



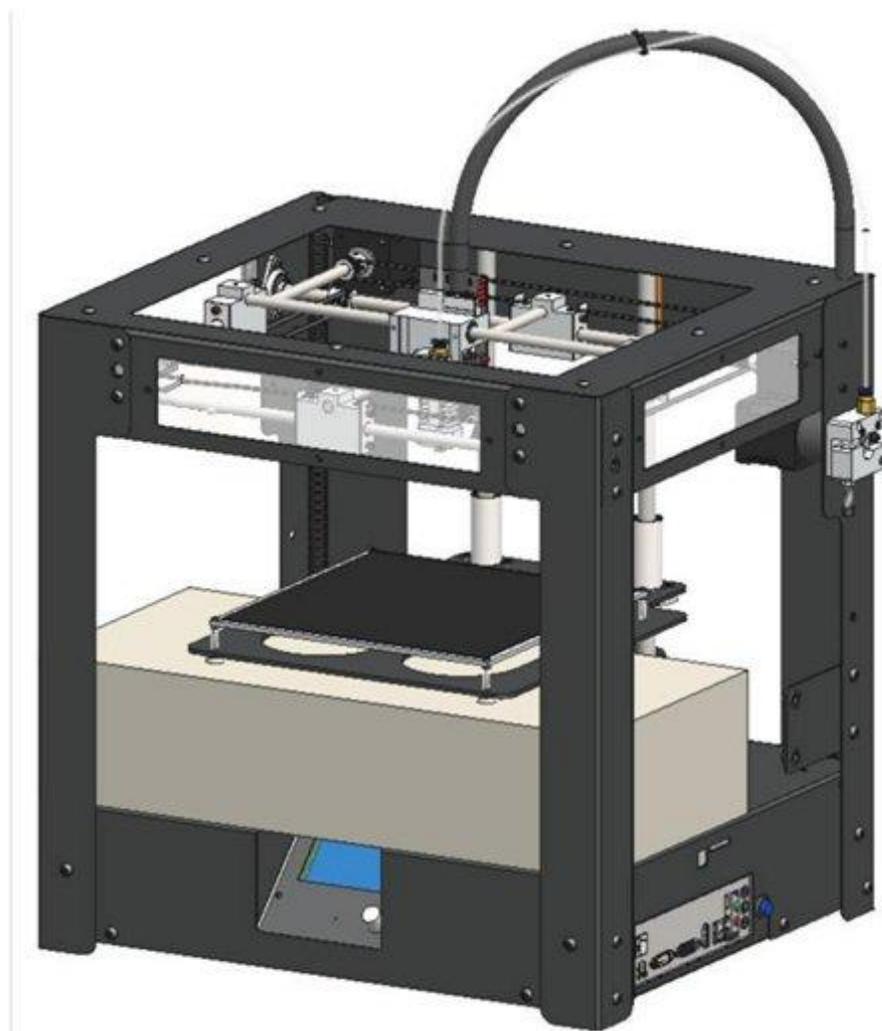
KORA

EN

# Quickstart Guide

## Kora Pro 3D PC

### Printer





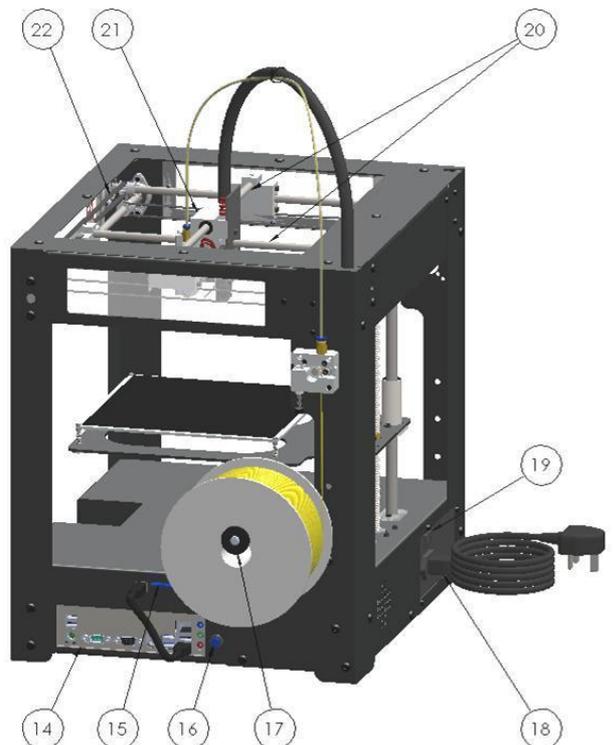
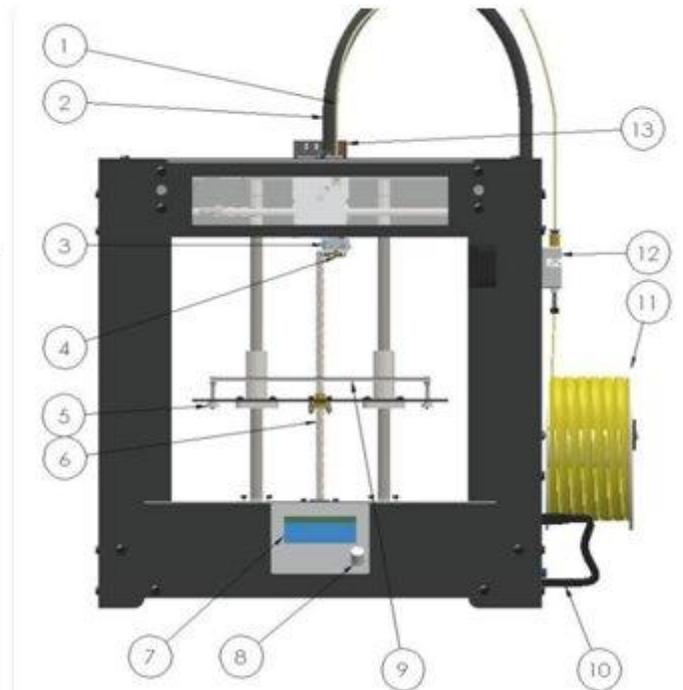
## General Precautions and Advice

- **Only use original accessories from or approved by the manufacturer**
- **Always read the manual before initial operation**
- **The product should only be used for applications as described by the manufacturer**
- **The manufacturer cannot be held liable for damage resulting from errors, unintended or incorrect use of the device**
- **Do not disassemble, modify or alter this device or its operating system(s) in any way without specific written instruction to do so by the manufacturer**
- **Do not operate or store the product outdoors or in any place where it might become damp or wet**
- **Do not operate or store the product in any place that might be exposed to extreme heat or cold (Ideal environment temperatures between 10 - 32C (50 - 89F))**
- **Keep the product out of reach of unsupervised children**
- **Disconnect the device from all power sources before cleaning**
- **Remove the plug from the power outlet during storms, lightning and whenever the product will not be used for a longer period of time**
- **Only install the product as indicated in this manual and/or as instructed in writing by the manufacturer**
- **If in doubt, consult a recognized technician and always take account of local installation codes of practice and regulations**
- **The product must not be disposed of as unsorted municipal waste; it should be disposed of in accordance with local Waste Electrical and Electronic Equipment (WEEE) Regulations. Please check the options in your region for disposing of electrical / electronic equipment**
- **Whilst this product has several built-in safety features to avoid hazardous operating conditions developing, it is not recommended to operate *any* 3D Printing device whilst unattended - unless installed in a suitable safety enclosure or safety cabinet. Check with the manufacture for suitable 3D Printer safety enclosures and cabinets**
- **It is recommended that a 3D Printer has a regular service safety check - contact the manufacturer for further details**
- **Always retain all the outer packaging supplied with your 3D Printer to ensure safe transportation, should this be required in the future**
- **See also '*Kora Pro 3D PC Printer Firmware Manual*' for detailed operation of the machine via the built-in LCD Screen and Jog Wheel controller. *This file is located on the USB Stick Drive supplied with the machine in the sub-directory /Kora/Instructions***



# MACHINE OVERVIEW

- 1. PTFE Filament Feeder Tube**
- 2. Electrical Umbilical Cord**
- 3. Heater Block**
- 4. Nozzle**
- 5. Thumb Screws**
- 6. Bed 'Lead' Screw**
- 7. Control Panel**
- 8. Jog Wheel**
- 9. Printer Bed**
- 10. USB Cable**
- 11. Filament Reel**
- 12. Filament Extruder**
- 13. Control LED's**
- 14. CPU Motherboard**
- 15. SD Card Slot**
- 16. CPU Power 'ON/OFF' Button**
- 17. Filament Spool Holder**
- 18. Power Supply Cable**
- 19. Power Supply Switch**
- 20. Mechanism Support Rods**
- 21. Main HOT END Block**
- 22. Drive Belts**



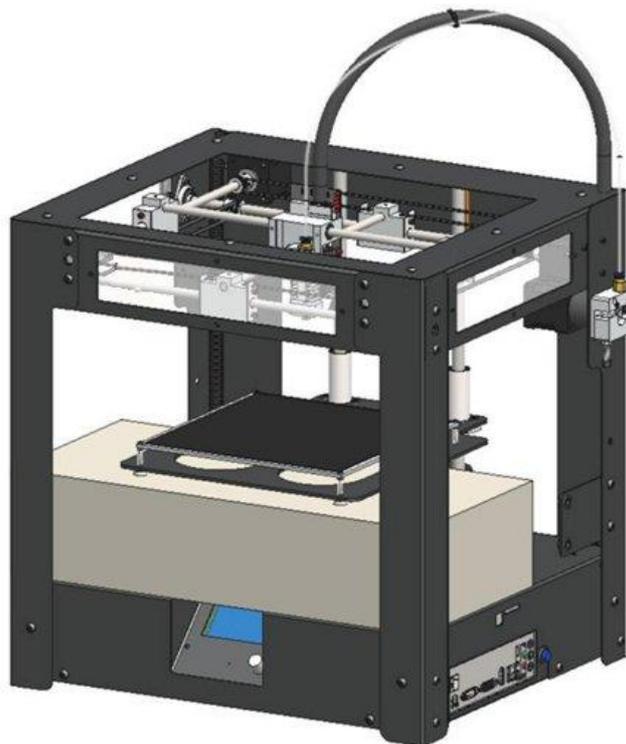


## REMOVING THE PACKAGING

Having taken delivery of your brand new Kora Pro 3D PC Printer, carefully remove the reusable packaging. The 3D Printer should ALWAYS be repackaged as received when transporting - ***the manufacturer or supplier cannot be held responsible for any damage caused during transportation of a machine not correctly repackaged in its original packaging.***

**WARNING: Only lift the Kora Pro 3D PC by the metal frame, NEVER lift by the printing mechanism, support rods, conduit wiring loom or toothed belts. See 'Removal Guide Sheet' Supplied with the machine packaging.**

Once all the outer packaging has been removed and stored for future use, place the 3D printer on a stable and level surface for example a table or bench, in a well ventilated area.

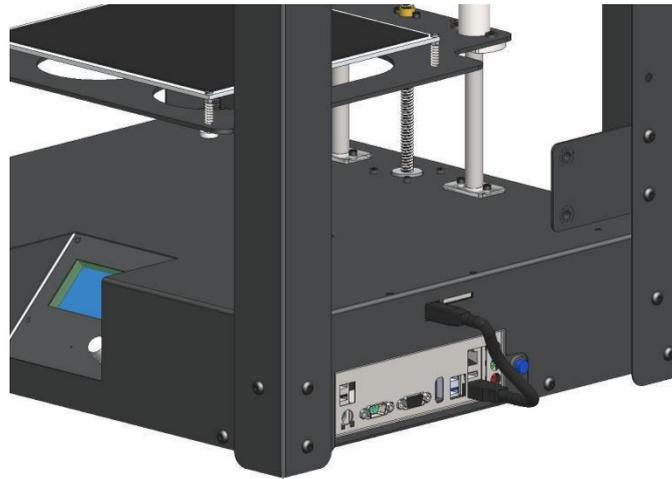


1. Taking care not to interfere with the Drive Belts, carefully cut the two cable ties holding the Main Printer Head Block in place during transportation.
2. Slightly raise the Printer Bed by twisting the rear Bed Lead Screw clockwise with your fingers.
3. Remove cardboard Accessory Box and check contents according to the checklist enclosed in the box.



## INITIAL SET UP

1. Use the shorter USB Cable to connect 3D printer control board to PC Mother Board as shown.



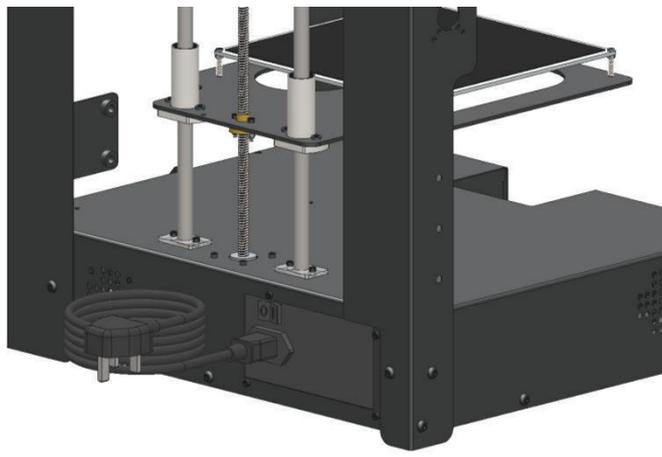
2. Now connect - if PC functionality is required \*\* (ancillary parts not supplied as standard).

- A Monitor (VGA or HDMI)
- A Keyboard (USB wired or wireless\*)
- A Mouse (USB wired or wireless\*)

(\*Keyboard and Mouse connection can be made via a wireless USB dongle).

3. Insert supplied USB Stick Drive into any available USB port on PC Mother Board connection panel.

4. Attach Mains Power Cable, as shown below and turn on Printer Power Supply Switch then press and release the CPU Power Button located to the right of the CPU panel (shown above in blue or green).





\*\* If PC functionality is not required at this stage - simply press and hold the CPU Power Button and operate the 3D Printer as described from 8. below.

5. Follow instructions on monitor to load and configure Windows 10 from the previously inserted USB Drive. YOU MUST ONLY SELECT WINDOWS 10 **HOME EDITION** - otherwise your software key supplied with your Windows 10 Disk inside the box will be invalid.

6. Once Windows 10 has completed the installation, connect to the Internet following the Windows 10 on screen instructions (you may require a cable connection from the PC Motherboard your Internet router or use a USB wireless Internet dongle, if your router offers wireless connectivity).

7. Once connected to the Internet, download and install the free Open Source Arduino IDE and Repetier-Host Software programs from the links below.

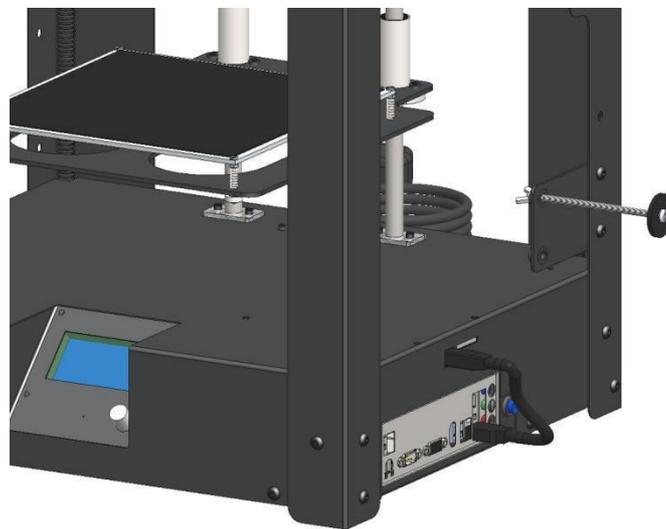
Arduino IDE - <https://www.arduino.cc/en/Main/Software>

Repetier-Host (optional donation) - <https://www.repetier.com/download-software/>

Repetier-Host (no donation) - <https://www.repetier.com/download-now/>

***For users unfamiliar with Repetier-Host, full details of Repetier-Host set-up for the Kora Pro 3D PC please refer to the document 'Instructions RepetierHost KoraPro3DPC Rev01.pdf' - located on the USB Stick Drive supplied with the machine in the sub-folder /Kora/Instructions.***

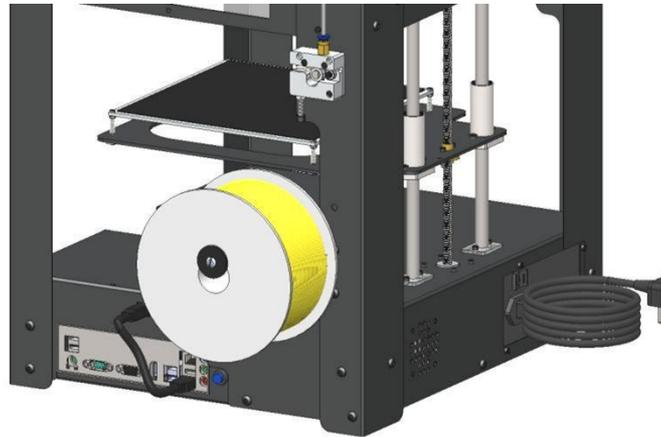
8. Attach Filament Spool Holder as shown below.



9. Take a reel of filament and remove from packaging, taking care to save the plastic bag and bag of silicon for storing filament after use (It is recommended not to store filament for a prolonged period in any kind of moist/damp environment).

You will notice the free end of the filament is held in the hole on the reel. It is important to ensure the filament is able to unravel freely from the spool, without being knotted or snagged. Keeping track of the filament end is good practice and should be returned to the hole when the spool is not in use.

Place filament spool on to the spool holder as shown overleaf.



## LOADING THE FILAMENT

To insert (or to change) the filament, the machine Hot End extruder must be heated first. This can be done in two ways, either using the Repetier-Host software or via the onboard LCD control panel.

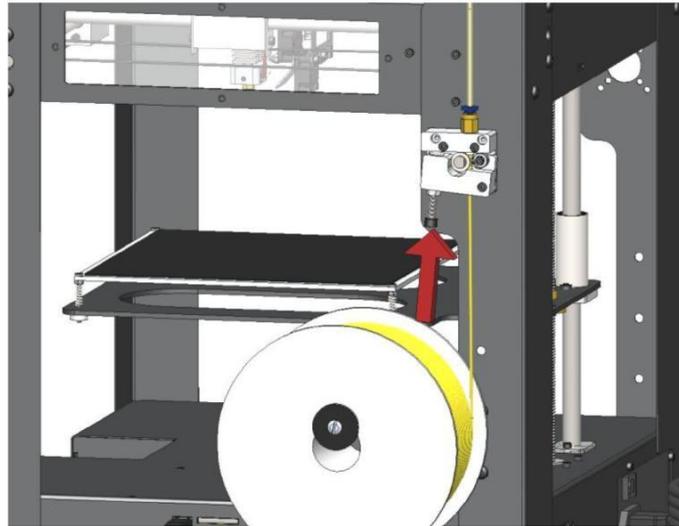
Using the control panel go into 'Quick Settings' by turning the jog wheel and select 'Preheat PLA/ABS' (depending on which filament you are using) and press the jog wheel.

**WARNING: 'Preheat PLA/ABS' heats the printer hot end assembly and the print bed to the required appropriate temperatures - use caution not to touch either whilst heating or hot (between 50 and 260°C)**

Select 'Back' on the control panel to return to the 'Main Menu'. This will show you the current Extruder and Heated Bed actual temperatures (to the left) and target temperatures (to the right) after heating is complete. Once the target temperatures have been achieved, the extruder is ready to take filament.

Make sure the end of the filament is cleanly cut and straighten 40mm using your fingers. This will make it easier to feed the filament through the filament feeder mechanism.

With one hand gently squeeze/pinch the filament extruder arm as shown below, and carefully feed the filament up through the 'rectangular nipple' past the filament drive gear and up into the PTFE feeder tube. Do not over squeeze/pinch the filament extruder during filament loading as this will make feeding the filament **more** difficult.



While still squeezing/pinching, continue feeding the filament through the PTFE Feeder Tube until melted filament is extruded from the **HOT** Nozzle. Note that the printer bed must be away from the Nozzle tip to allow the filament to be extruded freely. The Printer Bed height can be adjusted at this point away from the nozzle by manually rotating the Bed Lead Screw anti-clockwise - (the long threaded rod at the rear/centre of the machine), using finger and thumb.

Once about 60mm of filament has been extruded from the Nozzle, release your squeeze/pinch to engage the 'filament gear' and 'bearing' on to the filament. Trim the excess extruded filament from the Nozzle with tweezers or scissors, making sure **not to touch the HOT Nozzle or the aluminium Heater Block directly above the nozzle. This block and the nozzle can reach temperatures in excess of 260°C.**

The filament is now loaded.

**PLEASE NOTE -**

**NEVER** shut down the built in PC or turn off the Mains Power Supply if the Nozzle temperature is showing above 60°C on the Printer LCD screen - failure to follow this instruction can cause a machine Nozzle blockage. If this is done in error - immediately restoring the power will avoid possible Nozzle blockage.



# LEVELING THE HEATED PRINT BED

It cannot be stressed enough that levelling the printer bed correctly is essential to achieve good adhesion between the printer bed and the first layer of all your 3D prints. Only **VERY LIGHT** contact is required between the tip of the nozzle and the printer bed, ideally **NO** "gap" should be present. However, a sheet of standard 80 gram printer paper can be used to gauge when the nozzle is very close to the printer bed during adjustment, by feeling friction on the paper as the nozzle starts to squeeze the paper against the printer bed.

Although so called 'automatic printer bed levelling' could be easily installed on this machine, only manual printer bed levelling has been installed on this machine. This is much more consistent and accurate and after a little practice, proves a far better levelling method than any 'automatic' alternatives. Future additional Bed Levelling is only required if the first print layer appears too close (nozzle scraping on the print bed) or too far away (first print layer does not adhere sufficiently) from the print bed.

It is good practice to level the Printer Bed after loading the filament with the Nozzle and Heated Bed at printing temperature, before each print. This allows for the Nozzle to be clear of hardened filament - allowing accurate judgement of light contact between Nozzle and Printer Bed.

It also allows, once bed levelling is complete, to proceed straight to printing without the risk of the interfering with the levelled bed.

Experience in this procedure will be gained quickly, through practice.

There are several ways to ensure that the bed is level and ready to print.

**Note:** Before attempting to level the printer bed using method **a.** or **b.** (page 10) manually rotate the Bed Lead Screw clockwise until the Nozzle lightly touches the printer bed. At this position the lowest LED on the Hot End PCB (Z home limit switch indicator) should be illuminated. If it is not illuminated, turn all the thumb screws (x4, located at each corner of the headed print bed) one full turn anticlockwise (to lower printer bed) and repeat test from '**Note:**' (above). Continue this procedure until the lowest LED on the hot end PCB illuminates when the nozzle is just touching the bed.

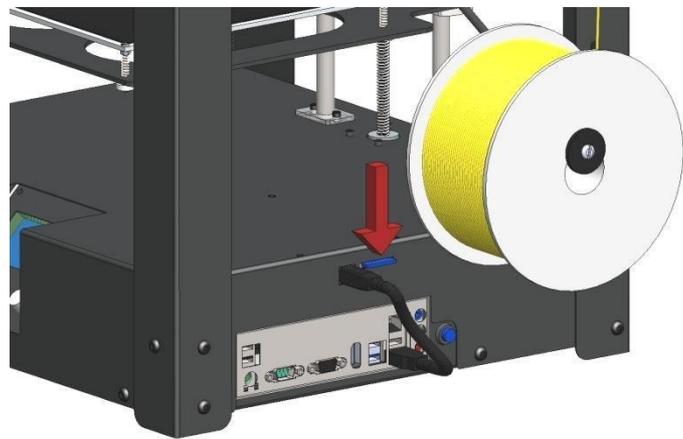


## a) MANUAL METHOD (preferred method)

1. Using Control Panel, press the Jog Wheel once and scroll down to '**Position**' on the printers LCD screen, press the Jog Wheel. Scroll down to '**Home Z**' and select by pressing the Jog Wheel, the printing bed will rise towards the Nozzle then stop in a locked position.
2. When it reaches the top, using the Mechanism Support Rods to manually move the main Hot End holder block to all four corners of the printer bed - at each corner use the Thumb Screw below that particular corner of the Printer Bed to adjust the printer bed up and down so that it **lightly** touches the brass tip of the Nozzle in all positions.
3. When complete re-check all four corners again and finally check the middle of the Printer bed.
4. You have 6 minutes to complete the above process after selecting '**Home Z**', after this time the Z motor will time out and unlock - thus preventing accurate Printer Bed levelling - if this happens, simply repeat from step a)1. above.

## b) USING SD CARD (alternative 'Semi-Automatic Levelling')

1. Insert SD card (if already inserted remove and re-insert). On the file list shown on the Control Panel LCD display scroll down and select the file named '**Kora\_levelling.gco**'. The printer will home all axes, then automatically move the Hot End holder block to far right hand corner slowly raising the Printer Bed towards the Nozzle.



2. When the bed stops rising check that the Nozzle is **lightly** touching the Printer Bed surface. This is adjustable using the Thumb Screw under the far right hand corner of the bed. You have 10 seconds after the bed has stopped rising to make this adjustment correctly. After 10 seconds the bed will slightly lower and the Nozzle will move to the far left hand corner to repeat the process.
3. The process will be repeated for the remaining corners, allowing for adjustment each time.
4. The Nozzle will then move to the centre for 5 seconds to check the adjustment.
5. The Control Panel will then display '**One Quick Check!**' and will repeat everything from 2 above but this time only pausing for 5 seconds (To allow final fine tuning).
6. The Nozzle will return to its home position (rear right hand corner).
7. You can repeat the process as often as you like, until completely satisfied that the Nozzle is lightly touching the Printer Bed in all positions. To repeat if required, start again at step b)1. above.



# PREPARATION FOR 3D

# PRINTING

The Printer Bed as well as being level before printing should also be clean and free from any old print filament matter. Use the Hand Scraper to remove any residual filament. Once the Printer Bed is clean a thin layer of Glue Stick Adhesive (Or similar 3D printer bed adhesive) should be applied before each print. If using a spray-on adhesive for the first ever print, several sprayed layers should be applied, (to prime the Printing Bed surface) allowing the previous one to dry before adding the next.

***You are now ready to print!***

You can select an object to print either from the SD Card by using the jog wheel to select 'Print File' to show all the prints on your SD Card, or select '**SD Card**' this will give you '**Print File**' or removing and re-inserting the SD Card will display the 'files available to print' list automatically.

Scroll to the print file name you want to print and select using the Jog wheel.

The print will not start immediately (Unless you have used the pre-heat feature).

The Nozzle will move to its home position (rear right hand side of the print bed) to heat up, illuminating the top LED on the Hot End PCB.

When the Heated Bed and Hot End approach the required temperature this LED will begin to flicker.

**CAUTION! At this point the printer mechanism is about to begin moving in all directions.**

The LCD Control Panel will show the status of the print.

**Always monitor the first layer of any print to ensure good adhesion to the bed. (Fine adjustment of the bed height can be made during this first layer, if necessary. Again experience in this procedure will be gained quickly, with practice).**

When the print has finished the Printer Bed will lower and the main Hot End holder block will return to its home position at the rear right hand corner of the machine.

You can also print objects directly from the built-in (or any external) PC or Laptop via the Repetier-Host program.

Refer to Repetier-Host documentation for details.

(Link - <https://www.repetier.com/#documentation>)

## **IMPORTANT NOTE - SWITCHING THE PRINTER OFF.**

To switch off the printer, **ensure the nozzle temperature, displayed on the control panel LCD is indicating below 60°C**. Shut down the onboard PC by following the usual Windows 10 shut down procedure. Then turn off the mains power supply using the switch next to the mains power supply cord plug. Selecting 'Cooldown' from within the 'Quick Settings' menu will disable all machine heaters.

