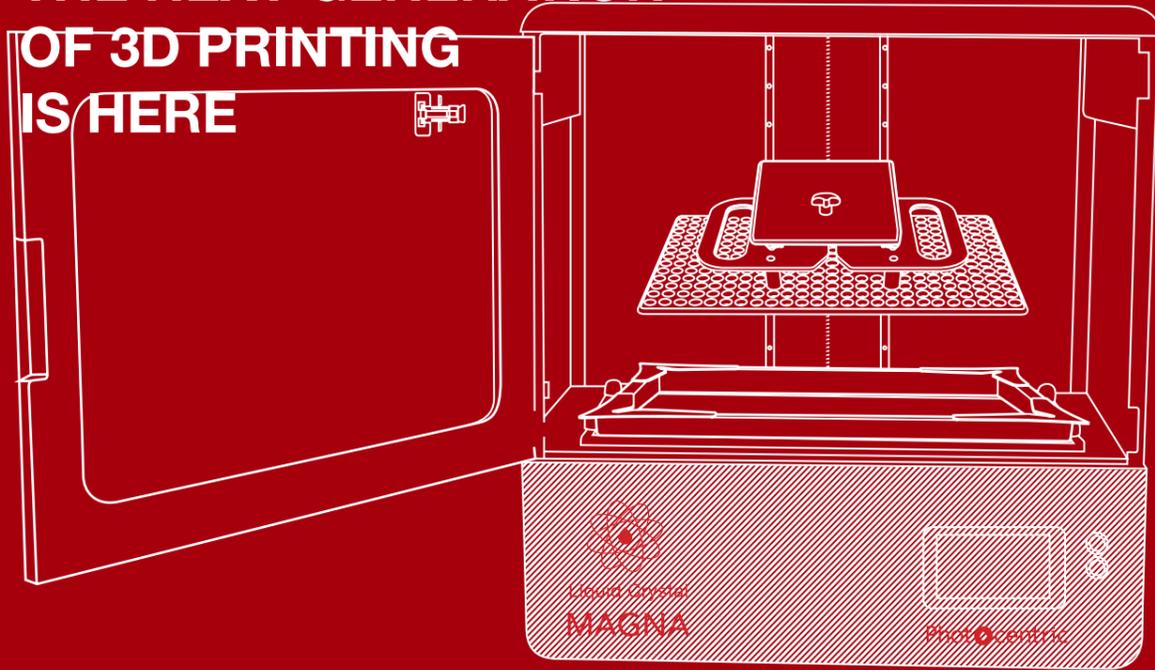


**THE NEXT GENERATION
OF 3D PRINTING
IS HERE**



**LC MAGNA
USER MANUAL**



DISPOSAL INSTRUCTIONS

Do not throw this electronic device into the waste when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle or return to Photocentric for recycling.

Photocentric

UK

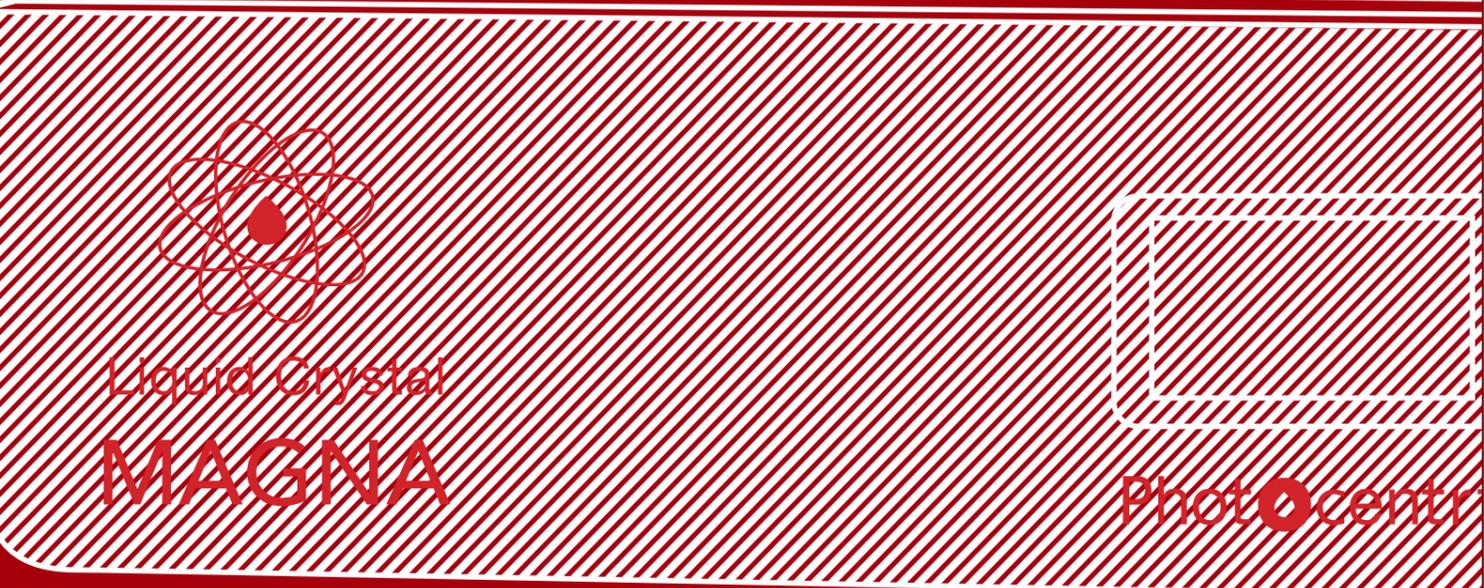
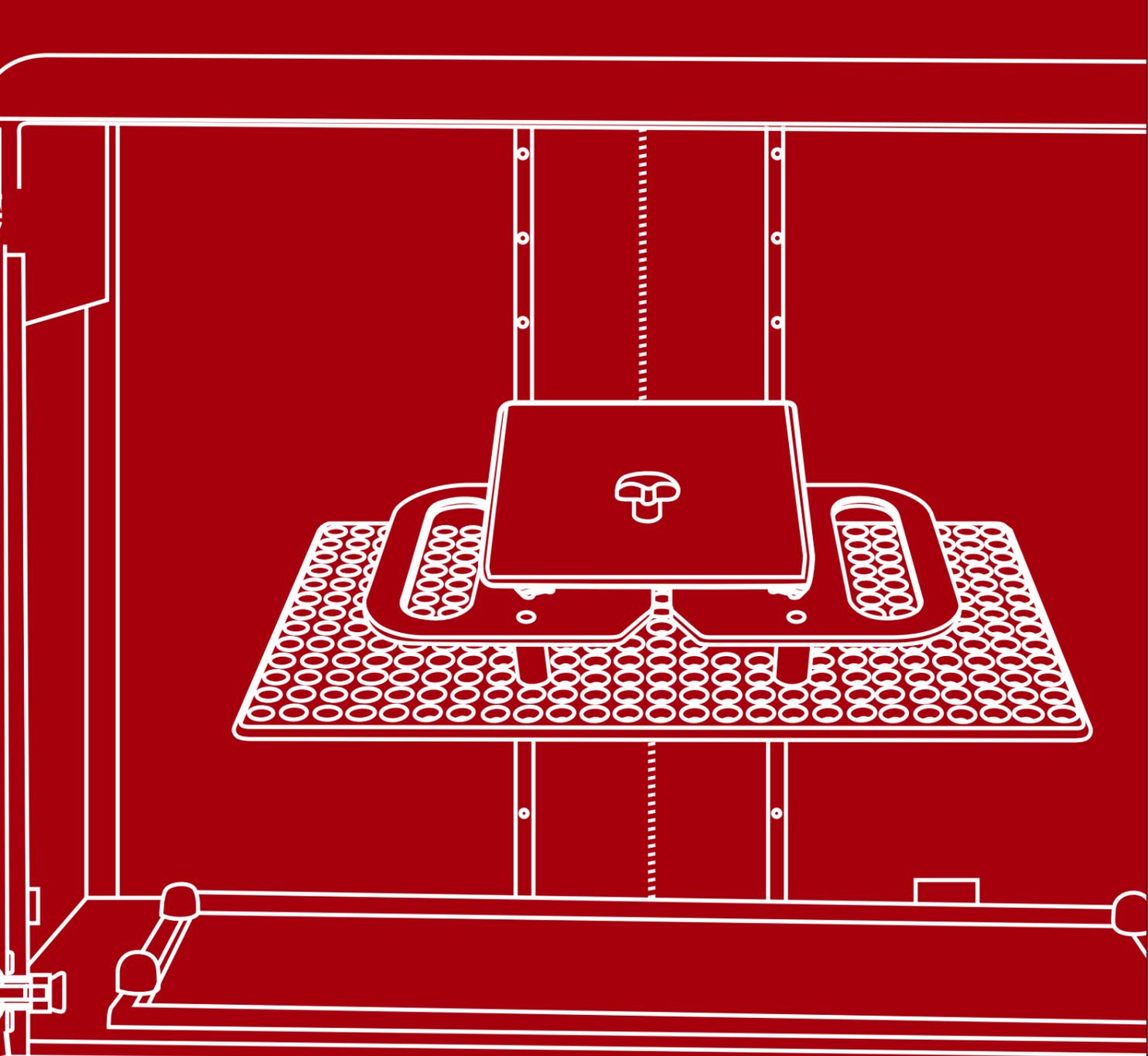
Cambridge House, Oxney Road
Peterborough PE1 5YW UK.
info@photocentric.co.uk
www.photocentricgroup.com

USA

2205 West Parkside Lane, Phoenix,
85027, AZ USA
www.photocentricgroup.us

Contents

General information	1-2
Safety Information	3-4
Contents of Box	5
1. Install	6-7
2. Print	8
2.1 Print Pre-Sliced File	8
2.2 Print your own file	9-13
3. Clean	14-15
4. Finish	15-16
5. Maintain	17-18
5.1 Vat Reskinning	17
5.2 Re-homing print platform	17
5.3 General maintenance	18



EU DECLARATION OF CONFORMITY

LIQUID CRYSTAL 3D-PRINTER

Model: Liquid Crystal Magna

We hereby declare that the product above is in compliance with the essential requirements of the following:
Machinery (MD), 2006/42/EC. Electromagnetic Compatibility Directive (EMC), 2004/108/EC, 2014/30/EU.
Restriction of the use of certain hazardous substances (RoHS) Directive, 2011/65/EU Commission Regulation (EU) No. 453/2010 and IEC 60950-1 Safety of ITE.

Technical Documentation is stored at the manufacturer's address below

Date of Issue: 17. June 2019

Place of Issue: Peterborough

Paul Holt
Director

Manufacturer
Photocentric Ltd
Cambridge House, Oxney Road
Peterborough, PE1 5YW, UK
Year of CE Marking: 2019



USER MANUAL

Congratulations!

With LC Magna, you have just purchased one of the first ever custom mass manufacture 3D printers that we hope will become an irreplaceable part of your production line or design unit. We trust you will enjoy your experience and we look forward to receiving your feedback. Please do not hesitate to get in touch with us at info@photocentric.co.uk

With best wishes,
Photocentric



SAFETY INFORMATION



Please read the instructions carefully. Keep this document for future reference. Follow all warnings and instructions marked on the product.

- Magna weighs approx 100kg. Ensure you have four people available to remove Magna from its crate.
- The footprint of Magna is 850mmx640mm. Take care to choose a flat and stable work bench that can handle Magna's weight and foot print.
- Magna's height is 980mm. We recommend a work bench with a height of 800mm to allow for comfortable operation.
- Plug in the power cord first, then connect the plug to the AC power outlet.
- Unplug the power cord before disconnecting from the printer.
- Do not operate outdoors.
- Do not allow resin or any liquids to get inside the chassis; wipe up any liquid spills immediately.
- Disconnect the printer from AC before storage or when not used for a long period of time.
- This 3D printer is connected to the electrical network with an input of 110 or 240 V AC, 50/60 Hz.
- Do not allow anything to rest on the power cord. Do not locate this product where people could walk on the cord.
- If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord

does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.

- Do not overload a power outlet, strip or receptacle by plugging in too many devices.
- Use the product only with the supplied power supply cord set.
- In case of malfunction, disconnect the printer immediately from the power network.
- Do not attempt to fix this product by yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all repairs to qualified service personnel. Please send an email to your national supplier or contact technical service at: info@photocentric.co.uk

Unplug this product from the wall outlet and refer servicing to a qualified service personnel if:

- The power cord or plug is damaged, cut or frayed.
- Liquid has been spilt in the machine.
- The machine has been exposed to rain or water.
- The machine has been dropped or the case has been damaged.
- The machine does not operate normally after following the operating instructions.

SAFETY GUIDELINES



IRRITANT

- Keep the printer and resins out of the reach of children.
- The resin is an irritant to skin and eyes. Always wear gloves when coming into contact with the liquid resin. Always use in a well ventilated room.
- We recommend connecting Magna to your extraction unit through the hole in the back panel, using the supplied extraction spigot
- Resins are classified as irritants, not harmful, but in exceptional circumstances people can be sensitive to the resin and develop a skin irritation or rash. Avoid this possibility by always wearing gloves and avoid breathing fumes.
- The printer should be operated on a stable and level surface, preferably away from direct ambient light.

Please note that the latest instructions will always be available from:

www.photocentricgroup.com/support

DISPOSAL INSTRUCTIONS



Do not throw this electronic device into the waste when discarding. To minimise pollution and ensure protection of the environment, please recycle or return to Photocentric for recycling.

CONTENTS

The box contains



Liquid Crystal Magna

Liquid Crystal MAGNA



2Kg Daylight Magna White Dental



2Kg Daylight Magna Black Hard

1 X Accessories box which contains



MINIMUM COMPUTER REQUIREMENTS

- Operating System Windows 7, 8 or 10
- Minimum 2.0 Ghz processor speed 2 cores (recommended 4 cores)
- GPU capable of opening opengl version 3.0 or higher.
- .net framework version 4.0
- 64bit system: minimum 2GB of RAM, recommended 4GB
- 32bit system: minimum 1GB of RAM, recommended 2GB

Your perpetual Photocentric Studio license is stored in provided USB stick. Please visit Photocentric Studio Manual to install and activate your software.

RECOMMENDED ITEMS

- Extra gloves.
- Paper towels.
- Access to a sink with hot water to clean the object.
- Liquid Soap (detergent) to clean the object.
- Glass or clear plastic container to post expose the object in.
- Air gun and air compressor (Optional)
- Access to Photocentric Resin cleaner (Optional) and Photocentric Wash99 unit (Optional).

Liquid Crystal MAGNA

1. INSTALL

1.1 PRINTER SET-UP

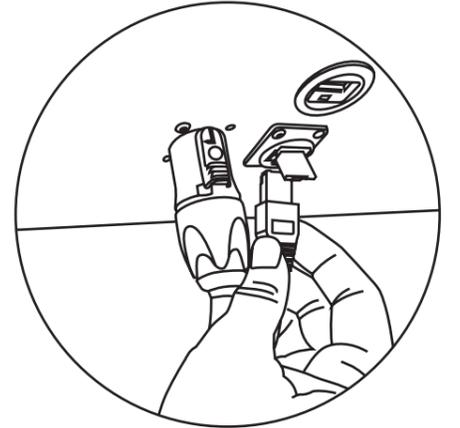
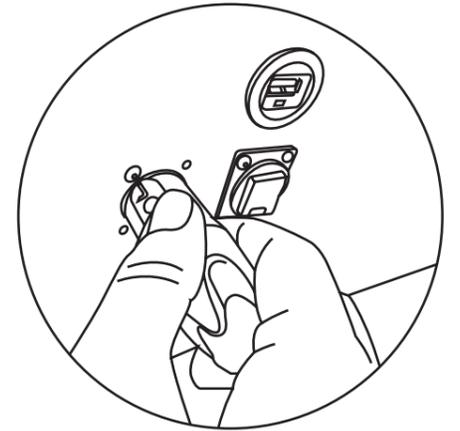
Once you reach this stage, LC Magna should already be in position on a secure appropriate bench, ready for use.

1. Open the door and remove linear drive protection
2. Take the power cable and align plug to Magna's power socket as shown in the photo. Push the plug in, and twist 90 degrees clockwise until it clicks. Then, connect the power cable to a wall socket.

NOTE:
To unplug the printer from the power, first unplug the power cord from the wall socket. Then disconnect the plug from the printer.

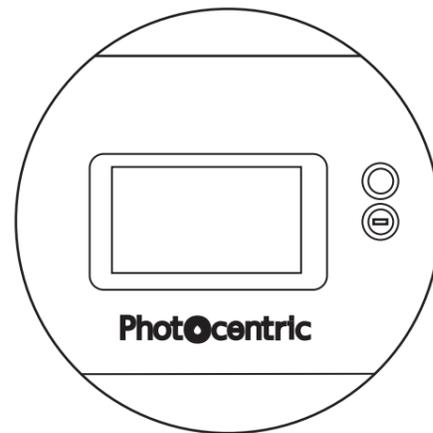
NOTE:
To remove the plug, pull back the latch and twist 90 degrees anticlockwise.

3. Also at this stage, you can prepare the printer for internet connectivity.
 - 3.1 Wi-Fi- Push the supplied Wi-Fi dongle into the back panel socket.
 - 3.2 Ethernet- Connect one end of an Ethernet cable to the socket with the other end connected to your local area network.



- Now, turn the printer on by pushing the front power button.

Note: When you press the maintain button the LC Magna logo will turn from red to blue.



- If you are planning to connect to Wi-Fi, go to the Network menu.

Select your Wi-Fi network.

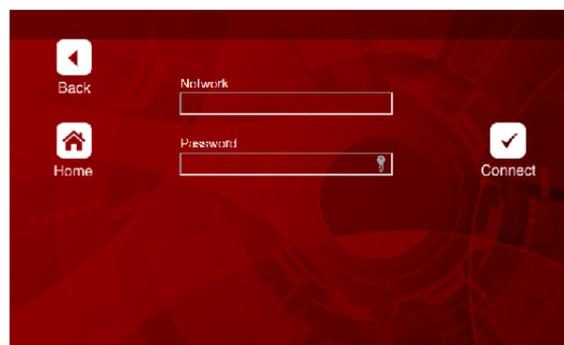
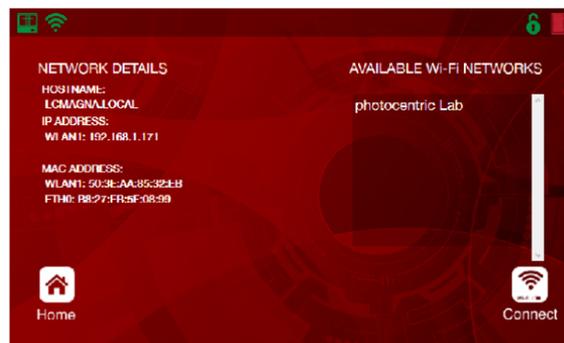
Press Connect.

Write the password and connect.

You should see an IP address appear in the top left corner of the GUI Home menu.



- Your LC Magna is all set and ready to use.

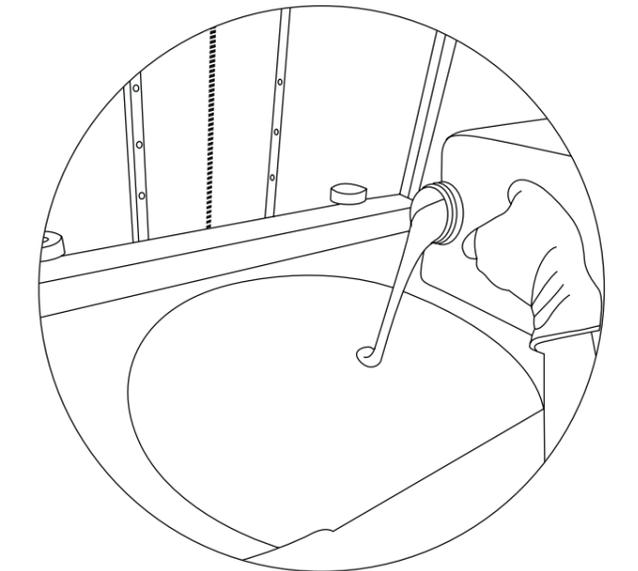
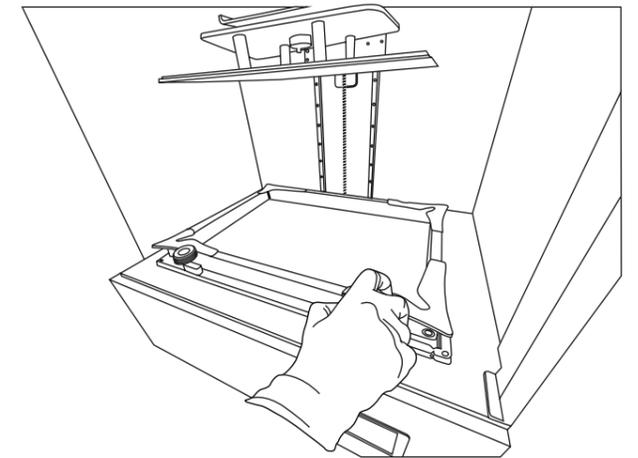


2. PRINT

2.1 PRINT PRE-SLICED FILE

We have stored two test files on your printer. One has been prepared to work with Daylight Magna Hard black resin and the other with Daylight Magna Dental White resin.

- Pick one of the sample resins
- Make sure vat bolts are fully tightened.
- Empty 2kg of sample resin into the vat.
- Select the relevant file and press print.
- Once the print is done, you can start the cleaning process.



2.2 PRINT YOUR OWN FILE

2.2.1 PHOTOCENTRIC STUDIO SOFTWARE SET-UP

1. Please refer to the Photocentric Studio manual to install software and activate your license.

www.photocentricgroup.com/studio-support/

2. Select LC Magna and your desired resin profile then press apply.

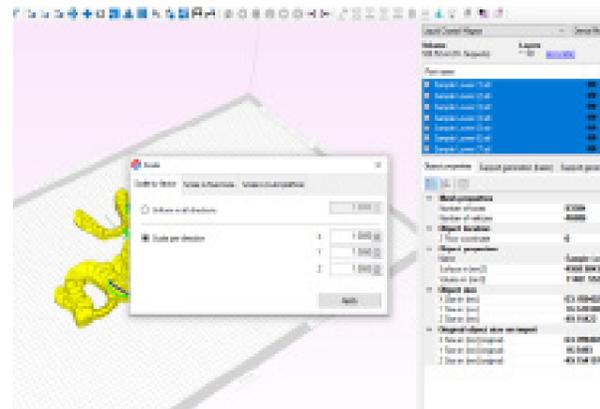
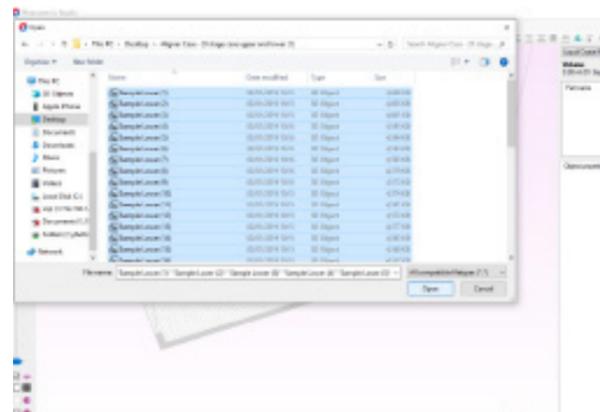
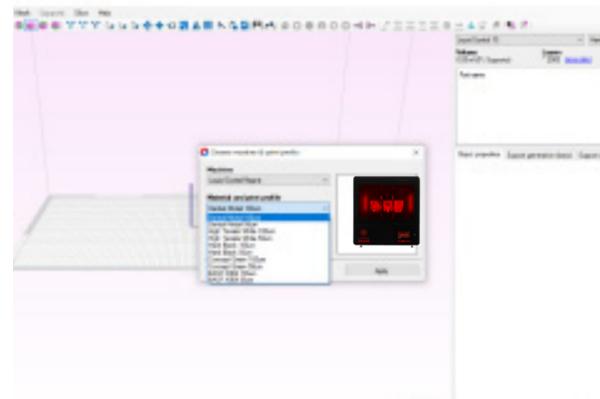
2.2.2 SLICE YOUR FILE

1. Open your STL, OBJ or P3D file or files. Orient and support them as you wish. Suitable orientation and support layout are vital to achieve success. Please refer to example [here](#) to learn how to correctly orient and support files

2. In order to achieve the highest accuracy with LC Magna, we recommend you scale up models in X and Y by 0.5%.

For maximum accuracy, we also recommend locating parts 5mm higher than the build platform and adding supports

Note: For Dental arches the latter step is not necessary.



Liquid Crystal MAGNA

Liquid Crystal MAGNA

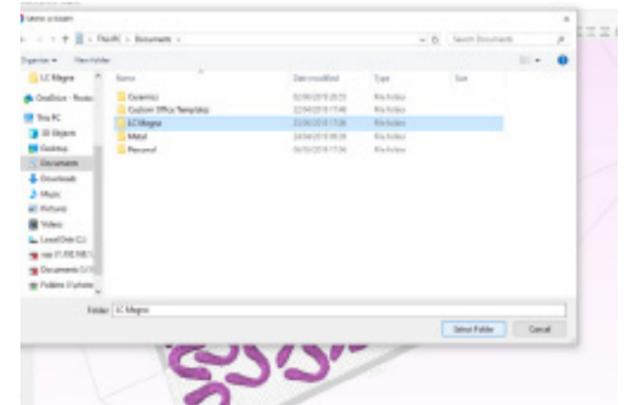
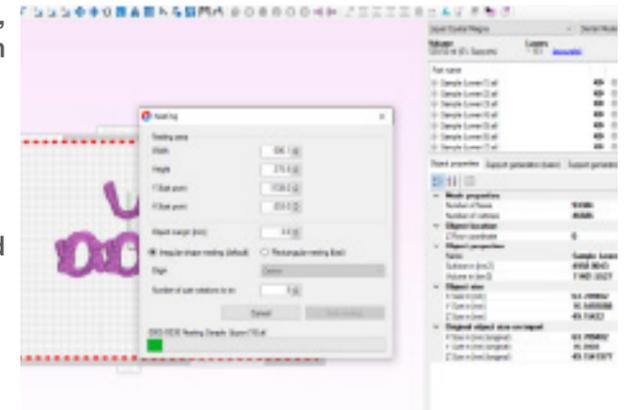
3. If you have more than one part on the platform, choose Nesting option to auto-align parts on the platform.



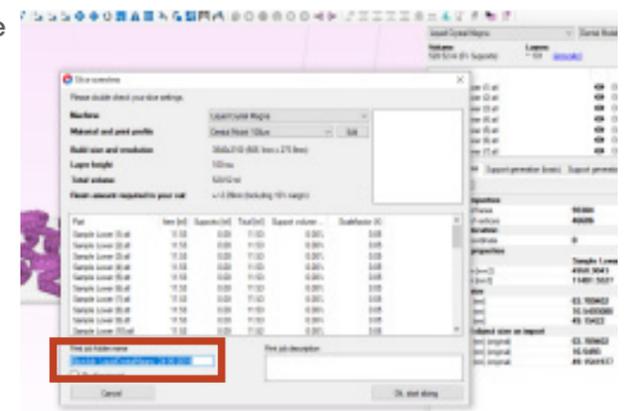
4. Click Slice icon.



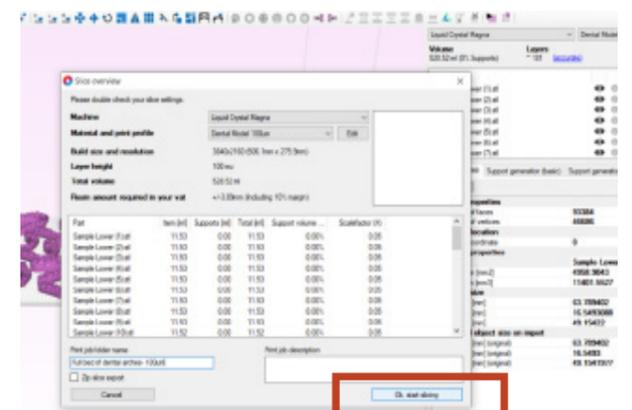
5. Select your preferred location to save the sliced file.



6. You can change your sliced file name in the pop-up window if required.



7. Now, start slicing.



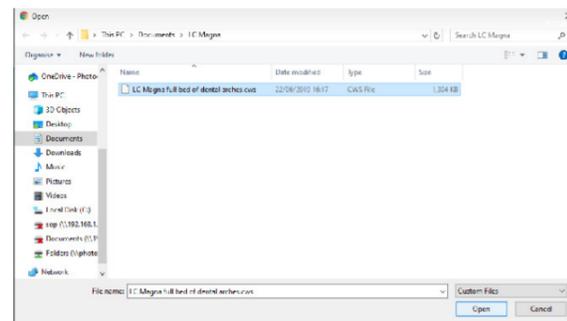
Liquid Crystal MAGNA

2.2.3 UPLOAD YOUR SLICED FILE

1. Save the sliced *.cws file onto your USB drive (if you are connected to the internet you can upload it directly: see instructions below from point 4)
2. Insert USB and select the Print Files icon on the touchscreen.
3. After a few seconds, your file will appear in the print job queue.

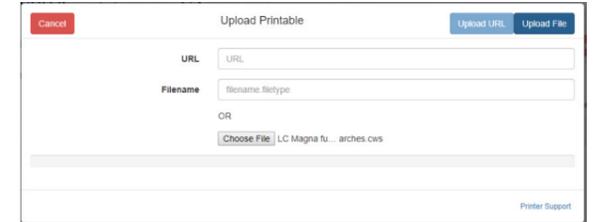


4. To upload using the internet, proceed as follows:
 - 4.1 Write your LC Magna IP address (see top left corner of GUI), in your web browser address box.
 - 4.2 Press Upload, then Browse and select your file to open.

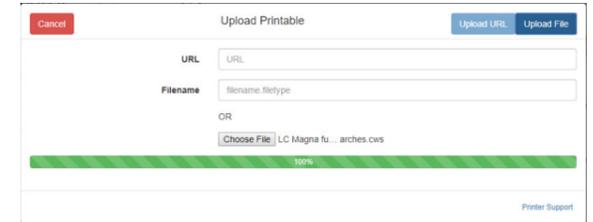


Liquid Crystal MAGNA

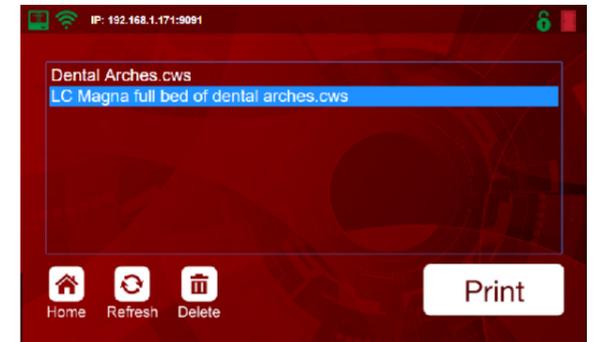
- 4.3 Press Upload file.



- 4.4 Once uploading is complete (100%), click on main page.



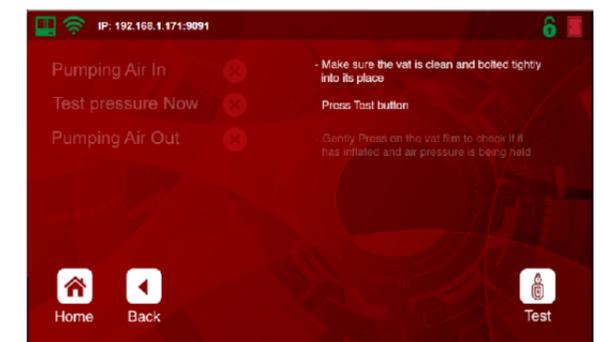
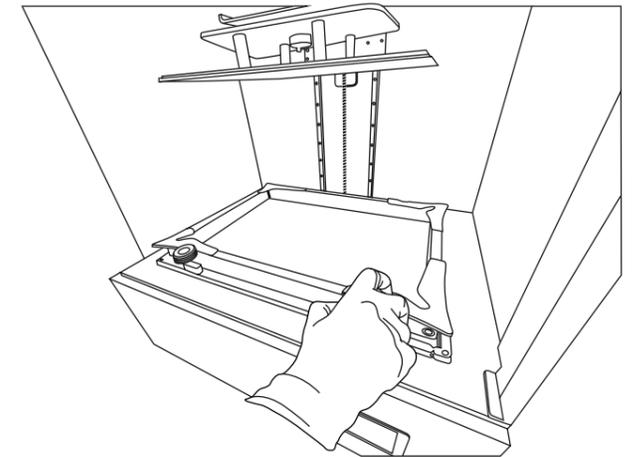
- 4.5 Your file should appear on both the web interface and machine interface (GUI).



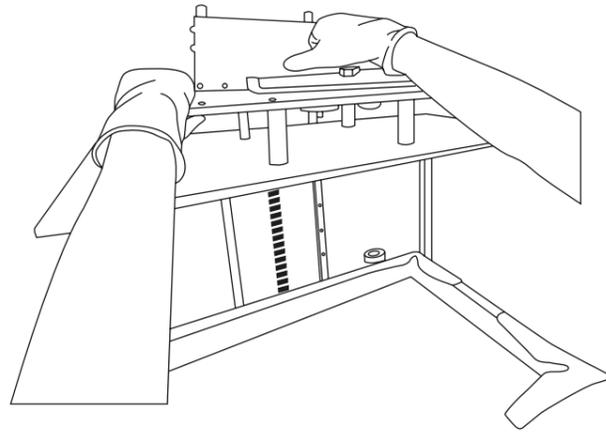
2.2.4 PRINT SET-UP

1. Make sure the vat is clean, dry and bolted down tightly.

NOTE: Bolting the vat down tightly is critical for successful peel release. You can check peel function by going to the Maintain menu, selecting Pump button and following on-screen instructions.

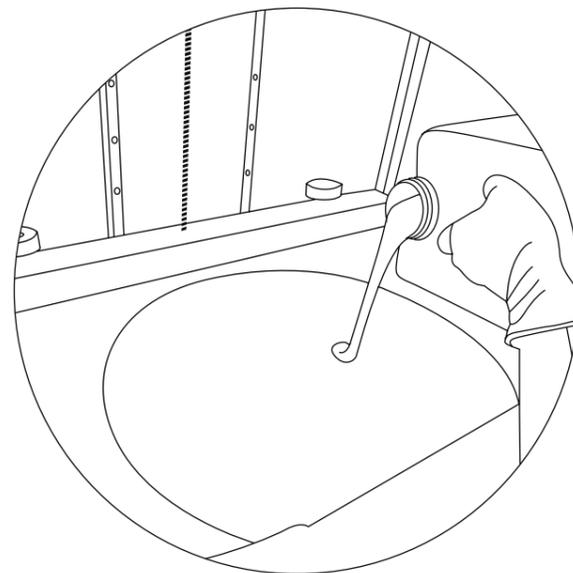
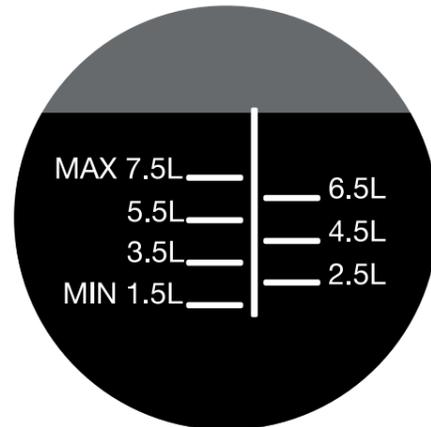


2. Make sure platform is clean and bolted tightly into place.



3. Add resin to vat. Use volume gauge to add required amount of resin.

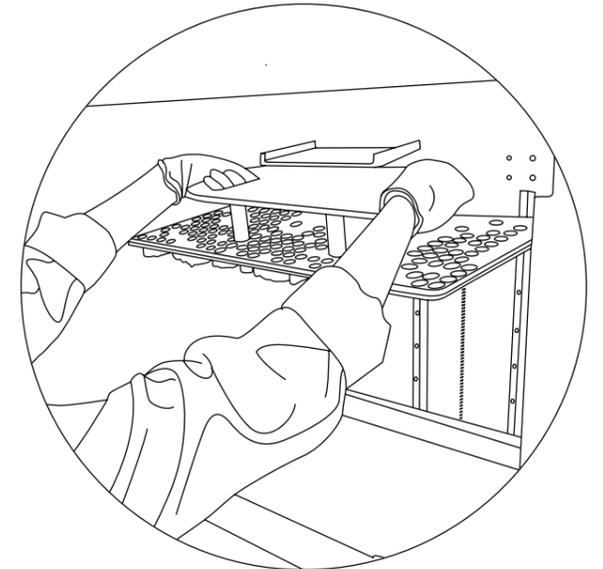
NOTE: you need to fill resin up to the MIN mark and then add the required amount of resin for your print. For example, if Photocentric Studio shows a total volume of 1L - add 2.5L of resin. (1.5L min + 1L for parts).



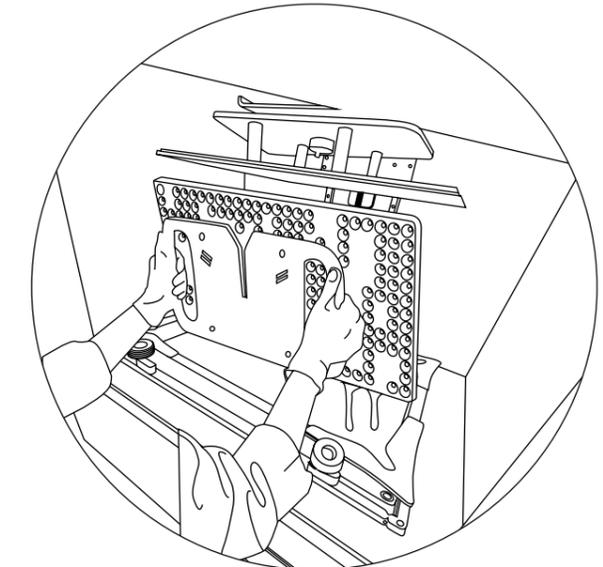
4. Select your file from Print Files menu and press print.
5. Once the print is done the LC Magna logo will change from red to green, you can start the cleaning process (sections 3 and 4).

3. CLEAN

1. Take off the platform. Drain off excess resin by holding the platform vertically over the vat.



2. Wipe off the remaining excess resin from the platform with absorbent paper.



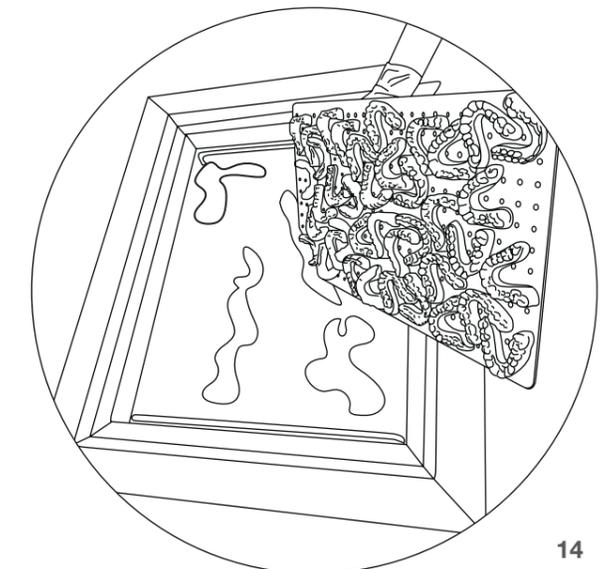
- 3.1. Place the platform in Photocentric Wash99 filled with Photocentric Resin Cleaner. Wash for 5-10 minutes.

If necessary, leave longer than 10 minutes.

Take the platform out of the wash unit and rinse with warm/hot water.

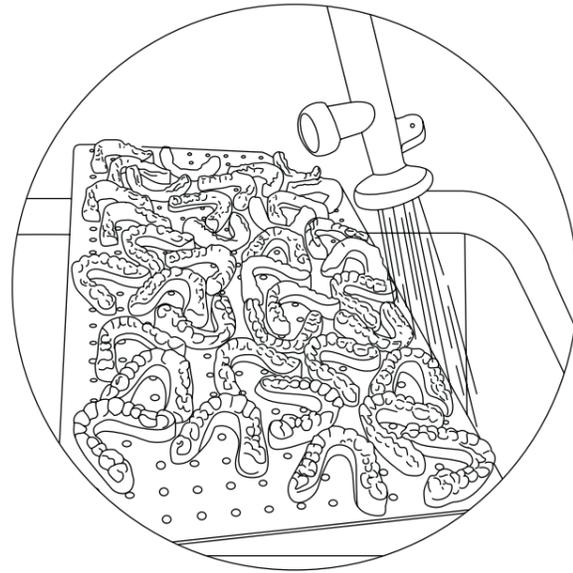
Or

- 3.2. Spray warm soapy water over the parts. A sponge or soft brush can be useful to clean detailed parts. Rinse with warm/hot water.



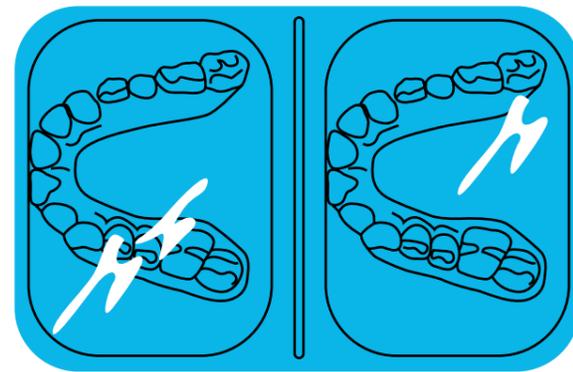
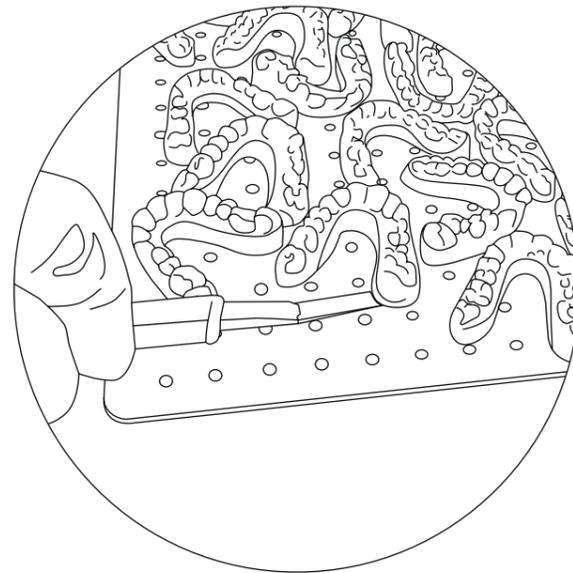
Liquid Crystal MAGNA

- Once cleaned, there should be no trace of uncured resin visible.
- If you have access to an air compressor with an air gun, you can dry your parts after cleaning. We recommend this for delicate and accurate parts to ensure all holes and pores are free of any traces of uncured resin.



4. FINISH

- Gently remove the parts from the platform by sliding the scraper (provided) or a snap-off blade knife (taking great care) underneath parts.
- Place parts under hot water (60°C) in UV light for 15 minutes to remove the surface tack.
- Large parts can be post exposed for 1 hr in water, under UV light.
- Once post exposure is complete, dry parts and your print is ready.
- To prepare for the next print job, scrape off any cured resin and clean the build platform with hot water and Photocentric Resin Cleaner in the spray bottle. Dry the platform and place on the print arm.



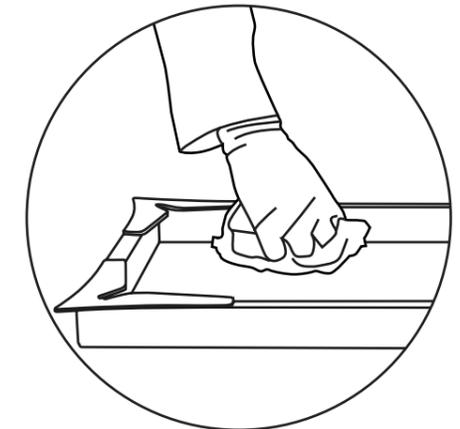
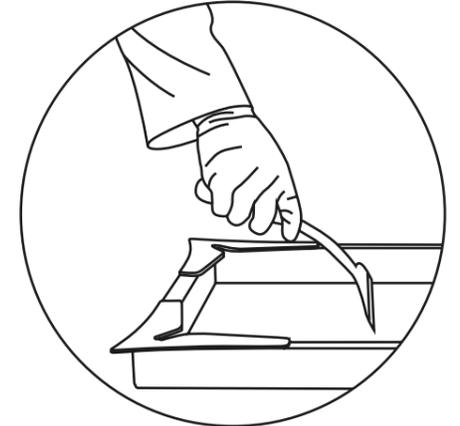
Liquid Crystal MAGNA

Note: Take extra care to make sure the platform is clean and there is no residue of cured parts. Any hard resin may pierce the vat film and could cause print failure. Please see Maintain Section 5.

- Pour the remaining resin from the vat back into the bottle using the funnel and filter paper provided.
- Use the vat cleaning tool (provided) to direct any excess resin from the vat down towards the funnel.
- Place the vat on the Foam Vat Cleaning Mat (provided) and mop up any resin residue with absorbent paper.
- Use the soft spatula (provided) extremely carefully to remove small cured pieces.

Note: Take extra care to make sure the Cleaning Mat is perfectly clean and there are no chips of cured resin on it. If the vat film gets damaged, it can lead to a vat leak and damage to your printer.

- Make sure your screen plate area is clean prior to placing the vat back into place on the printer.
- If you have evidence of a leak on the screen, mop up the liquid resin immediately using absorbent paper or a damp tissue with IPA. Hardened resin can be removed by chipping off carefully with the provided soft spatula. It is extremely important to keep your screen plate surface clean from any resin. If not, you risk print and/or printer failures.



5. MAINTAIN

5.1 VAT RESKINING

You will need to change the vat film after 6 times of use.

You need
1x LC Magna Vat film
1x set of gaskets (1x Vat gasket + 1x vat seal)
1x Pozi1 Screwdriver
1x Pozi2 Screwdriver
Clean surface area.

Please watch [Photocentric tutorial video](#) on how to reskin the LC Magna vat.

NOTE: Tighten smaller screws manually; for larger screws you can use an electrical screw driver or a manual one.

5.2 RE-HOMING PRINT PLATFORM

You will rarely or never need to rehome the platform.

NOTE: when you purchase a new platform, simply place it on the print arm with no extra adjustment.

You will need
1 x Spanner 13mm
1 x Allen Key 5mm
2 x A3 or 4 x A4 sheets of paper
1 x Torque wrench (Optional)

Please see [here](#) a sample product to choose a correct torque wrench

NOTE: We recommend using torque wrench to enhance calibration accuracy. Torque wrench specs should be set to 0.03Nm.

5.3 GENERAL MAINTENANCE

1. It is extremely important to keep the top surface of your printer clean. If the screen film gets damaged please contact us at technical@photocentric.co.uk, or contact your local distributor.
2. Please vacuum the side panel fans every two months. It is important to keep fans dust free and avoid overheating the electronic parts.
3. Make sure to lubricate the ball screw of linear drive, every 6 months or after 1000 hours of operation. Please use suitable grease. We recommend a lithium soap based no2 grease.
4. If you would like to use extraction, you can connect LC Magna to your extraction network. First, remove the extraction cover plate on the back panel of the printer. Then, bolt in the provided Extraction Spigot. Magna is now ready to be connected to any extraction unit.
5. In case of any serious vat leak and sign of resin leak underneath your printer, stop the printer and unplug it. Contact immediately technical@photocentric.co.uk, or your local distributor.

