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# Primeprint

Draft

Instructions for Use

English



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# 1 General data

## 1.1 Dear Customer,

Thank you for your purchase of this Primeprint<sup>®</sup> unit from Dentsply Sirona.

This unit enables you to use computer aided manufacturing of dental applications.

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  
Primeprint team,

## 1.2 Contact data

### Customer Service Center

In the event of technical queries, please use our online contact form at the following address:

<http://srvcontact.sirona.com>

### Manufacturer's address



Sirona Dental Systems GmbH  
Fabrikstrasse 31  
64625 Bensheim  
Germany

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

## 1.3 General information about this operating manual

### **Observe the Operating Instructions**

Please familiarize yourself with the unit by reading through these Operating Instructions before putting it into operation. It is essential that you comply with the specified warning and safety information.

### **Keep documents safe**

Always keep the Operating Instructions handy in case you or another user require(s) information at a later point in time. Save the Operating Instructions on the PC or print them out.

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

### **Online portal for technical documents**

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

### **Help**

If you have difficulties despite having thoroughly studied the Operating Instructions, please contact your dental depot.

## 1.4 General conventions and structure of the document

### 1.4.1 Structure of the document

#### 1.4.1.1 Identification of the danger levels

To prevent personal injury and material damage, please observe the warning and safety information provided in these instructions for use. 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.

### 1.4.1.2 Formats and symbols used

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

<ul style="list-style-type: none"> <li>■ Prerequisite</li> <li>1. First action step</li> <li>2. Second action step</li> <li>or</li> <li>&gt; Alternative action</li> <li>↔ Result</li> <li>&gt; Individual action step</li> </ul>	Requests 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.

### 1.4.2 Notes to the repository

It is mandatory to keep this operating manual in an easily accessible place for the purpose of later reference. In the event of a sale or transfer of the device to another user, make sure that the device is supplied along with the operating manual, so that the new owner can get acquainted with the operation and the appropriate precautions and warnings

## 1.5 Scope of these Operating Instructions

### Equipment options

This document describes the full version of your system. It may therefore cover components that are not included in the system you purchased.



## 1.6 Warranty and liability

### Maintenance

In the interest of the safety and health of patients, users or third parties, it is necessary that maintenance work is carried out at fixed time intervals to ensure the operational safety and reliability of your product.

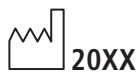
The operator must ensure the implementation of the maintenance work.

As a manufacturer of electro-medical equipment, we can consider ourselves responsible for the safety characteristics of the device only if maintenance and repairs are carried out only by us or by companies authorized explicitly by us for this purpose and if components are replaced with original spare parts in case of failure.

### Exclusion of liability

If the operator does not meet the obligation to carry out such maintenance or fault messages are ignored, Dentsply Sirona or its authorized dealer does not assume any liability for damage caused.

## 1.7 Legend



Year of manufacture



Product disposal symbol (see "Disposal [-> 66]").



### Accompanying documents

This symbol can be found on the rating plate on the unit.

Meaning: Observe the Operating Instructions when operating the unit.



This symbol can be found on the rating plate on the unit.

Meaning: The accompanying documents are available on the Dentsply Sirona homepage.

### Electrostatic discharge (ESD)

Connector pins or sockets bearing ESD warning labels must not be touched or interconnected without ESD protective measures. See also "Electrostatic charge [-> 17]" and "Electromagnetic compatibility".



### Disconnection of the power supply during maintenance work

If the device-sided electronics box must be opened during maintenance work, this may be done only after disconnection of the power supply to the device.



### General danger notice



Observe the Operating Instructions.



Wear protective gloves.



"Hot surface" symbol

### Symbols on the packaging

Take note of the following symbols on the packaging:



Top



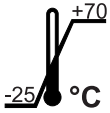
Protect from moisture



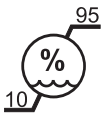
Fragile; handle with care



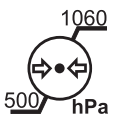
Do not stack



Temperature during storage and transport



Relative humidity during storage and transport



Air pressure during storage and transport

## 2 Safety instructions

### 2.1 Basic safety information

#### 2.1.1 Prerequisites

##### NOTE

###### Important information on building installation

In order to prevent the risk of an electric shock, this unit must only be connected to a supply mains with a ground wire.

The building installation must be performed by a qualified expert in compliance with the national regulations.

##### 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!

#### 2.1.2 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.

#### 2.1.3 Modifications to the product

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

### 2.1.4 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. In particular, only the power cable also supplied or the corresponding original spare part may be used with the unit. The user is responsible for any damage resulting from the use of non-approved accessories.

### 2.1.5 In case of damage

In case of noticeable malfunctions or damage, stop using the instrument immediately and notify your authorized dealer or the manufacturer.

## 2.2 Electromagnetic compatibility

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

Primeprint complies with the requirements for electromagnetic compatibility (EMC) according to DIN EN 61326-1:2013

Primeprint is hereinafter referred to as "UNIT".

### 2.2.1 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 <b>CISPR 11</b>	Group 1	The <b>UNIT</b> 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 <b>CISPR 11</b>	Class B	The <b>UNIT</b> 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 <b>IEC 61000-3-2</b>	Class A	
Voltage fluctuations / flicker according to <b>IEC 61000-3-3</b>	coincides	

## 2.2.2 Immunity to interference

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	DIN EN 61326-1 Test level	Compliance level	Electromagnetic environment – guidelines
Electrostatic discharge (ESD) according to <b>IEC 61000-4-2</b>	± 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 <b>IEC 61000-4-4</b>	± 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 <b>IEC 61000-4-5</b>	± 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 <b>IEC 61000-4-11</b>	<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 <b>UNIT</b> is possible following interruptions of the power supply, since the <b>UNIT</b> is powered by an uninterruptible power supply backed up by a storage battery.
Magnetic field of power frequencies (50/60 Hz) according to <b>IEC 61000-4-8</b>	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 <b>UNIT</b> and its cables, which is calculated based on the equation suitable for the relevant transmission frequency. Recommended working clearance:

Interference immunity tests	DIN EN 61326-1 Test level	Compliance level	Electromagnetic environment – guidelines
Conducted RF interference <b>IEC 61000-4-6</b>	3 V <sub>eff</sub> 150 kHz to 80 MHz	3 V <sub>eff</sub>	$d = [1.2] \sqrt{P}$
Radiated RF interference <b>IEC 61000-4-3</b>	3 V/m 80 MHz to 800 MHz 3 V/m 800 MHz to 2.5 GHz	3 V/m  3 V/m	$d = [1.2] \sqrt{P}$ at 80 MHz to 800 MHz $d = [2.3] \sqrt{P}$ at 800 MHz to 2.5 MHz where P is the nominal transmitter output in watts (W) specified by the transmitter manufacturer and d is the recommended working clearance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey <sup>1</sup> should be less than the compliance level <sup>2</sup> 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.

### 2.2.3 Working clearances

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

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

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

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

#### Remark 1

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

#### Remark 2

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

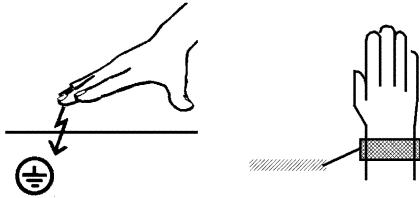


## 2.3 Electrostatic charge

### 2.3.1 ESD protective measures

#### ESD

#### ESD protective measures



ESD stands for **ElectroStatic Discharge**.

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.

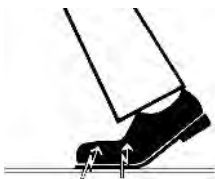
The content of this training is explained in the Chapter "About the physics of electrostatic charges" [→ 17].

### 2.3.2 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.

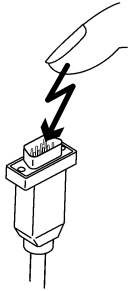
The following rule of thumb can be applied to assess the transient voltages resulting from an electrostatic discharge.

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.

## 2.4 Connecting the unit

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

## 2.5 Connection of external equipment

If any devices not approved by Dentsply Sirona are connected, they must comply with the applicable standards (see "Standards/ approvals/ certifications [-> 20]").

## 2.6 Ventilation slots

Under no circumstances may the ventilation slots on the rear of the unit be covered, since otherwise the air circulation will be obstructed. This can cause the unit to overheat.

### Do not spray into the ventilation slots



Do not spray liquids such as disinfectants into the ventilation slots. This may lead to malfunctions. Use wipe disinfection only in the vicinity of the ventilation slots.

## 2.7 Product-specific safety instructions

### CAUTION

#### **Status LED illuminated in red**

In the event of any faults, the status bar lights up red.

- Turn off the machine at the main switch before you reach into the processing area. You can restart the machine once the error is eliminated.

### CAUTION

#### **Do not use the component**

In rare cases where the component falls from the build platform, it is recommended to carefully remove the component from the Primeprint unit or the transport container using the tweezers supplied with the Primeprint PPU.

Because it cannot be excluded that the component has not been fully printed, this component must not be used.

### CAUTION

#### **Do not use faulty printed objects**

Faulty printed objects must not be used.

## 2.8 Material-specific safety instructions

### CAUTION

#### **Handling printed materials**

For general handling of the printed materials, please refer to the safety data sheet of the manufacturer. The materials must be handled properly and in compliance with all manufacturer's specifications and local legal requirements.

Independent of the specific requirements in the safety data sheet of the material, we recommend wearing protective goggles, protective clothing and gloves during maintenance and cleaning.

## 3 General information on the device

### 3.1 Standards/ approvals/ certifications



#### CE mark

This product bears the CE mark in accordance with the provisions of Council Directives 2014/53/EU (RED), 2006/42/EC (Machinery Directive), 2014/30/EC (EMC Directive) and 2011/65/EU (RoHS) including 2015/863/EC as Annex II. As such, the following standards apply: ETSI EN 301 489-3 V2.1.1 (2017-03), DIN EN 61010-1:2011-07, DIN EN ISO 14971:2013-04 and DIN EN 61326-1:2013-07.

#### CAUTION

##### CE mark for connected products

Further products which are connected to this unit must also bear the CE mark. These products must be tested according to the applicable standards.

Examples of CE mark for connected products:

- EN 60601
- EN 61010-1
- EN 60950
- EN 62368-1
- UL 60950
- UL 62368-1

#### RoHS compliance

This symbol indicates that this product does not contain any toxic or hazardous substances or components above the maximum concentration value set out in the Chinese standard SJ / T 11364-2014, and can be recycled following disposal and should not be carelessly discarded.



### **Compliance statement**

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### **IC declaration (For Canada only)**

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## 3.2 Intended use

The Dentsply Sirona 3D printer is designed to produce three-dimensional dental applications from printable viscous materials. It hereby represents a part of an overall system of Computer Aided Imaging (data acquisition), Computer Aided Design (modelling of the application) and Computer Aided Manufacturing (production).

The product only covers the initial manufacturing process. For this purpose, a light-curing process is used to produce three-dimensional objects layer-by-layer in a single operation using a projection unit and printable viscous materials from specific material cartridges.

The subsequent washing and post-exposure treatment that is to be carried out in the associated post-processing unit after this printing process is not part of the product.

The data preparation (alignment, positioning, slicing etc.) is part of an additional CAM software and, like the material used (printable viscous material), is not part of the product.

### CAUTION

#### Follow the instructions

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

### CAUTION

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

### 3D printing process

### CAUTION

The Primeprint 3D printer processes light-curing plastics. These are not finally polymerized before and after the machining process and require further post-processing. The materials can lead to injuries if they are not fully cured. Observe the safety data sheets of the materials used and use the corresponding and named accessories (Primeprint PPU) for the post-processing of the printing results.

For cleaning the print results, observe the safety data sheets of the materials used. These can be obtained from the respective material manufacturer.

The post-processing of all materials validated in the Dentsply Sirona Primeprint 3D printer is performed with the Primeprint PPU of the Dentsply Sirona, REF 6745561 in a validated post-processing process. Observe the separate operating instructions (REF 6745272).

### NOTE

Observe local regulations for the disposal of all operating materials such as cartridges, gloves, and cleaning supplies associated with use of the Primeprint 3D printer.

### NOTE

Observe the local legal requirements for operating the 3D printer.

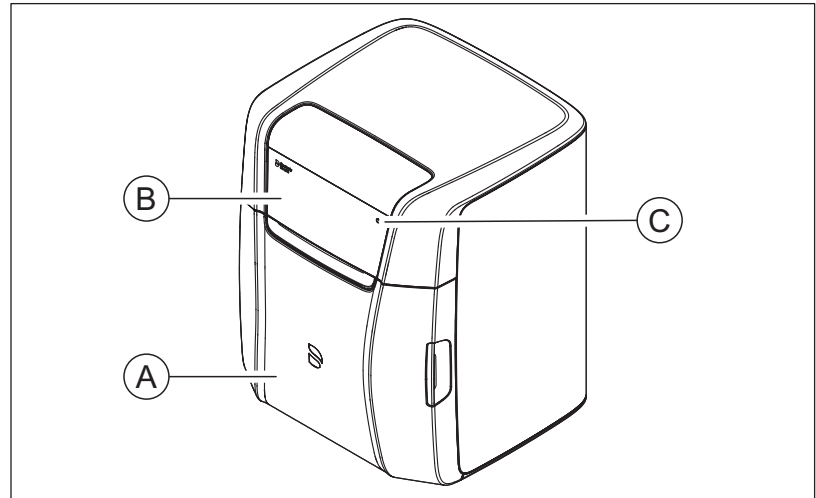
### 3.3 Scope of supply

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

### 3.4 Technical description (component and interfaces)

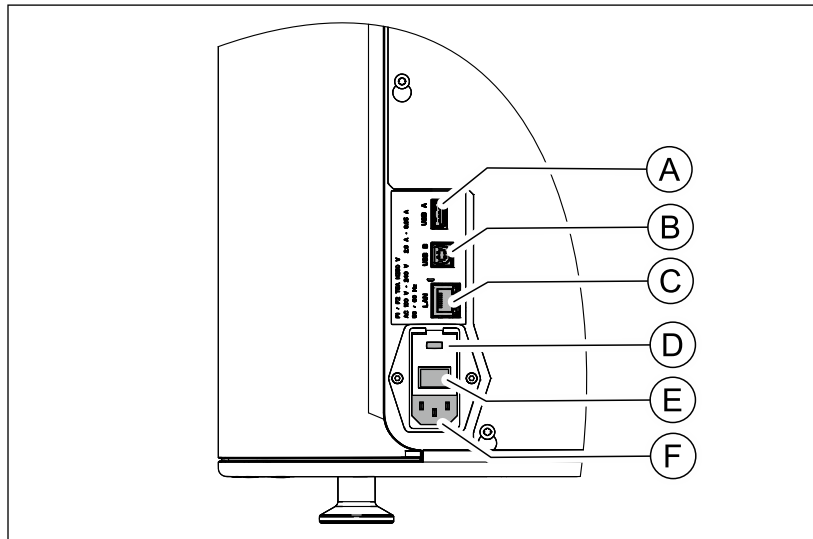
#### 3.4.1 Major components

##### 3.4.1.1 Front view



A	Printer door
B	Touch display
C	ON/OFF button

### 3.4.1.2 Connections



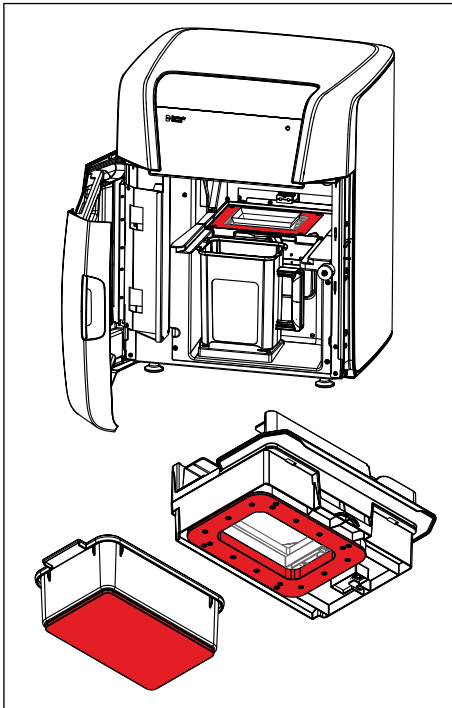
A	USB 1 type A	D	Fuse cover
B	USB 1 Type B	E	Main switch 1 = ON, 0 = OFF
C	LAN	F	Power connection

Connected loads: 100 V AC to 240 V AC 50/60 Hz  
 2.0 A – 0.85 A

Fusing: T5A, H250V



### 3.4.1.3 Build chamber

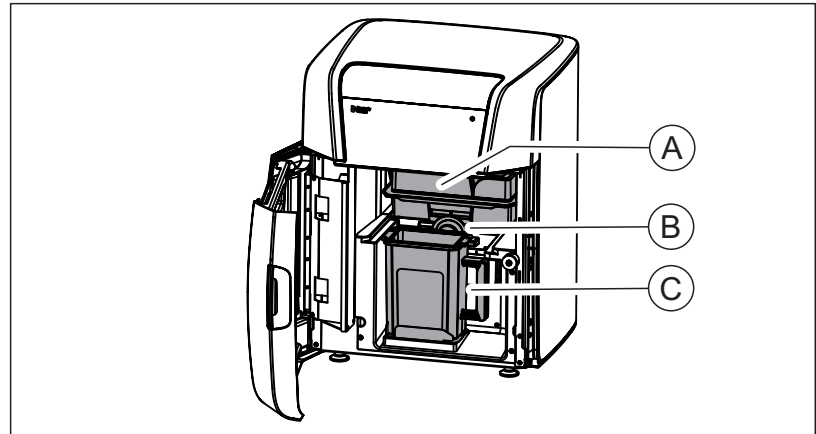


#### **⚠ CAUTION**

##### **Risk of burning**

The Primeprint 3D printer uses a heating system integrated into the build chamber. Make sure that you do not touch this when loading and or unloading with the material unit or when reaching into the build chamber.

The areas marked in red in the adjacent figure become hot.



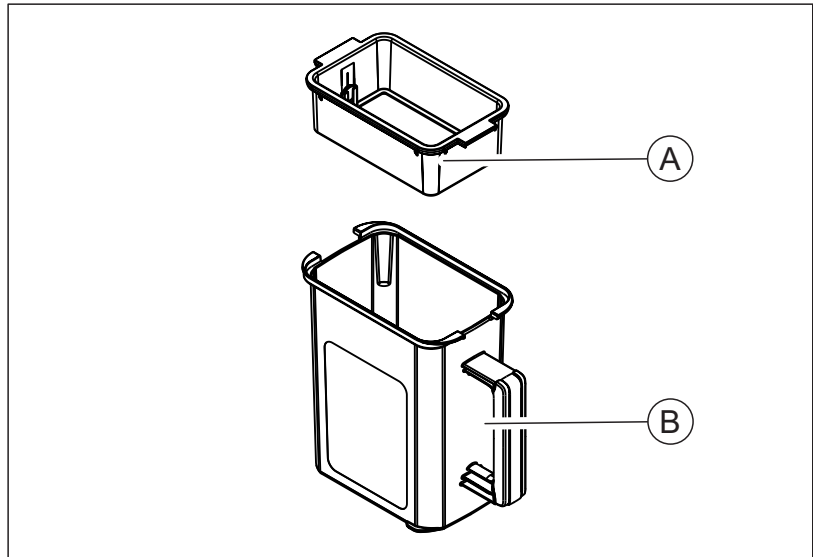
A	Material unit (inserted)	C	Primeprint box (inserted)
B	Locking mechanism of the material unit		

### 3.4.1.4 Primeprint box

#### NOTE

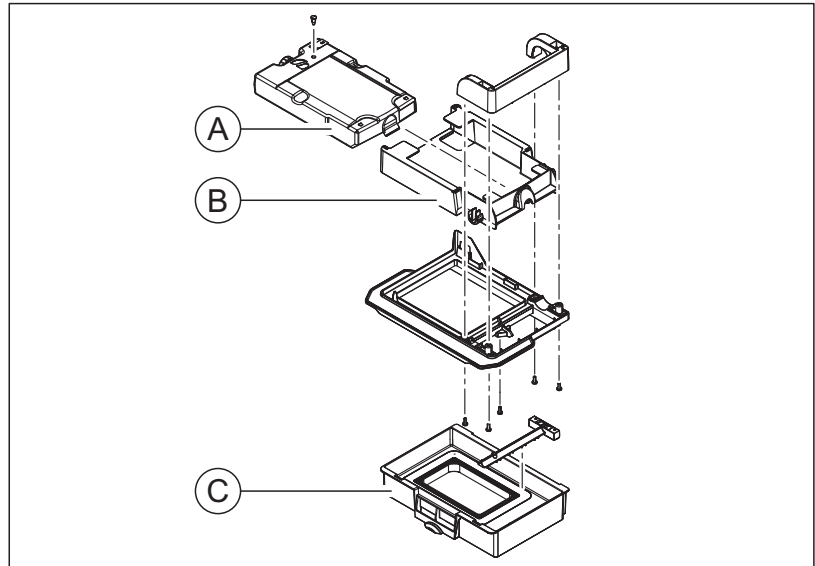
##### Replace damaged transport containers

Damaged (broken, torn etc.) transport containers must not be used any further and must be replaced by a corresponding spare part (REF 6744887).



A + B	Primeprint box (REF 6744895)
A	Build platform
B	Transport container (REF 6744887)

### 3.4.1.5 Primeprint material unit



B + C	Primeprint material unit without cartridge (REF 6744903)
A	Material cartridge
B	Material unit, cover
C	Material unit, vat

### 3.4.2 Standard accessories

- Power cable
- Crossover LAN cable
- Technical Documents
- License stick
- inLab CAM software license voucher
- Primeprint material unit without cartridge
- Primeprint box
- Torque wrench for changing film
- Microfiber cloth for glass
- Lens cleaning cloth for film
- Set of playing cards
- Tweezers
- Gloves, nitrile
- Compressed air pipe, 3 m

#### Optional accessories

- inLab 6 PC
- Monitor
- LAN switch including LAN cable (2 m)

### 3.5 Technical data

Type designation	Primeprint
Rated line voltage	100 V AC to 240 V AC
Rated power frequency	50/60 Hz
Nominal current	2.0 A - 0.85 A
Permissible line voltage fluctuations	±10% of nominal voltage
Type of protection against electric shock	Class I unit
Degree of protection against ingress of water	Usual unit (without protection against ingress of water), IP 20
Overvoltage category	II
Ambient conditions	For indoor use Pollution degree 2 Air pressure: 700 hPa – 1060 hPa Operating height: ≤3000 m above sea level
Temperature range	+15 °C to +35 °C (+41 °F - 104 °F)
Humidity range	80% rel. up to 31 °C (88 °F) decreasing to 50% rel. up to 40 °C (104 °F)
Operating mode	Continuous operation
Dimensions W x H x D	
in mm	530 x 670 x 515
in inches	
Approx. weight	41 kg

## 4 Transportation and installation

### 4.1 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.

#### Transportation without packaging

#### CAUTION

##### Damage to the unit or risk of injury during transport without packaging

There is a danger of the unit falling down if it is grasped by its plastic housing.

- > The unit should always be carried by two persons.
- > Do not grasp the unit by its plastic housing.
- > Always grasp the unit by the base of the unit next to its feet.

### 4.2 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.

## 4.3 Installation requirements

### 4.3.1 Requirements on the place of installation

Make sure that the unit is installed on an even, horizontal surface of approx. 530x515 mm (W x D). The load carrying capacity should be at least 50 kg. The height of the machine is 670 mm.

Install the machine so that access to the power plug is guaranteed at all times. Make sure that the ventilation slots on the rear of the unit remain unobstructed.

The distance between the back of the unit and the wall must be at least 5 cm.

Note the weight of 41 kg!

The unit must not be installed at sites with a high level of humidity or dust!

### 4.3.2 Requirements for the storage of the material units

At least one Primeprint material unit and one Primeprint box is required to operate the 3D printer. Please observe the following instructions regarding storage.

For storage, observe the requirements of the material manufacturer.

## 4.4 Connecting the unit to the power supply and existing network

### Connecting the unit to the power supply

Only use the power cord supplied in the package for connecting to the mains. The unit must be connected directly to a fixed socket and must not be bridged via an extension cable.

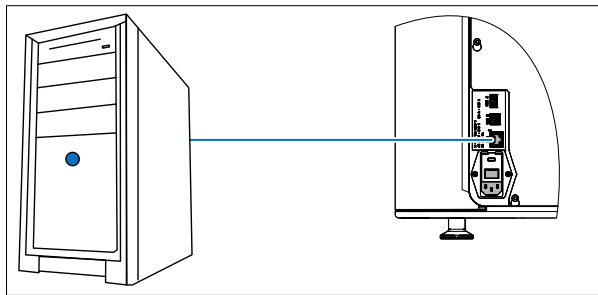
- > Connect the unit to the power supply.

### Connecting the unit to the network

- > Integrate your unit into your existing network via the LAN "Ethernet" connection. Use the network cable supplied for this and the LAN switch delivered as an option if applicable.

## 4.5 Connecting to the PC via LAN

An Ethernet port is located on the rear of the unit, which can be used to connect the PC to the unit. Use a network cable to do this (LAN connection).



*Using a network cable*

Connect the unit with the network card of your PC using the provided network cable.

### **IMPORTANT**

If you wish to integrate the Primeprint unit into an existing network, then please contact your responsible IT technician and follow instructions for checking the installation.



## 4.6 Repacking

- ✓ The Primeprint material unit is removed.
  - ✓ The Primeprint box is removed.
  - ✓ The main switch on the back side of the unit is set to the **0** (OFF) position.
1. Disconnect the power cable and the connecting cable from the back side of the unit and stow them away.
  2. Check the unit for completeness according to the scope of supply!
  3. Pack the unit securely and use the transport locks provided.

## 4.7 Storage

Store the unit in a closed and dry room at a temperature of -10°C to 50°C for a maximum period of 12 months.

## 5 Commissioning

### 5.1 Putting the inLab 4 PC into operation

Observe the following steps in order to put the unit into operation using the inLab 4-PC (optional).

#### 5.1.1 Startup prerequisites

##### 5.1.1.1 Required accessories

###### Supplied parts:

- inLab PC with power cable
- Keyboard
- Mouse
- Power cable
- Ethernet cable for connection of the machine with the PC.

###### Also required:

- PC monitor including corresponding monitor connection cable, such as VGA, DVI, HDMI or display port cable (not included in scope of supply)

#### CAUTION

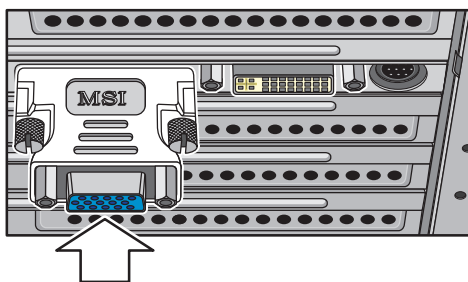
##### Image may not display

Note the required minimum monitor resolution of 1920 x 1080 at 70 Hz. Refer to the technical documentation of the monitor for the correct resolution and frame rate settings.

###### Recommendation:

- Sirona inLab system PC monitor, Order No.: 60 42 548 D3446

Depending on the connection type of the monitor, the monitor cable converters must be used (not included in scope of supply).



*Example of monitor cable converter*

### 5.1.1.2 Making connections

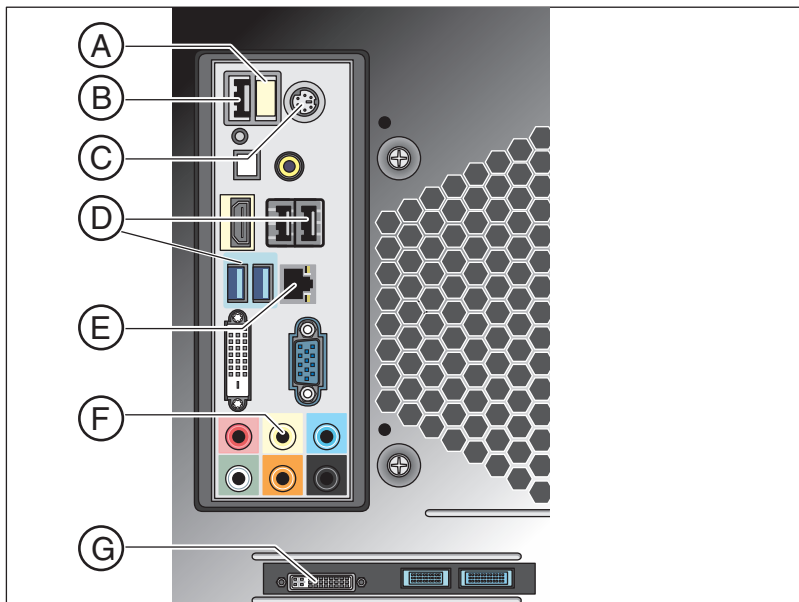
#### NOTE

**Do not connect and turn on the device yet!**

First, connect the PC to the monitor, keyboard, and mouse.

Follow the instructions in this document exactly in order to successfully perform start-up of your device.

**You must install the user software prior to connecting the device to the PC.**



A	USB license stick
B	USB port
C	Keyboard/mouse Alternatively: Connection via USB
D	USB connections
E	Ethernet connection
F	Optional: Audio output
G	Monitor

1. Connect the keyboard and the mouse to the PC.
2. Connect the monitor to the PC with the VGA/DVI cable.
3. Connect the Ethernet port on your device to the Ethernet port on your PC.
4. Turn on the monitor and PC power supplies.
5. Turn on the power switch on the rear panel of the PC (if present).

## 5.1.2 Safety

The inLab 4-PC is equipped with Windows 10. The Windows Firewall is activated. The software Microsoft Security Essentials is also pre-installed by default. Please activate the automatic update function in the settings of this software for optimal protection.

### CAUTION

#### **Damage to the system and data loss:**

If you exchange files and programs with other PC systems and/or operate this PC in a network (LAN or Internet), damage may be caused by software viruses.

- > Activate the "Automatic Updates" function of Microsoft Security Essentials.
- > Activate the "Automatic Updates" function of Windows 10.
- > Run backups of all your important files at regular intervals.

### 5.1.3 Installing the software

#### NOTE

##### Initial installation without device

Perform the initial installation of the software **without** the connected device.

The software requires the 2.00 firmware version of the license stick. Update the firmware version if necessary. For additional information, refer to the "License manager" section in the user manual inLab CAM. inLab 4-PC or higher is required for the software.

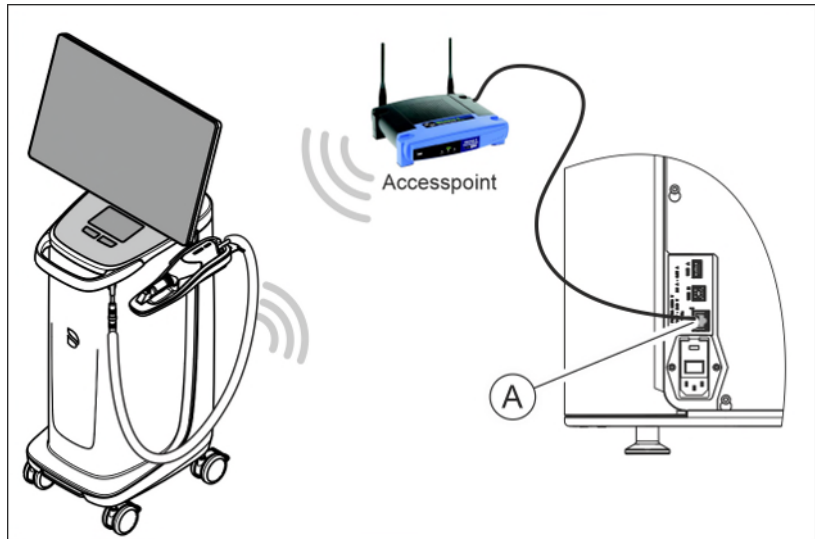
Use the version of the license manager provided with this version to import licenses from the license certificate provided.

- ✓ The license stick firmware is available in version 2.00.
- ✓ The PC is powered up and all programs are terminated.
- 1. Insert the DVD in the DVD drive.
  - ↳ The setup program starts automatically.
- 2. If this is not the case, run the "*Setup.exe*" file in the root directory of the DVD.
  - ↳ The installation wizard opens.
- 3. Click the "*OK*" button.
- 4. In the next dialog, click the "*Next*" button.
  - ↳ The license agreement is shown.
- 5. Read through the license agreement carefully.
- 6. If you accept the license agreement, then check the "*I accept the terms in the license agreement*" option and subsequently click the "*Next*" button.
- 7. In the next dialog, click the "*Next*" button.
- 8. In the next dialog, click the "*Install*" button.
  - ↳ The program continues the installation routine. This may take several minutes.
- 9. Click the "*Finish*" button once installation is complete.
  - ↳ The software is installed.

## 5.2 Connection to the PC of the acquisition unit

### 5.2.1 Connecting to the PC via WLAN (option)

#### Making the connection



#### Connect access point

- > Connect the LAN port **A** of the production unit and the access point, using the network cable (10m, REF 6151521).
  - ↳ The access point is pre-configured at the factory for this application.

### Positioning the access point

1. As a test, place the access point near the production unit at head level or higher.
2. Perform a communication test as described in the separate instructions (see "Operating MC XL via WLAN in infrastructure mode", section "Final work, analyzing connection quality"). If applicable, follow the instructions on changing channels.
3. After you have found the optimum setting, take the acquisition unit and place it in the position in which it will be operated that is farthest away from the access point.
4. From this position, repeat the communication test you conducted earlier. If the results are satisfactory, leave the access point permanently in this position.
5. If the results are not satisfactory, position the access point outside of the room in which the production unit is located and repeat the communication test.
  - ↳ If the connection quality is still not adequate, WLAN communication cannot be easily achieved under the local conditions. In this case, ask your network administrator for assistance.

#### NOTE

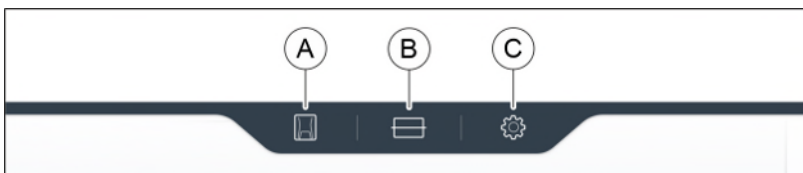
##### LAN connection

Operation via a LAN cable connection is possible at any time.

## 5.3 Putting the unit into operation

### 5.3.1 Functional elements

#### 5.3.1.1 Touch display



A	Unit status
B	Material unit management
C	Configuration

These operating instructions describe how to operate the unit by executing and confirming commands via the touch display. All inputs that are required on the unit can be made here.

#### 5.3.1.2 Color status of the light strip

The LED light strip can display various statuses of the unit.

LED light strip	Operating status
White	Unit ready for operation Door closed
Yellow Continuous illumination	Unit ready for operation Door open
Green Slowly flashing	Unit ready for operation All elements available for job
Green x% progress Rest is white	Processing is in progress
Green 100% lit	Processing concluded in a controlled manner
Yellow Flashing at x%	Process interrupted with Stop
Red Flashing at x%	Process interrupted because of error
Yellow Rapidly flashing	Unit is switching off
Red Continuous illumination	Internal error, restart necessary
Color of your choice, except blue, red, green, yellow, white Pulsating	Unit in Idle mode



### 5.3.2 Removing the transport safety device and putting the build chamber into operation

The Primeprint unit is equipped with a transport safety device that must be removed during commissioning. To do this, proceed as follows:

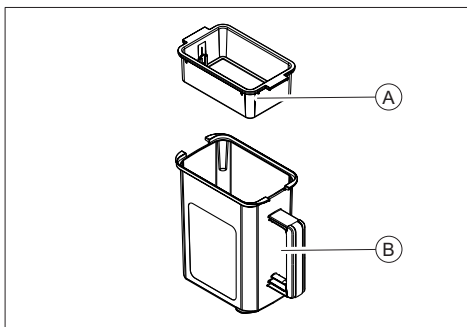
1. Open the door.
2. Take out the transport safety device.

### 5.3.3 Preparing the Primeprint box

#### IMPORTANT

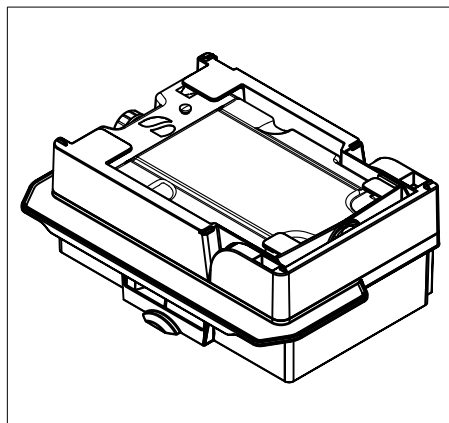
##### Cleaned platform

Before using a build platform for a print job, make sure that it is empty and clean.



1. Use an empty build platform (A).
2. Make sure that the build platform is free of adhesive and grease.
3. Use an empty transport container (B).
4. Snap the build platform in the transport container.

### 5.3.4 Preparing the Primeprint material unit



1. Use an empty material vat.
2. Take a new cartridge of the material you want to use for the printing process.
3. Remove the seal from the cartridge.
4. For visualization, you can apply the color-coded sticker included with the cartridge to the left vat side of the material unit. This should simplify the search for the required material in the material cabinet.
5. Insert the cartridge into the media unit.
6. The unit uses an RFID tag on the cartridge and the Primeprint material unit to automatically pair these two components.
7. The name of the vat assigned ex works can be found on the white sticker on the right side of the material unit vat. The name corresponds to the numerical value assigned to the RFID code.
8. The name can also be customized in the software.

### 5.3.5 Switching the unit ON and OFF

#### 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.

Within the machine, grease depots are included for lubricating components that can cause error messages at low temperatures.

- ✓ 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.

#### NOTE

##### **Do not adjust the line voltage**

The unit automatically adjusts to the line voltage.

#### Switching on the unit

- ✓ The unit is connected to the power supply.
- 1. The main switch on the left rear side of the unit is set to position I (ON).
- 2. Press the ON/OFF button on the front panel.
- ↪ The unit switches on.



#### Switching off the unit

- ✓ The unit has finished the machining operation.
- Briefly press the ON/OFF button on the front panel.
- ↪ When you let go of the button, the unit switches off.



## 5.3.6 Installing and configuring the unit

### 5.3.6.1 Installing the unit

You must connect the unit to the PC before putting it into operation. This is described in the section "Connecting the PC/interfaces".

#### IMPORTANT

The Primeprint unit can be operated with both a static as well as an automatically assigned IP address.

The Primeprint unit is always configured for operation ex works with a static IP address. The standard IP address is as follows: 192.168.230.xy. The digits x and y are made up from the last two digits of the unit serial number. These can be found on the label on the rear of the device. If the serial number ends in "00" then the xy value is always "100".

The MAC address for the network card can be found on the machine's configuration menu.

To change the IP configuration always establish a direct connection with static IP address to your PC's network card. The network address for the inLab 6 PC used is 192.168.230.101. The subnet mask is 255.255.255.0.

#### 5.3.6.1.1 Automatic unit search

- ✓ The unit is connected to the PC using a direct connection via Ethernet cable.
- ✓ The unit is switched on.
- 1. Start the *"inLab CAM"* software.
- 2. Click on the *"Machine and Instrument tray Management"* button in the system menu.
- 3. Click on the *"Scan for New Devices"* button.
  - ↳ All units connected to the PC are recognized.
- 4. Enter a name for the new unit.



#### 5.3.6.1.2 Manual unit search

- ✓ The unit is connected to the PC using a direct connection via Ethernet cable.
- ✓ The unit is switched on.
- 1. Start the *"inLab CAM"* software.
- 2. Click on the *"Machine and Instrument tray Management"* button in the system menu.
- 3. Click on the *"Add Device (Manual)"* button.
- 4. Select *"Network"*.
- 5. Enter the network address.
- 6. Click on the *"Ok"* button.
  - ↳ The software attempts to contact the device.



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

### 5.3.6.1.3 Updating devices

With the *"Refresh Devices"* button you can

- display the status; e.g. check whether a machine has in the meantime finished producing, or
- Check the current availability of a device.

### 5.3.6.1.4 Remove the unit

If you no longer require a unit (e.g. a unit is replaced), you can remove it.

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



### 5.3.6.2 Configuring the device

In the "Machine and Instrument tray Management" software "inLab CAM" area you can make subsequent amendments to the various settings for your unit.

1. Click the "Configuration" button in the system menu.
2. Click on the "Machine and Instrument tray Management" button.
3. Click on the unit that you wish to configure.

#### 5.3.6.2.1 Primeprint – Editing device settings

Using the touch display, you can change or view the following settings subsequently via menu item "Settings":

- Language setting
- Sound and light settings
- IP settings
  - Automatic IP setting
  - Manual IP settings
  - Display of the MAC address
- Configuring DS hub connections
- Firmware download

##### 5.3.6.2.1.1 Device settings

###### Manual IP settings

The IP address can be changed in order to integrate the machine into existing networks. To do this, proceed as follows:

1. Establish a direct connection to the inLab 6 PC (see Installing the unit [→ 43]).
2. If you want to change the static IP address, click "Edit Device Settings".
3. Enter the network settings in accordance with your local network configuration.
4. Confirm the new network settings with "Ok" or press "Cancel" in order not to save the changed settings.
5. Disconnect the Ethernet connection with the PC and connect the machine to the network socket in your local network (see Connecting the PC/interfaces).

###### Auto IP settings

There is an option for integrating the machine into an existing network with DHCP server in such a way that the IP address is received by the DHCP server automatically. To do this, proceed as follows:

1. Establish a direct connection to the inLab 6 PC (see Installing the unit [→ 43]).
2. If you want to change the IP address to automatic addressing, click "Edit Device Settings".
3. Now click "Auto IP settings".

#### IMPORTANT

Ensure that the network in which you are integrating the machine has an active DCHP server for the allocation of IP addresses.

4. Confirm the new network settings with *"Ok"* or press *"Cancel"* in order not to save the changed settings.
5. If you have changed the setting to *"Automatic"* you must now disconnect the Ethernet connection to the PC and connect the machine to the network socket in your local network.
6. If you wish to change the settings back again, then change over to *"Manual IP settings"*.

#### **IMPORTANT**

If the machine is in *"Auto IP settings"* mode and does not detect any active DHCP server, the IP address is automatically reset to 192.168.230.1. With the help of a direct connection to a PC, you can then add and manage the machine again via the *"Add Device (Manual)"* function.

#### **Firmware download**

Each CAD/CAM unit of the Dentsply Sirona requires a firmware version that is compatible with the respective version of the inLab CAM software.

You start the download of the appropriate firmware for Primeprint via this button.

#### **IMPORTANT**

If a unit does not have the correct firmware version, this is in fact detected by the software, yet it cannot be used for production. It is indicated as "invalid firmware" both in the device management and in the production phase.

## 6 Operation

### 6.1 Referencing run

#### NOTE

##### **Observe the Operator's Manual**

Please also observe the information in the Operator's Manual for inLab CAM SW software.

The referencing run is used for the function check of the sensors and the position check of movable parts in the build chamber. The referencing run takes place automatically via the firmware. The complete referencing run always takes place following switch-on of the machine immediately before starting the first job. The shortened referencing run takes place before every new job.

## 6.2 Production process

3D printing is done on the build platform, which is placed in the 3D printer with the Primeprint material unit.

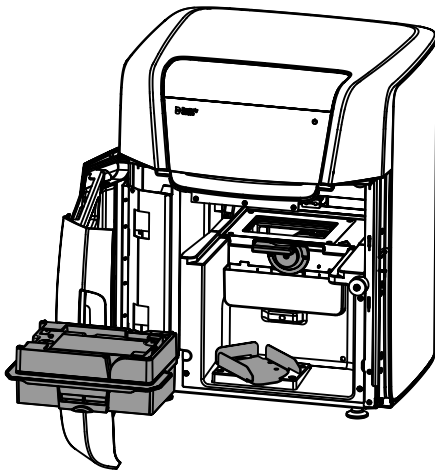
### 6.2.1 Equipping the Primeprint material unit

The Primeprint material unit consists of the lower material unit vat and the upper material unit cover.

The desired cartridge is inserted into the Primeprint material unit. The cartridge is supplied with a material unit sticker, which is applied to the left side of the material unit vat. This allows a visual classification of the vat and significantly simplifies operation later on.

The cartridge must be preconditioned before it is inserted into the material unit. First, shake the cartridge for about 10 seconds so that the contents are well mixed. The sealing film of the cartridge must then be removed to vent the cartridge.

### 6.2.2 Loading with material unit



#### **CAUTION**

##### **Risk of injury when reaching into the build chamber**

There is the risk of cut and crush injuries caused by sharp edges and movable parts.

> Be sure not to touch the sharp edges and movable parts.

During each change, ensure clean contact surfaces of all parts; otherwise, the fixation and the correct positioning cannot be guaranteed. Depending on your choice of materials, also follow the processing instructions of the manufacturer.

#### **NOTE**

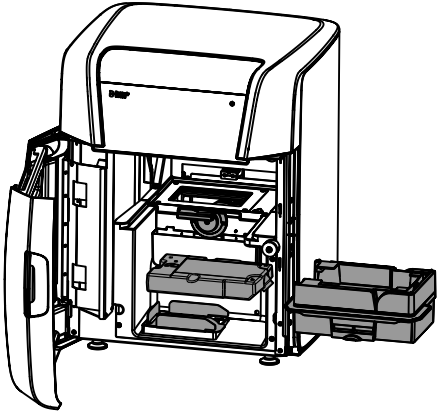
Make sure that you only process material whose expiration date has not passed.

**To load the 3D printer with the Primeprint material unit, follow these steps:**

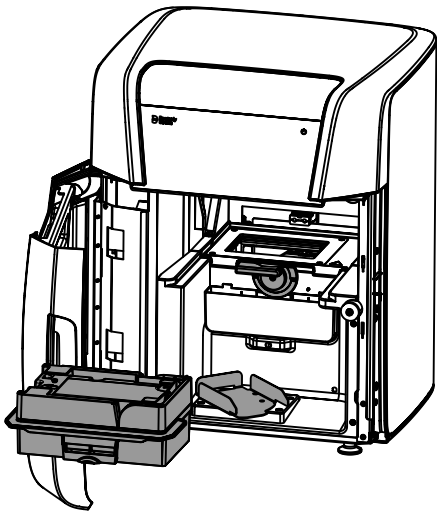
- ✓ The job is shown on the touch display and you are prompted to insert the appropriate material unit.
- 1. Follow the instructions of the 3D printer on the display.



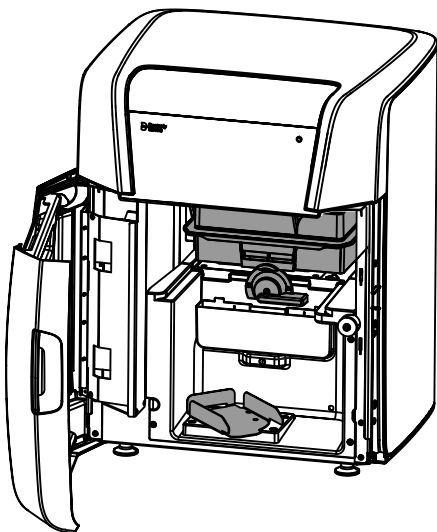
2. Open the door of the unit.
3. Optional: Unlock the material unit lock by turning it counterclockwise.
4. Optional: Remove the currently used material unit.
5. Insert a correct material unit. Make sure that the material unit is correctly guided in the guide rails provided.



6. The 3D printer recognizes and checks the Primeprint material unit used.
7. Optional: The touch display prompts you to configure and insert a suitable material unit.



8. Lock the material unit lock.
9. Follow the instructions for loading the Primeprint box (see "Loading with Primeprint box [→ 50]").



### 6.2.3 Loading with Primeprint box

#### CAUTION

##### **Risk of injury when reaching into the build chamber**

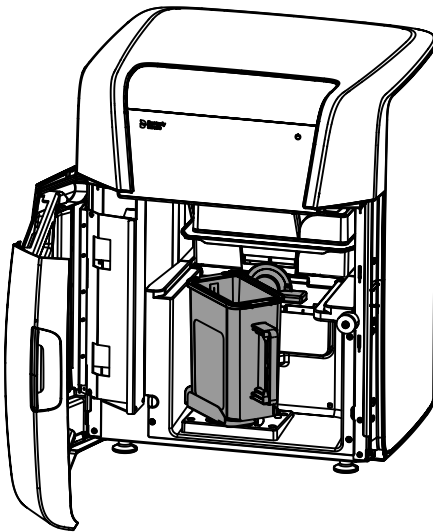
There is the risk of cut and crush injuries caused by sharp edges and movable parts.

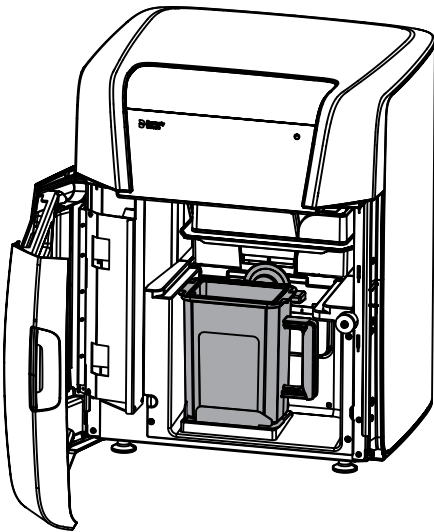
> Be sure not to touch the sharp edges and movable parts.

During each change, ensure clean contact surfaces of all parts; otherwise, the fixation and the correct positioning cannot be guaranteed. Depending on your choice of materials, also follow the processing instructions of the manufacturer.

##### **To load the 3D printer with the Primeprint box, follow these steps:**

- ✓ The job is shown on the touch display and you are prompted to insert a prepared Primeprint box.
  - ✓ For information on preparing and cleaning the build platform, refer to section 5.2.5 (Preparing the Primeprint box).
1. Follow the instructions of the 3D printer on the display.
  2. Rotate the holder for the Primeprint box by approx. 45° out of the printer.
  3. Place the prepared Primeprint box in the guide rails of the holder.
  4. Push the Primeprint box into the holder until the unit clicks noticeably into place.





5. Rotate the Primeprint box back into the starting position.
6. The 3D printer recognizes and checks the inserted unit and, if necessary, the touch display prompts you to insert a correct build platform into the unit.
7. To start the 3D printer, close the door and follow the instructions on the touch display.

#### 6.2.4 Process start

Follow the instructions that appear on the touch display.