IMPRIMO® 90

SCHEU

Operation Manual

Inhaltsverzeichnis

1 Copyright 3

2 Safety information 4

2.1 Important Safety Symbols 4

2.2 Operating Environment 5

2.3 Operating Directions 8

2.4 Installation / Moving 9

2.5 Maintenance / Checking 11

2.6 Supply / Usage 13

3 About this user's guide 14

3.1 Conventions 14

3.2 Finding more information 14

4 Introduction 15

4.1 Front view 15

4.2 Rear view 16

4.3 Inside view 16

4.4 Tray table view 17

4.5 Tray view 17

4.6 Control Panel overview 18

4.7 LCD overview 18

4.8 Understanding the status 19

4.9 Error codes 20

4.10 Introducing the Buttons 20

5 Getting started 22

5.1 Setting up the hardware 22

6 Machine basics 24

6.1 Opening machine door 24

6.2 Closing machine door 24

6.3 Unloading the tray 25

6.4 Loading the tray 26

6.5 Removing the building platform 27

6.6 Placing the building platform 28

6.7 Pour material into tray 29

6.8 Pour material from tray to bottle 29

7 Printing 30
7.1 Turning on the machine 30
7.2 Preparing job 30
7.3 Verifying the machine 30
7.4 Sending a job to the machine 30
7.5 Pause/resume or cancel a job 31
7.6 Removing objects from the building platform 31
7.7 Turning off the machine 31

8 Maintenance 32
8.1 Cleaning the machine 32
8.2 Storing the material 32
8.3 Storing the tray 33
8.4 Cleaning machine when the tray is damaged 33
8.5 Cleaning the tray when objects stick on it 33

9 Troubleshooting 34
9.1 Machine does not power on 34
9.2 3D printer manager (software) can not identify the machine 34

10 Specifications 34

1 Copyright

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2 Safety information

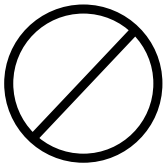
These warnings and precautions are included to prevent injury to you and others, and to prevent any potential damage to your machine. Be sure to read and understand all of these instructions before using the machine.

2.1 Important Safety Symbols

This section explains the meanings of all icons and signs in the user‘s guide. These safety symbols are in order, according to the degree of danger:

Warning - Hazards or unsafe practices that may result in severe personal injury or death.

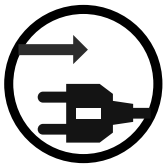
Caution - Hazards or unsafe practices that may result in minor personal injury or property damage.



Do not attempt.

Do not disassemble.

Do not touch.

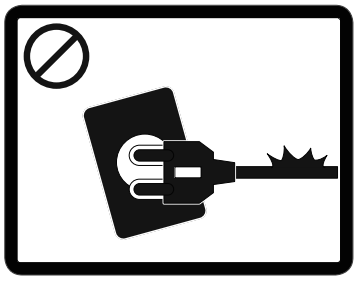


Unplug the power cord from the wall socket.

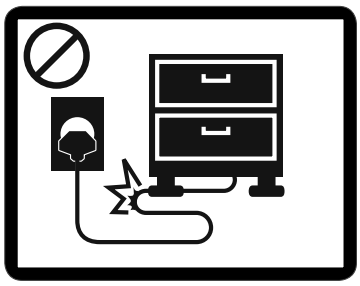
Call the support for help.

2.2 Operating environment

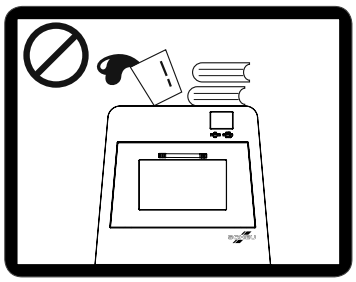
Warning



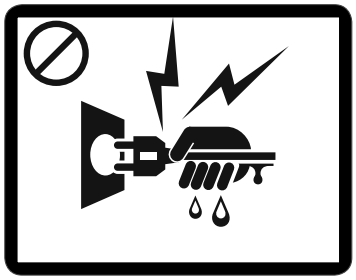
Do not use if the power cord is damaged or if the electrical outlet is not grounded. This could result in electric shock or fire.



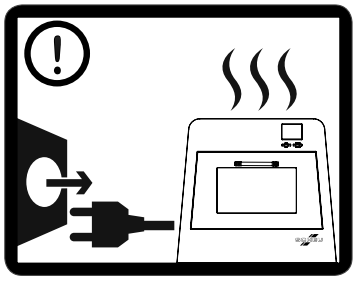
Do not bend, or place heavy objects on the power cord. Stepping on or allowing the power cord to be crushed by a heavy object could result in electric shock or fire.



Do not place anything on top of the machine (water, small metal or heavy objects, books, candles, lit cigarettes, etc.). This could result in electric shock or fire.



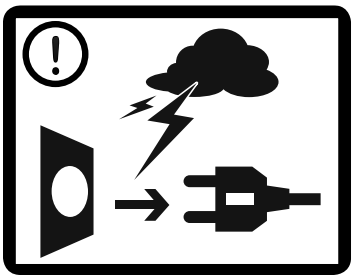
Do not remove the plug by pulling on the cord; handle it by the plug end only; do not handle the plug with wet hands. This could result in electric shock or fire.



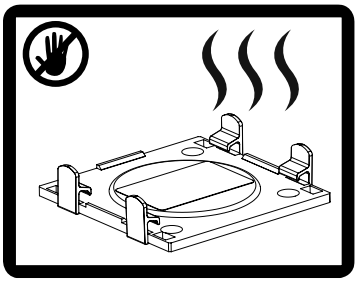
If the machine becomes overheated, releases smoke, makes strange noises, or generates an odd odor, immediately turn off the power switch and unplug the machine. Not doing so could result in electric shock or fire, and at the least damage the printer.

2.2 Operating environment

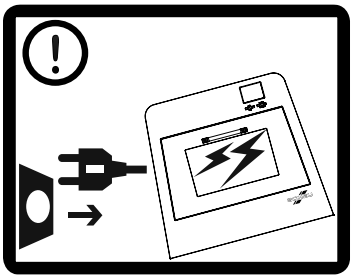
Caution



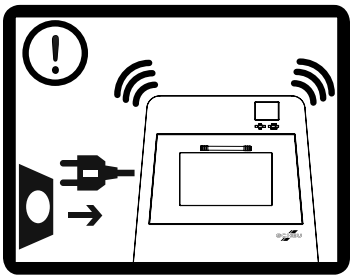
During an electrical storm or for a period of non-operation, remove the power plug from the electrical outlet.



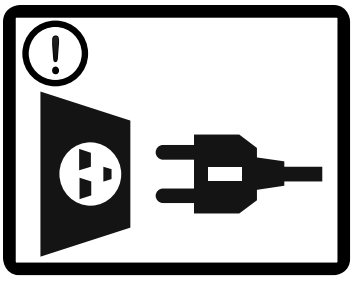
Be careful, when handling the plastic tray, the area and material may be hot.



If the machine has been dropped, or if the plastic cover appears damaged, unplug the machine from all interface connections and request assistance from our service personnel.

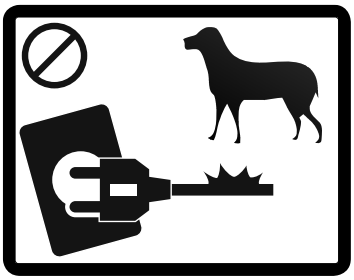


If the machine exhibits a sudden and distinct change in performance, unplug the machine from all interface connections and request assistance from our service personnel.

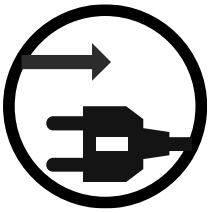


If the plug does not easily enter the electrical outlet, do not attempt to force it in. Call an electrician to change the electrical outlet.

2.2 Operating environment



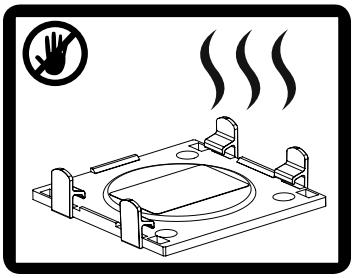
Do not allow pets to chew on either the AC power or the USB interface cords. This could result in electric shock or fire and/or injury to your pet.



If the machine does not operate properly after these instructions have been followed, unplug the machine from all interface connections and request assistance from qualified service personnel.

2.3 Operating directions

Caution



Do not touch the internal tray table after removing the plastic tray. The surface may be hot after printing.

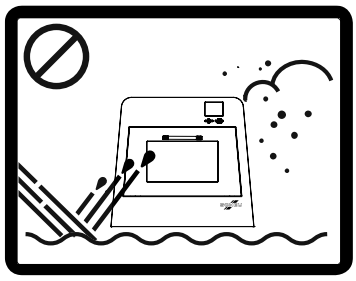
Do not send any printing job to the machine if there are any objects on the printer head. This could damage the machine.

Do not block or push objects into the ventilation opening. This could result in elevated component temperatures, which can cause damage or fire.

Never allow children to use this machine.

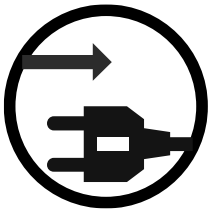
2.4 Installation / Moving

Warning



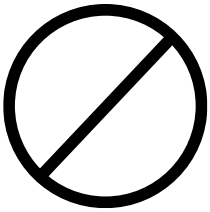
Do not place the machine where there is dust, humidity or water leaks. This could result in severe damage to the machine, electric shock or fire.

Caution

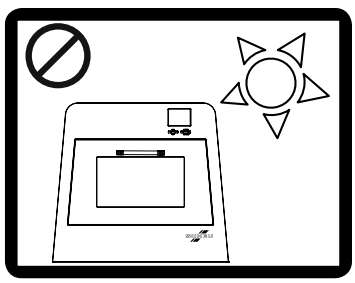


Before moving the machine, turn the power off and disconnect all cables.

Install the machine in a well-ventilated area. Lack of ventilation could be toxic or result in the machine overheating.

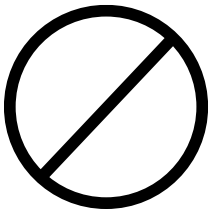


Do not put a cover over the machine or place it in an airtight location - such as a closet while it is hot or connected to a power outlet. If the machine is not well-ventilated, it could cause a fire.



Do not install the machine near windows or in places with sunlight. This will damage your material or reduce its shelf life.

2.4 Installation / Moving

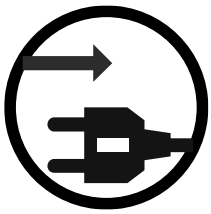


Do not place the machine on an unstable surface. The machine could fall, causing injury or severe damage to the machine.

Make sure you plug the power cord into a grounded electrical outlet. Not doing so could result in electric shock or fire.

2.5 Maintenance / Checking

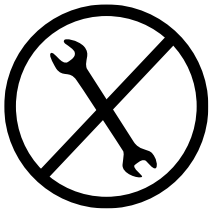
Caution



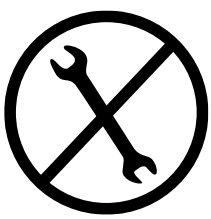
Unplug the machine from the wall outlet, and let it cool before cleaning the inside of the machine. Do not clean the machine with benzene and paint thinner as these can damage delicate parts. Do not spray water directly into the machine. This could result in electric shock or fire.

Keep cleaning supplies away from children, as most cleaning supplies are dangerous for children.

When you are working inside the machine replacing supplies or cleaning the inside, do not operate the machine. Doing so could result in damage to the machine or the operator or both.



If the machine needs repair call a SCHEU-DENTAL technician.



Do not remove any covers or guards that are fastened with screws. Screws in covers indicate that these places should only be opened by a certified technician. The machine should only be repaired by a SCHEU-DENTAL technician.

2.5 Maintenance / Checking

To clean and operate the machine, carefully follow the user‘s guide step by step directions provided with the machine. Otherwise, the machine could be damaged.

Keep the power cable and the contact surface of the plug clean from dust or moisture. These materials could result in electric shock or fire.

2.6 Supply / Usage

Warning

Do not use any other material in the machine except the materials approved by SCHEU-DENTAL for this model. Otherwise, this could damage the machine or injure someone.

Do not burn any of the supplies such as material, plastic tray and material bottles. This could cause an explosion or uncontrollable fire. Leftover supplies or their containers should be disposed of as directed on the labels.

When storing supplies, such as printing materials, keep them away from children in a locked area or child proof cupboard. These materials are dangerous if inhaled or ingested.

3 About this user's guide

This user's guide provides information about this machine as well as detailed explanations of each step during actual usage. It is a valuable resource for both novice and professional users for the proper installation and use of the machine.

- Read the safety information before using the machine.
- If you have a problem using the machine, refer to the troubleshooting chapter (See „Troubleshooting“ on page 34).
- For software installation and usage, refer to the Unyk User's Manual.

3.1 Conventions

Some terms in this guide are used interchangeably, as below:

- Object is synonymous with 3D Object.
- Tray is synonymous with Polymerization Tray.
- Material is synonymous with resin.
- Printer is synonymous with Machine.
- Machine refers to SCHEU-DENTAL 3D Printer.

The following table offers the conventions used in this guide:

Convention	Description	Example
Kursiv	For texts on the display or button names on the machine.	On/Off
Caution	Contains information you can use to protect the machine from possible mechanical damage or malfunction.	Caution: Do not touch this part.
(“Cross-reference”)	Refers you to additional detailed information.	(See „Introduction“ on section 4).

3.2 Finding more information

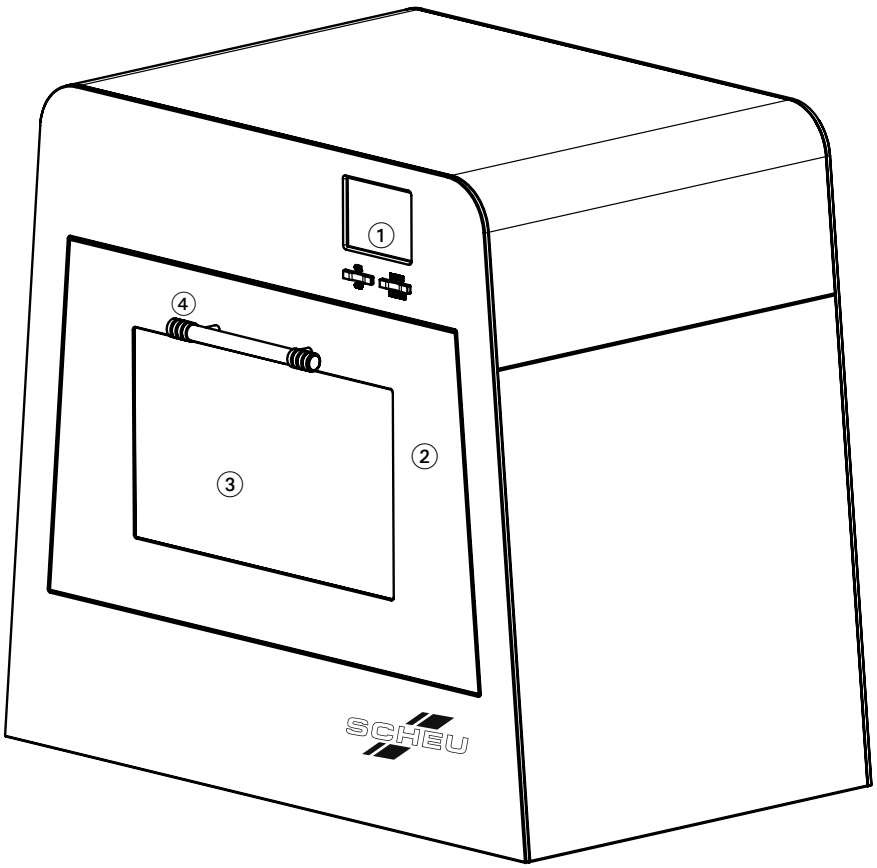
SCHEU-DENTAL website	www.scheu-dental.com
Unyk Manual	Available with Unyk software
SCHEU-DENTAL Support Portal	www.scheu-dental.com/support

4 Introduction

This chapter gives you an overview of your new 3D Printer.
This chapter includes:

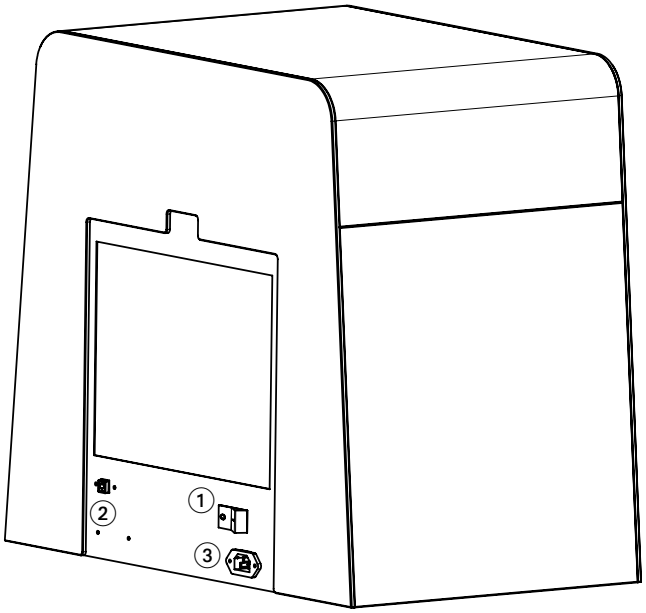
• Front view	• Control panel overview
• Rear view	• LCD Overview
• Inside view	• Understanding the status
• Tray table view	• Error codes
• Tray view	• Introducing the buttons

4.1 Front view



① Control panel (LCD + 2 Buttons)
② Door
③ Translucent window
④ Door handle

4.2 Rear view

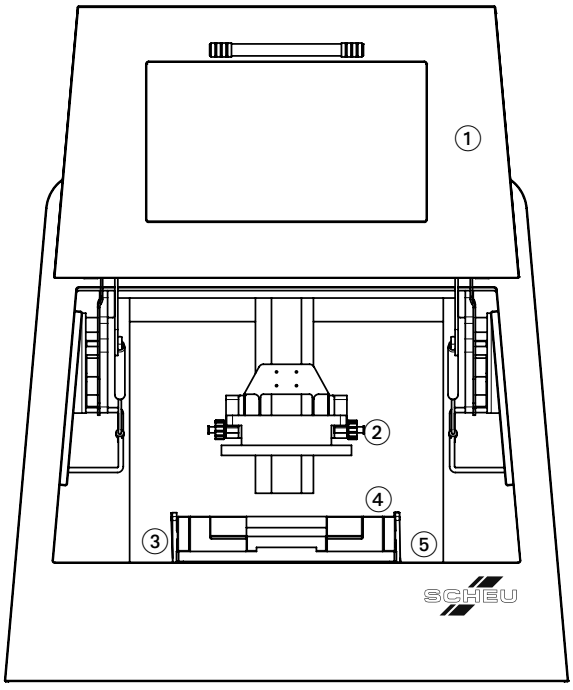


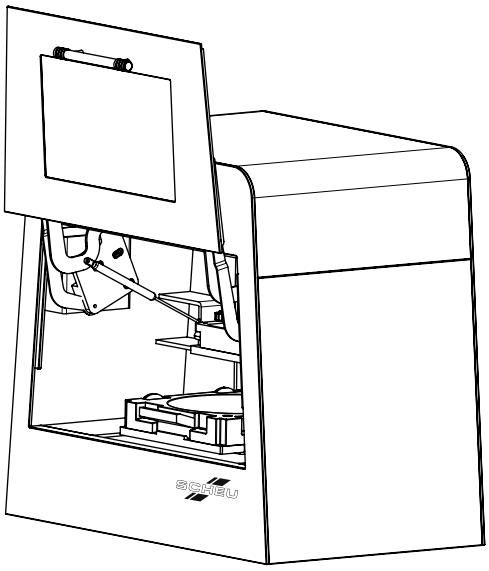
① Main power switch
(See „Main power switch“ on section 4.10.1).

② USB port

③ Power cord receptacle

4.3 Inside view





① Door

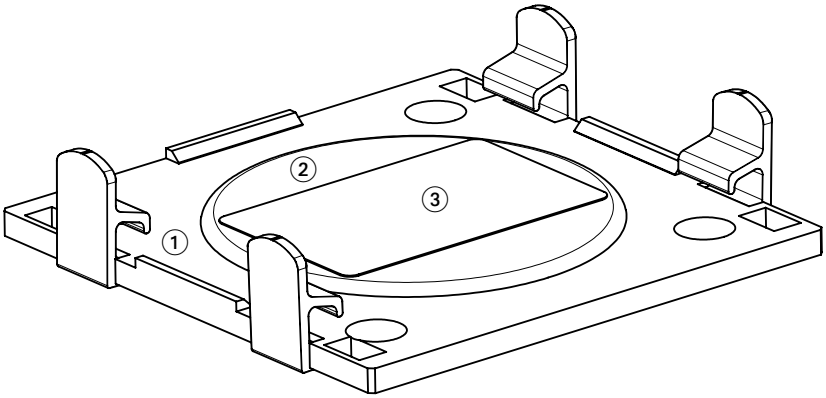
② Build Platform

③ Plastic latches

④ Plastic Tray

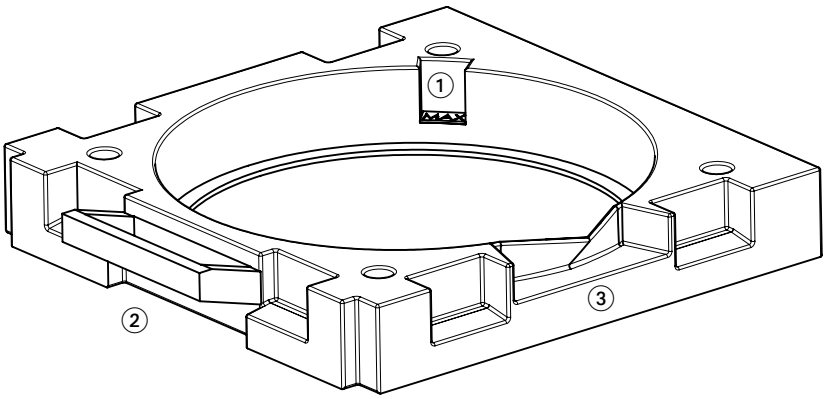
⑤ Tray table and guide

4.4 Tray table view



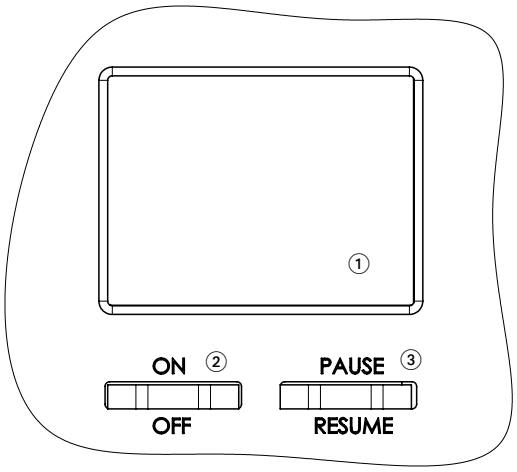
① Tray guide
② Heating system
③ Optical glass

4.5 Tray view



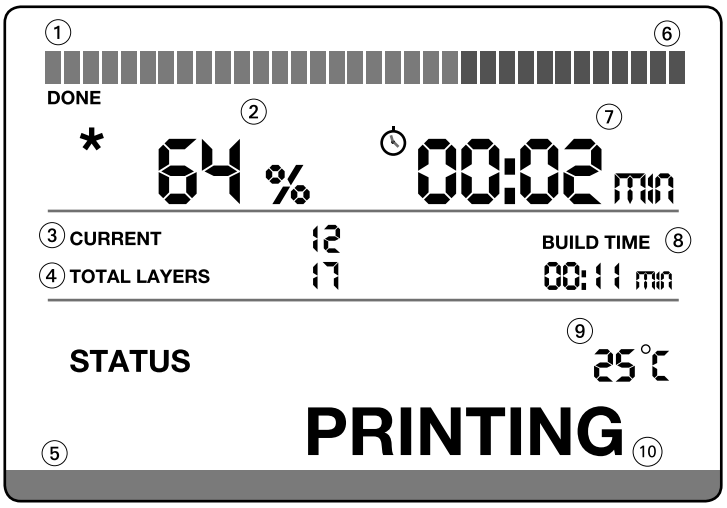
① Max. material level marks
② Tray handle
③ Tray spout

4.6 Control panel overview



① Color LCD	(See „LCD OVERVIEW“ on section 4.10.3).
② On/Off button	Allows you to turn the machine on or off. (See „On/Off Button“ on section 4.10.1).
③ Pause/Resume button	Allows you to turn Pause, Resume or Cancel the job. (See „On/Off Button“ on section 4.10.3).

4.7 LCD overview



① Progress bar (%Done = displays green).

② % Job completed (0 – 100).

③ Number layer currently printing.

④ Total number of layers for the job.

⑤ Status bar (Green = Ok / Red = Error).

⑥ % Remaining Job
(% Remaining = displays in red).

⑦ Estimated amount of time to finish the job in HH:MM.

⑧ Total amount of time spent on current job in HH:MM.

⑨ Material temperature in Degrees Celsius.

⑩ Status
(See „Understanding the status“ section 4.8).

4.8 Understanding the status

Status	Description
Initializing	• When you power up the machine, the system will check if all components are working. Additionally the build platform will be positioned at the right place for printing. • No job can be sent to the machine during this process which takes between 1 and 2 minutes. • After the initializing process the machine will change to display “Ready” Status.
Ready	• The machine is ready to print
Door Opened	• The machine door is opened • For safety reason the system will stop the job in case the machine is printing.
Loading	• The machine is receiving a job from the computer via high speed USB 2.0.
Printing	• The machine is printing a job.
Pausing	• The machine is pausing. • The machine will pause after it finishes the current layer. This will insure that there will be no damage to the object.
Paused	• The job is paused • You can open the machine door to see the current printing status or add more material without damaging the object.
Canceling	• The job has been canceled and the machine is positioning the building platform in the home position.
Shutting Down	• The machine is shutting down • The building platform will be positioned at home position before the power is turned off.
Error	• The machine has stopped due to a functional error • See „Error codes“ on section 4.9.

4.9 Error codes

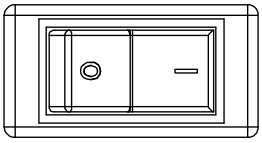
This section contains a list and description of all error codes that the machine can display in cases of failure. For all errors listed in the table below, please turn off the machine and try again. If the problem persists, please contact a SCHEU-DENTAL authorized service center.

Error	Description
01	The machine projection engine failed.
11	The machine LED sensor failed.
12	The machine LED temperature presented some technical problem.
13	The machine LED failed.
21	The machine heater sensor failed.
22	The machine heater presented some technical problem.
23	The machine heater failed.
24	The machine heater presented some technical problem.
31	The machine building platform motor failed.
32	The machine building platform motor failed to find home position.
41	The machine tray table motor failed.
42	The machine tray table motor failed to find home position.
51	The machine memory card was removed or is not working properly.
61	The machine has overheated.
62	The machine system failed.
71	The job sent to machine is bigger than printing area allows.

4.10 Introducing the buttons

4.10.1 Main power switch

The main power switch is located on the back of the machine near the power cord receptacle.
(See “Rear view” on section 4.2)
To turn on your machine, switch to position (I).



4.10.2 On/Off button

By pressing the On/Off button, you can turn the machine on and off.

Function	Description
Turning on the machine	Press On/Off button on the control panel for less than 1 second. When the machine is powered the LCD will immediately turn on and you will hear the internal motors moving.
Turning off the machine	Press On/Off button on the control panel for 5 seconds. The machine will start shutting down process and will automatically turn off. However, turning the machine off or pulling the plug during a print job will result in an incomplete printout and the job will have to be started again from scratch.

4.10.3 Pause/Resume button

By pressing the Pause/Resume button, you can Pause, Resume or Cancel a job.

Function	Description
Pausing a job	Press Pause/Resume button on the control panel for less than 1 second. The machine will start the pausing process and LCD status will be updated to “Pausing”. Once the machine is paused the status on LCD will be updated again to “Paused” The machine will move the building platform up, so you can see the current status of your object. You will be able to resume the job.
Resuming a job	When the machine is paused, press the Pause/Resume button on the control panel for less than 1 second. The machine will resume the job and the LCD status will be updated to “Printing”.
Canceling a job	Press Pause/Resume button on the control panel for 5 seconds. The machine will cancel the job and LCD status will be updated to “Canceling”. When the canceling process is finished the LCD will be updated to “Ready”. If cancelling a job in progress, remember to clean the print platform before the beginning again.

Caution: When printing, you must stop the job before opening the machine door. If you open the machine door without pausing, for safety reasons, the machine will stop all motors immediately. This could result in small imperfections on the printed object surfaces.

5 Getting started

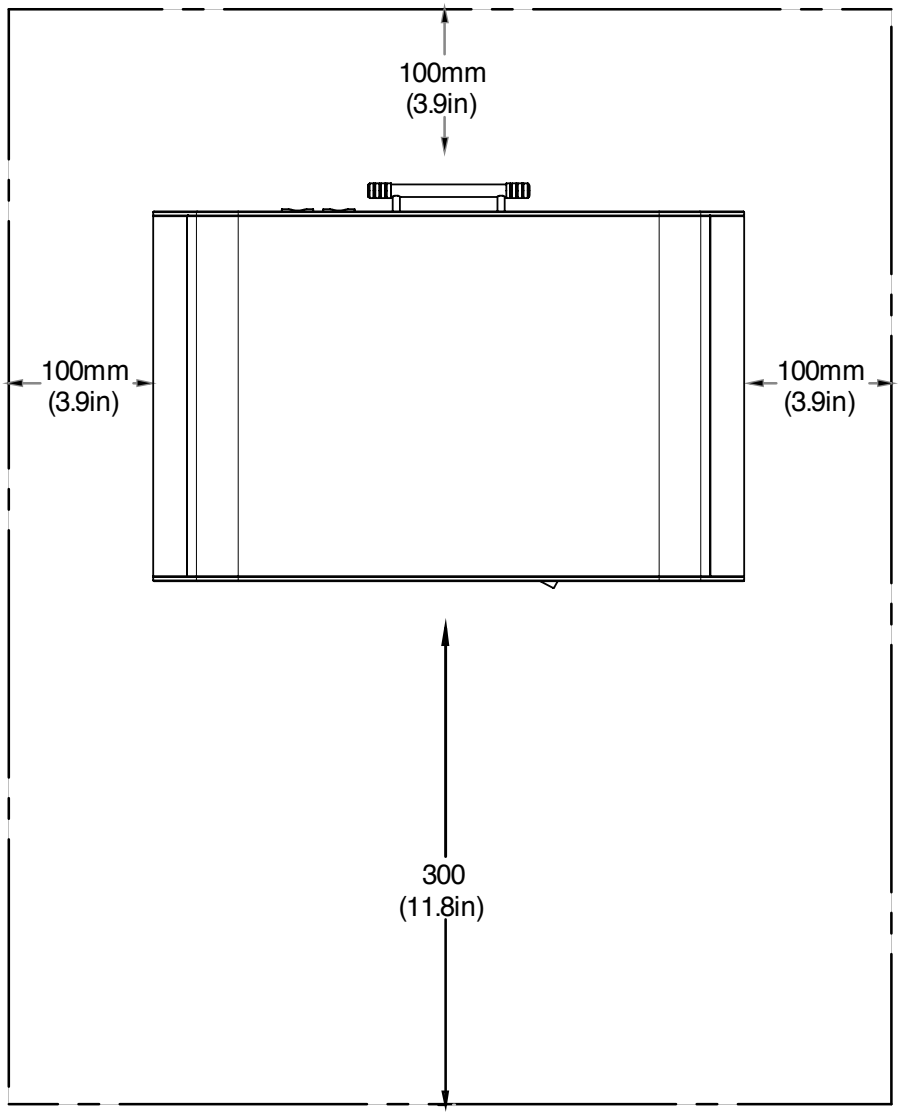
This chapter gives you step-by-step instructions for setting up your new 3D Printer.
This chapter includes:

- Setting up the hardware

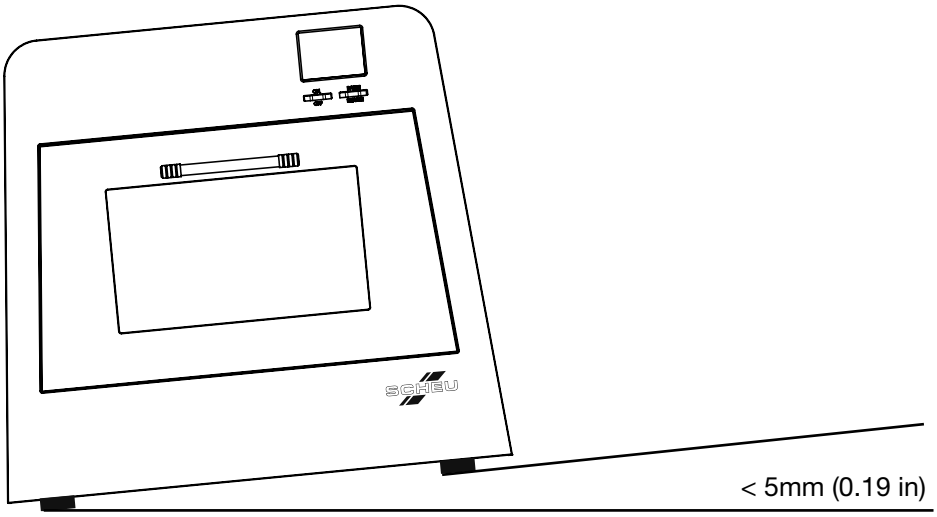
5.1 Setting up the hardware

This section shows the steps to setup the hardware.

1. Select location for Printer
    - Select a place with adequate space for air circulation and allow extra space for opening the door.
    - This space should be well-ventilated and protected from sunlight or sources of heat, cold, humidity or dust.
    - Do not install your machine on the edge of the table and make sure the table can support the machine weight.



Install the machine on flat and stable surface (inclination not greater than 5mm (0.19 inch). Otherwise, this could affect the printing quality.



2. Unpack the machine and check all enclosed items against the packing list.
3. Please remove the plastic covering foil from the window.
4. Connect the power cord and USB cable.
5. Connect the other end of the USB cable to the computer.
6. Install the software.
7. Connect Unyk software license - USB key.
8. Turn on the machine.

Caution: When moving the machine, remove the plastic tray with material from the machine. Otherwise, the inside of the machine may be contaminated by resin, which can cause damage to the machine.

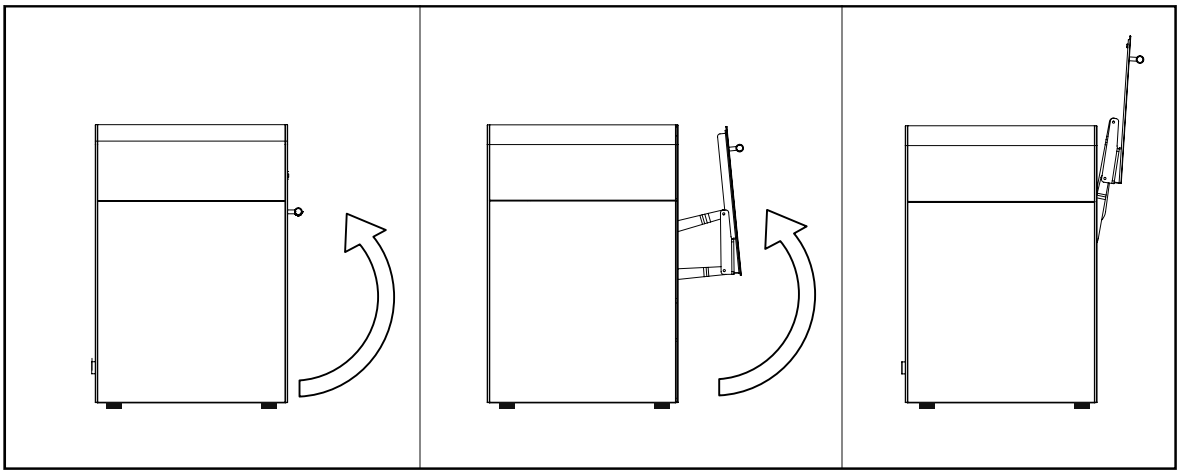
6 Machine basics

This chapter gives you important information about how to operate your new 3D Printer.
This chapter will help you on:

- Opening the machine door
- Loading / unloading the tray
- Placing / removing the building platform
- Pour material into tray
- Pour the material back into the bottle

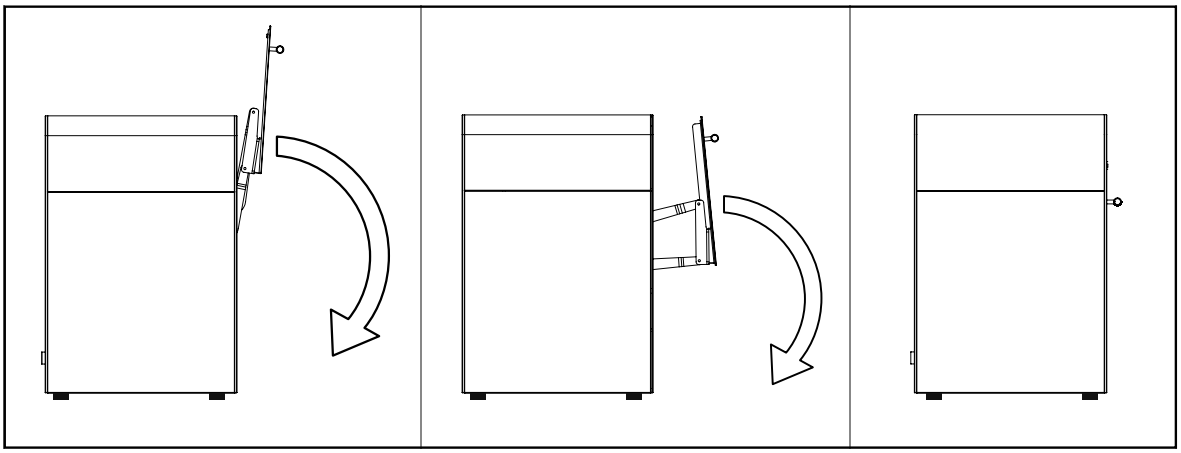
6.1 Opening machine door

1. Open the machine door by holding the door handle (see door handle on section 4.1) and lifting it following the arrow movement as shown in the picture below.



6.2 Closing machine door

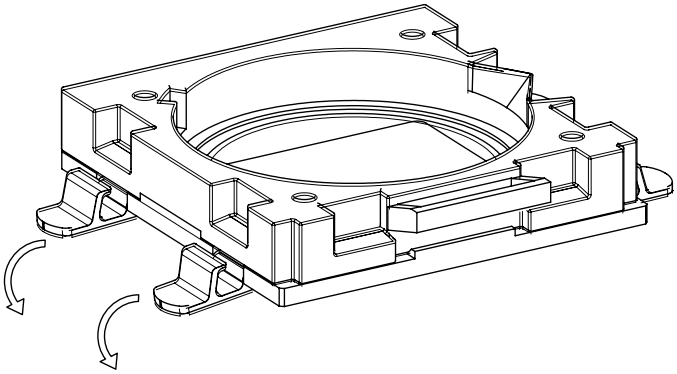
1. Close the machine door by holding the door handle (see door handle on section 4.1) and moving it following the arrow movement as shown in the picture below.



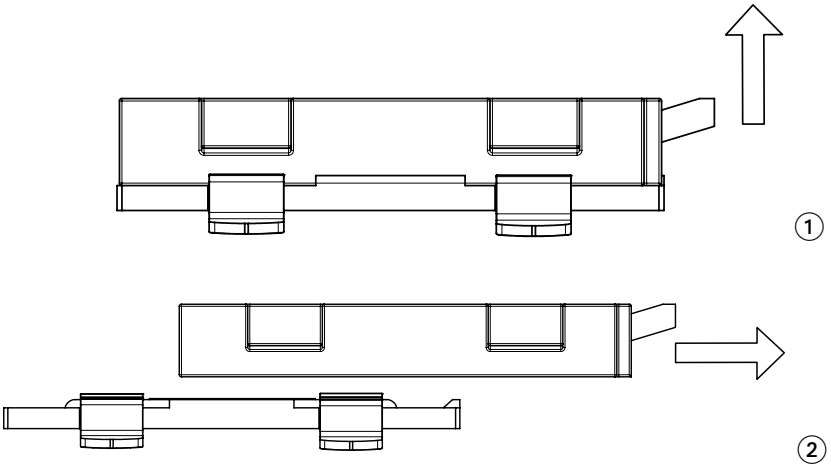
Caution: When closing the machine door ensure that the plastic latches are locked or positioned inside the tray table. Also, be careful not to put your hand between the machine and the door.

6.3 Unloading the tray

1. Open the machine door as described on the Section 6.1 of this document.
2. Unlatch the plastic latches following the arrow movement as shown in the picture below.



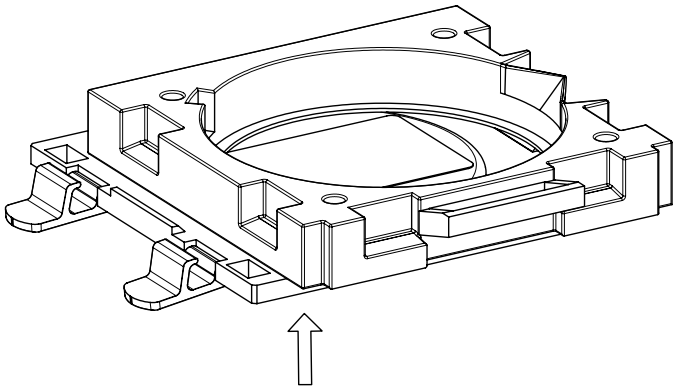
3. Move the tray up following the arrow movement represented in picture number ① to unlock it from front wall.
4. Pull the tray out holding on the tray handle following the arrow movement as shown in picture number ②.



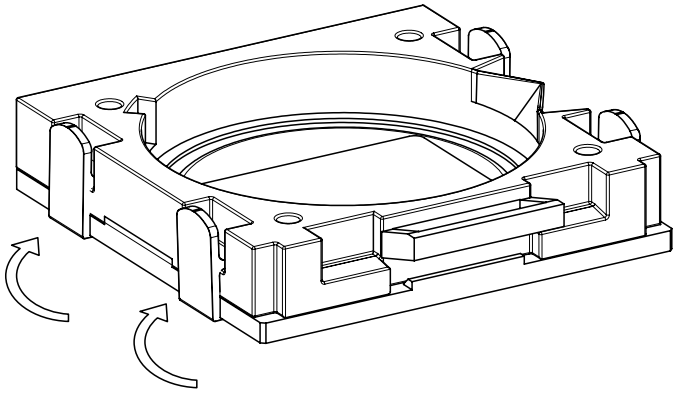
Caution: Be careful not to accidentally spill material inside the machine while unloading the tray. To prevent damage to the material inside the tray, do not expose it to light for more than few minutes. Cover it, if necessary.
Be careful not to damage or scratch the tray's thin film.

6.4 Loading the tray

1. Insert the tray using the positioning pin to guide you.



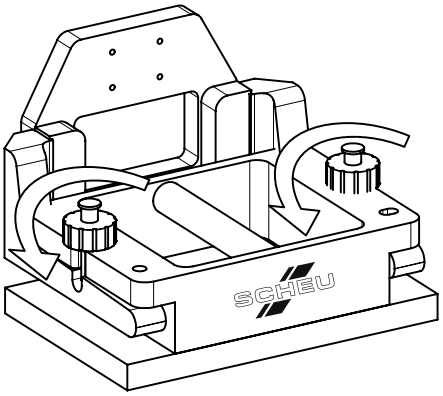
2. Latch the plastic latches by lifting as shown in the picture below.



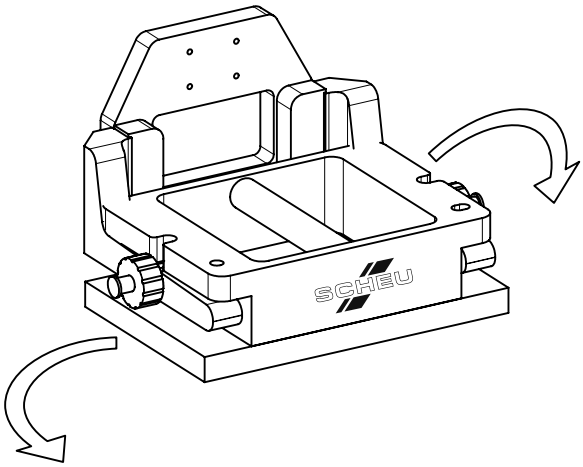
Caution: Be careful not to accidentally spill material inside the machine while loading the tray. Make sure the tray is in a good condition, without leaks or scratches, before loading into your machine. With a dry and lint-free cloth, wipe away any dust from the optical glass before loading the tray.
Be careful not to damage or scratch the optical glass with the tray or any other material.

6.5 Removing the building platform

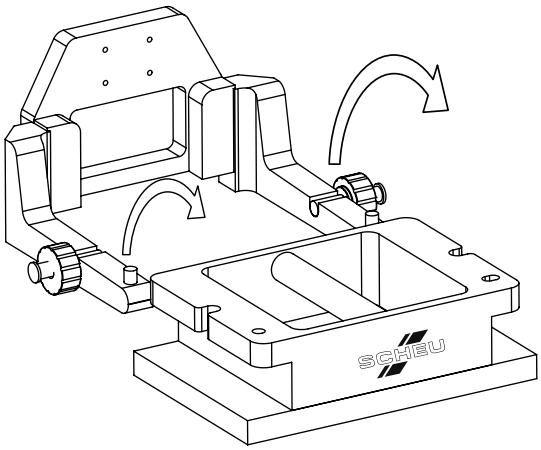
1. Unscrew the metal knobs on top of the building platform following the arrow movement as shown in the picture below.



2. Release the building platform by moving the knob screws following the arrow movement as shown in the picture below.



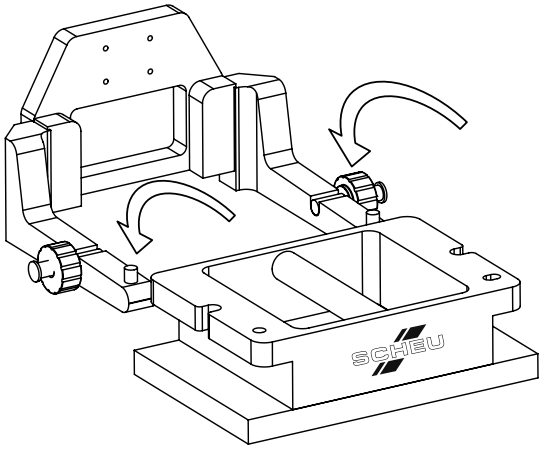
3. Remove the building platform by moving it up and forward following the arrow movement represented shown in the picture below.



Caution: Be careful not to break or scratch the building platform glass.

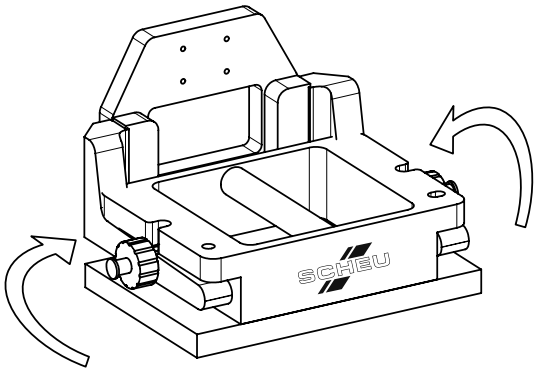
6.6 Placing the building platform

1. Place the building platform by moving it following the arrow movement as shown in the picture below.

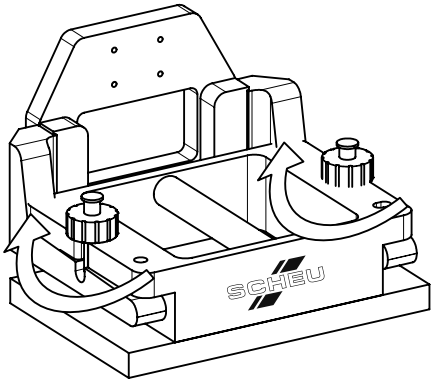


Caution: Be careful not to break or scratch the building platform glass.
Make sure the SCHEU-DENTAL logo is facing you and the building platform is securely locked with the security pins.

2. Lock the building platform by moving the knob screws following the arrow movement as shown in the picture below.



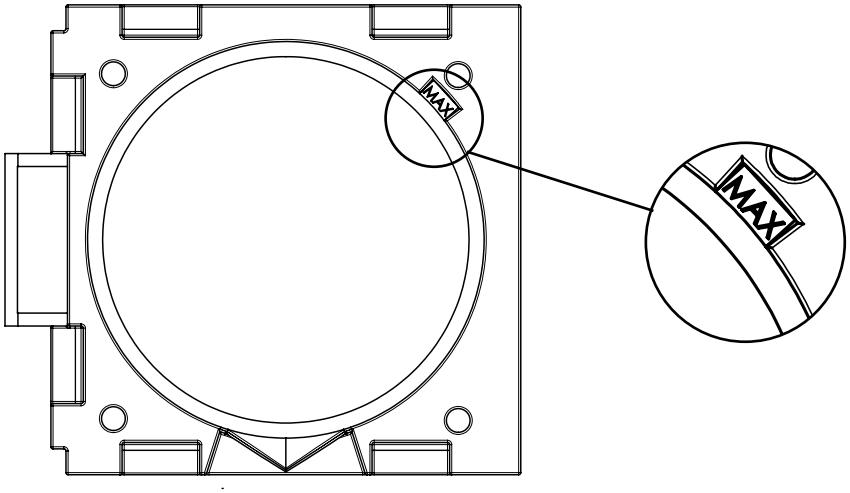
3. Screw the metal knobs on top of the building platform following the arrow movement as shown in the picture below.



Caution: Be careful not to break or scratch the building platform glass.
Make sure to lock the building platform properly before printing any object.

6.7 Pour material into tray

1. Pour the material inside the tray and use the level mark to control the volume. See the level mark on the picture below.

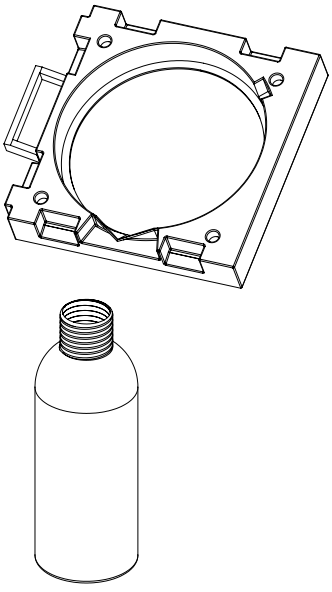


To extend the life of your tray, always use same type of material for a tray, so you won't need to clean it.
The material can stay on the tray if it is stored in a dark place (e.g. plastic box); however we would recommend pouring the material back into the original bottle if you will not be using it for more than one week.

6.8 Pour material from tray to bottle

1. Pour the material from the tray back into the bottle as shown in the picture below.

Be careful not to accidentally spill material while pouring into bottle.
Make sure you are pouring the material into the original bottle, pay attention not to mix different materials or materials from a different fabrication lot. It is recommended that you label the materials with a date or a job number before using them.
To prevent damage to the tray, do not touch the thin film in the bottom or try to clean it.



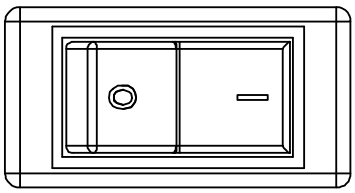
7 Printing

This chapter gives you detailed information on 3D Printing workflow.
This chapter will help you with:

- Turning on the machine
- Preparing a job
- Verifying that the machine is ready for printing
- Sending a job to the machine
- Pausing and resuming a job
- Canceling a job
- Removing objects from the buildingplatform
- Turning off the machine

7.1 Turning on the machine

1. Switch to position (I) using the main power switch located on the back of the machine near the power cord receptacle. (See “Main Power Switch” on section 4.10.1)



2. Press the “On/Off” button located on the Control Panel for less than 1 second. (See “Control Panel Overview” on section 4.6)
3. Wait until the machine status shows “Ready”

7.2 Preparing job

1. The job is fully prepared using Unik software from SCHEU-DENTAL. Please refer to the Unyk User Manual to learn how to prepare a job.

7.3 Verifying the machine

1. Before sending a job for your printer you must check that:
   a. The building platform is correctly positioned and there is no object on the platform.
   b. The tray is correctly positioned and there is enough material inside to print your object.
   c. You have the right material you want to use in your next job.
   d. The machine door is closed.

7.4 Sending a job to the machine

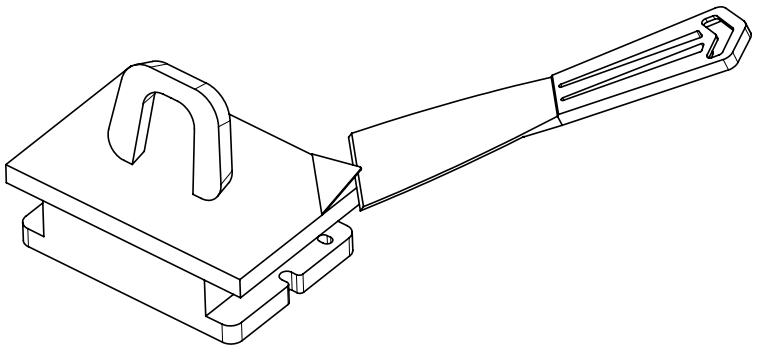
1. You will use the K-Studio software from SCHEU-DENTAL to send the job to your 3D Printer. Please refer to the Unyk User Manual to learn how to send a job.

7.5 Pause/Resume or cancel a job

1. Please refer to “Pause/Resume Button” details on section 4.10.3.

7.6 Removing objects from the building platform

1. Remove the object using the plastic scraper.



2. Clean the building platform with isopropyl alcohol and a lint-free cloth.
3. Dry the building platform with the lint-free cloth.

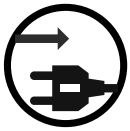
Caution: Be careful not to damage or scratch the building platform glass. Don’t use a metal scraper to remove objects from your building platform.

7.7 Turning Off the machine

1. Please refer to “On/Off Button” description on section 4.10.2.

8 Maintenance

8.1 Cleaning the machine



Unplug the machine from the wall outlet before cleaning the inside of the machine. Do not clean the machine with benzene or paint thinner; do not spray water directly into the machine. This could result in electric shock or fire.

If printing quality problems occur or if you use your machine in a dusty environment, you need to clean your machine regularly to maintain optimum print quality.
Cleaning the cabinet of the machine with cleaning materials containing large amounts of alcohol, solvent or other strong substances can discolor or distort the cabinet.
If your machine or the surrounding area is contaminated with dust, we recommend that you use a cloth or tissue dampened with water to clean it. You can also use a vacuum cleaner. In an environment which might become dusty it is recommended that you use an air cleaner with a heap filter to keep the air as clean as possible.

8.1.1 Cleaning the outside

Clean the machine cabinet with a soft and lint-free cloth. Dampen the cloth slightly with water, but be careful not to let any water drip onto or into the machine.

8.1.2 Cleaning the inside

Dust particles can accumulate inside the machine. This buildup can cause print quality problems if they block the optical glass. Cleaning the inside of the machine clears and reduces these problems.
Clean the machine metal parts and optical glass with a soft, lint-free cloth. Dampen the cloth slightly with isopropyl alcohol, but be careful not to let any isopropyl alcohol drip onto or into the machine.

8.2 Storing the material

SCHEU-DENTAL material is sensitive to light, temperature, and humidity. SCHEU-DENTAL suggests users to follow the following recommendations to ensure optimum performance, highest quality, and longest life from your material.

- The storage bottle should be stored in controlled office temperature and humidity conditions in a dark cabinet.
- Opening the bottle prior to use dramatically shortens its useful shelf and operating life. Do not store on the floor.
- Store the bottle standing (not lying flat) with the cap facing up.
- Store the bottle with the original cap and make sure it is always properly closed.
- Do not store consumables in any of the following conditions:
  - Temperature greater than 28°C (82°F).
  - Humidity greater than 40%.
  - Direct sunlight or room light.

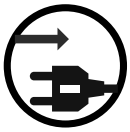
8.3 Storing the tray

SCHEU-DENTAL material is sensitive to light, temperature, and humidity. If you are storing the tray, we suggest you follow the following recommendations:

- Do not store the tray with material if you will not use it for more than one week. In this case we would recommend pouring the material into original bottle.
- Store the tray in a closed and dark container, such as plastic box.
- The container should be stored in controlled office temperature and humidity conditions in a dark cabinet.
- The tray can also be stored inside your machine for short period (one day or less).

8.4 Cleaning machine when the tray is damaged

In the unlikely event of spillage of a large amount of material inside the machine, because of accident or damaging the tray, please follow the steps below to clean your machine.



Always unplug the machine from the wall outlet before cleaning the inside of the machine. Do not clean the machine with benzene or paint thinner; as these can damage the machine parts. Do not spray water directly into the machine. This could result in electric shock or fire.

- Remove the excess of material with paper towel
- Clean the machine with a soft and lint-free cloth. Dampen the cloth slightly with isopropyl alcohol, but be careful not to let any isopropyl alcohol drip on to or into the machine.
- Remove the residue tray on the back of your machine (Refer to “Rear View” on section 4.2 of this document) and clean it.

8.5 Cleaning the tray when objects stick on it

If an object sticks onto the tray during the printing process, you need to carefully remove the object from the tray with your hands (wearing powder free vinyl gloves). Please follow the instructions below:

- Remove the tray from the machine and place it on a flat surface (e.g. Table)
- Using one finger, carefully lift the border of the object and remove it slowly.
- You should not stretch the film with your fingers or use sharp tools to remove the object, this may damage the tray.

9 Troubleshooting

9.1 Machine does not power on

- Check if the power cable is connected
- Check if the main power switch is at the “On” position
- Check if you have electricity at the wall outlet. Use another electrical appliance to test, never touch the wall outlet.
- Check your breakers. If the breakers interrupt more than once check to see what is on the same line. Do not use wall outlet multipliers or power bards without fuse or breaker protection.

9.2 3D printer manager (software) can not identify the machine

- Check if the USB cable is installed properly on the machine and the computer
- Check if the Unyk software is properly installed
- Turn the machine off and on again and check if your Windows OS can identify the SCHEU-DENTAL Printer device

10 Specifications

Druckermodell	**IMPRIMO® 90**
Build Envelope (L x W x H) (Deviation ± 2mm possible)	125 x 75 x 100mm
Native Pixel Size (X,Y)	94 µm
Layer Resolution (Z)	25 µm, 50 µm, 75 µm, 100 µm
Integrated Software	Unyk
Technology	DLP / LED
Interface	Schneller USB-Anschluss 2.0

3D Printer (L x W x H):	56,4 x 35,3 x 51,0 cm
Nett Weight:	16 kg
Electrical Requirements:	110V (10A) / 230V (4,5A)

More information:

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