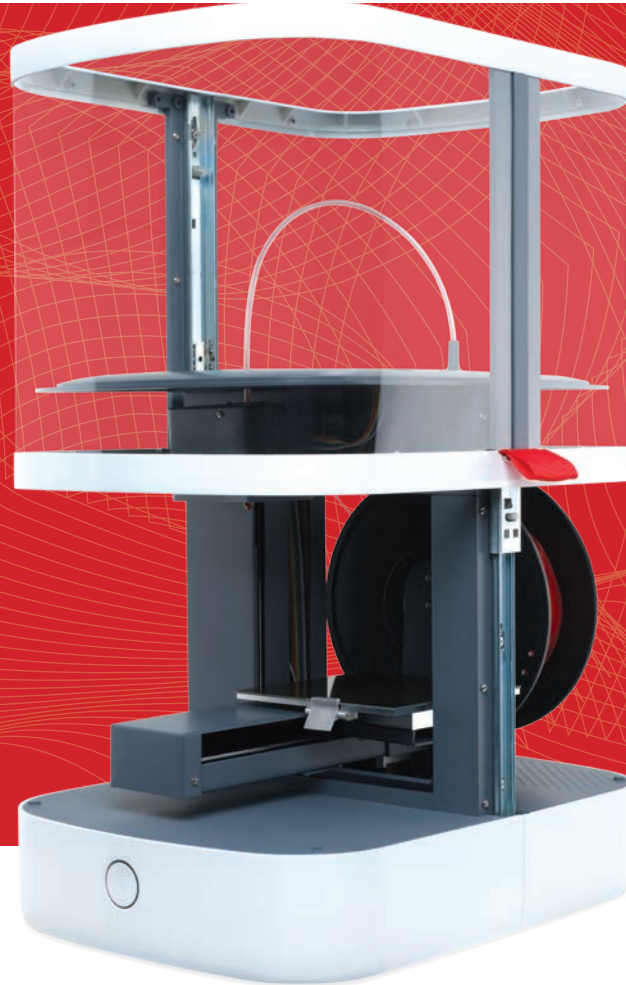


VECTOR 3: QUICK START GUIDE



DESIGNED BY
SebastianConran|associates

EAGLEMOSS
COLLECTIONS

THANK YOU FOR BUYING THE VECTOR 3 PRINTER.

Exclusively designed by Sebastian Conran Associates, the VECTOR 3 printer is a sleek, easy-to-use 3D printer that will add a whole new dimension to your creativity.

Virtually anything that fits the print area can be designed and printed as a physical 3D object.

The Vector 3 has been created with complete novices to 3D printing in mind. Aside from normal home computer skills, no prior special knowledge is required to operate the printer or to use the printer software.

NOW, THE ONLY LIMIT IS YOUR IMAGINATION!

PRINTER FEATURES

Single jet nozzle	0.4mm
Filament	Can print with biodegradable PLA or strong, recyclable ABS
Layer thickness	0.1~0.4mm
Zero waste	Prints one layer at a time using only the amount of material required for each object
Prints any object up to	140mm x 140mm x 135mm
Print speed	10~100cm³ per hour
Printer weight	9kg
Printer dimensions	400mm x 295mm x 356mm
Power requirements	220~240V 50~60 Hz (UK / EU / AUS) • 100~110V 50~60 Hz (JPN / USA)
Input format	stl (stl is the acronym for Standard Tessellation Language – the software file format used to produce 3D models on 3D printers)
Computer compatibility	Windows Vista and above, Mac OS X 10.7 and above
Printer interface software	3D Create & Print (licensed under the Apache licence, v2.0.)

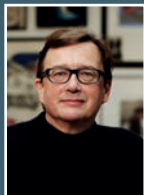
VECTOR 3'S TOP 10 FUNCTIONS

- 1 3D printing using fused filament technology
- 2 Compatible with eco-friendly, plant-based PLA filament (available in a multitude of colours and finishes)
- 3 Prints at a range of resolutions and rates
- 4 Able to print objects up to 140 x 140 x 135mm
- 5 Creates objects with zero waste
- 6 Uses coloured LEDs to show its status
- 7 Prints straight from stl files
- 8 Compatible with specially created 3D Create & Print printer interface software (based on Repetier-Host)
- 9 Compatible with both Mac (OS X 10.7 and above) and Windows (Vista and above)
- 10 Vector 3's sleek look was designed by internationally acclaimed product designer Sebastian Conran

3D PRINTING SAFETY

- This printer must only be used at the specified voltage, or it may be damaged, with a risk of fire
- Do not touch the nozzle or the platform with any part of the body while the printer is working, or immediately after it has finished printing
- If printing with ABS, operate in a well-ventilated but draught-free room, and keep away from other heat sources. ABS can catch fire and, when burnt, produces a thick black smoke that is toxic if inhaled
- Always have adult supervision when children are present. Store all small 3D printed parts at a suitable height and away from young children, as they represent choking hazards
- Tie back long hair and avoid loose clothing when operating the printer
- Protect the printer from exposure to rain or any other water source
- To ensure fault-free operation, store the printer at an ambient temperature in the range of 15–30°C.
- Store the printer in a location with humidity in the range of 20–50%.

SEBASTIAN CONRAN



THE VECTOR 3 PRINTER was designed by Sebastian Conran, multi-award-winning product designer and director of Sebastian Conran Associates (SCA)

www.sebastianconran.com

SAFETY HOOD

A flexible but strong Lexan polycarbonate window protects the moving parts from fingers – and vice versa

FILAMENT

The PLA or ABS filament is fed to the free tube and printer nozzle from a free-rotating spool supported on a cradle on the Vector 3

MAIN FRAME

The printer's frame is made of durable powder-coated steel plate and is attached directly to the metal base plate

INITIALISE SWITCH

(See top right for details)

FILAMENT GUIDE

The 1.75mm filament guide tube feeds the PLA or ABS from the roll holder to the print nozzle



USB
PORT

INITIALISE
SWITCH

POWER
SUPPLY

PRINT HEAD

At the 'business end' of the V3 is the head, with its filament extruder, cooling fan, and nozzle – all protected behind the head guard

NOZZLE

The heated nozzle extrudes the softened filament

BUILD PLATE

The heated build plate area (or print bed) moves in two planes – the horizontal X- and Y-axes and the vertical Z-axis – as the filament is extruded from the nozzle and builds into an object. Heated beds give a higher quality finish with PLA

HOOD LIFTING MECHANISM

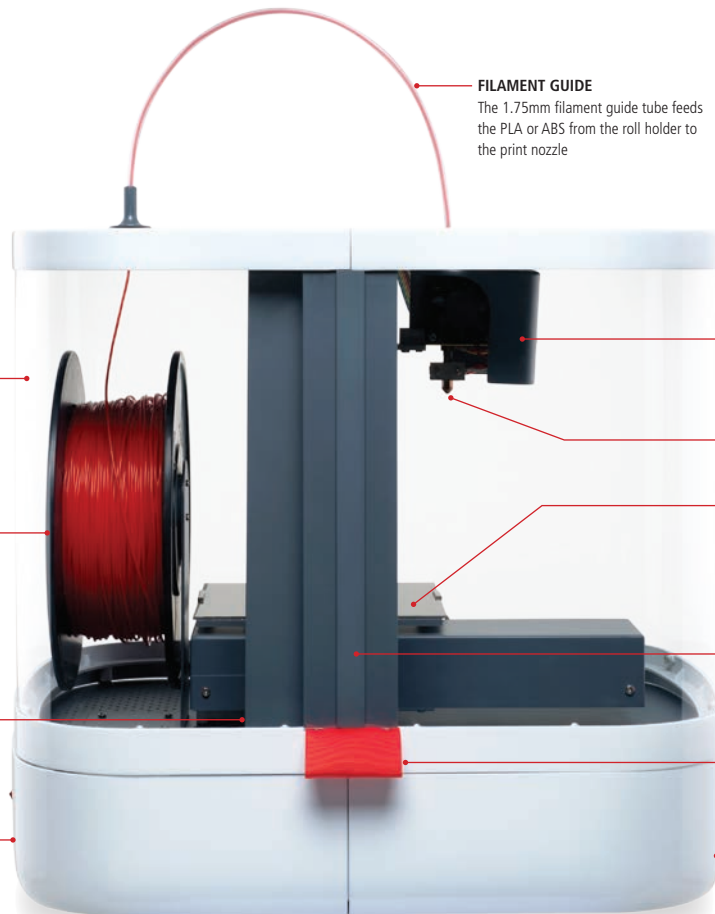
The cantilevered hood lifting mechanism lets you slide the hood smoothly up and down, while a safety catch holds it in place when raised

HOOD TABS

Sturdy woven hood tabs add a splash of colour and help you raise and lower the hood with ease

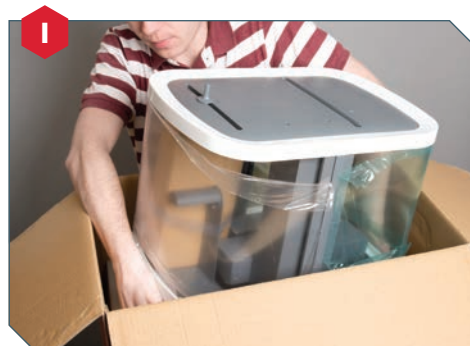
POWER BUTTON

Features a coloured LED light that glows white, green, blue or red, depending on your printer's status



UNPACKING YOUR PRINTER

Because your printer contains precision moving parts, it was carefully prepared for shipping, and requires final assembly by you. Please follow these instructions when assembling. You will need a medium-small Phillips screwdriver and a good pair of scissors, plus the Allen keys supplied.



Find a suitable site, such as a desk or benchtop, with a flat surface. The V3 has a compact footprint, but you will want space nearby for a PC, plus room for your projects.

Now remove the top tray from the box and carefully take out the printer. Ease your fingers under the base; DO NOT lift the printer by the top or sides of the hood, or by the red hood tabs.

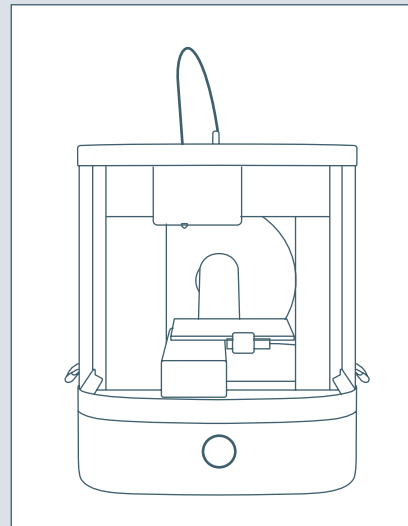


Set the printer down and check for stability. If it rocks at all, gently lay it on its side and adjust the height of the feet until it is completely stable.

It is preferable, though not essential, for the printer to be level during operation. Check by placing a spirit level on the base platform, and adjust feet as necessary.

IN THE BOX

Before assembly, check that you have all the items shown below. Some of these you will find packaged within the cardboard box taped to the printer gantry.



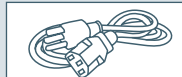
Vector 3 printer (shown assembled)



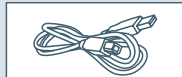
Printer parts (shipping box)



2 x 100g PLA 1.75mm filament in red & white



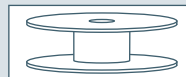
Power supply



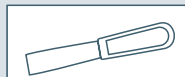
USB cable



Allen keys



Filament reel



Scraper tool



Calibration gauge

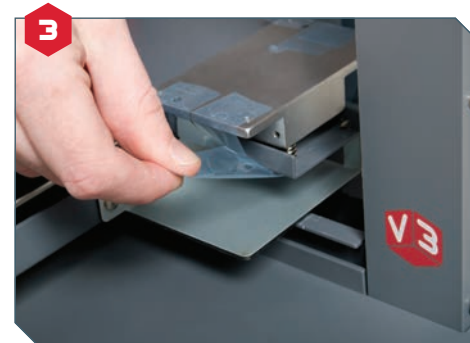
2. SETTING UP YOUR PRINTER



Assembly is much easier with the hood removed. (You will replace it before printing.) First, take the red tabs and lift until the hood locks on the catches. To release these, keep the hood raised while easing the catches sideways, then lift clean off.



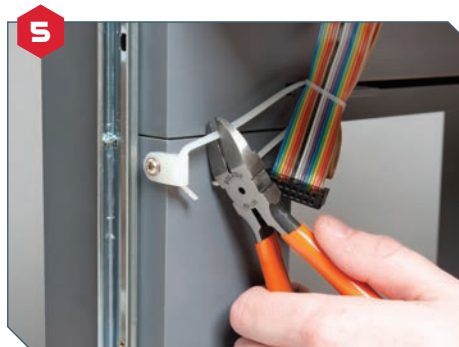
Remove the cardboard box from the gantry and lay out all the parts. These are: print head (plus two bolts), print head guard (plus one screw), base (plus four countersunk bolts), build plate. Bolts and screws may be supplied in a separate bag.



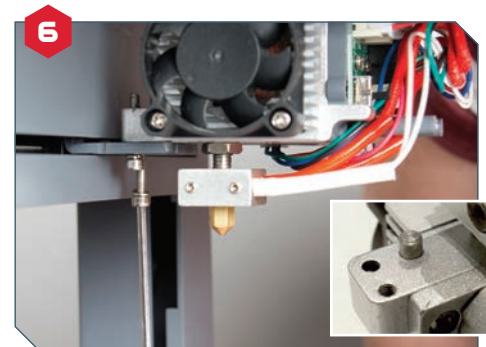
For added protection, the X- and Y-axis movement is locked into place with a shipping bracket, which must be removed. First, peel the adhesive tape off the base mounting unit.



Now remove the five screws from the shipping bracket, and remove the bracket. You may want to keep the bracket and screws somewhere handy in case you need to transport the printer (i.e. if moving house) or store it for any length of time.



Cut the cable tie retaining the multicoloured print head cable. The plastic lug can also be removed from the gantry, if you choose, but be sure to replace the screw and tighten it fully.



Bolt the print head to its supporting plate. To ensure it is correctly seated and aligned, engage the small lug on the head (see inset photo) within the notch in the plate. The bolts take the large Allen key; don't overtighten, just 'nip them up'.

2. SETTING UP YOUR PRINTER



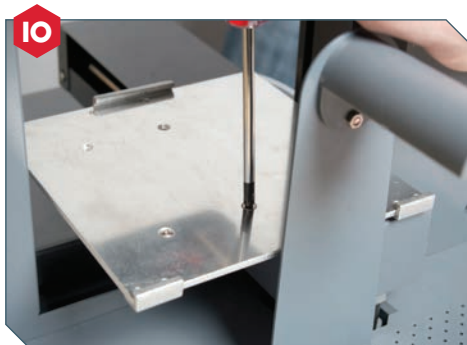
Plug the print head cable into the socket on the print head. It can be inserted only one way round. Ensure the plug is fully seated in its socket.



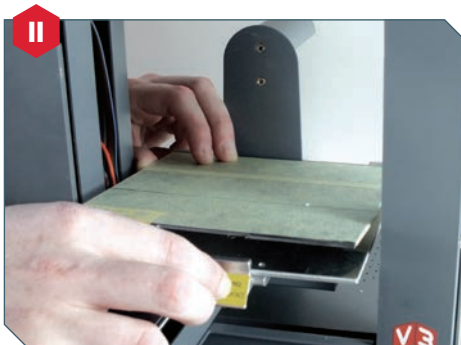
Offer the print guard up to the print head, ensuring the tubular sockets inside it engage with the two posts projecting from the print head. As you do this, make sure the cable wraps around to the left and is kept *above* the two posts.



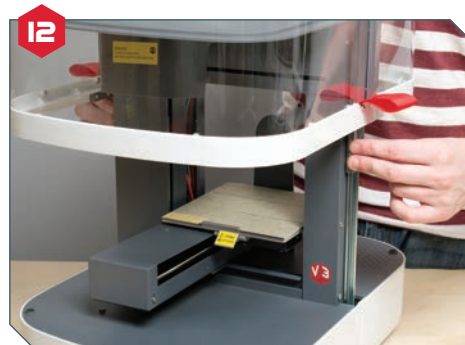
The print guard is secured with a single Phillips screw; access to the screw hole is via the slot in the top of the printer. Take care not to overtighten.



Now attach the build plate base to the build support, using the four countersunk bolts supplied. Ensure they are driven fully home so that they do not sit proud of the surface of the build plate base.



Fit the build plate to the build plate base, engaging the two corner recesses at the back and the centre recess at the front clip. We recommend you add masking tape to the plate to improve print adhesion; do this before clipping it into position.



Reattach the hood. Guide the sides carefully into place so that they engage smoothly with the rails. Note also that the hood goes on only one way round, with the side-rails closer to the back of the printer than to the front.

DOWNLOAD THE SOFTWARE

Visit www.3dprinter-collection.com to download the 3D Create & Print software. Please ensure that your PC or Mac meets the minimum specification requirements.

Illustrations in this quick-start manual apply to Windows software; detailed Mac instructions are available in the full-length pdf guide from www.3dprinter-collection.com.

Windows

- Operating system: Vista and higher
- Graphics card: OpenGL 1.5 or higher
- Free disk space: 500 MB
- .NET 3.5 required

Mac

- Operating system: OS X 10.7 or higher
- Graphics card: OpenGL 1.5 or higher
- Free disk space: 500 MB

Downloading and installing for Windows

- Double-click the Windows version, then choose where to save the program and whether to create a desktop short cut. Once selected, the program will download.

Downloading and installing for Mac

- Double-click the download link.
- Double-click the installer.
- Click & drag the 3D Print app into the Applications folder.

LICENSING

3D Create & Print incorporates open source software files, licensed under the Apache licence, version 2.0.

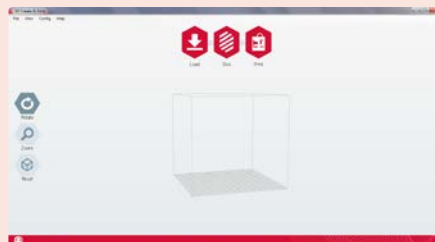
CONNECT & TEST THE PRINTER

The printer requires a manual connection to be established between your printer and the computer, in which a USB port is identified for the printer's use.

This simple procedure is described below.

Establishing a connection:

- Connect your computer to the printer using the USB cable supplied. Ensure you have an internet connection.
- Launch the 3D Create & Print software; a screen will appear showing the object control field (below).



Windows

- Go to the Config menu and select Printer Settings.
- If the port is showing in the drop-down Connection menu, then the printer is already connected.
- If the port is not showing, click Refresh Ports and it will appear. Click Apply, and then OK.

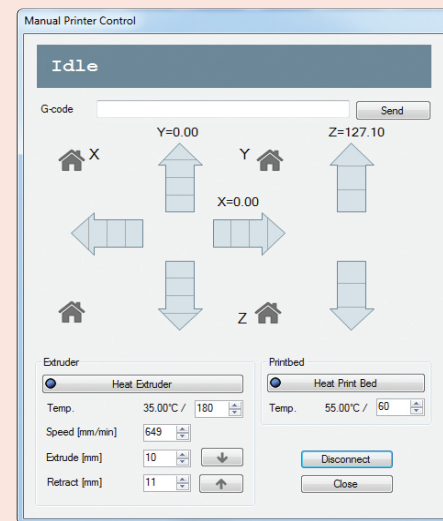
Mac

- To access port connection, go to the 3D Create & Print menu and select Printer Preferences.
- Select a port, and click OK.

Testing the connection to the printer:

Windows

- Go to the Config menu.
- Select Manual Printer Control (below), and click Connect.



- You will now be prompted to calibrate your printer before attempting to print for the first time. Please see overleaf for details on how to do this.

Mac

- Go to Printer and select Manual Control.
- Click Connect.

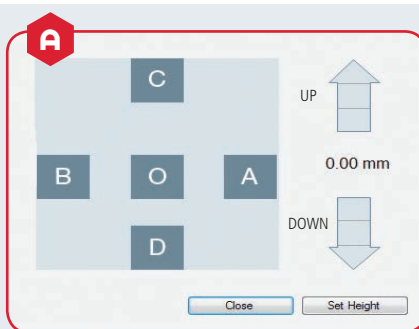
4. CALIBRATING YOUR PRINTER

CALIBRATION

Calibration ensures the build plate is exactly perpendicular to the print nozzle, and that its movements comply with commands from the 3D Create & Print software. You should only need to calibrate the printer once (i.e. as part of this initial setup).

You will need the calibration gauge supplied. You will also need to operate the printer with the hood raised; to enable this, go to Config, select Printer Settings, and check the box marked Disable Hood Safety Switch. You may also prefer to remove the print guard (see step 8, page 6) for easier access to the nozzle.

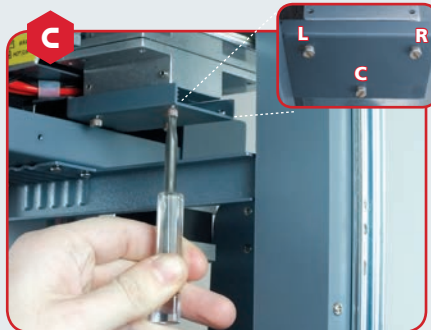
1. The Calibration Setup (image A, right) appears when you first try to connect the software to the printer. The five points O, A, B, C, D correspond to the areas on the build plate where you will be checking the gap between the plate and the print nozzle. Click on each point in turn to move the plate accordingly.
2. Click on the 'up' arrow to raise the build plate. For 10mm travel, click the arrow head. For 1mm travel, click the centre part of the arrow. For 0.1mm travel, click the arrow base. Raise the plate by a total of 110–115mm, taking it to 10–15mm below the nozzle.
3. Now click through the five squares and watch the plate as it tracks beneath the nozzle. If it looks level, raise it to within 2mm of the nozzle, then go to step 6. Alternatively, if the plate is on a tilt – however slight – continue to step 4.
4. With the small Allen key, loosen (DO NOT remove) the three grub screws in the plate support base (image B). This will allow you to adjust the vertical bolts that control the tilt of the plate.
5. Track from square to square again (image A) and check the gap. Using a screwdriver or your fingers, turn the vertical adjustment bolts (image C) until you achieve a consistent gap between plate and nozzle at all five squares. This may take a while; you should make only small adjustments to each bolt in turn.
6. Bring the plate up to <1mm below the nozzle. Adjust the elevation until the calibration gauge just slides into the gap (image D). Retighten grub screws (image B) and check again with the gauge.
7. Finally, click Set Height. Your machine is now calibrated.



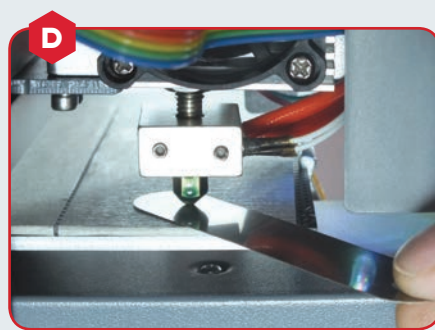
In the Calibration Setup window, use the up and down arrows to raise or lower the build plate. Each three-part arrow enables you to adjust the plate height in graded increments (10mm, 1mm, or 0.1mm).



To adjust the tilt of the build plate, first use the small Allen key to loosen the three grub screws (two in front, one behind) that lock the vertical adjustment bolts. DO NOT fully extract the grub screws, as they are tiny and easy to misplace.



Now, carefully turn the adjustment bolts to level the plate. For instance, to lower the right-hand side, tighten the right-hand bolt (marked R above). To raise it, loosen bolt R. To raise the back of the plate, loosen the centre bolt C; and so on.



Once you have reduced the gap between build plate and nozzle to a millimetre or less, use the calibration gauge to measure it. The gauge should just slide into the gap at all five points of the Calibration Setup window (image A).



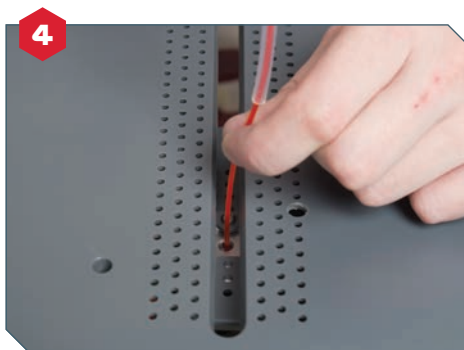
Twist-lock the spool centre onto one spool side. Fix with three screws. Remove the filament roll from its plastic wrapper and lay it over the spool centre, then lock and screw the second side into place. Now snip the cable tie from the filament roll.



Feed the free end up through the guide in the lid. Attach the guide tube to the guide and feed filament into it until about 5cm protrudes from the other end. Using scissors, snip the end off the filament at an angle, to sharpen the tip.



With the hood locked in the raised position, ease the spool onto the support arm. It does not matter which way round you attach it: the free end can rise to left or right. But check the filament is wound freely on the spool and not tangled.



Feed the filament into the print head. After extruding filament (see right), push-fit the guide tube end into place. Finally, lower the hood, and go into Config / Printer Settings to uncheck the box marked Disable Hood Safety Switch.

5 EXTRUDING FILAMENT

Before printing for the first time, your print head must be primed with filament. This step need not be repeated (except when you change filaments).



- Select Manual Printer Control.
- Click the Heat On button (see image above). Once the nozzle has heated to the indicated working temperature, click the Extrude button. A length of filament will ooze from the nozzle. Dispose of this.
- Repeat this operation once or twice as necessary, until you see the filament coming through the nozzle.

TIP: If nozzle does not extrude, you may need to temporarily unplug the guide tube and apply a little pressure on the filament from above until it engages with the drive gear.

6. SLICING & PRINTING

LOADING AN STL FILE

Your newly installed 3D Create & Print software is designed to be as easy and intuitive to use as possible. It allows you to take any stl file and print the object (stl stands for Standard Tessellation Language and is the standard format for 3D files). You can either create stl files yourself or download files that others have created from the internet.

Loading files to print

- Click Load, and then select your file from its location.
- Alternatively, use one of the two sample files by selecting the File menu, highlighting Examples and picking one of the two options.
- A virtual image of your file on the build plate will now drop down into the object control field (below).

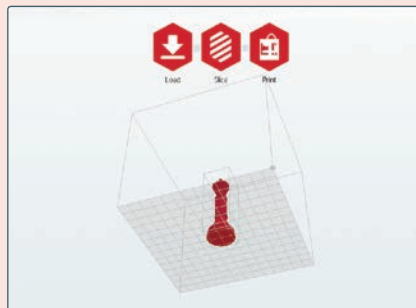


Loading multiple files

To add further files to a single print session, simply load them one after the other. The software will automatically place them in an appropriate spot on the virtual build plate.

VIEWING THE OBJECT

You can view your object from any angle, and zoom in on it, using the buttons down the left-hand side of the object control field. Note: using these buttons simply changes your view; it doesn't alter how the object prints.



ROTATE VIEW

Select Rotate, then click and grab the object control field and move it in any direction – from side to side or up and down (see above).



ZOOM IN / OUT

Select Zoom, then click and drag the object field. Alternatively, zoom in and out at any time using the scroll button on the mouse.



RESET

To restore your view to its original setting, click Reset. For a different viewpoint, double-click Reset to bring up an options panel offering Front, Back, Left, Right, Top or Bottom views.

MANIPULATING THE OBJECT

You can rescale the object, or alter the location or orientation in which it prints, by using the buttons down the right-hand side of the object control field.



MOVE OBJECT

To move an object to a different location on the build plate, select Move, then click/hold and drag it. To move an object more precisely, double-click Move to bring up a vector panel, then enter your chosen X and Y coordinates.



SCALE OBJECT

To resize an object by eye, select Scale, then click/hold and drag the object down to make it larger or up to make it smaller. To resize precisely, double-click Scale to bring up a scale factor panel, then enter your chosen scaling values.



TURN OBJECT

To turn an object on its vertical axis so it prints facing another direction, select Turn, then click/hold and drag the object. For more axis options, double-click Turn to bring up the control panel.



DELETE OBJECT

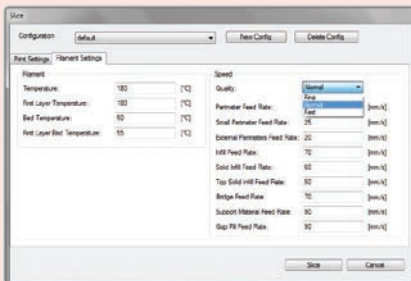
To remove an object from the control field, first make sure it is highlighted (i.e. it is red, not grey), then click on Remove.

Note: if a virtual object turns from red to grey, this means it cannot be printed (e.g. it is too large, or is now off the build plate). Reverse your last action until it returns to red.

SLICING

Your stl file must be 'sliced' into layers before printing. The software does this for you, although you also have the option to alter default values to customise your print.

- Click the red Slice button to bring up the Slicing Settings.
- Select the Filament Settings tab; the drop-down menu allows you to select between Fine, Fast and Normal (below). Fine gives a higher quality print but will take longer to print. Fast gives the quickest print time but the lowest print resolution. Normal is a mid-range option.
- If your build requires support structures (see right), select the Print Settings tab and tick the box labelled Generate Support Material.
- Click Slice.

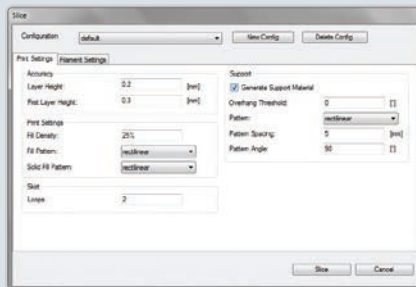


SUPPORT STRUCTURES

Some stl files will print more effectively with the aid of support structures – 'props' of PLA or ABS that extend between the object and the build plate. Printing with supports is required when creating shapes with undercuts, overhangs or bridges, as these are otherwise liable to droop or collapse.

Once an object has printed, the support structures must be removed manually, and the surface of your object will need finishing off by cutting with tin-snips, or by filing.

Support structures are added during the slicing process (see left).

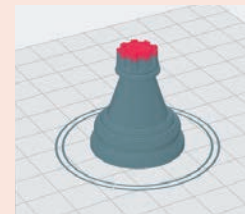


PRINTING

Once your file is sliced, click Print. Printing will commence once the plate and nozzle reach operating temperature. The estimated print time is shown in the bottom right-hand corner of the screen.

At the start of the print, the plate rises to meet the nozzle, which first lays down a perimeter skirt of plastic before commencing on the object itself. Your computer screen displays a grey representation of the print in progress, with each new layer shown in red (see below).

Once printing has finished, use the scraper tool to ease the object and any other material from the build plate. Give the printer a couple of minutes to cool down before switching off.

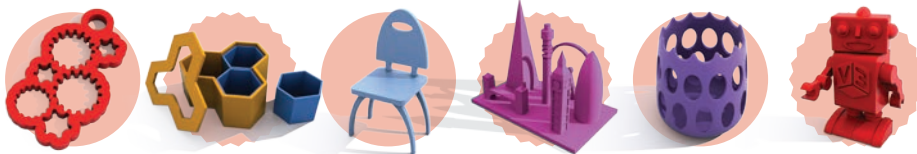


OFFLINE PRINTING

Your V3 printer is equipped with an SD card. If you choose the Offline option, you can unplug your computer from the printer once the print command has fully 'spooled' to the printer (this may take some time).

DOWNLOAD EXCLUSIVE V3 DESIGNS

We have a collection of exclusive 3D models, all created and tested on the V3 printer. To obtain them, visit the site below and enter the code **V3EXCLUSIVE** and download these brilliant designs. Sign up and we will let you know when new models are available too!



VECTOR 3 FAQs

Is the support material easy to remove from a model?

Support struts are attached to the models at pinpoints and for easy removal. Some models may require greater post-production and finishing to achieve the desired result.

What is the difference between ABS and PLA plastic?

PLA is a rigid liquid formulated to be biodegradable. It has a glossy-looking finish. ABS is a crystallised liquid and is fully recyclable. ABS is more flexible than PLA and less likely to snap under stress. The two materials have different melting points.

I don't know how to design yet; can I still find objects to print?

Yes, absolutely. There is a large community of designers who share files online. These can be downloaded and imported into the 3D Create & Print software.

What software settings should I use for the printer?

The software comes with the optimum settings for printing in PLA as a default. If you wish to switch to ABS, please follow the instructions in the full-length guide.

A full-length guide is available as a PDF from www.3dprinter-collection.com. Please download and consult this full-length guide for further information on your printer and additional guidance on its use.

ABS: Acrylonitrile butadiene styrene is a recyclable plastic, an alternative to PLA.

BUILD PLATE: The acrylic surface on which the V3 builds up an object.

BUILD PLATFORM: The support for the build plate.

DRIVE GEAR: The gear that drives the filament into the extruder.

EXTRUDER: The assembly that melts filament and pushes it through the nozzle onto the build plate.

EXTRUDER FAN: The fan that automatically cuts in to keep the motor assembly cool and disperse heat from the heat sink.

3D GLOSSARY

GANTRY: The fixed metal frame supporting the extruder assembly and moving parts.

HEAT SINK: The component that dissipates heat from the nozzle heater.

MOTOR ASSEMBLY: The motor and the drive gear that push filament into the extruder.

NOZZLE: The opening at the end of the extruder, from which heated filament emerges onto the build plate.

PLA: Polylactic acid is a renewable bioplastic, the source material for the filament supplied with your V3.

REEL HOLDER: Ensures that filament is fed evenly to the extruder.

SD CARD: The Secure Digital memory card, which can store digital data and be read by the V3 printer.

SLICING: The process of turning a 3D model into instructions for your V3.

STL: Standard Tessellation Language – a universal file format used for creating 3D models.

USB CABLE: The cable that allows the V3 to communicate with a computer using the computer's USB interface.

WARRANTY

The Manufacturer will repair or replace this product, or any part of this product, free of charge on the following conditions:

- The product is shown within 1 year of its purchase to have failed to perform its normal function.
- The failure can be shown to result from defective workmanship or materials, including working parts.
- The claim under this Guarantee is supported by proof of purchase in the form of a written or printed receipt.
- The product is returned carriage paid to the manufacturer.
- The product has been packed for transit to the manufacturer with sufficient care to avoid all reasonably foreseeable damage or loss.

THE GUARANTEE DOES NOT APPLY:

If the product has been opened or taken apart other than by a repairer authorised by the manufacturer; or if the product has been used for any purpose other than domestic use; nor for cosmetic deterioration resulting from fair wear and tear (including the natural ageing of constituent materials).

This Guarantee is additional to the consumer's legal rights and does not affect those rights in any way in relation to a faulty product or a product that is not as described. Advice about your legal rights is available from your local Citizens Advice Bureau or Trading Standards Office.

The final complete version may differ from the photographs – please see www.3dprinter-collection.com

In the unlikely event that you experience any problems with your Vector 3 printer please contact:

3dprinter@eagle-moss-service.com

DATA BASE FACTORY

Unit 4, Pullman Way,
Pullman Business Park,
Ringwood, Hampshire, BH24 1HD

Manufacturer:

KIA SCIENCE AND TECHNOLOGY
CORPORATION LTD

5th Street, Kanghua Road
Qiaochang, Tongqiao Township
Zhongkai High-Tech District
Huizhou City, Guangdong Province, China

IMPORTANT DATA

220V~240V 50~60 Hz (UK / EU / AUS)

100V~110V 50~60 Hz (JPN / USA)

Factory Model: STR Version 1.0

Warning – hazardous moving parts.
Keep fingers and other body parts away.
Warning – hot surface. Do not touch.
See installation instructions before connecting to the supply.

