Version 1.2, August 2022

# **Einstein™** Site Prep Guide


Desktop Health™

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# Document Information

## Legal Notice

# History of Changes

| Date | Changes | Version |
|---|---|---|
| Feb-2022 | Document creation | 1.0 |
| March-2022 | • Added Legal Notice<br>• Updated Document Footer<br>• Updated Product Overview<br>• Updated How to Use This Guide<br>• Updated Einstein Footprint | 1.1 |
| August- 2022 | • Added History of Changes<br>• Added Document Information<br>• Added User Information<br>• Added Site Information<br>• Updated How to Use This Guide<br>• Updated Environmental Conditions Einstein<br>• Updated Einstein Footprint<br>• Updated Printer Technical Specifications<br>• Updated Bottle Roller<br>• Updated Washing Unit<br>• Updated Curing Unit<br>• Added Manufacturer | 1.2 |

# How to Use This Guide

This document serves as a comprehensive guide to prepare your site for the Einstein 3D printer.

# User Information

## Product Overview

Meet the Einstein 3D printer series, brought to you by Desktop Health. Meticulously designed for dental professionals, Einstein hits on all the key features essential to superior 3D printing: accuracy, speed, and versatility.

The secret to Einstein is in its DNA. Proprietary NanoFit 385 technology ensures that every application features stunning clarity, perfect fit, and an impressively natural-looking finish.

Equipped with Hyperprint™ technology, harnessing the power of heat and a closed-loop software upgrade, the Einstein series allows you to fabricate a variety of dental applications, from models to dentures and everything in between, with ease and at up to 50% faster speed than its predecessor.

Transform your workflow from fit to finish with Einstein. Available as Einstein, Einstein Pro, and Einstein Pro XL. Visit health.desktopmetal.com for more information.

## Customer Responsibilities

| | |
|---|---|
| ***NOTICE*** | Risk of equipment damage, risk of injury, and void warranty: comply with the below responsibilities. |

Prior to installation, the customer is required to ensure the site is ready for the Einstein. These responsibilities are:

1. Provide a location to receive crated packages per individually listed shipping dimensions.
2. Provide a clear pathway from the receiving site to the installation site.
3. Provide resources to move the equipment from the receiving site to the installation location, with respect to:
    a. The dimensions and weight of each system component.
    b. Thresholds and corners.
4. A mover is required for unloading, uncrating, and moving the printer into location.
    a. The printer requires a forklift or pallet jack to move the pallet to the site.
    b. Carefully disassemble the crate.
    c. Lift the printer out of the crate and place it in its final destination.
5. Create a component layout based on the system requirements included in this document.
6. Select a location that provides all services listed on each component page as necessary for operation.
    a. Distance the printer from climate control systems. Do not direct airflow onto or within the printer's footprint. This includes air conditioning (window, wall, or similar), fans (ceiling, tabletop, or similar), heaters (space heaters, or similar).
    b. Do not expose the printer to any direct sunlight or UV radiation
    c. Keep the printer and accessories away from water sources such as sinks, tubs, wash stations, etc.
    d. Do not place the printer near any vibration source, or on a wooden surface that can easily transfer vibrations.
    e. Do not place the printer near polishing stations.
7. Meet all National/Governmental or Environmental Health and Safety (EHS) regulations.
    a. See Product Safety.
    b. Review material storage as well as processing/operation guidelines.
8. Install all safety equipment required for operation, according to codes and regulations.
9. Perform risk analysis and address deficiencies.
10. Operate the Einstein indoors, as designed.

11. Locate the Einstein away from equipment that produces dust or vibration.

**Note:** If you have questions, please contact Technical Support.

# Einstein Process Flow-Recommendation

**Process Steps**

Model Processing:

1. Prepare the .stl file in CAD software.
2. Import the .stl file into Envision One RP Software.
3. Use automatic placement to place parts.
4. Generate supports, if required.
5. Generate job in Envision One RP.
6. Send the build job to the printer.

At the Printer:

1. Install the clean material tray in the printer.
2. Prepare the material to print.
3. Add material to the material tray.
4. Install the clean build platform in the printer.
5. Close the printer hood.
6. On the touchscreen, navigate to the required build job.
7. Start the job. Wait for the job to finish.
8. Remove the build platform with printed model(s) from the printer.
9. Use the paint scraper to remove the model(s) from the build platform.

Cleaning Station:

1. Remove supports, if required.
2. For medical materials, follow instructions in the Instructions for Use (IFU) to clean models.
3. For non-medical materials, follow instructions in the Material Best Practice guide to clean models.

Post Curing:

1. Bring the clean and dry part(s) to the curing unit and place it in the unit.
2. Set the timer as per the recommended cure times (material dependent).

Finishing:

1. If part(s) were printed on supports, then sand away all support remains starting from a coarser grit to a finer one until the supported surface is smooth.
2. Final finishing processes are material dependent.

**Note:** The Einstein printer, curing unit, and washing unit are provided by Desktop Health. All other items to be purchased from third party suppliers. See Shopping List for recommendations.

# Site Information

## Environmental Conditions Einstein

Distance the printer from climate control systems. Do not direct airflow onto or within the printer's footprint. This includes air conditioning (window, wall, or otherwise), fans (ceiling, tabletop, or similar), heaters (space heaters, or otherwise).

- Do not expose the printer to direct sunlight or UV radiation.
- Do not place the printer near a doorway.
- Avoid temperature changes.
- Keep the printer and concentrator away from water sources such as sinks, tubs, wash stations, etc.
- Do not place the printer near polishing stations.

Ensure the room temperature remains within the following range:

- Minimum temperature of 23°C (73°F)
- Maximum temperature of 28°C (85°F)

Follow the temperature instructions for each material.

- These instructions can be found on the label of the material bottle.
- Extended instructions are located in the Instructions for Use (IFU) for medical materials, and the Material Best Practice guide for non-medical materials.

**Important:** The humidity should be below 45%.

## Air Quality Considerations

Use the Einstein in a clean atmosphere. High levels of impurities in the air may find their way into printed parts.

- The room must allow heat generated from the system to dissipate at 0.03 $m^3$/min airflow.
- Air conditioning units should be at least 3 m (10 ft) away from the printer with no airflow pointing directly at the printer.

Maintain a space with little or limited:

- Dust
- Smoke
- Steam

## Einstein Footprint

| NOTICE | Incorrect positioning of the printer can cause damage to the printer and/or to the printed models. Please follow the positioning guidelines. |
|---|---|

**Printer:** 36.3 kg (80 lb).
**Dimensions:** 40.64 x 40.64 x 69.85 cm (16 x 16 x 27.5 in).
The Einstein must be installed on a sturdy surface that can comfortably hold over 36.3 kg (80 lb).

The printer requires a minimum amount of space for operation, maintenance, and heat dissipation.

- A minimum of 46 cm (18 in) behind the printer.
- A minimum of 61 cm (24 in) on the left and right side of the printer.
- A minimum of 122 cm (48 in) above the table-top.

**Fig. 1** Einstein Clearance Front View

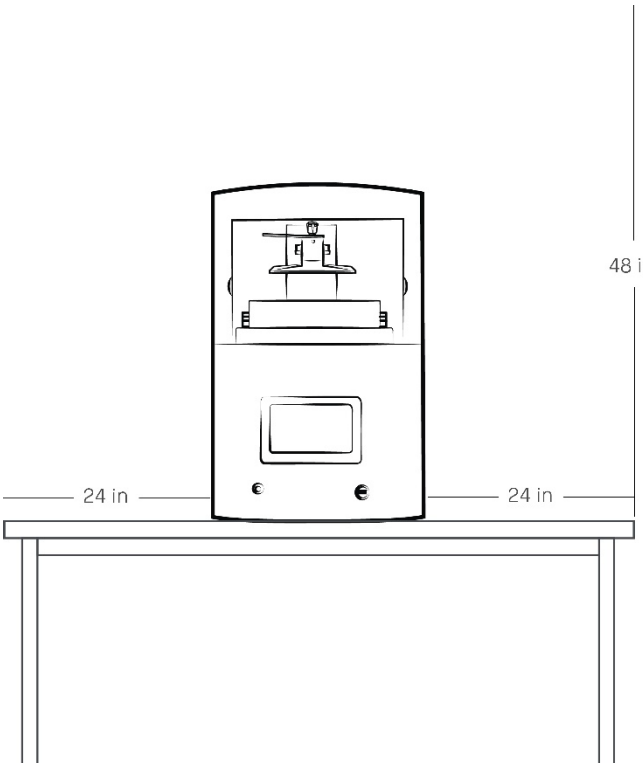
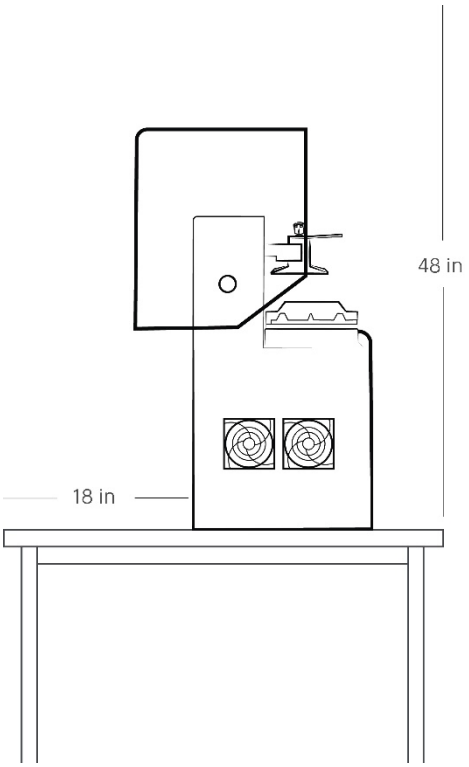



**Fig. 2** Einstein Clearance Right Side View




# Product Safety

Desktop Health's Einstein has been designed to comply with safety standards.
See the Einstein Compliance and Safety Guide > Product Safety Warnings for a description of all safety warnings associated with the Einstein printer.

**General Safety**

All general workplace safety rules should be followed when operating the printer. It is the responsibility of the user to ensure compliance with all local, regional, and national regulations. Additionally, it is the responsibility of the user to ensure that the system is installed and maintained properly by Desktop Health.

**Material Safety**

Safety data sheets (SDS) for materials used in the printing process are available in the Desktop Health Knowledge Base: Safety Data Sheets. Read and understand the information provided in these documents prior to attempting to operate the printer or handle any media.

# Einstein Printer

**Fig. 3** Einstein Front View

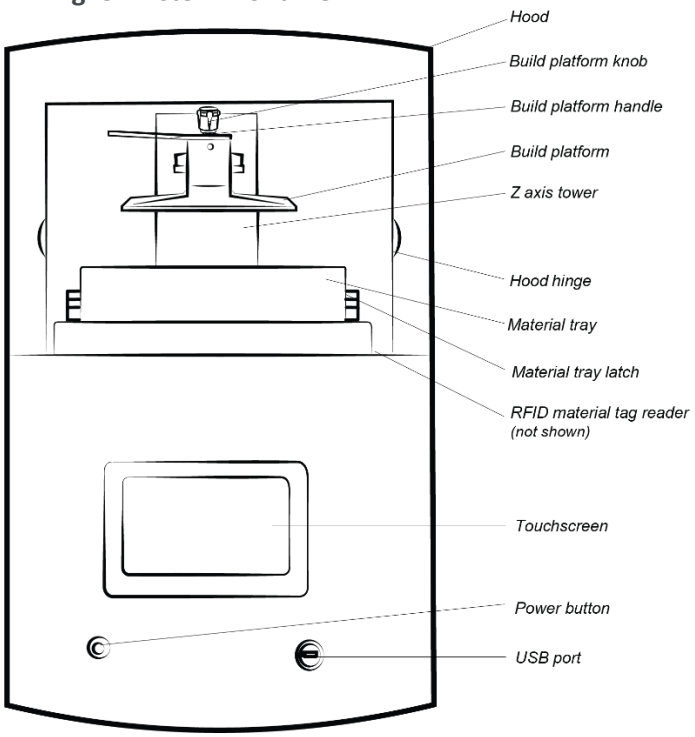



**Fig. 4** Einstein Back View

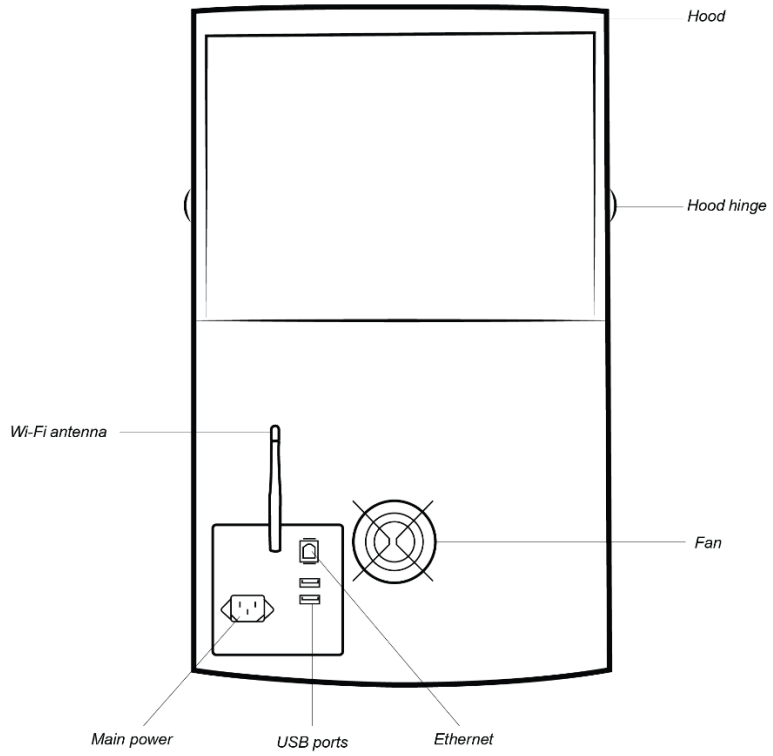
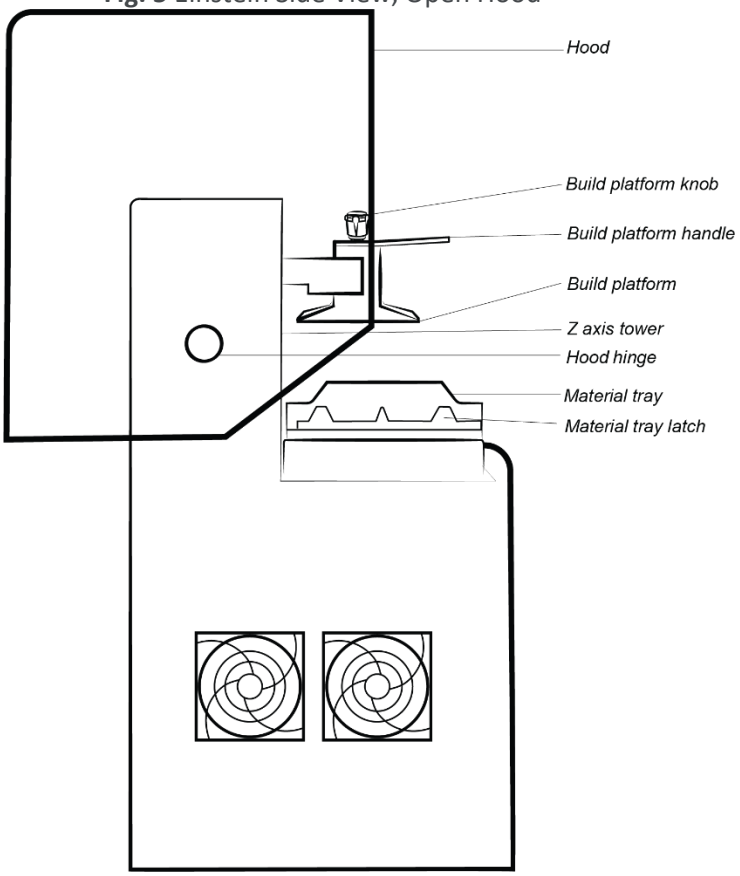


**Fig. 5** Einstein Side View, Open Hood




# Printer Technical Specifications

| | |
|---|---|
| **Unit Dimensions** | Hood closed: 40.64 x 40.64 x 69.85 cm (16 x 16 x 27.5 in)<br>Hood open: 40.64 x 47.76 x 84.77 cm (16 x 18.80 x 33.38 in) |
| **Shipping Dimensions (estimate)** | 58.42 x 88.9 x 109.22 cm (23 x 35 x 43 in) |
| **Unit Weight** | 36.3 kg (80 lb) |
| **Shipment Weight (estimate)** | 74.84 kg (165 lb) |
| **Electrical** | Printer: 100-240V, 50/60Hz, 1 ph, 5A max |
| **Ethernet (Not Required)** | Cable: Cat 6 or better |
| **USB** | Type: USB 2.0 Standard A |

# Software

## Overview Envision One RP Software®

Envision One RP automatically orients your model, adds supports, if necessary, and sends the file to the printer, resulting in your three-dimensional model. Everything that is printed using Desktop Health printers must pass through this software successfully.

## System Requirements Envision One RP

**Note:** Envision One RP requires Windows Operating System.
The software is not compatible with macOS.

| | |
|---|---|
| **Operating System** | Windows 10 or higher |
| **Working Memory** | >= 8GB RAM |
| **Hard Drive** | 400 MB Free space |
| **CPU** | Multi Core Processor e.g. Core i5, >= 3GHz, >= 6MB Cache |
| **Graphics** | Dedicated 3D graphics card with >= 1 GB memory and OpenGL 4.3 and higher.<br>It is recommended to use the Nvidia graphics card. |

## Install Envision One RP Software

It is recommended to install Envision One RP software prior to the arrival of your Einstein printer.

1. Download **Envision One RP Software**.
2. Open the **Downloads** folder on your computer.
3. Find a file named *EnvisionOneRP.exe* and double-click it to start the installation.
   → *A setup window opens.*
4. Follow instructions on the screen to complete the installation.

# License Envision One RP Software

Licensing Envision One RP provides access to the software's full functionality. There are two license types available:

- The **Standard license** allows you to use the whole software functionality for 12 months. After its expiration, you will have to request a new license.
- The **Trial license** allows you to use the whole software functionality for 14 days. After its expiration, you will have to request the **Standard license**.

**Important:** It is not possible to use the software without a license. If no license is available, the software is blocked.

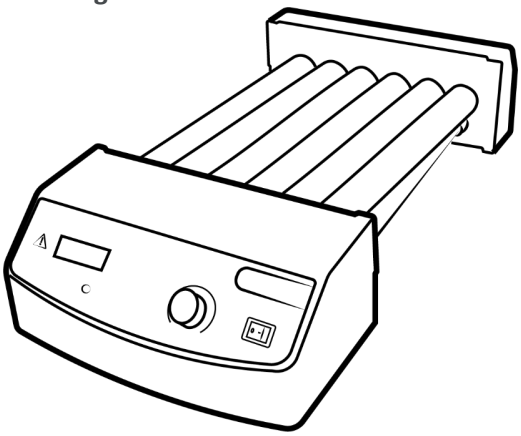
See the Desktop Health Knowledge Base for further licensing instructions, software knowledge articles, and the Envision One RP User Guide.

# Accessories

## Bottle Roller

**Dual Motion Bottle Roller**
The Dual Motion Bottle Roller is the recommended material mixing solution for all Desktop Health materials.

**Fig. 6** Dual Motion Bottle Roller



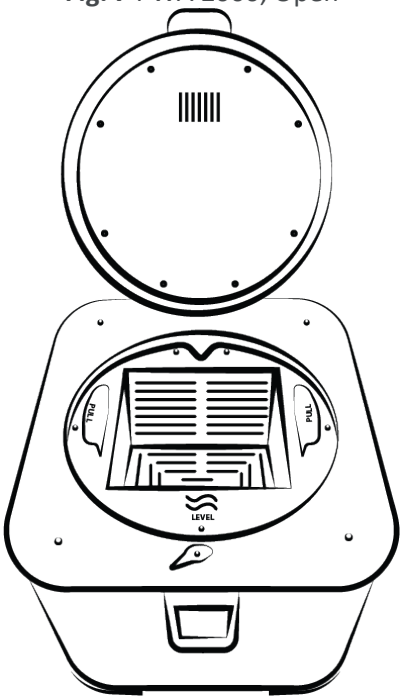
| | |
|---|---|
| **Unit Dimensions** | 47 x 26 x 12 cm (18.5 x 10.24 x 4.72 in) |
| **Shipping Dimensions** | 63.5 x 50.8 x 50.8 cm (25 x 20 x 20 in) |
| **Unit Weight** | 5.1 kg (11.25 lb) |
| **Shipment Weight** | 6.8 kg (15 lb) |
| **Electrical Requirements** | 100-240V AC, 50Hz/60Hz |

# Washing Unit

**PWA 2000**

The PWA 2000 Parts Washing Apparatus is a brushless, contactless agitator and is the recommended washing unit for non-medical materials.

**Fig. 7** PWA 2000, Open



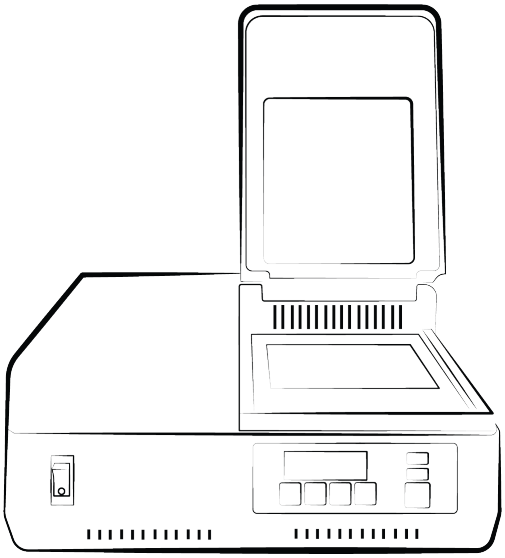

| | |
|---|---|
| **Unit Dimensions** | 32 x 33 x 24.6 cm (12.60 x 12.99 x 9.69 in) |
| **Shipping Dimensions** | 40.64 x 40.64 x 40.64 cm (16 x 16 x 16 in) |
| **Unit Weight** | 4.6 kg (10.2 lb) |
| **Shipment Weight** | 9.07 kg (20 lb) |
| **Electrical Requirements** | 100-230V AC, 0.3A, 50Hz/60Hz<br><br>External power adapter: 12V AC, 2A |

# Curing Unit

**Otoflash**

The Otoflash is the recommended curing unit for medical materials.

**Fig. 8** Otoflash, Open

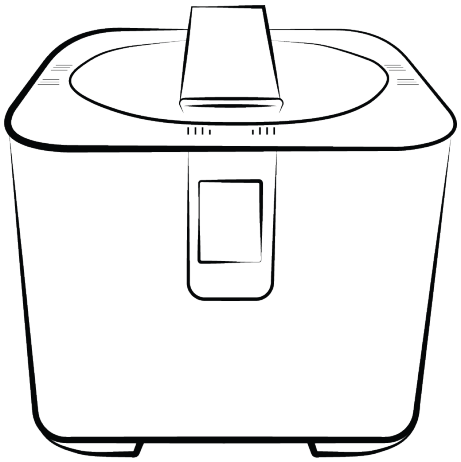


| | |
|---|---|
| **Unit Dimensions** | 31 x 31 x 14 cm (12.2 x 12.2 x 5.5 in) |
| **Shipping Dimensions** | 38.1 x 33.02 x 17.78 cm (15 x 13 x 7 in) |
| **Unit Weight** | 6.3 kg (13.9 lb) |
| **Shipment Weight** | 8.16 kg (18 lb) |
| **Electrical Requirements** | 100-230V AC, 15A, 50Hz/60Hz, 275 Watts |

**PCA 4000**

The PCA 4000 Parts Curing Apparatus is the recommended curing unit non-medical printing materials.

**Fig. 9** PCA 4000



| | |
|---|---|
| **Unit Dimensions** | 36.4 x 40.4 x 31.9 cm (14.33 x 15.9 x 12.55 in) |
| **Shipping Dimensions** | 20 x 20 x 20 in. (50.8 x 50.8 x 50.8 cm) |
| **Unit Weight** | 8.03 kg (17.7 lb) |
| **Shipment Weight** | 11.34 kg (25 lb) |
| **Electrical Requirements** | 100-230V AC, 4-6A, 50Hz/60Hz, 300 Watts |

# Shopping List

## Primary Supplies

Primary supplies should be acquired prior to printer delivery. Obtain the proper tools to prepare for successful printing and post-processing.

- **99% Isopropyl alcohol (IPA):** breaks down uncured material from printed models. This product can be purchased from many big box stores, and from medical and business supply stores. Do not use denatured alcohol. Do not use less than 99%.
- **Absorbent paper towel:** used to clean the printer, material tray, and build platform. Inter-folded paper towel, found in labs or offices, is not as effective as a standard roll of absorbent paper towel.
- **Air compressor/forced air system:** required for drying models during post processing. Forced air also removes the 99% isopropyl alcohol from the surface of the models. Do not use canned air. For those without a forced air system, compressors can be purchased and installed into the post-processing station.
- **Desktop Health's Dual Motion Bottle Roller:** provides a gentle but highly efficient rocking and rolling motion, for 3D printing materials. The Dual Motion Bottle Roller almost eliminates the separation of resin and allows for an even distribution of the material. Contact your Desktop Health Sales Representative for more information.
- **Cone-shaped paint filters (included in the Starter Kit):** used to strain material. The filter removes particles that may be too small to see but may affect print quality. They will be used while pouring material from the tray into the material storage containers for maintenance. Each filter is approved for one-time use only. Do not leave filters in the bottle of material for longer than 5 minutes. Do not use coffee filters.
- **Desktop Health's curing unit:** 3D printed models must be post-cured to achieve the final, end-use state. Desktop Health offers the Otoflash curing unit for medical materials, and the PCA 4000 curing unit for non-medical materials. See Desktop Health's Knowledge Base for more information on the Otoflash and the PCA 4000.

**Note:** Desktop Health only supports Desktop Health curing units.

- **Desktop Health's washing unit:** 3D printed models must be washed prior to post-curing. Desktop Health offers the PWA 2000 washing unit for non-medical materials. See Desktop Health's Knowledge Base for more information on the PWA 2000.
- **Digital calipers (included in the Starter Kit):** required during printer calibration. The printer may need to be calibrated when new material is purchased, or for maintenance reasons. Digital calipers are used to check the accuracy of printed models against the computer's measurements. Find calipers from major manufacturers only. Look for accuracy of ± 0.02 mm.
- **Ethernet cable:** connects the printer to the local network. The cable inserts into the I/O panel behind the printer. The other end plugs into the network or operating computer. The printer can be operated by other Windows computers on the network if the CAT 6 is plugged into a modem or into a network outlet. If it is directly connected to the operating computer, it can only be accessed by the connected printer.
- **Garbage can:** for cleanup. Having a can on hand speeds up throughput, increasing efficiency. This needs to be easily accessible.
- **Nitrile gloves:** required when working with the printer or prior to touching anything that may come into contact with uncured material. See the Safety Data Sheet for proper handling guidelines.
- **Rubber spatula (included in the Starter Kit):** used to gently mix material in the material tray.
- **Storage containers for material:** used to store material after it is removed from the material tray. To avoid contamination, never pour used material back into the original bottle. Storage containers

must be completely clean, opaque, and have a strong seal to keep material fresh. Containers must not let any light through. See the Safety Data Sheet for proper handling guidelines.

- **USB drive (included in the Starter Kit):** a back-up for transferring print information from the operating computer to the printer. Between 8 and 32 GB size is recommended.

# Secondary Supplies

Secondary supplies are recommended for the 3D printing workflow and may be acquired after printer delivery.

- **Magnification loupe:** used to look at the fine details of printed models.
- **Makeup or quality paint brush:** used to clean model(s) during post processing. Do not use a toothbrush as they are too rigid and can scratch printed models.
- **Metric Allen key set:** used to perform calibrations as directed by a Desktop Health certified technician.
- **Phillips screwdriver:** used to open the printer's front and back covers. The cover should only be opened when instructed by an authorized technician.
- **Post-processing tools:** Electric hand-tools, files, rasps, needle-nose pliers, sandpaper (220 grit +), and snips are all helpful tools for removing supports and polishing supported surfaces.
- **UV safety glasses (included in the Starter Kit):** used during printer calibration. They are not required for day-to-day operation.

**Note:** Contact your Desktop Health Sales Representative for more information on any Shopping List item.

# Appendix A – Site Prep Checklist

| | |
|---|---|
| Contact Information: | |
| Company name: | |
| Street address: | |
| City: | |
| Postal Code: | |
| Country: | |
| Phone: | |
| Printer Operator: | |
| Email: | |
| Phone: | |
| IT administrator: | |
| Email: | |
| Phone: | |

## General Items

**Receiving & Site Access**

Receiving location meets requirement for size and weight of equipment ---------- Y / N
Clear path to install location (clear corners, doors, etc.) ---------- Y / N
Fork lift or pallet jack available to move items ---------- Y / N
Two individuals to lift 36.3 kg (80 lb) printer ---------- Y / N
Room accessible and Desktop Health staff access permitted ---------- Y / N

**General Facility Requirements**

Minimum footprint
Space available meets minimum footprint requirements ---------- Y / N
Room meets ventilation requirements for safe operation ---------- Y / N
Room is able to maintain 23-28°C (73-85°F) operational temperature ---------- Y / N
No vibration that will impact performance ---------- Y / N
Room is able to maintain less than 45% humidity ---------- Y / N
All necessary corporate, local, regional, or national approvals for operation ---------- Y / N

**Room Layout**

Required component clearances available 61 cm (24 in) on right and left sides ---------- Y / N
Required component clearances available 122 cm (48 in) above the tabletop ---------- Y / N
Required component clearances available 46 cm (18 in) behind the printer ---------- Y / N

**Safety**

Completed a preinstall safety review ---------- Y / N

Installed fire extinguishers s required by local code ---------- Y / N

**Printer**

Power 100-240V, 50/60Hz, 1 ph, 5A max ---------- Y / N

**Materials**

Printing material arrived on site and is undamaged ---------- Y / N

Instructions for Use or Material Best Practice located and understood, mixing procedure understood, SDS located and understood ---------- Y / N

# Checklist Signoff

Sign below to acknowledge that the checklist is complete, accurate, and the site is ready for install:

Name of signatory: _____

Signature: _____

Title: _____

Date: _____

**Note:** If you have questions, please reach out to Technical Support.

# Manufacturer

Desktop Metal, Inc.
63 3rd Avenue
Burlington, MA 01803
www.desktopmetal.com

Desktop Health
c/o Desktop Metal, Inc.
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Burlington, MA 01803
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EnvisionTEC US LLC (ETEC)
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ExOne GmbH
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86368 Gersthofen
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ExOne KK
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