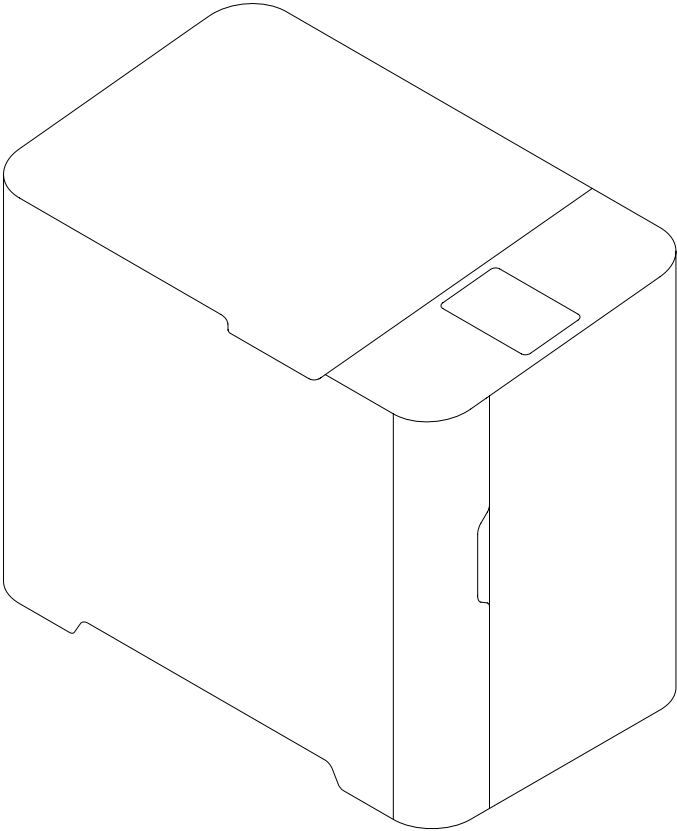


Manual | Form Wash L



Installation and Usage Instructions

Form Wash L

Large-format Desktop Stereolithography
(SLA) Print Cleaner

Original English instructions

Read this manual carefully and keep it for future reference.

November 2021

REV 01

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Read and understand this manual and its safety instructions before using the Form Wash L. 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
Nov 2021	REV 01	Initial publication

1 Preface

Congratulations on purchasing the Form Wash L. On behalf of the Formlabs team, we thank you for your purchase.

The Form Wash L is a large-format stereolithography (SLA) print cleaner. The Form Wash L removes uncured resin from the surface of printed parts by simultaneously soaking and moving them in a solvent. The Form Wash L uses either isopropyl alcohol (IPA), tripropylene glycol monomethyl ether (TPM), or water.

This manual explains how to set up, use, and properly maintain the Form Wash L, 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 Wash L. Supervise young or inexperienced users to ensure enjoyable and safe operation.

1.1 Read and retain instructions

Read and understand this manual and its safety instructions before using the Form Wash L. 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 instructions to avoid fire, explosions, electric shocks, or other hazards that may result in damage to property and/or severe or fatal injuries.

The Form Wash L 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 Wash L 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 **authorized resellers** 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 support.formlabs.com to:

- Access the latest version of all Formlabs product documentation.
- Contact [Formlabs Support](https://support.formlabs.com) to request documentation, manuals, 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](https://support.formlabs.com) or a [certified service provider](#) for product support. For products

purchased from authorized resellers, contact the original service provider for assistance before contacting Formlabs 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

AdjectiveAnimal.

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 any support or service requests, including product information, technical assistance, or assistance with instructions, contact [Formlabs Support](#):

support.formlabs.com

USA

Formlabs, Inc.
35 Medford St.
Somerville, MA, USA, 02143

Germany

Formlabs GmbH
Nalepastrasse 18
12459 Berlin, Germany

1.2.2

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/support/terms-of-service

EU (EN)

formlabs.com/eu/terms-of-service

EU (DE)

formlabs.com/de/support/terms-of-service/eu

EU (FR)

formlabs.com/fr/support/terms-of-service/eu

EU (ES)

formlabs.com/es/terms-of-service/eu

EU (IT)

formlabs.com/it/terms-of-service/eu

2 Introduction

2.1 Intended use

The Form Wash L automatically cleans uncured liquid resin from 3D printed parts. 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.



NOTICE

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.



WARNING

You shall independently verify the suitability of additive manufacturing, stereolithography (SLA), the Form Wash L, 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.



WARNING

Formlabs is not a manufacturer of medical devices. 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.



WARNING

Do not modify. The Form Wash L is intended for use as-is. Modifying the machine without explicit approval and directions from Formlabs or a certified service provider will void your warranty, and could potentially ruin the machine and cause you bodily harm.

2.2 Technical specifications

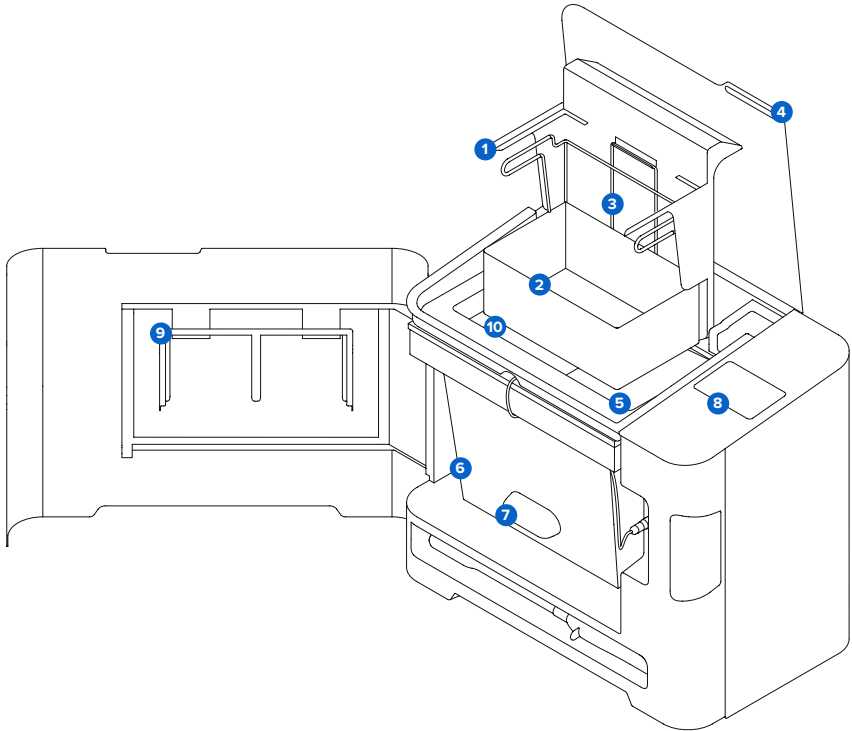
Visit formlabs.com for additional information on technical specifications.

Parameter	Unit
Unit	Form Wash L
Installation surface	Floor-standing unit
Minimum dimensions for convenient access (W × D × H)	100 × 120 × 120 cm 40 × 48 × 48 in
Product dimensions (W × D × H)	78 × 46 × 67 cm 30.7 × 18.1 × 26.4 in
Product weight	56.7 kg (without solvent) 125 lb (without solvent)
Wash bucket dimensions (W × D × H)	54 × 28 × 41 cm 21.3 × 11.0 × 16.1 in
Wash bucket capacity	43 L 11.4 US gal 42 L (11.1 US gal) minimum to reach build platform 12 L (3.2 US gal) minimum to submerge solvent monitor
Maximum part size (W × D × H)	33.5 × 20 × 30 cm 13.2 × 7.9 × 11.8 in
Compatible solvents	Isopropyl alcohol (IPA) Tripropylene glycol monomethyl ether (TPM) Water
Operating environment	18–28 °C 64–82 °F
Power requirements	Input (NA): 100–120 VAC, 50–60 Hz, 1 A max Input (EU): 220–240 VAC, 50–60 Hz, 1 A max
Connectivity	Wi-Fi: 2.4 GHz Ethernet: 100 Mbit USB: 2.0
Wi-Fi connectivity	Protocol: IEEE 802.11 b/g/n Frequency: 2.4 GHz Supported security: WPA/WPA2
Ethernet connectivity	RJ-45 Ethernet (10BASE-T/100BASE-TX) LAN port Connect with a shielded Ethernet cable (not included); minimum Cat5, or Cat5e or Cat6.
USB connectivity	USB (rev 2.0) B port with a USB A-B cable
Sound emission	Does not exceed 79.5 dB(A).
Unit control	Interactive touchscreen
Alerts	Touchscreen alerts

2.3 Product components

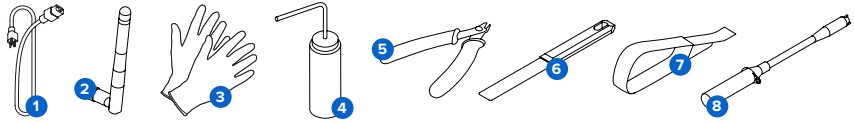
For detailed guidance and visual assistance, visit support.formlabs.com.

2.3.1 Form Wash L



- 1 **Platform mount:** Holds the build platform when washing parts on the platform.
- 2 **Basket:** Removable container holds parts to wash without the build platform.
- 3 **Basket mount:** A single hook secures the basket to raise and lower.
- 4 **Outer lid:** Limits solvent evaporation. Keep the lid closed when not in use.
- 5 **Inner lid:** A hinged, secondary lid opens and closes to contain solvent while allowing parts to be lowered or raised from the bucket.
- 6 **Wash bucket:** Removable container holds a maximum of 43 L (11.4 US gal) of solvent. A rotating impeller at the bottom circulates the solvent.
- 7 **Solvent monitor:** A sensor measures the amount of resin dissolved in the solvent, allowing the Form Wash L to determine when the solvent needs to be replaced.
- 8 **Touchscreen:** The LCD capacitive touch user interface displays wash cycle information, settings, and error messages.
- 9 **Platform mount adapter:** An adapter that can be placed on the platform mount so that two Form 3 Build Platforms can be washed at the same time.
- 10 **Solvent:** Not included. Dissolves liquid resin from printed parts' surfaces.

2.3.2 Additional package components



- 1 Power cable:** Provides power to the Form Wash L.
- 2 Wi-Fi antenna:** Allows the machine to connect to a network via Wi-Fi.
- 3 Non-reactive nitrile gloves:** Wear gloves when handling liquid resin, resin-coated surfaces, or solvent. Wash skin with plenty of soap and water.
- 4 Rinse bottle:** Remove resin trapped in cavities and internal channels of prints. Use clean solvent. Formlabs recommends isopropyl alcohol.
- 5 Flush cutters:** Snip to separate prints from their supports. Cut with the flat side on the prints' surface for minimal support marks.
- 6 Scraper:** Remove prints from the build platform. Do not use the scraper to clean the resin tank interior.
- 7 Removal tool:** Pry under the raft to remove prints from the build platform. Do not use the removal tool to clean the resin tank interior.
- 8 Electric siphon pump:** A battery-powered siphon pump for moving solvent into and out of the wash bucket. The pump has a dedicated storage slot underneath the wash bucket.

2.4 User interface

For detailed guidance and visual assistance, visit support.formlabs.com.

The Form Wash L display is a touchscreen interface. The touchscreen displays wash information (wash time and selected material), settings, and error messages. The touchscreen serves as the user interface for the machine.

The home screen displays the current solvent, saturation rate, wash type and time, and serial name.

The following screens and options are accessible via the home screen on the Form Wash L display:

Settings	<ul style="list-style-type: none">• Connectivity• Update Firmware• Washing Guidelines• Onboarding	<ul style="list-style-type: none">• Machine Sound Volume• Tilt Mode• Reboot
Solvent	<ul style="list-style-type: none">• Current Solvent• Saturation Rate	<ul style="list-style-type: none">• Number of Washes• Replace Solvent
Select Wash Solvent	<ul style="list-style-type: none">• IPA• TPM	<ul style="list-style-type: none">• Custom
Wash Preset	<ul style="list-style-type: none">• Quick Wash• 5 min• Default Wash• 10 min	<ul style="list-style-type: none">• Long Wash• 20 min• Custom• Guidelines
Start	<ul style="list-style-type: none">• Start a wash cycle.	

3 Safety



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



Supervise young or inexperienced users to ensure enjoyable and safe operation. These 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.



DANGER: Isopropyl alcohol is a flammable chemical.



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



CAUTION: w present crushing and tangling hazards.



CAUTION: Take care to avoid injury from sharp elements.



MANDATORY ACTION: Refer to instruction manual/booklet.



MANDATORY ACTION: Grounding required.



MANDATORY ACTION: Disconnect before carrying out maintenance or repair.



MANDATORY ACTION: Wear eye protection.



MANDATORY ACTION: Wear thermal-insulating silicone gloves when handling hot build chambers.

3.1 Component and subsystem safety

3.1.1 General

The Form Wash L is a professional appliance that includes electronic components. As with any such appliance:

- Do not operate the device with a damaged cord or plug.
- Ensure reliable grounding before connecting the device to power.
- Always disconnect power before cleaning.
- Only use well-maintained equipment.
- Operate on a clear and level surface.



NOTICE

Always remove solvent from the wash bucket before removing the wash bucket or storing or transporting the Form Wash L.

- Use the included electric siphon pump to avoid overfilling or spilling solvent. For more information about using the siphon pump, visit support.formlabs.com.

3.1.2 Resin



WARNING



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



NOTICE

Consult the safety data sheet (SDS) as the primary source of information to understand safety and handling of Formlabs resins. 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. Refer to the safety data sheet (SDS) for each specific resin as well as support.formlabs.com for more detail.

3.1.3 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.

3.1.4 Isopropyl alcohol (IPA)



Isopropyl alcohol is a flammable chemical. Keep away from ignition sources, including open flames, sparks or concentrated sources of heat. Allow any printed part cleaned with isopropyl alcohol to dry completely before post-curing.



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.

3.1.5 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 Wash L can be achieved by using the following equipment:

- Non-reactive nitrile gloves
- Safety glasses



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



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 Specification of tools to be used

The Form Wash L shall only be used with supplied accessories and additional tools recommended by Formlabs or a certified service provider. 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:

- Apron
- General purpose cleaner (e.g., glass cleaner)
- Isopropyl alcohol (IPA), 90% or higher, and/or tripropylene glycol monomethyl ether (TPM)
- Low-fiber paper towels
- Non-abrasive microfiber cloth
- Non-reactive nitrile gloves
- Safety glasses
- Shoe covers

3.4 Sensitive components

The Form Wash L has multiple 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.

- **Wash bucket and impellers:** Removable container holds a maximum of 43 L (11.4 US gal) of solvent. A rotating impeller at the bottom circulates the solvent.
- **Solvent monitor:** A sensor measures the amount of resin dissolved in the solvent, allowing the Form Wash L to determine when the solvent needs to be replaced.

Refer to section **6.2** for more information.

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. Visit formlabs.com/sds to download safety data sheets for Formlabs materials.

3.5.1 Fire



Do not use water to extinguish an electrical fire. Dousing an electrical fire with water increases the risk of electrocution, and may cause the fire to spread by allowing electricity to conduct across additional flammable surfaces.

If a localized fire develops either inside or outside of the machine, immediately take the following actions.

If the fire is inside the device:

1. Immediately disconnect the machine from its power source.
2. If the outer lid is open, close it if possible.
 - If the fork is up and/or a part inside the Form Wash L is on fire, do not close the outer lid. Place a fire blanket over the unit.
3. Use an ABC fire extinguisher to cover the affected area generously.

If the fire is too large to control:

1. Immediately leave the area and close the door of the room behind you.
2. Evacuate the building according to your organization's emergency protocols.
3. Call emergency services once you have reached a safe distance from the fire.

3.5.2 Isopropyl alcohol (IPA)



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 wash bucket and bottles closed whenever possible.

3.5.3 Resin



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 device after a resin spill to minimize any cosmetic or functional damage to the machine. If you have experienced an accidental resin spill, document the problem with photos and clean the device as best as possible. Contact [Formlabs Support](#) or a [certified service provider](#) as soon as possible.

3.5.4 Chemical spills

Prepare for a possible chemical spill of flammable materials, such as isopropyl alcohol. Your spill response procedure should contain the following:

- A listing of personal protective equipment (PPE), safety equipment, and cleanup materials required for spill cleanup and an explanation of their proper use.
- Appropriate evacuation zones and procedures.
- Availability of fire suppression equipment.
- Disposal of containers for spill cleanup materials.
- The first aid procedures that might be required.

4 Preparation and setup

4.1 Location and environs

Prepare a space to install and operate the Form Wash L and house the necessary accessories and consumables.

To prepare the workspace:

- Ensure that the workspace meets the following requirements:
 - Dry, indoor location
 - Maximum altitude of 2000 m (6561.7 ft)
 - Low ambient humidity
 - Mains supply voltage fluctuations $\leq 10\%$
 - Pollution degree of intended environment: 2
- Operate the device in a well-ventilated room (≥ 3 air exchanges per hour) with a temperature of 18–28 °C (64–82 °F).
- Due to flammable vapors, place the device at least 0.9 m (3 ft) from other electrical equipment.
- Installation should include appropriate signage (“No Smoking,” etc.) to indicate that open flames must be kept away from the device.
- 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 1 A of current.

4.2 Power and networking

For detailed guidance and visual assistance, visit support.formlabs.com.



The Form Wash L requires reliable grounding. The power supply used with the device must be grounded. Do not use an inadequately-rated power cable with the Form Wash L.

For remotely monitoring the device, ensure it maintains a constant connection to a secured network. Refer to section 4.6 Setting up a network connection for more information.

4.3 Unboxing the machine

For detailed guidance and visual assistance, visit support.formlabs.com.

Prior to unboxing, ensure that the suitable workspace has been prepared according to section 4.1 Location and environs.

4.3.1 Receiving

Shipping dimensions	Shipping weight	Product dimensions	Product weight
96.2 × 59.7 × 82.7 cm 37.9 × 23.5 × 32.6 in	64.7 kg 142.6 lb	78 × 46 × 67 cm 30.7 × 18.1 × 26.4 in	56.7 kg 125 lb

4.3.2 Unboxing

The custom packaging the Form Wash L 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](https://support.formlabs.com) or a [certified service provider](#).

To unbox the machine:

1. Position the packaging near the designated location, leaving enough room for two people to comfortably maneuver throughout the area. Stand the packaging upright to ensure it is level.
2. Lift the outer cardboard box off of the lower carrier tray.
3. Open the lid of the machine and remove the accessories box.
4. Remove the foam inserts from the top of the machine.
5. Use the provided handles on the carrying slings to lift the machine out of its carrier tray.
6. Carefully move the machine onto its workspace.



If you need to readjust the Form Wash L, use the carrying slings to pick the machine back up. Do not pick up the Form Wash L without the carrying slings.

7. Tilt each side of the machine up slightly to remove the carrying slings. Keep the original packaging for transportation or shipping.

4.4 Accessing the 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 Wash L is located on the back of the unit in the format **AdjectiveAnimal** and is accessible via the touchscreen.

To access the serial name on the touchscreen:

1. If you are currently viewing a submenu on the touchscreen, tap the < arrow until you return to the home screen. The home screen lists your current wash settings and the device status.
2. The serial name is listed in the top-left corner.

4.5 Installing the machine

For detailed guidance and visual assistance, visit support.formlabs.com.

After selecting a location, connect the device to a power source and install the Wi-Fi antenna before turning on the device.

4.5.1 Installing the Wi-Fi antenna

Install the Wi-Fi antenna to connect the machine to a wireless network.

To install the Wi-Fi antenna, screw the Wi-Fi antenna onto the jack on the back of the unit.

4.5.2 Connecting the cables

Plug the included power cable into the power port on the back of the unit and connect the power cable to a circuit.

For Ethernet, connect the machine to your LAN. Refer to section **4.6 Setting up a network connection** for more information.

4.5.3 Filling the wash bucket with solvent

Fill the Form Wash L with your choice of compatible solvent before use.

To fill the wash bucket:

1. Open the outer lid.
2. Pour or siphon solvent into the wash bucket to fill to a level between the minimum and maximum fill lines.



NOTICE

When siphoning solvent, Formlabs recommends using the motorized pump included with the Form 3L Finish Kit or the manual pump included with the Form 2 and Form 3 Finish Kits. For more information about using the siphon pump, visit support.formlabs.com.

4.5.4 Turning on

To turn on the machine:

1. Plug the included power cable into the power port on the back of the unit and connect the power cable to a dedicated circuit.
2. Flip the breaker switch on the back of the unit to the **ON** position to turn on the machine.
3. As the Form Wash L initializes, the Formlabs logo with a progress bar appears on the touchscreen, followed by the onboarding process. Follow the on-screen prompts to finish setting up the machine.

To turn off the machine, refer to section **5.5.3 Turning off**.

4.6 Setting up a network connection

Connect the machine to a secure network via Wi-Fi or Ethernet, providing it internet access for remote monitoring and receiving firmware updates. The device can connect directly to a computer with a USB cable.

For a Windows operating system, after installing PreForm, check to ensure that Bonjour is properly installed. Bonjour is third-party software that is required to connect over Wi-Fi or Ethernet. Visit support.apple.com for assistance with Bonjour. The USB connection can still be used while the device is connected to a LAN.

4.6.1 Connecting with Wi-Fi

The device has built-in Wi-Fi (IEEE 802.11 b/g/n) that supports WPA/WPA2 security. Use the touchscreen to configure a wireless network connection.

To connect with Wi-Fi:

1. Tap the wrench 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 (10BASE-T/100BASE-TX) 100 Mbit LAN Port. Use a shielded Ethernet cable (not included): minimum Cat5, or Cat5e or Cat6.

To connect with Ethernet:

1. Plug one end of the Ethernet cable into the Ethernet port on the back of the unit.
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 wireless network, the device can be configured with a static IP address. Use the 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 wrench 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. A new screen appears. Tap the **Manual IP** button in the lower-left corner. The **Manual IP** Settings 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 the included USB cable for connecting a computer directly to the machine.

To connect with USB:

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

4.7

Updating firmware

Visit support.formlabs.com for additional information on firmware updates.

Formlabs regularly releases updated firmware to fix bugs and improve functionality. Download the latest firmware version for your Formlabs device with PreForm, then upload and install the firmware file on the machine. Refer to the [firmware downloads and release notes](#) to learn more about the improvements that come with each version's release.

To update the firmware:

1. Open PreForm.
2. Connect the machine to the computer via USB or connect the device to an Ethernet network.
3. Click **File > Devices**. The **Device List** window appears.
4. Click the machine's serial name. The **Device Details** window opens.
5. Click **Update** in the upper-right corner of the **Device Details** window. The **Firmware Update** window opens.
6. Follow the on-screen instructions to download the latest firmware and then upload the file to the machine. To upload firmware, the device must be connected to the computer via USB or the machine must be connected to an Ethernet network.
7. The machine may automatically recognize that you have sent a firmware update. Tap **Continue** on the touchscreen to finish the installation.
8. If you are not prompted to **Continue**, continue the firmware update manually. Tap **Settings > System > Firmware Update**.
9. After the firmware update installs, confirm the system restart on the touchscreen or wait 30 seconds for an automatic restart.

4.8

Transporting the machine

For detailed guidance and visual assistance, visit support.formlabs.com.

Refer to section **4.3.1 Receiving** for product weight and dimensions. Keep the packaging for transportation or shipping.

The complete packaging kit consists of:

- 1 outer carton, cardboard
- 1 carrier tray, cardboard
- 1 carrier tray insert, foam
- 1 upper insert, foam
- 2 carrying slings, cardboard
- 1 accessories box, cardboard

4.8.1 **Preparing for transportation**

Before repackaging, drain the wash bucket of remaining solvent, clean it, and fully dry it. Ensure the outer shells are clean and dry.



The Form Wash L is a heavy object. A two-person lift is required to prevent injury and avoid damage to the machine. Always use the included cardboard slings when moving the device.



Do not ship the machine with any solvent inside the wash bucket. Solvent left in the machine can leak during transit, which may result in additional fees or void the warranty.

To prepare the machine:

1. Always empty the wash bucket and remove any printed parts before moving or packaging the machine.
2. Wipe residual solvent from the wash bucket and other internal components.



Do not ship the machine with any solvent inside. Solvent left inside the machine can leak during transit, which may result in additional fees, void the warranty, or present a safety hazard.

Do not ship the Form Wash L with any loose items stored inside the machine. Loose items can shift during transit and damage sensitive components, which may result in additional fees or void the warranty.

3. Store solvent in a sealable container appropriate for the solvent of your choice.



When shipping a machine to Formlabs or a certified service provider for replacement or repair, the power cable 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.

4.8.2 **Packaging**

Thoroughly read and follow the instructions to properly package the machine. Skipping any of the following steps may result in shipping damage and void the warranty.

To package the machine:

1. If you have previously collapsed the machine's outer cardboard carton, start by reassembling and securely taping the box.
2. Tilt one side of the machine up and slide a carrying sling underneath. Repeat with a second sling under the other side of the machine.

3. Place the foam carrier tray insert into the cardboard carrier tray.
4. Use the provided handles on the carrying sling to lift the machine into its carrier tray.



Lifting hazard: The Form Wash L is a heavy object. A two-person lift is required to prevent injury and avoid damage to the machine.

5. Place the foam insert on the top of the machine.
6. Lower the outer box onto the printer.
7. Seal each edge of the opening with adhesive packing tape.

5 Usage

5.1 Operational environment

- **Ventilation:** At least three air exchanges per hour
- **Temperature:** 18–28 °C (64–82 °F)
- **Power:**
 - Dedicated power outlet and circuit capable of delivering 1 A of current
 - Easy access to the power switch of the device
- **Location:** Dry, indoor
- **Altitude:** Maximum 2000 m (6561.7 ft)
- **Humidity:** Low ambient humidity
- **Mains supply voltage fluctuations:** ≤ 10%
- **Pollution degree of intended environment:** 2

5.2 Washing printed parts

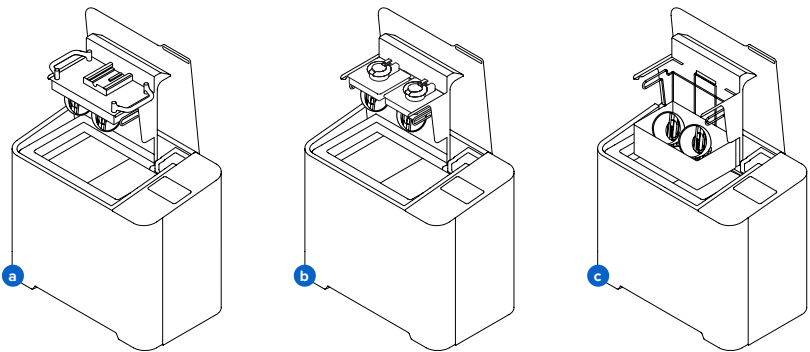
The Form Wash L removes uncured resin from the surface of printed parts by simultaneously soaking and moving them in a solvent. For detailed guidance and visual assistance, visit support.formlabs.com.

5.2.1 Inserting printed parts

The Form Wash L can wash printed parts either before or after they have been separated from the build platform.

To insert printed parts for cleaning:

1. Use the touchscreen to raise the platform and basket mounts.
2. Insert printed parts:



- a. Form 3L Build Platform:** Place the build platform with printed parts directly in the Form Wash L to clean parts before removal. Align the top lip of the build platform with the arms of the platform mount, and fully insert to touch the back.
- b. Form 3 Build Platform:** Place the platform mount adapter, stored on the inside of the Form Wash L door, on the arms of the platform mount. Align the top lip of the build platform with the arms of the platform mount adapter, and fully insert to touch the back.
- c. Individual printed parts:** Place parts directly in the basket after removing them from the build platform using the removal tool, scraper, or flush cutters. The basket comes installed in the Form Wash L.

Parts must be washed on the build platform or in the basket. Ensure parts are fully secured to the build platform when washing parts without the basket installed. Washing loose parts directly in the wash bucket—whether intentionally or accidentally—may damage printed parts, damage the machine, create noise, and interfere with solvent agitation.

To remove the basket:

3. Remove the build platform from the platform mount.
4. Lift the basket vertically out of the basket mount.

5.2.2

Setting the wash time

The Form Wash L has preset wash cycles including **Quick**, **Default**, and **Long**. There are also additional settings for biocompatible resins. You can also set a custom wash time.

The Form Wash L notifies you when you start a wash cycle if the solvent is saturated with resin and should be replaced. Tap **Replace Solvent** for instructions on replacing the solvent or tap **Wash** to proceed with the wash cycle.

The Form Wash L also notifies you when you start a wash cycle with no solvent selected. Tap **Replace Solvent** to select a solvent or tap **Wash** to proceed with the wash cycle.

To set the wash time based on printed part geometry:

1. Tap **Wash Type**. The **Select Wash Type** screen appears.
2. Depending on the geometry of the parts you are washing, tap **Quick Wash**, **Default Wash**, or **Long Wash** for a 5, 10, or 20 minute wash cycle, respectively.
 - Tap the **i** icon under each preset to learn more about the preset, or tap **Guidelines** to learn more about best practices for washing printed parts.
3. Tap **Start**.

Depending on the size of your printed parts, their geometry, and the purity and type of your solvent, you may need to adjust the recommended wash time.

To set the wash time based on resin type for biocompatible resins:

1. Tap **Wash Type**. The **Select Wash Type** screen appears.
2. Tap **Guidelines**. The **Guidelines for Best Wash Results** screen appears. Scroll down to select a wash time for biocompatible resins.
3. Tap a resin type to select the corresponding wash time.
 - Tap the **i** icon next to each resin type to learn more about the preset.
4. Tap **Start**.

Depending on the size of your printed parts, their geometry, and the purity and type of your solvent, you may need to adjust the recommended wash time.

To manually set the wash time:

1. Tap **Wash Type**. The **Select Wash Type** screen appears.
2. Tap **Custom Time**. The **Custom Wash** screen appears.
3. Use the touchscreen to select your desired wash time, up to 99:99. Once you have set the wash time, tap **Done**.
4. Tap **Start**.

The wash cycle begins when the platform and basket lower. Ensure that the outer lid closes and is not obstructed.

To adjust the wash cycle time:

1. Tap the square stop icon on the **Washing** screen.

2. Tap **Wash Type**, then adjust the wash time.
3. Tap **Start**.

5.2.3 **Draining and drying parts**

The platform mount and basket raise automatically at the end of the wash cycle. Solvent drains into the wash bucket as parts dry. To help with drainage, the Form Wash L tilts the platform mount to the side for two minutes after the wash cycle completes.

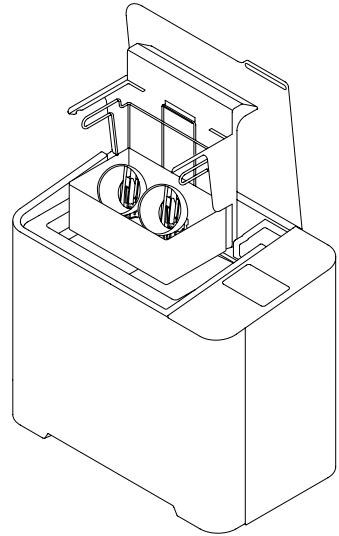
To disable the tilt feature:

1. Tap the wrench icon. The **Settings** screen appears.
2. Tap the **Tilt Mode** toggle.

Thoroughly drain solvent from printed parts. Carefully check and drain concave or hollow geometries that may hold additional solvent. Allow parts that have been washed in any solvent that evaporates readily to air dry for at least 30 minutes after washing and draining. Solvents that do not evaporate readily, such as tripropylene monomethyl ether (TPM), should be washed off the parts with a secondary water rinse.

Ensure appropriate ventilation while the solvent evaporates. Refer to section **5.1. Operational environment** for more information.

Observe necessary safety precautions, according to the solvent supplier's SDS. Options for drying include air drying or forced air. Forced air, such as a fan or clean compressed air, may dry parts more quickly.



NOTICE

Check inside cavities and channels for uncured resin or liquid solvent. Remove residual liquid before drying to avoid fully or partially cured resin in unwanted areas. Compressed air may be helpful to empty internal channels before drying. To begin the next wash immediately, dry the parts outside of the Form Wash L.

5.2.4 **Collecting printed parts**

Remove the build platform or parts from the basket, depending on the wash method used in

5.2.1 Inserting printed parts.

5.2.5 **Additional finishing steps**

After washing parts on the build platform, remove parts from the build platform with the removal tool, scraper, or flush cutters.



CAUTION

Take care to avoid injury from sharp elements (e.g., flush cutters, scraper, or removal tool) and slippery surfaces when removing wet parts from the build platform.



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.

Once each part is washed and dried, check the specific material's post-cure settings on support.formlabs.com. Post-curing is required for many materials to achieve their optimal properties. After post-curing (if necessary), use the flush cutters that come in your Finish Kit to carefully cut the supports attached to the part(s). Supports can also be removed before post-curing, but parts may warp under exposure to light and heat without structural support. In addition to removing supports, use sanding, polishing, priming, or painting to improve presentation, or use other equipment to create molds from printed parts.

5.3 Considerations for specific geometries

For detailed guidance and visual assistance, visit support.formlabs.com.

Consider the specific geometry of each part when choosing a method to wash the part and the sequence of steps. Modify the wash process for parts that are large or long, hollow, concave or cup shaped, or have internal chambers or channels that hold solvent, air, or uncured resin inside.

5.3.1 Hollow geometries

Design hollow parts with drainage holes for successful printing. During the washing, the drainage hole allows the solvent to flow inside and clean the internal surfaces. Take care when removing hollow parts from the solvent bath. Check to ensure that all solvent drains out of the chamber before transferring the part to another surface.

5.3.2 Internal channels

Thin channels, such as those used in micro-fluidic designs, may not drain entirely on their own. Use a syringe filled with clean solvent to flush out internal channels. After cleaning, use compressed air to fully drain and dry the channel.

5.3.3 Large or long parts

Parts move around the basket with the circulation of solvent in the wash bucket. Check the path of the basket and inner lid to ensure that all parts can safely rise out of the bucket when the wash cycle completes and the basket raises. Parts that hang outside the basket perimeter may dislodge the inner lid when the wash cycle completes.



Whether using the build platform or basket as a wash method, the maximum single part size that can be washed in the Form Wash L is 33.5 × 20 × 30 cm (13.2 × 7.9 × 11.8 in).

5.3.4 Concave surfaces, printed and washed on the build platform

Hollowed parts—such as hollowed dental models—printed directly on the build platform can trap resin inside during the wash cycle, when they are washed while still attached to the build platform. Consider washing these parts in the wash basket or adding a second wash cycle after removing them from the build platform to remove uncured resin that is not removed when washing on the build platform alone.

5.3.5 Parts larger than 7.5 L

The solvent in the Form Wash can overflow when washing parts that are larger than 7.5 L of enclosed volume. Consider how much solvent a printed part displaces before placing the part in the Form Wash L. Remove some solvent from the wash bucket before washing a large print.

5.4 Time settings

For detailed guidance and visual assistance, visit support.formlabs.com.

For the best results, use the recommended time settings tested specifically for use with the Form Wash L.

Biocompatible materials are a speciality product, developed for use by medical professionals, and should be used in accordance with the instructions for use.

5.5 Managing the machine

Between wash cycles, perform maintenance, manage your solvent usage, track the machine's history, or turn the machine off. For detailed guidance and visual assistance, visit support.formlabs.com.

5.5.1 Extending solvent lifetime

The solvent in the Form Wash L builds up a higher concentration of resin after each wash, as liquid resin from each wash cycle accumulates over time. As the solvent becomes more resin-concentrated, a layer of diluted resin coats the outermost surface of printed parts after washing. As the solvent dries, a thin layer of liquid resin is left behind on the part's surface, causing the surface to feel tacky. Thus, the part is only as clean as the cleaning solution.

When washing parts on the build platform, scrape excess liquid resin back into the resin tank before placing the build platform in the Form Wash L. To achieve the cleanest parts, replace used solvent with fresh solvent frequently or consider a multi-step washing process. As solvent evaporates, add fresh solvent to keep the fill level between the minimum and maximum lines. Maintain separate wash buckets for each resin type or similar colors to preserve the best possible surface quality and performance. For example:

- Biocompatible resins – to comply with biocompatibility regulations
- Castable Wax 40 Resin – to avoid color transfer
- Castable Wax Resin – to avoid color transfer
- Rigid 4000 Resin – to prevent glass particles adhering to parts printed with other resins
- Rigid 10K Resin – to prevent glass particles adhering to parts printed with other resins
- Ceramic Resin – to prevent ceramic particles adhering to parts printed with other resins

Solvent lifetime depends in part on the chemical properties of the solvent. Visit support.formlabs.com for detailed information about different solvents and solvent performance.

5.5.2 Measuring the resin concentration of solvent

As more parts are cleaned, the solvent gradually becomes more concentrated with liquid resin and reduces the effectiveness of the Form Wash L. Replace solvent when the wash is no longer effective and when parts have tacky surfaces after washing.

To significantly prolong the lifetime of the solvent before replacement, consider implementing a preliminary rinse with a small volume of solvent before inserting printed parts into the Form Wash L.

To measure the resin concentration of solvent with the solvent monitor:

1. If you are currently viewing a submenu on the touchscreen, tap the < arrow until you return to the **Home** screen. The home screen lists your current wash settings and the status of the Form Wash L.
2. The current solvent type and resin concentration are listed under **Solvent**.

5.5.3 **Turning off**

The Form Wash L is designed to remain powered on when not in use. Flip the breaker switch on the back of the unit to the **OFF** position to turn off the machine completely and conserve power. When moving or storing the machine, unplug the unit from its power source in addition to flipping the breaker switch.

6 Maintenance

For detailed guidance and visual assistance, visit support.formlabs.com.

To maintain the most efficient and long-lasting machine, ensure regular conservation. Formlabs provides instructions to advise in installing, operating, and maintaining the machine. The Form Wash L 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 use, and intermittent maintenance, which only needs to be done occasionally. Please keep a log detailing when each intermittent maintenance procedure was last performed.



Tampering with, or disassembling the device prior to disconnecting the power cable and waiting at least five minutes can subject users to potentially fatal electrical hazards. When removing the exterior paneling, disconnect the machine from its power source before maintenance.



Wear personal protective equipment (PPE) when performing maintenance tasks. Use tools only as described.



When removing the exterior paneling, disconnect the machine from its power source before maintenance. Moving parts present crushing and tangling hazards.



- Formlabs provides instructions to advise skilled and unskilled persons in installing, operating, and maintaining the Form Wash L. The Form Wash L shall only be maintained by a qualified and trained person.
- Do not open the Form Wash L and/or investigate internal components unless under the guidance of Formlabs Support or a certified service provider. Contact [Formlabs Support](https://support.formlabs.com) or a certified service provider for any additional guidance.
- Unauthorized disassembly or repair procedures may damage the machine and void the warranty.

6.1 Tools and supplies

Only use tools, chemicals, or procedures to maintain the Form Wash L that are outlined in this manual, by prompts on the touchscreen, and on support.formlabs.com.

Do not use any tools, chemicals, or unapproved procedures with the Form Wash L unless otherwise instructed to do so by Formlabs or a certified service provider.

- **General purpose cleaner (e.g., glass cleaner) and/or soapy water**
 - For cleaning the outer shells and display.
- **Isopropyl alcohol (IPA), 90% or higher**
 - For cleaning the work surface and tools.
- **Low-fiber paper towels**

- For cleaning the work surface and tools.
- For wiping residue grease, resin, or solvent.
- **Non-abrasive microfiber cloth**
 - For cleaning the outer shells and display.

6.2 Inspection and maintenance

6.2.1 Before each use

Inspect	Refer to	Section
Solvent level	Checking the solvent level	6.3.1
Installation environment	Location and environs	4.1
Parts to be washed	Considerations for specific geometries	5.3

6.2.2 Periodic maintenance

Inspect	Refer to	Section
Solvent and solvent monitor	Replacing solvent	6.4.1
Wash bucket	Cleaning the wash bucket	6.4.2

6.3 Tasks between uses

Regularly check the Form Wash L, its environment, and any printed parts to be cleaned to ensure that the machine operates as expected.

6.3.1 Checking the solvent level

The level of solvent in the Form Wash L decreases over time due to use and evaporation. Before starting a wash cycle, ensure that the solvent level in the wash bucket is between the minimum and maximum fill lines. If the solvent level is below the minimum fill line, parts washed on the build platform may not be fully immersed in the solvent during the wash. To add solvent to the Form Wash L, refer to section **4.5.3 Filling the wash bucket with solvent**.

6.4 Periodic maintenance

The Form Wash L requires regular maintenance and care. The standard cycle for the following procedures is every three months of use, or as indicated on the touchscreen.

Task	Frequency	Refer to	Section
Replace used solvent	When indicated by solvent monitor	Replacing solvent	6.4.1
Clean the wash bucket	When replacing solvent, or every three months If you notice significant deposits of resin in the wash bucket	Cleaning the wash bucket	6.4.2
Inspect the wash bucket and impellers	When replacing used solvent or cleaning the wash bucket	Replacing solvent Cleaning the wash bucket	6.4.1 6.4.2

6.4.1 Replacing solvent

The level of resin concentration in the solvent in the Form Wash L increases gradually as more parts are cleaned, reducing the effectiveness of the wash. Replace the solvent when indicated on the touchscreen.

To learn more about recycling of solvent, refer to section **9.4. Recycling of solvent**. Alternately, refer to section **9.3 Disposal of solvent** to safely dispose of solvent.

Required supplies:

- 37.9 L (10 US gal) of fresh solvent (IPA, TPM, or water)
- Electric siphon pump, included with the Form Wash L
- Empty container, suitable for storing up to 43 L (11.4 US gal) of solvent
- Non-reactive nitrile gloves
- Safety glasses

Follow these steps to transfer solvent from the Form Wash L into a chemical resistant container that is safely designated for highly-resin-concentrated solvent and to refill the wash bucket with fresh solvent.

To replace solvent:

1. Put on a new, clean pair of nitrile gloves.
2. On the touchscreen, tap **Solvent**. The **Solvent** screen appears.
3. Tap **Replace Solvent**. Follow the on-screen instructions to empty and refill the wash bucket.
4. Using the electric siphon pump, pump all solvent out of the wash bucket and into a container appropriate for your solvent of choice.
 - a. Place the pump intake into the wash bucket.
 - b. Securely place the flexible pump hose into the solvent container.
 - c. Press and hold the pump switch to pump solvent into the solvent container.
5. If necessary, clean the wash bucket. Refer to section **6.4.2 Cleaning the wash bucket** for more information.
 - a. Tap **Raise**. The platform mount rises out of the wash bucket.
 - b. Open the Form Wash L door. Gently pull the wash bucket towards yourself to remove it from the Form Wash L. The wash bucket is still connected to the machine via the solvent monitor at this time, so place the wash bucket next to the Form Wash L.
 - c. Lift the inner lid off of the wash bucket. Set it aside.
 - d. Unclip the solvent monitor bracket from the front edge of the wash bucket. Lift the solvent monitor bracket (with the solvent monitor attached) out of the wash bucket and set it aside on a paper towel or other absorbent surface.
 - e. Remove the impellers. Inspect the area underneath the impellers for signs of wear. Visible gouges are a sign that wash bucket failure is imminent and the wash bucket must be replaced before continuing use. If no damage is visible, reinstall the impellers.
 - f. Clean the wash bucket.
 - g. Clip the solvent monitor bracket (with the solvent monitor attached) onto the front edge of the wash bucket.
 - h. Place the inner lid back on the wash bucket.
 - i. Reinsert the wash bucket into the Form Wash L. Push the wash bucket in until it reaches the back wall of the unit.
6. On the touchscreen, select the solvent type to be added to the wash bucket.
7. Using the electric siphon pump, fill the wash bucket with fresh solvent to the indicated fill line.
 - a. Place the pump intake into the solvent container.
 - b. Securely place the flexible pump hose into the wash bucket.
 - c. Press and hold the pump switch to pump solvent into the wash bucket.

8. Dispose of used solvent according to local regulations.

6.4.2

Cleaning the wash bucket

Over time, dissolved resin accumulates on the walls of the wash bucket. Periodically, while replacing the solvent, clean out the wash bucket to remove these resin deposits. Rinse the wash bucket with fresh solvent and wipe with a paper towel.

Required supplies:

- 2.5 mm hex driver
- 43 L (11.4 US gal) of fresh solvent (IPA, TPM, or water)
- Electric siphon pump, included with the Form Wash L
- Empty container, suitable for storing up to 37.9 L (10 US gal) of solvent
- Non-reactive nitrile gloves
- Safety glasses

Follow these steps to transfer solvent from the Form Wash L into a chemically-resistant container that is safely designated for highly-resin-concentrated solvent and to refill the wash bucket with fresh solvent.

To clean the wash bucket:

1. Empty the wash bucket and remove it from the Form Wash L. Refer to section **6.4.1**

Replacing solvent for detailed instructions.

2. There are two circular impellers located at the bottom of the wash bucket. Using a 2.5 mm hex driver, loosen and remove the screw holding each impeller in place. Set the screws and impellers aside.
3. Inspect the bearing underneath the impellers and the bottom surface of the impellers for signs of wear. Visible wear on either surface is a sign that the impeller and bearing should be replaced.
4. Rinse the wash bucket and solvent monitor with IPA or water and wipe with a paper towel.
5. Reseat the two impellers in the wash bucket. Thread one screw into each of the impellers. Using a 2.5 mm hex driver, tighten the impeller screws until finger tight.
6. Reinstall the wash bucket and fill it with solvent. Refer to section **6.4.1 Replacing solvent** for detailed instructions.

6.5

Intermittent maintenance

Task	Frequency	Refer to	Section
Update the firmware	When indicated by Formlabs	Updating firmware	4.7
Dispose of used solvent	After replacing solvent	Disposal of solvent	9.3
Replace the wash bucket	After 2,000 hours of use	Replacing the wash bucket	6.5.1

6.5.1

Replacing the wash bucket

The wash bucket is rated for up to 2,000 hours of use. After this length of time, the bucket should be replaced.

To replace the wash bucket:

1. Lift the Form Wash L lid.
2. Using the electric siphon pump, pump all solvent out of the wash bucket and into a container appropriate for your solvent of choice.
 - a. Place the pump intake into the wash bucket.

- b. Securely place the flexible pump hose into the solvent container.
 - c. Press and hold the pump switch to pump solvent into the solvent container.
3. Remove the wash bucket.
- a. Tap **Raise**. The platform mount rises out of the wash bucket.
 - b. Open the Form Wash L door. Gently pull the wash bucket towards yourself to remove it from the Form Wash L. The wash bucket is still connected to the machine via the solvent monitor at this time, so place the wash bucket next to the Form Wash L.
 - c. Lift the inner lid off of the wash bucket. Set it aside.
 - d. Unclip the solvent monitor bracket from the front edge of the wash bucket. Lift the solvent monitor bracket (with the solvent monitor attached) out of the wash bucket and set it aside on a paper towel or other absorbent surface.
4. Insert the new wash bucket.
- a. Clip the solvent monitor bracket (with the solvent monitor attached) onto the front edge of the wash bucket.
 - b. Place the inner lid back on the wash bucket.
 - c. Reinsert the wash bucket into the Form Wash L. Push the wash bucket in until it reaches the back wall of the unit.

7 Troubleshooting

For detailed guidance and visual assistance, visit support.formlabs.com.

7.1 Collecting diagnostic logs

The Form Wash L 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 Wash L, 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.

7.2 Performing a factory reset



A factory reset erases diagnostic information and custom settings, including networked connections. Do not perform a factory reset 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.

7.3 Cleaning after a chemical spill

Refer to section **3.5.2 Chemical spills** for more information on developing a spill response procedure. Keep emergency tools in a known, accessible location. When working with isopropyl alcohol or other flammable chemicals, consider purchasing a flammable solvent cleanup kit. Required supplies:

- Apron
- Non-reactive nitrile gloves
- Safety glasses
- Shoe covers

7.3.1 Isopropyl alcohol (IPA)



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 wash bucket and bottles closed whenever possible.

Spilled IPA presents an immediate fire and health hazard. IPA spills must be cleaned up immediately. Use only disposable supplies to clean up an IPA spill to avoid risk of fire.

Immediately after an IPA spill, do the following:

1. Put on a pair of disposable nitrile gloves.
2. If a wash cycle is in progress, cancel the wash on the touchscreen.
3. Unplug the device from its power source.
4. Absorb excess IPA with paper towels.
5. Clean up any remaining residue using wet paper towels.
6. Dispose of any tools used to clean up the spill (paper towels soaked with IPA, gloves coated in IPA) with hazardous waste according to local regulations.

7.3.2 Tripropylene glycol monomethyl ether (TPM)

Spilled TPM does not present an immediate fire or health hazard, but it does leave an oily residue that can be slippery. TPM evaporates very slowly, so the spill won't dry by itself.

To clean a TPM spill:

1. Put on a pair of disposable nitrile gloves.
2. If a wash cycle is in progress, cancel the wash on the touchscreen.
3. Unplug the device from its power source.
4. Absorb excess TPM with paper towels.
5. Clean up any remaining residue using wet paper towels.
6. Dispose of tools used to clean up the spill (paper towels soaked with TPM, gloves coated in TPM) with hazardous waste according to local regulations.

7.4 Troubleshooting errors or abnormal activity

In the case of errors or abnormal activity with the Form Wash L, reference the following errors, causes, and proposed solutions. Complete the initial troubleshooting steps and carefully document all results. Contact [Formlabs Support](#) or a [certified service provider](#) for additional guidance.

7.4.1 Resolving abnormal functions

Error	Cause	Solution
The display does not turn on.	Power failure or a faulty electrical connection	<ul style="list-style-type: none">• Disconnect and reconnect the power.• Plug the power cable into a different outlet.
The touchscreen is unresponsive.	Faulty or damaged touchscreen	<ul style="list-style-type: none">• Disconnect and reconnect the power.• Replace the touchscreen.
The outer lid does not close fully.	Printed part is obstructing outer lid Outer lid hinge is broken	Check that any printed parts in the basket do not interfere with the outer lid. If the outer lid is free of any obstructions, contact Formlabs Support or a certified service provider .
The impeller does not rotate.	<ul style="list-style-type: none">• Debris or obstructions in the wash bucket• Faulty or damaged impeller motor	<ul style="list-style-type: none">• Check for loose cured material or debris in the bottom of the wash bucket.• Disconnect and reconnect the power.
Unusual noises	<ul style="list-style-type: none">• Debris or obstructions in the wash bucket• Improper wash bucket alignment	<ul style="list-style-type: none">• Check for loose cured material or debris in the bottom of the wash bucket.• Reseat the wash bucket
Washed parts have tacky or sticky surfaces.	Resin concentration in solvent is too high	Replace the solvent. Refer to section 6.4.1 Replacing solvent .
The machine does not detect the wash bucket.	Wash bucket not fully inserted	Reseat the wash bucket

Error	Cause	Solution
The platform and bucket mount do not move properly.	<ul style="list-style-type: none"> • Debris or obstructions in the wash bucket • Firmware issue 	<ul style="list-style-type: none"> • Check for loose cured material or debris in the bottom of the wash bucket. • Update the firmware
Incorrect solvent saturation readings	<ul style="list-style-type: none"> • Bubbles on solvent monitor • Mismatch between selected solvent and solvent in wash bucket 	<ul style="list-style-type: none"> • Check the solvent monitor for bubbles • Check that the selected solvent matches the solvent in the Form Wash L

7.4.2

Resolving errors

If errors persist after following these steps, contact [Formlabs Support](#) or a [certified service provider](#) for additional guidance.

Error	Cause	Solution
The bucket is already down	The Form Wash L attempted to lower the basket mount and platform mount when they were already at their bottom position.	Disconnect and reconnect the power.
The bucket is already raised	The Form Wash L attempted to raise the basket mount and platform mount when they were already at their top position.	Disconnect and reconnect the power.
The device position is unknown	The Form Wash L attempted to raise the basket mount and platform mount when they were in an unknown position.	Disconnect and reconnect the power.
The device is already moving	The Form Wash L attempted to raise or lower the basket mount and platform mount while they were still in motion.	Disconnect and reconnect the power.
The call to Dbus failed	Firmware error	Disconnect and reconnect the power.
The reply to the Dbus was invalid	Firmware error	<ul style="list-style-type: none"> • Disconnect and reconnect the power. • Check for debris or obstructions that would prevent the platform mount from moving.
Moving the motor failed	The Form Wash L encountered an error during a motor movement.	<ul style="list-style-type: none"> • Disconnect and reconnect the power. • Check for debris or obstructions that would prevent the platform mount from moving.
The device is not currently running	The Form Wash L attempted to cancel an ongoing cycle with no cycle in progress.	Disconnect and reconnect the power.

Error	Cause	Solution
The device state is currently invalid	The Form Wash L attempted to cancel an ongoing cycle while the machine was in an invalid state.	Disconnect and reconnect the power.
An unknown error occurred	Other/unspecified cause	Disconnect and reconnect the power.
Any other error related to the solvent monitor	The Form Wash L detected an issue with the solvent monitor	<ul style="list-style-type: none"> • Check that the solvent monitor is submerged in the solvent • Check that the solvent monitor cable is fully plugged into the Form Wash L • Check that the selected solvent matches the solvent in the Form Wash L • Replace the solvent monitor

8 Disassembly and repair



All steps that involve opening the machine and/or investigating internal components should be done by skilled persons under the guidance of Formlabs Support or a certified service provider. Any damage resulting from attempting disassembly and/or repair without prior authorization from Formlabs Support or a certified service provider is not covered by warranty. When removing the exterior paneling, disconnect the machine from its power source before maintenance.

8.1 Tasks

Contact [Formlabs Support](#) or a [certified service provider](#) to receive repair instructions and authorization, including how to disassemble or remove the exterior paneling.

Task	Frequency
Replacing the display assembly	Touchscreen has stopped functioning or does not accept input
Replacing the outer lid hinge	Outer lid does not close fully or move smoothly
Replacing the impeller	Impeller is damaged or does not turn

Any other maintenance or repair tasks not listed in section **6 Maintenance** requires servicing the machine. Contact [Formlabs Support](#) or a [certified service provider](#) for service options.

9 Recycling and disposal

For detailed guidance and visual assistance, visit support.formlabs.com.

9.1 Disposal of resin

9.1.1 Liquid resin



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



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

9.1.1.1 Disposal with a chemical waste stream

To dispose of liquid resin that has not been cured or dissolved in a solvent, add it to your chemical waste stream in accordance with all applicable regulations.

9.1.1.2 Disposal without a chemical waste stream

To dispose of liquid resin:

1. Put on a pair of disposable nitrile gloves.
2. Pour a small amount of resin into a labeled, transparent, resin-safe container.
3. Leave the container exposed to sunlight to cure for 1–10 days. Expose resin to 365 nm and 395 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 as household waste.

9.1.2 Cured resin or cleaned parts

Cleaned parts and cured resin cannot be recycled. Discard cleaned parts and cured (hardened) resin as household waste.

9.2 Recycling of resin

9.2.1 Liquid resin

Liquid resin that has not been cured or dissolved in solvent cannot be recycled. Refer to section **9.1 Disposal of resin** for more information.

9.2.2 Cured resin or cleaned parts

Cleaned parts and cured resin cannot be recycled. Discard cleaned parts and cured (hardened) resin as household waste.

9.3 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 powder safety data sheet (SDS) on hand in case the disposal service attendant needs more information.

9.4 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. The recycled solvent may still have small amounts of contaminants in it. Recycling solvent reduces waste disposal costs, emissions that are required to produce solvents, and the cost of purchasing solvent.

9.5 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 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.

9.6 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.



NOTICE

The original packaging is designed to be kept and reused for transporting or shipping the machine for service. Save the complete packaging including any inserts for your convenience.

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11 Glossary

Term	Meaning
Basket	Holds parts to wash without the build platform.
Basket mount	A single hook secures the basket to raise and lower. The basket mount can tilt when it raises out of the wash basket to improve part drainage.
Display	The display shows status, time, temperature, and options for configuring the Form Wash L.
Display ribbon cable	A flat, flexible cable connects the display assembly to the motherboard.
Ethernet port	The Form Wash L can connect to a network via Ethernet. The port is connected to the motherboard and can be accessed from the back of the machine.
Impeller	Two impellers at the bottom of the wash bucket couple to the impeller motors using magnets and agitate the solvent during the wash cycle.
Impeller magnets	Four small circular magnets, set into the impellers, couple to magnets in the impeller motors to turn the impeller.
Impeller motor	The two impeller motors, located in the base of the Form Wash L, use magnets to spin the impellers in the wash bucket.
Inner lid	A hinged, secondary lid opens and closes to contain solvent while allowing parts to be lowered or raised from the bucket.
Lid hinges	The inner and outer lids are hinged, allowing them to open and close automatically as the platform mount and basket mount raise and lower.
Motherboard	The motherboard is the main circuitry through which all systems in the Form Cure L communicate.
Outer lid	Limits solvent evaporation. Keep the lid closed when not in use.
Platform mount	Holds the build platform when washing parts on the platform. The platform mount can tilt when it raises out of the wash basket to improve part drainage.
Platform mount adapter	An adapter, stored in the door of the Form Wash L, that allows two Form 3 Build Platforms to be washed simultaneously.
Power cable	Provides power to the Form Wash L.
Solvent monitor	The solvent monitor measures how much liquid resin has been dissolved in the solvent. This allows the Form Wash L to track and display solvent usage data.
Siphon pump	The Form Wash L includes an electric siphon pump, used to transfer solvent between the wash bucket and a solvent storage container.
Solvent	Not included. Dissolves liquid resin from printed parts' surfaces.
USB port	The Form Wash L can connect to a computer via USB. The port is connected to the motherboard and can be accessed from the back of the machine.
Wash bucket	A removable container in the Form Wash L holds a maximum of 8.6 L of solvent. A rotating impeller at the bottom circulates the solvent.
Wi-Fi antenna	The Wi-Fi antenna enables the machine's wireless connectivity.
Z-tower motor	The Form Wash L Z-tower motor assembly raises and lowers the platform mount and basket mount.

12 Product compliance

The Form Wash L complies with the following electronics and safety standards:

ETL

UL-61010-1
CAN/CSA-C22.2 No. 61010-1-12

CE

Machinery Directive 2006/42/EC
Radio Equipment Directive 2014/53/EU
RoHS Directive 2011/65/EU
EMC Directive 2014/30/EU

Other

FCC
IEC 61010-1:2010
IEC 61010-1:2010/AMD1:2016

