicable	Mains power quality should be that of a typical commercial or hospital environment.

Voltage dips, short Interruptions and voltage variations on power supply input lines IEC 61000-4-11	<p><5% U_T (>95% dip in U_T) for 0.5cycle</p> <p>40% U_T (60% dip in U_T) for 5 cycle</p> <p>70% U_T (30% dip in U_T) for 25 cycle</p> <p><5% U_T (<95% dip in U_T) for 5 s</p>	Not applicable	Main power quality should be that of a typical commercial or hospital environment. If the user of the BSVD-1000 system requires continued operation during power mains interruptions, it is recommended that the Planmeca PlanScan scanner be powered from an uninterruptible power supply (UPS) or a battery
Power frequency (50/60Hz) Magnetic field IEC 61000-4-8	3.0 A/m	3.0 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_T is the A.C. mains voltage prior to application of the test level.			
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	Not applicable	Portable and mobile RF communications equipment should be used no closer to any part of the Planmeca PlanScan scanner, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Radiated RF IEC 61000-4-3	3 V/m 80.0 MHz to 2.5 GHz	3 V/m	<p>Recommended separation distance</p> $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2.3\sqrt{P} \quad 800 \text{ MHz to } 2.5 \text{ GHz}$ <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, (a) should be less than the compliance level in each frequency range (b).</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
<p>Note 1) At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>Note 2) These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the EUT is used exceeds the applicable RF compliance level above, the EUT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the EUT.</p> <p>b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V / m.</p>			
<p>Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the Planmeca PlanScan scanner.</p>			
<p>The Planmeca PlanScan scanner is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The user of the Planmeca PlanScan scanner can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Planmeca PlanScan scanner as recommended below, according to the maximum output power of the communications equipment.</p>			

Rated maximum output power (W) of transmitter	Separation distance (m) according to frequency of transmitter		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.23
10	3.70	3.70	7.37
100	11.70	11.70	23.30
<p>For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.</p> <p>Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.</p>			

29 TROUBLESHOOTING / REPAIR

Problem	Probable cause	Corrective action
Software application freezing	Low memory	Re-start application or re-start system.
Mouse not responding	Low batteries Loose mouse dongle	Replace batteries. Ensure mouse dongle is plugged into the USB port.
Laser flickering	IOD Cable not grounded properly	Call Customer Support.

30 DISPOSAL

CAUTION

Comply with all applicable regulations when disposing of waste materials from the Planmeca products.



In order to reduce the environmental load over the product's entire life cycle, Planmeca's products are designed to be as safe as possible to manufacture, use and dispose of.

Parts which can be recycled should always be taken to the appropriate processing centres, after hazardous waste has been removed. Disposal of obsolete device is the responsibility of the possessor.

All parts and components containing hazardous materials, such as oil and heavy metals, must be disposed of in accordance with local and national waste legislation and instructions issued by the environmental authorities. The risks involved and the necessary precautions must be taken into account when handling waste products. For more detailed information consult your Planmeca representative.

Batteries must be disposed of following the requirements of Directive 2006/66/EEC and in accordance with waste legislation and instruction issued by the environmental authorities.

This product must NOT be disposed of with other waste. It is the user's responsibility to dispose of their waste electrical and electronic equipment by handing it over to an approved reprocessor, or by returning it to Planmeca for reprocessing. For more information about where you can send your waste equipment for recycling, please contact your local city office or Planmeca.

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