

3D Printing Post-Processing with Elma Ultrasonic Cleaner and FormLabs Form 3L Purchasing Guide



### POST-PROCESSING

### Form 3L Finish Kit \$349

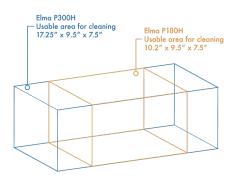
Similar to the Finish Kit included in all Form 3 packages, the Form 3L Finish Kit is equipped with removal tools to detach your part from the build platform for post-processing and rinse buckets to wash away uncured resin. The rinse buckets are sized to accommodate full-size Form 3L prints. Solvent compatibility and testing on recommended wash times are ongoing and will vary by material. More information will be shared at a later time.

### Large Format Wash

For customers seeking an automated wash solution, Formlabs recommends the Elma P180H or P300H Ultrasonic Cleaning Units, depending on typical print size. These cleaners can be purchased globally through **Tovatech**, a distributor for Elma.



		SE prints
Internal Dimensions with Tub	28.0 × 25.0 × 11.5 cm	45.5 × 25.0 × 11.5 cm
Tank Max Capacity	18L	28L
Quoted Price	\$3474.00	\$4131.00



The P180H and P300H use ultrasonic cleaning to wash away uncured resin on a printed part, which is different than the Form Wash which uses agitated cleaning. Ultrasonic cleaners work through cavitation. Soundwaves are emitted at a certain frequency into the solvent which creates powerful microscopic voids, or bubbles. These bubbles ultimately implode and scrub away uncured resin from the part, where it can then be absorbed by the solvent. Since these bubbles are microscopic, they are able to clean any surface touched by the solvent.

At this time, The P180H and P300H are specifically being recommended due to their capability to handle larger print volumes, tub and custom lid compatible with resin and solvent, fast and quiet operation, and 2 year warranty from Elma.

The units of the Elmasonic P ultrasonic series are ideal helpers for all applications in analytical and medical laboratories as well as for applications in the industrial production. 6 different unit sizes are available. The practical units are easy to operate with a clearly arranged display showing all set and actual parameters. Several special features make the units perfect for intensive cleaning applications and for laboratory job.

## **MULTI-FREQUNECY**

- Standard applications are carried out at 37 kHz. All units are considerably more powerful than conventional ultrasonic units. If the high energy density should prove too strong for individual cleaning jobs, it can be reduced electronically.
- Operating the unit at 80 kHz prolongs the cleaning time and is ideal for the treatment of very small and sensitive items. Even tiny capillaries are reached by the imploding microscopic cavitation bubbles. A positive side effect is the comfortably low noise level at this frequency

### **UNIT FEATURES**

- Normal: for laboratory applications, e.g. mixing, dissolving and dispersing
- Pulse-function: activatable additional power through increased peak performance
- Sweep: for a uniform distribution of the ultrasonic power throughout the tank
- Degas: for the quick degassing of samples and HPLC solvents.
- Power control: optimised power regulation for special cleaning and laboratory applications
- Pause: interrupts the operation
- Auto-Start: automatic start when set temperature is reached



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	P 30 H	P 60 H	P 70 H	P 120 H	P 180 H	P 300 H
Ultrasonic frequency (kHz)	37/80	37/80	37/80	37 / 80	37 / 80	37/80
Ultrasonic power effective (W)	120 / 100	180 / 150	220	330	330	380
Ultrasonic peak power (W)	480 / 400	720 / 600	880	1320	1320	1520
Heating power (W)	250	500	750	1000	1000	1250
Power consumption total (W)	370 / 350	680 / 650	970	1330	1330	1630
Voltage (V)	115–120 or 220–240	115–120 or 220–240	115-120 or 220-240	220-240	220-240	220-240
Volume (I)	2.75	5.75	6.9	12.75	18.0	28.0
Unit external dimensions W/H/D (mm)	300 / 179 / 221	365 / 186 / 271	568 / 179 / 221	365 /278 / 321	390/340/321	568/340/321
Tank internal dimensions W/H/D (mm)	240 / 137 / 100	300 / 151 / 150	505 / 137 / 100	300 / 240 / 200	327 /300 / 200	505 / 300 / 200
Basket internal dimensions W/H/D (mm)	198 / 106 / 50	255/115/75	465 / 106 / 50	250/190/115	280/250/115	455 / 250 / 115
Drain duct V4A	3/8*	3/8"	3/8"	3/8"	3/8*	3/8"

### **TECHNICAL DATA**

The Form 3 and Form 3L are powered by a new 3D printing process called Low Force Stereolithography (LFS). LFS 3D printing uses a flexible tank and linear illumination to turn liquid resin into flawless parts. Inside the Form 3 and Form 3L is a completely redesigned optics engine, the Light Processing Unit (LPU), which contains a system of lenses and mirrors to deliver accurate, repeatable prints.

The modular design of the LPU, uniform linear illumination, and low forces from the flexible tank mean the LFS technology can seamlessly scale up to a larger print area, using two staggered LPUs that work simultaneously along an optimized print path. The Form 3L is the first affordable large-format resin printer on the market, with a build volume of 7.9 x 13.2 x 11.8 in ( $20 \times 33.5 \times 30$  cm), which is five times that of the Form 3.

## THE FORM 3L BASIC PACKAGE

The Form 3L Basic Package is available for pre-order now. The expected shipping date for orders placed today can be found on **the FormLabs website**.

Included in the Form 3L Basic Package:

• 1 Form 3L 3D Printer

1 Finish Kit

1 Build Platform

PreForm Software

• 1 Resin Tank

# ADDITIONAL CONSUMABLES AND ACCESSORIES

Similar to the Form 2 and Form 3, users purchasing the Form 3L should understand its consumables and accessories, post-processing options, and service offerings to help keep the Form 3L running at peak performance.

### Form 3L Build Platform \$399

Spare build platforms speed up your workflow and allow for nonstop printing, for example, starting a new print while post-processing your previous part. The Form 3L build platform holds full-size prints and has two side handles to easily transport your printed part.

## Form 3L Resin Tank \$349

The Form 3L Resin Tank relies on the same Low Force Stereolithography technology as the Form 3. Robust yet flexible, this resin tank reduces peel forces during the peel process, improving part quality and surface finish. Each resin tank includes a mixer and is designed to block extraneous UV light and allow for easy stacking.

It is recommended to have at least one tank for each material you are planning to use, understanding that unused resin can be stored in the tank in between use. Tanks do wear over time and are considered consumables. Tank lifetime depends on which resin is being used.

### Resin Cartridges \$149+

Formlabs offers over 25 different resins, ranging from standard prototyping materials to engineering materials with various material properties. The Form 3L uses the same resin cartridges as the Form 2 and Form 3, but is designed to hold two cartridges at once to account for the larger print volume.



## Large Format Cure

Adding post-curing to your stereolithography 3D printing process helps your part reach its maximum material properties, including improved strength and performance. In some cases, post-curing also improves part accuracy.

For customers seeking an automated cure solution, Formlabs recommends the Photocentric Cure L due to its ability to cure large parts. This large format cure can be purchased through Photocentric.

#### Cure L Photocentric



External Dimensions	700 (H) x 600 (D) x 700 (W) mm
Internal Dimensions	550 (H) x 350 (D) x 500 (W) mm
Temperature Range	0 – 65 °C
Curing Time	15 – 120 min
Quoted Price	\$3764

Optimal cure times and temperatures with the Photocentric Cure L may vary from those published with the Form Cure.

## SERVICES

We are expanding our industry-leading support and service offerings to cover the Form 3L. Online documentation, support articles, and the Formlabs Forum are always available for all Formlabs products.

Additional Pro Service Plans and an Extended Warranty specifically tailored toward the Form 3L will be made available closer to Q4, with the ability to add them onto any Form 3L preorder.

Service	Description	
Form 3L Pro Service Plan	Tailored for professionals, this premier support service is designed to meet the needs of your business and delive rapid response to critical issues.	
Form 3L Extended Warranty	Add a year of additional coverage to the standard one- year warranty included with every Formlabs 3D printer for two years of worry-free warranty coverage.	

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