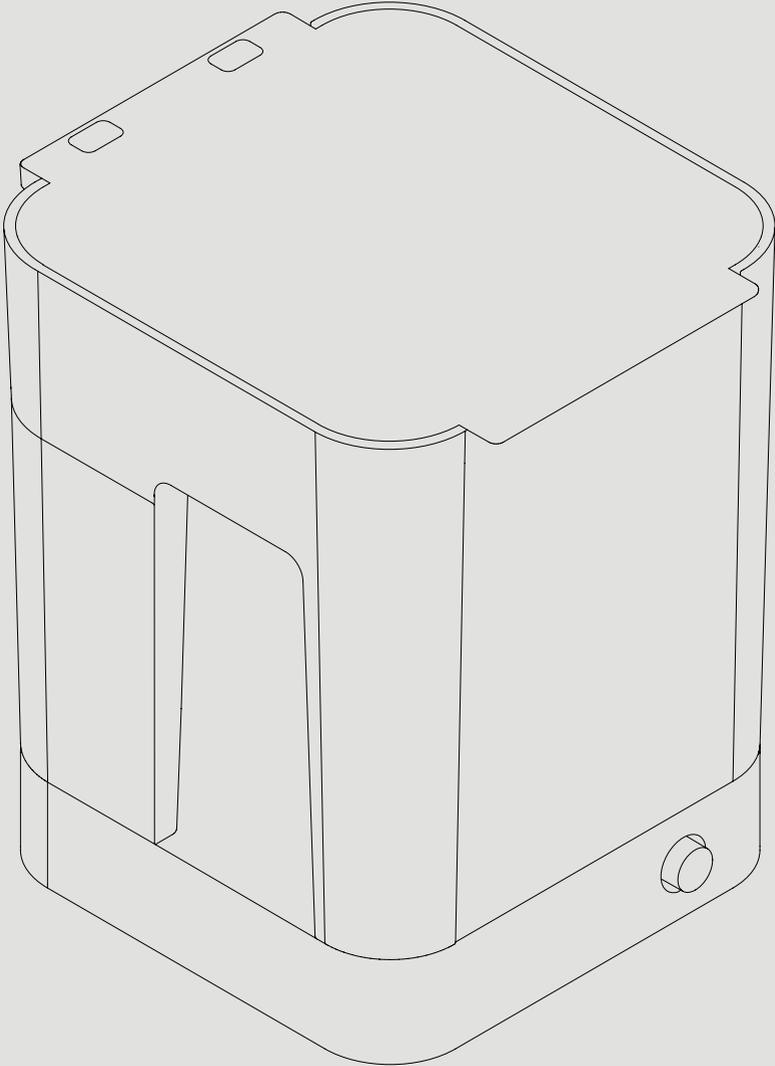
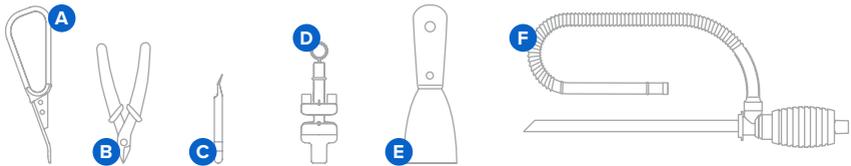
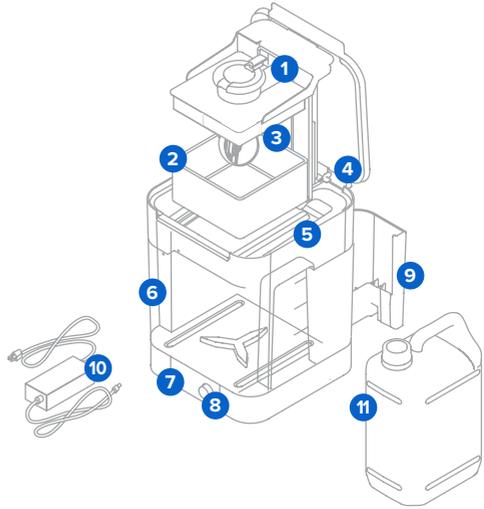


Manual | Form Wash



2.2 Product Elements

- 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 8.6 L of solvent. A rotating impeller at the bottom circulates the solvent.
- 7 Display** Shows status, time, and options for configuring the Form Wash.
- 8 Knob** Turn or press to adjust time and to start, pause, or end a wash cycle.
- 9 Tool Storage** Each side has designated locations for storing each tool.
- 10 Power Supply** Provides power to the Form Wash. Specifications: 24 V, 2 A.
- 11 Solvent** Not included. Dissolves liquid resin from printed parts' surfaces.



The Form Wash includes storage space for commonly used tools during the print cleaning process.

- A Flush Cutters** Use to carefully remove support tips from printed parts.
- B Removal Tool** Apply pressure under the base generated by PreForm to release the base of your parts from the build platform.
- C Tweezers** Use to handle small parts or to manipulate supports after printing.
- D Hydrometer** If using isopropyl alcohol (IPA) as a solvent (or another solvent with an equivalent specific gravity), float in IPA to measure the IPA's resin concentration (based on previous calibration in fresh IPA). Other solvents may require a different hydrometer for a different specific gravity range.
- E Scraper** Can be used to remove parts from the build platform, as well as to carefully clean and inspect the resin tank for cured material.
- F Siphon Pump** Transfer solvent between the wash bucket and a solvent storage container. See **10 Glossary** for full product terminology.

2.3 Technical Data

Shipping Weight	9.0 kg (20 lb)
Product Weight	6.7 kg (14.5 lb)
Shipping Dimensions	33.0 × 35.4 × 45.6 cm (14 × 14 × 18 in)
Product Dimensions	26.2 × 29.3 × 34.0 cm (10.3 × 11.5 × 13.4 in) Height when open: 64 cm (25.2 in)
Minimum Space Requirement	38.9 × 41.9 × 64.0 cm (15.3 × 16.5 × 25.4 in)
Power Requirements	100–240 V 2.0 A 50/60 Hz 50 W
Electrical Safety Standard	60950-1:2005+A1:2009+A2:2013 (and applicable national deviations)
Sound Emission	Does not exceed 70 dB(A).
Bucket Volume	8.6 L
Maximum Part Size	14.5 × 14.5 × 17.5 cm (5.7 × 5.7 × 6.9 in)
Operating Temperature	Suggested 18–28 °C (64–82 °F)
Agitation Method	Magnetically coupled impeller

2.4 Form Wash Controls

When connected to power, use the knob to program and operate the Form Wash:

- Rotate the knob counterclockwise or clockwise to move between items in the menu.
- Press the knob to select an option on the display.

The following options are available from the main menu on the Form Wash display:

- **Start:** Lowers the mount and basket and initiates the washing process.
- **Open:** Raises the mount and basket.
- **Sleep:** Lowers the mount and basket. The wash cycle does not start until **Start** is selected.
- **Time:** Press the knob to select and adjust the time, indicated in minutes. Check each material's recommended wash time before beginning a cycle.

After beginning a wash cycle, the display shows the remaining time and additional menu options:

- **Pause:** Stop the agitation and lift the platform and basket mount, while maintaining the remaining time in the wash cycle.
- **End:** Cancel the remaining time in the wash cycle while also stopping the agitation and lifting the platform and basket mount.

5. Using the Form Wash

5.1 Operational Environment

Operate the Form Wash in a well-ventilated room with a temperature of 18–28 °C (64–82 °F). For optimal performance, do not exceed this range.

5.2 Washing

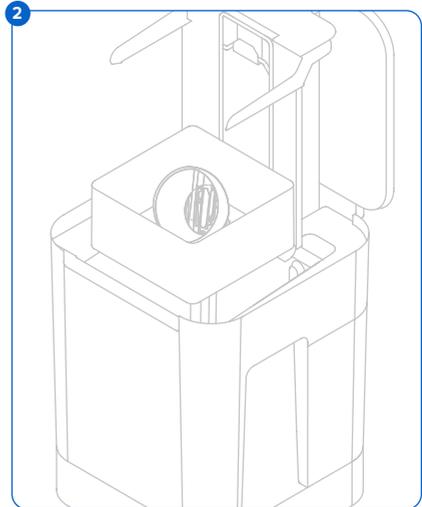
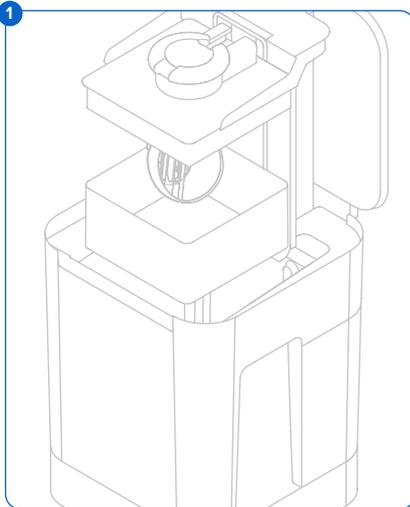
5.2.1 Insert Print

To wash a printed part:

1. Use the display and knob to raise the platform and basket mounts.
2. For convenience, install the build platform with printed parts directly in the Form Wash to clean parts before removal **1**. Align the top lip of the build platform with the arms of the Form Wash platform mount, and fully insert to touch the back.

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, create noise, and interfere with solvent agitation.

Parts can also be washed in the basket **2**, either as an alternative or in addition to the platform mount. 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.



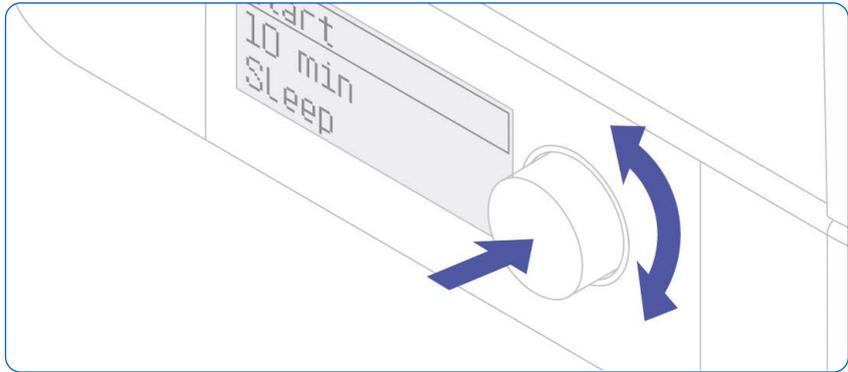
To remove the basket from the Form Wash:

1. Remove the build platform from the platform mount.
2. Lift the basket vertically out of the basket mount.

5.2.2 Set Wash Time

To wash parts for a specific amount of time:

1. Turn the knob to navigate the display menu and adjust the wash time.
2. Press the knob to select or confirm.
3. Once the wash cycle begins, select **Pause** to raise the platform and basket.



Part washing time depends on the resin and solvent used. Check support.formlabs.com for specific wash time recommendations. Wash for additional time when using partially resin-concentrated solvent. 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. Press the knob to access the display menu.
2. Select **Pause** to raise the platform and basket.

5.2.3 Drain and Dry Prints

The platform mount and basket raise automatically at the end of the wash cycle. Solvent drains into the wash bucket as parts dry and drips onto the inner lid. 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. Consult support.formlabs.com for additional information about working with specific solvents.

Ensure appropriate ventilation while the solvent evaporates. 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.



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. Take extra care with sharp objects and slippery surfaces when removing wet parts from the build platform.

5.2.4 **Collect Prints**

Remove the build platform or parts from basket, depending on the wash method used in **5.2.1**

Insert Print.

5.2.5 **Finish Your Print**

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

Once each part is washed and dried, check the specific material's post-curing settings on support.formlabs.com. Post-curing is optional for Standard Resins and required for many other 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.



Wear safety glasses to protect eyes from dislodged fragments of supports.

You can sand support marks and polish your parts for a smooth finish.

5.3 **Considerations for Specific Geometries**

Consider the specific geometry of each part when choosing a method to wash the part and the sequence of steps. Take special care when washing parts that are large, 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 process, the drainage hole allows the solvent to flow inside and clean the internal surfaces. Take care when removing hollow parts from the alcohol 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 Parts**

Parts move around the basket with the circulation of alcohol in the wash bucket. Check the path of the basket and inner lid to ensure that all parts can safely raise 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 is 14.5 × 14.5 × 17.5 cm (5.7 × 5.7 × 6.9 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 still attached to the build platform. Consider washing these parts in the Form 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 1.8 L**

The solvent in the Form Wash can overflow when washing parts that are larger than 1.8 L of enclosed volume. Consider how much solvent a printed part will displace before washing in the Form Wash. Remove some solvent from the wash bucket before washing a large print.

5.4 **Device Management**

5.4.1 **Extending Solvent Lifetime**

The solvent in the Form Wash 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.

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:

- Biocompatible resins - to comply with biocompatibility regulations
- Castable Wax Resin - to avoid color transfer
- Castable Resin - to avoid color transfer
- Rigid 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.

5.4.2 **Measuring the Resin Concentration of Solvent**

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



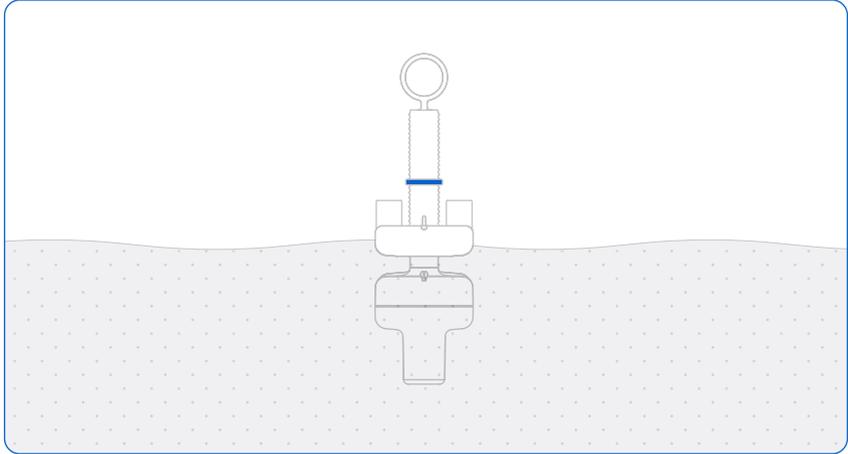
TIP

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.

Use a calibrated hydrometer to check the solvent's resin concentration between cleaning cycles and help determine when to replace the solvent. The included hydrometer is suitable for measuring the resin concentration in IPA (or another solvent with an equivalent specific gravity). Other solvents will require a hydrometer that can measure the correct specific gravity range. For example, TPM requires a hydrometer that can measure a specific gravity of 0.9–1.2, and a specific gravity greater than 1.0 indicates that the TPM will not be fully effective as a final wash. For more information about calibrating a hydrometer, see **4.3.4 Calibrate the Hydrometer (IPA Only)**. For additional recommendations for specific solvents, consult support.formlabs.com.

To check whether the solvent is suitable for cleaning parts:

1. Use the knob to select **Sleep** to lower the mount and close the lid of the Form Wash.
2. Open the outer lid.
3. Float the previously calibrated hydrometer in the wash bucket. Note the alignment of the O-ring relative to the float's wings.



When calibrated properly, the O-ring should be set to align with the short wings in fresh solvent. As the solvent's resin concentration increases, the weight will float higher, and the stem and O-ring will rise.

For a smooth, dry surface finish, replace solvent when the O-ring rises above the float's tall wings.

5.4.3 **Powering Off the Form Wash**

Turn off the Form Wash completely when moving or storing the device and to conserve power. To turn off the Form Wash completely, disconnect the power cord from the power source. Ensure either the wall outlet or power supply is easily accessible.

The Form Wash display will automatically power off after a period of inactivity.

5.4.4 **Updating the Firmware**

The Form Wash includes a USB port for the possibility of future firmware updates. See **6.5.1 *Updating the Form Wash Firmware.***

5.4.5 **Accessing the Serial Name**

The serial name is on the back panel of the machine in the format "AdjectiveAnimal." The serial name is also available on the display. To access the serial name or firmware version on the display:

1. Disconnect the power cable.
2. Reconnect the power cable.
3. When the display shows **Formlabs**, press and hold the knob immediately. The display shows the serial name (preceded by **Wash-**) and firmware version.

7. Troubleshooting and Repair

For detailed guidance and visual assistance, search on support.formlabs.com.

7.1 Restarting with a Power Cycle

If the display freezes during or after the firmware update, power cycle the Form Wash unit:

1. Unplug the unit.
2. Wait at least 10 seconds to ensure a complete power cycle.
3. Reconnect the power cable to restart the unit.

7.2 Troubleshooting

In the case of an error or abnormal activity with the Form Wash, reference the following errors, causes, and proposed solutions. Complete the initial troubleshooting steps and carefully document all results. Contact Formlabs or an authorized reseller for additional assistance.

ERROR	CAUSE	SOLUTION
Outer lid does not close fully	Outer lid hinge is broken	Contact Formlabs or an authorized reseller for instructions to replace the outer lid hinge.
Unusual noises	Misaligned impeller Debris or obstructions in the wash bucket	Check for loose cured material or debris in the bottom of the wash bucket. Check that the impeller rotates properly. If not, contact Formlabs or an authorized reseller for instructions to reverse the magnets.
Motor Jammed error message	Inner lid resting on hinge plate	Disconnect power. Manually lift the tower to its maximum height. Remove the wash bucket. Press down on the edges of the inner lid, so that the lid is flush with the bucket. Reinsert the wash bucket. Ensure the inner lid stays flush with the bucket.
The display does not turn off or sleep	Firmware bug	Disconnect and reconnect the power. Update the firmware. See 6.5.1 Updating the Form Wash Firmware .
The display does not turn on	Power failure or a faulty electrical connection	Check that the power supply indicator light is illuminated. Try another outlet. Disconnect and reconnect the power.
Washed parts have tacky or sticky surfaces.	Resin concentration in solvent is too high	Replace the solvent in the Form Wash. See 6.5.2 Replacing Solvent .