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sirona
The Dental Company

CEREC AC

Operating Instructions for the acquisition unit
With Bluecam

English

This product is covered by one or more of the following US patents:

- US6885464
- US6813035
- US7522764
- US7388678
- US7801632
- US8062034
- US8111909

Table of contents

1 Dear Customer, ... 5

2 General information 6

2.1 Structure of the document 6
2.1.1 Identification of the danger levels 6
2.1.2 Formats and symbols used 6
2.2 Warranty 7
2.3 Battery warranty 7
2.4 Legend 7

3 General description 9

3.1 Certification 9
3.2 Intended use 9

4 Safety 10

4.1 Basic safety information 10
4.1.1 Prerequisites 10
4.1.2 Connecting the unit 10
4.1.3 General safety information 10
4.1.4 Movement and stability of the unit 11
4.1.5 Maintenance and repair 11
4.1.6 Changes to the product 12
4.1.7 Accessories 12
4.1.7.1 Included accessories 12
4.2 Safety labels 12
4.3 Electrostatic charge 14
4.3.1 ESD warning labels 14
4.3.2 ESD protective measures 15
4.3.3 About the physics of electrostatic charges 15
4.4 Wireless phone interference with equipment 16
4.5 Disturbance of data transmission 17
4.6 Integration in a network or connection to a modem 17

5 Technical information 19

5.1 Technical description 19

5.2 Technical data 20
5.3 Electromagnetic compatibility 21
5.3.1 Electromagnetic emission 22
5.3.2 Interference immunity 23
5.3.3 Working clearances 25

6 Installation and startup 26
6.1 Transport and unpacking 26
6.2 Disposal of packaging materials 26
6.3 Scope of supply 26
6.4 Initial startup 27
6.4.1 Controls and functional elements 27
6.4.2 Operating state LED 30
6.4.3 Line voltage 30
6.4.4 Plug connections 31
6.4.5 Insert battery (optional) 32
6.4.6 Using a trackball 33
6.4.7 Changing from right-handed to left-handed operation 33
6.4.8 Switching the units on 33
6.4.9 Switching the units off 35
6.5 Battery-backed operation (optional) 35

7 Operation 39
7.1 Setting the acquisition system to 3D camera 39
7.2 General 39
7.3 Preparations 40
7.3.1 Surface 40
7.3.2 CEREC Optispray 41
7.3.3 Direction of application 41
7.3.4 Marking the cervical step 41
7.4 Camera support 42
7.5 Preparing the optical impression 42
7.6 Acquisition control with software version 3.8 43
7.7 Acquisition control with CEREC SW 45
7.8 Acquiring a 3-unit bridge 46

8 Maintenance 47
8.1 Care and cleaning agents 47
8.2 Care and cleaning of the monitor screen 48
8.3 Surfaces (without monitor) 48
8.4 Cleaning and setting the trackball cover ring 49
8.5 Calibrating the Bluecam 49
8.6 Care of the Bluecam 51
8.6.1 Prismatic tube without sapphire glass 51
8.6.2 Prismatic tube with sapphire glass 53
8.7 Replacing the main fuse 55
8.8 Replacing fuse F3 55
8.9 Charge battery (optional) 56
8.10 Replace battery (optional) 57
9 Disposal 58
9.1 Disposal of the storage battery pack 59
10 Appendix 60
10.1 DVD playback 60
10.2 Making backup copies 60
10.2.1 Creating (burning) a CD 60
10.3 Seal on PC slide-in module 61
Index 62

1 Dear Customer,

Thank you for purchasing your CEREC AC® 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 AC Team

2 General information

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 Structure of the document

2.1.1 Identification of the danger levels

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

⚠ DANGER

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

⚠ WARNING

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 on making work easier.

2.1.2 Formats and symbols used

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

✓ Prerequisite **1.** First action step **2.** Second action step or ➢ Alternative action ↳ Result	Prompts you to do something.
See "Formats and symbols used [→ 6]“	Identifies a reference to another text passage and specifies its page number.

• List	Designates a list.
"Command/menu item"	Identifies commands, menu items or quotations.

2.2 Warranty

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

2.3 Battery warranty

The battery is subject to wear and the warranty period of 6 months therefore deviates from the period specified for the entire device.

2.4 Legend

Year of manufacture

Safety labels

Identifies labels/imprints on the unit (see Safety labels).

Product disposal symbol (see "Disposal").

Storage battery pack disposal symbol (see "Disposal of the storage battery pack" [→ 59])

Storage battery pack recycling symbol (see "Disposal of the storage battery pack" [→ 59])

The CEREC AC may contain an RF transmitter in the form of a WLAN card or a separate wireless module.

Radio approval for Australia/New Zealand

Follow the operating instructions.

To ensure safe operation of the unit, the user must follow the operating instructions.

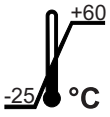
Symbols on the packaging

Take note of the following symbols on the packaging:

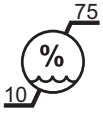
Top

Protect from moisture

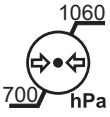
Fragile; handle with care



Temperature during storage and transport



Relative humidity during storage and transport



Air pressure during storage and transport

3 General description

3.1 Certification

CE mark

CE

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

NOTICE

CE mark for connected products

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

Compliance

Anyone creating or changing a medical electrical system through a combination with other devices in accordance with standard EN 60601-1-1:2001 based on 60601-1-1:2000 (specification for the safety of medical electrical systems)/UL 60601-1 Part 1: first edition 2003 is responsible for ensuring that the requirements of these standards are met to the full extent in order to ensure the safety of patients, operators and the environment.

3.2 Intended use

In connection with the milling unit, the CEREC AC acquisition unit is used to manufacture dental restorations, e.g. from a natural-appearing ceramic material. The unit may be operated only by medically trained and qualified personnel.

If the unit is used for any usage purpose other than the one mentioned above, it may be damaged.

Intended use also includes observing the present operating instructions and the relevant maintenance instructions.

⚠ CAUTION

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.

For the USA only

CAUTION: According to US Federal Law, this product may be sold only to or by instruction of physicians, dentists, or licensed professionals.

4 Safety

4.1 Basic safety information

4.1.1 Prerequisites

NOTICE

Important information on the 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.

NOTICE

Restrictions regarding installation site

The system is not intended for operation in areas subject to explosion hazards.

NOTICE

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.

4.1.3 General safety information

⚠ CAUTION

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 AC acquisition unit is Class B equipment (classified according to CISPR 11, EN 60601-1-2: 2007 based on IEC 60601-1-2:2007 and A1:2004).

This system may be operated in a residential area provided that it is used under the responsibility of a medical specialist.

NOTICE

Install only approved software

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

NOTICE

Ventilation openings must not be obstructed.

4.1.4 Movement and stability of the unit

NOTICE

The unit can overturn or slip away

For reasons of tilt stability, the unit must be pulled by its front handle when being moved. If you push the unit, obstacles on the floor could block its wheels, thus causing it to overturn.

The two front wheels of the unit has brakes which can be locked to ensure secure positioning. If the unit has a steeply inclined or is standing on a slippery surface and lateral forces are acting on it, it may slide even though the wheel brakes are locked.

➢ Always make sure that the unit's footprint is a flat, nonskid surface.

4.1.5 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.

4.1.6 Changes to the product

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

4.1.7 Accessories

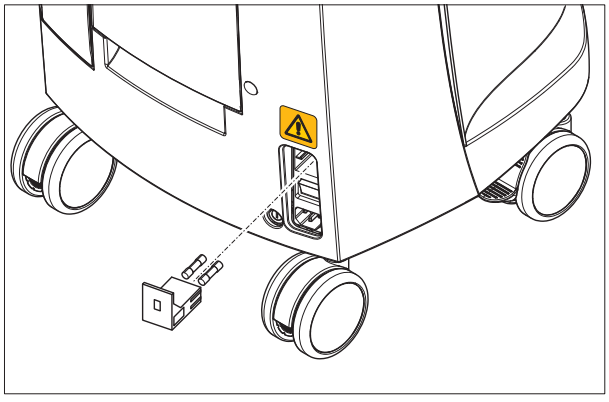
In order to ensure product safety, this product may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user assumes the risk of using non-approved accessories.

4.1.7.1 Included accessories

- Camera support (6 pcs), Order No.: 59 45 360
- Storage battery pack, order no.: 61 87 582

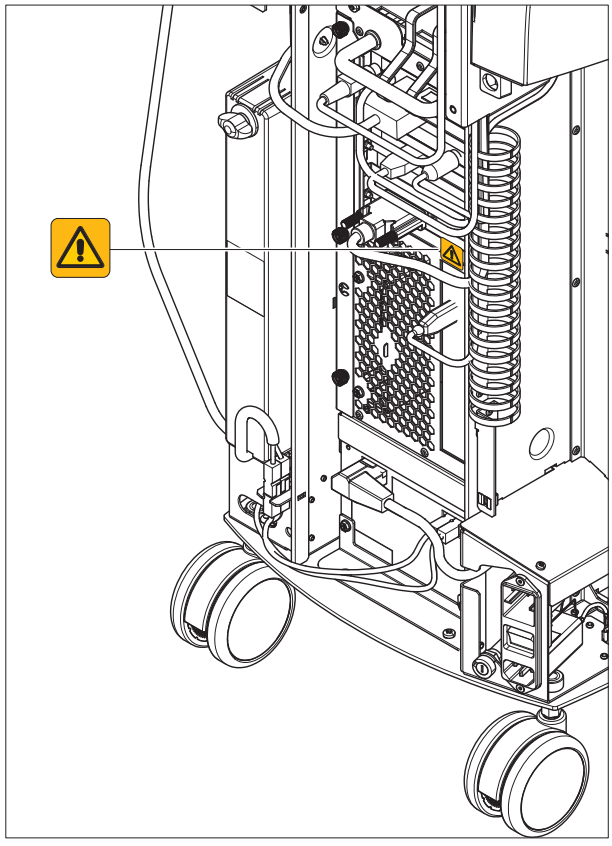
4.2 Safety labels

Fuses



NOTICE
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.

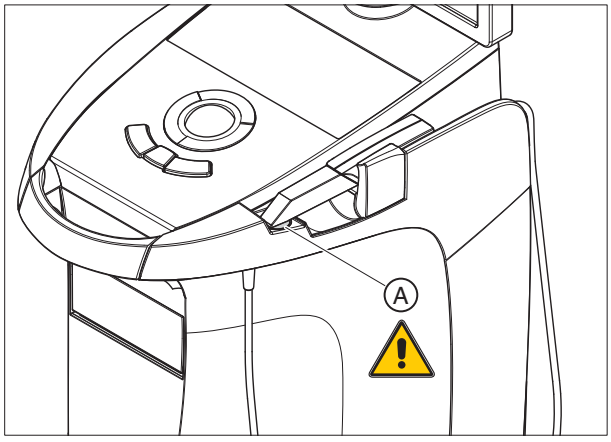
NOTICE

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

⚠ CAUTION

In order to maintain electrical safety, the rear doors of the acquisition unit must be kept closed while it is in operation. The acquisition unit must not be operated inside of the patient area (within a radius of 1.5 m surrounding the patient) with the doors open.

Heater plate



⚠ CAUTION

Risk of burns due to hot surface!

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

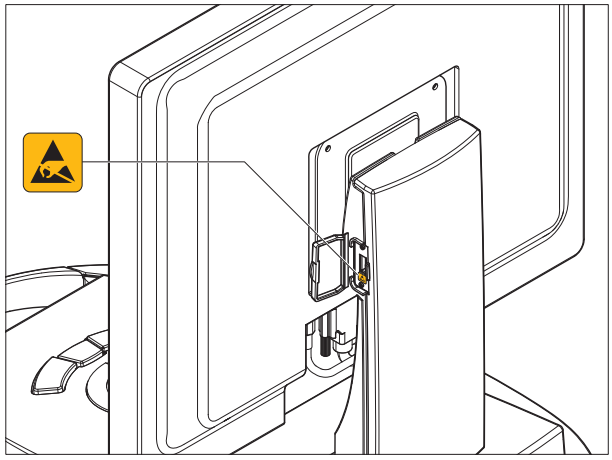
4.3 Electrostatic charge

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.



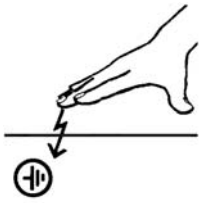
4.3.2 ESD protective measures

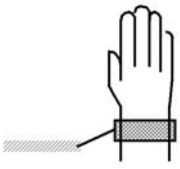
ESD

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

ESD protective measures

ESD protective measures include:





- Procedures for preventing electrostatic charge build-up (e.g. air conditioning, air moistening, conductive floor coverings and non-synthetic clothing)
- Discharging the electrostatic charges of your own body on the frame of the UNIT, the protective ground wire or large metallic objects
- Connecting yourself to ground using a wrist band.

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.

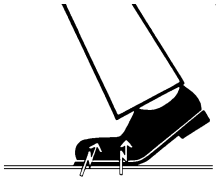
The content of this training is explained in the Chapter "About the physics of electrostatic charges" [→ 15].

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).

NOTICE

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:

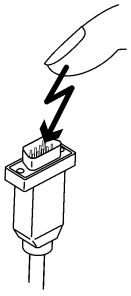
- perceptible at 3,000 V or higher
- audible at 5,000 V or higher (cracking, crackling)
- visible at 10,000 V or higher (arc-over)

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 to implement a wide variety of functions in dental/X-ray/CAD/CAM 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 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.

4.5 Disturbance of data transmission

The Hoeft & Wessel (H&W) wireless interface is not available for the Brazilian market.

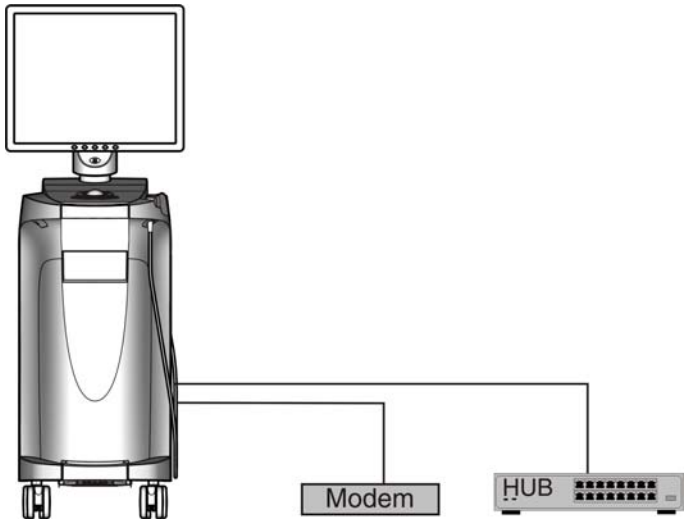
The information on this interface contained within this document is only applicable in countries outside of Brazil, where these wireless modules are approved.

Note on wireless communication

Data communication between the acquisition unit and the CEREC MC XL milling unit should preferably be established via the wireless H&W interface or WLAN. As for all wireless connections (e.g. cell phones), 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 at all.

Sirona has selected the best possible configuration for data communication via the wireless H&W interface or 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. If the only LAN interface on the rear of the CEREC AC is occupied by another plug, remove this H&W wireless interface connection and instead connect the LAN cable with the CEREC MC XL milling unit.

4.6 Integration in a network or connection to a modem



NOTICE

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 only be operated in a network 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 only be operated outside of the patient area (radius of 1.5 m surrounding the patient).
- An RS232 isolator compliant with EN 60 601-1-1 with a dielectric strength of at least 1.5 kV must be installed at the modem end in the RS232 connecting cable between the acquisition unit and the modem.

5 Technical information

5.1 Technical description

CAD system for high-precision intraoral optical impressions

- High-resolution, heated oral camera (3D camera) with removable prism tube (prism tube sterilizable with hot air)
- Integrated image processing
- High processing power due to state-of-the-art processor
- Trackball
- Hand and foot controlled enter keys
- Wipe-disinfectable membrane keyboard
- Hard disk
- DVD-R(W)/CD-R(W) drive
- Ethernet port
- USB port
- 1 integrated loudspeaker

High-resolution 3D intraoral camera with control and image processing electronics

• Measuring technique:	active triangulation
• Pixel size:	28µm x 28µm
• Low-noise CCD sensor:	680 x 480 pixels (=326,400 pixels)
• Light source:	Blue LED, polarized, 470nm
• Image acquisition:	Image control inside the camera
• Image acquisition:	16MB ultrafast SDRAM
• Image processing:	Intensity measurement of 1.4 mil. pixels in 0.070 sec.
• Image data transfer:	Dependent on fast USB 2.0 standard

Monitor

- 19" TFT LCD flat display, true color, resolution SXGA (1280 x 1024 pixels)

PC hardware (LN)

Special PC with the following equipment:

• Processor:	Intel i7, 920
• Memory:	3 x 2048MB, 1066 MHz DDR3-RAM
• DVD-R(W)/CD-R(W):	SH-S223 combi drive
• Hard disk:	Western Digital WD500-xxx (500 GB Serial ATA)

- Network card: Ethernet 10/100/1000MBit/s onboard
- WLAN card: Linksys WMP600N
- Sound card: Realtek HD Audio onboard
- Graphics card: N250GTS 2D512 (PCIe 16x, 512 MB)
- Supply board: 61 37 413 D3492 Sirona

PC software

- Operating system: Windows 7 professional, 64 bit
- Installation: The operating system and applications are installed at the factory.

Housing

All units are integrated in a mobile housing with easily movable/lockable castors.

No water or air connection required.

5.2 Technical data

Type designation	CEREC AC Acquisition unit
Rated line voltage for Europe	230 VAC / 50Hz
Rated current for Europe	1.5 A
Rated line voltage for USA	115VAC / 60Hz
Rated current for USA	2.7 A
Rated line voltage for Japan	100VAC / 50Hz and 60Hz
Rated current for Japan	3.0 A
Type of protection against electric shock	Class I device
Type of protection against electric shock (camera)	Type BF applied part 
Degree of protection against ingress of water	Ordinary device (without protection against ingress of water)
Pollution degree	2
Installation category	II
Operating mode	Continuous operation Battery-backed operation for 6 minutes

Storage battery pack for battery-backed operation	24 VDC / 2.5 Ah Sirona Order Number: 61 87 582 D3492
 Label: CAUTION	Observe accompanying documents

Transport and storage conditions

Temperature	-25 °C to 60 °C (-13° F to 140° F)
Relative humidity	10% to 75%
Air pressure	700 hPa to 1060 hPa

Operating conditions

Ambient temperature	10 °C to 35 °C (50° F to 95° F)
Relative humidity	30% to 85% No condensation
Air pressure	700 hPa to 1060 hPa
Operating altitude	≤ 3000 m

Dimensions and weight

Dimensions (WxHxD) in mm in inches	 350 x 1210 x 470mm 13¾ x 47 ⅝ x 18½“
Weight	
• without monitor and battery pack approx.	38 kg (83.8 lbs)
• Monitor approx.	4 kg (8.8 lbs)
• Battery pack approx.	2 kg (4.4 lbs)

5.3 Electromagnetic compatibility

Observance of the following information is necessary to ensure safe operation regarding EMC aspects.

CEREC AC complies with the requirements for electromagnetic compatibility (EMC) according to IEC 60601-1-2:2001 and A1:2004.

CEREC AC is hereinafter referred to as "UNIT".

5.3.1 Electromagnetic emission

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

Emission measurement	Conformity	Electromagnetic environment – guidance
RF emissions according to **CISPR 11**	Group 1	The **UNIT** uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions according to **CISPR 11**	Class B	The **UNIT** is intended for use in all facilities, including residential areas and in any facilities connected directly to a public power supply providing electricity to buildings used for residential purposes.
Harmonics according to **IEC 61000-3-2**	Class A	
Voltage fluctuations/flicker according to **IEC 61000-3-3**	Complies	

5.3.2 Interference immunity

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) according to **IEC 61000-4-2**	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst according to **IEC 61000-4-4**	± 1 kV for input and output lines ± 2 kV for power supply lines	± 1 kV for input and output lines ± 2 kV for power supply lines	The quality of the line power supply should be that of a typical commercial or hospital environment.
Surge voltages according to **IEC 61000-4-5**	± 1 kV differential mode voltage ± 2 kV common mode voltage	± 1 kV differential mode voltage ± 2 kV common mode voltage	The quality of the line power supply should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and variations of the power supply according to **IEC 61000-4-11**	<5% U_T for ½ period (>95% dip of U_T) 40% U_T for 5 periods (60% dip of U_T) 70% U_T for 25 periods (30% dip of U_T) <5% U_T for 5sec. (>95% dip of U_T	<5% U_T for ½ period (>95% dip of U_T) 40% U_T for 5 periods (60% dip of U_T) 70% U_T for 25 periods (30% dip of U_T) <5% U_T for 5sec. (>95% dip of U_T	The quality of the line power supply should be that of a typical commercial or hospital environment. Continued operation of the **UNIT** is possible following interruptions of the power supply, since the **UNIT** is powered by an uninterruptible power supply backed up by a storage battery.
Magnetic field of power frequencies (50/60 Hz) according to **IEC 61000-4-8**	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Remarks: U_T is the AC supply voltage prior to application of the test level.			
			Portable and mobile radio equipment must not be used within the recommended working clearance from the **UNIT** and its cables, which is calculated based on the equation suitable for the relevant transmission frequency. Recommended working clearance:

Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF interference **IEC 61000-4-6**	3 V_{eff} 150 kHz to 80 MHz	3 V_{eff}	$d = [1.2] \sqrt{P}$
Radiated RF interference **IEC 61000-4-3**	3 V/m 80 MHz to 800 MHz 3 V/m 800 MHz to 2.5 GHz	3 V/m 3 V/m	$d = [1.2] \sqrt{P}$ at 80 MHz to 800 MHz $d = [2.3] \sqrt{P}$ at 800 MHz to 2.5 MHz where P is the nominal transmitter output in watts (W) specified by the transmitter manufacturer and d is the recommended working clearance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[1] should be less than the compliance level[2] in each frequency range. Interference is possible in the vicinity of equipment bearing the following graphic symbol. 

Remark 1
The higher frequency range applies at 80 MHz and 800 MHz.

Remark 2
These guidelines may not be applicable in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.

1. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM/FM radio and TV broadcasts, cannot be predicted theoretically with accuracy. An investigation of the location is recommended to determine the electromagnetic environment resulting from stationary RF transmitters. If the measured field strength in the location in which the **UNIT** is used exceeds the applicable RF compliance level specified above, the **UNIT** should be observed to verify normal operation. If unusual performance characteristics are observed, it may be necessary to take additional measures such as reorientation or repositioning of the **UNIT**.
2. Over the frequency range 150kHz to 80MHz, field strengths should be less than 3V/m.

5.3.3 Working clearances

Recommended working clearances between portable and mobile RF communication devices and the UNIT

The **UNIT** is intended for operation in an electromagnetic environment, where radiated RF interference is checked. The customer or the user of the **UNIT** can help prevent electromagnetic interference by duly observing the minimum distances between portable and/or mobile RF communication devices (transmitters) and the **UNIT**. These values may vary according to the output power of the relevant communication device as specified below.

Rated maximum output power of transmitter [W]	Working clearance according to transmission frequency [m]		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d= [1.2] \sqrt{P}$	$d= [1.2] \sqrt{P}$	$d= [2,3] \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters whose maximum nominal output is not specified in the above table, the recommended working clearance d in meters (m) can be determined using the equation in the corresponding column, where P is the maximum nominal output of the transmitter in watts (W) specified by the transmitter manufacturer.

Remark 1

An additional factor of 10/3 is applied when calculating the recommended working clearance between transmitters in the 80 MHz to 2.3 GHz frequency range in order to reduce the probability that a mobile/portable communication device unintentionally brought into the patient area could lead to interference.

Remark 2

These guidelines may not be applicable in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.

6 Installation and startup

6.1 Transport and unpacking

All Sirona products are carefully checked prior to shipment. Please perform an 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.

NOTICE

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.

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.

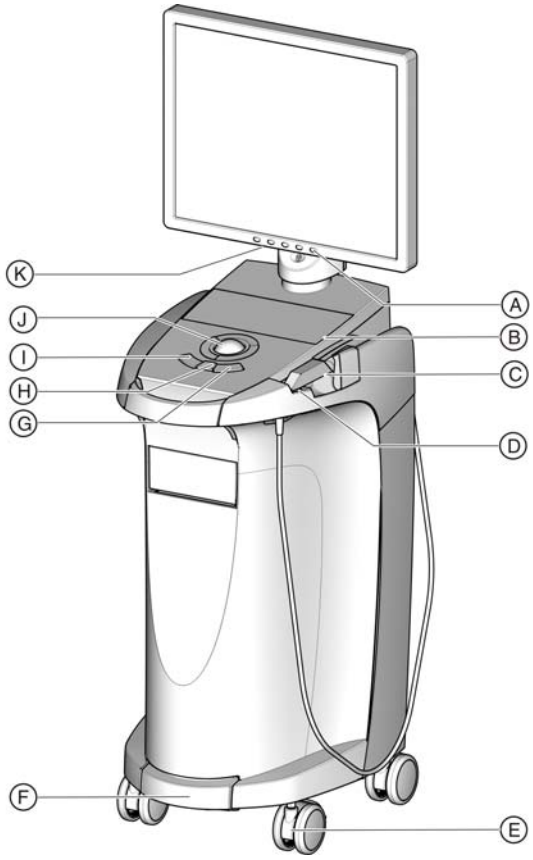
6.3 Scope of supply

The detailed scope of supply is specified in the document "Scope of supply".

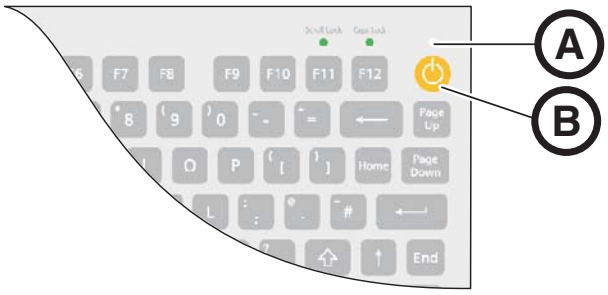
6.4 Initial startup

6.4.1 Controls and functional elements

Overview of the front panel

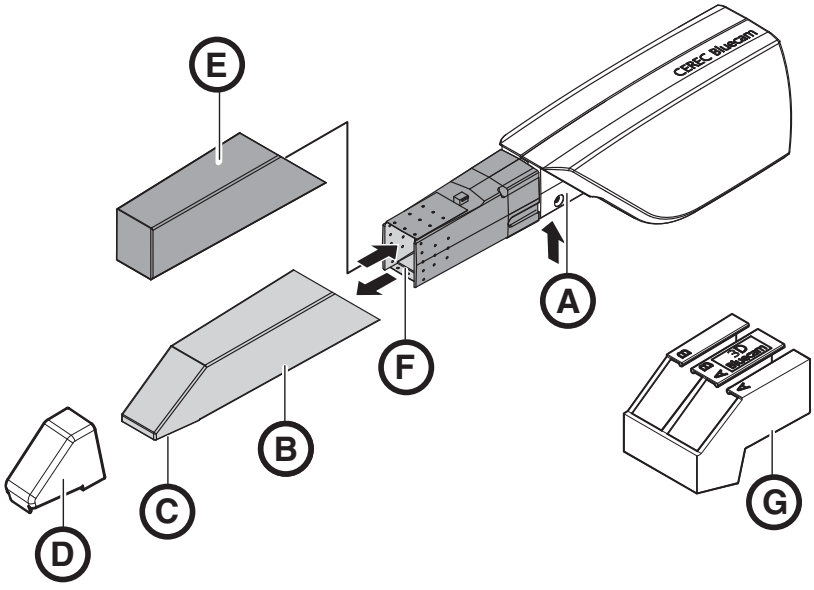


A	Monitor ON/OFF switch	H	Center trackball button
B	Membrane keyboard	I	Left trackball button
C	CEREC camera	J	Trackball
D	Heater plate	K	Keys for monitor settings
E	Locking brake		
F	Foot control/foot pedal		
G	Right trackball button		



A	Operating state LED
B	ON button

Components of the Bluecam



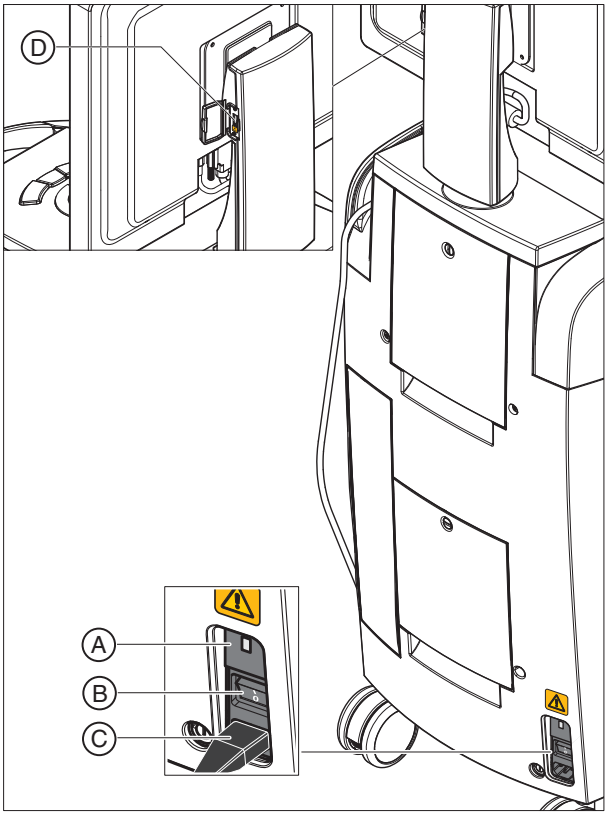
A	Press detent to release	E	Protective cap
B	Prismatic tube	F	Front lens
C	Prism	G	Bluecam calibration set
D	Camera support (6 pcs), Order No.: 59 45 360		

NOTICE

CEREC Bluecam is calibrated

The CEREC Bluecam is calibrated ex works (see "Calibrating the Bluecam“).

Overview of rear side



A	Fuses	C	Power connection
B	Main switch **I** = ON, **0** = OFF	D	USB port

NOTICE

Waiting time after shutting down

If you have shut down the device using the main switch, wait at least 10 seconds before restarting.

If you do not observe the waiting time, the PC power supply cannot be switched on.

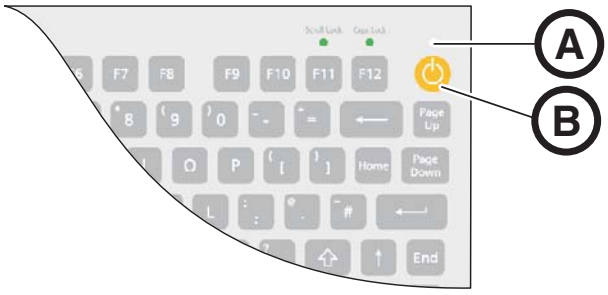
✓ You have not waited the specified time. The PC power supply cannot be switched on.

➢ Switch the unit off.

➢ Wait a further 10 seconds.

➢ Switch the unit on again.

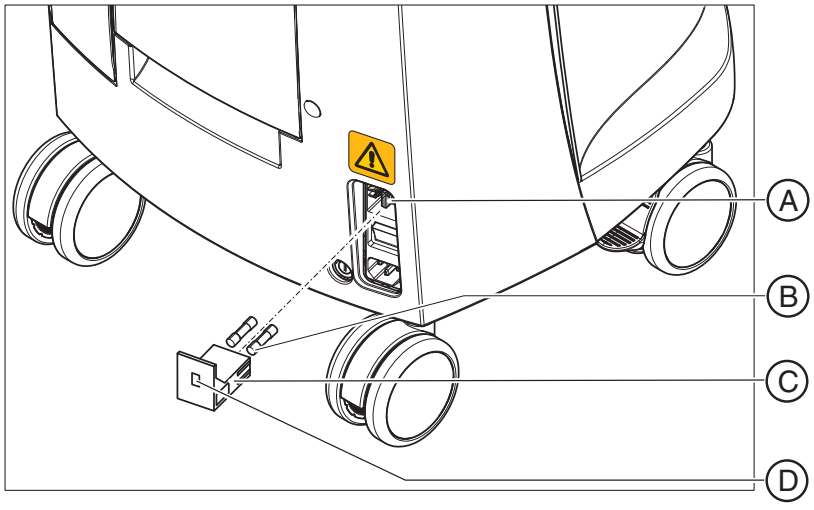
6.4.2 Operating state LED



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	C	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, 100V in Japan and 115V in the USA). If the set voltage does not agree with the actual line voltage, you must change this setting:

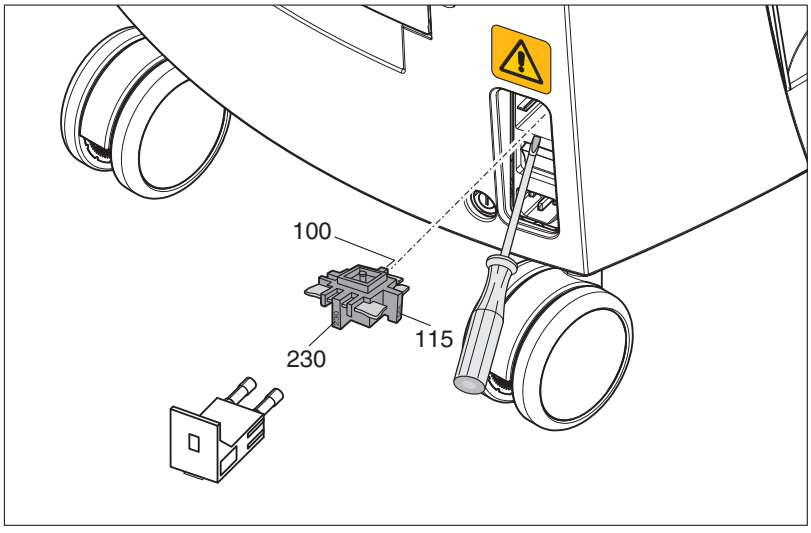
⚠ WARNING

Risk of electric shock

Electric shock due to inserted power plug.

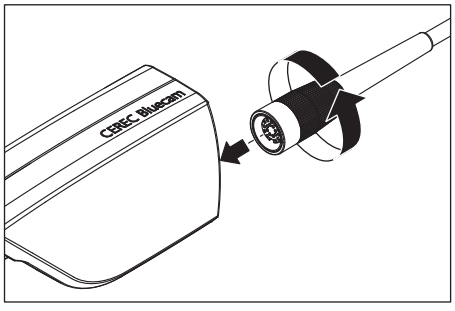
➢ Disconnect the power plug before selecting the line voltage.

✓ The line voltage can be switched from 230V to 100V or 115V and 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. Carefully plug the connector of the camera cable into the Bluecam, watching out for the guide nose and screw it down tight clockwise.
3. Check the plug connections of the power supply and the Bluecam. The camera cable must be connected to the Bluecam and securely screwed on. The Bluecam always remains connected.

NOTICE

The Bluecam is a high-precision optoelectronic scanning instrument for non-contact impression taking which requires careful handling. Incorrect handling (impacts, dropping) leads to failure of the Bluecam.

➢ Always deposit the sensitive Bluecam in its holder!

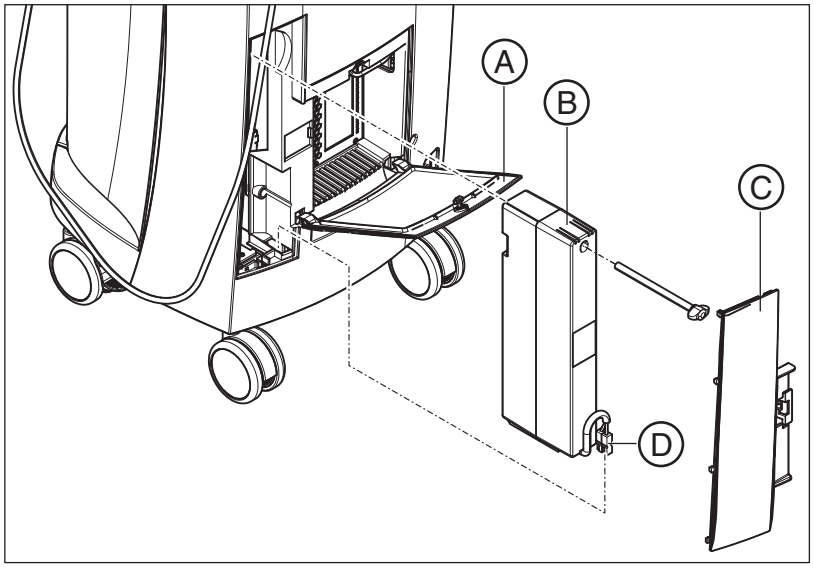
4. If the Bluecam must be replaced, carefully plug in the connector, watching out for the guide nose, and screw it down tight.

Notes 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.

6.4.5 Insert battery (optional)



A	Bottom door	C	Battery cover
B	Storage battery	D	Battery connector

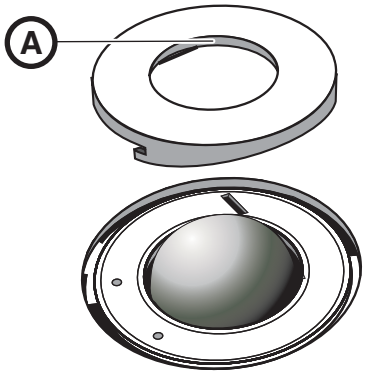
1. Open the lower door on the back panel.

NOTICE

Open with coin.

Use a coin to open the latch. Turn counter-clockwise.

2. Remove the battery cover.
3. Insert the battery into the battery compartment with the mounting screw and screw it down.
4. Plug in the battery plug.
5. Attach the battery cover.
6. Put the door back in position and lock it.



6.4.6 Using a trackball

1. Turn the collar (**A**) counterclockwise and remove it.
2. Insert the ball supplied.
3. Lay the collar (**A**) into position and turn it clockwise until it snaps into place.

6.4.7 Changing from right-handed to left-handed operation

In the factory default setting, the left button trackball button corresponds to a foot control entry. If you would like to change this assignment to the right trackball button, your CEREC service technician can do this for you.

6.4.8 Switching the units on

NOTICE

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)

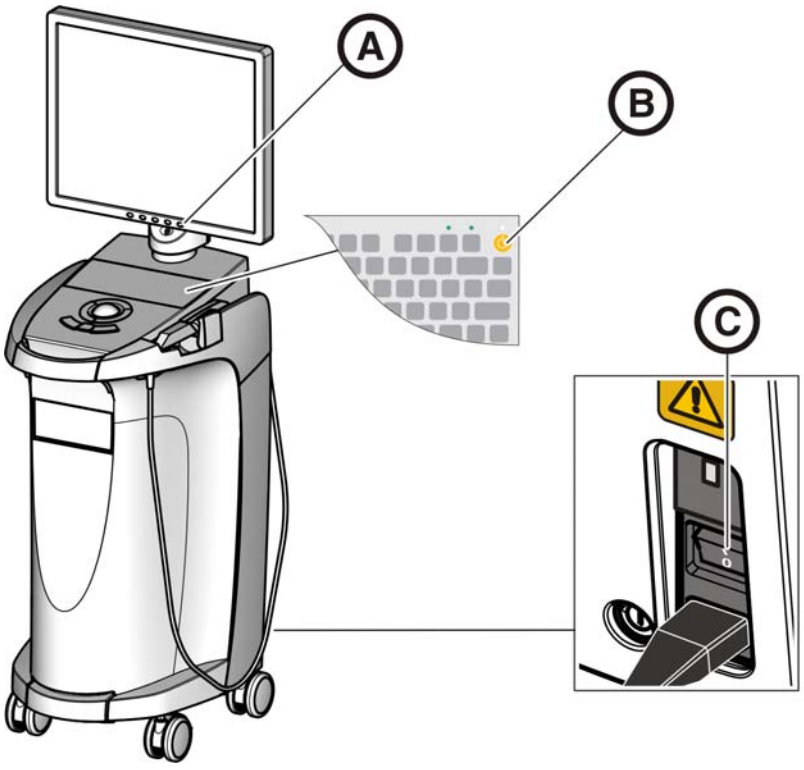
↳ The unit is dry and can be put into operation.

⚠ CAUTION

Use only the supplied power cord

Use only the power cord supplied by Sirona to connect the acquisition unit to the power supply.

If the acquisition unit is switched on at the main switch, it can be activated with the **ON button**. The monitor is switched on and off automatically (if it was switched on before the acquisition unit was switched off).
You can switch the monitor 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**.

NOTICE

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 application by double-clicking on the CEREC button.
6. For descriptions of further software actions, an online help function can be invoked with "F1" or via the **Help...** menu option.

NOTICE

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

6.4.9 Switching the units off

NOTICE

Proper shutdown procedure

The operating system must always be shut down properly to prevent data loss.

1. Exit all programs.
2. Power down the operating system.
   ↳ The PC automatically switches off. The operating state LED lights up yellow.

NOTICE

Do not switch off while battery (optional) is being charged

The battery will be charged only if the power cord is plugged in and the main switch at the back of the unit is switched on (see also Charging the battery (optional) [→ 56]).

3. Switch the acquisition unit off at the main switch.
   ↳ The operating state LED goes out.

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

6.5 Battery-backed operation (optional)

Introduction

The acquisition unit PC has a battery-backed power supply. It is thus possible to operate the acquisition unit for a short time with no line voltage connected.

⚠ CAUTION

No treatment without connected line voltage

Patients must not be treated (generation of intra-oral impressions) unless the unit is connected to the practice's electricity-supply system.

The following parameters are constantly checked by the installed monitoring software in order to monitor the battery back-up function:

- Line voltage present
- Charge set of storage battery pack
- Fan function
- Temperature of power supply

When the unit is running in the battery-powered mode, this is indicated by a message displayed at the bottom of the screen. It is accompanied by a rhythmic beep.

This beep changes to a continuous signal 30 seconds before the system shuts down due to insufficient battery power. A corresponding display then appears in the center of the screen. The user thus has time to finish his last actions on the PC.

As soon as 30 seconds have elapsed, the operating system is shut down.

NOTICE

The operating time of the storage batteries is not constant. It depends on the charge state, the load and the age of the storage batteries.

Monitoring program

The monitoring program is represented in the task bar by the following symbol:

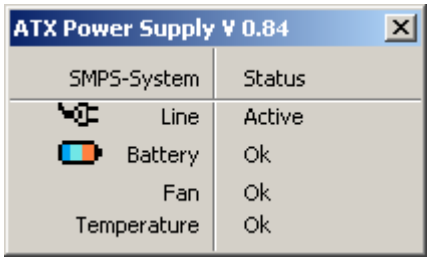
The color of the symbol has the following meaning:

- Green = line voltage present, fan functioning, temperature OK.

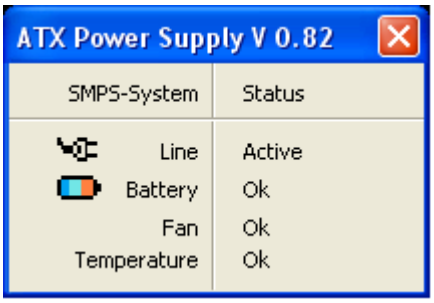
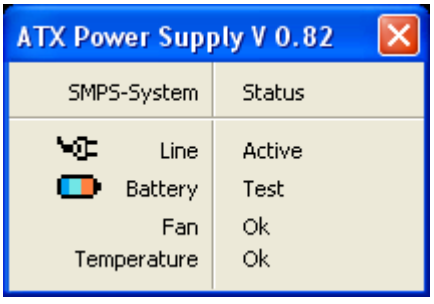
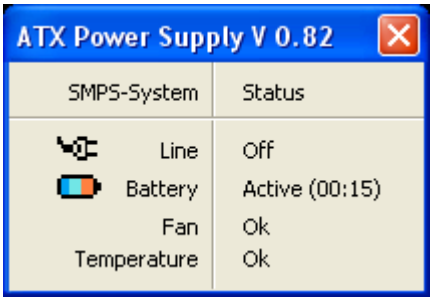
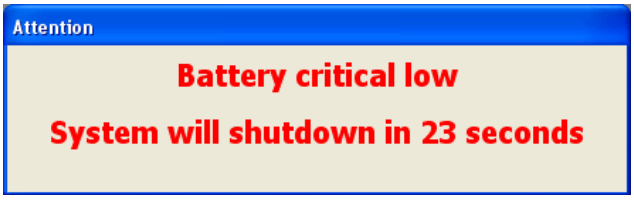
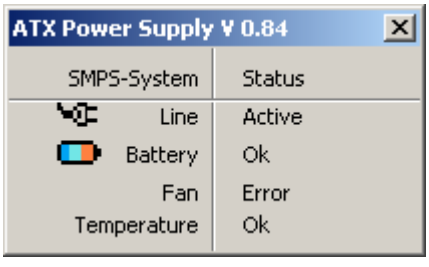
- Yellow = Unit running in battery-powered mode, all other operating parameters OK.

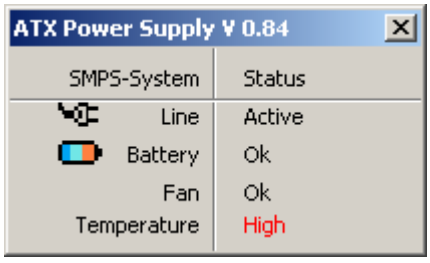
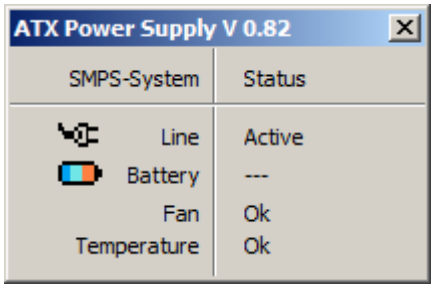
- Red = error

Following a double-click on the symbol, the following monitoring window opens:



The following information is displayed in the monitoring window:

Monitoring window	Explanation
	Line voltage switched on and battery available.
	When the line voltage is switched on, a battery test is performed one time. You can repeat this test at any time by clicking the right mouse button inside this window.
	Battery-powered operation in the event of power failure. The time in brackets shows how long the battery has been active. A rhythmic beep is sounded via the system loudspeaker.
	When the battery charge is almost depleted, the shutdown window opens. The operating system is then shut down after 30s and the PC can then be switched off. A continuous signal is then sounded via the system loudspeaker.
	Fan blocked, status message in monitoring window.
	Warning window with 30s countdown until the PC shuts down. A continuous signal is then sounded via the system loudspeaker.

Monitoring window	Explanation
	The temperature monitor has two message thresholds. The first message threshold is output as the message "High" in the temperature result field. The "High" reading is displayed in the red-and-black flashing mode. No countdown window appears since, depending on the load and ambient conditions, the unit can keep operating for a few minutes, or even for a longer period of time if the temperature level decreases again. Direct shutdown occurs if the 2nd threshold is reached.
	No battery is inserted.

Restarting delay

Once the power supply has been switched off, it can only be switched back on again after 10 seconds have elapsed.

7 Operation

7.1 Setting the acquisition system to 3D camera

IMPORTANT
These settings only apply to software version 3.8.

✓ To use the 3D camera, the acquisition system must be set to *"3D camera"*.

✓ You can only execute the following settings if the *"Settings"* menu is changed to *"Master Mode"*.

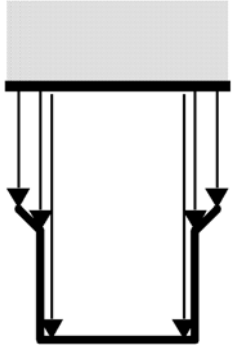
1. In the menu line, select the command *"Settings"* | *"Configuration"* | *"Acquisition system"*.
   ↳ The *"Configuration"* window appears.
2. Select *"3D camera"* and confirm with *"OK"*.

↳ The 3D camera will remain selected until it is set back to *"Scanner"* or *"inEos"*.

7.2 General

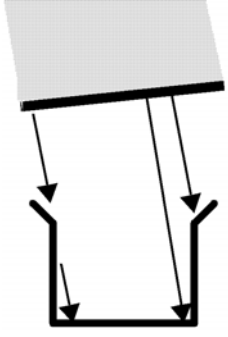
Aligning the Bluecam

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



right

If the Bluecam 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.

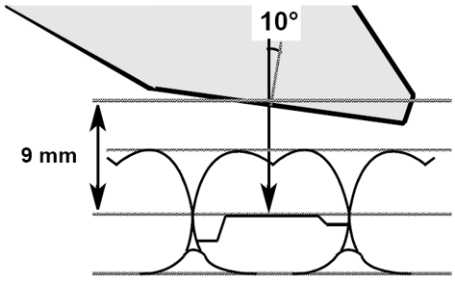


wrong

Depth of focus and focusing

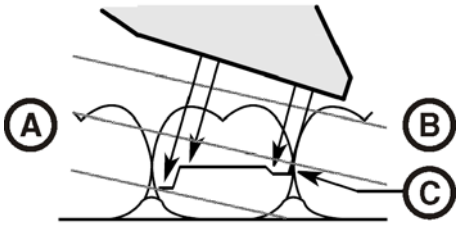
The telecentric optics, which cause objects to be displayed with a constant size regardless of how far away from the prism they are, have a depth of focus which is sufficient to capture deep preparations.

The image definition is determined by the distance between the Bluecam 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 Bluecam is too large, the mesial cervical step moves outside of the focal depth range of the Bluecam 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

7.3.1 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 acquisition.

NOTICE

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.

NOTICE

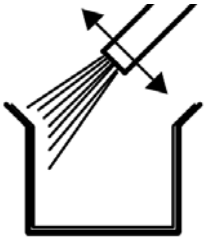
The extraoral 3D image acquisition of a model may be adversely affected by bright light.

Set the model up so that it is not located directly in the beam path of an extreme light source and not exposed to direct sunlight.

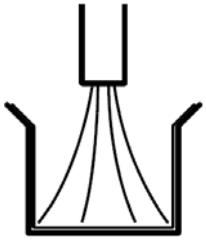
7.3.2 CEREC Optispray

1. Clean and dry the surface to be coated.
2. Place the spray head with cannula/nozzle onto the spray can.
3. Check that the cannula/nozzle is seated correctly before each use by pulling it gently.
4. Shake the container before use.
5. Cover the respective area with the spray in a targeted manner. The cannula/nozzle can be rotated as required to enable optimal coating from all directions. The spray nozzle should be held approx. 10-15 mm away from the object.
6. Take an optical impression with the Bluecam as usual.
7. After taking the 3D optical impression, clean the surface with an air/water spray.
8. Replace the cannula/nozzle after each use.

7.3.3 Direction of application



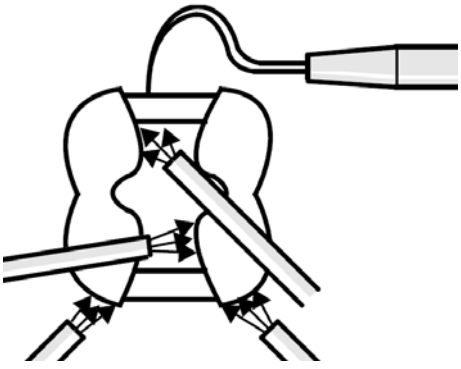
right



wrong

It is essential that the material is applied 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 base may result in an excessively thick layer, which in turn can result in fitting inaccuracy.

7.3.4 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 spray 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 spraying, you can loosely insert dental floss and then carefully remove it again.

NOTICE

Avoid applying too much or not enough coating. We recommend blowing the object clean with compressed air after spraying.

7.4 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

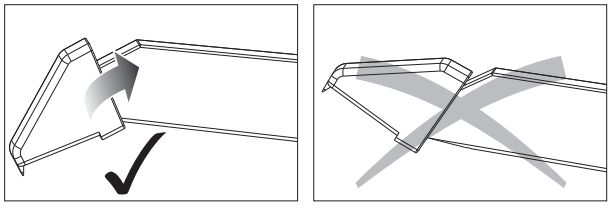
Using the camera support

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

7.5 Preparing the optical impression

Pushing on the camera support

➢ Push the camera support onto the camera as illustrated.



Pushing on the camera support

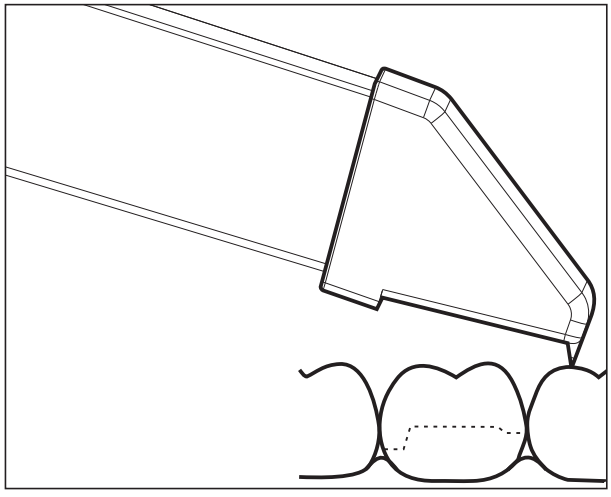
Positioning the camera

⚠ CAUTION

Hot surface!

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

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



Supporting the 3D camera

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

NOTICE

Powder on the surface of the prism

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

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

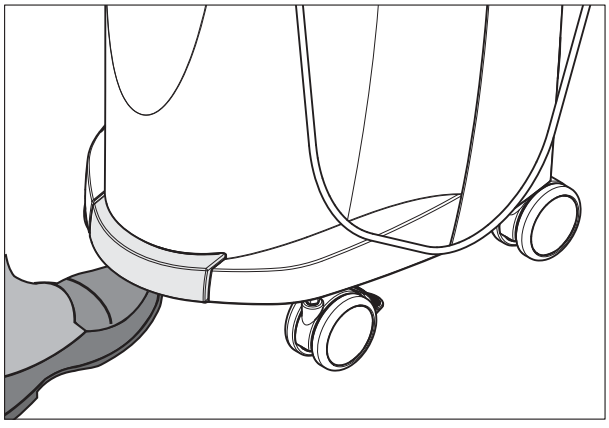
7.6 Acquisition control with software version 3.8

The acquisition control of the Bluecam functions as follows:

Manual acquisition control

✓ A window is opened for a new restoration.

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



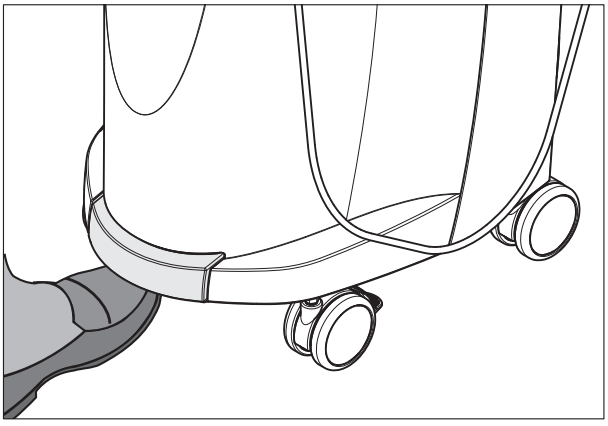
2. Press the **foot control upward** and **keep it pressed**.
   ↳ A live video image appears with a green cross.

3. Release the foot control.
   ↳ The optical impression is automatically transferred to the 3D preview (e.g. the Preparation image field).
4. Additional optical impressions can be captured by repeating steps 1 to 3.
5. By positioning the cursor on another acquisition icon (e.g. *"Acquire occlusion"* or *"Acquire antagonist"*) and repeating steps 2 to 4, additional acquisitions can be taken in the occlusion or antagonist models.
6. To exit the acquisition process, click the icon marked *"Next"*.

Automatic acquisition control

✓ A window is opened for a new restoration.

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



2. Press the foot control upward **briefly**.
   ↳ As soon as a sharp optical impression can be captured, images are automatically generated and transferred to the 3D preview.
3. Press the foot control upward **briefly**.
   ↳ The optical impression is completed.
4. By positioning the cursor on another acquisition icon (e.g. *"Acquire occlusion"* or *"Acquire antagonist"*) and repeating steps 2 to 3, additional acquisitions can be taken in the occlusion or antagonist models.
5. To exit the acquisition process, click the icon marked *"Next"*.

Changing from automatic to manual acquisition control

If you press the **foot control upward** and **keep it pressed** during an automatic exposure, this changes the program back to manual acquisition control.

7.7 Acquisition control with CEREC SW

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.

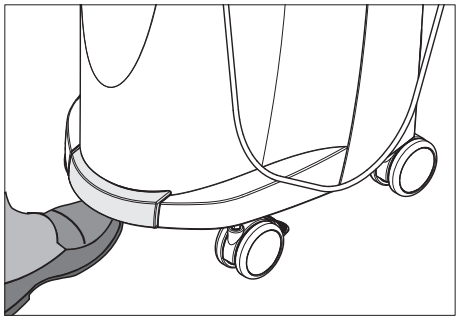
The surroundings of the tooth to be acquired should be as weakly illuminated as possible. Avoid any type of external light. Switch off the dental light.

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

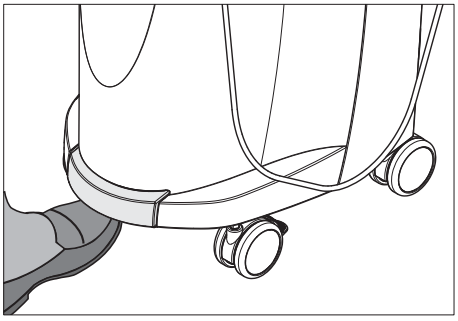
To help avoid blurred acquisitions caused by withdrawing the CEREC camera too early, an acoustic signal sounds as soon as the acquisition is completed. Make sure that neither the Windows volume control is at the lowest position nor “Sound off” is activated.

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.

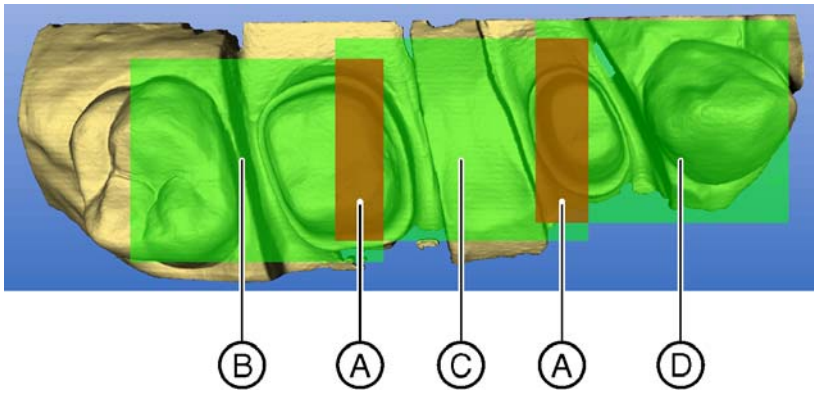
Manual acquisition control



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.

7.8 Acquiring a 3-unit bridge



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

To produce bridge frameworks of up to 3 elements, you can acquire the tooth situation with the CEREC Bluecam. Make sure there is always dental substance visible in the overlap area of the acquisitions (areas **A**). Start by taking the 1st scan on the distal end. Then guide the camera over the preparation in the mesial direction.

8 Maintenance

⚠ WARNING

Danger of touching live parts

If the housing is damaged, there is a possibility of touching live parts inside the unit. If the housing is damaged, the unit must be put and left out of operation until it has been professionally repaired.

NOTICE

Regular inspection

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

Sirona would like to point out that a so-called "retest" (repeat test) must be carried out for the CEREC AC acquisition unit every three years at the latest. In addition, this retest also must be performed following every repair or retrofit of components such as the PC, the PC power supply, the isolating transformer, the camera and the camera cable.

NOTICE

Annual maintenance performed by trained technical personnel is recommended.

8.1 Care and cleaning agents

NOTICE

Approved care and cleaning agents

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

Approved care and cleaning agents

NOTICE

Not for LCD monitors

Do not use the agents listed in the following for the LCD monitor!

You can use these agents for all other surfaces, including the camera.

Not approved in the USA

Alpro	• Minuten Spray classic • Minuten Wipes • Plasti Sept • Plasti Sept Wipes
Merz	• Pursept-A
Dürr	• FD 312

Approved in the USA

Kerr Corporation	• CaviCide • Cavi Wipes

8.2 Care and cleaning of the monitor screen

Cleaning

The monitor screen can be wiped off with a soft cloth.

NOTICE

Never spray the monitor screen with a disinfectant or cleaning agent!

8.3 Surfaces (without monitor)

NOTICE

Use only care and cleaning agents which have been approved by Sirona (see Care and cleaning agents)!

Cleaning

NOTICE

Do not allow liquids to penetrate into the ventilation slots!

NOTICE

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!

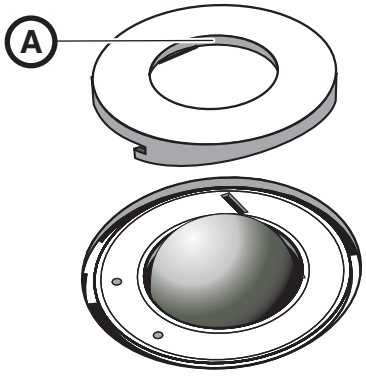
Protection against medicaments

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

NOTICE

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



1. Rotate the cover ring counterclockwise and remove it.
2. Clean inner surface of cover ring (**A**) with ethanol (commercially available cleaning alcohol).
3. Remove the ball.
4. Wipe out the calotte (spherical cap).
5. Insert the ball.
6. Fit the cover ring and turn it clockwise until it is firmly tightened.

NOTICE

Setting the ease of action of the ball

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 Bluecam

IMPORTANT

If you are using software version 3.8, calibrate the Bluecam with the installed CEREC SW or CEREC Connect SW software.

The scanning technique used by the system requires the use of a calibrated Bluecam. The Bluecam is factory calibrated. If calibration should be required, you can use the supplied *"Bluecam calibration set"*.

NOTICE

Make sure that the surfaces of part A and part B in *"Bluecam calibration set"* are free from contamination.

Recalibrate the CEREC Bluecam in the following cases:

- following transport (shaking stress),
- 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.

NOTICE

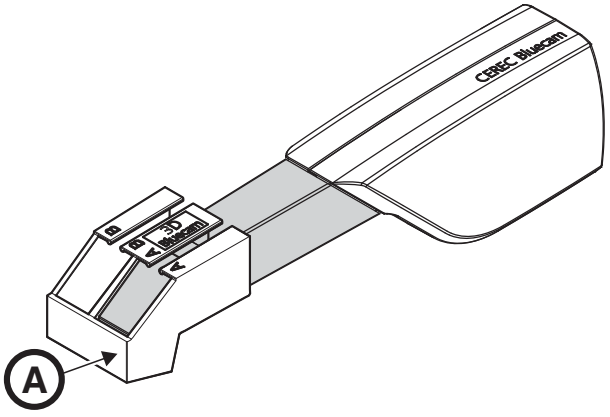
The *"Bluecam calibration set"* must not be powdered.

Start calibration

1. In the software, navigate to the system menu and click on the *"Configuration"* button.
2. Click on the *"Devices"* button.
3. Click on the *"Camera"* button.
4. Click on the *"Calibrate"* button.

Part A Calibration

You will be prompted to fasten the **calibration set** with **part A** to the Bluecam.

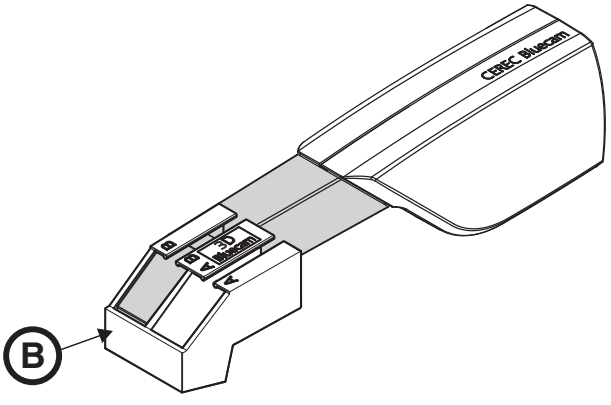


A	Part A

1. Slide the calibration set with part A as far as it will go toward the camera handle.
2. Click on the *"OK"* button.
   ↳ The program now automatically starts calibrating the Bluecam.

Part B Calibration

You will be prompted to fasten the calibration set to the Bluecam with **part B**.



B	Part B

1. Slide the calibration set with part B as far as it will go toward the camera handle.
2. Click on the *"OK"* button.
   ↳ The program then automatically calibrates the Z scale of the Bluecam.

Completing the calibration

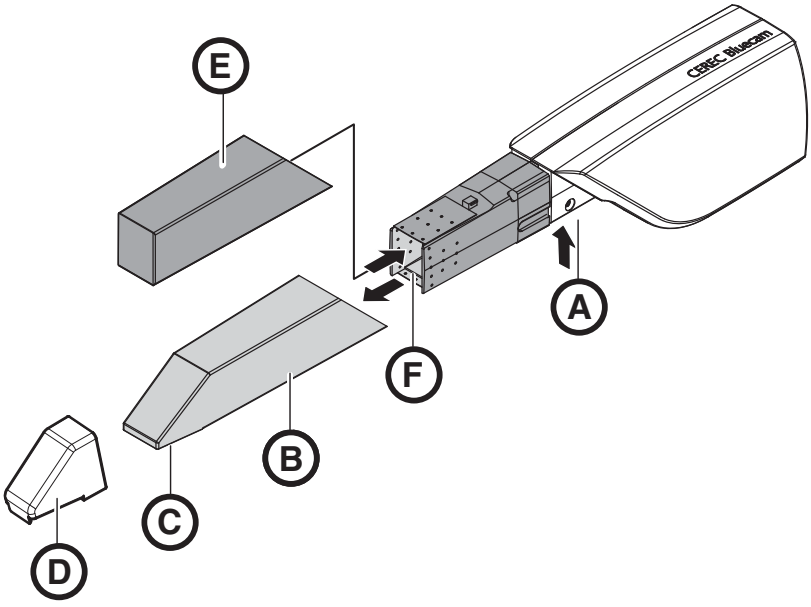
✓ The software reports that calibration is complete.

➢ Click on the *"OK"* button.

↳ The Bluecam is calibrated.

8.6 Care of the Bluecam

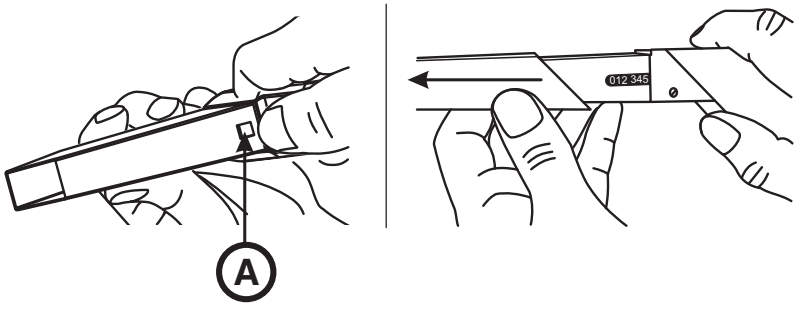
8.6.1 Prismatic tube without sapphire glass



A	Press detent to release	D	Camera support 6 pcs., Order No. 5945360
B	Prismatic tube	E	Protective cap
C	Prism	F	Front lens

The Bluecam 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



A	Detent

1. Press the prismatic tube against the camera body.
2. Press detent **A**.

NOTICE

Risk of damaging the front lens or prism.

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

3. Pull off the prismatic tube.

Fitting the prismatic tube

NOTICE

Do not use CEREC 2 / CEREC 3 prismatic tubes.

NOTICE

Risk of damaging the front lens or prism.

➢ The prismatic tube must not touch the front lens.

➢ Push the prismatic tube straight toward the camera body; do not tilt it.

➢ Carefully refit the prismatic tube until it locks in place.

Disinfecting

NOTICE

Do not spray the Bluecam with or immerse it in cleaning agents or disinfectants!

➢ Disinfect the Bluecam with a cloth which has been soaked in the agent specified in the section "Care and cleaning agents".

Sterilizing

NOTICE

Not sterilizable!

Do not under any circumstances sterilize the Bluecam 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 cap over the front lens to protect it.

⚠ CAUTION

If the Bluecam accidentally falls down, check to make sure that the front lens and prism are not damaged. If the Bluecam has been damaged, it must not be used on patients any more.

The Bluecam must be recalibrated in any case.

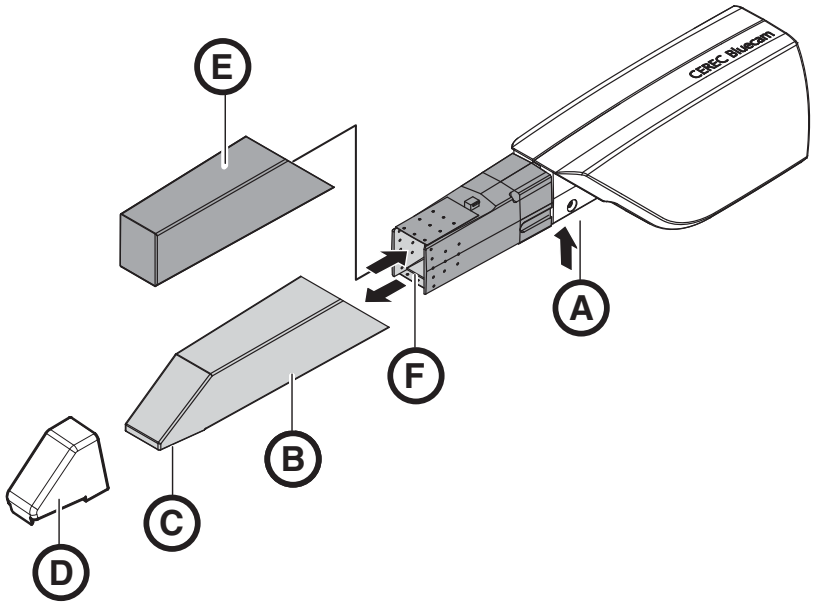
NOTICE

For markets where the RKI* guidelines are to be observed

The prismatic tube is classified as a "semicritical medical device A" according to RKI guidelines and therefore does not have to be autoclavable.

*RKI=Robert Koch Institute, Berlin (Germany).

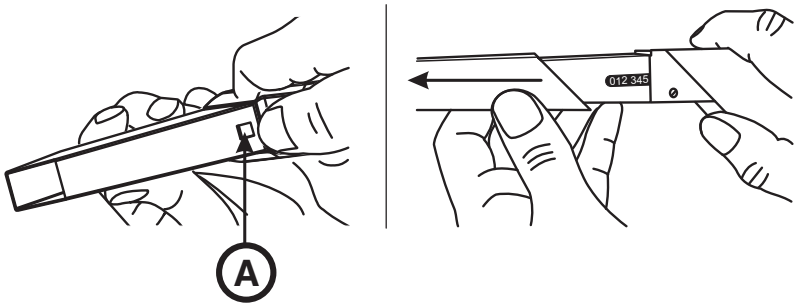
8.6.2 Prismatic tube with sapphire glass



A	Press detent to release	D	Camera support 6 pcs., Order No. 5945360
B	Prismatic tube	E	Protective cap
C	Prism	F	Front lens

The Bluecam 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



A	Detent

1. Press the prismatic tube against the camera body.
2. Press detent **A**.

NOTICE

Risk of damaging the front lens or prism.

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

3. Pull off the prismatic tube.
4. Replace protective cap (**E**).

Disinfecting

NOTICE

Do not spray the Bluecam with or immerse it in cleaning agents or disinfectants!

➢ Disinfect the Bluecam (including the prismatic tube with sapphire glass) with a cloth which has been soaked in the agent specified in the section "Care and cleaning agents“ in the operating instructions for the acquisition unit.

Sterilizing

NOTICE

Not sterilizable!

Do not under any circumstances sterilize the Bluecam or the video cable!

The camera support cannot be sterilized.

⚠ CAUTION

If the Bluecam accidentally falls down, check to make sure that the front lens and prism are not damaged. If the Bluecam has been damaged, it must not be used on patients any more.

The Bluecam must be recalibrated in any case.

NOTICE

Risk of damaging the prismatic tube!

The prismatic tube with sapphire glass is not suitable for hot air sterilization and autoclaving!

The permissible temperature range is: -25°C to +60°C.

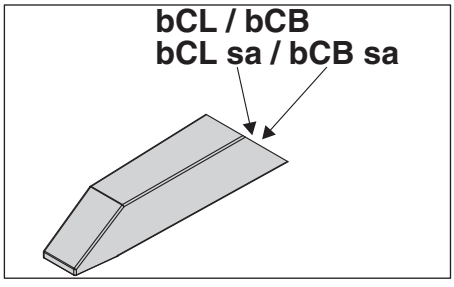
NOTICE

For markets where the RKI* guidelines are to be observed

The prismatic tube is classified as a "semicritical medical device A" according to RKI guidelines and therefore does not have to be autoclavable.

*RKI=Robert Koch Institute, Berlin (Germany).

Fitting the prismatic tube



1. Pull off the protective cap (**E**).

NOTICE

Do not use CEREC 2 / CEREC 3 prismatic tubes.

➢ Only use prismatic tubes marked with "**bCL sa**", "**bCB sa**", "**bCL**" or "**bCB**".

NOTICE

Risk of damaging the front lens or prism.

➢ The prismatic tube must not touch the front lens.

➢ Push the prismatic tube straight toward the camera body; do not tilt it.

2. Carefully refit the prismatic tube until it locks in place.

8.7 Replacing the main fuse

⚠ WARNING

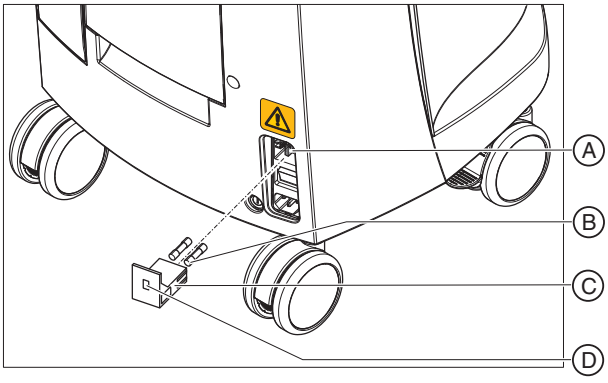
Electric shock

Disconnect the power plug at the unit end before replacing the fuses.

NOTICE

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: 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.

8.8 Replacing fuse F3

⚠ WARNING

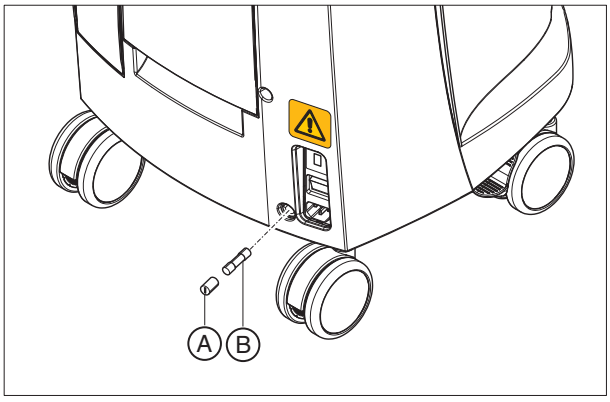
Electric shock

Disconnect the power plug at the unit end before replacing the fuses.

NOTICE

Fuse type

Use only fuses of the same type!



A	Fuse holder	B	Fuse

Fuses: T2,5A L 250V Order No. 46 57 656

✓ The power plug must be disconnected.

1. Use a screwdriver to unscrew the fuse holder.
2. Replace the defective fuse.
3. Screw the fuse holder back in.

8.9 Charge battery (optional)

NOTICE

Reduced buffer cycles

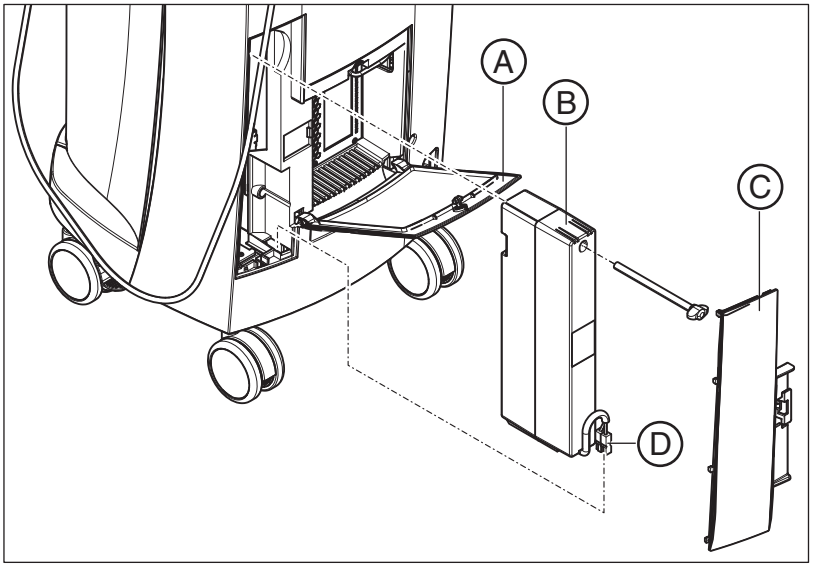
After around 1000 buffer cycles the capacity of the battery fades due to the nature of the battery technology used.

If the buffer times are too short, you should replace the battery.

The storage battery is permanently charged during operation on line voltage. This allows brief buffer operation after one hour of charging.

For a complete charge, the battery must be charged without interruption for at least 12 hours. Keeping the acquisition unit connected to the mains voltage and the power switch on is sufficient here. The PC does not have to be switched on for the charging process.

8.10 Replace battery (optional)



A	Bottom door	C	Battery cover
B	Storage battery	D	Battery connector

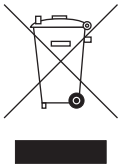
1. Open the lower door on the back panel.

NOTICE

Open with coin.

Use a coin to open the latch. Turn counterclockwise.

2. Remove the battery cover.
3. Unplug the battery connector.
4. Unscrew the fastening screw and remove the battery.
5. Insert the new battery into the battery compartment with the fastening screw and screw it down.
6. Plug in the battery plug.
7. Attach the battery cover.
8. Put the door back in position and lock it.



9 Disposal

Your product is marked with the adjacent symbol. 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 observe the disposal regulations applicable in your country.

Disposal procedure

Please note that this product is subject to the stipulations in EC Directive 2002/96 governing waste electrical and electronic equipment and must be disposed of in line with these special requirements within the European Union (EU).

Prior to disassembly / disposal of the product, it must be fully prepared (cleaned / disinfected / sterilized).

When disposing of equipment permanently, please proceed as follows:

In Germany:

To initiate return of the electrical device, please send a disposal order to "enretec GmbH".

1. You can find a form for placing a disposal order on the company's homepage (www.enretec.de) under the menu item "Entsorgung elektrischer und elektronischer Geräte" (Disposal of electric and electronic devices). The form can either be downloaded or completed online.
2. Fill out the form with the corresponding details and send it as an online order or fax it to enretec GmbH at +49(0)3304 3919 590. You can also get in touch with the following contacts for disposal orders and any questions relating to this you may have:
   Phone: +49(0)3304 3919 500;
   E-mail: pickup@eomRECYCLING.com
   Mailing address: enretec GmbH, Geschäftsbereich eomRECYCLING Kanalstrasse 17, 16727 Velten

↳ Any nonpermanently installed equipment will be picked up at its installation site in the practice. Permanently installed equipment will be picked up curbside at your address by appointment.

All disassembly, transport and packaging costs are to be borne by the owner/operator of the equipment. The disposal itself is free of charge.

Worldwide (outside Germany):

Please contact your local dental equipment specialist for country-specific information on disposal.

9.1 Disposal of the storage battery pack

The storage battery pack located in the acquisition unit must be subjected to recycling if it becomes defective or reaches the end of its service life. Recycling is performed via Sirona.

The storage battery pack is marked with the adjacent symbol. Disposal of the storage battery pack with domestic refuse is not compatible with the objectives of environmentally sound recycling/disposal. Send in the replaced storage battery pack to Sirona (see the reverse side of these operating instructions for the mailing address).

10 Appendix

10.1 DVD playback

DVD videos can be played back on the acquisition unit via *"Windows Media Center"*.

➢ Start the program via the corresponding icon or via *"Start"* | *"All 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 Creating (burning) a CD

The Nero Multimedia Suite 10 Essentials program is installed on the acquisition unit for burning data CDs.

➢ Start the program via the corresponding icon or via *"Start"* | *"All Programs"* | *"Nero"* | *"Nero 10"* | *"NeroExpress"*.

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

NOTICE

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

NOTICE

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

NOTICE

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**).

Index

Numerics

3D calibration set, 28
3D camera, 39

A

Acquisition
optical, 40
Acquisition unit
Overview, 27
Air pressure
Operation, 21
Storage, 21
Transport, 21
Ambient temperature
Operation, 21

B

Bluecam
Acquisition control, 43
Angle of incidence, 40
calibrating, 49
Care, 51, 53
Depth of focus, 40
Disinfecting, 52, 54
Focusing, 40
Sterilizing, 52, 54
Building installation, 10

C

Camera support, 28, 51, 53
Care agents
Care, 47
Care and cleaning agents
approved care and cleaning agents, 47
CE mark, 9
CEREC application, 34
CEREC button, 34
Cleaning agent, 48
Cleaning agents
Cleaning, 47
Compliance, 9
Conditions
Operation, 21
Storage, 21
Transport, 21

D

Dimensions, 21
Disinfectant, 48
Disinfecting, 48
Disposal
Disposal of electronic and electrical equipment, 58

F

Foot pedal, 27
Front lens, 28, 51, 53
Fuse
Fuse type, 55, 55
Order No., 55, 56
Replacement, 55, 56
Fuses, 29

H

Heater plate, 27
HUB, 18

I

Insertion
Trackball, 33
Intended use, 9

L

Line voltage, 30

M

Main fuses, 30, 55
Main switch, 29, 30, 33
Maintenance, 11
Measuring technique, 40
Modem, 18
Monitor
Cleaning, 47
ON/OFF switch, 33

N

Network, 18
Network installation, 32

O

ON button, 30, 33
Online help, 34
Operating mode, 20
Operating state LED, 30

P

Packaging, 26
Patient area, 18
Plug connections, 31
Power connection, 29
Prism, 28, 51, 53
Prismatic tube, 28, 51, 53
Product safety, 12
Protection against medicaments, 48
Protection class, 20
Protective cap, 28, 51, 53
Protective ground wire, 18

R

Rated current, 20, 20, 20
Rated line voltage, 20, 20, 20
Relative humidity
Operation, 21
Storage, 21
Transport, 21
Repair, 11

S

Safety information, 6
Scope of supply, 26
Setting
Trackball, 49
Storage battery, 56
Storage battery pack, 21
Disposal, 59
Surface, 40
Switch, 18

T

Temperature
Storage, 21
Transport, 21
Trackball, 27
Cleaning, 49
trackball button
left, 33
right, 33
Trackball button
center, 27
left, 27
right, 27
Transport, 26
Type designation, 20

U

Unpacking, 26
Usage purpose, 9

V

Voltage selection insert, 30, 55

W

Warranty, 7

Water, 20

Weight, 21

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