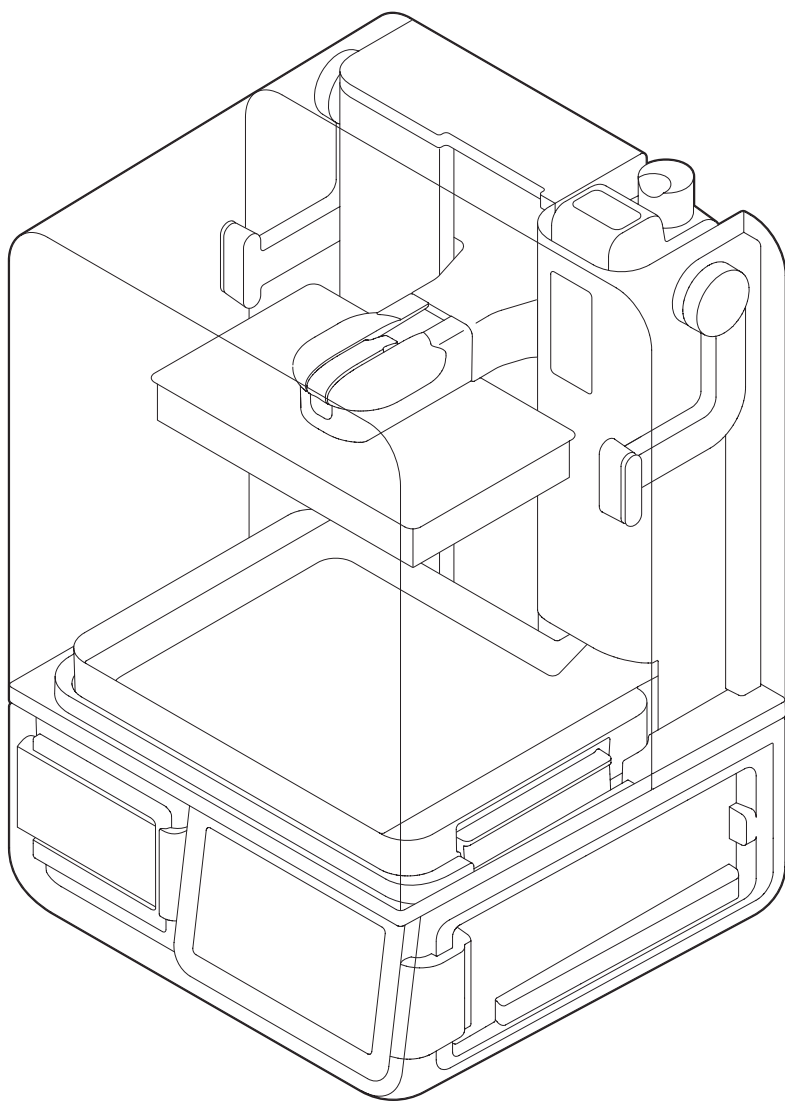


MANUAL

FORM

STUDIO

1



Installation and Usage Instructions

FORM STUDIO 1

with Low Force Display (LFD)[™] Print Engine

Original English instructions

Read this manual carefully and keep it for future reference.

September 2026

REV 01

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Read and understand this manual and its safety instructions before using the Form Studio 1. Failure to do so can result in serious injury or death.

DISCLAIMER

Formlabs has made every effort to make these instructions as clear, complete, and correct as possible. The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation, and testing of the products with respect to the relevant specific application or use thereof. Neither Formlabs nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information that is contained herein. Notify us if you have any suggestions for improvements or amendments or have found errors in this publication.

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DOCUMENT REVISIONS

Date	Version	Document changes
Sept 2026	REV 01	Initial publication

1. PREFACE

Congratulations on purchasing the Form Studio 1. On behalf of the Formlabs team, we thank you for your purchase. The Form Studio 1 is a desktop Low Force Display (LFD)[™] 3D printer. The Form Studio 1 fabricates fully-supported parts by converting a 3D object into 2D slices that can be cured layer by layer with 405 nm light. This manual explains how to set up, use, and properly maintain the Form Studio 1, as well as provides design guidance for optimizing print results. The manual is intended for anyone who is installing, operating, maintaining, or otherwise interacting with the Form Studio 1.

1.1 Read and retain instructions

Read and understand this manual and its safety instructions before using the Form Studio 1. Failure to do so can result in serious injury or death. Keep all safety information and instructions for future reference and provide them to subsequent users of the product.

Follow all the instructions. This will avoid fire, explosions, electric shocks, or other hazards that may result in damage to property and/or severe or fatal injuries.

The Form Studio 1 shall only be used by persons who have fully read and understand the contents of this manual. Ensure that each person who uses the Form Studio 1 has read these warnings and instructions and follows them. Formlabs is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be voided.

1.2 Obtaining documentation and information

Visit formlabs.com to:

- Access your **Formlabs store** (formlabs.com/store) and **Dashboard** accounts (formlabs.com/dashboard).
- Find **certified service providers** in your region (formlabs.com/company/partners).
- Access the **Terms of Service** (formlabs.com/terms-of-service) and the **Privacy Policy** (formlabs.com/privacy-policy).

Visit formlabs.com/support to:

- Access the latest version of all Formlabs product documentation.
- Contact Formlabs Support to request documentation, usage instructions, repair guides, and technical information.
- Submit any comments or feedback regarding what is good and what can be improved. Formlabs values comments from its users.
- Request additional training.

1.2.1 Support and service

Retain a record of the original purchase to request warranty services. Service options depend on the status of the specific product's warranty. Include the serial name of the product when contacting Formlabs Support or a certified service provider for product support.

Instead of a serial number, Formlabs products have a serial name, which is a unique

identifier to track the history of manufacturing, sales, and repair, and to distinguish usage when connected to a network. The serial name is on the back panel of the machine in the format **FormStudio1-ColorAdjectiveAnimal**.

Service providers of Formlabs products also provide support and service. To the extent that Formlabs or a certified service provider offers other or extended warranties, the terms of the separate offer may apply. For products purchased from certified service providers, contact the original service provider for assistance before contacting Formlabs Support.

For any support or service requests, including product information, technical assistance, or assistance with instructions, contact Formlabs Support:

formlabs.com/support

USA Formlabs, Inc. 35 Medford St. Somerville, MA, USA, 02143	USA Formlabs, Inc. 220 E Buffalo St. Milwaukee, WI, USA 53202
Hungary Formlabs Andrássy út 9 1061 Budapest, Hungary	Germany Formlabs GmbH Mühlenstr. 15 10243 Berlin, Germany
Japan 1F Kitashinagawa Ubiz Shinagawa 3 Chome-6-9 Kitashinagawa Shinagawa City, Tokyo 140-0001, Japan	China Formlabs China 形朗科技(深圳)有限公司 Room 601, Building E, Tongfang Information Port, No. 11 Langshan Road, Songpingshan Community, Xili Subdistrict, Nanshan District, Shenzhen City, Guangdong Province, China

1.2.2 **Returns**

Formlabs accepts returns for unopened, unused, undamaged SLA products within 14 days of the shipment date. Returns must be authorized by Formlabs. Visit [Formlabs.com](https://formlabs.com) for more detailed information about returning your purchase.

1.2.3 **Warranty**

This product is protected under warranty. Formlabs offers a warranty for all Formlabs branded hardware. Unless otherwise expressly stated, the **Terms of Service**, including the **Warranty**, constitute the entire agreement between you and Formlabs with respect to the **Service** and any product you purchase from Formlabs and supersedes all prior or contemporaneous communications, proposals, and agreements, whether electronic, oral, or written, between you and Formlabs. Read the warranty for more details on the Formlabs warranty for your region:

US formlabs.com/terms-of-service
EU (EN) formlabs.com/eu/terms-of-service

EU (DE)	formlabs.com/de/terms-of-service
EU (FR)	formlabs.com/fr/terms-of-service
EU (ES)	formlabs.com/es/terms-of-service
EU (IT)	formlabs.com/it/terms-of-service
Latin America (ES)	formlabs.com/latam/terms-of-service
Asia and Oceania (EN)	formlabs.com/asia/terms-of-service
Japan (JA)	formlabs.com/jp/terms-of-service

2. INTRODUCTION

2.1 Intended use

The Form Studio 1 is a commercial, precision tool intended for use in the additive manufacture of end-user supplied designs from photopolymer resin. The final performance characteristics of cured photopolymer resin may vary according to your compliance with the instructions for use, application, operating conditions, material combined with, end use, or other factors.



In some cases, the additive manufacturing process may inherently result in variable performance characteristics between manufacturing runs or within a specific part. Such variances may not be apparent and may result in unexpected defects in additively fabricated parts.



You shall independently verify the suitability of additive manufacturing, stereolithography (SLA), the Form Studio 1, and any specific designs or materials employed for the application and intended purpose before use. In no event shall Formlabs be liable for any loss, death, or bodily injury that you suffer, or that you cause to any third party, in connection with your use of Formlabs products. To the fullest extent legally permitted Formlabs EXPRESSLY DISCLAIMS ANY IMPLIED OR EXPLICIT WARRANTY OF FITNESS for a particular usage, the particular nature and circumstances of said usage being unforeseen and unforeseeable to Formlabs.



Formlabs provides tools and materials that may be used in many applications, but makes no claims as to the safety or effectiveness of any specific devices made using Formlabs products. Certain Formlabs products, such as those commonly known in the industry as “biocompatible” materials, have been engineered to comply with relevant industry standards. The specific standards and most relevant technical specifications may be identified within the technical data sheets and have been tested according to relevant testing protocols for those standards and specifications. Biocompatible materials are a speciality product, developed for use by medical professionals, and should be used in accordance with the instructions for use.



Do not modify. The Form Studio 1 is intended for use as-is. Modifying the machine without explicit approval and directions from Formlabs will invalidate the warranty, and could potentially ruin the machine and cause you bodily harm.

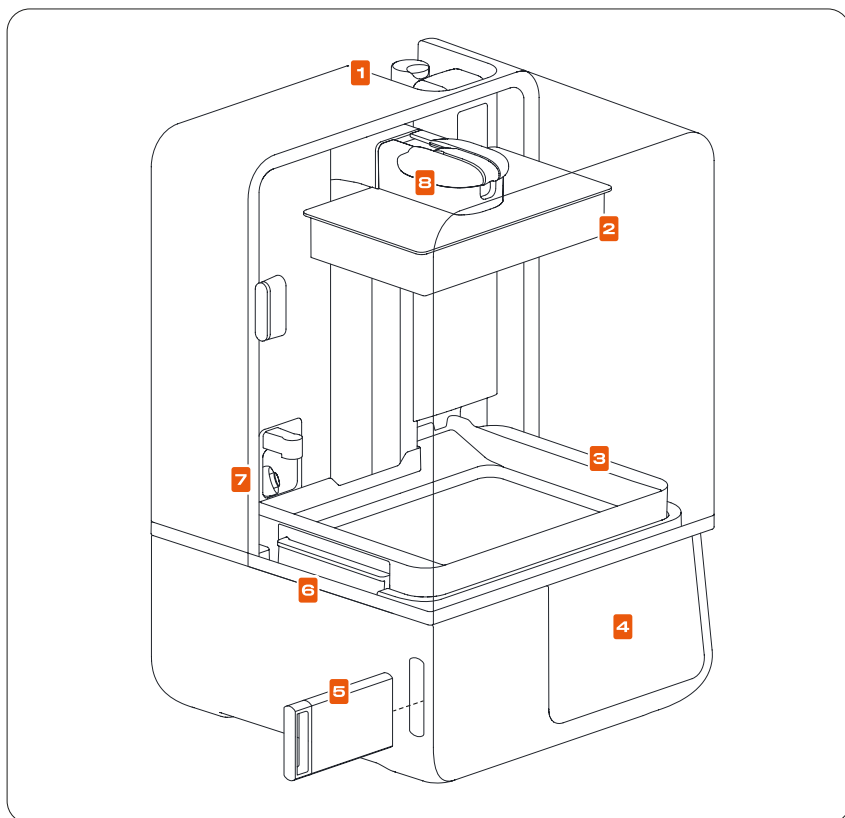
2.2 Technical specifications

Parameter	Unit
Printer	Form Studio 1
Technology	Masked Stereolithography (MSLA)
Print Engine	Low Force Display™ (LFD)
Minimum dimensions for convenient access (W × D × H)	36 × 33 × 79 cm 14.2 × 13 × 31.1 in
Printer dimensions (W × D × H)	34.2 × 31.5 × 50.2 cm 13.5 × 12.4 × 19.8 in
Printer weight	14.3 kg 31.5 lb
Build volume (W × D × H)	200 × 125 × 235 mm 7.9 × 4.9 × 9.3 in Parts taller than 215 mm (8.5 in) require that the resin tank be removed with the build platform. When washing with Form Wash, the basket must be removed. When washing with Form Studio Wash+Cure, prints taller than 200 mm must be removed from the build platform before washing.
Layer thickness (Axis resolution)	25–300 microns 0.001–0.012 in
XY resolution	35 micron pixel size with pretuned anti-aliasing 0.0014 in
Optical power intensity	6 mW/cm ² delivered to the print plane
Optical wavelength	405 nm
Resin cartridges	1
Resin dispensing system	Automated
Biocompatible materials	No
Supports	Auto-generated, Light-touch removal
Operating environment	18–28 °C 64–82 °F Low ambient humidity
Operating temperature	Auto-heats resin to 25–45 °C (77–113 °F), depending on material
Temperature control	Direct resin heating
Power requirements	100–240 VAC Maximum 3 A 50/60 Hz 300 W
Connectivity	Wi-Fi: 2.4, 5 GHz Ethernet: 100 Mbit USB: 2.0
Wi-Fi connectivity	Protocol: IEEE 802.11 a/b/g/n/ac/ax Frequency: 2.4 GHz, 5 GHz Supported security: WPA/WPA2
Ethernet connectivity	RJ-45 Ethernet, 100BASE-TX LAN Port Connect with a shielded Ethernet cable (not included): minimum Cat5.

Parameter	Unit
USB connectivity	USB C port with a USB C-A cable
Printer control	Interactive touchscreen
Alerts	Touchscreen alerts SMS/email via Dashboard Speaker for audio alerts Mobile notifications via the Formlabs Form Mobile App
Camera	Integrated camera 1920 × 1080 resolution (2 MP)
Print preparation	PreForm desktop software
File type	STL, OBJ, 3MF, and other CAD file formats. See the PreForm download page for more information.

2.3 Product elements

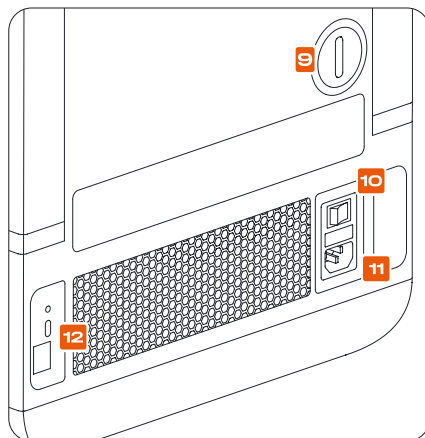
2.3.1 Form Studio 1



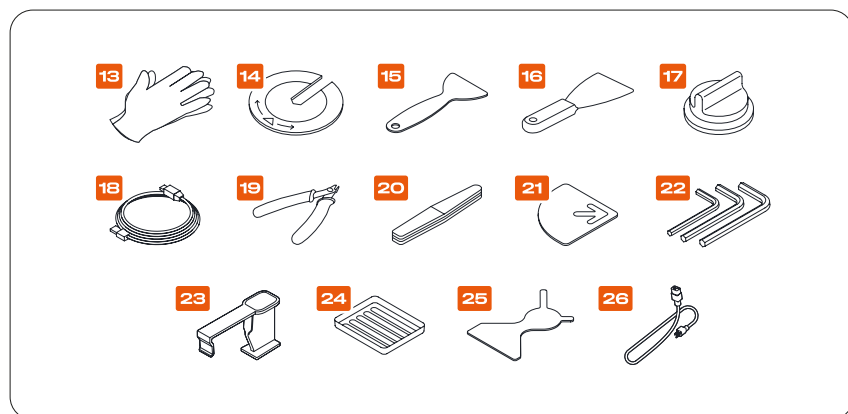
- 1 Resin cartridge:** A container that holds the resin before dispensing into the resin tank. Shake resin cartridges periodically to keep resin well mixed.
- 2 Build platform:** The aluminum base provides a surface for prints to attach to.
- 3 Resin tank:** Resin is dispensed out of the resin cartridge into the resin tank. During a print, light passes up through the bottom of the resin tank and cures resin onto the build platform to form a printed part.
- 4 Touchscreen:** The LCD capacitive touch user interface displays print information, settings, and error messages.
- 5 Tool caddy:** The tool caddy contains parallelism shims, a 2 mm hex key, a 2.5 mm hex key, and a 4 mm hex key to be used for printer maintenance. See [2.3.3 Included accessories](#) for more information.
- 6 Tank latch:** Two tank latches secure the resin tank in place for printing.
- 7 Camera:** An integrated camera for post-print photos, timelapses, and remote monitoring.
- 8 Build platform latch:** Secures the build platform in place.

2.3.2 Rear ports

- 9 Optional exhaust port:** A removable air plug provides access to the print cavity for active air handling. The VOC Extractor (sold separately) connects to the exhaust port.
- 10 Power switch:** For powering the printer on and off.
- 11 Power port:** For connecting the printer to mains power.
- 12 USB and Ethernet ports:** For connecting the printer to a computer or network.



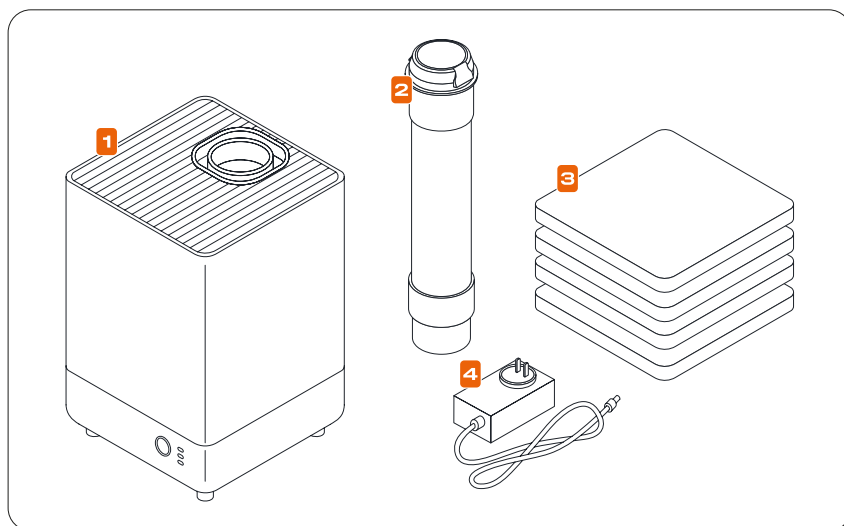
2.3.3 Included accessories



- 13 Non-reactive nitrile gloves:** Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.
- 14 Leveling disc:** Slide the leveling disc included around one of the leveling feet and rotate to raise or lower the printer.
- 15 Mixer/plastic tank scraper:** Non-sharp tool to maintain the resin tank and manually mix resin before starting a print, such as to ensure uniform pigment distribution.
- 16 Metal scraper:** For cleaning the build platform print surface and removing prints from the build platform. Do not use the metal scraper to clean the resin tank interior.
- 17 Camera lens cap:** For covering the Form Studio 1 camera, either for privacy or when not in use.
- 18 USB cable:** USB C-to-A cable for connecting the printer to a computer.

- 19 Flush cutters:** Snip to separate prints from their supports. Cut with the flat side on the prints' surface for minimal support marks.
- 20 Sanding sticks:** For post-processing printed parts.
- 21 Parallelism shims:** For adjusting and aligning the build platform, if necessary. Included in the tool caddy.
- 22 Hex keys:** 2 mm, 2.5 mm, and 4 mm right-angle hex keys for printer maintenance and repair. Included in the tool caddy.
- 23 Cleaning sheet removal tool:** Before printing a cleaning sheet, place the cleaning sheet removal tool in the corner of the resin tank for easy removal. See [7.3.1 Removing cured resin](#) with the cleaning sheet for more information.
- 24 Drip tray:** Temporarily store dirty or wet parts or tools.
- 25 LevelSense calibration tool:** Place under the resin level sensor while running the on-screen calibration procedure. Included in the tool caddy.
- 26 Power cable:** Compatible with Form Studio 1 generation printers.

2.3.4 VOC Extractor (sold separately)

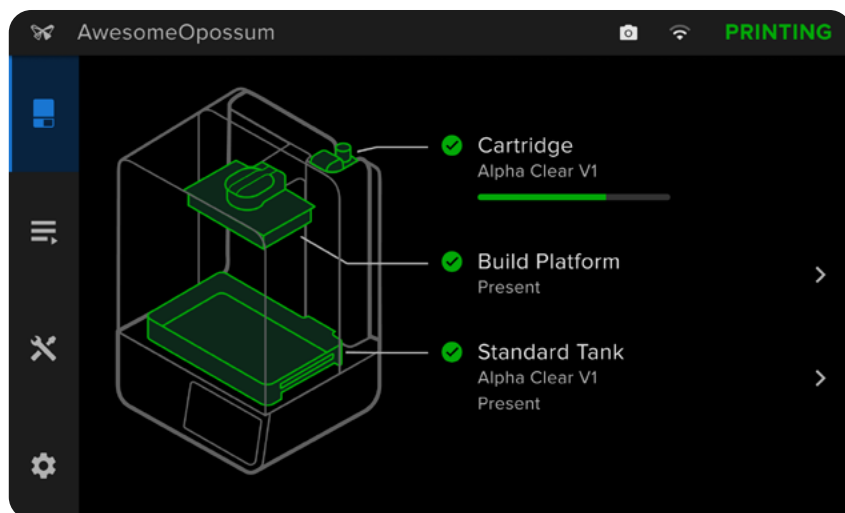


- 1 VOC Extractor:** Extracts and filters resin VOCs through the exhaust port on the back of the Form Studio 1. UL Greenguard certified when used with Form Studio 1 and Alpha Resins. Also compatible with Form 4 generation printers.
- 2 Hose with adapter:** For connecting the VOC Extractor to the printer.
- 3 Spare pre-filters:** The VOC Extractor draws air through one pre-filter and two activated carbon filters. The pre-filter removes dust and large particles so the carbon filters can run effectively. All three filters are replaceable.
- 4 Power adapter:** Compatible with the VOC Extractor. Includes interchangeable plugs for different regional outlet types (not pictured).

2.4 Understanding the display

The Form Studio 1's display includes a touchscreen and speaker for audio notifications. The touchscreen displays print information (job name, time remaining, layers printed), settings, and error messages.

The touchscreen serves as the user interface for the printer. The audio notifications indicate the printer's state. Refer to messages on the printer's touchscreen to understand the meaning of the audio notifications. For detailed guidance and visual assistance, visit formlabs.com/support.



- Tap the printer icon in the left sidebar to access the printer status screen. Information about the inserted consumables, such as resin types, resin cartridge levels, and resin tank temperature appear here.
- Tap the collapsed menu icon in the left sidebar to access the **Queue** screen. A list of print jobs that have been uploaded to the printer appears here.
 - Previously-completed jobs can be viewed in the **History** tab.
 - You can mark print jobs as a favorite to easily reprint them in the future from the **Favorites** tab. In the **Queue** or **History**, tap a job to view more information about the print, then tap **Favorite** to add it as a favorite.
- Tap the wrench icon in the left sidebar to access the **Maintenance** screen. Maintenance procedures can be accessed here.
- Tap the gear icon in the left sidebar to access the **Settings** screen. Network connectivity, printer management settings, and other options can be accessed here.

3. SAFETY



Read and understand this manual and its safety instructions before using the Form Studio 1. Failure to do so can result in serious injury or death.

Supervise young or inexperienced users to ensure enjoyable and safe operation. The instructions contain warnings and safety information, as explained below:



DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



NOTICE indicates information considered important, but not hazard-related.



ENVIRONMENTAL HAZARD: Uncured photopolymer resin is classified as hazardous to aquatic life.



DANGER: Isopropyl alcohol is a flammable chemical.

3.1 Component and subsystem safety

3.1.1 General



UV light source: The backlight emits UV light. Do not look directly into the backlight when it is powered on.



Do not lift or reposition the Form Studio 1:

- By the cover or any other movable part of the printer.
- When the printer is connected to a power source.
- When the printer is connected to an Ethernet or USB cable.



The Form Studio 1 requires an operating environment that is low in ambient humidity and static electricity. Due to the sensitive nature of its components

and the printing mediums, system reliability and print quality may fluctuate if the ambient temperature and moisture are outside the recommended ranges. Refer to section [4.1 Location and environment](#) for the recommended operating environment.

3.1.2 Sharp tools



Cutting hazard: Using sharp tools on slippery surfaces (such as a resin-coated build platform) can result in sudden movement. Orient sharp tools away from yourself, especially when cutting or scraping.

3.1.3 Resin



Poison hazard: Never ingest resin in liquid or solid form. If swallowed, immediately call a poison center or medical professional. Contact Chemtrec at +1 800 424 9300 for global 24-hour emergency assistance.



Refer to the safety data sheet (SDS) and local authorities for guidance on disposing of resin and solvent. Liquid resin (whether pure liquid, dissolved in solvent, or partially cured) may be classified as hazardous waste in your region and shall be disposed of with care.



ENVIRONMENTAL HAZARD:

Uncured photopolymer resin is classified as hazardous to aquatic life.



Consult the safety data sheet (SDS) as the primary source of information to understand safety and handling of Formlabs materials. Respect Formlabs resin like any household chemical. Follow standard chemical safety procedures and Formlabs resin handling instructions. In general, Formlabs resin is not approved for use with food, drink, or medical applications on the human body. However, Formlabs resins for biocompatible applications are biologically safe for specific types and lengths of exposure to the human body. Refer to the safety data sheet (SDS) for each specific resin as well as formlabs.com/support for more detail.

3.1.4 Radio interference

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to CFR Title 47, Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential

area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

Changes or modifications to this product not authorized by Formlabs could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.

This product has demonstrated EMC compliance under conditions that included the use of compliant peripheral devices and shielded cables between system components. It is important that you use compliant peripheral devices and shielded cables between system components to reduce the possibility of causing interference to radios, televisions, and other electronic devices.

3.1.5 Isopropyl alcohol (IPA)



Fire hazard: Isopropyl alcohol is a flammable chemical. Keep away from ignition sources, including open flames, sparks or concentrated sources of heat.



Formlabs does not manufacture isopropyl alcohol. Consult the chemical manufacturer or supplier for detailed safety information. Carefully follow the safety instructions provided with the isopropyl alcohol that you purchase. Isopropyl alcohol can be flammable, even explosive, and should be kept away from heat, fire, or sparks. Any containers holding isopropyl alcohol should be kept closed or covered when not in use. We also recommend that you wear protective gloves and have good ventilation when working with isopropyl alcohol.

3.1.6 Tripropylene glycol monomethyl ether (TPM)



Formlabs does not manufacture tripropylene glycol monomethyl ether. Consult the chemical manufacturer or supplier for detailed safety information. Carefully follow the safety instructions provided with the tripropylene glycol monomethyl ether you purchase. We also recommend that you wear protective gloves when working with tripropylene glycol monomethyl ether.

3.2 Personal protective equipment (PPE)

Safe operation of the Form Studio 1 can be achieved by implementing the following equipment:

- Non-reactive nitrile gloves
- Safety glasses



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.



Risk of eye injury: Some methods of support removal may cause small pieces of supports to break away. Beware of flying debris. Wear eye protection and gloves to protect the skin and eyes.

3.3 Specifications of tools to be used

The Form Studio 1 shall only be used with supplied accessories and additional tools recommended by Formlabs. Third-party accessories and materials may cause damage. Refer to sections [3.2 Personal protective equipment \(PPE\)](#) and [6.1. Tools and supplies](#) for more information.

Purchase additional supplies:

- **Cotton swabs**
 - For cleaning small resin spills.
- **Soap and water or glass cleaner**
 - For cleaning the printer's cover, outer shells, and display.
- **Isopropyl alcohol (IPA), 90% or higher**
 - Recommend washing solvent for rinsing prints.
 - For cleaning the printer's optical components and build platform.
 - For cleaning the work surface and tools.
- **Lithium grease for ball bearings**
 - For lubricating the Z-axis screw.
- **Low-fiber paper towels**
 - For cleaning the work surface and tools.
 - For protecting sensitive components.
 - For wiping residue grease, resin, or solvent.
- **Non-abrasive microfiber cloth**
 - For cleaning the printer's cover, outer shells, and display.
- **Optical cleaning cloths**
 - Disposable lint-free, non-woven microfiber cloths for cleaning the printer's optical components. Do not reuse an optical cleaning cloth; dispose of after each use.
- **Rubber bulb air blower**
 - For removing dust from the Light Processing Unit (LPU) texture.
- **Tripropylene glycol monomethyl ether (TPM)**
 - Alternative washing solvent to isopropyl alcohol for rinsing prints.
- **Formlabs Resin Washing Solution**
 - Alternative washing solvent to isopropyl alcohol for rinsing prints.

3.4 Sensitive components

The Form Studio 1 has multiple sensitive components that are vulnerable to permanent damage if not periodically inspected and properly maintained. Using any tools, cleaning agents, or methods not mentioned in this manual may result in permanent damage to these components. Follow the maintenance instructions outlined in this manual and on formlabs.com/support when servicing the following components or any other internal component of the machine. For detailed guidance and visual assistance, visit formlabs.com/support.

- **Backlight and Light Processing Unit (LPU) modules**

These customer-replaceable assemblies contain the 405 nm LEDs and masking display that control which areas of resin are exposed to light during each layer. Refer to section [8. Disassembly and repair](#) for more information.

- **LPU release texture**

The texture on the top of the LPU reduces forces on the printed parts, resin tank, and printer between layers. Maintain a clean LPU to prevent print failures and damage to the resin tank. Refer to section [6.5.4 Cleaning the LPU release](#) texture for more information.

- **Platform lock**

A lever that is part of the locking mechanism that secures the build platform.

- **Z-axis lead screw**

The Z-axis lead screw is a threaded rod that controls the vertical motion of the build platform mount. Keep the lead screw clean and well-lubricated so that the build platform mount can move smoothly and accurately. To inspect and lubricate the lead screw, refer to section [6.4.5 Maintaining the Z-axis screw](#).

3.5 Emergency and exceptional situations

Formlabs has made every effort to provide updated safety data sheets (SDS) for every resin product, in accordance with the latest government guidelines. Always consult the safety data sheet (SDS) as the primary source of information to understand safety and handling of Formlabs materials and required accessories.

3.5.1 Isopropyl alcohol (IPA)



Fire hazard: When handling isopropyl alcohol, always consult the safety data sheet (SDS) from the isopropyl alcohol supplier as the primary source of information. Handle isopropyl alcohol with gloves in a well-ventilated area. Keep away from heat, sparks, and open flame. Isopropyl alcohol evaporates rapidly, so keep the rinse tub and bottles closed whenever possible.

3.5.2 Resin



Poison hazard: Never ingest resin in liquid or solid form. If swallowed, immediately call a poison center or medical professional. Contact Chemtrec at +1 800 424 9300 for global 24-hour emergency assistance.



Promptly clean and inspect the printer after a resin spill to minimize any cosmetic or functional damage to the printer. If you have experienced an accidental resin spill, document the problem with photos and clean the printer as best as possible. Contact Formlabs Support or a certified service provider as soon as possible.

4. PREPARATION AND SETUP

4.1 Location and environment

Prepare a space to install and operate the Form Studio 1 and house the necessary accessories and consumables.

- Choose a location away from any machinery or tooling that generates dust or sparks, such as wood or metal working equipment.
- Ensure that the workspace meets the following requirements:
 - Dry, indoor location
 - Low ambient humidity
 - Temperature of 18–28 °C (64–82 °F)
 - Mains supply voltage fluctuations ≤ 10%
 - Position the device so that it is easy to operate the power switch of the unit.
 - Dedicate a power outlet and circuit to the device capable of delivering 3 A of current at 100–240 VAC, 50/60 Hz.
- Reserve the following minimum dimensions for the most convenient access:
 - **Form Studio 1:** 36 × 33 × 79 cm (14.2 × 13 × 31.1 in)
 - **Additional space for other post-processing tools** (e.g., Form Studio Wash+Cure, Form Wash, Form Cure, or Formlabs-approved third-party devices)
- **Purchase additional supplies:**
 - Isopropyl alcohol (90% or higher) and/or tripropylene glycol monomethyl ether
 - Low-fiber paper towels
 - Non-abrasive microfiber cloth
 - Non-reactive nitrile gloves
 - Optical cleaning cloths
 - Safety glasses

4.2 Networking and connectivity

For uploading prints to the Form Studio 1 and remotely monitoring the printer, ensure that the Form Studio 1 maintains a constant connection to a secure network. Refer to section 4.6 Connecting the printer to a network for more information. For detailed guidance and visual assistance, visit formlabs.com/support.

4.3 Unboxing the printer

Prior to unboxing the printer, prepare a suitable workspace according to section [4.1 Location and environment](#). For detailed guidance and visual assistance, visit formlabs.com/support.

4.3.1 Form Studio 1 package

The standard Form Studio 1 package ships in one box, containing the printer, a resin tank, a build platform, and the included printer accessories. Resin cartridges and any additional build platforms, resin tanks, and other accessories ship separately.

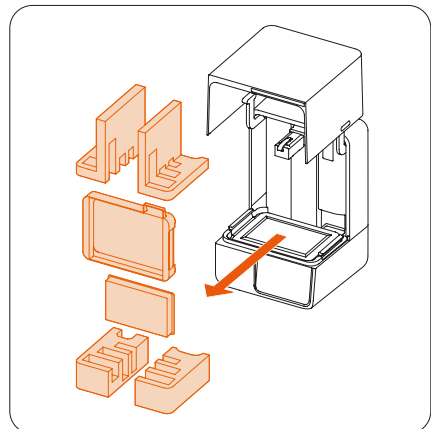
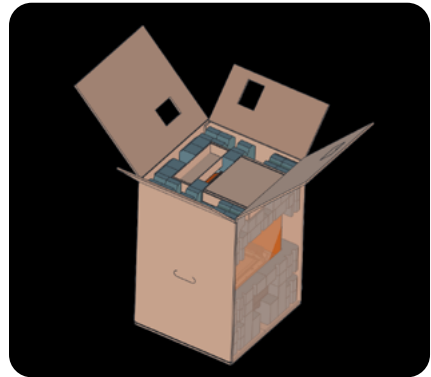
	Printer	Resin cartridge	Resin tank	Build platform
Shipping dimensions	43.1 × 40.5 × 61.6 cm (17 × 16 × 24.3 in)	8.9 × 10.2 × 28.6 cm (3.5 × 4.0 × 11.3 in)	31 × 24 × 6 cm (12.2 × 9.4 × 2.4 in)	Standard Build Platform: 24 × 15 × 9 cm (9.4 × 5.9 × 3.5 in) Build Platform Flex: 27 × 17 × 10 cm (10.6 × 6.7 × 3.9 in)
Shipping weight	Basic package: 18.5 kg (40.8 lb) Flex package: 18.6 kg (41 lb)	1.5 kg (3.3 lb)	0.35 kg (0.77 lb)	Standard Build Platform: 0.96 kg (2.12 lb) Build Platform Flex: 1.11 kg (2.45 lb)

4.3.2 Unboxing the Form Studio 1

The custom packaging the Form Studio 1 arrives in is specially designed to protect the machine during shipping. During unboxing, inspect the product for any damage or missing items. In the case of damage or missing items, contact Formlabs Support or a certified service provider.

To unbox the printer:

1. Open the top of the box.
2. Unpack the power cable and accessories.
3. Remove the top foam.
4. Lift the printer out of the box using its shipping bag and place it on a flat, level surface.
5. Lift the printer out of the bag and place it on your work surface.
6. Remove any additional packaging around the printer.
7. Open the printer cover.
8. Remove the resin tank, build platform, and the internal foam.
9. Remove the protector from the Light Processing Unit.





Save the Form Studio 1's packaging including any inserts for transporting the machine. Original packaging is required for warranty service and designed to be kept and reused for transportation or shipping.

4.4 Serial name

The serial name is a unique identifier used to track the history of manufacturing, sales, and repair. The serial name for the Form Studio 1 is located on a sticker next to the A/C input on the back panel in the format **FormStudio1-ColorAdjectiveAnimal**. The serial name is also available on the printer's touchscreen.

To access the serial name the printer's touchscreen:

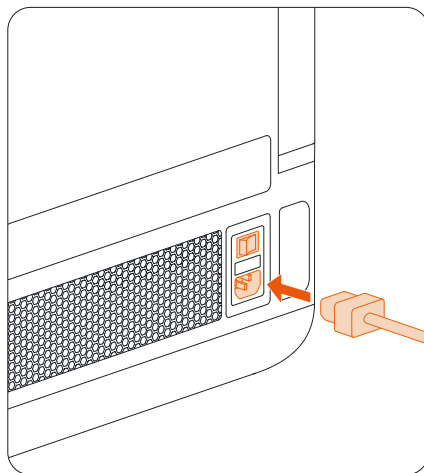
1. Power on the printer. The printer initializes.
2. The serial name is listed in the status bar at the top of the touchscreen.

4.5 Installing the printer

After selecting a location for the Form Studio 1, connect the power supply and turn on the printer. Depending on your internet setup, you may need to connect an Ethernet cable to establish an internet connection on the printer.

4.5.1 Connecting the cables

Connect the power cable to the printer and to the power supply. Files can be uploaded via Wi-Fi, Ethernet, or USB. For USB, connect the printer to a nearby computer. For Ethernet, connect the printer to your LAN. Refer to section [4.6. Connecting the printer to a network](#) for more information.



4.5.2 Turning on the printer

To turn on the printer:

1. Plug the included power cable into the power port on the back of the machine and connect the power cable to a power outlet.
2. Flip the power switch to the **ON (I)** position.
3. The printer initiates.

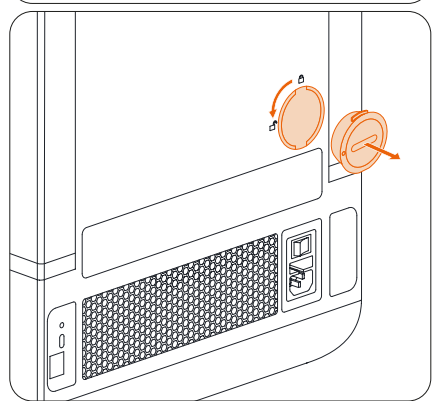
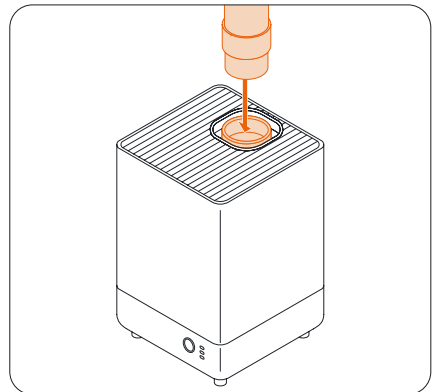
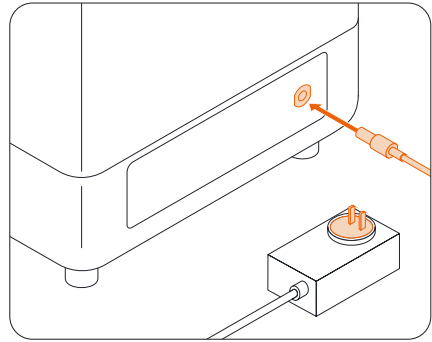
To put the printer into sleep mode or turn off completely, refer to section [5.6.7 Turning off the printer](#).

4.5.3 Setting up and connecting the VOC Extractor

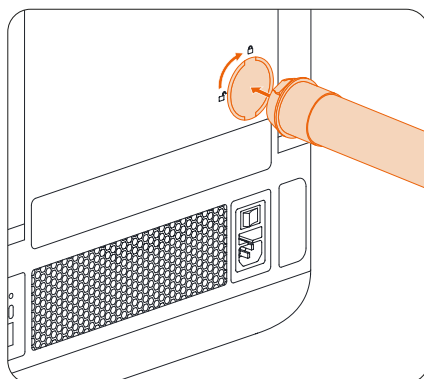
The VOC Extractor is a Form Studio 1 accessory (sold separately) that extracts and filters resin VOCs through the exhaust port on the back of the printer. When used with Form Studio 1 and Alpha Resins, the ecosystem meets UL Greenguard standards.

To set up and connect the VOC Extractor:

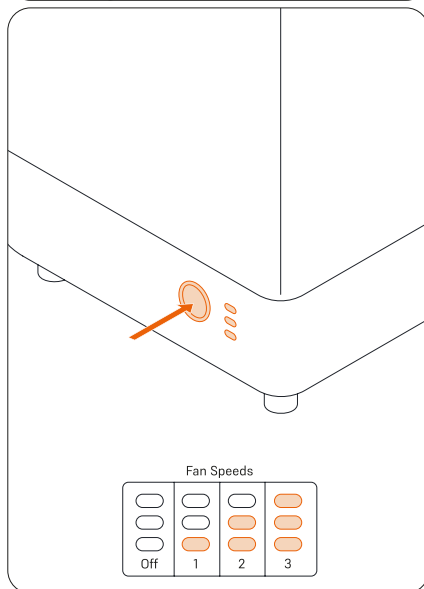
1. Unbox the VOC Extractor and its accessories. Place the unit near the printer.
2. The VOC Extractor power adapter comes with interchangeable plugs. Swap the plug to the appropriate type if needed.
3. Connect the power adapter to the VOC Extractor and a power source.
4. Connect the smooth end of the hose to the inlet at the top of the VOC Extractor.
5. Remove the exhaust plug from the back of the printer.



6. Connect the hose adapter to the exhaust port, keeping the hose short and with as few bends as possible. Long or kinked hose runs reduce the effective airflow and efficacy of the VOC Extractor.



7. When you are ready to print, press the touch button on the VOC Extractor to power it on and select the appropriate fan speed.
 - a. When printing with Alpha Resins on the Form Studio 1, use fan speed 2. This is the only setting that is UL Greenguard certified when used with Alpha Resins and the Form Studio 1.
 - b. Fan speed 1 can be used for lower fan noise (roughly 5 dBA quieter than fan speed 2).
 - c. Use fan speed 3 if the VOC Extractor hose is fully extended and/or has multiple bends.
8. Turn off the VOC Extractor when not actively printing to extend filter and resin lifetimes.



4.6 Connecting the printer to a network

Connect the Form Studio 1 to a secure network via Wi-Fi, Ethernet, or USB, providing it internet access for remote printing, remote troubleshooting, and sending diagnostic logs. The Form Studio 1 can connect directly to a computer with a USB cable. For detailed guidance and visual assistance, visit formlabs.com/support.

For remote uploading and monitoring, the Form Studio 1 supports both wired (Ethernet) and wireless (Wi-Fi) connections. Connect PreForm print preparation software to the same local-area network (LAN) as the printer in order to send a print job.

When the Form Studio 1 is connected to a LAN, its current status and print progress can be monitored with Dashboard: formlabs.com/dashboard.

When the Form Studio 1 is connected to the internet, it can be accessed via the Formlabs Form Mobile App, which allows for print monitoring, live camera view, remote printing, printer control, and viewing timelapses and print history. For more information, visit <http://formlabs.com/app-setup>.

4.6.1 **Connecting with Wi-Fi**

The Form Studio 1's built-in Wi-Fi (IEEE 802.11 a/b/g/n/ac/ax) supports WPA/WPA2 security. Use the printer's touchscreen to configure a wireless network connection.

To connect with Wi-Fi:

1. Tap the gear icon on the **Home** screen. The **Settings** screen appears.
2. Tap **Connectivity > Wi-Fi**. The **Wi-Fi** screen appears.
3. Toggle **Use Wi-Fi** to **ON**. The toggle turns blue.
4. Tap the desired wireless network.
5. If prompted, enter your network password and tap the checkmark to confirm.

4.6.2 **Connecting with Ethernet**

The rear of the unit is equipped with a RJ-45 Ethernet (100BASE-TX) 100 Mbit LAN Port. Use a shielded Ethernet cable (not included): minimum Cat5.

To connect with Ethernet:

1. Plug one end of the Ethernet cable into the Ethernet port on the back of the machine
2. Connect the other end of the Ethernet cable to your LAN.

4.6.3 **Connecting with a manual IP configuration**

When connected to an active Ethernet connection or available Wi-Fi network, the Form Studio 1 can be configured with a static IP address. Use the printer's touchscreen to configure a manual IP connection.

To connect with Wi-Fi or Ethernet using a manual IP configuration:

1. With an established Ethernet or available Wi-Fi connection, tap the gear icon on the **Home** screen. The **Settings** screen appears.
2. Tap **Connectivity**. The **Connectivity** screen appears.
 - For Wi-Fi networks, tap Wi-Fi, then the desired wireless network. The Wi-Fi screen appears.
 - For Ethernet connections, tap Ethernet. The Manual IP Settings screen appears.
3. Toggle **Use Manual IP** to **ON**. The toggle turns blue.
4. Enter the appropriate **IP Address**, **Subnet Mask**, **Default Gateway**, and **Name Server**.

4.6.4 **Connecting with USB**

Use a USB cable to connect a computer directly to the printer.

To connect with USB:

1. Plug one end of the USB cable into the USB-C port on the back of the machine.
2. Connect the other end of the USB cable to a computer's USB port.

4.7 Leveling the printer

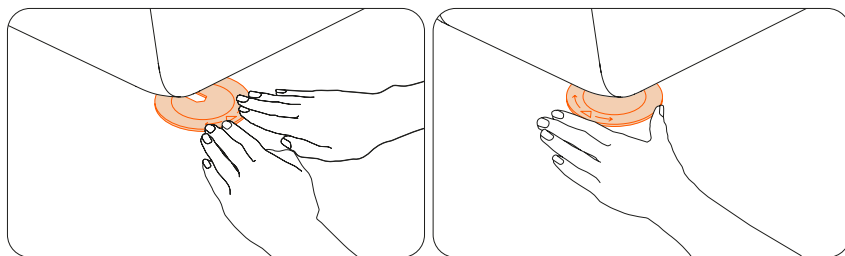
The Form Studio 1 must be completely level before printing can begin. If prompted, use the leveling disc to raise or lower each foot of the printer.



It is important that the printer sits level so resin does not overflow from the resin tank during printing. All four leveling feet must rest on a solid surface to ensure optimal print accuracy.

To level the printer:

1. Connect the printer to power. If necessary, the printer's touchscreen prompts use of the leveling disc.
 - The initial printer setup includes the leveling procedure.
2. Follow the on-screen instructions to adjust the feet under the printer.
3. Insert the round leveling disc under the designated corner. Push until the leveling disc clicks onto the leveling foot.
4. Rotate the leveling disc clockwise to raise and counter-clockwise to lower the height of the printer.
 - The printer ships with each leveling foot fully retracted. The height of the feet can only be raised during the initial printer setup.
5. Adjust the feet until the printer's touchscreen indicates the printer is level.



4.8 Inserting the resin tank

Resin is dispensed out of the resin cartridge into the resin tank. During a print, light shines upward through the bottom of the resin tank and cures resin onto the build platform to form a printed part.

The Form Studio 1 has two types of resin tanks. Select the resin tank type that best matches your application and needs for your print.

- **Form Studio 1 Resin Tank:** Optimized for Form Studio 1 General Purpose resins, yielding fast prints with great detail and surface finish. Not compatible with all Formlabs resins (such as the Tough family of resins) or third-party resins.
- **Form Studio 1 Resin Tank Pro:** Optimized for material compatibility. Can print with all supported Formlabs resins. Required for printing with Open Material Mode.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

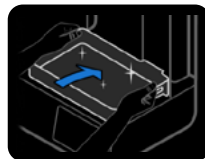


Spill hazard: Resin may spill over the tank walls if the resin tank tilts more than 5–10 degrees. Hold the resin tank level with two hands. To inspect and clean the resin tank's underside, empty the resin tank and/or take care to avoid spilling resin outside the resin tank.

4.8.1 Inserting the resin tank

To insert the resin tank:

1. Open the printer cover.
2. Remove all packaging from the resin tank before inserting it into the printer.
3. Remove the resin tank lid and set it aside.
4. Lift the resin tank with one hand on each side.



Avoid contaminating the resin tank's underside with fingerprints or liquid resin.

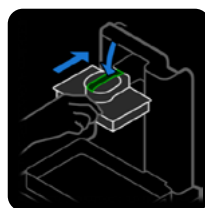
5. With the tank spout facing away from you, place the resin tank flat between the blue latches in the middle of the printer.
6. Press down on the sides of the resin tank with your thumbs. Latch the tank into place by closing the two blue latch handles on the sides. The printer detects its insertion and displays a message on the touchscreen.
7. If you have not done so already, remove the resin tank lid and set it aside.

4.9 Inserting the build platform

The build platform is the surface onto which parts are printed. It is secured in place on the build platform mount during a print with the platform lock.

The Form Studio 1 has two types of build platforms. Select the build platform type that best matches your application and needs for your print.

- **Form Studio Build Platform:** Standard build platform with a durable matte aluminum surface.
- **Form Studio Build Platform Flex:** A flexible print surface allows you to quickly and easily remove your parts after each print.



To insert the build platform:

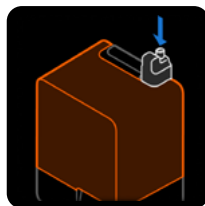
1. Lift the blue build platform latch.
2. Align the build platform with the build platform mount and push into place. The printer detects its insertion and displays a message on the touchscreen.
3. Lower the build platform latch to secure the build platform.

4.10 Inserting the resin cartridge

Resin cartridges hold liquid resin before it is dispensed into the resin tank.

To insert the resin cartridge:

1. Close the printer cover.
2. Shake the resin cartridge before each print to ensure the resin is mixed thoroughly. Shake each resin cartridge approximately every two weeks during storage to keep resin well mixed for the best print quality.



Spill hazard: Do not remove the flexible, rubber bite valves at the bottom of the resin cartridge. These bite valves control the release of the resin. Removing the bite valves allows resin to continuously flow and causes extreme damage to the printer. This damage is not covered by the warranty.

3. Lower the resin cartridge until the top of the cartridge is level with the top of the printer. The cartridge sits loosely inside the cartridge slot. This ensures the load cell can accurately measure cartridge resin levels.
4. Press the vent cap open, so that the resin tank fills correctly.

4.11 Transporting the printer

Refer to the section [4.3.1 Form Studio 1 package](#) for product weight and dimensions. Keep the packaging for transportation or shipping. For detailed guidance and visual assistance, visit formlabs.com/support.

The printer's complete packaging kit consists of:

- 1 box, cardboard
- 1 bottom insert, foam
- 1 Build Platform or Build Platform Flex
- 1 lower build platform and resin tank holder, foam
- 1 printer bag, plastic
- 1 upper insert, foam
- 1 Form Studio 1 Resin Tank
- 1 upper build platform and resin tank holder, foam

4.11.1 Preparing the printer for transportation

To prepare the printer:

1. Always remove the build platform, resin tank, and resin cartridge before moving or packaging the printer.
2. Wipe residual resin from the build platform and store the platform away from sunlight.



Do not ship the printer with any resin inside. Resin left inside the machine can leak during transit, which may result in additional fees or void the warranty. Do not ship the printer with a filled resin tank or resin cartridge inserted into the printer. Consumables left inside the machine can become loose during transit and damage sensitive components, which may result in additional fees or void the

warranty. The Form Studio 1 packaging foam allows for one clean resin tank and build platform to be stored inside the printer during shipping.

3. Store the resin tank with its lid in place.
4. Store the resin cartridge with the vent cap pressed closed and the valve cover installed.



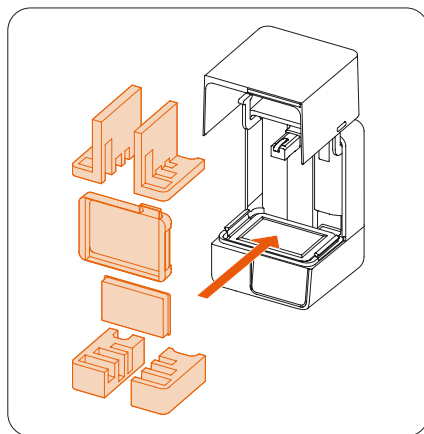
When shipping a printer to Formlabs or a certified service provider for replacement or repair, the build platform, resin tank, resin cartridge, power and USB cables, and other accessories should not be shipped and will not be returned after service. Original packaging is required for warranty service. Contact Formlabs Support or a certified service provider for unique guidance on shipping requirements.

4.11.2

Packaging the printer

To package the printer:

1. If the printer's box has been flattened, start by re-assembling the box and securely taping its bottom opening. Use reinforced packing tape or tape all box seams to ensure that your printer is not damaged during shipping.
2. Insert the bottom foam insert into the box.
3. Ensure the build platform and resin tank are completely clean of any residual resin.
4. Open the printer cover and insert the lower build platform and resin tank holder.
5. Place the build platform and resin tank into their slots in the holder.
6. Place the upper build platform and resin tank holder foam on top of the build platform and resin tank to completely secure them.
7. Close the printer cover
8. Lower the printer into the box. The printer should sit securely in the cutouts in the bottom foam insert.
9. Place the upper foam on top of the printer. The foam should fit exactly around the top of the printer's cover.
10. Close the top of the box and seal the edges of all box openings with adhesive packing tape. Use reinforced packing tape and tape all box seams, across all open corners, and from each side across the bottom to ensure that your printer is not damaged during shipping.



5. PRINTING

5.1 Operational environment

The operating temperature for the Form Studio 1 is 18–28 °C (64–82 °F), with low ambient humidity. For optimal printing, do not exceed this range.

5.2 Designing for SLA

A successful 3D print starts with a well-designed model. Follow these best practices to optimize designs and reduce print failures. For detailed guidance and visual assistance, visit formlabs.com/support.

5.2.1 Printing specifications

Parameter	Unit
Build volume (W × D × H)	200 × 125 × 235 mm 7.9 × 4.9 × 9.25 in Parts taller than 215 mm (8.5 in) require that the resin tank be removed with the build platform. When washing with Form Wash, the basket must be removed. When washing with Form Studio Wash+Cure, prints taller than 200 mm must be removed from the build platform before washing.
Layer thickness	25–300 microns 0.001–0.012 in

5.2.2 Feature design guidelines

Consult formlabs.com/support for a list of the minimum feature requirements you can expect from Form Studio 1 generation printers.

5.3 Setting up a print

Form Studio 1 print jobs can be set up using PreForm, Formlabs’ print preparation software. To start, open OBJ, STL, or 3MF files in PreForm, orient and layout multiple models into a complete build, then upload the print job to the printer. For detailed guidance and visual assistance, visit formlabs.com/support.

5.3.1 Downloading or updating PreForm

Visit the PreForm product webpage to download the latest version: formlabs.com/software.

Learn how to use PreForm from the tutorials available in the software. Click **Help > Show Onboarding Tutorial** from PreForm’s menu bar.

5.3.2 Preparing the file for printing

Use PreForm software to process STL, OBJ, 3MF, and other CAD files. Prepare, save, and upload FORM files to the printer.

5.3.2.1 Adding a model

Import multiple part files into PreForm to print multiple parts on a single build platform.

To add a model:

1. In the menu bar, click **File > Open**. The **Open File** window opens.
2. Select at least one file.
3. Click **Open**. The selected models appear in PreForm.

5.3.2.2 Orienting a model

Orienting a model within the build volume consists of two components: moving a model and rotating a model. Position a model to prevent suction cups and reduce minima.

To move a model to a different location:

1. Select the model in PreForm. Manipulators are overlaid on the model.
2. To move:
 - Click-and-drag the **Move** manipulator to a new location on the build platform.
 - Click-and-drag the selected model to a new location on the build platform.

To rotate a model along the X-, Y-, and Z-axes:

1. Select the model in PreForm. Manipulators are overlaid on the model.
2. Click **Orientation**. A dialogue box opens.
3. To rotate:
 - Click-and-drag along the central manipulator to spin the model freely.
 - Click-and-drag on a ring to move the model along that axis.
 - Enter a specific angle into an axis field.
 - Click on an axis arrow.
 - Hover the pointer over an axis field and use the scroll wheel.

5.3.2.3 Supporting a model

Supports reinforce overhangs and other delicate features for maximum printability. They should be removed after the print is complete. Supports can be auto-generated en masse or individually placed by hand.

To auto-generate supports:

1. Select the model in PreForm.
2. Click **Supports**. A dialog box opens.
3. Click **Auto-Generate All**. Supports are added to all models on the build platform.

To manually add and edit supports:

1. Select the model in PreForm. Manipulators are overlaid on the model.
2. Click **Supports**. A dialog box opens.
3. Click **Edit....** The model turns gray and supports are shown as white touchpoints.
4. Click on the under-supported areas in red to add a support. White touchpoints appear where clicked.
5. Click **Apply**. Supports are regenerated and remaining under-supported areas are highlighted in red.
6. Repeat until the model is fully supported.

5.3.2.4 Uploading a print

After orienting and supporting your model(s), and saving your FORM file, upload your print job to the printer. Both the printer and the computer running PreForm must be

connected via USB or on the same network in order to upload a print job. Refer to section [4.6 Connecting the printer to a network for more information](#). Once transferred, print jobs must be confirmed on the printer's touchscreen to begin. Refer to section [5.4.3 Starting a print](#) for more information.

To upload a print job from PreForm to the printer:

1. Click **Edit Job Setup**. The **Job Setup** window opens.
2. If you have not done so already, confirm your printer, material, layer thickness, and print settings. Click **Apply**. Note that if you change these settings, you may need to re-support your models.
3. Click **Print Now** to start the print immediately if the printer is ready or **Upload to Queue** to add the print to the printer or Printer Group's queue.
 - If you did not confirm that the build platform is ready to print on the printer's touchscreen, the **Print Now?** window opens. Verify that the build platform is clean and locked into position, then click **Confirm and Print Now**. The model is sent to the printer.

5.4 Preparing the printer for printing

Before a print job can begin, the Form Studio 1 must be set up to match the correct material settings. Insert the resin tank, build platform, and resin cartridge. Confirm the print job on the printer's touchscreen and wait for the print chamber inside the Form Studio 1 to preheat. For detailed guidance and visual assistance, visit formlabs.com/support.

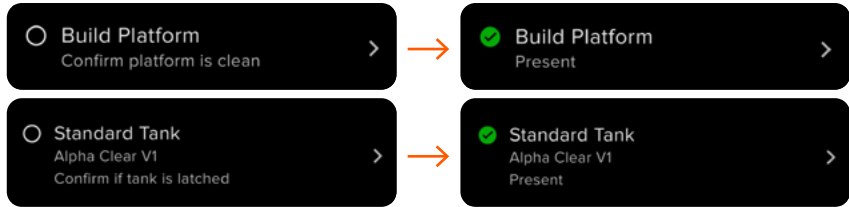
5.4.1 Automatic consumables checks

The Form Studio 1 checks the following before each print:

- **Accessories:** Sensors check for the proper installation of the build platform, resin tank, and resin cartridge.
- **Temperature:** The printer heats the resin to its optimal temperature before starting the print.
- **Resin:** Resin flows from the resin cartridge into the resin tank when the cartridge dispense arm squeezes the bite valve of the resin cartridge open. The Form Studio 1 regulates the volume of resin in the resin tank through a sensor called the LevelSense, which is located above the rear left-hand corner of the resin tank. The printer begins to fill the resin tank once a print starts and maintains the level of resin in the resin tank during the print. Printing begins automatically when LevelSense detects the proper amount of resin in the resin tank.

5.4.2 Ready your printer to start a print

Before the printer can start a print, confirm that the build platform is clean and ready to use and that the resin tank is secured in place. To ready your printer to start a print:



1. On the touchscreen, tap the printer icon on the sidebar.
2. Tap the check mark next to the **Build Platform** and **Tank** status items to confirm that they are ready to be used.
3. The status in the top bar changes to **Ready**.

5.4.3 Starting a print

Once a print job is uploaded to the Form Studio 1, the printer's touchscreen displays the next print job in the queue. To start the print, tap **Print** on the printer's touchscreen. If the file is not the next print job in the queue, tap the collapsed menu icon from **Home** to access the **Queue** screen.

To start a print on the printer's touchscreen:

1. Tap the print job on the **Home** screen, or from **Queue**. The print job screen appears.
 - a. To print a job from the uploaded queue, go to **Queue** tab
 - c. To print a job from previous prints, go to **History** tab
 - d. To print a job from a job that is marked as favorite, go to **Favorites** tab
2. Tap **Print** to confirm.
 - a. If the printer is **Ready**, the print will start immediately
 - b. If the printer is not **Ready**, a new screen appears.
3. Follow the prompts on the touchscreen to check the resin tank and cartridge are inserted correctly, then tap **Confirm**. The print starts once the resin in the resin tank has reached its optimal temperature.
4. If you are using the VOC Extractor, press the touch button on the VOC Extractor to power it on and select the appropriate fan speed.
 - a. When printing with Alpha Resins on the Form Studio 1, use fan speed 2. This is the only setting that is UL Greenguard certified when used with Alpha Resins and the Form Studio 1.
 - b. Fan speed 1 can be used for lower fan noise (roughly 5 dBA quieter than fan speed 2).
 - c. Use fan speed 3 if the VOC Extractor hose is fully extended and/or has multiple bends.

5.4.4 Stopping a print

To stop a print in progress, tap **Pause > Abort** on the printer's touchscreen.



Moving parts. Do not open the printer cover until the printer's touchscreen

indicates the print is complete. Moving parts present crushing and tangling hazards.

5.5 Finishing and post-processing a print

Finishing and post-processing includes all steps after printing. Bring a 3D model from a digital file to a functional print with the following steps. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

To finish and post-process a print:

1. Put on a new, clean pair of nitrile gloves.
2. When the print is complete, open the printer cover and lift up the platform lock.
3. Use both hands to grip the handles and remove the build platform from the printer.
4. Close the printer cover.
5. Turn off the VOC Extractor when not actively printing to extend filter and resin lifetimes.
6. Wash the print in the Form Studio Wash+Cure, Form Wash, Form Wash L, or a Formlabs-approved third-party large-format ultrasonic cleaner. Formlabs products can be used with isopropyl alcohol, tripropylene glycol monomethyl ether, or Formlabs Resin Washing Solution as a washing solvent unless otherwise noted.



Fire hazard: Isopropyl alcohol is a flammable chemical. Keep away from ignition sources, including open flames, sparks, or concentrated sources of heat.



7. Remove the solvent from the print.
 - If your solvent evaporates readily (e.g., isopropyl alcohol), allow at least 30 minutes for the solvent to fully evaporate after washing.
 - If your solvent does not evaporate readily (e.g., tripropylene glycol monomethyl ether), wash the prints with water to remove excess solvent.
8. Dry your prints. Ensure all prints are fully dry and free of excess solvent, resin, and other liquids before post-curing.
9. Post-cure your print with the Form Studio Wash+Cure, Form Cure, Form Cure L, or a Formlabs-approved third-party large-format SLA post-curing unit to achieve a part's full mechanical properties.
10. Post-process your print by removing supports, sanding down blemishes, and adding paint.

5.6 Managing the printer

During and between prints, you can track your printer's usage, manage print jobs, and prepare for future print jobs. For detailed guidance and visual assistance, visit formlabs.com/support.

5.6.1 Connecting the printer to the Formlabs Form Mobile app

The Form Mobile App (<http://formlabs.com/app-setup>) allows individuals to monitor prints, access the camera view, control the printer remotely, and view timelapses and print history. Register the Form Studio 1 to the app through the printer's touchscreen. Once the printer is registered to the Form Mobile App, the Form Studio 1 sends data to the app as long as the printer is able to access the internet.

5.6.2 Connecting the printer to Dashboard

Dashboard (formlabs.com/dashboard) allows individuals and teams to remotely monitor Formlabs printers, track material usage, and explore past and future Formlabs purchases. Register the Form Studio 1 to Dashboard through the printer's touchscreen. Once the printer is registered to Dashboard and Dashboard logging is enabled on the printer, the Form Studio 1 sends data to Dashboard as long as the printer's Wi-Fi or Ethernet connections are able to access the internet.

5.6.3 Starting an uploaded print

To start an uploaded print job on the printer's touchscreen:

1. Confirm the resin tank, build platform, and resin cartridge have been inserted into the printer.
 2. Tap the print job from **Queue**.
- Refer to section [5.4.2 Starting a print](#) for more information.

5.6.4 Deleting an uploaded print

To delete an uploaded print job on the printer's touchscreen:

1. Tap the print job from **Queue**.
2. Tap **Delete**. If prompted, tap **Delete** again to confirm.

5.6.5 Changing resin types between prints

When changing resin types, always change both the resin tank and resin cartridge. Remove the resin cartridge before removing the resin tank to prevent the bite valves from dripping resin into the printer cavity. Refer to sections [6.6.3 Replacing the resin tank](#) and [6.5.3 Replacing the resin cartridge](#) for more information.

5.6.6 Checking and maintaining the resin temperature

The Form Studio 1 heats resin to a set temperature before starting a print. View the resin's current temperature on the printer's touchscreen while the job is being printed. The resin is heated by resistive heaters located beneath the resin tank. The Form Studio 1 automatically preheats and maintains a consistent print chamber temperature before and between prints.

5.6.7 **Turning off the printer**

The Form Studio 1 is designed to be left powered on when not in use. Depending on your printer's firmware version, there is an option, accessible through the printer's touchscreen, that places the printer into sleep mode immediately or after a set period of inactivity.

Tap the printer's touchscreen, insert or remove consumables, or otherwise interact with the printer to wake it from sleep mode. For detailed guidance and visual assistance, visit formlabs.com/support.

Turn off the machine completely when moving or storing the printer, and to conserve power.

To turn off the printer completely:

1. Press the power switch on the back of the machine, next to the power cord.
2. The printer turns off.

6. MAINTENANCE

Formlabs provides instructions to advise in installing, operating, and maintaining the machine. It shall only be maintained by a qualified and trained person. Unauthorized disassembly or repair procedures may damage the machine.

There are two groups of maintenance procedures: regular, which should be done after every print, and intermittent maintenance, which only needs to be done occasionally. Please keep a log detailing when each intermittent maintenance procedure was last performed. For detailed guidance and visual assistance, visit formlabs.com/support.



- Formlabs provides instructions to advise skilled and unskilled persons in installing, operating, and maintaining the Form Studio 1. The Form Studio 1 shall only be maintained by a qualified and trained person. Contact Formlabs Support or a certified service provider for any additional guidance.
- Unauthorized disassembly or repair procedures may damage the machine and void the warranty.
- Wear personal protective equipment (PPE) when performing maintenance tasks. Use tools only as described.
- Disconnect the machine from its power source before maintenance. Moving parts present crushing and tangling hazards.

6.1 Tools and supplies

Only use tools, chemicals, or procedures to maintain the Form Studio 1 that are outlined in this manual, by prompts on the printer's touchscreen, and formlabs.com/support. Do not use any tools, chemicals, or unapproved procedures with the Form Studio 1 unless otherwise instructed to do so by Formlabs Support or a certified service provider.

- **Cleaning sheet**
 - For cleaning the interior of the resin tank.
- **Cotton swabs**
 - For cleaning small resin spills.
- **General purpose cleaner (e.g., glass cleaner) and/or soapy water**
 - For cleaning the printer's cover, outer shells, and display.
- **Isopropyl alcohol (IPA), 90% or higher**
 - For cleaning the printer's optical components and build platform.
 - For cleaning the work surface and tools.
- **Lithium grease for ball bearings**
 - For lubricating the Z-axis screw.
- **Low-fiber paper towels**
 - For cleaning the work surface and tools.
 - For protecting sensitive components.
 - For wiping residue grease, resin, or solvent.

- **Non-abrasive microfiber cloth**
 - For cleaning the printer's cover, outer shells, and display.
- **Optical cleaning cloths**
 - For cleaning the printer's optical components.
- **Rubber bulb air blower**
 - For removing dust from the Light Processing Unit (LPU).
- **Plastic tank scraper**
 - For inspecting and cleaning the interior of the resin tank.

6.2 Inspecting and maintaining the printer

Inspect and maintain your printer and consumables to ensure that your printer continues to function properly and produce high print quality. For detailed guidance and visual assistance, visit formlabs.com/support.

6.2.1 Before each use

Inspect	Refer to	Section
Installation environment	Operational environment	5.1
Build platform	Cleaning the build platform	6.3.1
Resin cartridge bite valves	Inspecting the bite valves	6.3.2
Resin resin tank interior	Inspecting the resin tank	6.6.1

6.2.2 Periodic maintenance

Inspect	Refer to	Section
Cover	Inspecting the cover	6.4.1
Display	Inspecting the display	6.4.2
Drip catcher	Inspecting the drip catcher	6.4.3
Shells	Inspecting the shells	6.4.4
Z-axis screw	Maintaining the Z-axis screw	6.4.5
VOC Extractor filters	Replacing the VOC Extractor filters	6.4.6

6.3 Tasks between uses

Perform the following maintenance tasks between each print. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

6.3.1 **Cleaning the build platform**

The build platform is the aluminum base that provides a surface for prints to attach to. Over time, the build platform develops scratches from part removal, which can assist with print adherence. Avoid exposing a resin-covered build platform to light directly after a print completes. Liquid resin cures in ambient light, and resin left on the surface of a build platform renders it unusable.

Required supplies

Isopropyl alcohol
Low-fiber paper towels
Non-reactive nitrile gloves

When switching to a different resin type between prints or storing the build platform for future use, clean the surface and edges of the build platform with isopropyl alcohol and low-fiber paper towels. If you are starting a new print immediately using the same resin type, there is no need to remove liquid resin.

6.3.2 **Inspecting the bite valve**

The bite valve is located on the underside of each resin cartridge. This flexible seal regulates resin dispensing. Resin flows out of the opening in the center of the bite valve when the cartridge dispense arm squeezes the bite valve open. When switching to a different resin cartridge, inspect the bite valve for any cured resin or damage.

In some rare occasions, the cartridge bite valve may not open even after being squeezed by the dispense arm. Repeated warnings of insufficient resin level at the start of a print is an indication that this is happening. Check the bite valve and squeeze it several times with gloved fingers until it opens.

6.3.3 **Inspecting the resin tank interior**

Refer to section [6.6.1 Inspecting the resin tank](#).

6.4 Periodic maintenance

Perform the following maintenance tasks periodically or as needed. For detailed guidance and visual assistance, visit formlabs.com/support.

6.4.1 **Inspecting the cover**

Visually inspect the cover for traces of resin, cracks, or other damage. Clean the cover with a non-abrasive microfiber cloth and soapy water or a general purpose cleaner, such as glass cleaner. In the case of a crack that allows light to pass through the cover, install a new cover. Refer to section [8. Disassembly and repair](#) for more information.

6.4.2 **Inspecting the display**

Visually inspect the display for any traces of resin. Clean the display with a non-abrasive microfiber cloth and general purpose cleaner, such as glass cleaner.

6.4.3 **Inspecting the drip catcher**

Visually inspect the drip catcher under the resin cartridge for any traces of resin. Clean the

drip catcher with isopropyl alcohol and low-fiber paper towels.



Moving parts. Disconnect the machine from its power source. Moving parts present crushing and tangling hazards.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

Required supplies

Isopropyl alcohol
Low-fiber paper towels
Non-reactive nitrile gloves

To inspect and clean the drip catcher:

1. Put on a new, clean pair of nitrile gloves.
2. Disconnect the printer from its power source.
3. Remove the build platform, resin tank, and resin cartridge to access the drip catcher, which is the area below the tank spout or under the cartridge dispense arm.
4. Visually inspect the drip catcher.
5. Clean any traces of resin or contamination with isopropyl alcohol and low-fiber paper towels.

6.4.4 Inspecting the shells

Visually inspect the rear, front and side shells for traces of resin or other damage. Clean any traces of resin or contamination with soapy water and low-fiber paper towels.

6.4.5 Maintaining the Z-axis screw

The build platform mount rides along the Z-axis lead screw. The screw must be lubricated for the build platform mount to move smoothly and quietly.



Moving parts. Disconnect the machine from its power source. Moving parts present crushing and tangling hazards.

6.4.5.1 Inspecting the Z-axis screw

Visually inspect the Z-axis screw to ensure that the build platform mount moves smoothly and that there is no debris built up in the screw threads.

Required supplies

Microfiber cloth or low-fiber paper towels
Lithium grease for ball bearings
Non-reactive nitrile gloves

To inspect the Z-axis screw:

1. Put on a new, clean pair of nitrile gloves.
2. Rotate the Z-axis screw. Depending on your printer's firmware version, there is a maintenance option, accessible through the printer's touchscreen, that moves the build platform mount along its screw. For detailed guidance and visual assistance, visit formlabs.com/support.
3. As the build platform mount moves up and down, listen, look, and feel to check for areas that emit noise or where the build platform mount sticks or moves less smoothly.
4. Visually inspect the lead screw to ensure that no debris or foreign objects obstruct the lead screw or path of motion.
5. Visually inspect the lead screw to ensure that lubricant covers the full length of the screw threads.
6. In the case that the screw is missing lubricant or if the Z-axis emits intermittent noises when printing, lubricate the lead screw using the instructions below.

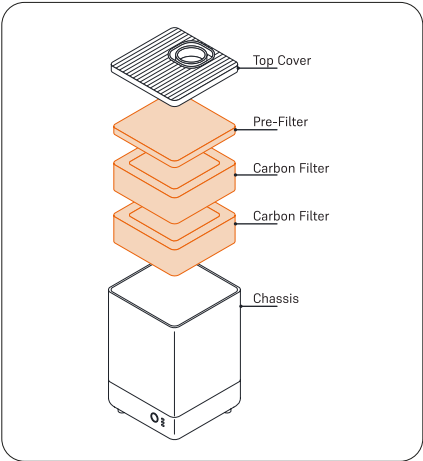
6.4.5.2 Lubricating the Z-axis screw**To lubricate the Z-axis screw:**

1. Put on a new, clean pair of nitrile gloves.
2. Disconnect the printer from its power source.
3. Remove the build platform and resin tank.
4. Place a clean low-fiber paper towel over the LPU.
5. Remove old and dirty grease from the screw using a paper towel.
6. Apply a light layer of lithium grease specifically intended for use with ball bearings evenly along the screw. Apply the lubricant directly from the container or by dabbing lubricant onto the screw with a gloved hand.
7. Rotate the screw. Depending on your printer's firmware version, there is a maintenance option, accessible through the printer's touchscreen, that moves the build platform mount along its screw. For detailed guidance and visual assistance, visit formlabs.com/support.
8. As the build platform mount moves up and down, listen, look, and feel to check for areas that emit noise or where the build platform mount sticks or moves less smoothly.
9. Wipe the screw with a microfiber cloth or low-fiber paper towel to remove excess lubricant.

6.4.6 **Replacing the VOC Extractor filters**

The VOC Extractor is a Form Studio 1 accessory (sold separately) that extracts and filters resin VOCs through the exhaust port on the back of the printer. When used with Form Studio 1 and Alpha Resins, the ecosystem meets UL Greenguard standards.

The VOC Extractor draws air through one pre-filter and two activated carbon filters. The pre-filter removes dust and large particles so the carbon filters can run effectively. All three filters are replaceable. Only use the machine with the pre-filter and both activated carbon filters installed.



6.4.6.1 **Checking and replacing the pre-filter**

Check the pre-filter regularly. Lift the top cover off of the machine to access the pre-filter. Replace if it is covered in dust. Do not wash or reuse the prefilters or carbon filters.

6.4.6.2 **Replacing the activated carbon filters**

The two activated carbon filters are rated to last two weeks (336 hours) of active use. Replace both filters after this time period or when reminded on the printer touchscreen. The carbon filters are located beneath the pre-filter; lift the top cover off of the machine and remove the pre-filter to access them.

6.5 **Planned maintenance**

Perform the following maintenance tasks at the frequency specified in the table below. For detailed guidance and visual assistance, visit formlabs.com/support.

Maintenance tasks shall be done according to the following plan:

Task	Frequency	Refer to	Section
Updating the firmware	When PreForm indicates a new firmware version is available.	Updating the firmware	6.5.1
Filtering the resin	When a cleaning sheet does not sufficiently remove particles from the resin tank.	Filtering the resin	6.5.2
Replacing the resin cartridge	When the resin cartridge is empty, after 1 liter of printing.	Replacing the resin cartridge	6.5.3
Cleaning the LPU release texture	When the LPU release texture is smudged or contaminated.	Cleaning the rear mesh filter	6.6.4

Task	Frequency	Refer to	Section
Cleaning the LPU release texture	When the LPU release texture is smudged or contaminated.	Cleaning the LPU release texture	6.5.4
Replacing the resin tank	When wear on the bottom of the resin tank begins to affect print quality. When the printer indicates that the resin tank has reached the end of its usable lifetime.	Replacing the resin tank	6.6.3
Lubricating the Z-axis screw	Every 12 months, if the build platform mount does not move smoothly, or emit intermittent noises when printing.	Maintaining the Z-axis screw	6.4.5

6.5.1 Updating the firmware

Formlabs regularly releases updated firmware to fix bugs and improve functionality. Review the PreForm and firmware release notes to learn more about the improvements that come with each version's release. For detailed guidance and visual assistance, visit formlabs.com/support.

6.5.2 Filtering the resin

Filter resin to remove contamination and very small particulates of partially cured resin. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

Required supplies

Non-reactive nitrile gloves
Opaque container suitable for storing resin
Paint or oil filters ("fine" or 190 micron mesh size)

To filter the resin:

1. Put on a new, clean pair of nitrile gloves.
2. Suspend the paint or oil filter (with a "fine" or 190 micron mesh size) above an opaque container suitable for storing resin. Use a ring stand to reduce the risk of spilling resin.
3. Remove the resin tank.
4. Hold the edge of the resin tank, taking care not to touch the resin tank's underside.
5. Tilt the resin tank with the tank spout aligned directly above the filter.
6. Pour the resin through the filter, into the opaque plastic container.
7. Gently scrape the interior of the resin tank with the plastic tank scraper to pull resin toward the tank spout.
8. Once all resin passes through the filter, pour the resin back into the resin tank.
9. To dispose of the used filter, refer to section [9.1 Disposal of resin and accessories](#).

6.5.3 Replacing the resin cartridge

Replace the resin cartridge to change materials between prints or when a resin cartridge is empty.

To replace the resin cartridge:

1. Press the vent cap closed.
2. Hold the resin cartridge by its handles.
3. Lift the resin cartridge out of the printer.
4. Store or dispose of the resin cartridge. For detailed guidance and visual assistance, visit formlabs.com/support.
5. To install a new resin cartridge, refer to section [4.10 Inserting the resin cartridge](#).



Store the resin cartridges upright with the valve covers installed to protect storage surfaces from resin.

6.5.4 Cleaning the LPU release texture

The texture on the top of the LPU reduces forces on the printed parts, resin tank, and printer between layers. Maintain a clean LPU to prevent print failures and damage to the resin tank. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

Required supplies

Isopropyl alcohol
Non-reactive nitrile gloves
Non-abrasive wipes
Rubber bulb air blower

To clean the release texture:

1. Put on a new, clean pair of nitrile gloves.
2. Grip the top of a non-abrasive wipe with a gloved hand. Soak the bottom half of the wipe with clean isopropyl alcohol.
3. Drag the isopropyl alcohol soaked wipe slowly across the surface of the LPU. It should take 20–30 seconds to traverse the width of the LPU.
 - Do not contact the release texture with your hand or apply pressure to the wipe.
 - For debris and resin near the edge of the LPU, always drag the wipe towards the edge of the LPU to avoid spreading the contaminant.
4. Wait for the isopropyl alcohol on the release texture to dry.
5. Repeat this process several times until the contaminant has been removed.

6.6 Maintaining the resin tank

The resin tank is the primary container for holding resin after it is dispensed from the resin cartridge. Resin is cured onto the build platform when the light from the backlight passes through the bottom of the resin tank. Be sure to handle and maintain the resin tank properly between each print. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.



Spill hazard: Resin may spill over the tank walls if the resin tank tilts more than 5–10 degrees. Hold the resin tank level with two hands. To inspect and clean the resin tank's underside, empty the resin tank and/or take care to avoid spilling resin outside the resin tank.



Sharp and metal tools can damage the resin tank and affect print quality, leading to print failures and/or a resin spill. Do not use sharp or metal tools like the removal tool or flush cutters to inspect or clean the resin tank.

6.6.1 Inspecting the resin tank

For the best results, inspect resin tanks regularly and, if necessary, clean them. Dirty optical surfaces and damage to the resin tank may cause print failures.

Required supplies

Non-reactive nitrile gloves
Mixer/plastic tank scraper

To inspect the resin tank interior:

1. Put on a new, clean pair of nitrile gloves.
2. Use the plastic tank scraper to inspect the resin and the resin tank interior. Refer to section [7.3 Cleaning after a failed print](#), steps 1–3.
3. Check for the following issues that may lead to print failures or any excessive wear that requires switching to a new resin tank:
 - Cured resin on the bottom of the tank
 - Debris or failed prints in the resin
 - Cuts or gouges in the bottom of the tank
4. If necessary, follow cleaning instructions to remove cured resin, failed prints, debris, and settled pigment in the resin tank.
 - For moderate wear or scratches on the bottom of the tank, use the Layout tool in PreForm to move the model outside the worn or scratched area.
 - In the case of excessive wear or scratches on the bottom of the tank, switch to a new

resin tank. Refer to section [6.6.3 Replacing the resin tank](#).

To inspect the resin tank exterior:

1. Put on a new, clean pair of nitrile gloves.
2. Visually inspect the resin tank exterior (bottom of the resin tank) for fingerprints, dust, contamination, and scratches, which cause the light from the backlight to diffuse and lead to print failures or inaccuracies.
3. If necessary, use the cleaning instructions to remove any fingerprints, dust, or contamination on the bottom of the resin tank.
 - For moderate wear or scratches on the bottom of the resin tank, use the **Layout** tool in PreForm to move the model outside the worn or scratched area.
 - In the case of excessive wear or scratches on the bottom of the resin tank, switch to a new resin tank. Refer to section [6.6.3 Replacing the resin tank](#).

To inspect the tank frame:

1. Put on a new, clean pair of nitrile gloves.
2. Visually inspect the tank frame for contamination or resin. Resin on the tank frame may result in print failures and/or damage to the release texture. If the release texture is contaminated, refer to section [6.5.4 Cleaning the LPU release texture](#).

6.6.2

Cleaning the resin tank

Keep the resin tank clean and free of cured resin and other debris to ensure print quality and extend the lifetime of the printer.

Required supplies		
Resin tank interior	Resin tank exterior	Tank frame
• Cleaning sheet • Non-reactive nitrile gloves • Mixer/plastic tank scraper • Isopropyl alcohol • Optical cleaning cloths	• Isopropyl alcohol • Non-reactive nitrile gloves • Optical cleaning cloths	• Low-fiber paper towels • Non-reactive nitrile gloves

To clean the resin tank interior:

- **Print failures:**
 - Refer to section [7.3 Cleaning after a failed print](#).
 - Clean the resin tank interior using a cleaning sheet or manually with the plastic tank scraper.
- **Debris or contamination in the resin:**
 - Refer to section [6.5.2 Filtering the resin](#).
 - Clean, debris-free resin helps avoid print failures, which may damage the resin tank.
- **Settled pigment in the resin:**
 - Resin pigment can settle onto the interior of the resin tank. To supplement the mixer's function, slide the plastic tank scraper against the bottom of the resin tank to remove settled pigment.

To clean the resin tank exterior (bottom of the resin tank):

1. Put on a new, clean pair of nitrile gloves.
2. Empty the liquid resin from the resin tank into an opaque container.
3. Apply a small amount of clean isopropyl alcohol to an optical cleaning cloth.
4. Wipe the resin tank exterior to remove contamination or resin.

To clean the tank frame:

1. Put on a new, clean pair of nitrile gloves.
2. Wipe the tank frame with a low-fiber paper towel to remove contamination or resin.

6.6.3

Replacing the resin tank

Replace the resin tank to change materials between prints or when a resin tank is damaged or needs to be cleaned.

To replace the resin tank:

1. Put on a new, clean pair of nitrile gloves.
2. Remove the build platform from the printer.
3. Unlatch the resin tank latches.
4. Hold the side walls of the resin tank.
5. Lift the resin tank out of the printer.
6. Place the lid on the resin tank.
7. To install a new resin tank, refer to section [4.8 Inserting the resin tank](#).

To dispose of the old resin tank, refer to section [9.1 Disposal of resin and accessories](#).

7. TROUBLESHOOTING

7.1 Collecting diagnostic logs

The Form Studio 1 maintains diagnostic logs to provide detailed information about the machine that may expedite issue investigation. After experiencing any error or unusual behavior on the Form Studio 1, include the diagnostic logs with other relevant observations and details when contacting Formlabs Support or a certified service provider. The options for sharing diagnostic logs vary depending on the machine's connection type. For detailed guidance and visual assistance, visit formlabs.com/support.

7.2 Performing a factory reset

On some occasions, a factory reset may correct unusual printer behavior. Unusual behavior may include unknown error messages, incomplete firmware updates, an unresponsive touchscreen, or trouble connecting to PreForm. For detailed guidance and visual assistance, visit formlabs.com/support.



Do not perform a factory reset immediately before contacting Formlabs Support or a certified service provider. The stored diagnostic information may be helpful to Formlabs Support or a certified service provider to assist with troubleshooting. A factory reset erases diagnostic information and custom settings, including uploaded print jobs and networked connections.

7.3 Cleaning after a failed print

Occasionally, a print may fail to complete. A failed print may leave small, partially-cured pieces of resin floating in the resin tank or hard cured resin stuck to the interior of the resin tank. Inspect the resin tank after every print. Remove debris after a failed print. For detailed guidance and visual assistance, visit formlabs.com/support.



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.



Sharp and metal tools can damage the resin tank and affect print quality, leading to print failures and/or a resin spill. Do not use sharp or metal tools like the removal tool or flush cutters to inspect or clean the resin tank.

7.3.1 Removing cured resin with the cleaning sheet

Formlabs Low Force Display (LFD)[™] printers can print a cleaning sheet, which is a thin, flat printed part that binds loose debris together. The cleaning sheet adheres to the resin tank for removal using the cleaning sheet removal tool. Print a cleaning sheet after a failed print to more easily remove cured resin and other debris.

Required supplies

Non-reactive nitrile gloves
Paper towels
Cleaning sheet removal tool

To remove cured resin with the cleaning sheet:

1. Put on a new, clean pair of nitrile gloves.
2. Open the printer cover.
3. Place the flat base of the cleaning sheet removal tool in a corner of the resin tank.
4. Close the printer cover.
5. Tap the wrench icon on the **Home** screen. The **Maintenance** menu appears.
6. Tap **Cleaning Sheet**. The **Print Cleaning Sheet** screen appears.
7. Tap **Clean**. The cleaning sheet begins printing.
8. Prepare several paper towels nearby to collect cured and uncured resin.
9. Once the cleaning sheet is complete, open the printer cover.
10. Grip the cleaning sheet removal tool handle and carefully pull it upwards to peel the cleaning sheet away from the resin tank. Do not pull or tug on the tool suddenly. If necessary, pull at different angles to separate the cleaning sheet from the resin tank film.
11. Lift the cleaning sheet out of the resin tank and a) rest it on paper towels or b) hang it on the build platform using the cleaning sheet removal tool to drain the excess resin back to the resin tank before putting it on paper towels.
12. Separate the cleaning sheet removal tool from the cleaning sheet.
13. To dispose of the cleaning sheet, refer to section [9.1 Disposal of resin and accessories](#).
14. Clean the cleaning sheet removal tool and work surface.

7.3.2

Removing cured resin manually

The Form Studio 1 comes with a plastic mixer, which can be used to remove cured resin from the interior of the resin tank without damaging it. Remove individual pieces of cured resin from the resin tank with the plastic tank scraper.

Required supplies

Non-reactive nitrile gloves
Paper towels
Mixer/plastic tank scraper

To manually remove cured resin:

1. Put on a new, clean pair of nitrile gloves.
2. Remove the build platform and resin cartridge from the printer.
3. Remove the resin tank from the printer. Place the resin tank on a clean, flat surface.
4. Prepare several paper towels nearby to collect cured and uncured resin.
5. Rest the edge of the plastic mixer on the interior of the resin tank. Skim the surface. Search for obstructions that indicate cured resin stuck to the resin tank.
6. To remove cured resin:
 - a. Slide the edge of the plastic mixer under the edge of the cured resin.

- b. Pry with moderate pressure. Slide or pry from different angles or increase pressure to detach the cleaning sheet from the resin tank. Do not press directly into the resin tank with the edge of the tank scraper.
 - c. Lift the cured resin out of the resin tank.
 - d. Rest the cured resin on paper towels.
7. To dispose of cured resin, refer to section [9.1 Disposal of resin and accessories](#).
 8. Clean the plastic mixer and work surface.

7.3.3 Cleaning the mixer/plastic tank scraper

Clean the plastic mixer after each use to remove excess liquid resin and prevent contamination.

Required supplies

Wiping	Washing
• Isopropyl alcohol • Low-fiber paper towels • Non-reactive nitrile gloves	• Form Studio Wash+Cure, Form Wash, or Form Wash L • Isopropyl alcohol • Non-reactive nitrile gloves

To wipe the plastic tank scraper:

1. Put on a new, clean pair of nitrile gloves.
2. Apply clean isopropyl alcohol to a clean low-fiber paper towel.
3. Wipe the surface of the mixer/plastic tank scraper to remove resin.
4. Allow the mixer/plastic tank scraper to air dry after wiping.

To wash the mixer/plastic tank scraper:

1. Put on a new, clean pair of nitrile gloves.
2. Rest the mixer/plastic tank scraper in the wash basket in the Form Studio Wash+Cure, Form Wash, or Form Wash L.
3. Wash the mixer/plastic tank scraper for five minutes. Increase the wash time for heavily-used solvent.
4. Allow the mixer/plastic tank scraper to air dry after washing.

7.4 Troubleshooting errors or abnormal activity

In the case of errors, abnormal activity, or print failures with the Form Studio 1, reference the following errors, causes, and proposed solutions. Complete the initial troubleshooting steps and carefully document all results. For detailed guidance and visual assistance, visit formlabs.com/support.

7.4.1 **Resolving abnormal functions during print setup**

Error	Cause	Solution
The bite valve does not dispense resin.	• The silicone material has sealed itself. • Resin may cure over the bite valve opening.	1. Press the vent cap closed and remove the resin cartridge from the printer. 2. Turn the cartridge upside down to inspect the bite valve. 3. Squeeze the bite valve a few times to open up the seal and enable resin flow. 4. If squeezing the bite valve does not enable resin flow, carefully use the tip of a pair of tweezers to push through the opening to enable resin flow. 5. If the bite valve seal remains closed after troubleshooting, contact Formlabs Support or a certified service provider for additional help. Submit photos of the bite valve seal with your request.
The orange Upload Print icon is not available in PreForm.	The printer may not be properly connected to the same LAN.	• Check for other open instances of PreForm. • Save any files before restarting PreForm. • Disconnect your printer from the LAN and reconnect to establish a proper connection.
Error messages • Error 6.3: Cartridge missing • Error 6.8 or Error 6.9: Tank missing	The printer cannot sense the inserted resin tank and/or cartridge.	1. Fully remove the resin tank and/or cartridge. 2. Reinsert the resin tank and/or cartridge.

7.4.2 **Resolving print failures and errors**

Print failures can manifest in different ways and originate from different causes. Check the model configuration in PreForm, the cleanliness of the optical surfaces, and the machine's operating condition according to section [6. Maintenance](#), including the proposed solutions below. Refer to our article on [diagnosing an SLA print failure](#) for help identifying and resolving specific print failure types.

If print failures persist after following these steps, contact Formlabs Support or a certified service provider for additional guidance. In order to introduce a known good variable to isolate any printing issues, run a Formlabs test print, for which the file is available on formlabs.com/support. Provide clear, focused photographs of the test print to help diagnose the issue.

Error	Cause	Solution
Delamination - Peeling or separation between printed layers OR - Pieces of cured parts float in the resin tank	- Model orientation, layout, and/or support issues - A print that has been paused for a long time - An older resin tank - A loose build platform - Contaminated optical surfaces	- Check the model in PreForm - Check for pauses in printing - Check the resin tank for debris or damage - Check the cleanliness of optical surfaces - Check the stability of the build platform
Non-adherence - Prints partially attached to the build platform OR - Prints completely non-existent on the build platform	- Printing without supports - The first layer of the part on the build platform is too small to withstand peel forces - Debris/damage in resin tank - Contaminated optical surfaces - Build platform height requires adjustment	- Print with a base and supports - Check that the first layer's surface area is sufficiently large - Check the resin tank for debris or damage - Check the cleanliness of optical surfaces - Check the build platform height - Use the Align Build Platform calibration tool on the touchscreen to adjust the parallelism of the build platform. Tap Settings > Tools > Align Build Platform and follow the on-screen instructions.
Overcompression The base printed onto the build platform is thinner than expected and/or very difficult to remove.	The initial layers fail to cure properly, due to insufficient space between the build platform and the resin tank.	- Increase the base height in PreForm's advanced settings - Check the build platform height - Use the Align Build Platform calibration tool on the touchscreen to adjust the parallelism of the build platform. Tap Settings > Tools > Align Build Platform and follow the on-screen instructions.

Error	Cause	Solution
Poor surface finish • Cured or partially cured resin forms thin, shelf-like structures that hang horizontally from a print OR • A rough, uneven, or bumpy surface texture forms on one or both sides of an otherwise successful print	Diffused light spreads the cure area beyond the appropriate limits for each layer outline, due to: • Expired resin • Debris/damage in the resin tank • Contaminated optical surfaces • Restricted resin flow due to improper model orientation or overly dense supports	• Check the resin's shelf life • Check the resin tank for debris or damage • Check the cleanliness of optical surfaces • Check for restricted resin flow
Undeveloped feature A void of missing material forms within a print and widens as the print builds away from the build platform.	• Debris/damage in resin tank • Model orientation, layout, and/or support issue • Contaminated optical surfaces	• Check the resin tank for debris or damage • Check the model in PreForm • Check the cleanliness of optical surfaces • Check the function of the Backlight Unit and LPU. Tap Settings > Tools > Inspect optics and follow the on-screen instructions. A properly-functioning Backlight Unit and LPU will be uniformly lit or uniformly dark during the test.
Holes or lines Models have linear cuts or holes.	Obstructions in the optical path block the backlight from curing resin in a specific part of the model.	• Check the resin tank's underside for debris or damage • Check the cleanliness of optical surfaces

8. DISASSEMBLY AND REPAIR



All steps that involve opening the machine and/or investigating internal components should be done by skilled persons.

Visit formlabs.com/support to find repair instructions and videos, including how to disassemble or remove the shells.

Task	Frequency
Replacing the Light Processing unit	• When the LPU has visible damage or defects. • When the LPU no longer masks the light from the Backlight Unit correctly. • When advised by Formlabs Support or a certified service provider.
Replacing the Backlight Unit	• When the backlight has visible bright or dark spots. • When advised by Formlabs Support or a certified service provider.
Replacing the touchscreen	When the touchscreen becomes inoperable or does not respond to touch inputs.
Replacing the cover	When advised by Formlabs Support or a certified service provider.

9. RECYCLING AND DISPOSAL

9.1 Disposal of resin and accessories



Skin irritant: Resin and solvent may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.

9.1.1 Liquid resin

To dispose of pure resin (resin that has not been cured or dissolved in solvent), add this waste to your chemical waste stream.



Environmental hazard: Refer to the safety data sheet (SDS) and local authorities for guidance on disposing of resin and solvent. Liquid resin (whether pure liquid, dissolved in solvent, or partially cured) may be classified as hazardous waste in your region and shall be disposed of with care.

If you do not have a chemical waste stream:

1. Put on a new, clean pair of nitrile gloves.
2. Pour a small amount of resin into a labeled container suitable for storing resin.
3. Leave the container outside, exposed to sunlight to cure for 1–10 days. Expose resin to 405 nm light and heat for the most effective curing. The liquid resin cures to solid material when exposed to light and heat.
4. Dispose of the fully cured resin and container in the household waste.

9.1.2 Cured resin or cleaned prints

Dispose of cleaned prints and cured (hardened) resin in the household waste. Cleaned prints and cured resin cannot be recycled.

9.1.3 Empty resin cartridges

In the United States, empty resin cartridges are considered RCRA empty by EPA standards and can be disposed of as household waste. Regulations that control waste are often regional and vary by jurisdiction. Check with applicable local agencies to ensure that you are disposing of empty resin cartridges properly.

OPTIONAL: Triple rinse resin cartridges with clean solvent to remove traces of excess resin from the resin cartridge interior. Add the resulting used solvent to your chemical waste stream in accordance with all applicable regulations.

9.1.4 Resin tanks

Dispose of a resin tank when it is damaged, has reached the end of its lifetime, or is otherwise unsuitable for use.

To dispose of a resin tank:

1. Put on a new, clean pair of nitrile gloves.
2. Remove the build platform from the printer.

3. Open the two latch handles securing the resin tank in the printer.
4. Lift the resin tank out of the printer.
5. Transfer or dispose of the remaining resin.
 - Pour the resin from the old resin tank to a new resin tank or another container.
 - If there is debris or cured parts in the resin, filter the resin before transferring it to a new resin tank. Refer to section [6.5.2 Filtering the resin](#) for more information.



Pouring resin back into the original resin cartridge may risk contaminating the resin cartridge with cured resin pieces or debris, which can cause print failures.

6. Use a paper towel to wipe any remaining resin off the old resin tank.
7. Place the old resin tank in sunlight (a window sill is fine) or UV light to cure excess resin, and dispose of properly once cured.

9.2 Disposal of solvent

Safe and appropriate disposal methods of used solvent vary by location.

To safely dispose of used solvent:

1. Consult the safety data sheet (SDS) from the solvent supplier as the primary source of information.
2. Research the approved methods of disposal for your area. This will most likely involve hiring a waste disposal service. For smaller amounts, check with a hazardous disposal service to see if they have any suggestions for removal.
3. Inform your waste disposal service that your bottle contains solvent with small amounts of methacrylated monomers and oligomers (unpolymerized plastic resin) and trace amounts of photoinitiator. Have a copy of the Formlabs resin safety data sheet (SDS) on hand in case the disposal service attendant needs more information.

9.3 Recycling of solvent

For large volumes of solvent, consider using a solvent recycling system, which offers a cost-effective and more environmentally responsible alternative to paying for waste solvent disposal services. Solvent recycling systems use distillation and fractionation processes to remove solutes from waste solvents, making it possible to reuse the solvent to wash prints. The recycled solvent may still have small amounts of monomers in it. Recycling solvent reduces waste disposal costs, emissions that are required to produce solvents, and the cost of purchasing solvent.

9.4 Disposal of electronic components

The symbol on the product, the accessories, or packaging indicates that this device shall not be treated as nor disposed of with household waste. When you decide to dispose of this product, do so in accordance with environmental laws and guidelines. Dispose of the device via a collection point for the recycling of waste electrical and electronic equipment. By disposing of the device in the proper manner, you help to avoid possible hazards for the environment and public health that could otherwise be caused by improper treatment of waste equipment. The recycling of materials contributes to the conservation of natural

resources. Therefore do not dispose of your old electrical and electronic equipment with the unsorted municipal waste.

9.5 Disposal of packaging waste

The packaging is made of cardboard and plastic-based materials. Dispose of packaging through waste and recycling facilities. By disposing of the packaging waste in the proper manner, you help avoid possible hazards for the environment and public health.



Save the Form Studio 1's packaging including any inserts for transporting the machine. Original packaging is required for warranty service and designed to be kept and reused for transportation or shipping.

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11. GLOSSARY

Term	Meaning
Backlight Unit	A set of 405 nm LEDs emit light upwards through lenses, the Light Processing Unit, and the bottom of the resin tank to cure liquid resin.
Bite valve	A flexible, rubber seal that regulates resin dispensing. Resin flows out when the cartridge dispense arm squeezes the bite valve open.
Build platform—see also, platform lock	The aluminum base provides a surface for prints to attach to. Over time, the build platform develops scratches from part removal, which can assist with print adherence.
Build platform mount	The metal arm that the build platform slides onto.
Build platform latch	A lever that is part of the locking mechanism that secures the build platform. Contact Formlabs Support or a certified service provider before adjusting the platform lock, as improper adjustment can damage the machine.
Cartridge dispense arm	Plastic hooks press against the bite valve to dispense resin out of the resin cartridge into the resin tank.
Cartridge RFID sticker	Each resin cartridge has an RFID sticker attached to the cartridge skirt. The printer reads the RFID sticker to detect the unique cartridge ID and resin type.
Cleaning sheet	A thin, flat printed part that binds loose resin and other debris together in the resin tank for removal and disposal.
Cover	The printer lid, made of a strong, orange-tinted material, blocks exposure to the curing light and protects the resin from curing due to ambient light.
Display assembly	The display assembly contains the touchscreen and the display circuit board. A ribbon cable connects the display assembly to the motherboard.
Display cable	A flat, flexible cable connects the display assembly to the motherboard.
Display PCB	This circuit board, separated from the main motherboard, controls the touchscreen.
Ethernet port	The Form Studio 1 can connect to a network via Ethernet. The port is connected to the motherboard and can be accessed from the back of the machine.
Fans	Cooling fans pull warm air away from electronic components: the backlight, the LCD, and the power supply

Term	Meaning
Flush cutters	Snip to separate prints from their supports. Cut with the flat side on the prints' surface for minimal support marks.
Heater	The resin in the resin tank is heated by resistive heaters located below the resin tank.
Interlock magnets	The interlock sensor detects these magnets to determine when the cover is closed. This safety mechanism triggers the Cover Open message on the touchscreen and disables the backlight when the cover is open.
Leveling disc	Slide the leveling disc included around one of the leveling feet and rotate to raise or lower the printer.
Leveling feet	Each corner of the printer is supported by a rubber foot that is threaded into the bottom of the machine. When prompted by the touchscreen, use the leveling disc to raise or lower each foot to ensure that the printer is acceptably level.
LevelSense	An ultrasonic sensor, located above the rear left-hand corner of the resin tank detects the amount of resin in the resin tank.
Low Force Display (LFD) [™] Print Engine	An advanced form of stereolithography (SLA) to cure solid isotropic parts from liquid resin.
Light Processing Unit (LPU)	The LPU blocks the 405 nm light from the backlight to selectively expose and cure each layer of a print.
LPU release texture	The texture on the top of the LPU reduces forces on the printed parts, resin tank, and printer between layers.
Metal scraper	Pry under the raft to remove prints from the build platform.
Mixer/plastic Tank Scraper	Use the plastic mixer to inspect the resin tank and mix resin before starting a print.
Motherboard	The main circuitry through which all systems in the printer communicate.
Optical cleaning cloth	Disposable lint-free, non-woven microfiber cloths for cleaning the printer's optical components. Do not reuse an optical cleaning cloth; dispose of after each use.
Power supply	The Form Studio 1 utilizes a 100–240 VAC power supply. The internal power supply converts line power to DC power for the printer.
Resin cartridge	A container that holds the resin before dispensing into the resin tank. Shake resin cartridges periodically to keep resin well mixed.
Resin tank	Resin is dispensed out of the resin cartridge into the resin tank. During a print, light passes upwards through the bottom of the resin tank and cures resin onto the build platform to form a printed part. Only use approved materials and procedures to clean the resin tank.

Term	Meaning
Shell	Seven protective external casings protect the printer's internal components: Right tower shell: casing for the right side of the printer Left tower shell: casing for the left side of the printer. Back panel: casing for the back face of the printer. Cover: printer lid, made of an orange-tinted material; hinged to the top of the printer. Front shell: casing that covers the bottom of the front face of the printer (below the cover); also includes the display assembly. Halo: casing for the top rear part of the printer, covering the Z-tower Stool: casing for the bottom part of the printer
Resin tank handles	Handles on each side of the resin tank allow for easy insertion, removal, and carrying of the resin tank. Use the tank handles to avoid touching the resin tank's underside, as fingerprints leave smudges that obstruct the optical path.
Resin tank latch	The resin tank latch holds the resin tank in place during printing.
Resin tank lid	Each resin tank includes a lid for storing and protecting the resin tank when not in use.
Resin tank spout	A spout at the right of the resin tank sits underneath the cartridge dispense hole and receives resin from the resin cartridge.
Touchscreen	The LCD capacitive touch user interface displays print information, settings, and error messages.
USB port	The Form Studio 1 can connect to a computer via USB. The port is connected to the motherboard and can be accessed from the back of the machine.
Vent cap	The lid at the top of the cartridge allows for air interchange, enabling proper resin dispensing. Press the vent cap open prior to printing.
VOC Extractor	The VOC Extractor is a Form Studio 1 accessory (sold separately) that extracts and filters resin VOCs through the exhaust port on the back of the printer. When used with Form Studio 1 and Alpha Resins, the ecosystem meets UL Greenguard standards.
Wi-Fi antenna	The internal Wi-Fi antenna enables the Form Studio 1's wireless connectivity.
Z-axis lead screw	The Z-axis lead screw is a threaded rod that controls the vertical motion of the build platform mount.
Z-tower	This vertical tower at the back of the machine provides support for many components of the Form Studio 1. The build platform is raised and lowered along the Z-axis, inside the Z-tower.

12. PRODUCT COMPLIANCE

The Form Studio 1 complies with the following electrical and photobiological safety standards:

Electrical

- IEC 62368-1:2023
- UL 62368-1:2025
- CSA C22.2 No. 62368-1:2025
- EN IEC 62368-1:2024
- AS/NZS 62368.1:2022
- J62368-1 (2023)

Photobiological

- IEC 62471:2006

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