New as of: 03.2019

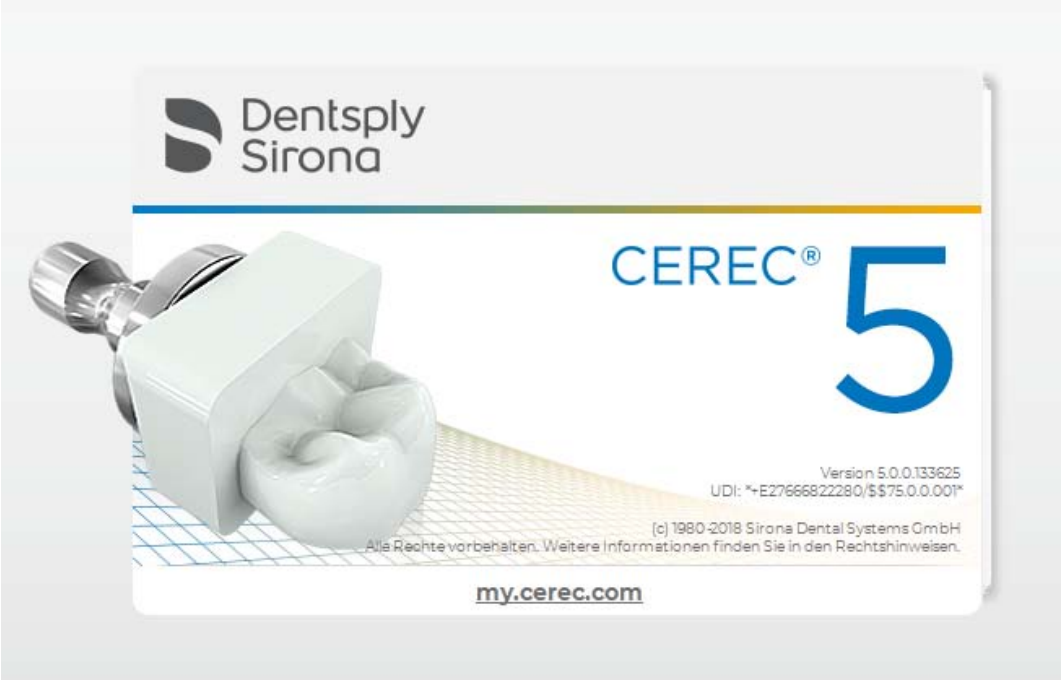
Dentsply Sirona

CEREC 5

Software version 5.x

Operator's Manual (not valid for USA)

English



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1 Introduction

1.1 Dear CEREC user

Thank you for purchasing your CEREC 5 software from Dentsply Sirona.

In connection with the CEREC acquisition unit and grinding and milling unit, this software enables you to produce computer-assisted 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.

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 Contact data

Customer Service Center

In the event of technical queries, please use our online contact form at the following address:
http://srvcontact.sirona.com

Manufacturer's address

Sirona Dental Systems GmbH
Fabrikstrasse 31
64625 Bensheim
Germany

Tel.: +49 (0) 6251/16-0
Fax: +49 (0) 6251/16-2591
e-Mail: contact@dentsplysirona.com
www.dentsplysirona.com

1.3 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.

1.4 General information on the User Manual

Always keep the User manual handy in case you or another user require(s) information at a later point in time. Print out the manual and note where it is stored on the unit or online.

If you sell the unit, make sure that the manual is included with it either as a hard copy or on an electronic storage device so that the new owner can familiarize himself with its functions and the specified warning and safety information.

Online portal for technical documents

We have set up an online portal for the Technical Documents at www.dentsplysirona.com/manuals. From here, you can download the manual along with other documents. Please complete the online form if you would like a hard copy of a particular document. We will then be happy to send you a printed copy free of charge.

Help

If you continue to have difficulties despite having thoroughly studied the manual, please contact your dealer.

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

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

2.2 General safety information

Only use original software

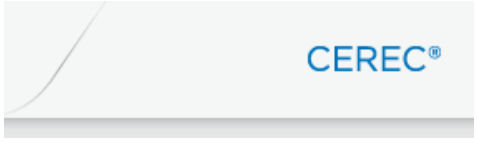
Only use original software or software which has been released by Dentsply Sirona. To produce restorations and equipment, manipulated or non-released software components must not be used.

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

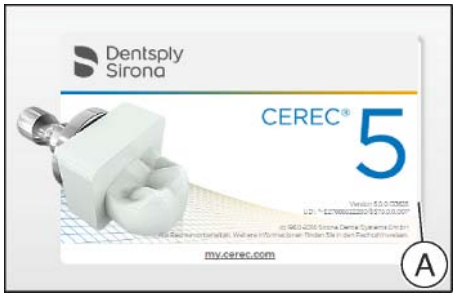
Please check that each installed component has been granted approval in its country. Contact your dealer for more information.

Checking the installed software version

You can check which version is installed during operation.



1. On the phase bar, tap or click on *"CEREC"*.



2. Tap or click on the right narrow stripe (**A**) behind the opened window.
3. The advanced window contains all information relating to the software CEREC 5.

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).

Observe the information from the material manufacturer

Please observe the processing instructions and combination options of the material/implant manufacturer applicable in your country.

For the USA only

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

2.2.1 Indication of use

Creation or import of optical impressions of dental situations (intraoral or from stone models). Construction or import of dental restorations. Export of dental restorations and models. Creation of dental restorations or stone models out of ceramic and plastic materials. Creation of dental surgical guides or drill bits as part of dental surgical guides. Data export of optical impressions for planning and creation of orthodontic devices.

2.3 Accessories

In order to ensure product safety, this device may be operated only with original Dentsply Sirona accessories or third-party accessories expressly approved by Dentsply Sirona. The user is responsible for any damage resulting from the use of non-approved accessories.

2.3.1 Accessories for implant measurement

Manufacturer / Implant	Implant Diameter	Platform	ScanPost	REF	Connection	Abutment Screw	REF
Dentsply Sirona Implants							
AstraTech Osseospeed EV	3	3.0	AT EV 3.0 S	6586353	S	AT EV 3.0	6586262
	3,6	3.6	AT EV 3.6 S	6586361	S	AT EV 3.6	6586270
	4,2	4.2	AT EV 4.2 L	6586379	L	AT EV 4.2	6586288
	4,8	4.8	AT EV 4.8 L	6586387	L	AT EV 4.8	6586296
	5,4	5.4	AT EV 5.4 L	6586395	L	AT EV 5.4	6593714
AstraTech OsseoSpeed TX	3.5 S / 4.0 S	3.5 / 4.0	AT OS 3.5/4.0 L	6431055	L	AT OS 3.5/4.0	6460344
	4.5 / 5.0 / 5.0 S	4.5 / 5.0	AT OS 4.5/5.0 L	6431063	L	AT OS 4.5/5.0	6460443
Ankylos	A, B, C, D	C/X	ANK S	6586569	S	Not available	
Frialit / Xive	3,4	3.4	FX 3.4 S	6430891	S	FX 3.4, 3.8, 4.5, 5.5	6460476
	3,8	3.8	FX 3.8 S	6430909	S		
	4,5	4.5	FX 4.5 L	6430917	L		
	5,5	5.5	FX 5.5 L	6430925	L		
Biomet 3i							
Certain®	3,4	3.4	B C 3.4 S	6431212	S		
(Inner connection)	4,1	4.1	B C 4.1 L	6431220	L	B C 3.4, 4.1, 5.0	6460450
	5	5.0	B C 5.0 L	6431238	L		
Outer hexagon	3,4	3.4	B O 3.4 L	6431089			
	4,1	4.1	B O 4.1 L	6431105	L	B O 3.4, 4.1, 5.0	6460468
	5	5.0	B O 5.0 L	6431113			
BioHorizons							
(Inner connection) tapered internal,	3,0 / 3,8	3.0	BH 3.0 S	6532761	S	BH 3.0	6561240
tapered internal tissue level, tapered	3,0/3,5/3,8/4,0/4,6	3.5	BH 3.5 L	6532886	L	BH 3.5, 4.5, 5.7	6561257
plus, internal dental implant, single stage	4,0/4,6/5,0/5,8	4.5	BH 4.5 L	6532944	L		
dental implants	5,0/5,8/6,0	5.7	BH 5.7 L	6536234	L		
Nobel Biocare							
Replace	3,5	NP	NB RS 3.5 L	6430933	L	NB RS 3.5	6460526
(Tri-channel inner connection)	4,3	RP	NB RS 4.3 L	6430941		NB RS 4.3, 5.0, 6.0	6460534
	5	WP	NB RS 5.0 L	6430958			
	6	6.0	NB RS 6.0 L	6430982			
Nobel Active	3,5	NP	NB A 4.5 L	6431279	L	NB A 4.5	6460484
(conical connection)	4,3 / 5,0	RP	NB A 5.0 L	6431287		NB A 5.0	6460492
Branemark®	3,3	NP	NB B 3.4 L	6431006	L	NB B 3.4	6460500
(Outer hexagon)	3,75 / 4,0	RP	NB B 4.1 L	6431022		NB B 4.1	6460518
Osstem							
Osstem TS	3,5	Mini	O TS 3.5 L	6534197	L	O TS 3.5	6561208
	4,0/4,5/5,0/6,0/7,0	Standard	O TS 4.0 L	6536846		O TS 4.0	6561232
Straumann							
Bone Level	3,3	NC (3.3 mm)	S BL 3.3 L	6431246	L	S BL 3.3, 4.1	6460542
	4,1 / 4,8	RC (4.1 mm / 4.8 mm)	S BL 4.1 L	6431253			
Standard	3,3	NN (3.5 mm)	S SO 3.5 L	6431162	L	S SO 3.5	6460559
(Tissue Level)	3,3 / 4,1 / 4,8	RN (4.8 mm)	S SO 4.8 L	6431170		S SO 4.8, 6.5	6460567
	4,8	WN (6.5 mm)	S SO 6.5 L	6431196			
Thommen Medical							
SPI Element, SPI Contact, SPI Element	3,5	3,5	TM 3.5 S	6544386	S	TM 3.5	6561265
Inicell, SPI Contact Inicell	4	4	TM 4 S	6544394		TM 4.0, 4.5, 5.0, 6.0	6561273
	4,5	4,5	TM 4.5 S	6544402			
	5	5	TM 5 S	6544410			
	6	6	TM 6 S	6544428			
Zimmer							
Tapered Screw-Vent	3,7 / 4,1	3,5	Z TSV 3.5 L	6431139	L	Z TSV 3.5, 4.5, 5.7	6460575
	4,7	4,5	Z TSV 4.5 L	6431147			
	6	5,7	Z TSV 5.7 L	6431154			

2.3.2 Hub

Hub is a network-based data center for CAD/CAM data in the practice. Hub stores CEREC AC data and enables data exchange between CEREC devices.

If a Hub is connected to the network, it is detected automatically.

The Hub logo appears in the context bar in the CEREC 5.

The CEREC 5 must be set so that it can save data on the Hub. For more information refer to the Hub Operator's Manual.

1. In the *"Configuration"* system menu, under *"Settings"* select the *"Patient Database"* menu.
   ↳ The *"Database Settings"* menu appears.
2. Activate the *"Hub Patient Database"* option.

Setup and commissioning of the Hub is described for users in the Operator's Manual. For more information, refer to the Hub Service Manual.

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 these operating instructions. Such information is highlighted as follows:

⚠ DANGER

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

⚠ WARNING

A possibly dangerous situation that could result in serious bodily injury or death.

⚠ CAUTION

A possibly dangerous situation that could result in slight bodily injury.

NOTE

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

IMPORTANT

Application instructions and other important information.

Tip: Information for simplifying 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 ➢ Individual action step	Requests you to do something.
See "Formats and symbols used [→ 15]"	Identifies a reference to another text passage and specifies its page number.
• List	Designates a list.
"Command / menu item"	Indicates commands / menu items or quotations.

2.4.3 Operating conventions

Example	Meaning
Tapping	Pressing once and releasing the finger or the left trackball/touchpad key on the acquisition unit.
Double-tapping	Pressing twice quickly in succession and releasing the finger or the left trackball/touchpad key on the acquisition unit.
Moving the mouse in one direction	On the acquisition unit: Moving the trackball/finger in the corresponding direction.
Seizing a point	Pressing and holding the left mouse button (left trackball/touchpad button on the acquisition unit).
"Ctrl+N"	On the keyboard: Press the **Ctrl** and **N** keys simultaneously.
Drag & drop	. Select an element (e.g. a pictograph) and drop / release it onto a potential destination.

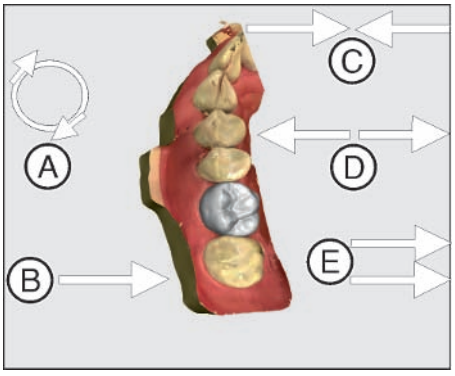
Multi-Touch Technology

The screen is equipped with multi-touch technology. You can navigate and enter content using your finger. Icons open if you tap them with your finger.

Navigating in the software

Example	Meaning
Tap	Single tap on the screen using your finger. To execute functions in the software you must tap once on the corresponding button.
Double-click	Two taps on the screen in rapid succession using your finger. **Tip:** To open programs in Windows you must tap the corresponding button twice (double-click).
Call up shortcut menus	Tap the corresponding point and hold the finger on the screen for a longer period. A shortcut menu opens at this point.
Drag & drop	Tap an element (e.g. pictograph), drag and drop onto new potential destination.

Edit a 3D model with multi-touch



You can edit the 3D model using multi-touch.

Item	Function
A	➢ Complete a rotary movement using 2 fingers. ↳ The object is rotated in the plane.
B	➢ Drag with 1 finger. ↳ The model is rotated out of its current plane.
C	➢ Pull 2 fingers in together. ↳ The object is minimized.
D	➢ Pull the fingers apart. ↳ The object is maximized.
E	➢ Drag with 2 fingers. ↳ The model is dragged.

2.4.4 Odontogram used

The software can be adjusted to the international odontogram (FDI) or the USA odontogram (ADA) (Odontogram).

In this documentation teeth are named as follows:

Principle:	FDI	(#ADA)
Example:	13	(#6)

2.5 User interface

Overview of the user interface

A	System menu	F	Tool wheel
B	Phase bar	G	Step menu
C	Information dialog	H	Object bar
D	Side palette	I	Context bar
E	Main window		

2.5.1 New features from the new acquisition unit and CEREC 5.x software

2.5.1.1 New screen format

With the new CEREC Primescan AC / Primescan AC / CEREC Omnicam AC / Omnicam AC acquisition unit, you are provided with a new screen resolution. The wide-screen format in 16:9 offers you more space for an increased level of precision when working on models and restorations. Tool windows can be positioned more generously, at the same time the 3D preview is presented in a rather large format.

2.5.1.2 New control options

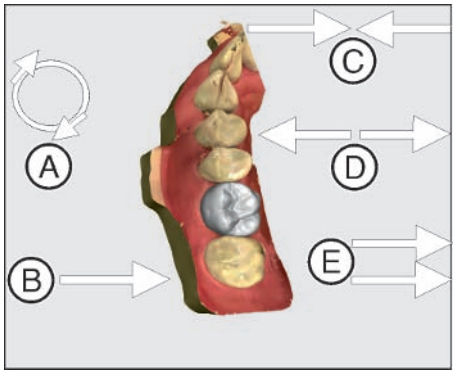
Touch functionality

The CEREC 5 software is touch-compatible. This means that you can interact directly on screen with your finger.

The application can be operated unconditionally by switching between touch and using a touchpad or trackball.

A number of functions can only be executed by trackball. If this is the case, this is indicated in the corresponding sections.

Edit a 3D model with multi-touch



You can edit the 3D model using multi-touch.

Item	Function
A	➢ Complete a rotary movement using 2 fingers. ↳ The object is rotated in the plane.
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C	➢ Pull 2 fingers in together. ↳ The object is minimized.
D	➢ Pull the fingers apart. ↳ The object is maximized.
E	➢ Drag with 2 fingers. ↳ The model is dragged.

2.5.1.3 Touchpad

In some markets, the CEREC Primescan AC / Primescan AC / CEREC Omnicam AC / Omnicam AC acquisition unit features a touchpad rather than a trackball. On the flush-mounted horizontal surface, you can move a mouse cursor with your finger on the screen. All the usual interactions of a standard mouse are possible.

2.5.1.4 Trackball

To operate a mouse, there is a trackball integrated into the German-speaking device model. This enables use of a mouse cursor and represents alternative input options for the direct touch operation by finger on the display.

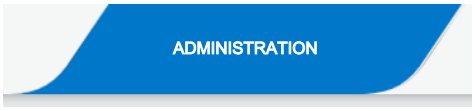
2.5.2 Phase bar

The workflow is illustrated in the software in 5 phases.

Phase bar

- ADMINISTRATION
- ACQUISITION
- MODEL
- DESIGN
- MANUFACTURE

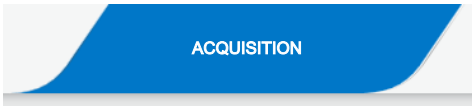
2.5.2.1 ADMINISTRATION



In this phase, you can perform the following:

- Create restorations and determine their type
- Specify a production machine
- Select material

2.5.2.2 ACQUISITION



In this phase, you can perform the following:

- Creating acquisitions with the scanner
  - lower jaw,
  - upper jaw,
  - buccal bite registration
- View a 3D preview of the acquisitions
- Add additional image catalogs
  - BioCopy Lower
  - BioCopy Upper
  - Gingiva Mask Lower Jaw
  - Gingiva Mask Upper Jaw
  - Scanbody Lower Jaw
  - Scanbody Upper Jaw

2.5.2.3 MODEL

In this phase, you can perform the following:

- Edit the model
- Check or redefine the bite situation
- Align the models
- Check the trimmed model or manually re-trim
- Check, correct or re-enter the preparation margin
- Define insertion axes
- Define jawline and restoration positions
- Define restoration axes if necessary (abutments and telescopes only)

2.5.2.4 DESIGN

In this phase, you can perform the following:

- Select tooth form
- Position and scale restorations
- Individually change restoration parameters
- Have initial restoration suggestions generated
- Design restorations individually

2.5.2.5 MANUFACTURING

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

- Determine the color of the block which should be sintered with a connected CEREC SpeedFire sintering furnace.
- Specify a production machine
- Select the CEREC SpeedFire (if connected)
- Define manufacturing options (not possible for all materials)
- Determine the block size
- Check and adapt the positioning of the restoration in the block
- Define the sprue location of the restoration
- Start the manufacturing process
- Export restorations/models for the inLab CAM SW.

2.5.3 Object bar

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

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

Active elements are presented on a blue background.

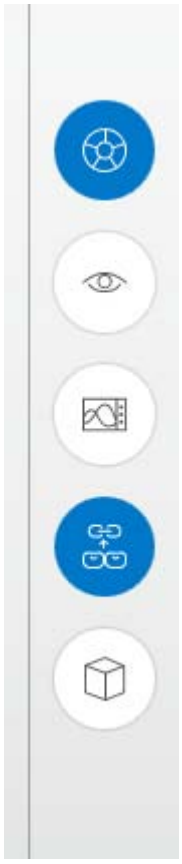
Once a case includes more than three restorations, these are hidden summarized behind a button.

If restorations span multiple tooth positions or two objects per tooth position are selectable for multilayer, the object bar is extended downwards. You can change between different active elements in the extended area.

During the restoration of multiple teeth or groups of teeth (e.g. bridge) it is necessary to complete mandatory steps (e.g. drawing the preparation margin) for all objects in order to proceed.

Corresponding notes on the objects provide information about the status.

2.5.4 Page palette



Various functions and options are offered to you in the page palette, depending on the restoration phase currently active.

You can open several page palettes at the same time. All page palettes are initially closed. Mandatory palettes are automatically shown as open upon entry in the respective step. Opened page palettes share the available height.

Should this display be inadequate for you, you can remove any page palette of your choosing from the fixed state of the magnet bar. To do this, press and hold your finger on the header of the page palette and then drag the palette to the desired position within the main window.
Tip: If you are using CEREC 5 software in window mode or on multiple screens, then you can also pull the page palettes out of the application window and position them in any point on your screen.

All changes to a page palette (size and position) are saved separately for each step. You can therefore configure each work step as you want.

IMPORTANT
If a page palette is closed, the size and position are retained when next opened. If a page palette is stuck back on the magnet bar, however, the saved size and position are lost.

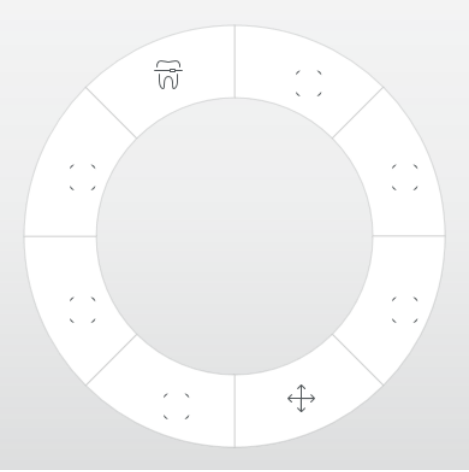
In order to affix a page palette back onto the magnet bar on the right side, drag any page palette over the magnet bar on the right side. The magnet bar lights up, suggesting various positions for the window. The window then snaps into place as soon as you release your finger. The page palette will now automatically put itself back in order with the other page palettes.

To close a page palette, click on the right button in the page palette header or once more on the respective right button in the magnet bar.

Minimize and maximize

For page palettes with a variety of functions, a compact view is available. Only the tools and functions most frequently used are presented in this view. You can switch back and forth between both views by tapping the corresponding button (left next to Close).

2.5.5 Tool wheel



In the ADMINISTRATION, MODEL, DESIGN or MANUFACTURE phases, the tool wheel provides the most common tools for simplifying access. The tools available vary depending on the current step.

1. Press and hold with your finger or right-click in the workspace.
   - The tool wheel opens.
2. Press and hold with your finger again or click with the right mouse button anywhere in the workspace.
   - The tool wheel moves to the position of the mouse cursor/ finger.
3. Select a tool.
   - The selected tool is available. The tool wheel closes automatically.

You also can close the tool wheel by briefly tapping or clicking in the workspace.

2.5.6 Step menu

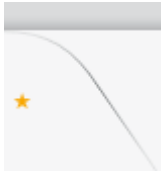
Each phase is divided into steps. They are shown in the step menu at the bottom edge of the screen. The step menu changes depending on which phase the current restoration is located in at the time.

This menu guides you through the process step-by-step. The system runs through all steps in a phase with the restoration(s). Changes in the individual steps are accepted by clicking on the next step.

The double arrow keys in the context bar can be used to switch between phases.

Status check marks and asterisks

All steps have a status bar. Asterisks indicate obligatory steps.



Orange asterisk / no check mark: The step is mandatory and has not been started yet.

White asterisk / no check mark: The step has not yet been completed.

No asterisk / white check mark: The step has been completed successfully.

Mandatory and optional steps

Optional steps can be shown or hidden using the button on the right of the step menu. To do so, tap in the right area near to the edge of the last step.

Optional steps are executed automatically and have a green check mark with immediate effect. However, the standards used can be modified. Obligatory steps are also automatically executed by the software as far as possible. The automatic process stops at the next mandatory step, when self-execution is necessary. There is only one obligatory step per phase.

2.5.7 Context bar

In the lower area of the screen, you will find a black bar.

In this area, you will find context-dependent function buttons, such as the double arrow keys for switching to the next phase.

Certain steps must be confirmed with a *"OK"* or can be interrupted.

Furthermore, the context bar contains the status information and functions on the right side:

- Screen lock
- Connect Chat
- Hub connectivity
- Battery status

3 Getting started

3.1 Installing the software

The software requires at least the 2.00 firmware version of the USB license stick. Update the firmware version if necessary. For more information, refer to the "License manager" section.

A CEREC AC acquisition unit with at least hardware version LQ is needed for the software.

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

3.1.1 Installation via USB stick

Preparing the installation

✓ The USB license stick firmware is available in at least version 2.00.

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

1. Insert the USB stick into the corresponding USB port of the acquisition unit.
   ↳ The setup program starts automatically.
2. If this is not the case, run the *"Setup.exe"* file in the root directory of the stick.
   ↳ This installation program starts.

Installing the application

1. Select the language for the following installation and then press the *"Next"* button.
2. Read the information on copyright carefully and then press the *"Next"* button.
3. In the next step, select the language and application region for the application and then press the *"Next"* button.
4. In the next step you have the option of defining another folder for the installation of the application and, if necessary, an alternative folder for the patient data folder.
   Then press the *"Next"* button. The path to the patient data folder can still be changed after the installation via the configuration menu.
5. In the next step, the license agreement appears. Read through the license agreement carefully.
   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.
6. In the next step, your license is checked on the USB license stick. Make sure the USB license stick is inserted properly for this purpose before clicking on the *"Next"* button.
   Tip: You may skip this step. To do this check the *"Skip License Check and continue with application installation"* option and then press the *"Next"* button. If the license check is skipped, the software will run in demo mode.
   ↳ The application is now installed. This may take several minutes.
7. Following successful installation, press the *"Start"* button to complete the installation and to start the application immediately after this. At this point, you have the option to subscribe to a Dentsply Sirona newsletter.
   Tip: If you do not want to start the application immediately, remove the tick from the *"Start application directly"* check box and then press the *"Exit"* button. The installation program closes.

3.2 Uninstalling the software

✓ The program is closed.

1. Press “Start / All Programs / Sirona Dental Systems /CEREC 5 / 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, confirm with the *"Yes"* button or decline with the *"No"* button.
   ↳ The software is uninstalled.

3.3 Restore factory default settings

✓ The program is closed.

1. Uninstall the software (see "Uninstalling the software [→ 28]").
2. Install the software (see "Installing the software [→ 27]").
   ↳ The original factory default settings are restored.

3.4 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 (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 License manager.

3.5 Downloading software

Auto-update, Sirona Connect Center

IMPORTANT
In order to use the auto-update function, the PC must be connected to the Internet.

During the installation of CEREC 5, the auto-update function is also installed as a part of the Sirona Connect Center. You can conveniently download and install future software updates of CEREC 5 in the form of service packs over the Internet.

Once an update is ready for download, you are notified of this automatically through a dialog box.

Update

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

3.6 Starting the software

✓ The CEREC 5 software is installed. You will find the start icon on the desktop.

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

1. Double-click the CEREC 5 start icon.

or

➢ Press “Start / All Programs / Sirona Dental Systems/ CEREC 5 / CEREC 5”.

↳ The software is started.

4 Design mode

4.1 General information on Biogeneric

Biogenerics enable the CEREC software to reconstruct teeth in a natural way. Biogenerics is a biogeneric process based on the scientific understanding that there are morphological connections between the teeth that can be expressed in mathematical functions.

With CEREC 5 , the suggestion process for biogenerics has undergone fundamental overhaul. For example, the positioning and the overall morphology are now also included in the analysis and suggestion. Consequently, the quality of the initial suggestions has been significantly further improved. This applies to individual teeth, but especially for multiple restorations and anterior teeth as well.

All teeth recorded by the camera are analyzed with respect to their position and morphology. Based on this analysis the relevant restoration can be produced in fully automated fashion.

For the biogenerics to deliver ideal suggestions, it is important that entries are correct and complete. This applies to the following steps in particular:

- **Exposure**
  The exposure should be good and complete. For single tooth provision, the neighboring teeth must also be recorded at a minimum. Scanning holes around the preparation and the proximal contacts should be avoided (see “Take a scan”).
- **Model axis**
  The model axis should be aligned precisely (see “Set model axis”).

4.2 Biogeneric Individual

In the *"Biogeneric Individual"* design technique, the exposure taken is analyzed and the restoration suggestion is calculated on the basis of this information. 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 Copy and mirror

Select the *"Copy & Mirror"* 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.

4.4 Biogeneric Copy

Select the *"Biogeneric Copy"* design technique in the case administration in the case details 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.

4.5 Bio jaw

The suggestion system for *"Bio Jaw"* restorations offers the option of adjusting the position and morphology (only the anterior teeth and premolars) prior to the first actual suggestion. In other words, in this step the restoration is not yet adapted to the preparation margin and only very roughly to the contacts with neighbors and antagonists. The adjustments are only made with the calculation of the initial suggestion.

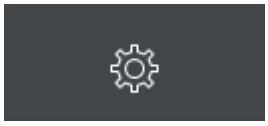
If the initial suggestion does not match your intentions in terms of its position or shape, you have the option of adapting this via an additional step.

Step Morphology

The optional *"Morphology"* step is available to you in the step menu. In this option you can choose whether the teeth should be calculated completely by the biogenerics (standard) or whether you want to specify the shape of the teeth. Then the biogenerics calculates an initial biogeneric suggestion for you with the defined tooth shape. Click on Tooth Shape for this and select the appropriate tooth shape.

Step Positioning

In the *"Positioning"* step, you can modify the position of the teeth. The *"Position and Rotate"* and *"Scale"* tools are available to you for this purpose. The new positioning can be performed for each tooth, or you can group neighboring restorations and thus process several teeth simultaneously. When you group the teeth, the software takes account of the contact situation of the selected teeth. For example, this means that if one tooth in a group is enlarged, the others are reduced in size. The same mechanism applies when positioning the teeth. The teeth are adjusted in size to the modified conditions here, too.

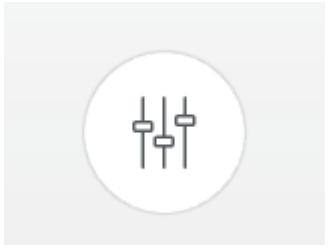


5 Configuration

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

- Parameters
- Devices
- Settings
- Apps

5.1 Parameters



The *"Parameters"* menu is structured by restoration types. You can make the settings for each of the following restoration types.

The changes in the values are displayed graphically.

The parameter values set here are used as standard values for all initial proposals.

Tip: If you want to change the parameter values only for one restoration, do this in the DESIGN phase in the step *"Restoration Parameters"*.

Parameter profiles

You can define parameter profiles. Through this menu you can define and save different parameter sets for all restoration types.

1. Duplicate the default settings with the manufacturer specifications by clicking on the tick icon.
2. Give the profile a unique name and confirm the entry with the tick icon.
3. Adjust the parameters to your needs and then save them.
   ↳ You can then use these default settings both as global and local parameters.
4. You can select the newly created profile as a favorite by clicking on the star icon.

Accepting settings

➢ Press the *"Ok"* button.

Discarding settings

➢ Press the *"Cancel"* button.

Resetting settings

➢ Press the *"Reset All Group Parameter"* button.
   ↳ The settings for this restoration type are reset to the factory settings.

Crown, inlay, onlay and veneer

Parameter	Description	Default value		
		Crown	Inlay/ Onlay	Veneer
Spacer (radial)	• Possibility for setting the space for the fastening material below the restoration. Acts up to the preparation margin. A different spacer for radial and occlusal can set for crowns.	120 µm	120 µm	120 µm
Spacer (occlusal)		120 µm	-	-
Marginal Adhesive Gap	• Adjust width of space on preparation margin. • The value of the adhesive gap cannot exceed the spacer value.	-	60 µm	-
Veneer Thickness	• Set to minimum thickness. • The software tries not to fall below this thickness when calculating the restoration suggestions. • DESIGN and MANUFACTURE phases: The value is displayed as a semitransparent geometry on the preparation. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.	-	-	500 µm
Occlusal Milling Offset	• Apply or remove material in the occlusal direction over the entire occlusal surface. • This value concerns only the milling result. • DESIGN and MANUFACTURE phases: The effects are not visible.	0 µm	0 µm	0 µm
Proximal Contacts Strength	• Set the thickness of the proximal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm	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	25 µm	-
Dynamic Contacts Strength	• Define the thickness of the occlusal contacts. Only works when using the virtual articulator.	25 µm	25 µm	-

Parameter	Description	Default value		
		Crown	Inlay/ Onlay	Veneer
Minimal Thickness (Radial)	• Set the minimum wall thickness in the horizontal direction. • The software tries not to fall below this thickness when calculating the restoration suggestions. • DESIGN and MANUFACTURE phases: The value is displayed on the preparation as a semitransparent geometry together with the minimum occlusal thickness and the instrument geometry setting. Areas where the thickness falls short of the minimum level in the design phase are thus made visible. • Observe the material manufacturer's recommendations when setting the minimum thickness. • Can be switched on and off	500 µm ON	500 µm ON	-
Minimal Thickness (Occlusal)	• Set the minimum wall thickness in the occlusal direction. • The software tries not to fall below this thickness when calculating the restoration suggestions. • DESIGN and MANUFACTURE phases: The value is displayed on the preparation as a semitransparent geometry together with the minimum radial thickness and the instrument geometry setting. Areas where the thickness falls short of the minimum level in the design phase are thus made visible. • Observe the material manufacturer's recommendations when setting the minimum thickness. • Can be switched on and off	700 µm ON	700 µm ON	-
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. • Can be switched on and off	50 µm ON	50 µm ON	50 µm ON
"Margin Ramp Angle"	Specifies the angle at which the restorations rise from the edge.	60°	60°	60°
"Margin Ramp Width"	Specifies the length of the edge with which the restoration rises from the preparation margin.	150 µm	150 µm	150 µm

Parameter	Description	Default value		
		Crown	Inlay/ Onlay	Veneer
Regard Instrument Geometry	Considers the instrument geometry in the bottom of the restoration. Areas of the preparation that are smaller than the diameter of the instrument geometry are calculated in the bottom of the restoration so that they increase with the instrument geometry.	YES	YES	YES
Remove Undercuts	Undercuts within the preparation margin are blocked out in the restoration bottom.	YES	YES	YES
"Block Out Undercuts Virtually"	If active the preparation margin is raised in the event of undercuts.	-	YES	-

Abutment (multi-layer 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.	1,000 µm
Telescope Angle	• Telescope angle of an abutment or telescope.	7 °
Minimal Thickness (Radial)	• Determines the minimum radial wall thickness in the horizontal direction. • Manufacturer specifications can be changed.	NO 500 µm
Minimal Thickness (Occlusal)	• Determines the minimum radial wall thickness in the occlusal direction. • Manufacturer specifications can be changed.	NO 2,400 µm

Abutment, crown facing structure

Parameters	Description	Default values
Spacer	• Increase or decrease space for adhesive underneath crown (not on the preparation margin).	120 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 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

Parameters	Description	Default values
Occlusal Contacts Strength	• Set the thickness of the occlusal contacts. • The software tries to achieve this stored thickness in the restoration suggestions.	25 µm
Dynamic Contacts Strength	• If activated in the options (see “Articulation [→ 53]”), the software attempts to achieve these saved thicknesses with 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
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

Pontic (anatomical)

Parameter	Description	Default value
Gingival Spacing	• Space between pontic and preparation geometry/gingiva.	0
Lingual Opening Angle	• Increase of pontic for the basal area in the oral direction.	0
Proximal Contacts Strength	• Set the thickness of the proximal 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
Dynamic Contacts Strength	• Define the thickness of the occlusal contacts. Only works when using the virtual articulator.	25 µm
Consider Intersections Outside Baseline	• Also adapt the pontic design outside the baseline to the gingiva.	-

Model

Observe the information supplied concerning the pins, model holders and base plates.

Parameters	Description
Segmentation Cut Width	• Set the width of the saw-cut.
Baseplate Distance	• Adjust the distance of the base plates from each other.
Pin Diameter	• Set the diameter of the pins.
Pin Spacing	• Set the distance of the pins from each other.

Articulator

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

Parameter	Setting	Mean value
"Arms"	Side of the Bonwill triangle	105 mm
"Base"	Intercondylar distance	100 mm
"Balkwill Angle"	Balkwill angle	23 °
"Sagittal Angle Left" and *"Sagittal Angle Right"*	Sagittal condylar path inclination	35°
"Bennett Angle Left" and *"Bennett Angle Right"*	Bennett angle	15°
"Immediate Side Shift Left" and *"Immediate Side Shift Right"*	Initial Bennett movement	0 µm
"Include Restorations"	If activated, available restorations are taken into consideration for the calculation of the FGPs as if they were already inserted. This means reconstructed cuspid guidance can be considered for the other restorations in the case, for example.	YES

Gingiva

Parameters	Description	Default value
"Gingiva Cleaning Spacer"	Specifies the distance between the gingival element and the gum. The gap is also produced at the edge of the gingival element.	0 µm
"Gingiva Spacer"	Specifies the distance of the gingival element and the gums between the edges of the elements. The edges are always on the gum.	50 µm
"Gingiva Implant Spacer"	Specifies the space between the gingival element and the cemented cap of the abutment.	100 µm
"Gingiva Minimal Thickness"	Specifies the minimum wall thickness of the element	700 µm
"Gingiva Margin Thickness"	Specifies the material thickness at the edge of the element. Prevents the splitting of the material.	50 µm
"Regard Instrument Geometry"	Considers the instrument geometry in the bottom of the restoration. Areas of the element that are smaller than the diameter of the instrument geometry are calculated in the bottom of the restoration so that they increase with the instrument geometry.	Yes
"Remove Undercuts"	Undercuts within the preparation margin are blocked out in the restoration bottom.	Yes

CEREC Guide Drilling Template

Parameter	Description	Default values
Thickness	Template body thickness.	4 mm
Spacer	Gap between the contact surface on the remaining teeth and the interior of the template body.	60 µm

Preparation analysis

Parameters	Setting	Default values
Tolerance	Distance between prepared stump and antagonist. The tolerance indicates the range between the minimum material thickness and the set standard value.	200 µm

5.2 Devices

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

If the device is inaccessible, a warning symbol is displayed instead of a miniature image.

Adding devices automatically

You can add additional devices with the *"Scan for New Devices"* function.

✓ The unit is connected to the PC.

1. Press 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 devices (manual)

You can add devices manually with the *"Add Device (Manual)"* function. This is mandatory for units which cannot be operated at the maximum speed of 115,200 baud. This concerns devices with long cable connections or when certain radio modules (e.g. Futaba, 19,200 baud) are used.

1. Press the *"Add Device (Manual)"* button.
2. Choose whether the device should be connected via the network or a serial connection.
3. Network: Enter the network address.
   Serial: Enter the COM port and the baud rate.
4. Press the *"Ok"* button.
   ↳ The software attempts to contact the device.

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

5.2.1 Scanner

5.2.1.1 Configuring the scanner

Audio feedback

Using the *"Sound:"* selection box, you can switch the audio feedback for acquisitions on or off. You can set the volume using the slide bar. You are able to choose from five different sounds.

Switch on the color analysis

1. In the software, navigate to the system menu and click on the *"Configuration"* button.
2. Press the *"Devices"* button.
3. Press the *"Omnicam"* / *"Primescan"* button.
4. Select the *"Shade Detection"* option.
   - You can choose between various color systems (*"Shade Guide Selection"*).
   - You can decide whether you would like to be notified in 14 days when the color calibration is needed again.
   - If color analysis is not possible with your scanner, a corresponding notice will appear. A color calibration is also not available in this case.
5. Confirm the changes below with *"Ok"*.
6. Click the *"Color Calibration"* button and carry out the color calibration.

5.2.1.2 Resetting scanner settings

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

5.2.1.3 Calibrating the scanner

Using a calibrated scanner

The measurement procedure used by the system requires the use of a calibrated scanner. The scanner is calibrated ex works. Calibrate the scanner after every reinstallation and after each time that it is transported. The calibration set supplied is available for the calibration process.

CEREC Omnicam / Omnicam: In order to achieve optimum results, the scanner must be allowed to warm up for 15-20 minutes before calibration.

CEREC Primescan / Primescan: In order to achieve optimum results, the scanner must be allowed to warm up for 2 minutes before calibration.

Recalibrate the scanner 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 / 85°F),
- with temperature differences of over 15°C / 60°F 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.
- As the system may be exposed to vibration loads without knowledge of this, it should be calibrated once a month.

Starting calibration

1. In the software, navigate to the system menu and click on the *"Configuration"* button.
2. Press the *"Devices"* button.
3. Press the *"Omnicam"* / *"Primescan"* button.
4. Press the *"Calibrate"* button.
   ↳ The camera view is displayed in one window.
5. Enter the 8-digit Sirona ID. You can find this ID on the sticker on the calibration set (not required for CEREC Primescan / Primescan).

Calibrating the scanner

1. Remove the protective cap from the calibration set.
2. Mount the calibration set on the tip of the scanner until it locks into place.
3. Secure the scanner in the calibration set using one hand. Ensure that the external calibration set screw is fully screwed in a clockwise motion until it gently locks into place.
4. Click on the *"OK"* button.
   - 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. Hold the scanner still.
   - The software confirms the calibration process.
   - The software prompts you to proceed to the next latching.
7. CEREC Omnicam / Omnicam: Execute steps 5 and 6 a total of 11 times.
   CEREC Primescan / Primescan: Execute steps 5 and 6 a total of 17 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 scanner.
2. Click on the *"OK"* button.
   - 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.

The CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner 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.

➢ Press the *"OK"* button.
   - The scanner is calibrated.

5.2.1.4 Color calibration

General information

NOTE

Faulty color analysis

The color analysis can be negatively impacted due to strong light incidence and it can lead to varying results.

➢ Set the scanner up so that it is not located directly in the beam path of an extreme light source (e.g., the treatment light) and not exposed to direct sunlight.

A color-calibrated scanner must be used for the color analysis.

NOTE

Observe color calibration

A color calibration may only be performed at least 20 minutes after the system start/cleaning.

The color calibration must be performed regularly.

In order to achieve optimum results, the scanner must be allowed to warm up for a few minutes before color calibration. The scanner must be color calibrated every two weeks in order to carry out a reliable color analysis. You will achieve the best results if the scanner is color calibrated immediately before scanning a new case.

Carry out a color calibration also after changing a sleeve/mirror sleeve.

Heavily scratched sleeve window may not be used for a color analysis.

Storing a color-calibration set

The color-calibration set must be stored in its packaging in a dry place which is protected from light. It must be used with a disinfected scanner as the color-calibration set must itself not be disinfected. If dust accumulates on the inside of the color-calibration set, it must be carefully removed using compressed air.

Switch on the color analysis

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"* / *"Primescan"* button.
4. Select the *"Shade Detection"* option.
   - You can choose between various color systems (*"Shade Guide Selection"*).
   - You can decide whether you would like to be notified in 14 days when the color calibration is needed again.
5. Confirm the changes below with *"Ok"*.
6. Click the *"Color Calibration"* button and carry out the color calibration.

Color-calibrating the scanner

NOTE

Only use color calibration set with clean, dry CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner

In order to achieve optimum results, the CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner must be clean, disinfected and dry before color calibration.

➢ Make sure that the CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner is clean, disinfected and dry.

1. Remove the color-calibration set from the packaging.
2. Use the CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner to scan the QR code on the underside of your color-calibration set. In order to do this, you must hold the CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner still in front of the QR code so that it is completely visible in the picture. If the QR code appears to be shiny, hold the scanner at more of an oblique angle in order to avoid any glaring light and to make it easier to scan the codes. If the QR code is recognized, the next *"Please mount color calibration set"* step appears.
   This step of the QR code scan is skipped during the subsequent color calibration and the serial number of the color-calibration set is thus displayed. If this does not match the serial number printed on your color-calibration set, click on the *"Rescan QR Code"* button and scan the new QR code.
3. Mount the color-calibration set on the tip of the scanner until it locks into place.
4. Click on the *"Ok"* button.
   - The measuring process starts. Do not move the CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner or the color-calibration set during this time.
   - The software provides status updates on the calibration and informs you once the procedure is complete.

Ending the color calibration

✓ The software indicates that the color calibration was completed successfully.

1. Click on the *"Ok"* button.
   - The CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner is now color-calibrated.
2. Remove the color-calibration set from the scanner and place it back in the packaging.

Error message during color calibration

The software indicates if an error occurs during color calibration. If the color calibration contained an error, ensure the following:

- The color-calibration set is free of dust
- The color-calibration set was mounted correctly
- The CEREC Primescan / Primescan / CEREC Omnicam / Omnicam scanner exit window is clean

➢ Then restart the color calibration.

Do not continue using a damaged color-calibration set; instead, contact your distributor to purchase a new one.

Replacing the color calibration set

NOTE

Regularly replacing the color calibration set

In order to achieve optimum results, the color calibration set must be replaced regularly.

➢ Observe the following:

Please note that the color calibration set

- can only be used with CEREC 5 software ≥ 5.x or Connect SW ≥ 5.
- can only be kept for use for a maximum of 2 years. You can find the expiry date at the bottom of the color calibration set container. Previous storage may mean that the period for use has been reduced to less than 2 years.
- can only be used for one year after the container has been opened. Write the date that the container was opened on the container after "Opened on _____" using a waterproof pen and do not use after one year.

The color calibration set may no longer be used once either of the two periods has expired.

The software notifies you that the color calibration set needs to be replaced with a new set before the color calibration expires.

Once the color calibration set has expired the software notifies you that a color analysis can only be carried out based on old calibration data.

Please contact your dealer for replacements for the color calibration set.

5.2.1.5 Updating the firmware

You can start the scanner software update directly through the *"Update Firmware"* button.

NOTE

The firmware update is mandatory for operating the scanner in conjunction with the CEREC 5 software. When starting phase ACQUISITION, the firmware must be updated.
The firmware update takes around two minutes.

5.2.1.6 Settings scanner heating

You can access the dialog for the temperature settings of the scanner via the *"Camera Heater Settings"* button. Using the slider, you can set the temperature at which the scanner's mirror sleeve is preheated in five stages to prevent the optics from potentially fogging up. Confirm your settings with *"Cancel"* or discard them with *"Ok"*.

⚠ CAUTION

Hot surface!

The coated sapphire glass of the scanner, is preheated in the scanner cradle. When removing the scanner from its holder, the surface temperature of the mirror sleeve can be up to 51°C. This may cause an unpleasant heat sensation on contact with a person's skin or mucous membrane. These temperatures will not damage the skin or mucosal membrane.

After removing the scanner from the scanner cradle, the temperature of the mirror sleeve drops within a few minutes (< 5 minutes) to less than 43°C. The scanner 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.

5.2.2 Grinding and milling unit

5.2.2.1 Editing settings

CEREC MC / CEREC MC X / CEREC MC XL / CEREC MC XL Premium Package

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

- Description (name)
- Connection settings
  - Retrieve IP settings automatically
  - Specify IP settings manually
- Manual block fixing
  - If you use manual block fixing, a check mark must be placed in front of *"Manual Block Chuck"*.
- Second motor set
  - If the optional second motor set is installed, you must set a check mark before *"Two Bur Sets"*.
- Barcode reader
  - If the grinding and milling unit has an integrated scanner (optional) a check mark must be placed in front of *"Barcode Reader"*.
  - If a scanner is retrofitted, your service engineer must place a check mark in front of *"Barcode Reader"*.
- Extraction Unit
  - Place checkmark if dry milling is desired. A separate suction unit must be connected for this purpose.

- Firmware Update
  - The button is only visible if firmware is not up-to-date.
  - Manually starts the upload of the firmware on the grinding and milling unit.
- External water tank
  - If the 25-liter canister (optional, 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.
  - This option is only available for CEREC MC XL or CEREC MC XL Premium Package (not for CEREC MC or CEREC MC X).
  - If the 25-liter canister is retrofitted, your service engineer must place a check mark in the box in front of *"Large Water Tank"*.

5.2.2.2 Calibration

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

5.2.2.3 Changing instruments

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

5.2.2.4 Removing the grinding and milling unit (deleting the device)

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

5.2.3 Furnace

5.2.3.1 Editing settings

CEREC SpeedFire

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

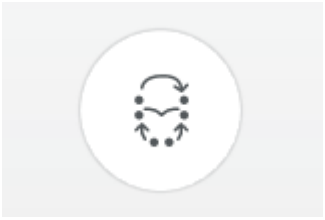
- Name
- Connection settings
  - Retrieve IP settings automatically
  - Specify IP settings manually

5.3 Settings

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

- *"ADA/FDI Notation"*
- *"Notification Messages"*
- *"Hub Settings"*
- *"Patient Database"*
- *"Language"*
- *"Block Handling"*
- *"Automatic Preparation Border Proposal"*
- *"Set Sprue Position"*

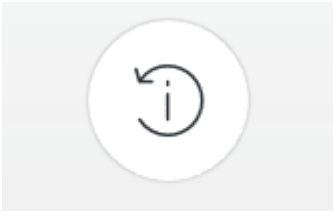
5.3.1 ADA/FDI odontogram



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

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

5.3.2 Notification messages



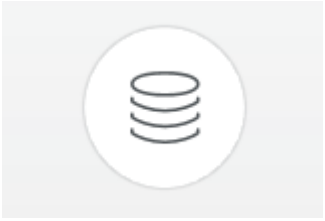
Notes may appear in pop-up windows when using the software. Many of these messages can be deactivated by clicking on the *"Don't show this message again"* check box. If this check box is already selected or if a new user uses the software, all notifications can be reset here. By pressing the *"Reset"* button, all notes are displayed again.

5.3.3 Hub settings

You can implement the settings for connecting to the server in the *"Hub Settings"* menu item. The IP settings may be automatic or may be entered manually with the corresponding IP address and port.

Information on the connection status is provided on the right half of the screen.

5.3.4 Patient database



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

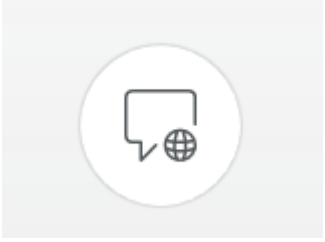
You have the option to rename patients and cases in the patient overview table (accessible via the start view).

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.

You can export a support container (*.zip) that contains all the data for analyzing problems: rst file, image data, log files, etc.

5.3.5 Language



Here, you can set the language of the software.

5.3.6 Handling blocks

Under *"Configuration"* / *"Settings"* / *"Block Handling"* you can select whether the block size in the MANUFACTURE phase should be selected as the smallest possible or the last used size.

5.3.7 Milling

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

When this option is activated, you can choose between the milling and grinding manufacturing processes for plastic, metallic and zirconium oxide materials in the *"Select Material"* step.

5.3.8 Automatic suggestion for determining the preparation margin

Under *"Configuration"* / *"Settings"* / *"Automatic Preparation Border Proposal"* you can select whether the *"Draw Margin"* step in the MODEL phase should be automatically performed.

5.3.9 Presetting the sprue location

Under *"Configuration"* / *"Settings"* / *"Set Sprue Position"* the parting points of various tooth or restoration types can be initially preset.

A distinction is made between veneer, premolar-crown and grinder-crown.

Select one of the two options per category. The active option is shown on the right in the 3D view.

The sprue location can still be changed in the MANUFACTURE phase.

5.4 App Center (applications)

Via the App Center (Apps), 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 Options

6.1 Articulation

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 dynamics calculated by the virtual articulator are considered for the calculation of 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).

6.2 Smile Design

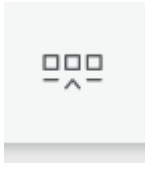
Setting	Description
Activate	The Smile Design function is available during the ADMINISTRATION / *"Indications"* phase for the respective case and can be activated in the window at the bottom left.
Deactivate	The Smile Design function is not offered in the ADMINISTRATION phase.

7 System menu

In the system menu the following sub-menus are offered:

"Start Screen"	Switch to the start window to start a new case.
"Save"	Saves currently opened case.
"Save As..."	To save a case under a different name or dentist.
"Import"	Imports case from the file system.
"Export"	Exports currently opened case.
"Run Application..."	Opens app center to start plug-ins.
"Sirona Connect"	Sends the current case via the Connect Case Center Portal.
"Connect Chat"	Opens the chat window of the Connect Case Center.
"License Manager"	Opens the license manager.
"Configuration"	Configure hardware and software.
"Window Mode"	Toggles between full-screen and window mode.
"Exit CEREC"	Closes the CEREC software.

Open system menu



➢ Press the button in the top left corner of the screen.
  ↳ The system menu is displayed.

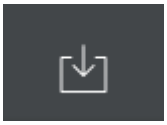
Close system menu

1. Press the button in the top left corner of the screen.

or

➢ Tap or click in the main window.
  ↳ The system menu is closed.

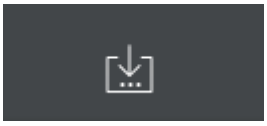
7.1 Save case



In this dialog, you can save the actual case.

➢ Select *"Save"* in the system menu.
  ↳ The current processing status of the case is saved.

7.2 Save case as



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

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

or

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

3. You can give the case a new name in the *"Case"* column via the pencil icon.

7.3 Import case

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

↳ The case is then imported and opened.
Depending on the type of restoration, only the optical impression is opened.

7.4 Exporting a case

You can store a case in any location.

✓ You have opened a case in the software.

1. Click the *"Export"* 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. Press the *"Save"* button.

↳ The case is exported to the desired format.

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.

7.5 Exporting scan data

You can export scan data as STL or DXD in order to process

- in inLab SW, CEREC SW or Connect SW (DXD)
  or
- in another compatible (STL)

system.

IMPORTANT
Dentsply Sirona will not be held liable for the further processing of *.stl data in other/external software.

7.6 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.

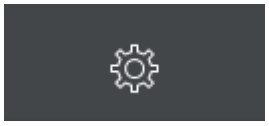
Tip: You can also start the license manager via “Start / All Programs / Sirona Dental Systems / CEREC 5 / Tools / License Manager”.

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 other providers, see licenses.pdf. The file is in the installation directory under "C:/Programs/Sirona Dental Systems/CADCAM".

7.7 Configuration



The configuration is described in the "Configuration [→ 33]" section.

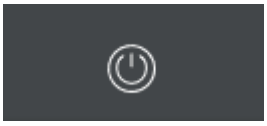
7.8 Window mode

The *"Window Mode"* function can be used to exit full-screen mode or enter it again. You can also activate or deactivate the window mode by pressing `F11`.

7.9 Current program version

If you click on the lettering *"CEREC"* in the phase tab, you obtain information on the current program version.

7.10 Exit program



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

8 Start view

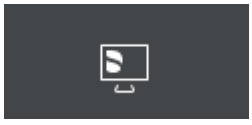
In the start view you can perform the following functions:

- Patient search
- Open patient database
- Create a patient
- Open the Connect portal
- Open action points

Switching to the start view

You can switch to the start view at any time.

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

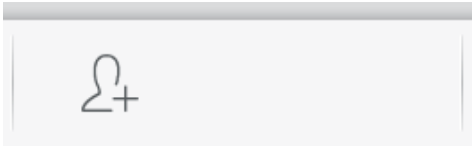


8.1 Create a new patient

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
  Tip: We recommend that our customers work solely with one reference number. Please observe the data protection regulations applicable to you.

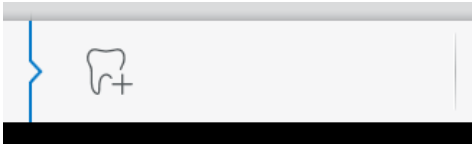
Add patients



1. Press the *"Add New Patient"* button.
   ↳ An empty patient card is opened.
2. Enter a surname, first name, and date of birth. A real-time search function is active during the input which should prevent duplicate entries.

or

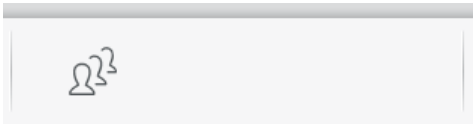
➢ Enter the patient ID.



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

8.2 Patient search

Displaying all patients



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

8.3 Editing patient data

8.3.1 Editing a patient card

Changing patient data using the patient row.

✓ You have found the patient with the search function.

1. Select the patient card.
2. Click on the pen icon on the patient row.
   ↳ The patient data in the row can be edited.
3. Carry out the changes.
4. Confirm your changes by clicking the check mark.
   ↳ The changes are saved in the memory.

Changing patient data using the patient name in the phase bar

✓ You have opened a case.

1. Tap or click in the opened case at the top in the phase bar on the patient name.
2. Carry out the changes.
3. Confirm in the context bar with *"OK"* or discard them with *"Cancel"*.

8.3.2 Deleting patients

✓ You have found the patient with the search function.

1. Select the patient card.
2. Click on the trash can icon on the patient row.
3. Confirm the deletion with *"Yes"*.
   ↳ The patient is deleted.

8.3.3 Deleting a case

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

1. Select the patient.
2. Select the case.
3. Click on the trash can icon on the case row.
4. Confirm the deletion with *"Yes"*.
   ↳ The case is deleted.

8.3.4 Opening a case

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

1. Select the patient card.
2. Select the case.
3. Click the button marked *"Open Case"* in the case row.
   As an alternative, you can also double-tap or click the case row or the thumbnail.
   ↳ The case opens.

8.3.5 Add a new case

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

1. Select the patient.
2. Press the *"Add New Case"* button above the case list.
   ↳ The program switches over to the *"ADMINISTRATION"* phase.

8.4 Restoration types and design mode

8.4.1 Restoration types

Single tooth restoration

Symbol	Restoration type	Design mode
	Automatic detection	-
	Missing	Tap on the teeth in the odontogram which are not created.
	Crown	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Inlay/Onlay	• Biogeneric Individual • Biogeneric Copy
	Veneer	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror

Bridge restoration

Symbol	Restoration type	Design mode
	Crown	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Inlay/Onlay	• Biogeneric Individual • Biogeneric Copy
	Veneer	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Pontic	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Missing	Tap on the teeth in the odontogram which are not created.

Connector type

Symbol	Restoration type	Design mode
	Connector	• Intersection
	Connector	• Anatomic

Abutment

Symbol	Restoration type	Design mode
	Crowns screwed down directly	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Framework abutment	-
	Multi-layer abutment	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror

Abutment bridge

Symbol	Restoration type	Design mode
	Multi-layer abutment	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Pontic	• Biogeneric Individual • Biogeneric Copy • Copy & Mirror
	Missing	-

CEREC Guide

Symbol	Restoration type	Design mode
	CEREC Guide	Implant templates

8.4.2 Design mode

Biogeneric Individual

For more information, refer to “Biogeneric Individual [→ 30]”.

Copy & Mirror

For more information, refer to “Copy and mirror [→ 31]”.

Biogeneric Copy

For more information, refer to “Biogeneric Copy [→ 31]”.

Anatomic / Intersection

The *"Anatomic"* and *"Intersection"* modes are available only for bridge connectors.

Anatomic
The connector is a separate element and can be edited.

Intersection
The connector is created by penetrating the neighboring teeth. It is not a separate element, and therefore cannot be edited.

Multilayer

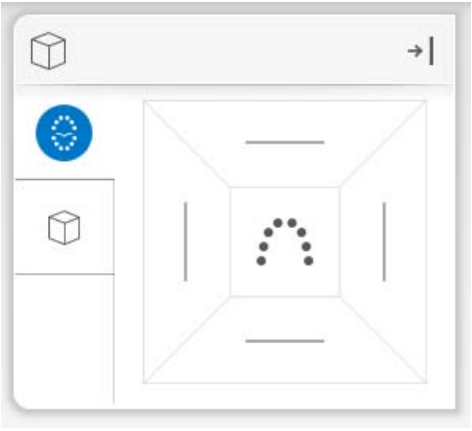
However, the fully anatomical shape is broken down into a mesostructure with no undercut and the covering crown by this technique. The two parts can be milled from different materials.

9 Tools and functions of the page palette

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

9.1 View options

Different views are available to you in the *"View Options"* page palette. These view options are split into global and local views. The global views are based on the model axis of the upper and lower jaw.
Tip: You can adjust the global model axis in the *"Set Model Axis"* step.



The local views are determined by the element currently selected in the object bar. Each element in the object bar therefore has its own coordinate system. Depending on the current step, the following views are available to you:

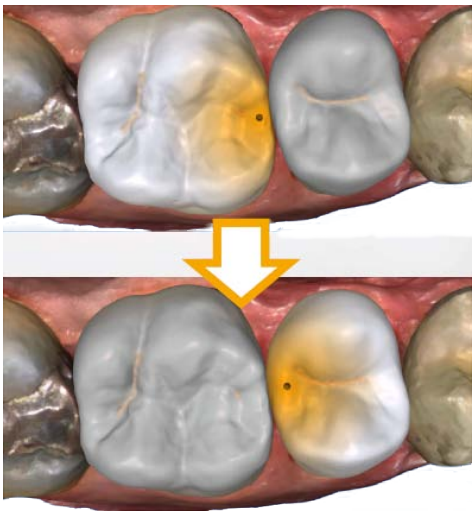
Global views

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

Local views

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

9.2 Tools



Tip: Automatic tooth change is possible when using the tools for several restorations. You do not have to make a selection via the restoration selector or by clicking.

In the page palette, you can lock restorations to prevent unwanted modifications. You can unlock them again for further modifications later on.

Tools which can be used on the active restoration element are always active. The other tools are grayed out.

The most important tools are also offered to you in the tool wheel. You can find further information on the tool wheel in the section “Tool wheel”.

You will find all tools as a sub-menu under *"Tools"*. The available tools are displayed for each step.

To change a tool, click on the button of another tool in the left column of the page palette.

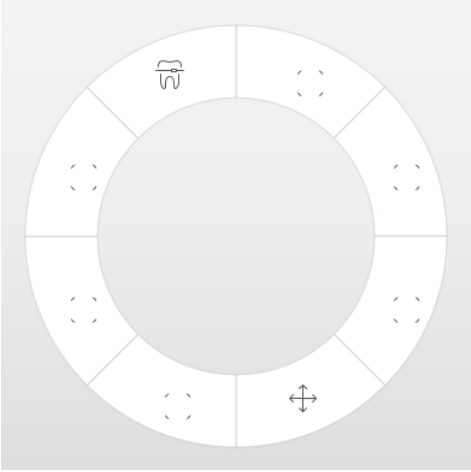
To close a tool, click on the button of the active tool once more in the left column.

"Undo" and *"Reset"*

With the *"Undo"* button in the tools you can undo all changes made on the selected restorations since the tool was started.

With the *"Reset"* button in the tools you can undo all changes made on all restorations since the tool was started.

9.2.1 Tool wheel



In the ADMINISTRATION, MODEL, DESIGN or MANUFACTURE phases, the tool wheel provides the most common tools for simplifying access. The tools available vary depending on the current step.

1. Tap and hold with your finger or right-click in the workspace.
   ↳ The tool wheel opens.
2. Tap and hold with your finger or click with the right mouse button anywhere in the workspace.
   ↳ The tool wheel moves to the position of the finger or mouse cursor.
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.

9.2.2 Buccal registration

Correcting buccal images

The buccal registration takes place automatically. If it is not correct you can do it manually.

✓ The *"Buccal Bite Registration"* tool is selected in the page palette.

1. Press the *"Reset"* button.
   ↳ The buccal registration is triggered and you have both jaws and the buccal exposure separated on the screen.
2. Tap 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 to the buccal scan. 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.
3. If the image was accepted, move the image to the corresponding region of the opposite jaw.

Turn Buccal Impression

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

1. Press the *"Buccal"* button.
2. Press the *"Turn Buccal Impression"* button.
   ↳ The buccal image is then rotated.

9.2.3 Buccal bite tools

You can adjust the occlusion using the following tools.

Move jaw

You can correct the buccal bite by positioning and rotating the upper jaw using the *"Align Jaw"* function.

➢ Press the *"Align Jaw"* button.
  ↳ The rotating/positioning tool will be shown.

9.2.4 Shape

(*"DESIGN"* phase, *"Edit Restoration"* step).

With the *"Form"* function, you can do the following to material

- Apply
- Smoothen
- Remove

You can enter the *"Size"* and *"Strength"* properties with a slider or numerically in advance (see “Properties [→ 71]”).

Apply material

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

Smoothing

When smoothing, you are able to smooth the surface location.

1. Press the *"Form"* button.
2. Press the *"Smooth"* button.
3. Tap with your finger or click with the mouse cursor on the area you wish to smoothen.
4. Press and hold and smoothen the surface location by moving your finger or the mouse.

Removing material

1. Press the *"Form"* button.
2. Click on the *"Remove"* button.
3. Tap with your finger or click with the mouse cursor on the area you wish to shape.
4. Press and hold and remove the material from the surface location by moving your finger or the mouse.

9.2.4.1 Properties

Modify the size

You can use the *"Size"* slider to modify the size of the area affected. The area affected is shown as an orange-colored area on the current restoration in the 3D preview.
The size of the area affected can be modified for each shaping tool.

1. Actuate the *"Size"* slider and press and hold this.
2. Now drag the slider to the right or left to enlarge or reduce the area affected.
   ↳ The orange-colored area (area affected) will be expanded or reduced in the 3D preview.

Tip: You can also change the size of the area affected by dragging the mouse up or down with the right mouse button held down on the restoration.

Adjusting thicknesses

You can use the *"Strength"* slider to modify the intensity of the area affected. The thickness of the affected area can be modified for each shaping tool.

1. Actuate the *"Strength"* slider and press and hold this.
2. Now drag the slider to the right or left to increase or reduce the intensity.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Clip Neighbors"* function. This option is only available as long as the jaw is shown.

9.2.5 Cut out model areas

(*"MODEL"* phase, *"Edit Model"* step)

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.

With the *"Cut"* function, you can cut out model areas. The cut-out model areas are then discarded once you exit the *"Edit Model"* step. You cannot display discarded areas later on.

Removing the model area

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

Inverting the 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.

➢ Press 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.

9.2.6 Correcting defects

(*"MODEL"* phase, *"Edit Model"* step)

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

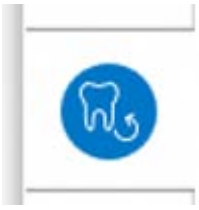
IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

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

1. Press the *"Replace"* button.
2. Set the starting point by double-tapping.
3. Tap 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-tapping.
5. Press the *"Apply"* button.
   ↳ The software smoothens everything within the line by interpolation.

9.2.7 Resetting the model

(*"MODEL"* phase, *"Edit Model"* step)



With the *"Reset Model"* function, all changes will be reset.

1. Press the *"Reset Model"* button.
2. Confirm with *"Apply"*.

9.2.8 Trimming

(*"MODEL"* phase, *"Trim"* step)

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

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

Inverting an image region

With the *"Invert Selected"* function, an image region which was hidden can be restored.

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

➢ Press 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 area by double-clicking on the semitransparent hidden region.

9.2.9 Drawing the preparation margin

More information on using this tool can be found in the section “Entering the preparation margin”.

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

Automatic edge detection

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

1. Press the *"Margin"* button.
2. Press 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.

➢ Press the *"Manual"* button.
   ↳ The manual technique is switched on.

9.2.10 Enter baseline on gingiva

(In the implant workflow)

In the *"Edit Base Line"* step, you can select whether or not the gingiva is to be used for calculating the emergence profile.

The baseline for the pontic can also be entered on the gingiva. To do so, the corresponding *"Use Gingiva"* option must be activated in the tool.

In this step, the *"Intensity Image"* analysis tool is available, it can be activated via the page palette.

9.2.11 Using a gingival mask

In the *"Edit Base Line"* step, you can select whether the corresponding area of the jaw scan should be acquired for calculating the emergence profile. *"Use Gingiva Mask"* must be activated in this case (default setting). *"Use Gingiva Mask"* must be deactivated in order to have an emergence profile suggested independent of the scan.

The baseline for the pontic can also be entered on the gingiva. To do so, the corresponding option must be activated in the tool.

9.2.12 Positioning and rotating

(Phase *"DESIGN"*).

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

Displacing and rotating

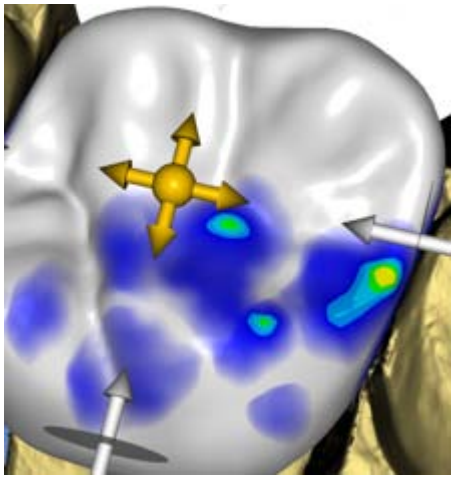
With the *"Position and Rotate"* tool, you can displace and rotate the restoration.

Displacing and rotating the restoration

➢ Actuate an arrow symbol and press and hold it.
  ↳ You can displace or rotate the restoration in the corresponding direction.

Changing axes

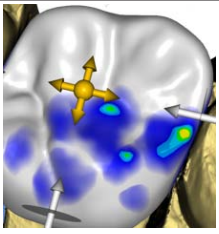
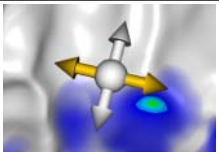
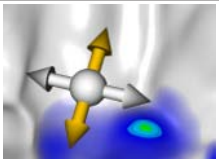
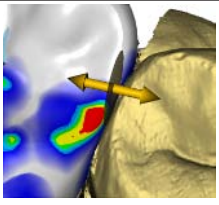
➢ Right-click on an arrow symbol and hold the button down.
  ↳ You can change the axis on which the object is rotated or moved.



Scaling

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

1. Press the *"Move"* button.
2. Press the *"Scale"* button.
3. Press the arrow for the selected scaling direction.
   ↳ The arrow is shown in orange.
4. Press and hold the button and drag to enlarge or reduce the restoration.
   ↳ The restoration is enlarged or reduced in the corresponding directions.

Layout	Effect
	Press the ball in the center to enlarge or reduce the entire restoration.
	Press and hold the arrow and drag it to enlarge or reduce the restoration in the mesio-distal direction.
	Press and hold the arrow and drag it to enlarge or reduce the restoration in the bucco-lingual direction.
	Press and hold the arrow and drag it to enlarge or reduce the restoration in the shown direction. The restoration is enlarged or reduced to half-page size.

9.2.13 Recalculating restorations

The initial suggestion can be recalculated using the *"Recalculate"* tool.

1. To do so, select *"Recalculate"* and then click on *"Recalculate"* in the tool.
2. If you select the *"Unadapted"* option, you can choose to align the restoration before the recalculation via the *"Move"* / *"Scale"* tool.
3. Finally, click on *"Recalculate"* to conclude the process.

9.2.14 Designing

(*"DESIGN"* phase, *"Edit Restoration"* step).

Anatomical

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

Circular

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

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

You can shape the restoration in 2 ways:

Function	Description
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.

9.2.14.1 Properties

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

You can use the *"Size"* slider to modify the size of the area affected. The area affected is shown as an orange-colored area on the current restoration in the 3D preview.

1. Actuate the *"Size"* slider and press and hold this.
2. Now drag the slider to the right or left to enlarge or reduce the area affected.
   ↳ The orange-colored area (area affected) will be expanded or reduced in the 3D preview.

Tip: You can also change the size of the area affected by dragging the mouse up or down with the right mouse button held down on the restoration.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Clip Neighbors"* function. This option is only available as long as the jaw is shown.

9.2.15 Biogeneric variation

(*"DESIGN"* phase, *"Edit Restoration"* step).

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

1. Actuate the *"Biogeneric Variation"* slider and press and hold this.
2. Drag the slider to the left or right.
   ↳ The new morphology is shown as a 3D preview.
3. If you are satisfied with the morphology, release the slider.
   ↳ The new morphology is applied to the current restoration.

9.2.16 Reduce

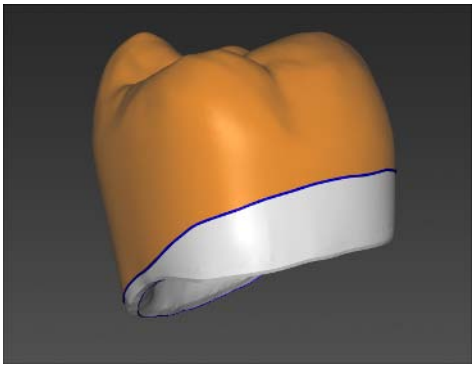
(*"DESIGN"* phase, *"Edit Restoration"* step).

With the *"Reduce"* function, you can anatomically reduce the restoration. You also can perform partial reductions.

9.2.16.1 Full reduction

1. Press the *"Reduce"* button.
2. Set the reduction level using the slider. The value will be memorized for other reductions.
3. Click on *"Apply"* to execute the reduction.
   ↳ The restoration is reduced by the set value.

Tip: You can reduce several teeth at the same time by using the *"Group"* function in the page palette.



Tip: You can edit the reduction line before the reduction and create festoons and back rest plates quickly and easily.

9.2.16.2 Partial reduction

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

1. Press the *"Reduce"* button.
2. Double-tap on the restoration and draw a closed line.
3. Set the reduction level using the slider.
4. Press *"Apply"* to execute the reduction.
   ↳ The restoration is reduced by the set value.

Tip: You can use *"Toggle area"* to switch the area to be reduced. It is displayed as an orange colored area.

9.2.16.3 Properties

Taking into account the minimum thickness during reductions

The *"Reduce"* tool enables you to choose whether the minimum thickness should be taken into account during reductions.

- If the corresponding option is selected in the tool, the minimum thickness is observed during reduction.
- If the corresponding option is not selected in the tool, the minimum thickness may not be reached during reduction.

Attaching the base of the pontic

If the *"Stick Pontic Base to Gingiva"* function is active, the base of the pontic is not reduced for a full reduction.

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Clip Neighbors"* function. This option is only available as long as the jaw is shown.

9.2.17 Adjusting contacts

(*"DESIGN"* phase, *"Edit Restoration"* step).

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

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

Hiding the neighboring restoration

You can hide the neighboring restoration with the *"Clip Neighbors"* function. This option is only available as long as the jaw is shown.

9.2.18 Adjusting sprue location

(*"MANUFACTURE"* phase)

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

- Step-by-step, by pressing the arrow in the circle segment.
- Continuously, by pressing and holding the circle segment or inside the circle segment and moving your finger or the mouse.

9.2.19 Moving the block

(*"MANUFACTURE"* phase)

Displacing

The *"Position Block"* 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 pressing one of the arrows showing the movement axes on the semitransparent cube.
- Continuously in 2 directions, by pressing one of the arrows, holding down and moving your finger or the mouse.
- Continuously in all 4 directions, by pressing in the center of a cube surface, holding down and moving your finger or the mouse.

Rotating

With the *"Position Block"* function, you can also rotate the restoration around the axis of the block.

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

- Step-by-step, by pressing the arrow in the circle segment.
- Continuously, by pressing and holding the circle segment or inside the circle segment and moving your finger or the mouse.

9.2.20 Incisal variation

(*"DESIGN"* phase, *"Edit Restoration"* step).

Using the *"Incisal Variation"* function, you can generate mamelons (vertical structures) and growth lines (horizontal structures) on your anterior restorations.

Strength

Using the *"Strength"* slider you can set the intensity at which the selected structure acts on a restoration.

Variation

Using the *"Variation"* slider you can select the desired structure type.

- Items 1 to 4 stand for mamelons (vertical structures).
- Items 5 to 6 stand for growth lines (horizontal structures).

Positioning structures

If you have set the structure type and the desired intensity, you can now adjust the position of the structure.

1. To do this, press or click on your current anterior restoration in the 3D preview and then hold down.
   ↳ The tools effect area is colored in orange.
2. Now move the mouse to position the structure as you want it.

Applying structures

1. If you are satisfied with the structure created, press the *"Apply"* button. The created structure is now saved.

IMPORTANT
In order to combine multiple structures together, first complete a structure and then save this with the *"Apply"* button.

2. Now create additional structures and save every other structure here once they are completed.

9.2.21 Splitting

(*"DESIGN"* phase, *"Edit Restoration"* step).

Using the *"Split"* function you can split a full-format *"Multilayer Abutment"* into a frame and veneer structure.

Using the *"Unsplit"* function you can join the frame and a veneer structure of a multi-layer abutment back together.

1. Select the desired option *"Split"* or *"Unsplit"* through the associated button.
2. Then press the *"Apply"* button.
   ↳ The multi-layer abutment is split or joined together again.

9.2.22 Adjusting connectors

(*"DESIGN"* phase, *"Edit Restoration"* step).

Various tools are available for designing the connectors. These are only applicable with the *"Anatomic"* connector type.

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

Scaling

With the *"Connector Move"* function, you can adjust the connectors.

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

If you have selected the *"Scale Whole"* option, you can adjust the entire connector.

Positioning

With the *"Connector Move"* function, the connector can be re-positioned.

1. Press the *"Position"* button.
2. Place the mouse pointer on an active connector.
   ↳ The area affected is shown highlighted in orange.
3. Press and hold down the left mouse button.
4. Move the mouse to change the object.

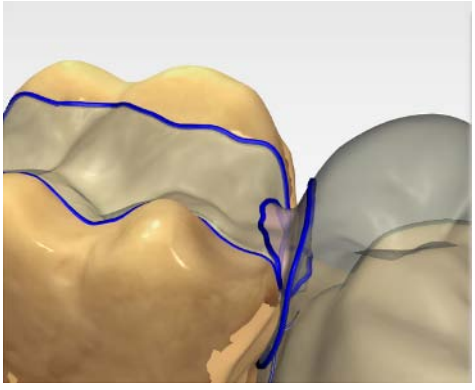
If you have selected the *"Position All"* option, you can displace the entire connector. The neighboring elements are displayed transparently.

The adhesion sites are recalculated after displacement.

Editing lines

You can change the lines of a connector with *"Drag Line"*. The neighboring elements are displayed transparently.

1. Click on the *"Connector Lines"* button.
   ↳ *"Drag Line"* is activated automatically.
2. Move the mouse over the blue connector line displayed.
   ↳ A sub-area is shaded yellow.
3. Drag the lines as required. The section of the line presented in yellow is moved in all cases.



You can redraw the lines of a connector with *"Edit Line"*.

1. Click on the *"Connector Lines"* button.
2. Press the *"Edit Line"* button.
3. Redraw the line at the required points by starting on the line with a double-click.
4. Click to fix the line at the corresponding point.
5. Continue the lines this way until you complete the change by double-clicking a different point on the original line.

9.3 Display objects

You can use these functions to display and hide the regions of the model and that of the restorations.

1. Press the *"View Options"* button.
2. Press the respective button.
   ↳ The affected region is then displayed or hidden.

	With the *"Upper Jaw"* button, you can display and hide the **upper jaw**.
	With the *"Lower Jaw"* button, you can display and hide the **lower jaw**.
	You can adjust the **transparency of the upper/lower jaw** seamlessly. 1. Actuate the slider of the "Upper/lower jaw" and press and hold this. 2. Now drag the slider to the right or left to increase or reduce the transparency.
	With the *"Minimal Thickness"* button, you can show and hide the **display of minimum thicknesses**. You can set the minimum thickness under *"Parameters"*. For more information, refer to the section on Parameters.
	The *"Restoration"* button enables you to display and hide the **restoration**.
	You can adjust the **transparency of the restoration** seamlessly. 1. Actuate the *"Restoration"* slider and press and hold this. 2. Now drag the slider to the right or left to increase or reduce the transparency.

	With the *"Trimmed Model"* button, you can display and hide the **trimmed region**.
	With the *"BioCopy Upper"* button, you can display and hide the **BioCopy upper jaw** region (only if the corresponding image catalog contains images).
	With the *"BioCopy Lower"* button, you can display and hide the **BioCopy lower jaw** region (only if the corresponding image catalog contains images).
	With the *"Gingiva Mask Upper Jaw"* button, you can display and hide the **Gingival mask upper jaw** region (only if the corresponding image catalog contains images).
	With the *"Gingiva Mask Lower Jaw"* button, you can display and hide the **Gingival mask lower jaw** region (only if the corresponding image catalog contains images).
	With the Implant button, you can display and hide **implants** (abutment only).
	With the TiBase button, you can display and hide the **TiBase** (abutment only).
	The *"Model Base"* button enables you to display and hide the model base.

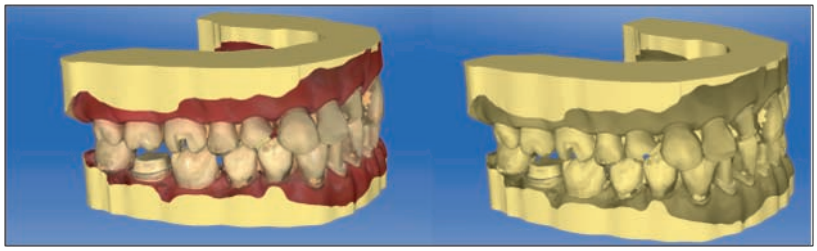
9.4 Activating analysis

Activating Analyzing Tools

➢ Press the *"Analyzing Tools"* button to activate the analysis tools.

Color model

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



Contact surfaces on the virtual model

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

➢ Press 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 color 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

Contacts

Through the *"Contacts"* button, the contact points of the restoration(s) of the shown jaw which are displayed in color can be switched on or off.

➢ Press the *"Contacts"* button.
  ↳ The restoration is displayed with or without occlusal contacts.

Model Contacts

Through the *"Model Contacts"* button, the contact points of the entire model which are displayed in color can be switched on or off.

This function is only available when the upper and lower jaw have been scanned.

➢ Press the *"Model Contacts"* button.
  ↳ The restoration is displayed with or without proximal contacts.

Side and bottom surfaces

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

➢ Press the *"Model Box"* button.
  ↳ The virtual model is displayed without side and bottom surfaces.

Tip: In the MANUFACTURE phase show the relevant jaw model 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.

Restoration Color

Using the *"Restoration Color"* button, the restoration can be displayed in the model color.

1. Press the *"Restoration Color"* button.
   ↳ The virtual model is shown in white or the model color.
2. Actuate the *"Restoration Color"* slider and press and hold this.
3. Drag the slider to the right or left to show or hide the restoration color.
   ↳ The restoration color of the respective object (or object group) is changed.

Slice (MANUFACTURE / DESIGN phase)

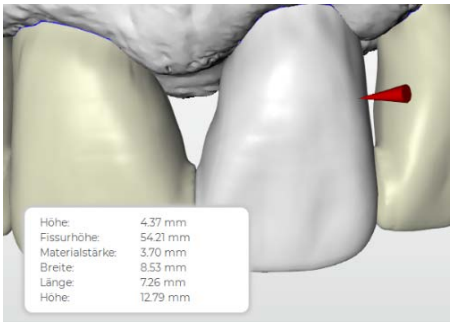
Using the *"Slice"* analysis tool, a cut can be created through the restorations and model in the screen plane.

1. Press the *"Slice"* button.
   ↳ A cut is created in the screen plane through the virtual model and all restorations.
2. Press one of the drag points in the 3D preview and hold down this. By moving at the same time, you can move the height of the cutting plane or rotate the cutting plane.

Cursor Details (MANUFACTURE / DESIGN phase)

Via the *"Cursor Details"* button, you can have the height and thickness of the restoration displayed. The cursor details are displayed at the bottom left of the screen.

➢ Press the *"Cursor Details"* button.
  ↳ Use the touchscreen for operation, a precision cursor is displayed below your finger.



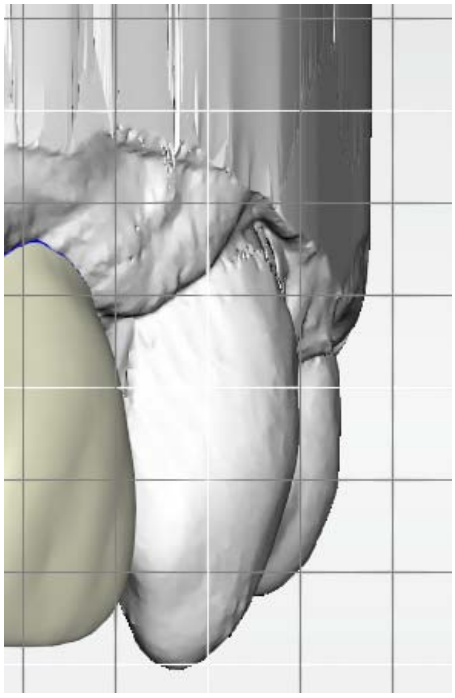
Depending on the type of restoration, the following information is displayed:

Height	Distance from this point to the bottom of the model
Fissure height	Minimum thickness in fissure
Material thickness	Thickness of the restoration at this point
Connector cross-section	Cross-section area
Width	Overall width of the restoration
Length	Overall length of the restoration
Height	Overall height of the restoration

Distance

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

1. Press the *"Distance"* button.
2. Tap or click on the restoration to define the starting point.
3. Tap or click a second time and/or drag the second cursor to the desired end point.
   ↳ The distance is then displayed.



Grid Mode

With the *"Grid Mode"* function, you can display a grid comprised of vertical and horizontal lines. It serves as an orientation guide.

➢ Press the *"Grid Mode"* button.
  ↳ The grid is displayed in the 3D preview.

Guidelines

(*"DESIGN"* phase, *"Edit Restoration"* step, Smile Design active)

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

➢ Press the *"Guideline Mode"* button.
  ↳ The guidelines are displayed in the 3D preview.

9.5 Case details

In the *"Case Details"* restoration display, you can open all the information on a case during the construction (see also the section “ADMINISTRATION phase [→ 92]”).

10 ADMINISTRATION phase

10.1 Restoration

Selecting a restoration type

1. Create a new case (see "Add a new case [→ 62]").
2. Select the restoration type in the page palette:

- *"Single Restoration"*,
- *"Bridge Restoration"*,
- *"Abutment"*,
- *"Guide"*
- *"Implant Planning"* (see “Creating a CEREC Guide 2”)

Single tooth restoration

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

1. Select the restoration type.
   ↳ The types of restoration available match the selected tooth number.
2. Select the design mode.
   Tip: For information on the design technique, see the “Design mode [→ 30]” section.
3. First select *"Manufacturer"* and then *"Material"* in order to determine the desired material for the restoration.
   - For some of the materials the two production types of grinding or milling are possible.
   - You must select 2 materials with the *"MultiLayer"* restoration type.
   - With the *"Abutment"* restoration type you must select the scanbody type and an implant type.
   - If there are multiple devices connected you can determine the corresponding device under *"Mill Device"*.
4. Select the tooth for which the restoration is to be created with the set specifications.
   ↳ The selected tooth is marked.
5. If necessary, create further restorations.

Bridge restoration

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

1. Determine the restoration type and the connector type as described in the "Single tooth restoration" section.
2. Select the positions of the abutment teeth of the bridge.
   ↳ The selected teeth are marked.
3. Determine the restoration type and the design mode for the intermediate teeth.
   ↳ The selected teeth are marked.
4. In the step menu proceed to the *"Select Milling Device"* step and select the desired production machine.
5. Optional: In the step menu, proceed to the *"Select Material"* step, in order to select the desired material for the restoration.
6. If necessary, create further restorations.

Editing the restoration

You can edit previously created restorations.

1. Press the restoration in the object bar
   or
   select the relevant restoration in the *"Case Details"* page palette.
2. Press the pen icon to access editing mode.
3. Amend the desired data.
4. Confirm the changes with the check mark or discard them with the cross.

Selecting the implant connection and scanbody type (only for implant-supported crowns)

1. Select single restoration or bridge restoration.
2. Select the tooth number from the odontogram.
3. Press the *"Implant Connection"* step.
4. If you have selected single tooth restoration, you can choose between Ti-Base or implant level at *"Implant ConnectionType"*.
5. Then select the implant and, if necessary, the manufacturer.
6. Proceed to the *"Select Scanbody Type"* step.
   ↳ The scanbody type to be used is displayed depending on the implant connection.
7. In the step menu, press the *"Select Milling Device"* step and select the desired production machine.
8. In the step menu, press the *"Select Material"* step, in order to select the desired material for the restoration.
   Tip: The last two used materials are displayed as favorites

IMPORTANT
Multilayer restorations can only be created in connection with Ti-Bases.

Closing the ADMINISTRATION phase

✓ All restorations to be attached are defined.
✓ The ACQUISITION phase can be selected.

1. Proceed to the ACQUISITION phase.

or

➢ Actuate the double arrow.
   ↳ The program switches over to the ACQUISITION phase.

Case details

After creating a case, all information is displayed in the page palette.

The following information can be read during the entire construction of the case.

- Indication
- Design mode
- Material
- Production machine
- For bridges: The indication for each element

10.2 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.

Activating Smile Design

In the *"ADMINISTRATION"* phase under *"Indications"* you can activate the *"Smile Design"* function.

1. Go to *"Smile Design"* on the bottom left.
2. Place a check mark at the top in *"Smile Design"*.
   ↳ The function is listed in the *"Case Details"*.
3. You can deactivate the *"Smile Design"* function again in the selected state by removing the check mark.

Changing to Smile Design

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

➢ Actuate the *"Initialize Smile Design"* function in the *"Smile Design"* page palette on the right edge of the screen.

Exiting Smile Design

✓ You are in *"Smile Design"*.

➢ In the step menu, press *"Exit Smile Design"* in order to exit *"Smile Design"*.

10.2.1 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.

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

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

10.2.2 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 marking 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"*.

Once all reference points have been set, no further markings are displayed and the next steps become active. Switch independently to the *"Lateral Canthi Distance"* step.

10.2.3 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.

10.2.4 Aligning jaws

Align the model to the image.

Positioning the model

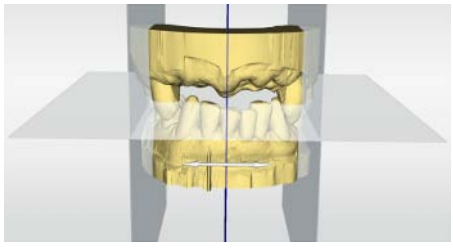
➢ Actuate an arrow symbol and press and hold this.
  ↳ You can displace or rotate the model in the corresponding direction.

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

➢ Actuate an arrow symbol and press and hold this.
  ↳ You can change the axis on which the object is rotated or moved.

10.2.5 Auxiliary planes

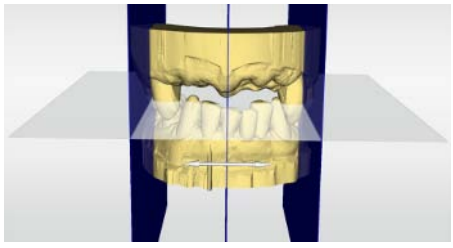


You can display the auxiliary planes in the *"Guideline"* step. The auxiliary planes help with positioning the jaw in the image of the patient.

You can also display the planes for the construction.

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

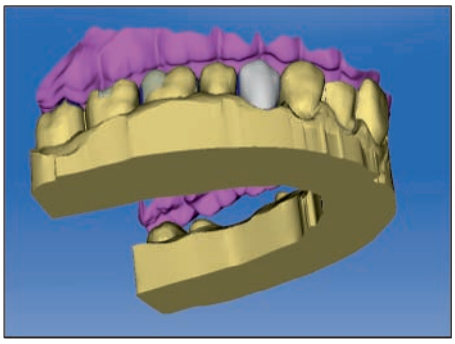
Positioning the plane



➢ Tap or click an arrow symbol and press and hold this.
  ↳ 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 tapping or clicking on them.

10.3 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. Press the *"Articulation"* button.
2. Press the *"Articulation Parameters"* button.
   ↳ The articulation parameters are displayed.

You can set the following values individually:

Parameter	Setting	Mean value
"Arms"	Side of the Bonwill triangle	105 mm
"Base"	Intercondylar distance	100 mm
"Balkwill Angle"	Balkwill angle	23 °
"Sagittal Angle Left" and *"Sagittal Angle Right"*	Sagittal condylar path inclination	35°
"Bennett Angle Left" and *"Bennett Angle Right"*	Bennett angle	15°
"Immediate Side Shift Left" and *"Immediate Side Shift Right"*	Initial Bennett movement	0 µm
"Include Restorations"	If activated, available restorations are taken into consideration for the calculation of the FGPs as if they were already inserted. This means reconstructed cuspid guidance can be considered for the other restorations in the case, for example.	YES

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. Press the *"Articulation"* button.
2. Press the *"Lower Virtual FGP"* button.
   ↳ The virtual FGP is displayed.

Upper virtual FGP

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

11 ACQUISITION phase

11.1 Image catalogs

In the *"ACQUISITION"* phase, 3 image catalogs are available as standard:

- Lower Jaw
- Upper Jaw
- Buccal

In addition, further image catalogs can be shown:

- BioCopy Lower (Lower jaw)
- BioCopy Upper (Upper jaw)
- Gingiva Mask Lower Jaw (Lower jaw)
- Gingiva Mask Upper Jaw (Upper jaw)
- Scanbody Lower Jaw (Lower jaw)
- Scanbody 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. Select 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 3D exposure is visible.

The necessary image catalog is initially selected provided the restoration(s) is (are) only in the upper or lower jaw.

If you exit the ACQUISITION phase and subsequently return to it, all acquisitions are initially blocked.

Deleting acquisitions

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

1. Select the image in the image catalog.
2. Drag the image with your finger/mouse to the trash can and let go (Drag & drop).

↳ The image is deleted.

11.2 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 your fingers or the mouse.
Tip: You can switch between the image catalogs by selecting them by mouse/touchpad or double-clicking with the foot control.

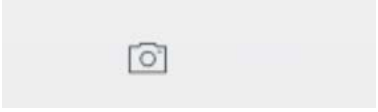
11.3 Take a scan

11.3.1 Mode

Step Video / Photo

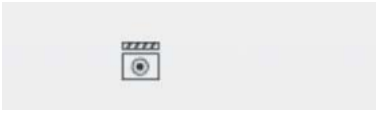
In the *"Video"* / *"Photo"* step, you can make intraoral videos and individual intraoral images with the scanner.

Taking photos



1. In the step menu, go to *"Video / Picture"*.
2. Select the *"Photo"* option.
3. Press the button or use the foot switch to trigger the scanner.

Recording videos



1. In the step menu, go to *"Video / Picture"*.
2. Select the *"Video"* option.
3. Press the button to start video recording or use the foot control.
4. Repeatedly press the button or actuate the foot control once more to stop the recording.

View photos and videos

1. Select the button with the *"View"* folder symbol.
2. Use the left or right arrows to see all exposures taken. Videos can be started by pressing the play icon.
   Tip: In the acquisition modes activate the right button with the folder symbol in order to switch directly from the acquisition mode to the media view.

11.3.2 CEREC Omnicam, Omnicam

11.3.2.1 Scanner warm-up time

When switching on the system, the scanner needs to warm up for 15 - 20 minutes. If the coated sapphire glass of the scanner is not sufficiently warm, it may steam up during the acquisition. This complicates the scan acquisition.

Following use, always position the scanner on the heater plate or in the scanner cradle.

You can set the end temperature to which the scanner heater warms the mirror sleeve of the scanner.

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.

11.3.2.2 Scanner guide

The scanner 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 under configuration and select another type of sound (melody).

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

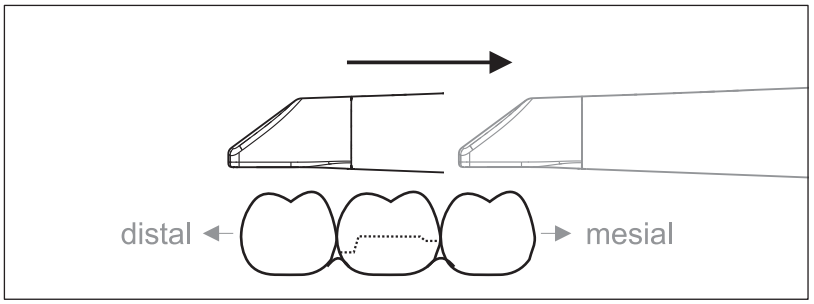
⇨ You will be able to hear the sound for registered acquisitions.

➢ Continue the acquisition.

Divide the acquisition into four consecutive sequences:

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

11.3.2.2.1 Occlusal scan

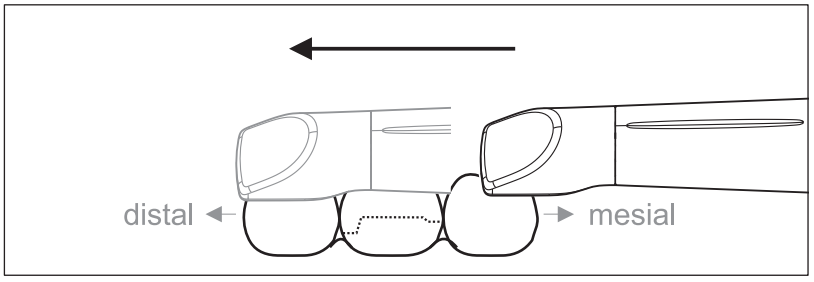


Important: Ensure that the distance between the coated sapphire glass of the scanner and the scanned surface is observed.
The distance must be between 0 - 15 mm (ideally: 5 mm). The scanner does not rest on the teeth or the gums. If the distance is too great, no data will be obtained.

1. Move the scanner to the starting position. For this purpose, the scanner 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, move the scanner slowly 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.

11.3.2.2.2 Buccal scan



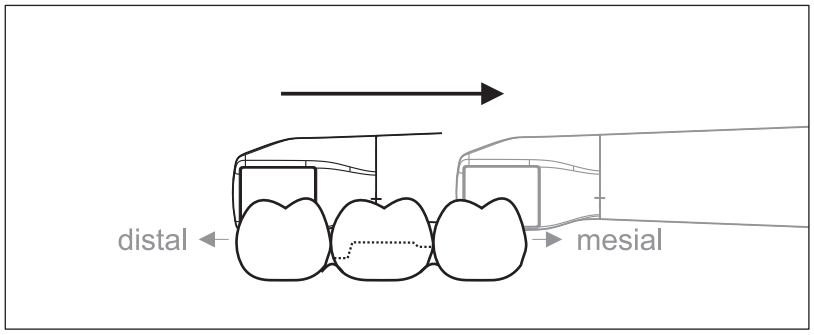
✓ The scanner is on the adjacent tooth, in the mesial direction to the preparation.

1. Rotate the scanner between 45° to maximum 90° toward the buccal.
2. Guide the scanner 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 scanner is held like a flute during buccal scans. Do not tilt it vertically to the direction of motion.

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

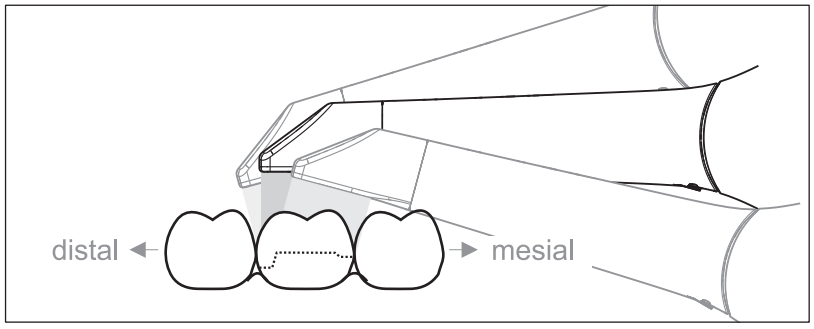
11.3.2.2.3 Lingual scan



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

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

11.3.2.2.4 Approximal surface scan



Scan the approximal surfaces of the prepared tooth.

➢ Move the scanner 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.

Notes:

- Remove the soft tissue.
- Cut away the moveable gingivae, so that only 2-5 mm gingivae remains around the tooth.
- 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.
- This cut must be completed during the ACQUISITION phase using the cutter.

11.3.2.2.5 Single and multiple buccal registration

The buccal registration establishes the allocation of jaw exposures.

✓ The jaw with the preparation is scanned.

1. Scan the occlusal, buccal and lingual view of the antagonist (see the section “Occlusal scan”, “Buccal scan” and “Lingual scan”).
2. Perform a buccal scan of the bite block prior to completing the registration. This buccal scan should be carried out close-up to the preparation. To acquire sufficient geometry, capture the teeth of the upper and lower jaw as well as 5 mm of the respective gingival areas.

Tip: In the case of multiple or long-span restorations over several quadrants, we recommend generating several buccal exposures close to the restoration.

11.3.2.2.6 Scanning the quadrant and jaw

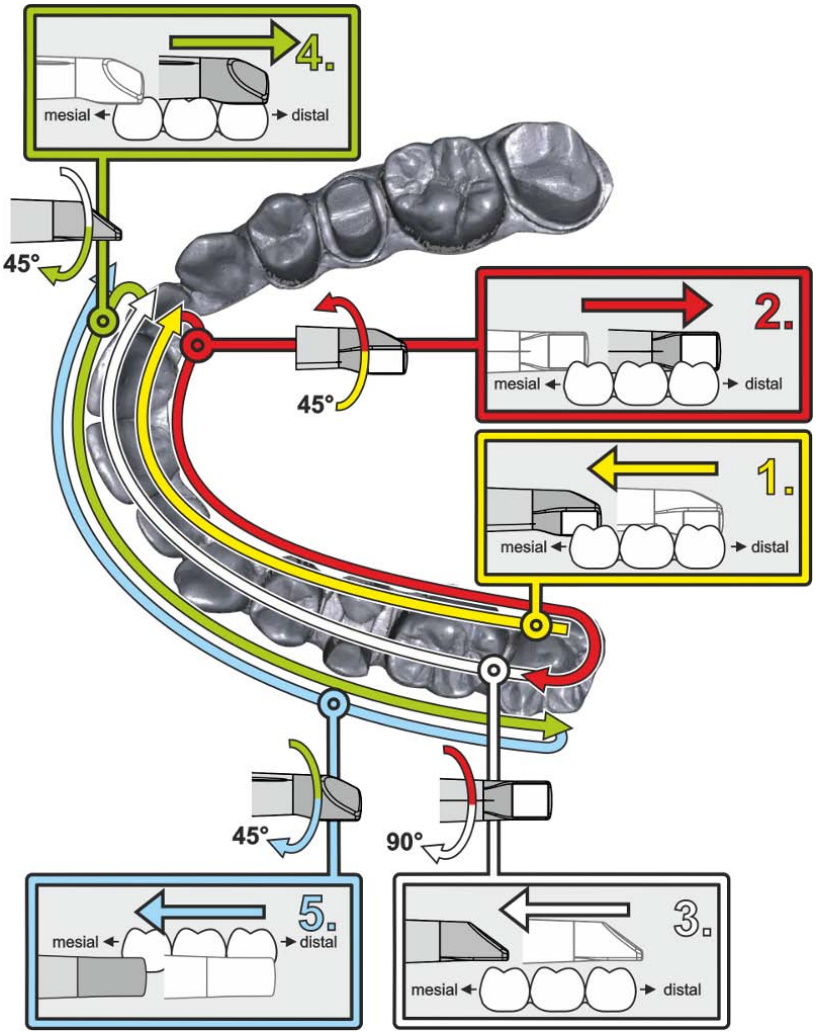
The following scan regulation applies for the acquisition of a complete quadrant or jaw arch.

The first (fourth) quadrant is scanned up to the opposite second front tooth by moving the scanner in parallel along the jaw arch.

Start the scanning process

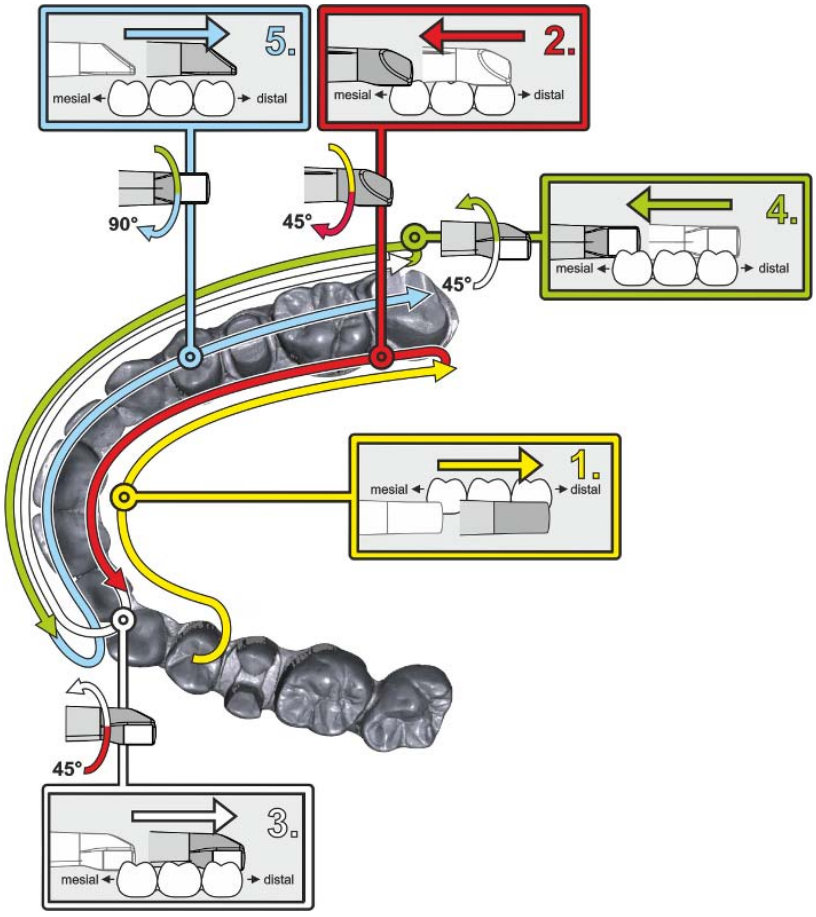
➢ Position the scanner occlusally above the last tooth on the right, to start the scanning process.

Completing the scanning process



1. **Start as indicated above, on the occlusal surface of the right terminal tooth,** and scan it occlusally.
   Tilt the scanner by 45° in a palatinal direction (oral) and guide it from the distal to the mesial.
2. Tilt the scanner another 45° in a palatinal direction (oral) and move it in a distal direction.
3. Tilt the scanner by 90° on to the occlusal surface and move it in a mesial direction.
4. Tilt the scanner in a 45° buccal direction and move it back towards the distal.
5. Then tilt the scanner a further 45° in a buccal direction to a total of 90° and move it in a mesial direction again.

The following scan sequence is implemented for the opposite second (third) quadrant:



1. **Start by placing the device on the occlusal surface of a premolar, that has already been scanned,** and guide the scanner palatally (orally) at a mesial tilt of up to 90° across the lingual surface of the front teeth in a distal direction towards the terminal tooth.
2. Slight tilt the scanner by 45°, so that the scanner is only tilted by 45° in a palatinal direction (oral) moving from the distal and back to the mesial to the front teeth.
3. Once you have reached the area of the front tooth, guide the scanner 45° to the buccal side and tilt the scanner by 45° from the mesial to the distal direction.
4. Once you have reached the distal, tilt the scanner by another 45° (total of 90°) further towards the buccal and guide the scanner from the distal back to the mesial direction.
5. Once you have reached the area of the front tooth, tilt the scanner in an occlusal direction and guide the scanner mesially to the occlusal surfaces right to the back distal molars.

Notes:

- Remove the soft tissue.
- Cut away the moveable gingivae, so that only 2-5 mm gingivae remains around the tooth.

- 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.
- This cut must be completed during the ACQUISITION phase using the cutter.

11.3.2.2.7 Completing measurements

✓ The exposures are complete.

1. Press the *"Next"* button.
   ↳ The virtual model is calculated and displayed 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 exposures.

11.3.2.3 Taking optical impressions with the scanner

NOTE

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 scanner 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, as they can reduce the precision of the scan and create image interference.

⚠ CAUTION

Prevent cross-contamination

Germs can be transmitted to uncontaminated persons via the hands, materials or objects.

➢ For hygiene reasons, wear a new set of disposable gloves for each patient while using the scanner.

⚠ CAUTION

In the case of patients with allergies to nickel

Should the scanner mirror sleeve make contact with the skin of patients allergic to nickel, allergic reactions may occur.

➢ Ensure that in the case of patients with nickel allergies, the parts of the mirror sleeve which may make contact are protected from areas of skin.

⚠ WARNING

Risk of injury for those diagnosed with epilepsy

For persons who have been diagnosed with epilepsy, there is a risk of epileptic shock through the flashing light of the scanner.

➢ Patients who have been diagnosed with epilepsy cannot be treated with the scanner.

➢ Dentists and dental assistants who have been diagnosed with epilepsy cannot work with the scanner.

✓ The teeth are blow-dried.

1. Change to the *"ACQUISITION"* phase.
   - The scanner is ready for exposure.
   - As soon as you move the scanner, a live image appears which can be used to look around the patient's mouth.
2. Remove the scanner from the holder.
   - As soon as the scanner is pointed over a tooth or the gums, 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 scanner to any area which has already been scanned. The scanning procedure continues.
3. Place the scanner in the holder, it then switches off after a few seconds.
   - Prior to taking the exposure, you can activate the foot control in order to switch off the automatic exposure function. Then hold the scanner above the surface, which you wish to acquire and then press the foot control a second time. The camera function switches on and the scanner starts. By activating the foot control again, the camera and scan function can be switched off.
4. Activate the foot control or point the scanner cursor to the camera icon in the top right corner to end the acquisition procedure.

Proceeding with scanning procedure

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

11.3.3 CEREC Primescan, Primescan

11.3.3.1 Optical impressions with the scanner

NOTE

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 scanner 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, as they can reduce the precision of the scan and create image interference.

⚠ CAUTION

Prevent cross-contamination

Germs can be transmitted to uncontaminated persons via the hands, materials or objects.

➢ For hygiene reasons, wear a new set of disposable gloves for each patient while using the scanner.

⚠ WARNING

Risk of injury for those diagnosed with epilepsy

For persons who have been diagnosed with epilepsy, there is a risk of epileptic shock through the flashing light of the scanner.

➢ Patients who have been diagnosed with epilepsy cannot be treated with the scanner.

➢ Dentists and dental assistants who have been diagnosed with epilepsy cannot work with the scanner.

⚠ CAUTION

Potentially hazardous optical radiation

The scanner transmits potentially hazardous optical radiation which may cause harm to the eyes.

➢ During operation, do not look directly at the scanner for long periods.

✓ The teeth are blow-dried.

1. Change to the *"ACQUISITION"* phase.
   ↳ The scanner is ready for exposure.
   ↳ As soon as you move the scanner, a live image appears which can be used to look around the patient's mouth.

2. Remove the scanner from the holder.
   ↳ As soon as the scanner is pointed over a tooth or the gums, 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 scanner to any area which has already been scanned. The scanning procedure continues.
3. Place the scanner in the holder, it then switches off after a few seconds.
   ↳ Prior to taking the exposure, you can activate the foot control in order to switch off the automatic exposure function. Then hold the scanner above the surface, which you wish to acquire and then press the foot control a second time. The camera function switches on and the scanner starts. By activating the foot control again, the camera and scan function can be switched off.
4. Activate the foot control or point the scanner cursor to the camera icon in the top right corner to end the acquisition procedure.

Proceeding with scanning procedure

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

11.3.3.2 Scanner guide

The scanner 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 under configuration and select another type of sound (melody).

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

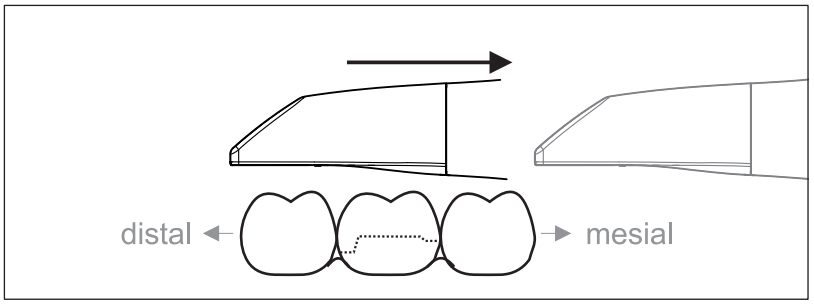
⇨ You will be able to hear the sound for registered acquisitions.

➢ Continue the acquisition.

Divide the acquisition into four consecutive sequences:

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

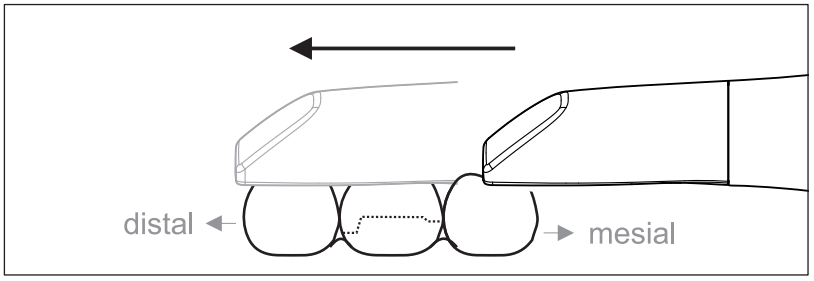
11.3.3.2.1 Occlusal scan



Important: Ensure that the distance between the coated sapphire glass of the scanner and the scanned surface is observed.
The distance must be between 0-20 mm (ideally: 2mm). The scanner does not rest on the teeth or the gums.

1. Move the scanner to the starting position. For this purpose, the scanner 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, move the scanner in the occlusal direction from the distal-positioned tooth over the prepared tooth to the mesial-positioned tooth.

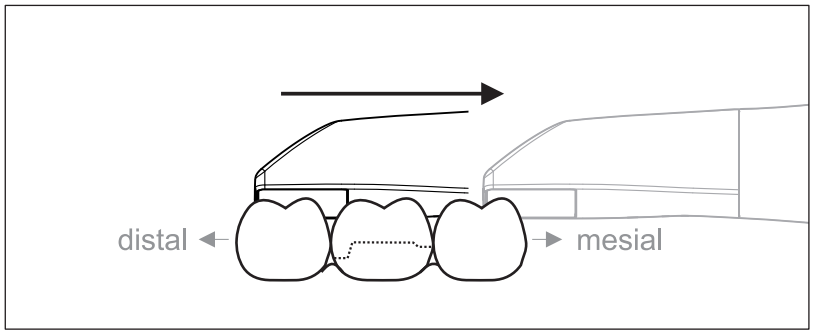
11.3.3.2.2 Buccal scan



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

1. Rotate the scanner 20° toward the buccal.
2. Guide the scanner over the entire buccal distance in the distal direction over the prepared tooth.

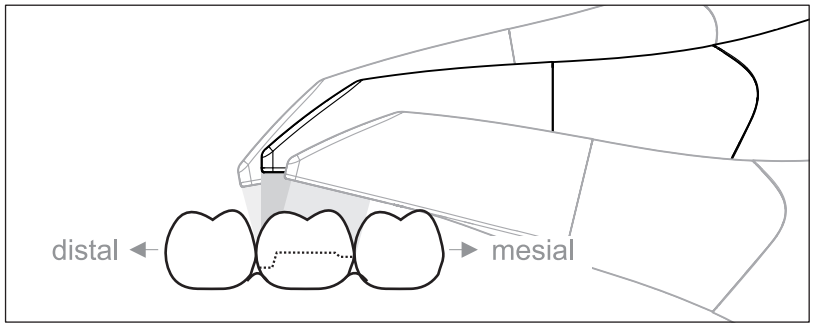
11.3.3.2.3 Lingual scan



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

1. Rotate the scanner to maximum 20° toward the lingual direction.
2. Guide the scanner over the entire lingual distance in the mesial direction over the prepared tooth.

11.3.3.2.4 Approximal surface scan



Scan the approximal surfaces of the prepared tooth.

➢ Move the scanner in the occlusal direction to the prepared tooth. Acquire the approximal surfaces in the distal and mesial direction.

11.3.3.2.5 Single and multiple buccal registration

The buccal registration establishes the allocation of jaw exposures.

✓ The jaw with the preparation is scanned.

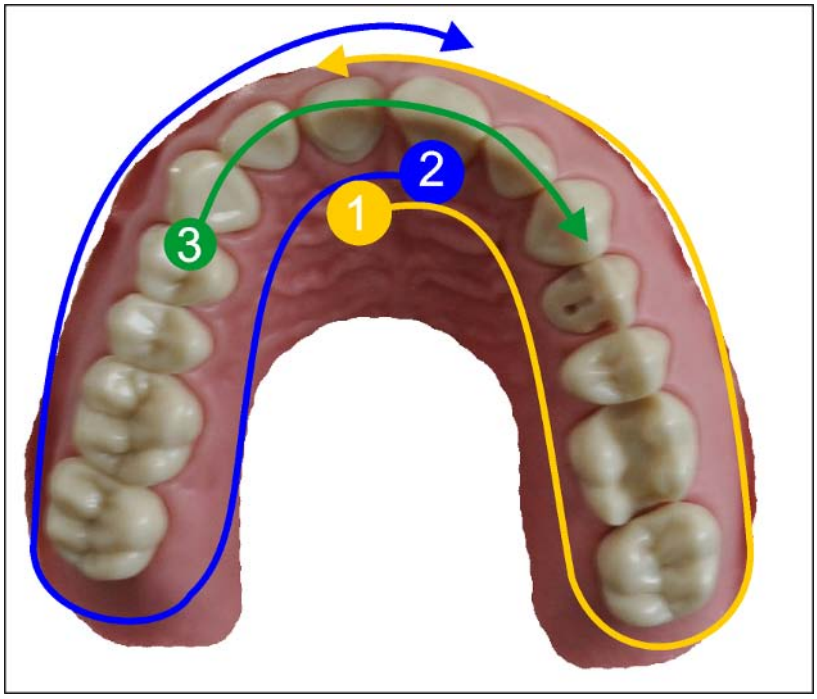
1. Scan the occlusal, buccal and lingual view of the antagonist (see the section “Occlusal scan”, “Buccal scan” and “Lingual scan”).
2. Perform a buccal scan of the bite block prior to completing the registration. This buccal scan should be carried out close-up to the preparation. To acquire sufficient geometry, capture the teeth of the upper and lower jaw as well as 5 mm of the respective gingival areas.

Tip: In the case of multiple or long-span restorations over several quadrants, we recommend generating several buccal exposures close to the restoration.

11.3.3.2.6 Quadrant and full jaw scan

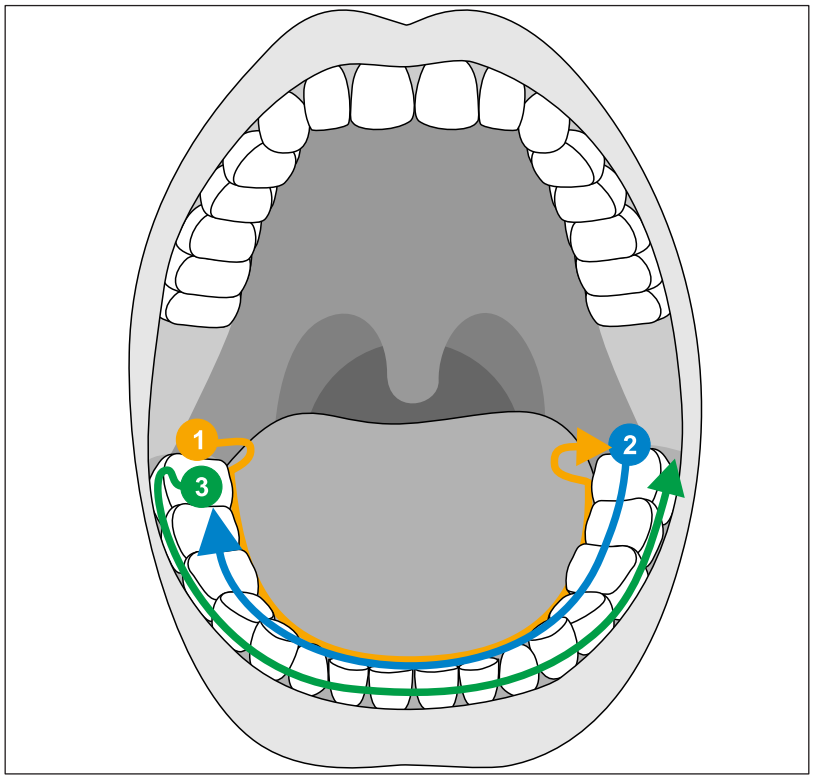
You can use different scanning procedures for scanning a quadrant or a full jaw. Find two procedures as follows to help you gain access should such help be necessary.

Procedure 1



1. Start with the oral surface of the anterior teeth and move the scanner in the oral direction along the quadrant. Move the scanner over the distal tooth to the vestibular side and track the first quadrant to the anterior teeth. Gently tilt the scanner approx. 30° in the coronal-apical direction.
2. Move the scanner as shown below (1) for the second quadrant.
3. Then scan the anterior teeth from cuspid to cuspid in the coronal-apical direction. Ensure that both the labial surface and the oral surfaces are visible.
   Extend this third scan to locations where you can view scan holes.

Procedure 2



1. Start occlusally on the distal tooth, tilt the scanner approx. 60° in an oral direction and move it orally along the dental arch up to the opposite distal tooth.
2. Guide the scanner occlusally from the distal tooth across the entire dental arch back to the other side.
3. To complete the scan, tilt the scanner approx. 60° in a buccal direction and move it buccally along the entire dental arch.

11.3.3.2.7 Completing measurements

✓ The exposures are complete.

1. Click on the *"Next"* button.
   ↳ The virtual model is calculated and displayed in color.
2. If missing data emerges in the preparation area, carry out further scans.

11.3.4 Cut out model areas

With the *"Cut"* function, you can should be able to 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.

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

✓ You are now in the ACQUISITION or MODEL phase.

1. Actuate the tool wheel.
2. Press the *"Cut"* button.
   ↳ The cursor changes to a cross.
3. Begin the cut line with a double-tap/double-click.
4. Tap/click to set additional points.
5. Finish the cut by double-tapping/double-clicking.
   ↳ The model area is cut out.
6. Press the *"Apply"* button to implement the change.

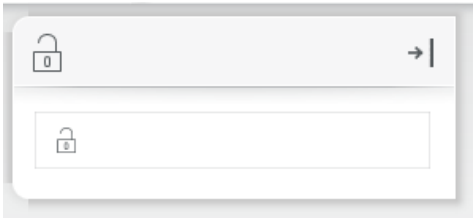
You can execute another exposure of the area which you have cut out using the crop function. To do so, close the tool window, by pressing on the top right corner. You can refill the area with another acquisition.

11.3.5 Additional acquisitions

You can switch back from the MANUFACTURE, DESIGN, and MODEL phases to the ACQUISITION phase and add additional exposures.

✓ You are now in the DESIGN phase.

1. Proceed to the ACQUISITION phase.
   ↳ The ACQUISITION phase opens. The image catalogs are locked.



2. Click the button *"Unlock"* in the page palette.
   ↳ The image catalogs are unlocked.
   ↳ You can take additional exposures.

12 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 *"Upper Jaw"*, *"Lower Jaw"*, *"Buccal Bite Registration"* and *"Set Model Axis"* steps relate 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 carried out as relevant for all restorations.

12.1 Editing the model

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

- *"Cut"*
- *"Replace"*
- *"Reset Model"*

Use of the individual tools is described in the section “Tools [→ 68]”.

12.2 Buccal registration

The software joins the models together automatically und shows this with a green check mark at the buccal window. If this is not possible, the software will attempt to correlate the jaws in the following process. If this is not possible, you can also correlate the models together manually.

Manual correlation

In this step, the virtual models of the upper and lower jaw should be aligned with one another with the help of the buccal image in its correct position.

In the *"Buccal Bite Registration"* step, you can work with the following tools in the page palette:

- Drag Buccal
- Turn Buccal Impression

Tool Settling

In the *"Buccal Bite Tools"* step, you can modify the buccal registration semi-automatically using the *"Settling"* tool. This might be necessary if the bite is blocked by an intraoral ScanPost.

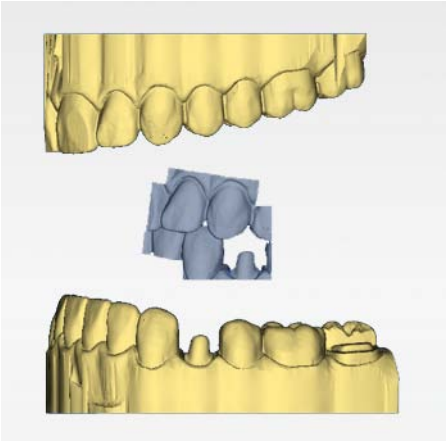
Tip: The *"Buccal Bite Tools"* step with the *"Settling"* tool is only available for the *"Abutment"* restoration type.

Rotating the lower and upper jaw

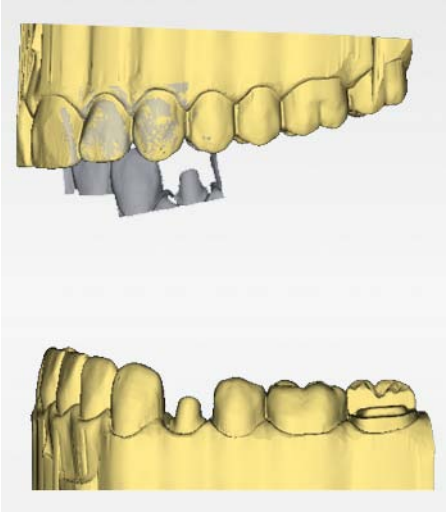
➢ Press with one finger or click in the gray area with the left mouse button and keep held down.
  ↳ The lower jaw and upper jaw can be rotated about the vertical axis simultaneously.

➢ Press with one finger or click on the lower jaw or upper jaw with the left mouse button and keep held down.
  ↳ The arches can be rotated freely, individually.

Drag Buccal



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 finger/mouse and let go (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 press 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.

Turn Buccal Impression

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:

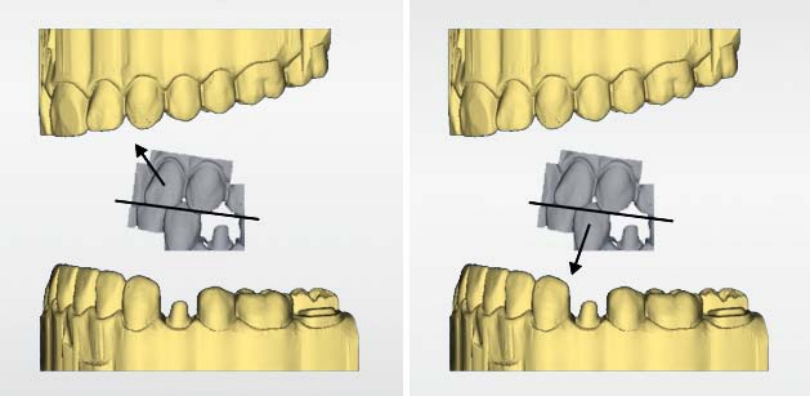
1. Press the upper area of the buccal image and drag it onto the lower model.

or

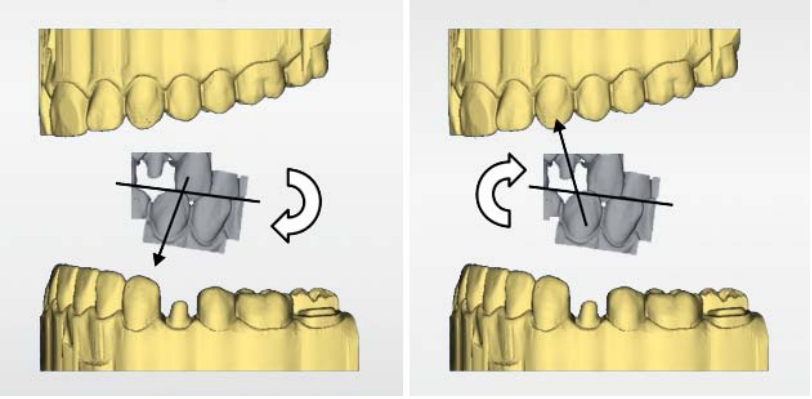
➢ Move the mouse via *"Tools"* onto the *"Bite Registration"* button and activate the *"Turn Buccal Impression"* command.

↳ 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 press 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.

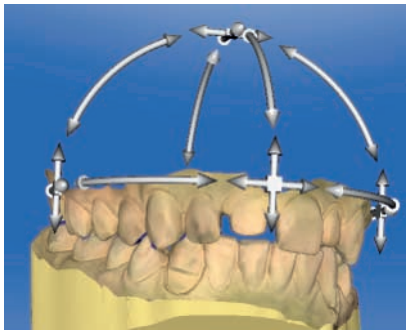
➢ Go to the next step to proceed.

12.3 Buccal bite tools

You can align buccal registration manually in this step.

In the step *"Move Jaw"*, you can work with the following tool:

- *"Move Jaw"*



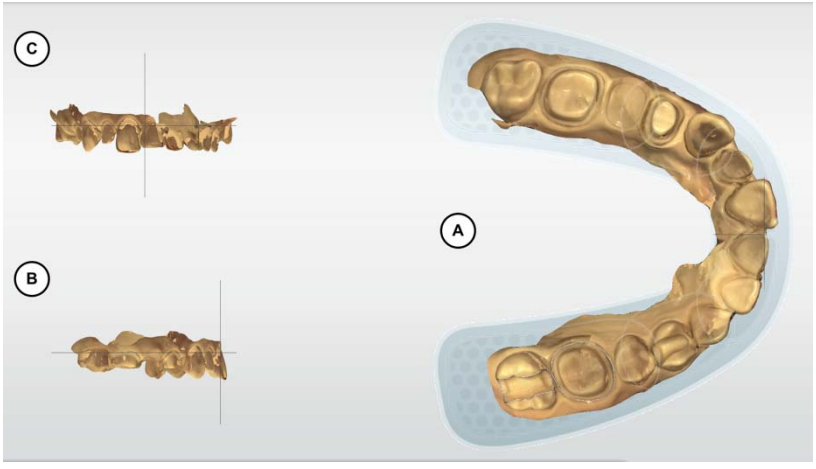
Positioning the upper jaw

➢ Actuate an arrow symbol and press and hold it.
  ↳ You can displace or rotate the upper jaw in the corresponding direction.

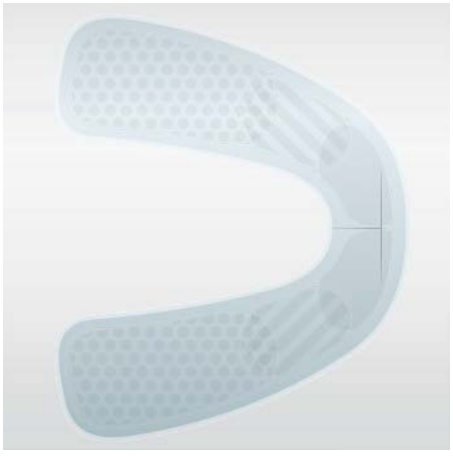
Changing axes

➢ Right-click on an arrow symbol and hold the button down.
  ↳ You can change the axis on which the upper jaw is rotated or shifted.

12.4 Optional step: Set model axis



The model axis is automatically suggested by the software. If you are not satisfied with the suggestion, you can redefine the model axis. This alignment is required to calculate optimal initial suggestions.



Aligning the occlusal view (A)

1. Align the model using the schematic mandibular arch. Each tooth must be in the correct quadrant.
2. Align the incisors using the center lines displayed.
   The following markings should help you with the alignment:
   - T-shaped cross hairs for the incisal points of the incisors
   - Dotted area for the molars
   - Dashed area for the premolars
   - Filled area for the anterior teeth
3. Hold down your finger or the left mouse button to rotate the jaw or hold down two fingers or the right mouse button to move the jaw. If you move a jaw, the other jaw automatically moves as well.
4. Go to the next step to draw the preparation margin
   or
   for acquisitions with the extraoral scanner:
   Go to the next step to reach the configuration of the jaw ridge line.
   The settings in the model axis are adopted automatically.

Aligning the buccal view (B)

1. Align the jaw so that the incisal point and distobuccal cusp of the first molars are parallel with the horizontal guiding lines.
2. Hold down your finger or the left mouse button to rotate the jaw or hold down two fingers or the right mouse button to move the jaw.
3. Go to the next step to draw the preparation margin
   or
   for acquisitions with the extraoral scanner:
   Go to the next step to reach the configuration of the jaw ridge line.
   The settings in the model axis are adopted automatically.

Aligning the mesial view (C)

1. Align the quadrants of the jaw parallel with the horizontal guiding line.
2. Hold down your finger or the left mouse button to rotate the jaw or hold down two fingers or the right mouse button to move the jaw.
3. Go to the next step to draw the preparation margin
   or
   for acquisitions with the extraoral scanner:
   Go to the next step to reach the configuration of the jaw ridge line.
   The settings in the model axis are adopted automatically.

12.5 Entering the preparation margin

Automatically detect the preparation margin

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

You can correct the preparation margin if it is not detected with complete accuracy or if you wish to refine the margin that has been detected automatically.

1. Start by double-clicking in the vicinity of the point to be corrected.
   ↳ A new corrected line is opened and the line hangs from the mouse cursor.
2. Redraw the line appropriately by guiding the cursor over the correct positions and setting points with a left mouse click.
3. Continue with this procedure until the point is corrected and the end the line with by double-clicking.

General information

IMPORTANT
You can enlarge or reduce the 3D view during the input or editing of the preparation margin (see “3D Preview”) in order to ensure the correct positioning of the preparation margin. Be sure to hold down the left mouse button for a long time. A short click adds a point to the preparation margin.

The tooth number is displayed after completing the preparation margin. This way confusion and thus poor suggestions can be avoided.

The preparation margin must always form a closed line.

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

Once the preparation margin is complete and has a tooth number, only the *"Manual"* tool will be available. This can be used for editing.

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.

Entering the preparation margin in the case of clear preparation edges

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

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.

Gingival element preparation margin

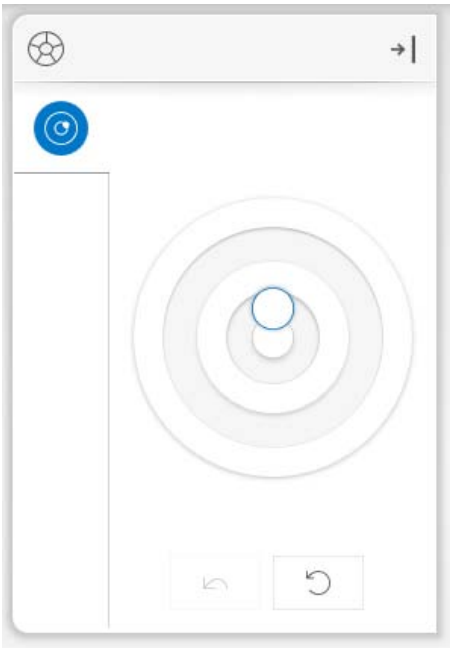
If you have selected a gingival element for the preparation margin, you must enter the preparation margin for the element in this step.

This works in the same way as the manual drawing of a preparation margin on a stump.

Enter the preparation margin for the next restoration

➢ Continue with the preparation margin for the next restoration by selecting the desired restoration in the object bar.

12.6 Defining the insertion axis or restoration axis



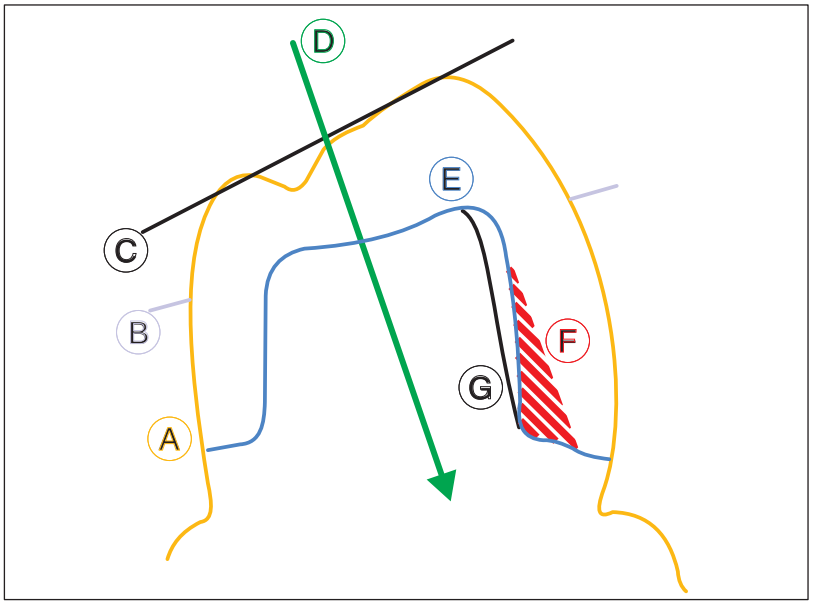
The insertion axis or restoration axis is automatically suggested by the software. If you are not satisfied with the suggestion, you can redefine the insertion axis (see “Redefining the insertion axis [→ 126]”).

12.6.1 Preparing the right insertion axis

CEREC Biogeneric obtains the information it requires from the occlusal surface and the proximal contact line of adjacent teeth based on the insertion axis selected by the user. The software stipulates that both levels must be positioned vertically to the insertion axis.

If indentations are created by positioning the insertion axis vertically to the occlusal surface in the preparatory steps, you must change the direction of the insertion axis.

Deviations of the acquired surface from the actual occlusion have a negative effect upon the quantity of data available for the biogeneric algorithm. This has the potential to affect the quality of the proposal.



A	Tooth contour	E	Preparation
B	Proximal contact line	F	Undercut
C	Occlusal surface	G	Alternative buccal preparation line
D	Insertion axis		

(A) displays the original contour of the tooth to be restored.

The optimum alignment for the insertion axis (D), in order to provide information for the biogeneric algorithm, is vertically to the proximal contact line (B) and occlusal surface (C).

With this axis for the preparation (E) which is ideal for the biogeneric calculation, indentations may occur. (G) shows an alternative buccal preparation line which would optimize the angle of insertion and enable optimum results from CEREC Biogeneric Individual.

12.6.2 Redefining the insertion axis

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

➢ Change the position of the preparation in the 3D model so that all colored 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 color highlighted undercuts are as far away as possible from the preparation margin.

You can set the insertion axis in 3 different ways.

1. Change the insertion axis by moving the blue bordered ball in the target circle of the page palette.
2. You can drag the arrows over the preparations.
3. Rotate the model to the desired insertion axis and select the *"Set Restoration Axis"* option from the page palette.

In the case of bridges, you have the option to re-define the insertion axis of the individual stumps.

➢ To do this, select the desired tooth in the restoration selector.
  ↳ All the options for setting the insertion axis are available to you.

MC XL = 4 axes (the insertion can only be set here in the bucco-lingual direction to the bridge axis.

12.6.3 Setting the insertion axis for the gingival element

If you have selected a gingival element for the preparation margin, you must enter the insertion axis of the gingival element in this step.

12.6.4 Preparation analysis

This step can optionally be selected after defining the insertion axis.

Here the following analyses are possible:

- Distance to the antagonist
- Undercut
- Preparation margin
- Surface (surface condition)

A key in the upper left corner of the 3D area displays the different dimensions.

In the left bottom corner, measured values of the mouse cursor position can be read out.

12.7 Restoration axis for implant abutment

This step is only available if *"Abutment"* is selected as the indication.

A restoration axis is suggested automatically, that can be manually edited.

To do so, left-click the circle highlighted in orange, in the center of the target displayed. Press and hold the key and change the restoration axis to the desired direction.

NOTE

Angulation of more than 20° to the implant axis is not permitted. This is indicated through highlighting the restoration in red.

For the *"Multilayer Abutment"* indication, the restoration axis corresponds to the insertion axis of the crown on the abutment or an angled abutment.

12.8 Finishing the phase

✓ The next phase can be selected.

1. Proceed to the next phase.

or

➢ Actuate the double arrow.

↳ The program switches over to the next phase.

13 DESIGN phase

13.1 Restoration parameters

Before further editing, you can check the parameters for this restoration and make any changes that are necessary. The values set here refer only to the current restoration.

This step is optional. If you skip this step, the global parameters will be used

You can set the parameters as described in the “Parameters” section.

13.2 Morphology step

The *"Morphology"* step offers you the following options:

- Whether the restorations should be calculated fully by the biogenerics
- Whether you want to specify the tooth shape (for anterior teeth)
- Whether the suggestion should be made using a database tooth In this version, the databases of VITA, Candulor, and Merz are available.

The morphology is selected separately according to anterior and posterior teeth.

To do this, select *"Tooth Shape"* to specify a tooth shape for anterior teeth or select *"Tooth DB"* to select a database tooth.

13.3 Positioning step

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.

In the *"Positioning"* step, you can modify the position of the teeth. The teeth are not yet taken into account in the preparation margin in this step and can be moved freely. The *"Position and Rotate"* and *"Scale"* tools are available to you for this purpose. Place the mouse above the relevant tooth in order to display the tool handle. Alternatively you can select the individual restorations in the object bar and the drag points are shown in the 3D model. The new positioning can be performed for each tooth, or you can group neighboring restorations (page palette option) and thus process several teeth simultaneously. When you group the teeth, the software takes account of the contact situation of the selected teeth. For example, this means that if one tooth in a group is enlarged, the others are reduced in size. The same mechanism applies when positioning the teeth. The teeth are adjusted in size to the modified conditions here, too.

If *"Linear"* is checked, all grouped restorations are moved, enlarged or reduced to the same extent. The linear function is only active if multiple teeth are grouped.

With the *"Snap to Biojaw"* option, the initial position of the edge of the preparation is ignored for the benefit of an even course of the mandibular arch. This allows natural malpositions in the mandibular arch to be compensated for to a certain degree.

If the *"Constrained Adoption"* function is checked (default), the initial suggestion is adjusted once more in shape and position to accommodate the contact situation, material thickness and the edge of the preparation. If this is not desired, this option can be deactivated. Then the suggestion is only calculated for the edge of the preparation and the shape and positioning remains the same. This may mean that material has to be manually applied so material wall thicknesses can be maintained.

13.4 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 section "Tools and functions of the page palette [→ 67]".

Group page palette

You can also edit multiple restorations at the same time with the *"Group"* function instead of using the key combinations.

1. Open the *"Group"* page palette.
2. Select the *"Group"* function.
3. Select the desired teeth/restorations in the object bar or directly in the model.
   - ↳ The blue selection color provides information on the objects assembled together.
4. Press the *"Group"* button again to deactivate Grouping and to edit the selected restorations together.

13.5 Finishing the phase

- ✓ The next phase can be selected.

1. Proceed to the next phase.

or

- ➢ Actuate the double arrow.
  - ↳ The program switches over to the next phase.

14 MANUFACTURING phase

14.1 Selecting the color

14.1.1 CEREC SpeedFire

When using zirconia and IPS e.max CA in a CEREC SpeedFire sintering oven, the color of the block must be selected in advance in the software. This ensures use of the appropriate parameters.

✓ In the ADMINISTRATION phase, you have selected the “CEREC zirconia”, “inCoris TZI C”, “inCoris TZI”, or “IPS e.max CAD” materials.

1. Select the *"Select Color"* step.
2. Select the desired color by choosing the color in the color center.
3. Press the *"OK"* button.

14.1.2 CEREC Blocs C In

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

14.2 Page palette manufacture / export

In this page palette, you can determine a grinding and milling unit and choose its CEREC SpeedFire sintering oven (if connected).

Here you can also select the editing options as a sub-menu of the relevant machine (see “Changing editing settings [→ 133]”).

14.2.1 Manual firmware update

If the grinding and milling unit firmware is not up to date, this is indicated by a red exclamation mark and a tooltip (pop-up window that appears if you hover over the symbol for 1-2 seconds). If you click on the symbol, you are taken to the corresponding configuration menu of the grinding and milling unit. You can perform the update there manually via the *"Update Firmware"* button, which appears approximately 5 seconds after a check is performed to check the current firmware version.

14.2.2 Changing editing settings

14.2.2.1 Grinding – production options

Grinding Fast

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"* button if you require this.

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

In this mode the level of detail is automatically set to *"High"* and the processing mode to *"Fast"*.

Grinding Fine

This is the standard grinding mode and can be used for all indications and materials.

In this mode the level of detail is automatically set to *"High"* and the processing mode to *"Normal"*.

Grinding Extra Fine

In connection with an MC XL (4-motor machine), you have the possibility of choosing the *"Extra Fine"* option.

You must equip your machine with the following instruments for this:

- In instrument set 1: Instruments of type *"Extra Fine"*:
  Left – CYLINDER BUR 12 EF,
  Right – CYLINDER POINTED BUR 12 EF
- In instrument set 2: Instruments of type “Standard”.

Grinding times are around 100% longer.

In this mode the level of detail is automatically set to *"Very High"* and the processing mode to *"Normal"*.

IMPORTANT

The *"Extra Fine"* grinding option can only be selected for final ceramics.

IMPORTANT

From the CEREC 5, the *"Occlusal Offset"* parameter is set in the MANUFACTURE phase. This value relates solely to the grinding result and is not available for milling. Apply or remove material in the occlusal direction over the entire occlusal surface with this setting. The effects are not visible in the software.

14.2.2.2 Milling – production options

Fast milling

Eliminates special processes and increases cutting parameters as well as the path spacing for optimum editing times with very good quality.

This mode is only available if the *"Margin Thickness"* parameter is set to 100 µm or more for the restoration.

In this mode the level of detail is automatically set to *"High"* and the processing mode to *"Fast"*.

Fine milling

Comprises the same process steps as the *"Fast"* stage but with reduced path spacing.

In this mode the level of detail is automatically set to *"High"* and the processing mode to *"Normal"*.

Customized milling

This mode provides greater flexibility with the individual settings for the level of detail and the processing mode.

14.2.2.3 Veneer mode

Veneer mode

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

14.2.3 Exporting a restoration

You can export individual restorations in order to

- process them with the inLab CAM SW software
- save them for shipment to infiniDent or
- save them in a different format.

TIP: To reuse blocks which have been ground, export the restoration to the inLab CAM SW software. It is not possible to call up blocks which have already been ground in the CEREC 5 milling preview.

inLab CAM restorations	The file format can be read only by inLab CAM SW software.

IMPORTANT
Dentsply Sirona will not be held liable for the further processing of *.stl data in other/external software.

14.3 Block size selection page palette

Block Sizes

In the *"Block Sizes"* page palette, you can select the right block size. The last selected or smallest possible block size is always preselected to start with. This presetting can be made in the configuration via the system menu.

IMPORTANT
The block sizes which are smaller than the currently selected restoration are indicated with a yellow warning sign.

14.4 Positioning restorations 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 “Tools [→ 68]” section.

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

14.5 Changing block sizes

The block size is automatically suggested by the software. You can change the block size in the *"Block Sizes"* side palette.

➢ Select the selected block size in the side palette. Blocks that are not suitable on account of the size are marked by an additional symbol in the page palette.
  ↳ The restoration is positioned in the block selected by you.

14.6 Starting the production process

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

For further information on milling or grinding, please see the corresponding Operating Instructions for the units.

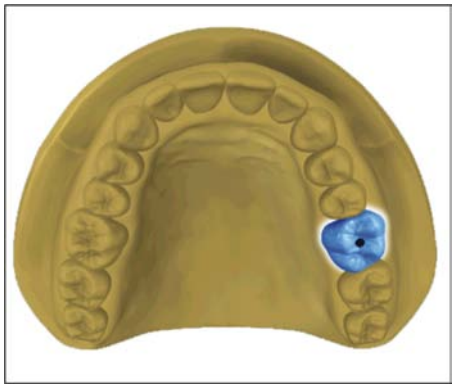
15 Design examples

15.1 Abutment - Biogeneric individual - MultiLayer

This example describes the procedure for designing an abutment with matching crown with neighboring teeth present that are in good order.

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

15.1.1 Create a new restoration



✓ You have selected a case or created a new one.
✓ You are now in the ADMINISTRATION phase.

1. Select the restoration type *"Abutment"*.
2. Select the restoration type *"Multilayer Abutment"*.
3. Select the design mode *"Biogeneric Individual"*.
4. Select a material from the desired manufacturer as the framework material from which the abutment should be produced.
5. Select a material from the desired manufacturer as the veneering structure from which the crown should be produced.
6. Optional: If you are using multiple grinding and milling units, you can choose which machine you would like to use for the case in the *"Select Milling Device"* step.
7. Select the desired TiBase.

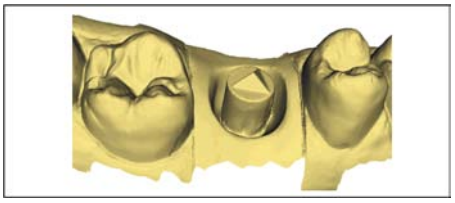
IMPORTANT
Not all TiBases can be selected
It is possible that not all TiBases can be selected depending on the framework material selected and the country stipulated for your installation.

8. Select whether you wish to use the TiBase or ScanPost for scanning.

IMPORTANT
For intraoral application: ScanPost recommended
Using a ScanPost is recommended for intraoral application as the correct positioning of the scanbody can only be reviewed in this case.

9. Select the tooth for which the restoration is to be created.
   ↳ The selected tooth is marked.
10. Change to the ACQUISITION phase.

15.1.2 Scanning a preparation



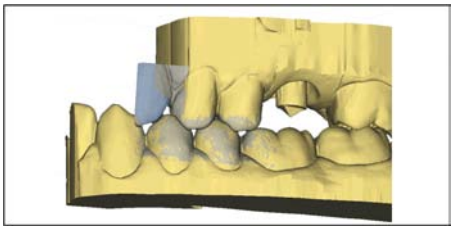
1. Acquire the preparation (see "ACQUISITION phase").
2. If you have formed an emergence profile then starting the acquisition of this region directly after removing the gingiva former is recommended.
3. You can also complete scans of the opposite jaw and the buccal bite registration as an option.
4. Now insert the ScanPost with the scanbody. Switch to the *"Scanbody"* image catalog for the relevant jaw and scan the scanbody. **NOTE! Ensure that the ScanPost itself as well as the transition from the gingiva to the ScanPost have been captured properly and that there is no interruption.**
5. Ensure that you also scan toothed areas (two additional teeth in all cases) in order to guarantee the registration for the preparation acquisition.
6. If all required acquisitions are present, change to phase MODEL.

15.1.3 Editing the model

✓ The step Edit Model is active.

1. With the tool *"Form"*, apply, remove or smoothen material (see shape).
2. With the tool *"Cut"*, cut out unnecessary image areas (see Cut out model areas).
3. Correct defects with the tool *"Replace"* (see Correcting defects).

15.1.4 Bite registration



✓ The *"Bite Registration"* step is optional. The bite registration is generally automatic.

➢ Complete a manual buccal registration if necessary (see "Buccal registration").

15.1.5 Set model axis

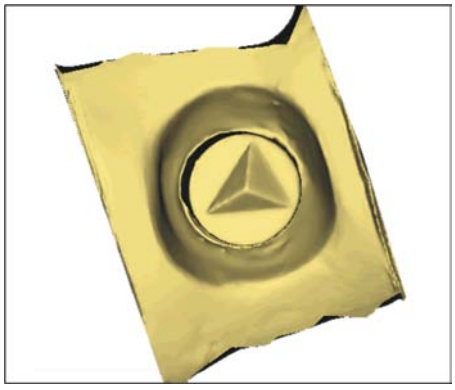
✓ The step *"Set Model Axis"* is active.

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

15.1.6 Mask areas

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.



✓ The *"Trim Area"* step is active.

➢ Cut away the distal and mesial neighbors, so that you input an open line in each case (see “Trimming [→ 74]”).

15.1.7 Select Scanbody

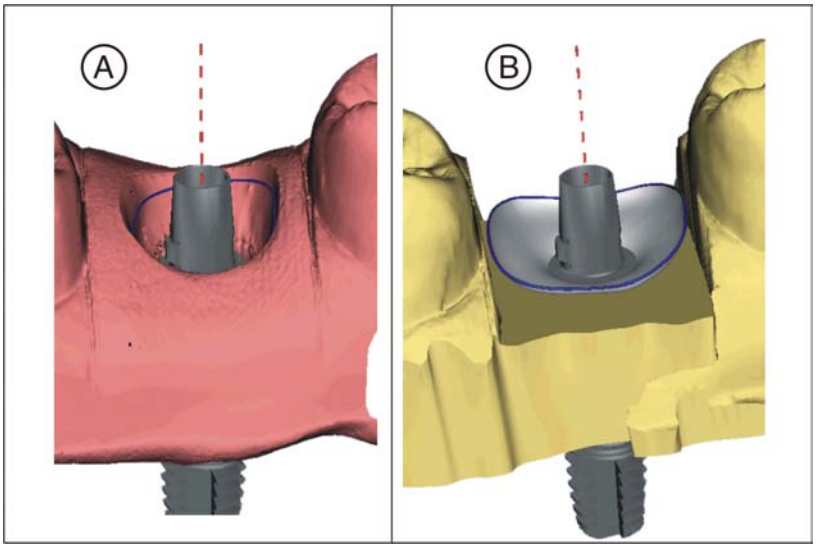
✓ The *"Click Scanbody Head"* step is active.

➢ Double-tap or click the Scanbody you are working on.

15.1.8 Editing the baseline

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

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



The baseline (emergence line, blue) is suggested automatically (**A**).
If you deselect the *"Use Gingiva Mask"* option, an emergence profile is suggested automatically (**B**).

If necessary, adjust the baseline as follows.

1. Start the entry by double-clicking anywhere on the baseline. Draw a new baseline by clicking along the desired path.
2. Complete the entry with a double-click on a point on the old baseline.

IMPORTANT
Editing the baseline is possible both for the automatic emergence profile and the gingiva-based emergence profile.

The baseline for the pontic can also be entered on the gingival mask. To do so, the corresponding option must be activated in the tool.

15.1.9 Define restoration axis

Determine the angulation for the abutment (see "Restoration axis for implant abutment [→ 128]").

15.1.10 Adjusting parameters

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

1. Adjust the parameters where necessary.
2. Confirm the changes with *"Ok"*.
   ↳ The initial suggestion is then calculated automatically.

15.1.11 Editing the restoration

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

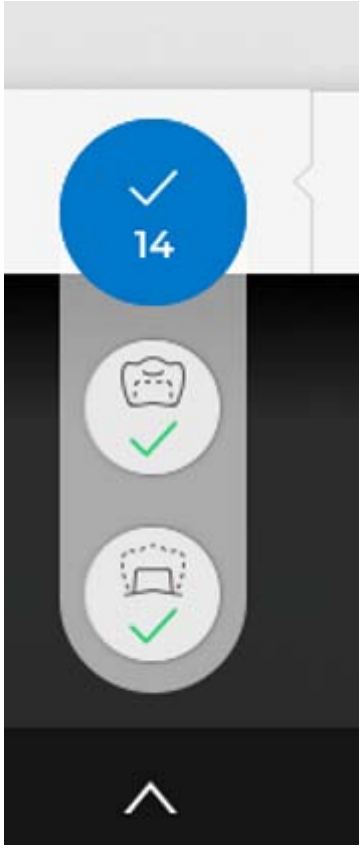
Once the restoration has been calculated, you can change the restoration with the tools in the toolbar.

The individual tools and their applications are described in the section "Tools and functions of the page palette [→ 67]". Designing the final outer shape of the restoration first of all is useful before you divide this into abutment and crown.

Start with the rough tools first and position the restoration. Then implement the smaller corrections. The same editing recommendations that apply to crowns also apply to the area around the crown.

Using the *"Shape"* / *"Circular"* tool is recommended for adjusting the emergence profile.

Edit layers individually

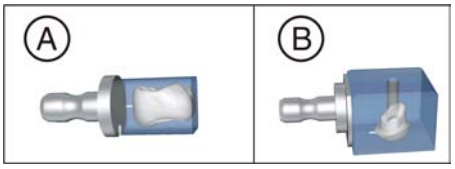


✓ The *"Edit Restoration"* step is active.

1. Select the *"Split"* tool.
   ↳ The crown is displayed transparently.
2. Actuate the arrow in the context bar on the lower edge of the screen.
   ↳ The restoration range expands. 2 restorations are represented for the tooth position.
3. Press 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.
5. Start with the editing of the abutment. Use the *"Scale"* tool to adjust the height of the abutment and the course of the shoulder.
6. Please note that changes to the abutment affect the crown design. By switching to the crown you can check e.g. whether the minimum wall thickness has still been observed for the crown after the shoulder has been narrowed.

Change to the MANUFACTURE phase. Both restoration layers have to be developed individually.

15.1.12 Creating restorations



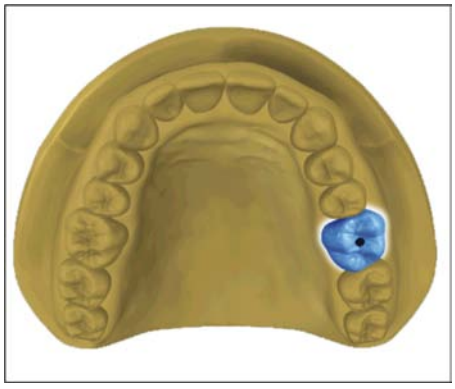
1. In step *"Milling Unit"*, select the device with which the restoration will be edited.
2. In step *"Change Block Size"*, change the block size, where necessary.
3. In step *"Adjust Mill Position"*, position the restoration in the block, where necessary.
4. Start the editing process.

15.2 Abutment - Biogeneric individual

This example describes the procedure for designing a directly screw-retained crown with neighboring teeth present that are in good order.

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

15.2.1 Create a new restoration



✓ You have selected a case or created a new one.
✓ You are now in the ADMINISTRATION phase.

1. Select the restoration type *"Abutment"*.
2. Select the restoration type *"Screw Retained Crown"*.
3. Select the design mode *"Biogeneric Individual"*.
4. Select a material from the desired manufacturer from which the crown should be produced.
5. Optional: If you are using multiple grinding and milling units, you can choose which machine you would like to use for the case in the *"Select Milling Device"* step.
6. Select the desired TiBase.

IMPORTANT

Not all TiBases can be selected

It is possible that not all TiBases can be selected depending on the framework material selected and the country stipulated for your installation.

7. Select whether you wish to use the TiBase or ScanPost for scanning.

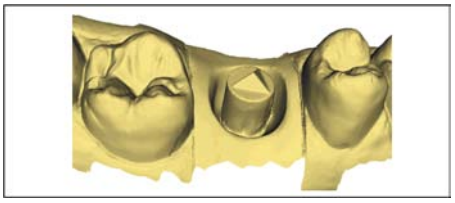
IMPORTANT

For intraoral application: ScanPost recommended

Using a ScanPost is recommended for intraoral application as the correct positioning of the scanbody can only be reviewed in this case.

8. Select the tooth for which the restoration is to be created.
   ↳ The selected tooth is marked.
9. Change to the ACQUISITION phase.

15.2.2 Scanning a preparation



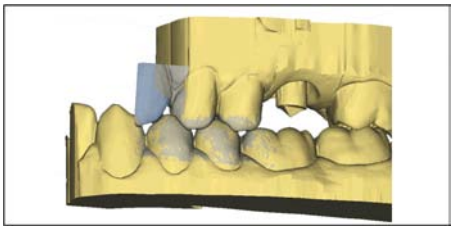
1. Acquire the preparation (see "ACQUISITION phase").
2. If you have formed an emergence profile then starting the acquisition of this region directly after removing the gingiva former is recommended.
3. You can also complete scans of the opposite jaw and the buccal bite registration as an option.
4. Now insert the ScanPost with the scanbody. Switch to the *"Scanbody"* image catalog for the relevant jaw and scan the scanbody. **NOTE! Ensure that the ScanPost itself as well as the transition from the gingiva to the ScanPost have been captured properly and that there is no interruption.**
5. Ensure that you also scan toothed areas (two additional teeth in all cases) in order to guarantee the registration for the preparation acquisition.
6. If all required acquisitions are present, change to phase MODEL.

15.2.3 Editing the model

✓ The step Edit Model is active.

1. With the tool *"Form"*, apply, remove or smoothen material (see shape).
2. With the tool *"Cut"*, cut out unnecessary image areas (see Cut out model areas).
3. Correct defects with the tool *"Replace"* (see Correcting defects).

15.2.4 Bite registration



✓ The *"Bite Registration"* step is optional. The bite registration is generally automatic.

➢ Complete a manual buccal registration if necessary (see "Buccal registration").

15.2.5 Set model axis

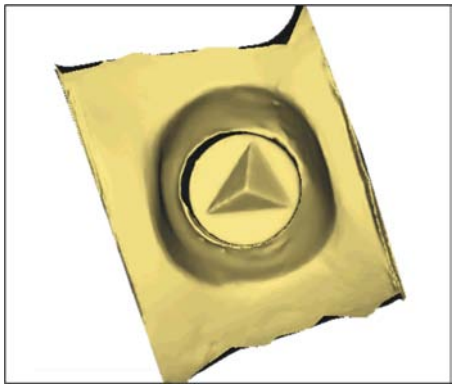
✓ The step *"Set Model Axis"* is active.

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

15.2.6 Mask areas

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.



✓ The *"Trim Area"* step is active.

➢ Cut away the distal and mesial neighbors, so that you input an open line in each case (see “Trimming [→ 74]”).

15.2.7 Select Scanbody

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

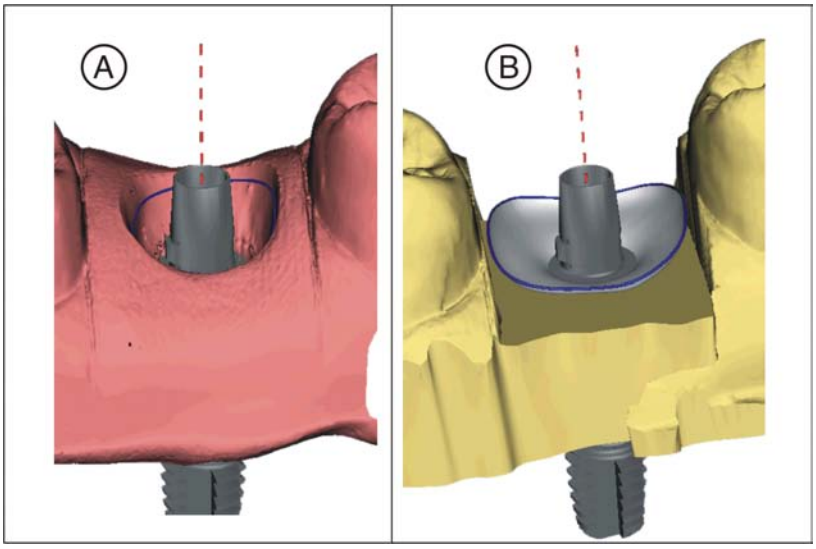
➢ Double-tap or click the Scanbody you are working on.

15.2.8 Editing the baseline

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.

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



The baseline (emergence line, blue) is suggested automatically (**A**).
If you deselect the *"Use Gingiva Mask"* option, an emergence profile is suggested automatically (**B**).

If necessary, adjust the baseline as follows.

1. Start the entry by double-clicking anywhere on the baseline. Draw a new baseline by clicking along the desired path.
2. Complete the entry with a double-click on a point on the old baseline.

IMPORTANT

Editing the baseline is possible both for the automatic emergence profile and the gingiva-based emergence profile.

The baseline for the pontic can also be entered on the gingival mask. To do so, the corresponding option must be activated in the tool.

15.2.9 Define restoration axis

This work step can be skipped.

15.2.10 Adjusting parameters

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

1. Adjust the parameters where necessary.
2. Confirm the changes with *"Ok"*.
   ↳ The initial suggestion is then calculated automatically.

15.2.11 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 "Page palette" section.

Start with the rough tools first and position the restoration. Then implement the smaller corrections. The same editing recommendations that apply to crowns also apply to the area around the crown.

Using the *"Shape"* / *"Circular"* tool is recommended for adjusting the emergence profile.

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

➢ Use the tools from the page palette to edit the restoration.

15.2.12 Grinding the restoration

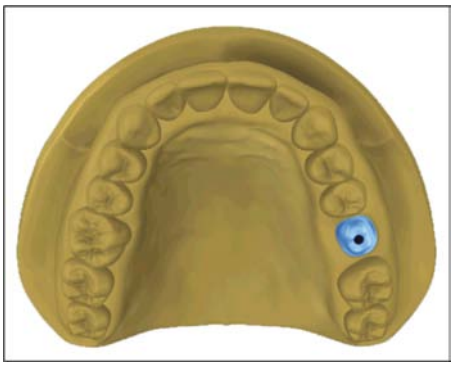
1. In step *"Milling Unit"*, select the tool with which the restoration needs to be ground.
2. In step *"Change Block Size"*, change the block size, where necessary.
3. In step *"Adjust Mill Position"*, position the restoration in the block, where necessary.
4. Start the milling process.

15.3 Abutment - framework

This example describes the procedure for designing an abutment.

Design example *"Abutment"* with design mode *"Framework"* on tooth 26 (#14).

15.3.1 Create a new restoration



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

✓ You are now in the ADMINISTRATION phase.

1. Select the restoration type *"Abutment"*.
2. Select the restoration type *"Framework Abutment"*.
3. Select a material from the desired manufacturer from which the abutment should be produced.
4. Optional: If you are using multiple grinding and milling units, you can choose which machine you would like to use for the case in the *"Select Milling Device"* step.
5. Select the desired TiBase.

IMPORTANT
Not all TiBases can be selected It is possible that not all TiBases can be selected depending on the framework material selected and the country stipulated for your installation.

6. Select whether you wish to use the TiBase or ScanPost for scanning.

IMPORTANT
For intraoral application: ScanPost recommended Using a ScanPost is recommended for intraoral application as the correct positioning of the scanbody can only be reviewed in this case.

7. Select the tooth for which the restoration is to be created.
   ↳ The selected tooth is marked.
8. Change to the ACQUISITION phase.

15.3.2 Scanning a preparation

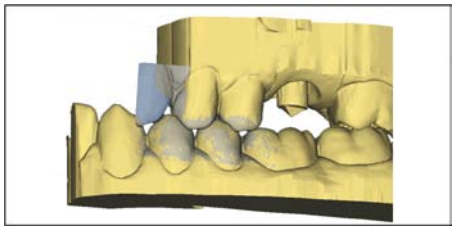
1. Acquire the preparation (see "ACQUISITION phase").
2. If you have formed an emergence profile then starting the acquisition of this region directly after removing the gingiva former is recommended.
3. You can also complete scans of the opposite jaw and the buccal bite registration as an option.
4. Now insert the ScanPost with the scanbody. Switch to the *"Scanbody"* image catalog for the relevant jaw and scan the scanbody. **NOTE! Ensure that the ScanPost itself as well as the transition from the gingiva to the ScanPost have been captured properly and that there is no interruption.**
5. Ensure that you also scan toothed areas (two additional teeth in all cases) in order to guarantee the registration for the preparation acquisition.
6. If all required acquisitions are present, change to phase MODEL.

15.3.3 Editing the model

✓ The step Edit Model is active.

1. With the tool *"Form"*, apply, remove or smoothen material (see shape).
2. With the tool *"Cut"*, cut out unnecessary image areas (see Cut out model areas).
3. Correct defects with the tool *"Replace"* (see Correcting defects).

15.3.4 Bite registration



✓ The *"Bite Registration"* step is optional. The bite registration is generally automatic.

➢ Complete a manual buccal registration if necessary (see "Buccal registration").

15.3.5 Set model axis

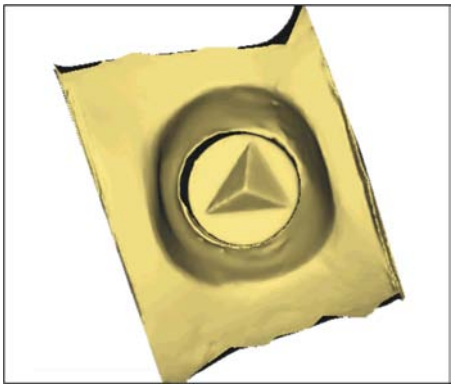
✓ The step *"Set Model Axis"* is active.

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

15.3.6 Mask areas

IMPORTANT

For precision reasons, this function can only be operated by trackball or touchpad.



✓ The *"Trim Area"* step is active.

➢ Cut away the distal and mesial neighbors, so that you input an open line in each case (see “Trimming [→ 74]”).

15.3.7 Select Scanbody

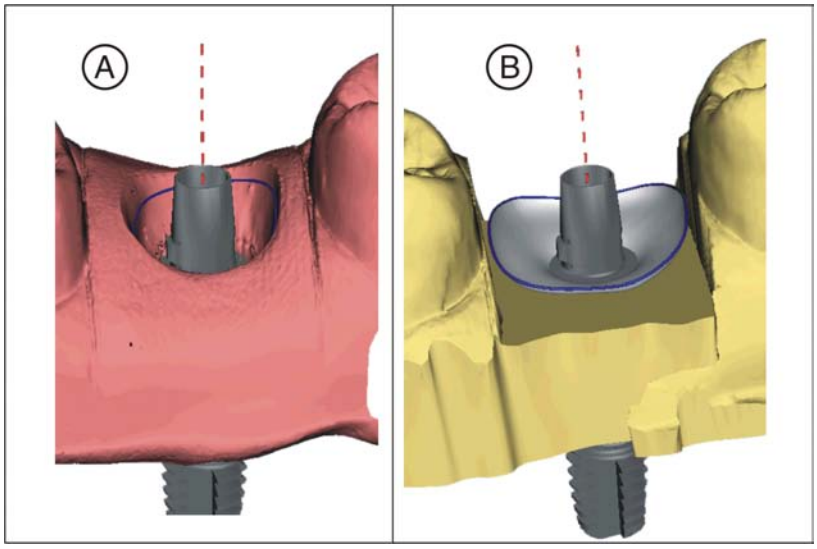
✓ The *"Click Scanbody Head"* step is active.

➢ Double-tap or click the Scanbody you are working on.

15.3.8 Editing the baseline

IMPORTANT
For precision reasons, this function can only be operated by trackball or touchpad.

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



The baseline (emergence line, blue) is suggested automatically (**A**).
If you deselect the *"Use Gingiva Mask"* option, an emergence profile is suggested automatically (**B**).

If necessary, adjust the baseline as follows.

1. Start the entry by double-clicking anywhere on the baseline. Draw a new baseline by clicking along the desired path.
2. Complete the entry with a double-click on a point on the old baseline.

IMPORTANT
Editing the baseline is possible both for the automatic emergence profile and the gingiva-based emergence profile.

The baseline for the pontic can also be entered on the gingival mask. To do so, the corresponding option must be activated in the tool.

15.3.9 Define restoration axis

This work step can be skipped.

15.3.10 Adjusting parameters

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

1. Adjust the parameters where necessary.
2. Confirm the changes with *"Ok"*.
   ↳ The initial suggestion is then calculated automatically.

15.3.11 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 "Page palette" section.

Use the *"Scale"* tool to adjust the general size and shape of the abutment. Adjusting the emergence profile with the *"Shape"* / *"Circular"* tool is recommended if the shoulder has been defined.

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

➢ Use the tools from the page palette to edit the restoration.

15.3.12 Grinding the restoration

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 milling process.

16 Shortcut keys

Tip: Press and hold down the "Alt" key on the keyboard to see the keyboard shortcuts. All available functions that can be reached using the keyboard shortcuts are visible on the corresponding buttons.

System menu

Shortcut keys	Meaning
Ctrl + N	Closes the current case and the application returns to the start screen.
Ctrl + S	Saves the current case.
Ctrl + Alt + S	Saves the current case under a new patient.
Ctrl + I	Opens the file import dialog for importing a file.
Ctrl + E	Opens the file export dialog for exporting a file.
Ctrl + Q, Alt + F4	Exits the application.
F1	Opens the Help section.
Alt + F2	Opens the configuration
F11	Full frame mode

Phases

Shortcut keys	Meaning
Ctrl + F1	Switches to the ADMINISTRATION phase, if available.
Ctrl + F2	Switches to the SCAN phase, if available.
Ctrl + F3	Switches to the MODEL phase, if available.
Ctrl + F4	Switches to the DESIGN phase, if available.
Ctrl + F5	Switches to the MANUFACTURE phase, if available.
Ctrl + F2	Opens the configuration, if it is available.

Opening the tool wheel and page palette

Shortcut keys	Meaning
Alt + V	Opens the *"View Options"* menu in the page palette.
Alt+ T	Opens the *"Tools"* menu in the page palette.
Alt + D	Opens the *"Display Objects"* menu in the page palette.
Alt +A	Opens the *"Analyzing Tools"* menu in the page palette.
Alt +L	Opens the *"Link Options"* menu.
Ctrl + Num 3	Changes to buccal display, left
Ctrl + Num 5	Changes to centered display
Ctrl + Num 2	Changes to cervical display, bottom
Ctrl + Num 9	Changes to distal display, rear
Ctrl + Num 7	Changes to lingual display, right
Ctrl + Num 1	Changes to mesial display, front
Ctrl + Num 8	Changes to occlusal display, top

Analyzing Tools

Shortcut keys	Meaning
Ctrl + O	Displays or hides the occlusal contacts.
Ctrl + B	Displays or hides the box of the model.
Ctrl + C	Starts/ends the *"Slice"* analysis tool.
Ctrl + D	Displays or hides the details on the mouse cursor
Ctrl + T	Start/ends the distance analysis tool.
Ctrl + G	Displays or hides the grid.
Ctrl + Alt + M	Displays and hides the model color.

Acquisitions

Shortcut keys	Meaning
1	Change to the Lower Jaw image catalog
2	Change to the Upper Jaw image catalog
3	Change to the Buccal image catalog
4-9	Inserts image catalogs onto the page palette according to their sequence and selects these directly.
Right arrow	Changes to the right, to the next image catalog. If this is not yet available, the corresponding image catalog is applied.
Left arrow	Changes to the left, to the next image catalog. If this is not yet available, the corresponding image catalog is applied.
Space bar	Switches the camera on or off
Return	Changes to manual mode or triggers an acquisition

Shortcut keys	Meaning
+	Starts the acquisitions in automatic acquisition mode
-	Ends the acquisitions in automatic acquisition mode

Tools – Edit Restoration

Shortcut keys	Meaning
Alt + F	Opens the *"Form"* tool.
Alt + S	Opens the *"Shape"* tool.
Alt + R	Opens the *"Reduce"* tool.
Alt + B	Opens the *"Biogeneric Variation"* tool.
Alt + C	Opens the *"Contacts"* tool.
Alt + M	Opens the *"Position and Rotate"* tool.
Alt + X	Opens the *"Recalculate"* tool.
Alt + L	Opens the *"Connector Lines"* tool.
Alt + 0	Opens the *"Connector Move"* tool.
Alt + I	Opens the *"Facial Variation"* tool.
Alt + E	Opens the *"Edit Base Line"* tool.
Ctrl + C	Activates the *"Slice"* analysis tool.

Tools – Edit Model

Shortcut keys	Meaning
Alt + C	Opens the *"Cut"* tool.
Alt + E	Opens the *"Replace Tool..."* tool.
Alt + F	Opens the *"Form"* tool.
Alt + R	Opens the *"Reset Model"* tool.
Ctrl + Z	Undo
Ctrl + Y	Repeat
Ctrl + Alt + Z	Resets the changes made with the tool.
Ctrl + C	Copy
Ctrl + V	Insert
Ctrl + X	Cut
Ctrl + A	Mark all

Tools – Display Objects

Shortcut keys	Meaning
Ctrl + B	Displays or hides the box of the model.
Ctrl + M	Opens the *"Minimal Thickness"* tool.
Ctrl + U	Hides the jaw which has the active restoration.

17 Connect Case Center Portal

17.1 Starting Connect Case Center Portal

✓ The start screen is active.

➢ Click the *"Sirona Connect Portal"* button in the step menu.

↳ The login window is displayed.

You can log in to the Connect Case Center Portal here. You must register as a dentist on the Connect Case Center homepage for this.

Model data in the Connect Case Center Portal

The user contact data is saved within the Connect Case Center and is used by Dentsply Sirona to make contact if necessary. The users should send patient data via the Connect Case Center in anonymized form only wherever possible. Connect Case Center deletes this data at regular intervals.

17.2 Registration and functions of the Connect Case Center Portal

1. Go to the Connect Case Center homepage and click on *"Dentist Registration"*.
   ↳ The application software now guides you through the log-in process.
2. Enter all required information there.
   ↳ On completing registration successfully, you will receive an email from the Connect Case Center with an activation link.
3. Follow the link in the e-mail to activate your account.

Under *"My account"* you have the option of amending your user data and saving additional information such as your Skype™ ID.

Under *"My favorite Laboratories"* you can add up to 5 laboratories with which you are able to work via the Connect Case Center. To do so, select *"Search labs"* and enter at least your zip code and an area for the search. Via the *"add"* and *"remove"* buttons you can adapt your favorite laboratories.

Under the *"External portals"* link you have the option of linking the Connect Case Center Portal with other portals. If you do connect with other portals, the data-protection regulations apply for the other portal that is connected. Depending on the external portal you may need its access data to log on.

You can also change your password in this area and display your Connect Case Center order list.

Under the *"User Administration"* option, you can create new users, e.g. if there are multiple users working in a practice, and manage their access rights.

17.3 Log in to the portal from the Connect software

1. Enter user name and password.
2. Activate the relevant option if you want to save the user name and password.
3. Press *"Apply"* in the window.
   ↳ The data are uploaded in parallel to the information being entered in the portal.

17.4 Check restoration information

You can check the restoration information in the first step.

To the left of the overview the restoration information is shown for each restoration that was created in the *"ADMINISTRATION"* phase.

If the data are not correct you have to change them in the *"ADMINISTRATION"* phase. You can leave the portal via the button with the cross at the top right of the window.

If the data are correct, you can press *"Enter Order Data"* to move to the next step.

17.5 Enter order data

In this step you can select the lab to which the case is to be sent and enter the desired delivery date.

IMPORTANT
Maximum 5 labs
You can save a maximum of 5 labs in the list of your favorite labs.

Via *"Edit your favourite laboratories"* you can add labs to or delete labs from the list.

Under *"Lieferdatum"* you can select the delivery date by clicking on the desired day in the calendar. Under *"Time"* you can also state a delivery time.

Under *"Additional instructions of purchaser"* your preferred laboratory has saved individual order information, which must be entered for the return date.

17.6 Add additional information

In these options you must add the patient's gender and insurance type (Germany only).

Under *"Additional Instructions"*, either a wide text field is provided or individual fields for further information are shown, which were created by their laboratory.

Using the *"Additional Files"* function you can send additional files (photos).

Then press the *"Add To Cart"* button in the step menu to move to the shopping cart.

17.7 Shopping cart

In the shopping cart you can check the order details, modify them or delete the order from the shopping cart.

As soon as the file has been fully uploaded and all the information is correct, you can send the order to your lab via *"Submit cart"*. To do so under *"Verification"* you must enter your password and confirm it with *"Ok"*. The order list is then inserted automatically.

17.8 Order list

You can filter the orders by the various statuses via the filter next to the list.

In order to view the order details you must select the relevant order in the list so that it is highlighted in blue. Then you can view the details by clicking on the *"View Order"* button.

18 Creating a CEREC Guide 2

18.1 Optical impression

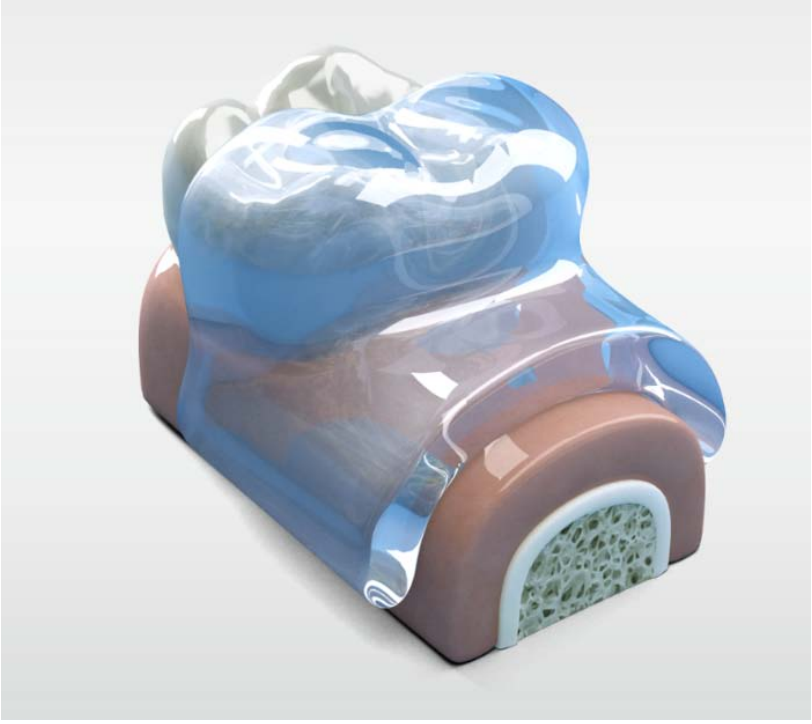
1. Scan the situation in the mouth either intraorally or using a model. The following applies at least to all areas which are intended to later serve as a support for the CEREC Guide. The surface scan is also used for the overlay of the x-ray volume.

NOTE

Note that the drilling template cannot be bigger than the scanned area.

Avoid holes in the scan. Otherwise, no locating surface for the CEREC Guide can be determined at these points.

2. Design a restoration at the planned implant position. Mark the emergence profile of the tooth on the gingiva in manual entry mode.
3. Export the data record using in *.SSI format.



18.2 3D x-ray and implant planning

A DVT exposure can be performed before or after the optical impression. Make sure that there are no metal artifacts in the scan, as these may hinder the overlay of optical data with the x-ray volume or even make it impossible. Do not scan the patient at the final bite position, but rather with a slightly opened jaw. Remove all removable metal parts in the opposing jaw (e.g. prosthetics). If possible, record 3/4 of the arch of the jaw. This increases the likeliness that teeth free from artifacts can be used for registration.

To produce a CEREC Guide, the import of the previously created *.SSI data record in GALILEOS Implant is necessary. The optical surface scan is superimposed over the X-ray volume. This makes it possible to determine the implant location while also considering the soft tissue and prosthetic planning.

⚠ CAUTION

Check that the optical impression is correctly aligned with the X-ray data record.

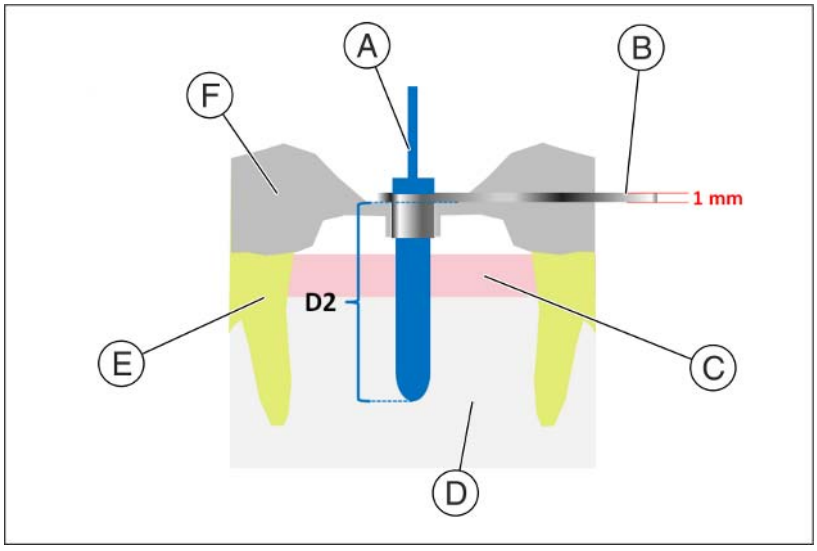
If multiple implants are to be planned, multiple *.SSI data records must be imported.

To plan the implant follow the instructions provided in the "GALILEOS Implant 1.9.2" operator's manual. As a general rule, follow the instructions provided in Appendix C.2 "Exporting plans for third-party processing using optical impressions".

Select Sirona - CEREC Guide Drill Keys as the sleeve system (CEREC Guide 2, SICAT Surgical Guides). You then have three sleeves available to choose from, which match the CEREC Guide drill keys S, M or L respectively.

If, for example only one pilot hole is to be created, the selection of size S is sufficient (apart from Camlog).

The specification of a depth stop is oriented on the length of the drill used. The planned position is reached when drilling once the mechanical stop of the drill reaches the drill key or (if the drill does not have a stop) the length marking on the drill is lowered to the upper side of the drill key.



A	Drill	D	Bones
B	CEREC Guide Drill Key	E	Tooth
C	Gingiva	F	CEREC Guide 2

In the GALILEOS Implant software, the depth stop is to be entered using the D2 value. The D2 value is defined as the distance from the side of the drilling template to the apical top of the implant. As the drill strikes the 1 mm thick drill key, the D2 value to be set results from the length of the drill minus one millimeter
(**D2 = drill length – 1 mm**).

The statement of the D1 value is to be ignored.

After entering the D2 value, the sleeve is visualized above the implant at the relevant height.

NOTE

When selecting the bushing, ensure that it does not collide with neighboring teeth and the drill key and the drill itself can be introduced without a collision.
Note that selecting a smaller sleeve may limit the use of larger drill diameters.
The Camlog Guided System is only compatible with sleeve L.

If the representation of the underside of the sleeve cuts the scan shown as the yellow line, this indicates that the position of the drill key is at least partially subgingival.

Multiple implants and sleeve positions are planned in the same way. It is possible to export this as a file. Export the plan for “processing by third-party providers by way of optical impressions” as a .CMD.DXD file.

18.3 Design and development of the CEREC Guide 2

By selecting *"Import"*, you can switch the directly load the *.CMG.DXD file.

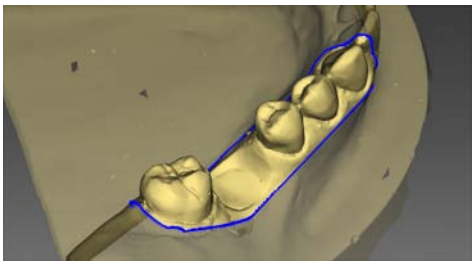
Phase ADMINISTRATION

If the plan contains multiple implants, these will be treated as multiple separate restorations. Select the implants that you want to integrate into a drilling template.

Select the machine type for development. This determines the possibilities for further processing.

- Drilling templates can be produced with a bore hole on an MC XL and up to an anatomical size of 85 mm x 40 mm.

Phase MODEL



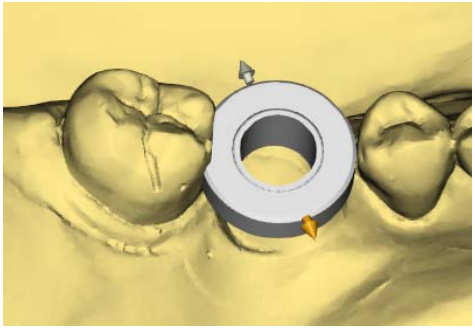
If the original scan is presented, which was also the basis for the implant planning. All areas, which are not intended to serve as a support for the CEREC Guide 2 should be cut. This includes, for example, larger areas of gingiva outside the planned implant position. Parts of the residual teeth may also be discarded if they are not required for support.

Note that a longer template is easier to hold in position with one finger and ensures secure support. This applies to free-end situations in particular.

In the *"Set Restoration Axis"* step, you can define the insertion axis of the drilling template. To do this move the orange-colored ball in the target circle.

Phase DESIGN

Set the parameters for the drilling template.



The position and shape of the sleeve cannot be changed using general design tools.

If a sleeve is shown in red, parts of it are subgingival. Determine whether these areas are to be cut away (e.g. to enable the unhindered placement on a model) or are to be left as they are. They color of the sleeve then turns green.

Optionally, you can create side access to introduce the drill from the side. This is only recommended for reasons of stability where required due to a lack of space.

After calculating the template element and if necessary orienting it in the block or round blank, you have the option of creating viewing panels in the step *"Inspection Window"*, which you can use to check the fitting of the template even during the surgical intervention. To do this click on the cursor at the point at which you want to design a viewing panel. Then you have the option to change the position of the viewing window, if necessary.

You can then still adapt the design of the template by cutting away any problematic areas.

Phase MANUFACTURE

If you want to create the drilling template on an MC XL, ensure that you have activated the option *"MC XL Milling"* in *"Configuration"*.

So that the milling process runs without interruption, ensure where necessary that milling tools with a sufficient service life are used, the water filter has been cleaned and there is sufficient water in the tank.

After milling, ensure that no shavings enter into the tank during the cleaning process, as these can quickly clog the water filter.

18.4 Application information

- All materials that are used intraorally must be disinfected before use and safeguarded against aspiration when being used.
- The materials “CEREC Guide Blocs” and “inCoris PMMA guide disc 22” (see “Materials”) are intended for single use only and are not supplied in sterile packaging; also refer to “Disinfection/sterilization of the surgical guide”.

NOTE

Risk of deformation to the surgical guide

Please protect the drilling template from direct sunlight and high temperatures
(> 35 °C/95 °F) and high humidity (> 80%) to prevent it from deforming. Check the surgical guide before the operation. Do not use any heat-based methods to disinfect or sterilize (e.g. autoclaves), as this can cause the surgical guide to deform.

19 Creating a CEREC Guide 3

19.1 Optical impression

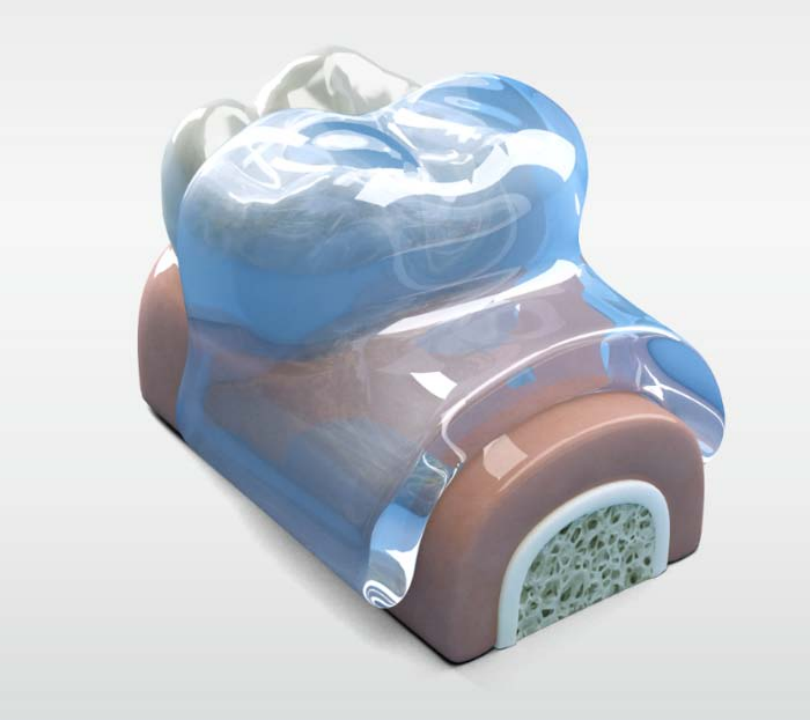
1. Scan the situation in the mouth either intraorally or using a model. The following applies at least to all areas which are intended to later serve as a support for the CEREC Guide. The surface scan is also used for the overlay of the x-ray volume.

NOTE

Note that the drilling template cannot be bigger than the scanned area.

Avoid holes in the scan. Otherwise, no locating surface for the CEREC Guide can be determined at these points.

2. Design a restoration at the planned implant position. Mark the emergence profile of the tooth on the gingiva in manual entry mode.
3. Export the data record using in *.SSI format.



19.2 3D x-ray and implant planning

A DVT exposure can be performed before or after the optical impression. Make sure that there are no metal artifacts in the scan, as these may hinder the overlay of optical data with the x-ray volume or even make it impossible. Do not scan the patient at the final bite position, but rather with a slightly opened jaw. Remove all removable metal parts in the opposing jaw (e.g. prosthetics). If possible, record 3/4 of the arch of the jaw. This increases the likeliness that teeth free from artifacts can be used for registration.

To produce a CEREC Guide, the import of the previously created *.SSI data record in GALILEOS Implant is necessary. The optical surface scan is superimposed over the X-ray volume. This makes it possible to determine the implant location while also considering the soft tissue and prosthetic planning.

⚠ CAUTION

Check that the optical impression is correctly aligned with the X-ray data record.

If multiple implants are to be planned, multiple *.SSI data records must be imported.

To plan the implant follow the instructions provided in the "GALILEOS Implant 1.9.2" operator's manual. As a general rule, follow the instructions provided in Appendix C.2 "Exporting plans for third-party processing using optical impressions".

19.3 Design and development of the CEREC Guide 3

By selecting *"Import"*, you can load the *.CMG.DXD planning file in the CEREC 5 software directly.

ADMINISTRATION phase

If the plan contains multiple implants, these will be treated as multiple separate restorations.

Select the machine type for development. This determines the possibilities for further processing.

MODEL phase

If the original scan is presented, which was also the basis for the implant planning. All areas, which are not intended to serve as a support for the CEREC Guide 3 should be cut. This includes, for example, larger areas of gingiva outside the planned implant position. Parts of the residual teeth may also be discarded if they are not required for support.

Note that a longer template is easier to hold in position with one finger and ensures secure support. This applies to free-end situations in particular.

DESIGN phase

The CEREC 5 software detects the CEREC Guide 3 automatically.

IMPORTANT
If no implant supported by CEREC Guide 3 has been selected, the parameters for the sleeve diameter (S, M or L) and D2 value are adopted automatically and a CEREC Guide 2 is produced.

The position and shape of the sleeve cannot be changed using general design tools.

If a sleeve is shown in red, parts of it are subgingival or there is an intersection with a neighboring tooth.

After calculating the template element and if necessary orienting it in the block, you have the option of creating viewing panels, which you can use to check the fitting of the template even during the surgical intervention.

You can then still adapt the design of the template by cutting away any problematic areas.

MANUFACTURE phase

In the *"Configuration"* ensure that you have enabled the *"MC XL Milling"* option as necessary.

So that the milling process runs without interruption, ensure where necessary that milling tools with a sufficient service life are used, the water filter has been cleaned and there is sufficient water in the tank. We recommend inserting the available spare part "Upper sieve" (REF 6645886) into the milling machine.

After milling, ensure that no shavings enter into the tank during the cleaning process, as these can quickly clog the water filter.

Rework

After the grinding/milling process, a diamond burr milling tool has to be used to separate the restoration.

Remove burrs and round off any sharp corners on the template element.

⚠ CAUTION

Damage to health due to abrasive dusts

Breathing in abrasive dusts can be harmful to health.

➢ Make sure you do not inhale abrasive dusts.

➢ Use a vacuum system and wear a mask.

Block remains and the block holder do not need to be disposed of separately. They can be disposed of as normal household waste.

19.4 Application information

NOTE

Risk of deformation to the surgical guide

Please protect the drilling template from direct sunlight and high temperatures
(> 35 °C/95 °F) and high humidity (> 80%) to prevent it from deforming. Check the surgical guide before the operation. Do not use any heat-based methods to disinfect or sterilize (e.g. autoclaves), as this can cause the surgical guide to deform.

19.5 Stick in the sleeves

Use of Calibra® Universal Self-Adhesive Resin Cement for extraoral cementation of Guide Sleeves into the bore of the template element of CEREC Guide 3:

✓ The drill template element and sleeve must be clean and dry. Clean the sleeve with ethanol.

1. Attach the sleeve onto the enclosed retaining pin.
2. Prepare the Calibra® universal syringe according to the Operating Instructions and use it.
3. With gentle pressure, immediately apply a thin, even layer of cement directly from the mix syringe into the circular recess of the sleeve. At room temperature, Calibra® Universal Cement offers a minimum working time of 2 minutes.
4. Press the sleeve with the retaining pin immediately into the drill hole in the drill template element.
5. Remove any excess cement. Excess cement reaches the “supplied” state after approx. 2-3 minutes at room temperature or after being briefly exposed to a polymerization light, which enables simple removal. If exposed to a set up operation light, the “gel” state can be reached earlier and remain “supplied” for a shorter length of time.

IMPORTANT

The cement has not yet hardened. Do not move the sleeve while the excess cement is being removed. After removing the excess, the cement can be light-cured for 20 to 40 seconds in order to support stabilization of the sleeve.

6. Leave Calibra® Universal Cement to harden for 10 minutes following stabilizing. Protect the sleeve and template element against contamination and movement during hardening.
7. Remove the retaining pin carefully after hardening.

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

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