

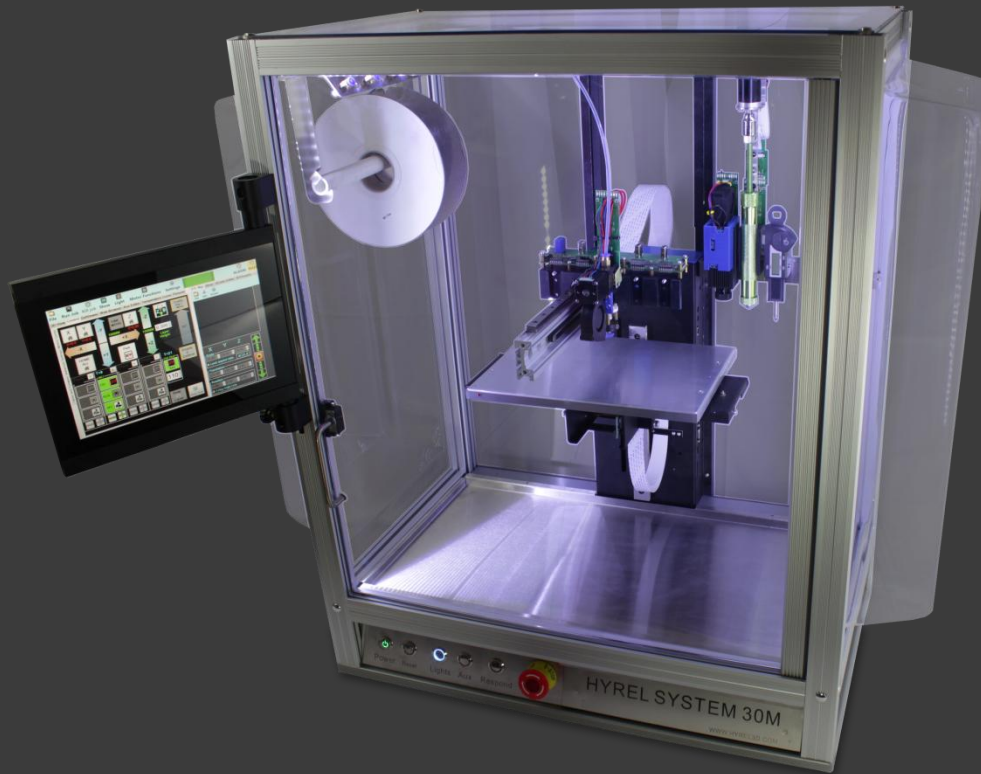
T1 Training Session

# **HYREL 3D TRAINING SERIES**

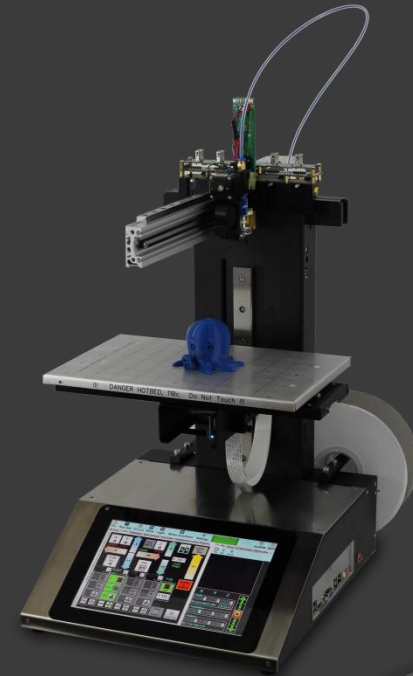
# Agenda

- ⦿ Breaking the Ice
- ⦿ Physical Setup
- ⦿ Walkthrough of REPETREL
- ⦿ First Print

# Breaking the Ice

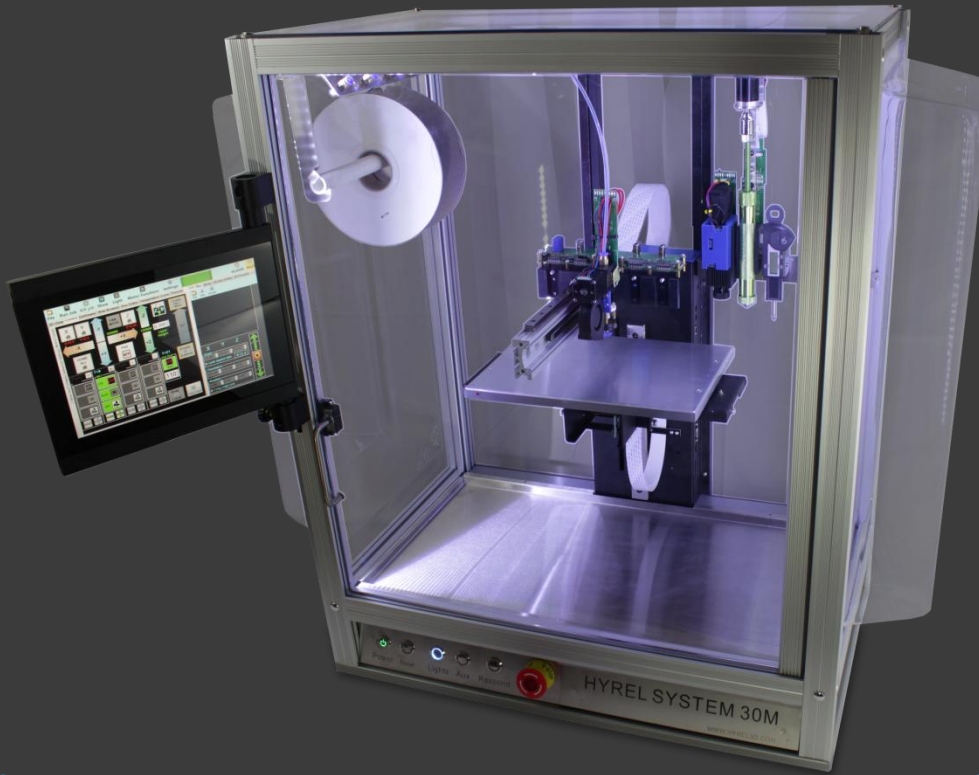


SYSTEM 30M



ENGINE

# Breaking the Ice



- Protected build environment
- Slightly larger build area
- Better printing results

SYSTEM 30M

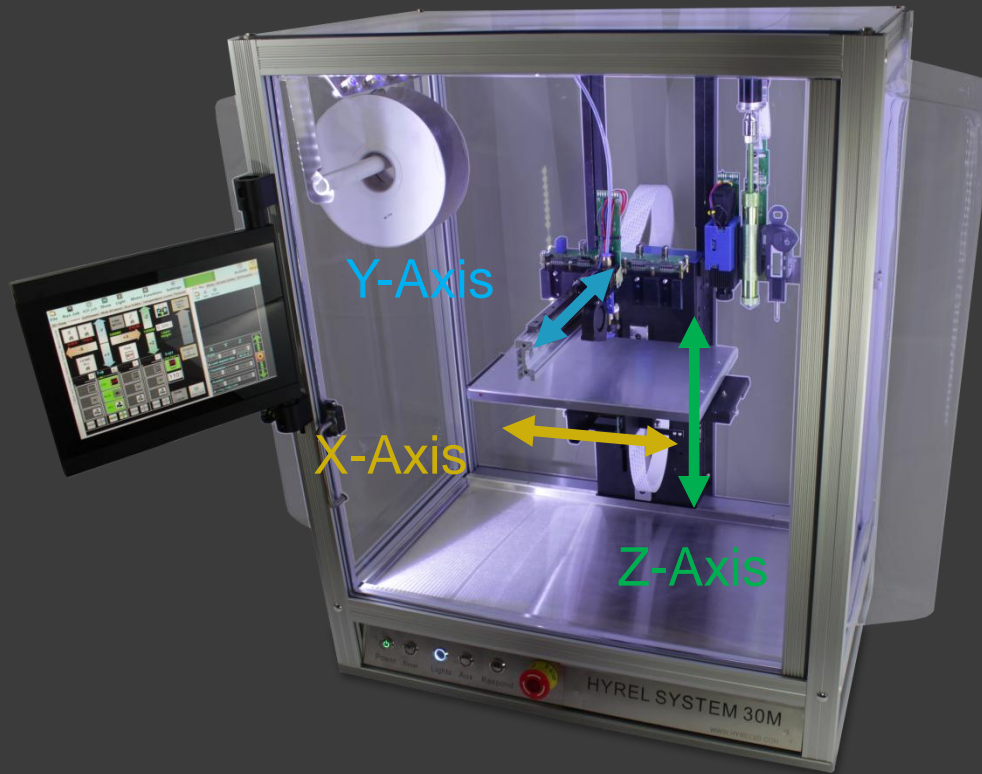
# Breaking the Ice

- Entry-Level HYREL
- All metal construction
- Built to last

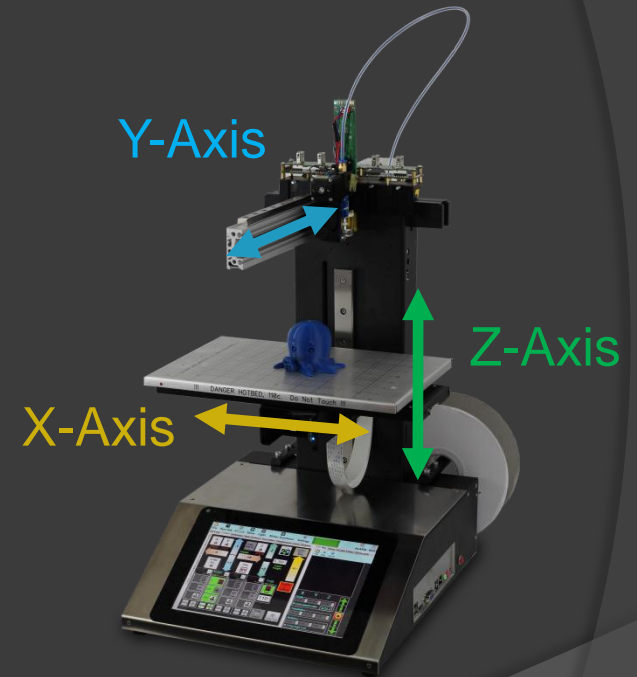


ENGINE

# Physical Setup

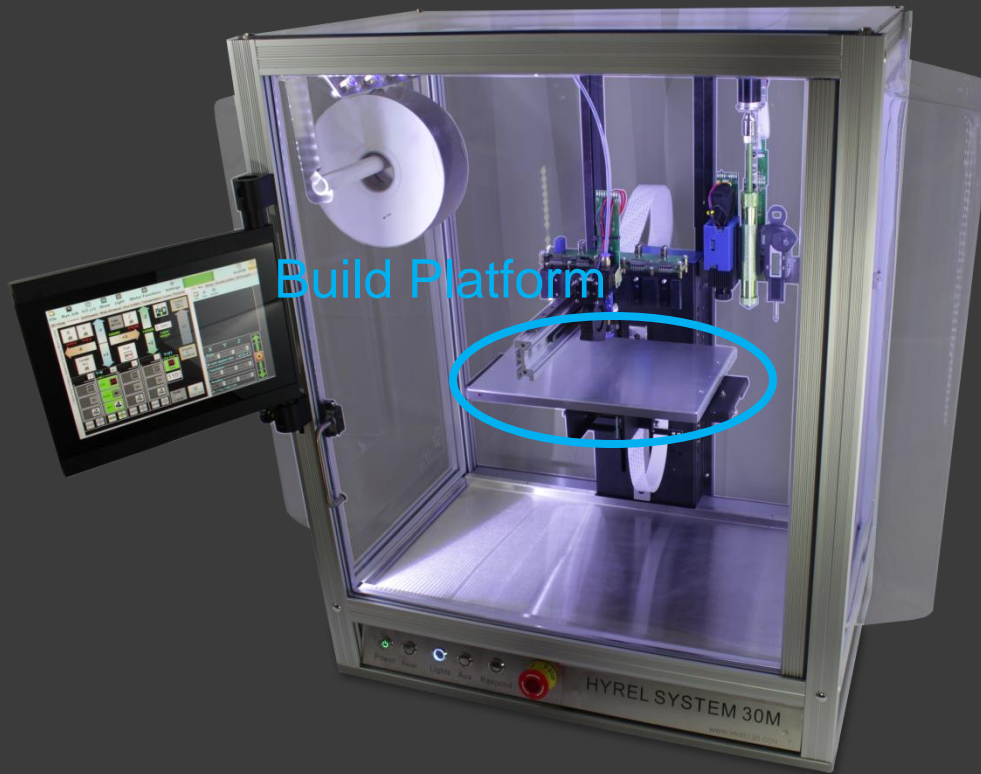


SYSTEM 30M



ENGINE

# Physical Setup



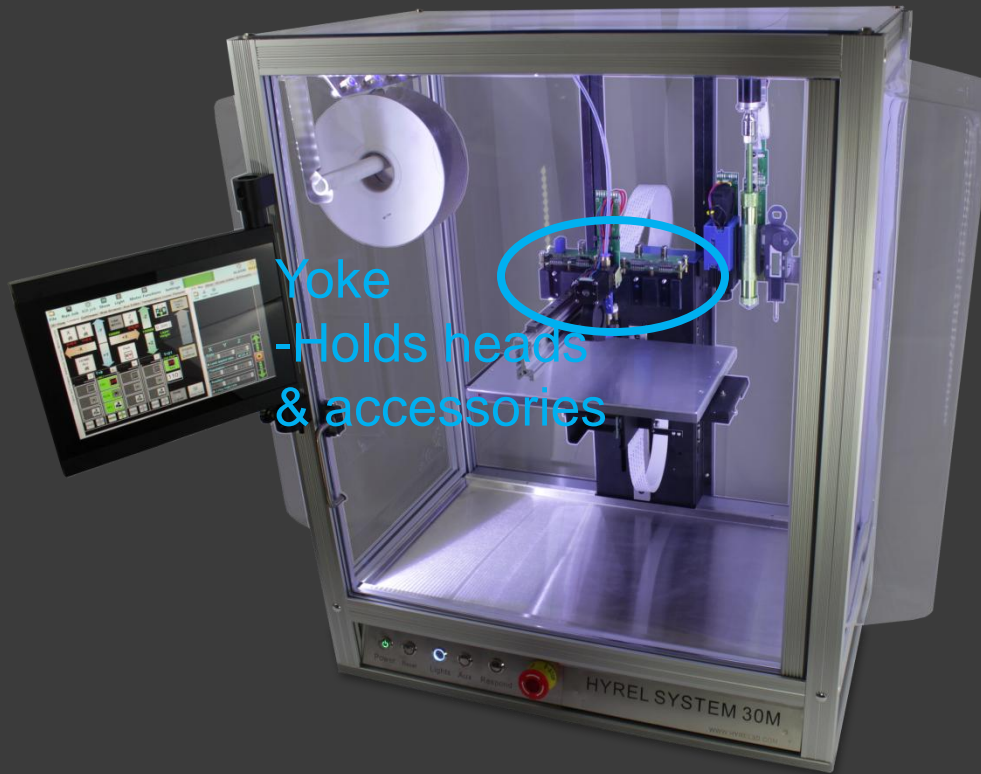
SYSTEM 30M



ENGINE



# Physical Setup



SYSTEM 30M

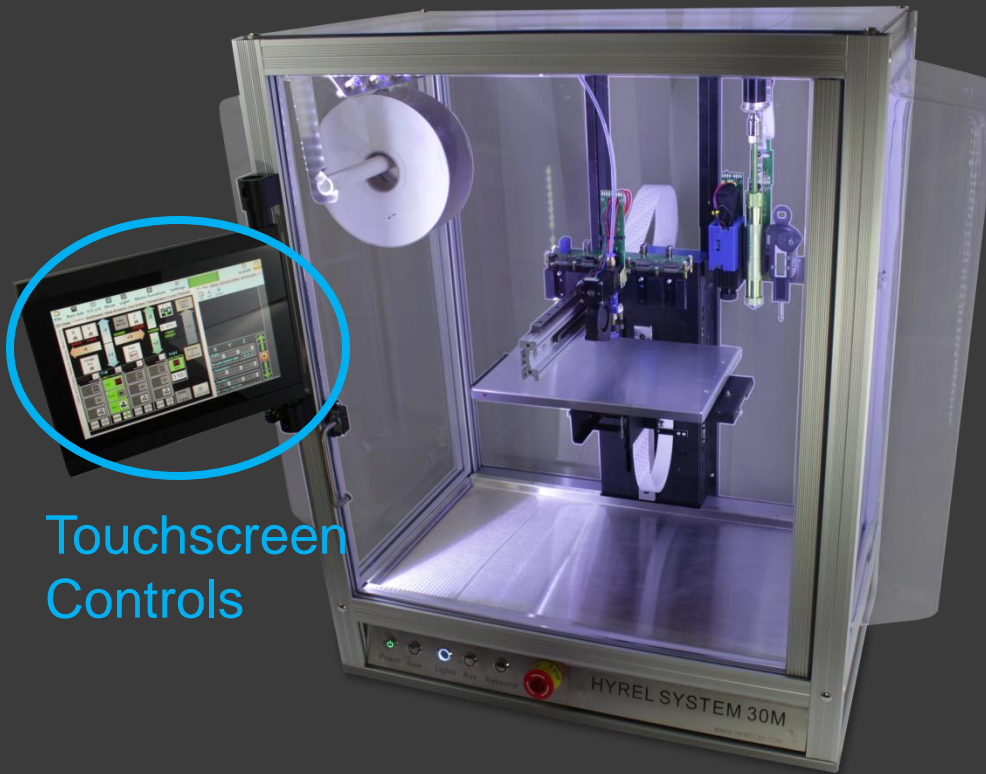
Yoke  
-Holds heads  
& accessories



ENGINE

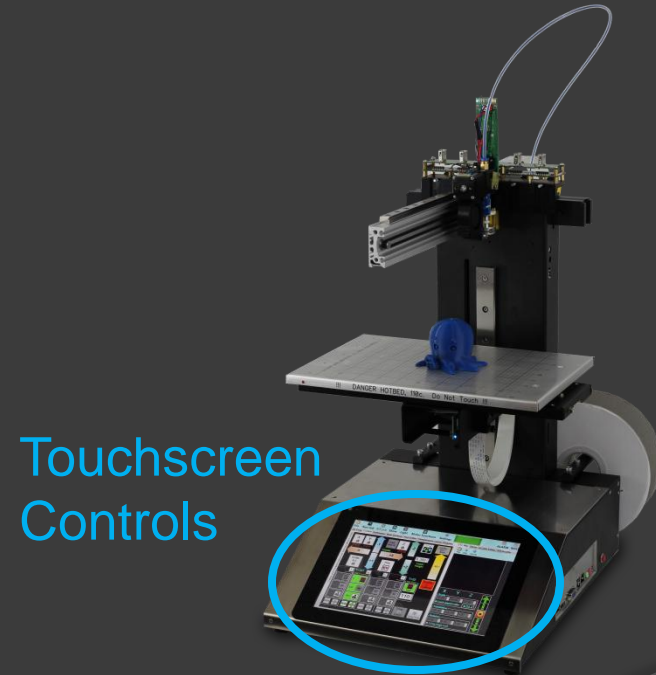


# Physical Setup



Touchscreen  
Controls

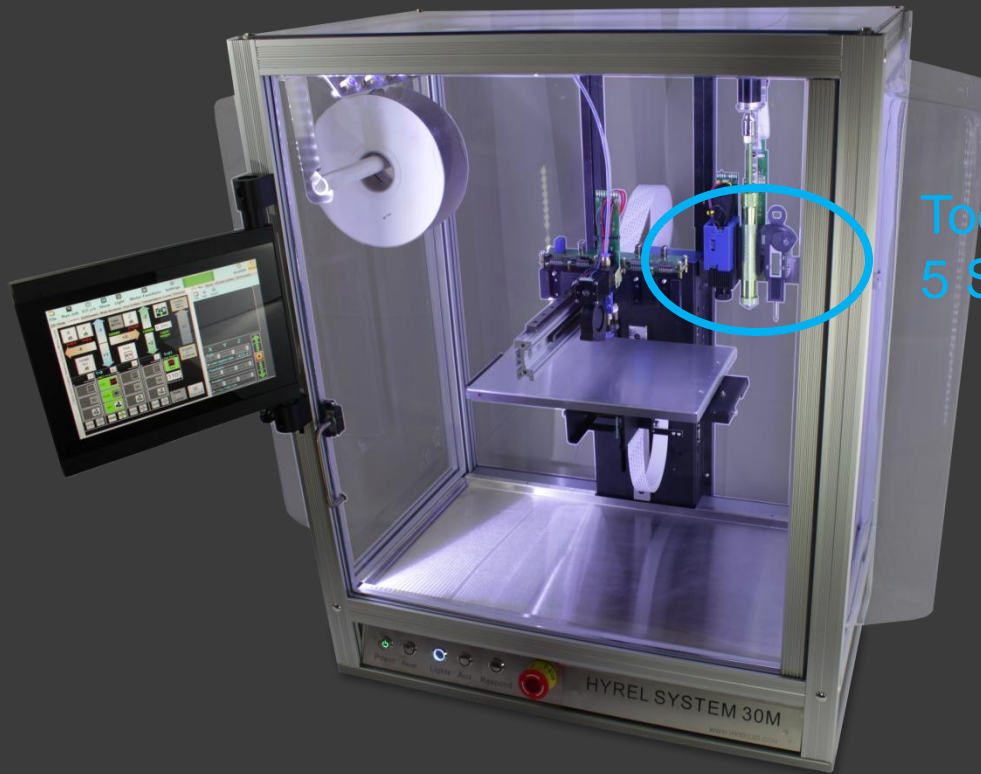
SYSTEM 30M



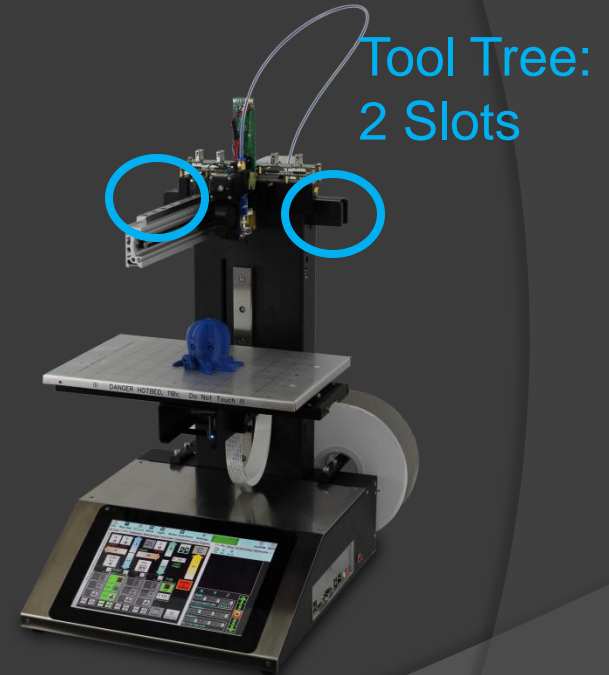
Touchscreen  
Controls

ENGINE

# Physical Setup



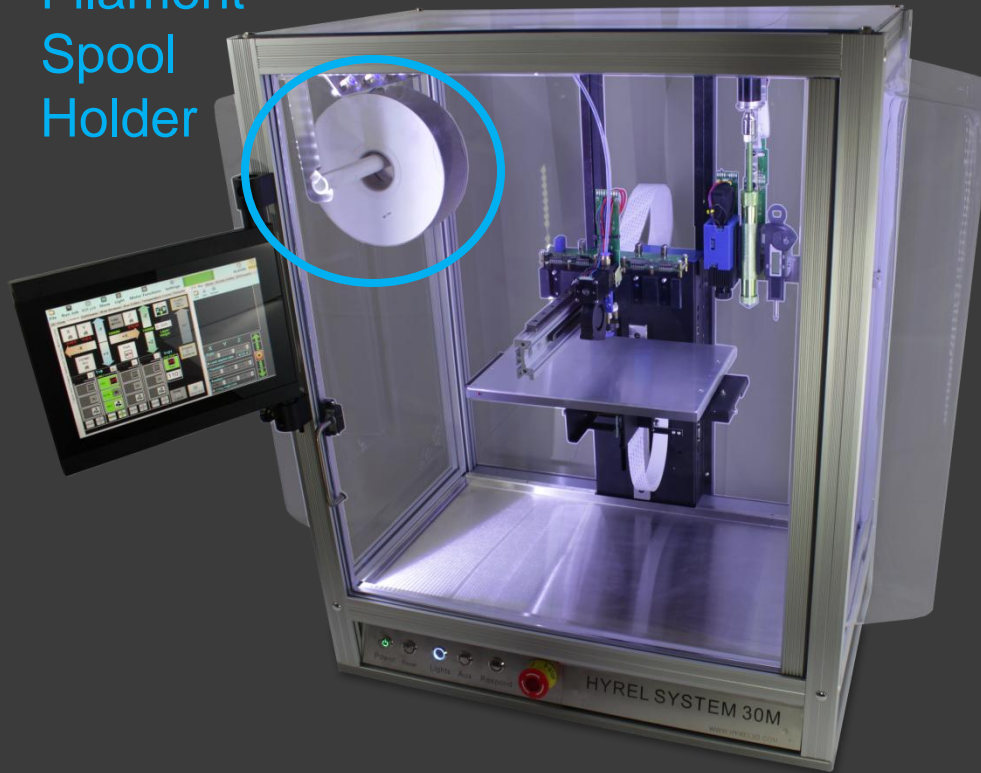
SYSTEM 30M



ENGINE

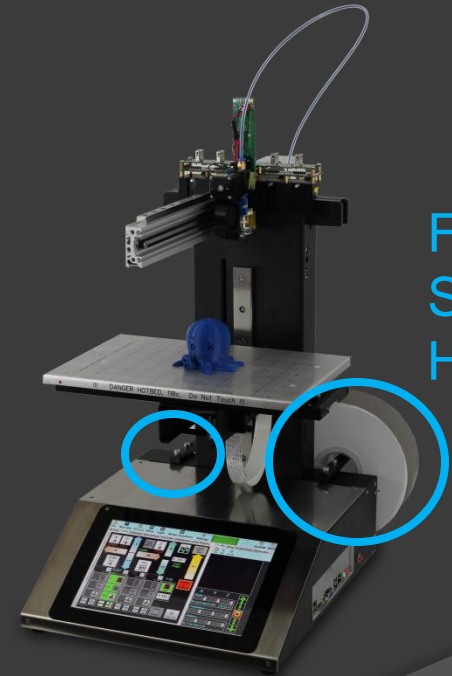
# Physical Setup

Filament  
Spool  
Holder



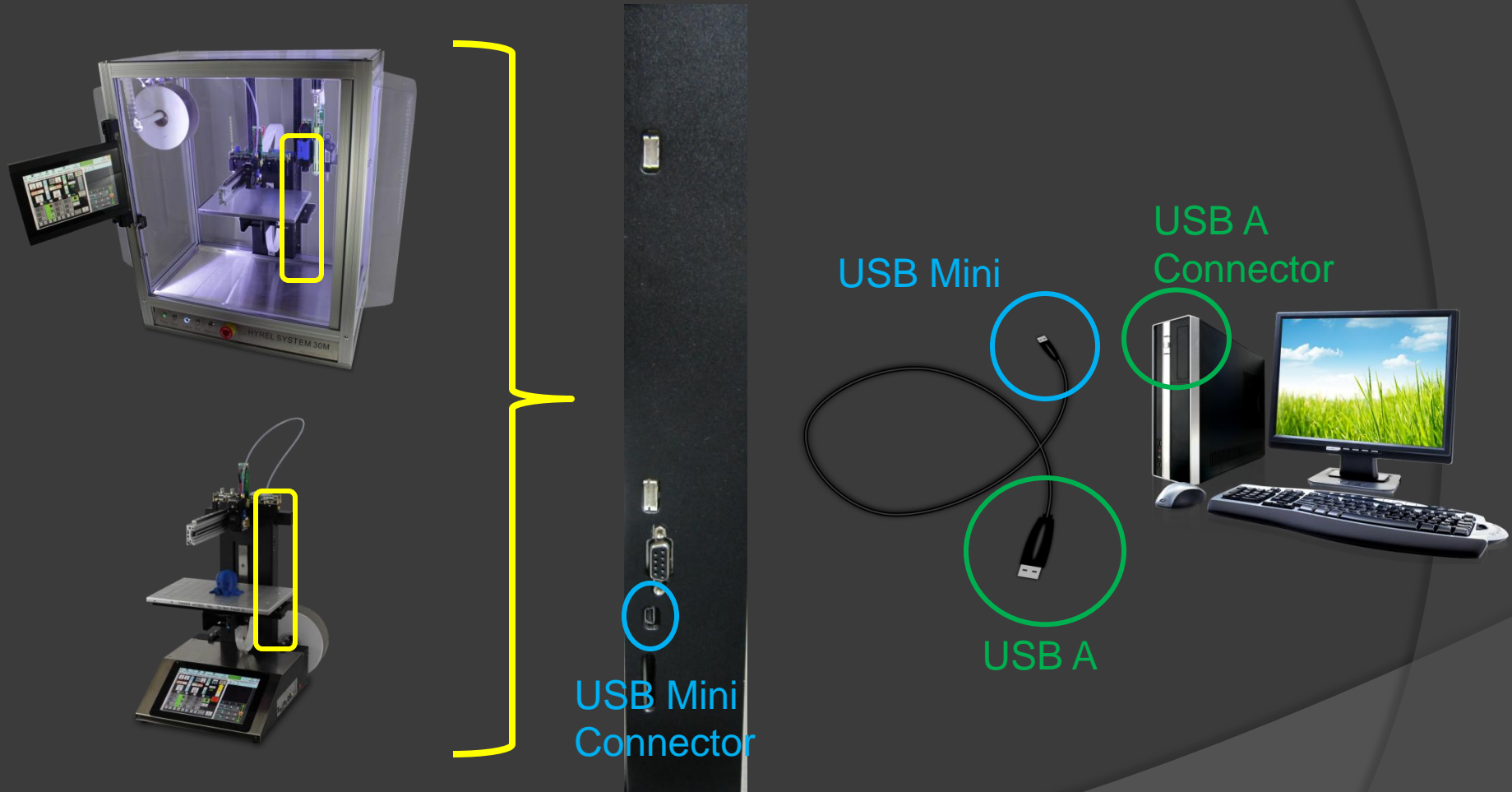
SYSTEM 30M

Filament  
Spool  
Holders



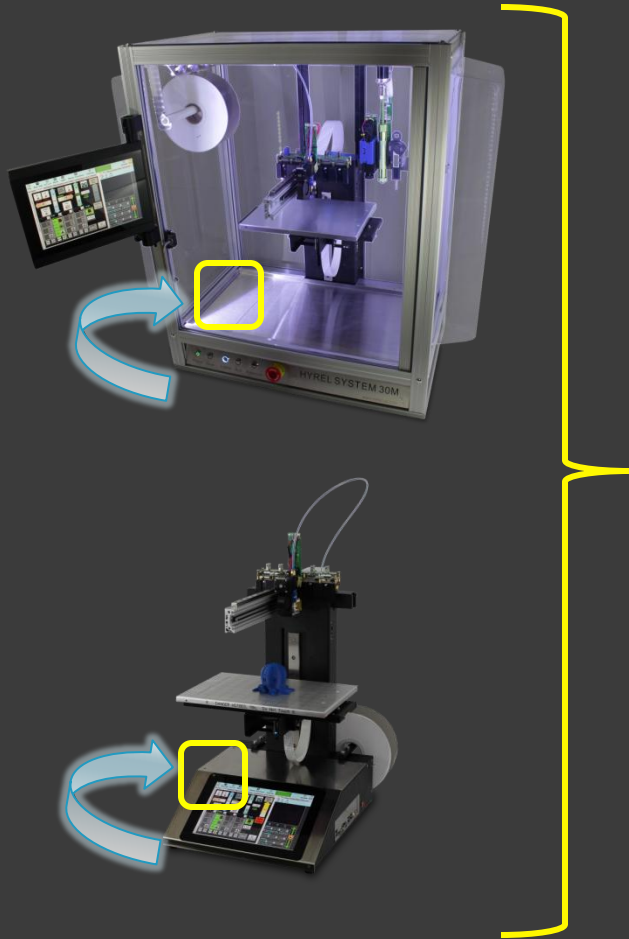
ENGINE

# Physical Setup



Control your HYREL from a separate PC

# Physical Setup



Power Supply:  
ATX Form Factor  
500W





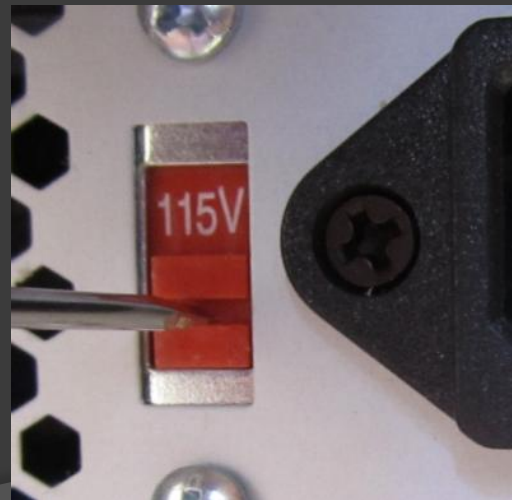
# Physical Setup

## CAUTION:

Make sure you know your Outlet's Voltage Requirements.

If you are unsure, **start** with the Power Supply set to 230V and turn it on. If the machine does not turn on with the Power Supply set to 230V, then Set the Power Supply to 115V and turn it on.

Doing this in reverse WILL blow a capacitor in your Power Supply and will void your warranty.

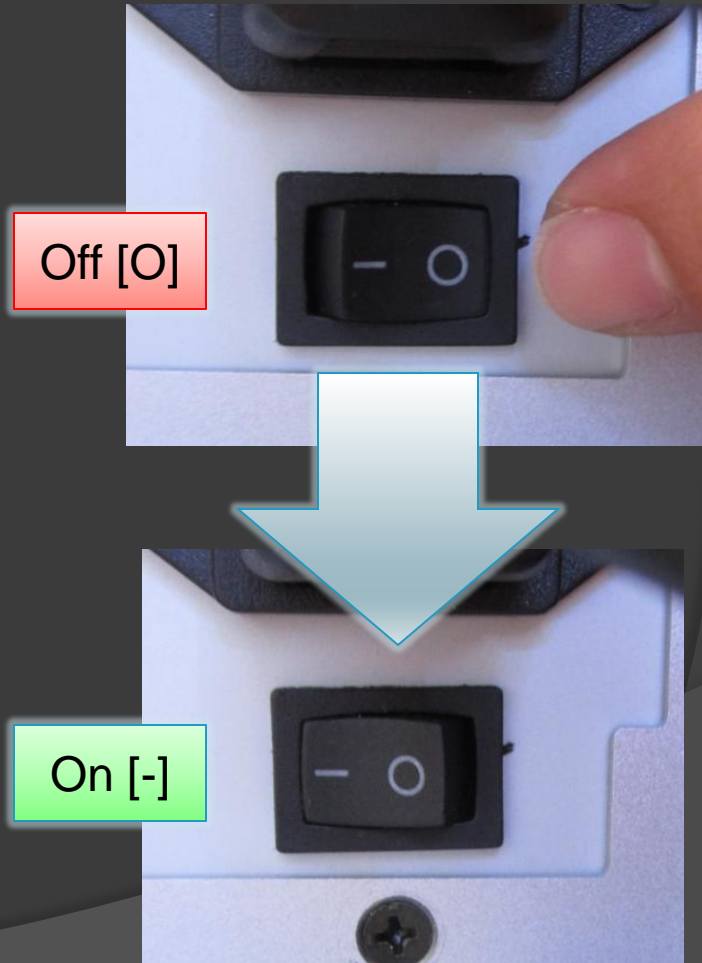


# Physical Setup

1. Plug in your power cord

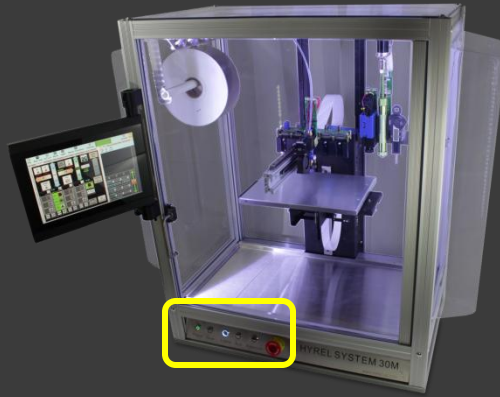


2. Turn on your Power Supply





# Physical Setup



System 30M Power On Button



Engine Power On Button



# Walkthrough of REPETREL

- Q: What is it?
- A: REPETREL is the control software suite included on all HYREL machines.
- Q: Why use it, instead of other software?
- A: Most other 3D printing software, if not all, is based solely around the Arduino. The HYREL machines demand state-of-the-art electronics to handle higher precision movements (such as G2 & G3 moves), multiple heads, and accessories using a CAN bus architecture. REPETREL was programmed to interface with these embedded electronics.

# Walkthrough of REPETREL



Repetrel

Desktop Icon  
opens this window:

**File** **Run Job** **Kill job** **Show** **Light** **Motor Functions** **Settings** **ALARM** **RESET**

**3D View** **Control** **DxfViewer** **Web Browser** **Aux Editor** **Temperature Curve** **Pictures**

**STL Mgr** **Slicer** **GCode Editor** **3DVisualSettings** **Co**

**File** **Edit** **GCode**

**X** **Y** **Z**

**Scale**  
25.40 25.40 25.40  
☒ **Lock aspect ratio** **M 25.4**

**Translation**  
100.00 100.00 0.00

**Rotation**  
0.00 0.00 0.00  
☒ **5 Deg Angle Lock**

**Show in Log:** ☒ **Commands** ☐ **Infos** ☐ **Warnings** ☐ **Errors**

20:15:11.238 OpenGL version:4.0.0 - Build 10.18.10.3412  
20:15:11.238 OpenGL extensions:GL\_EXT\_blend\_minmax GL\_EXT\_blend\_subtract GL\_EXT\_blend\_color GL\_EXT\_abgr  
20:15:11.238 OpenGL renderer:Intel(R) HD Graphics 4000  
20:15:11.238 Using fast VBOs for rendering is possible

Disconnected - Idle 707 FPS

# Walkthrough of REPETREL

The screenshot displays the REPETREL software interface. The top menu bar includes 'File', 'Run Job', 'Kill job', 'Show', 'Light' (highlighted with a red box), 'Motor Functions', and 'Settings'. Below the menu bar, the '3D View' tab is active, showing a 3D wireframe model of a cube on a grid. Red text overlaying the cube reads: 'Click here to turn on / off the light'. Below this, white text states: 'This also serves as a double-check to make sure the PC is communicating with the printer'. The bottom left corner features a 'Show in Log' section with radio buttons for 'Commands', 'Infos', 'Warnings', and 'Errors'. The bottom right corner contains a control panel with 'X', 'Y', and 'Z' axes, 'Scale' (25.40), 'Translation' (100.00), 'Rotation' (0.00), and a '5 Deg Angle Lock' checkbox. The status bar at the bottom indicates 'Disconnected - Idle' and '707 FPS'.

File Run Job Kill job Show **Light** Motor Functions Settings

3D View Control DxfViewer Web Browser Aux Editor Temperature Curve Pictures

Click here to turn on / off the light

This also serves as a double-check to make sure the PC is communicating with the printer

Show in Log: ☒ Commands ☐ Infos ☐ Warnings ☐ Errors

20:15:11.238 OpenGL version:4.0.0 - Build 10.18.10.3412  
20:15:11.238 OpenGL extensions:GL\_EXT\_blend\_minmax GL\_EXT\_blend\_subtract GL\_EXT\_blend\_color GL\_EXT\_abgr  
20:15:11.238 OpenGL renderer:Intel(R) HD Graphics 4000  
20:15:11.238 Using fast VBOs for rendering is possible

Disconnected - Idle 707 FPS

STL Mgr Slicer GCode Editor 3DVisualSettings Co

File Edit GCode

X Y Z

Scale  
25.40 25.40 25.40  
☒ Lock aspect ratio M[25.4]

Translation  
100.00 100.00 0.00

Rotation  
0.00 0.00 0.00  
☒ 5 Deg Angle Lock

# Walkthrough of REPETREL

Click here for the  
drop-down menu

The screenshot displays the REPETREL software interface. The top menu bar includes 'File', 'Run Job', 'Kill job', 'Show', 'Light', 'Motor Functions', and 'Settings'. The 'Motor Functions' menu is open, showing a list of options: 'UNLOCK MOTORS', 'Home XY Motors', 'Home Z Axis', 'Send Z To Zero', 'Clean Head 1', 'Clean Head 2', 'Clean Head 3', and 'Clean Head 4'. The 'UNLOCK MOTORS' option is highlighted with a red box. A red circle highlights the drop-down arrow in the 'Motor Functions' menu. The main window is divided into several sections. On the left, there is a '3D View' area with a grid and text instructions: 'To move the x & y axes around, use Unlock Motors' and 'Every time any of the axis move from commands in REPETREL, all of axes motors will lock up. Use this command to unlock them.' Below the 3D view is a 'Show in Log' section with tabs for 'Commands', 'Infos', 'Warnings', and 'Errors'. The log shows several messages related to OpenGL version and extensions. On the right, there is a 'GCode Editor' area with a 'File' menu and a 'GCode' tab. Below the editor is a control panel with 'X', 'Y', and 'Z' axis controls. Each axis has a 'Scale' section with a value of 25.40 and a 'Translation' section with a value of 100.00. There are also 'Rotation' controls with a value of 0.00. A '5 Deg Angle Lock' checkbox is checked. To the right of the control panel are four large green arrows pointing up, down, left, and right, and a red circular button in the center.

File Run Job Kill job Show Light Motor Functions Settings

3D View Control DxfViewer Web Browser Manual Control

UNLOCK MOTORS

Home XY Motors

Home Z Axis

Send Z To Zero

Clean Head 1

Clean Head 2

Clean Head 3

Clean Head 4

Type Here

To move the x & y axes around, use Unlock Motors

Every time any of the axis move from commands in REPETREL, all of axes motors will lock up. Use this command to unlock them.

Show in Log: Commands Infos Warnings Errors

20:15:11.238 OpenGL version:4.0.0 - Build 10.18.10.3412

20:15:11.238 OpenGL extensions:GL\_EXT\_blend\_minmax GL\_EXT\_blend\_subtract GL\_EXT\_blend\_color GL\_EXT\_abgr

20:15:11.238 OpenGL renderer:Intel(R) HD Graphics 4000

20:15:11.238 Using fast VBOs for rendering is possible

Disconnected - Idle 707 FPS

STL Mgr Slicer GCode Editor 3DVisualSettings Co

File Edit GCode

X Y Z

Scale

25.40 25.40 25.40

Lock aspect ratio M25.4

Translation

100.00 100.00 0.00

Rotation

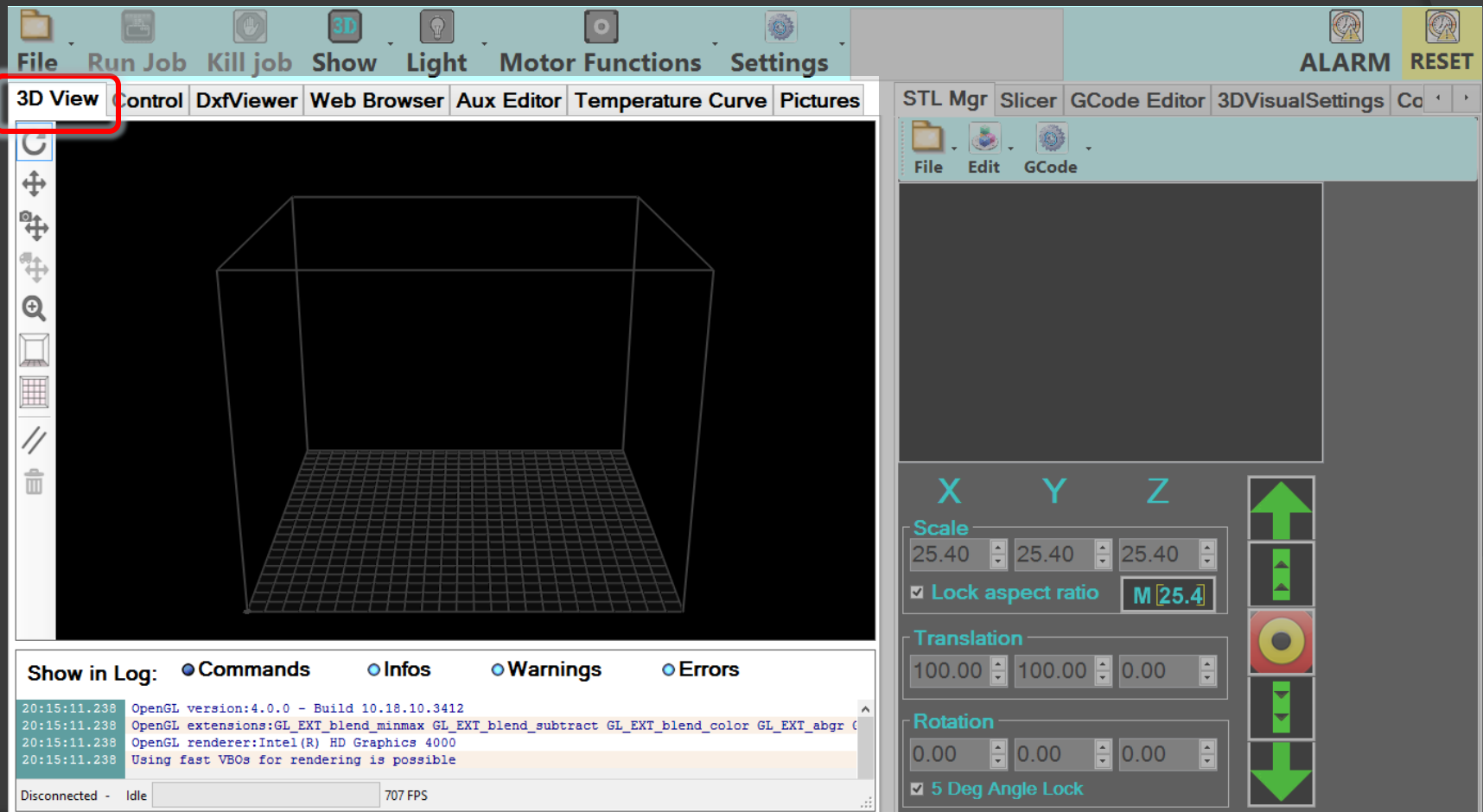
0.00 0.00 0.00

5 Deg Angle Lock

# Walkthrough of REPETREL

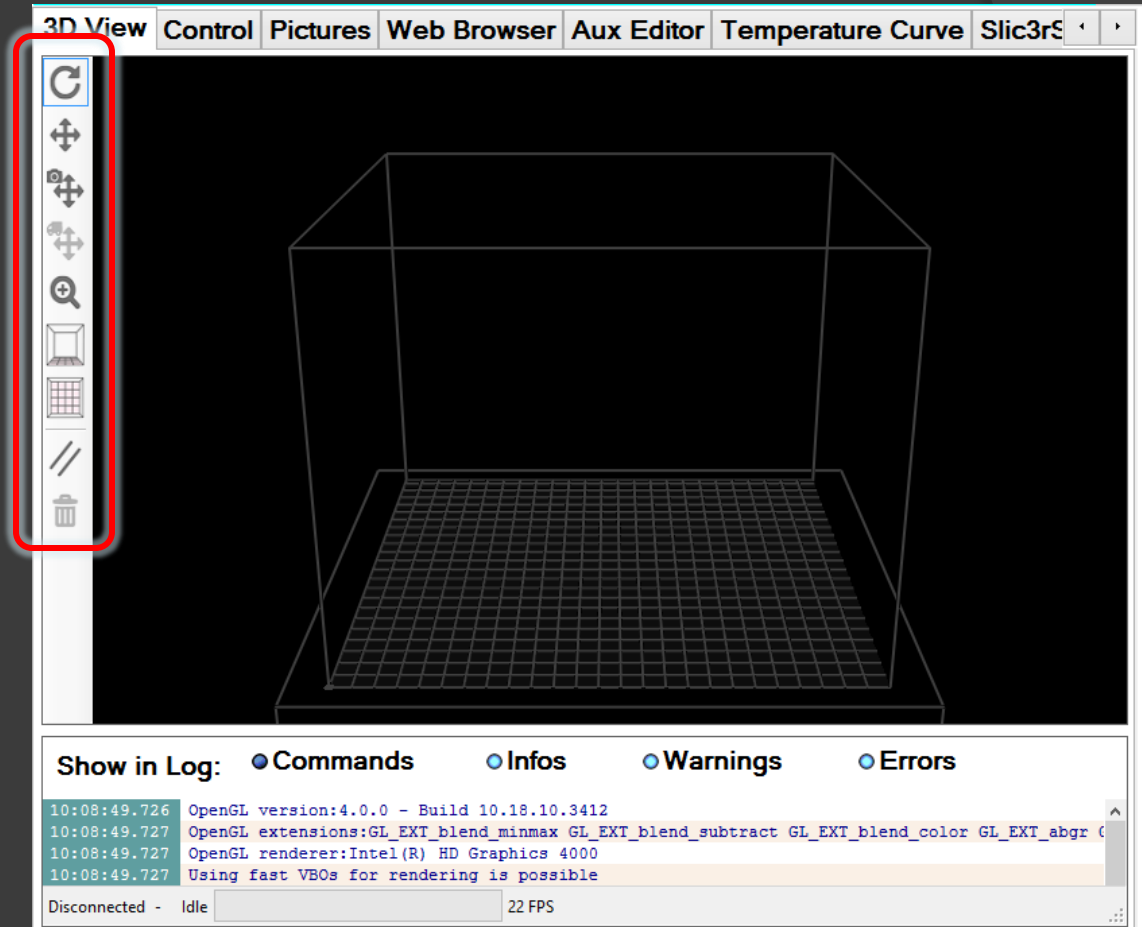
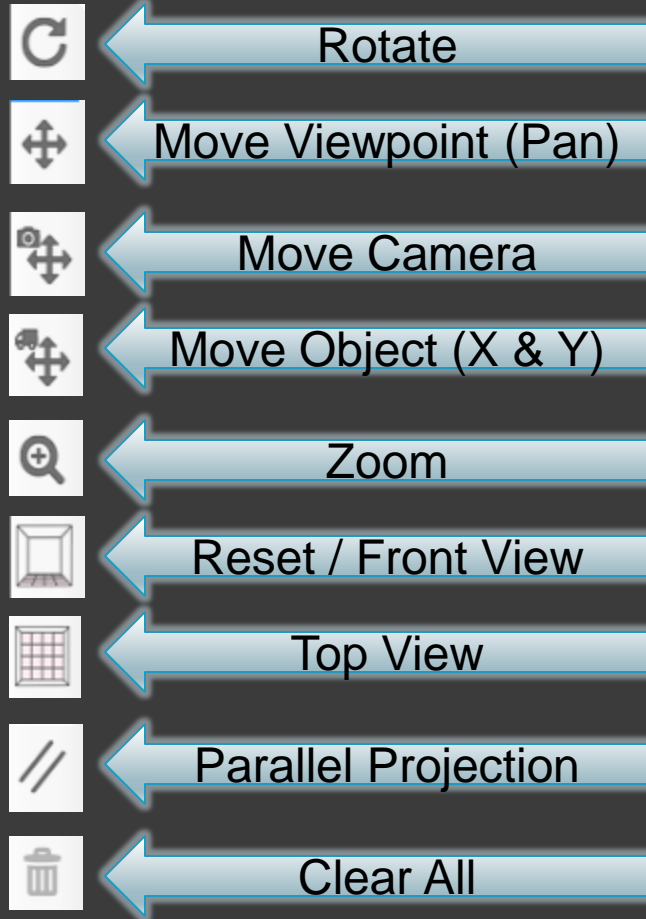
“3D View” tab

Provides a graphical simulation of the user's parts



# Walkthrough of REPETREL

"3D View" tab  
Control Buttons





# Walkthrough of REPETREL

“3D View” tab  
Log Filters

## Commands

Displays commands passed to the ARM processor in the printer

## Infos

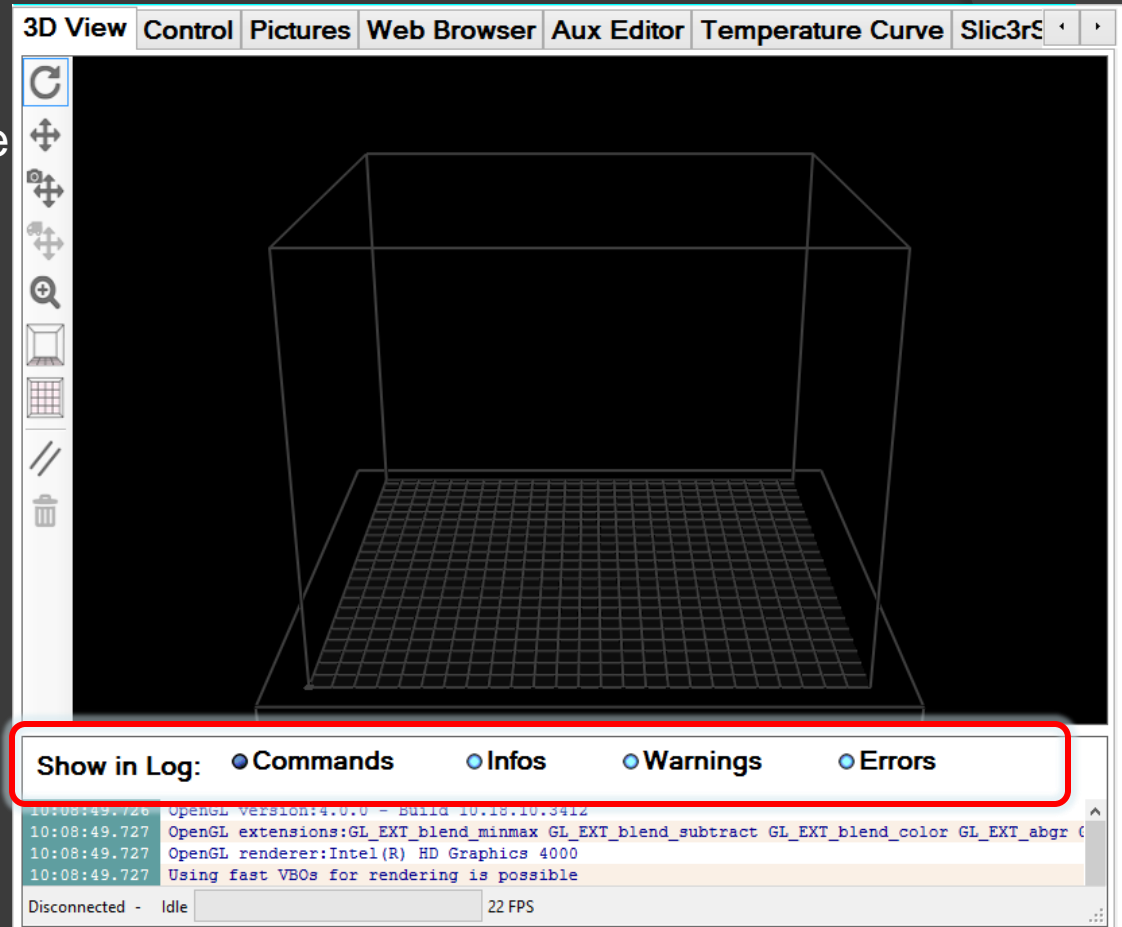
Displays information/text messages to/from the printer

## Warnings

Displays warning messages to/from the printer

## Errors

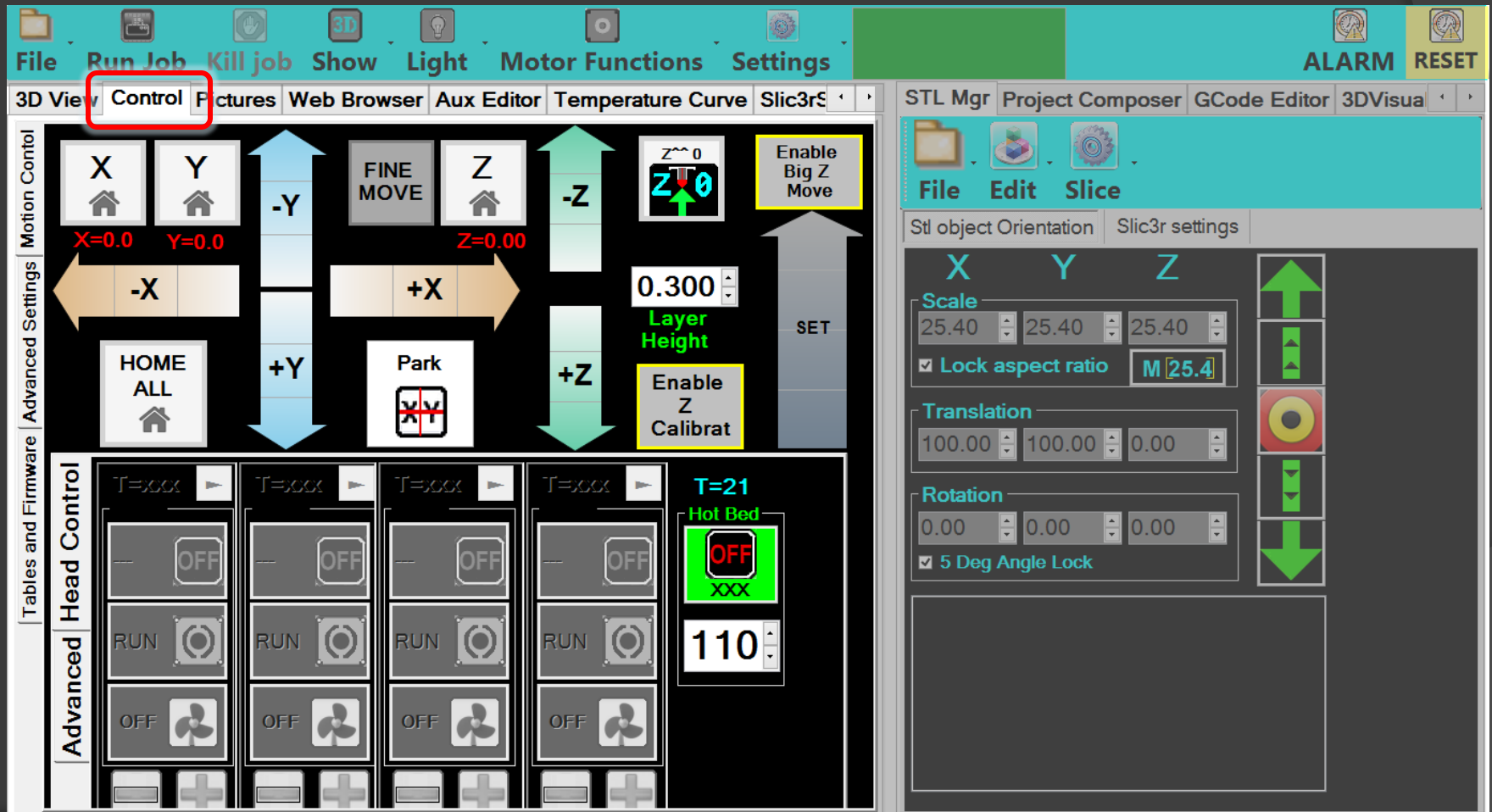
Displays errors messages to/from the printer



# Walkthrough of REPETREL

“Control” tab

Provides manual movement, head, & bed calibration and controls



# Walkthrough of REPETREL

“Control” tab

Most Used Buttons



Sends X & Y Axis to Home Position

Home = X0, Y0

*Does not move Z-Axis*

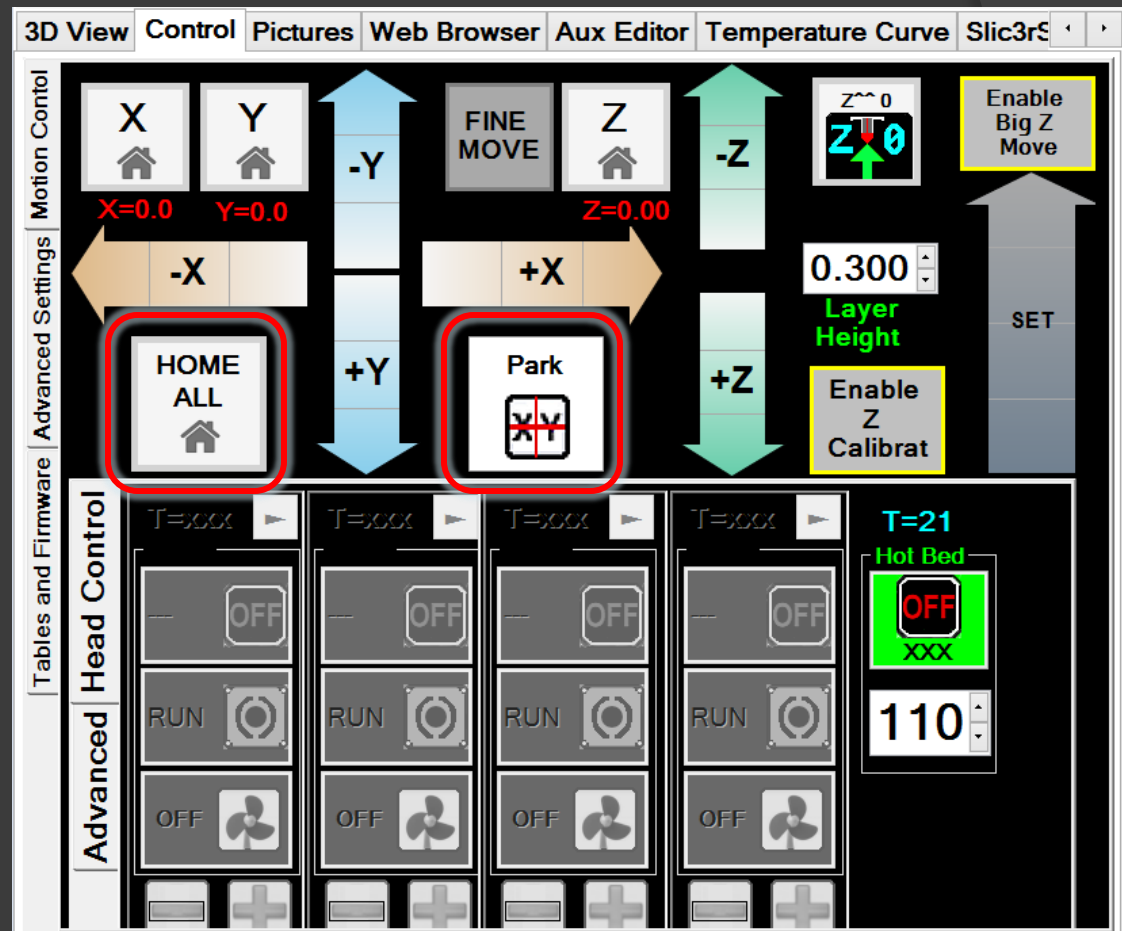


Sends X & Y Axis to Park Position

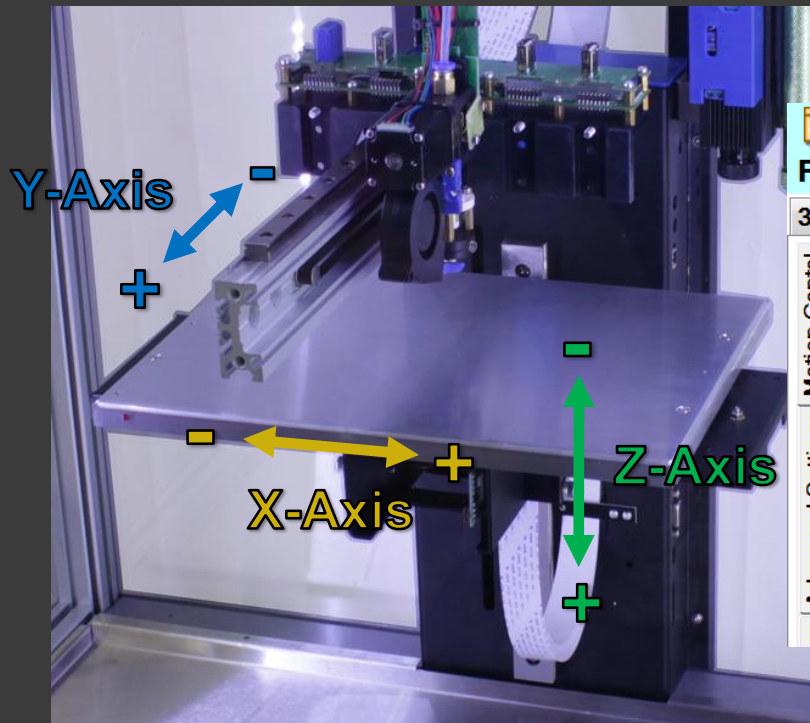
Park = X130, Y130

*Does not move Z-Axis*

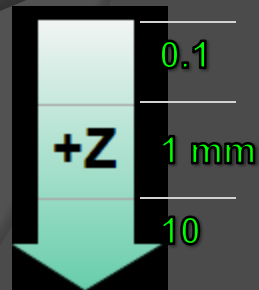
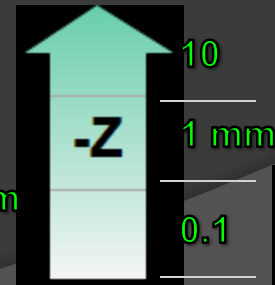
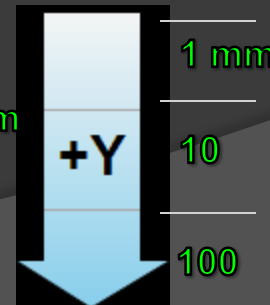
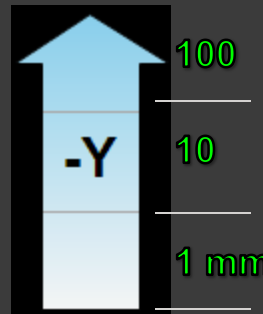
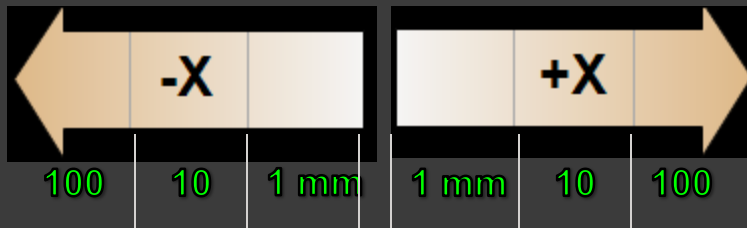
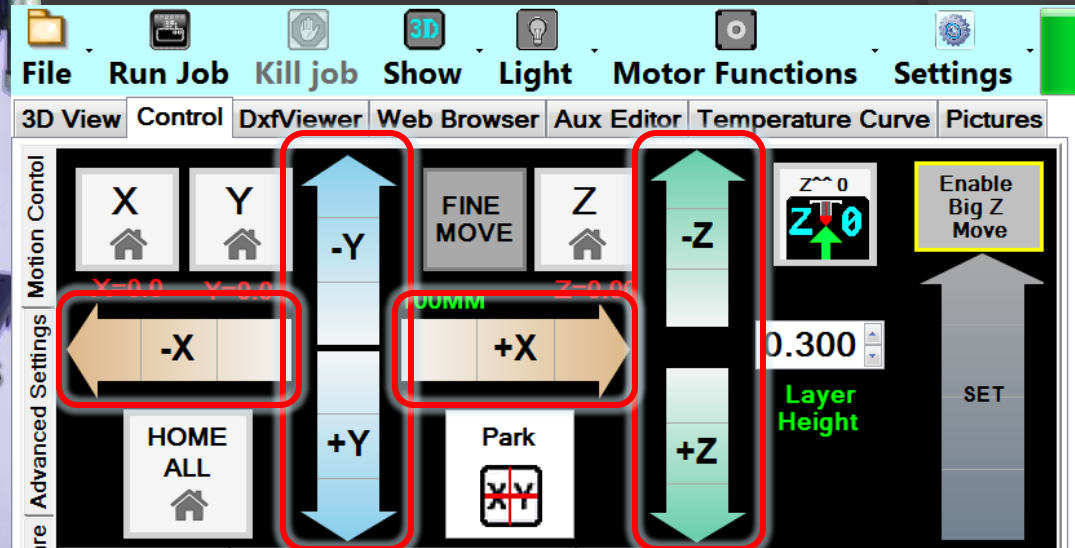
**NOTE:** Both the Home & Park X&Y Axis values can be changed in the “Printer Settings”



# Walkthrough of REPETREL



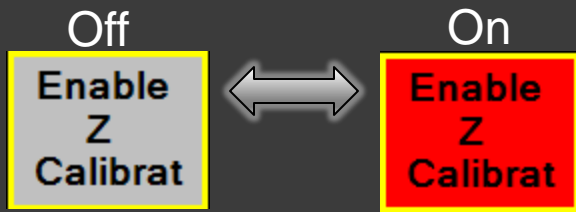
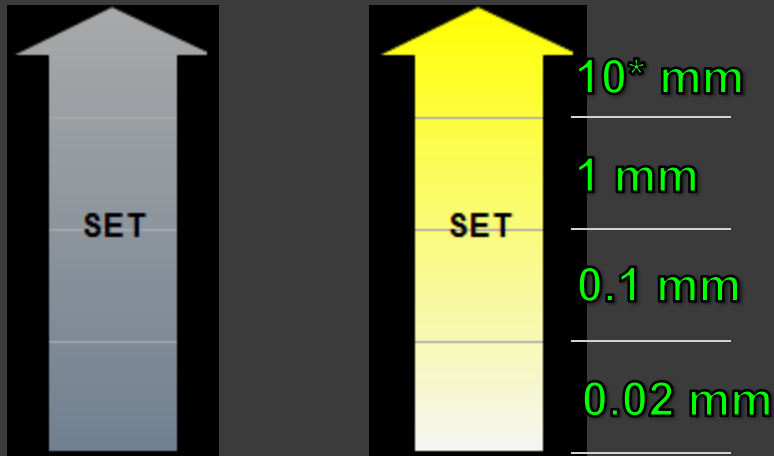
“Control” tab  
Manual Move Arrows



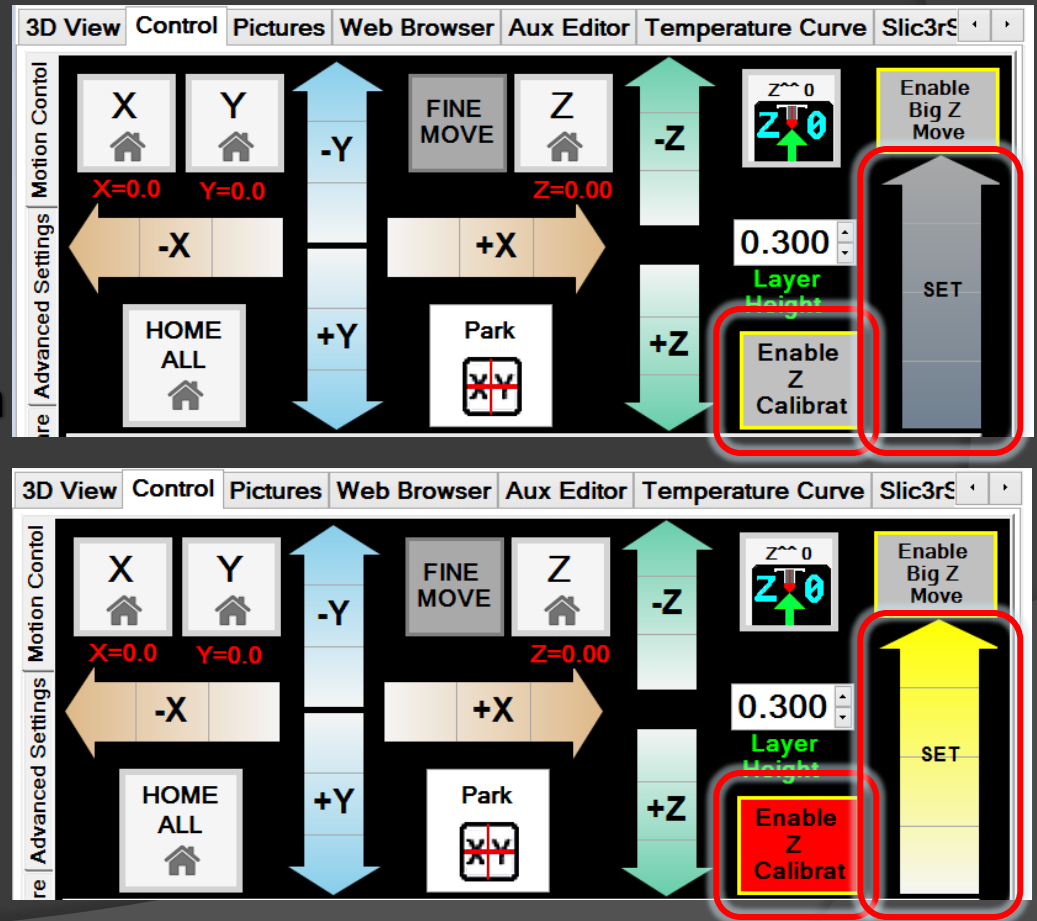
# Walkthrough of REPETREL

“Control” tab

Setting the Z-Height Buttons, Part 1 of 2



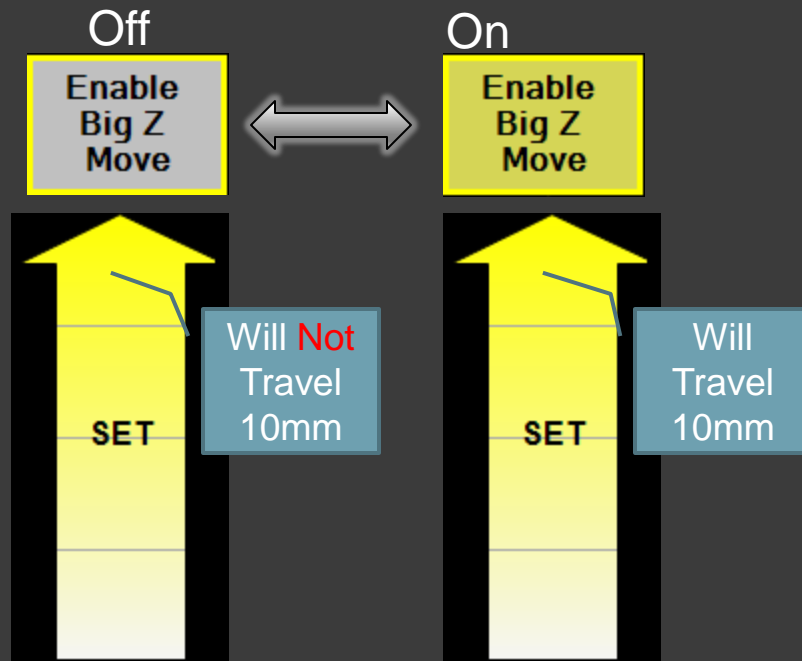
\* 10mm moves only possible when “Enable Big Z Move” is On  
More information on next slide



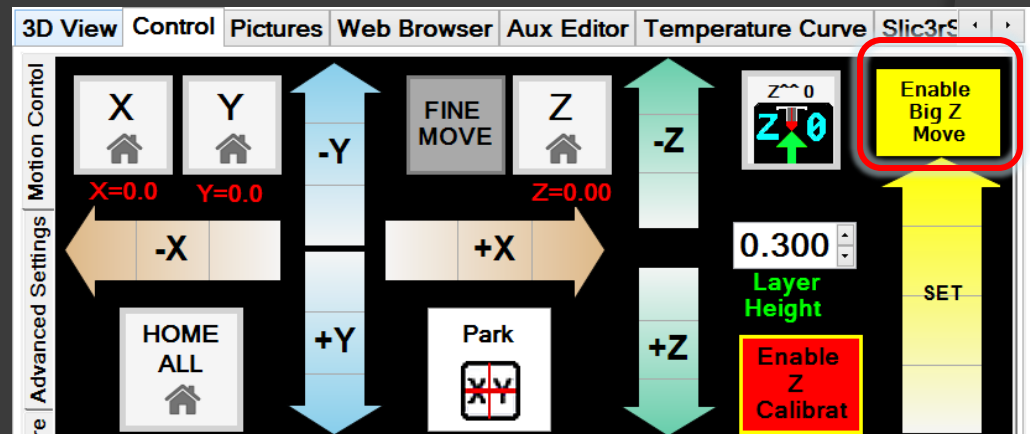
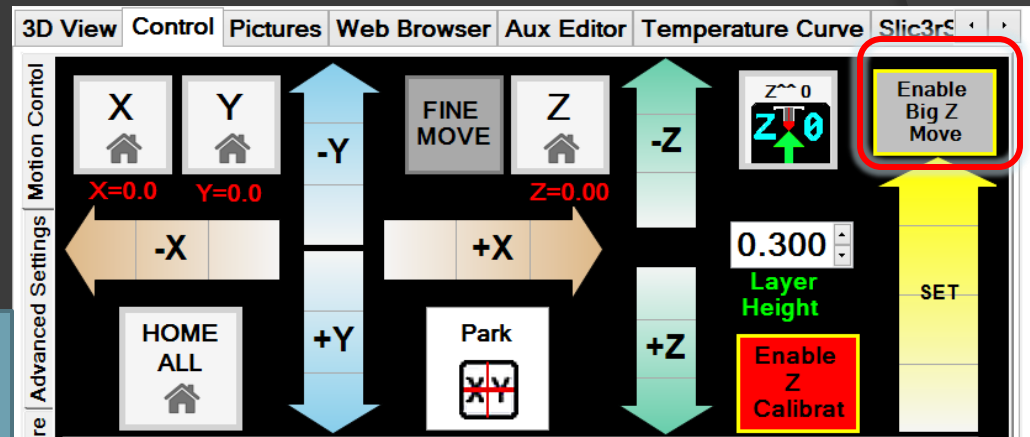
# Walkthrough of REPETREL

“Control” tab

Setting the Z-Height Buttons, Part 2 of 2



Every time you use the 10mm move, the Enable Big-Z Move *turns off*. We purposely coded this in to prevent head crashes from “Spamming” top arrow button.



# Walkthrough of REPETREL

“Control” tab

Setting the Z-Height Buttons, Part 2 of 2



Sends X-Axis to the Home Position

Home = X0

*Does not move Y or Z Axis*



Sends Y-Axis to the Home Position

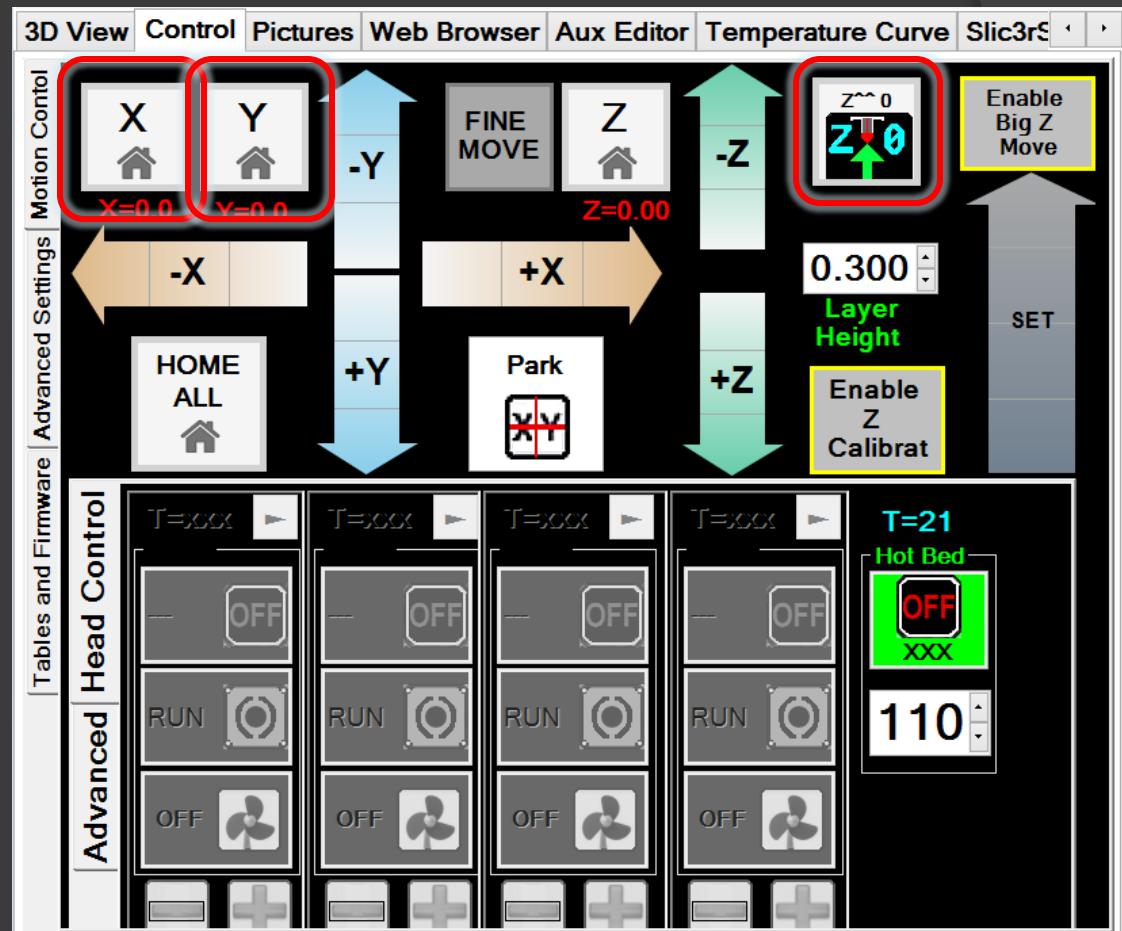
Home = Y0

*Does not move X or Z Axis*



Sends Z-Axis to the last Height-Set Position

Home = Z0

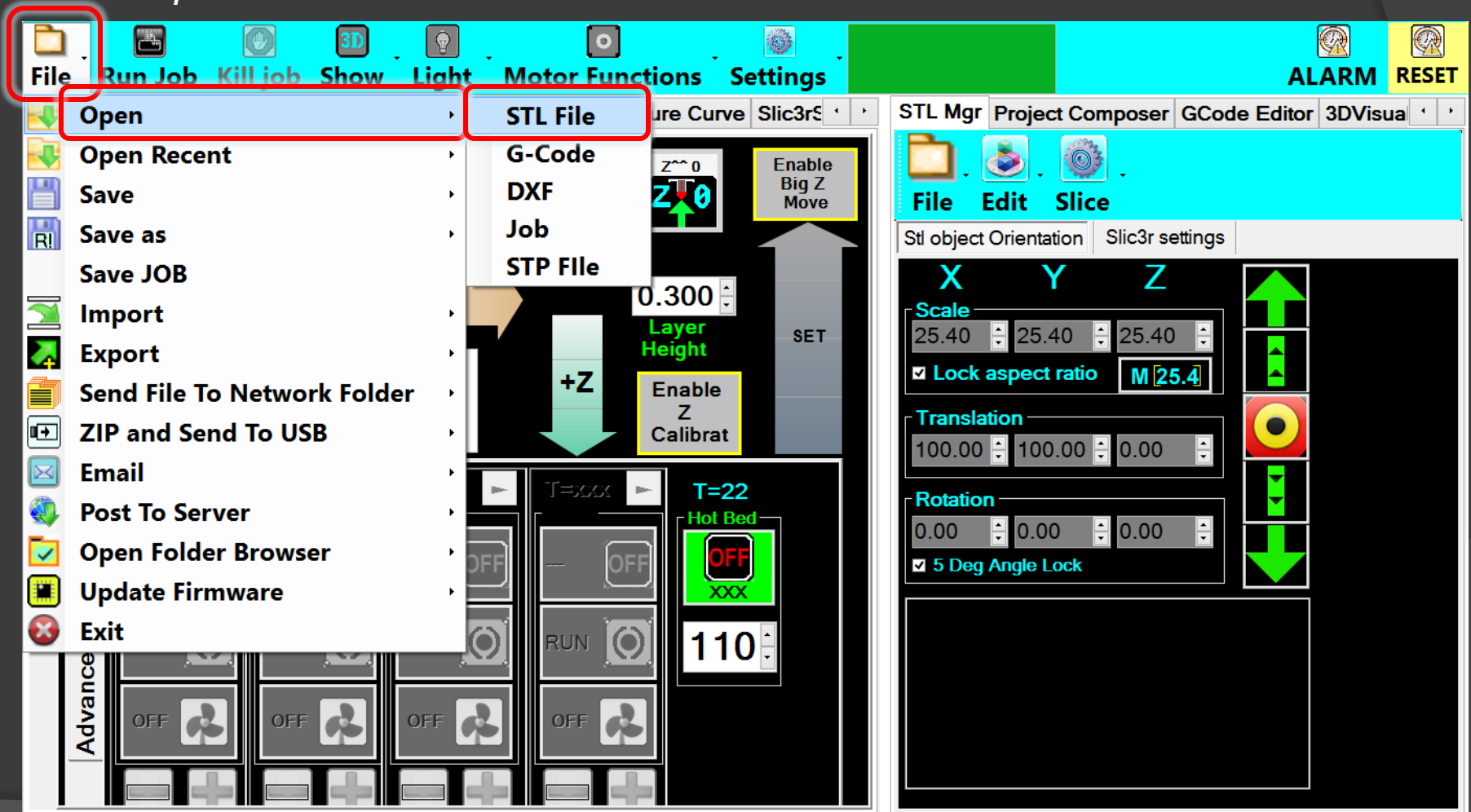




# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

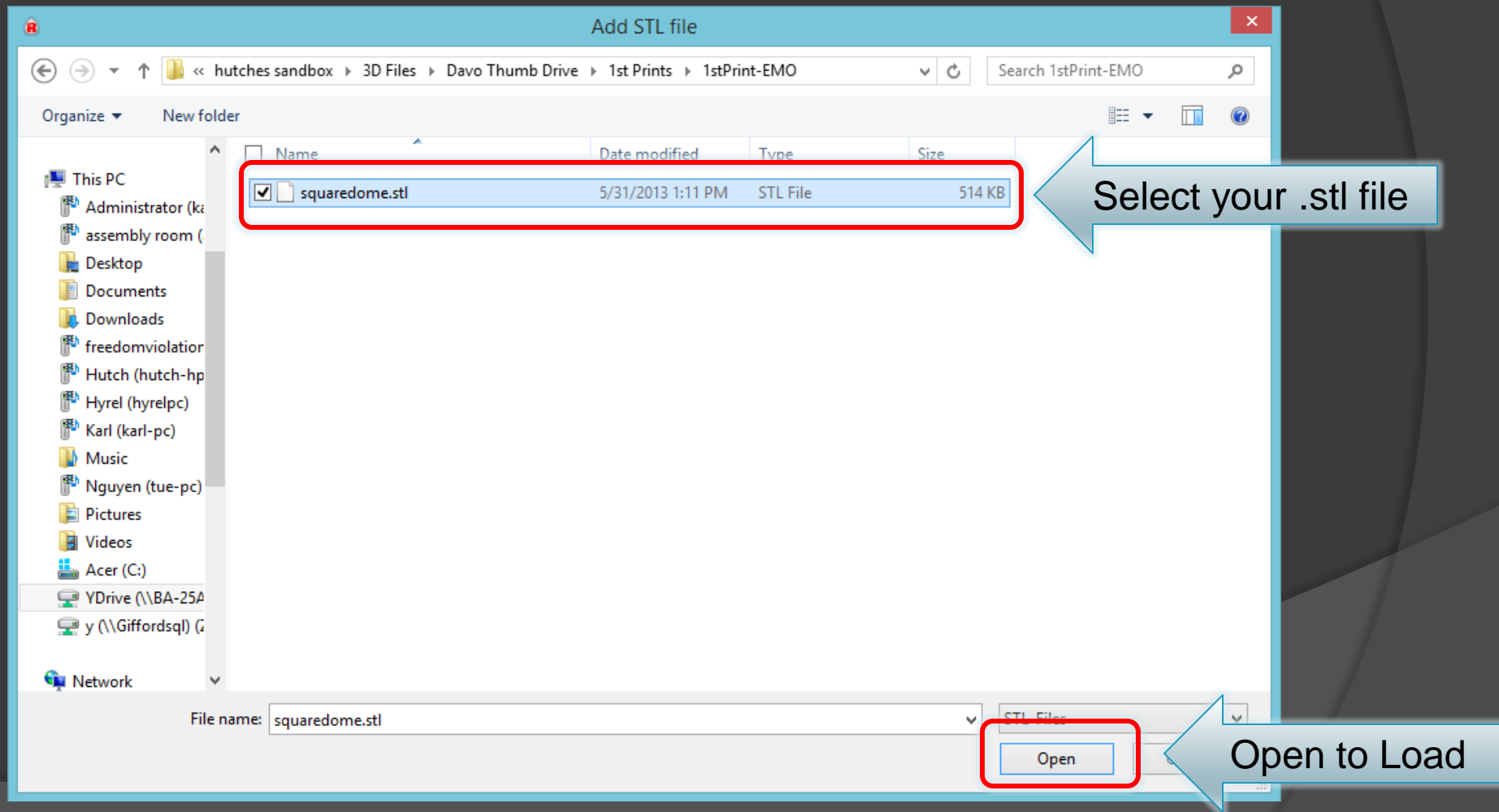
Step 1: Load a .stl file



# First Print with Plasticine

*Ch1: Turn your .stl file into G-Code*

*Step 1: Load a .stl file*



# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

The screenshot displays the Slic3r software interface. The top menu bar includes File, Run Job, Kill job, Show, Light, Motor Functions, and Settings. The main 3D View window shows a grid with a red circle at the center. A text box with a blue arrow points to this circle, containing the text: "If your .stl is in Imperial instead of Metric, this is what you'll see". The right panel shows the STL Mgr, Project Composer, GCode Editor, and 3DVisua tabs. The STL Mgr tab is active, showing the File, Edit, and Slice menus. The STL object Orientation and Slic3r settings are visible. The Scale section shows X: 1.00, Y: 1.00, Z: 1.00, with a checked Lock aspect ratio and a value of M 25.4. The Translation section shows X: 124.00, Y: 111.95, Z: 1.00. The Rotation section shows X: 0.00, Y: 0.00, Z: 0.00, with a checked 5 Deg Angle Lock. The bottom panel shows the Show in Log section with radio buttons for Commands, Infos, Warnings, and Errors. The log shows several messages, including ">IN: 0: Buffer Flushed" and ">IN: 91: Scanner detached".

File Run Job Kill job Show Light Motor Functions Settings

3D View Control Pictures Web Browser Aux Editor Temperature Curve Slic3r

STL Mgr Project Composer GCode Editor 3DVisua

File Edit Slice

Stl object Orientation Slic3r settings

X Y Z

Scale

1.00 1.00 1.00

☒ Lock aspect ratio M 25.4

Translation

124.00 111.95 1.00

Rotation

0.00 0.00 0.00

☒ 5 Deg Angle Lock

squaredome.stl

Show in Log: ☒ Commands ☐ Infos ☐ Warnings ☐ Errors

16:29:57.701 >IN: 0: Buffer Flushed  
16:29:58.826 >IN: 91: Scanner detached  
16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6  
16:30:03.451 >IN: 0: Buffer Flushed  
>Hy: 2.6 Idle 1658 FPS

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

The screenshot displays the Slic3r software interface. The main 3D view on the left shows a wireframe model of a rectangular object on a grid. A red circle highlights a point on the grid, with a blue arrow pointing to it labeled "To Rescale". The right panel, titled "STL Mgr", contains settings for the selected object. The "Scale" section shows X, Y, and Z scale factors, all set to 1.00. A red box highlights the "Lock aspect ratio" checkbox, which is checked, and the "M 25.4" button next to it. A blue arrow points from the "To Rescale" text to this button. Below the "Scale" section, the "Translation" and "Rotation" sections are visible. A blue box with white text at the bottom right of the STL Mgr panel reads: "Click on this Button To auto-scale Imperial to Metric". The top menu bar includes "File", "Run Job", "Kill job", "Show", "Light", "Motor Functions", and "Settings". The bottom status bar shows the log of commands and the current printer status.

File Run Job Kill job Show Light Motor Functions Settings

3D View Control Pictures Web Browser Aux Editor Temperature Curve Slic3r

STL Mgr Project Composer GCode Editor 3DVisua

File Edit Slice

Stl object Orientation Slic3r settings

X Y Z

Scale

1.00 1.00 1.00

☒ Lock aspect ratio M 25.4

Translation

124.00 111.95 1

Rotation

0

Click on this Button To auto-scale Imperial to Metric

Show in Log: Commands Infos Warnings Errors

16:29:57.701 >IN: 0: Buffer Flushed  
16:29:58.826 >IN: 91: Scanner detached  
16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6  
16:30:03.451 >IN: 0: Buffer Flushed  
>Hy: 2.6 Idle 1658 FPS

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

The screenshot displays a 3D printing software interface. The main 3D view shows a grid representing the build surface. A small white rectangular object is positioned on the grid, with a blue arrow indicating it has been rescaled. A text box overlay states: "Rescaled, it needs to be rotated to lay flat on the build surface".

The interface includes a menu bar with options: File, Run Job, Kill job, Show, Light, Motor Functions, Settings, ALARM, and RESET. Below the menu bar are tabs for 3D View, Control, Pictures, Web Browser, Aux Editor, Temperature Curve, Slic3r, STL Mgr, Project Composer, GCode Editor, and 3DVisua.

The right-hand panel contains settings for the STL object orientation and Slic3r settings. The Slic3r settings are divided into three sections: Scale, Translation, and Rotation.

X	Y	Z
25.40	25.40	25.40
<input checked="" type="checkbox"/> Lock aspect ratio		
M 25.4		
Translation		
124.00	111.95	1.00
Rotation		
0.00	0.00	0.00
<input checked="" type="checkbox"/> 5 Deg Angle Lock		

The bottom of the interface shows a log window with the following text:

```
Show in Log: ● Commands ● Infos ● Warnings ●
16:29:57.701 >IN: 0: Buffer Flushed
16:29:58.826 >IN: 91: Scanner detached
16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6
16:30:03.451 >IN: 0: Buffer Flushed
>Hy: 2.6 Idle 33 FPS
```

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

2. Use these buttons to Rotate the shape flat

1. Select this Box to Rotate the part about the X-Axis

NOTE: Other .stl files may require rotation in other Axis

File Run Job Kill job Show Light Motor Functions Settings

3D View Control Pictures Web Browser Aux Editor Temperature Curve Slic3r

STL Mgr Project Composer GCode Editor 3DVisua

File Edit Slice

Stl object Orientation Slic3r settings

X	Y	Z
Scale	25.40	25.40
Lock aspect ratio	<input checked="" type="checkbox"/>	M[25.4]
Translation	124.00	111.95
Rotation	90.00	0.00
5 Deg Angle Lock	<input checked="" type="checkbox"/>	

Show in Log: ☒ Commands ☐ Infos ☐ Warnings ☐ Errors

16:29:57.701 >IN: 0: Buffer Flushed  
16:29:58.826 >IN: 91: Scanner detached  
16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6  
16:30:03.451 >IN: 0: Buffer Flushed  
>Hy: 2.6 Idle 1393 FPS

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

The screenshot displays the Slic3r software interface. The main 3D View window shows a wireframe model of a dome on a grid. A blue callout box with an arrow points to the model, containing the text: "Rescaled & Rotated, it needs to be centered on the build surface". The interface includes a top menu bar with options like File, Run Job, Kill job, Show, Light, Motor Functions, and Settings. Below this is a toolbar with icons for various functions. The right sidebar contains the STL Mgr, Project Composer, GCode Editor, and 3DVisua tabs. The STL Mgr tab is active, showing settings for the selected object 'squaredome.stl'. The settings are organized into sections: Scale (X: 25.40, Y: 25.40, Z: 25.40, with 'Lock aspect ratio' checked), Translation (X: 124.00, Y: 111.95, Z: 1.00), and Rotation (X: 90.00, Y: 0.00, Z: 0.00, with '5 Deg Angle Lock' checked). A 'M[25.4]' field is also visible. The bottom status bar shows the current state as 'Idle' and '1393 FPS'.

File Run Job Kill job Show Light Motor Functions Settings

3D View Control Pictures Web Browser Aux Editor Temperature Curve Slic3r

STL Mgr Project Composer GCode Editor 3DVisua

File Edit Slice

Stl object Orientation Slic3r settings

X Y Z

Scale

25.40 25.40 25.40

☒ Lock aspect ratio M[25.4]

Translation

124.00 111.95 1.00

Rotation

90.00 0.00 0.00

☒ 5 Deg Angle Lock

squaredome.stl

Show in Log: ☒ Commands ☐ Infos ☐ Warnings

16:29:57.701 >IN: 0: Buffer Flushed

16:29:58.826 >IN: 91: Scanner detached

16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6

16:30:03.451 >IN: 0: Buffer Flushed

>Hy: 2.6 Idle 1393 FPS

Rescaled & Rotated, it needs to be centered on the build surface



# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 2: Scale, Rotate, & Translate

File Run Job Kill job Show Light Motor Functions Settings

3D View Control Pictures Web Browser Aux Editor Temperature Curve Slic3r

STL Mgr Project Composer GCode Editor 3DVisua

File Edit Slice

Stl object Orientation Slic3r settings

X	Y	Z
25.40	25.40	25.40
<input checked="" type="checkbox"/> Lock aspect ratio M [25.4]		
99.60	12.50	0.00
0.00	0.00	0.00

1. Select this Box to allow the part to be centered by the Bulls-eye

2. Click on the Bulls-eye to Auto-Center

NOTE: This will center the X & Y Axis, and bring the closest, bottom surface of the part to the build surface

Show in Log: ☒ Commands ☐ Infos ☐ Warnings ☐ Errors

```
16:29:57.701 >IN: 0: Buffer Flushed
16:29:58.826 >IN: 91: Scanner detached
16:30:03.435 Hyrel Printer Found, SW Rev>Hy: 2.6
16:30:03.451 >IN: 0: Buffer Flushed
>Hy: 2.6 Idle 895 FPS
```

# First Print with Plasticine

*Ch1:* Turn your .stl file into G-Code

*Step 3:* Check your EMO Nozzle Diameter Size

2 mm

1.5 mm

1 mm



For the rest of this documentation,  
we will be using the 2 mm nozzle

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 4: Select the appropriate Slic3r Recipes

The screenshot displays the Slic3r software interface. The top menu bar includes 'File', 'Run Job', 'Kill job', 'Show', 'Light', 'Motor Functions', and 'Settings'. The 'Settings' menu is open, and the 'Slic3rSettings' tab is selected. Below the menu bar, there are buttons for 'Slice with Slic3r' and 'Kill Slicing'. The 'Slic3r' section is active, showing a list of settings. A blue callout box labeled 'Nozzle Size' points to the 'Print:' dropdown menu, which is set to 'EMO 500 Microns 2.0mm v1.85'. The 'Printer:' dropdown menu is set to 'Hyrel Printer'. The 'Filament settings:' section shows 'Extruder 1:' set to 'Plasticine 17mm Tube'. The 'Extruder 2:' is set to 'Simple mode', 'Extruder 3:' is set to 'ABS 1.75mm for 100 microns', and 'Extruder 4:' is empty. On the right side of the interface, there are tabs for 'STL Mgr', 'Project Composer', 'GCode Editor', and '3DVisual'. The 'STL Mgr' tab is active, showing a list of STL files. The 'Slic3r settings' tab is also visible, showing various parameters for X, Y, and Z axes, including 'Scale', 'Translation', and 'Rotation'. The 'Scale' section shows 'X' and 'Y' set to 25.40 and 'Z' set to 25.40. The 'Translation' section shows 'X' set to 99.60, 'Y' set to 112.50, and 'Z' set to 0.00. The 'Rotation' section shows 'X' set to 90.00, 'Y' set to 0.00, and 'Z' set to 0.00. The 'Lock aspect ratio' checkbox is checked, and the '5 Deg Angle Lock' checkbox is also checked. The 'STL Mgr' tab shows a list of STL files, with 'squaredome.stl' selected.

File Run Job Kill job Show Light Motor Functions Settings

Control Pictures Web Browser Aux Editor Temperature Curve Slic3rSettings

Slice with Slic3r Kill Slicing

Slic3r SkienForge LogBox

Slic3r

Active Configure Setup

Print: EMO 500 Microns 2.0mm v1.85

Printer: Hyrel Printer

Filament settings:

Extruder 1: Plasticine 17mm Tube

Extruder 2: Simple mode

Extruder 3: ABS 1.75mm for 100 microns

Extruder 4:

STL Mgr Project Composer GCode Editor 3DVisual

File Edit Slice

Stl object Orientation Slic3r settings

X Y Z

Scale

25.40 25.40 25.40

Lock aspect ratio M 25.4

Translation

99.60 112.50 0.00

Rotation

90.00 0.00 0.00

5 Deg Angle Lock

squaredome.stl

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 5: Slice – *NOTE: This can be a long process*

The screenshot displays the Slic3r software interface. The top menu bar includes 'File', 'Run Job', 'Kill Job', 'Show', 'Light', 'Motor Functions', and 'Settings'. Below this, a toolbar contains icons for file operations and a 'Slice with Slic3r' button, which is highlighted with a red rectangle. The main window is divided into several panels. On the left, the 'Slic3r' panel shows settings for 'Print' (EMO 500 Microns 2.0mm v1.85), 'Printer' (Hyrel Printer), and 'Filament settings' (Extruder 1: Plasticine 17mm Tube, Extruder 2: Simple Mode, Extruder 3: ABS 1.75mm for 100 microns, Extruder 4: ). A 'Slicing Info' pop-up window is centered over the main settings, displaying: 'Slicer: Slic3r', 'Action: Slicing STL file ...', 'Duration: 0:01', and a checkbox for 'Start Job after Slicing'. On the right, the 'STL Mgr' panel shows 'Stl object Orientation' and 'Slic3r settings' for X, Y, and Z axes, including 'Scale' (25.40), 'Translation' (99.60, 112.50, 0.00), and 'Rotation' (90.00, 0.00, 0.00). A blue arrow points from the 'Slicing Info' pop-up to a text box at the bottom.

File Run Job Kill Job Show Light Motor Functions Settings

Control Pictures Web Browser Aux Editor Temperature Curve Slic3rSettings

ALARM RESET

File Edit Slice

Stl object Orientation Slic3r settings

X Y Z

Scale

25.40 25.40 25.40

☒ Lock aspect ratio M 25.4

Translation

99.60 112.50 0.00

Rotation

90.00 0.00 0.00

☒ 5 Deg Angle Lock

Slicing Info

Slicer: Slic3r

Action: Slicing STL file ...

Duration: 0:01

☐ Start Job after Slicing

This Pop-up window informs you Slic3r is converting your .stl file into G-Code

# First Print with Plasticine

Ch1: Turn your .stl file into G-Code

Step 6: G-Code ready to print

Gcode Editor tab automatically opens when slicing is complete

The screenshot displays the Slic3r software interface. The top menu bar includes File, Run Job, Kill job, Show, Light, Motor Functions, and Settings. Below this is a secondary bar with Control, Pictures, Web Browser, Aux Editor, Temperature Curve, Slic3rSettings, STL Mgr, Project Composer, GCode Editor (highlighted with a red box), and 3DVisua. The main window is divided into two panes. The left pane contains the Slic3r configuration area with tabs for Slic3r, SkienForge, and LogBox. It includes a 'Slice with Slic3r' button, a 'Kill Slicing' button, and a 'Print' section with settings for 'EMO 500 Microns 2.0mm v1.85' and 'Hyrel Printer'. Below this is the 'Filament settings' section with four extruders: Extruder 1 (Plasticine 17mm Tube), Extruder 2 (Simple Mode), Extruder 3 (ABS 1.75mm for 100 microns), and Extruder 4. The right pane is the GCode Editor, showing a 'Show Gcode' button and a list of parts (Part2 to Part6). The main GCode area displays the generated code, starting with 'generated by Slic3r 1.1.7 on 2015-04-28 at 09:01:41' and listing parameters for perimeters, infill, and solid infill extrusion width, all set to 2.00mm. It also shows G21 commands to set units to millimeters. At the bottom of the GCode Editor, there is a search and replace section with buttons for 'Find', 'Replace', and 'Replace All', and a 'Set All G1 Speed To >' button set to 1500.

File Run Job Kill job Show Light Motor Functions Settings

Control Pictures Web Browser Aux Editor Temperature Curve Slic3rSettings STL Mgr Project Composer GCode Editor 3DVisua

Slice with Slic3r Kill Slicing

Slic3r SkienForge LogBox

Slic3r

Active Configure Setup

Print: EMO 500 Microns 2.0mm v1.85

Printer: Hyrel Printer

Filament settings:

Extruder 1: Plasticine 17mm Tube

Extruder 2: Simple Mode

Extruder 3: ABS 1.75mm for 100 microns

Extruder 4:

MAIN Part2 Part3 Part4 Part5 Part6

Show Gcode 14113 #####

File EDIT Refresh Gcode

generated by Slic3r 1.1.7 on 2015-04-28 at 09:01:41

perimeters extrusion width = 2.00mm

infill extrusion width = 2.00mm

solid infill extrusion width = 2.00mm

top infill extrusion width = 2.00mm

G21 ; set units to millimeters

G21 ; set units to millimeters

Find Help Part Position View Control Code Helper Ed

Find << >> >Z Match Case Whole Word

Replace

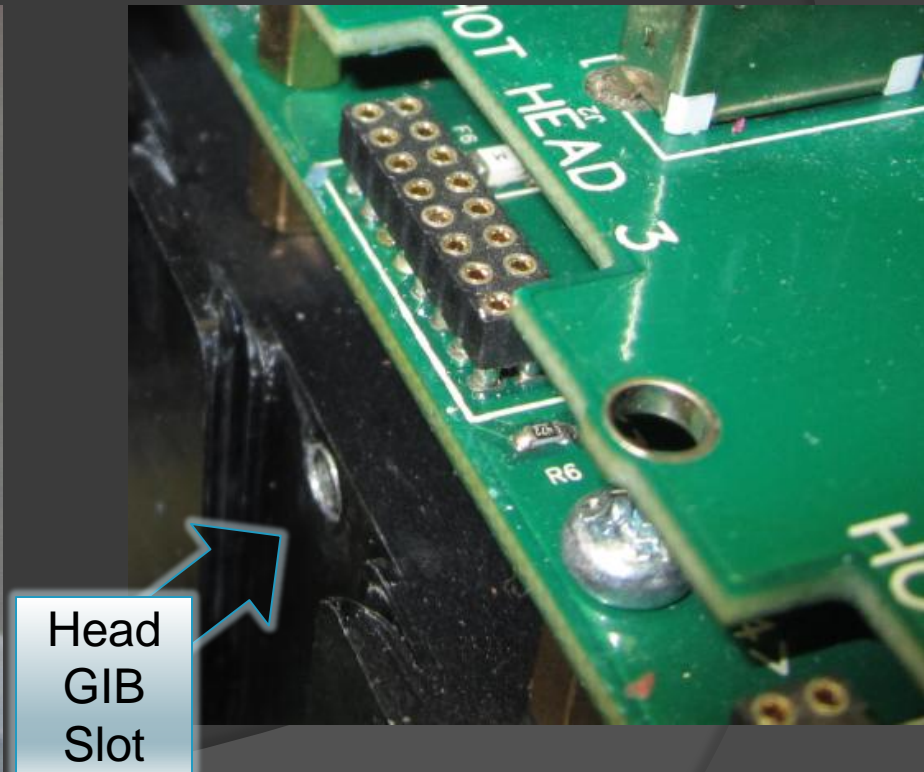
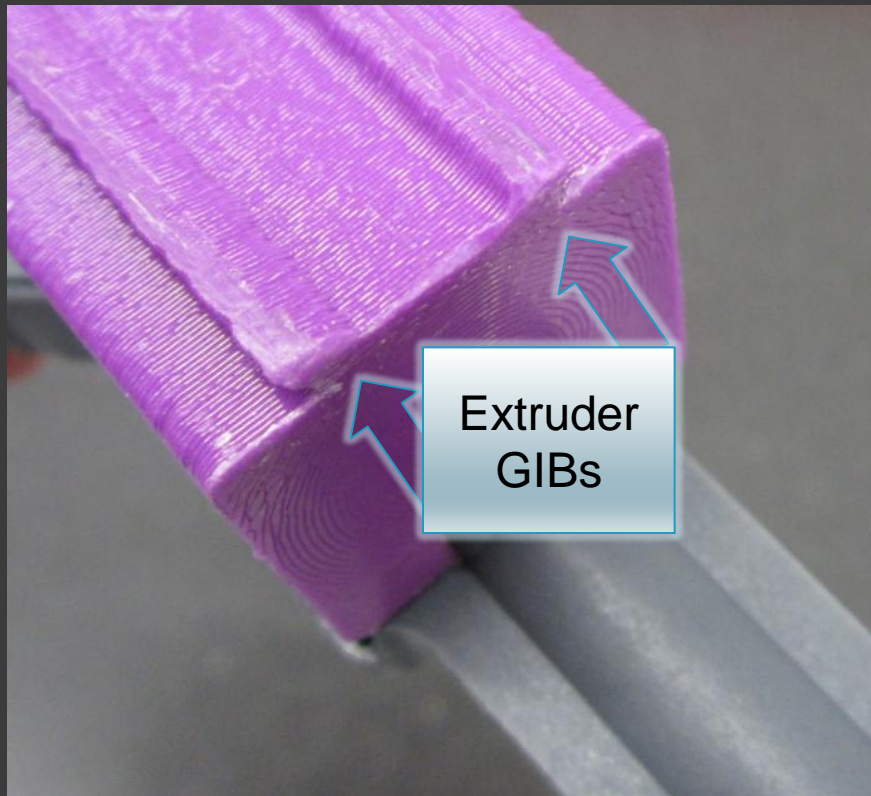
Replace All

Auto Prep Gcode Set All G1 Speed To > 1500

# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Install Digi-tram*

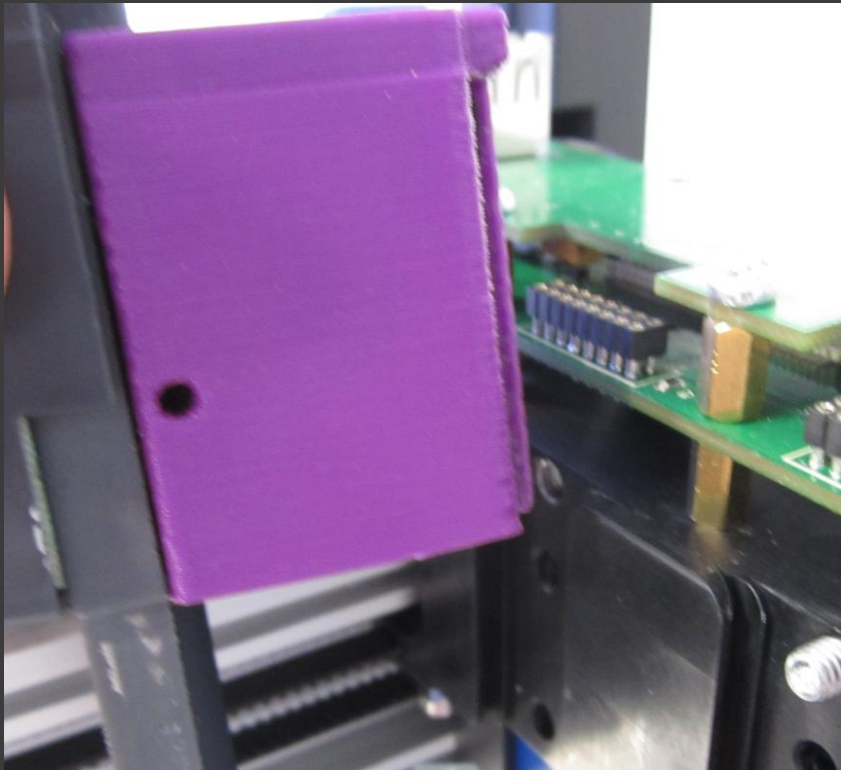




# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Install Digi-tram*



Slide into place





# First Print with Plasticine

Ch2: Prep Printer for Printing

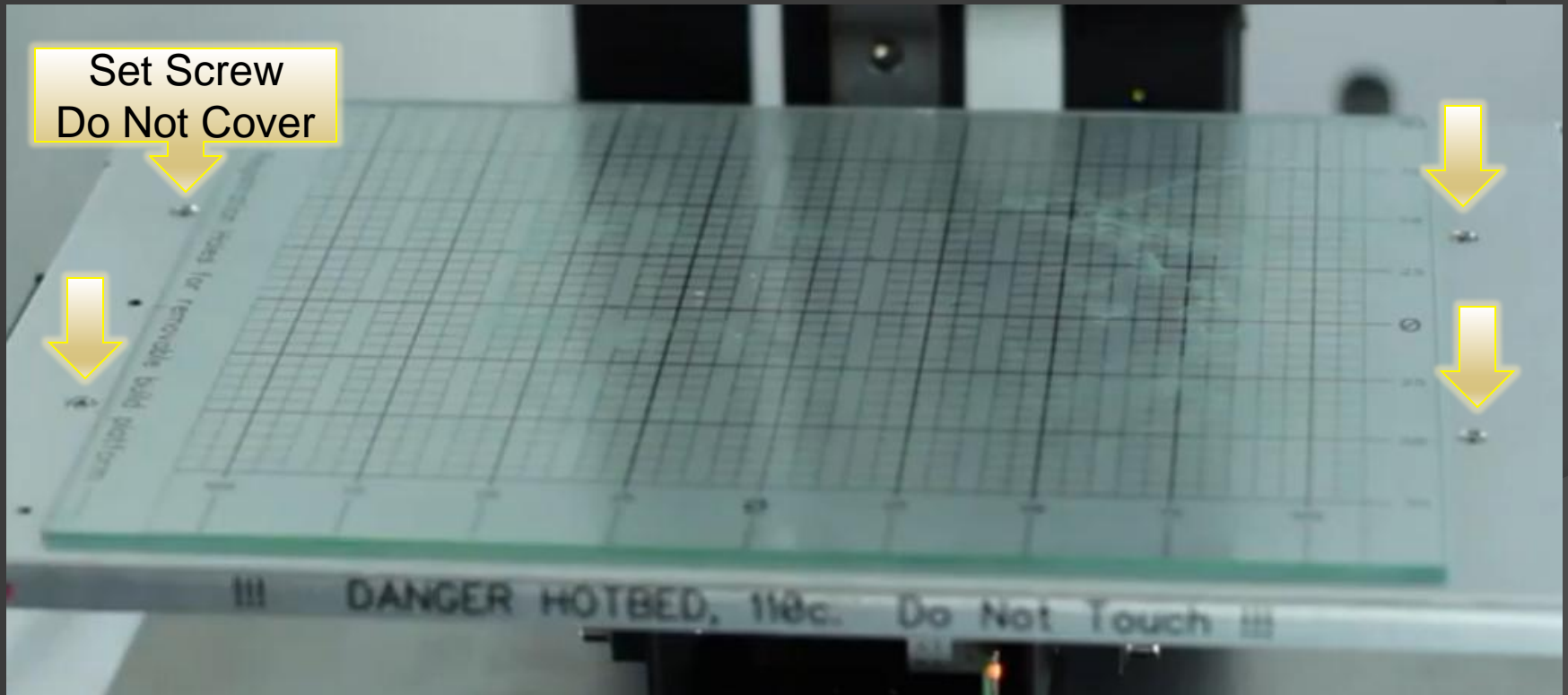
*Step 1: Tram – Install Digi-tram*



# First Print with Plasticine

Ch2: Prep Printer for Printing

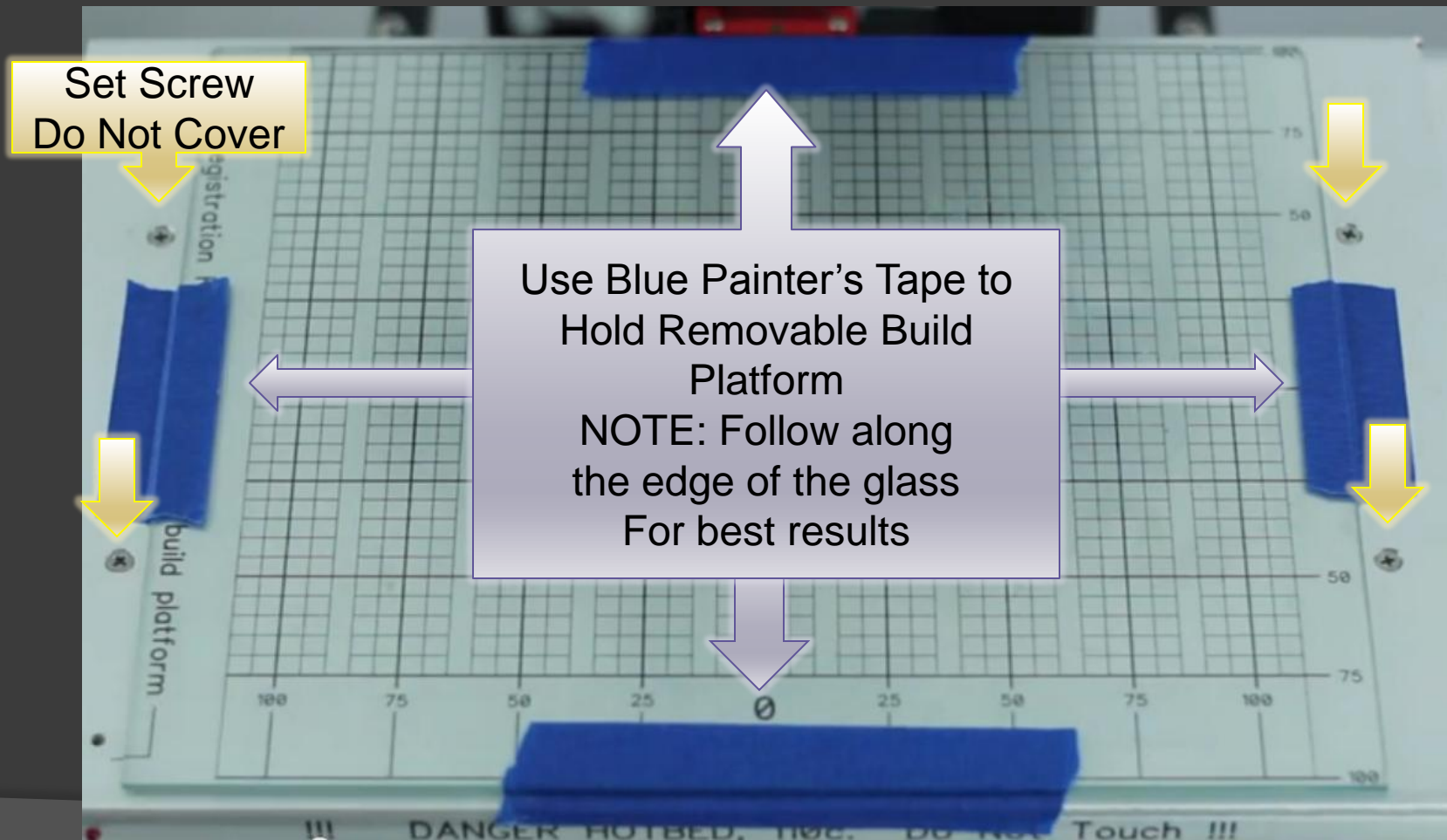
*Step 1: Tram – Place Removable Build Platform*



# First Print with Plasticine

Ch2: Prep Printer for Printing

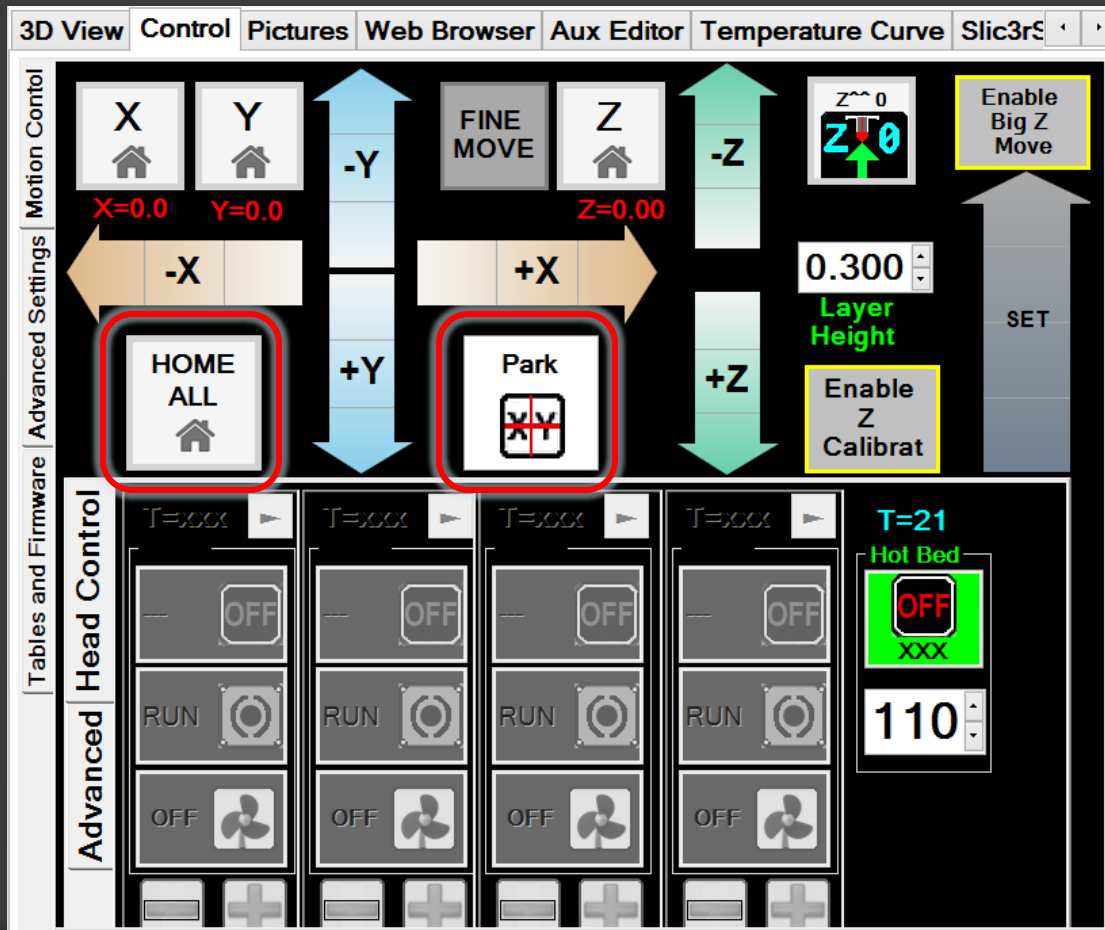
*Step 1: Tram – Place Removable Build Platform*



# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Home, then Park*

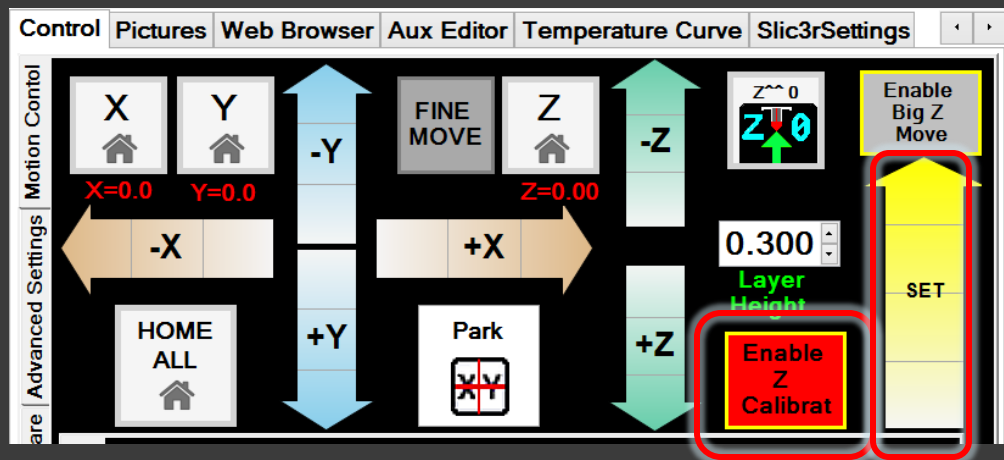


This will place the Digi-tram over the center of the build platform

# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Setting the Zero*



Elevate the build platform just pass the point the pin of the Digi-tram touches.

The Digi-tram will register the distance the pin was displaced.



# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Setting the Zero*



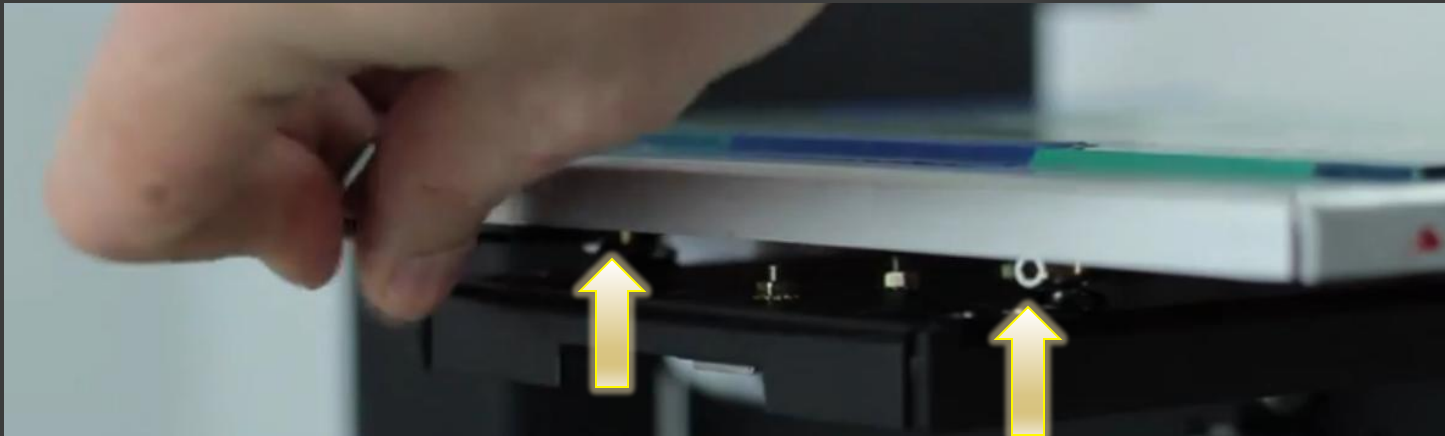
Press the “Zero”  
button to set this  
point to zero



# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Unlock the Four (4) Lock Screws*



Included in your kit, use the 2.5mm Allen wrench to unlock the four (4) lock screws under the build platform





# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Unlock your Motors*

The screenshot displays the control interface of a 3D printer. The top menu bar includes 'File', 'Run Job', 'Kill job', 'Show', 'Light', 'Motor Functions', and 'Settings'. The 'Motor Functions' menu is open, showing options: 'UNLOCK MOTORS' (highlighted with a red box), 'Home XY Motors', 'Home Z Axis', 'Send Z To Zero', 'Clean Head 1', 'Clean Head 2', 'Clean Head 3', and 'Clean Head 4'. The main 3D view area shows a wireframe of a rectangular prism on a grid. The right panel contains 'STL Mgr', 'Slicer', 'GCode Editor', and '3DVisualSettings'. Below these are 'X', 'Y', and 'Z' axis controls with 'Scale' (25.40), 'Translation' (100.00), and 'Rotation' (0.00) settings. A 'Lock aspect ratio' checkbox is checked, and a '5 Deg Angle Lock' checkbox is also checked. The bottom status bar shows 'Show in Log' with 'Commands', 'Infos', 'Warnings', and 'Errors' tabs. The log displays OpenGL version 4.0.0 and other system information. The status bar also shows 'Disconnected - Idle' and '707 FPS'.

File Run Job Kill job Show Light Motor Functions Settings

3D View Control DxfViewer Web Browser Au Manual Control

UNLOCK MOTORS

Home XY Motors

Home Z Axis

Send Z To Zero

Clean Head 1

Clean Head 2

Clean Head 3

Clean Head 4

Type Here

STL Mgr Slicer GCode Editor 3DVisualSettings Co

File Edit GCode

X Y Z

Scale

25.40 25.40 25.40

☒ Lock aspect ratio M 25.4

Translation

100.00 100.00 0.00

Rotation

0.00 0.00 0.00

☒ 5 Deg Angle Lock

Show in Log: ☒ Commands ☐ Infos ☐ Warnings ☐ Errors

20:15:11.238 OpenGL version:4.0.0 - Build 10.18.10.3412

20:15:11.238 OpenGL extensions:GL\_EXT\_blend\_minmax GL\_EXT\_blend\_subtract GL\_EXT\_blend\_color GL\_EXT\_abgr

20:15:11.238 OpenGL renderer:Intel(R) HD Graphics 4000

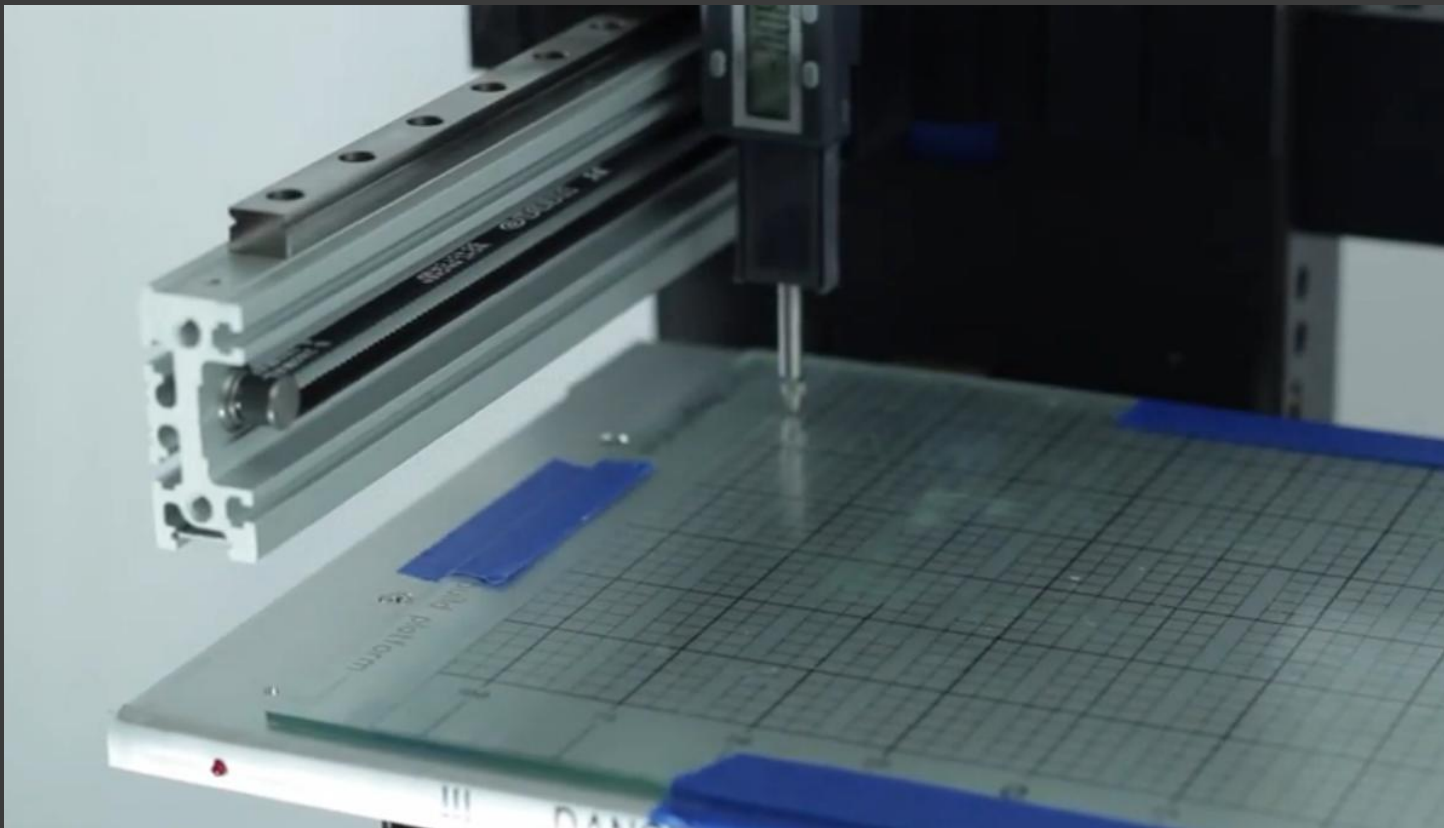
20:15:11.238 Using fast VBOs for rendering is possible

Disconnected - Idle 707 FPS

# First Print with Plasticine

Ch2: Prep Printer for Printing

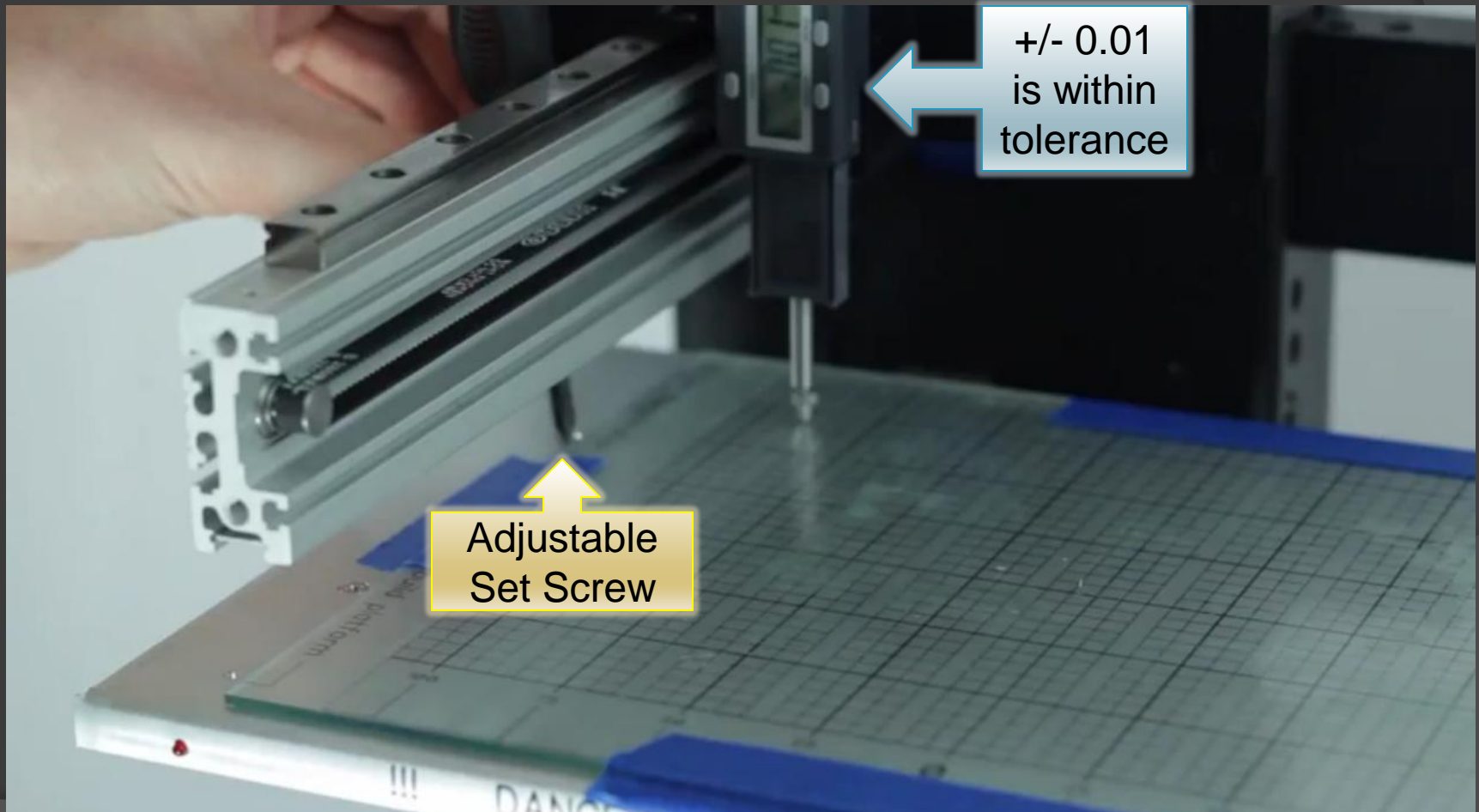
*Step 1: Tram – Position Pin in first corner*



# First Print with Plasticine

Ch2: Prep Printer for Printing

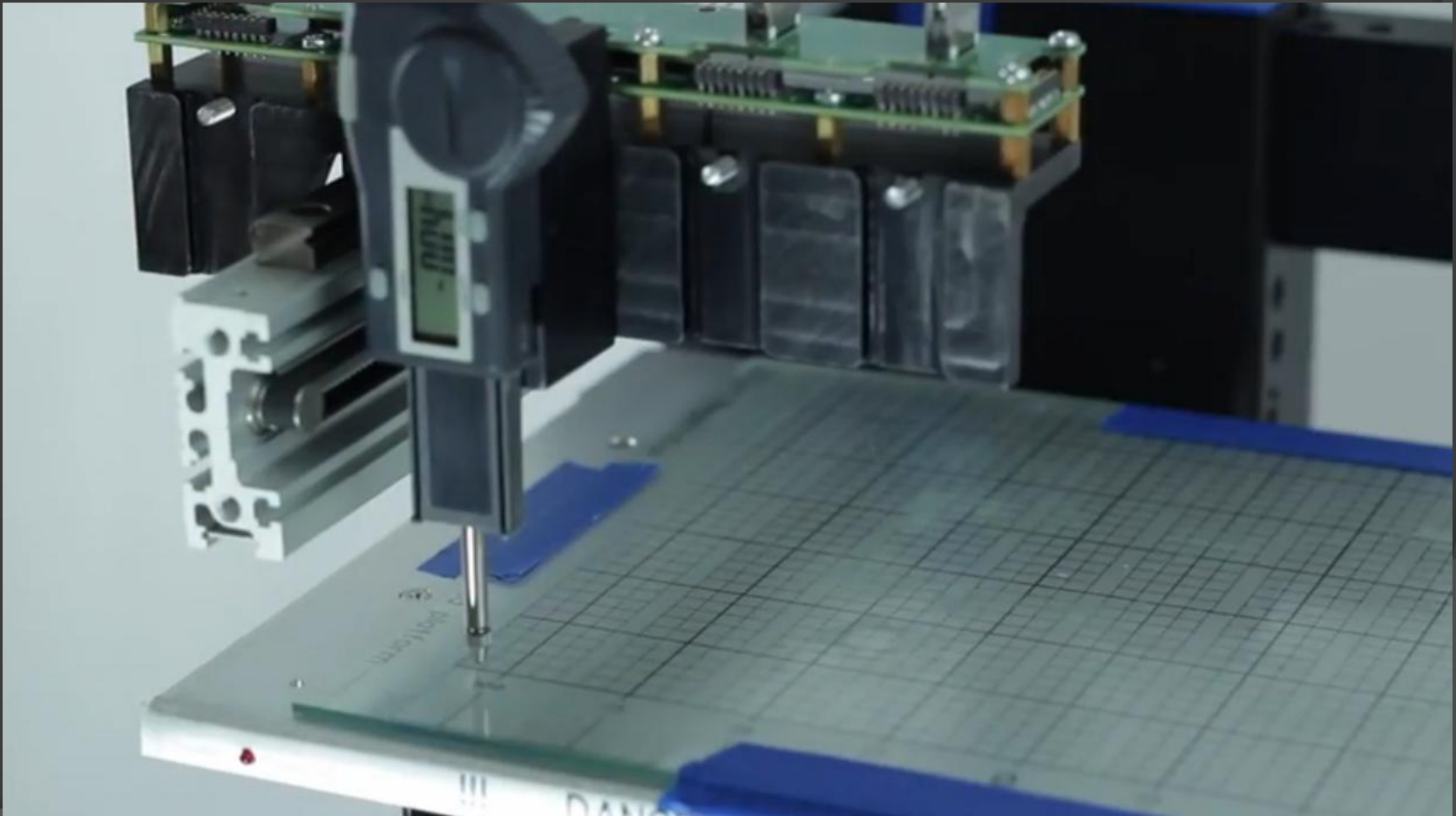
*Step 1: Tram – Adjust Set Screw with Philips Head Screwdriver*



# First Print with Plasticine

Ch2: Prep Printer for Printing

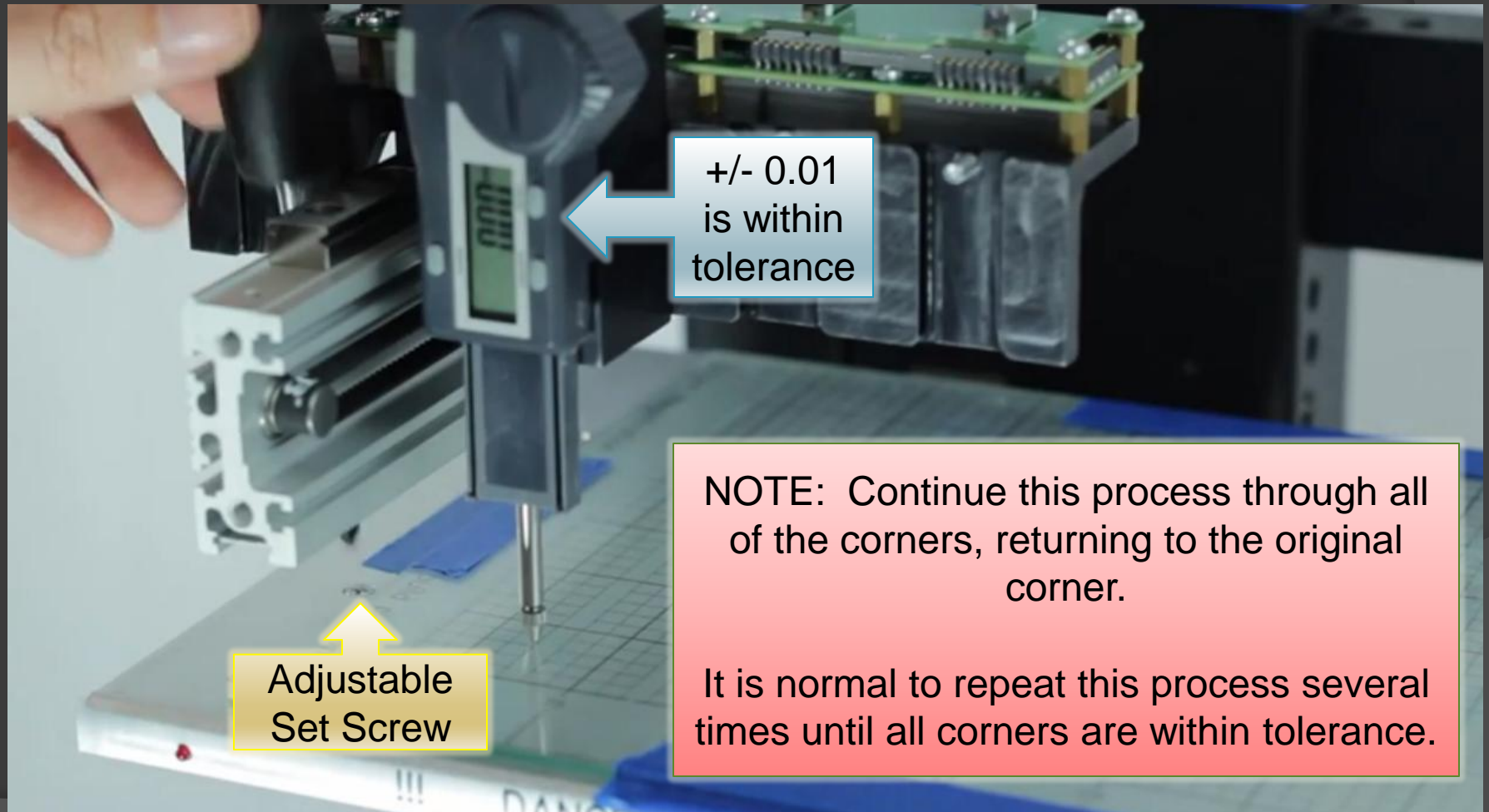
*Step 1: Tram – Position Pin in next corner*



# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Adjust Set Screw with Philips Head Screwdriver*

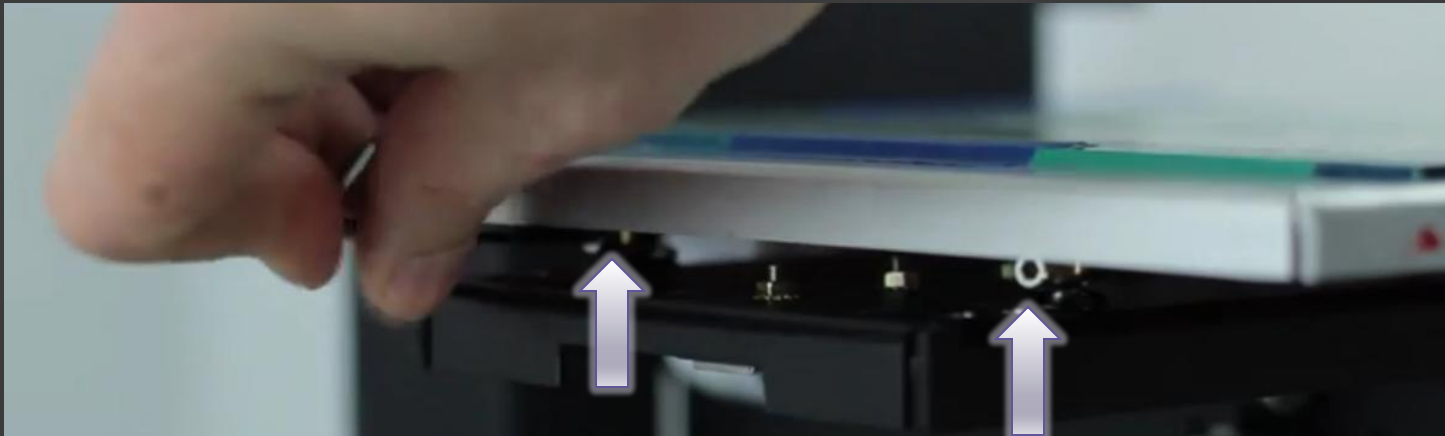




# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 1: Tram – Lock the build platform lock screws*



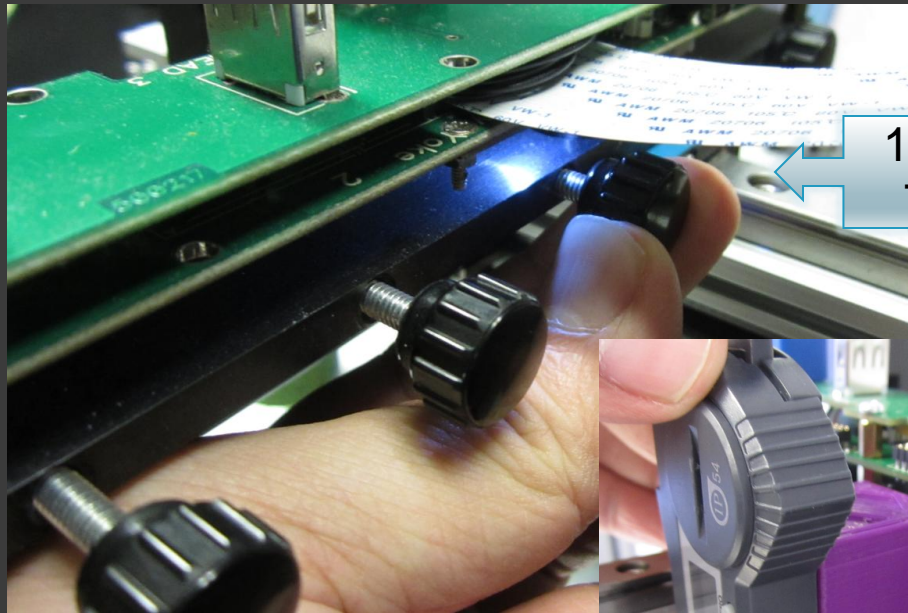
Included in your kit, use the 2.5mm Allen wrench to lock the four (4) lock screws under the build platform.



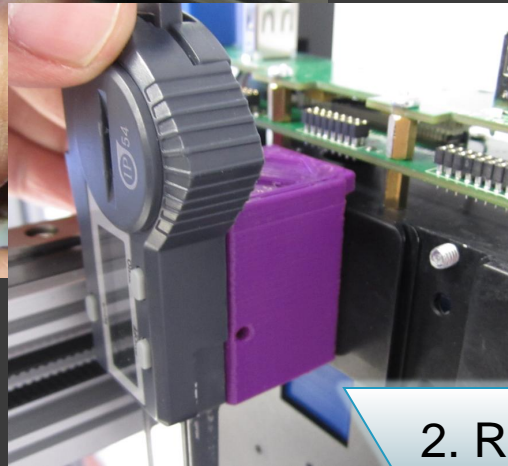
# First Print with Plasticine

Ch2: Prep Printer for Printing

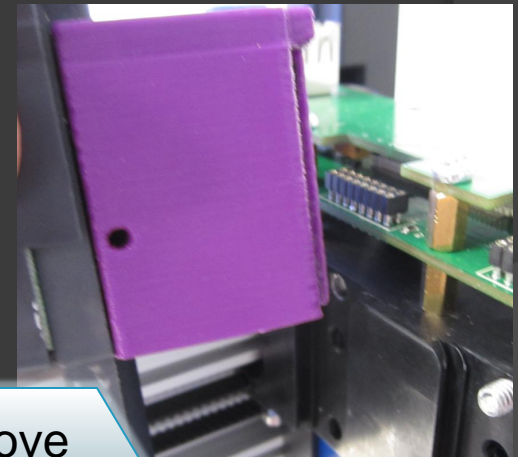
*Step 1: Tram – Remove Digi-tram*



1. Unlock Yoke  
Thumbscrew



2. Remove  
Digi-tram

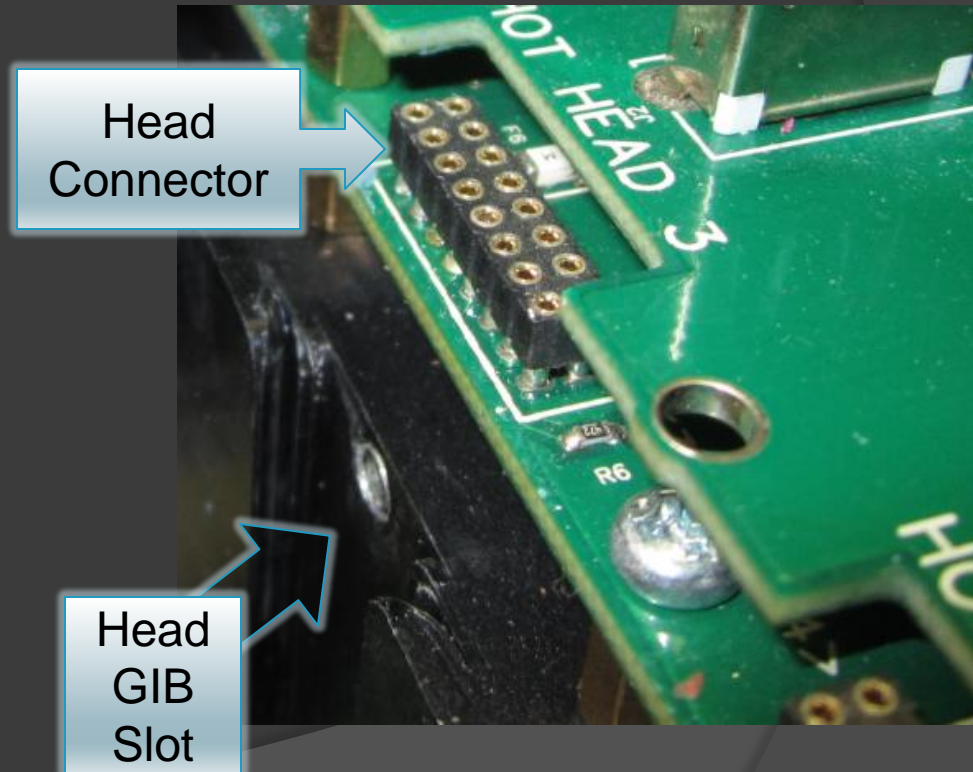
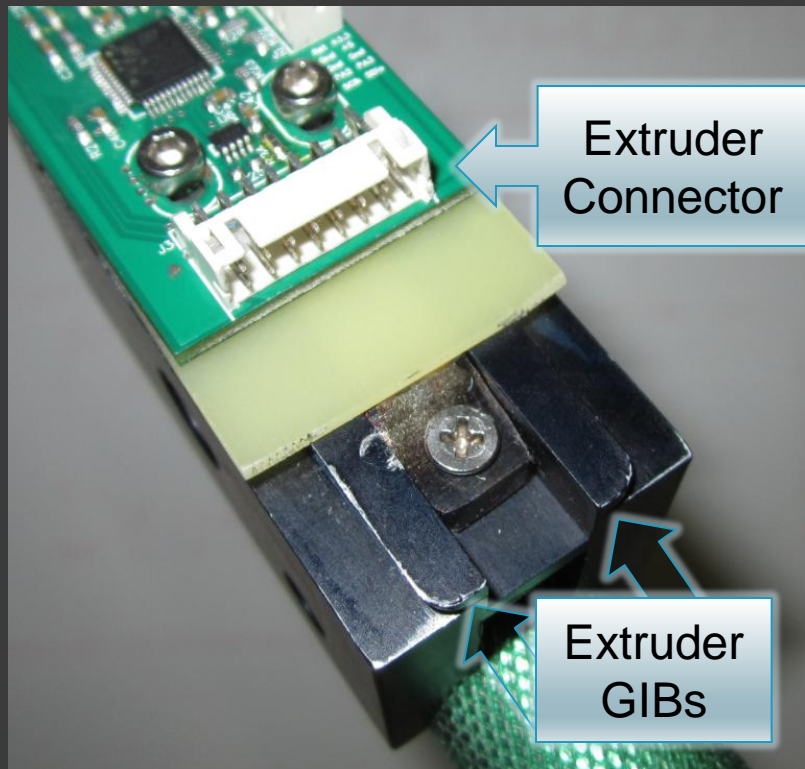




# First Print with Plasticine

Ch2: Prep Printer for Printing

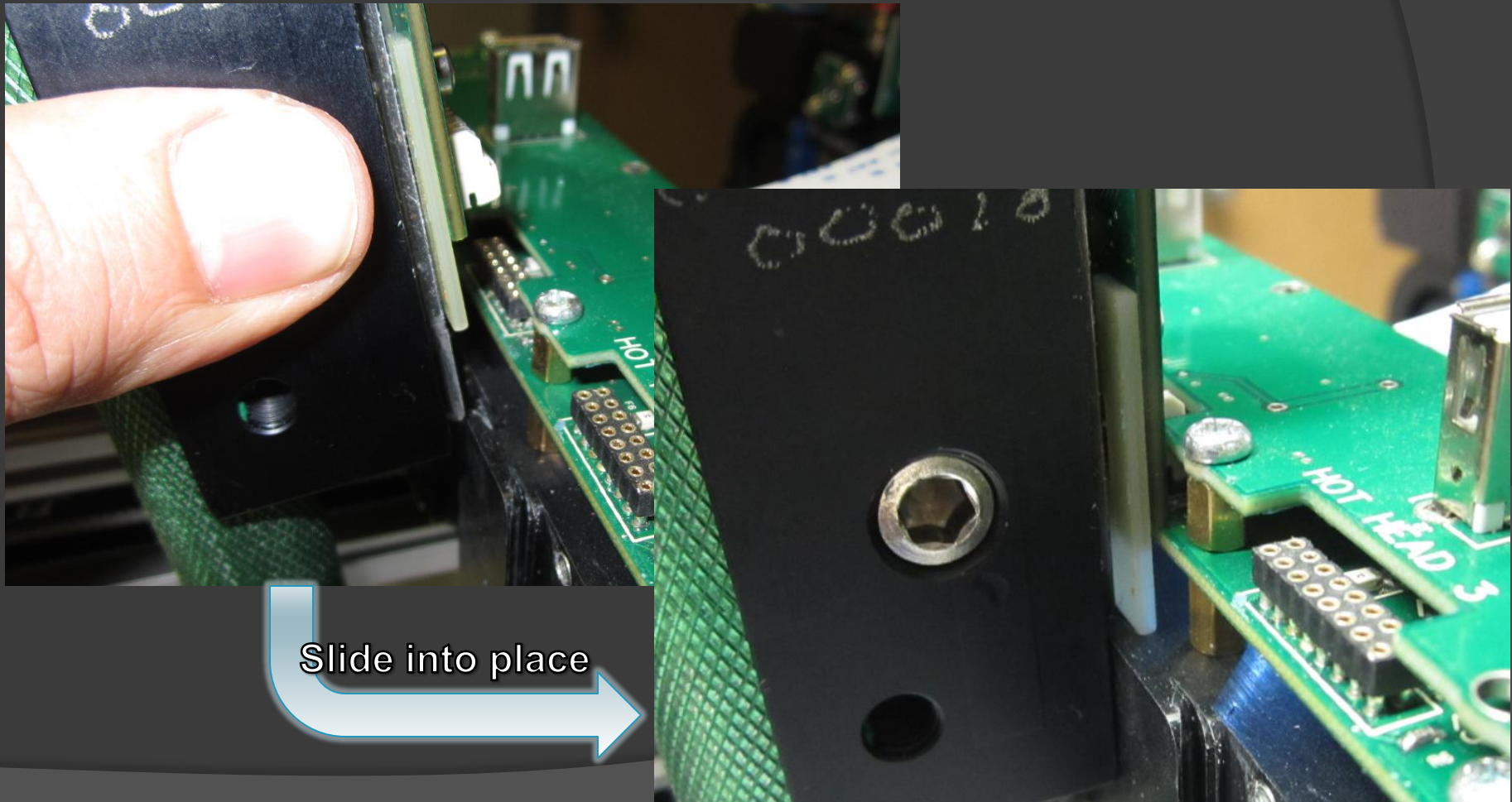
*Step 2: Install Extruder Head – Physical Installation*



# First Print with Plasticine

Ch2: Prep Printer for Printing

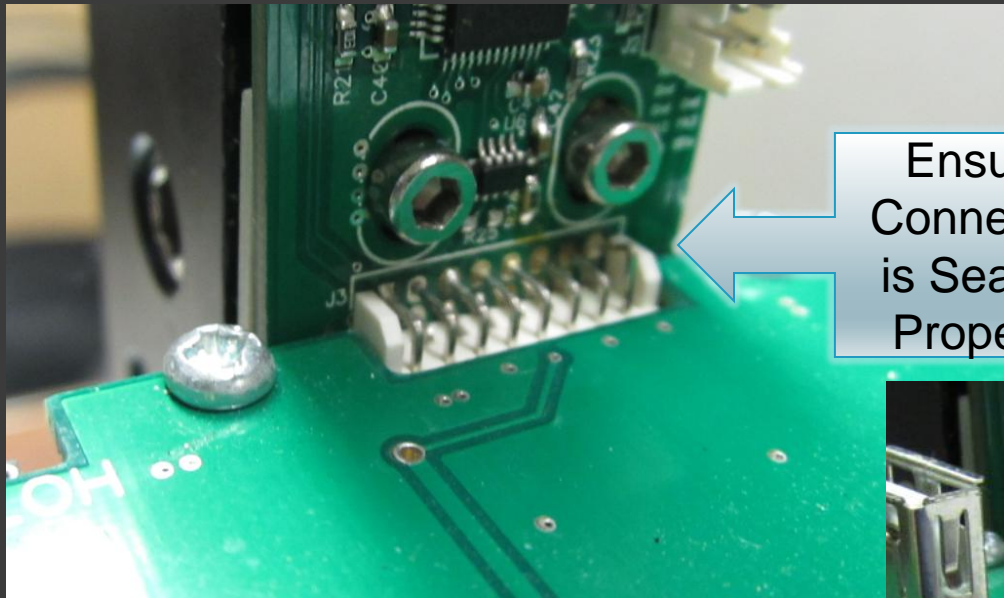
*Step 2: Install Extruder Head – Physical Installation*



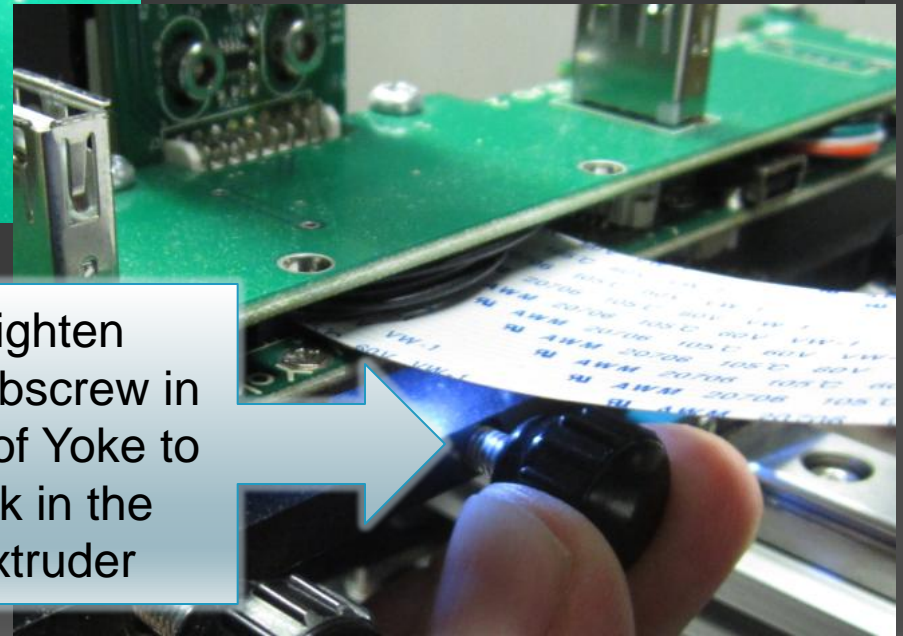
# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 2: Install Extruder Head – Physical Installation*



Ensure  
Connector  
is Seated  
Properly



Tighten  
thumbscrew in  
rear of Yoke to  
lock in the  
Extruder



# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 2: Install Extruder Head – What you see in REPETREL, 1 of 2*

The screenshot displays the REPETREL software interface, which is used for controlling a 3D printer. The interface is divided into several sections:

- Top Bar:** Contains icons for File, Run Job, Kill Job, Show, Light, Motor Functions, and Settings. On the right, there are buttons for ALARM and RESET.
- Control Panel:** This section includes:
  - Motion Control:** Buttons for X, Y, Z, and FINE MOVE, along with directional arrows for -X, +X, -Y, +Y, -Z, and +Z. It also shows coordinates (X=0.0, Y=0.0, Z=0.00) and a Z-axis scale (0.300).
  - Advanced Settings:** Includes a 'HOME ALL' button and a 'Park' button.
  - Head Control:** A section with a red box around it, containing four columns of controls for the extruder head. Each column has a 'RUN' button and a fan speed control (OFF, ON, and a fan icon). A blue arrow points to the first column with the label 'Before'.
  - Temperature Control:** Displays 'T=22' for the Hot Bed and '110' for the extruder temperature. There are also 'OFF' buttons for the bed and extruder heaters.
- G-code Editor:** On the right, it shows the G-code generated by Slic3r 1.1.7 on 2015-04-28 at 09:01:41. The code includes settings for perimeters, infill, and top infill extrusion width (all 2.00mm). It also shows G21 commands for setting units to millimeters.
- Bottom Bar:** Contains buttons for Find, Help, Part Position, View Control, and Code Helper. It also has a search bar and buttons for Replace and Replace All. At the bottom right, there are buttons for 'Auto Prep Gcode' and 'Set All G1 Speed To >' with a value of 1500.

# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 2: Install Extruder Head – What you see in REPETREL, 2 of 2*

The screenshot displays the REPETREL software interface, which is used for controlling a 3D printer. The interface is divided into several sections:

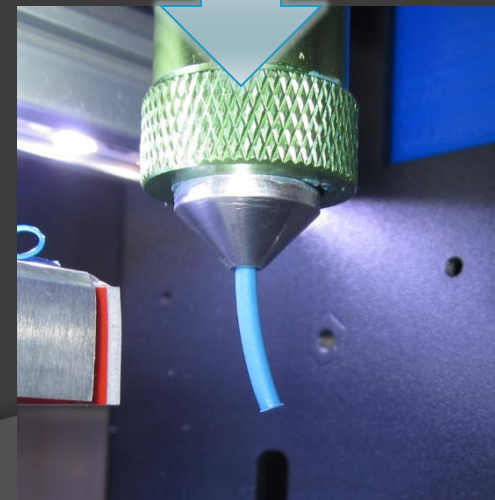
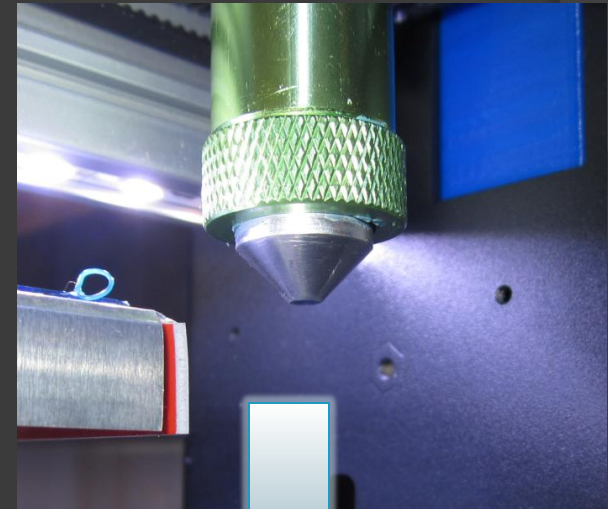
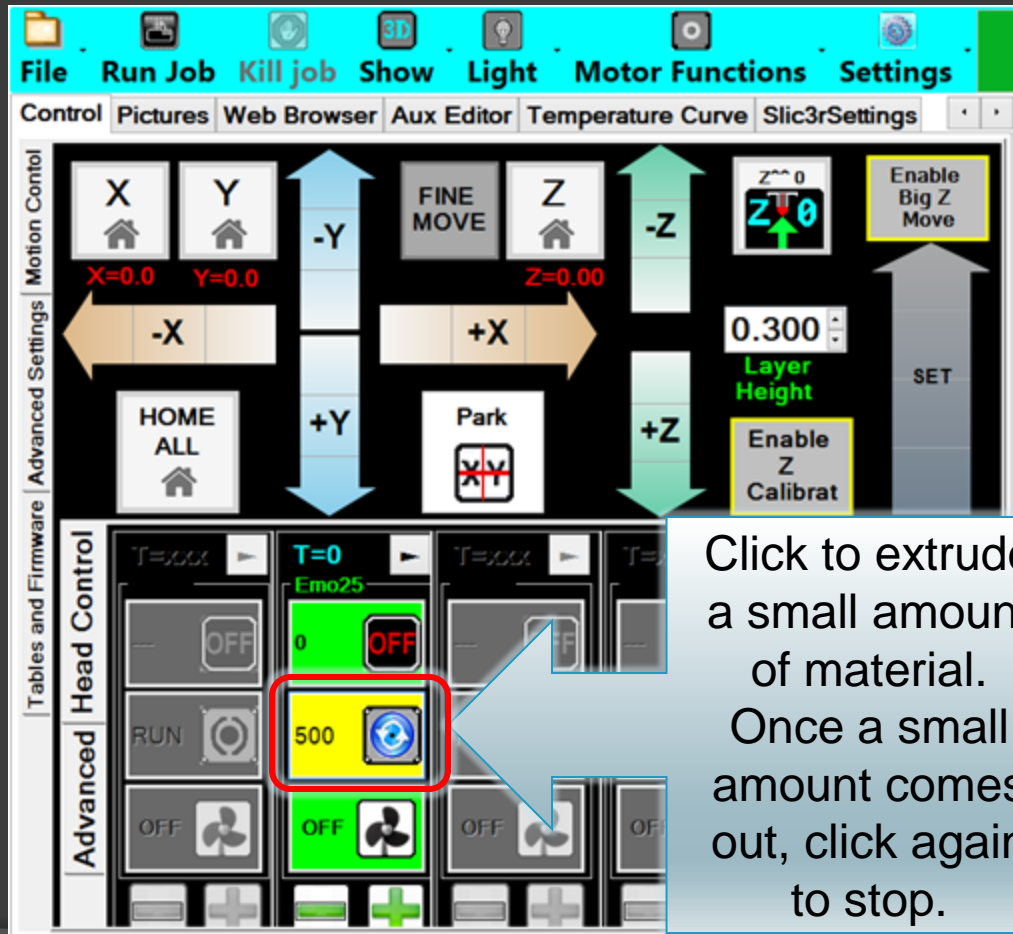
- Top Bar:** Contains icons for File, Run Job, Kill Job, Show, Light, Motor Functions, and Settings. On the right, there are buttons for ALARM and RESET.
- Control Panel:** Located on the left, it includes buttons for X, Y, Z, and FINE MOVE. It also has a HOME ALL button and a Park button. The panel shows coordinates (X=0.0, Y=0.0, Z=0.00) and a Layer Height of 0.300. There are also buttons for -X, -Y, +X, +Y, -Z, and +Z.
- Advanced Settings:** A section on the left side of the control panel, which is highlighted with a red box. It contains a table of settings for the printer's head and bed. The table has columns for the component name, a status indicator (ON/OFF), and a value. The 'After' label points to the 'Emo25' row, which is currently set to 'OFF'.
- GCode Editor:** On the right side, it shows the GCode generated by Slic3r 1.1.7 on 2015-04-28 at 09:01:41. The code includes settings for perimeters, infill, and top infill extrusion width, all set to 2.00mm. It also includes G21 commands to set units to millimeters.
- Find and Replace:** At the bottom right, there is a search and replace section with buttons for Find, Help, Part Position, View Control, and Code Helper. It includes input fields for search and replace text, and buttons for Replace and Replace All. The 'Auto Prep Gcode' button is also visible.

Component	Status	Value
Emo25	OFF	0
Hot Bed	OFF	110

# First Print with Plasticine

Ch2: Prep Printer for Printing

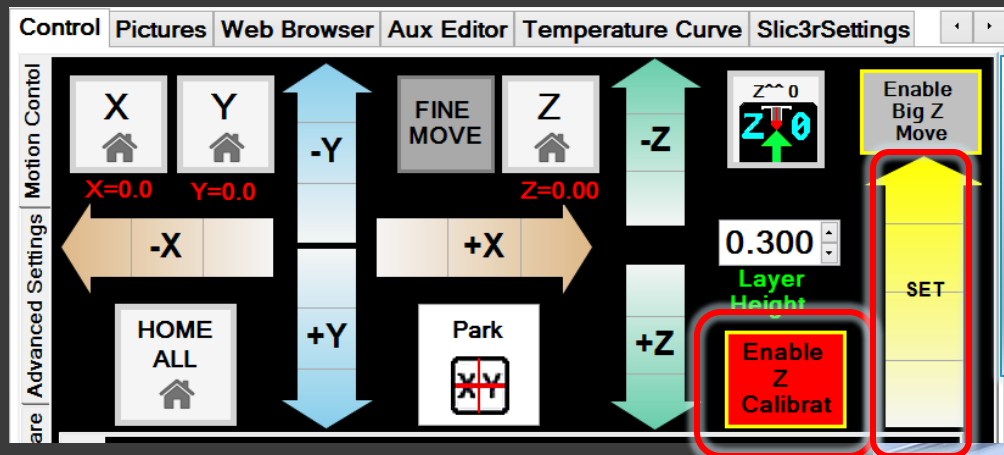
*Step 3: Prime Extruder Head*



# First Print with Plasticine

Ch2: Prep Printer for Printing

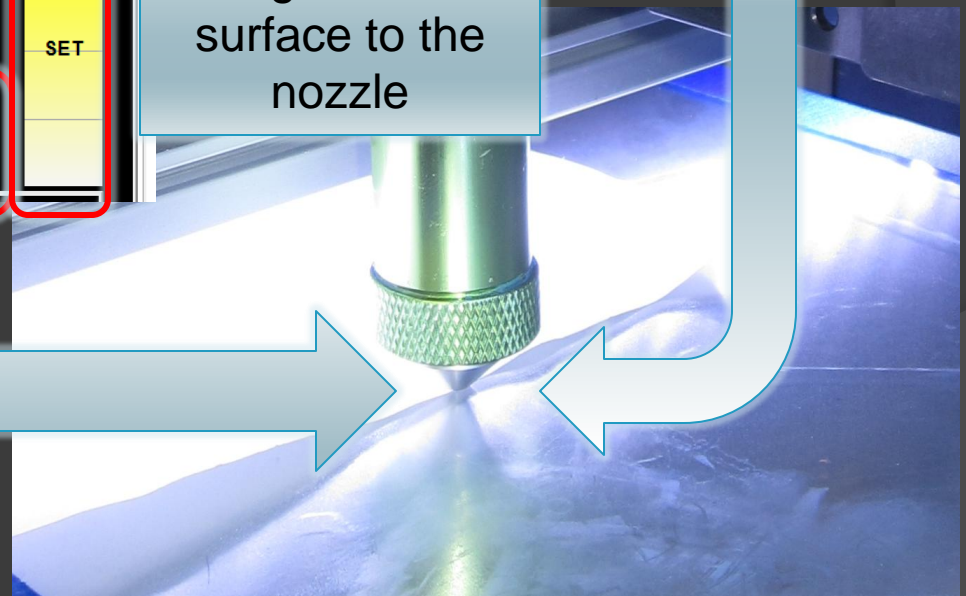
*Step 4: Set the Extruder Head Height*



2. Use Z-Height Calibration to bring the build surface to the nozzle

1. Place a piece of paper between the nozzle and the build surface

3. Once the piece of Paper just starts to pinch, the Extruder Height is correct.





# First Print with Plasticine

Ch2: Prep Printer for Printing

*Step 5: Prepare build surface*



Rub a small amount of Plasticine on the build surface. The film it leaves on the surface allows the printed Plasticine to stick.

# First Print with Plasticine

Ch3: Printing

Step 1: Press "Run Job" button

The screenshot shows the control software interface. The top menu bar includes 'File', 'Run Job', 'Kill Job', 'Show', 'Light', 'Motor Functions', and 'Settings'. The 'Run Job' button is highlighted with a red box. Below the menu, the 'JOB Running' panel displays 'Layer 40', 'Lines 14113', and 'TIME 00:00:00'. It features three buttons: 'Pause' (yellow), 'Z' (yellow with a red 'Z'), and 'KILL JOB' (red with a red 'X'). The 'KILL JOB' button is also highlighted with a red box. To the right, the 'Z Fine Adj' panel has two buttons: 'Z+' (yellow with a green plus) and 'Z-' (yellow with a green minus). A red box highlights the 'Z Fine Adj' panel. Below the 'JOB Running' panel, the 'Advanced Head Control' section shows four temperature controls. The second control, 'T=0 Emo25', is highlighted with a red box and shows '0' and 'OFF'. The 'Hot Bed' control is also highlighted with a red box and shows 'OFF' and 'XXX'. A yellow arrow points from the 'Hot Bed' control to a text box. The 'GCode Editor' panel on the right shows 'File' and 'EDIT' buttons. A pink box highlights the 'GCode Editor' panel. The bottom right panel shows 'Find', 'Help', 'Part Position', 'View Control', and 'Code Helper' buttons. A yellow box highlights the 'Set All G1 Speed To >' button.

When running, this control panel opens.

The most used buttons are:

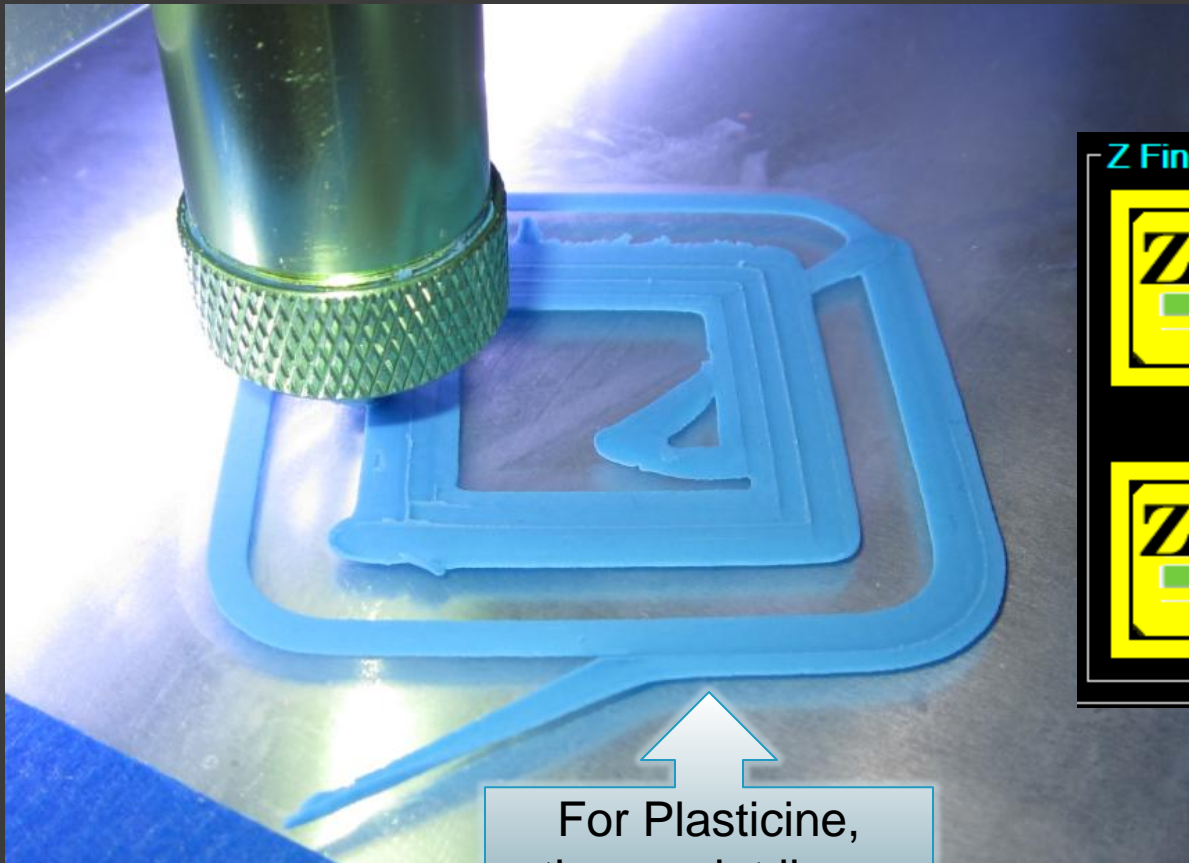
- 1.) Z Fine Adj [+] [-]
- 2.) Kill Job

Keep the Hot-Bed off / cold  
Plasticine has a low melting point, and will start to melt around 40 C / 104F

# First Print with Plasticine

Ch3: Printing

*Step 2: Pay close attention to the first layers & adjust height while printing*



For Plasticine,  
these print lines  
are near perfection



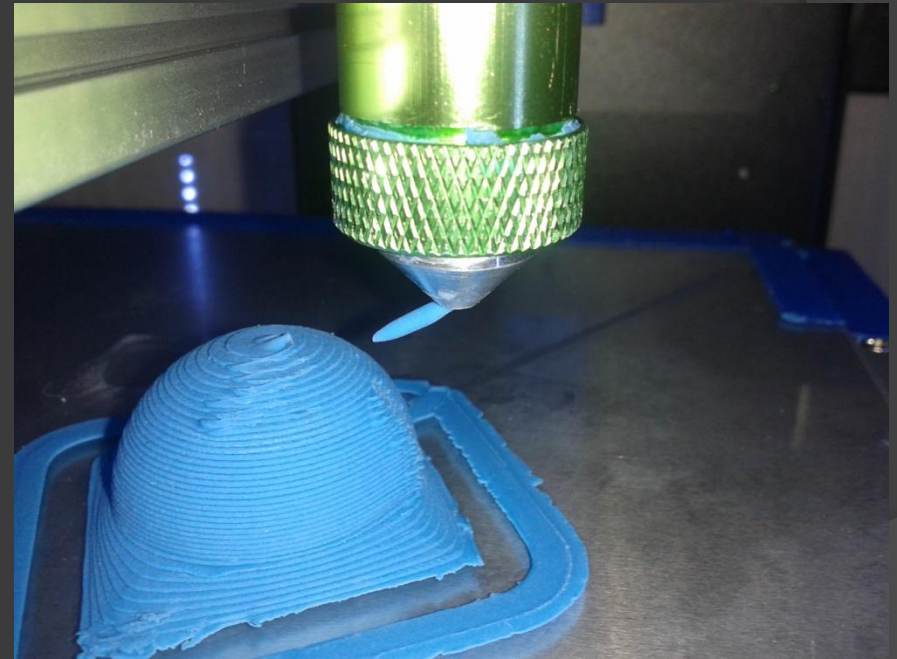
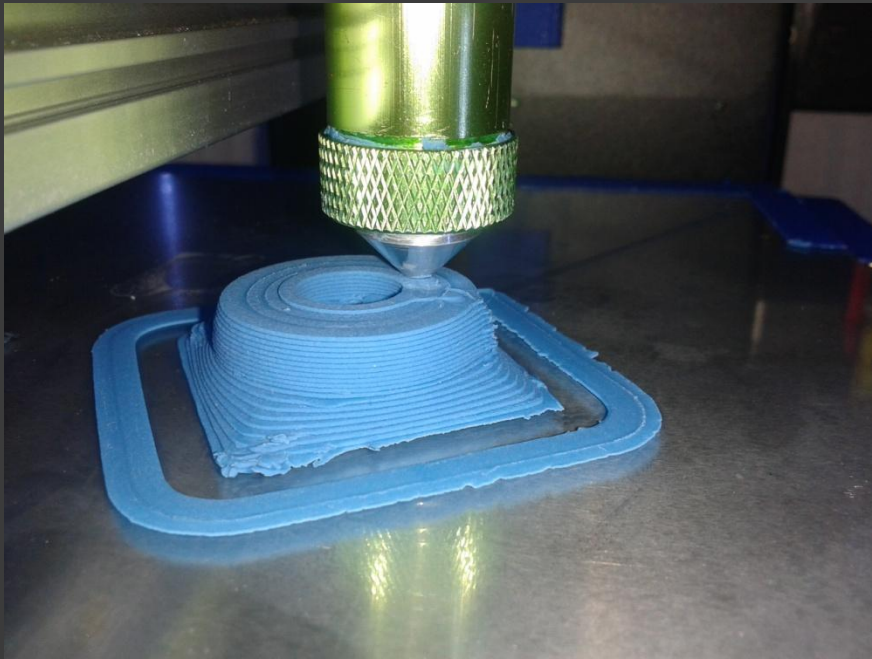
Use when  
lines are  
not  
touching

Use when  
lines are  
50%  
wider than  
the  
adjacent  
lines

# First Print with Plasticine

Ch3: Printing

*Step 3: Allow the print to finish*

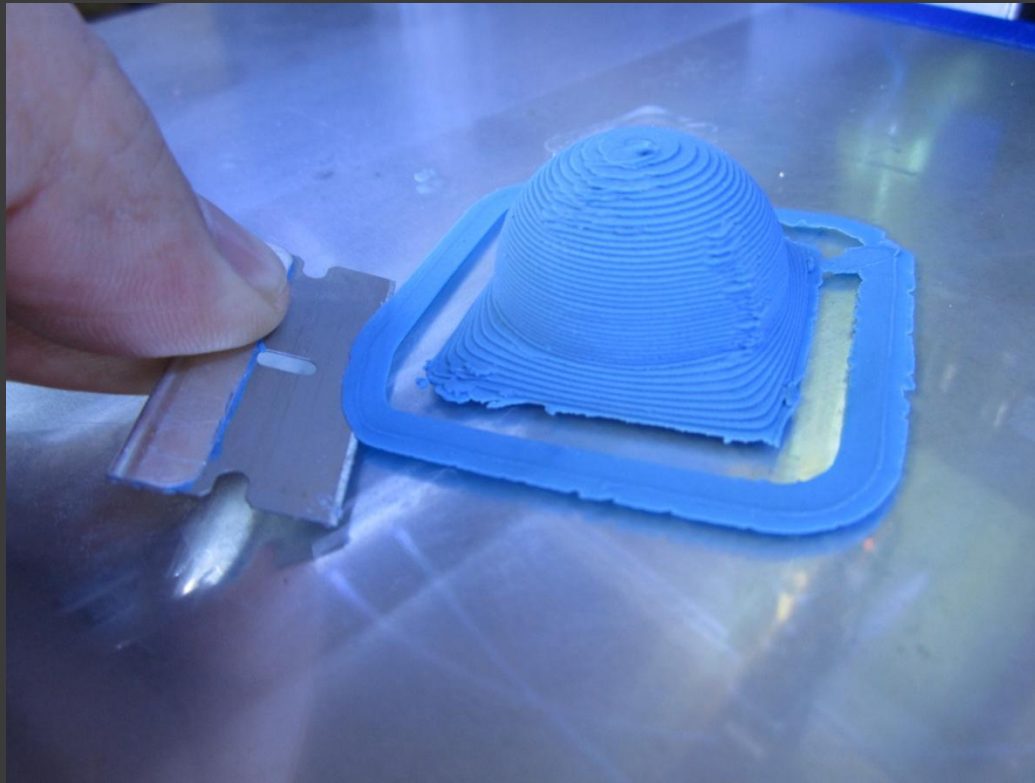




# First Print with Plasticine

Ch3: Printing

*Step 4: When complete, remove the print from the build surface*



# More Information Available at:

HYREL LLC

2900 Cole Court

Norcross, GA 30071

[www.hyrel3d.com](http://www.hyrel3d.com)

[www.hyrel3d.net](http://www.hyrel3d.net)

[sales@hyrel3d.com](mailto:sales@hyrel3d.com)

(404)-914-1748 (US Shop Phone)

Skype: Hy.Rel

Ustream: [www.ustream.tv/channels/hyrel3d](http://www.ustream.tv/channels/hyrel3d)