New as of: 01.2019

Dentsply Sirona

Sirona Dental CAD/CAM System CEREC AC

With CEREC Omnicam

Operating Instructions (valid for USA)

English

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

- US6813035
- US7388678
- US7801632
- US8062034
- US8111909

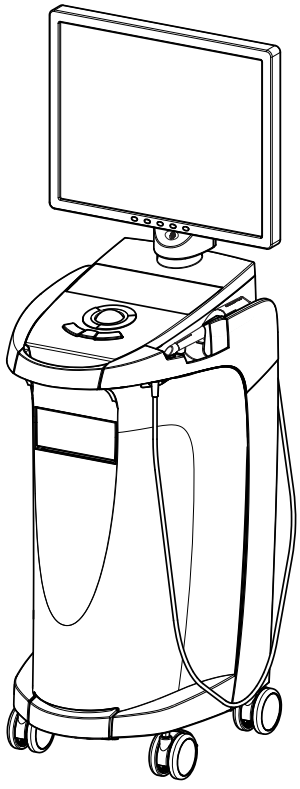


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1 Dear Customer,

Thank you for your purchase of this CEREC AC® unit from Dentsply 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 therefore read and follow these operating instructions carefully. Always keep them within easy reach.

Also pay attention to the safety instructions to prevent personal injury and material damage.

Your
CEREC AC team

1.1 Contact information

Customer service center

For technical questions, use the contact form on the internet at the following address:
http://srvcontact.sirona.com

Manufacturer's address



Sirona Dental Systems GmbH
Fabrikstrasse 31
64625 Bensheim
Germany

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

2 General data

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

Original language of the present document: German.

2.1 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 these operating instructions. Such information is highlighted as follows:

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTE

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

IMPORTANT

Application instructions and other important information.

Tip: Information for simplifying work.

2.1.2 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 ➢ Individual action step	Prompts you to do something.
See "Formats and symbols used [→ 8]"	Identifies a reference to another text passage and specifies its page number.
• List	Designates a list.
“Command / menu item”	Indicates commands / menu items or quotations.

2.2 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.

2.3 Legend

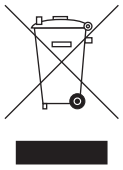


Year of manufacture



Safety labels

Identifies labels/imprints on the unit (see Safety labels [→ 16]).



Product disposal symbol (see "Disposal [→ 77]").



Storage battery pack disposal symbol (see "Disposal of the storage battery pack" [→ 78])



Storage battery pack recycling symbol (see "Disposal of the storage battery pack" [→ 78])



The CEREC AC acquisition unit 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:



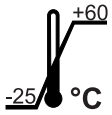
Top



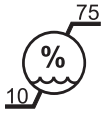
Protect from moisture



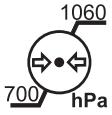
Fragile; handle with care



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



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

NOTE

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.

EAC certification



Mark of conformity of the Eurasian Economic Community

3.2 Intended use

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

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

⚠ CAUTION

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

⚠ CAUTION

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

3.3 Further use of Sirona Dental CAD/CAM System

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

4 Safety

4.1 Basic safety information

4.1.1 Prerequisites

NOTE

Important information 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.

NOTE

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 coming into contact with 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.

NOTE

Install only approved software

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

➢ Use version ≥ CEREC software 4.0.4 or

➢ Use version ≥ CEREC Connect software 4.1.1.

NOTE

Ventilation openings must not be obstructed.

4.1.4 Movement and stability of the unit

NOTE

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 have brakes which can be locked to ensure secure positioning. If the unit is steeply inclined or 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 Dentsply Sirona or by agencies authorized by Dentsply Sirona.
- Components which have failed and influence the safety of the unit must be replaced with original (OEM) spare parts.
- Only original cables may be used, so that EMC requirements are met.

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 Modifications to the product

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

4.1.7 Accessories

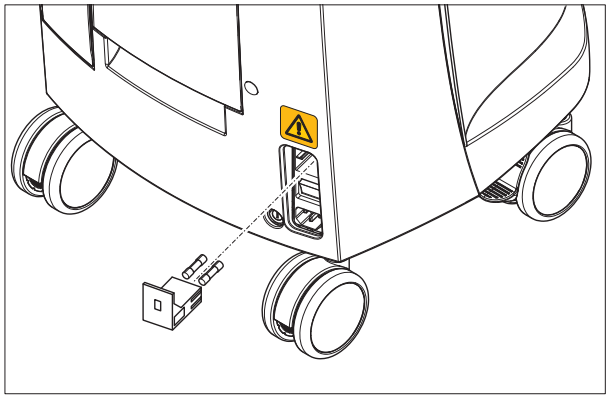
In order to ensure product safety, this device may be operated only with original Dentsply Sirona accessories or third-party accessories expressly approved by Dentsply Sirona. The user is responsible for any damage resulting from the use of non-approved accessories.

4.1.7.1 Included accessories

- Storage battery pack, order no.: 61 87 582
- CEREC Omnicam disposable sleeves (50 units), order No.: 66 32 264

4.2 Safety labels

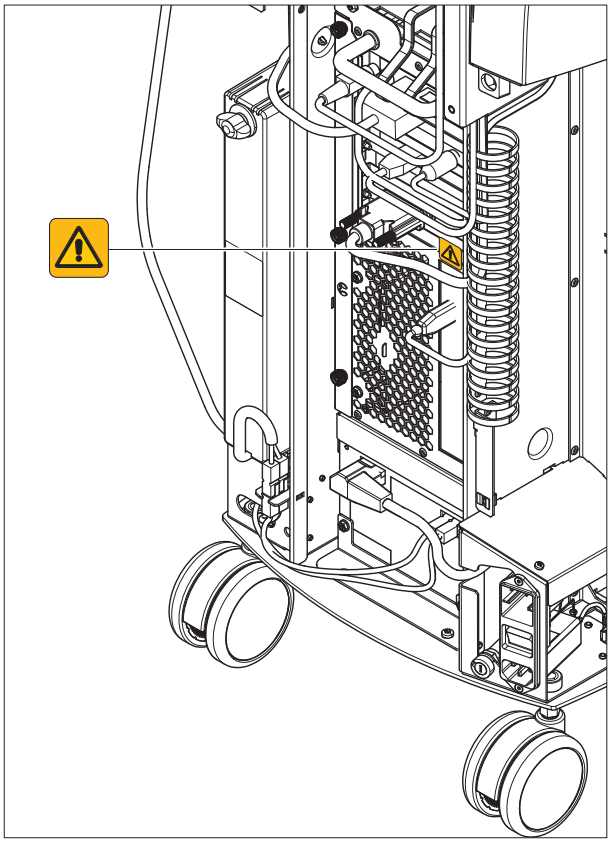
Fuses



NOTE

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 Part 1: 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 1.5 m surrounding the patient).

⚠ CAUTION

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

➢ Do not touch the pins of the connectors.

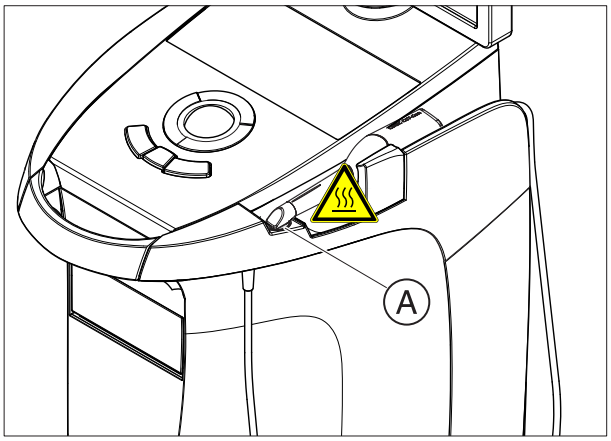
NOTE

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

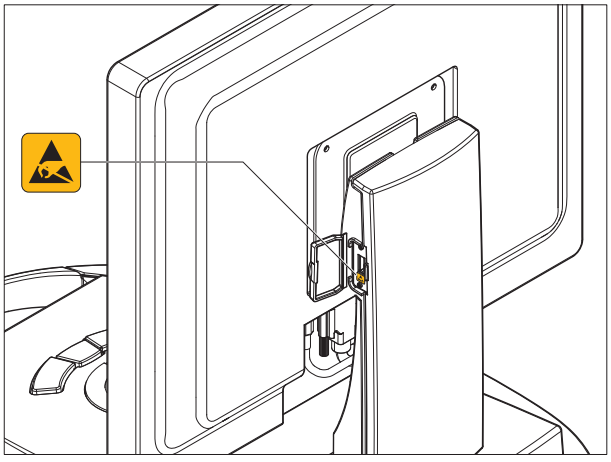
Risk of injury or damage to components from electrostatic discharge

For electrical components labeled with an ESD warning label, observe the following instructions.

➢ Apply the ESD protective measures.

➢ Do not touch connector pins or sockets without applying ESD protective measures first.

➢ Do not establish any connections between these connectors without applying ESD protective measures first.

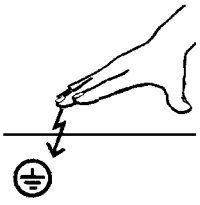


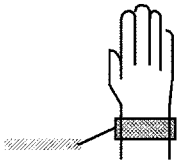
4.3.2 ESD protective measures

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" [→ 20].

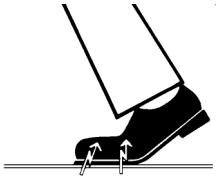
4.3.3 About the physics of electrostatic charges

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).

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:

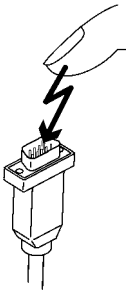
- perceptible at 3,000 V or higher
- audible at 5,000 V or higher (cracking, crackling)
- visible at 10,000 V or higher (arc-over)

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.

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

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

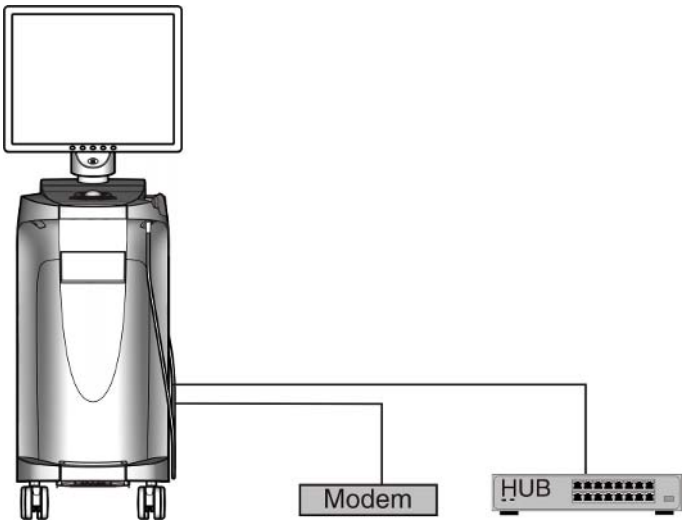
Note on wireless communication

Data communication between the acquisition unit and the CEREC MC XL milling and grinding unit should preferably be established via the wireless interface CEREC Radio Device 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.

Dentsply Sirona has selected the best possible configuration for data communication via the wireless interface (CEREC Radio Device) or WLAN, which generally ensures 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 wireless interface connection, and instead connect the LAN cable with the CEREC MC XL milling and grinding unit.

4.6 Integration in a network or connection to a modem



NOTE

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 reflective sleeve (reflective sleeve 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
- DVD-R(W)/CD-R(W) drive
- Ethernet port and WLAN
- USB port
- 1 integrated loudspeaker

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

• Measuring technique:	Triangulation
• Light source:	White LED, unpolarized, visible spectral range
• Image acquisition:	Image control inside the camera
• Image data transfer:	Gigabit Ethernet Standard

Monitor

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

PC hardware

Special PC with the following equipment:

- Processor: Intel®
- Memory: 16 GB
- DVD-R(W)/CD-R(W):
- Hard disk: 1x SATA HDD
- Network card: Ethernet 10/100/1000 Mbit/s
- WLAN card
- Sound card
- Graphics card
- Supply board: 61 46 048 D3573 Sirona

PC software

- Operating system: Windows Embedded Standard 7, 64 Bit
- Installation: The operating system is 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	100 - 240 VAC /50 - 60 Hz
Rated current	4.7 - 1.8 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 47⅝ 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 - guidelines
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**	coincides	

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 – guidelines
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.
Note: 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 – guidelines
Conducted RF interference **IEC 61000-4-6**	3 V_{eff} 150 kHz to 80 MHz	3 V_{eff}	d= [1.2] √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] √P at 80 MHz to 800 MHz d= [2.3] √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 80 MHz, field strengths should be less than 3 V/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] √P	d= [1.2] √P	d= [2,3] √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 products from Dentsply Sirona 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.

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.

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.

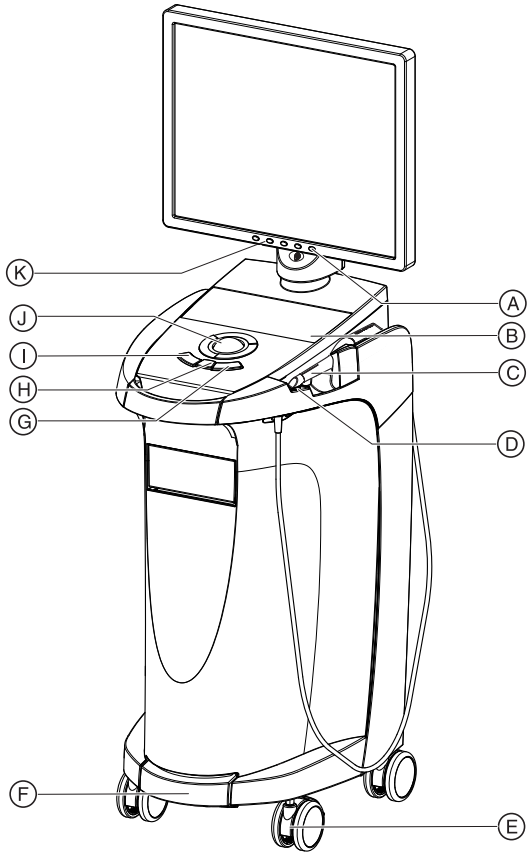
6.3 Scope of supply

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

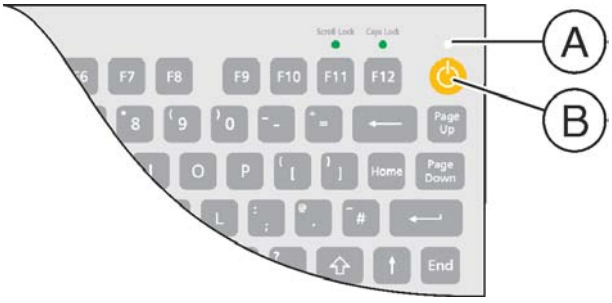
6.4 Initial startup

6.4.1 Controls and functional elements

Overview of the front panel

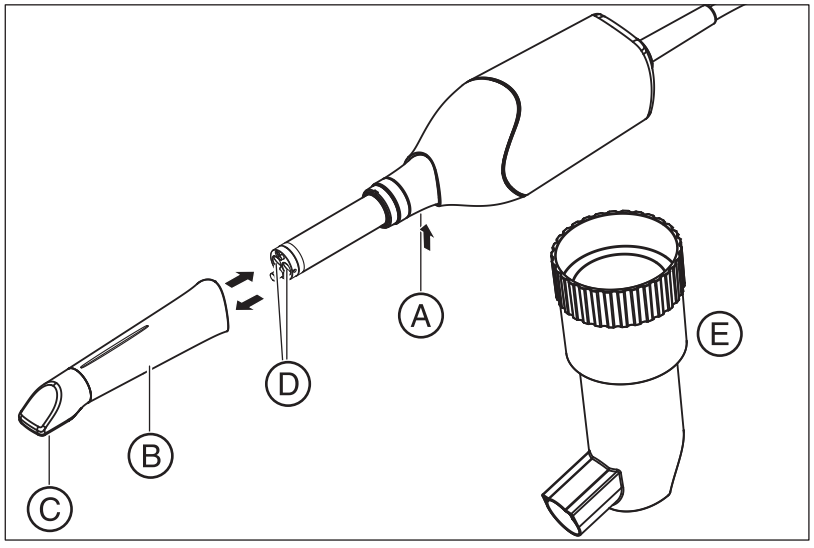


A	Monitor ON/OFF switch	H	Center trackball button
B	Membrane keyboard	I	Left trackball button
C	CEREC Omnicam	J	Trackball
D	Heater plate	K	Keys for monitor settings
E	Locking brake		
F	Foot switch/foot pedal		
G	Right trackball button		



A	Operating state LED
B	ON button

Components of the Omnicam



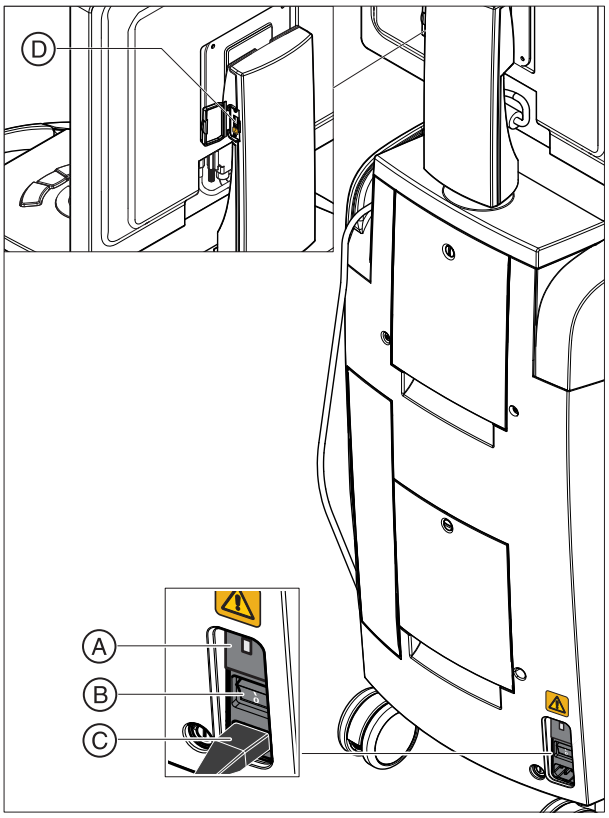
A	Press detent to release	D	Camera windows
B	Mirror sleeve	E	Calibration set
C	Sapphire glass (coated)		

NOTE

CEREC Omnicam is calibrated

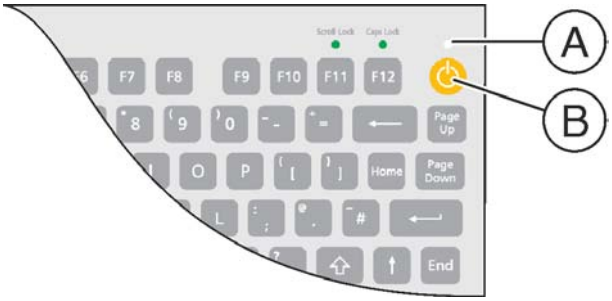
The CEREC Omnicam is calibrated ex works (see "Calibrating CEREC Omnicam [→ 67]“).

Overview of rear side



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

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 Plug connections

NOTE

The CEREC Omnicam 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 CEREC Omnicam.

➢ Always deposit the sensitive CEREC Omnicam in its holder!

NOTE

Do not damage cable

If you pull on the cable itself in order to unplug it or to check the plug connection, you will damage the cable.

➢ Never pull on the cable.

➢ Slide the moving part of the plug-in coupling upward on the CEREC AC. At the same time, hold the camera connector in place.

1. Connect the unit to the line voltage with the power cord.
2. Carefully insert the connector of the CEREC Omnicam cable into the coupling on the CEREC AC, watching out for the guide nose.
3. Check the plug connections of the power supply and the camera. The CEREC Omnicam always remains connected.

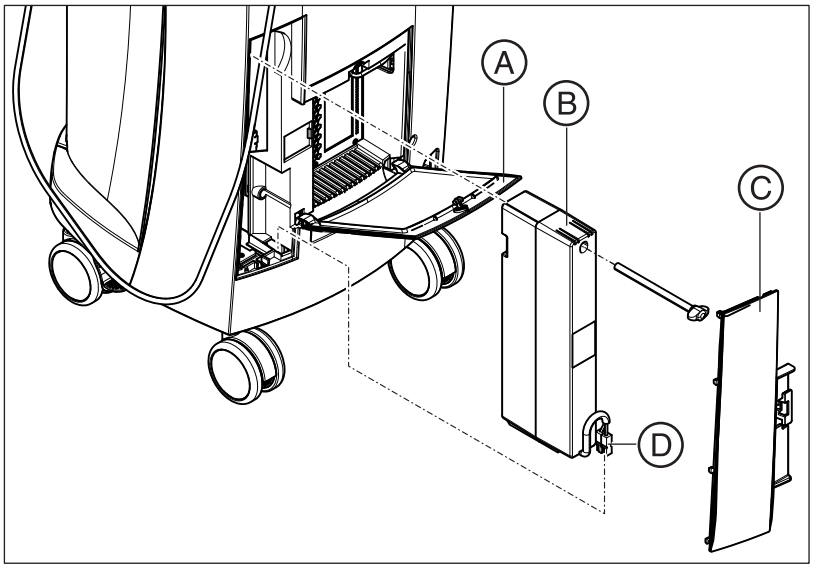


Notes on network installation

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 Dentsply Sirona.

6.4.4 Insert battery (optional)



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

1. Open the lower door on the back panel.

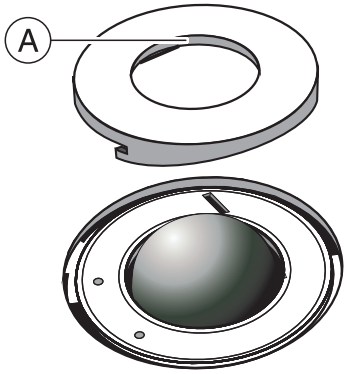
NOTE

Open with coin.

Use a coin to open the latch. Turn counterclockwise.

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.

6.4.5 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.

6.4.6 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.

6.4.7 Switching the units on

NOTE

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)

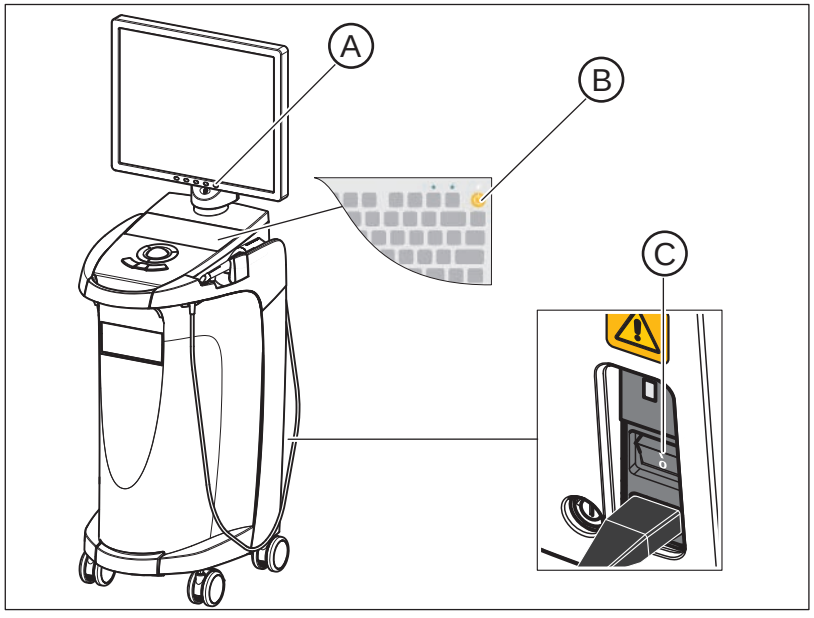
↳ The unit is dry and can be put into operation.

⚠ CAUTION

Use only the supplied power cord

Use only the power cord supplied by Dentsply 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	CC
B	ON button		

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

NOTE

Possible data loss and PC malfunction:

Switching the acquisition 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 SW"* application by double-clicking on the *"CEREC SW"* 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.

NOTE

To provide data security breach it is recommended to activate the password secured login function of the windows operating system.

6.4.8 Switching the units off

NOTE

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.

NOTE

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) [→ 75]).

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

Treating a patient (generating intraoral acquisitions) is not permitted if the unit is not connected to the power supply of the practice.

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.

NOTE

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.

NOTE

In battery mode, the CEREC AC acquisition unit must remain connected to the mains supply for at least two hours after using the battery buffering to charge the storage batteries.
At least every three months the CEREC AC acquisition unit must be connected to the mains supply to charge the storage batteries.

Monitoring program

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





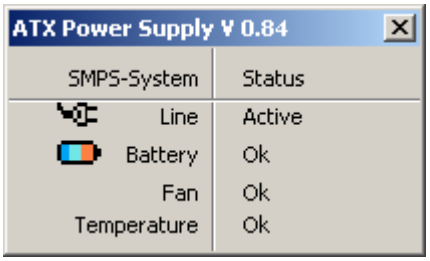




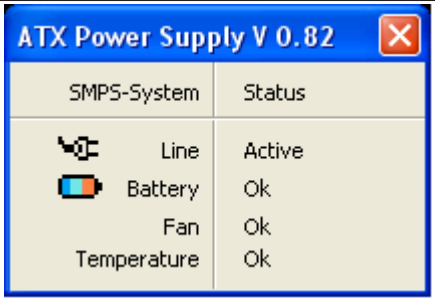
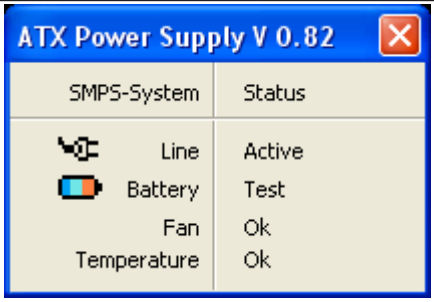
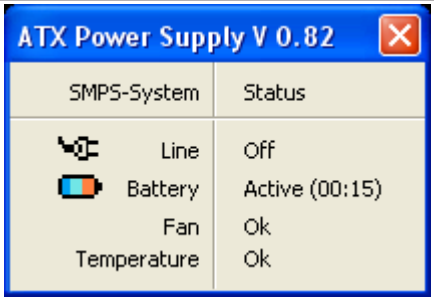
The color of the symbol has the following meaning:

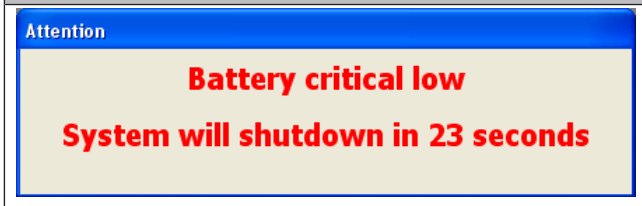
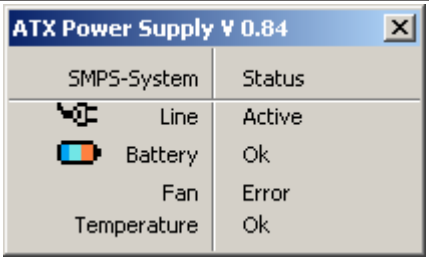
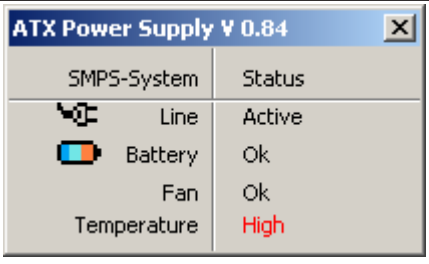
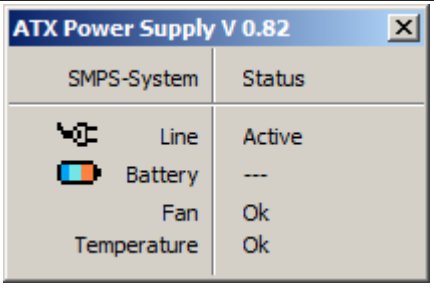
- Green = line voltage present, fan functioning, temperature OK.
- Yellow = Unit running in battery-powered mode, all other operating parameters OK.
- Red = error

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.

Monitoring window	Explanation
	When the battery charge is almost depleted, the shut-down 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.
	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 Camera warm-up time

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

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

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

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

7.2 Adjusting the CEREC Omnicam



You can adjust the CEREC Omnicam in the device configuration.

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

Accepting settings

➢ Click on the *"Ok"* button.

Discarding settings

➢ Click on the *"Cancel"* button.

7.3 Taking acquisitions with the CEREC Omnicam

⚠ CAUTION

Hot surface!

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

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

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

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 CEREC Omnicam scanner and the tooth.

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

IMPORTANT

Do not use cotton rolls in the scan area

Do not use any cotton rolls in the vicinity of the scan area, as they can reduce the precision of the scan and create image interference.

⚠ CAUTION

Prevent cross-contamination

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

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

⚠ CAUTION

In the case of patients with allergies to nickel

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

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

⚠ WARNING

Risk of injury for those diagnosed with epilepsy

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

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

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

✓ The teeth are blow-dried.

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

Proceeding with scanning procedure

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

7.4 Directing the camera

⚠ CAUTION

After each use

Prepare the camera once again after each patient.

➢ Follow the instructions in the "CEREC Omnicam" section in order to avoid cross-contamination between patients.

⚠ CAUTION

After each use

Reprocess the camera after each patient.

➢ Follow the instructions in chapter „CEREC Omnicam [→ 56]“ in order to avoid cross-contamination between patients.

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

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

IMPORTANT

Registration error

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

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

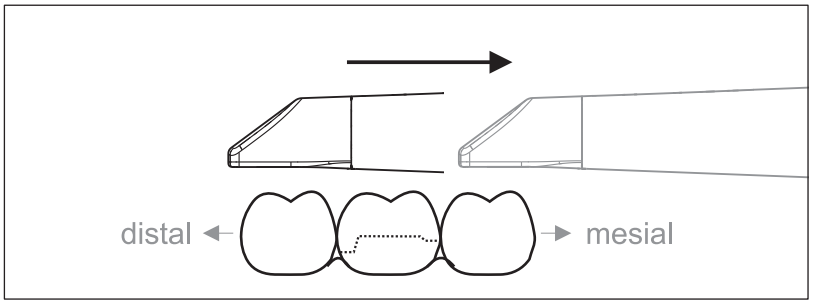
⇨ You will be able to hear the sound for registered acquisitions.

➢ Continue the acquisition.

Divide the acquisition into four consecutive sequences:

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

7.4.1 Occlusal scan

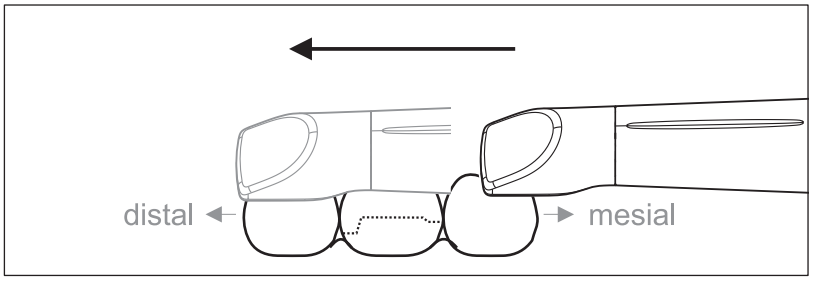


Important: Ensure that the distance between the coated sapphire glass of the CEREC Omnicam and the scanned surface is observed.
The distance must be between 0 - 15 mm (ideally: 5 mm). The camera does not rest on the teeth or the gums. If the distance is too great, no data will be obtained.

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

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

7.4.2 Buccal scan



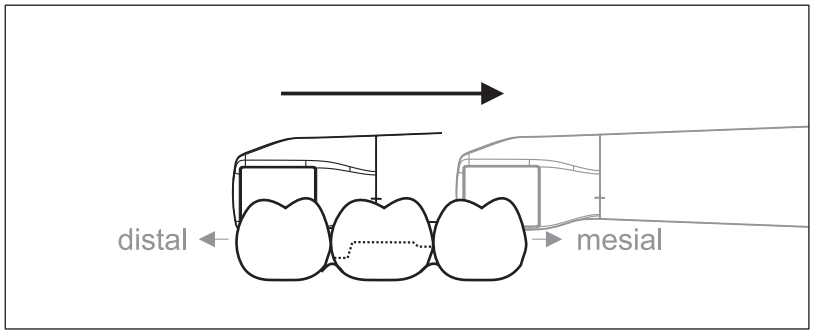
✓ The CEREC Omnicam is on the adjacent tooth, in the mesial direction to the preparation.

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

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

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

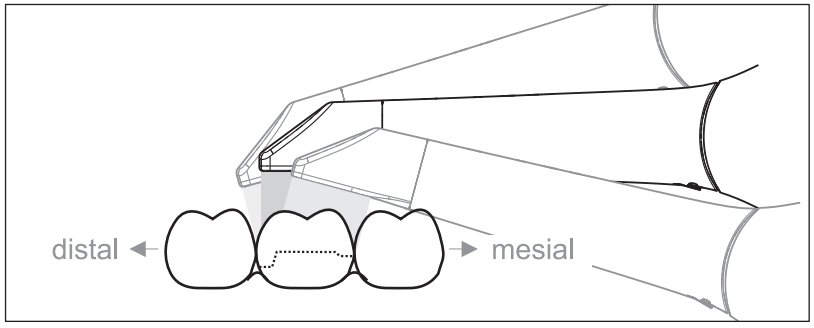
7.4.3 Lingual scan



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

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

7.4.4 Approximal surface scan



Scan the approximal surfaces of the prepared tooth.

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

Notes:

- Remove the soft tissue.
- Cut away the moveable gingivae, so that only 2-5 mm gingivae remains around the tooth.
- When performing this activity, be careful not to accidentally cut out any areas that e.g. are located behind the model or are otherwise cut away from the line.
- This cut must be completed during the ACQUISITION phase using the cutter.

7.4.5 Buccal registration

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

✓ The jaw with the preparation is scanned.

1. Scan the occlusal, buccal and lingual view of the antagonist (see the section “Occlusal scan [→ 47]”, “Buccal scan [→ 47]” and “Lingual scan [→ 48]”).
2. Perform a buccal scan of the bite block prior to completing the registration. This buccal scan should be carried out close-up to the preparation. To acquire sufficient geometry, capture the teeth of the upper and lower jaw as well as 5 mm of the respective gingival areas.

7.4.6 Scan procedure for the color analysis

Do not guide the Omnicam exclusively at the same distance to the tooth when carrying out the color analysis.

Vary the distance to the tooth for the scan of the buccal surface of the tooth for which you wish to carry out a color analysis of the buccal surface.

Ensure that you avoid reflections (highlights) on the buccal surface by tilting the Omnicam slightly during the scanning process.

7.4.7 Scanning the quadrant and jaw

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

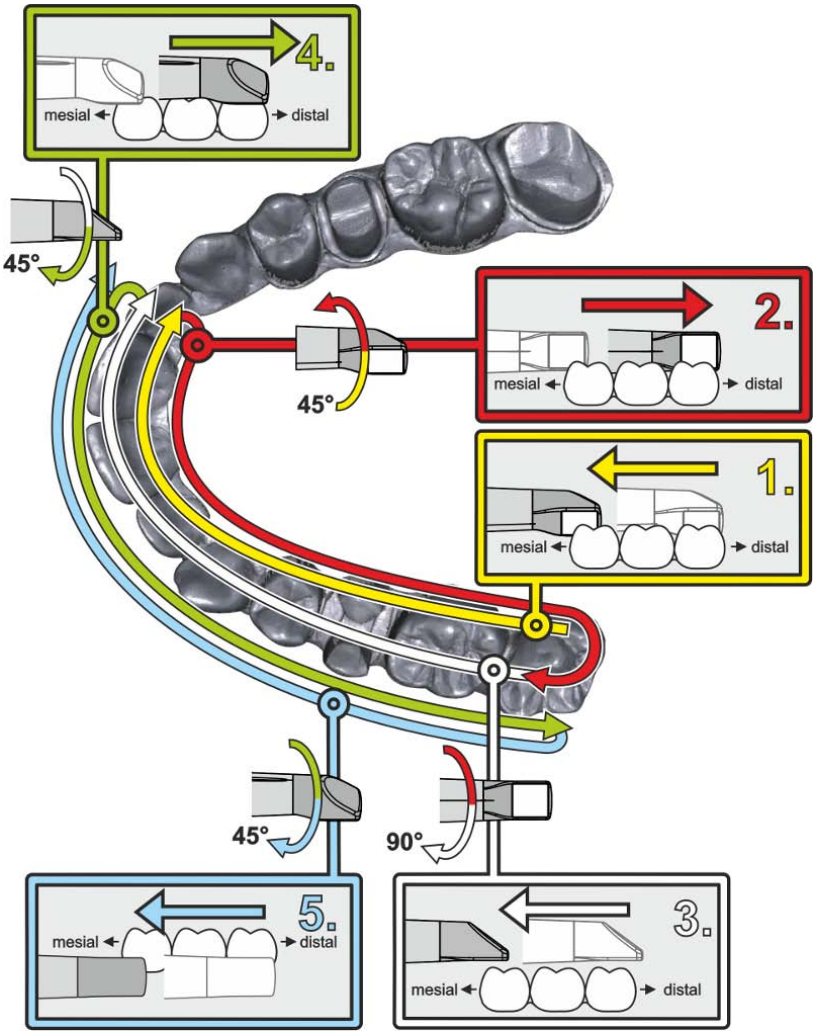
The first (fourth) quadrant is scanned up to the opposite second front tooth by moving the camera in parallel along the jaw arch.

Start the scanning process



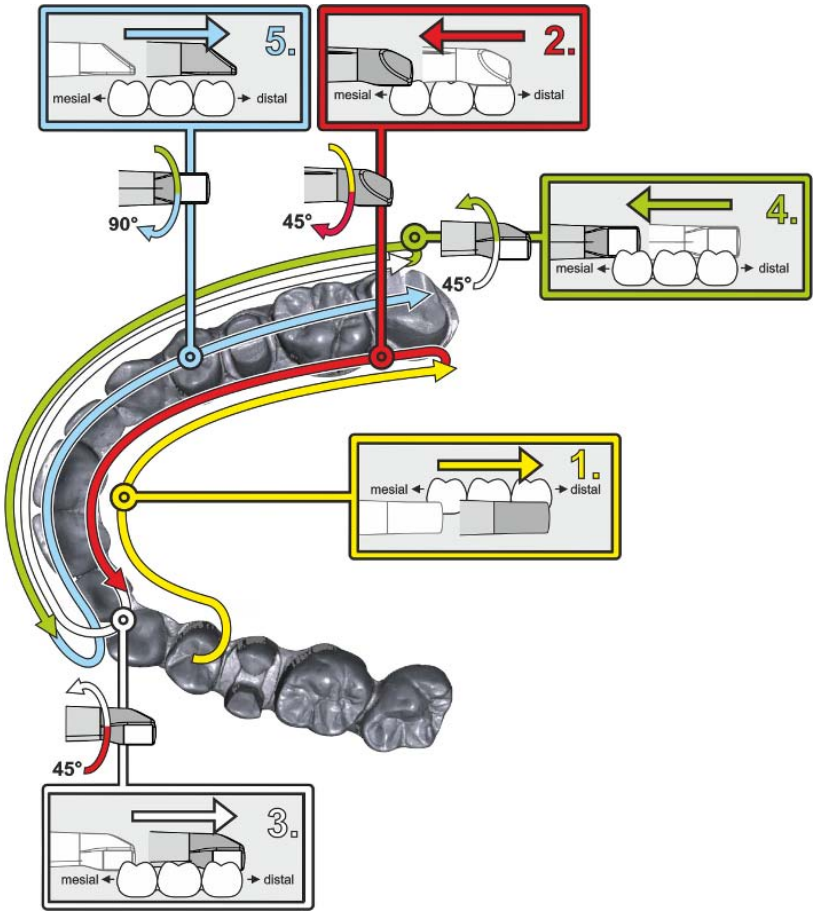
➢ Position the camera occlusally above the last tooth on the right, to start the scanning process.

Completing the scanning process



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

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



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

Notes:

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

- When performing this activity, be careful not to accidentally cut out any areas that e.g. are located behind the model or are otherwise cut away from the line.
- This cut must be completed during the ACQUISITION phase using the cutter.

7.4.8 Completing measurements

✓ The exposures are complete.

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

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

7.5 Software for the CEREC Omnicam

Refer to the Operator's Manual for more information on using the CEREC SW and the CEREC Premium SW.

You can find additional information on setting the CEREC Omnicam in the "Adjusting the CEREC Omnicam" section of these Operating Instructions.

7.5.1 Cut out model areas



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

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

✓ You are now in the ACQUISITION phase.

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

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

"Undo" and *"Reset"*



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



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

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.

NOTE

Regular inspection

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

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

NOTE

Annual maintenance performed by trained technical personnel is recommended.

8.1 Care, cleaning, disinfection and sterilization

NOTE

Use only chemical products recommended by Dentsply Sirona.

8.1.1 Cleaning and disinfection agents

Kerr Corporation	• CaviCide • Cavi Wipes
Patterson	• pdCARE • pdCARE Wipes
> 60% isopropyl alcohol	

8.1.2 Monitor screen

Cleaning

NOTE

Never spray the monitor screen with a disinfectant or cleaning spray.

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

8.1.3 Non-critical surfaces excluding monitor screen

NOTE

Do not allow liquids to penetrate into the ventilation slots!

NOTE

Never use corrosive cleaning agents, wax or solvents.

➢ Use a new cotton gauze moistened with one of the cleaning agents listed in the „Cleaning and disinfection agents [→ 54]“ section to disinfect the non-critical contact surfaces of the CEREC AC like the camera cradle, keyboard, and track ball. Discard this gauze.

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

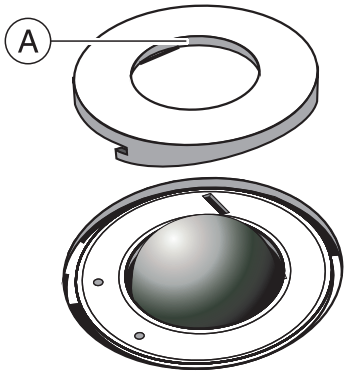
Protection against medicaments

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

NOTE

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

8.1.4 Trackball holder



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.

NOTE

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.

8.1.5 CEREC Omnicam

⚠ CAUTION

If the CEREC Omnicam accidentally falls down, check to make sure that the camera windows and coated sapphire glass are not damaged. If the CEREC Omnicam has been damaged, it must no longer be used on patients.

The CEREC Omnicam must be recalibrated.

NOTE

Do not sterilize the CEREC Omnicam or the camera cable!

NOTE

The mirror sleeves are not autoclave sterilizable!

8.1.5.1 General information

The CEREC Omnicam is a very sensitive optical device and must therefore be handled with the **utmost care**. Protect the coated sapphire glass and the camera windows against scratches and clean them with a clean lint-free cloth and ethanol (commercially available cleaning alcohol) whenever a film is noticed during imaging.

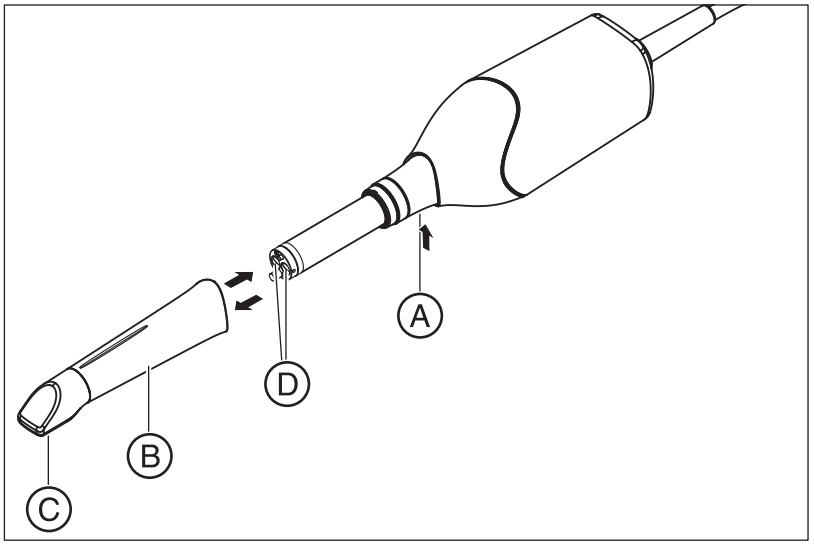
Dental health care providers are advised to select the reprocessing method that aligns with their infection control process. An effective infection control program is practical, reasonable, and reproducible.

4 methods have been validated to reprocess the CEREC Omnicam between patient care:

- High-level disinfection of the mirror sleeve (with HLD Set) [→ 59]
- High-level disinfection of the mirror sleeve (without HLD Set) [→ 63]
- Dry heat sterilization of the mirror sleeve [→ 65]
- Use of CEREC Omnicam Disposable Sleeves [→ 66]

One of these methods is strongly recommended to be used for the reprocessing of the mirror sleeve.

8.1.5.2 Components of the Omnicam



A	Press detent to release	C	Sapphire glass (coated)
B	Mirror sleeve	D	Camera windows

8.1.5.3 Removing the mirror sleeve

If required to remove the mirror sleeve do the following:

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

NOTE

There is a risk of damaging the camera windows or the coated sapphire glass, if the mirror sleeve is not pushed straight toward the front.

➢ Push the mirror sleeve straight toward the front – **do not tilt**.

3. Pull off the mirror sleeve.

8.1.5.4 Refitting the mirror sleeve

NOTE

There is a risk of damaging the camera windows or the coated sapphire glass, if the mirror sleeve is not pushed straight toward the camera body.

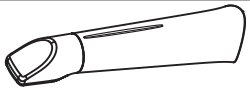
➢ The mirror sleeve must not come into contact with the camera windows.

➢ Push the mirror sleeve straight toward the camera body – **do not tilt**.

➢ Carefully refit the mirror sleeve until it locks in place.

8.1.5.5 Mirror sleeve reprocessing overview

See detailed instructions after summary.

Mirror sleeve for CEREC Omnicam 

Pre-Cleaning process
(while mirror sleeve is attached to the camera)

1. Clean with a cotton gauze moistened with tap water of potable water quality that meets Federal Clean Water Standards and pH neutral soap
   or
   use a clean lint-free cloth which has been soaked in CaviCide
   or
   use Cavi Wipes
   or
   use pdCARE Wipes
   or
   use a clean lint-free cloth which has been soaked in >60% isopropyl alcohol
2. Dry the mirror sleeve with a clean lint-free cloth.

HLD process

1. Use CIDEX® OPA or Sporox II Sterilizing and Disinfecting Solution (use steel mirror sleeves) as disinfectant for high-level disinfection per manufacturer´s instructions.
2. Leave the mirror sleeve in CIDEX® OPA for 12 minutes or in Sporox II for 30 minutes at 20° C.
3. Rinse the sleeve under tap water of potable water quality that meets Federal Clean Water Standards.
4. Dry the mirror sleeve with a clean lint-free cloth.

Dry heat sterilization process

➢ Dry heat 160°C (Steridент Model 200) for 120 minutes (wrapped or unwrapped)
or
Dry heat 160°C (SteriSURE) for 60 minutes (wrapped or unwrapped)
or
Dry heat 190°C (Cox RAPIDHEAT Sterilizer) for 6 minutes (unwrapped),
or
Dry heat 190°C (Cox RAPIDHEAT Sterilizer) for 12 minutes (wrapped).

8.1.5.6 Pre-cleaning of the mirror sleeve

Cleaning process immediately after using the CEREC Omnicam: While the mirror sleeve is attached to the camera, wipe off so that any surface contamination cannot harden and adhere to the surface of the mirror sleeve.

1. Use a cotton gauze moistened with tap water of potable water quality that meets Federal Clean Water Standards and pH neutral soap or use a clean lint-free cloth which has first been soaked in one of the cleaning products listed in the „Cleaning and disinfection agents [→ 54]“ section to remove visible contamination.
2. Wipe down the mirror sleeve afterwards with the absorbent cotton gauze dipped in drinking water.
3. Next dry the mirror sleeve using a lint-free cloth.

8.1.5.7 Wipe disinfection for the camera and mirror sleeve

NOTE

Do not spray the CEREC Omnicam or immerse it in cleaning agents or disinfectants!

1. Carry out a preliminary cleaning process (see "Pre-cleaning of the mirror sleeve").
2. Use a new absorbent cotton gauze which is moistened with one of the agents listed in the "Cleaning agents and disinfectants" section. First wipe the camera enclosure and then the mirror sleeve. The camera enclosure and mirror sleeve are disinfected through this step.
3. Wipe down the mirror sleeve afterwards again with the absorbent cotton gauze dipped in drinking water.
4. Next dry the mirror sleeve using a lint-free cloth.

8.1.5.8 High-level disinfection of the mirror sleeve (with HLD Set)

NOTE

Dry heat sterilization and high-level disinfection must not be combined.

The complete process for high-level disinfection is as follows:

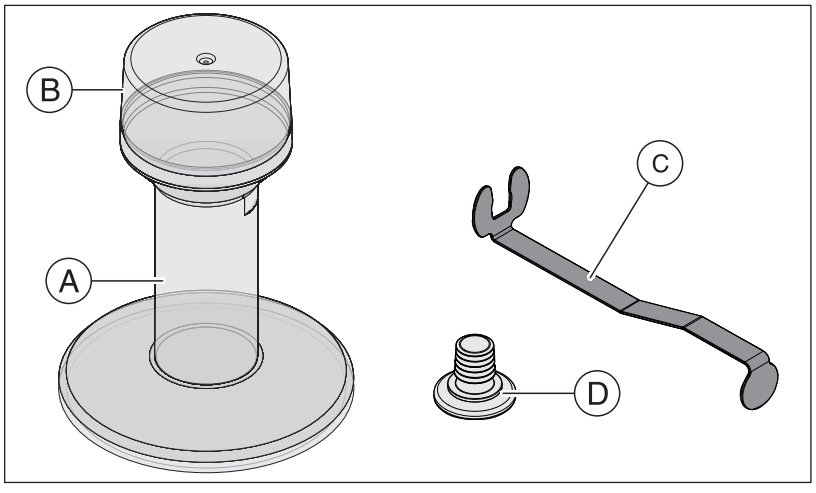
With HLD Set



NOTE

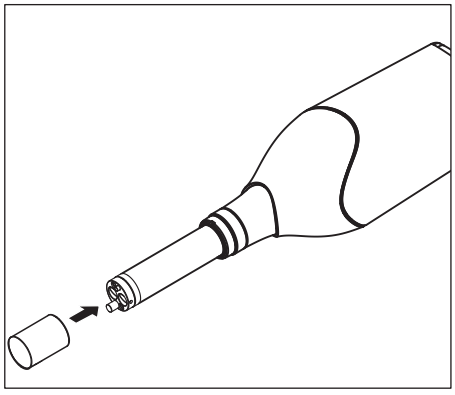
Sporox II should only be used with steel mirror sleeves. Steel mirror sleeves are marked with the letters ST (see the image).

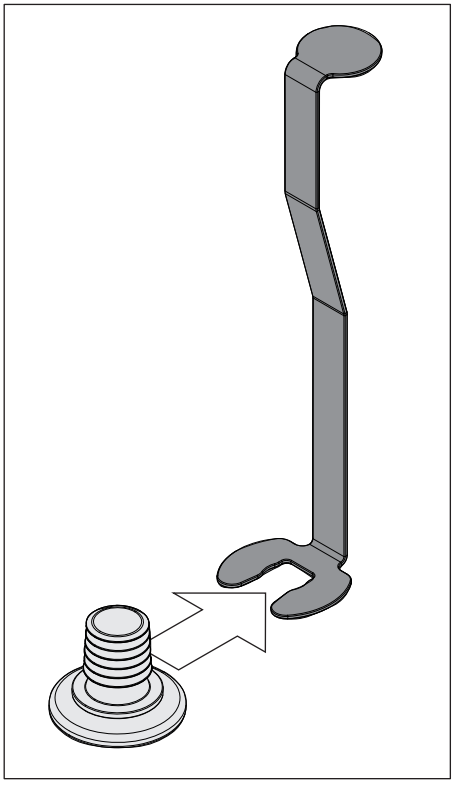
A HLD set to support the HLD process should be ordered from Dentsply Sirona with REF 66 05 120.



A	HLD container	C	Metal holder
B	Lid	D	Plug

1. Pre-cleaning (see „Pre-cleaning of the mirror sleeve [→ 58]“).
2. Put on Personal Protective Equipment at the latest when handling the high-level disinfectant.





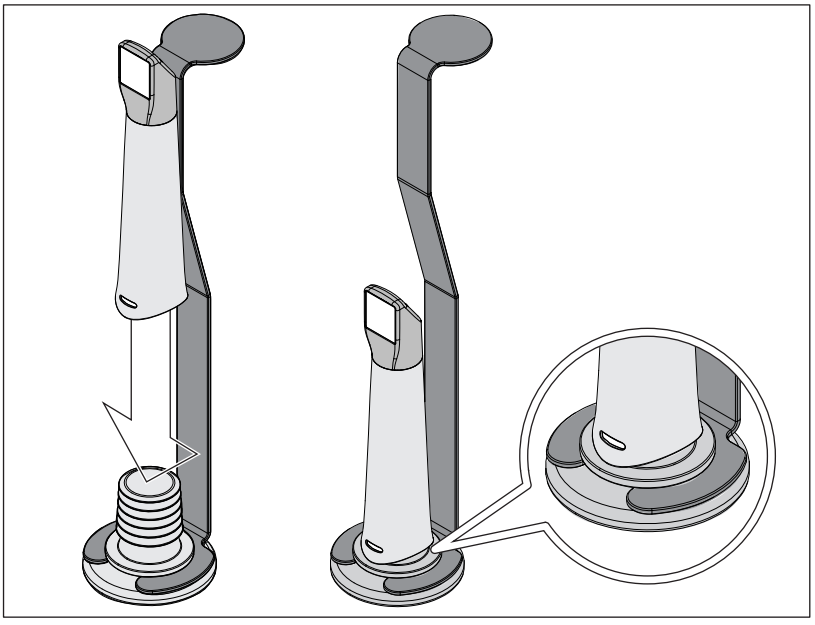
3. Remove the mirror sleeve from the CEREC Omnicam (see „Removing the mirror sleeve [→ 57]“).

NOTE

It is recommended that you never switch between disinfecting and sterilizing solutions. However if you do, make sure you thoroughly rinse the HLD set before switching.

4. Place the white protective cap on the camera tip and place the camera in the camera cradle.
5. Use one of the following disinfectants for the high-level disinfection: CIDEX ® OPA, Sporox II.

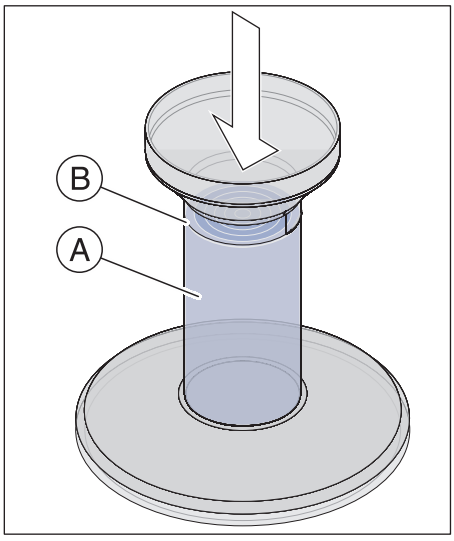
6. Slid the plug into the metal holder.



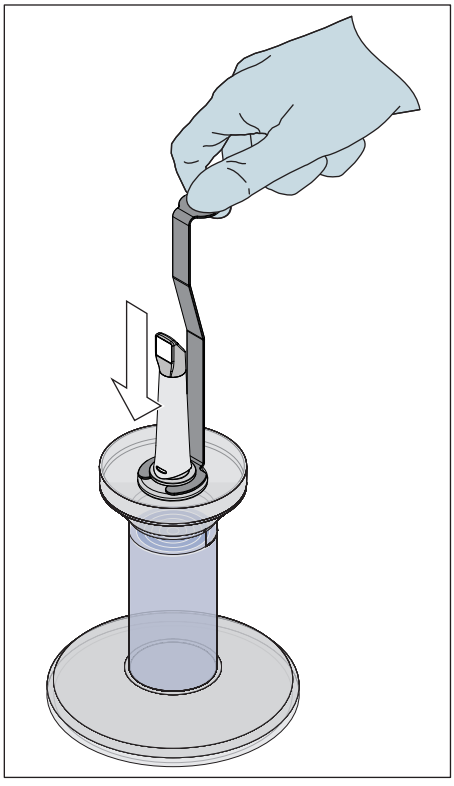
7. Press the mirror sleeve onto the plug while holding the metal holder in order to ensure that no particle contamination or fluids penetrate the inside of the mirror sleeve.
   ↳ If attached correctly, the plug seals the mirror sleeve watertight.

⚠ CAUTION

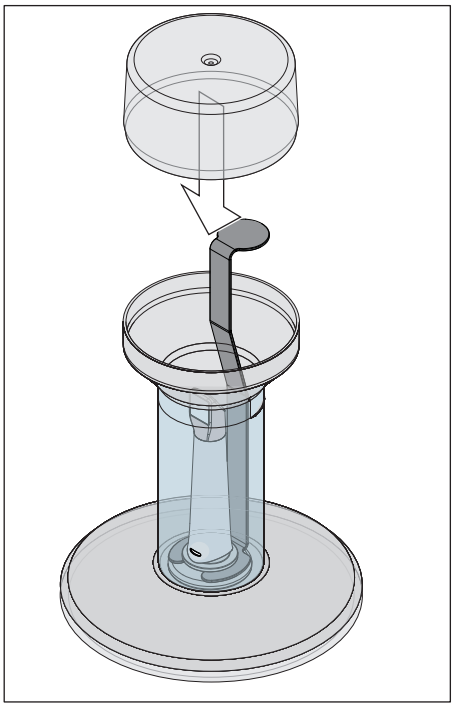
Observe the disinfectant‘s manufacturer‘s safety indications!



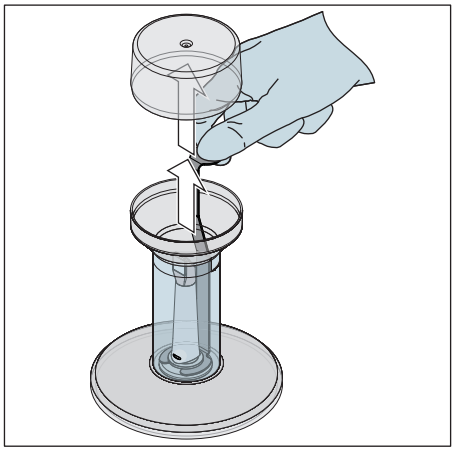
8. Cautiously fill the HLD container up to the marked level (**B**) per manufacturer´s instructions. A funnel can be used to assist with filling the liquid (**A**). Do not spill any disinfectant. If spillage occurs please follow disinfectant´s manufacturer´s safety indications for cleaning.



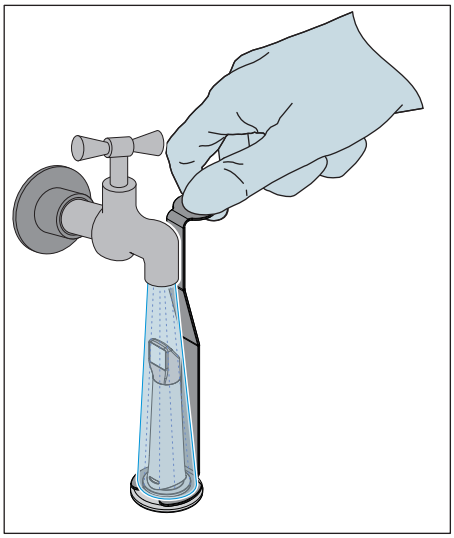
9. Insert the metal holder with the mirror sleeve.



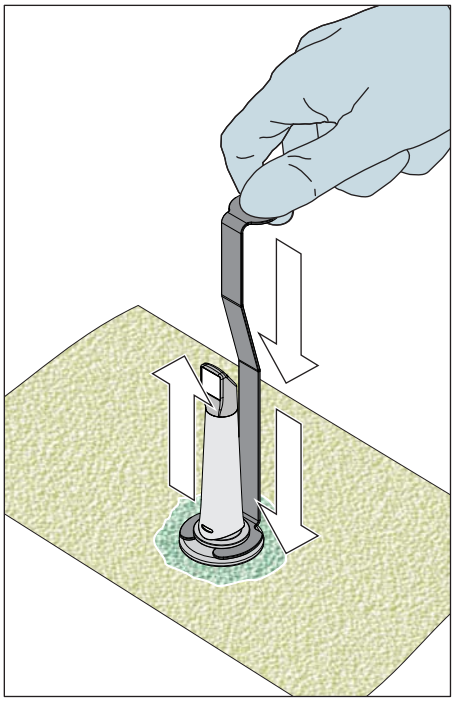
10. Place the lid on the container and leave the mirror sleeve at least 12 minutes for CIDEX®OPA or 30 minutes for Sporox II in the disinfectant. While exceeding the recommended immersion time may not cause damage to the mirror sleeve, the mirror sleeve should be removed as soon as possible after the recommended time.



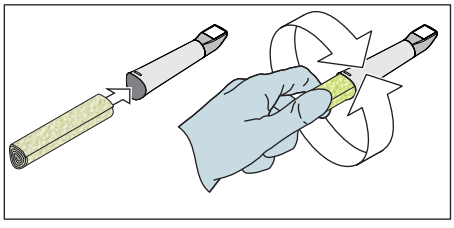
11. Remove the lid and the holder with the mirror sleeve from the container.



12. Thoroughly rinse the mirror sleeve with tap water of potable water quality that meets Federal Clean Water Standards for at least 30 seconds while holding it with its holder.



13. Carefully and slowly remove the plug with the holder from the mirror sleeve by downward movement of the holder. Make sure that the mirror sleeve points upwards not to risk any damage by liquids entering the inside of the mirror sleeve.
14. Remove the plug from the holder.
15. Dry the plug with a clean lint-free cloth.
16. Prior to each use of the HLD set test the solution for its effectiveness per manufacturer´s instructions. If not in use rinse container and holder and store the holder inside the empty container.



17. Dry the whole surface of the mirror sleeve and also the lower part of the inner surface using a clean soft, lint-free cloth.
18. Store the mirror sleeve in a manner to protect it from contamination until the time of use.
19. At time of use remove the white protective cap from the camera tip.
20. Carefully re-attach the mirror sleeve and allow it to lock in place (see „Refitting the mirror sleeve [→ 57]“).

8.1.5.9 High-level disinfection of the mirror sleeve (without HLD Set)

In case the HLD Set is not available

NOTE

Dry heat sterilization and high-level disinfection must not be combined.



NOTE

Sporox II should only be used with steel mirror sleeves. Steel mirror sleeves are marked with the letters ST (see the image).

1. Pre-cleaning (see „Pre-cleaning of the mirror sleeve [→ 58]“).
2. Remove the mirror sleeve from the CEREC Omnicam (see „Removing the mirror sleeve [→ 57]“).
3. Place the camera in its camera cradle.
4. Use one of the following disinfectants for the high-level disinfection: CIDEX ® OPA, Sporox II.

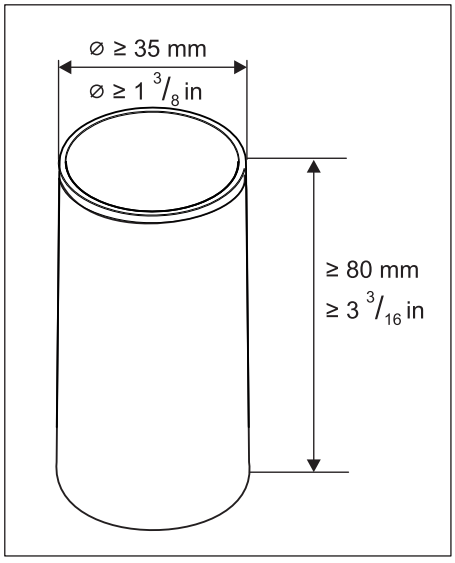
⚠ CAUTION

Observe the disinfectant‘s manufacturer‘s safety indications!

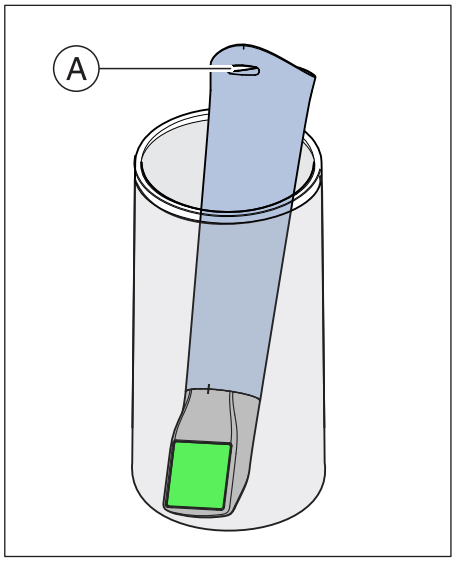
NOTE

Only place the mirror sleeve into the container and not the entire CEREC Omnicam.

Ensure that the mirror sleeve is placed upright in the disinfectant (with the coated sapphire glass down) so that the solution cannot penetrate the inside of the mirror sleeve.



5. Choose a container. Find an example on the left.



6. Cautiously fill the container to a filling level of 20mm - 25mm ($^{13}/_{16}$in - 1in) under the small elongated hole (**A**) of the mirror sleeve when immersed. A funnel can be used to assist with filling the liquid. Do not spill any disinfectant. If spillage occurs please follow disinfectant‘s manufacturer‘s safety indications for cleaning.
7. Insert the mirror sleeve in the correct position (coated sapphire glass down).
8. Leave the mirror sleeve at least 12minutes for CIDEX®OPA or 30 minutes for Sporox II in the disinfectant. While exceeding the recommended immersion time may not cause damage to the mirror sleeve, the mirror sleeve should be removed as soon as possible after the recommended time.
9. Remove the mirror sleeve from the container.
10. Thoroughly rinse the mirror sleeve with tap water of potable water quality that meets Federal Clean Water Standards for at least 30 seconds. Ensure that no water is able to penetrate into the interior of the mirror sleeve.
11. Wipe off the mirror sleeve. Use a cotton gauze moistened with tap water of potable water quality that meets Federal Clean Water Standards for this purpose.
12. Dry the mirror sleeve using a clean soft, lint-free cloth.
13. Store the mirror sleeve in such a way that it is protected from contamination until the next use.
14. Carefully re-attach the mirror sleeve and allow it to lock in place (see „Refitting the mirror sleeve [→ 57]“).

8.1.5.10 Dry heat sterilization of the mirror sleeve

NOTE

Dry heat sterilization and high-level disinfection must not be combined.

The process for dry heat sterilization is as follows:

1. Pre-cleaning (see „Pre-cleaning of the mirror sleeve [→ 58]“)
2. Remove the mirror sleeve from the CEREC Omnicam (see „Removing the mirror sleeve [→ 57]“).
3. Sterilize the mirror sleeve using dry heat at 190°C for 6 minutes (unwrapped) or 12 minutes (wrapped). Use only pouches which are suitable for dry heat sterilization cycle of at least 190ºC, 12 minutes. Alternatively, sterilize mirror sleeve using dry heat at 160°C for 120 minutes or for 60 minutes (unwrapped or wrapped). Use only pouches which are suitable for dry heat sterilization cycle of at least 160ºC, 120 minutes.
   The CPAC Cox RAPIDHEAT Sterilizer, the CPAC Sterident Model 200 and the CPAC SteriSURE have been validated by Sirona Dental Systems.
   For 6 minutes 190°C program # 1 has to be set on the CPAC Cox RAPIDHEAT Sterilizer.
   For 12 minutes 190°C program # 3 has to be set on the CPAC Cox RAPIDHEAT Sterilizer.
   For 120 minutes 160°C the CPAC Sterident Model 200 is to be used.
   For 60 minutes 160°C the CPAC SteriSURE is to be used.
4. Store the mirror sleeve in such a way that it is protected from contamination until the next use.
5. Carefully re-attach the mirror sleeve and allow it to lock in place (see „Refitting the mirror sleeve [→ 57]“).

NOTE

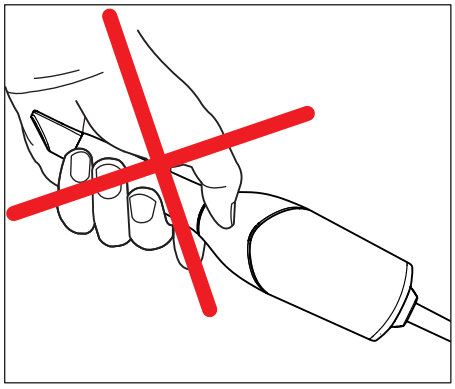
The mirror sleeve changes its color which will not have any negative impact upon the mirror sleeve´s durability.

8.1.5.11 Use of CEREC Omnicam Disposable Sleeves

The CEREC Omnicam can use disposable plastic sleeves to ensure maximum infection control. These are available with order number 66 32 264.

NOTE

The disposable sleeves cannot be used with the CEREC AF and CEREC AI systems or when using the shade detection feature or using the Ortho software.



1. Following each patient, remove the disposable sleeve from the CEREC Omnicam camera and dispose of it according to the standard procedure.
2. Wipe disinfection of the camera (see “Wipe disinfection for the camera and mirror sleeve [→ 59]“).
3. Remove one disposable sleeve from its packaging. Slide the disposable sleeve up to the stop on the mirror sleeve, so that it is securely positioned on the CEREC Omnicam camera. Hold the camera in other places, not just on the sleeve in order to prevent the camera from falling.
4. Position the camera in the holder, so that it can warm up for 15 minutes prior to the intraoral exposure. Make sure that the holder has been disinfected (see „Non-critical surfaces excluding monitor screen [→ 55]“).
5. In the case of intraoral exposures with disposable sleeves, the CEREC Omnicam camera should be positioned closer to teeth than without sleeves. If the 3D preview indicates artifacts, check whether the window of the disposable sleeve is clean and wipe it down with alcohol.

8.2 Calibrating CEREC Omnicam

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

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

Recalibrate the CEREC Omnicam in the following cases:

- following transport (shaking stress) or during first commissioning,
- after storage in unheated or un-air-conditioned rooms (temperature differences exceeding 30°C / 85°F),
- with temperature differences of over 15°C / 60°F between the last calibration and operation.
- In general, carrying out a calibration is the correct process in the event of errors in the acquisition process (such as poor image quality or the lack of a 3D preview). In many cases, the errors can be corrected in doing so.
- As the system may be exposed to vibration loads without knowledge of this, it should be calibrated once a month.

Starting calibration

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

Calibrate the camera



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



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



Measuring the position of the exit window

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

The CEREC Omnicam is calibrated.

Error message during calibration

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

End calibration

✓ The software indicates that the calibration was completed successfully.

➢ Click on the *"OK"* button.
   - The CEREC Omnicam is calibrated.

8.3 Color calibration

General information

NOTE

Faulty color analysis

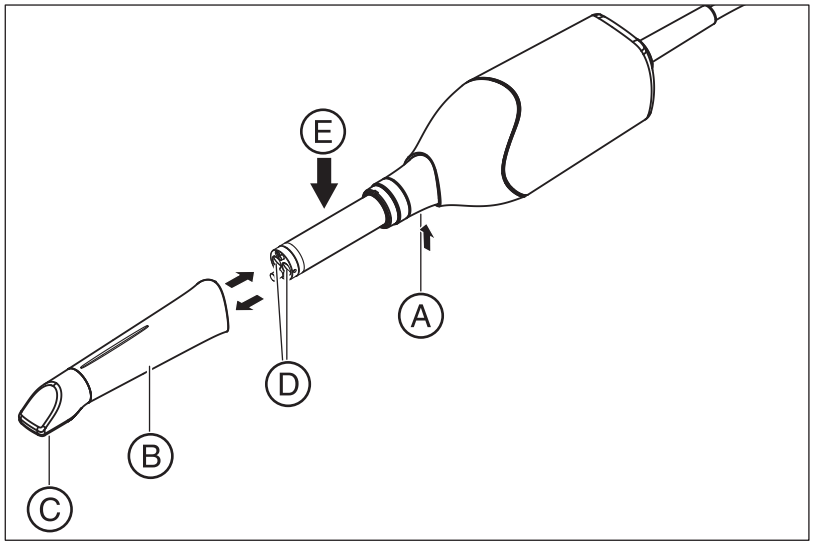
The color analysis can be negatively impacted due to strong light incidence and it can lead to varying results.

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

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

The color analysis can only be carried out with a CEREC Omnicam from a particular serial number. In order to test the CEREC Omnicam, use the Omnicam test tool on
my.cerec.com -> CEREC SW 4.5 - > Shade Detection.
You can find the serial number of the Omnicam on the upper side on the optics tube (see arrow **E** in the figure below).

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



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

NOTE

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

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

3. Pull off the mirror sleeve.

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

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

Heavily scratched mirror sleeves may not be used for a color analysis.

Storing a color-calibration set

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

Switch on the color analysis

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

Color-calibrating the camera

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

Ending the color calibration

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

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

Error message during color calibration

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

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

➢ Then restart the color calibration.

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

Replacing the color calibration set

Please note that the color calibration set

- can only be used with CEREC SW software ≥ 4.5 or Sirona Connect SW ≥ 4.5 or CEREC Premium SW ≥ 4.5.
- can only be kept for use for a maximum of 2 years. You can find the expiry date at the bottom of the color calibration set container. Previous storage may mean that the period for use has been reduced to less than 2 years.
- can only be used for one year after the container has been opened. Write the date that the container was opened on the container after "Opened on _____" using a waterproof pen and do not use after one year.

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

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

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

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

8.4 Replacing the main fuse

⚠ WARNING

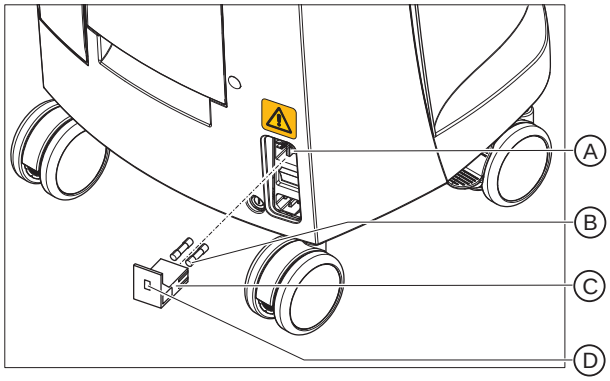
Electric shock

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

NOTE

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.

8.5 Charge battery (optional)

NOTE

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 battery is permanently charged during operation on mains 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.

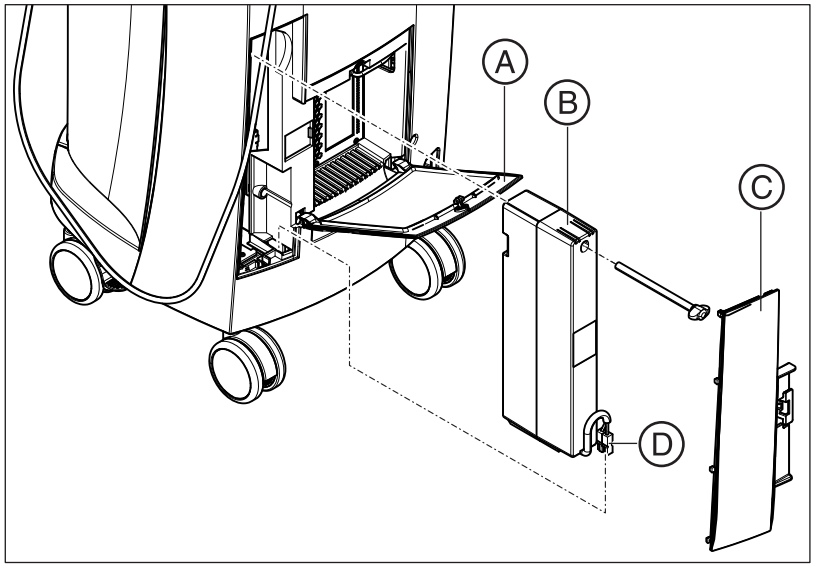
NOTE

Reduced battery service life

If the battery is not charged over a long period of time, this significantly reduces its service life.

➢ Always recharge the battery fully after buffer operation.

8.6 Replace battery (optional)



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

1. Open the lower door on the back panel.

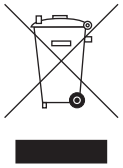
NOTE

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



In accordance with Directive 2012/19/EU and national disposal regulations regarding old electrical and electronic devices, please be advised that such items must be disposed of in a special way within the European Union (EU). These regulations require the environmentally friendly recycling/disposal of old electrical and electronic devices. Such items must not be disposed of as domestic refuse. This has been expressed using the icon of the “crossed out trash can”.

Disposal procedure

We feel responsible for our products from the first idea to their disposal. For this reason, we give you an option to return our old electronic and electrical devices.

If you wish to dispose of your devices, please proceed as follows:

In Germany

To initiate return of the electrical device, please send a disposal request to enretec GmbH. You have the following options here:

- Use the ‘Returning an electrical device’ button under the ‘eom’ menu item on the enretec GmbH homepage (www.enretec.de).
- Alternatively, you can also contact enretec GmbH directly.

  enretec GmbH
  Kanalstraße 17
  16727 Velten, Germany

  Phone: +49 3304 3919-500
  E-mail: eom@enretec.de

In accordance with the national disposal regulations regarding old electrical and electronic devices (ElektroG), as the manufacturer, we assume the costs for disposing of the electrical and electronic devices in question. Disassembly, transport and packaging costs shall be borne by the owner / operator.

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

If your unit is not permanently installed, it will be collected from the practice. If it is permanently installed, it will be picked up curbside at your address by appointment.

Other countries

For country-specific information on disposal, contact your local dental dealers.

9.1 Disposal of the storage battery pack



The storage battery pack must be subjected to recycling if it becomes defective or reaches the end of its service life. Recycling is performed via Dentsply 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 Dentsply Sirona (see the reverse side of these operating instructions for the mailing address).

10 PC Diagnostic Tool

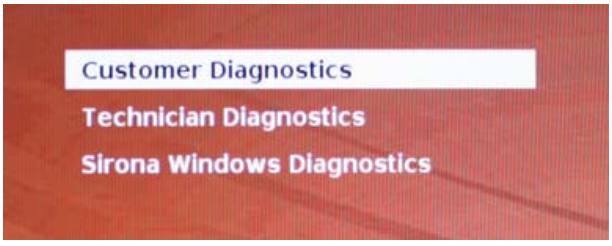
10.1 Start diagnostic tool

Test	Suitable for
Customer Diagnostics	Suitable for the user, in order to check the PC components.
Technician Diagnostics	Suitable for the technician, in order to check the PC components.
Sirona Windows Diagnostics	Windows Stress Test, in order to test the PC at permanent load.

Tip: If one of the following steps does not work, further steps can be found in the Service Manual.

✓ The PC is switched off.

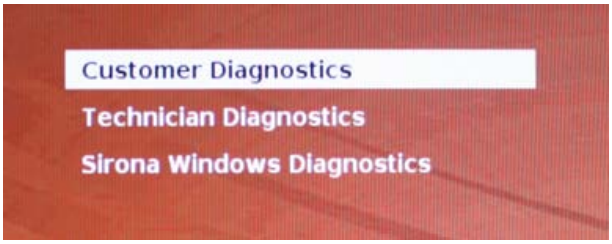
1. Switch on the PC.
2. Repeatedly press the "F11" or "F8" button (in V2.2.1 - V2.2.3) until the PC switches to the boot menu.
3. Insert the diagnostics tool CD into the drive.
4. Select the "`P3: TSSTcorp CDDVDW ...`" menu option.
5. Confirm your selection with the "`Return`" key on the keyboard.
   ↳ The diagnostics tool starts and a selection menu appears.
   Tip: After one minute, if none of the arrow keys have been pressed, the "`Customer Diagnostics`" test starts automatically.



6. Select the test using the arrow keys.
7. Confirm your selection with the "`Return`" key on the keyboard.
   ↳ The test starts.

10.2 Test procedure

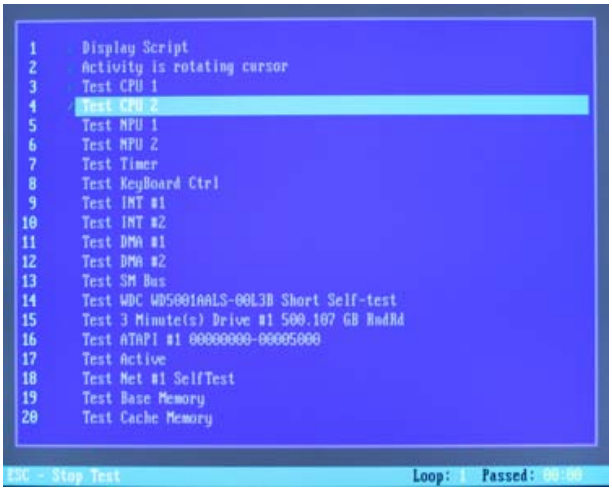
10.2.1 Customer Diagnostics



✓ You have started the "`Customer Diagnostics`" test and the system configuration is displayed.



1. Using the information in the system configuration, check whether the system corresponds to the default settings. You can scroll up and down using the arrow keys.
   Tip: The test starts automatically after 3 minutes if you do not press an arrow key.
2. Press the "`Esc`" key on the keyboard.



↳ The test starts. The entire test run takes approx. 30 minutes.

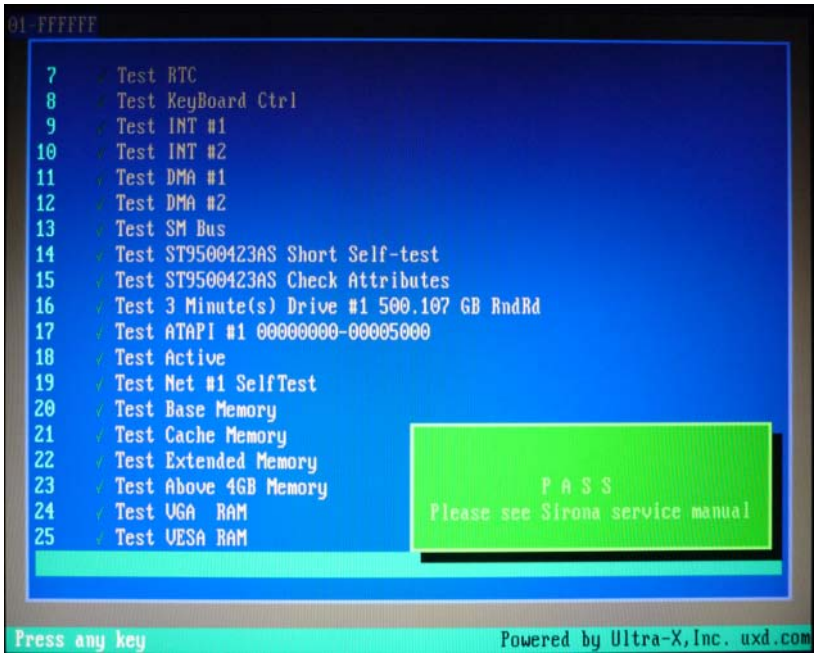
↳ The result, i.e. "Pass" or "Fail", appears at the end of the test (see sections entitled "Test result: Pass" or "Test result: Fail").

3. On completion of the test, press any key to go on to the test dialog.
Tip: You can scroll to the individual test steps using the arrow keys. The corresponding result is shown in front of each test step.
4. To end the test, restart the PC.

Test result: Pass

No errors were found on the PC-specific hardware. Replacing the PC component or the PC is not advisable.

1. Perform the separate test for the supply board.
2. Perform an image restore with the restore set for troubleshooting.
3. Check the service instructions for other possible fault sources.



Test result: Fail

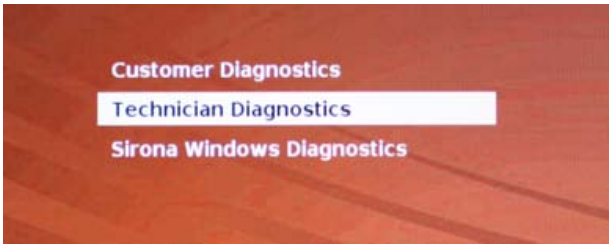
An error was found on the PC-specific hardware. Replacing the PC component or the PC may be required.
An image restore is not advisable.

1. Check to find out which components did not pass the test.
2. Write down the defective test number and, if available, the error code and inform the technician of this as soon as possible.
3. Carry out the appropriate steps in the chapter entitled Troubleshooting [→ 85] .

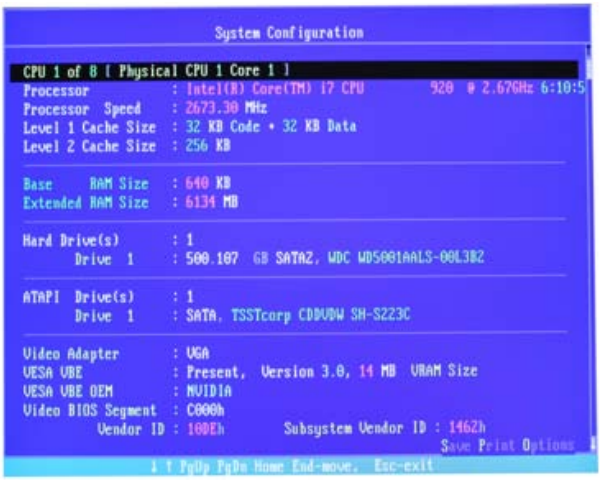
End "Customer Diagnostics" test

1. Remove the PC diagnostic tool CD from the drive.
2. Switch the PC off by briefly pressing the on/off key.

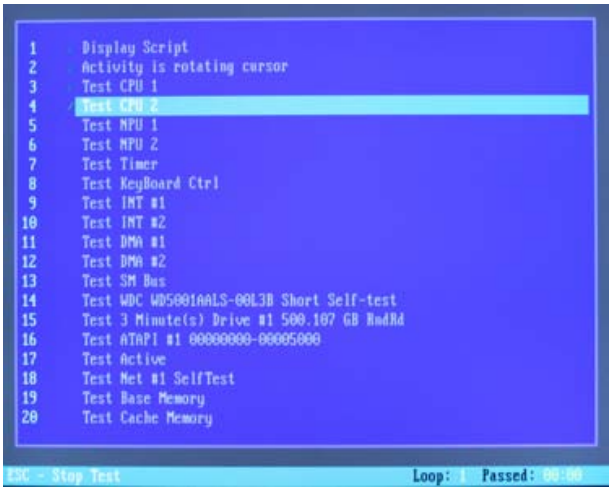
10.2.2 Technician Diagnostics



✓ You have started the "Technician Diagnostics" test and the system configuration is displayed.



1. Using the information in the system configuration, check whether the system corresponds to the default settings. You can scroll up and down using the arrow keys.
   Tip: The test starts automatically after 3 minutes if you do not press an arrow key.
2. Press the "Esc" key on the keyboard.



↳ The test starts. The entire test run takes approx. 30 minutes.

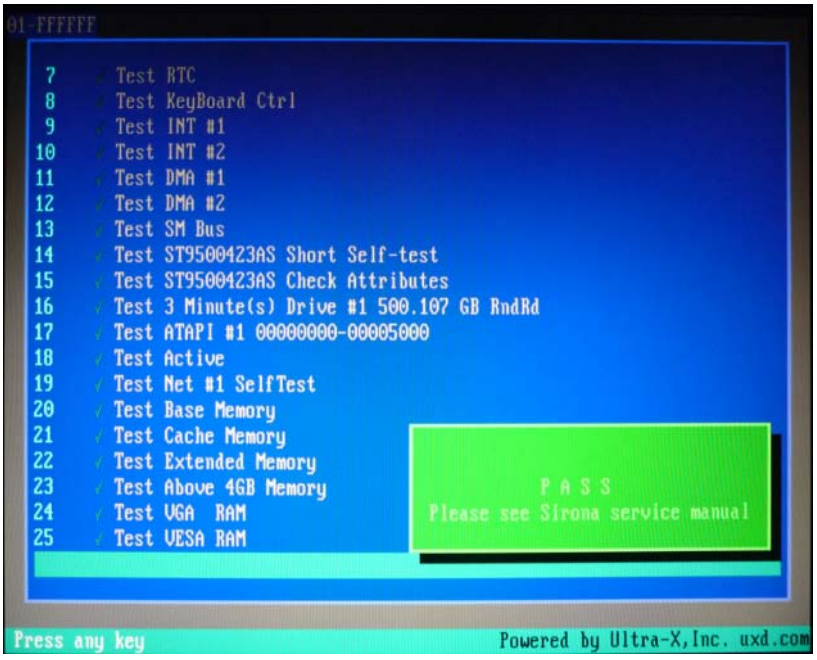
↳ The result, i.e. "Pass" or "Fail", appears at the end of the test (see sections entitled "Test result: Pass" or "Test result: Fail").

3. On completion of the test, press any key to go on to the test dialog.
   Tip: You can scroll to the individual test steps using the arrow keys. The corresponding result is shown in front of each test step.
4. To end the test, restart the PC.

Test result: Pass

No errors were found on the PC-specific hardware. Replacing the PC component or the PC is not advisable.

1. Perform the separate test for the supply board.
2. Perform an image restore with the restore set for troubleshooting.
3. Check the service instructions for other possible fault sources.



Test result: Fail

An error was found on the PC-specific hardware. Replacing the PC component or the PC may be required.
An image restore is not advisable.

1. Check to find out which components did not pass the test.
2. Carry out the appropriate steps in the chapter entitled Troubleshooting [→ 85] .
3. Note the number of the failed test and the error code if available. Attach this information to the returned PC when replacing a PC.

End `"Technician Diagnostics"` test

1. Remove the PC diagnostic tool CD from the drive.
2. Switch the PC off by briefly pressing the on/off key.

10.2.3 Sirona Windows Diagnostics

General

The "Sirona Windows Diagnostics" test loads the PC-specific components simultaneously over a long period of time. This period of time is determined by the user.

As a result of this load

- the temperature in the PC is significantly increased compared with normal operation.
  A temperature malfunction or any existing faults are thereby detected.
- Thanks to the temporal, unlimited test phase, sporadically occurring faults are more likely to be detected.

Tip: Only conduct the test if at least one of the "Customer Diagnostics" or "Technician Diagnostics" tests has been completed with a "pass" and without errors.

Performing the test

Tip: Allow the "Sirona Windows Diagnostics" test to run for at least 1 hour. For optimum results, allow the test to run overnight.



✓ You have started the "Sirona Windows Diagnostics" test and Windows starts in the test environment. The "Sirona Windows Diagnostics" test starts automatically.



➢ Check the result in the "Windows Stress Test" window.
Tip: You may have to rearrange the windows to be able to see the "Windows Stress Test" window.

Test result: Pass

No errors were found on the PC-specific hardware. Replacing the PC component or the PC is not advisable.

Test result: Fail

An error was found on the PC-specific hardware. Replacing the PC component or the PC may be required.
An image restore is not advisable.

1. Check the "Windows Stress Test" window for those components that did not pass the test.
2. Carry out the appropriate steps in the chapter entitled Troubleshooting [→ 85] .

Ending the "Sirona Windows Diagnostics" test

➢ Click the "Stop" button.
  ↳ The individual test windows close.
  ↳ The PC is switched off.

10.3 Troubleshooting

The recommended procedure is as follows. If troubleshooting and/or a component replacement cannot eliminate the fault, replace the PC.

In this case, specify which test was defective when returning the defective PC.

10.3.1 Customer Diagnostics & Technician Diagnostics

Test	Test description / condition	Action if problems occur
Display Script Activity is rotating cursor	Control command without a test function	n.a.
Test CPU-1 Test CPU-2 Test NPU-1 Test NPU-2	The CPU test checks the control, address, data, and flag register of the system processor. When testing the floating point unit (NPU, Numeric Processing Unit) the system's mathematics processor and the interface between the two functions are checked.	➢ Replace the PC.
Test Timer	In this test a number is loaded into the three timer channels and then a check is made on whether the countdown takes place at the right speed in the individual channels (not too fast or too slow).	➢ Replace the PC.
Test Keyboard Controller	This test checks the proper function of the electrical circuit for the keyboard controller.	➢ Replace the PC.
Test INT #1 Test INT #2	The test tool checks the system interrupt controller. These controllers contain the interrupt mask register, in-service register, interrupt request register, and all of the interrupt request lines. All channels on the interrupt controllers are checked for problematic, incorrect, or defective interrupts.	➢ Replace the PC.
Test DMA #1 Test DMA #2	During the test all of the registers and status ports of the two DMA controllers are checked. The DMA controller is extremely important for system operation, as it has separate channels which the E/A devices can use to directly access the system RAM. This enables high data transfer rates without using the microprocessor.	➢ Replace the PC.
Test SM Bus	This test checks the SMBus. This bus is mainly used in systems to manage the battery and sensor. The SMBus is also used to access the SPD data on the memory modules.	➢ Replace the PC.

Test	Test description / condition	Action if problems occur
Test WDC___TYP HDD___Short Self-Test	A range of destruction-free tests on the hard drives installed in a system are conducted with these functions. Controller search and read tests are conducted to check the overall condition of a drive.	1. For the CEREC AC check the setting of the ASM1061 Storage Controller. 2. Check the hard disk's SATA line. 3. Check the hard disk's power supply. 4. Exchange the hard drive including the hard drive cable.
Test 3 Minute(s) Drive #1 __Size of HDD__RndRd		
Test ATAPI #1 00000000-000050000	Use this function to test the installed CD-ROM-/CDR/W-/DVD drive. The test checks the test ROM directly; no software drivers have to be loaded. The test medium is the CD test tool	1. Check the CD for scratches or other dirt. 2. Check the SATA line between the PC and DVD drive. 3. Check the power supply line between the PC and DVD drive. 4. Replace the DVD drive. 5. Check the SATA connection from the mainboard to the SATA slot sheet in the PC. 6. Check the connection of the power supply from the mains power unit to the SATA Slot sheet in the PC.
Test Active	USB test (at least 1 USB human device must be connected; for the AC this is usually a keyboard, trackball, camera, and UPS mains supply).	➢ Replace the PC.
Test NET #1 SelfTest	This test provides an internal check on all of the network cards.	➢ Replace the PC.
Test Base Memory	The "Base RAM Test" provides a check on the base RAM on the system board (up to 640 KB).	➢ Remove the memory and then re-insert it.
Test Cache Memory	This function provides a test on the low-level memory data and the low-level addresses in the external system cache in order to check its function.	
Test Extended Memory	The "Extended RAM Test" provides a check on the extended RAM between 1 MB and 4 GB.	
Test Above 4 GB memory	The "Above 4 GB Memory Test" enables you to check the extended RAM in the range above 4 GB.	

Test	Test description / condition	Action if problems occur
Test VGA RAM	This test checks the graphics memory installed in the graphics card that is currently active.	➢ Replace the graphics card.
Test VESA RAM	This test enables you to check the text and graphics modes supported by a VESA compatible graphics card.	➢ Replace the graphics card.

10.3.2 Sirona Windows Diagnostics

Test	Test Description	Action if problems occur
Processor(s)	Continuous load and inspection of processor cores	➢ Replace the PC.
Motherboard testing	Continuous load and inspection of the motherboard functions	➢ Replace the PC.
Stress test drive	Continuous load and inspection of the hard disk	1. Check the hard disk's SATA line. 2. Check the hard disk's power supply. 3. Exchange the hard drive including the hard drive cable.
Memory testing	Continuous load and inspection of the memory	➢ Remove the memory and then re-insert it.
2D test	Continuous load and inspection of 2D properties of the graphics card	➢ Replace the graphics card.
Multimedia testing	Continuous load and inspection of 3D properties of the graphics card	➢ Replace the graphics card.
USB testing	USB test (at least one USB human device must be connected, such as a keyboard, trackball, camera, or UPS mains supply)	➢ Replace the PC.

11 Appendix

11.1 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.

11.2 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.

11.2.1 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.

NOTE

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

NOTE

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.

11.3 Seal on PC slide-in module



NOTE

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**).

11.4 Windows Update

"Windows Update" is a service, which provides software updates and security updates for the operating system.

"Windows Update" is set by default at the factory, meaning that only *"Critical Updates"* and *"Recommended updates"* are installed automatically.

"Optional Updates" should not be installed, if available. These may include device drivers and additional software, which are possibly incompatible with the PC components.

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

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