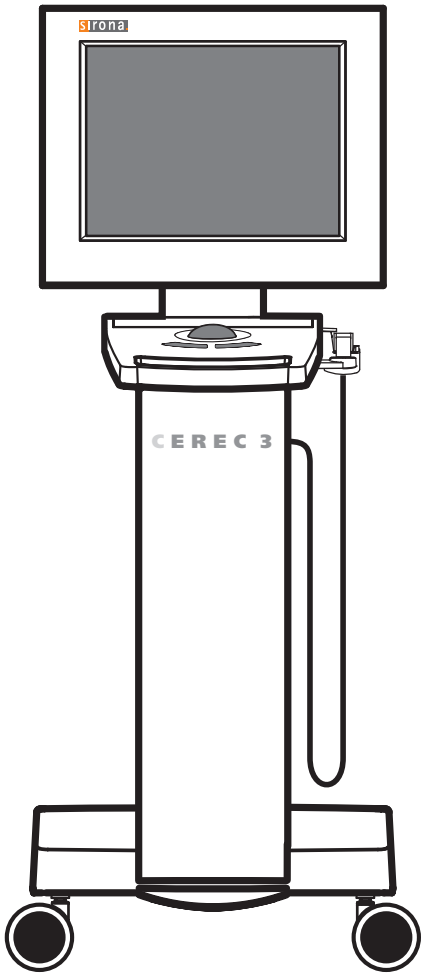
New as of: 09.2008

sirona
The Dental Company

CEREC 3

Operating Instructions for the Acquisition Unit

English



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1 Dear Customer

Thank you for purchasing your CEREC 3® from Sirona.

This device enables you to produce dental restorations, e.g. from ceramic material with a natural appearance (**CE**ramic **REC**onstruction).

Improper use and handling can create hazards and cause damage. Please read and follow these operating instructions carefully and always keep them within easy reach.

To prevent personal injury or material damage it is important to observe all safety information.

To safeguard your warranty claims, please complete the attached **Installation Report / Warranty Passport** when the system is handed over and send it to the indicated fax number.

Your
CEREC 3 Team

2 General information

CAUTION: Be sure to observe all warnings!
Please observe the warning and safety information provided to prevent personal injury and material damage. Any such information is highlighted by a signal word, i.e. WARNING, CAUTION or NOTE.

Please read these operating instructions completely and follow them exactly. always keep them within easy reach.

2.1 Structure of the documents

Structure of the documents

The symbols and character formats used in the present manual have the following meaning:

WARNING:
Identifies warnings where a medium risk of injury to persons exists if they are not observed.

CAUTION:
Identifies safety information where the following hazards exist if they are not observed: Slight risk of injury to persons, risk of property damage or damage to the product.

NOTE: Assistance
Identifies additional information, hints and tips.

✓ Prerequisite ➢ Action or ➢ **1.**, **2.**, … ↳ Result	Requests you to do something.
See chapter on "General information". [🗎 6]	Identifies a reference to another text passage.
▪ List	Identifies a list.
"Text between quotation marks"	Identifies commands, menu items or quotations.

2.2 Legend

Year of manufacture

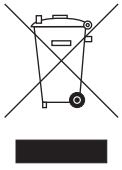
No mobile operation with an "uninterruptible power supply" (UPS)

The electrical safety of the acquisition unit can no longer be guaranteed and its operation is prohibited if one of the following points applies:

- The acquisition unit is operated with a connected and medically unapprovedUPS in the patient's surroundings.
- The acquisition unit is operated without a connected protective ground wire (e.g. mobile operation via UPS).

Safety label

Identifies labels/imprints on the unit (see Safety labels [🗎 11]).



Product disposal symbol (see "Disposal" [🗎 14]).

2.3 Warranty

To safeguard your warranty claims, please complete the attached Installation Report / Warranty Passport when the system is handed over. Then fax it to the specified fax no.

3 General description

3.1 Certification

CE mark

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

CAUTION: CE mark for connected products
Further products which are connected to this unit must also bear the CE mark.

Compliance

Any person who assembles or modifies a medical electrical system complying with the standard IEC 60601-1-1:2001 based on IEC 60601-1-1:2000 (safety requirements for medical electrical equipment) / UL 60601-1 Part 1: first edition 2003) by combining it with other equipment is responsible for ensuring that the requirements of this regulation are met to their full extent for the safety of the patients, the operators and the environment.

GOST mark

ИМ24

3.2 Intended use

In connection with the milling unit, the CEREC 3 acquisition unit is used to manufacture dental restorations, e.g. from a natural-appearing ceramic material.

In connection with the SIROCAM 3, the acquisition unit generates and displays intraoral video images.

If the unit is used for any application other that the one mentioned above, it may be damaged.

The intended use also includes observance of the present operating instructions and the relevant maintenance instructions.

NOTE: Follow the instructions
If the instructions for operating the unit described in this document are not observed, the intended protection of the user may be impaired.

4 Safety

4.1 Basic safety information

4.1.1 Prerequisites

NOTE: Important info on Building installation
The building installation must be performed by a qualified expert in compliance with the national regulations. DIN VDE 0100-710 applies in Germany.

NOTE: Restrictions regarding installation site
The system is not intended for operation in areas subject to explosion hazards.

CAUTION: Do not damage the unit!
The unit can be damaged if opened improperly.
It is expressly prohibited to open the unit with tools!

4.1.2 Connecting the unit

Perform connection by following the directions given in the present operating instructions.

WARNING:
As long as an inEos is connected to an acquisition unit, no exposures may be taken in the patient's mouth using the connected CEREC 3D camera.

4.1.3 General safety information

WARNING: Do not damage the monitor
DO NOT touch the LCD screen with sharp or pointed objects.
If the LCD monitor is damaged (e.g. the glass screen is broken), prevent any leaking liquid from contacting your skin, mucous membranes (eyes, mouth) or foodstuffs and be careful not to inhale any escaping vapors.
Rinse any parts of your body or items of clothing already contaminated by the liquid with ample amounts of water and soap.

CAUTION:
Note on the prevention, recognition and elimination of unintended electromagnetic effects:
The CEREC 3 acquisition unit is a Class B device (classified according to CISPR 11, EN 60601-1-2: 2001 based on IEC 60601-1-2).
This system may be operated in a residential area provided that it is used under the responsibility of a medical specialist.

⚠CAUTION: Install only approved software
To prevent interference with the runtime reliability of the program, only approved software may be installed.

⚠CAUTION:
Ventilation openings must not be obstructed.

4.1.4 Maintenance and repair

As manufacturers of dental instruments and laboratory equipment, we can assume responsibility for the safety properties of the unit only if the following points are observed:

- The maintenance and repair of this unit may be performed only by Sirona or by agencies authorized by Sirona.
- Components which have failed and influence the safety of the unit must be replaced with original (OEM) spare parts.

Please request a certificate whenever you have such work performed. It should include:

- The type and scope of work.
- Any changes made in the rated parameters or working range.
- Date, name of company and signature.

4.1.5 Modifications of the unit

Modifications to this unit which may affect the safety of the operator, patients or third parties are prohibited by law!

4.1.6 Accessories

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

4.1.7 SIROCAM 3

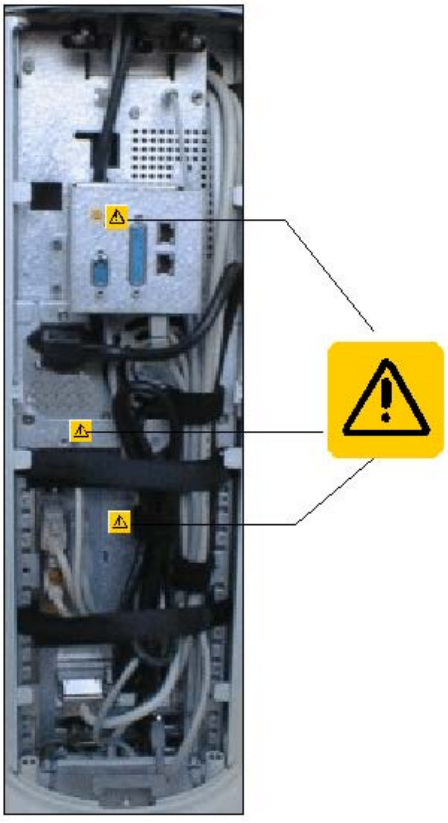
If a **SIROCAM 3** is installed, the **safety information** provided in the relevant operating instructions must be observed.

4.2 Safety labels

Fuses

⚠CAUTION:
Use ONLY fuses of the same type!

Plug connections of external interfaces



⚠CAUTION:
Additional devices connected to external interfaces must be tested according to the relevant standards, e.g.:

EN 60601-1:1990 + A1:1993 + A2:1995 based on IEC 60601-1, EN 60950-1:2001 based on IEC 60950-1:2001, EN61010-1:2001 based on IEC 61010-1:2001, UL 60601-1 Part1: first edition 2003, UL 60950 third edition 2000, UL 3101-1 Part 1 first edition 1993).

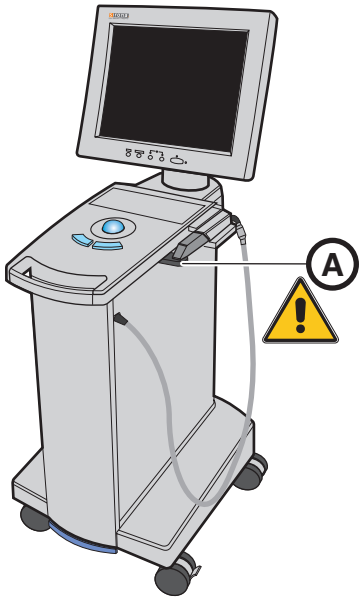
They must be installed outside of the patient area (a radius of 1.5m surrounding the patient.

⚠CAUTION:
Low voltages are applied to the sockets for connecting external interfaces.

➢ Do not touch the pins of the connectors.

⚠CAUTION:
The externally connected cables must not be subjected to pulling stress.

Heater plate



CAUTION:
Risk of burns due to hot surface!

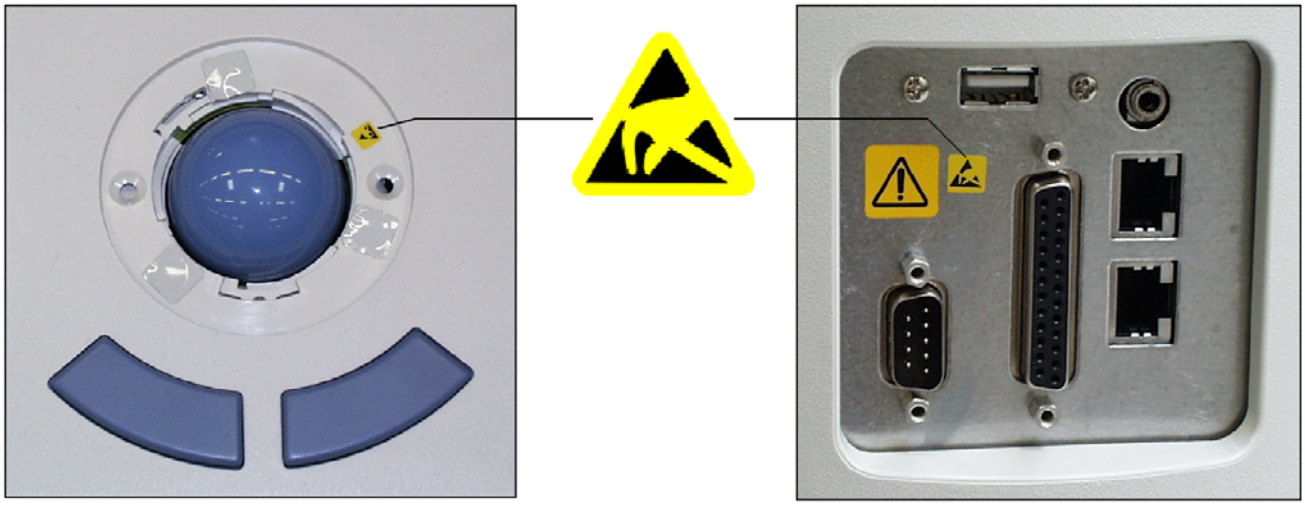
➢ Never touch the heater plate (**A**)!

4.3 Electrostatic charges

4.3.1 ESD warning labels

ESD warning label

CAUTION:
Connector pins or sockets bearing ESD warning labels must not be touched or interconnected without ESD protective measures.



4.3.2 ESD protective measures

ESD

ESD stands for **E**lectro**S**tatic **D**ischarge.

Training

We therefore recommend that all persons working with this system be instructed on the significance of this warning label. Furthermore, they also should receive training in the physics of electrostatic discharges which can occur in the practice and the destruction of electronic components which may result if such components are touched by electrostatically charged USERS.

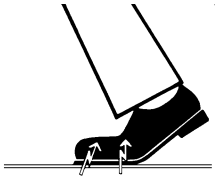
The content of this training is explained in the Chapter "About the physics of electrostatic charges" [13].

4.3.3 About the physics of electrostatic charges

What is an electrostatic charge?

An electrostatic charge is a voltage field on and in an object (e.g. a human body) which is protected against conductance to ground potential by a nonconductive layer (e.g. a shoe sole).

Formation of an electrostatic charge



Electrostatic charges generally build up whenever two bodies are rubbed against each other, e.g. when walking (shoe soles against the floor) or driving a vehicle (tires against the street pavement).

Amount of charge

The amount of charge depends on several factors:

Thus the charge is higher in an environment with low air humidity than in one with high air humidity; it is also higher with synthetic materials than with natural materials (clothing, floor coverings).

NOTE:
Electrostatic discharge must be preceded by electrostatic charging.

The following rule of thumb can be applied to assess the transient voltages resulting from an electrostatic discharge.

An electrostatic discharge is:

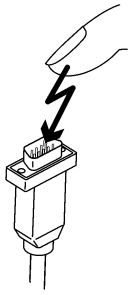
- perceptible at 3,000 V or higher
- audible at 5,000 V or higher (cracking, crackling)
- visible at 10,000 V or higher (arc-over)

The transient currents resulting from these discharges have a magnitude of 10 amperes. They are not hazardous for humans because they last for only several nanoseconds.

Background

Integrated circuits (logical circuits and microprocessors) are used in order to implement a wide variety of functions in dental/X-ray/CEREC systems.

The circuits must be miniaturized to a very high degree in order to include as many functions as possible on these chips. This leads to structure thicknesses as low as a few ten thousandths of a millimeter.



It is obvious that integrated circuits which are connected to plugs leading outside of the unit via cables are sensitive to electrostatic discharge.

Even voltages which are imperceptible to the user can cause breakdown of the structures, thus leading to a discharge current which melts the chip in the affected areas. Damage to individual integrated circuits may cause malfunction or failure of the system.

To prevent this from happening, the ESD warning label next to the plug warns of this hazard. ESD stands for **E**lectro**S**tatic **D**ischarge.

4.4 Disposal

Disposal

Please observe the disposal regulations applicable in your country.

Within the European Economic Area, this product is subject to Directive 2002/96/EC as well as the corresponding national laws. This directive requires environmentally sound recycling/disposal of the product.

The product must not be disposed of as domestic refuse!

Please contact your dealer if final disposal of your product is required.

4.4.1 Additional note on disposal

The PC motherboard contains a lithium battery.

4.5 Wireless phone interference with equipment

The use of mobile wireless phones in practice or hospital environments must be prohibited to ensure safe operation of the unit.

4.6 Disturbance of data transmission

Note on wireless communication

The data communication between the CEREC 3 acquisition unit and the CEREC MC XL milling unit should preferably be implemented via WLAN. As for all wireless connections (e.g. mobile telephones) heavy utilization of the available radio channels or shielding caused by building installations (e.g. metal-shielded X-ray enclosures) may impair the quality of the connection. This may become noticeable through a reduction in range and/or a slower data transmission rate. In extreme cases, it will be impossible to establish a wireless connection.

Sirona has selected the best possible configuration for data communication via WLAN, which generally provides perfect functioning of this connection. However, in individual cases unrestricted wireless data communication may be impossible for the reasons mentioned above and/or due to local circumstances. In such cases, a cable LAN connection should be selected to ensure uninterrupted operation.

4.7 Disturbance of data transmission via radio module (option)

DECT radio module

Data transmission may be adversely affected in the following cases:

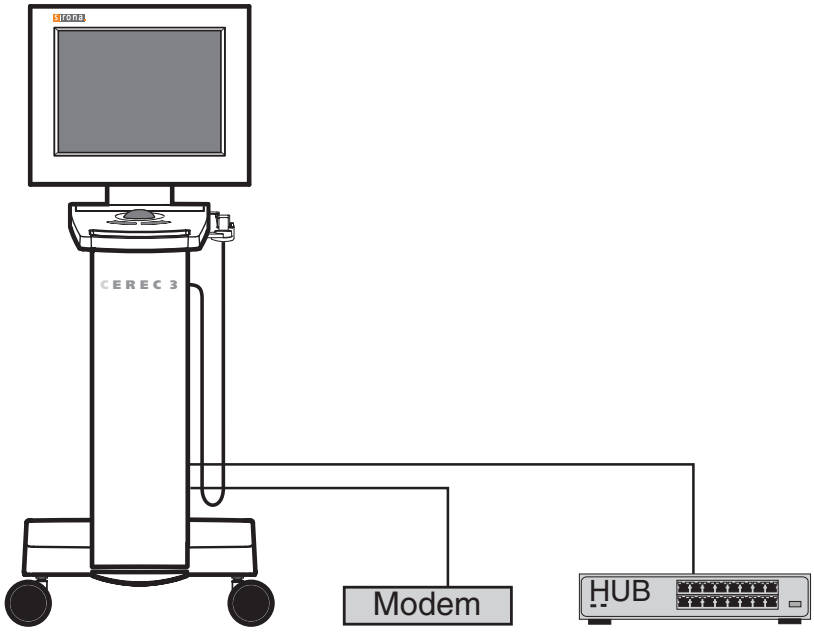
- if more than 6 pairs of radio interfaces are used in one area
- if an E-net mobile phone is used near the radio interface

Höft&Wessel radio module

Data transmission may be adversely affected if more than 8 pairs of radio interfaces are used in one area.

If the radio module is operated in Norway, please note that it must not be operated within a radius of 20 km around Ny-Alesund.

4.8 Integration in a network or connection to a modem



⚠CAUTION: Observe the following installation regulations
The following installation regulations apply to integration of the acquisition unit in a network or connection of the acquisition unit to a modem:

Network

The acquisition unit may be operated in a network only if it is connected to a hub/switch. The hub/switch must:

- be located in the room where the acquisition unit is operated, **permanently installed**.
- be grounded via an **additional ground wire**.

Cross-section of the protective ground wire	laid protected	2.5 mm^2
	laid unprotected	4 mm^2

Modem

At least one of the following specifications must be fulfilled in order to operate the acquisition unit on a modem:

- If a modem is connected, the acquisition unit may be operated only outside of the patient area (radius of 1.5 m surrounding the patient).
- An RS232 isolator must be installed at the modem end in the connecting cable between the acquisition unit and the modem as a separator according to EN 60 601-1-1 with a dielectric strength of at least 1.5 kV.

5 Technical data

Type designation	CEREC 3 Acquisition unit
Rated line voltage for Europe	230 VAC / 50Hz
Rated current for Europe	1.3 A
Rated line voltage for the USA	115VAC / 60Hz
Rated current for the USA	3.0 A
Rated line voltage for Japan	100VAC / 50Hz u. 60Hz
Rated current for Japan	3.0 A
Type of protection against electric shock	Unit classified as Protection class I
Type of protection against electric shock (3D camera, SIROCAM camera)	Type BF applied part 
Degree of protection against ingress of water	Ordinary device (without protection against ingress of water)
Ambient temperature	10°C to 35°C
Mode of operation	Continuous operation
Dimensions (WxHxD) in mm	418 x 1110 x 570
 Sign: CAUTION	Observe accompanying documents
Weight	
▪ Without monitor approx.	36 kg
▪ Monitor approx.	4 kg

6 Installation and startup

6.1 Transport and unpacking

All products from Sirona are carefully checked prior to shipment. Please perform the incoming inspection immediately after delivery.

1 Check the delivery note to ensure that the consignment is complete.

2 Check whether the product shows any visible signs of damage.

NOTE: Damage during transport
If the product was damaged during transport, please contact your carrying agent.

If return shipment is required, please use the original packaging for shipment.

To prevent damage to the LCD monitor, it must be removed during transport of the unit.

To prevent damage to the heater and the holder, these parts must be protected against damage during transport (see protective packaging).

6.2 Disposal of packaging materials

The packaging must be disposed of in compliance with the relevant national regulations. Please observe the regulations applicable in your country.

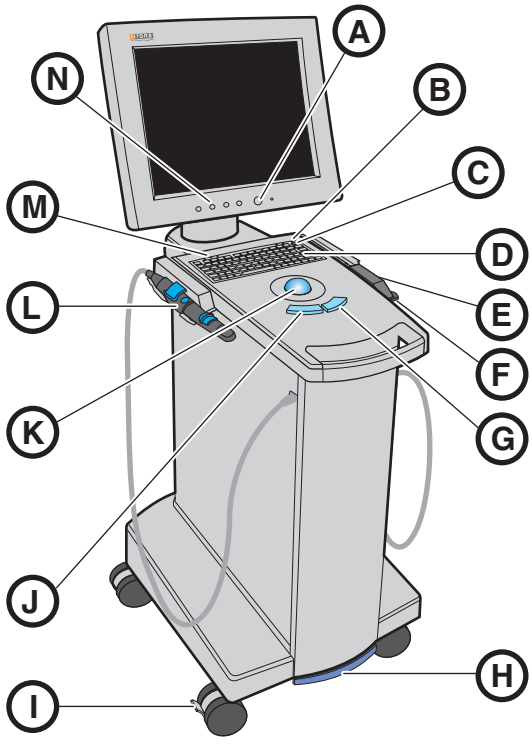
6.3 Scope of supply

The exact scope of supply is specified in the document "Scope of supply of the CEREC 3 acquisition unit".

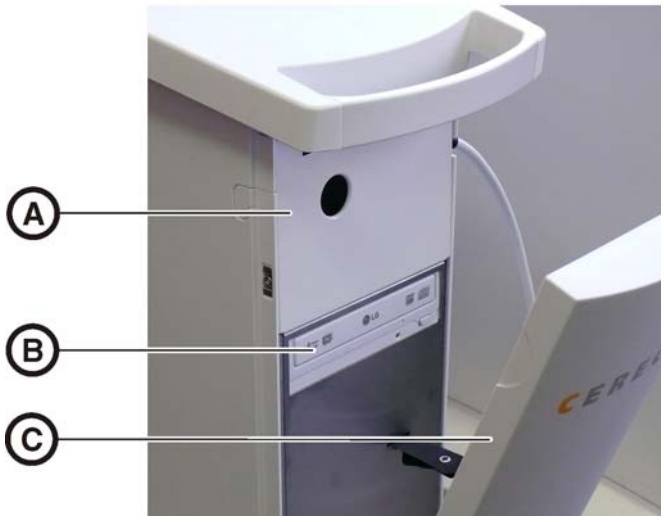
6.4 Initial startup

6.4.1 Controls and functional elements

Overview of the front panel



A	Monitor ON/OFF switch	H	Foot switch/foot pedal
B	Operating state LED	I	Locking brake
C	ON button	J	Left trackball button
D	Membrane keyboard	K	Trackball
E	CEREC 3D camera	L	SIROCAM 3 (option)
F	Heater plate for prismatic tube	M	LEDs without function
G	Right trackball button	N	Keys for monitor settings

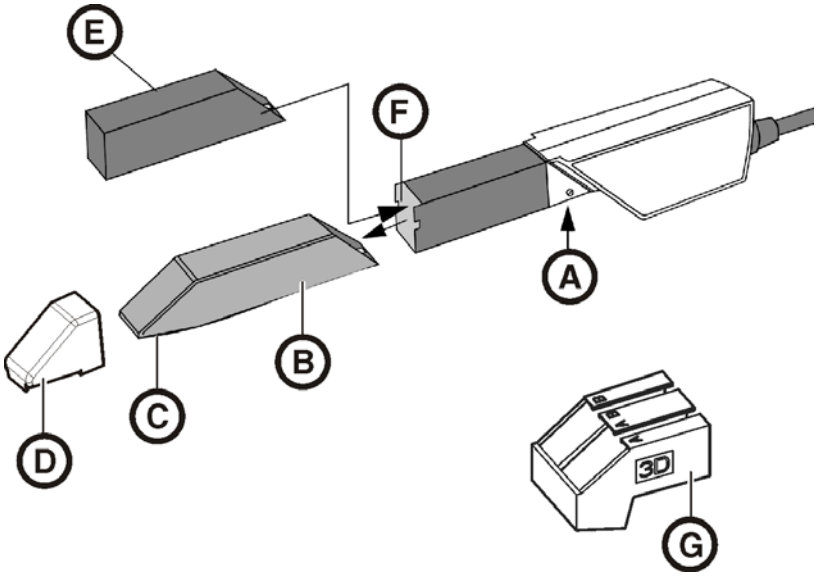


A Cover plate

B DVD drive with indicator light and CD/DVD eject button

C Front cover

Components of the 3D camera



A Press at bottom to remove

B Prismatic tube

C Prism

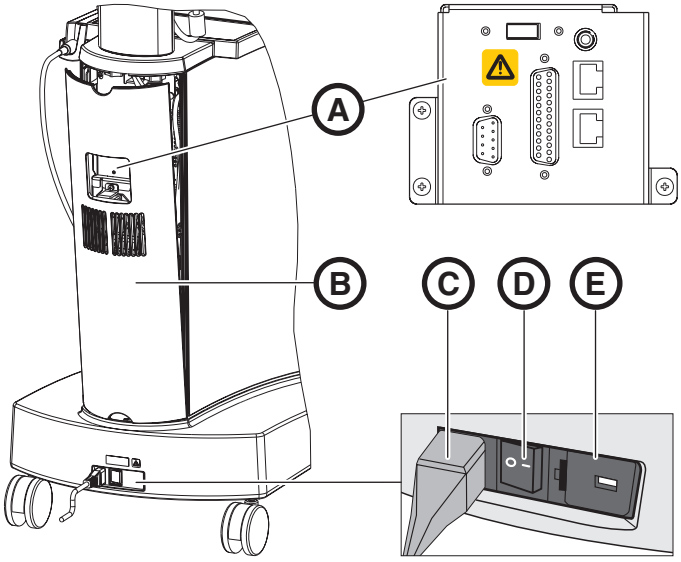
D Camera support
6 pcs, Order No. 59 45 360

E Protective cap

F Front lens

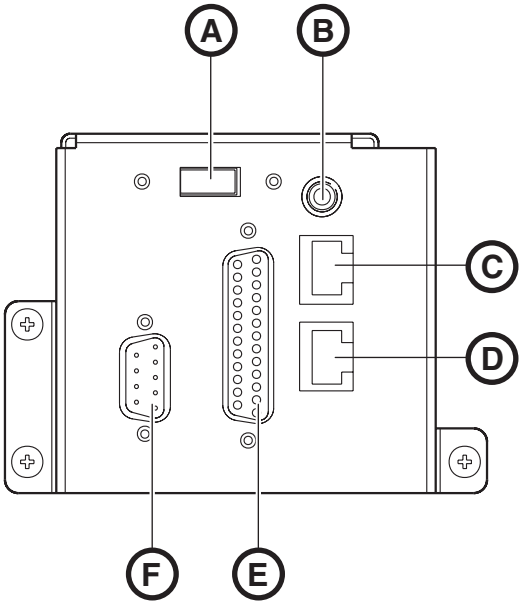
G 3D calibration set

Ports on the back side



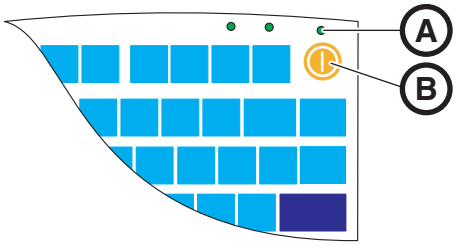
A	Adapter plate (optional)	D	Main switch **I** = ON, **0** = OFF
B	Rear cover	E	Fuses
C	Power connection		

Adapter plate (optional)



A	USB port	D	Network connection
B	External audio connection (e.g. headphones)	E	Parallel interface
C	Without function	F	Serial interface

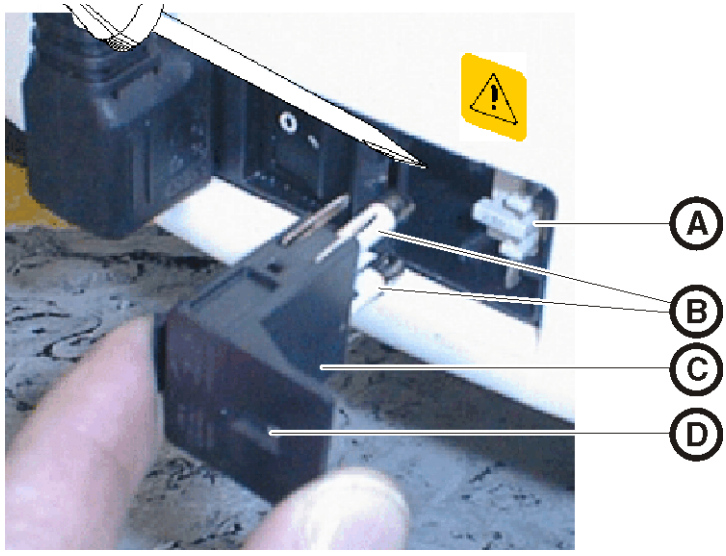
6.4.2 Operating state LED



A	Operating state LED
B	ON button

LED not lit:	Acquisition unit is switched off at main switch.
LED lights up yellow:	Acquisition unit is switched on at main switch, Windows is shut down and the PC is switched off.
LED lights up green:	Acquisition unit is switched on at ON button and ready for operation.

6.4.3 Line voltage



A	Voltage selection insert	C	Fuse module
B	Main fuses	D	Window

➢ Check the set Line voltage The value of the line voltage must be visible in the window with the module inserted (230V in Europe and 115V in the USA). If the set voltage does not agree with the actual line voltage, you must change this setting:

⚠WARNING: Risk of electric shock
Electric shock due to inserted power plug.

➢ Disconnect the power plug before selecting the line voltage.

✓ The line voltage can setting be switched from 230V to 100V /115V or vice versa.

1. To do this, unlatch the fuse module with a screwdriver and pull the module out.
2. Then pull out the voltage selection insert and turn it so that the correct line voltage value is visible after it is reinserted.
3. Reinsert the fuse module.

6.4.4 Plug connections

1. Connect the unit to the line voltage with the power cord.
2. Check the plug connections of the power supply and the CEREC 3D camera. The camera cable must be connected to the 3D camera and securely screwed on. The 3D camera always remains connected.

⚠CAUTION:
The 3D camera is a high-precision optoelectronic measuring instrument which requires careful handling. Incorrect handling (impacts, dropping) leads to failure of the 3D camera.

➢ Always deposit the sensitive 3D camera in its holder!

3. If the 3D camera must be replaced, carefully plug in the connector, watching out for the guide nose, and screw it down tight.

⚠CAUTION:
The Additional devices and the acquisition unit must be connected to separate, permanently installed sockets.

Information on Network installation

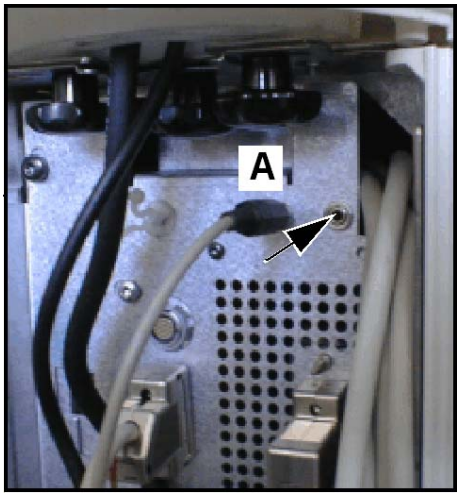
The network card is installed.
The cable with the RJ-45 connectors establishes the network connection. The network software and the driver for the network card must be installed by your network administrator.

The acquisition unit is equipped with a WLAN card that is preconfigured for operation with an MC XL milling unit. The integration of the acquisition unit into the practice network with the aid of the WLAN card is not supported by Sirona.

Communication with the CEREC 3 milling unit

The acquisition unit contains a preconfigured radio interface for data communication with the CEREC 3 milling unit.

6.4.5 Changing from right-handed to left-handed operation



In the factory default setting, the left trackball button corresponds to a foot switch entry. If you would like to change this assignment to the right trackball button (e.g.: left handed setting), connector (**A**) must be replugged on the back of the unit.

The software changeover from **right-handed**to **left-handed** operation is described in the Windows help function (F1, mouse buttons, swap).

6.4.6 Switching the units on

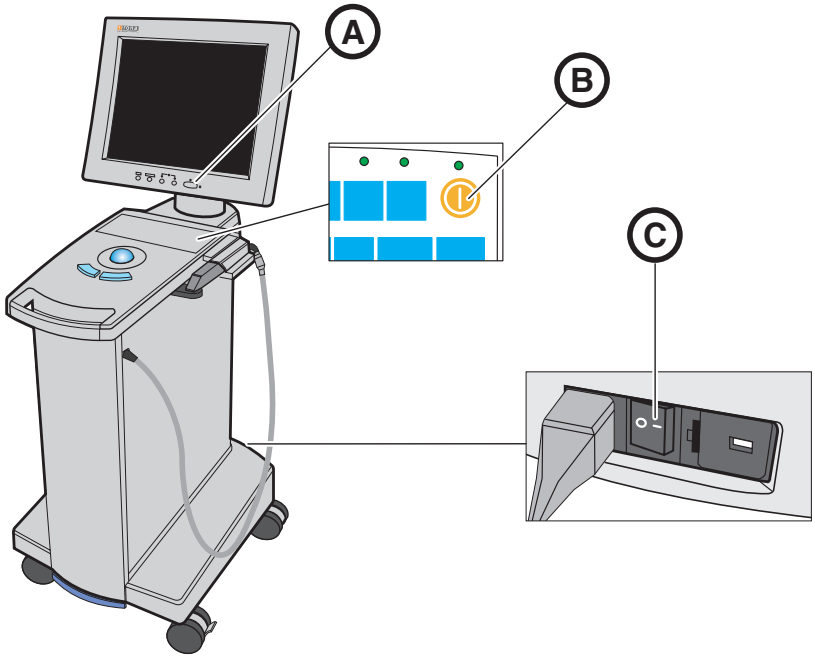
⚠CAUTION: Do not put the unit into operation at low temperatures!
If you move the unit to the operating site from a cold environment, condensation may form and result in a short circuit.

✓ Install the unit at room temperature.

➢ Wait until the unit has reached room temperature and is absolutely dry (for at least one hour)

↳ The unit is dry and can be put into operation.

If the acquisition unit is switched on at the mainswitch, then it can be switched on at the **ON button**. The monitor is switched on and off automatically (if it was switched on before the acquisition unit was switched off).
At theyou can switch on and off with the**monitor ON/OFF switch**.



A	Monitor ON/OFF switch	C	Main switch
B	ON button		

1. Switch the acquisition unit on at the **main switch**.
2. Switch the acquisition unit on at the **ON switch**.

⚠CAUTION: Possible data loss and PC malfunction:
Switching the exposure unit off at the ON button during operation may cause data loss and PC malfunctions.

➢ Always switch the unit off as described in the chapter "Switching the units off".

3. Switch the monitor **on**.

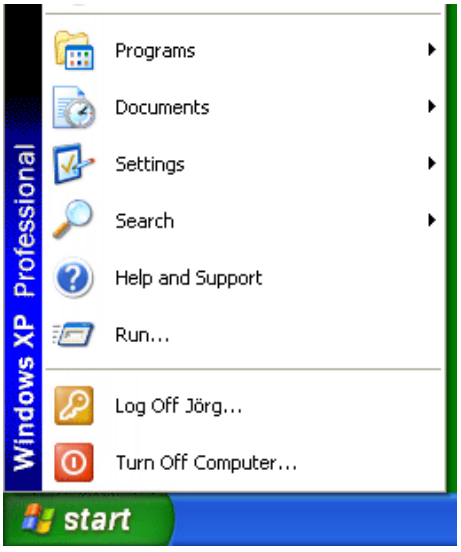
4. Switch the milling unit on (see the **Operating Instructions for the Milling Unit**).
5. After loading the operating system, start the CEREC 3D application by double-clicking the CEREC icon.
6. For descriptions of further software actions, an online help function can be invoked with "F1 or via the **Help...** menu option.

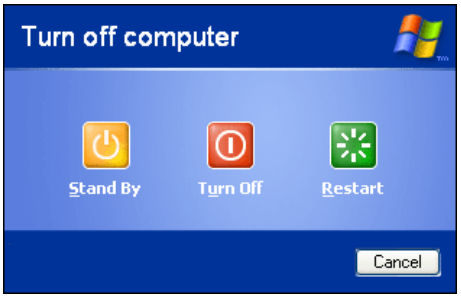
NOTE:
Internet Explorer V 5.0 or higher must be installed on your system in order to use the online help function.

6.4.7 Switching the units off

CAUTION: Proper shutdown procedure
The operating system must always be shut down properly to prevent data loss.

1. Exit all programs.
2. Open the start menu using the "`start`" button.
3. Select "`Turn Off Computer...`" function.





4. Select the option "`Turn Off`" in the corresponding dialog box.

   ↳ The PC automatically switches off. The operating state LED lights up yellow.
5. Switch the acquisition unit off at the main switch.

   ↳ The operating state LED goes out.

NOTE:
Now you can also switch the milling unit off if necessary.

7 Operation

7.1 Setting the acquisition system to 3D camera

✓ In order to use the 3D camera, the acquisition must be set to "3D camera".

1. Select the command "Settings" / "Configuration" / "Acquisition system" in the menu line.

   ↳ The "Configuration" dialog box appears.

2. Select "3D camera" and confirm with "OK".

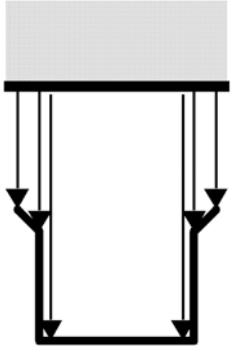
↳ The 3D camera will remain selected until you select "Scanner" or "inEos".

7.2 General

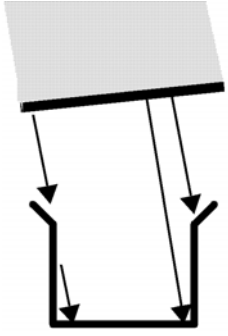
Aligning the 3D camera

The direction of acquisition must coincide with the insertion axis of the preparation prepared by the dentist.

If the camera is held at an oblique angle to the prepared insertion axis, the wall closer to the lens will be registered with an undercut; the wall further away from the lens will be fully displayed, thus causing the occlusal margin angle to be presented unfavorably there and obstructing the automatic margin detection.



right

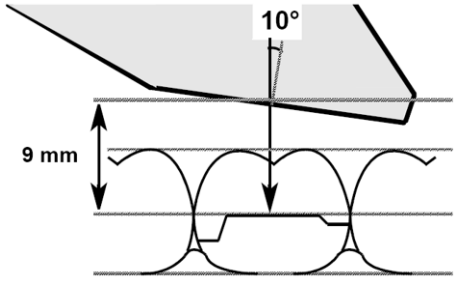


wrong

Depth of focus and focusing

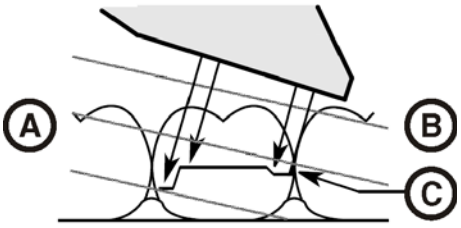
The telecentric optics, which cause objects to be displayed with a constant size regardless of how far away from the prism they are, have a depth of focus which is sufficient to capture deep preparations.

The image definition is determined by the distance between the 3D camera and the preparation.



➢ **Check the monitor** to determine whether the cervical steps and the occlusal margins are simultaneously displayed with sufficient definition. The center of focus should be aimed at the vertical center of the preparation, e.g. at the occlusal base.

Angle of incidence/steepness



If the angle of incidence of the 3D camera is too large, the mesial cervical step moves outside of the focal depth range of the 3D camera as shown in the illustration. Distally, the cervical step is concealed by the distal neighbors with the excessively steep angle shown here. This leads to an inadequate "optical impression".

7.3 Preparations

Surface

The surface of the preparation is captured with an especially fast and precisely functioning optical measuring technique. This measuring technique requires a non-glare, diffusely reflecting surface. The surface must be covered with a thin, opaque coating in order to obtain even light dispersion, exclude blinding effects and obtain clear surface definition. This is the precondition for a high-contrast image and good optical measurement.

1. Distribute the CEREC liquid over the surfaces thinly and evenly and blow it out fine.
2. Powder the surfaces with an even and thin coating.

NOTE: Thin and even coating
Please try to deposit as thin and even a coating as possible on all surfaces, especially in the edge and marginal regions.

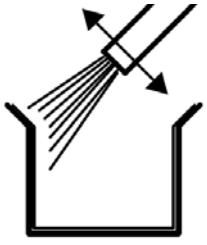
Application of powder

The CEREC powder is sprayed on with a CFC-free propellant. It can be removed without leaving any residue using water spray.

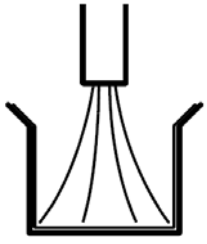
1. **The powder bottle may be filled only approx. 1/3 full! No refilling is necessary.** This low filling level ensures that you will obtain optimal results when applying the powder. **Always use only the original powder bottle filled approx. 1/3 full!**
2. The powder bottle should be held as upright as possible during the coating process. You can rotate the cannula in order to reach all areas.

3. Immediately before application, tap the powder bottle **(A)** gently to remove any possible powder deposits from its outlet.
4. Please do not shake the entire powder bottle. This may cause an uncontrolled amount of powder to be dispensed when you initially start applying the powder.
5. Dosing should be performed with a fine touch. Always try to apply as thin and even a coating to the cavity as possible.

Direction of application



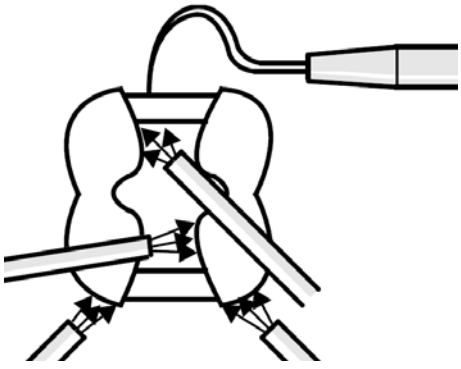
right



wrong

It is essential to apply the powder perfectly, especially in the edge and marginal areas. It is therefore advisable to aim the cannula directly at all edge and marginal areas. Spraying directly onto the bottom may result in an excessively thick layer of powder resulting in fitting inaccuracy.

Marking the cervical step



The cervical and lateral edges are coated from the proximal direction.

If the cervical step is located at the same height as the edge of the gingiva, the powder may cover the borderline between these two structures.

This boundary can be marked again by running a fine probe along the step or laterally pulling a rubber cofferdam.

Before you start powdering, you can loosely insert dental floss and then carefully remove it again.

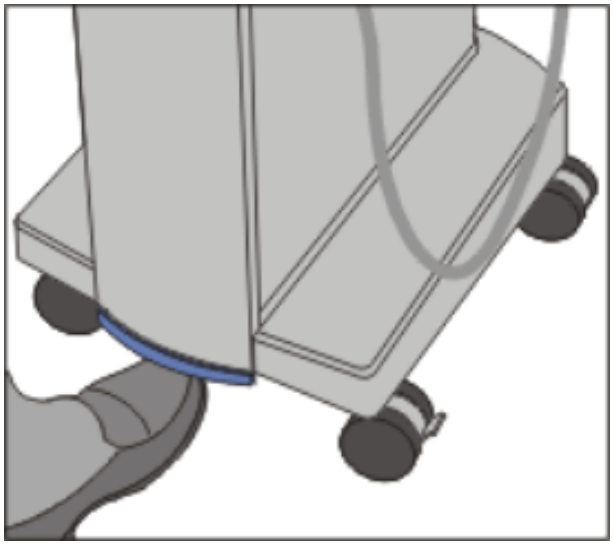
NOTE:
Excessively heavy and excessively light coats of powder should be avoided. To avoid excessively heavy powdering, we recommend blowing off the object with compressed air after you powder it.

7.4 Acquisition control

The acquisition control of the3D camera functions as follows:

✓ A window is opened for a new restoration.

1. Position the cursor on the acquisition icon (e.g. "`Acquire preparation`").



Acquisition unit foot switch

2. Press the **foot switch upward** and **keep it pressed**.

   ↳ A live video image appears.

3. Release the foot switch.

   ↳ The live video image changes into a still image.

4. **Actuate** the foot switch briefly.

   ↳ The still image is transferred to the image catalog (e.g. the Preparation image field).

5. Additional optical impressions can be captured by repeating steps 1 to 4.
6. By positioning the cursor on another acquisition icon (e.g. "`Acquire occlusion`" or "`Acquire antagonist`") and repeating steps 2 to 5, additional optical impressions can be sent to the occlusion or antagonist image fields.
7. To exit the acquisition mode, click the "`Next`" icon.

7.5 Capturing the optical impression

NOTE:
For more details, please refer to the chapter "Optical impression, exposures with the 3D camera" in the CEREC 3D Operator's Manual.

Once you have selected a tooth and the design technique, the "Acquire preparation" icon is activated on the tool bar. The cursor then jumps to this icon.

⚠CAUTION: Handling the 3D camera
The 3D camera is a high-precision optoelectronic measuring instrument which requires careful handling. Incorrect handling (impacts, dropping) leads to failure of the 3D camera.
Do not support the camera head (prism) on a tooth. Use the camera support for this purpose.

Camera support

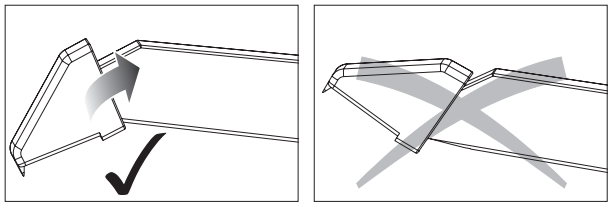
Using the camera support gives you the following advantages:

- You obtain optical impressions 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.

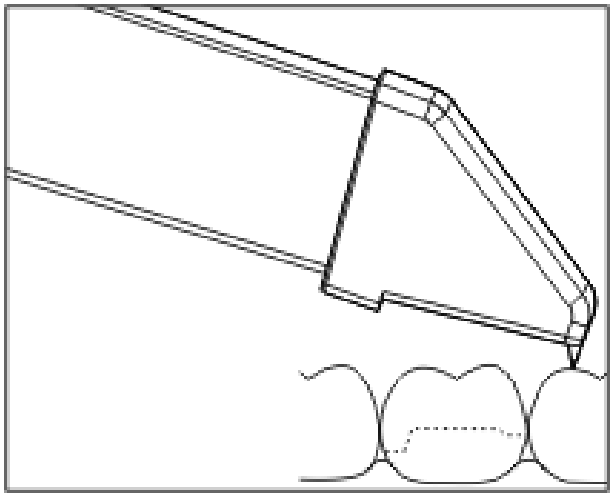
Preparing the optical impression

1. Push the camera support onto the camera as illustrated.



Pushing on the camera support

2. Position the 3D camera over the powdered preparation.



Supporting the 3D camera

3. Support the 3D camera with the front part of the camera support on a tooth so that you can hold it quietly during the acquisition phase.

NOTE: 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.

Capturing the optical impression

1. Press the **foot switch upward** and **keep it pressed** (see "3D camera acquisition control" [30]).

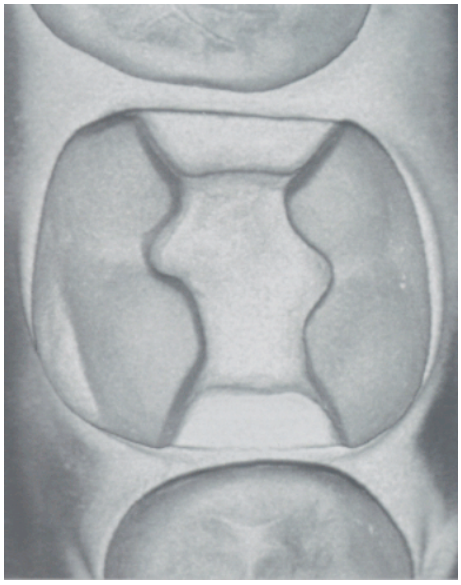
   ↳ As long as you keep the foot pedal pressed, you will see a live video image of the preparation to be captured on the screen.

NOTE: Image brightness

The image brightness during the acquisition is controlled automatically, so that there is always optimum image brightness, largely independent of the distance between the 3D camera and the tooth.

The surroundings of the tooth to be acquired should be as weakly illuminated as possible. Avoid any type of external light. Switch off the dental lamp and also the room light, if necessary.

2. Watch out for undercuts on all lateral cavosurface margins of the preparation.



3. If you are satisfied with the insertion axis determined by the 3D camera positioning, you can initiate the three-dimensional acquisition of the preparation by releasing the foot pedal.

   ↳ The live video image changes into a still image.

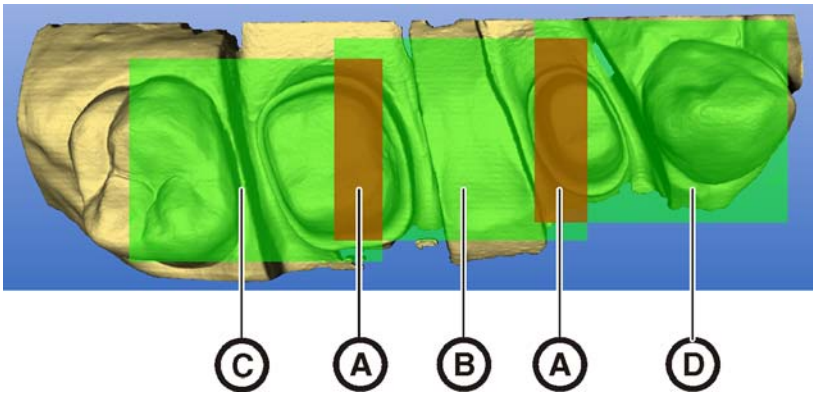
NOTE: Acoustic signal
To help avoid blurred images caused by withdrawing the 3D camera too early, an acoustic signal sounds as soon as the acquisition is completed. Make sure that the Windows volume control is not set to the lowest position and that “Sound off” is not activated.

4. Then check the above points once again. Take care that the optical impression is **sufficiently bright**, **sharp** and **free of motion blurring**. Non-observance of these points can have a negative influence on the further procedure.
5. Actuate the foot switch briefly.

   ↳ The still image is transferred to the image catalog.

Additional optical impressions can be captured by repeating the steps described in "Capturing the optical impression".

7.6 Acquisition of a 3-unit bridge



A	Overlap area	C	2. Optical impression
B	1. optical impression, central	D	3. Optical impression

To produce bridge frameworks of up to 3 elements, you can acquire the tooth situation with the 3D camera. Make sure there is always dental substance visible in the overlap area of the acquisitions (areas **A**). Start in the center with the 1st impression (**B**).

8 Maintenance

NOTE:
Some countries have legal regulations which require regular safety inspections of electrical devices or systems by the operator.

NOTE:
Annual maintenance performed by trained technical personnel is recommended.

8.1 Care and cleaning agents

NOTE: Approved care and cleaning agents
Use only care and cleaning agents which have been approved by Sirona!

A continuously updated list of approved agents can be downloaded from the Internet at:
"www.sirona.com" / "SERVICE" / "Downloads" / "Care and cleaning agents"

If you do not have any access to the Internet, you can order the list in one of the following two ways:

- Order from your local dental depot
- Order from Sirona:
  Tel: ++49 (0) 62 51 / 16-16 16
  Fax: ++49 (0) 62 51 / 16-18 18

Order No.: **59 70 905**

8.2 Care and cleaning of the monitor

Disinfecting

The glass screen and housing of the monitor can be disinfected by wiping them with a soft cloth.

CAUTION:
Use only care and cleaning agents which have been approved by Sirona (see Care and cleaning agents [34])!

CAUTION:
Never spray the monitor with Disinfectants or cleaning agents!

Cleaning

CAUTION:
Do not allow liquids to penetrate into the ventilation slots!

CAUTION:
Never use corrosive cleaning agents, wax or solvents.

Remove any dirt and disinfectant residues **regularly** using a mild commercial cleaning agent.

Do not use any **colored cloths** for cleaning, since they may cause discoloration of the surfaces, e.g. in combination with disinfectants!

8.3 Surfaces (without monitor)

Disinfecting

Either spray or wipe disinfection may be performed with surface disinfectants. Observe the manufacturer's instructions regarding restrictions for use.

Please follow the instructions for disinfecting the 3D camera provided under "Care of the 3D camera [39].

CAUTION:
Use only care and cleaning agents which have been approved by Sirona (see Care and cleaning agents [34])!

Cleaning

CAUTION:
Do not allow liquids to penetrate into the ventilation slots!

CAUTION:
Never use corrosive cleaning agents, wax or solvents.

Remove any dirt and disinfectant residues **regularly** using a mild commercial cleaning agent.

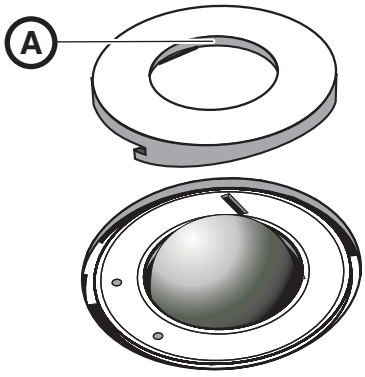
Do not use any **colored cloths** for cleaning, since they may cause discoloration of the surfaces, e.g. in combination with disinfectants!

Protection against medicaments

Due to their high concentrations and the substances they contain, many medicaments can dissolve, etch, bleach or discolor surfaces.

CAUTION:
The only way to prevent damage is to **wipe off medicaments immediately** with a damp cloth and a cleaning agent!

8.4 Cleaning and setting the trackball cover ring



WARNING: Risk of electric shock!
Switch the unit off at the main switch.

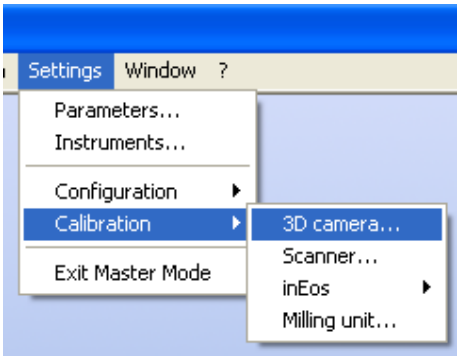
1. Rotate the cover ring counterclockwise and remove it.
2. Clean inner surface of cover ring (**A**) with ethanol (commercially available cleaning alcohol).
3. Fit the cover ring and turn it clockwise until it is firmly tightened.

NOTE: Adjust the ease of action of the trackball
For cover rings with various detent positions, the ease of action of the ball can be set by selecting the corresponding detent position.

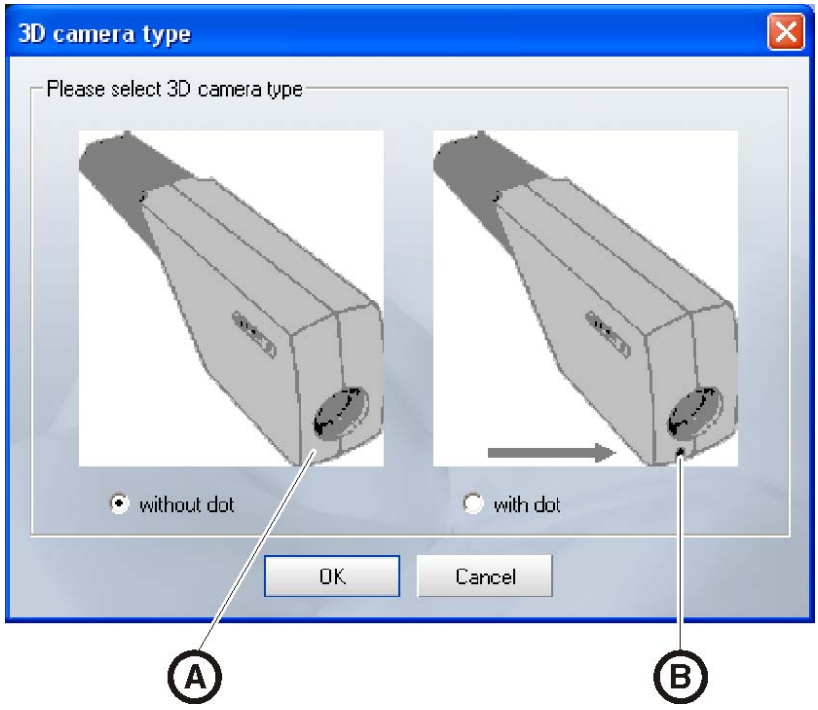
8.5 Calibrating the 3D camera

The scanning technique used by the system requires the use of a calibrated 3D camera. The The 3D camera is factory calibrated. If calibration is required due to improper handling, you can use the supplied "`3D calibration set`" for this purpose.

CAUTION:
The "`3D calibration set`" must not be powdered.



1. Select the menu item "`Settings`" / "`Calibration`" / "`3D camera`".
   ↳ The following dialog box is displayed:



A 3D camera without dot

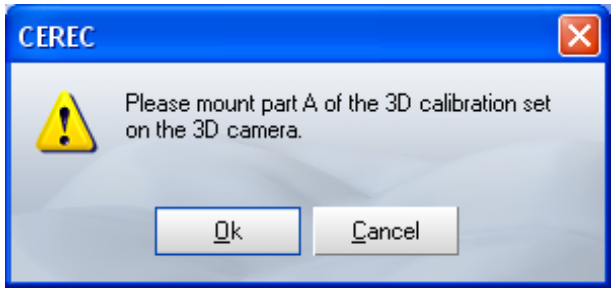
B 3D camera with dot

2. In this dialog box, you must select the appropriate 3D camera and confirm with "OK":

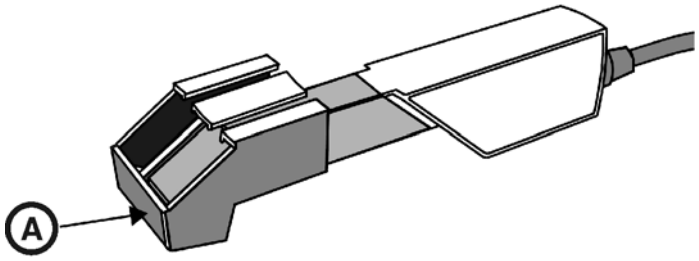
NOTE:
The 3D camera with dot may be used only with a PC that is equipped with HW EC or higher and SW version 2.20 R1510.

Part A Calibration

You will be prompted to fasten the **3D calibration set** with **part A** (flat surface) to the 3D camera.



CAUTION:
Make sure that the flat surface (part A) and the surface with the cross (part B) in the "3D calibration set" are free of dirt and grime.



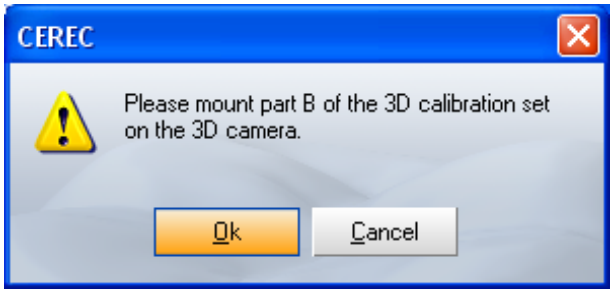
A Part A, flat surface

1. Slide the "3D calibration set" toward the camera handle as far as it will go.
2. Click the "OK" button.

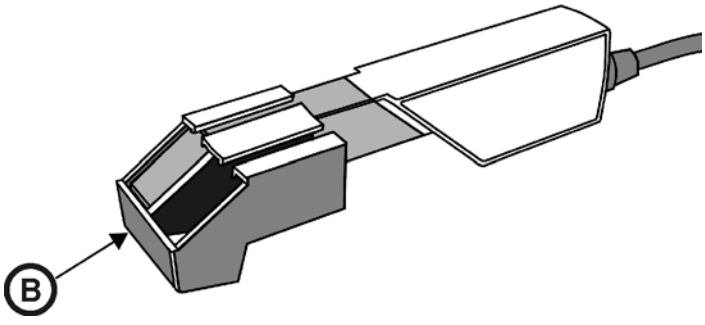
   ↳ The program now automatically starts calibrating the 3D camera.

Part B Calibration

You will then be prompted to fasten the "3D calibration set" with **part B** (surface with cross) to the 3D camera.



⚠CAUTION:
Make sure that the surface with the cross (part B) in the "3D calibration set" is free of dirt and grime.

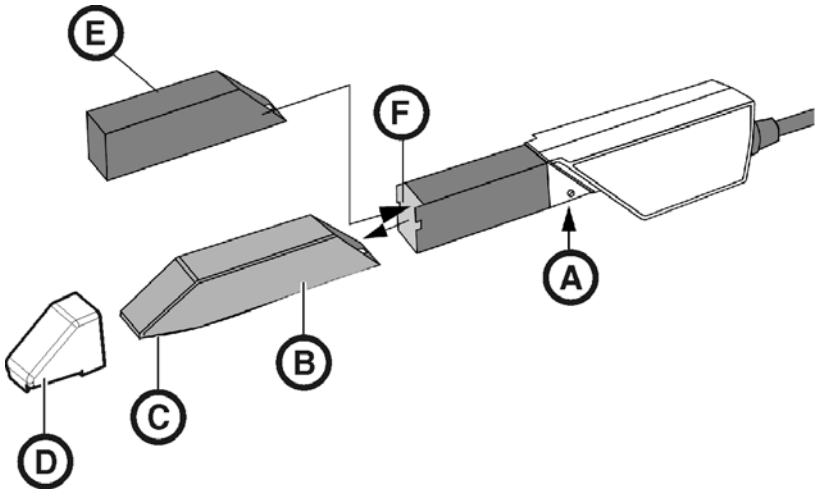


B Part B, surface with cross

1. Slide the "3D calibration set" toward the camera handle as far as it will go.
2. Click the "OK" button.

↳ The program then automatically calibrates the Z scale of the 3D camera.

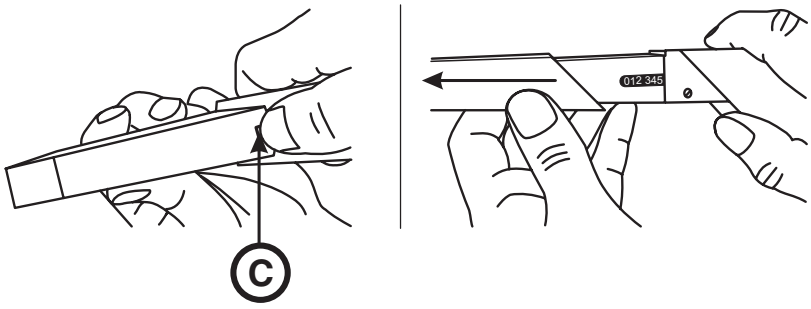
8.6 Care of the 3D camera



A	Press at bottom to remove	D	Camera support 6 pcs, Order No. 59 45 360
B	Prismatic tube	E	Protective cap
C	Prism	F	Front lens

The 3D camera is a very sensitive optical device and must therefore be handled with the **utmost care**. Protect the front lens and the prism against scratching and clean them with a lint-free cloth and ethanol (commercially available cleaning alcohol).

Removing the prismatic tube



C Detent

1. Press the prismatic tube against the camera body.
2. Press catch **C**.

CAUTION:
Risk of damaging the camera optics or prism.

➢ Push the prismatic tube straight toward the front, do not tilt it.

Fitting the prismatic tube

➢ Carefully refit the prismatic tube Do not attach the prismatic tube to the camera optics.

Disinfecting

CAUTION:
Do not spray the 3D camera with or immerse it in cleaning agents or disinfectants!

➢ Disinfect the 3D camera with a cloth which has been soaked in the agent specified in the section "Care and cleaning agents [34]".

Sterilizing

CAUTION: Not sterilizable!
Do not under any circumstances sterilize the 3D camera or the video cable!
The camera support cannot be sterilized.

The prismatic tube can be sterilized with hot air (180 °C, 30 min) **(not in the autoclave!)**.

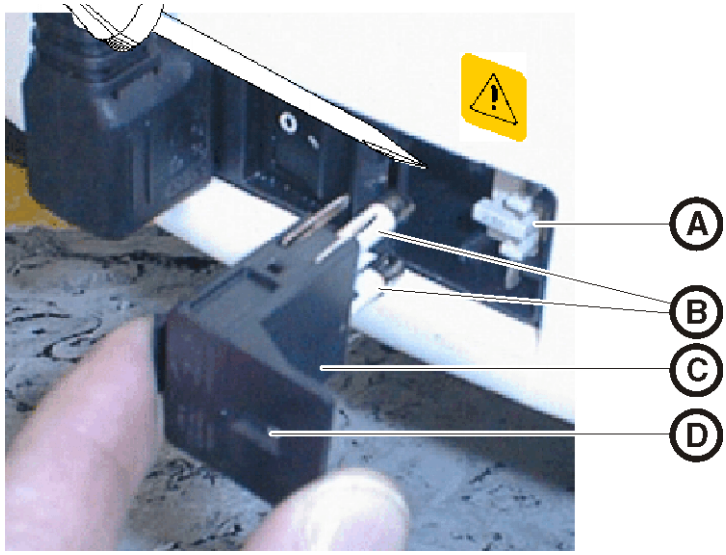
Temporarily place the protective sleeve over the front lens to protect it (see Accessories).

CAUTION:
If the 3D camera accidentally falls down, check to make sure that the front lens and prism are not damaged. If the 3D camera has been damaged, it must not be used on patients any more.
The 3D camera must be recalibrated in any case.

8.7 Replacing the main fuses

WARNING: Electric shock
Disconnect the power plug at the unit end before replacing the fuses.

CAUTION: Fuse type
Use only fuses of the same type in the fuse module!



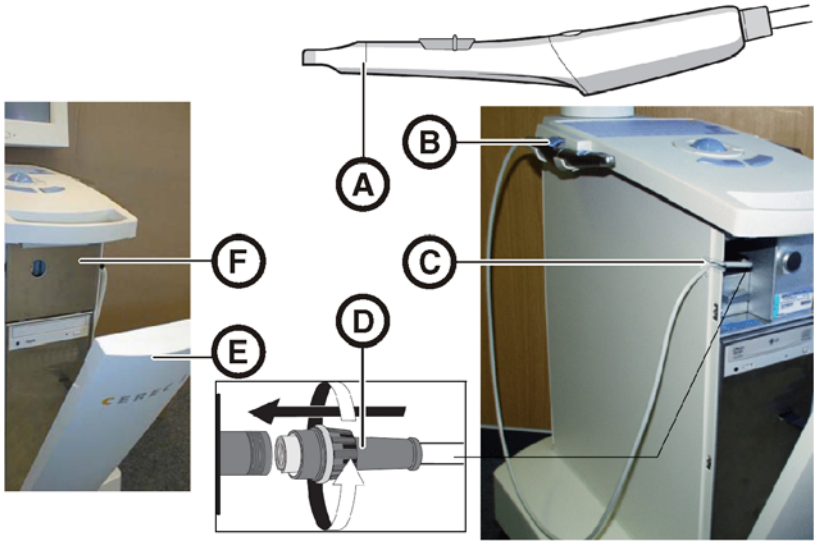
A	Voltage selection insert	C	Fuse module
B	Main fuses	D	Window

Fuses:	for line voltage 230 V / 100 V / 115 V: T8A H 250V	Order No. 62 33 188

✓ The power plug must be disconnected.

1. Unlatch the fuse module with a screwdriver and pull the module out.
2. Replace the defective fuses.
3. Reinsert the fuse module.

9 SIROCAM 3 video system (optional)



A	SIROCAM 3	D	Camera connector
B	Holder with lock	E	Front cover
C	Cable clamping piece	F	Cover plate

1. Open the front cover.
2. Remove the cover plate.
3. Place the SIROCAM 3 camera in the holder and lock it.
4. Plug the camera connector into the socket and tighten the cap nut slightly.
5. Clamp the camera cable in the clamping piece.
6. Reinsert the cover plate.
7. Close the front cover.

For more information, refer to the Operating Instructions for the SIROCAM 3 (Order No. "59 43 910").

⚠CAUTION: Temporary image falsifications:
If strong discharges of static electricity (ESD) occur during operation of the SIROCAM 3, temporary image falsifications may result.

➢ To eliminate such image falsifications, deposit the SIROCAM 3 camera in its holder and then remove it again.

10 Appendix

10.1 DVD playback

Windows Media Center is installed on the acquisition unit to enable the playback of DVD videos.

➢ Start the program by clicking the matching icon or by selecting "Start" / "Programs" / "Windows Media Center".

The program features an online help function to familiarize you with the operation of the software.

10.2 Making backup copies

To increase the system's data security and protect themselves against data losses, users should make backup copies of the data regularly.

10.2.1 MO drive

An external magneto-optical drive can be connected to the parallel port of the acquisition unit for this purpose.

1. Perform the installation of the external drive according to its relevant installation instructions.
2. Back up the contents of the entire hard drive or only the contents of the data path (see "Archiving data" in the Operator's Manual).

10.2.2 Creating (burning) a CD

The program Nero 7 Essentials is installed on the acquisition unit for creating data CDs.

➢ Start the program by clicking the matching icon or by selecting "Start" / "All Programs" / "Nero 7 Essentials" / "Data" / "Nero Express Essentials".

The program features an online help function (F1) to familiarize you with the operation of the software.

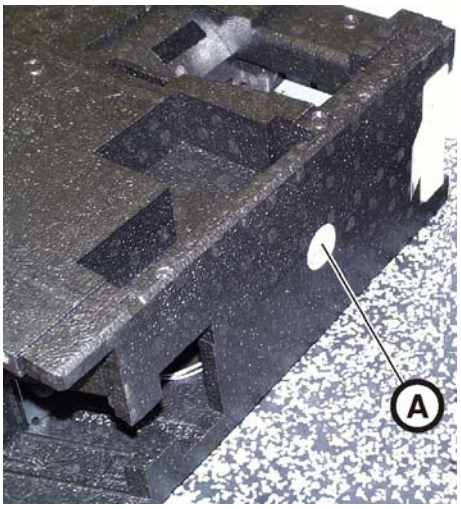
CAUTION:
The front panel must remain open when completing the write operation.

CAUTION:
Do **not** work with other programs and do **not** put the acquisition unit in the non-operative state during a write operation.

Checking the CD

Insert the CD in the drive and check its contents with the Windows Explorer.

10.3 Seal on PC slide-in module



⚠CAUTION:
If the seal is broken, all warranty claims regarding the PC slide-module automatically expire.

The PC slide-in module may be opened only by an authorized dental technician. Only spare parts approved by us may be used in this module.

Following a repair, the seal supplied along with the spare parts must be affixed at the specified location (**A**).

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

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