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sirona
The Dental Company

Sirona Dental CAD/CAM System CEREC SW

Software Version 4.3

Operator's Manual

English (US)

Table of contents

1 Introduction

1.1 Dear CEREC user

Thank you for purchasing your CEREC SW software from Sirona.

In connection with the CEREC acquisition unit and milling machine, this software enables you to produce dental restorations, e.g. from ceramic material with a natural appearance.

Improper use and handling can create hazards and cause damage. Therefore, please read and carefully follow this manual and the relevant operating instructions. always keep them within easy reach.

In order to operate the CEREC unit safely for the first time, you should train on the exercise model using the described examples.

To prevent damage to third parties and property, adhere to both the safety instructions provided in this document regarding the units and the instructions provided in the software.

Happy Milling!
Your Sirona CEREC Team

1.2 Copyright and trademark

Copyright

The information contained in this manual may be changed without notice.

The software and all related documentation are protected by copyright. You must therefore handle it in the same way as any other protected material.

Anyone who copies this software to any medium for any purpose other than his own personal use without the written permission of Sirona Dental Systems will be liable to prosecution.

Trademarks

Microsoft® and Windows 7® are registered trademarks.

Windows™ is a trademark of Microsoft Corporation.

All other trademarks are the property of their respective holders.

Notes on 3rd party code libraries must be stored in license.pdf in the installation directory.

2 General data

Please read this document completely and follow the instructions exactly. You should always keep it within reach.

Original language of the present document: German

2.1 Certification

CE mark

CE 0123

This product bears the CE marking in accordance with the provisions of Council Directive 93/42/EEC of June 14, 1993 concerning medical devices.

2.2 General safety information

Only use original software

Only use original software or software which has been released by Sirona. To produce restorations, manipulated or non-released software components must not be used.

Software and software components must not be installed using incorrect data.

Please check that each installed component has been granted approval in its country. Contact your dealer for more information.

Restoration to be checked by trained personnel

Each restoration which is performed with this software must be checked for suitability by a trained person (e.g. dental technician or dentist).

2.2.1 Intended use

The Sirona Dental CAD/CAM System is intended for use in partially or fully edentulous mandibles and maxillae in support of single or multiple-unit cement retained restorations. For the SSO 3.5 L and SBL 3.3 L titanium bases, the indication is restricted to the replacement of single lateral incisors in the maxilla and lateral and central incisors in the mandible. The system consists of three major parts: TiBase, inCoris mesostructure, and CAD/CAM software. Specifically, the inCoris mesostructure and TiBase components make up a two-piece abutment which is used in conjunction with endosseous dental implants to restore the function and aesthetics in the oral cavity. The inCoris mesostructure may also be used in conjunction with the Camlog Titanium base CAD/CAM (types K2244.xxxx) (K083496) in the Camlog Implant System. The CAD/CAM software is intended to design and fabricate the inCoris mesostructure. The inCoris mesostructure and TiBase two-piece abutment is compatible with the following implant systems:

- Nobel Biocare Replace (K020646)
- Nobel Biocare Branemark (K022562)
- Friadent Xive (K013867)
- Biomet 3i Osseotite (K980549)
- Astra Tech Osseospeed (K091239)
- Zimmer Tapered Screw-Vent (K061410)
- Straumann SynOcta (K061176)
- Straumann Bone Level (K053088, K062129, K060958)
- Biomet 3i Certain (K014235, K061629)
- Nobel Biocare Active (K071370)

⚠ CAUTION

Small diameter implants and large angled abutments in the anterior region of the mouth due to possible failure of the implant system.

⚠ CAUTION

Federal Law (USA) restricts the sale of this device to or on the order of a physician, dentist, or licensed practitioner.

2.2.2 Further use of Sirona Dental CAD/CAM System

The Sirona Dental CAD/CAM System is also an optical impression system for computer assisted design and manufacturing (CAD/CAM) according to 21 CFR 872.3661.The system records the topographical characteristics of teeth, dental impressions, or stone models for use in the computer-assisted design and manufacturing of dental restorative prosthetic devices. Such devices are exempt from the premarket notification procedures.

2.3 Accessories

In order to ensure product safety, this device may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user assumes the risk of using non-approved accessories.

2.3.1 Accessory: TiScan

Implantat manufacturer	Implantat system	ScanPost	REF	Scanbodies for Omnicam (36pcs)	REF	Scanbodies for Bluecam (36pcs)	REF
Noble Biocare	Replace® NP	ScanPost NB RS 3.5 L	6430933	L	6431329	L	6431303
	Replace® RP	ScanPost NB RS 4.3 L	6430941	L	6431329	L	6431303
	Replace® WP	ScanPost NB RS 5.0 L	6430958	L	6431329	L	6431303
	Replace® 6.0	ScanPost NB RS 6.0 L	6430982	L	6431329	L	6431303
	Noble Active NP	ScanPost NB A 4.5 L	6431279	L	6431329	L	6431303
	Noble Active RP	ScanPost NB A 5.0 L	6431287	L	6431329	L	6431303
	Branemark®	ScanPost NB B 3.4 L	6431006	L	6431329	L	6431303
	Branemark®	ScanPost NB B 4.1 L	6431022	L	6431329	L	6431303
Straumann	SynOcta NN	ScanPost SSO 3.5 L	6431162	L	6431329	L	6431303
	SynOcta RN	ScanPost SSO 4.8 L	6431170	L	6431329	L	6431303
	SynOcta WN	ScanPost SSO 6.5 L	6431196	L	6431329	L	6431303
	Bone Level NC	ScanPost S BL 3.3 L	6431246	L	6431329	L	6431303
	Bone Level RC	ScanPost S BL 4.1 L	6431253	L	6431329	L	6431303
Astra Tech	OsseoSpeed	ScanPost AT OS 3.5/4.0 L	6431055	L	6431329	L	6431303
	OsseoSpeed	ScanPost AT OS 4.5/5.0 L	6431063	L	6431329	L	6431303
Friadent	Frialit / Xive	ScanPost FX 3.4 S	6430891	S	6431311	S	6431295
	Frialit / Xive	ScanPost FX 3.8 S	6430909	S	6431311	S	6431295
	Frialit / Xive	ScanPost FX 4.5 L	6430917	L	6431329	L	6431303
	Frialit / Xive	ScanPost FX 5.5 L	6430925	L	6431329	L	6431303
Biomet 3i	external hex.	ScanPost B O 3.4 L	6431089	L	6431329	L	6431303
	external hex.	ScanPost B O 4.1 L	6431105	L	6431329	L	6431303
	external hex.	ScanPost B O 5.0 L	6431113	L	6431329	L	6431303
	Certain®	ScanPost B C 3.4 S	6431212	S	6431311	S	6431295
	Certain®	ScanPost B C 4.1 L	6431220	L	6431329	L	6431303
	Certain®	ScanPost B C 5.0 L	6431238	L	6431329	L	6431303
Zimmer	Tapered Screw-Vent	ScanPost Z TSV 3.5 L	6431139	L	6431329	L	6431303
	Tapered Screw-Vent	ScanPost Z TSV 4.5 L	6431147	L	6431329	L	6431303
	Tapered Screw-Vent	ScanPost Z TSV 5.7 L	6431154	L	6431329	L	6431303

2.4 Structure of the manual

2.4.1 Identification of the danger levels

To prevent personal injury and material damage, please observe the warning and safety information provided in this document. Such information is highlighted as follows:

⚠ DANGER
An imminent danger that could result in serious bodily injury or death.

⚠ WARNING
Potentially dangerous situation that could result in serious bodily injury or death.

⚠ CAUTION
Potentially dangerous situation that could result in slight bodily injury.

NOTICE
Potentially harmful situation which could lead to damage of the product or an object in its environment.

IMPORTANT
Instructions for use and other important information.

Tip: Information for facilitating work.

2.4.2 Formats and symbols used

The formats and symbols used in this document have the following meaning:

✓ Prerequisite **1.** First action step **2.** Second action step or ➢ Alternative action ↳ Result	Requests you to do something.
see “Formats and symbols used [→ 11]”	Identifies a reference to another text passage and specifies its page number.
• List	Identifies a list.
“Command / menu item”	Identifies commands, menu items or quotations.

2.4.3 Conventions

Example	Meaning
Clicking	Single pressing and subsequent release of the left mouse button or the left trackball button on the acquisition unit
Double-clicking	Double pressing and release in quick succession of the left mouse button or left trackball button on the acquisition unit
Moving the mouse in one direction	On the acquisition unit: Moving the trackball in the corresponding direction.
Seizing a point	Pressing the left mouse button (left trackball button on the acquisition unit) and keeping it pressed.
For acquisitions with the CEREC Bluecam: Actuate foot switch	The same function as: Pressing the left trackball button on the acquisition unit or the left mouse button.
"Ctrl+N"	On the keyboard: Press the **Ctrl** and **N** keys simultaneously.
Drag & drop	(Drag & drop) Press and hold an element (e.g. pictograph), and drop onto new potential destination.

2.4.4 Formats of the manual

You can access the manual via the Help button or by pressing "F1".

The pdf-format user manual can be found on the supplied software DVD or on the Internet (http://www.sirona.com/manuals).

This format is page-oriented and is well suited for printing out the desired pages.

2.4.5 File format

The software enables you to assign one or more cases to each patient. Depending on its state, a case consists of optical impressions, virtual models calculated from them and one or more virtual restorations.

In this manual, this patient data is referred to as "cases".

The software uses its own file format to export store cases (*.rst). This format contains all case data including patient information. RST files can be opened with other CEREC or inLab software installations. In some cases older software versions may not be able to open data exports from a newer version.

2.5 User interface

Overview of the user interface

A	Phase bar	E	Object bar
B	System menu	F	Image catalog (can only be activated in *"ACQUISITION"* phase)
C	Page palette	G	Main window
D	Step menu	H	Tool wheel

2.5.1 Phase bar

The workflow is described in the software in five phases.

Phase Bar

- ADMINISTRATION
- ACQUISITION
- MODEL
- DESIGN
- MILL

2.5.1.1 ADMINISTRATION

In this phase, you can perform the following:

- Create restorations and determine their type
- Determine the tooth number
- Select restoration material,
- Choose a material color.

2.5.1.2 ACQUISITION

In this phase, you can perform the following:

- Creating acquisitions with the CEREC camera
  - lower jaw,
  - upper jaw,
  - buccal bite registration
- View a 3D preview of the acquisitions
- Activate other image catalogs

2.5.1.3 MODEL

In this phase, you can perform the following:

- The buccal registration of the bite situation
- Adjust the virtual models
- Draw and edit preparation margins
- Determine the insertion axes of the restorations
- Determining the model axis
- If necessary, have the virtual FGP calculated
- If necessary, create a Smile Design facial model

2.5.1.4 DESIGN

In this phase, you can perform the following:

- Have initial restoration suggestions generated
- Rotate and position the restoration
- Form and process restorations

2.5.1.5 MILL

In this phase, you can perform the following for each restoration:

- Check and adjust the positioning of the restoration in the block
- Determine the sprue position of the restoration
- Determine the block size
- Define milling options
- Begin the milling procedure

2.5.2 Object bar

The buttons for restoration selection are located in the object bar.

Each restoration is represented by a tooth with the corresponding tooth number. You can switch back and forth between the teeth by clicking on the corresponding tooth symbol.

2.5.3 Tool wheel

The tool wheel makes the standard tools available in the MODEL and DESIGN phases in order to simplify access. The tools currently available vary depending on the current step.

1. Right-click in the workspace.
   ↳ The tool wheel opens.
2. Click with the right mouse button anywhere in the workspace.
   ↳ The tool wheel moves to the position of the mouse pointer.
3. Select a tool.
   ↳ The selected tool is available. The tool wheel closes automatically.

You also can close the tool by clicking in the workspace with the left mouse button.

2.5.4 Step menu

Each phase is divided into steps. They are shown in the step menu at the bottom edge of the screen. The step menu changes depending on which phase the current restoration is in.

This menu guides you through the process step-by-step.

The double arrow keys can be used to switch between steps and phases.

Mandatory steps

Mandatory steps are marked with a red or green bar.

Red bar:	The step has not yet been completed successfully.
Green bar:	The step has been completed successfully.

Optional steps

Optional steps do not have colored bars.

They can be shown/hidden using the button on the left of the step menu.

2.5.5 System menu

In the system menu, you can:

- Switch to the start window to start a new case
- Save case
- Save the case under a different name
- Import case
- Export case
- Call up App Center/start plug-ins
- Open license manager
- Configure hardware and software
- Change window mode
- Retrieve software information
- Close the software

2.5.6 The start window

In the start window, you can perform the following:

- Create a patient.
- Switch to patient data.
- Search for a patient.

3 Getting started

3.1 Installing the software

The software requires the 2.00 firmware version of the license stick. Update the firmware version if necessary. For more information, refer to the section on License manager [→ 41].

You need a CEREC L-PC for the software.

Use the version of the license manager provided with this version to import licenses from the license certificate provided.

✓ The license stick firmware is available in version 2.00.

✓ The PC is powered up and all programs are terminated.

1. Insert the DVD in the DVD drive.
   ↳ The setup program starts automatically.
2. If this is not the case, run the *"Setup.exe"* file in the root directory of the DVD.
   ↳ The installation wizard opens.
3. Click on the *"OK"* button.
4. In the next dialog, click the *"Next"* button.
   ↳ The license agreement is shown.
5. Read through the license agreement carefully.
6. If you accept the license agreement, then activate the *"I accept the terms in the license agreement"* option button and click the *"Next"* button.
7. In the next dialog, click the *"Next"* button.
8. In the next dialog, click the *"Install"* button.
   ↳ The program continues the installation routine. This may take several minutes.
9. Click the *"Finish"* button once installation is complete.
   ↳ The software is installed.

3.2 Uninstalling the software

✓ The program is closed.

1. Click on "Start / All Programs / Sirona Dental Systems / CEREC / Tools / Deinstallation" to uninstall the software.
   ↳ During the uninstall procedure, you will be asked whether you want to delete the patient data or the entries in the registration database (e.g. the calibration data).
2. Depending on your decision, click either the *"Yes"* or *"No"* button.
   ↳ The software is uninstalled.

3.3 Copy protection

The software can be started only when the USB license stick is plugged in. The USB license stick is included in the scope of supply of the units. If you require additional licenses, please contact your dealer.

Always keep the USB license stick near the unit.

All authorizations (milling, interface, software licenses) can be installed as electronic licenses on the USB license stick. You must enter a 25-digit license key for this purpose.
You will receive the license key along with the unit. Alternatively, you can order it separately from your dealer.

Following an update, you may require a new license that is not available on your USB license stick. For more information, refer to the section on License manager [→ 41].

3.4 Downloading software

ServicePacks

To keep your software updated, regularly check whether new ServicePacks are available.

Visit the Sirona website at www.sirona.com. In the product area for digital dental care, you will find the download area with the products for CEREC chairside solutions.

You will also find a description of the improvements and enhancements made in the ServicePack.

Update

You have to pay for major software changes (upgrades), and these also require a license. If you do not have a new license, you can only work in the demo version.

Contact your dealer for information on how to obtain new licenses for an upgrade.

3.5 Starting the software

✓ The CEREC SW software is installed. You will find the start icon on the desktop.

✓ The USB license stick is connected with a valid, current license.

➢ Double-click the CEREC SW start icon.

or

➢ Click on "Start / All Programs / Sirona Dental Systems/ CEREC/ CEREC SW 4".

↳ The software is started.

3.6 License update

For more information on the license manager, refer to the section on License manager [→ 41].

3.6.1 Installation of the License Manager (Individual)

✓ The PC is powered up and all programs are terminated.

1. Insert the DVD in the DVD drive.
   ↳ The setup program starts automatically.
2. If this is not the case, run the *"Setup.exe"* file in the root directory of the DVD.
   ↳ The installation wizard opens.
3. Click the *"OK"* button.
4. In the next dialog, click the *"Next"* button.
   ↳ The license agreement is shown.
5. Read through the license agreement carefully.
6. If you accept the license agreement, then activate the *"I accept the terms in the license agreement"* option button and confirm your acceptance by clicking the *"Next"* button.
7. In the next dialog, click the *"Custom"* button.
8. Uncheck all options apart from the license manager.
9. In the next dialog, click the *"Next"* button.
10. In the next dialog, click the *"Install"* button.
    ↳ The program continues the installation routine. This may take several minutes.
11. Click the *"Finish"* button once installation is complete.
    ↳ The license manager is installed.

3.6.2 License update without Internet access

If the CEREC AC does not have Internet access itself, you can run the license manager on another PC with Internet access.

You need to remove the USB dongle from the CEREC AC and plug it into the PC with Internet access. The USB dongle is behind the lower cover at the rear side of the CEREC AC.

Install the license manager on the PC with Internet access and run the license update.

4 Design technique

4.1 General information on Biogeneric

CEREC Biogeneric is a software that is able to reconstruct lifelike occlusal surfaces. On the basis of the features of a patient's single intact tooth, the program extrapolates the naturally created morphology of other teeth. The biogeneric occlusal design functions for all single tooth restorations and fully anatomic bridges.

Previously, all occlusal design approaches were based on dental libraries and databases containing data records of various standard teeth. Today, these databases are only enlisted if you do not want to have the biogeneric suggestion calculated from the adjacent teeth. Instead, you can select a preference form for the tooth.

The biogeneric occlusal design replaces the “dental database” design procedure applied in the CEREC SW software.

It will now be possible to create crowns, inlays, onlays, veneers, and anatomically sized bridges in a fully automated manner. The reconstruction can be based on any intact patient tooth from the same type, i.e. posterior tooth or anterior tooth. The often time-consuming process of manually adjusting the tooth to the clinical situation is now virtually a thing of the past.

4.2 Biogeneric Individual

In the *"Biogeneric Individual"* design technique, the neighboring teeth are analyzed and the restoration suggestion is calculated on this basis. The more information that is available, the more successful the calculation. A full image of at least one neighboring tooth should therefore be taken from the occlusal/incisal direction. For anterior and corner teeth, an image of the labial surface should also be taken.

For premolars or molars, the calculation is mainly based on the distal neighbor, for anterior teeth the mesial neighbor is used.

4.3 Biogeneric Copy

Select the *"Biogeneric Copy"* design technique to transfer parts of an existing occlusal surface to the restoration and enhance the rest using the patented Biogeneric technique.

To do this, acquire the status separately in the *"BioCopy Upper"* or *"BioCopy Lower"* image field prior to the preparation.

This technique can be used for inlays, onlays, partial crowns, crowns, and bridges.

4.4 Biogeneric Reference

Select the *"Biogeneric Reference"* design technique for user definition of the tooth to be used as a reference for calculating the restoration suggestion. The reference tooth can be any tooth of the same class (anterior/posterior tooth), e.g. the antagonist or the contralateral tooth. You also can use a reference tooth from a model to achieve the desired morphology.

This reference tooth must be acquired on a separate basis in the *"BioRef Lower"* or *"BioRef Upper"* image field. This technique can be used for inlays, onlays, partial crowns, crowns, and bridges.

5 Configuration

The *"Configuration"* menu contains the following submenus:

- Parameters
- Devices
- Options
- Settings
- Apps

5.1 Parameters

The *"Parameters"* menu is separated by restoration type. Each restoration type has its own set of parameters.

Crown

Parameters	Description	Default values
Spacer	• Increase or decrease space for adhesive underneath crown (not on the preparation margin).	80 µm
Occlusal Milling Offset	• Apply or remove material in the occlusal direction over the entire occlusal surface. • This value concerns only the milling result. • The effects are not visible in the DESIGN phase or in the milling preview. • Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.	0 µm
Proximal Contacts Strength	• Set the thickness of the approximal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Occlusal Contacts Strength	• Set the thickness of the occlusal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Minimal Thickness (Radial)	• Set the minimum material thickness on steep preparation walls. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • The value is displayed on the preparation as a semitransparent cover together with the minimum occlusal thickness in the DESIGN phase. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.	500 µm

Parameters	Description	Default values
Minimal Thickness (Occlusal)	• Set the minimum material thickness on the surfaces of the preparation in the occlusal direction. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • A high value can lead to a flat morphology if deep fissures would strongly violate the minimum thickness. • Observe the material manufacturer's recommendations when setting the minimum thickness.	700 µm
Margin Thickness	• Reinforce restoration margins with additional material. – Simplifies handling of the restoration – Prevents splitting of the material • The additional material can be milled off manually before inserting the restoration.	50 µm

Inlay/onlay

Parameters	Description	Standard value
Spacer	• Increase or decrease space for adhesive.	80 µm
Marginal Adhesive Gap	• Adjust width of gaps on preparation margin. • The adhesive is a buffer between the ceramic material and the tooth substance. • The adhesive gap cannot be larger than the spacer value.	60 µm
Occlusal Milling Offset	• Apply or remove material in the Z direction over the entire occlusal surface. • This value concerns only the milling result. • The effects are not visible in the DESIGN phase or in the milling preview. • Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.	0 µm
Proximal Contacts Strength	• Set the thickness of the approximal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Occlusal Contacts Strength	• Set the thickness of the occlusal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm

Parameters	Description	Standard value
Minimal Thickness (Radial)	• Set the minimum material thickness on steep preparation walls. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • The value is displayed on the preparation as a semitransparent cover together with the minimum occlusal thickness in the DESIGN phase. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.	500 µm
Minimal Thickness (Occlusal)	• Set the minimum material thickness on the surfaces of the preparation in the occlusal direction. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • A high value can lead to a flat morphology if deep fissures would strongly violate the minimum thickness. • Observe the material manufacturer's recommendations when setting the minimum thickness.	700 µm
Margin Thickness	• Reinforce restoration margins with additional material. – Simplifies handling of the restoration – Prevents splitting of the material • The additional material can be milled off manually before inserting the restoration.	50 µm

Veneer

Parameters	Description	Default values
Spacer	• Increase or decrease space for adhesive.	80 µm
Veneer Thickness	• Set to minimum thickness. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • The value is displayed on the preparation as a semitransparent cover in the DESIGN phase. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.	500 µm

Parameters	Description	Default values
Occlusal Milling Offset	• Apply or remove material in the occlusal direction over the entire occlusal surface. • This value concerns only the milling result. • The effects are not visible in the DESIGN phase or in the milling preview. • Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.	0 µm
Margin Thickness	• Reinforce restoration margins with additional material. – Simplifies handling of the restoration – Prevents splitting of the material • The additional material can be milled off manually and polished before inserting the restoration.	50 µm

Abutment (anatomic)

Parameters	Description	Default values
Occlusal Milling Offset	• Apply or remove material in the occlusal direction over the entire occlusal surface. • This value concerns only the milling result. • The effects are not visible in the DESIGN phase or in the milling preview. • Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.	0 µm
Proximal Contacts Strength	• Set the thickness of the approximal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Occlusal Contacts Strength	• Set the thickness of the occlusal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Gingival Depth	• Determines how far below or above the preparation margin the gingiva lies in reference to the gingival line.	0 µm
Gingival Placement Pressure	• Determines how strongly the initial suggestion for the abutment penetrates the gingiva in order to build up pressure on the gingiva.	0 µm
Minimal Thickness (Radial)	• Determines the minimum radial wall thickness in the horizontal direction. • Can be switched on and off	NO 500 µm
Minimal Thickness (Occlusal)	• Determines the minimum radial wall thickness in the occlusal direction. • Can be switched on and off	NO 2400 µm

Abutment (framework)

Parameters	Description	Default values
Gingival Depth	• Determines how far below or above the preparation margin the gingiva lies in reference to the gingival line.	0 µm
Gingival Placement Pressure	• Determines how strongly the initial suggestion for the abutment penetrates the gingiva in order to build up pressure on the gingiva.	0 µm
Shoulder Width	• Width of the shoulder of an abutment or telescope.	1000 µm
Telescope Angle	• Telescope angle of an abutment or telescope.	4°
Minimal Thickness (Radial)	• Determines the minimum radial wall thickness in the horizontal direction. • Can be switched on and off	NO 500 µm
Minimal Thickness (Occlusal)	• Determines the minimum radial wall thickness in the occlusal direction. • Can be switched on and off	NO 2400 µm

Crown veneering structure

Parameters	Description	Default values
Spacer	• Increase or decrease space for adhesive underneath crown (not on the preparation margin).	80 µm
Occlusal Milling Offset	• Apply or remove material in the occlusal direction over the entire occlusal surface. • This value concerns only the milling result. • The effects are not visible in the DESIGN phase or in the milling preview. • Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.	0 µm
Proximal Contacts Strength	• Set the thickness of the approximal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Occlusal Contacts Strength	• Set the thickness of the occlusal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm

Parameters	Description	Default values
Minimal Thickness (Radial)	• Set the minimum material thickness on steep preparation walls. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • The value is displayed on the preparation as a semitransparent cover together with the minimum occlusal thickness in the DESIGN phase. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.	500 µm
Minimal Thickness (Occlusal)	• Set the minimum material thickness on the surfaces of the preparation in the occlusal direction. • The software tries not to fall below this material thickness when calculating the restoration suggestions. • A high value can lead to a flat morphology if deep fissures would strongly violate the minimum thickness. • Observe the material manufacturer's recommendations when setting the minimum thickness.	700 µm

Virtual articulator

The preset parameters are mean values which can be used without alteration for an average articulation.

Parameters	Description	Default values
Arms	• Set the side length for the Bonwill triangle	105 mm
Base	• Set the intercondylar distance	100 mm
Balkwill Angle	• Set the Balkwill angle • Affects the height of the incisal point	23°
Sagital	• Set the condylar path inclination	35°
Bennett	• Create Bennett angle	15°

Accepting settings

➢ Click on the *"Ok"* button.

Discarding settings

➢ Click on the *"Cancel"* button.

Resetting settings

➢ Click on the *"Reset All Group Parameter"* button.

↳ The settings for this restoration type are reset to the factory settings.

5.2 Devices

All connected devices can be displayed and configured under the menu item *"Devices"*.

A green check mark on a device indicates its availability.

Adding units automatically

You can add further units with the *"Scan for New Devices"* function.

✓ The unit is connected to the PC.

1. Click on the *"Scan for New Devices"* button.
   ↳ All units connected to the PC are recognized. In the case of new units, you will be prompted to enter a name.
2. Enter a name for the new unit.

Adding units (manually)

You can add further units manually with the *"Add Device (Manual)"* function. This is a mandatory requirement with units which cannot be operated with the maximum speed of 115200 baud. It affects long cable connections or the use of certain radio modules (e.g. Futaba, 19200 baud).

1. Click on the *"Add Device (Manual)"* button.
2. Select whether the unit is connected on the network or has a serial connection.
3. Network: enter the network address.
   Serial: enter the COM port and the baud rate.
4. Click on the *"Ok"* button.
   ↳ The software attempts to contact the device.

If the connection fails, check the connection. If necessary, ask a qualified technician.

Refresh status

Using the *"Refresh Devices"* button you can

- refresh the status display, e.g. check whether a grinding unit has in the meantime finished grinding or
- check the current availability of a unit.

5.2.1 CEREC Bluecam

Under the menu item *"Camera"*, CEREC Bluecam can be set up.

Setting	Description
Shake tolerance	• Set motion sensitivity for automatic activation. • The more stringent the setting, the longer you have to hold the camera still before the next acquisition will be taken.
Auto-delete rejected images	• Images that could not be reconstructed/ overlaid with the current acquisitions are automatically moved to the Recycle Bin.

Accepting settings

➢ Click on the *"Ok"* button.

Discarding settings

➢ Click on the *"Cancel"* button.

5.2.1.1 Resetting settings

➢ Click on the *"Reset Camera Settings"* button.
↳ The settings are reset to factory settings.

5.2.1.2 Calibration

1. Click on the *"Calibrate"* button.
2. Then simply proceed as prompted by the software.

5.2.2 CEREC Omnicam

A CEREC SW 4.0 license and a CEREC SW 4.2 license must be present in order to use the CEREC Omnicam.

Audio feedback

Using the *"Sound:"* selection box, you can switch the audio feedback for acquisitions on or off. You can control the volume using the slide bar.

Acquisition notes

Acquisition notes provide you with visual support for acquisitions with Omnicam.

There is no adequate data in the yellow areas. The areas are colored white during acquisitions and model calculations.

Accepting settings

➢ Click on the *"Ok"* button.

Discarding settings

➢ Click on the *"Cancel"* button.

5.2.2.1 Resetting settings

➢ Click on the *"Reset Camera Settings"* button.

↳ The settings are reset to factory settings.

5.2.2.2 Calibration

The measurement procedure used by the system requires the use of a calibrated CEREC Omnicam. The CEREC Omnicam is factory calibrated. Then calibrate the CEREC Omnicam after every reinstallation and after every transport. The calibration set supplied with the CEREC Omnicam is available for the calibration process. The supplied calibration set and a USB stick form a single unit.

Recalibrate the CEREC Omnicam in the following cases:

- following transport (shaking stress) or during first commissioning,
- after storage in unheated or un-air-conditioned rooms (temperature differences exceeding 30°C)
- with temperature differences of over 15°C between the last calibration and operation
- In general, carrying out a calibration is the correct process in the event of errors in the acquisition process (such as poor image quality or the lack of a 3D preview). In many cases, the errors can be corrected in doing so.

Prior to the first calibration

Ensure to take note of the serial number of the calibration set when starting the calibration, which must be used at this point. The number displayed in the software and the serial number on the calibration set must be identical.

The serial number of the calibration set to be used has been set on the CEREC AC with Omnicam at the factory. Prior to the first calibration after changing the PC and when switching the calibration set, you must enter the serial number of the calibration set to be used in the software. If you do not wish to do this, you can continue with "Start calibration [→ 32]".

When entering the serial number, the following steps should be followed:

1. Start the CalibRegistry.exe application on the USB stick included with delivery of the calibration set.
2. Enter the 8-digit Sirona ID. You can find the ID on the sticker on the calibration set.

   ↳ With all future calibration work involving the *"CEREC SW"* software, you will be prompted to use this calibration set.

Start calibration

1. In the software, navigate to the system menu, and click on the *"Configuration"* button.
2. Click on the *"Devices"* button.
3. Click on the *"Omnicam"* button.
4. Click on the *"Calibrate"* button.
   - The camera view is displayed in one window.
5. Follow the prompt to set up the calibration set with the corresponding ID number. At this point, check that this ID matches the ID on your calibration set. If this is not the case, go back to "Prior to the first calibration [→ 31]".

Calibrate the camera

1. Remove the protective cap from the calibration set.
2. Mount the calibration set on the tip of the camera until it locks into place.
3. Secure the CEREC Omnicam in the calibration set using one hand. Ensure that the external calibration set screw is fully screwed in in a clockwise motion until it gently locks into place.
4. Click on the *"OK"* button on your CEREC AC.
   - The measuring process starts.
   - The software prompts you to proceed to the next latching.

5. Turn the screw counter-clockwise until you reach the next latching point.
6. Click on the *"OK"* button on your CEREC AC. In doing so, ensure that the CEREC Omnicam does not move.
   - The software confirms the calibration process.
   - The software prompts you to proceed to the next latching.
7. Execute steps 5 and 6 a total of **11** times.
   - The software provides status updates on the calibration and informs you once the procedure is complete.
   - You will be prompted to measure the position of the exit window.

Measuring the position of the exit window

1. Mount the bottom side of the calibration set to the tip of the camera.
2. Click on the *"OK"* button on your CEREC AC.
   - ↳ The calibration process is continued.
   - ↳ Once the calibration is complete, a message is displayed indicating this.
3. Confirm the message by clicking the *"OK"* button on your CEREC AC.

↳ The CEREC Omnicam is calibrated.

Error message during calibration

The software indicates if an error occurs during calibration. If the calibration process resulted in errors, restart the process.

End calibration

✓ The software indicates that the calibration was completed successfully.

➢ Click on the *"OK"* button.

↳ The CEREC Omnicam is calibrated.

5.2.3 Grinding unit

5.2.3.1 Editing settings

CEREC MC / CEREC MC X / CEREC MC XL

You can subsequently edit the following settings via the relevant menu item:

- Name
- Connection settings
  - Retrieve IP settings automatically
  - Specify IP settings manually
- Manual block fixing
  - If you use manual block fixing, you must set a check mark before *"Manual block fixation"*.
- Second motor set
  - If the optional second motor set is installed, you must set a check mark before *"Two Bur Sets"*.

CEREC 3

You can subsequently edit the following settings via the menu item *"CEREC 3/inLab"*:

- Name
- Connection settings
- Large water tank
  - If the 25-liter canister (option, Order No. 60 56 217) is connected and the check mark has been placed, you will not be reminded to change the water until a later point in time.
  - If the 25-liter canister is retrofitted, your service engineer must place a check mark in the box in front of *"Large Water Tank"*.
- Scanner
  - If the *"CEREC 3/inLab"* milling unit has an integrated scanner (option, Order No. 58 33 707) a check mark must be placed in front of *"Scanner"*.
  - If a scanner is retrofitted, your service engineer must place a check mark in front of *"Scanner"*.

5.2.3.2 Calibration

1. Click on the *"Calibrate"* button.
2. Then simply proceed as prompted by the software.

5.2.3.3 Changing instruments

1. Click on the *"Change Instruments"* button.
2. Then simply proceed as prompted by the software.

5.2.3.4 Removing the grinding unit

1. Click on the *"Delete Device"* button.
2. Then simply proceed as prompted by the software.

5.3 Options

5.3.1 Bite registration

Here you can set whether the image catalog is offered for bite registration.

Setting	Description
Activate	The image catalog is offered for bite registration. You can carry out bite registration in the MODEL phase.
Deactivate	The image catalog is not offered for bite registration. The buccal bite registration must be used.

5.3.2 Virtual articulator

Use Articulation:

Setting	Description
Activate	The articulator is displayed to the right-hand side of the page palette during the construction. It can be activated at any time for constructing the restorations.
Deactivate	The articulator is not displayed to the right-hand side of the page palette during the construction.

Use Articulation for initial proposal:

Setting	Description
YES	The dynamic contact points are taken into consideration in the initial suggestion.
NO	Only the static contact points are taken into consideration in the initial suggestion. The dynamic contacts are identified by color (occlusal compass acc. to Schulz).

5.3.3 Smile Design

Setting	Description
Activate	The Smile Design function is available and can be activated for the respective case under *"Options"* in the phase ADMINISTRATION .
Deactivate	The Smile Design function is not offered in the ADMINISTRATION phase.

5.4 Settings

The menu item *"Settings"* has the following subitems:

- Select odontogram
- Reset notes
- Deactivate restoration parameters
- Database
- Calculating restorations
- Auto-hide the page palette
- Selecting a language
- Select odontogram
- Reset notes
- Deactivate restoration parameters
- Database
- Calculating restorations
- Auto-hide the page palette
- Selecting a language
- Milling

5.4.1 Odontogram

You can set the odontogram using *"ADA/FDI Notation"*:

- International (*"FDI Notation"*)
- USA (*"ADA Notation"*)

5.4.2 Reset notes

Here, all warnings can be displayed again.

Setting	Description
YES	Displays all the deactivated warnings in the workflow again.
NO	Warnings which were previously hidden, remain hidden.

5.4.3 Checking restoration parameters

Here, you can select whether the restoration parameters will be displayed during the construction.

Setting	Description
YES	The restoration parameters are displayed before the restoration is calculated. You can change the values.
NO	The parameters are not displayed. The values set under *"Configuration"* / *"Parameters"* are used.

5.4.4 Database

In the *"Patient Database"* menu item, you can select where patient data and cases are saved.

You can specify a folder for this data. This allows you, for example, to save all data on a secure server on the practice network.

Alternatively, you can manage patient data with SIRONA SIDEXIS software and save cases in a database created in SIDEXIS.

5.4.5 Calculating restorations

Using *"Restoration Calculation"* you can define the behavior on entering the *"DESIGN"* phase.

Setting	Description
YES	Upon entering the *"DESIGN"* phase, proposals for all restorations are automatically calculated, for which preparation boundaries and an insertion axis have been defined. If this option is activated, it may result in lengthy computing times when editing numerous restorations.
NO	Upon entering the *"DESIGN"* phase, only the restoration proposal for the currently active tooth number is calculated.

5.4.6 Auto-hide the page palette

The page palette will automatically be minimized if you use a tool.

This setting affects the phases MODEL and DESIGN.

Setting	Description
YES	After selecting a tool, the palette will be minimized and only the symbol of the active tool will be displayed. The entire palette opens again when the mouse is positioned over it. **Tip:** Use this setting if you frequently work with the tool wheel.
NO	Provided a tool is selected, the tool palette will always be displayed in its entirety and with all options.

5.4.7 Selecting a language

Here, you can set the language of the software. Once the software is rebooted, the language is set to your choice.

5.4.8 Milling

You can activate and deactivate the milling manufacturing option for zirconium oxide, plastic and metal here.

When this option is activated, you can choose between the grinding and milling manufacturing processes for zirconium oxide, plastic and metal materials in the material selection step.

Milling of zirconium oxide, plastic and metal is possible using machines with the following serial numbers:

Machine type	Serial number
inLab MC XL	129001
CEREC MC XL	129001
CEREC MC XL Premium Package	302001
CEREC MC	202001
CEREC MC X	231001

Other machines must be fitted with the Milling Starterkit, Design 2011 (REF: 64 48 893) or with the with the Milling Starterkit for closed motors (REF: 64 51 079).

5.5 App Center (applications)

Via the Sirona App (Application) Center, you have access to various apps (applications) for our CAD/CAM products. Furthermore, you have access to a website that shows you the apps available. The website also contains additional information on where you can download the apps.

6 System menu

In the system menu, you can:

- Switch to the start window to start a new case
- Save case
- Save the case under a different name
- Import case
- Export case
- Call up App Center/start plug-ins
- Open license manager
- Configure hardware and software
- Change window mode
- Retrieve software information
- Close the software

Opening system menu

➢ Move the mouse cursor to the top of the window.

or

➢ Click the start window button.

↳ The system menu is displayed.

Closing system menu

➢ Click the start window button.

or

➢ Click into the main window with the left mouse button.

↳ The system menu is closed.

6.1 Save case

In this dialog, you can save the actual case.

➢ Select *"Save Case"* in the system menu.

↳ The current processing status of the case is saved.

6.2 Save the case under a different name

This dialog allows you to save the current case under a new name or assign it to a different patient.

1. Select *"Save Case As..."* in the system menu.
   ↳ The patient list is opened.
2. Select the appropriate patient.

or

➢ Create a new patient via *"Add New Patient"*.

6.3 Import case

✓ A case's RST file (or older CDT file) is located on an acquisition unit or connected data carrier.

1. Click the *"Import Case..."* button in the system menu.
   ↳ The *"Import Case..."* dialog box opens.
2. Select the folder, in which the case is located.
3. Select the relevant file.
4. Click the *"Open"* button

↳ The optical impression is imported and opened.

6.4 Export case

You can store a case in any location.

✓ You have opened a case in the software.

1. Click the *"Export Case..."* button in the system menu.
   ↳ The *"Export Case..."* dialog box opens.
2. Select the target folder to which you want to export the case.
3. Assign any name to the case.
4. Click on the *"Save"* button.

↳ The case is exported as an LAB file.

If you would like to transfer the optical impression to another PC, you can use a USB stick or a network drive for this purpose.

6.5 License manager

The license manager is used for the installation of new software licenses on the USB license stick. To do this, start the license manager via the system menu and follow the instructions on the screen. Keep the license certificate with 25-digit license key ready, which you either obtained with the unit or ordered separately from your dealer.

Tip: You can also start the license manager via "Start / All Programs / Sirona Dental Systems / CEREC / Tools / License Manager".

To activate the license you must have an Internet connection and the USB license stick must be connected.

Licenses and code libraries

For information on licenses and code libraries from third parties, see licenses.pdf. The file is in the installation directory under "C:/Programs/ Sirona Dental Systems/CADCAM".

6.6 Configuration

The configuration is described in the chapter "Configuration [→ 23]".

6.7 Window mode

The *"Window Mode"* function can be used to exit full-screen mode or enter it again.

6.8 Current program version

The *"About"* function contains information about the current program version.

6.9 Close the software

The *"Exit"* function can be used to close the software.

7 Start window

In the start window, you can perform the following:

- Create a patient.
- Switch to patient data.
- Search for a patient.

Switching to the start view

You can switch to the start view at any time.

1. Open the system menu.
2. Click on the *"Start Screen"* button.

7.1 Creating a new patient

In the data structure, a patient is uniquely identified by one of the following two entries:

- Surname, first name and date of birth
  or
- Patient ID

Adding patients

1. Click on the *"Add New Patient"* button.
   ↳ An empty patient card is opened.
2. Enter a surname, first name, and date of birth.

or

   ➢ Enter the patient ID.

   ↳ Once you have entered enough information, the bar in the *"Edit Patient"* step turns from red to green.

3. Click on the *"Add New Case"* button.
   ↳ The program switches over to the *"ADMINISTRATION"* phase.

7.2 Patient search

Displaying all patients

The *"Show All Patients"* function can be used to display all patients.

Searching for individual patients

You can view individual patients by searching for them

1. Click into the search text box.
2. Enter the surname or the patient ID.
   ↳ The program now shows all the search results.

7.3 Editing patient data

7.3.1 Editing a patient card

✓ You have found the patient with the search function.

1. Click on the patient card.
2. Click on the *"Edit Patient"* step in the step menu.
   ↳ The patient card/case view is opened for editing.
3. Carry out the changes.
4. Confirm your changes by clicking the *"Ok"* button.
   ↳ The changes are saved in the memory.
5. Click the double arrow on the left side of the step menu.
   ↳ The patient card/case view is displayed.

7.3.2 Deleting patients

✓ You have found the patient with the search function.

1. Click on the patient card.
2. Click on the *"Delete Patient"* step in the step menu.
3. Confirm the deletion by clicking the *"Ok"* button.
   ↳ The patient is deleted.

7.3.3 Deleting a case

✓ You have found the associated patient with the search function.

1. Click on the patient.
2. Select the case.
3. Click on the *"Delete Case"* step in the step menu.
4. Confirm the deletion by clicking the *"Ok"* button.
   ↳ The case is deleted.

7.3.4 Opening a case

✓ You have found the associated patient with the search function.

1. Click on the patient card.
2. Select the case.
3. Click on the *"Open Case"* step in the step menu.
   ↳ The restoration is opened.

7.3.5 Add a new case

✓ You have found the associated patient with the search function.

1. Click on the patient.
2. Click on the *"Add New Case"* step in the step menu.
   ↳ The program switches over to the *"ADMINISTRATION"* phase.

8 Page palette

The page palette offers you various different functions, depending on the current step.

8.1 Views

In the view options, you can select whether the selection is to be applied to the restoration (Local) or the 3D patient photo.

Local

You can use the *"View Options"* button to display six predefined views in the *"Local"* area.

- *"Mesial"*
- *"Distal"*
- *"Buccal"* | *"Labial"*
- *"Lingual"*
- *"Cervical"*
- *"Occlusal"* | *"Incisal"*

Global

You can use the *"View Options"* button to display six predefined views in the *"Global"* area.

- *"Top"*
- *"Bottom"*
- *"Right"*
- *"Left"*
- *"Front"*
- *"Back"*

Changing the view

1. Click on the *"View Options"* button.
2. Click on one of the proposed views.
   ↳ The virtual model rotates to the corresponding view.

Enlarging or reducing the view

1. Click on the *"View Options"* button.
2. Position the mouse pointer over the center tooth icon and press and hold the left mouse button.
   ↳ The icon then changes to a magnifying glass.
3. Pull the mouse button up or down.
   ↳ The virtual model is then enlarged or reduced.

Tip: You also can use the mouse scrollwheel to enlarge or reduce the view.

8.2 Tools

The most important tools are also offered to you in the tool wheel. For more information on the tool wheel, refer to the section "Tool wheel [→ 56]".

You will find all tools as a submenu under *"Tools"*.

Tip: To prevent automatic minimization of the tool window, go to the configuration under *"Options"* and select the option *"NO"* in the *"Tool-Menu"*.

Tip: You can cancel the current tool with the stop icon (top right).

Undo and reset
With the *"Undo"* button in the tools you can undo the last change made.

With the *"Reset"* button in the tools you can reset changes that were made with the tool.

8.2.1 Buccal registration

Displacing a buccal image

With the *"Drag Buccal"* function, you can displace the buccal image.

1. Click on the *"Buccal"* button.
2. Click on the *"Drag Buccal"* button.
3. Click on the buccal image and displace it to the same region on the upper or lower jaw.
   - The image is accepted.
     Tip: If an image is not accepted, align the jaw buccally. This enables better overlaying.
     If registration is still not possible, check whether the buccal sections in the jaws and in the buccal image are sufficient.
4. If the image was accepted, move the image to the corresponding region of the opposite jaw.

Rotating a buccal image

With the *"Flip Buccal Impression"* function, you can rotate the buccal image.

1. Click on the *"Buccal"* button.
2. Click on the *"Flip Buccal Impression"* button.
   - The buccal image is then rotated.

8.2.2 Buccal bite tools

Settling

Using the *"Settling"* function, you can state areas that are not to be taken into account in bite determination.

1. Click on the *"Settling"* button.
2. Using the left mouse button, select the area on a jaw half that is not to be taken into account in bite determination.
3. Click on *"Apply"*.
   ↳ The software will restart the buccal registration.

8.2.3 Form

With the *"Form"* function, you can

- apply
- remove
- or smooth material.

Tip: If one of the Form tools is active you can switch to the following order using the space bar on the keyboard:
Apply > Remove > Smooth > Apply > ...

Apply material

1. Click on the *"Form"* button.
2. Click on the *"Add"* button.
3. Click with the mouse cursor on the area you wish to shape.
4. Press and hold the left mouse button and apply the material to the surface location by moving the mouse.

Removing material

1. Click on the *"Form"* button.
2. Click on the *"Remove"* button.
3. Press and hold the left mouse button and remove the material from the surface location by moving the mouse.

Smoothing

When smoothing, you can smooth the surface locally.

1. Click on the *"Form"* button.
2. Click on the *"Smooth"* button.
3. Click with the mouse cursor on the location you wish to smoothen.
4. Press and hold the left mouse button and smoothen the surface location by moving the mouse.

Properties

Modifying the size

You can use the *"Size"* button to modify the size of the area affected. The area affected is shown as an orange colored area. The size of the area affected can be modified for each forming tool.

1. Click on the *"Form"* button.
2. Click the *"Size"* button and press and hold the mouse button.
3. Pull the mouse cursor up or down.
   ↳ The size of the orange area is enlarged or reduced. The size is shown on the restoration.

Tip: You can also change the size by clicking on the restoration with the right mouse button and, while holding the right mouse button down, dragging the mouse up or down.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Hide Neighbors"* function.

Adjusting thicknesses

You can use the *"Strength"* button to modify the intensity of the area affected. The thicknesses of the affected area can be modified for each forming tool.

1. Click on the *"Form"* button.
2. Click the *"Strength"* button and press and hold the mouse button.
3. Pull the mouse cursor up or down.

Using the *"Form"* tool for entire bridges

The *"Form"* tool can also be used for an entire bridge.

1. To do so, first of all select the *"Bridge Restoration"* restoration type in the restoration selector.
2. Then start the corresponding tool.

8.2.4 Cut out model areas

With the *"Cut"* function, you can cut out model areas. The cut out model areas are then discarded. You cannot display cut out areas later on.

Remove model area

The *"Discard Part"* function enables model areas to be removed.

When performing this activity, be careful not to accidentally cut out any areas that e.g. are located behind the model or are otherwise cut away from the line.

1. Click on the *"Cut"* button.
2. Begin the cut line with a double-click.
3. Click to set additional points.
4. Finish the cut by double clicking.
   ↳ The model area is cut off.

Invert model area

With the *"Invert Selected"* function, the model area that is cut out can be inverted.

✓ The *"Cut"* tool is selected.

✓ You have created a cut.

➢ Click on the *"Invert Selected"* button.

↳ The model area which was cut out is displayed.
The rest of the model area is hidden.

Tip: You can invert the model area that is cut out by double-clicking on the semitransparent cut-out area.

8.2.5 Correcting defects

With the *"Replace"* function, you can correct defects and artifacts on the model (e.g. holes or elevations).

To do so, drag a line around the defect in your model and select the appropriate function.

1. Click on the *"Replace"* button.
2. Set the starting point with a double-click.
3. Click to set further points in order to enclose the defect tightly. The line must be located completely on the model.
4. Set the line end by double-clicking.
   ↳ The line is finalized.
   Tip: You can use delete to remove the line.
5. Click on the *"Apply"* button.
   Tip: The tool can also be triggered by pressing the Enter key.
   ↳ The software smoothens everything within the line by interpolation.

8.2.6 Resetting the model

The *"Reset Model"* function is used to reset all changes.

1. Click on the *"Tools"* button.
2. Click on the *"Reset Model"* button.
   ↳ The program will ask whether you really want to reset all changes.
3. Confirm with *"Ok"*.

8.2.7 Trimming

With the *"Trim"* function, you can isolate the preparation. You can thus e.g. draw in the preparation margin more easily. Trimmed image regions can be optionally displayed and hidden later on.

Hiding image regions

The *"Discard Part"* function enables you to hide image regions.

The trim line can also be placed over the preparation line. Only the region underneath the preparation will then be hidden automatically. The prepared region remains fully intact.

1. Click on the *"Trim"* button.
2. Click on the *"Discard Part"* button.
3. Start by double-clicking in the vicinity of the model or on the model.
4. Click to set additional points. Draw the line close to the preparation around which you want to trim.
5. Finish the line by double clicking.
   ↳ The smaller region of the model is hidden.

Inverting an image region

With the *"Invert Selected"* function, the hidden image region can be inverted.

✓ An image region has been hidden using the *"Trim"* tool.

➢ Click on the *"Invert Selected"* button.
   ↳ The hidden image region will be shown.
   The image region shown will be hidden.

Tip: You can invert the hidden image region by double-clicking on the semitransparent hidden region.

8.2.8 Entering the preparation margin

More information on using this tool can be found in the section "Entering the preparation margin [→ 94]".

Automatic edge detection

With *"Margin"* / *"Auto"*, you can work with automatic edge detection.

1. Click on the *"Margin"* button.
2. Click on the *"Auto"* button.
   ↳ Automatic edge detection is switched on.

Manual drawing

With *"Manual"* you can draw in the preparation margin manually. With this technique, you must place the individual points close together in order to clearly define the contour of the preparation margin even in difficult situations.

✓ The *"Margin"* tool is open.

➢ Click on the *"Manual"* button.

↳ The manual technique is switched on.

Manual drawing with intensity image

With *"Manual with intensity image"* you can manually draw in the preparation margin on the intensity image.

✓ The *"Margin"* tool is open.

➢ Click on the *"Manual with intensity image"* button.

↳ The manual technique with intensity image is switched on.

Tip: As long as the *"Margin"* tool is activated, you can switch back and forth between the drawing options by pressing the space bar.

8.2.9 Positioning

With the *"Move"* function, you can displace, rotate, and scale the restoration.

Displacing and rotating

With the *"Position and Rotate"* tool, you can displace and rotate the restoration.

Displacing and rotating the restoration

➢ Left-click on an arrow symbol and hold the button down.

↳ You can displace or rotate the restoration in the corresponding direction.

Changing axes

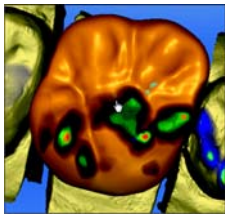
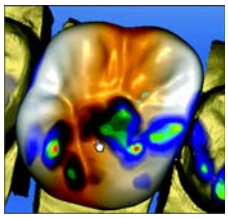
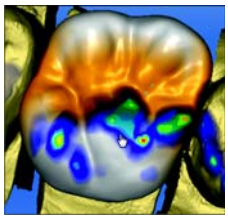
➢ Right-click on an arrow symbol and hold the button down.

↳ You can change the axis on which the object is rotated or moved.

Scaling

With the *"Scale"* function, you can change the size of the restoration. The area affected is shown as an orange-colored area.

1. Click on the *"Move"* button.
2. Click on the *"Scale"* button.
3. Drag the mouse cursor to the restoration until the desired area is highlighted.
4. Hold the left mouse button down and drag the mouse to enlarge or reduce the restoration.
   ↳ The orange-colored area will be expanded or reduced.

Layout	Effect
	Drag the mouse to enlarge or reduce the entire restoration.
	Drag the mouse to enlarge or reduce the restoration in the bucco-lingual direction.
	Drag the mouse to enlarge or reduce restoration in the mesio-distal direction.

8.2.10 Design

The *"Shape"* function enables you to shape a selected region.

You can shape the restoration in 3 ways:

Function	Description
Auto	The software preselects the movement axis based on the screen perspective.
2-Direction	The movement is possible along one axis orthogonal to the restoration surface.
4-Direction	The movement is possible along two axes parallel to the restoration surface.

Anatomic

The *"Anatomic"* function is used to preselect regions of morphology, e.g. cusps or fissure lines, for designing.

Circular

The *"Circular"* is used to preselect a circular region for designing.

Properties:

Modifying the size
This option is available only for the circular variant.

You can use the *"Size"* button to modify the size of the area affected. The area affected is shown as an orange colored area.

1. Click on the *"Shape"* button.
2. Click the *"Size"* button and press and hold the mouse button.
3. Pull the mouse cursor up or down.
   ↳ The size of the orange area is enlarged or reduced. The size is shown on the restoration.

Tip: You can also change the size by clicking on the restoration with the right mouse button and, while holding the right mouse button down, dragging the mouse up or down.

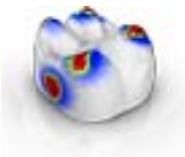
Scale all
The option is only available for the automatic tool.

You can use the *"Scale Whole"* function to change the overall size of the restoration.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Hide Neighbors"* function.

8.2.11 Contacts



If you modify the restoration, the contact surfaces also will be displaced. The *"Contacts"* function is used to reset the contacts to the thickness set in the parameters.

1. Click on the *"Contacts"* button.
2. Click the *"Mesial"*, *"Distal"*, *"Occlusal"*, or *"FGP"* button.
   ↳ The respective contact surface is then reset.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Hide Neighbors"* function.

8.2.12 Modify biogeneric morphology

With the *"Biogeneric Variation"* function, you can generate different variants of the possible morphology.

1. Click the *"Biogeneric Variation"* button and press and hold the mouse button.
2. Pull the mouse cursor up or down.
   - The morphology is then changed.
3. Let go of the mouse button when the morphology that is optimal for your purposes becomes visible.

8.2.13 Incisal variation

Using the *"Incisal Variation"* function, you can generate textures (mamelons) for front teeth.

1. Click on the *"Incisal Variation"* button.
2. Using the left mouse button, click on the controller and draw the mouse downwards to set the thickness of the textures on the teeth.
3. Click with the left mouse button on the tooth to move the texture on the tooth.

8.2.14 Using a gingival mask

8.2.15 Scaling

You can use this tool for frameworks, telescopes, multilayer frameworks and bars.

In the tool menu, you can select whether the tool is to be effective in the radial or the occlusal direction. You can toggle between these directions with the space bar or with the mouse.

1. Place the mouse pointer on an active restoration.
   - Various design elements are then offered, depending on the restoration type.
   - An arrow shows the direction in which the scaling will occur. The area affected is shown highlighted in orange.
2. Press and hold down the left mouse button.
3. Move the mouse to change the object.

Radial/occlusal

You can edit the edge of the crown caps and bridge frameworks for the restoration type *"Framework"* in radial or occlusal direction.

1. Click on the *"Scale"* button.
2. Click on the *"Radial"* or *"Occlusal"* button.
3. Place the mouse pointer on an active restoration.
   ↳ The area affected is shown highlighted in orange.
4. Press and hold down the left mouse button.
5. Move the mouse to change the object.

Properties

Modifying the size

If a check mark is placed in front of *"Complete"* the area affected is maximized and applies to the entire design element. If no check mark is placed, you can determine the area affected individually.

You can use the *"Size"* button to modify the size of the area affected. The area affected is shown as an orange colored area. The size of the area affected can be modified for each forming tool.

1. Click on the *"Scale"* button.
2. Click the *"Size"* button and press and hold the mouse button.
3. Pull the mouse cursor up or down.
   ↳ The size of the orange area is enlarged or reduced. The size is shown on the restoration.

Tip: You can also change the size by clicking on the restoration with the right mouse button and, while holding the right mouse button down, dragging the mouse up or down.

8.2.16 Adapt sprue location

This option is only available for the *"MILL"* manufacturing process.

The *"Sprue"* function enables you to rotate the position of the sprue location on the restoration in 2 ways:

- Step-by-step, by clicking on the arrow in the circle segment.
- Continuously, by clicking and holding the left mouse button inside the circle segment and moving the mouse.

8.2.17 Move the block

This option is only available for the *"MILL"* manufacturing process.

Displace

The *"Position"* function enables you to displace the block surrounding the restoration in all spatial directions until the restoration strikes one of the block margins.

You can move the block in 3 ways:

- Step-by-step, by clicking on one of the arrows showing the movement axes on the semitransparent cube.
- Continuously in 2 directions, by clicking on one side of one of the cube surfaces, holding the button down and moving the mouse.
- Continuously in all 4 directions, by clicking in the center of a cube surface, holding the button down and moving the mouse.

Rotate

With the *"Rotate"* function, you can rotate the restoration about the axis of the block.

This function is only available for the *"MILL"* manufacturing process.

You can rotate the restoration in the block in 2 ways:

- Step-by-step, by clicking on the arrow in the circle segment.
- Continuously, by left-clicking on or inside of the circle segment and moving the mouse.

8.2.18 Tool wheel

The tool wheel makes the standard tools available in the MODEL and DESIGN phases in order to simplify access. The tools currently available vary depending on the current step.

1. Right-click in the workspace.
   ↳ The tool wheel opens.
2. Click with the right mouse button anywhere in the workspace.
   ↳ The tool wheel moves to the position of the mouse pointer.
3. Select a tool.
   ↳ The selected tool is available. The tool wheel closes automatically.

You also can close the tool by clicking in the workspace with the left mouse button.

Working with the tool wheel

✓ You are now in the MODEL or DESIGN phase.

1. Click inside the main window with the right mouse button.
   ↳ The tool wheel opens at the mouse pointer.
2. Position the mouse above the desired tool.
   ↳ For tools with several variants, all variants will be displayed.
3. Click on the desired tool.
   ↳ The desired tool is then activated.

8.3 Displaying objects

Upper jaw

With the *"Upper Jaw"* button, you can display and hide the upper jaw.

1. Click on the *"View Options"* button.
2. Click on the *"Upper Jaw"* button.
   ↳ The upper jaw is displayed or hidden.

Lower jaw

With the *"Lower Jaw"* button, you can display and hide the lower jaw.

1. Click on the *"View Options"* button.
2. Click on the *"Lower Jaw"* button.
   ↳ The lower jaw is displayed or hidden.

Display upper/lower jaw transparently

You can adjust the transparency of the upper/lower jaw continuously.

1. Click on the *"View Options"* button.
2. Place the mouse pointer on the appropriate button, press and hold the left mouse button and move the mouse up or down.
   ↳ The transparency of the jaw concerned is changed.

Minimum thickness

With the *"Minimal Thickness"* button, you can show and hide the display of minimum thicknesses.

➢ Click on *"Minimal Thickness"*.
   ↳ The display of the minimum thickness is then displayed or hidden.

You can set the minimum thickness under *"Parameters"*. For more information, refer to the section on Parameters [→ 23].

Restoration

With the *"Restoration"* button, you can display and hide the restoration.

➢ Click on *"Restoration"*.
   ↳ The restoration is displayed or hidden.

Transparent display of restoration

You can adjust the transparency of the restoration continuously.

1. Click on the *"View Options"* button.
2. Place the mouse pointer on the *"Restoration"* button, press and hold the left mouse button and move the mouse up or down.
   ↳ The transparency of the active restoration is changed.

Trimmed region

With the *"Trimmed Model"* button, you can display and hide the trimmed region.

✓ You have trimmed a region in the MODEL phase.

➢ Click on *"Trimmed Model"*

↳ The trimmed region of the virtual model is displayed or hidden.

Gingiva mask upper jaw

Gingiva mask OK (only if relevant image catalog contains images)

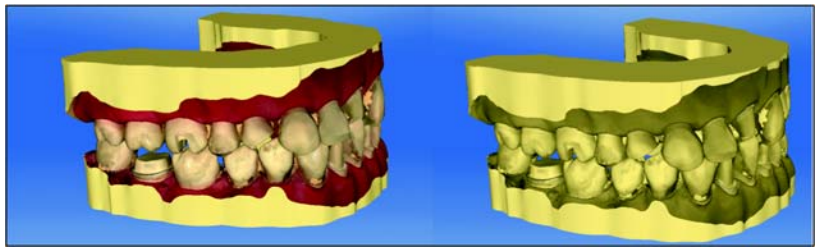
Gingiva mask lower jaw

Gingiva mask UK (only if relevant image catalog contains images)

8.4 Analysis tools

Color model

Using the *"Color Model"* button, you can change the color of models that were acquired with the CEREC Omnicam.



Contact surfaces on the virtual model

Using the *"Model Contacts"* button, the contact surfaces on the virtual model can be displayed or hidden.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Model Contacts"* button.
   ↳ The contact areas on the model are displayed or hidden.

Penetration/pressure:	> 100 µm 100 - 50 µm 50 - 0 µm
Distance:	0 - 50 µm 50 - 100 µm > 100 µm

Contact surfaces on the restoration

You can use the page palette button to check the occlusal contact points of the jaws.

The same color scheme is used as when displaying the contacts to the neighboring teeth or to the opposing jaw.

Penetration/pressure:	> 100 µm 100 - 50 µm 50 - 0 µm
Distance:	0 - 50 µm 50 - 100 µm > 100 µm

Side and bottom surfaces

Using the *"Model Box"* button, the virtual model can be displayed without the sides and bottom.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Model Box"* button.
   ↳ The virtual model is displayed without side and bottom surfaces.

Tip: In the MILL phase show the relevant jaw model (show reference objects) and hide the bottom of the model in order to check the fit from all sides.
This enables you to check the tightly sealed preparation limit and check whether the ceramic extends through the preparation. This is a reference to areas where the restoration may be too low.

Occlusal contacts

Using the *"Occlusal Contacts"* button the occlusal contact points of the active restoration presented in color can be switched on and off.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Occlusal Contacts"* button.
   ↳ The restoration is displayed with or without occlusal contacts.

Proximal contacts

Using the *"Proximal Contacts"* button the approximal contact points of the active restoration presented in color can be switched on and off.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Proximal Contacts"* button.
   ↳ The restoration is displayed with or without proximal contacts.

Model color

Using the *"Color restoration"* button the restoration can be presented in the model color.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Color restoration"* button.
   ↳ The virtual model is shown in white or the model color.

Cuts

Using the *"Cut"* button, a cut can be placed through the restoration and model in the screen plane.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Cut"* button.
   ↳ A cut is placed in the screen plane through the virtual model.
3. Click on the "Move cut" buttons to move the cut plane.

Cursor details

The height and thickness of the restoration can be displayed using the *"Cursor Details"* button. The cursor details are displayed at the bottom left of the screen.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Cursor Details"* button.
   ↳ The height and thickness of the restoration are displayed on the mouse cursor and updated in real time.

Depending on the type of restoration, the following information is displayed:

Height	Distance from this point to the bottom of the model
Fissure height	Minimum thickness in fissure.
Thickness	Thickness of the restoration at this point
With anatomical connectors	Smallest section

Distance

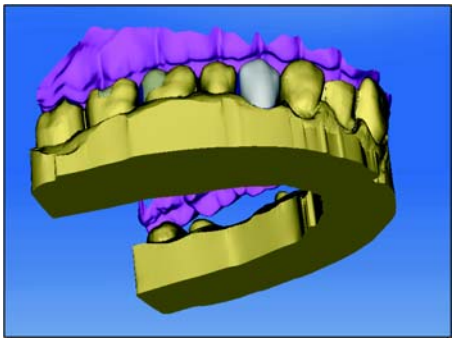
You can use the *"Distance"* button to measure distances.

1. Click on the *"Analyzing Tools"* button.
2. Click on the *"Distance"* button.
3. Click on the restoration to define the starting point and the end point.
   ↳ The distance is then displayed.

Guidelines

The *"Guideline Mode"* function enables you to display and hide the Smile Design auxiliary planes.

8.5 Articulation



The *"Articulation"* function enables you to configure a restoration taking the dynamics into consideration.
Once the initial suggestion has been calculated, the dynamic contact points are displayed in color.

For the most accurate result possible, it is important that the acquisition of the jaw meets the following conditions:

- The canine guidance must be able to be carried out on both sides.
- The virtual model is accurately aligned on the guide lines when setting the model axis.

The virtual articulator uses Camper's plane as a reference plane for the articulation parameters. The Camper's plane is usually parallel to the occlusal plane.

Once the model axis has been set, you can activate the virtual articulator at any time by using the button in the page palette.

IMPORTANT
Use the lower jaw to set the model axis.

Articulation Parameters

The values for articulation only apply for the current restoration. You can adjust the settings in the *"MODEL"* and *"DESIGN"* phases.

1. Click on the *"Articulation"* button.
2. Click on the *"Articulation Parameters"* button.
   ↳ The articulation parameters are displayed.

You can set the following values individually:

Parameters	Setting	Mean value
"Arms"	Side of the Bonwill triangle	105 mm
"Base"	Intercondylar distance	100 mm
"Balkwill Angle"	Balkwill angle	22°
"Sagittal Angle Left" and *"Sagittal Angle Right"*	Sagittal condylar path inclination	34°
"Bennett Angle Left" and *"Bennett Angle Right"*	Bennett angle	15°
"Bennett Side-Shift Left" and *"Bennett Side-Shift Right"*	Bennett movement	0 µm

Incisal Pin

Using the *"Incisal Pin"* function an opening can be produced in the jaws. The *"Incisal Pin"* function is only available in the *"MODEL"* phase.

1. Click the *"Articulation"* button.
2. Click on *"Incisal Pin"*, hold the left mouse key down and drag the mouse until the desired value is reached for the jaw opening.

Functionally generated path (FGP)

You can show a virtual FGP for the opposing jaw or the jaw using the *"Lower Virtual FGP"* and *"Upper Virtual FGP"* functions. The cover shows the maximum movement of the respective jaw for the selected articulation parameters.

The interrupting contacts are displayed by the FGP. The interrupting contacts can correspondingly be removed using the tools.

Lower virtual FGP

1. Click on the *"Articulation"* button.
2. Click on the *"Lower Virtual FGP"* button.
   ↳ The virtual FGP is displayed.

Upper virtual FGP

1. Click on the *"Articulation"* button.
2. Click on the *"Upper Virtual FGP"* button.
   ↳ The virtual FGP is displayed.

Occlusal Compass

The occlusal compass can be calculated using the virtual FGP. The software uses the Schulz occlusal compass.

The *"Occlusal Compass"* button enables you to display and hide the dynamic contact points.

1. Click on the *"Articulation"* button.
2. Click on the *"Occlusal Compass"* button.
   ↳ The dynamic contact points are displayed.

Color	Dynamic contact point
Blue	Laterotrusion
Green	Mediotrusion
Black	Protrusion
Red	Centric
Yellow	Latero-protrusion

Each direction of motion can be displayed or hidden.

Manual Move

Using the *"Manual Move"* the lower jaw can be moved manually in accordance with the calculated chewing movement.

1. Click on the *"Articulation"* button.
2. Click on the *"Manual Move"* button.

3. Move the lower jaw by clicking on the orange colored ball in the pound sign presented on the left.

9 ADMINISTRATION phase

Selecting a restoration type

➢ Select the restoration type in the page palette: *"Single Restoration"* or *"Bridge Restoration"*.

Single tooth restoration

✓ You have selected the restoration type *"Single Restoration"*.

1. Click on the tooth for which the restoration must be set up.
2. Select the restoration type.
   The restoration types available adapt to the tooth numbers selected. In the case of abutments, it is possible to activate the multilayer option as well, which enables you to work on the abutment and veneer structure separately. As a result, you do not need to have any crowns which screw in directly.
3. Choose the design technique *"Biogeneric Individual"*, *"Biogeneric Copy"* or *"Biogeneric Reference"*.
   Tip: For information on the design technique, see the section Design technique.
4. Optional: In the step menu, click on the step *"Select Milling Device"* to change the current milling unit.
5. Optional: In the step menu, click on the step *"Select Material"* to select the manufacturer and the material.
6. Confirm the settings by clicking *"Ok"*.
   Tip: If you click on *"Cancel"* the restoration will not be created and the program will return to the odontogram.
7. If necessary, create further restorations.

Bridge restoration

✓ You have selected the restoration type *"Bridge Restoration"*.

1. Choose the positions of the two end abutments of the bridge.
2. Select the individual bridge elements.
3. Determine the restoration type and the design technique of the individual elements, as described in section ADMINISTRATION phase [→ 65] .
4. Optional: Click on the step *"Select Milling Device"* in the step menu to change the current milling unit.
5. Optional: Click on the *"Select Material"* step in the step menu to change the manufacturer and the material.
6. Confirm the settings by clicking *"Ok"*.
   Tip: If you click on *"Cancel"* the restoration will not be created and the program will return to the odontogram.
7. If necessary, create further restorations.

Selecting the scanbody type (only for abutments)

You can select the desired scanbody type in this step.

➢ Click on the desired scanbody type.

Selecting material for the veneering structure

You can select the desired material for the veneering structure in this step.

➢ Click on the desired material.

Selecting material for the framework

You can select the desired material for the framework in this step.

➢ Click on the desired material.

Finishing the ADMINISTRATION phase

✓ All restorations to be created are defined.

✓ The *"ACQUISITION"* phase is can be selected.

➢ Click on the *"ACQUISITION"* phase.

or

➢ Click on the double arrow.

↳ The program switches over to the *"ACQUISITION"* phase.

Finishing the ADMINISTRATION phase

✓ All restorations to be attached are defined.

✓ The *"SCAN"* phase is can be selected.

➢ Click on the *"SCAN"* phase.

or

➢ Click on the double arrow.

↳ The program switches over to the *"SCAN"* phase.

10 ACQUISITION phase

10.1 Image catalogs with CEREC Bluecam

Overview

- Lower Jaw

- Upper Jaw

- Buccal

In addition, further image catalogs can be shown:

- BioRef Lower (Lower jaw)
- BioRef Upper (Upper jaw)
- BioCopy Lower (Lower jaw)
- BioCopy Upper (Upper jaw)
- Gingiva Mask Lower Jaw (Lower jaw)
- Gingiva Mask Upper Jaw (Upper jaw)

Opening the image catalog

1. Click on the icon of the desired image catalog.
2. Move the mouse cursor to the bottom edge of the screen.
   ↳ The active image catalog is opened, the individual acquisitions are visible.

10.1.1 Working with the image catalog

In the image catalog all acquisitions are shown respective to their regions.

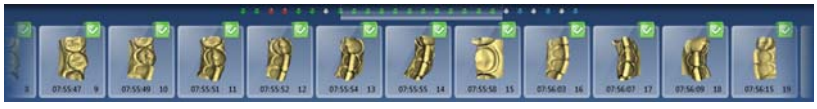
The first acquisition of an image catalog is called the reference acquisition and is marked with a dot (flag in the upper right corner of the frame). Acquire the image in the occlusal direction, as this acquisition determines the orientation of the virtual model.

The acquisitions are labeled as follows:

Symbol	Meaning
Green flag with check mark	Calculated / overlaid images
Green flag with dot	Reference optical impression
Blue flag	The attempted calculation / overlay is still being processed.
Red flag with exclamation mark	Calculation / overlay failed.
No flag	Hidden images

If you position the mouse over an acquisition, it will be shown in the camera view and highlighted in the 3D preview.

Scrolling through the image catalog



For each acquisition, a colored dot will be shown at the top of the image catalog.

Color	Meaning
Green	Reconstructed / overlapped images
Blue	Reconstruction / overlapping attempt still in progress
Red	Reconstruction / overlapping failed
White	Hidden images

If the acquisitions can no longer be displayed in full in the image catalog, a scroll bar appears. You can use it to scroll through all acquisitions.

1. Click on the scroll bar and press and hold the mouse button.
2. Slide the scroll bar to the right or left.

Selecting images

➢ Click on the acquisition with the left mouse button.
Several images can be selected.
↳ The images are now selected.

Moving acquisitions

You can move acquisitions to other image catalogs using drag & drop.

1. Click on marked acquisitions and keep the mouse button pressed.
2. Drag your selection to the icon of the desired image catalog.
   ↳ The program will ask whether you want to move or copy the acquisition.
3. Select *"YES"* to copy the acquisition or *"NO"* to move it. *"Cancel"* can be used to cancel the operation.
   ↳ The acquisition will be ready for use in the corresponding image catalog.

Tip: You can copy or move all of the acquisitions contained in an image catalog. Simply click on the image catalog with the left mouse button and drag it to any other previously created folder.

Hiding images

➢ Click an acquisition with the right mouse button.

↳ The acquisition is presented in grey.
The acquisition is no longer used for the 3D preview and creation of the virtual model.

You can make the acquisitions visible again by following the same process.

If the *"Ignored"* filter is active, the acquisition remains visible in the image catalog.
If the *"Ignored"* filter is deactivated, the acquisition is hidden (see Filter command [→ 70]).

Command Select

The *"Select"* command enables you to:

- select all images
- void the selection
- invert the selection

1. Click the *"Select"* button in the image catalog.
2. Click the appropriate button.

Command Edit

The *"Edit"* command enables you to:

- copy
- cut
- insert
- delete
- hide
- display

1. Select the acquisitions you want to edit.
2. Click the *"Edit"* button in the image catalog.
3. Click the appropriate button.

Command Filter

The *"Filter"* command enables you to:

- Switch the display of hidden acquisitions on/off
- Show or hide discarded acquisitions (offsetting/overlaying not possible)

Command	Description
"Ignored" (active)	Hidden acquisitions are displayed.
"Rejected" (active)	Rejected acquisitions are displayed.

1. Click the *"Filter"* button in the image catalog.
2. Click the appropriate button.

10.1.2 Adding image catalogs

Using the *"Add Catalog"* button, you can create additional image catalogs in the page palette.

1. Click the button marked *"Add Catalog"* in the page palette.
   ↳ The possible image catalogs are offered.
2. Click on the required image catalog.

↳ The image catalog is displayed next to the standard image catalogs.

10.1.3 Options

In the page palette, the *"Options"* button enables you to:

- Buffer the acquisition sequence (quadrant)

- Merge the first and second acquisition sequences (quadrants)

- Activate first acquisition sequence

- Change to the *"Impression Scan"* mode

Command	Description
"Add Quadrant"	• Buffer the first acquisition sequence (quadrant). • Subsequently, another acquisition sequence can be taken.
"Merge Quadrants"	• The current acquisition sequence is merged with the buffered sequence.
"Change Quadrants"	• Activate the first acquisition sequence in order to add other images. The second sequence is saved temporarily automatically.

1. Click the button marked *"Options"* in the page palette.
2. Click the appropriate button.

10.1.4 Recycle bin

Removing acquisitions

1. Select the acquisitions you want to remove.
2. Click on the *"Edit"* button.
3. Click on the *"Delete"* button.

or

➢ Grab the image with your mouse and move it using drag & drop to the recycle bin.

↳ The acquisition is sent to the recycle bin.

Tip: You can move the last acquisition to the recycle bin by right-clicking on the image catalog icon.

Opening the recycle bin

In the recycle bin you will see the acquisitions removed from the currently active image catalog.

1. Click on the icon of the image catalog, for which you wish to open the recycle bin.

2. Click on the icon of the recycle bin.
↳ The recycle bin for the active image catalog is displayed.

Reusing acquisitions from the recycle bin

➢ Grab the image with your mouse and move it using drag & drop to the desired folder.

Tip: If you display/hide acquisitions in the recycling bin these are automatically moved into the image catalog again.

10.2 Image catalogs with CEREC Omnicam

- Lower Jaw
- Upper Jaw
- Buccal

In addition, further image catalogs can be shown:

- BioRef Lower (Lower jaw)
- BioRef Upper (Upper jaw)
- BioCopy Lower (Lower jaw)
- BioCopy Upper (Upper jaw)
- Gingiva Mask Lower Jaw (Lower jaw)
- Gingiva Mask Upper Jaw (Upper jaw)

For each of these image catalogs, only one acquisition is saved in the corresponding image catalog.

Opening the image catalog

1. Click on the icon of the desired image catalog.
2. Move the mouse cursor to the bottom edge of the screen.
   ↳ The active image catalog is opened, the individual acquisitions are visible.

Deleting acquisitions

If an acquisition is not suitable, you can delete it. You can then execute a new acquisition for the corresponding image catalog.

➢ Grab the image with your mouse and move it using drag & drop to the recycle bin.
↳ The image is deleted.

10.2.1 Adding image catalogs

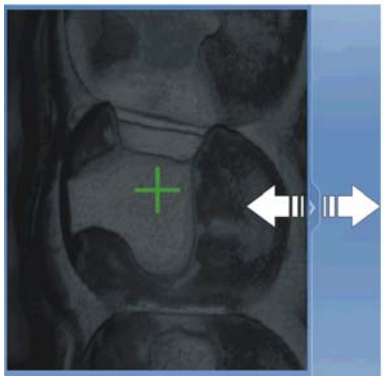
Using the *"Add Catalog"* button, you can create additional image catalogs in the page palette.

1. Click the button marked *"Add Catalog"* in the page palette.
   ↳ The possible image catalogs are offered.
2. Click on the required image catalog.

↳ The image catalog is displayed next to the standard image catalogs.

10.3 Camera view

Change window size



You can adjust the size of the camera view proportionally.

1. Click the arrow at the right edge with the mouse and hold down the mouse button.
2. Drag the camera view to enlarge or reduce it.

Height and intensity image

Acquisitions from the image catalog can be displayed as height or intensity images.

Height image

Intensity image

✓ The camera is switched off.

1. Click on the icons to switch between the height and intensity image.
2. Position the mouse over a scan in the image catalog.
   ↳ The scan is shown in the selected display in the camera view.

10.4 3D Preview

In the default setting, the data are displayed from the occlusal direction in the 3D preview.

You can freely select the viewing direction of the virtual model in the 3D preview window by using the mouse.

Rotating a 3D preview

1. Click on the 3D preview with the left mouse button and hold it down.
2. Move the mouse.

↳ The 3D preview is rotated.

Moving the 3D preview

1. Click on the 3D preview with the right mouse button and hold it down.
2. Move the mouse.

↳ The 3D preview is moved.

Zooming into/out of the 3D preview

1. Click on the 3D preview with the middle mouse button and hold it down.
2. Move the mouse up or down as desired.
   ↳ The 3D preview is enlarged or reduced.

10.5 Taking the scan

10.5.1 CEREC Bluecam

10.5.1.1 Switching on/off CEREC camera

The CEREC camera is turned on automatically when you switch to the acquisition phase. If it is not used for some time, it will shut down.

➢ Click the camera icon to switch the CEREC camera on or off.

10.5.1.2 Camera support

Using the camera support gives you the following advantages:

- You obtain acquisitions free of motion blurring.
- You avoid damage to the prism.
- You avoid touching the prepared tooth.

⚠ CAUTION

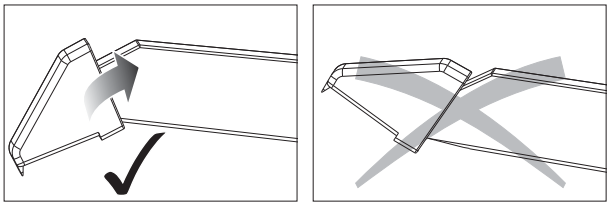
Using the camera support

Clean the camera support by wiping or spraying it with disinfectant prior to use. Designed for one-time use only.

10.5.1.3 Prepare the exposure

Pushing on the camera support

➢ Push the camera support onto the camera as illustrated.



Pushing on the camera support

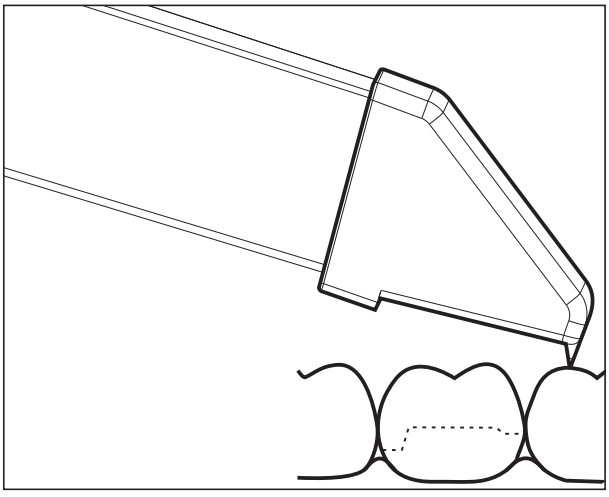
Positioning the camera

⚠ CAUTION

Hot surface!

The prism of the camera is preheated in the camera holder. The surface temperature may be as high as 50°C. This may cause an unpleasant heat sensation on contacting a person's skin or mucous membrane. These temperatures will not damage anyone's skin or mucosal membrane.

1. Position the camera over the teeth to be scanned.



Supporting the 3D camera

2. Support the camera with the front part of the camera support on a tooth so that you can hold it quietly during the acquisition phase.

NOTICE

Powder on the surface of the prism

If the prism touches powdered surfaces, then powder usually remains on the prism surface and generates dark spots in the image.

The powder can be wiped off from the prism with a soft cloth.

10.5.1.4 Taking acquisitions with the CEREC Bluecam

With the CEREC camera you can switch between two acquisition modes:

- manual
- automatic

After being switched on, the CEREC camera is set to automatic acquisition control.

NOTICE

Image brightness

The image brightness during the scan is controlled automatically, so that there is always optimum image brightness, largely independent of the distance between the CEREC camera and the tooth.

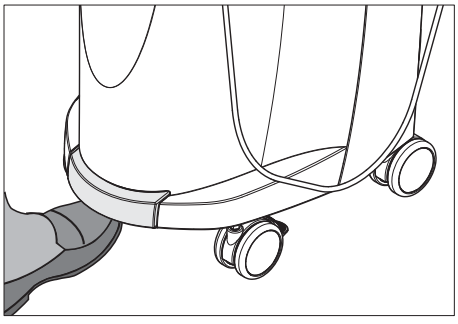
The surroundings of the tooth to be scanned should be as weakly illuminated as possible. Avoid any type of external light. Switch off the dental light.

Changing from automatic to manual acquisition control

You can change from automatic to manual acquisition control.

✓ You are now using automatic acquisition control.

1. Place the cursor on the camera icon.



2. Press the foot control upward and keep it pressed.
   ↳ A green cross appears in the live image. Manual acquisition control is active.

You can exit manual acquisition control in the same way.

Automatic acquisition control

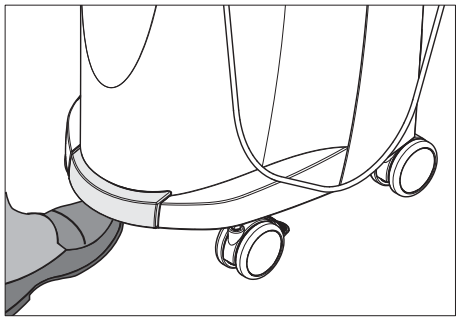
To help avoid blurred acquisitions caused by withdrawing the CEREC camera too early, an acoustic signal sounds as soon as the acquisition is completed. Make sure that neither the Windows volume control is at the lowest position nor “Sound off” is activated.

1. Position the CEREC camera above the powdered preparation as described.
2. Once a sharp acquisition is possible, images are generated and transmitted to the 3D preview automatically.
   Observe undercuts on all lateral edge lines of the preparation.
3. Move the camera until all required images have been acquired.
   ↳ The model is restored automatically in the 3D preview during the acquisition.

4. Then check the above points once again. Take care that the optical impression is **sufficiently bright**, **sharp** and **free of motion blurring**. If you do not observe these points, one of them may have a negative effect upon the subsequent procedure.

If you click the scan icon of the upper jaw, lower jaw or buccal registration, you can take additional acquisitions of the upper jaw, lower jaw or buccal registration.

Manual acquisition control

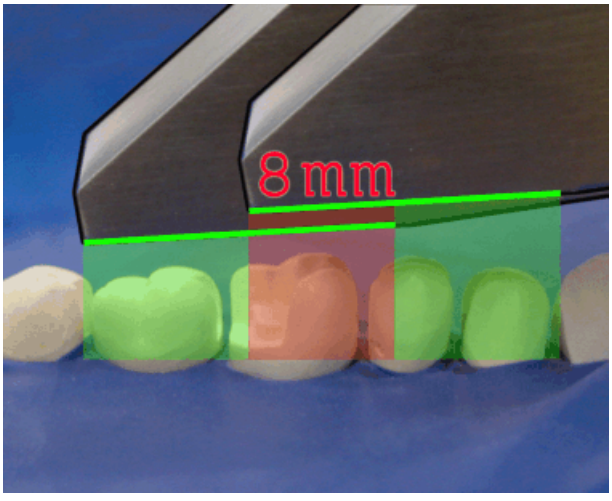


1. Press the foot control upward and keep it pressed.
   ↳ A live video image appears with a green cross in the camera view.
2. Release the foot control.
   ↳ The acquisition is automatically transferred to the 3D preview.
3. Additional acquisitions can be created by repeating steps 1 and 2.
   ↳ The model is restored automatically in the 3D preview during the acquisition.
4. Then check the above points once again. Take care that the optical impression is **sufficiently bright**, **sharp** and **free of motion blurring**. If you do not observe these points, one of them may have a negative effect upon the subsequent procedure.

If you click the scan icon of the upper jaw, lower jaw or buccal registration, you can take additional acquisitions of the upper jaw, lower jaw or buccal registration.

10.5.1.5 Supplementary optical impressions

Acquiring the neighboring teeth as well



Overlap area 8mm

If the neighboring teeth are to be completely imaged as well, then the image catalog can be extended by acquisitions of these teeth. The overlap area of two neighboring optical impressions must be at least 8 mm.

10.5.1.6 Angled optical impressions

Additional angled optical impressions

Additional angled acquisitions are possible. They can be used to acquire regions that are concealed in the occlusal acquisition direction, or to acquire steep walls in more favorable angles.

IMPORTANT
Proximal undercuts Proximal undercuts may make it impossible to seat an inlay.

The maximum permissible tilt angle for capturing an additional optical impression of the same area is 20°.

10.5.1.7 Optical impressions for quadrant restoration

For quadrant restoration it is recommended to acquire the prepared teeth as well as an unprepared neighboring tooth in each case. It can be covered by capturing several supplementary optical impressions.

10.5.1.8 Acquiring end teeth

End tooth at the distal margin

When end teeth are restored, the end tooth should lie at the distal margin of the image field.

10.5.1.9 Acquiring an impression

Preparing an impression

✓ In certain circumstances, the casting must be cut free somewhat, so that the definition of the image of the CEREC camera is sufficient.

➢ Unless it is scannable silicon, mat the area to be scanned in order to avoid reflections. For this purpose, use CEREC Optispray.

Acquiring an impression

1. Click on the icon of the desired image catalog.
2. Open the image catalog.
3. Click on the *"Advanced"* button.
4. Click on the *"Impression Scan"* button.
5. Start the acquisition procedure.
   ↳ In the 3D preview, the model is displayed on both sides. The model preview is displayed in yellow, whereas the preview of the casting itself is shown in green.

As long as the *"Impression Scan"* mode is activated the scans will be inverted when the virtual model is created. The *"Impression Scan"* mode is available for all image catalogs.

The different catalogs do not have to be acquired in the same mode.

10.5.2 CEREC Omnicam

10.5.2.1 Camera warm-up time

When switching on the system, the camera needs to warm up for 15 - 20 minutes. If the sapphire glass of the Omnicam is not sufficiently warm, it may steam up during the acquisition. As such, it is not possible to carry out the exposure.

Following use, always position the Omnicam on the heater plate.

From CEREC software version 4.0.4 and unit serial number 121 001, you can now set the end temperature to which the camera heater warms the Omnicam mirror sleeve.

1. In the software, navigate to the system menu, and click on the *"Configuration"* button.
2. Click on the *"Devices"* button.
3. Click on the *"Omnicam"* button.
4. Click on the *"Camera Heater Settings"* button.
5. Use the slider to adjust the temperature.

10.5.2.2 Mode

You have a choice between the Measure (3D) and Movie (2D) modes and between intraoral acquisitions and extraoral acquisitions.

10.5.2.2.1 3D acquisition mode

1. Click on the *"Mode"* button.
2. Click on the Measure (3D) button.
3. Acquire the 3D model as described in the chapter on Directing the camera [→ 80] .

10.5.2.2.2 2D film mode

Video recording

Using the video mode, you can record patient situations and play them back.

1. Click on the *"Mode"* button.
2. Click on the *"Movie (2D)"* button.
   - In the camera view base board, a red button appears.
3. Click on the red button in the camera view base board.
   - The video mode starts.
   - During the acquisition, a red dot with a letter R appears in the top left corner of the camera view. The dot indicates that a recording is being taken.
4. Record the video with the CEREC Omnicam.

5. End the recording by clicking on the red button in the camera view base board with the cursor.

The video recording is automatically deleted if you switch to the *"MODEL"* phase.

Deleting an existing video

Only one video is possible per patient. The existing video must therefore be deleted before a new one can be recorded.

✓ A video recording exists.

✓ You are in the Movie (2D) acquisition mode.

➢ Click on the *"Recycle Bin"* button in the camera view base board.

Playing back a video

You can play back, rewind or fast forward the video using the button in camera view.

10.5.2.2.3 Switching between modes

You can use the *"Mode"* button to switch between the acquisition modes.

10.5.2.3 Directing the camera

⚠ CAUTION

After each use

Clean and disinfect the camera after each patient.

➢ Follow the instructions on cleaning and disinfection in order to avoid cross-contamination between patients.

The CEREC Omnicam acquires images which are used during the ongoing measurement in spatial relation to each other (image registration).

During the acquisition and then during the ongoing registration process, a distinctive sound can be heard.
If the registration cannot be implemented, the acquisition flow is suspended. You are informed of this by means of a sound. This is different to the sound emitted during successful acquisition. You can adjust the volume in configuration.

IMPORTANT

Registration error

Should a registration error occur, you must return to another acquired point.
To start with, practice this procedure on the model and then on intraoral areas.

➢ Move the CEREC Omnicam to a position where a successful acquisition was taken. A point that has already been acquired in the occlusal area is best.

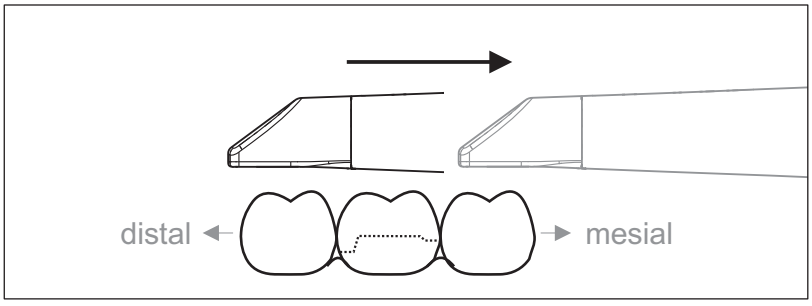
↳ You will be able to hear the sound for registered acquisitions.

➢ Continue the acquisition.

Divide the acquisition into four consecutive sequences:

1. Occlusal
2. Buccal
3. Lingual
4. Proximal

10.5.2.3.1 Occlusal scan

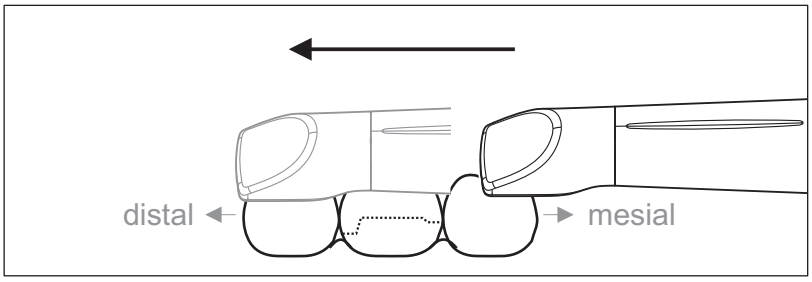


Important: Ensure that the distance between the output window of the CEREC Omnicam and the scanned surface is observed.
The distance must be between 0-15 mm (ideally: 5 mm). The camera does not rest on the teeth or the gums. If the distance is too great, no data will be obtained.

1. Move the CEREC Omnicam to the starting position. For this purpose, the CEREC Omnicam is in the occlusal view of the tooth, which is next to the prepared tooth in the distal direction.
2. Scan in the mesial direction. To do so, slowly move the CEREC Omnicam in the occlusal direction from the distal-positioned tooth over the prepared tooth to the mesial-positioned tooth.

With full jaw acquisitions, the scan sequence is different for the transition to anteriors. Scanning begins with the lingual and labial areas, before moving on to the incisors.

10.5.2.3.2 Buccal scan



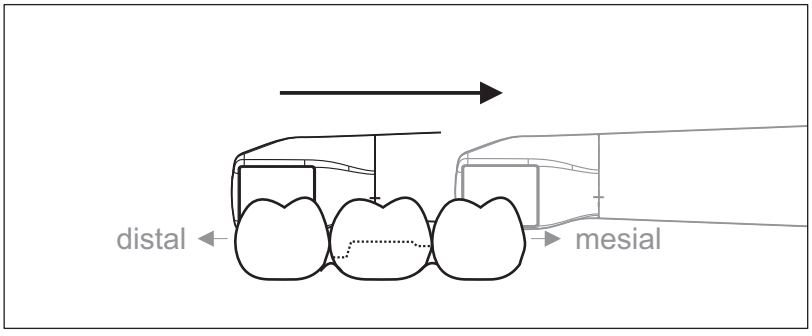
✓ The CEREC Omnicam is on the adjacent tooth, in the mesial direction to the preparation.

1. Rotate the CEREC Omnicam between 45° to maximum 90° toward the buccal.
2. Guide the CEREC Omnicam over the entire buccal distance in the distal direction over the prepared tooth.
   With full jaw acquisitions, limit the buccal scan to no more than a quadrant.

Ensure that the CEREC Omnicam is held like a flute during buccal scans. Do not tilt it vertically to the direction of motion.

Tip: Practice guiding the camera between 45° and 90°.

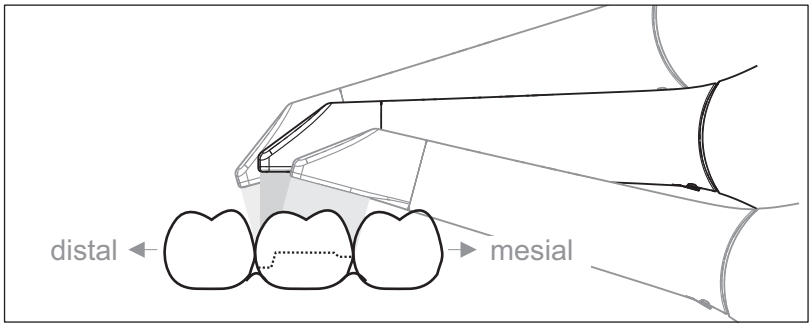
10.5.2.3.3 Lingual scan



✓ The CEREC Omnicam is on the tooth that is positioned next to the preparation in the distal direction.

1. Rotate the CEREC Omnicam from 90° in the buccal direction to around 45° to maximum 90° in the lingual direction on the other side.
2. Guide the CEREC Omnicam over the entire lingual distance in the mesial direction over the prepared tooth.

10.5.2.3.4 Approximal surface scan



Scan the approximal surfaces of the prepared tooth.

➢ Move the CEREC Omnicam in the occlusal direction to the prepared tooth. Acquire the approximal surfaces in the distal and mesial direction by using a wave motion in the occlusal, buccal, and lingual direction over the prepared tooth.
To do so, tilt the surface by 15° in the distal and mesial direction to gain a better view of the approximal contacts.

10.5.2.3.5 Buccal registration

A buccal registration can be used to establish contact with the antagonist.

✓ The jaw with the preparation is scanned.

1. Scan the occlusal and buccal view of the antagonist (see the section Occlusal scan [→ 81] and Buccal scan [→ 82]).
2. Perform a buccal scan of the bite block prior to completing the registration.

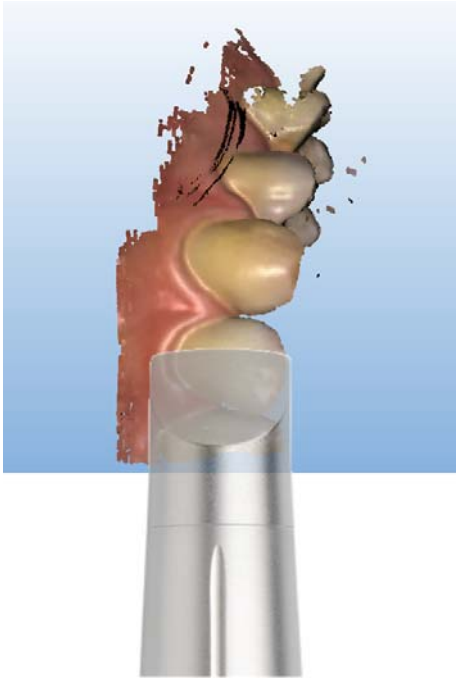
10.5.2.3.6 Acquisition in the anterior region

Acquisitions for the anterior tooth region in the lower jaw

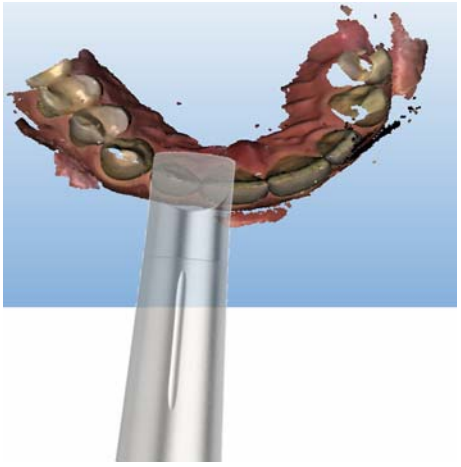
The acquisitions are described using the 4th quadrant. The process is the same for the 3rd quadrant.

✓ Before acquiring the anterior tooth region, if necessary acquire the posterior tooth region (occlusal, buccal, labial, and approximal). Refer to chapter Occlusal scan [→ 81], Buccal scan [→ 82], Lingual scan [→ 82] and Approximal surface scan [→ 83].

✓ Start the acquisition of the posterior tooth region with the posterior tooth region of the 4th quadrant.



1. End the acquisition of the posterior tooth region or start the acquisition of the anterior tooth region when you can still see the premolars (tooth number: 44) in the viewing panel. To do so move the camera from occlusal to labial.
2. From the starting point under 1) guide the camera mesial labial over the front teeth parallel to the chin line up to the 1st position of the neighboring quadrant (in this case tooth number: 31).
3. Guide the camera from there in the distal direction back to the premolars (tooth number: 44), i.e. acquire the front teeth labial a second time. This movement is also parallel to the chin line.
4. Once you get to the premolars, guide the camera occlusal over the zenith above the premolars by turning the camera in a position vertical to the chin line (i.e. like a recorder or clarinet).



5. Pass the camera incisal over the front teeth in the mesial direction by moving the camera with a slight tipping movement over the incisal edge from labial to lingual. When doing so emphasize the labial movement in order to acquire the lingual area of the front teeth well. In this phase move the camera somewhat slower than when the camera is moving parallel to the chin line.
6. When you arrive at the premolars (tooth number 34), follow the movement along the chin line by turning the chair and at the same time turn the camera in the occlusal direction over the zenith of the premolars - with the camera tip in the distal direction of the side teeth in the 2nd quadrant.
7. But do not go in the distal direction yet, rather guide the camera in parallel to the chin line labial in the mesial direction and back again in order to complete the labial acquisition of the front teeth (up to tooth number 31 and back again in the mesial direction to the premolars).
8. Now guide the camera again buccal in the distal direction and as per the measuring regulation for the posterior tooth region in Chapter Occlusal scan [→ 81], Buccal scan [→ 82], Lingual scan [→ 82] and Approximal surface scan [→ 83].

↳ This acquisition regulation for the anterior tooth region provides the connection with the acquisition regulation for the posterior tooth region to acquire the whole jaw.

Acquisitions for the anterior tooth region in the upper jaw

➢ Conduct the acquisitions for the upper jaw as described here for the lower jaw. But it is necessary to change the grip for the premolars (step 6 above) in order to move the camera tip in the mesial direction and to ensure that the cable does not form a loop. A favorable location for this change is the occlusal view of the premolars.

Tip: The grip change offers a good opportunity to dry the 2nd quadrant. It takes around 3 seconds before it is possible to restart the acquisition flow.

Tip: Note a slightly asymmetric process for left-handers.

Tip: Be sure to thoroughly practice passing over the incisal ridge.

If the data stream is interrupted at this point, proceed as follows:

1. Return to an occlusal surface of a premolar which has already been acquired.
2. Approach the anterior teeth again from this occlusal surface.

10.5.2.3.7 Completing measurements

✓ The acquisitions are complete.

1. Click on the *"Next"* button.
   - The virtual model is calculated and presented in color.
   - Gray sections highlight data material that is missing from the calculated model.
2. If missing data emerges in the preparation area, carry out further scans.

10.5.2.4 Taking acquisitions with the CEREC Omnicam

⚠ CAUTION

Hot surface!

The output window of the CEREC Omnicam is preheated in the camera holder. When removing the CEREC Omnicam from its holder, the surface temperature of the mirror sleeve can be up to 51°C. This may cause an unpleasant heat sensation on contacting a person's skin or mucous membrane. These temperatures will not damage anyone's skin or mucosal membrane.

After removing the CEREC Omnicam from its camera holder, the temperature of the mirror sleeve drops within a number of minutes (< 5 minutes) to less than 43°C. The CEREC Omnicam is therefore suitable for use in the patient's mouth for an unlimited period of time.

At an ambient temperature from 30°C, only select the three lower heater settings.

NOTICE

Image brightness

The image brightness during the acquisition is controlled automatically, so that there is always optimum image brightness, largely independent of the distance between the CEREC Omnicam and the tooth.

The surroundings of the tooth to be scanned should be as weakly illuminated as possible. Avoid any type of external light. Switch off the operating light.

IMPORTANT

Do not use cotton rolls in the scan area

Do not use any cotton rolls in the vicinity of the scan area.
Should any pieces of cotton roll contaminate this area, the acquisitions will be inaccurate.

✓ The teeth are blow-dried

1. Change to phase *"ACQUISITION"*.
   - The camera is ready for acquisition.
   - A live image appears which can be used to look around the patient's mouth.
2. Remove the CEREC Omnicam from its holder.
   - As soon as the camera is pointed over a tooth or the gums, or the foot control is pressed, data acquisition begins. During the continuous data acquisition, a color 3D model is generated automatically on the screen.
     A white field indicates in which area data will be acquired. If the automatic data flow breaks off, the white field is lost and the audio signal changes. In this case, move the camera to any area which has already been acquired. The acquisition procedure continues.
3. Activate the foot control or point the camera cursor to the Omnicam icon in the bottom left corner to end the acquisition procedure.

Proceeding with the scanning procedure

1. Activate the foot control or click on the Omnicam icon with the cursor.
   - The scanning procedure begins.
2. Proceed with the scanning procedure as described above.

10.5.2.5 Cut out model areas

With the *"Cut"* function, you can cut out model areas. These can be areas in which parts of cotton rolls or cheeks were unintentionally acquired.

When performing this activity, be careful not to accidentally cut out any areas that e.g. are located behind the model or are otherwise cut away from the line.

You can execute another scan of the area which you have cut out using the crop function. To do so, close the tool window, by clicking on the top right corner. You can refill the area with another acquisition.

Undo and reset
With the *"Undo"* button in the tools you can undo the last change made.

With the *"Reset"* button in the tools you can reset changes that were made with the tool.

10.5.2.6 Additional acquisitions

You can switch back from the DESIGN phase to the ACQUISITION phase and add additional acquisitions.

✓ You are now in the DESIGN phase.

1. Click on the ACQUISITION phase.
   - The ACQUISITION phase opens. The image catalogs are locked.
2. Click the button marked *"Unlock"* in the side bar.
   - The image catalogs are unlocked.
   - You can take additional acquisitions.

10.5.3 Finishing the phase

✓ All required acquisitions are present (jaw, opposing jaw and buccal bite acquisition).

✓ The *"MODEL"* phase is can be selected.

➢ Click on the *"MODEL"* phase.

or

➢ Click on the double arrow.

↳ The program switches over to the *"MODEL"* phase.

11 MODEL phase

In the *"MODEL"* phase, the virtual models are reconstructed based on the acquired image catalogs.

If you would like to edit the model, change to the *"Edit Model"* step.

The *"Edit Model"*, *"Bite Registration"* and *"Set Model Axis"* refer to the entire model (upper and lower jaw).
All other steps in the *"MODEL"* phase refer to the restoration currently selected. These steps must be performed individually for each restoration.

11.1 Buccal registration

In this step, you see the virtual models of the jaw, opposing jaw and the buccal acquisition. The buccal acquisition is placed in the center between the lower jaw and upper jaw.

In the *"Bite Registration"* step, you can work with the following tools:

- Drag Buccal
- Flip Buccal Impression

The use of the individual tools is described in the section Page palette [→ 45] .

For more information on the *"Flip Buccal Impression"* function, refer to the section on Buccal registration [→ 89].

Rotating the lower and upper jaw

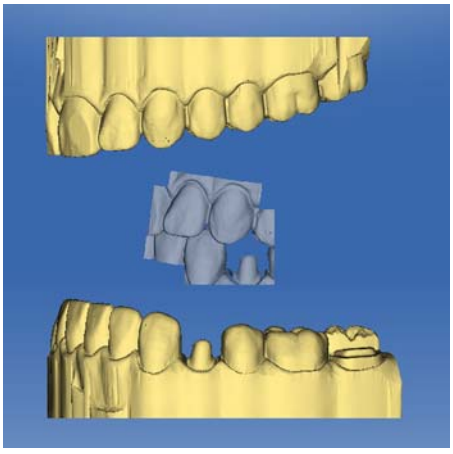
➢ Click in the blue area with the left mouse button and hold the button down.

↳ The lower jaw and upper jaw can be rotated about the vertical axis simultaneously.

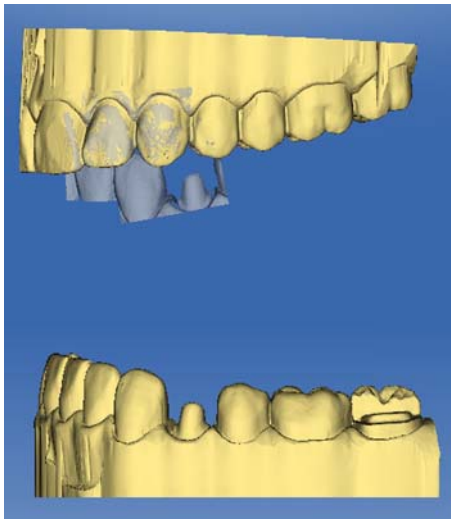
➢ Click on the lower jaw or upper jaw with the left mouse button and hold the button down.

↳ The arches can be freely rotated individually.

Registering the buccal acquisition on the lower jaw and upper jaw

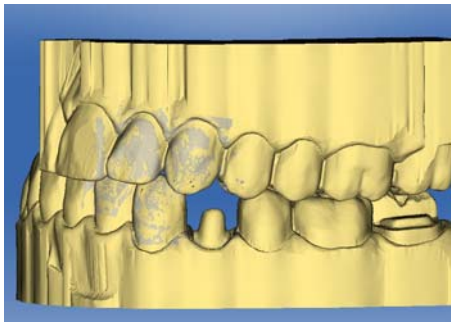


1. Rotate both models so that you can see the overlap area of the buccal acquisition and of the upper jaw and lower jaw.
2. Now drag the buccal acquisition to the corresponding area of the upper jaw with the mouse and let go of the mouse button (drag & drop).



↳ The buccal acquisition automatically registers itself on the upper jaw. If the registration was successful, this will be indicated by a "leopard pattern". If the registration was not successful, the buccal acquisition returns to its original position. In this case, you must repeat the drag&drop procedure in order to find a better correlation surface.

3. Now click on the buccal acquisition once again and drag it onto the appropriate area of the lower jaw (drag & drop).



↳ If the registration was successful, this will be indicated by a "leopard pattern". If the registration was not successful, the buccal acquisition returns to its original position. In this case, you must repeat the drag&drop procedure in order to find a better correlation surface.

It is irrelevant whether you drag the buccal acquisition onto the lower jaw or onto the upper jaw first.

Rotating the buccal image

In some cases, the buccal acquisition may be displayed upside down in relation to the lower jaw and the upper jaw. Proceed as follows in such cases:

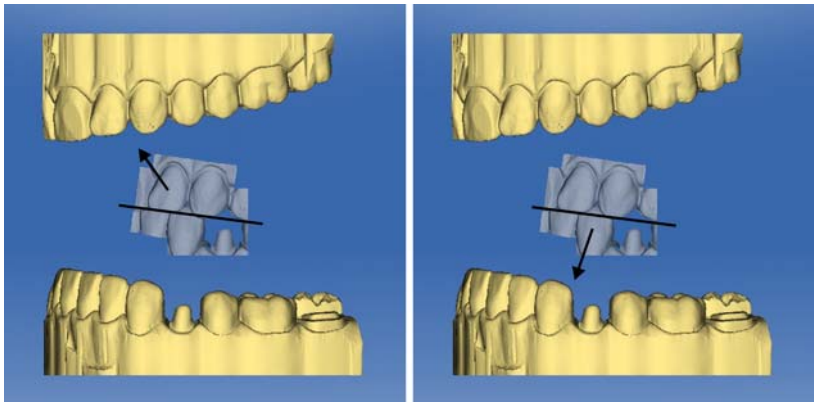
➢ Click on the upper area of the buccal image and drag it onto the lower model.

or

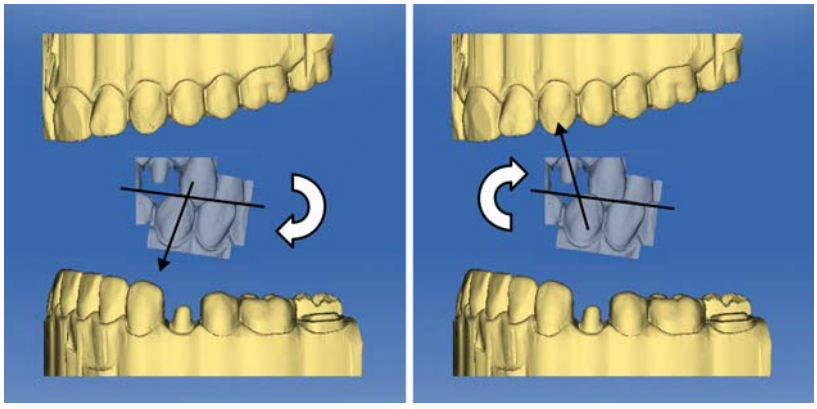
➢ Move the mouse via *"Tools"* onto the *"Bite Registration"* button and activate the *"Flip Buccal Impression"* command.

↳ The buccal acquisition will automatically flip, and you can then register it on the jaw using the drag & drop technique.

This works in the same way vice versa, i.e. if you click on the lower area of the buccal image and then drag it onto the upper model.



The buccal image is then displayed right side up. Registration is possible without rotation.



The buccal image is then displayed upside down. When you begin the registration, the software detects this and automatically flips the image right side up.

Moving to the next step

✓ The step is completed.

➢ Click the double arrow to proceed to the next mandatory step.

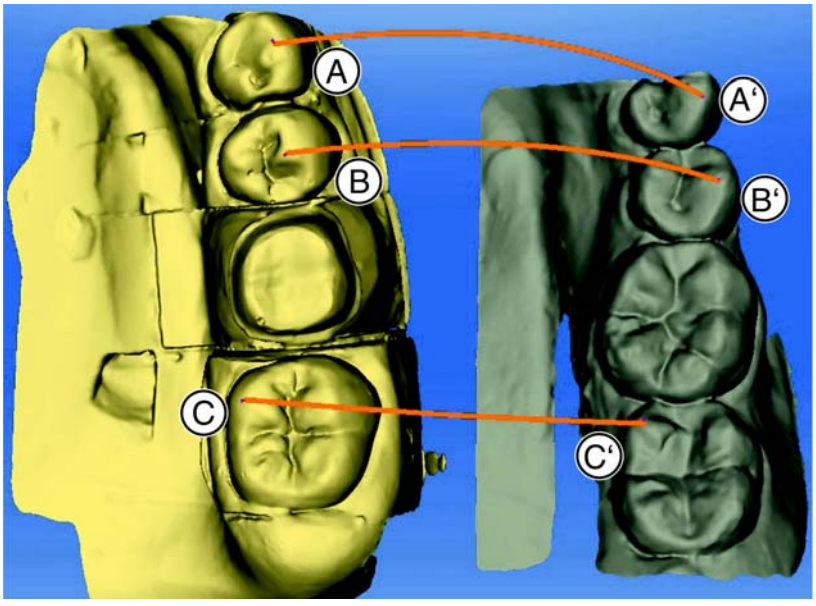
or

➢ Click on the restoration icon in the object bar to start the preparation of this restoration immediately.

11.2 Manual correlation for image fields

If automatic correlation of the image fields does not occur, you can compose the image fields via manual correlation. To do so, three points must be set by double-clicking on both models.

1. Select the *"Set Points"* tool.



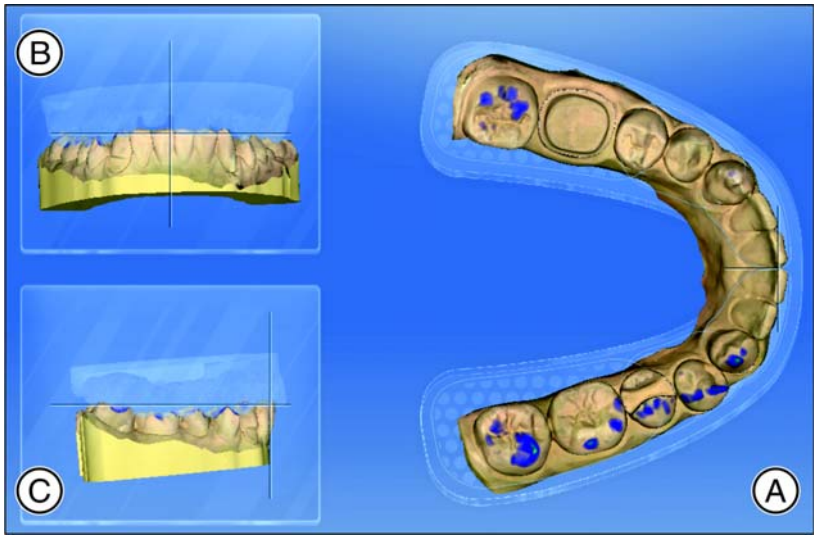
2. Double-click a prominent location (e.g. **A**) in a model to set a point.
3. Then double-click the corresponding location on the other model (e.g. **A'**).
   ↳ This pair of points is marked by an orange curve.
4. Set reference points B – B' and C – C' as described under items **2 – 3**.
5. Click on *"Apply"*.

11.3 Settling tool

In this step, you can semi-automatically rework the buccal registration. This may be necessary in the case of intraoral scanposts.

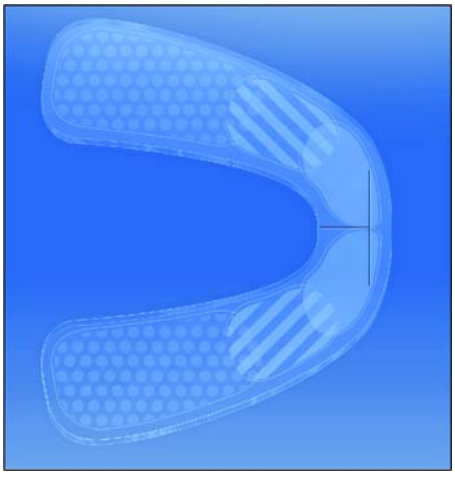
1. Using the brush tool, select areas that are to be omitted in calculating contacts (e.g. scanposts).
2. Click on *"Compute"*.
3. Check the new contact situation.

11.4 Set model axis



Set the axes for model alignment. Please ensure a consistent representation here.

This alignment is required to create optimal view options and initial suggestions.



1. Align the model to the orientation of the jaw (**A**). Each tooth must be in its respective quadrant. Align the incisors based on the displayed center line.
2. Align the incisal edges along the displayed line (**B**). If necessary, rotate the model by clicking on the display, holding the mouse button down and dragging the model.
3. Align the model for the occlusion plane (**C**). If necessary, tilt the model by clicking on the display, holding the mouse button down and dragging the model.

11.5 Editing the model

This step is optional. To access this step, you must click on it.

In the *"Edit Model"* step, you can work with the following tools:

- Form
- Cut
- Replace
- Reset

The use of the individual tools is described in the section "Page palette [→ 45]".

11.6 Trimming the preparation

This step is optional. To access this step, you must click on it.

In the *"Trim Area"* step you can hide image regions outside the preparation, e.g. mesial and distal neighbors.

If the virtual model is trimmed in this design step, both the sides and the bottom are subsequently displayed as closed.

In the step *"Trim Area"*, you can work with the following tool:

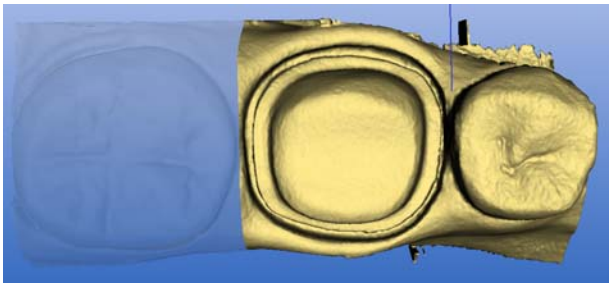
- *"Trim"*

The use of the tool is described in the Page palette [→ 45] .

Trimming image regions

You can trim several image regions.

1. Rotate the model to a perspective in which you can see all areas that you want to trim. The model cannot be rotated while you are drawing the line.
2. Double click in any location to set the starting point of the trim line.



Distal neighbor hidden

3. Click to set further points of the line, e.g. in the interdental space.
4. Double click in any position to end the line. Ensure that the closing end of the line does not cut any areas of the model that you want to keep.
   ↳ The smaller image region to the side of the line is hidden.
   Tip: If the wrong image region is hidden, you can switch to the other image region by double-clicking the hidden region.

11.7 Entering the preparation margin

In the step *"Draw Margin"*, you can work with the following tool:

- Margin

The use of the tool is described in the Page palette [→ 45] .

General information

As you are entering the preparation margin, you can rotate the 3D model. Be sure to hold down the left mouse button for a long time. A short click adds a point to the preparation margin.

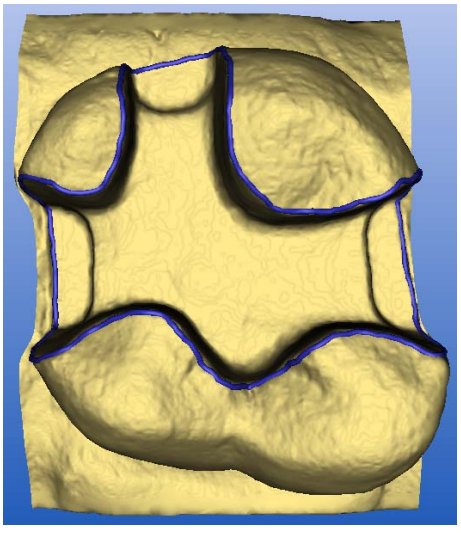
The preparation margin must always form a closed line.

You can edit the finished preparation margin after entering the last line.

To enter the preparation margin, a technique can be selected in the page palette:

Technique	Layout	Usage
"Auto"	Height image	With clear preparation margins, for initially drawing in the margin.
"Manual"	Height image	For unclear preparation margins, for subsequent correction of the initial limit.
"Manual with intensity image"	Intensity image	

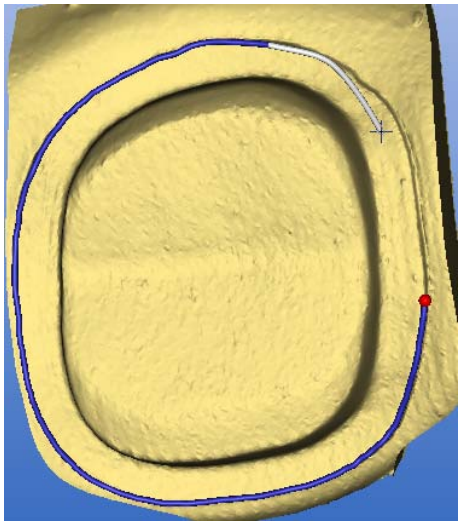
Entering the preparation margin in the case of clear preparation edges



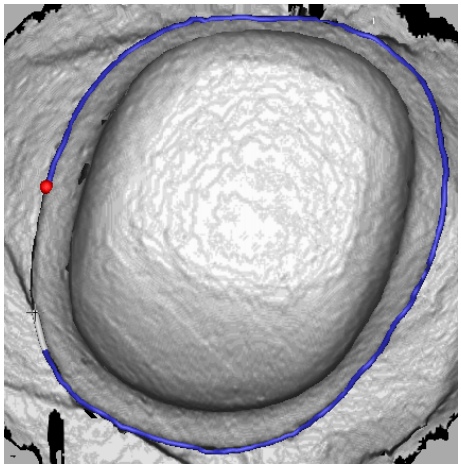
Tip: You can rotate the model during input in order to obtain a better view of the preparation limit.
Click and hold the left mouse button and move the model with the mouse.

1. Start the entry by double-clicking anywhere on the preparation margin.
2. Move the cursor along the preparation margin.
   Tip: To support the automatic edge detection, click anywhere near the margin on the raised side. There is an automatic correction when the next point is set.
3. Continue this procedure until you are back at the starting point.
4. Conclude the entry by double-clicking the starting point.

Entering the preparation margin in the case of blurred preparation edges



If you change to *"Manual"* in the page palette while entering the preparation margin, you can draw in the limit yourself.
Be careful to set the points exactly on the edge and place them close together.



If you wish to see the intensity image in blurred situations, change to the page palette in *"Manual with intensity image"*.

Tip: The space bar can be used to switch back and forth between drawing modes.

Moving to the next step

✓ The step is completed.

➢ Continue with the preparation limits for the next restoration by clicking on the desired restoration in the object bar.

or

➢ Click on the next step.

11.8 Defining the insertion axis

In the *"Define Insertion Axis"* step, you can work with the following tools:

- Insertion Axis

The use of the individual tools is described in the section "Page palette [→45]".

11.8.1 Redefining the insertion axis

Tip: Regions within a preparation margin that show an undercut from the viewing direction are marked yellow.

1. Change the position of the preparation such that all yellow markings disappear.
   If this is not possible, (e.g. in the case of diverging stumps) make sure that all preparation margins are completely visible from the viewing direction and the yellow-marked undercuts are as far away as possible from the preparation margin.
2. In order to achieve an optimum result with CEREC Biogeneric, change the position of the preparation so that the insertion axis is aligned as vertically as possible to the occlusal surface.
3. Then rotate the preparation model so that the model is correctly labeled by the axis designations (mesial<->distal). To do this, rotate the preparation in the occlusal view by grasping the right or left edge of the screen with the mouse pointer and then moving the pointer along the edge of the screen.
4. Confirm with the *"Ok"* button.

↳ The insertion angle of the restoration is determined.

11.9 Confirming quality

With some licensing versions (e.g. PAYG financing model), you must certify the quality of the model. Only following confirmation, can you change to the DESIGN phase.

1. Check the quality of the model.
2. Carry out any necessary corrections.
3. Click on the *"Check Models"* button.
   ↳ You have confirmed the model and can change to the DESIGN phase.

11.10 Finishing the phase

✓ The next phase is can be selected.

➢ Click on the next phase.

or

➢ Click on the double arrow.

↳ The program switches over to the next phase.

12 Phase DESIGN

12.1 Checking parameters

You can check the parameters for this restoration prior to further processing. The values entered here only apply to the current restoration.

This step is optional. If you skip this step, global parameters are used.

You can change the parameters as described in section Parameters [→ 23] .

12.2 Editing the restoration

The virtual model provides a visualization and design of a restoration in 3D.

Once the restoration has been calculated, you can change the restoration with the tools in the toolbar.

The individual tools and their applications are described in the .

12.3 Finishing the phase

✓ The next phase is can be selected.

➢ Click on the next phase.

or

➢ Click on the double arrow.

↳ The program switches over to the next phase.

13 MILL phase

13.1 Change the grinding unit

In the *"Milling Unit"* step, you can select the unit with which the restoration is to be ground.

13.2 Change the grinding settings

You can also select veneer mode and/or fast grinding in addition to the grinding process.

Veneer mode

Veneer mode ensures that grinding takes even the finest structures into account. This stops the veneer and anterior crowns binding.

Fast grinding

IMPORTANT
Loss of quality Fast grinding may have a negative influence on the quality of the restoration!

If desired, the grinding process can be accelerated for some materials. You can activate the *"Fast Milling"* button if you require this.

This mode is faster, however, the surface of the ground restoration is slightly rougher.

Two-stage grinding

Use two-stage grinding on restorations with complex margins and/or low spacers (e.g. multilayer inlays, partial crowns or full crowns with reduced spacers).

The grinding time will extend by around 50-60%.

IMPORTANT
Only use two-stage grinding for firmly screwed ceramics.

13.3 Selecting the color

You can set the color of the restoration and the incisal edge for "CEREC Blocs C In" materials.

✓ You have selected the "CEREC Blocs C In" material in the ADMINISTRATION phase.

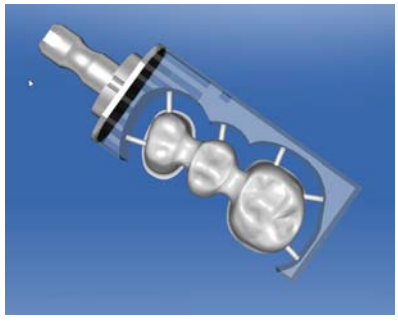
1. Select in the *"Select Color"* step.
2. Select the desired color by clicking on the color in the color center.
3. Click on *"Incisal Edge"*.
4. If necessary, adjust the dentine core of the individual situation in the incisal or apical direction.
5. Click the *"OK"* button.
6. The software sets the restoration in the block according to the selected parameters.

13.4 Positioning the restoration in the block

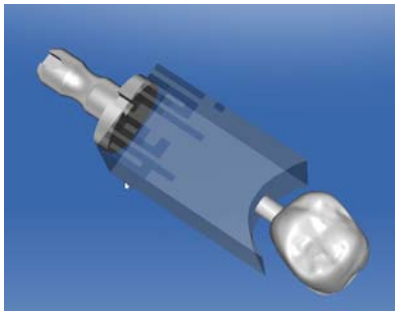
You can use the positioning tools to move the block around the restoration, turn it, and determine the sprue location.

The tools are described in the section .

2 pinned connection options are available for milling purposes. Always attempt to nest the restoration in a block (multiple sprue locations). To take full advantage of the block, for individual elements the software switches to one sprue location. You can generate a nest again at any time by selecting a larger block.



Several sprue locations in the block



Single sprue location in the block

13.5 Starting the grinding process

Once you have completed the design and assessed the restoration in the grinding preview, you can grind the restoration.

Further information on grinding can be found in the corresponding operating instructions.

14 Smile Design

With Smile Design, anterior restorations can be designed with consideration of the mouth or face of the patient.

During the construction, it is possible to change between the jaw model and the view with the patient using the analysis tool.

Changing to Smile Design

✓ You set the model axis in the *"Set Model Axis"* step in the MODEL phase.

➢ Click on the *"Smile Design"* function on the left lower on-screen menu.

Changing to Smile Design

1. In the *"ADMINISTRATION"* phase, look for *"Case"* and select the *"Smile Design"* function.
2. After the *"Set Model Axis"* step, when in the MODEL phase, click *"Next"*.
   ↳ The software changes to the *"Smile Design"* function.

Exiting Smile Design

✓ You are in *"Smile Design"*.

➢ Click the *"Full Model"* function at the bottom left edge of the screen to exit *"Smile Design"*.

You can change back to SmileDesign at any time.

14.1 Loading reference image

You must load an image of the patient's face for Smile Design. The image must be a head-on passport photograph of the patient smiling.

Permitted formats	Resolution
• jpeg / jpg • bmp • png	Min. 2 megapixels

1. Click on the step *"Load Reference Picture"*.
   ↳ The *"Load Reference Picture"* dialog box opens.
2. Select the folder where the file is located.
3. Select the relevant file.
4. Click on the *"Open"* button.
   ↳ The software changes to the *"Define Feature Points"* step.
   ↳ The image is then imported and opened.

14.2 Setting reference points

You must set the reference points in the patient image in the *"Define Feature Points"* step. Then simply proceed as prompted by the software. The yellow point in the avatar image shows you where the next face point must be set.

If a magnifier is displayed automatically, you must set the point as precisely as possible.

You can undo each step using *"Undo"*.

14.3 Adjusting the canthi distance

Use a suitable measurement tool to measure the clearance between the two canthi points. Change to step *"Lateral Canthi Distance"*.

Adjust the value using the slider.

IMPORTANT
You have to perform this step to achieve a precise correlation between a 3D facial model and the jaw.

14.4 Aligning the model

Align the model to the image.

Positioning the model

➢ Left-click on an arrow symbol and hold the button down.

↳ You can displace or rotate the model in the corresponding direction.

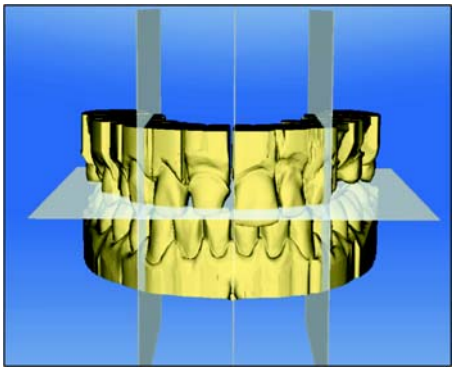
Use the *"Left"* or *"Right"* perspective or turn the facial model to the side using the *"Global"* view options. This enables you to align the facial model and the jaw model precisely.

Changing axes

➢ Right-click on an arrow symbol and hold the button down.

↳ You can change the axis on which the object is rotated or moved.

14.5 Auxiliary planes

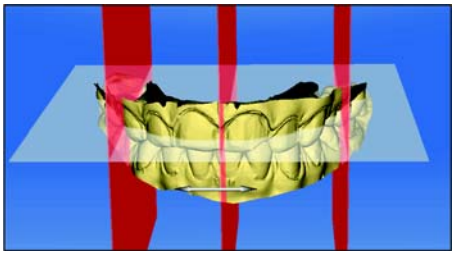


You can display the auxiliary planes in the *"Guideline"* step. The auxiliary planes help with positioning the jaw in the image of the patient.

You can also display the planes for the construction.

1. Double click on the plane you would like to adjust.
2. Adjust the plane using the arrow points.

Positioning the plane



➢ Click with the left mouse button on the arrow symbol and hold the button down.

↳ You can move the planes in the relevant direction.

If you only want to move one plane, remove the checkmark at *"Group Guidelines"*. You can activate the planes by double clicking on them.

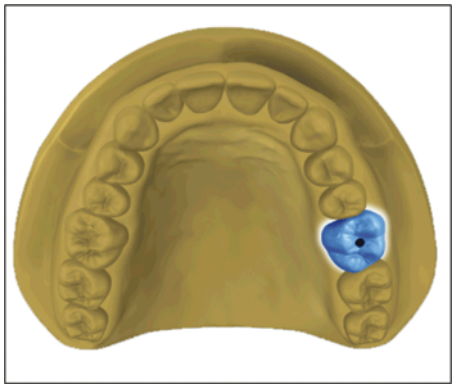
15 Abutments

15.1 Abutment - Biogeneric individual - MultiLayer

Design example *"Abutment"* with design mode *"Biogeneric Individual"* (*"Split"*: *"MultiLayer"*) on tooth 26 (#14)

15.1.1 Create a new restoration

Determine restoration type



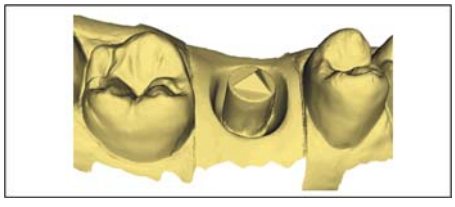
✓ You have selected a case or created a new one.

✓ You are now in the ADMINISTRATION phase.

1. Choose the restoration range *"Single Restoration"*.
2. Select the restoration type *"Abutment"*.
   ↳ The types of restoration available match the selected tooth number.
3. Choose the design modes *"Biogeneric Individual"* and *"MultiLayer"*.
4. Click on the tooth for which the restoration must be set up.
   ↳ The selected tooth is marked.

Choose settings

15.1.2 Scanning a preparation



1. Acquire the preparation (see ACQUISITION phase [→ 67]).
2. If all required acquisitions are present, change to phase MODEL.

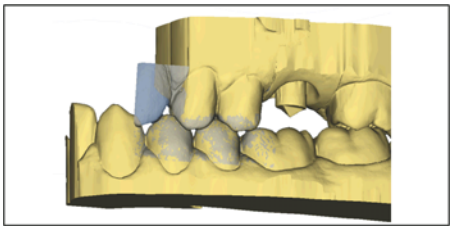
15.1.3 Editing the model

This step is optional. To access this step, you must click on it.

✓ The step Edit Model is active.

1. With the tool *"Form"*, apply, remove or smoothen material (seeForm [→ 47]).
2. With the tool *"Cut"*, cut out unnecessary image areas (seeCut out model areas [→ 48]).
3. Correct defects with the tool *"Replace"* (seeCorrecting defects [→ 49]).

15.1.4 Bite registration



✓ The step *"Bite Registration"* is active.

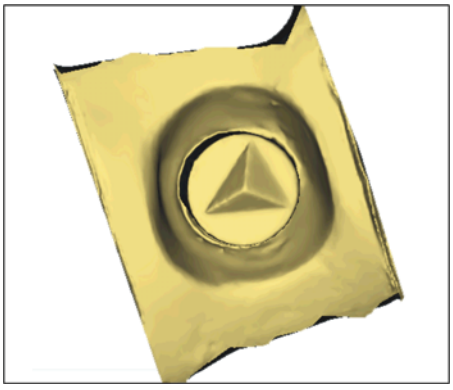
➢ Complete the buccal registration (see Buccal registration [→ 88]).

15.1.5 Set model axis

✓ The step *"Set Model Axis"* is active.

➢ Set the axes for model alignment (see Set model axis [→ 92]). Please ensure a consistent representation here.

15.1.6 Mask areas



✓ The step *"Trim Area"* is active.

➢ Cut away the distal and mesial neighbors, so that you input an open line in each case (see Trimming the preparation [→ 93]).

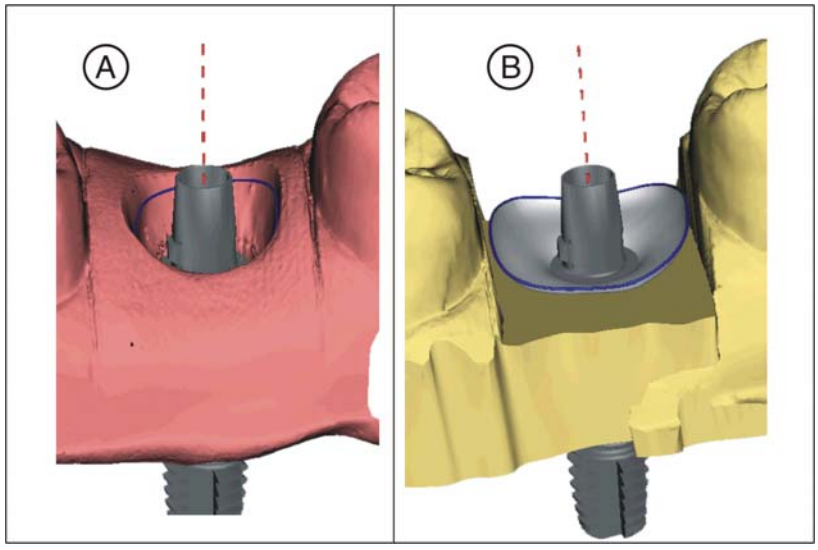
15.1.7 Select Scanbody

✓ The step *"Click Scanbody Head"* is active.

➢ Double-click the Scanbody you are working on.

15.1.8 Editing the baseline

If you have acquired a gingival mask, the tool *"Use Gingiva Mask"* is activated automatically.

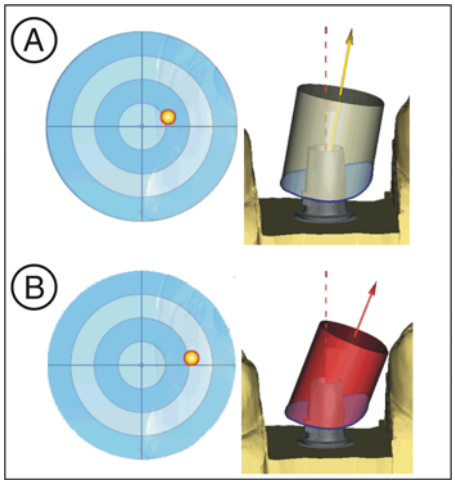


If you have acquired a gingival mask, the baseline (emergence line, blue) will be suggested automatically (**A**).
If you have not acquired a gingival mask, or *"Use Gingiva Mask"* has been deselected, an emergence profile will automatically be suggested (**B**).

✓ The step *"Edit Base Line"* is active.

➢ Adjust the baseline where necessary.
Begin the entry by double-clicking on any part of the preparation's edges. Move the cursor along the preparation's edge until it arrives at the starting point again. Conclude the entry by double-clicking the starting point.

15.1.9 Define restoration axis



The angle between the implant axis (dotted red) and the restoration axis (yellow arrow) may be no higher than 20° (**A**).

If an angle of more than 20° is selected between the implant axis (dotted red) and the restoration axis (yellow arrow), the user will be warned by a change of color to red (**B**).

⚠ CAUTION

Exceeding specified safety limits of your device results in the construction of a misbranded device which may lead to premature abutment fracture. In this case the patient must be informed that he is going to receive a device that is beyond the labeled specifications. Please refer to the corresponding manual of the used material for the cleared angle/wall thickness limitations.

➢ A caution will pop up:
"Warning! The angle you have set between the implant direction and abutment direction leads to a construction that is beyond the cleared safety limit. If you do not adjust this situation you are producing a device beyond the labeled specifications. Please consider the user manual for required actions".

✓ The step *"Define Restoration Axis"* is active.

1. Check the restoration axis and adjust it where necessary (see Defining the insertion axis [→ 95]).
2. Change to phase DESIGN.

15.1.10 Adjusting parameters

⚠ CAUTION

Exceeding specified safety limits of your device results in the construction of a misbranded device which may lead to premature abutment fracture. In this case the patient must be informed that he is going to receive a device that is beyond the labeled specifications. Please refer to the corresponding manual of the used material for the cleared angle/wall thickness limitations.

✓ The step *"Restoration Parameters"* is active.

1. Adjust the parameters where necessary.
2. Confirm the changes with *"Ok"*.
   ↳ The initial suggestion is then calculated automatically.
3. If you have not altered any parameters, change to the *"Calculate Restoration"* step.
   ↳ An initial suggestion is calculated.

15.1.11 Editing the restoration

The virtual model provides a visualization and design of a restoration in 3D.

Once the restoration has been calculated, you can change the restoration with the tools in the toolbar.

The individual tools and their applications are described in the .

Editing a single-part restoration

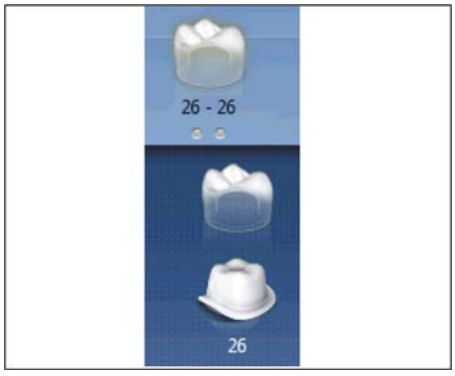
✓ The step *"Edit Restoration"* is active.

➢ Use the tools from the page palette to edit whichever restoration is active.

Edit layers individually

✓ The step *"Edit Restoration"* is active.

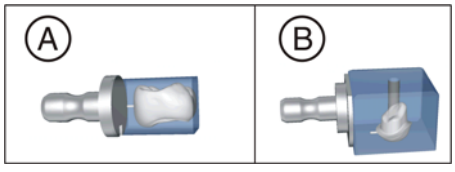
1. Select the *"Split"* tool.
   ↳ The crown is displayed transparently.



2. With the mouse pointer, go to the bottom edge of the picture.
   ↳ The restoration range expands. 2 restorations are represented for the tooth position.
3. Click on the icon for crown or abutment, to toggle between the two restorations.
4. Use the tools from the page palette to edit whichever restoration is active.

Change to phase MILL. Both restoration layers have to be ground individually.

15.1.12 Grinding of restoration layers



1. In step *"Milling Unit"*, select the tool with which the restoration needs to be ground.
2. In step *"Change Block Size"*, change the block size, where necessary.
3. In step *"Adjust Mill Position"*, position the restoration in the block, where necessary.
4. Start the grinding process.

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We reserve the right to make any alterations which may be required due to technical improvements.

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