



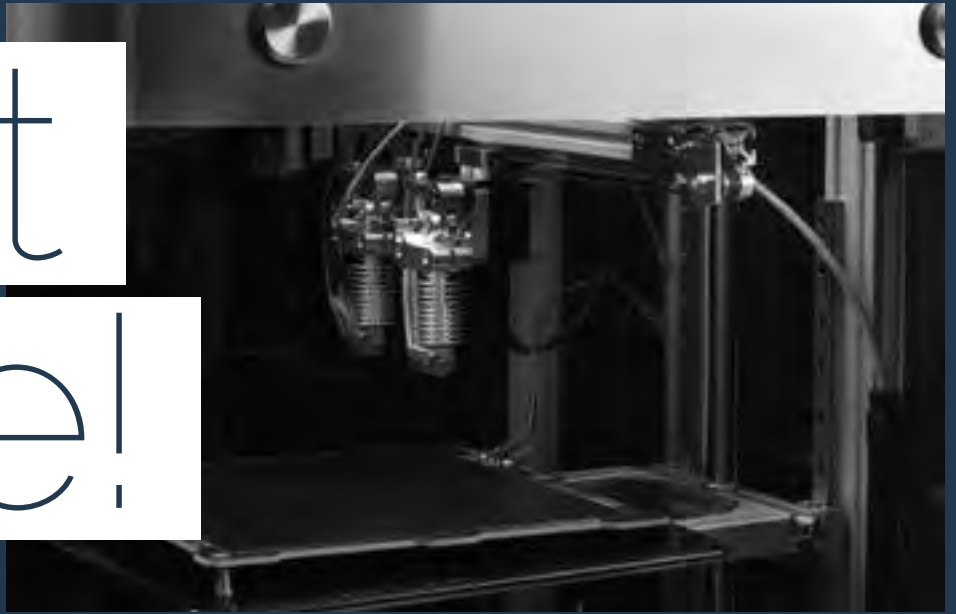
Zinter Special Projects

Zinter® Freedom Instruction Manual

V1.01 October 2016

Start

Here!



Thank you for choosing Zinter® Special Projects, and welcome to the Zinter® family!

This quick start guide is intended to get you up and running with your new Zinter® Freedom as quickly as possible.

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introduction

! Your heated bed and Extruders run at very hot temperatures. Please read and understand this guide before printing to avoid serious burns or injury.

! The Zinter Freedom is intended to remain within the solid case. Removing the printer from the case exposes live wires - disconnect from mains before removing from case.



Legal Notice

This manual is a "living document" The information in this manual is subject to change without notice. The latest version can be downloaded from www.zinter.com

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Zinter Freedom



Touch Screen

Build Chamber

Front Release

Filament Access

Cable Access

user safety

To avoid personal injury, or model deformation, do not touch the model, nozzle, or any moving parts by hand, or any other part of the body, while the printer is working or immediately after it has finished printing.

Protective glasses should always be worn when removing support material.

Always have adult supervision when children are present. Please keep all small printed parts away from young children; these can easily present choking hazards! There are several safety issues, small tools, sharp tools and HOT objects and most parts used in connection with 3D Printing. Tie back long hair and loose clothing. Keep fingers away from moving parts.

Tools and parts should be stored at a suitable height away from small children. Tools should be used in conjunction with safety gloves and glasses.

The printer must not be exposed to water or rain, or damage may occur.

Do not shut down the Zinter Freedom or pull out the USB cable when loading a digital model, or the model data may be lost. Your Zinter Freedom will not continue printing following a power cut and any progress made before a power cut will be lost and the print will need to be restarted.

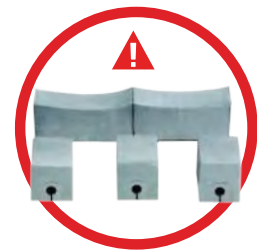
The printer is designed to work properly at an ambient temperature of between 15°C and 25°C and humidity of between 20% and 50%; Operating outside these limits may result in low quality models or machine malfunction.

unboxing

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Great care has been taken to ensure your Zinter® Freedom gets to you in one piece, however if there is any visible damage to the outer packaging, or obvious signs of damage please notify the courier immediately - failing to do so could invalidate any claim.

Unbox your Zinter® Freedom and retain all packaging for future use. Ensure all foam inserts' locking screws and transport cableties are removed from inside the printer.



Ensure you have all of the following parts before proceeding:

- 1 x Zinter® Freedom Printer
- 1 x USB lead
- 1 x Power Lead
- 1 x Glass Plate
- 1 x Simplify3D® Download Pack
- 1 x Instruction Manual
- 1 x Filament starter roll
- 1 x Build plate removal tool
- 2 x Rolls blue painters tape




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Your Zinter® Freedom is heavy, lifting should be carried out by 2 people, care should be taken when lifting or moving.

installation

Your Zinter® Freedom is shipped with a Simplify3D download booklet, please follow the instructions and use the One Time use code contained in the booklet to download and Install Simplify 3D. Your licence permits installation on two computers - for additional licences please visit our on-line store at www.zinter.com

Installation:

 XP or greater	Unzip and double click the .exe file to install. You may need to right click and choose 'Run as Administrator' depending on your permissions and trust settings. The windows installation requires Microsoft Visual C++ Redistributable which should be automatically detected and installed if necessary
 OS x 10.6.8 +	Unzip and double click the .app bundle to install. Enter your administrator username and password and follow on-screen prompts
 Linux	The Linux installer comes with both 32 and 64 bit options. After choosing the appropriate version for your system, unzip the file and launch the .run package. It is recommended to launch this program as super-user by opening terminal, cd'ing to the directory where you unzipped the file, and the typing "sudo ./Simplify3D*installer.run" and entering the administrator password.

Launch: The installer will guide you through the installation steps. The last step is a prompt to open and launch your Simplify3D® Software for the first time.

Activate: The software must be activated through an Internet connection after installation.

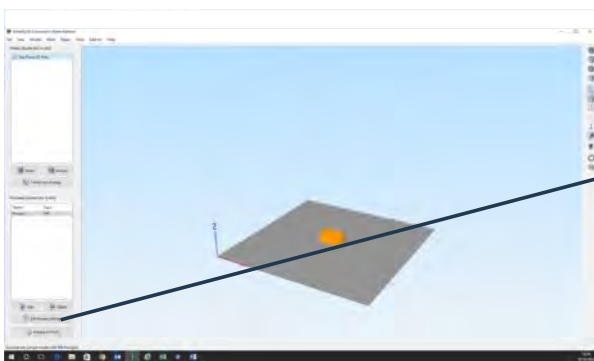
You can deactivate a specific machine at any time by going to Help > Deactivate Product.

configuration

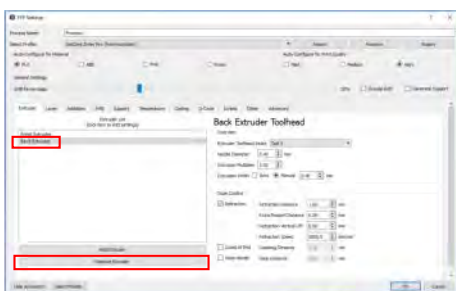
When you open Simplify3D for the first time, you will be greeted by the Configuration Assistant. Select Ion Core Zinter Pro from drop down menu and the Assistant will automatically configure all of your settings.



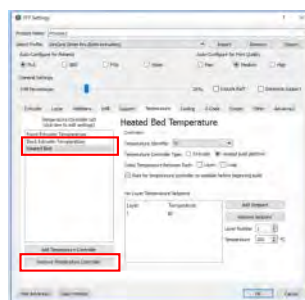
For Zinter Freedom Printers - select Zinter Pro from the menu and follow the steps below to adjust the default settings.



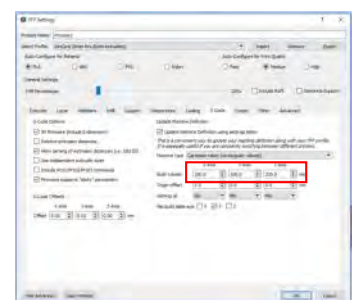
Once you have selected Zinter Pro from the drop down most settings will be configured automatically to configure the final settings for your printer click on 'Edit Process Settings'.



On extruder tab select remove extruder to delete 'back extruder'

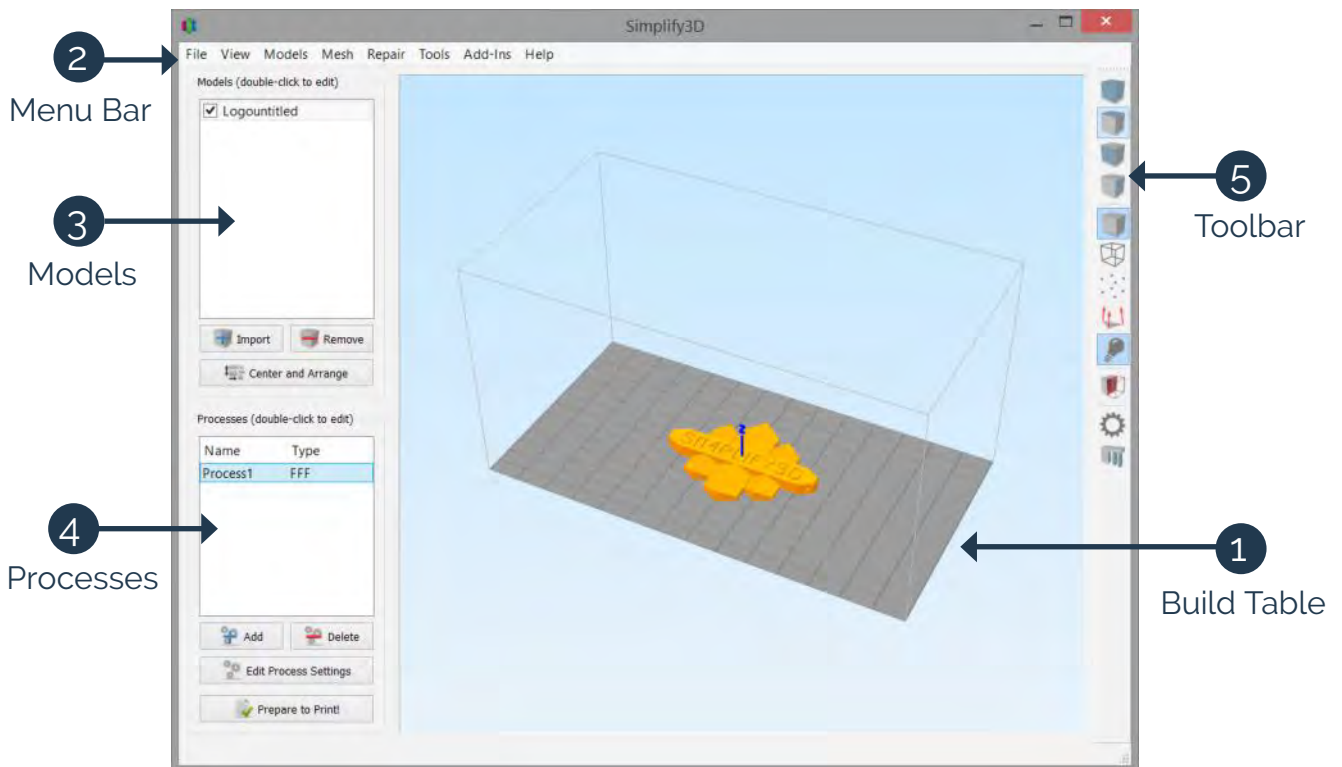


On temperature tab select remove controller to remove extruder and bed



On G Code Tab change bed size to 400 (X) 250(Y) 250 (Z)

the interface



1. Build Table: This is the interactive 3D environment where you will be viewing and working with your 3D content before printing. This is the “main stage” and primary viewing area. The grey grid is scaled proportionally to the size of your build volume and is determined based on your printer selection with the Configuration Assistant.

Use these mouse short cuts for different views:

- Rotate View – Left-click and drag
- Pan View – Right-click and drag
- Zoom – Scrolling or gesture zoom (or Shift-left-click and drag up and down)

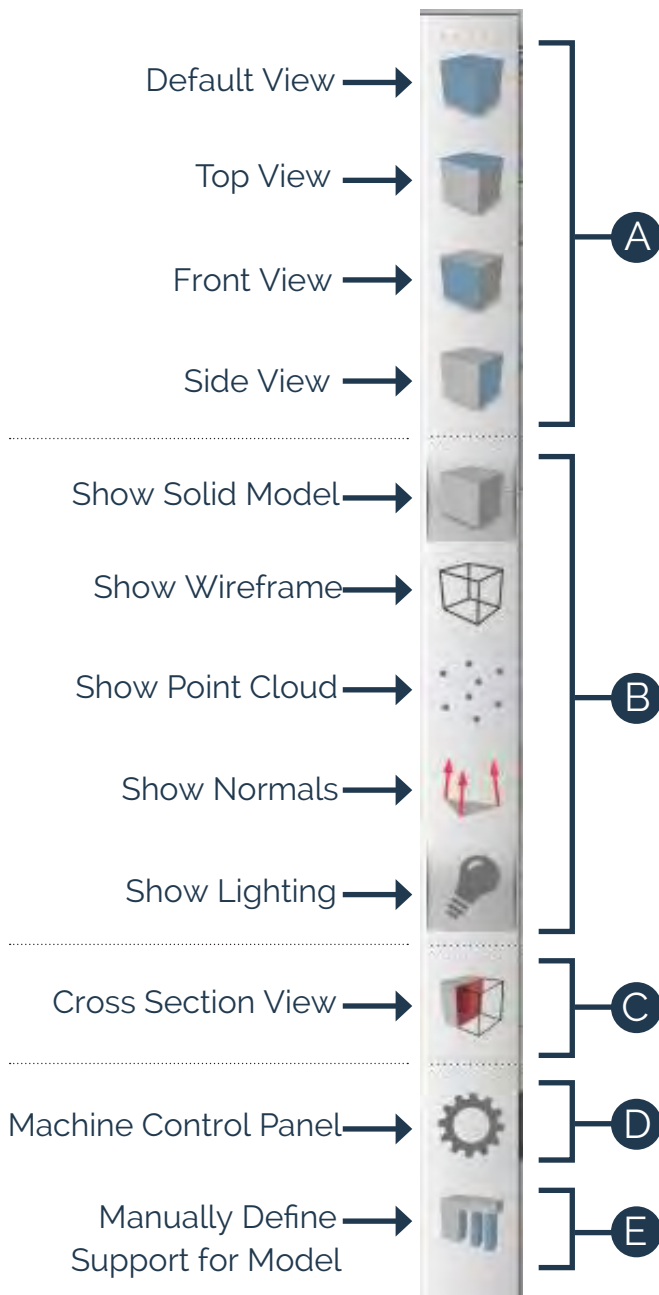
2. Menu Bar: Primary navigation to all aspects of Simplify3D Software.

3. Models: When you import 3D models, they are listed in this section above the buttons/commands that enable you to work with your models.

4. Processes: The build operations to create your 3D print are listed here, along with buttons/commands enabling you to work with process functions.

5. Toolbar: This toolbar contains quick access buttons for frequently used tools. You can move the toolbar anywhere you wish by clicking and dragging the top dotted line.

the interface



A. View: The first four buttons are preset viewing positions, allowing you to quickly change to the default, top, front, or side view.

B. Model Render: These tools control how you view the attributes of your 3D models. You can add a wireframe or a point cloud to your model, enable or disable the lighting and the solid rendering of the model, or display the surface normals of the model.

C. Cross Section Tool: The Cross Section tool gives you the ability to cut a model in half to look inside it. The tool allows you to cut your model from all three axes and can also be accessed in the Preview Mode.

D. Machine Control Panel: Simplify3D® Software can connect to virtually any printer through the Machine Control Panel (MCP). Another way to access the MCP is through the top menu bar under Tools > Machine Control Panel. The MCP allows you to view your extruder and build plate temperatures, preheat your nozzles, jog your machine's motors, and access the software-printer communication log.

E. Support: The Manually Define Support tool provides the freedom to customize your support structure under or inside any part of a model.

import a model

The first step in the 3D printing process is to import the model you want to build. You can obtain 3D models from <http://www.thingiverse.com>* or you can make a model yourself using a CAD package like SketchUp or AUTOCAD®. Save the 3D model file on your computer or storage device as an .stl or .obj file.

Click Import in the Models section and navigate to the folder where you saved your file. You can also drag-and-drop file(s) onto the Build Table. The software will automatically position and centre your imported model on the Build Table.

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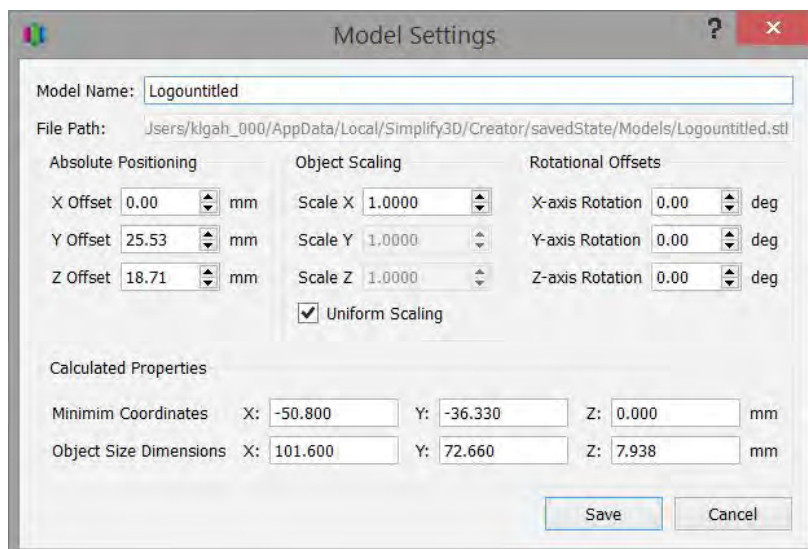
Helpful mouse and keyboard short-cuts to move, scale, or rotate your model:

Move Model – Ctrl-left-click and drag (or Command-left-click on Mac)• Scale

Model – Ctrl-right-click and drag up or down (Command-right-click - Mac)• Rotate

Model – Alt-left-click and drag right or left (or Option-Left Click on Mac)

Advanced model settings: Double click on any model (either in the Models list or on the Build Table) to bring up the Model Settings box. Enter numbers or use the up-down arrows to adjust the positioning, scaling, or rotation of your model. A helpful feature is that you can see your model change in real time on the Build Table.



*Thingiverse is owned and operated by MakerBot® Industries, LLC

process settings

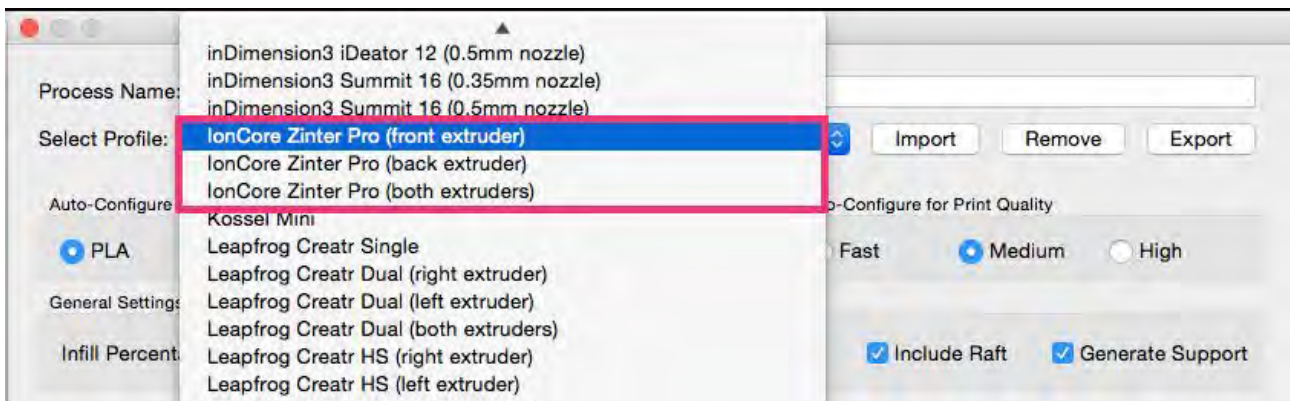
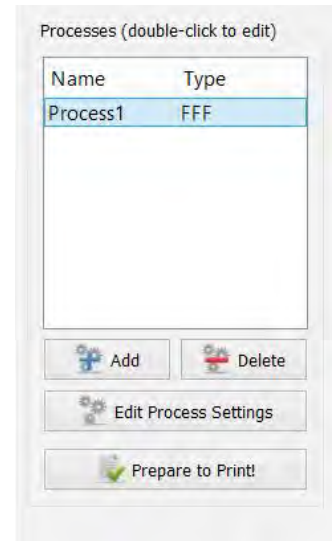
In the first step of the workflow, you imported a model. The next step is to define a Process that specifies how your model will be constructed.

A process is a collection of settings including speed, size, support material, quality levels, etc. Some models are built with one process, while more complicated models may involve multiple processes throughout the build sequence.

The first Process will be configured automatically based on the printer selected in the Configuration Assistant. You're free to make any adjustments you desire, but it's a great starting point!

To make adjustments to your Process, double-click on the Process or click Edit Process Settings. This will open the FFF* Settings window.

*The acronym FFF stands for Fused Filament Fabrication, and is the industry term for the 3D printing processes you will be using.



process settings

The FFF Settings window contains all the Processes that specify how your model will be constructed:

1. Select Profile – Allows you to choose a pre-configured printer profile.
2. Auto-Configure for Material – Allows you to select the material you will be printing with.
3. Auto-Configure for Print Quality – Allows you to select a pre-configured print quality.
4. Infill Percentage – Changes the interior solidity of your 3D print. 0% is completely hollow and 100% is completely solid. A value in the range of 20-50% is a good place to start.
5. Include Raft – Generates a raft structure underneath your part. Rafts are used to improve the bond to your build platform and may help reduce warping on large models.
6. Generate Support – Turns on support material for your 3D print. Support structures are similar to scaffolding, in that they help support steep overhangs and unsupported areas during the construction process. Typically, a 45° or greater overhang will benefit from support material underneath it. Simplify3D provides a unique ability to customize your supports, with add and delete support buttons. Simplify3D support structures break away cleanly and easily, minimizing difficult post-production cleaning and insuring the highest quality final print. Click OK when you have finished configuring your settings in the FFF Settings window. At any time, you can modify the settings by double-clicking on the Process in the list, or by clicking Edit Process Settings.



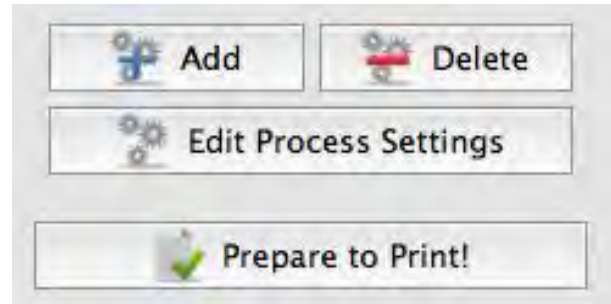
Click 'Show Advanced' at the bottom of the FFF settings window to view additional options and settings that are available within your Simplify3D Software.

previewing g-code

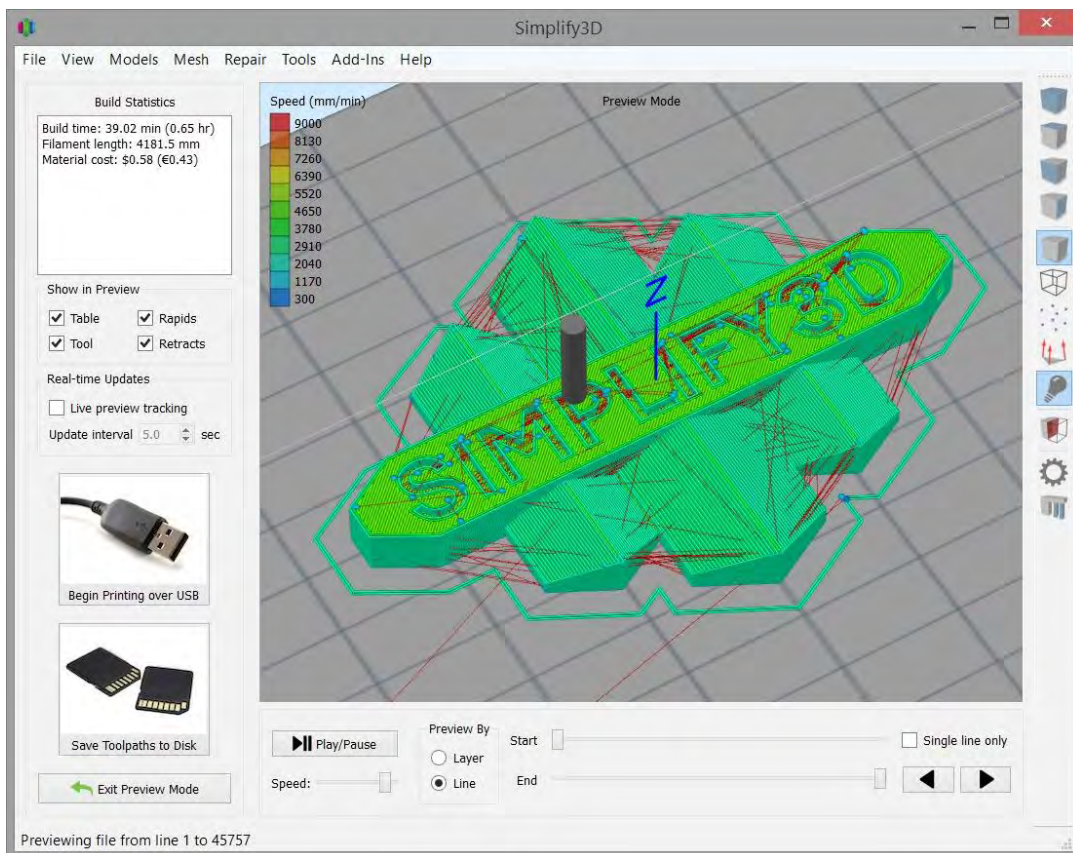
"Slicing" is the term used to describe the process of translating a digital model into line-by-line printer instructions called "G-code." The software slices the model into G-Code based on the variables you have selected in the FFF Settings window.

After you have finalised your Process settings, click Prepare to Print! to trigger the preparation of G-Code. Simple models will be sliced in seconds, while complex models may take several minutes.

When your G-Code has been created, the software window will transition automatically to Preview Mode.



The animated Preview Mode in the Simplify3D® Software allows you to inspect all aspects of your print operation prior to execution. The software takes your generated G-Code and virtually displays line by line how your model will be constructed.



Build Statistics are located in the top left corner of the Preview window and include three estimates:

1. Build Time (how long it would take for your print to finish).
2. Filament Length (how much filament it will take to build your model).
3. Material Cost (an approximation of how much it will cost to make your part).



Build statistics are intended only as a guide, and should not be relied upon to make business or costings decisions..



The Preview provides interactive buttons for precise playback control:

- Play/Pause button animates the preview line by line.
- Start and End Slider Bars allow you to move through the preview manually.

(Hint: leave the Start button positioned at left and drag the End button to see the entire build). The preview can be illustrated by Line or by Layer by clicking on either selection.

A useful setting is to select Preview by Layer and also place a check mark in Single Layer Only. Together, these selections will allow you to view a single layer at a time.



If you want to make adjustments to your model or process before printing, click exit Preview Mode.

keyboard shortcuts

MODEL MANIPULATION

Normal Selection	Q
Translate Models	W
Scale Models	E
Rotate Models	R

FILE MENU

New	Ctrl + N
Open	Ctrl + O
Save Factory File	Ctrl + S
Save Factory File As	Ctrl + Shift + S
Import Models	Ctrl + I

EDIT MENU

Undo	Ctrl + Z
Redo	Ctrl + Shift + Z
Copy Selection	Ctrl + C
Paste Selection	Ctrl + V
Remove Selection	Delete
Group Selection	Ctrl + G
Ungroup Selection	Ctrl + Shift + G
Select All	Ctrl + A
Deselect All	Ctrl + Shift + A
Duplicate Models	Ctrl + D
Center and Arrange	Ctrl + R
Drop Model to Table	Ctrl + T
Place Surface on Bed	Ctrl + L
Prepare to Print	Ctrl + E

VIEW MENU

Default View	Ctrl + 1
Top View	Ctrl + 2
Front View	Ctrl + 3
Side View	Ctrl + 4
Wireframe	Ctrl + W
Cross Section	Ctrl + K

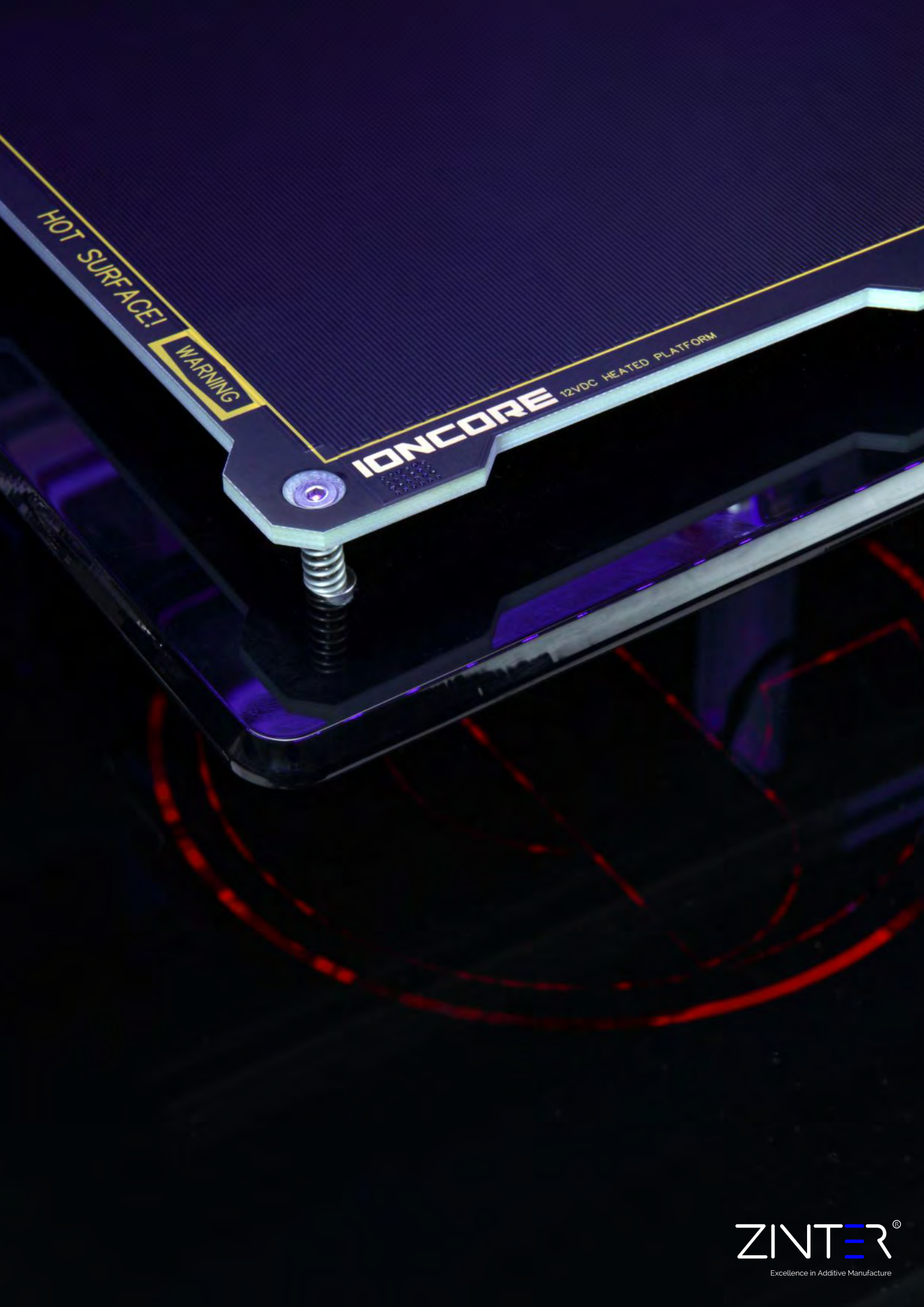
TOOLS MENU

Machine Control Panel	Ctrl + P
Customize Support Structures	Ctrl + U

OTHER SHORTCUTS

Select Multiple Models	Shift + Click Models
Change Build Plate Angle	Right Click + Drag
Change Build Plate Position	Left Click + Drag
Zoom In/Out on Build Plate	Scroll

Note: Mac users will need to replace the CTRL key with the Apple Command key (i.e., Command + Z to Undo).



HOT SURFACE!

WARNING

IONCORE

12VDC HEATED PLATFORM

get connected

1



Place on Zinter® on a firm surface

2



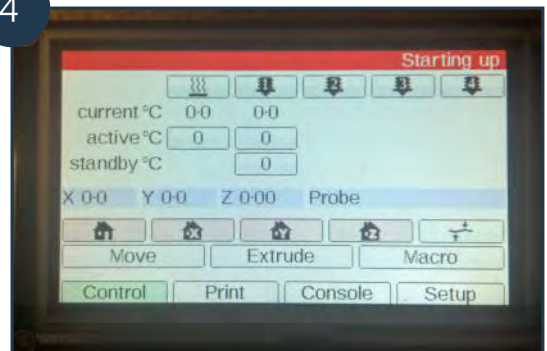
Connect USB or Network Cable

3



Connect the Power Cord

4



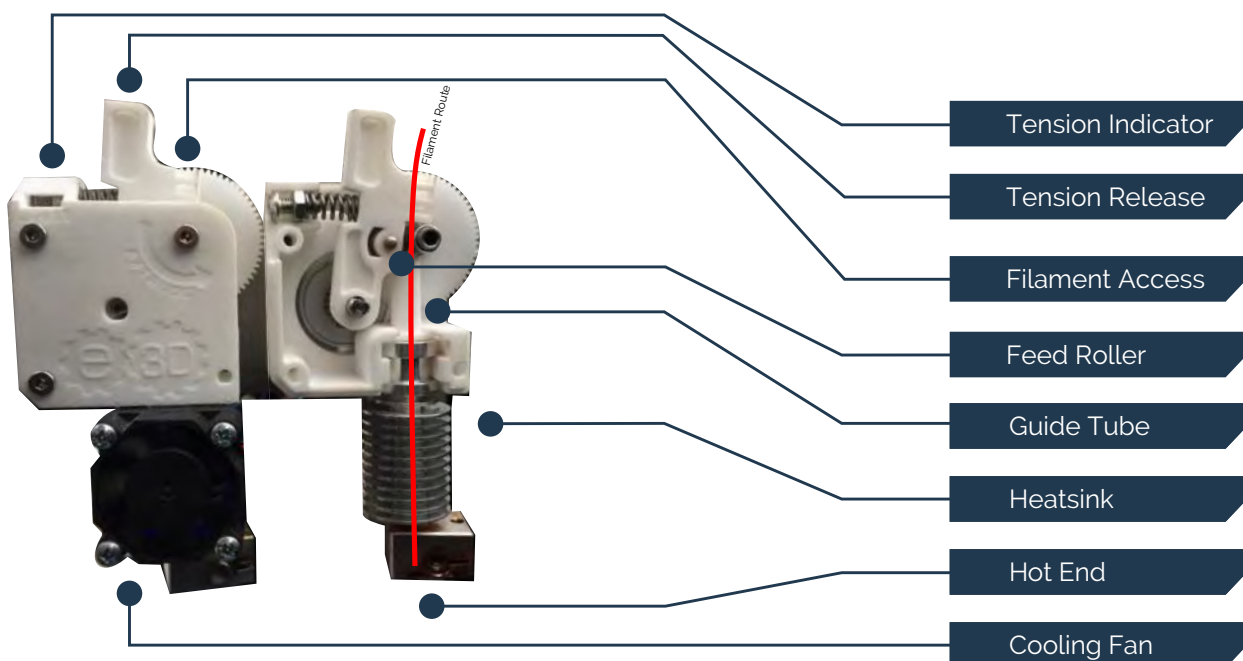
Power On

Loading Filament



When heated the hot end is extremely hot - take extra care when loading filament to prevent contact and avoid serious burns.

Loading filament can be tricky but is made much easier by understanding what is going on inside the extruder while you try to load filament. The image below shows the extruder assembly of your Zinter® Freedomboth with the Fan and Heat sink removed and complete and with key parts identified.



- 1: To load filament first ensure you begin by straightening out approx 5 - 10 cm of filament
- 2: While depressing the tension release lever insert filament through the Filament Access hole in the top of the extruder assembly.
- 3: Now carefully feed the filament in through the feed roller and into the end of the Guide Tube - This is quite fiddly, but gets easier with practice! This will be easier if you have cut the filament end at 45° to create a 'point'.
- 4: The printer is now ready to print.

Blocked Extruder



When heated the hot end is extremely hot - take extra care when loading filament to prevent contact and avoid serious burns.

From time to time your extruder may become blocked, and you will need to strip down your extruder to clear filament from the unit. This process can also be used to clean the drive gear to achieve optimum results.



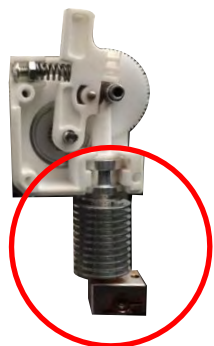
Begin by un-clipping the cooling fan from the heat sink, then carefully remove the 4 screws holding the extruder cover plate in place

Remove the cover plate to expose the inner workings of the extruder, be careful not to misplace the small bearing housed within the cover-plate.



You can now remove the tension release arm, by sliding it towards you, taking care not to loose the nut, bolt and spring that set your feed roller tension

With the tension arm removed you can now remove the heatsink, guide tube and hot end from the extruder assembly by sliding carefully towards you. **Be extremely careful if the hot end is still warm.** Take note of the orientation of the guide tube - it must be replaced the same way it came off!

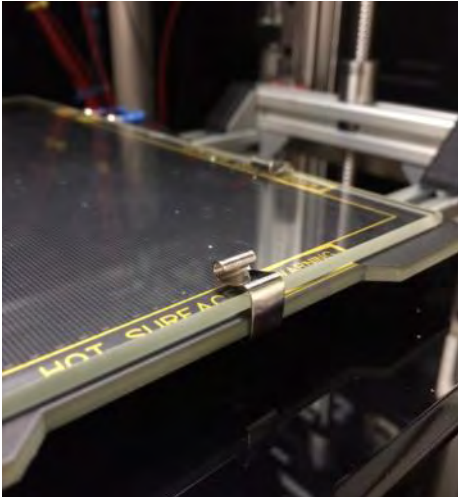


You can now unscrew the heat sink from the hot end, be careful not to loose the PTFE tube contained within, this will reveal any blocked filament.

You may need to heat the hot end in order to release the filament - if required this must be done with extreme caution.

Reverse these instructions to rebuild your extruder.

bed levelling

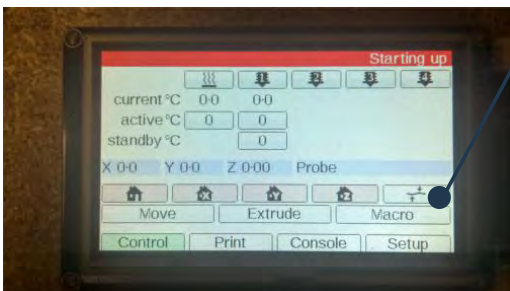


The most common cause of print problems and print failures is a print bed that has not been levelled.

Once you have levelled the bed on your Zinter® Freedom, technically you shouldn't need to touch it, however if you experience issues its always worth checking this first.

Underneath your print platform there are 3 Thumb screws, these allow the bed to be 'tilted' in any angle to level the bed.

Bed levelling is crucial to great prints and is worth spending a little time getting right: Begin by turning the.



1: Begin by pressing the home all or home z buttons on the touch screen

2: Once the printer has homed the axis press the bed levelling button .

3: The printer will automatically take a number of readings

4: Bed levelling compensation is now complete - you can fine adjust further using the thumb screws under the bed if needed

lets print!



When you are happy with the preview, there are two options to begin your print: Begin Printing over USB – if you are using a USB connection, you have the option to view the build sequence real-time on your monitor by selecting Live Preview Tracking.

For additional information on USB communication, access the Machine Control Panel to view a broad range of information that is transmitted via USB.

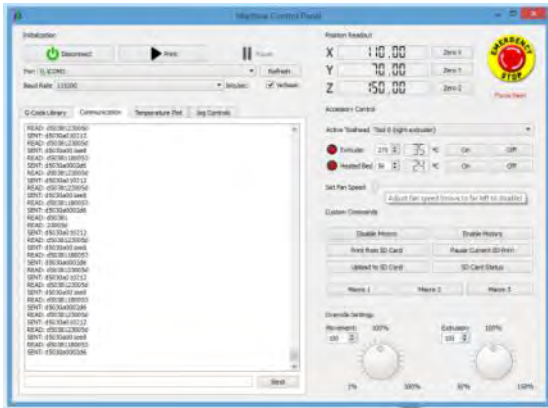
Save Tool paths to Disk – This saves your print file to a user-defined location, such as a folder on your computer or an SD card.



If you wish to print via the on-board web browser select 'Save tool paths to disk'.

stopping a print

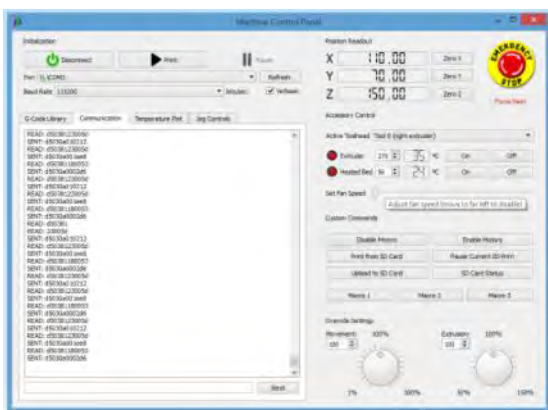
Printing via Simplify3d (USB)



During the Print you can click the pause button within the Machine Control Panel at any time to pause the print. The Extruder will remain at heat. You can the restart the print by clicking the print button again.

The Stop, or Emergency Stop buttons will both cease the print - you will not be able to restart the print.

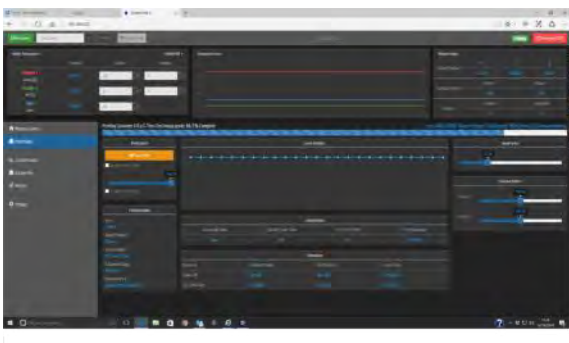
Printing via Touch Screen (Standalone)



During the Print you can click the pause button on the touch screen at any time to pause the print. The Extruder will remain at heat and the bed will move away from the nozzle. You can the restart the print by clicking the print button again.

One the print is paused, a cancel print option appears, to stop the print if needed.

Printing via Web portal (Network)



During the Print you can click the pause button within the Print Status tab at any time to pause the print. he Extruder will remain at heat and the bed will move away from the nozzle. You can the restart the print by clicking the print button again. The red emergency stop button will stop the print at any time. There is a few seconds delay between pressing the button and the printer reacting.

removing a print

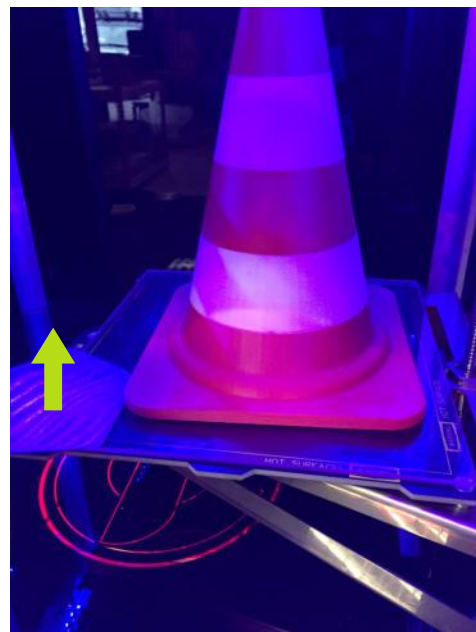
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Do not try to remove the model from the print bed before the nozzles and the bed have cooled. Doing so may cause burns or damage to your model or printer.

Once the Zinter® Freedom has finished printing, the extruder's will return to the 'Home' Position, and the Bed will lower to the bottom of the print area. the bed and nozzles will begin to cool It is advised that you wait approximately 10 minutes for cooling to complete before removing the print.

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A wallpaper scraper, or pallet knife, kept flat against the print glass is ideal for removing the model from the print bed.



filament guide



Your Zinter® Freedom is supplied with a roll of Premium PLA Filament selected by Zinter.

For best results we recommend using Zinter filaments with your Zinter® Freedom

Your Zinter Freedom is configured to work with 3mm filament using 1.75mm filament in your printer will cause your extruder to block and may damage your printer.

Ideal print temperature settings will vary in line with environmental factors, outside temperatures and other factors . Zinter Filament will always carry a guide temperature on the box, you can adjust the print temperature within your slicing software.

PLA	Nozzle Temp	Speed
All Colours	192 - 200C	40 - 100mm/s

A full range of filaments can be found on the Zinter shop at www.zinter.com.

Your Zinter Freedom is supplied with two rolls of adhesion tape to ensure maximum adhesion to the glass bed, replacements can be sourced from www.zinter.com

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More abrasive filaments such as XT-CF20 Carbon Fibre, and some metallic filaments (Brassfill for example) will wear your print nozzle much quicker than plastic filaments. This will become apparent through reduced quality prints, particularly where fine detail is needed. Hardened steel nozzles can be sourced from www.zinter.com

filament range

We are constantly adding new colours to our range and the full list is available through the online store at www.zinter.com.

PLA / ABS



Specials



Not all filaments are currently available in 3mm diameter - check our online store for availability.

Is the Zinter® Freedom suitable for use by children?

Almost all 3D printers use Hot Extruder's, and utilise moving parts, and without direct and constant supervision these parts could cause injury, if allowing children to work with 3D Printers it is important that they are made aware of the risks and constantly supervised.

What issues may I face?

The biggest complaint users find with 3D printers is models lifting from the print bed during the print, and this happening half way through a 6 hour print can be extremely frustrating. We have found that applying watered down PVA glue to the print bed, or sticking masking tape to the Glass bed before printing both help dramatically reduce occurrences of the print lifting from the bed - the internet is full of weird and wacky solutions from hair spray to beer - we recommend masking tape or PVA glue!

Do I have to use Zinter supplies?

You do not have to purchase your supplies from us (though we would love it if you did!) however the results of using cheap imported filament in any 3D printer are well documented on-line. We would recommend only sourcing quality filament through a reputable supplier - we cannot accept any warranty claims arising from the use of filament not approved for use in our machines.

What colours of filament are available?

There is a standard range of about 50 colours available plus, fluorescent and glow in the dark however we can (subject to minimum order quantities and lead times) obtain filament in almost any colour if you wish to match an existing branding or products.

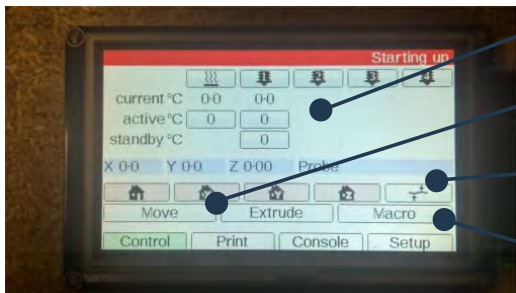
Do I require a special location to install the Zinter® Freedom?

All 3D printers should be located in a well ventilated room, where temperatures are reasonably stable and the machine should be located on a stable surface capable of carrying its weight. The Zinter® Range of printers do not need special ventilation systems.



A full list of FAQ's is available at www.zinter.com

Touchscreen menu

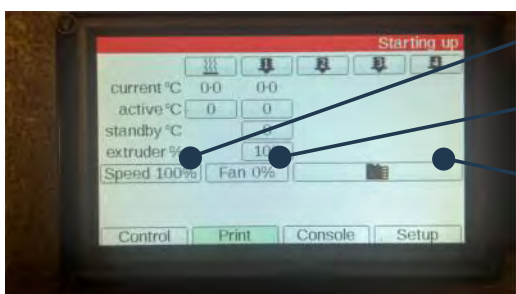


Heater Controls

Home Axis

Autobed level

Macros



Print speed

Fan speed control

File Browser



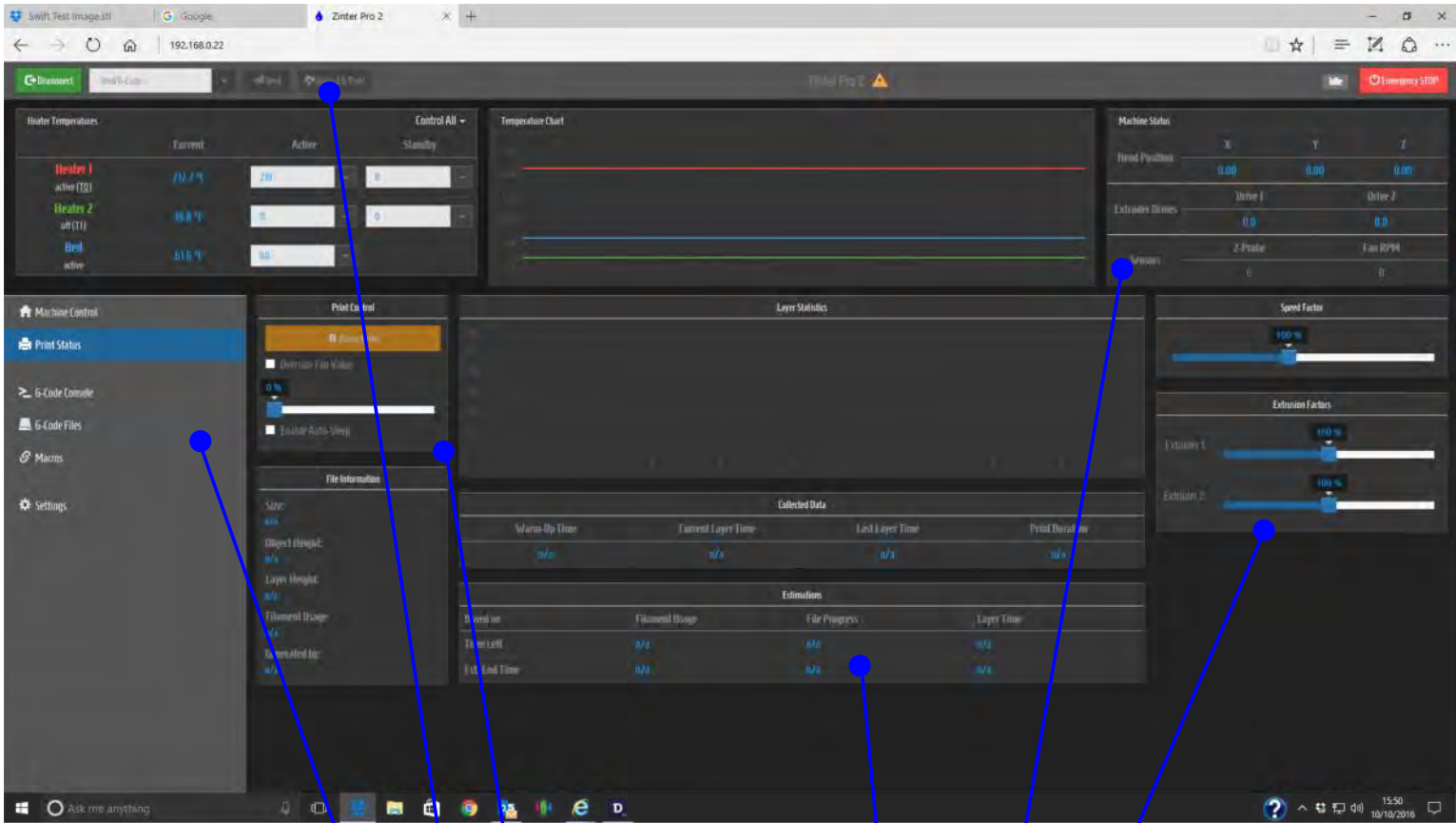
Keyboard



Setup options

This menu is subject to change with each new Firmware Release

Web Portal



Menu options

Upload and print

Pause Print

Fan Controls

Digital Readout

Time remaining

Web portal is subject to change with each new Firmware Release

Filament Materials

Your Zinter® Freedom utilises an open format filament system. We strongly recommend you purchase your 3D printing filament materials from www.zinter.com, where every filament has been thoroughly tested to work on your printer and comes with optimized default settings for easier printing.

If you choose to purchase your filament elsewhere, avoid low quality filaments that can lead to failed prints and even damage your Zinter® Freedom. Low quality filament can contain foreign objects, unlisted material blends, voids and density variations, its also not uncommon for cheap filament to have varying filament diameter. Purchasing consistent and reliable filament is key to consistent and reliable prints, and well worth it to protect your investment in a Zinter® Freedom.

More abrasive filaments such as XT-CF20 Carbon Fibre, and some metallic filaments (Brassfill for example) will wear your print nozzle much quicker than plastic filaments. This will become apparent through reduced quality prints, particularly where fine detail is needed.

Print Bed

Your Zinter® Freedom has a removable glass print surface, always check this plate for chips, cracks or damage at the start and end of each print, if any become apparent cease use immediately and replace.

If you start seeing adhesion issues and your prints are not sticking to the glass, carefully wipe the glass with isopropyl alcohol.

For some filaments applying Zintac™ to your print area prior to printing can also improve bed adhesion.

Print Nozzle

Over time you may also experience an accumulation of filament on the nozzle and heater block. To clean up this accumulated filament, heat the hot end up to 180°C and then carefully wipe affected areas using a clean dry cloth.



Excellence in Additive Manufacture

CERTIFICATE & DECLARATION OF CONFORMITY FOR CE MARKING



For the following:

Product: **3D Printer**
Model: **Zinter Freedom**
Serial Number: **ZPII - F001 - F005 Onwards**

Manufacturer:

Zinter LTD
Unit 1J Westpark 26
Wellington
Somerset
TA21 9AD
United Kingdom
info@zinter.com
+44 (0) 844 409 7976

Year of affixing CE marking: **2016**

We hereby declare under our sole responsibility that the product listed above is in compliance with the essential requirements of the following EU directives:

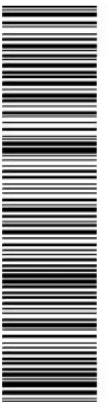
Machinery Directive (2006/42/EC)
Electromagnetic Compatibility Directive (2004/108/EC)
Low Voltage directive (2006/95/EC)
RoHS 2 Directive (2011/65/EU)

and further conform with the following EU Harmonised standards:

EN 953:1997 + A1:2009
EN 60204-1:2006 + A1:2009
EN 61000-6-3:2007 + A1:2011
EN 61000-6-1:2007

The technical documentation is kept at the Manufacturers address

Shane Nelson
Managing Director
Signed on behalf of Zinter Ltd
Date of Issue: 15th January 2014
Place of Issue: United Kingdom



Contact

Sales

- P: 0844 409 7976
- E: info@zinter.com
- <http://www.zinter.com>

Spares and Accessories

- P: 0844 409 7976
- E: sales@zinter.com
- <http://www.zinter.com>

Warranty & Support

- P: 0844 409 7976
- E: support@zinter.com
- <https://ioncore.zendesk.com>