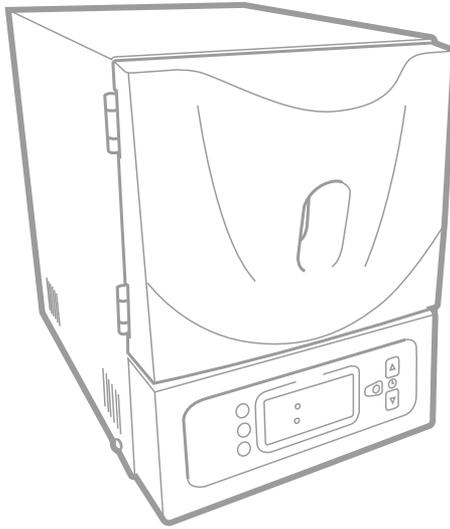


# Technical Guide

## PCA 100 Post-curing Apparatus Instructions

Fig. 1



*The EnvisionTEC PCA 100 is a post-curing apparatus for the final hardening and strengthening of photopolymer parts that were 3D printed. This unit features 36 LEDs that deliver light in the 390 to 420 nm wavelength range. The PCA 100 is ideal for applications within the aerospace, entertainment, automotive, dental, hearing aid, jewelry, consumer goods, education, medical devices, manufacturing, and orthodontic industries. Using a post-curing apparatus as a final step results in higher strength and stability and also ensures a thorough cure, which is critical for parts destined for direct casting.*

*The PCA 100 also features an automatic rotating turntable allowing for optimal uniformity in curing. A digital display control panel provides simple and user friendly operation and buzzer alerts, indicating the completion of the curing process.*



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# Product Assembly

## Shipment

- 1 PCA 100
- 1 Power Cable
- 1 Protective UV Safety Glasses
- 1 User's Manual

## Assembly and Initial Start-up

### Environment

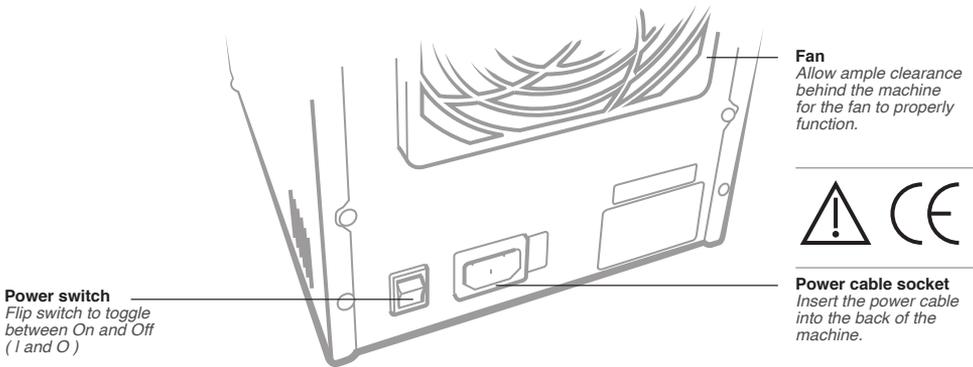
Place the machine on a flat surface, away from heat sources and direct sunlight exposure. Connect the power cable into the power cable socket in the back of the machine, while machine is in the Off (O) setting.

### Voltage

Make sure the voltage indicated on the rating plate complies with the local standard before attempting to connect the machine to an electrical outlet.

Fig. 2

BACK FACE OF PCA 100



## Battery Backup

***EnvisionTEC offers the PPS DLP battery backup to protect electrical machinery.***

Designed for use with all desktop, Micro and Vida series 3D printers. The EnvisionTEC Power Protection System (PPS) DLP ensures that voltage fluctuations and power outages do not disrupt the 3D printing process. More than just a battery backup system DLP conditions or cleans the power supply from noise and other issues that may interfere with high-value 3D print jobs, where a consistent supply of energy is crucial.

***<https://enviontec.com/3d-printers/accessories/pps-dlp/>***

***If a battery backup is not used, a surge protector is recommended.***

# Introduction

## Copyright

This instruction manual must be treated confidentially. It should only be used by authorized personnel. It may only be entrusted or made available to third parties with the prior written consent of EnvisionTEC GmbH, EnvisionTEC Inc. or authorized distributors.

All documents are protected within the sense of copyright law.

No part of this documentation may be reproduced, utilized or transmitted without specific prior consent. Infringements are an offence resulting in obligatory compensatory damages.

All industrial rights reserved.

## Trademark

EnvisionTEC® and Perfactory® are related product names that are registered Trademarks of EnvisionTEC GmbH, Germany.

## Manufacturer Warranty

This instruction manual must be read carefully before installing the product and putting it into operation. We assume no liability for damage and malfunctions resulting from failure to comply with the instruction manual. Furthermore, no warranty can be provided for faults that are due to subjecting the goods to improper use or application above average strain, nor can any warranty be provided for wearing parts.

In case any material defects or errors occur despite correct usage, EnvisionTEC offers a warranty period limited to one year starting from the moment the customer is supplied with the goods for the 3D printing system and respective accessories. The obligation of EnvisionTEC is limited to repairing or replacing defective machine parts.

Under no circumstances will EnvisionTEC assume liability for the consequences or side effects of a violation of warranty conditions, even if this has been agreed to or expected, and even in case of fault or negligence on the part of the company.

EnvisionTEC expressly refrains from granting any other warranty claims in this respect. Neither representatives/dealers nor employees of the company are authorized to increase or alter the warranty claims. See the EnvisionTEC Warranty Programs section on page 9 for details about extended warranty options.

## Safety Symbols and Definitions

CAUTION, ATTENTION



OFF (POWER SUPPLY)



ON (POWER SUPPLY)



ELECTRICAL SHOCK HAZARD



LIGHT ON/OFF



ALTERNATING CURRENT



UV RADIATION HAZARD



CURING TIME PRE-SET



WEAR GLOVES



PRODUCT FOLLOWS CE STANDARDS



ULTRAVIOLET RADIATION INSIDE



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## Safety Guidelines

Read and follow all instructions.

***Follow all safety rules in this section and heed all cautions and warnings in this guide.***

***Do not attempt to open the door while a part job is running.***

***Exercise proper cable management.***

***Do not attempt to access, service, or adjust the internal machine components.***

***Install the machine away from sources of heat and combustible objects.***

***This machine must be used indoors.***

***Do not use this equipment in a manner that is not specified by the manufacturer.***

## Resin Safety

***Consult the Safety Data Sheet (SDS) for each EnvisionTEC resin for more information about best practices specific to each resin. SDSs can be located at [envisiontec.com](http://envisiontec.com).***

EnvisionTEC resins are specifically engineered to cure when exposed to light sources and must be handled with care. Be advised that each resin is different and may require different handling throughout the 3D printing workflow. Be sure to follow post-processing instructions completely before touching printed models.

### Personal Protective Equipment (PPE)

**Nitrile or neoprene gloves** must be worn while in contact with any resin in any stage before it has been post-cured (green stage). Check to make sure that gloves are chemical-resistant before handling anything with them. Replace gloves with a clean pair if they become compromised in any way.

Wear protective clothing, such as a lab coat, to reduce the chance of coming into contact with any drips or splatter from uncured resin.

**Latex gloves are not an appropriate substitute.**

### Maintain Cleanliness

Leave the workspace in better condition than how it was found. Keep all surfaces, including the floor, clean of debris and resin. Have a wastebasket nearby for accessible waste removal.

**Paper towel** is suggested to remove spilled resin.

**Wash all clothing** that comes into contact with resin using detergent before wearing it again.

**Wash skin that comes into contact with resin immediately with cool water.**

**Remove spills that come into contact the PCA 100 immediately.**

### Managing Disposal

**Fully cure resin before disposing in the garbage.**

**Do not print using expired resin.**

**Do not pour liquid or uncured resin into any water system!**

### First Aid / Minimizing Contact with Resin

**If ingested, seek immediate medical attention.**

**Do not eat, drink, or smoke in or near workspaces.**

**If resin contacts skin** -- wash thoroughly with soap and water. Do not use any solvents!

**If resin contacts the eyes** -- immediately use an eye wash station or rinse eyes with water for 15 minutes.

# Ultraviolet Safety

Looking directly into the light without wearing proper eye protection may lead to optical damage.

During operation, these lamps emit UV light in the 390 nm to 420 nm range. These apparatuses are intended for aerospace, entertainment, automotive, dental, hearing aid, consumer goods, education, medical devices, manufacturing, and orthodontic purposes.

In normal operation, the ultraviolet light is completely confined and does not expose ultraviolet light. The lamps are immediately switched off when the access door is opened. Ultraviolet fluorescent lamps are not classified in a specific hazard class; however, the energy they emit is still potentially dangerous. Because the output spectrum of the fluorescent lamps ranges from approximately 390 nm to 420 nm, these lamps should only be operated inside the post-curing apparatus only with the door fully closed.

Use the PCA 100 in a clean environment!

## Post-curing Apparatus Overview

The post-curing apparatus provides the final step for post-processing printed models. Initial post-processing of printed models includes the following --

**Drain excess resin**

**Clean with 99% Isopropyl alcohol (IPA) (for most resins)**

**Remove supports**

**Dry with compressed air**

For more information about the initial steps of post-processing printed models, please contact EnvisionTEC.

After the initial post-processing has been completed and all excess resin has been removed, the printed models can then be placed into the PCA 100. Within the apparatus, the printed models are exposed to ultraviolet light for a specified period of time to harden the models. The interior of the apparatus is equipped with an array of UV lamps, reflective surfaces, and a turntable which revolves at the speed of one revolution per minute. This enables a more uniform curing cycle for each printed model.

## Material Curing Cycles

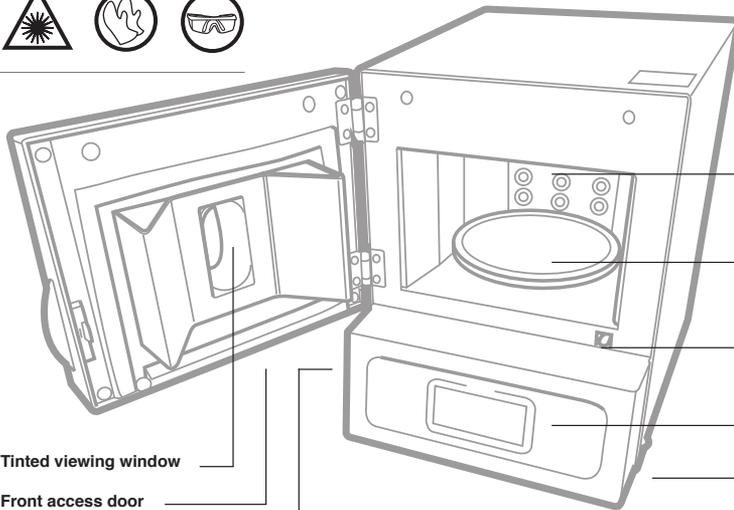
	Cycles	Cycle Time		Cycles	Cycle Time
<b>Casting Materials</b>			<b>Dental Materials</b>		
Easy Cast 2.0	4	9 min.	E-Partial/EC1000	2	10 sec.
EC 3000	4	4 min.	Press E-Cast/WIC300	2	40 sec.
EC 500	4	7 min.	E-Dent	2	3:30 sec.
PIC 100/G/C	4	9 min.	E-Model Light	2	1 min.
EPIC	4	9 min.	E-Guard	2	10 sec.
WIC100	4	1 min.	ClearGuide	2	20 sec.
			E-Guide Tint	2	5 min.

Fig. 3

OPEN PCA 100 WITH UV SAFETY GLASSES



 This product follows CE standards



Tinted viewing window

Front access door

Power switch

Located behind apparatus

Buzzer

The PCA 100 produces energetic beeping sounds between curing cycles and when buttons are pressed.

**Blue LEDs**

These LEDs have a much longer lifespan than halogen lamps.

**Rotating turntable**

Made of a gloss-finished stainless steel. Platform reflects and improves uniformity.

**Safety Interruption**

Whenever the front access door is opened.

**Digital display control panel**

**Rubber support feet**  
Located under machine



**UV safety glasses**

## Post-curing Apparatus Specifications

### Machine Properties

Power Supply Voltage

100 - 240 VAC 50/60 Hz

Wattage

MAX 200W

Outer Dimensions

9.7 x 7.8 x 10.6 in.

Height 245.5 mm

Width 197 mm

Depth 268 mm

Weight

14.3 lbs.

6.5 kg

Number of LEDs

36

Wavelength

390 ~ 420 nm

Standard Color

white

Usable Inner Chamber Dimensions

4.25 in. x 4.25 in. x 2.75 in.

108 mm x 108 mm x 70 mm

### Recommended Operating Environment

Ambient Temperature

10 °C ~ 40 °C

Humidity

30% ~ 75%

Ambient Pressure

700hPa ~ 1060 hPa

*\*Specifications are subject to change without notice*

# Operation

The table below provides the recommended curing process. As a general rule, most materials require two cycles of the same amount of time. Typically, the part is turned over between each cycle to make certain all surfaces are exposed to the UV light.



**Wear gloves while handling printed models until they are fully cured!**

1 -- Open the front access door of the PCA 100. Place the 3SP/DLP EnvisionTEC printed model directly onto the center of the stainless steel turntable. Close the front access door securely.

2 -- Power the machine on by flipping the switch in the back of the machine from off (O) to On (I), Fig. 3.

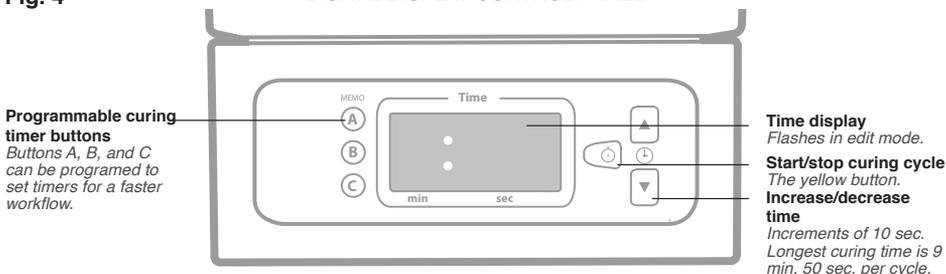
3 -- Use the control panel to press the Up and Down arrows, Fig. 4, to adjust the digital timer for the curing cycle. Press the start/stop curing cycle (yellow) button, Fig. 4, to start the curing cycle. See guide on page -- for a list of curing times based on material. The maximum setting for the PCA 100 is 9 minutes and 50 seconds.

## Programming Curing Timers

The PCA 100 is capable of saving three curing times to the re-programmable buttons, A, B, and C on the digital front panel, Fig. 4.

Fig. 4

DIGITAL DISPLAY CONTROL PANEL



To program button A, power on the machine and hold down the A button for five seconds until the machine emits an energetic beeping sound and the number on the digital display begins to flash. Use the up and down arrows, Fig. 4, to toggle by increments of 10 seconds. The arrow button can also be held-in to cycle through the time faster. Hold down the A button to save the time. Repeat as needed for buttons B and C.

## Safety Stop

There is a safety switch that engages when the front access door closes, Fig. 3. When the switch is released, the system will be automatically suspended to protect against optical damage. Press the start/stop curing cycle (yellow) button before opening the front access door during curing cycles to electronically suspend the apparatus.

4 -- The digital time display will count down the time until it reaches zero. When the curing cycle completes, the machine will produce five energetic beeping sounds to signal the end of the curing cycle.

5 -- The printed models need to cool between curing cycles. Wait 15 seconds after each curing cycle for cooling. Open the front access door and turn the printed models over. Models cannot touch one another. Proper spacing produces an even cure.

6 -- Close the front access door.

7 -- The PCA 100 will revert to the set curing cycle time. Press the start/stop curing cycle (yellow) button to begin the next curing cycle.

***Repeat steps 4 - 7 as needed. Refer to the Material Curing Cycles chart for specific curing cycle information based on material.***

8 -- After the time display, *Fig. 4*, reaches zero, remove the printed model from the PCA 100.

9 -- The printed model has now been fully post-cured and is safe to touch.

## Notes

# Maintenance

*Follow recommended cleaning instructions.*

**Do not touch the LEDs. Touching the LEDs will considerably shorten their lifespan!**  
*Clean the machine by using a neutral detergent on the exterior of the machine while the machine is turned off and unplugged.*

*The PCA 100 will need to be wiped down in the interior when the reflective stainless steel becomes foggy or cloudy due to prolonged use, dust, or other particles that accumulate. Keeping the interior clean of residue gives the machine the most accurate and uniform curing results*

*Please do not attempt to self-service the PCA 100. Please call EnvisionTEC for assistance to answer questions by referring to the Contact and Technical Support section on page 11 of this guide.*

*Power off the machine when not in use.*

## EnvisionTEC Warranty Programs

All EnvisionTEC 3D printers come with a one-year warranty. Following that period, several warranty and service contract choices are available.

### Warranty Program Option 1

One year comprehensive service & maintenance contract (warranty extension) The contract covers the replacement and/or repair of all parts covered under the original warranty\* excluding any shipping charges. The cost of any labor involved, and our software maintenance contract is also included. Travel and accommodations for on-site service are not included.

### Warranty Program Option 2

One year software maintenance contract Coverage will include all new software versions, upgrades, and bug fixes for the Perfactory Software Suite, MAGICCS EnvisionTEC software, and all telephone technical support for the software are also covered for 12 months.

### Warranty Program Option 3

Pay as you go For telephone support of machines that are not under warranty or an extended warranty agreement, a per hour rate for remote phone tech and remote support per incident billed at a minimum of one hour. For on-site presence, customer will be billed per hour with travel and accommodations and all parts required for repair to be paid by the customer. For factory service and repairs, customer will be billed per hour with all shipping costs to and from the factory to be paid by the customer.

***\*Please note that parts that fail due to operator abuse or not following instructions are not covered by warranty (i.e. dropping resin on tilting mechanism). Consumables such as resin, light bulbs for the projector, PSA's and material basement trays are not covered.***

## Best Practices and Online Documents

At EnvisionTEC, we have worked to develop Best Practices to make sure our customers consistently get the best performance out of their 3D printers and materials. Whether you are printing patterns for investment castings or creating models for indirect bonding, we have created these step-by-step guidelines to make the process as easy as possible based on the different software, machines and materials you may be using. And as always, if you have questions, feel free to reach out to our experienced team of 3D printing professionals for assistance.

<https://enviontec.com/3d-printing-white-papers-best-practices/>

## Contact and Technical Support

At EnvisionTEC, we understand that our machines are used by professionals for the production of custom parts and final products. The fastest way to get your issue resolved is to create a support ticket so we can connect you with the right member of our team of experienced 3D printing professionals. Please add as much detail as possible to expedite your support request.

### List of information needed before opening a support ticket

*Description of the situation*

*The serial number of the PCA 100*

*A reliable contact method (valid email address or phone number)*

*Photos or a brief video if applicable*

Visit the Technical Support Page on the EnvisionTEC website, and submit a support ticket or call in for assistance.

<https://enviontec.com/support/>

### *For technical support in North America*

EnvisionTEC Inc., Dearborn, Michigan, US  
Monday – Friday, 8:30 AM to 5:00 PM EST

**Call 1-313-436-4300**

### *For technical support outside of North America*

EnvisionTEC GmbH, Gladbeck, Germany  
Monday – Friday 8:30 AM to 5:00 PM CET

**Call +49-204-3987500**

EnvisionTEC UK, Stoke-on-Trent, UK

Monday – Friday 8:30 AM to 5:00 PM GMT

**Call +44-178-2418040**

## Have A Question?

*An Idea? Interested in a 3D Printer?*

Please submit the contact form at the link below and a member of our team of experienced 3D printing professionals will be back in touch soon. At EnvisionTEC, we sell our 3D printers and materials through an experienced and consultative sales team, which includes distributors, around the world. We also serve a wide variety of customers in the professional, medical and industrial sectors. By filling out the form, we can put you in touch with the best sales representative for you and your particular industry.

<https://enviontec.com/contact-us/>



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