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**sirona**  
The Dental Company

# Sirona Dental CAD/CAM System CEREC SW

Software Version 4.5.x

Operator's Manual (valid for USA)

**English**



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# 1 Introduction

## 1.1 Dear CEREC user

Thank you for purchasing your CEREC SW software from Sirona.

In connection with the CEREC acquisition unit and 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.

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

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

Happy Milling!  
Your Sirona CEREC Team

### 1.1.1 Contact information

#### Customer service center

For technical questions, use the contact form on the internet 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](mailto:contact@dentsplysirona.com)  
[www.dentsplysirona.com](http://www.dentsplysirona.com)

## 1.2 Copyright and trademark

### Copyright

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

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

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

### Trademarks

Microsoft<sup>®</sup>, Windows 7<sup>®</sup>, and Windows 10<sup>®</sup> are registered trademarks.

Windows<sup>™</sup> is a trademark of Microsoft Corporation.

All other trademarks are the property of their respective holders.

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

## 2 General data

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

Original language of the present document: German

### 2.1 Certification

#### CE mark



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 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.

#### 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).

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

The following TiBases are not currently approved and thus not available in the United States:

- ASTRA Tech Implant System EV
- ANKYLOS C/X
- BioHorizons
- HiOssen ET
- Thommen Medical

## 2.2.1 Intended use

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

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

### CAUTION

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

### CAUTION

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

## 2.2.2 Further use of Sirona Dental CAD/CAM System

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

## 2.3 Accessories

### 2.3.1 Accessories for implant measurement

| Manufacturer / Implant  | Implant Diameter    | Platform                | ScanPost        | REF     | Connection | Abutment Screw        | REF     |
|---|---------------------|-------------------------|-----------------|---------|------------|-----------------------|---------|
| <b>Dentsply Sirona Implants</b>   |                     |                         |                 |         |            |                       |         |
| 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          |                       |         |
| <b>Biomet 3i</b>  |                     |                         |                 |         |            |                       |         |
| Certain®<br>(Inner connection)  | 3,4                 | 3.4                     | B C 3.4 S       | 6431212 | S          | B C 3.4, 4.1, 5.0     | 6460450 |
|   | 4,1                 | 4.1                     | B C 4.1 L       | 6431220 | L          |                       |         |
|   | 5                   | 5.0                     | B C 5.0 L       | 6431238 | L          |                       |         |
| Outer hexagon   | 3,4                 | 3.4                     | B O 3.4 L       | 6431089 | L          | B O 3.4, 4.1, 5.0     | 6460468 |
|   | 4,1                 | 4.1                     | B O 4.1 L       | 6431105 |            |                       |         |
|   | 5                   | 5.0                     | B O 5.0 L       | 6431113 |            |                       |         |
| <b>BioHorizons</b>  |                     |                         |                 |         |            |                       |         |
| (Inner connection) tapered internal, tapered internal tissue level, tapered plus, internal dental implant, single stage dental implants | 3,0 / 3,8           | 3.0                     | BH 3.0 S        | 6532761 | S          | BH 3.0                | 6561240 |
|   | 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 |
|   | 4,0/4,6/5,0/5,8     | 4.5                     | BH 4.5 L        | 6532944 | L          |                       |         |
|   | 5,0/5,8/6,0         | 5.7                     | BH 5.7 L        | 6536234 | L          |                       |         |
| <b>HiOssen</b>  |                     |                         |                 |         |            |                       |         |
| HiOssen ET  | 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 | Regular                 | O TS 4.0 L      | 6536846 |            | O TS 4.0              | 6561232 |
| <b>Nobel Biocare</b>  |                     |                         |                 |         |            |                       |         |
| Replace<br>(Tri-channel inner connection)   | 3,5                 | NP                      | NB RS 3.5 L     | 6430933 | L          | NB RS 3.5             | 6460526 |
|   | 4,3                 | RP                      | NB RS 4.3 L     | 6430941 |            |                       |         |
|   | 5                   | WP                      | NB RS 5.0 L     | 6430958 |            |                       |         |
|   | 6                   | 6.0                     | NB RS 6.0 L     | 6430982 |            |                       |         |
| Nobel Active<br>(conical connection)  | 3,5                 | NP                      | NB A 4.5 L      | 6431279 | L          | NB A 4.5              | 6460484 |
|   | 4,3 / 5,0           | RP                      | NB A 5.0 L      | 6431287 |            |                       |         |
| Branemark®<br>(Outer hexagon)   | 3,3                 | NP                      | NB B 3.4 L      | 6431006 | L          | NB B 3.4              | 6460500 |
|   | 3,75 / 4,0          | RP                      | NB B 4.1 L      | 6431022 |            |                       |         |
| <b>Straumann</b>  |                     |                         |                 |         |            |                       |         |
| 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<br>(4.1 mm / 4.8 mm) | S BL 4.1 L      | 6431253 |            |                       |         |
| Standard<br>(Tissue Level)  | 3,3                 | NN (3.5 mm)             | S SO 3.5 L      | 6431162 | L          | S SO 3.5              | 6460559 |
|   | 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 |            |                       |         |
| <b>Thommen Medical</b>  |                     |                         |                 |         |            |                       |         |
| SPI Element, SPI Contact, SPI Element<br>Inicell, SPI Contact Inicell   | 3,5                 | 3,5                     | TM 3.5 S        | 6544386 | S          | TM 3.5                | 6561265 |
|   | 4                   | 4                       | TM 4 S          | 6544394 |            |                       |         |
|   | 4,5                 | 4,5                     | TM 4.5 S        | 6544402 |            |                       |         |
|   | 5                   | 5                       | TM 5 S          | 6544410 |            |                       |         |
|   | 6                   | 6                       | TM 6 S          | 6544428 |            |                       |         |
| <b>Zimmer</b>   |                     |                         |                 |         |            |                       |         |
| 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 top bar in the CEREC SW.

The CEREC SW 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 system menu, click on the "Configuration" button in the "Patient Database" area.

↳ 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.

#### NOTICE

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<br>1. First action step<br>2. Second action step<br>or<br>> Alternative action<br>↵ Result<br>➤ Individual action step | Prompts you to do something.  |
| See "Formats and symbols used [ → 14]"  | 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 Conventions

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

## 2.4.4 Manual formats (assistance)

### Step-specific help

The step-specific help explains the aims and implementation of the step. There is a full view which provides a complete overview and a window view for parallel working. An illuminated lightbulb indicates that this help is available.

By clicking on the lightbulb illuminated in yellow in the phase bar, you can access the step-specific help.

When accessing the ACQUISITION phase for the first time after installation, the step-specific help opens automatically.



If the lightbulb is not illuminated in yellow, there is no step-specific help available.

You can access the manual via the Help button or by pressing "F1". The PDF-format user manual can be found on the supplied software DVD or on the Internet (<http://www.sirona.com/manuals>).

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

## 2.4.5 Odontogram used

The software can be adjusted to the international odontogram (FDI) or the USA odontogram (ADA) (ADA/FDI odontogram [ → 48]).

In this documentation teeth are named as follows:

|                   |     |        |
|-------------------|-----|--------|
| <b>Principle:</b> | FDI | (#ADA) |
| <b>Example:</b>   | 13  | (#6)   |

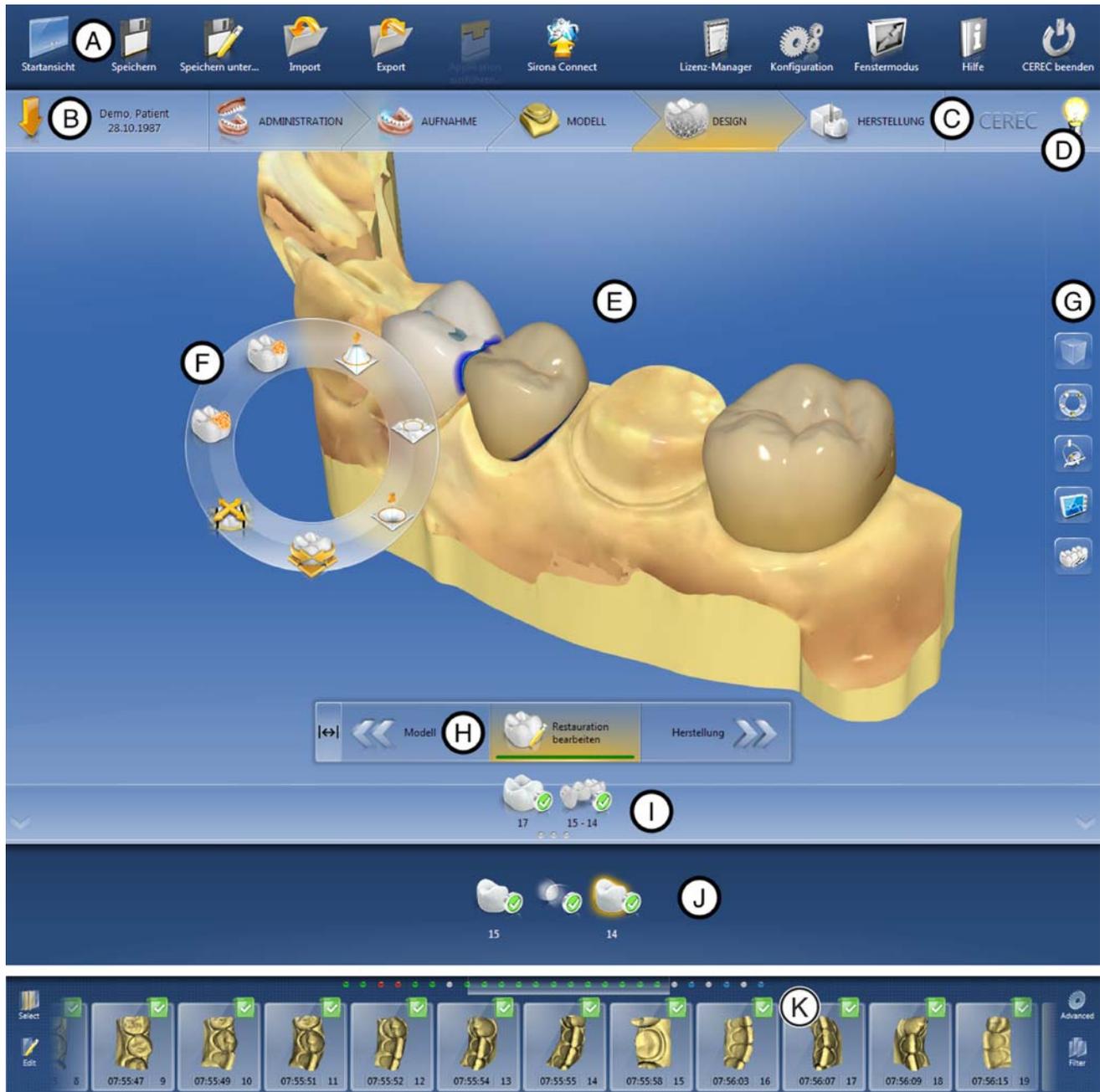
## 2.4.6 File format

You can assign one or more cases to any patient in the software. Depending on the processing status, a case comprises multiple optical impressions, the virtual models reconstructed from them and one or more virtual restorations.

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

The software uses its own file format (\*.rst) to export a case. This format contains all of the case data including patient information. RST files can be opened with the same or a newer CEREC or CEREC Premium software version.

## 2.5 User interface



Overview of the user interface

|   |                    |   |   |
|---|--------------------|---|---|
| A | System menu        | G | Page palette  |
| B | Phase bar          | H | Step menu   |
| C | Information dialog | I | Object bar  |
| D | Quick help         | J | Expanded object bar   |
| E | Main window        | K | Image catalog (only in "ACQUISITION" phase in combination with the CEREC Bluecam) |
| F | Tool wheel         |   |   |

## 2.5.1 Phase bar

The workflow is illustrated in the software in 5 phases.



*Phase bar*

- ADMINISTRATION
- ACQUISITION
- MODEL
- DESIGN
- MANUFACTURE

### 2.5.1.1 ADMINISTRATION



In this phase, you can perform the following:

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

### 2.5.1.2 ACQUISITION



In this phase, you can perform the following:

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

### 2.5.1.3 MODEL



In this phase, you can perform the following:

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

#### 2.5.1.4 DESIGN



In this phase, you can perform the following:

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

#### 2.5.1.5 MANUFACTURING



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

- Check and adapt the positioning of the restoration in the block
- Define the sprue location of the restoration
- Determine the block size
- Select the block color for CEREC SpeedFire for zirconium oxide and IPS e.max CAD
- Defining milling/grinding options
- Start the milling/grinding process

#### 2.5.1.6 Current program version

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

### 2.5.2 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.

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

Corresponding notes on the objects provide information about the status.

### 2.5.3 Tool wheel



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

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

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

### 2.5.4 Step menu

Each phase is divided into steps. They are shown in the step menu at the bottom edge of the screen. The step menu changes depending on which phase the current restoration is 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 can be used to switch between phases.

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



#### Mandatory steps

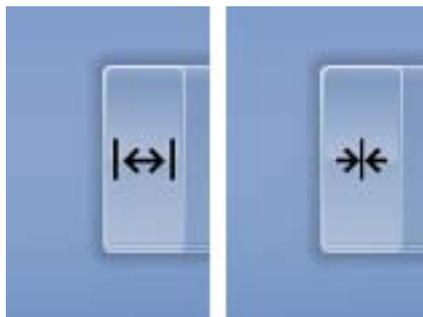
Mandatory steps have a status and progress bar.

- Transparent bar: The step is mandatory and has not been started yet.
- Red bar: The step has been completed with errors.
- Orange bar: The step has not yet been completed.
- Green bar: The step has been completed successfully.

#### Optional steps

Optional steps do not have colored bars. They can be shown/hidden using the button on the left of the step menu.

Optional steps are only shown with a symbol in the non-selected state. Hover over the step menu with your cursor in order to learn about the function. As soon as you have activated the step, the name of the function will be displayed.



## 2.5.5 System menu



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

|                      |  |
|----------------------|--|
| "Start Screen"       | Switches 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"     | Opens current case in <i>Sirona Connect SW</i> * |
| "License Manager"    | Opens the license manager                        |
| "Configuration"      | Configures hardware and software                 |
| "Window Mode"        | Toggles between full-screen and window mode      |
| "Help"               | Displays help information                        |
| "Exit CEREC"         | Closes the CEREC software                        |

\* The option in the system menu for opening the current file in the *Sirona Connect SW* is only available if *Sirona Connect SW* is also installed on the system at the same time.

## 2.5.6 Start view

In the start view you can perform the following functions:

- Patient search
- Open patient database.
- Create a patient.

You can also switch to the Sirona Connect Portal from the start view.

## 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 section License manager [ → 53].

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 with DVD

##### 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 DVD in the DVD drive.
  - ↳ The setup program starts automatically.
- 2. If this is not the case, run the *"Setup.exe"* file in the root directory of the DVD.
  - ↳ This installation program starts.

##### Installing the application

1. Select the language for the following installation and then click the *"Next"* button.
2. Read the information on copyright carefully and then click on the *"Next"* button.
3. In the next step, select the language and application region for the application and then click on 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 click on 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 check the *"I accept the terms in the license agreement"* option and subsequently click 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 click on 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, click on 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 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 click on the *"Exit"* button. This installation program closes.

## 3.2 Uninstalling the software

- ✓ The program is closed.
- 1. Click on "StartAll Programs / Sirona Dental SystemsCERECToolsUninstall CEREC SW 4.5" to uninstall the software.
  - ↳ During the uninstall procedure, you will be asked whether you want to delete the patient data folder, the LibBio folder and the device configuration in the system registry.
- 2. Once you have made your selection, click on the *"Next"* button.
  - ↳ The software is uninstalled.
- 3. Following uninstalling successfully, click on the *"Exit"* button to complete the process.

## 3.3 Restore factory default settings

- ✓ The program is closed.
- 1. Uninstall the software (see "Uninstalling the software").
- 2. Install the software (see "Installing the software [ → 21]").
  - ↳ 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 acquisition unit. If you require additional licenses, please contact your dealer.

Always keep the USB license stick near the acquisition unit/PC.

All authorizations (interface and 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 acquisition 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 "License manager [ → 53]" section.

## 3.5 Downloading software

### **Auto-update, Sirona Connect Center**

During the installation of CEREC SW, 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 SW through 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.

Chargeable updates are distributed via DVD. Contact your specialist dealer if you wish to purchase an update.

## **3.6 Starting the software**

- ✓ The CEREC SW software is installed. You will find the start icon on the desktop.
- ✓ The USB license stick is connected with a valid, current license.
- Double-click the CEREC SW start icon.

or

- Click on "StartAll Programs/ Sirona Dental Systems\CEREC\CEREC SW 4.5".

↵ The software is started.

## 3.7 License update

For more information on the license manager, refer to the section on "License manager [ → 53]".

### 3.7.1 Installation of the License Manager (Individual)

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

### 3.7.2 License update without Internet access

If the Sirona acquisition unit does not have Internet access itself, you can run the license manager on another PC with Internet access.

You need to remove the license stick from the Sirona acquisition unit and plug it into the PC with Internet access. The license stick is behind the lower cover at the rear side of the Sirona acquisition unit.

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

## 4 Design mode

### 4.1 General information on Biogeneric

Biogenics enable the CEREC software to reconstruct teeth in a natural way. Biogenics 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 SW 4.x, the suggestion process for biogenics 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 biogenics 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 [ → 94]").
- **Model axis**  
The model axis should be aligned precisely (see "Setting the model axis [ → 114]").

### 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 Biogeneric Copy

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

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

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

## 4.4 Biogeneric Reference

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

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

## 4.5 Bio jaw

The new suggestion system for restorations *"Bio Jaw"* 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 step *"Morphology"* is available to you in the extended step menu. In this option you can choose whether the teeth should be calculated completely by the biogenics (standard) or whether you want to specify the shape of the teeth. Then the biogenics calculates an initial biogenic 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 (Ctrl/shift key + left mouse button) 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
- Options
- Settings
- Apps

### 5.1 Parameters

#### General information

The *"Parameters"* menu is structured by restoration type. You can adjust the settings for each of the restoration types separately.

The global parameters in the configuration are used as default values for all restorations when calculating the initial suggestions.

Should you wish to set different parameter values for individual restorations, you can do this through the local parameters in the *"Restoration Parameters"* step within the DESIGN phase.

#### IMPORTANT

From CEREC SW version 4.4.0, the minimum wall thickness is no longer taken into account when calculating initial suggestions.

#### Parameter default settings

In the *"Configuration"* menu you can define parameter default settings from CEREC SW version 4.4.0 onwards. Through this menu you can define and save different parameter sets for all restoration types.

1. Duplicate the default settings with the manufacturer specifications.
2. Adjust the new default settings to your needs and then save them.
  - ↳ You can then use these default settings both as global and local parameters.

### Crown

| Parameters                 | Description  | Default values |
|----------------------------|--|----------------|
| Spacer                     | <ul style="list-style-type: none"> <li>Increase or decrease space for adhesive underneath crown (not on the preparation margin).</li> </ul>  | 120µm          |
| Occlusal Milling Offset    | <ul style="list-style-type: none"> <li>Apply or remove material in the occlusal direction over the entire occlusal surface.</li> <li>This value concerns only the milling result.</li> <li>The effects are not visible in the DESIGN phase or in the preview.</li> <li>Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.</li> </ul>   | 0µm            |
| Proximal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the approximal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Occlusal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the occlusal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Dynamic Contacts Strength  | <ul style="list-style-type: none"> <li>Define the thickness of the occlusal contacts. Only works when using the virtual articulator.</li> </ul>  | 25µm           |
| Minimal Thickness (Radial) | <ul style="list-style-type: none"> <li>Set the minimum wall thickness in the horizontal direction.</li> <li>The software tries not to fall below this thickness when calculating the restoration suggestions.</li> <li>DESIGN and MANUFACTURE<br/>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.</li> <li>Observe the material manufacturer's recommendations when setting the minimum thickness.</li> <li>Can be switched on and off.</li> </ul> | 500µm<br>ON    |

| Parameters                   | Description  | Default values |
|------------------------------|--|----------------|
| Minimal Thickness (Occlusal) | <ul style="list-style-type: none"> <li>Set the minimum wall thickness in the occlusal direction.</li> <li>The software tries not to fall below this thickness when calculating the restoration suggestions.</li> <li>DESIGN and MANUFACTURE phases:<br/>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.</li> <li>Observe the material manufacturer's recommendations when setting the minimum thickness.</li> <li>Can be switched on and off.</li> </ul> | 700µm<br>ON    |
| Margin Thickness             | <ul style="list-style-type: none"> <li>Reinforce restoration margins with additional material.                             <ul style="list-style-type: none"> <li>Simplifies handling of the restoration.</li> <li>Prevents splitting of the material.</li> </ul> </li> <li>The additional material can be milled off manually before inserting the restoration.</li> <li>Can be switched on and off.</li> </ul>   | 50µm<br>ON     |

### Inlay/onlay

| Parameters                 | Description   | Standard value |
|----------------------------|---|----------------|
| Spacer                     | <ul style="list-style-type: none"> <li>Increase or decrease space for adhesive.</li> </ul>  | 120µm          |
| Marginal Adhesive Gap      | <ul style="list-style-type: none"> <li>Adjust width of gaps on preparation margin.</li> <li>The adhesive is a buffer between the ceramic material and the tooth substance.</li> <li>The adhesive gap cannot be larger than the spacer value.</li> </ul>   | 60µm           |
| Occlusal Milling Offset    | <ul style="list-style-type: none"> <li>Apply or remove material in the Z direction over the entire occlusal surface.</li> <li>This value concerns only the milling result.</li> <li>The effects are not visible in the DESIGN phase or in the preview.</li> <li>Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.</li> </ul> | 0µm            |
| Proximal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the approximal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>  | 25µm           |
| Occlusal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the occlusal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>  | 25µm           |

| Parameters                   | Description  | Standard value |
|------------------------------|--|----------------|
| Dynamic Contacts Strength    | <ul style="list-style-type: none"> <li>Define the thickness of the occlusal contacts. Only works when using the virtual articulator.</li> </ul>  | 25µm           |
| Minimal Thickness (Radial)   | <ul style="list-style-type: none"> <li>Set the minimum wall thickness in the horizontal direction.</li> <li>The software tries not to fall below this thickness when calculating the restoration suggestions.</li> <li>DESIGN and MANUFACTURE<br/>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.</li> <li>Observe the material manufacturer's recommendations when setting the minimum thickness.</li> <li>Can be switched on and off.</li> </ul>     | 500µm<br>ON    |
| Minimal Thickness (Occlusal) | <ul style="list-style-type: none"> <li>Set the minimum wall thickness in the occlusal direction.</li> <li>The software tries not to fall below this thickness when calculating the restoration suggestions.</li> <li>DESIGN and MANUFACTURE phases:<br/>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.</li> <li>Observe the material manufacturer's recommendations when setting the minimum thickness.</li> <li>Can be switched on and off.</li> </ul> | 700µm<br>ON    |
| Margin Thickness             | <ul style="list-style-type: none"> <li>Reinforce restoration margins with additional material.               <ul style="list-style-type: none"> <li>Simplifies handling of the restoration.</li> <li>Prevents splitting of the material.</li> </ul> </li> <li>The additional material can be milled off manually before inserting the restoration.</li> <li>Can be switched on and off.</li> </ul>   | 50µm<br>ON     |

### Veneer

| Parameters              | Description  | Default values |
|-------------------------|--|----------------|
| Spacer                  | <ul style="list-style-type: none"> <li>Increase or decrease space for adhesive.</li> </ul>   | 120µm          |
| Veneer Thickness        | <ul style="list-style-type: none"> <li>Set to minimum thickness.</li> <li>The software tries not to fall below this material thickness when calculating the restoration suggestions.</li> <li>The value is displayed on the preparation as a semitransparent cover in the DESIGN phase. Areas where the thickness falls short of the minimum level in the design phase are thus made visible.</li> </ul>             | 500µm          |
| Occlusal Milling Offset | <ul style="list-style-type: none"> <li>Apply or remove material in the occlusal direction over the entire occlusal surface.</li> <li>This value concerns only the milling result.</li> <li>The effects are not visible in the DESIGN phase or in the preview.</li> <li>Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.</li> </ul> | 0µm            |
| Margin Thickness        | <ul style="list-style-type: none"> <li>Reinforce restoration margins with additional material. <ul style="list-style-type: none"> <li>Simplifies handling of the restoration.</li> <li>Prevents splitting of the material.</li> </ul> </li> <li>The additional material can be milled off manually before inserting the restoration.</li> <li>Can be switched on and off.</li> </ul>                                 | 50µm<br>ON     |

### Pontic (anatomical)

| Parameters                 | Description  | Default values |
|----------------------------|--|----------------|
| Proximal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the approximal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul> | 25µm           |
| Occlusal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the occlusal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Dynamic Contacts Strength  | <ul style="list-style-type: none"> <li>Define the thickness of the occlusal contacts. Only works when using the virtual articulator.</li> </ul>  | 25µm           |
| Gingival Spacing           | <ul style="list-style-type: none"> <li>Here you can set the distance from the bottom of the bridge elements to the gingiva.</li> </ul>   | 0µm            |
| Lingual Opening Angle      | <ul style="list-style-type: none"> <li>Increase for the basal area of the pontic in the oral direction.</li> </ul>   | 0              |

### Abutment (anatomic)

| Parameters                   | Description  | Default values |
|------------------------------|--|----------------|
| Occlusal Milling Offset      | <ul style="list-style-type: none"> <li>Apply or remove material in the occlusal direction over the entire occlusal surface.</li> <li>This value concerns only the milling result.</li> <li>The effects are not visible in the DESIGN phase or in the preview.</li> <li>Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.</li> </ul> | 0µm            |
| Proximal Contacts Strength   | <ul style="list-style-type: none"> <li>Set the thickness of the approximal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Occlusal Contacts Strength   | <ul style="list-style-type: none"> <li>Set the thickness of the occlusal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Dynamic Contacts Strength    | <ul style="list-style-type: none"> <li>Define the thickness of the occlusal contacts. Only works when using the virtual articulator.</li> </ul>  | 25µm           |
| Gingival Depth               | <ul style="list-style-type: none"> <li>Determines how far below or above the preparation margin the gingiva lies in reference to the gingival line.</li> </ul>   | 0µm            |
| Gingival Placement Pressure  | <ul style="list-style-type: none"> <li>Determines how strongly the initial suggestion for the abutment penetrates the gingiva in order to build up pressure on the gingiva.</li> </ul>   | 0µm            |
| Minimal Thickness (Radial)   | <ul style="list-style-type: none"> <li>Determines the minimum radial wall thickness in the horizontal direction.</li> <li>Manufacturer specifications can be changed.</li> </ul>   | NO<br>500µm    |
| Minimal Thickness (Occlusal) | <ul style="list-style-type: none"> <li>Determines the minimum radial wall thickness in the occlusal direction.</li> <li>Manufacturer specifications can be changed.</li> </ul>   | NO<br>2400µm   |

### Abutment (multi-layer framework)

| Parameters                  | Description  | Default values |
|-----------------------------|--|----------------|
| Gingival Depth              | <ul style="list-style-type: none"> <li>Determines how far below or above the preparation margin the gingiva lies in reference to the gingival line.</li> </ul>                         | 0µm            |
| Gingival Placement Pressure | <ul style="list-style-type: none"> <li>Determines how strongly the initial suggestion for the abutment penetrates the gingiva in order to build up pressure on the gingiva.</li> </ul> | 0µm            |
| Shoulder Width              | <ul style="list-style-type: none"> <li>Width of the shoulder of an abutment or telescope.</li> </ul>   | 1,000µm        |
| Telescope Angle             | <ul style="list-style-type: none"> <li>Telescope angle of an abutment or telescope.</li> </ul>   | 7°             |

| Parameters                   | Description  | Default values |
|------------------------------|--|----------------|
| Minimal Thickness (Radial)   | <ul style="list-style-type: none"> <li>Determines the minimum radial wall thickness in the horizontal direction.</li> <li>Manufacturer specifications can be changed.</li> </ul> | NO<br>500µm    |
| Minimal Thickness (Occlusal) | <ul style="list-style-type: none"> <li>Determines the minimum radial wall thickness in the occlusal direction.</li> <li>Manufacturer specifications can be changed.</li> </ul>   | NO<br>2,400µm  |

### Abutment, crown facing structure

| Parameters                 | Description  | Default values |
|----------------------------|--|----------------|
| Spacer                     | <ul style="list-style-type: none"> <li>Increase or decrease space for adhesive underneath crown (not on the preparation margin).</li> </ul>  | 120µm          |
| Occlusal Milling Offset    | <ul style="list-style-type: none"> <li>Apply or remove material in the occlusal direction over the entire occlusal surface.</li> <li>This value concerns only the milling result.</li> <li>The effects are not visible in the DESIGN phase or in the preview.</li> <li>Change this parameter as compensation if the occlusal surfaces of your restorations are generally too high or too low in practice.</li> </ul> | 0µm            |
| Proximal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the approximal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Occlusal Contacts Strength | <ul style="list-style-type: none"> <li>Set the thickness of the occlusal contacts.</li> <li>The software tries to achieve this stored thickness in the restoration suggestions.</li> </ul>   | 25µm           |
| Dynamic Contacts Strength  | <ul style="list-style-type: none"> <li>If activated in the options (see "Articulation [ → 47]"), the software attempts to achieve these saved thicknesses with the restoration suggestions.</li> </ul>   | 25µm           |

| Parameters                   | Description  | Default values |
|------------------------------|--|----------------|
| Minimal Thickness (Radial)   | <ul style="list-style-type: none"> <li>Set the minimum material thickness on steep preparation walls.</li> <li>The software tries not to fall below this material thickness when calculating the restoration suggestions.</li> <li>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.</li> </ul> | 500µm          |
| Minimal Thickness (Occlusal) | <ul style="list-style-type: none"> <li>Set the minimum material thickness on the surfaces of the preparation in the occlusal direction.</li> <li>The software tries not to fall below this material thickness when calculating the restoration suggestions.</li> <li>A high value can lead to a flat morphology if deep fissures would strongly violate the minimum thickness.</li> <li>Observe the material manufacturer's recommendations when setting the minimum thickness.</li> </ul> | 700µm          |

### 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  | 105mm      |
| "Base"   | Intercondylar distance  | 100mm      |
| "Balkwill Angle"   | Balkwill angle  | 23°        |
| "Sagittal Angle Left"<br>and<br>"Sagittal Angle Right"             | Sagittal condylar path inclination  | 35°        |
| "Bennett Angle Left"<br>and<br>"Bennett Angle Right"               | Bennett angle   | 15°        |
| "Immediate side shift left"<br>and<br>"Immediate side shift right" | Initial Bennett movement  | 0µm        |
| "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        |

## CEREC Guide

| Parameters | 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         |

## Resetting settings

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

## 5.2 Devices



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

A green check mark on a device indicates its availability.

A red warning triangle with an exclamation mark shows that the device cannot be reached.

### Adding devices automatically

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

- ✓ The unit is connected to the PC.
1. Click the *"Scan for New Devices"* button on the step menu.
    - ↳ The system now looks for new or previously deleted devices that are currently connected to your CEREC AC. If an available device is recognized by the system, a dialog box prompt will ask you whether or not you want to install the found device.
  2. Confirm the dialog box to close the installation of the device.

### 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. Click on 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. Click on the *"Ok"* button.
  - ↳ The software attempts to contact the device.

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

### Refresh Devices

With the *"Refresh Devices"* button you can:

- Refresh the status display; e.g. check whether a grinding and milling unit has finished milling/grinding
- Check the current availability of a device.

## 5.2.1 CEREC Bluecam

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

| Setting                     | Description   |
|-----------------------------|---|
| Shake tolerance             | <ul style="list-style-type: none"> <li>• Set motion sensitivity for automatic activation.</li> <li>• The more stringent the setting, the longer you have to hold the camera still before the next acquisition will be taken.</li> </ul> |
| Auto-delete rejected images | <ul style="list-style-type: none"> <li>• Images that could not be reconstructed/overlaid with the current acquisitions are automatically moved to the Recycle Bin.</li> </ul>   |

### 5.2.1.1 Resetting settings

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

### 5.2.1.2 Calibration

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

## 5.2.2 CEREC Omnicam



### Audio feedback

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

#### 5.2.2.1 Resetting settings

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

#### 5.2.2.2 Calibration

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

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

Recalibrate the CEREC Omnicam in the following cases:

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

### Starting calibration

1. In the software, navigate to the system menu and click on the "Configuration" button.
2. Click on the "Devices" button.
3. Click on the "Omnicam" button.
4. Click on the "Calibrate" button.
  - ↳ The camera view is displayed in one window.
5. Enter the 8-digit Sirona ID. You can find this ID on the sticker on the calibration set.

### Calibrate the camera



1. Remove the protective cap from the calibration set.
2. Mount the calibration set on the tip of the camera until it locks into place.
3. Secure the CEREC Omnicam in the calibration set using one hand. Ensure that the external calibration set screw is fully screwed in 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. In doing so, ensure that the CEREC Omnicam does not move.
  - ↳ The software confirms the calibration process.
  - ↳ The software prompts you to proceed to the next latching.
7. Execute steps 5 and 6 a total of **11** times.
  - ↳ The software provides status updates on the calibration and informs you once the procedure is complete.
  - ↳ You will be prompted to measure the position of the exit window.



### Measuring the position of the exit window

1. Mount the bottom side of the calibration set to the tip of the camera.
2. Click on the "OK" button.
  - ↳ 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 Omnicam is calibrated.

### Error message during calibration

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

### End calibration

- ✓ The software indicates that the calibration was completed successfully.
- Click on the "OK" button.
  - ↳ The CEREC Omnicam is calibrated.

### 5.2.2.3 Color calibration

#### General information

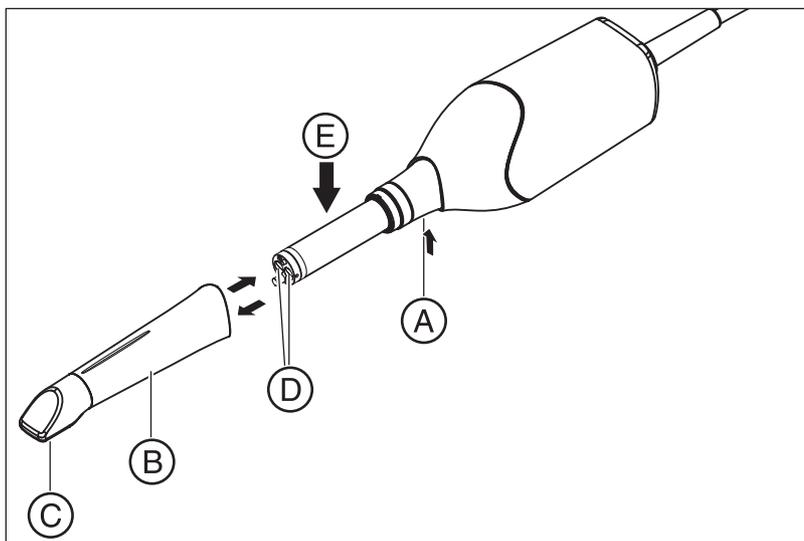
A color-calibrated Omnicam must be used for the color analysis.

The color analysis can only be carried out with a CEREC Omnicam from a particular serial number. In order to test the CEREC Omnicam, use the Omnicam test tool on

my.cerec.com -> CEREC SW 4.5 -> Shade Detection.

You can find the serial number of the Omnicam on the upper side on the optics tube (see arrow **E** in the figure below).

This is only relevant for first generation cameras. For new systems, the serial number of the Omnicam does not need to be determined.



1. Press the mirror sleeve (**B**) against the camera body.
2. Press detent (**A**).

#### NOTICE

Risk of damaging the camera window (**D**) or the coated sapphire glass (**C**).

➤ Push the mirror sleeve straight toward the front; do not tilt it.

3. Pull off the mirror sleeve.

In order to achieve optimum results, the CEREC Omnicam must be allowed to warm up for 20 minutes before calibration. The CEREC Omnicam must be color calibrated every two weeks in order to carry out a reliable color analysis. You will achieve the best results if the CEREC Omnicam is color calibrated immediately before scanning a new case.

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

Heavily scratched mirror sleeves 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 Omnicam 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 "Omnica" 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 recognition is not possible with your camera, 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.

### Color-calibrating the camera

1. Make sure that the CEREC Omnicam is clean, disinfected and dry.
2. Remove the color-calibration set from the packaging.
3. Use the CEREC Omnicam to scan the QR code on the underside of your color-calibration set. In order to do this, you must hold the CEREC Omnicam 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 camera 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.
4. Mount the color-calibration set on the tip of the camera until it locks into place.
5. Click on the "Ok" button.
  - ↳ The measuring process starts. Do not move the CEREC Omnicam 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 Omnicam is now color calibrated.
- 2. Remove the color-calibration set from the camera 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 Omnicam 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

Please note that the color calibration set

- can only be used with CEREC SW software  $\geq 4.5$  or Sirona Connect SW  $\geq 4.5$  or CEREC Premium SW  $\geq 4.5$ .
- 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.

#### 5.2.2.4 Camera heating settings

You can access the dialog for the temperature settings of the Omnicam via the *"Camera Heater Settings"* button. Using the slider, you can set the temperature at which the camera'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 layer of the CEREC Omnicam is preheated in the camera cradle. When removing the CEREC Omnicam from its cradle, 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 CEREC Omnicam from the camera cradle, the temperature of the mirror sleeve drops within a few minutes (< 5 minutes) to less than 43°C. The CEREC Omnicam is therefore suitable for use in the patient's mouth for an unlimited period of time.

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

#### 5.2.2.5 Updating the firmware

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

#### NOTICE

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

## 5.2.3 Grinding and milling unit

### 5.2.3.1 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 *"Scanner"*.
  - If a scanner is retrofitted, your service engineer must place a check mark in front of *"Scanner"*.
- Extraction Unit
  - Place checkmark if dry milling is desired. A separate suction unit must be connected for this purpose.
- Firmware Update
  - Button is 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"*.

### 5.2.3.2 Calibration

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

### 5.2.3.3 Changing instruments

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

#### 5.2.3.4 Removing the grinding and milling unit

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

### 5.2.4 Furnace

#### 5.2.4.1 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

#### 5.2.4.2 Automatic unit search

- ✓ The unit must be switched on.
  - ✓ The unit must be directly connected to the existing network with the network cable.
1. Start the CEREC SW software.
  2. Move the mouse cursor to the top of the window.  
or
    - > Click the start window button.
    - ☞ The system menu is displayed.
  3. Click on the *"Configuration"* button in the system menu.
  4. Click on the *"Devices"* button.
  5. Click on the *"Scan for New Devices"* button.
    - ☞ All connected units are recognized.
  6. Enter a name for the new unit.



#### 5.2.4.3 Manual unit search

- ✓ The unit must be switched on.
  - ✓ The unit must be directly connected to the existing network with the network cable.
1. Start the CEREC SW software.
  2. Move the mouse cursor to the top of the window.  
or
    - > Click the start window button.
    - ☞ The system menu is displayed.
  3. Click on the *"Configuration"* button in the system menu.
  4. Click on the *"Devices"* button.
  5. Click on the *"Add Device (Manual)"* button.
  6. Select *"Network"*.
  7. Enter the network address.



8. Click on the "Ok" button.
    - ↳ The software attempts to contact the device.
  9. Enter a name for the new unit.
- If connection fails, check the network status.

#### 5.2.4.4 Remove the unit

- ✓ The unit is not in operation.
1. Click on the "Configuration" button in the system menu.
  2. Click on the "Devices" button.
  3. Click on the unit that you wish to uninstall.
  4. Click on the "Delete Device" button.
    - ↳ You will be asked if you would like to remove the unit.
  5. Click on the "YES" button.
    - ↳ The device is removed.

### 5.3 Options

#### 5.3.1 Bite registration

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

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

#### 5.3.2 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.<br><br>The dynamic contacts are identified by color (occlusal compass acc. to Schulz). |

**5.3.3 Smile Design**



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

**5.4 Settings**



The menu item "Settings" has the following subitems:

- "ADA/FDI Notation"
- "Warning messages"
- "Sirona Server"
- "Patient Database"
- "Language"
- "MC XL Milling"
- "Favorite Materials"

**5.4.1 ADA/FDI odontogram**



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

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

**5.4.2 Warning messages**



All warnings can be reset here.

- Click on the "Reset" button.
  - ↳ All warnings are reset.

### 5.4.3 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.

### 5.4.4 Restoration calculation

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

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

### 5.4.5 Language

Here, you can set the language of the software.

From software version CEREC 4.x a restart is no longer required in order to switch language.



### 5.4.6 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.

Grinding of zirconium oxide, plastic, and metal is possible using machines from the following serial numbers onward:

| Machine type                | Serial number (wet milling) | Serial number (dry milling also with retrofit) |
|-----------------------------|-----------------------------|--|
| CEREC MC XL                 | 129001                      | Not possible                                   |
| CEREC MC XL Premium Package | 302001                      | 304801   |
| CEREC MC X                  | 231001                      | 236001   |
| CEREC MC                    | 202001                      | 202501   |

Other machines must be equipped with the milling starter kit, Design 2011 (REF: 64 48 893) or with the milling starter kit for connected motors (REF: 64 51 079) (only for wet milling).

### 5.4.7 Material configuration

You can define up to three favorite materials in this menu item.

1. Click in the top line on one of the three material favorites to be defined.
2. Click in the center line on one of the available material producers (e.g. SIRONA).
3. Click in the bottom line on one of the materials offered (e.g. CEREC blocks).  
**Tip:** Clicking on the material one more time deselects it. You can then opt for another material or remove the check of the favorite materials in question in the top line.
4. Once you have defined all the favorite materials you want, click on *"Ok"* in the step menu.

## 5.5 App Center (applications)

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

## 6 System menu



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

|                      |  |
|----------------------|--|
| "Start Screen"       | Switches 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"     | Opens current case in <i>Sirona Connect SW</i> * |
| "License Manager"    | Opens the license manager                        |
| "Configuration"      | Configures hardware and software                 |
| "Window Mode"        | Toggles between full-screen and window mode      |
| "Help"               | Displays help information                        |
| "Exit CEREC"         | Closes the CEREC software                        |

\* The option in the system menu for opening the current file in the *Sirona Connect SW* is only available if *Sirona Connect SW* is also installed on the system at the same time.

### Opening system menu

- > Move the mouse cursor to the top of the window.
- or
  - > Click the Start view button.
  - ↪ The system menu is displayed.



### Closing system menu

- > Click the Start view button.
- or
  - > Click into the main window with the left mouse button.
  - ↪ The system menu is closed.



### 6.1 Save case

In this dialog, you can save the actual case.

- > Select "Save Case" in the system menu.
- ↪ The current processing status of the case is saved.



## 6.2 Save the case under a different name

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



1. Select *"Save Case As..."* in the system menu.
    - ↳ The patient list is opened.
  2. Select the appropriate patient.
- or
- Create a new patient via *"Add New Patient"*.
3. You can give the case a new name in the *"Case"* column via the pencil icon.

## 6.3 Import case

✓ The RST file (or older CDT file) of a case is stored on the acquisition unit or on a storage medium connected to it.



1. Click on the *"Import Case..."* 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. Click the *"Open"* button.
  - ↳ The optical impression is imported and opened.

## 6.4 Exporting a case

You can store a case in any location.



- ✓ You have opened a case in the software.
1. Click the *"Export Case..."* button in the system menu.
    - ↳ The *"Export Case..."* dialog box opens.
  2. Select the target folder to which you want to export the case.
  3. Assign any name to the case.
  4. Click on the *"Save"* button.
    - ↳ The case is exported as an RST file by default.

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

## 6.5 Exporting scan data

You can export scan data as STL in order to process

- in the inLab SW or
- in another compatible

system.

### IMPORTANT

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

## 6.6 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 "StartAll Programs / Sirona Dental SystemsCERECToolsLicense Manager".

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

### Licenses and code libraries

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

## 6.7 Configuration



The configuration is described in the section "Configuration [ → 28]".

## 6.8 Window mode



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

## 6.9 Exit program



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

## 7 Start view

In the start view you can perform the following functions:

- Patient search
- Open patient database.
- Create a patient.

You can also switch to the Sirona Connect Portal from the start view.

### Switching to the start view

You can switch to the start view at any time.

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



## 7.1 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. Click on 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.
  - ↳ Once you have entered enough information, the bar in the *"Edit Patient"* step turns from red to green.
3. Click on the *"Add New Case"* button.
  - ↳ The program switches over to the *"ADMINISTRATION"* phase.



## 7.2 Patient search

### Displaying all patients

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



### Searching for individual patients

You can view individual patients by searching for them.

1. Click into the search text box.
2. Enter the surname or the patient ID.
3. Click the magnifying glass to start.
  - ↳ The program now shows all the search results.



## 7.3 Editing patient data

### 7.3.1 Editing a patient card

- ✓ You have found the patient with the search function.
1. Click on the patient card.
  2. Click the *"Edit Patient"* button in the patient row.
    - ↳ The patient data in the row can be edited.
  3. Carry out the changes.
  4. Confirm your changes by clicking the *"Save"* button.
    - ↳ The changes are saved in the memory.



### 7.3.2 Deleting patients

- ✓ You have found the patient with the search function.
1. Click on the patient card.
  2. Click the *"Delete Patient"* button in the patient row.
  3. Confirm the deletion by clicking the *"Save"* button.
    - ↳ The patient is deleted.



### 7.3.3 Deleting a case

- ✓ You have found the associated patient with the search function.
1. Click on the patient.
  2. Select the case.
  3. Click the *"Delete Case"* button in the case row.
  4. Confirm the deletion by clicking the *"Save"* button.
    - ↳ The case is deleted.



### 7.3.4 Opening a case

- ✓ You have found the associated patient with the search function.
  - 1. Click on the patient card.
  - 2. Select the case.
  - 3. Click the *"Open Case"* button in the case row.  
As an alternative, you can also double-click the case row or the thumbnail.
- ↳ The case opens.



### 7.3.5 Add a new case

- ✓ You have found the associated patient with the search function.
  - 1. Click on the patient.
  - 2. Click the *"Add New Case"* button above the case list.
- ↳ The program switches over to the *"ADMINISTRATION"* phase.



## 8 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 the left mouse button 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 SW 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 the left mouse button. 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.

## 8.1 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"*

### 8.1.1 3D Preview

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

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

#### Rotating a 3D preview

1. Click on the 3D preview with the left mouse button and hold it down.
  2. Move the mouse.
- ↻ The 3D preview is rotated.

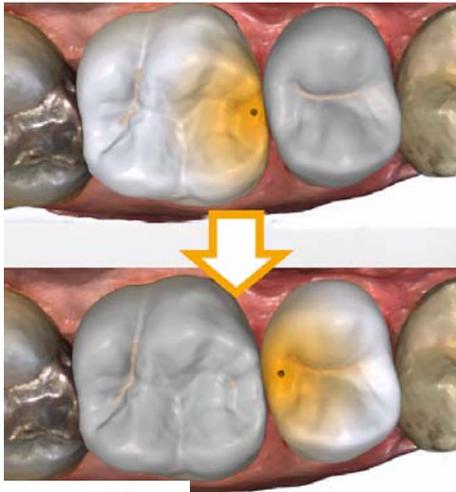
#### Moving the 3D preview

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

### Zooming into/out of the 3D preview

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

## 8.2 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 [→ 73]".

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.

## 8.2.1 Buccal registration

### Move buccal image

If no green check mark appears, the automatic buccal registration has not been possible.

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

1. Click on the *"Buccal"* button.
2. Click on the *"Drag Buccal"* button.
3. Click on the buccal image and displace it to the same region on the upper or lower jaw.

☞ The image is accepted.

**Tip:** If the buccal scan cannot be superimposed with the scan of the jaw, align the jaw in such a way that it is in the same position as the buccal scan.

If registration is still not possible, check whether the buccal sections in the jaws and in the buccal scan are sufficient.

4. 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. Click on the *"Buccal"* button.
2. Click on the *"Turn Buccal Impression"* button.

☞ The buccal image is then rotated.



## 8.2.2 Shaping

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

With the *"Form"* function, you can

- apply
- smoothen
- remove

**Tip:** If one of the shape tools is active, you can also switch to the following order using the space bar on the keyboard:

Add > Smooth > Remove > Add > ...

You can enter the *"Size"* and *"Strength"* properties with a slider or numerically in advance (see *"Properties [ → 61]"*).





### Apply material

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



### Smoothing

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

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



### Removing material

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

## 8.2.2.1 Properties



### Modifying 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. Click the *"Size"* slider and press and hold the mouse button.
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 thicknesses of the affected area can be modified for each forming tool.

1. Click the *"Strength"* slider and press and hold the mouse button.
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.



### Apply Symmetric

This function allows you to use the tool simultaneously on the associated symmetrical tooth (restoration). The check box can only be selected if a restoration has been created in the ADMINISTRATION phase.

### Apply global

This function allows you to use the tool on two adjacent restorations simultaneously. For this to happen, the teeth must be grouped in advance (Ctrl/Shift key + left mouse button) and the check box should subsequently be checked.

## 8.2.3 Recalculating (DESIGN phase)

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

1. Click on the *"Tools"* button on the page palette.
2. Click on the *"Recalculate"* button.
3. Click on the *"Apply"* button.
  - ↳ The program begins to calculate a suggestion.



## 8.2.4 Cut out model areas

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

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

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

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



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

### 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.
- Click the *"Invert Selected"* button.
  - ↳ The model area which was cut out is displayed.  
The rest of the model area is hidden.

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

### 8.2.5 Correcting defects



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

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

1. Click the *"Replace"* button.
2. Set the starting point with a double-click.
3. Click to set further points in order to enclose the defect tightly. The line must be located completely on the model.
4. Set the line end by double-clicking.
5. Click on the *"Apply"* button.

**Tip:** The tool can also be triggered by pressing the Enter key.

↳ The software smoothens everything within the line by interpolation.

### 8.2.6 Resetting the model (MODEL phase)

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

1. Click the *"Tools"* button.
2. Click on the *"Reset Model"* button.
3. Confirm with *"Apply"*.



### 8.2.7 Trimming

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

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

#### Hiding image regions

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

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

1. Click on the *"Trim"* button.
2. Click on the *"Discard Part"* button.
3. Start by double-clicking in the vicinity of the model or on the model.



4. Click to set additional points. Draw the line close to the preparation around which you want to trim.
5. Finish the line by double clicking.
  - ↳ The smaller region of the model is hidden.

### Inverting an image region

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

- ✓ An image region has been hidden using the *"Trim"* tool.
- > Click on the *"Invert Selected"* button.
  - ↳ The hidden image region will be shown.
  - The image region shown will be hidden.

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

## 8.2.8 Drawing the preparation margin

More information on using this tool can be found in the section "Entering the preparation margin [→ 116]".

### Automatic edge detection

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

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

### Manual drawing

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

- ✓ The *"Margin"* tool is open.
- > Click on the *"Manual"* button.
  - ↳ The manual technique is switched on.

### Manual drawing with intensity image

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

- ✓ The *"Margin"* tool is open.
- > Click on the *"Manual with intensity image"* button.
  - ↳ The manual technique with intensity image is switched on.

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



## 8.2.9 Entering the baseline on the gingival mask

## 8.2.10 Positioning and rotating



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

### Displacing and rotating

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

### Displacing and rotating the restoration

- Left-click on an arrow symbol and hold the button down.
  - ↳ You can displace or rotate the restoration in the corresponding direction.

### Changing axes

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

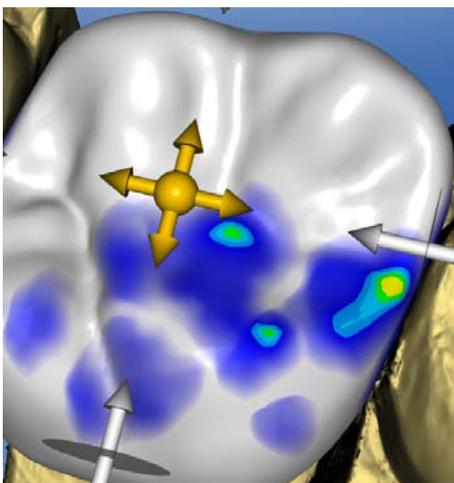
### Keep Contacts

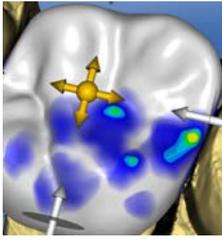
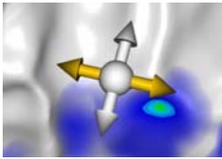
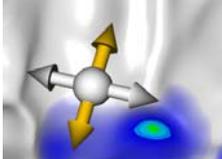
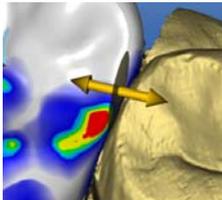
With the *"Keep Contacts"* option, the occlusal and proximal contacts are maintained when moving and rotating crowns.

### Scaling

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

1. Click on the *"Move"* button.
2. Click on the *"Scale"* button.
3. Use the mouse cursor to click with the arrow on the selected scaling direction.
  - ↳ The arrow is shown in orange.
4. Hold the left mouse button down and drag the mouse to enlarge or reduce the restoration.
  - ↳ The orange-colored area will be expanded or reduced.



| Layout   | Effect  |
|--|---|
|   | <p>Click on the ball in the center to enlarge or reduce the entire restoration.</p>   |
|   | <p>Drag the mouse and click on the arrow to enlarge or reduce the restoration in the mesio-distal direction.</p>  |
|   | <p>Drag the mouse and click on the arrow to enlarge or reduce the restoration in the bucco-lingual direction.</p>   |
|  | <p>Drag the mouse and click on the arrow to enlarge or reduce the restoration in the direction shown. The restoration is enlarged or reduced to half-page size.</p> |

### 8.2.11 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"* 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.   |

### 8.2.11.1 Properties

#### Changing 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. Click the *"Size"* slider and press and hold the mouse button.
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.

### 8.2.12 Adjusting contacts

(*"DESIGN"* phase, different steps, *"Analyzing Tools"*)

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

#### Hiding the neighboring restoration

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



### 8.2.13 Biogeneric variation

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

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



1. Click the *"Biogeneric Variation"* slider and press and hold the mouse button.
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 mouse button.
  - ↳ The new morphology is applied to the current restoration.

### 8.2.14 Editing the baseline

Phase *"DESIGN"* – Step *"Edit Restoration"*

Using the *"Edit Base Line"* function, you can retroactively edit the contact areas between a pontic and the gingiva.

#### IMPORTANT

The initial drawing in of the baseline for the pontic is omitted in the phase MODEL. This is created automatically.

The start and end point of your new line must always be on the existing baseline.

For a retroactive editing of the baseline, proceed as follows:

1. Start the editing of the baseline by double-clicking on the existing baseline.
2. Draw a new line by clicking on the desired line course.
3. Close the editing by double-clicking on the existing baseline.

### 8.2.15 Incisal variation

Phase *"DESIGN"* – Step *"Edit Restoration"*

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 click on your current anterior restoration in the 3D preview and then hold down the left mouse button.
  - ↳ 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, click on 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.

### 8.2.16 Disabling / enabling tools

Phase *"MODEL"* and phase *"DESIGN"*

Using the *"Lock / Unlock Tools"* function, you can unblock a restoration if it has been blocked by the system automatically after grinding or milling; e.g. to make later changes and alter the restoration again.

### 8.2.17 Splitting

Phase *"DESIGN"* – Step *"Edit Restoration"*

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 click on the *"Apply"* button.
  - ↳ The multi-layer abutment is split or joined together again.

## 8.2.18 Scaling



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

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

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

### Radial/occlusal

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

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

### 8.2.18.1 Properties

#### Modifying the size

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

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

1. Click the *"Scale"* button.
2. Click the *"Size"* button and press and hold the mouse button.
3. Drag the mouse cursor up or down.
  - ↳ The orange-colored area will be expanded or reduced. The size is displayed on the restoration.

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



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



## 8.2.20 Moving the block

("MANUFACTURE" phase)

### Move

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



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



### 8.2.21 Tool wheel



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

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

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

#### Working with the tool wheel

- ✓ You are now in the MODEL or DESIGN phase.
1. Click inside the main window with the right mouse button.
    - ↳ The tool wheel opens at the mouse pointer.
  2. Position the mouse above the desired tool.
    - ↳ For tools with several variants, all variants will be displayed.
  3. Click on the desired tool.
    - ↳ The desired tool is then activated.

## 8.3 Display objects

#### Opening view options

Click on the "View Options" button. Here you will find all currently available options for setting visibilities in the 3D preview. The options available depend on the current step.

#### Showing and hiding the upper jaw

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

- Click on the "Upper Jaw" button.
  - ↳ The upper jaw is displayed or hidden.



#### Showing and hiding the lower jaw

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

- Click on the "Lower Jaw" button.
  - ↳ The lower jaw is displayed or hidden.



### Display upper/lower jaw transparently

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

1. Click the slider of the "Upper/lower jaw" and press and hold the mouse button.
2. Now drag the slider to the right or left to increase or reduce the transparency.
  - ↳ The transparency of the jaw concerned is changed.

### Showing and hiding the minimum thickness (DESIGN or MANUFACTURING phase)



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

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

You can set the minimum thickness under "Parameters". For more information, refer to the section on Parameters [ → 28].

### Showing and hiding the restoration

The "Restoration" button enables you to display and hide the restoration.



- Click "Restoration".
  - ↳ The restoration is displayed or hidden.

### Transparent display of restoration

You can adjust the transparency of the restoration continuously.

1. Click the "Restoration" slider and press and hold the mouse button.
2. Now drag the slider to the right or left to increase or reduce the transparency.
  - ↳ The transparency of the currently selected restoration is increased or reduced.

### Side and bottom surfaces

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

- Click on 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.





### Displaying and hiding the trimmed region

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

- ✓ You have trimmed a region in the MODEL phase.
- Click on *"Trimmed Model"*
  - ↳ The trimmed region of the virtual model is displayed or hidden.

### Showing and hiding the Gingiva Mask Upper Jaw (upper jaw)

This option is available only if a gingival mask was acquired in the *"ACQUISITION"* phase.

With the *"Gingiva Mask Upper Jaw"* button, you can display and hide the gingival mask (upper jaw).

- Click *"Gingiva Mask Upper Jaw"*.
  - ↳ The gingival mask (upper jaw) is displayed or hidden.

### Showing and hiding the Gingiva Mask Lower Jaw (lower jaw)

This option is available only if a gingival mask was acquired in the *"ACQUISITION"* phase.

With the *"Gingiva Mask Lower Jaw"* button, you can display and hide the gingival mask (lower jaw).

- Click *"Gingiva Mask Upper Jaw"*.
  - ↳ The gingival mask (lower jaw) is displayed or hidden.

## 8.4 Activating analysis

### Color analysis

If you click on the middle of the tooth, you can determine the color of the tooth. Select the radius so that adjacent teeth are not included and the measurement is not too close to the tooth neck or tooth cut.

You can delete measuring points by right-clicking.

You can change the radius by:

- dragging the slider to the left or right
- directly entering a number
- right-clicking and moving the trackball up/down

No reliable color analysis is guaranteed on gray model areas.

The color indicated during the color analysis is displayed in the color system and set in the configuration menu. The nearest color in the color system to the measured color is also shown for comparison.

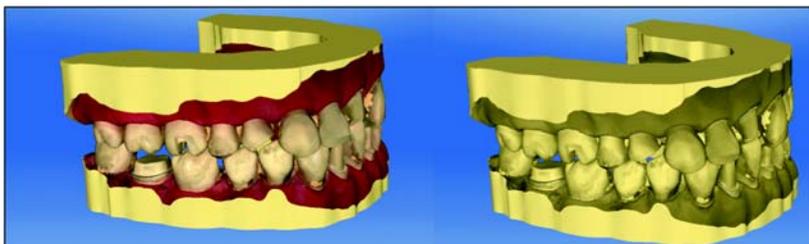
**NOTICE!** The colors shown on the monitor of the acquisition unit are only relative.

### Activating Analyzing Tools

➤ Click 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 CEREC Omnicam.



### Contact surfaces on the virtual model

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

➤ Click on the *"Model Contacts"* button.

↪ The contact areas on the model are displayed or hidden.

Penetration/pressure:

- > 100  $\mu\text{m}$
- 100 - 50  $\mu\text{m}$
- 50 - 0  $\mu\text{m}$

Distance:

- 0 - 50  $\mu\text{m}$
- 50 - 100  $\mu\text{m}$
- > 100  $\mu\text{m}$



## 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 $\mu\text{m}$    |
|                       |  | 100 - 50 $\mu\text{m}$ |
|                       |  | 50 - 0 $\mu\text{m}$   |
| Distance:             |  | 0 - 50 $\mu\text{m}$   |
|                       |  | 50 - 100 $\mu\text{m}$ |
|                       |  | > 100 $\mu\text{m}$    |

## 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.

- Click on 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.

- Click on the "*Model Contacts*" button.
  - ☞ The restoration is displayed with or without proximal contacts.



## Restoration Color

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

1. Click on the "*Restoration Color*" button.
  - ☞ The virtual model is shown in white or the model color.
2. Click on the "*Restoration Color*" slider and hold the mouse button down.
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 phase)

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

1. Click on the "*Slice*" button.
  - ☞ A cut is created in the screen plane through the virtual model and all restorations.





- Click on one of the drag points in the 3D preview and hold down the mouse button. By moving the mouse at the same time, you can move the height of the cutting plane or rotate the cutting plane.

### Cursor Details (MANUFACTURE 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.

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

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

|                         |   |
|-------------------------|---|
| Height                  | Distance from this point to the bottom of the model |
| Fissure height          | Minimum thickness in fissure                        |
| 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.

- Click on the *"Distance"* button.
- Click on the restoration to define the starting point and the 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.

- Click on 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.

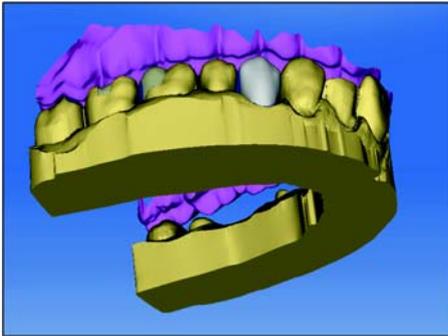
- Click on the *"Guideline Mode"* button.
  - ↳ The guiding lines are displayed in the 3D preview.



## 8.5 Articulation

In order to display the *"Articulation"* function, you must have activated the articulator in the *"Configuration"* under the *"Options"*. This is then additionally shown in the ADMINISTRATION phase in the *"Case Options"* page palette.

Here you can activate the usage of the articulator for the currently opened case.



The *"Articulation"* function enables you to configure a restoration taking the dynamics into consideration.

Once the initial suggestion has been calculated, the dynamic contact points are displayed in color.

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

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

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

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

### IMPORTANT

Use the lower jaw to set the model axis.

### Articulation Parameters



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

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

You can set the following values individually:

| Parameter  | Setting   | Mean value |
|--|---|------------|
| "Arms"   | Side of the Bonwill triangle  | 105mm      |
| "Base"   | Intercondylar distance  | 100mm      |
| "Balkwill Angle"   | Balkwill angle  | 23°        |
| "Sagittal Angle Left"<br>and<br>"Sagittal Angle Right"             | Sagittal condylar path inclination  | 35°        |
| "Bennett Angle Left"<br>and<br>"Bennett Angle Right"               | Bennett angle   | 15°        |
| "Immediate side shift left"<br>and<br>"Immediate side shift right" | Initial Bennett movement  | 0µm        |
| "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        |

### Incisal Pin



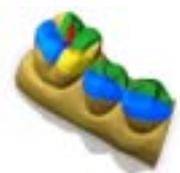
An opening of the jaw can be produced using the "Incisal Pin" function. The "Incisal Pin" function is only available in the "MODEL" phase from step "Draw Margin" onward.

1. Click on the "Articulation" button.
2. Click on "Incisal Pin". Hold the left mouse button down and drag the mouse until the desired value of the jaw opening is reached.

## Functionally generated path (FGP)

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

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



### Lower virtual FGP

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

### Upper virtual FGP

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

### Occlusal Compass

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

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

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

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

Each direction of movement can be shown/hidden.

### Manual Move

The lower jaw can be moved manually in accordance with the calculated masticatory movement using the *"Manual Move"* button,

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



3. Move the lower jaw so by clicking on the orange ball in the diamond on the left.

## 8.6 Smile Design

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

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

### Changing to Smile Design

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

↪ The software changes to the *"Smile Design"* function.

### Exiting Smile Design

- ✓ You are in *"Smile Design"*.
- Click the *"Full Model"* function at the bottom left edge of the screen to exit *"Smile Design"*.

You can change back to SmileDesign at any time.



### 8.6.1 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        |
|--|-------------------|
| <ul style="list-style-type: none"><li>• jpeg / jpg</li><li>• bmp</li><li>• png</li></ul> | Min. 2 megapixels |

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

### 8.6.2 Setting reference points

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

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

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

### 8.6.3 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.

### 8.6.4 Aligning jaws

Align the model to the image.

#### Positioning the model

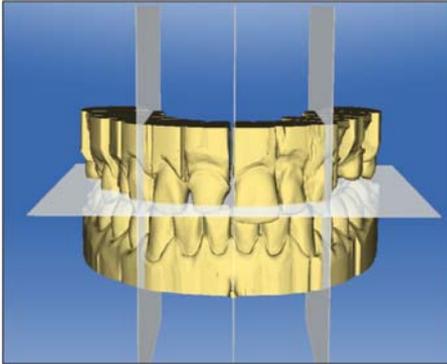
- Left-click on an arrow symbol and hold the button down.
  - ↳ You can displace or rotate the model in the corresponding direction.

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

### Changing axes

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

### 8.6.5 Auxiliary planes



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

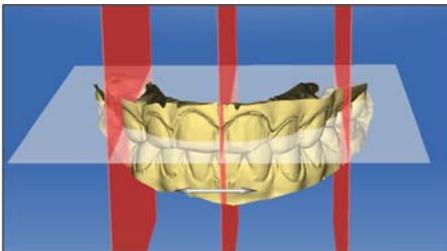
You can also display the planes for the construction.

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

### Positioning the plane

- Click with the left mouse button on the arrow symbol and hold the button down.
  - ↳ You can move the planes in the relevant direction.

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



## 9 ADMINISTRATION phase

### Creating restorations

Define the desired supply in the ADMINISTRATION phase. To do this, you must perform the following steps.

1. Select the type of supply (single restorations, bridge restorations or abutments) from the left column of the "Indications" page palette.
2. Select the restoration type, design mode, material, and the milling and grinding unit in the right column of the "Indications" page palette one after the other.
  - For single restorations, you can select "Auto-Detect" and "Missing".
  - For bridge restorations, you can select "Crown", "Inlay", "Veneer", "Pontic", and "Missing".
  - For abutments, you can select "Screw Retained Crown", "Multilayer Abutment", and "Missing".

↳ If all selection items in the "Indications" page palette are chosen, the odontogram is activated.

#### IMPORTANT

Depending on the type of restoration selected, only certain teeth are active in the odontogram.

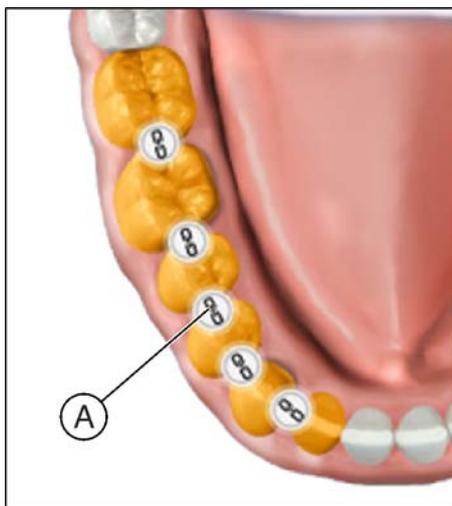
3. Place the restoration in the desired position in the odontogram. You can also place multiple restorations of the same type after another.

#### IMPORTANT

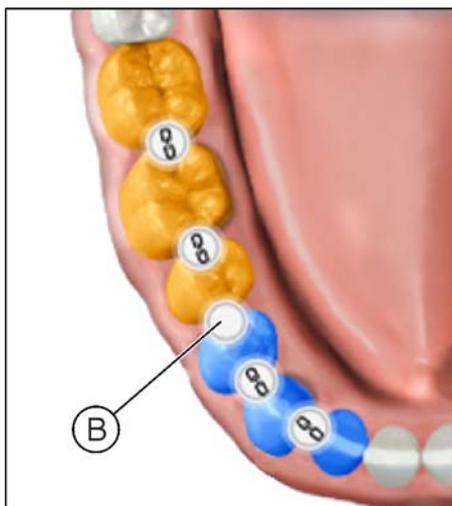
If you want to place a restoration type which differs from the current definition (restoration type, design mode, material, or milling and grinding unit), adjust your selection in the "Indications" page palette and then place the modified restoration in the odontogram.

### Adding bridges

When placing bridge restoration elements, anatomical connections are automatically created between the individual elements. If two bridges are immediately adjacent to one another, you must remove the automatically created connector manually.



1. To do this, click on the connecting element between the two bridges (e.g. **A**).



2. To connect two bridges back together again, click on the empty connecting element between the two bridges (e.g. **B**).

#### IMPORTANT

A valid bridge must always consist of at least two connected restoration elements.

#### Editing and deleting restorations

If you want to adjust or delete a restoration that has already been placed, then select the relevant restoration from the *"Case Details"* page palette. The buttons for editing (pen icon) and deleting (trash can icon) are located on the right side of a selected restoration.

1. Click on the button for editing a restoration.
2. Change the associated options via the drop-down menu lists.
3. Confirm or discard your changes via the *"Apply"* and *"Cancel"* buttons.

**Tip:** By clicking on the right mouse button, you can also delete a restoration directly from the odontogram.

**Tip:** You can select a restoration through the odontogram, the object list or the case details.

## Closing the ADMINISTRATION phase

Once at least one restoration has been added to the odontogram, you can jump to the "ACQUISITION" phase.

- ✓ At least one restoration is added to the odontogram.
- ✓ The "ACQUISITION" phase can be selected.
- Click on the "ACQUISITION" button in the phase bar.



or

- Click on the "Next" arrow in the step menu.
- ↪ The program switches over to the "ACQUISITION" phase.

## Smile Design

### Changing to Smile Design

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



### Exiting Smile Design

- ✓ You are in "Smile Design".
- Click the "Full Model" function at the bottom left edge of the screen to exit "Smile Design".

You can change back to SmileDesign at any time.

## Articulation

In order to display the "Articulation" function, you must have activated the articulator in the "Configuration" under the "Options". This is then additionally shown in the ADMINISTRATION phase in the "Case Options" page palette.

Here you can activate the usage of the articulator for the currently opened case.

### Case Options

If you have activated the articulator and/or Smile Design in the "Configuration" under the "Options", the "Case Options" page palette is also displayed in Administration.

Here you can activate the usage of the articulator and Smile Design for the currently opened case. The functions or steps required for this are then displayed at a later stage.

# 10 ACQUISITION phase

## 10.1 Image catalogs with CEREC Bluecam

### Overview

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

- Lower Jaw



- Upper Jaw



- Buccal



In addition, further image catalogs can be shown:

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

### Opening the image catalog

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

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

### 10.1.1 Working with the image catalog



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

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

The acquisitions are marked as follows:

| Symbol                         | Meaning   |
|--------------------------------|---|
| Green flag with check mark     | Reconstructed / overlapped images                       |
| Green flag with dot            | Reference optical impression                            |
| Blue flag                      | Reconstruction / overlapping attempt still in progress. |
| Red flag with exclamation mark | Reconstruction / overlapping failed.                    |
| No flag                        | Hidden images   |

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

#### Scrolling through the image catalog



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

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

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

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

#### Selecting images

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

## Moving acquisitions

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

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

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

## Hiding images

- Click an acquisition with the right mouse button.
  - ↳ The exposure is displayed in gray.  
The acquisition is no longer used for the 3D preview or creation of the virtual model.

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

If the *"Ignored"* filter is active, the acquisition remains visible in the image catalog.

If the *"Ignored"* filter is deactivated, the acquisition is not displayed in the image catalog (see Filter command [ → 91]).

## Command Select

The *"Select"* command enables you to:

- select all images
  - void the selection
  - invert the selection
1. Click the *"Select"* button in the image catalog.
  2. Click the appropriate button.

## Command Edit

The *"Edit"* command enables you to:

- copy
  - cut
  - insert
  - delete
  - hide
  - display acquisitions
1. Select the acquisitions you want to edit.
  2. Click the *"Edit"* button in the image catalog.

3. Click the appropriate button.

**Command Filter**

The "Filter" command enables you to:

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

| Command                | Description                          |
|------------------------|--------------------------------------|
| "Ignored"<br>(active)  | Hidden acquisitions are displayed.   |
| "Rejected"<br>(active) | Rejected acquisitions are displayed. |

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

**10.1.2 Adding image catalogs**



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

1. Click the "Add Catalog" button in the page palette.
  - ↳ The possible image catalogs are offered.
2. Click on the required image catalog.
  - ↳ The image catalog is displayed next to the standard image catalogs.

**10.1.3 Options**

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

- Buffer the acquisition sequence (quadrant)
- Merge the first and second acquisition sequences (quadrants)
- Activate first acquisition sequence
- Change to the "Impression Scan" mode



| Command        | Description   |
|----------------|---|
| "Add Quadrant" | <ul style="list-style-type: none"> <li>• Buffer the first acquisition sequence (quadrant).</li> <li>• Subsequently, another acquisition sequence can be taken.</li> </ul> |

| Command            | Description   |
|--------------------|---|
| "Merge Quadrants"  | <ul style="list-style-type: none"><li>• The current acquisition sequence is merged with the buffered sequence.</li></ul>  |
| "Change Quadrants" | <ul style="list-style-type: none"><li>• Activate the first acquisition sequence in order to add other images. The second sequence is saved temporarily automatically.</li></ul> |

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

### 10.1.4 Recycle bin

#### Removing acquisitions

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

or

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

↳ The acquisition is sent to the recycle bin.

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

#### Opening the recycle bin

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

1. Click on the icon of the image catalog, for which you wish to open the recycle bin.
  2. Click on the icon of the recycle bin.
- ↳ The recycle bin for the active image catalog is displayed.



#### Reusing acquisitions from the recycle bin

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

**Tip:** If you display/hide acquisition in the recycle bin then these are automatically moved back into the image catalog.

## 10.2 Image catalogs with CEREC Omnicam

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

- Lower Jaw
- Upper Jaw
- Buccal

In addition, further image catalogs can be shown:

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

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

### Opening the image catalog

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

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

### Deleting acquisitions

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

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



### 10.2.1 Adding image catalogs

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

1. Click the "Add Catalog" button in the page palette.
  - ↳ The possible image catalogs are offered.
2. Click on the required image catalog.
  - ↳ The image catalog is displayed next to the standard image catalogs.

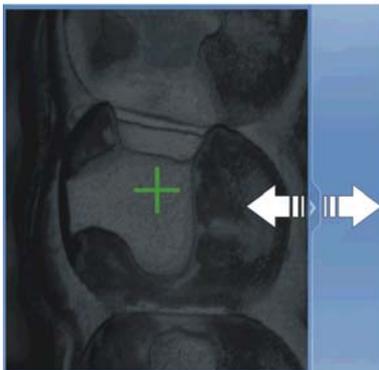


## 10.3 Camera view

### Change window size

You can adjust the size of the camera view proportionally.

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



### Height and intensity image

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



Height image



Intensity image

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

## 10.4 Take a scan

### 10.4.1 CEREC Bluecam

#### 10.4.1.1 Switch CEREC camera on/off

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

- > Click the camera icon to switch the CEREC camera on or off.



### 10.4.1.2 Camera support

Using the camera support gives you the following advantages:

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

#### CAUTION

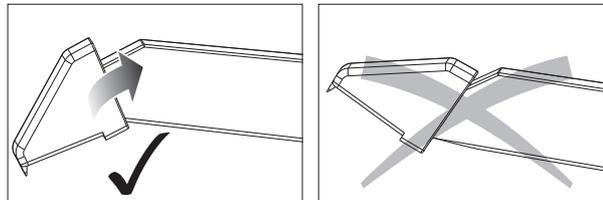
##### Using the camera support

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

### 10.4.1.3 Preparing the exposure

#### Pushing on the camera support

- Push the camera support onto the camera as illustrated.



*Pushing on the camera support*

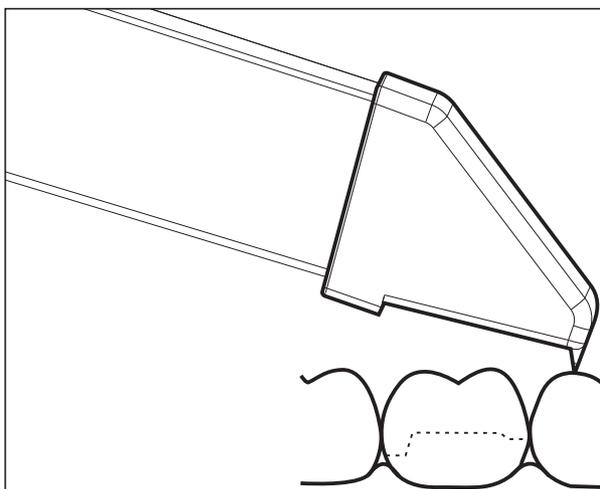
#### Positioning the camera

#### CAUTION

##### Hot surface!

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

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



*Supporting the 3D camera*

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

#### NOTICE

##### **Powder on the surface of the prism**

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

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

#### 10.4.1.4 Taking acquisitions with the CEREC Bluecam

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

- manual
- automatic

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

#### NOTICE

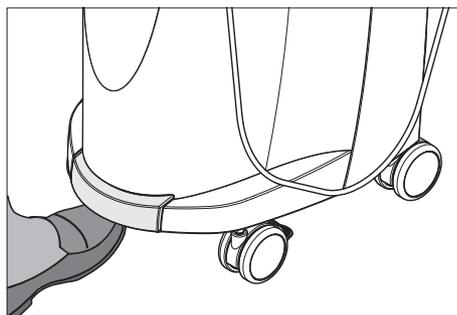
##### **Image brightness**

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

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

#### **Changing from automatic to manual acquisition control**

You can change from automatic to manual acquisition control.



✓ You are now using automatic acquisition control.

1. Place the cursor on the camera icon.

2. Press the foot control upward and keep it pressed.

↳ A green cross appears in the live image. Manual acquisition control is active.

You can exit manual acquisition control in the same way.

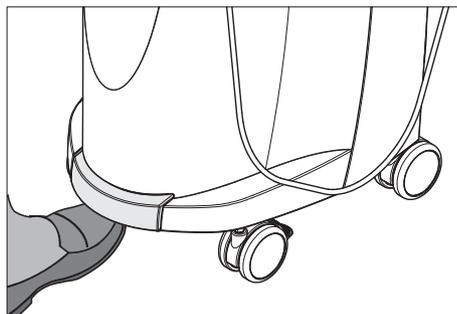
### Automatic acquisition control

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

1. Position the CEREC camera above the powdered preparation as described.
2. Once a sharp acquisition is possible, images are generated and transmitted to the 3D preview automatically.  
Observe undercuts on all lateral edge lines of the preparation.
3. Move the camera until all required images have been acquired.  
↳ The model is restored automatically in the 3D preview during the acquisition.
4. Then check the above points once again. Take care that the optical impression is **sufficiently bright, sharp** and **free of motion blurring**. If you do not observe these points, one of them may have a negative effect upon the subsequent procedure.

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

### Manual acquisition control



1. Press the foot control upward and keep it pressed.

↳ A live video image appears with a green cross in the camera view.

2. Release the foot control.

↳ The acquisition is automatically transferred to the 3D preview.

3. Additional acquisitions can be created by repeating steps 1 and 2.

↳ The model is restored automatically in the 3D preview during the acquisition.

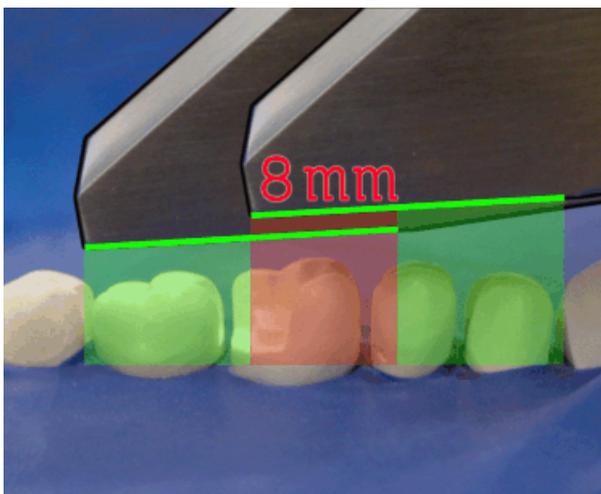
4. Then check the above points once again. Take care that the optical impression is **sufficiently bright, sharp** and **free of motion blurring**. If

you do not observe these points, one of them may have a negative effect upon the subsequent procedure.

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

#### 10.4.1.5 Supplementary optical impressions

##### Acquiring the neighboring teeth as well



*Overlap area 8mm*

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

#### 10.4.1.6 Angled optical impressions

##### Additional angled optical impressions

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

#### **IMPORTANT**

##### **Proximal undercuts**

Proximal undercuts may make it impossible to seat an inlay.

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

#### 10.4.1.7 Optical impressions for quadrant restoration

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

### 10.4.1.8 Acquiring end teeth

#### End teeth at the distal margin

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

### 10.4.1.9 Acquiring an impression

#### Preparing an impression

- ✓ In certain circumstances, the casting must be cut free somewhat, so that the definition of the image of the CEREC camera is sufficient.
- Unless this involves scannable silicone, apply a matte finishing to the areas to be acquired to prevent reflections. For this purpose, use CEREC Optispray.

#### Acquiring an impression

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

Provided that the *"Impression Scan"* mode is active, the acquisitions will be inverted when the virtual model is created. The *"Impression Scan"* mode is available for all image catalogs.

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

## 10.4.2 CEREC Omnicam

### 10.4.2.1 Camera warm-up time

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

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

You can set the end temperature to which the camera heater warms the Omnicam mirror sleeve.

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



### 10.4.2.2 Mode

#### Step Video / Photo

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

#### Taking photos

1. Select the "Photo" tab.
2. Click on the button or use the foot switch to trigger the camera.

#### Recording videos

1. Select the "Video" tab.
2. Click on the button to start video recording or use the foot switch.
3. Repeat click on the button or actuate the foot switch once more to stop the recording.

#### Viewing photos and images

1. Select the button with the "View" folder symbol.
2. Click on the left or right arrows to see all exposures taken. Videos can be started by clicking on the play button.  
**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.

### 10.4.2.3 Directing the camera

#### CAUTION

##### After each use

Reprocess the camera after each patient.

- Follow the instructions in chapter „CEREC Omnicam“ in order to avoid cross-contamination between patients.

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

During the acquisition and then during the ongoing registration process, a distinctive sound can be heard.

If the registration cannot be implemented, the acquisition flow is suspended. You are informed of this by means of a sound. This is different to the sound emitted during successful acquisition. You can adjust the volume under configuration and select another type of sound (melody).

## IMPORTANT

### Registration error

Should a registration error occur, you must return to another acquired point.

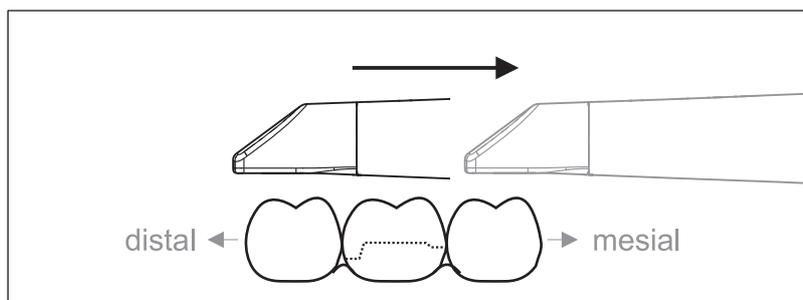
To start with, practice this procedure on the model and then on intraoral areas.

- Move the CEREC Omnicam to a position where a successful acquisition was taken. A point that has already been acquired in the occlusal area is best.
  - ☞ You will be able to hear the sound for registered acquisitions.
- Continue the acquisition.

Divide the acquisition into four consecutive sequences:

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

### 10.4.2.3.1 Occlusal scan

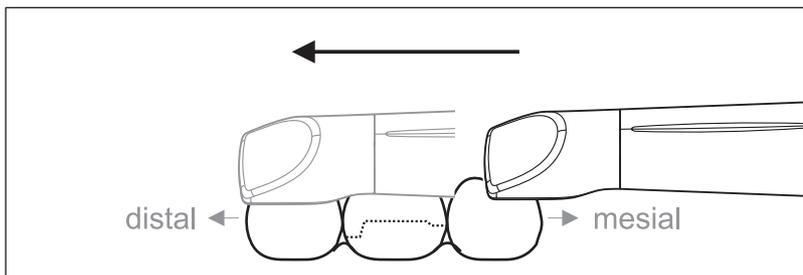


**Important:** Ensure that the distance between the coated sapphire glass of the CEREC Omnicam and the scanned surface is observed. The distance must be between 0-15 mm (ideally: 5 mm). The camera does not rest on the teeth or the gums. If the distance is too great, no data will be obtained.

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

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

### 10.4.2.3.2 Buccal scan

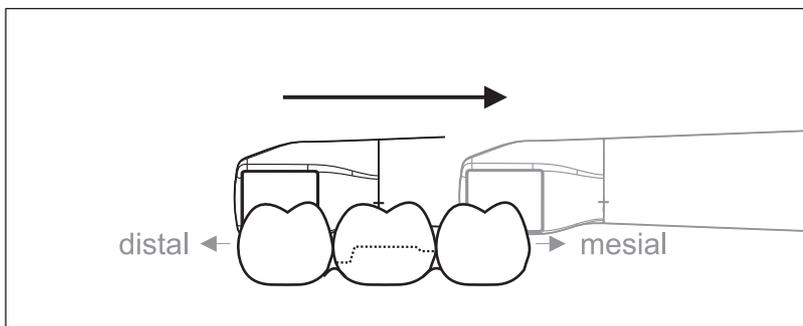


- ✓ The CEREC Omnicam is on the adjacent tooth, in the mesial direction to the preparation.
- 1. Rotate the CEREC Omnicam between 45° to maximum 90° toward the buccal.
- 2. Guide the CEREC Omnicam over the entire buccal distance in the distal direction over the prepared tooth.  
With full jaw acquisitions,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

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

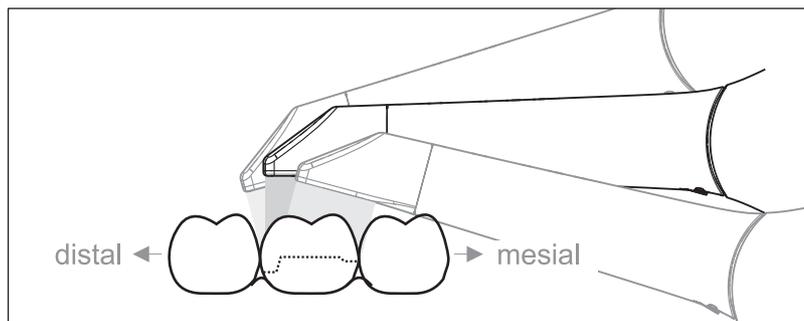
**Tip:** Practice guiding the camera between 45° and 90°.

### 10.4.2.3.3 Lingual scan



- ✓ The CEREC Omnicam is on the tooth that is positioned next to the preparation in the distal direction.
- 1. Rotate the CEREC Omnicam from 90° in the buccal direction to around 45° to maximum 90° in the lingual direction on the other side.
- 2. Guide the CEREC Omnicam over the entire lingual distance in the mesial direction over the prepared tooth.

#### 10.4.2.3.4 Approximal surface scan



Scan the approximal surfaces of the prepared tooth.

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

Notes:

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

#### 10.4.2.3.5 Buccal registration

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

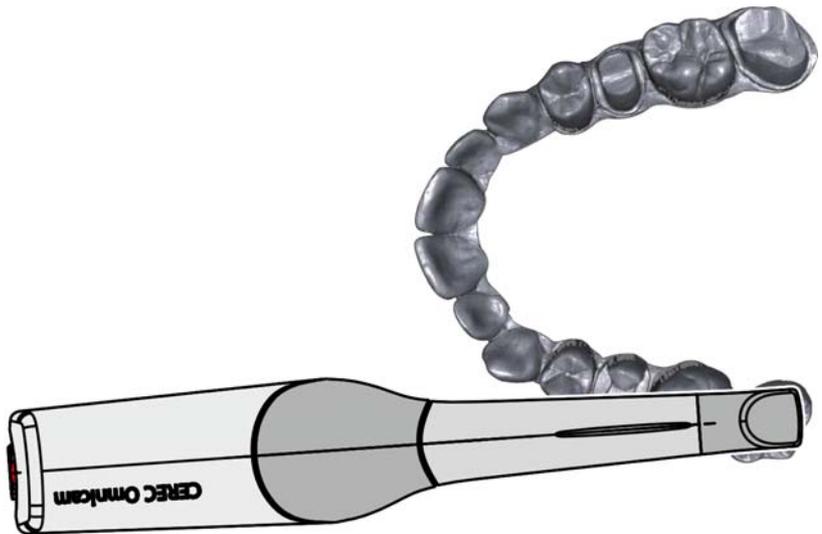
- ✓ The jaw with the preparation is scanned.
- 1. Scan the occlusal, buccal and lingual view of the antagonist (see the section "Occlusal scan [ → 101]", "Buccal scan [ → 102]" and "Lingual scan [ → 102]").
- 2. Perform a buccal scan of the bite block prior to completing the registration. This buccal 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.

#### 10.4.2.3.6 Scanning the quadrant and jaw

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

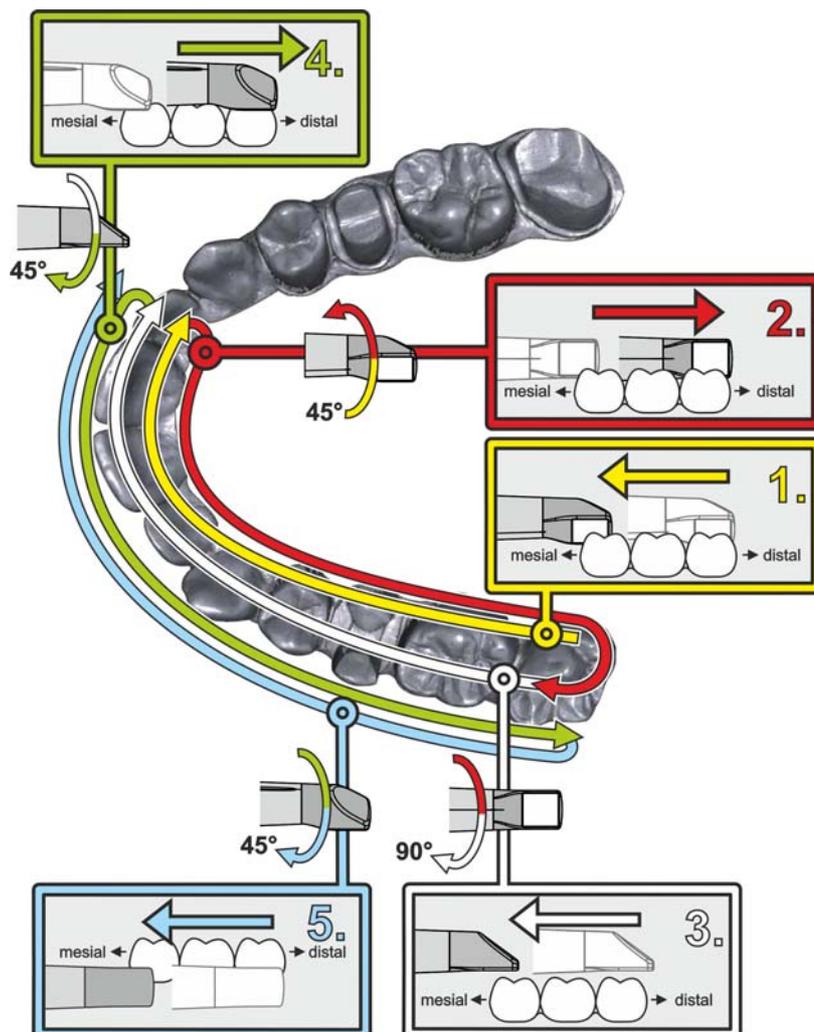
The first (fourth) quadrant is scanned up to the opposite second front tooth by moving the camera in parallel along the jaw arch.

##### Start the scanning process



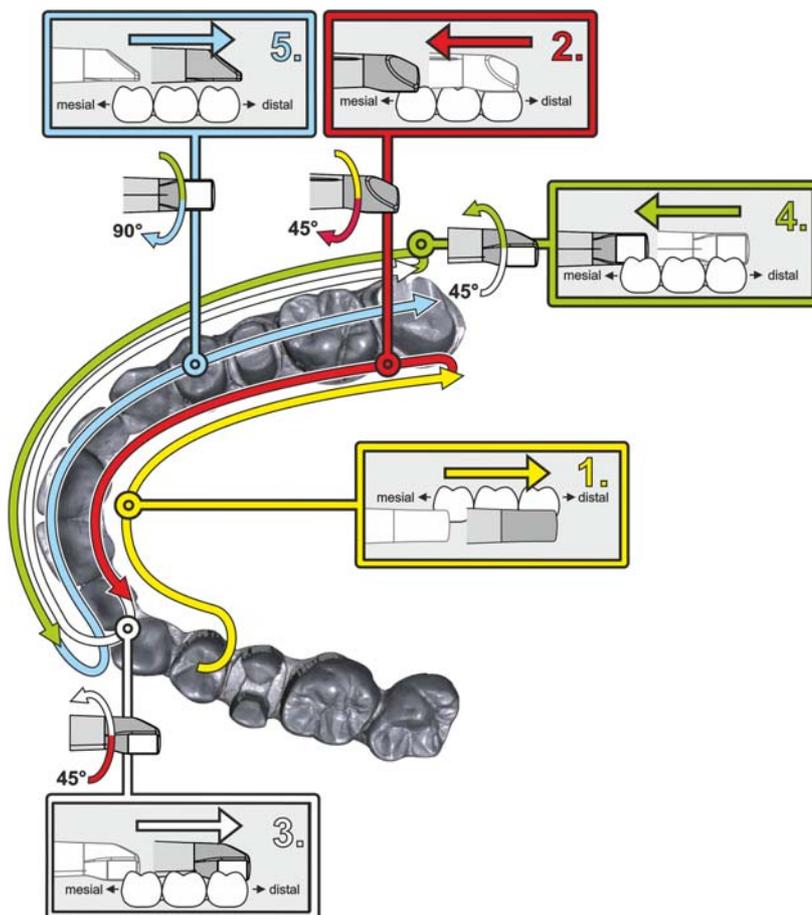
- Position the camera occlusally above the last tooth on the right, to start the scanning process.

### Completing the scanning process



1. Start as indicated above, on the occlusal surface of the right terminal tooth, and scan it occlusally.  
Tilt the camera by 45° in a palatal direction (oral) and guide it from the distal to the mesial.
2. Tilt the camera another 45° in a palatal direction (oral) and move it in a distal direction.
3. Tilt the camera by 90° on to the occlusal surface and move it in a mesial direction.
4. Tilt the camera in a 45° buccal direction and move it back towards the distal.
5. Then tilt the camera 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 camera 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 camera by 45°, so that the camera 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 camera 45° to the buccal side and tilt the camera by 45° from the mesial to the distal direction.
4. Once you have reached the distal, tilt the camera by another 45° (total of 90°) further towards the buccal and guide the camera from the distal back to the mesial direction.
5. Once you have reached the area of the front tooth, tilt the camera in an occlusal direction and guide the camera mesially to the occlusal surfaces right to the back distal molars.

Notes:

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

#### 10.4.2.3.7 Completing measurements

- ✓ The exposures are complete.
1. Click on 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 scans.

Change back to the "ACQUISITION" phase. Perform additional scans to complete the model structure.

#### 10.4.2.4 Taking acquisitions with the CEREC Omnicam

##### CAUTION

###### Hot surface!

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

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

##### NOTICE

###### Image brightness

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

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

### IMPORTANT

#### Do not use cotton rolls in the scan area

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

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

#### Proceeding with scanning procedure

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

#### 10.4.2.5 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.

- ✓ You are now in the ACQUISITION phase.
- 1. Click on the tool wheel.
- 2. Click on the "Cut" button.
  - ↳ The cursor changes to a cross.
- 3. Begin the cut line with a double-click.
- 4. Click to set additional points.
- 5. Finish the cut by double clicking.
  - ↳ The model area is cut out.
- 6. Click the "Apply" button to implement the change.

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

## Undo and Reset



With the *"Undo"* button in the tools you can undo 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.

### 10.4.2.6 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. Click on the ACQUISITION phase.
  - ↪ The ACQUISITION phase opens. The image catalogs are locked.
- 2. Click the *"Unlock"* button in the page palette.
  - ↪ The image catalogs are unlocked.
  - ↪ You can take additional exposures.



### 10.4.3 Finishing the phase

- ✓ All required scans are present (jaw, if necessary the opposing jaw and buccal bite exposure).
- ✓ The *"MODEL"* phase can be selected.
- Click on the *"MODEL"* phase.
- or
  - Click on the double arrow.
  - ↪ The program switches over to the *"MODEL"* phase.

## 11 MODEL phase

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

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

The *"Edit Model"*, *"Bite Registration"* and *"Set Model Axis"* 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.

In the *"MODEL"* phase the next mandatory step or the next phase in the step menu is displayed.

### 11.1 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.

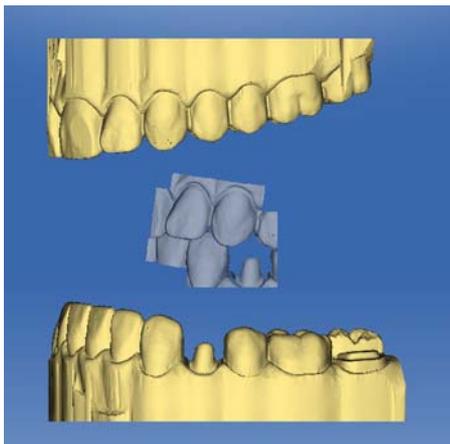
In the *"Buccal Bite Registration"* step, you can work with the following tools in the page palette:

- Drag Buccal
- Turn Buccal Impression

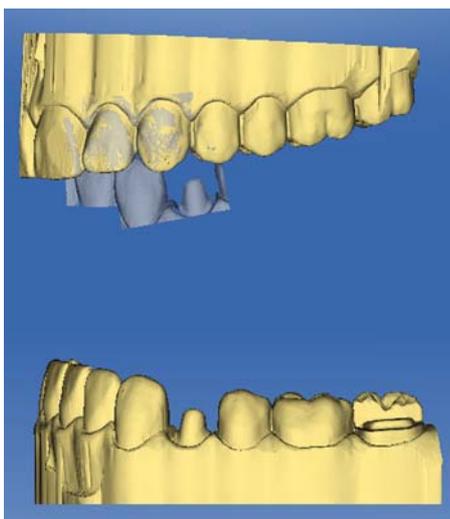
#### Rotating the lower and upper jaw

- Click in the blue area with the left mouse button and hold the button down.
  - ↳ The lower jaw and upper jaw can be rotated about the vertical axis simultaneously.
- Click on the lower jaw or upper jaw with the left mouse button and hold the button down.
  - ↳ The arches can be rotated freely, individually.

### Drag Buccal

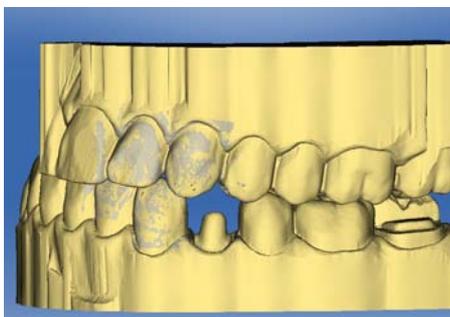


1. Rotate both models so that you can see the overlap area of the buccal acquisition and of the upper jaw and lower jaw.
2. Now drag the buccal acquisition to the corresponding area of the upper jaw with the mouse and let go of the mouse button (drag & drop).



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

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



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

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

### Turn Buccal Impression

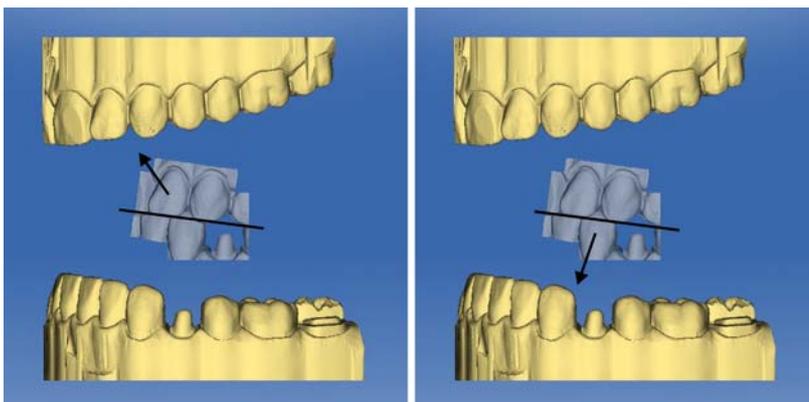
In some cases, the buccal acquisition may be displayed upside down in relation to the lower jaw and the upper jaw. Proceed as follows in such cases:

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

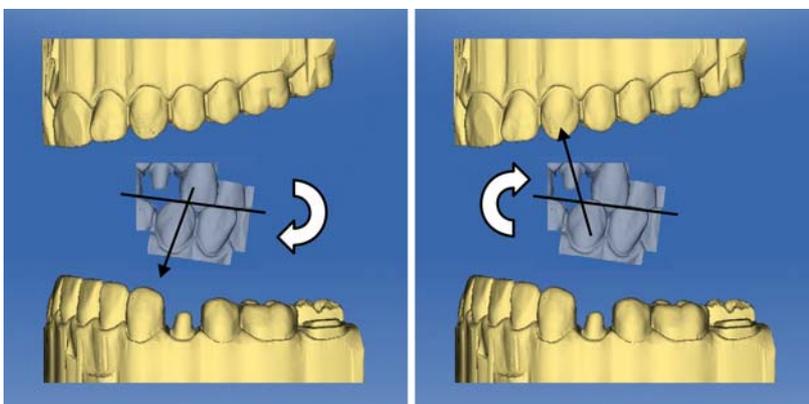
or

- Move the mouse via "Tools" onto the "Bite Registration" button and activate the "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 click on the lower area of the buccal image and then drag it onto the upper model.



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



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

### Moving to the next step

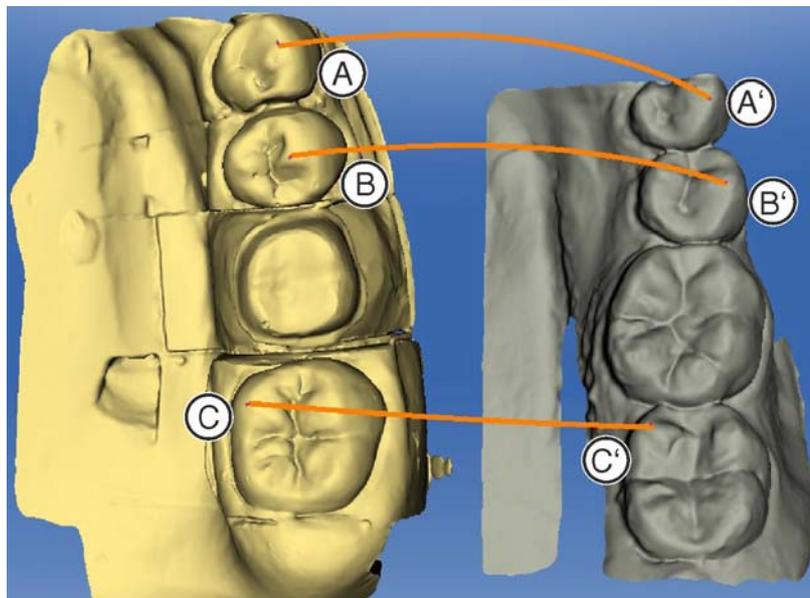
- ✓ The step is completed.
- Click on the next step to continue.

## 11.2 Manual correlation for image fields

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



1. Select the "Set Points" tool.



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

## 11.3 Settling tool

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.

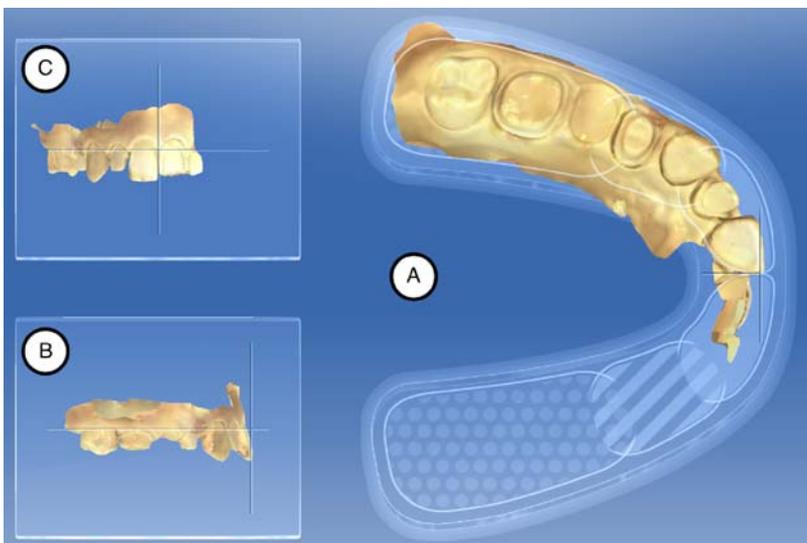
### IMPORTANT

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

1. Select the jaw regions that should be omitted for the registration of the contacts (i.e. all ScanPosts present) using the "Remove" brush tool.
2. You can discard the selections again with the "Add" brush tool.
3. Then click on the "Compute" button.
4. Then check the new contact situation.
5. Adapt the selections if necessary and recalculate the contact situation.

## 11.4 Setting the model axis

If the positioning in the model axis does not match the tooth number, a message appears. This way poor initial suggestions are prevented.

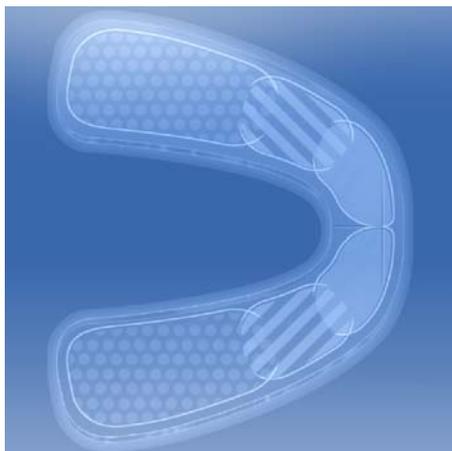


In this step, adapt the alignment of the jaw model to the software specifications. This alignment is required to calculate optimal initial suggestions.

### IMPORTANT

Through the buccal registration, aligning one of the two jaws will suffice. You can switch between the upper and lower jaw with the *"Display Objects"* page palette.

### 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 the left mouse button to rotate the jaw; or the right mouse button to move the jaw.
4. Click on the green *"OK"* button in the step menu to confirm the defined model axis or *"Cancel"* to discard an entry.

### 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 the left mouse button to rotate the jaw; or the right mouse button to move the jaw.
3. Click on the green "Ok" button in the step menu to confirm the defined model axis or "Cancel" to discard an entry.

### Aligning the mesial view (C)

1. Align the quadrants of the jaw parallel with the horizontal guiding line.
2. Hold down the left mouse button to rotate the jaw; or the right mouse button to move the jaw.
3. Click on the green "Ok" button in the step menu to confirm the defined model axis or "Cancel" to discard an entry.

## 11.5 Editing the model

This step is optional. You must click on this step in order to access it.

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 "Page palette [→ 57]".

## 11.6 Trimming the preparation

This step is optional. You must click on this step in order to access it.

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

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

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

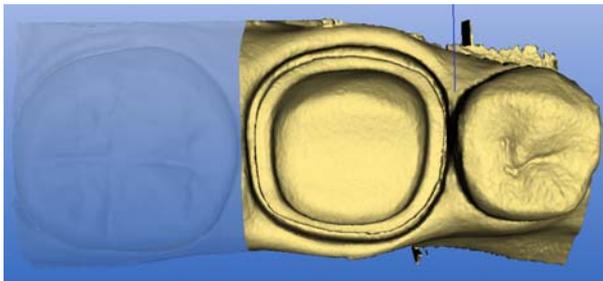
- "Trim"

The use of the tool is described in the Page palette [→ 57] section.

### Trimming image regions

You can trim several image regions.

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



3. Click to set further points of the line, e.g. in the interdental space.
4. Double click in any position to end the line. Ensure that the closing end of the line does not cut any areas of the model that you want to keep.

↳ The smaller image region to the side of the line is hidden.

**Tip:** If the wrong image region is hidden, you can switch to the other image region by double-clicking the hidden region.

## 11.7 Entering the preparation margin

### Automatically detect the preparation margin

1. Start by double-clicking anywhere on the preparation margin to be drawn.  
↳ The line is opened and the line hangs from the mouse cursor.
2. Move the cursor over the margin and approach the first point.  
↳ A green line is drawn automatically along the preparation margin.
3. Left-click to set points in order to ensure that the drawing of the line is set.
4. Continue the procedure until you reach the first point.
5. Close the automatic recording by double-clicking on this point (red).

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

- Margin

The use of the tool is described in the Page palette [ → 57] section.

**General information**

**IMPORTANT**

You can enlarge or reduce the 3D view during the input or editing of the preparation margin (see "3D Preview [ -> 58]") 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.

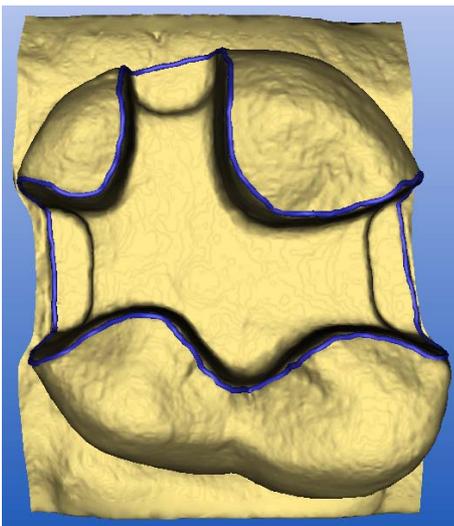
You can edit the finished preparation margin after entering the last line.

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.             |
| "Manual"                      | Height image    | For unclear preparation margins, for subsequent correction of the initial limit. |
| "Manual with intensity image" | Intensity image |  |

**Entering the preparation margin in the case of clear preparation edges**



**Tip:** You can rotate the model during input in order to obtain a better view of the preparation limit.

Click and hold the left mouse button and move the model with the mouse.

1. Start the entry by double-clicking anywhere on the preparation margin.

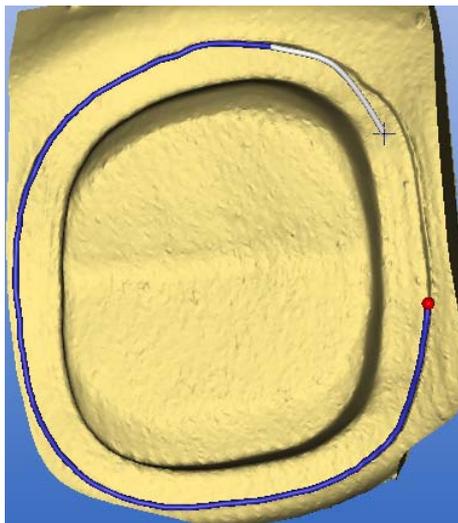
2. Move the cursor along the preparation margin.

**Tip:** To support the automatic edge detection, click anywhere near the margin on the raised side. There is an automatic correction when the next point is set.

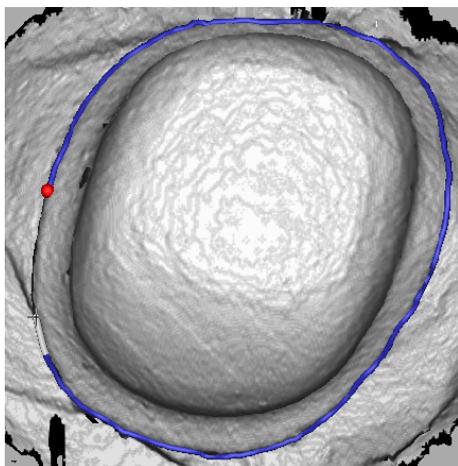
3. Continue this procedure until you are back at the starting point.

4. Conclude the entry by double-clicking the starting point.

### Entering the preparation margin in the case of blurred preparation edges



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



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

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

|                  |
|------------------|
| <b>IMPORTANT</b> |
|------------------|

|   |
|---|
| <b>Intensity image only with inEos Blue</b> |
|---|

|   |
|---|
| The intensity image can only be used for exposures with inEos Blue. |
|---|

### Enter the preparation margin for the next restoration

- Continue with the preparation margin for the next restoration by clicking on the desired restoration in the object bar.

## 11.8 Defining the insertion axis

In the "*Set Restoration Axis*" step, you can work with the following tools:

- Insertion Axis

Use of the individual tools is described in the section "Page palette [→ 57]".

### 11.8.1 Redefining the insertion axis

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

1. Change the position of the preparation such that all 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.

2. Confirm with the "*Ok*" button.

↳ The insertion axis of the restoration is determined.

## 11.9 Preparation analysis

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

Here the following analyses are possible:

- Distance to antagonists
- Undercuts
- Preparation margin
- Surface condition

The individual analysis tools show a legend in the main window in the selected state. The legend shows colored assignments with an assessment ("*Ok*" / "*Warning*") or values (e.g. "0.10 mm").

### 11.10 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.

#### NOTICE

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.

## 11.11 Finishing the phase

- ✓ The next phase is can be selected.
  - Click on the next phase.
- or
- Click on the double arrow.
  - ↩ The program switches over to the next phase.

## 12 DESIGN phase

**Tip:** In the DESIGN phase you can group with the following key combinations:

- Ctrl + left mouse button
- Shift key + left mouse button

### 12.1 Checking parameters



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

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

You can change the parameters as described in section Parameters [ → 28] .

### 12.2 Editing the restoration

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

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

The individual tools and their applications are described in the section “Page palette [ → 57]”.

### 12.3 Finishing the phase

- ✓ The next phase is can be selected.
  - > Click on the next phase.
- or
- > Click on the double arrow.
  - ↩ The program switches over to the next phase.

## 13 MANUFACTURING phase

### 13.1 Selecting the color

#### 13.1.1 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 clicking on the color in the color center.
  3. Click the *"OK"* button.

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



### 13.2 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 [ → 123]").

#### 13.2.1 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.

## 13.2.2 Changing editing settings

### 13.2.2.1 Milling

#### 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.

#### Grinding Fine

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

#### 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.

##### IMPORTANT

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

### 13.2.2.2 Milling

#### Fast milling

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

#### Fine milling

Comprises the same process steps as the Fast stage and the same path spacing as in the "Soft" setting.

#### Soft milling

Reduces the values of the cutting parameters and includes all development processes intended for the respective quality in order to achieve optimum quality.

### 13.2.2.3 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.

## 13.3 Block size selection page palette

### Block Sizes

In the "Block Sizes" page palette, you can select the right block size. The last selected block size is always preselected to start with.

#### IMPORTANT

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

## 13.4 Positioning restorations in the block

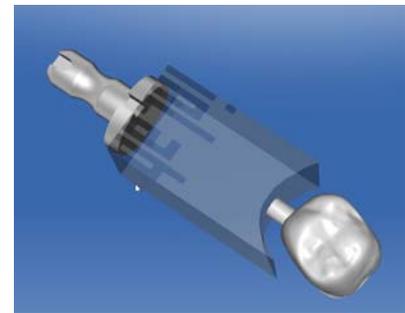
You can use the positioning tools to move the block around the restoration, turn it, and determine the sprue location.

The tools are described in the section "Page palette [ → 57]".

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.



Several sprue locations in the block



Single sprue location in the block

## 13.5 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.

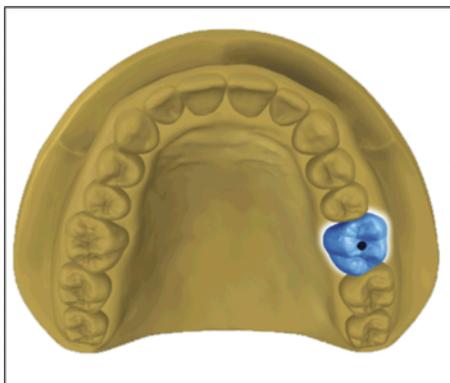
## 14 Design examples

### 14.1 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).

#### 14.1.1 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. Click on the tooth for which the restoration must be set up.
  - ☞ The selected tooth is marked.
- 10. Change to phase ACQUISITION.

### 14.1.2 Scanning a preparation



1. Acquire the preparation (see "ACQUISITION phase [ → 88]").
2. If you have formed an emergence profile then scanning this area separately is recommended. Complete this scan ideally directly after the gingiva former has been removed. Use the "*Gingiva Mask*" image catalog for this for the corresponding jaw.
3. Ensure that you also scan toothed areas (a half tooth is enough in most cases) in order to guarantee the registration for the preparation acquisition.
4. You can also complete scans of the opposite jaw and the buccal bite registration as an option.
5. If all required acquisitions are present, change to phase MODEL.

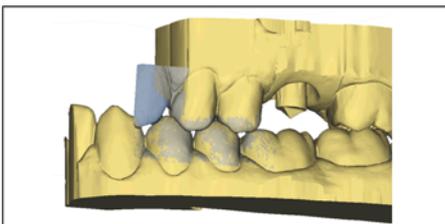
### 14.1.3 Editing the model

This step is optional. You must click on this step in order to access it.

✓ The step Edit Model is active.

1. With the tool "*Form*", apply, remove or smoothen material (see Shaping [ → 60]).
2. With the tool "*Cut*", cut out unnecessary image areas (see Cut out model areas [ → 62]).
3. Correct defects with the tool "*Replace*" (see Correcting defects [ → 64]).

### 14.1.4 Bite registration



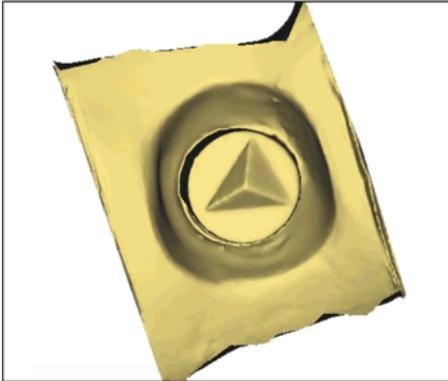
- ✓ The "*Bite Registration*" step is optional. The bite registration is generally automatic.
- Complete a manual buccal registration if necessary (see "Buccal registration [ → 110]").

### 14.1.5 Set model axis

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

- Set the axes for model alignment (see Setting the model axis [ → 114]). Please ensure a consistent representation here.

### 14.1.6 Mask areas



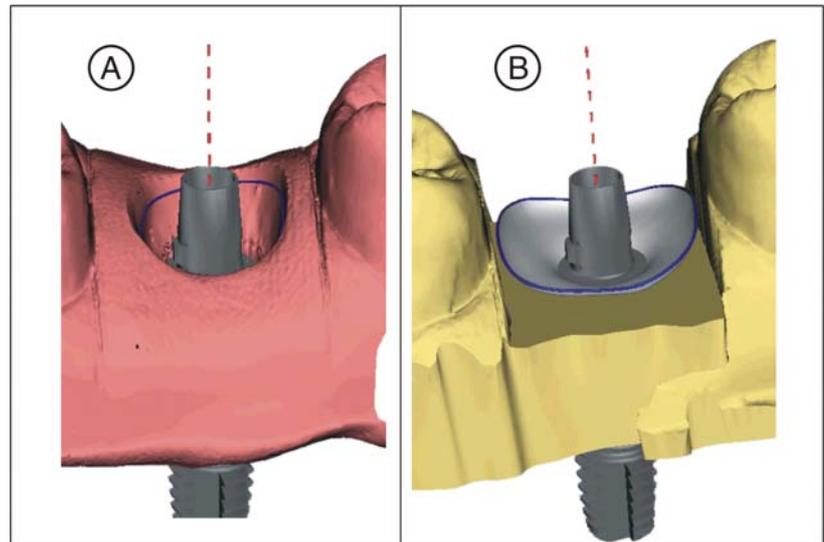
- ✓ The step *"Trim Area"* is active.
- Cut away the distal and mesial neighbors, so that you input an open line in each case (see *"Trimming the preparation [ → 115]"*). The area for the virtual gingival mask is defined mesially and distally through the trimming. If you have created a *"Gingiva Mask"* image catalog then this precise area can be displayed and hidden for the design. If you have created a *"Gingiva Mask"* image catalog, the area along the trim lines is made available for the design.

### 14.1.7 Select Scanbody

- ✓ The step *"Click Scanbody Head"* is active.
- Double-click the Scanbody you are working on.

### 14.1.8 Editing the baseline

Phase *"MODEL"* – Step *"Edit Base Line"*



If you have acquired a gingival mask, the baseline (emergence line, blue) will be suggested automatically (A).

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

**Option "Use Gingiva Mask"**

With the "Use Gingiva Mask" option, you can define whether or not the gingival mask is to be used for calculating the emergence profile.

**IMPORTANT**

This option is available only if a gingival mask was acquired in the "ACQUISITION" phase.

**14.1.9 Define restoration axis**

This work step can be skipped.

**14.1.10 Adjusting parameters****⚠ CAUTION**

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

- ✓ The "Restoration Parameters" step is optional.
- 1. Adjust the parameters where necessary.
- 2. Confirm the changes with "Ok".
  - ↳ The initial suggestion is then calculated automatically.

**14.1.11 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 "Page palette [ → 57]" section. 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.

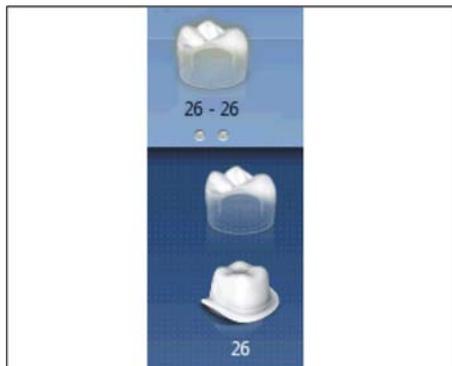
### Edit layers individually



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

1. Select the *"Split"* tool.

↳ The crown is displayed transparently.



2. With the mouse pointer, go to the bottom edge of the picture.

↳ The restoration range expands. 2 restorations are represented for the tooth position.

3. Click on the icon for crown or abutment, to toggle between the two restorations.

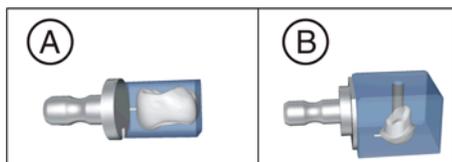
4. Use the tools from the page palette to edit whichever restoration is active.

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.

### 14.1.12 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 Creating a CEREC Guide 2

## 15.1 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 2. The surface scan is also used for the overlay of the x-ray volume.

### NOTICE

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 2 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.

## 15.2 3D x-ray and implant planning

A DVT scan 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 2, 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.

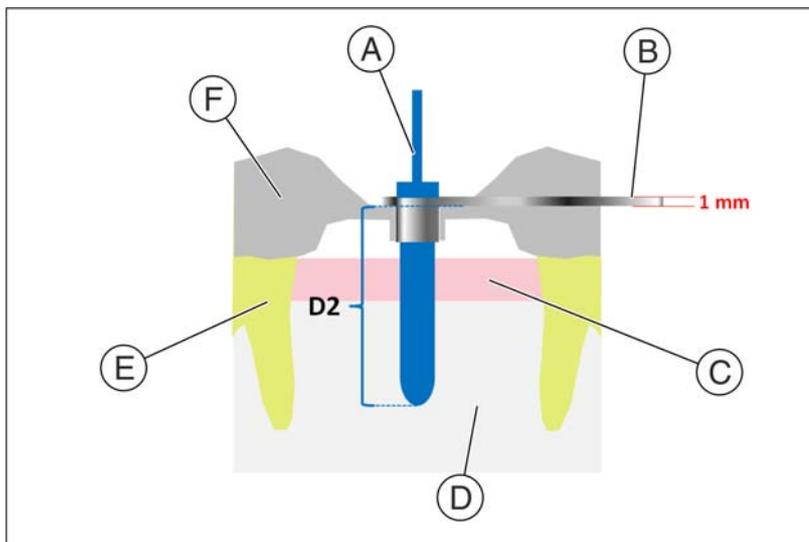
If multiple implants are to be planned, multiple \*.SSI data records must be imported.

To plan the implant follow the instructions provided in the "GALILEOS Implant 1.9.2" operator's manual. 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.

**NOTICE**

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.

## 15.3 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 machine type for development. This determines the possibilities for further processing.

### 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.

### Phase DESIGN

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, 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.

### Phase MANUFACTURE

Where necessary, ensure that you have activated "*Configuration*" the option "*MC XL Milling*".

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.

## 15.4 Surgical intervention

### CAUTION

Remove burrs and round sharp corners on the template element. Check that the template fits correctly beforehand where necessary using a model. The template element must be completely slid open and must not wobble.

Clean and disinfect the CEREC Guide 2 as described in the chapter below.

Select the drill key required which corresponds to the drills specified by the manufacturer of the guided system. Also adhere to the drill key assignment table.

Ensure that the drill key can fully enter the drill hole and stops there without wobbling.

1. Perform the implantation according to the implant manufacturer's instructions.
2. Fix the template in the mouth, holding it in position with your finger if necessary.

**Tip:** If you have created access to the drill from the side due to a lack of space, first place the CEREC Guide 2 into the patient's mouth. Then guide the drill key through the drill and push it upwards. Now guide the drill through the side into the sleeve position and lower the drill key to the stop point. Then start drilling.

# 16 Shortcut keys

## 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 + I      | Opens the file import dialog for importing a file.                       |
| Ctrl + E      | Opens the file export dialog for exporting a file.                       |
| Ctrl + Q      | Exits the application.   |
| F1            | Opens the Help section.  |

## 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.    |
| ALT + F2      | Opens the configuration, if it is available.        |

## Opening the tool wheel and page palette

| Shortcut keys | Meaning  |
|---------------|--|
| Alt + V       | Opens the <i>"View Options"</i> menu in the page palette.    |
| Alt+ T        | Opens the <i>"Tools"</i> menu in the page palette.           |
| Alt + D       | Opens the <i>"Display Objects"</i> menu in the page palette. |
| Alt +A        | Opens the <i>"Analyzing Tools"</i> menu in the page palette. |
| ALT + L       | Opens the <i>"Link Options"</i> menu.                        |

**Analyzing Tools**

| Shortcut keys  | Meaning   |
|----------------|---|
| Ctrl + O       | Displays or hides the occlusal contacts.          |
| Ctrl + C       | Starts/ends the (cross)section 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 | Shows the color of the model.                     |

**optical impression**

| Shortcut keys | Meaning   |
|---------------|---|
| Alt + C       | Open the menu to insert a new image catalog   |
| 1             | Change to the Lower Jaw image catalog   |
| 2             | Change to the Upper Jaw image catalog   |
| 3             | Change to the Buccal image catalog  |
| Arrow up      | Changes to the right, to the next image catalog.<br>If this is not yet available, the corresponding image catalog is applied. |
| Arrow down    | Changes to the left, to the next image catalog.<br>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   |
| +             | Starts the acquisitions in automatic acquisition mode   |
| -             | Ends the acquisitions in automatic acquisition mode   |

**Tools – Edit Restoration**

| Shortcut keys | Meaning                                       |
|---------------|---|
| Alt + F       | Opens the <i>"Form"</i> tool.                 |
| Alt + S       | Opens the <i>"Scale"</i> tool.                |
| Alt + B       | Opens the <i>"Biogeneric Variation"</i> tool. |
| Alt + C       | Opens the <i>"Contacts"</i> tool.             |
| Alt + M       | Opens the <i>"Move"</i> tool.                 |
| Alt + X       | Opens the <i>"Recalculate"</i> tool.          |

### Tools – Edit Model

| Shortcut keys | Meaning                         |
|---------------|---------------------------------|
| Alt + F       | Opens the " <i>Form</i> " tool. |

### Tools – Display Objects

| Shortcut keys | Meaning   |
|---------------|---|
| Ctrl + B      | Displays or hides the box of the model.         |
| Ctrl + M      | Opens the " <i>Minimal Thickness</i> " tool.    |
| Ctrl + U      | Hides the jaw which has the active restoration. |

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

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