Robo Support Documentation

Release 0.1.0

Robo

Aug 15, 2017

Contents

Greetings, Maker!

Thank you for your purchase and welcome to the Robo family! You've found the online manual for all Robo products, from hardware to software. In here you will find just above everything not covered in the Quick Start Guide you've recieved with your machine. The printer pages are broken up into 4 sections: Getting Started, Operation, Maintenance and Troubleshooting.

In our Maintenance and Troubleshooting sections we've provide useful tips on keeping your printer in top shape, and quickly resolving common issues. If you have any suggestions on material that should be covered or have suggestions in general, we welcome you to open an issue in Github here: https://github.com/Robo3D/support.robo3d.com/issues

Happy Printing,

Coby Kabili and Braydon Moreno, Robo Co-founders

CHAPTER 1

Make smarter with the Robo app

Simply download the free Robo app to experience the next level in 3D printing and get more out of everything you make.

- Connect and print right from your mobile device
- Monitor the progress of every print
- Manage multiple prints and printers at once
- Manual control panel lets you handle every detail with precision
- Connect to cloud libraries and access thousands of 3D models
- Make in-app purchases (filaments, accessories, print kits and more)

Logging into your Robo account

To enjoy the best possible Robo app experience, be sure to log into your Robo account. Logging into your account lets you do things like browse models from your cloud storage, and even post status updates via social media to show off all the cool stuff you're making with Robo C2.

Use the following steps to log into your Robo account:

1. Open the Robo app open and select "Menu" in the upper left corner

2. Select "Log In" on the right hand side of the screen

3. Follow the prompt to successfully login to your account

Robo C2

Enter the Robolution

Greetings, Maker!

Thank you for your purchase and welcome to the Robo family! We really love 3D printing and our aim is to get this amazing technology into the hands of as many people as possible to see what awesome creations spring from your imagination.

Here you'll find all of the information you need for a seamless 3D printing experience with Robo C2. This next-generation 3D printer includes a wish-list set of innovative features required in a modern, connected smart device to make 3D printing fun, easy and accessible to everyone.

To get the most from your Robo C2, please review the full manual.

Happy Printing,

Coby Kabili and Braydon Moreno, Robo Co-founders

Make more with Robo C2

The Robo C2 compact smart 3D printer with Wi-Fi gives you the freedom to make whatever you can imagine right from your mobile device using the Robo app.

- Engineered to fit anywhere in your home or workplace
- Efficient 5 x 5 x 6 in print size
- 3.5" built-in color touch screen
- Class-leading print speed
- Automatic self-leveling
- Prints 20+ materials types that don't require a heat bed

Getting Started

What's in the box

Besides your new Robo C2, you will find the following in the box:

1. Quick Start Guide

2. Autodesk Fusion 360 design software free 1-year voucher

3. 9 print bed tape covers (with 1 BuildTak sheet already applied to your print bed).

4. Robo stickers to place EVERYWHERE.

5. 19V power supply

6. Filament Guide Tube

7. 2 filament spool arms

8. Toolbox with the hotend cover, 2 allen wrenches, lubricant, and stylus.

9. Robo USB drive

10. 300g Robo light blue filament

11. Spatula

Unboxing Robo C2

Now that you've received your Robo C2, it's time to unbox it and get familiar with your printer and accessories.

Your C2 is housed in 3 styrofoam pieces, secured together by a nylon strap. Simply lift the printer from the box using the strap and set it down.

Unclip the black nylon strap and remove the two halves of the top styrofoam shell.

Finally, using the handholds on the bottom of your C2, lift the printer out of the bottom styrofoam piece.

Tip: Save your printer box, nylon strap, foam inserts, and inclusions box for transportation. Also, you might need the original packaging to exercise your warranty or ship your printer in the future.

The printer's accessories are stored in the inclusions box inside the printer. Simply slide the inclusion box out and be sure to remove the foam.

Now we are ready to take off the additional shipping material and zip ties. There are 4 orange rod holders that need to be taken off. Simply push on the clip and it will come off. There is one at each corner of the top gantry.

Next, remove the zip ties securing the rods to their plastic brackets
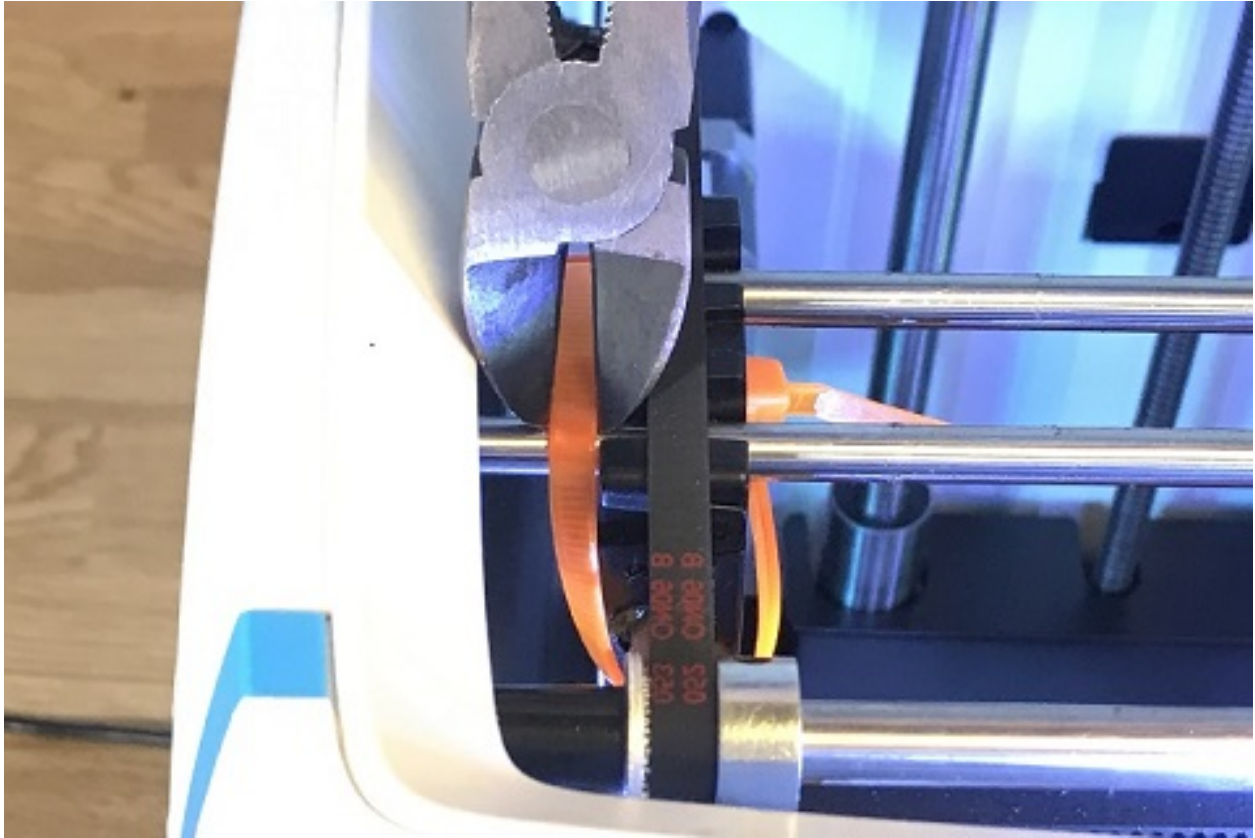
Register your Robo C2

Before you start, please register your Robo C2 for any servicing or warranty needs if they're ever required. You can register your product by visiting our registration_site.

Initial set-up

Now let's move forward with your initial set-up of Robo C2.

First, insert the spool holder into the rear slot of the printer. Make sure the taller tab is inserted first.

Next, insert the filament feed tube into the filament sensor block, and then insert it into the extruder.

Inside the toolbox you will find the hotend cover. Go ahead and take that out and place it over the hotend. It is held in with magnets so it just pops right in.

From here you'll want to connect the power cord to the designated area on the back of the printer and then plug it into an AC outlet.

Now go ahead and turn on the printer.
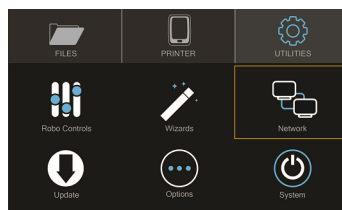
Connecting to Wi-Fi

We highly recommend connecting Robo C2 to your Wi-Fi network. Doing so provides you with necessary updates that allows for a more enjoyable 3D printing experience.

Note: You can also use an Ethernet cable (LAN) to connect Robo C2 directly to your Wi-Fi network.
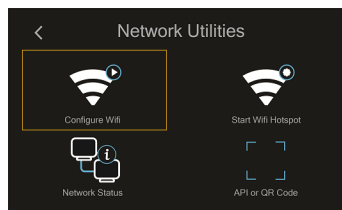

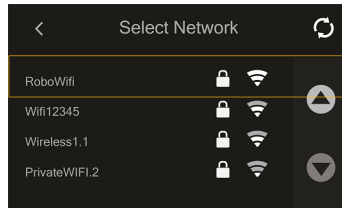To begin connecting to your Wi-Fi network, Select UTILITIES on home screen.
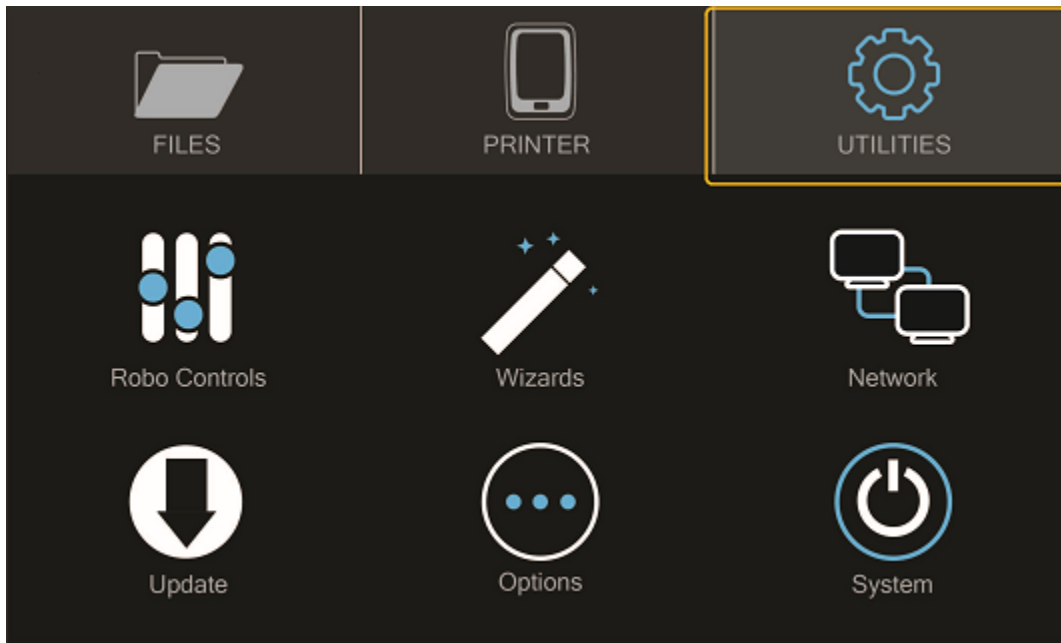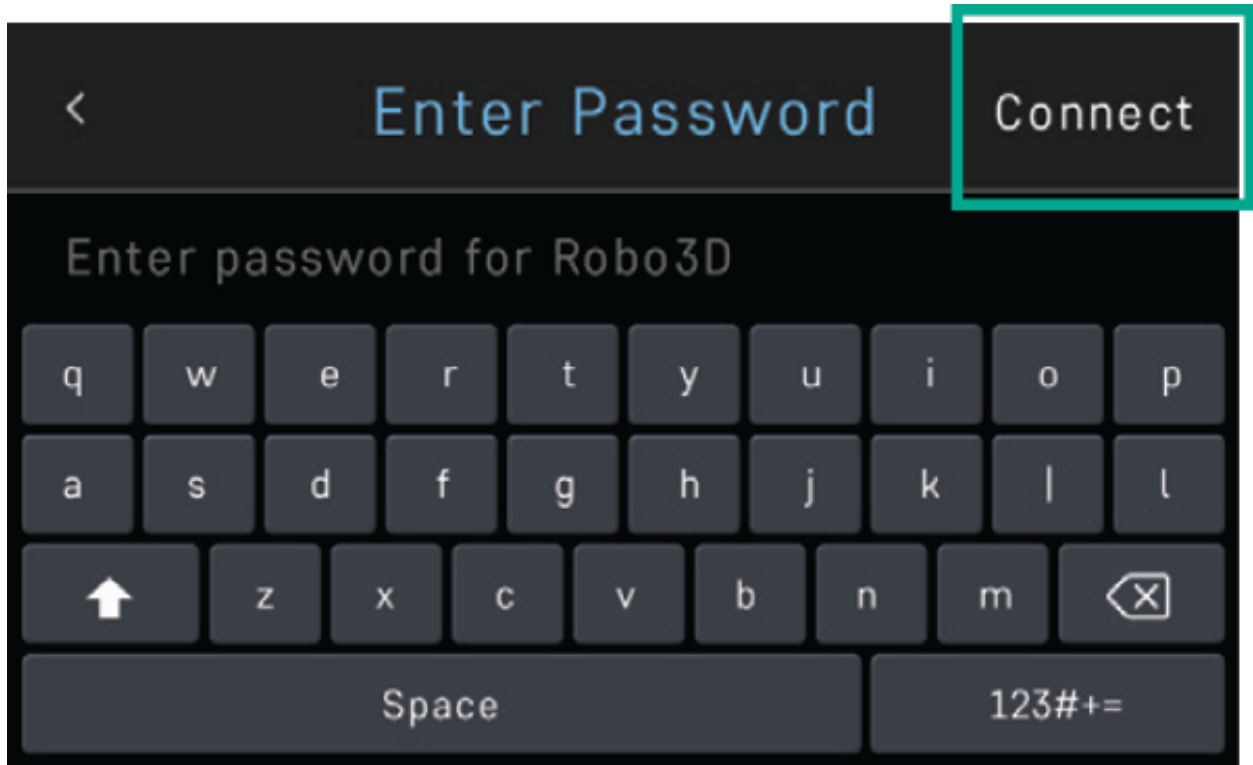

Select NETWORK.

Select CONFIGURE WIFI.

Then select your Wi-Fi network and use the on-screen keyboard to enter your password.
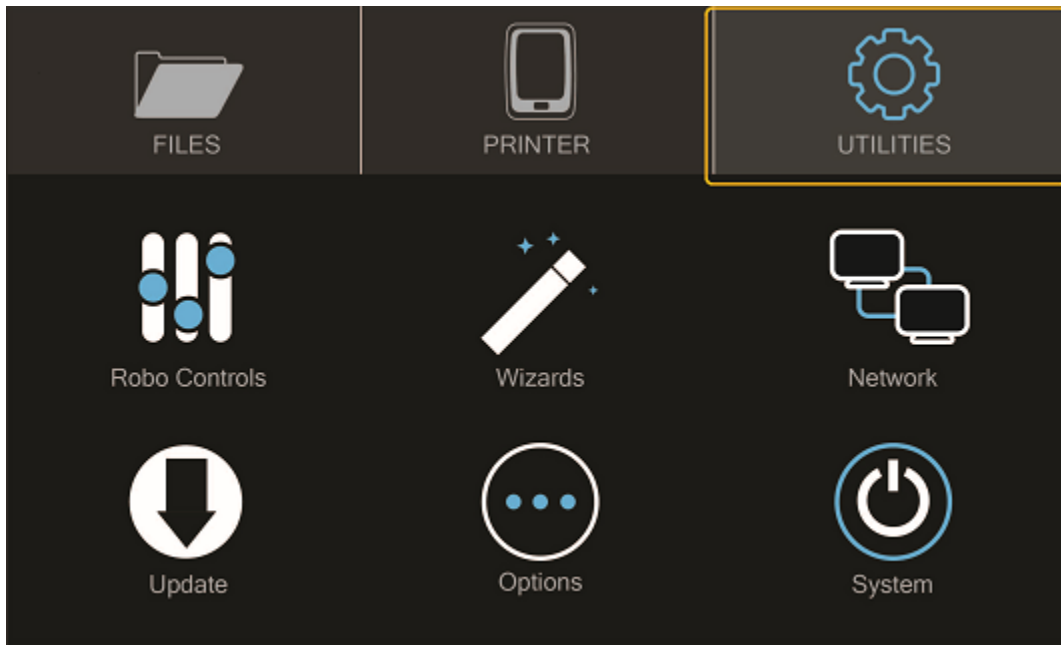

Once you're done, select CONNECT.

Updating Robo C2

Ensure your software is up-to-date - it's the best way to confirm that your machine is operating with the most recent functionalities available whenever we release them.

Select UTILITIES on the home screen

Select UPDATE

Screen will say UP_TO_DATE if software is already updated. If not, select UPDATE and the update will begin.

Note: Follow this process regularly to ensure software is always up to date.
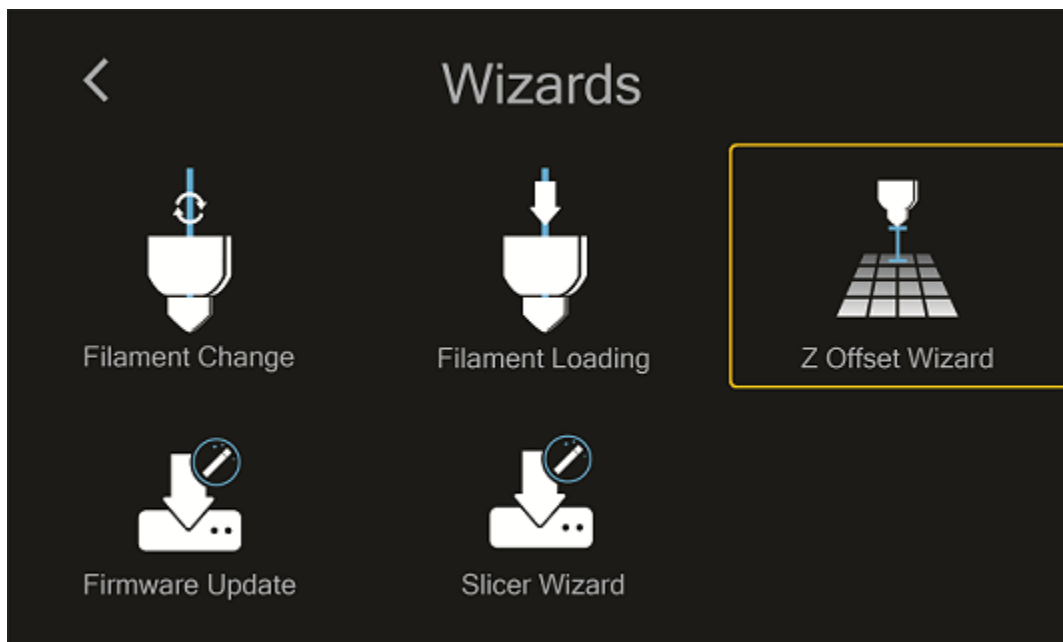
Calibration and setting Z offset

Next you'll want to calibrate Robo C2 by selecting UTILITIES on the touch screen, and then select WIZARDS from the list.
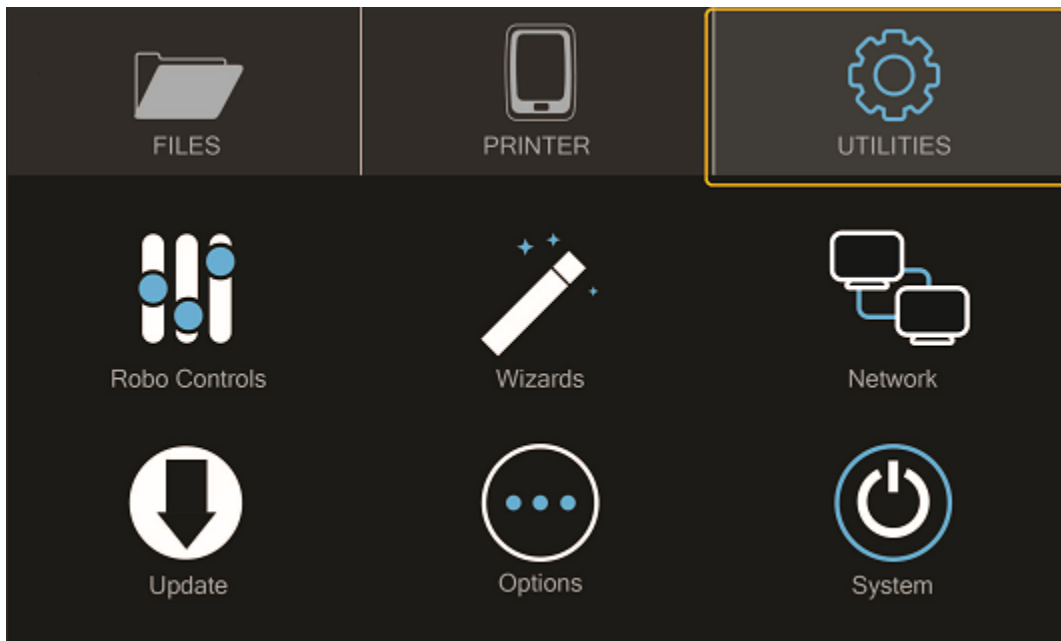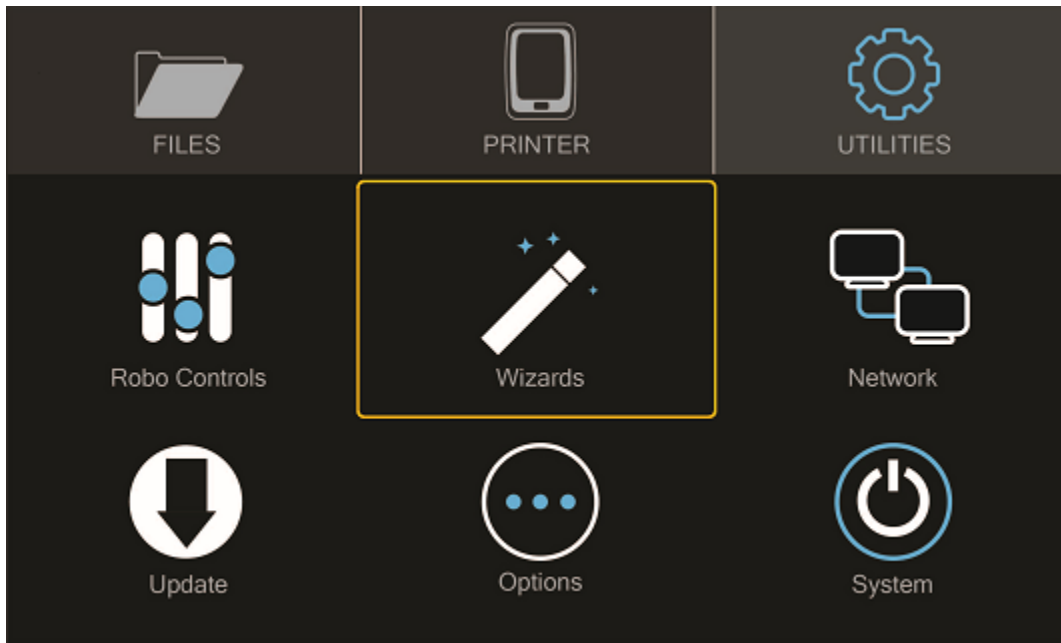
From here you'll select Z OFFSET WIZARD.

Now, the printer will wait to calibrate its home position

Press up and down on the arrow buttons while sliding a piece of paper between the nozzle and the print bed until you feel some resistance against the paper
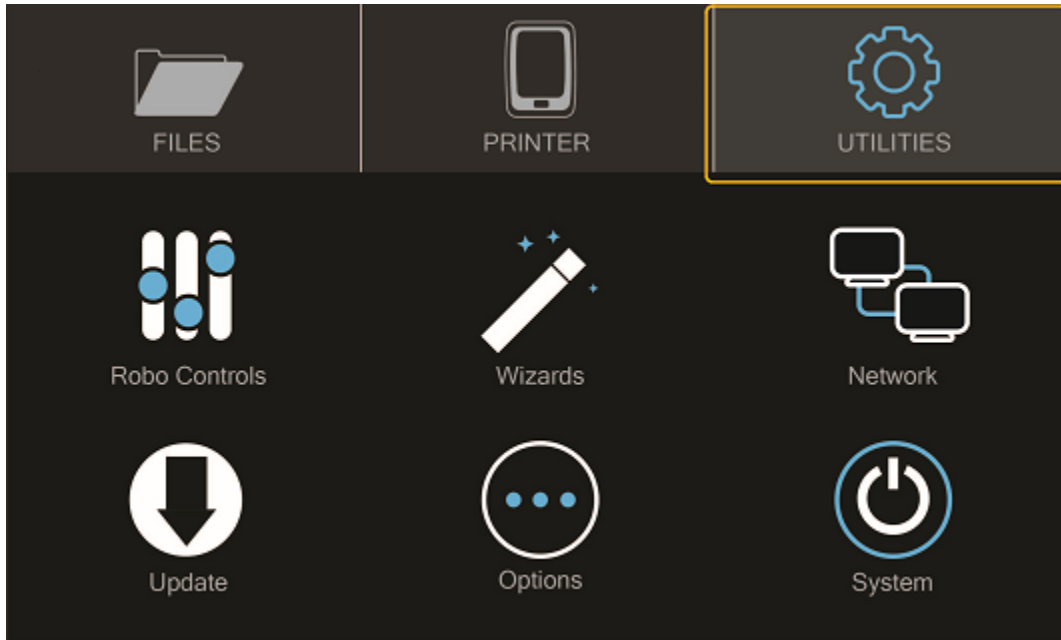
Press FINISHED

Note that you will see the offset progress and completion on the touchscreen.

Loading filament

To begin loading filament, hang your filament spool on the spool holder. Be sure to unroll at least 11"— or 30 centimeters — of filament and thread it through the base of the filament sensor block and into the filament feed tube.

Continue feeding the filament through the filament feed tube until it reaches the extruder. Then, press the extruder lever arm down and feed the filament into the printer's gears.

Now select UTILITIES on the touch screen.

Then select WIZARDS from the list.
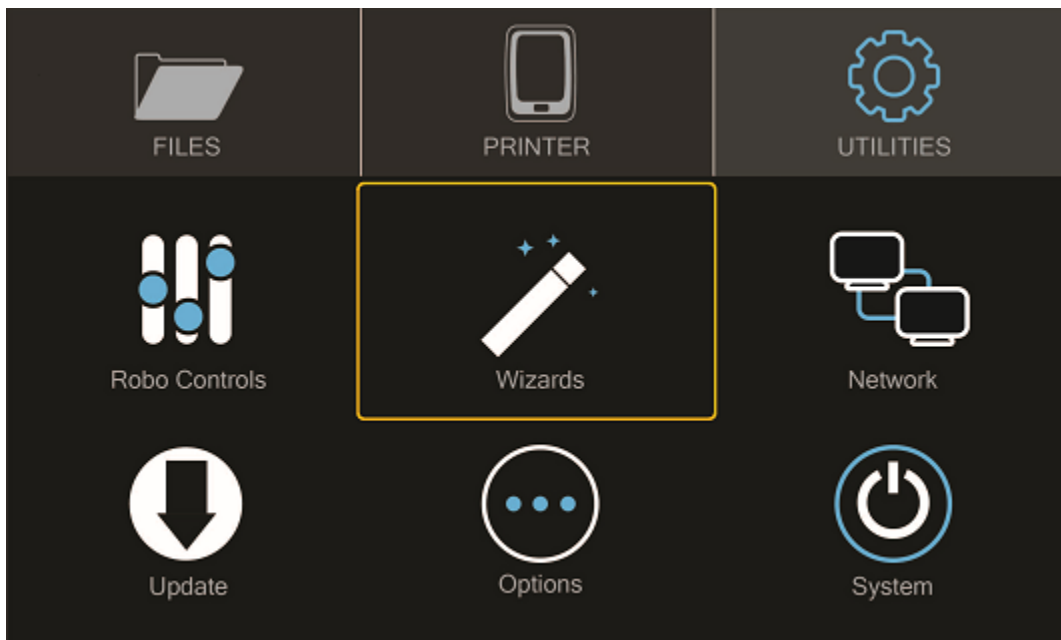
Finally, select FILAMENT LOADING WIZARD.
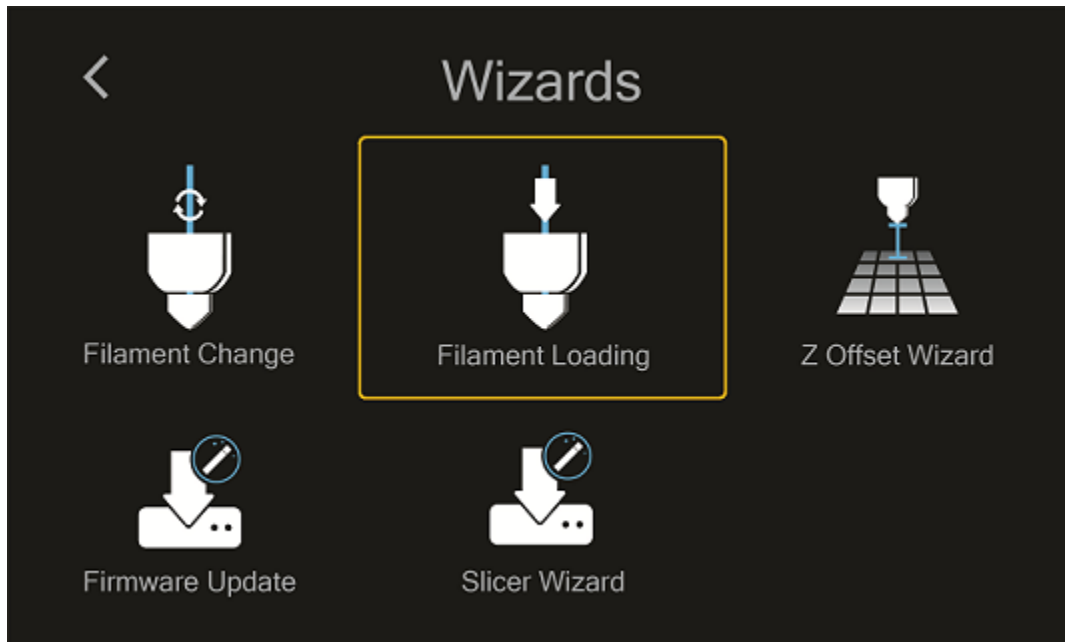
Follow the on-screen prompts:

- Heating up the printer
- Ensuring you've cut off the tip of the filament
- Now, look for filament to exit the nozzle

- Press NEXT, and
- Press FINISHED

The test print

To create your first test print, select FILES on the home screen. Then select a file to print from the list.
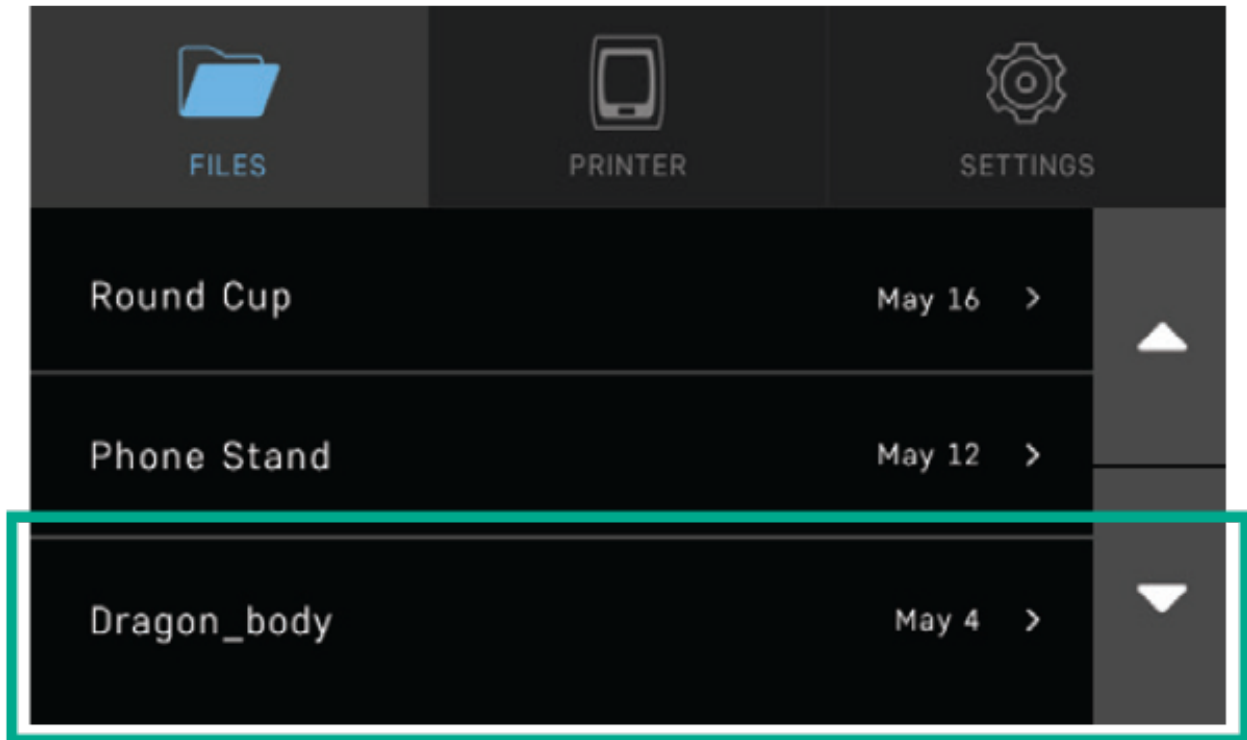
Now, select START to print—and be sure to wait several seconds while Robo C2 prepares to print the file.

The file will start printing.

Just note that you can select PAUSE to pause your print, or you can select CANCEL to cancel your print.

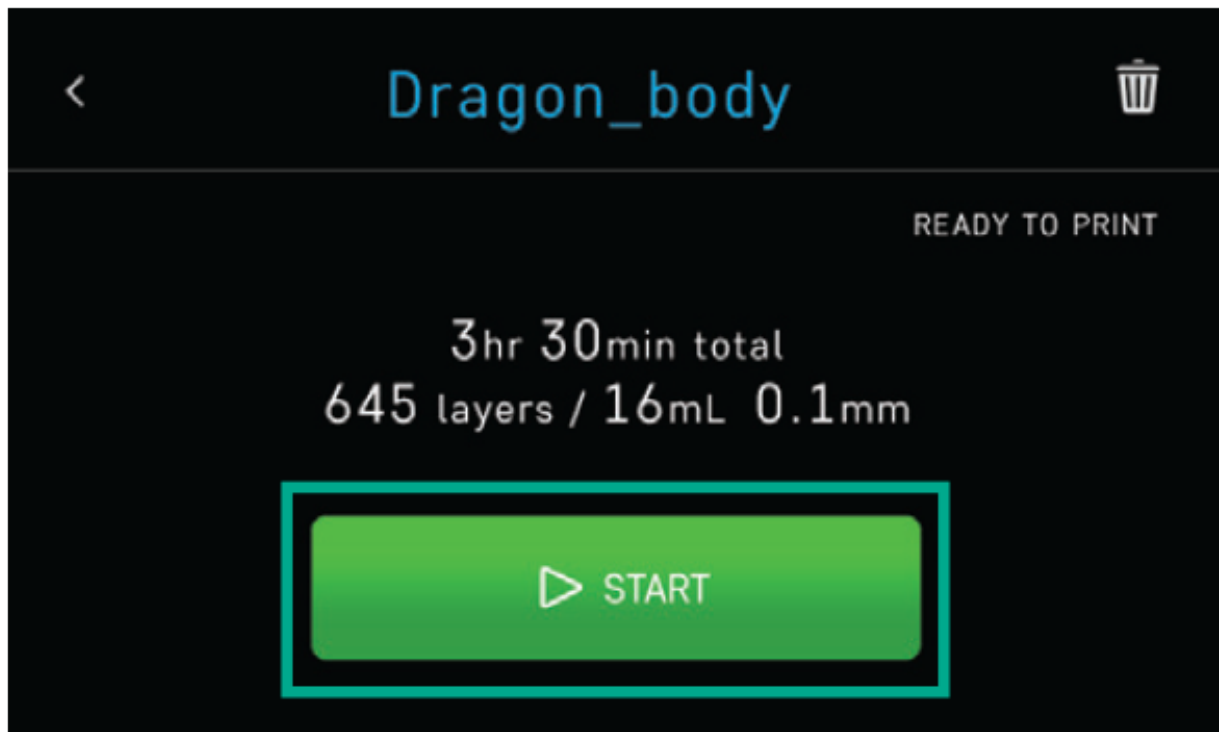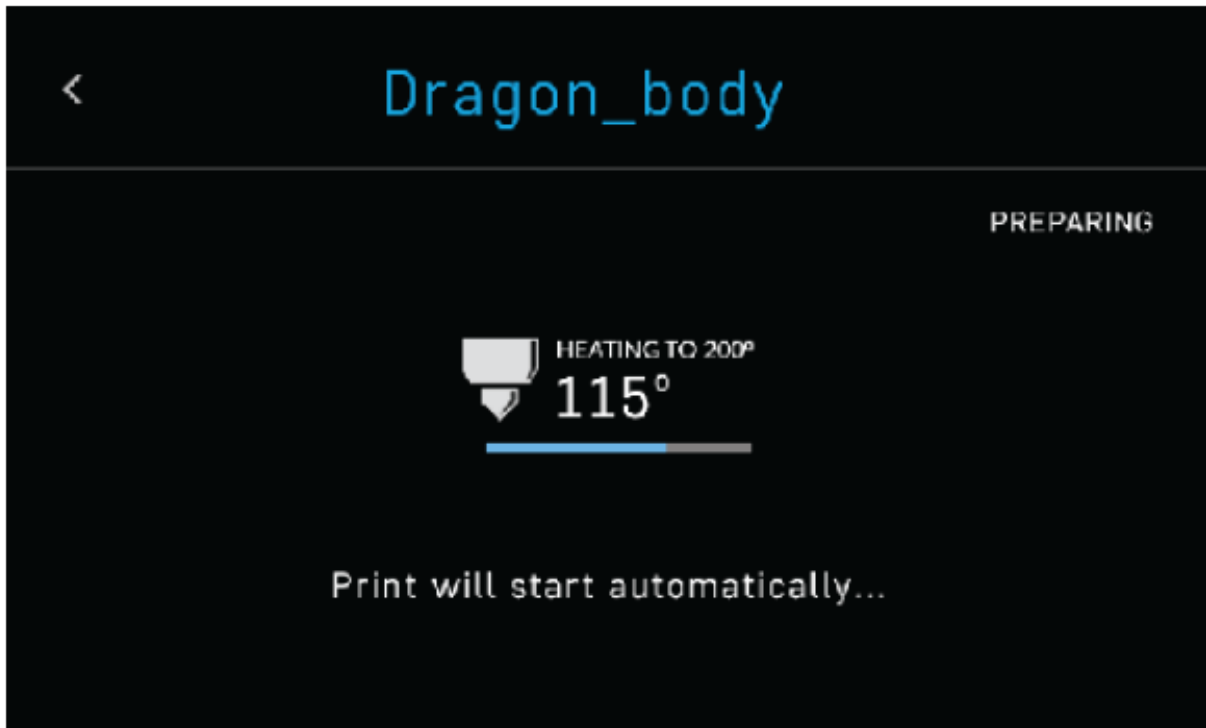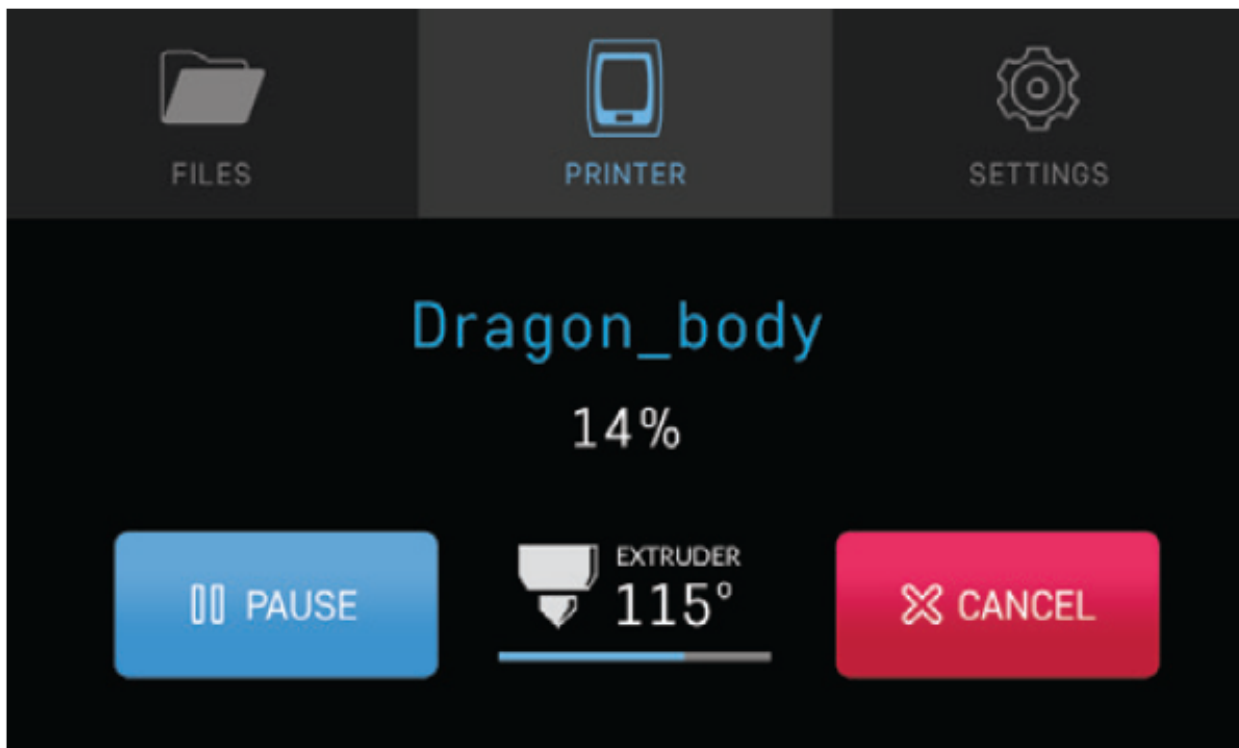### Removing the test print

When the test print is complete and cooled down, remove the print bed with the finished print still in place by lifting the bed up and away from the magnets. Slowly slide the print bed out of the machine with both hands. Now, carefully flex the print bed from several positions to help loosen the print from the print bed. Repeat this process until the most of the print is loose from the bed. Carefully remove the print from the print bed with your hand.
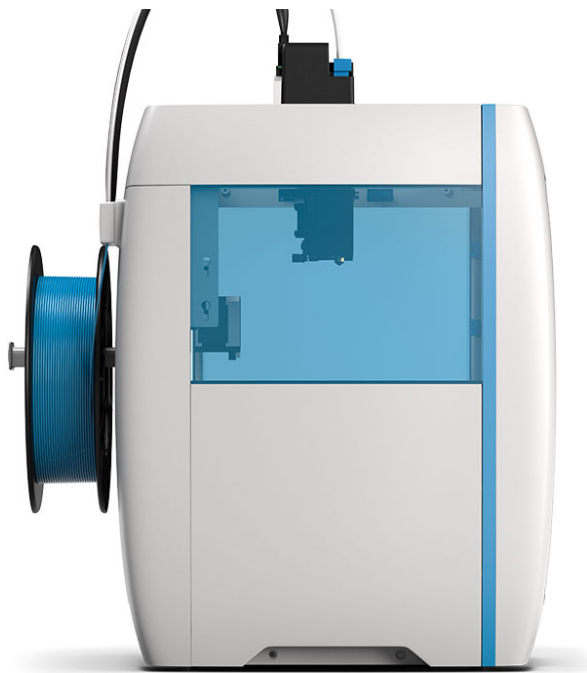
Note that if the print is not coming loose after flexing the print bed, put the bed back in Robo C2 and use the provided spatula to carefully remove the print at its borders. Then slowly work your way underneath the print until it's loose. Don't force the print loose by pulling it up directly up from the print bed, since this may cause your print to break.

Using Hotspot Mode

Your printer is capable of starting If no Wi-Fi signals are available for connection, you can use Hotspot Mode to emit a Wi-Fi signal from Robo C2 in order to connect to it wirelessly from your smart device. To access Hotspot Mode, do the following:

1. Select "Utilities" on the home screen of the Robo C2 touch screen

2. Select "Network" from the list

3. Select "Start Hotspot Mode" from the list

Operation

Display Screen

The color touch screen display on the front of your Robo C2 is the main access point for setting up, controlling, and reviewing all components of your 3d printer. You can navigate through the menus by touch or a stylus.

Files -Here you are able to navigate through your files, whether they are on a USB thumb drive or on the local hard drive internally.

Printer -The print screen is the default screen when printing. This will show you file printing, extruder temperature, a progress indicator, and pause and cancel buttons while in use.

Utilities -The Utilities menu offers a variety of options including: motor control, temperature control, z-offset wizard, network settings, and a way to update your printer

Setting the Z offset

Here we will calibrate Robo C2 by setting the Z-Offset and making sure your first layer is applied correctly. We will be covering three ways of zeroing in on your Offset. The first is the Z-Offset Wizard found in Utilities> Wizards; the second is the Fine Tune Wizard - also under Utilities> Wizards; the final is manually adjusting your Offset in the EEPROM manager.

What is "Z-Offset"? Simply, its the distance between your nozzle and your print bed when the print bed is at home (bottom of printer), which is technically known as a Home Offset. This offset can change by not seating your print bed correctly or a shifting hotend.

Z-Offset Wizard

From the home screen select "Utilities"
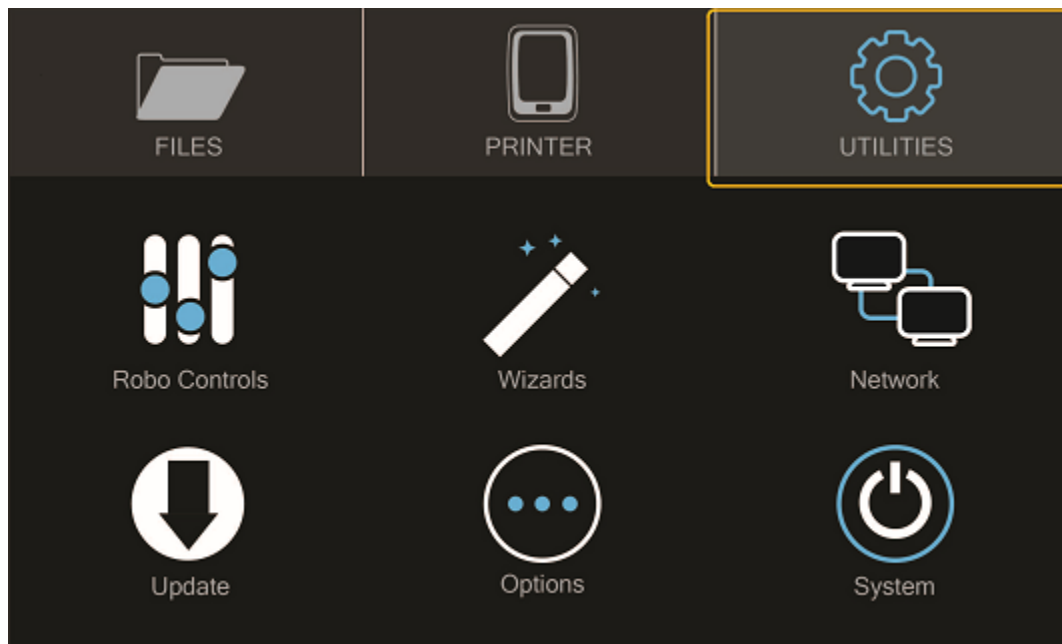
Then select "Wizards"

Next select "Z-Offset Wizard"

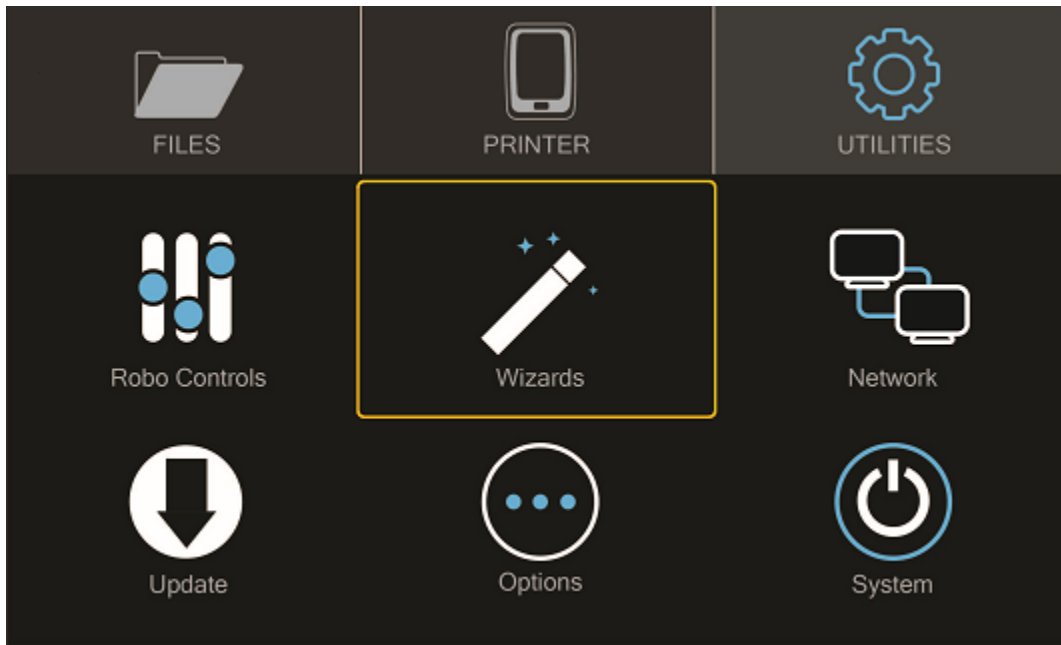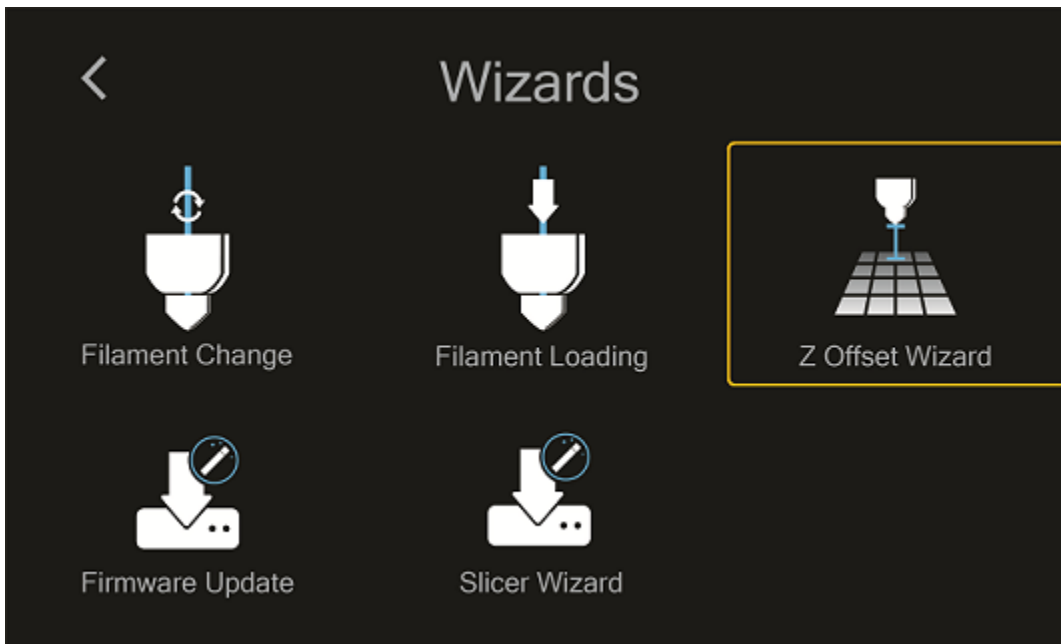Your printer will now home itself and get in position to set your offset

Follow the directions on the screen using your calibration card that came with your printer or a standard piece paper. Press on the 'Up' arrow to raise the bed up toward the nozzle of the printer. Slide the calibration card in between the nozzle and bed and continue pressing the 'Up" button until you feel slight resistance on the calibration card between the Nozzle and the print bed. Note: You still want to be able to slide the calibration card back and forth but with enough resistance that it is touching both the bed and the nozzle.

Select 'Finished". Your printer will calculate your Z-Offset and then press 'Finished' to complete setting your Z-

Offset.

Fine Tune Wizard

If you are experiencing the nozzle dragging (too low) or your prints are not sticking (too high), you can fine-tune your Z-Offset. It's a little more work, but you will tune your offset by actually printing on the bed to get the perfect height. Your Robo R2 will print a series of vertical lines, one at a time. Between each pass you can increase or decrease the Z-Offset value as needed. To use the fine-tune offset wizard, follow these steps below:

Note: It is very important to make sure that the print bed is level by adjusting the thumb screws below the print bed before starting this wizard.

1. To start, select 'Utilities' from the home screen, then select 'Fine tune offset'. Select the material currently loaded in the printer. Then the wizard will ask you which corner you'd like to start from. This simply sets where the printer will start printing out the test lines. You can start from whichever corner you prefer.

2. Once the printer homes and positions itself to begin testing, you will see a visual reference on the screen to help you know what to look for in order to find an ideal Z-Offset value.

3. You will come to the "Adjust Offset" screen, where you can set the adjustment increment, move the bed up or down, and test the offset. We recommend testing the offset first so you can get a visual reference to fine tune the current offset. Move the bed up and down with the provided buttons on screen, and test with the 'test offset' button to see if it looks satisfactory.

4. When you've found a satisfactory Z-Offset value, press the forward arrow in the top right corner and select 'Save' to finish the wizard.

### Manually setting Offset in EEPROM Manager

If you are a printing veteran and are comfortable with manually setting your Offset, you can do so under Utilities> Options> EEPROM> Home Offset. In the "Z" screen you will see the value of your current Offset, as well as two arrows that will increase or decrease this value. The arrows are arranged so that they correspond with raising or lowering the bed. A smaller value brings the bed closer to the nozzle, while a larger value increases the distance away.

If your Offset seems close but prints are still not sticking, you can decrease the value by 0.1mm - 0.2mm and try again. Generally only small changes may be needed.
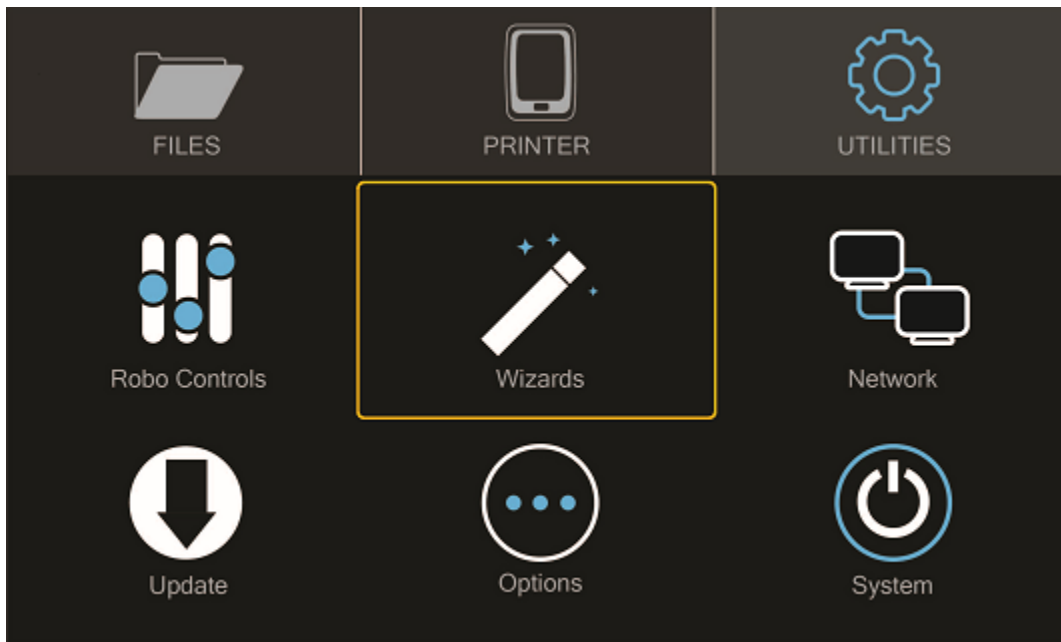
Loading and Unloading Filament
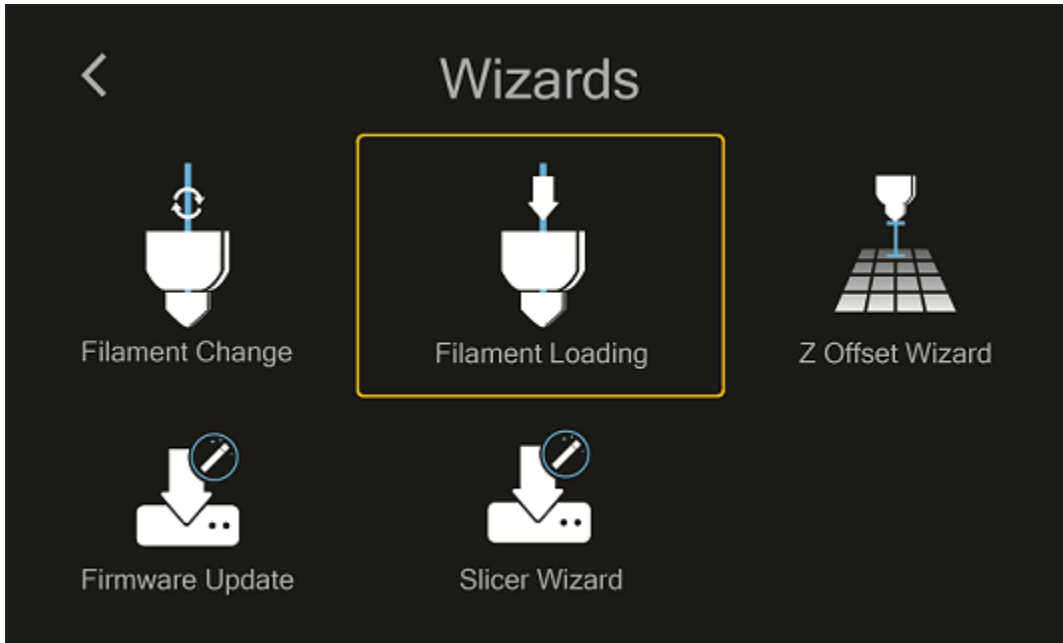
Loading Filament

From the home screen select 'Utilities'
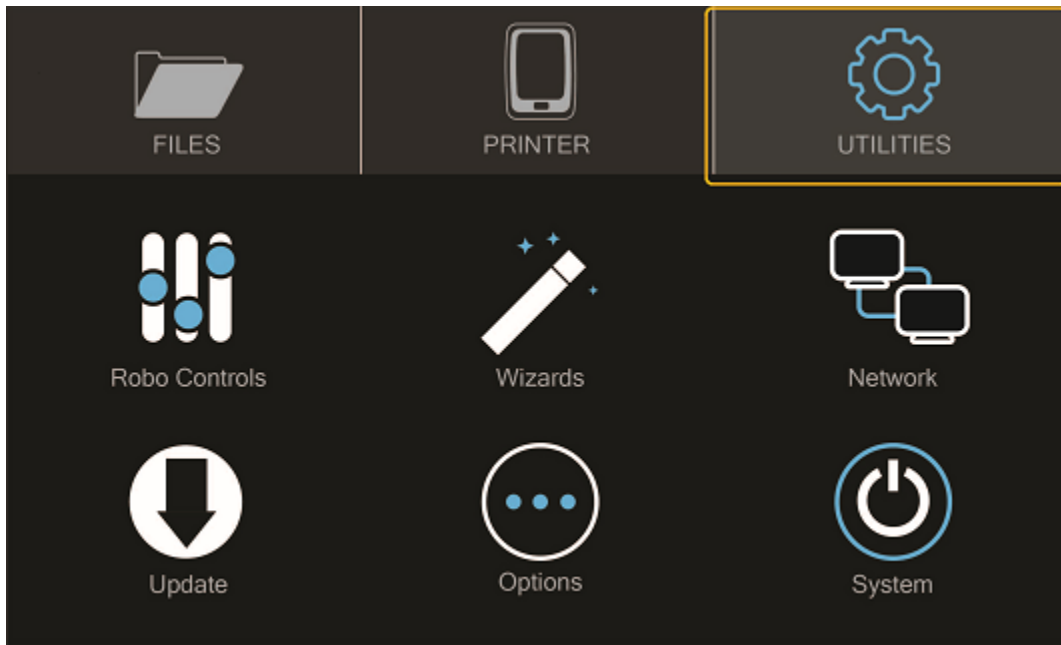
Next, select 'Wizards'

Select 'Filament Loading Wizard'

After you printer heats up, ensure you've cut the tip of the filament. Place the filament inside the feed hole, and press 'Next'.

The feeder gear will push your filament down, through the extruder, and out of the nozzle

Once you see filament coming out of the bottom of the nozzle, select 'Next' and 'Finished'

Unloading Filament

1. From the home screen select 'Utilities'

2. Next, select 'Wizards'

3. Select 'Filament Change Wizard'

4. After you printer heats up, the feeder gear will start to retract the filament from the nozzle

5. Once you see filament coming out of the top of the extuder, select 'Next' and 'Finished'

Start a print

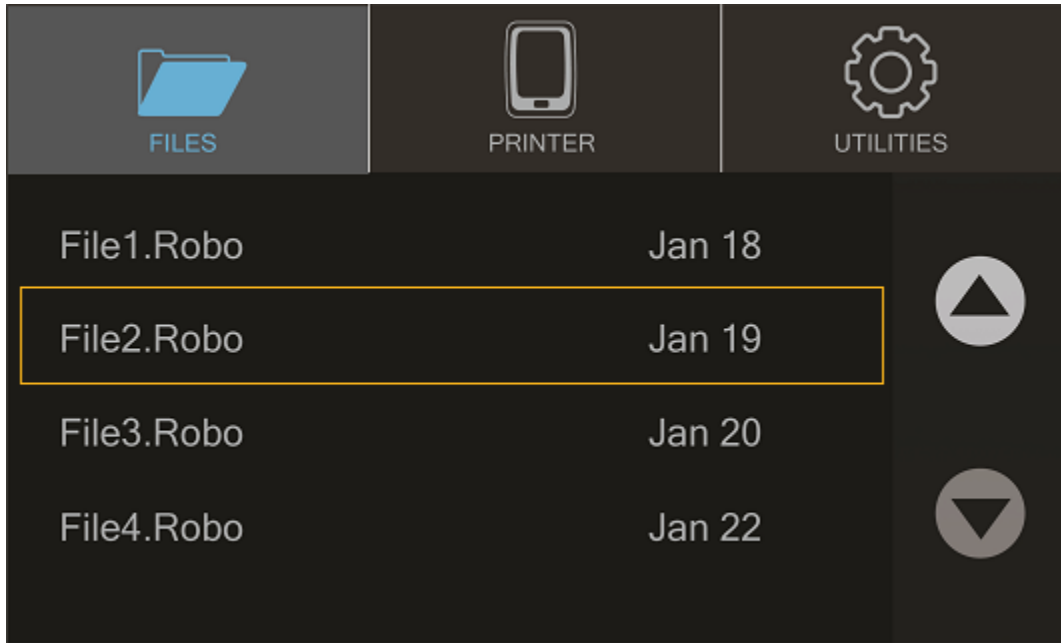Starting a print from your internal storage

Select 'Files' from the home screen
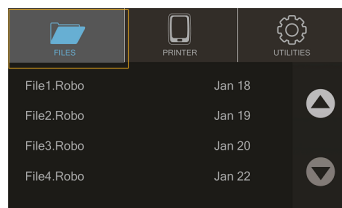
Select a file you would like to print

Now select 'Start' to print - and be sure to wait several second while the Robo C2 prepares to print the file
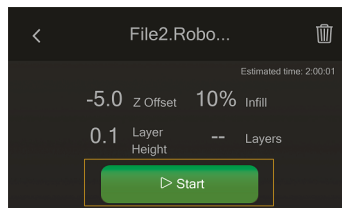
Note; you can select 'Pause' to pause your print, or you can select 'Cancel' to cancel your print
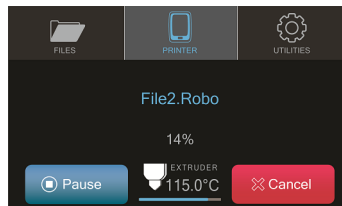
Note; you can change the nozzle temperature by pressing on the extruder and adding in your desired temperture

Starting a print from a USB flash drive

1. Insert the USB flash drive into the usb slot on the front of the printer

2. Select 'Files' from the home screen

3. Select which file you would like to print

4. Next, you can choose whether or not you would like to download the file directly to the printer or print directly from the usb

5. Finally, select 'Start' to start the print

Print Status

There are three ways to check on the status of your print while your Robo C2 is at work printing away

Screen

- While your Robo C2 is printing, you can simply check the status by selecting 'Printer' on the home screen. This will indicate the name of the file printing, what percentage done your print is, along with the nozzle temperature
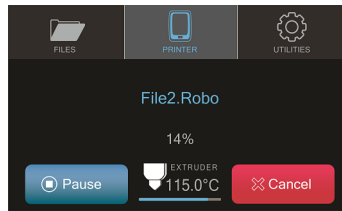
Robo App

- If you have the Robo App, you can check on the status of your print by selecting the printer under the 'Dashboard' tab This will indicate the name of the file printing, what percentage done your print is, along with the nozzle temperature

Web app

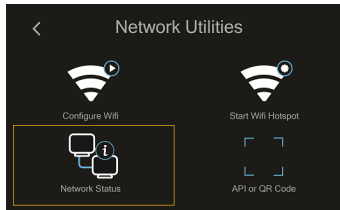- If you have a web browser on your computer or mobile device, you can check on the status of your print by navigating to its IP address in the navigation bar of the browser
- To see the IP address of your printer, select 'Utilities' from the home screen

- Next select 'Network'

- Then select 'Network Status' and note the IP address of your Robo C2

- Copy that number into your browser navigation bar, and it will bring you to a web app to see all things with your Robo C2

Using print bed adhesion

The Robo C2 has a print bed adhesion tape already installed with your printer. These will usually last about 10-30 prints depend

- In order to make sure you get good adhesion of your print, make sure to wipe the print bed adhesion with isopropyl alcohol before every print.

- If your prints have a hard time sticking to the bed, you can replace the print bed adhesion with the extras that came in your inclusions box or buy directly from www.robo3d.com store

Removing the print

1. When the Print is completed, remove the print plate with the finished print on it from the C2 by lifting the bed up and away from the magnets.

2. Slowly slide the print bed out of the machine and hold with two hands on opposite ends of the print plate.

3. Now, flex the print plate back and forth to create a gap in between the print and the print plate. Move to the opposite corners and repeat twisting until the majority of the print has come loose.

4. Carefully remove the print from the print plate with your hand.

Note: If the print is not coming loose after flexing the bed, use the provided spatula scraper carefully to skim the border of your print. Slowly work your way underneath the print toward the middle until your print comes loose. Do not try and pull the print from the plate directly up from the middle, as it may cause your print to break.

Setting Up Wifi

- To begin connecting to your Wi-Fi network, Select 'Utilities' on home screen.

- Select 'Network'.

- Select 'Configure WIFI'.

- Then select your Wi-Fi network and use the on-screen keyboard to enter your password.

- Once you're done, select CONNECT.

Your printer is capable of starting If no Wi-Fi signals are available for connection, you can use Hotspot Mode to emit a Wi-Fi signal from Robo C2 in order to connect to it wirelessly from your smart device. To access Hotspot Mode, do the following:

Hotspot Mode

1. Select "Utilities" on the home screen of the Robo C2 touch screen

2. Select "Network" from the list

3. Select "Start Hotspot Mode" from the list

4. Your Robo C2 is now casting it's own wireless network

Downloading the Robo App

From your iOS Device

1. Open the App Store app

2. On the bottom dock, tap on search

3. Enter "Robo 3D"

4. Tap on the Robo 3D app

5. Tap download on the right of the icon, and rate us 5 stars if you like it!

Connecting your iOS device to your Robo C2

Connecting via a local wifi network

1. Make sure your smart device is connected to the same wifi network as your Robo C2

2. In the 'dashboard' screen of the Robo App, tap '+Add a Printer' in the middle of the screen

3. Select 'Scan for Printer Name/IP'

4. A pop up will appear with all of the printers on the same network as your smart device, go ahead and select which printer you would like to add (your printer has a unique name, example - Curious Tesla, or Brilliant Einstein). (You may look on the back of your printer and find out which name your printer has been given).

5. Now you will need to scan the QR code on your screen to fully connect the 3d printer to your smart device.

   - On the screen of your machine, select 'Utilities'

   - Select 'network'

   - Select 'QR Code'

6. Tap on 'Scan Printer Barcode for Key'

7. Point your camera at the barcode and wait for the app to recognize the 3d printer

8. Tap 'add printer' at the bottom of the screen

9. Congratulations, you have now added your Robo C2 to your app

10. note that you can add multiple machines to the same app, and control each one independently

Connecting via Hotspot Mode

1. Make sure that you are connected to the wifi signal that the machine is emitting

2. Follow steps in the previous section to successfully connect your printer to the app

Updating Your Printer

Make sure to update your printer to grab the benefits of all the latest Robo has to offer, as well as making sure your Robo C2 performs to the best of its ability.

- Select "Utilities' from the main screen
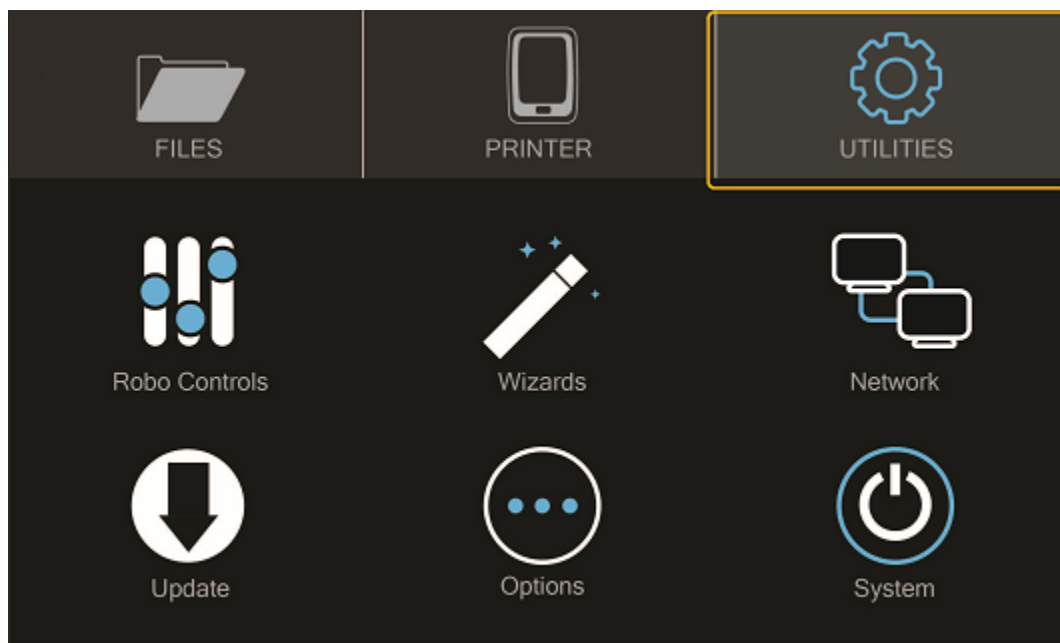
- Select 'Update'
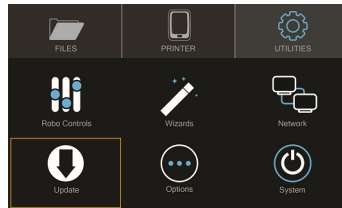
- Check to see if you have the most up-to-date software. If not, go ahead and update to get the best use from your Robo C2

Maintenance

Remember, a well-maintained Robo C2 is a happy one!

Be sure to check for the following before every print:

- Make sure the print bed is free of any/all objects
- Make sure nothing is blocking the extruder head from moving freely around the build area.
- Make sure no objects are below the print bed that could prevent it from freely moving up and down.
- Make sure there are no broken pieces of filament within the extruder.
- Make sure all cords are neatly tucked away to avoid unnecessary accidents while the printer is in operation.
- Make sure all of your software is up to date (on screen prompts will let you know when updates are available, but only if you are connected to a Wi-Fi network).

And to ensure the best 3D printing experience now and in the future, use the following Robo C2 maintenance tips regularly (every 6-12 months, depending on use):

Cleaning the feeder gear

Steps to take to clean your feeder gear

1. First, turn off your machine and remove the extruder cover.

2. Once that is off, go ahead and use a toothbrush to brush the feed gear to remove debris.

3. Rotate the feeder gear by turning the motor shaft by hand and repeat steps until the entire feeder gear is cleaned.

4. Place the extruder cap back onto the top of your extruder assembly and plug in Robo C2.

Lubricating the axis

There are two types of linear rods, and two types of bearings in Robo C2, and they must be lubricated differently to ensure best prints.

White Lithium Grease

- The rods that carry the extruder head are ball bearings and should be lubricated with a white-lithium grease to ensure smooth travel.

- The z-axis lead screw also needs a white lithium grease for lubrication. Dap a small amount onto the rod, and let the printer move up and down from the next print to lubricate itself.

3-in-1 Oil

- The x and y brackets have a smooth bushing inside of them, and need to be lubricated once every 2-4 months. Wipe down the build up that these bearing produce on the rods over time with a cleaning agent. The bearings can be greased with a few drops of 3-in-1 oil, or sewing machine oil to lubricate sufficiently.

Cleaning the print bed surface

- The Robo C2 print bed surface is a sheet of black painters tape. Make sure to clean it with rubbing alcohol to ensure your print sticks to its surface.

- After 15 or 20 prints, you may need to replace this sheet if you see that your prints are not sticking to it. Ensure that the print sheet is laid completely flat on the build platform, and that it is flush and level across the surface.

- When you run out of print surfaces, you can order more at www.robo3d.com.

- When removing and replacing the entire print bed, double check that its magnets align with the magnets on the platform to ensure it is seated correctly. Build platforms that aren't seated correctly will result in failed prints.

Replacing your Hotend Nozzle

Follow these steps to remove your hotend nozzle

1. Make sure to turn your Robo C2 off, and unplug the power cord from the back of the machine

2. Remove the magnetic extruder plate to expose your entire hotend and wires

3. The allen screw located on the front aluminum plate is the tensioner that holds your hotend in place. It is likely that this has come loose. Grab the allen wrench out of the the tool kit that came with your printer.

4. Loosen your hotend by turning the tensioner screw counterclockwise a few turns.

5. When the hex screw is loose enough, your hotend should be able to fall out of its housing

6. Carefully pull the wires by hand to remove them from their housings

7. Place new hotend in by reversing these steps

8. Push the hotend as far as it can go up into the seated ring and make sure it is flat against it.

9. While you are holding it there, screw the allen screw clockwise until you feel a good amount of resistance and the hotend cannot be pulled out with your hand. Make sure you align the heater block to be parallel with the front of the extruder so the hotend cover will lay flat against the magnets when reinstalling.

10. Turn the printer back on and test.

Troubleshooting

Troubleshooting

Print Not Sticking to Bed

If you are experiencing problems with the plastic not adhering to your print bed, there are a few things that can be done;

1. **Update**

- Make sure to update your printer to the latest version of RoboOS. This will ensure that you have the latest version of the firmware that is flashed to your controller board, and have the most up-to-date and tested version of build plate leveling.

2. **Re-run the z-offset wizard**

- Re-running the z-offset wizard will make sure that your bed is properly leveled. To do this, on the menu screen go to Utilities> Wizards>Z-offset Wizard.

Use the fine tune offset wizard

- If you are experiencing the nozzle dragging (too low) or your prints are not sticking (too high), you can fine-tune your Z-Offset. It's a little more work, but you will tune your offset by actually printing on the bed to get the perfect height. Your Robo R2 will print a series of vertical lines, one at a time. Between each pass you can increase or decrease the Z-Offset value as needed. To use the fine-tune offset wizard, follow these steps below:

- Note: It is very important to make sure that the print bed is level by adjusting the thumb screws below the print bed before starting this wizard.

To start, select 'Utilities' from the home screen, then select 'Fine tune offset'. Select the material currently loaded in the printer. Then the wizard will ask you which corner you'd like to start from. This simply sets where the printer will start printing out the test lines. You can start from whichever corner you prefer.

Once the printer homes and positions itself to begin testing, you will see a visual reference on the screen to help you know what to look for in order to find an ideal Z-Offset value.

You will come to the "Adjust Offset" screen, where you can set the adjustment increment, move the bed up or down, and test the offset. We recommend testing the offset first so you can get a visual reference to fine tune the current offset. Move the bed up and down with the provided buttons on screen, and test with the 'test offset' button to see if it looks satisfactory.

When you've found a satisfactory Z-Offset value, press the forward arrow in the top right corner and select 'Save' to finish the wizard.

3. **Replace the build plate adhesion**

   • After some time, the build plate adhesion can become unsticky and plastic will no longer be able to stick to it. Replace this with the black tape that came with your printer or order more from our store at www.robo3d.com. Unpeel the used build tape from the build plate, and replace with a new, fresh piece. Remember to re-calibrate your offset by selecting the z-offset wizard from the utilities menu.

4. **Using a raft**

   • Make sure to use a raft on all of your parts when preparing your print. This will allow a bigger surface area of plastic to stick to the bed, and can compensate for a small amount of unlevel bed.

5. **Lower fan speed**

   • If your prints are still curling after the above solutions are attempted, you can try lowering your fan speed to stop the plastic from cooling too fast and shrinking, causing warping. To do this go into your desktop software Cura for Robo. Under the settings> speed> fan speed and turn this setting down to 30%.
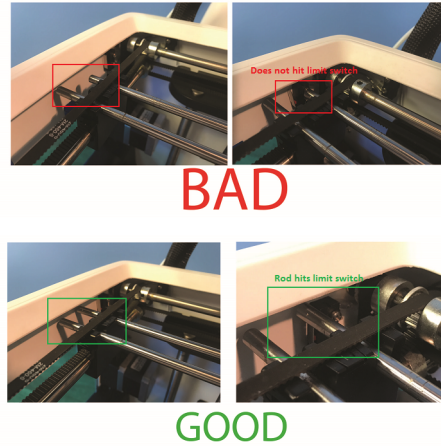
6. **First Layer Height and Width**

   • Set your first layer height to 0.3mm. This will allow more plastic to flow out of your nozzle, allowing a better adhesion to your print bed. You can also try making your first layer width of plastic higher. Usually a first layer width of 1mm is optimal - this will extrude more plastic at a lower layer height to allow more surface area of plastic bind to the print bed.

Grinding Noise when Starting a Print

If you are experiencing a grinding noise when trying to start a print, or when your printer is homing, there are some things to take a look at to make sure your printer hardware is in the right place. Sometimes during shipping or traveling, some things can come loose, so lets check those.

1. **Rods are out of place**

   • Make sure your rods are in the correct position. While moving to the home position, these rods will hit switches to let the printer know it is in the 0 position. If these rods have been moved out of the way, they will not hit the switch, and the printer will try and continue to travel past its 0 position, resulting in a grinding noise. The picture below will show you how they will look out of place, and also how they should look to work correctly.
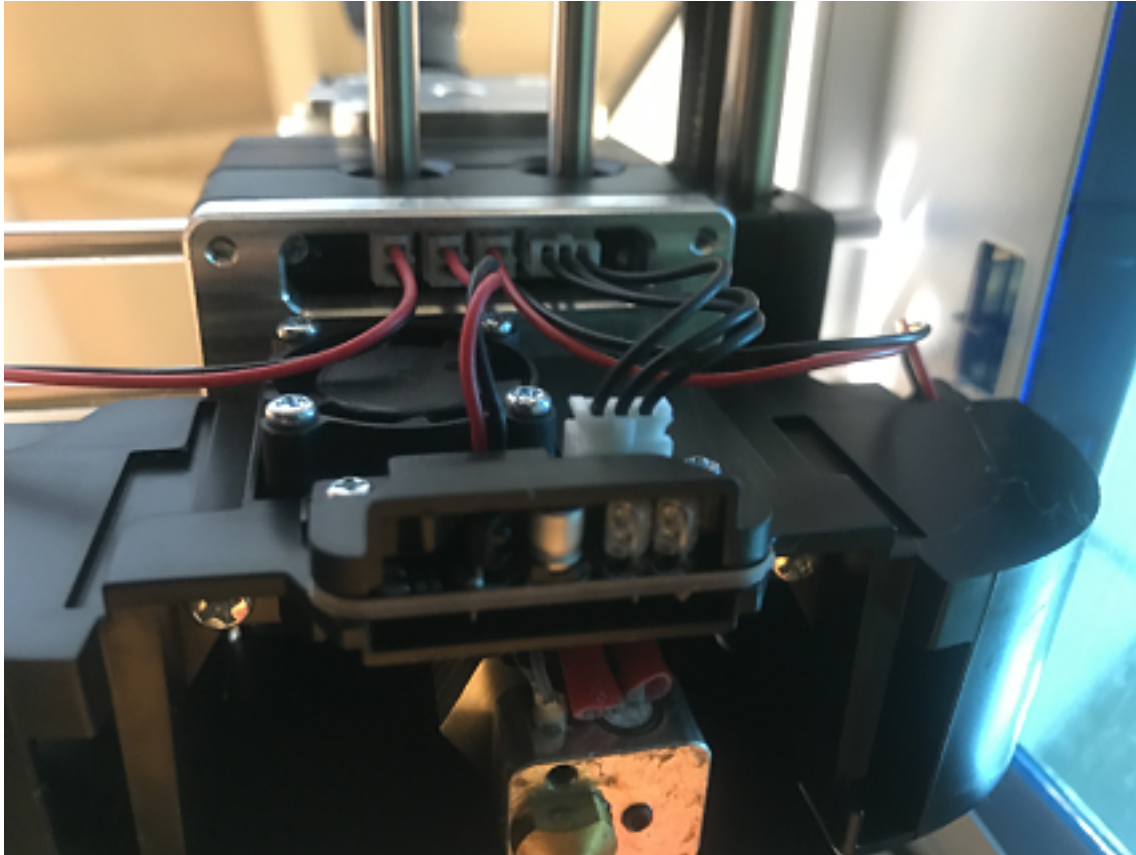
- To correct these, hold the plastic bracket the end of the rod is being held by with one hand. With your other hand, grab the rod that is furthest to the back left of the printer and slowly slide it into place (left on the x axis, away from you (back) on the y axis).

- Note: Make sure that the rod is not directly touching the side wall of the printer when placing back into its position. Once you have slid the rod over to the edge of the wall, back it off just slightly so it is not rubbing the side wall when moving back and forth.
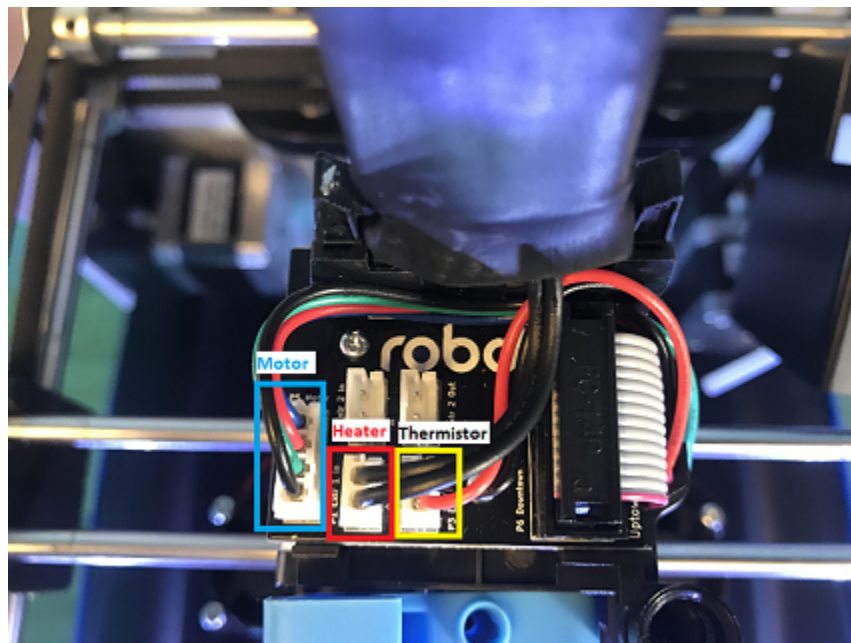
Material Not Extruding

1. **Nozzle isn't heating up**

- Make sure all of your wiring is plugged in and firmly mounted in its correct brackets.
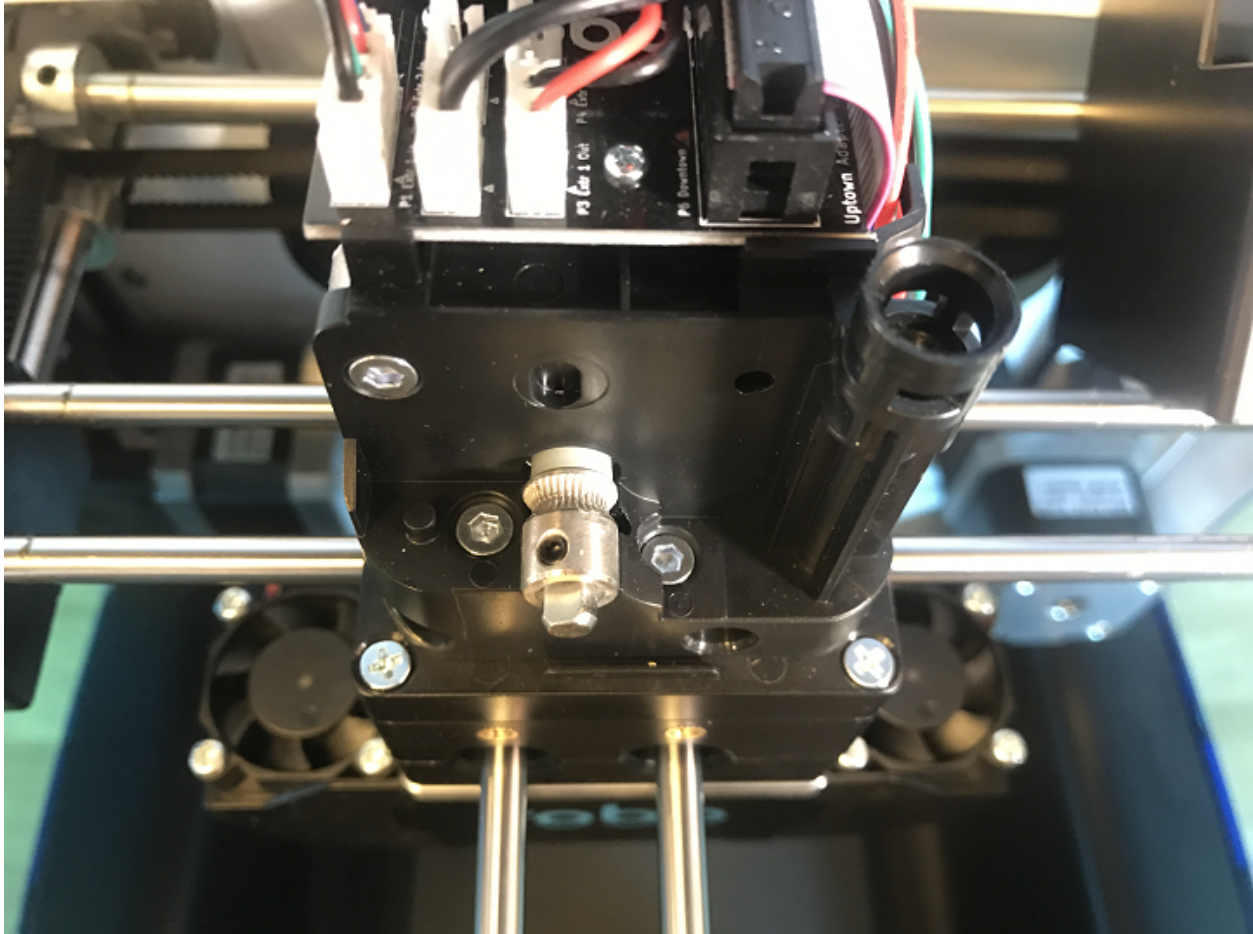- Nozzle Wires should be plugged into the correct terminals on the underside of the extruder.

- Wires should be plugged in and seated correctly on the top electronics board at the top of the extruder. Remove the extruder cover then check the wires.

2. **Drive Gear is not cleaned**

- Turn Off the Printer

- Take off the extruder cover

- Use a toothbrush to clean this drive gear of debris shown in the picture

- Turn the shaft, and continue scrubbing until it is cleaned of debris
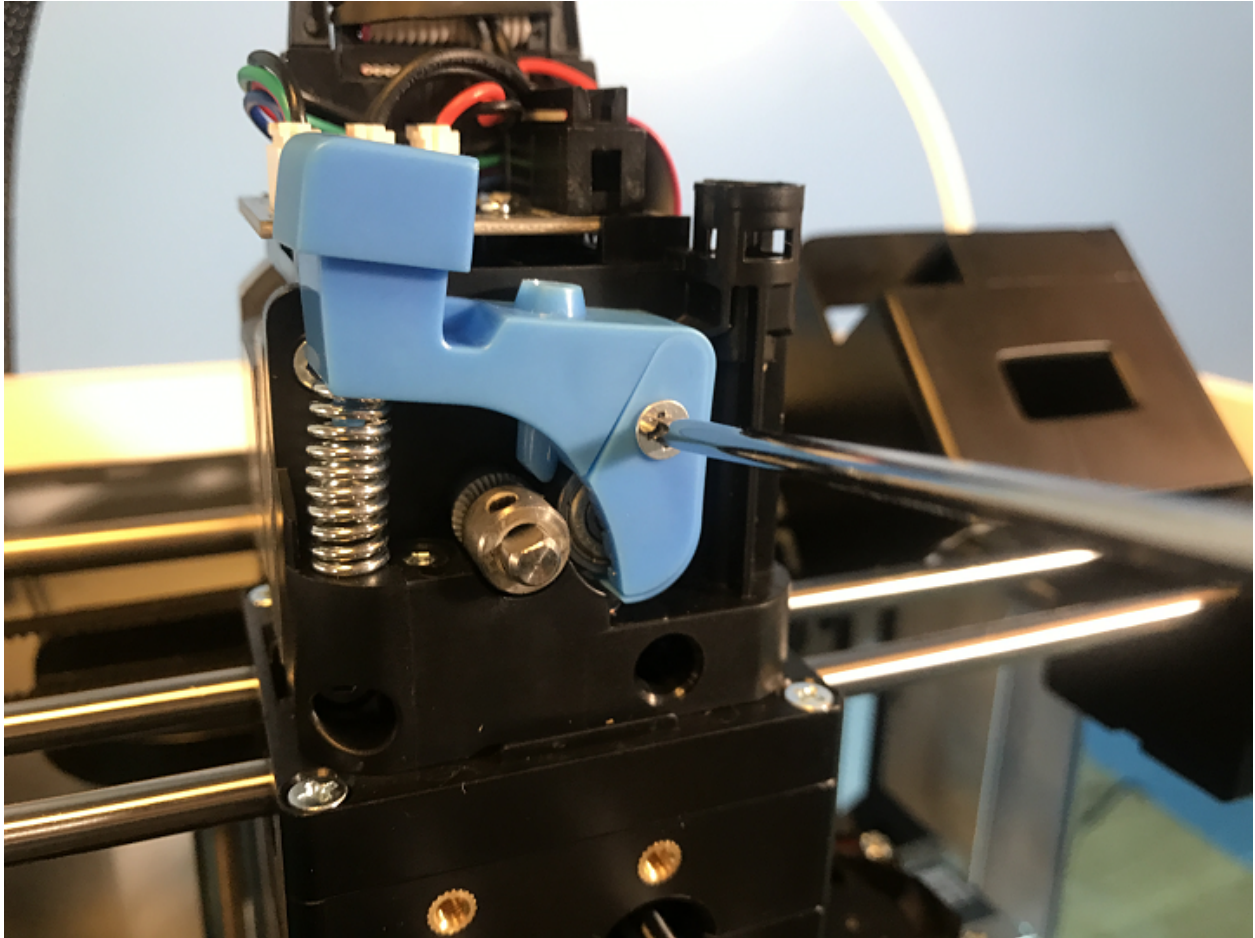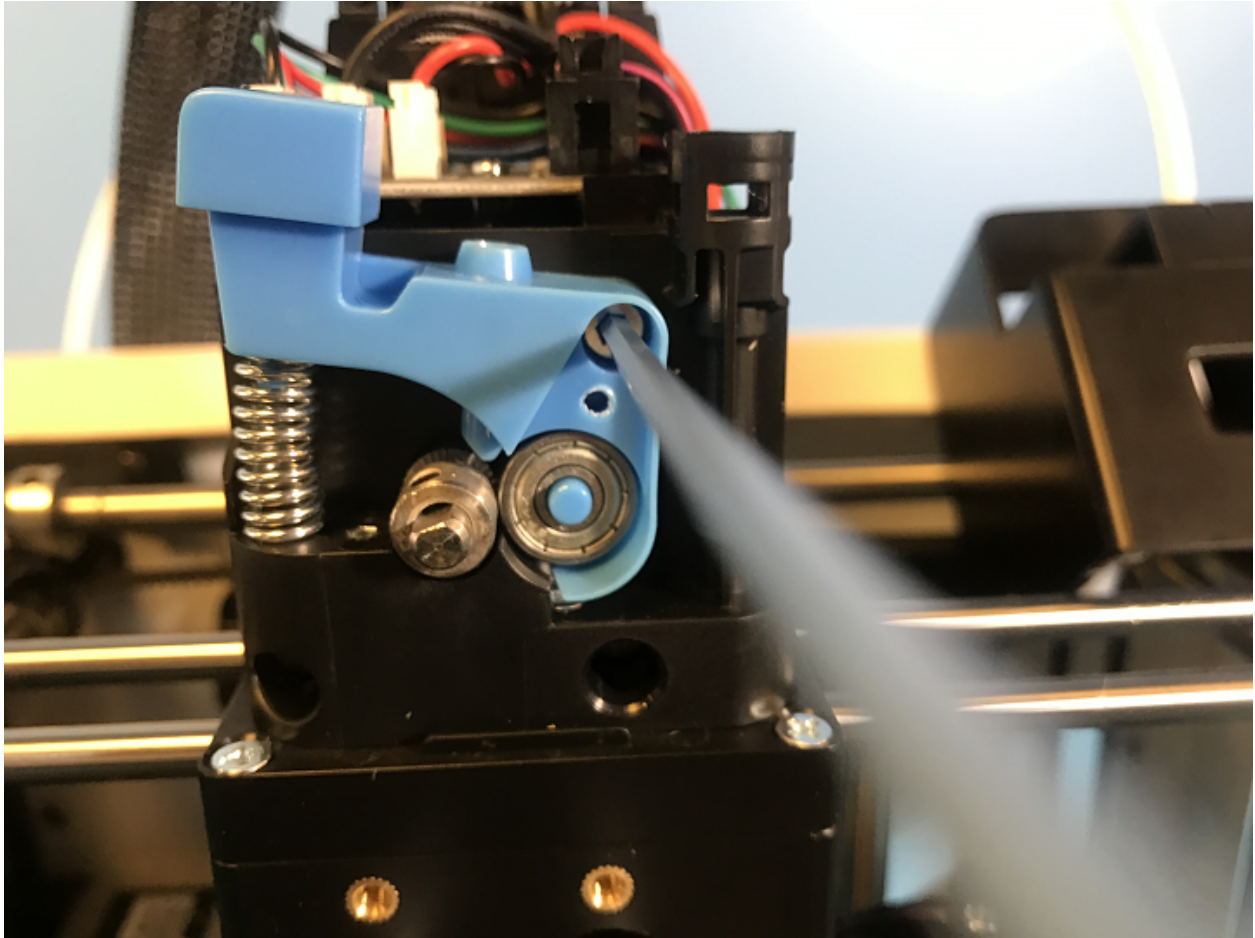

3. **Material is stuck around the spool**

- Every so often, the material can get stuck on the spool holder or in the spool itself

- If the material is tangled on the spool holder, unwind about 12 inches or 25 cm of filament to loosen it, then reel it back around the spool neatly, trying not to cross over plastic as it spools onto itself

- If the material is tangled within the spool, you will need to unwind some the spool and see where it is crossing over itself. Cut the plastic where you find it is crossing over itself, and feed it back into the machine.

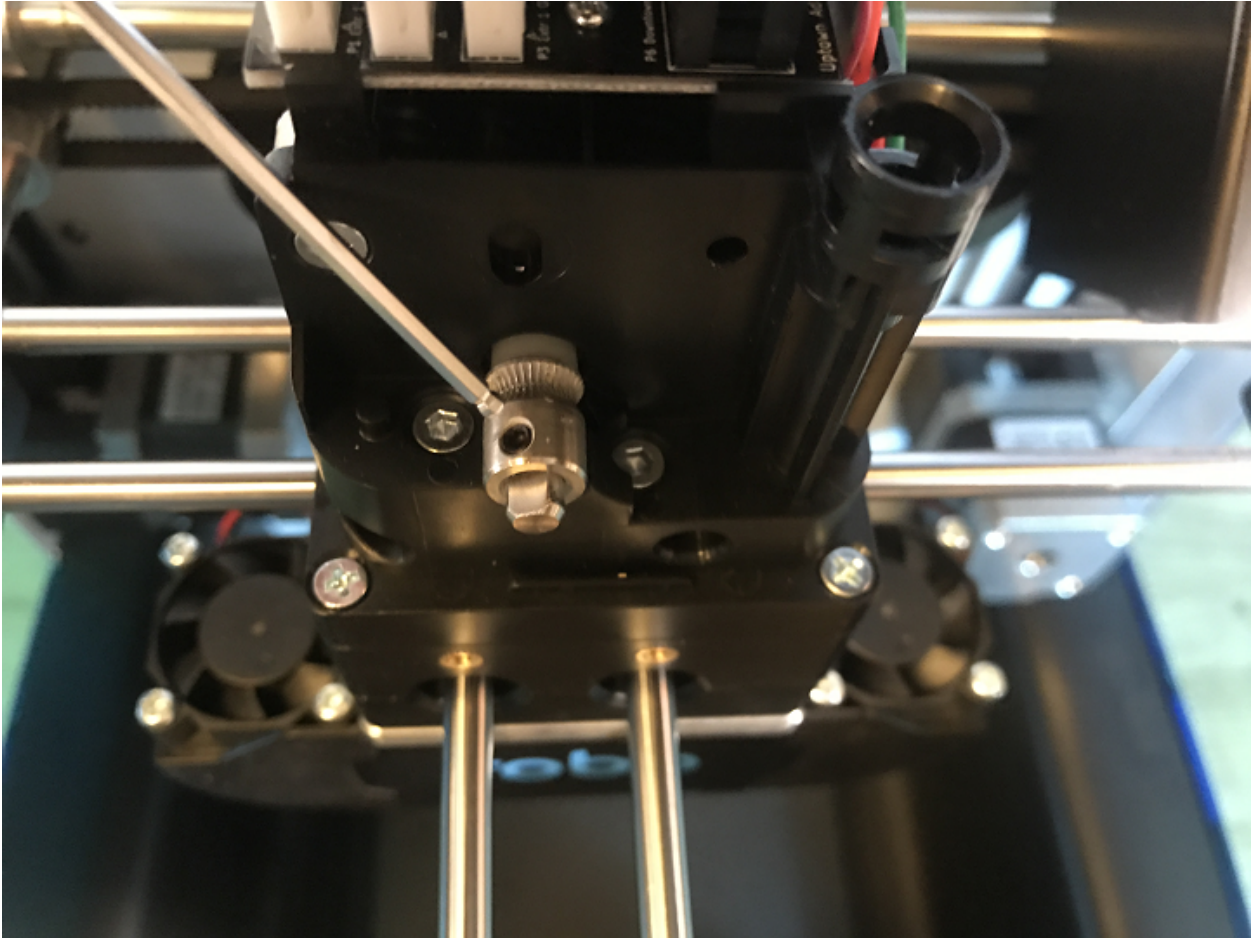4. **Drive Gear is not tightened down**

- If your motor shaft is turning, but the drive gear is not, it means you need to tighten down your drive gear.

- To do this, turn off your machine and remove the extruder cover.

- Next, unscrew the extruder tensioner cover with a screwdriver.

- Take the allen wrench that came in your tool kit, and unscrew the bolt connecting the extruder tensioner to the extruder.

- Once that is off, go ahead and use the smaller allen wrench to screw the drive gear set screw tight. Make sure it is seated all the way up to the spacer.

- Now reverse these steps to put it all back together

Shifting Layers/bad print quality

1. **Loose Pulleys**

- If the pulleys on the X and Y axis come loose, you may need to tighten down the set screws to hold these in place.

- Move the Extruder into the center of the printer, and find the set screws on the pulleys in the corners of the axis. There are a total of 10 pulleys that you must check (2-3 in each corner), and each has 2 set screws to make sure to tighten down.

2. **Unaligned Axis**

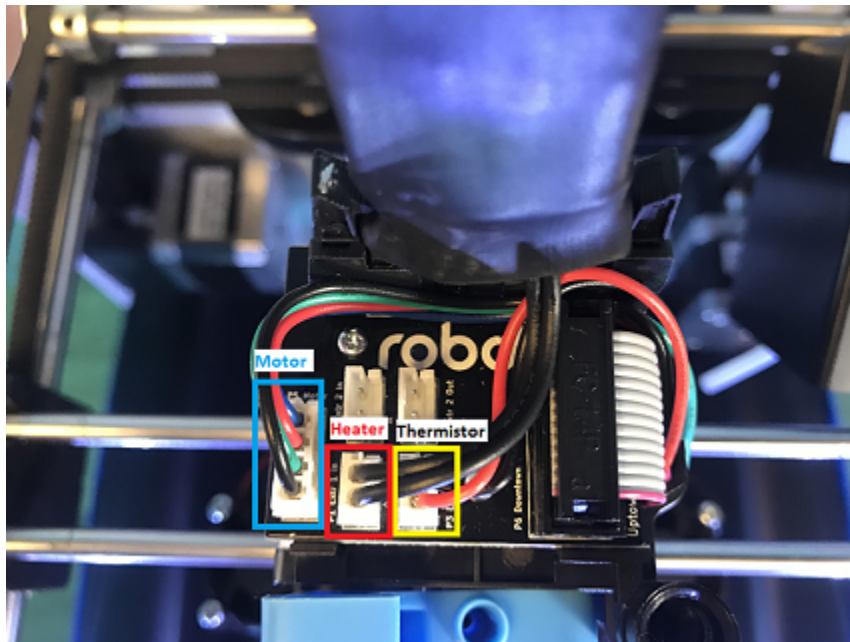- Re-align your axis to be perpendicular to each other. To do this, use the orange clips that came with your printer.

- Unplug your machine, and move your extruder to the front right corner.

- Using the orange rod stabilizers, attach one at each corner of the gantry, completing a square. This should re-align your brackets and revive your print quality.

Hotend Clogged

1. **Not Heating up enough**

- Make sure all of your wiring is plugged in and firmly mounted in its correct brackets.

- Nozzle Wires should be plugged into the correct terminals on the underside of the extruder.

- Wires should be plugged in and seated correctly on the top electronics board at the top of the extruder.

2. **Material stuck below the Drive Gear**

   • If your motor shaft is turning, but the drive gear is not, it means you need to tighten down your drive gear.

   • To do this, turn off your machine and remove the extruder cover.

- Next, unscrew the extruder tensioner cover with a screwdriver.

- Take the allen wrench that came in your tool kit, and unscrew the bolt connecting the extruder tensioner to the extruder.

- Once that is off, go ahead and use the smaller allen wrench to unscrew the drive gear set screw loose.

- From here, you can use the tweezers that came in your tool box to grab onto the filament that is stuck. Be sure to heat up the hotend before trying to pull out the filament.

3. **Hotend fan is not on**

- If your hotend fan is not on (the third fan on the back of the extruder), then it is most likely your hotend isnt being cooled enough and will jam your nozzle. The fan is most likely unplugged.

- Take the red and black fan wires, and look for the terminal plug that is empty on the back underside of the extruder.

Hotend Falling Out

If you are experiencing your hotend falling out from the extruder, there is a simple fix that will lock your extruder in place

1. **The tension screw is not tight enough**

- The allen screw located on the front aluminum plate is the tensioner that holds your hotend in place. It is likely that this has come loose. Grab the allen wrench out of the tool kit that came with your printer.

- Make sure to turn off your printer.

- Loosen your hotend by turning the tensioner screw counterclockwise a few turns.

- Push the hotend as far as it can go up into the seated ring and make sure it is flat against it.

- While you are holding it there, screw the allen screw clockwise until you feel a good amount of resistance and the hotend cannot be pulled out with your hand. Make sure you align the heater block to be parallel with the fron of the extruder so the hotend cover will lay flat against the magnets when reinstalling.

- Turn the printer back on and test. If it still falls out, try tightening the allen screw even more.

Drive Gear aligning and tightening

If your drive gear has come loose and/or it is not aligned with the filament to hotend pathway, take these steps to realign and retighten:

Note: Make sure there is no filament loaded into the extruder. If there is, heat up your extruder and remove any filament.

1. Remove your extruder cover.

2. Turn the extruder motor shaft so that the flat surface of the shaft is pointing at 10 o'clock (see picture below).

3. Use your allen wrench to loosen the set screw on the drive gear so that it is able to freely spin on the motor shaft.

4. Now we are going to align and tighten your drive gear. Grab a small length of filament to help you through this.

5. Apply pressure to the filament lever arm and insert the filament through the filament feed hole.

6. Push and pull the filament, while making sure it is centered with the drive gears grooves, until the drive gear is in position (it will self align when the filament starts passing through it).

7. Align the set screw with the flat surface of the motor shaft. Visually check to make sure the groove on the drive gear is aligned with the hole going down to the hotend.

8. Tighten the set screw on the flat surface of the motor shaft.

9. Replace your extruder cover and you are all set.

Screens Goes White or Doesn't Work

If the screen is not working there is a few steps that need to be taken to solve the issue.

1. **Loose Wiring**

- First, remove the black bezel (which is the black plastic holding the screen) by gently pulling inward from the inside edge of the plastic. From here you will be able to see the electronics of the printer.

- Next, raise your bed by manually turning the long threaded z screw until the bed is mostly all the way up. Now remove the internal lid under the bed that says Robo on it for better access to the electronics.

- Here, you will see a ribbon cable attached that attaches the screen to a green electronics board. On the screen side, detach the screen cable and re-attach. Do the same thing for the green electronics board side.

- Next, find the micro usb cord that is plugged into the bottom right corner of the green electronics board. Unplug this and plug it back in.

- Finally, follow the micro usb cord you just unplugged and follow it to the other end on the black board. It should be plugged in on the black electronics board in a terminal labeled 5V right next to Fan2 plug in. Unplug and re-plug this back in.

2. **If your screen is still broken**

- Contact customer support at www.robo3d.com/support

Hotend Cover is falling off

If your hotend cover is falling off when printing, or is teetering side to side and not flat against the extruder, more that likely your hotend is blocking it. To fix this, follow these steps:

1. Remove your hotend cover.

2. Loosen the hotend tensioner screw slightly. You do not need to loosen it completely, only enough to be able to rotate the hotend while it is still inside its mount.

3. Align the heater block to be parallel with the extruder carriage. Make sure the heater block is not turned in such a way that it is sticking out past the extruder carriage.

4. Tighten the hotend tensioner screw. Remember to not overtighten this screen, as it may be hard to perform maintenance later.

5. Replace the hotend cover

Filament Runout Sensor Error

If you see an error while printing that lets you know you are out of filament, but you are not, check the next couple of steps:
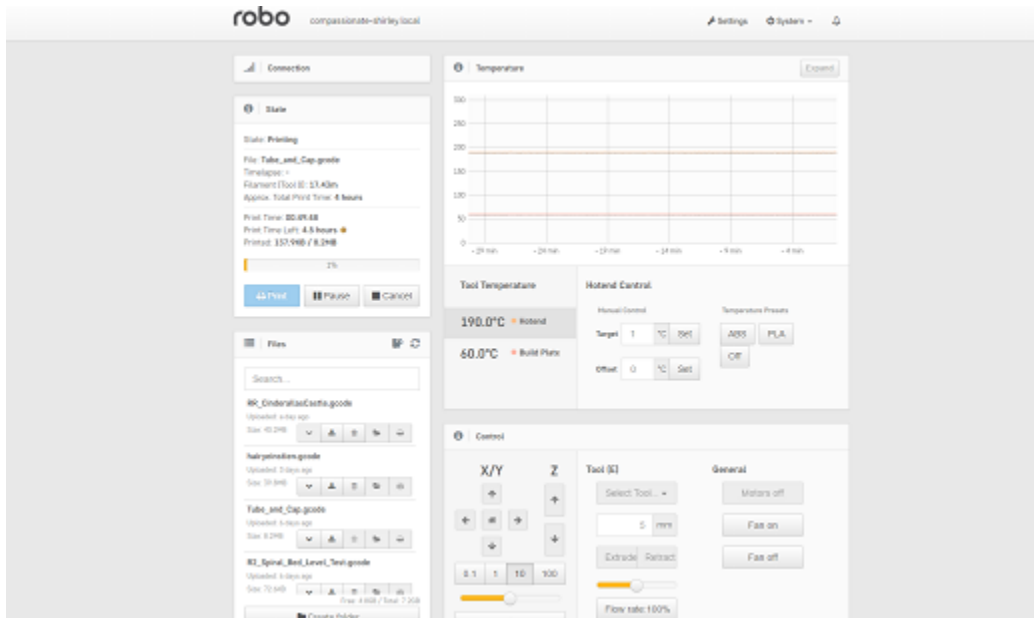
1. **Make sure you are not bypassing the filament block**

   - In order for the filament sensor to work correctly, the filament needs to be run through the filament block on the backside of your printer. The filament sensor is located in this black block and will give an error of no filament if the filament is being run on the outside. Make sure you run all filament through this block to ensure the filament sensor will detect your material.

2. **Disable the filament runout sensor**

   - If the filament runout sensor is still reading that there is no filament inside your printer, even though it is going through the filament sensor block, you can disable this software setting via the web browser. Take these steps to disable the filament sensor:

1. Connect your printer to Wi-Fi. Go to Utilities> Network> Configure Wi-Fi and connect your printer.

2. Once you are successfully connected to the internet, lets find your IP address. Go to Utilities> Network> Network Status. Here you will find the IP address.

3. Next, open up your browser (such as Google Chrome, or Mozilla Firefox), and enter that same IP address into the address bar. You should see a dashboard come up that looks like this:

4. Click on the 'Settings' button in the top right of the interface.

5. A settings window will pop up. On the left hand side, scroll down and select the item labeled 'Plugin Manager' under 'Octoprint' about half way down the list.

6. You will now see a list of plugins that are installed onto your printer. From here click the next page over until you see the line item labeled 'Filament Sensor'. Click on the small black button to the right of the item (circled in green in the picture below).

7. Once you have de-selected this plugin, you will need to restart Octoprint. A pop up will show on the top right of the interface - click 'restart now'. You should be good to print without filament runout detection interruption.

❶ Plugin "Filament Sensor" disabled
The plugin was disabled successfully, however
a restart of OctoPrint is needed for that to take
effect.

Restart now

Firmware Update

This will walk you through the steps to update your firmware from the touchscreen and a USB drive.

1. Make sure you have the latest firmware. Download here: C2_Firmware.

2. Unzip the file and place the file onto a USB drive.

3. Place the USB drive into the USB slot on the front of your Robo C2.

4. On the touchscreen, navigate to Utilities > Options > Firmware Update
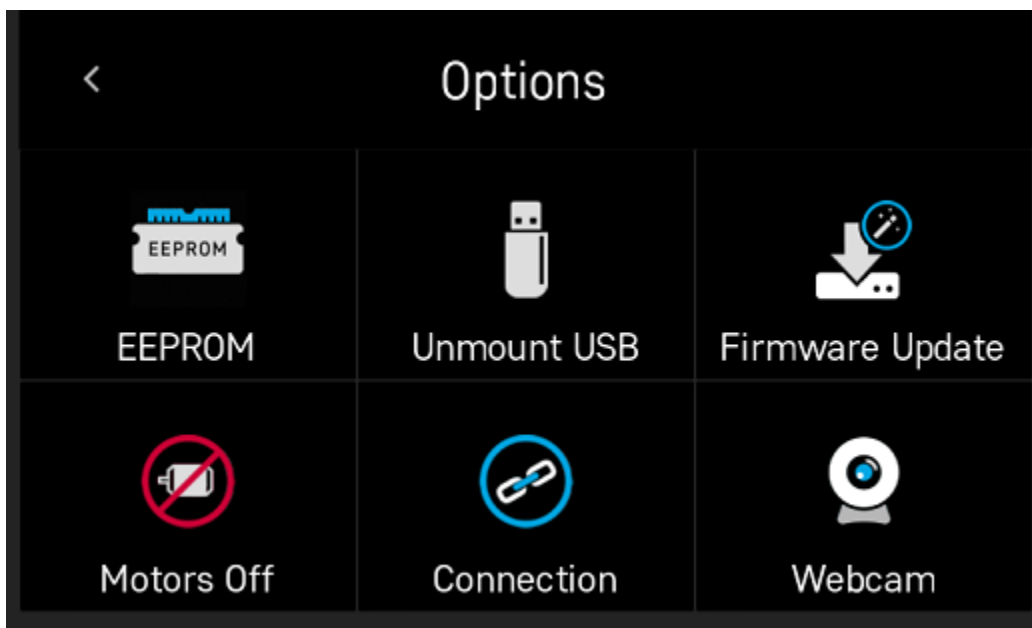
5. The next screen will show the .hex firmware file from your USB drive that you put on in step 2.

6. Click on the file name, and click 'Start' to start your firmware update.
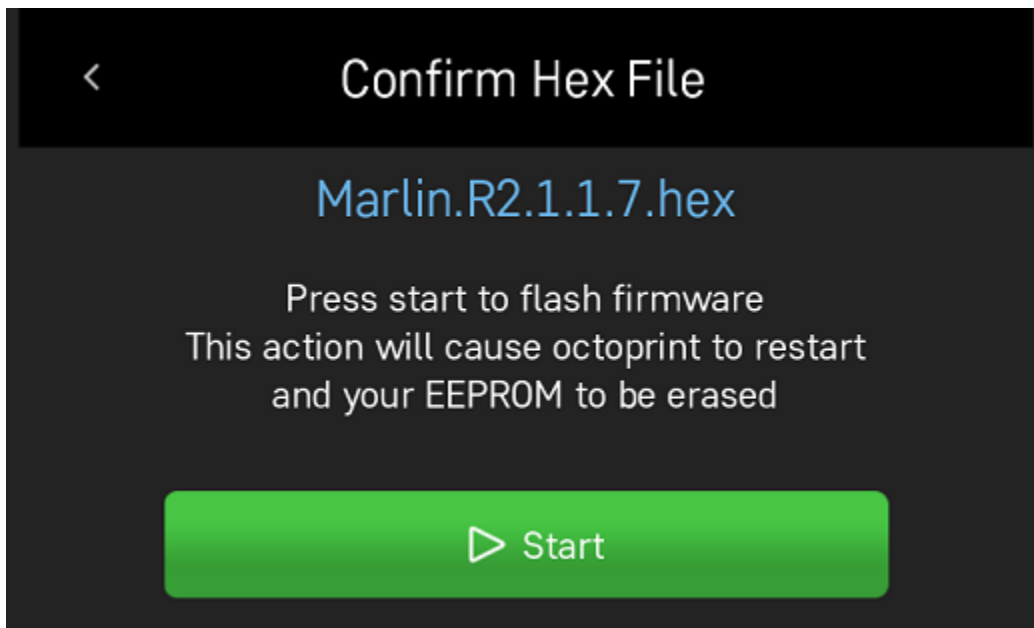
7. Wait a few minutes for the firmware to be loaded onto your Robo C2, and it will automatically reconnect.

8. Your Robo C2 should now have the latest firmware updated.

Error Messages

If you are receiving error messages on your Robo C2, the following instructions will give you information about them, and also show you how to fix them and get you back up and running in no time.
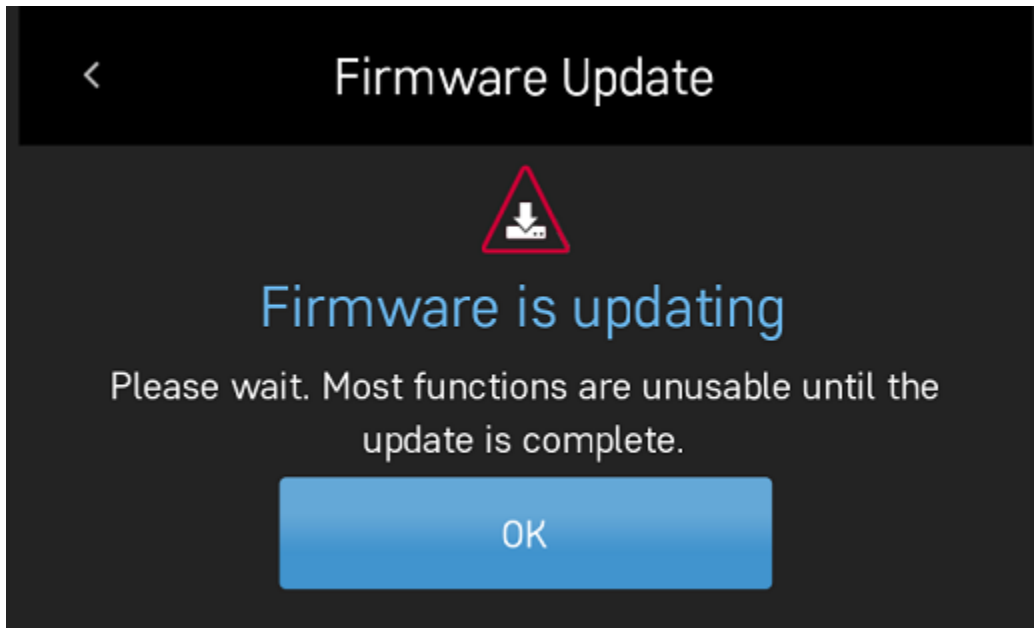
Connection Interrupted

This connection interrupted error is a result of the main electronics board not being detected. There are a few ways this can happen - more discussed below.

1. First step in resolving this error is trying to reset the connection to the printer. A button is displayed within the error message labeled 'Reset'. Press that to initiate an electronics reset. If this doesn't work, look to the next step to try and resolve the problem.

2. Check your wiring on the top of your extruder. Make sure the two ribbon cables on the top of extruder are locked into place. Also, make sure the other white plugs are seated into their sockets all the way.

3. Check the wiring on your hotend. Sometimes these can come loose and send an error to the electronics. There will be two sets of wires. One for the temperature reading, and one for the heating power. Make sure these plugs are seated all the way up into their sockets. The wires should be seated all the way to the left. The thinner wires are the ones that go toward the front of the extruder, and the thicker, all red wires should be plugged into the plug towards the back of the extruder.

4. Check the wiring on your main electronics board. Every so often, the ribbon cable coming from the main electronics board can come loose. You will need to first take the inner panel out, located inside the printer below

the bed, to get to the inside of the printer. Once that is out, you will see two electronics boards. We want to look at the one on the left, which is black. On the back right of the black electronics board, there is a ribbon cable plugged in. Make sure this ribbon cable is seated all the way down into its plug to ensure there is a proper connection.

Robo R2

Enter the Robolution

Greetings, Maker!

Thank you for your purchase and welcome to the Robo family! We really love 3D printing and our aim is to get this amazing technology into the hands of as many people as possible to see what awesome creations spring from your imagination.

Here you'll find all of the information you need for a seamless 3D printing experience with Robo R2. This next-generation 3D printer includes a wish-list set of innovative features required in a modern, connected smart device to make 3D printing fun, easy and accessible to everyone.

To get the most from your Robo R2, please review the full manual.

Happy Printing,

Coby Kabili and Braydon Moreno, Robo Co-founders

Make more with Robo R2

The Robo R2 high-performance smart 3D printer with Wi-Fi gives you the freedom to make whatever you can imagine right from your mobile device using the Robo app.

- Built for serious printing
- Sizeable 8 x 8 x 10 in print size
- 5" built-in color touch screen
- On-board camera for remote print monitoring
- Class-leading print speed
- Removable, heated and automatic self-leveling print bed
- Ability to add an additional extrusion head and print two materials at once

- Prints 30+ materials types

Getting Started

robo R2
Getting started

What's in the box

Besides your new Robo R2, you will find the following in the box:

1. Quick Start Guide
2. Autodesk Fusion 360 design software free 1-year voucher
3. Robo stickers to place EVERYWHERE.
4. 24V power supply
5. Filament Guide Tube
6. Toolbox with the hotend cover, 2 allen wrenches, lubricant, tweezers and z-offset calibration card.
7. Robo USB drive
8. 300g Robo light blue filament
9. Spatula

Register your Robo R2

Before you start, please register your Robo R2 for any servicing or warranty needs if they're ever required. You can register your product by visiting our registration_site.

Unboxing Robo R2

Now that you've received your Robo R2, it's time to unbox it and get familiar with your printer and accessories.

Your R2 is housed in 2 styrofoam pieces, secured together by a top and bottom box. Simply undo the 3 clips at the bottom of the box by pinching in and pulling, then slip the top box off.

The printer's accessories are stored in the inclusions box inside the printer. First, you will need to take off the zip tie securing the door shut to access this inclusions box.

Now, undo the blue tape and simply slide the inclusion box out.

Now we are ready to take out the inner packing material.

There are 4 orange gantry rod holders that need to be taken off. There is one at each corner of the top gantry. Simply push on the clips with your thumb and they will come off.

Next, remove the zipties securing the rods to their plastic brackets.

Now, remove the blue tape holding the moving parts stable.

Finally, using the handholds on the bottom of your R2, lift the printer out of the bottom styrofoam piece.

Tip: Save your printer box, foam inserts, and inclusions box for transportation. Also, you might need the original packaging to exercise your warranty or ship your printer in the future.

Initial set-up

Now let's move forward with your initial set-up of Robo R2.

Inside the inclusions box, there is a small toolbox; here you will find the hotend cover. Go ahead and take that out and place it over the hotend. It is held in with magnets so it just pops right in.

From here you'll want to connect the power cord to the designated area on the back of the printer and then plug it into an AC outlet.

Now go ahead and turn on the printer.

It is necessary connecting Robo R2 to your Wi-Fi network. Doing so provides you with necessary updates that allows for a more enjoyable 3D printing experience.

Note: You can also use an Ethernet cable (LAN) to connect Robo R2 directly to your Wi-Fi network.

Wi-Fi Configuration

To begin connecting to your Wi-Fi network, Select UTILITIES on home screen. Select NETWORK. Select CONFIGURE WIFI. Then select your Wi-Fi network and use the on-screen keyboard to enter your password. Once you're done, select CONNECT.

Updating

Now, you will need to update Robo R2.

Select UTILITIES. Then select UPDATE.

Update to the latest version and wait about a minute to get everything up-to-date. If your Robo R2 is already up to date, the button will be greyed out and say 'up to date'.

Calibration and setting Z offset

Next you'll want to calibrate Robo R2 by selecting UTILITIES on the touch screen. Then select WIZARDS from the list. From here you'll select Z OFFSET WIZARD. Now, the printer will wait to calibrate its home position.

Follow the directions on the screen by using the calibration card or a standard sheet of paper. Press on the 'Up' arrow to raise the bed up toward the nozzle of the printer. Slide the calibration card in between the nozzle and bed and continue pressing the 'Up" button until you feel little resistance on the card between the Nozzle and the print bed. Note: You still want to be able to slide the calibration card back and forth but with enough resistance that it is touching both the bed and the nozzle.

If your bed is too high and the calibration card does not have enough room to slide between the nozzle and the bed, press the down arrow until the calibration card can pass freely but with a slight resistance between the nozzle and the bed.

You can also fine-tune your offset by going to Utilities> Wizards> Fine Tune Offset

Loading filament

Now, unhinge the spool holder by simply pushing on the top of the higher lever from the rear of the printer. Next, insert the filament feed tube into the filament sensor block.

To begin loading filament, hang your filament spool on the top spool holder. Be sure to unroll at least 11"— or 30 centimeters — of filament and cut the tip with a pair of scissors. Thread it through the base of the filament sensor block and into the filament feed tube.

Now select UTILITIES on the touch screen. Then select WIZARDS from the list. Finally, select FILAMENT LOADING WIZARD. The on-screen prompts should guide you to loading your filament.

Continue feeding the filament through the filament feed tube until it reaches the extruder. Then, press the extruder lever arm and feed the filament into the printer's gears.

The filament drive gear should push the filament down, into the nozzle, and out the other end. Once you see this, press NEXT on the screen, then press DONE.

The test print

To create your first test print Select FILES on the home screen. Then select a file to print from the list. Now, select START to print—and be sure to wait several seconds while Robo R2 prepares to print the file.

Note that you can select PAUSE to pause your print, or you can select CANCEL to cancel your print.

Removing the test print

When the test print is complete and cooled down, carefully remove the print bed with both hands and set on a flat surface. Use the provided spatula to carefully remove the print at its borders. Then, slowly work your way underneath
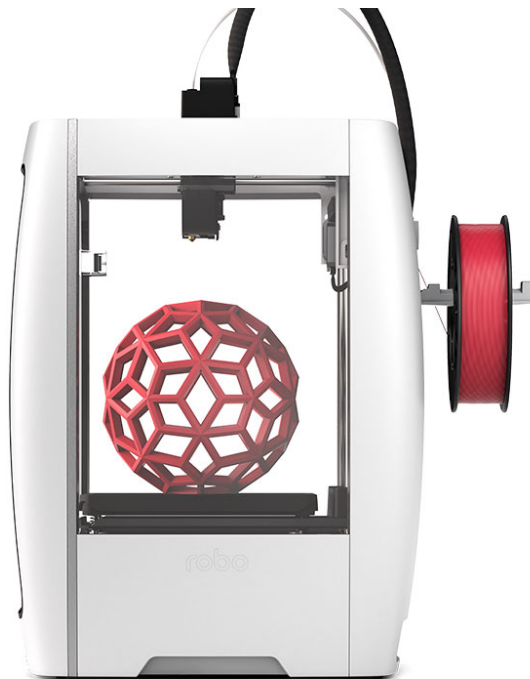
the print until it's loose. Don't force the print loose by pulling it up directly up from the print bed, since this may cause your print to break.

Using Hotspot Mode

Your printer is capable of starting If no Wi-Fi signals are available for connection, you can use Hotspot Mode to emit a Wi-Fi signal from Robo R2 in order to connect to it wirelessly from your smart device. To access Hotspot Mode, do the following:

1. Select "Utilities" on the home screen of the Robo C2 touch screen
2. Select "Network" from the list
3. Select "Start Hotspot Mode" from the list

Operation

Display Screen

The color touch screen display on the front of your Robo R2 is the main access point for setting up, controlling, and reviewing all components of your 3d printer. You can navigate through the menus by touch or a stylus.

Files -Here you are able to navigate through your files, whether they are on a usb thumb drive or on the local hard drive internally.

Printer -The print screen is the default screen when printing. This will show you file printing, temperatures, a progress indicator, error messages, and pause and cancel buttons while in use.

Utilities -The Utilities menu offers a variety of options including: fan controls, z-offset wizard, network settings, and a way to update your printer.

Setting the Z offset

Here we will calibrate Robo R2 by setting the Z-Offset and making sure your first layer is applied correctly. We will be covering three ways of zeroing in on your Offset. The first is the Z-Offset Wizard found in Utilities> Wizards; the second is the Fine Tune Wizard, also under Utilities> Wizards; the final is manually adjusting your Offset in the EEPROM manager.

What is "Z-Offset"? Simply, its the distance between your nozzle and your print bed when the print bed is at home (bottom of printer), which is technically known as a Home Offset. This offset can change by adjusting the bed springs, not seating your print bed correctly, or even a shifting hotend.

Z-Offset Wizard

Select UTILITIES on the touch screen. Then select WIZARDS from the list. From here you'll select Z OFFSET WIZARD. Now, the printer will wait to calibrate its home position.

Follow the directions on the screen by using the calibration card or a standard sheet of paper. Press on the 'Up' arrow to raise the bed up toward the nozzle of the printer. Slide the calibration card in between the nozzle and bed and continue pressing the 'Up" button until you feel little resistance on the card between the Nozzle and the print bed. Note: You still want to be able to slide the calibration card back and forth but with enough resistance that it is touching both the bed and the nozzle.

If your bed is too high and the calibration card does not have enough room to slide between the nozzle and the bed, press the down arrow until the calibration card can pass freely but with a slight resistance between the nozzle and the bed.

Fine Tune Wizard

If you are experiencing the nozzle dragging (too low) or your prints are not sticking (too high), you can fine-tune your Z-Offset. It's a little more work, but you will tune your offset by actually printing on the bed to get the perfect height. Your Robo R2 will print a series of vertical lines, one at a time. Between each pass you can increase or decrease the Z-Offset value as needed. To use the fine-tune offset wizard, follow these steps below:

Note: It is very important to make sure that the print bed is level by adjusting the thumb screws below the print bed before starting this wizard.

1. To start, select 'Utilities' from the home screen, then select 'Fine tune offset'. Select the material currently loaded in the printer. Then the wizard will ask you which corner you'd like to start from. This simply sets where the printer will start printing out the test lines. You can start from whichever corner you prefer.

2. Once the printer homes and positions itself to begin testing, you will see a visual reference on the screen to help you know what to look for in order to find an ideal Z-Offset value.

3. You will come to the "Adjust Offset" screen, where you can set the adjustment increment, move the bed up or down, and test the offset. We recommend testing the offset first so you can get a visual reference to fine tune

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the current offset. Move the bed up and down with the provided buttons on screen, and test with the 'test offset' button to see if it looks satisfactory.

4. When you've found a satisfactory Z-Offset value, press the forward arrow in the top right corner and select 'Save' to finish the wizard.

Manually setting Offset in EEPROM Manager

If you are a printing veteran and are comfortable with manually setting your Offset, you can do so under Utilities> Options> EEPROM> Home Offset. In the "Z" screen you will see the value of your current Offset, as well as two arrows that will increase or decrease this value. The arrows are arranged so that they correspond with raising or lowering the bed. A smaller value brings the bed closer to the nozzle, while a larger value increases the distance away.

If your Offset seems close but prints are still not sticking, you can decrease the value by 0.1mm - 0.2mm and try again. Generally only small changes may be needed.

Loading and Unloading Filament

Loading filament

Now, unhinge the spool holder by simply pushing on the top of the higher lever from the rear of the printer. Next, insert the filament feed tube into the filament sensor block.

To begin loading filament, hang your filament spool on the top spool holder. Be sure to unroll at least 11"— or 30 centimeters — of filament and cut the tip with a pair of scissors. Thread it through the base of the filament sensor block and into the filament feed tube.

Now select UTILITIES on the touch screen. Then select WIZARDS from the list. Finally, select FILAMENT LOAD-ING WIZARD. The on-screen prompts should guide you to loading your filament.

Continue feeding the filament through the filament feed tube until it reaches the extruder. Then, press the extruder lever arm and feed the filament into the printer's gears.

The filament drive gear should push the filament down, into the nozzle, and out the other end. Once you see this, press NEXT on the screen, then press DONE.

Unloading Filament

1. From the home screen select 'Utilities'

2. Next, select 'Wizards'

3. Select 'Filament Change Wizard'

4. After you printer heats up, the feeder gear will start to retract the filament from the nozzle

5. Once you see filament coming out of the top of the extruder, select 'Next' and 'Finished'

Start a print

Starting a print from your internal storage

To create your print Select FILES on the home screen. Then select a file to print from the list. Now, select START to print—and be sure to wait several seconds while Robo R2 prepares to print the file.

Note; that you can select PAUSE to pause your print, or you can select CANCEL to cancel your print.

Note; you can change the nozzle temperature by pressing on the extruder and adding in your desired temperature

Starting a print from a USB flash drive

1. Insert the USB flash drive into the USB slot on the front of the printer

2. Select 'Files' from the home screen

3. Select the USB folder that will appear at the top of the list

4. Select which file you would like to print

5. Next, you can choose whether or not you would like to download the file directly to the printer or print directly from the USB

6. Finally, select 'Start' to start the print

Print Status

There are three ways to check on the status of your print while your Robo R2 is at work printing away

Screen

- While your Robo C2 is printing, you can simply check the status by selecting 'Printer' on the home screen. This will indicate the name of the file printing, what percentage done your print is, a progress indicator, along with the nozzle temperature and any error messages you may have encountered.
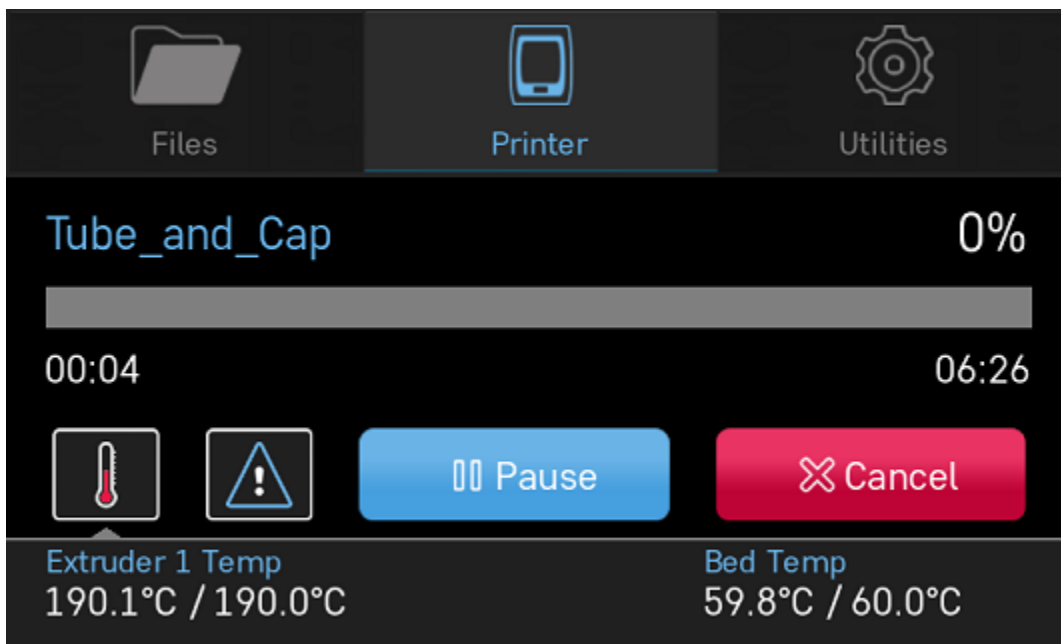
Robo 3D App

- If you have the Robo 3D app, you can check on the status of your print by selecting the printer under the 'Dashboard' tab This will indicate the name of the file printing, what percentage done your print is, along with the nozzle temperature
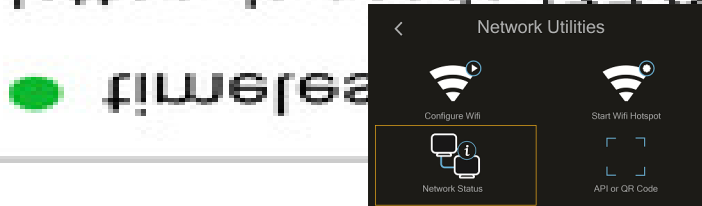
Web app

- If you have a web browser on your computer or mobile device, you can check on the status of your print by navigating to its IP address in the navigation bar of the browser

- To see the IP address of your printer, select 'Utilities' from the home screen

- Next select 'Network'

- Then select 'Network Status' and note the IP address of your Robo C2

- Copy that number into your browser navigation bar and it will bring you to a web app to see all things with your Robo R2

Using print bed adhesion

The Robo R2 has a print bed adhesion PEI plate already installed with your printer. These will usually last about 4-6 months de

- In order to make sure you get good adhesion of your print, make sure to wipe the print bed adhesion with a damp cloth before every print.

- If your prints have a hard time sticking to the bed, you can use a method to roughen the surface by using a 2000 grit sand paper and lightly sanding the top surface then cleaning off with a damp cloth.

Removing the print

When the print is complete and cooled down, carefully remove the print bed with both hands and set on a flat surface. Use the provided spatula to carefully remove the print at its borders. Then, slowly work your way underneath the print until it's loose. Don't force the print loose by pulling it up directly up from the print bed, since this may cause your print to break.

Setting Up Wifi

To begin connecting to your Wi-Fi network, Select UTILITIES on home screen. Select NETWORK. Select CON-FIGURE WIFI. Then select your Wi-Fi network and use the on-screen keyboard to enter your password. Once you're done, select CONNECT.

Your printer is capable of starting a Wi-Fi hotspot. If no Wi-Fi signals are available for connection, you can use Hotspot Mode to emit a Wi-Fi signal from Robo R2 in order to connect to it wirelessly from your smart device. To access Hotspot Mode, do the following:

Hotspot Mode

1. Select "Utilities" on the home screen of the Robo R2 touch screen

2. Select "Network" from the list

3. Select "Start Hotspot Mode" from the list

4. Your Robo R2 is now casting it's own wireless network

Your printer's WiFi password

The password for your printer's hotspot (AP mode) is the same as your printer's serial name. For example: careful-curie.

Downloading the Robo App

From your iOS Device

1. Open the App Store app

2. On the bottom dock, tap on search

3. Enter "Robo App"

4. Tap on the Robo App

5. Tap download on the right of the icon, and rate us 5 stars if you like it!

Connecting your iOS device to your Robo R2

Connecting via a local wifi network

1. Make sure your smart device is connected to the same wifi network as your Robo R2

2. In the 'Dashboard' screen of the Robo App, tap '+Add a Printer' in the middle of the screen

3. Select 'Scan for Printer Name/IP'

4. A pop up will appear with all of the printers on the same network as your smart device, go ahead and select which printer you would like to add (your printer has a unique name, example - Curious Tesla, or Brilliant Einstein). (You may look on the back of your printer and find out which name your printer has been given).

5. Now you will need to scan the QR code on your screen to fully connect the 3d printer to your smart device.

   - On the screen of your machine, select 'Utilities'

   - Select 'network'

   - Select 'QR Code'

6. Tap on 'Scan Printer Barcode for Key'

7. Point your camera at the barcode and wait for the app to recognize the 3d printer

8. Tap 'add printer' at the bottom of the screen

9. Congratulations, you have now added your Robo R2 to your app

10. note that you can add multiple machines to the same app, and control each one independently

Connecting via Hotspot Mode

1. Make sure that you are connected to the Wi-Fi signal that the machine is emitting

2. Follow steps in the previous section to successfully connect your printer to the app

Camera on/off

There are currently three ways to turn your camera on. By default this is off to prevent your internet bandwidth from slowing down. Make sure your Robo R2 is updated with the latest software before proceeding.

LCD Touchscreen

1. Go to Utilities

2. Click on Options

3. Click on Webcam. Now you can select whether to turn on of off your

Web Dashboard

1. Click on 'System' in the top right of your web dashboard.

2. Next, click on 'Start Webcam' in from the drop down menu.

3. Finally, refresh your web browser for the camera image to show up in your dashboard.

Robo iOS App (beta only)

1. Navigate to your printer that you wish to see the camera.

2. In the bottom right corner, tap on 'Video', then tap on the toggle button to turn it on or off.

Updating Your Printer

Make sure to update your printer to grab the benefits of all the latest Robo has to offer, as well as making sure your Robo R2 performs to the best of its ability.

Select UTILITIES. Then select UPDATE.

Update to the latest version and wait about a minute to get everything up-to-date. If your Robo R2 is already up to date, the button will be greyed out and say 'up to date'.

Maintenance

Remember, a well-maintained Robo R2 is a happy one!

Be sure to check for the following before every print:

- Make sure the print bed is free of any/all objects
- Make sure nothing is blocking the extruder head from moving freely around the build area.
- Make sure no objects are below the print bed that could prevent it from freely moving up and down.
- Make sure there are no broken pieces of filament within the extruder.

- Make sure all cords are neatly tucked away to avoid unnecessary accidents while the printer is in operation.

- Make sure all of your software is up to date (on screen prompts will let you know when updates are available, but only if you are connected to a Wi-Fi network).

And to ensure the best 3D printing experience now and in the future, use the following Robo R2 maintenance tips regularly (every 6-12 months, depending on use):

Cleaning the feeder gear

Steps to take to clean your feeder gear

1. First, turn off your machine and remove the extruder cover.

2. Once that is off, go ahead and use a toothbrush to brush the feed gear to remove debris.

3. Rotate the feeder gear by turning the motor shaft by hand and repeat steps until the entire feeder gear is cleaned.

4. Place the extruder cap back onto the top of your extruder assembly and plug in Robo R2.

Lubricating the axis

There are two types of linear rods, and two types of bearings in Robo R2, and they must be lubricated differently to ensure the best prints are made.

White Lithium Grease

- The rods that carry the extruder head are ball bearings and should be lubricated with a white-lithium grease to ensure smooth travel.

- The z-axis lead screw also needs a white lithium grease for lubrication. Dap a small amount onto the rod, and let the printer move up and down from the next print to lubricate itself.

3-in-1 Oil

- The x and y brackets have a smooth bushing inside of them, and need to be lubricated once every 2-4 months. Wipe down the build up that these bearing produce on the rods over time with a cleaning agent. The bearings can be greased with a few drops of 3-in-1 oil, or sewing machine oil to lubricate sufficiently.

Cleaning the print bed surface

- The Robo R2 print bed surface is a sheet of PEI. Make sure to clean it with a damp cloth to ensure your print sticks to its surface.

- After 4-6 months of use, you may need to retexture this sheet if you see that your prints are not sticking to it. To do this, simply grab some 2000 grit sandpaper and lightly sand the surface, afterwards cleaning it off with a damp cloth. Ensure that the print sheet is laid completely flat on the build platform, and that it is flush and level across the surface.

- If you would like, you can order more R2 print beds at www.robo3d.com.

- When removing and replacing the entire print bed, double check that its magnets align with the magnets on the platform to ensure it is seated correctly and plug in the power cord in the back of the bed. Build platforms that aren't seated correctly will result in failed prints.

Replacing your Hotend Nozzle

Follow these steps to remove your hotend nozzle

1. Make sure to turn your Robo R2 off, and unplug the power cord from the back of the machine.

2. Remove the magnetic extruder plate to expose your entire hotend and wires.

3. The allen screw located on the front aluminum plate is the tensioner that holds your hotend in place. It is likely that this has come loose. Grab the allen wrench out of the tool kit that came with your printer.

4. Loosen your hotend by turning the tensioner screw counterclockwise a few turns.

5. When the hex screw is loose enough, your hotend should be able to fall out of its housing.

6. Carefully pull the wires by hand to remove them from their housings.

7. Place new hotend in by reversing these steps.

8. Push the hotend as far as it can go up into the seated ring and make sure it is flat against it.

9. While you are holding it there, screw the allen screw clockwise until you feel a good amount of resistance and the hotend cannot be pulled out with your hand. Make sure you align the heater block to be parallel with the front of the extruder so the hotend cover will lay flat against the magnets when reinstalling.

10. Turn the printer back on and test.

Troubleshooting

Print Not Sticking to Bed

If you are experiencing problems with the plastic not adhering to your print bed, there are a few things that can be done;

1. **Update**

- Make sure to update your printer to the latest version of RoboOS. This will ensure that you have the latest version of the firmware that is flashed to your controller board, and have the most up-to-date and tested version of build plate leveling.

2. **Re-run the z-offset wizard**

   - Re-running the z-offset wizard will make sure that your bed is properly leveled. To do this, on the menu screen go to Utilities> Wizards>Z-offset Wizard.

   Use the fine tune offset wizard

   - If you are experiencing the nozzle dragging (too low) or your prints are not sticking (too high), you can fine-tune your Z-Offset. It's a little more work, but you will tune your offset by actually printing on the bed to get the perfect height. Your Robo R2 will print a series of vertical lines, one at a time. Between each pass you can increase or decrease the Z-Offset value as needed. To use the fine-tune offset wizard, follow these steps below:

   - Note: It is very important to make sure that the print bed is level by adjusting the thumb screws below the print bed before starting this wizard.

To start, select 'Utilities' from the home screen, then select 'Fine tune offset'. Select the material currently loaded in the printer. Then the wizard will ask you which corner you'd like to start from. This simply sets where the printer will start printing out the test lines. You can start from whichever corner you prefer.

Once the printer homes and positions itself to begin testing, you will see a visual reference on the screen to help you know what to look for in order to find an ideal Z-Offset value.

You will come to the "Adjust Offset" screen, where you can set the adjustment increment, move the bed up or down, and test the offset. We recommend testing the offset first so you can get a visual reference to fine tune the current offset. Move the bed up and down with the provided buttons on screen, and test with the 'test offset' button to see if it looks satisfactory.

When you've found a satisfactory Z-Offset value, press the forward arrow in the top right corner and select 'Save' to finish the wizard.

3. **Clean and repurpose the build plate adhesion**

- After some time, the build plate adhesion can become unsticky and plastic will no longer be able to stick to it. Resurface this by grabbing some 2000 grit sand paper and lightly sanding the surface, afterwards cleaning it with a damp cloth. Remember to re-calibrate your offset by selecting the z-offset wizard from the utilities menu.

4. **Using a raft**

- Make sure to use a raft on all of your parts when preparing your print. This will allow a bigger surface area of plastic to stick to the bed, and can compensate for a small amount of unlevel bed.

5. **Lower fan speed**

- If your prints are still curling after the above solutions are attempted, you can try lowering your fan speed to stop the plastic from cooling too fast and shrinking, causing warping. To do this go into your desktop software Cura for Robo. Under the settings> speed> fan speed and turn this setting down to 30%.

6. **First Layer Height and Width**

- Set your first layer height to 0.3mm. This will allow more plastic to flow out of your nozzle, allowing a better adhesion to your print bed. You can also try making your first layer width of plastic higher. Usually a first layer width of 1mm is optimal - this will extrude more plastic at a lower layer height to allow more surface area of plastic bind to the print bed.

Grinding Noise when Starting a Print

If you are experiencing a grinding noise when trying to start a print, or when your printer is homing, there are some things to take a look at to make sure your printer hardware is in the right place. Sometimes during shipping or traveling, some things can come loose, so lets check those.

1. **Rods are out of place**

- Make sure your rods are in the correct position. While moving to the home position, these rods will hit switches to let the printer know it is in the 0 position. If these rods have been moved out of the way, they will not hit the switch, and the printer will try and continue to travel past its 0 position, resulting in a grinding noise. The picture below will show you how they will look out of place, and also how they should look to work correctly. (note: images below are for the Robo C2 but will act the same way for the Robo R2)

- To correct these, hold the plastic bracket the end of the rod is being held by with one hand. With your other hand, grab the rod that is furthest to the back left of the printer and slowly slide it into place (left on the x axis, away from you (back) on the y axis).

- Note: Make sure that the rod is not directly touching the side wall of the printer when placing back into its position. Once you have slid the rod over to the edge of the wall, back it off just slightly so it is not rubbing the side wall when moving back and forth.
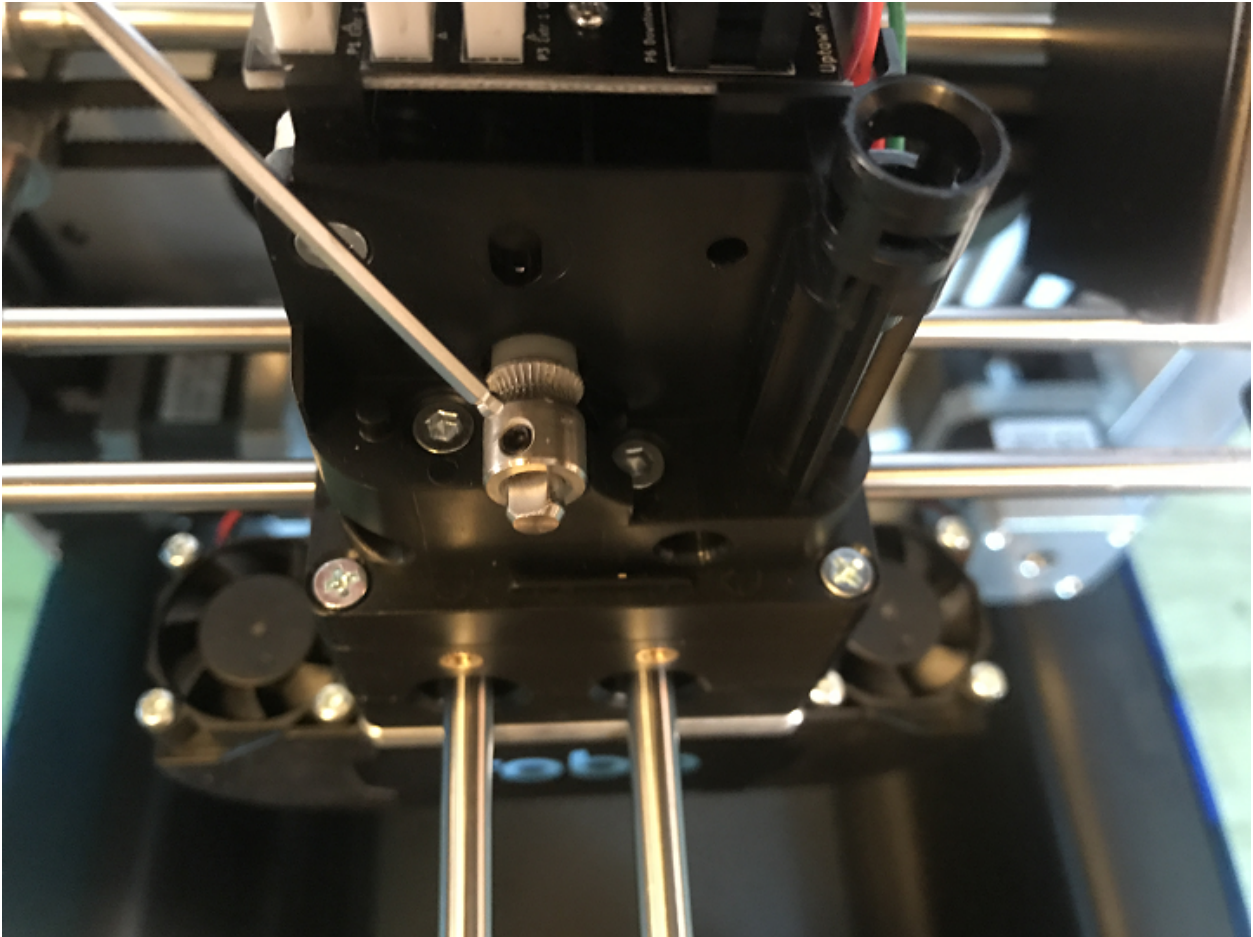
Material Not Extruding

1. **Nozzle isn't heating up**

- Make sure all of your wiring is plugged in and firmly mounted in its correct brackets.
- Nozzle Wires should be plugged into the correct terminals on the underside of the extruder.

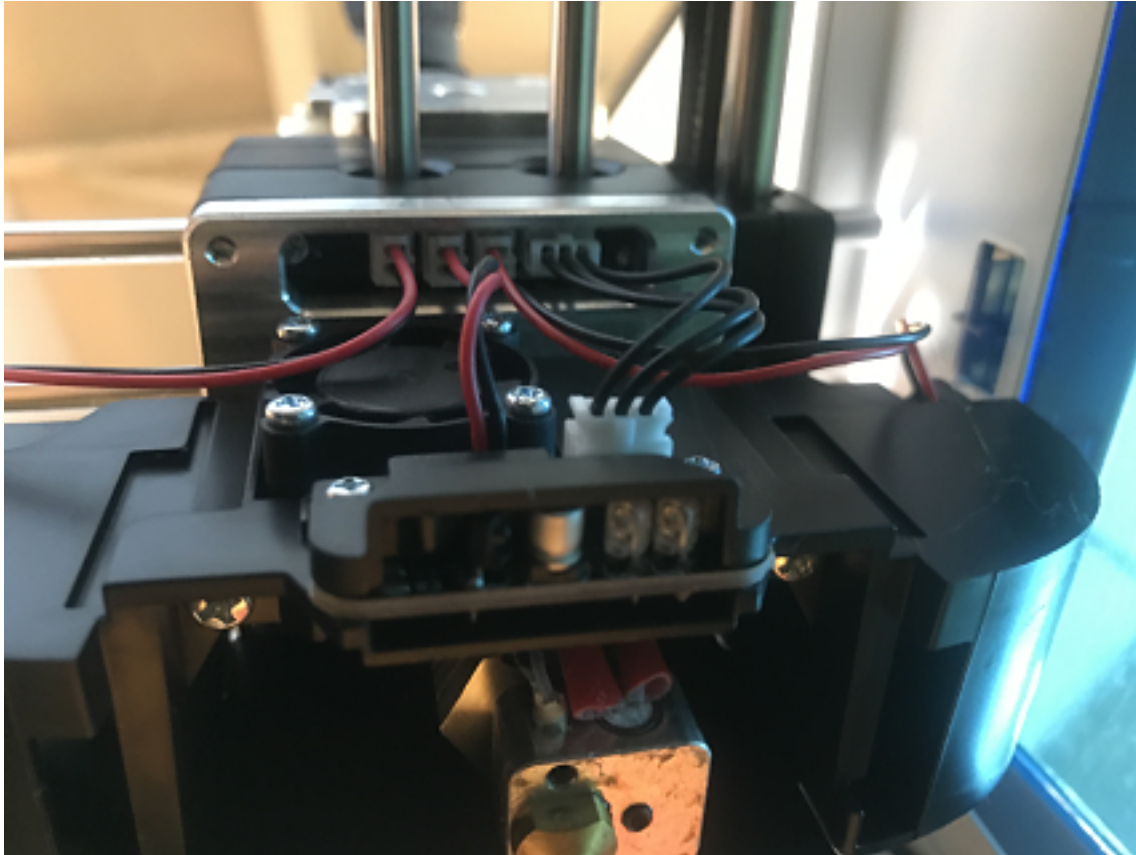- Wires should be plugged in and seated correctly on the top electronics board at the top of the extruder. Remove the extruder cover then check the wires.

2. **Drive Gear is not cleaned**

- Turn Off the Printer
- Take off the extruder cover

3. **Material is stuck around the spool**

- Every so often, the material can get stuck on the spool holder or in the spool itself
- If the material is tangled on the spool holder, unwind about 12 inches or 25 cm of filament to loosen it, then reel it back around the spool neatly, trying not to cross over plastic as it spools onto itself
- If the material is tangled within the spool, you will need to unwind some the spool and see where it is crossing over itself. Cut the plastic where you find it is crossing over itself, and feed it back into the machine.

4. **Drive Gear is not tightened down**

- If your motor shaft is turning, but the drive gear is not, it means you need to tighten down your drive gear.
- To do this, turn off your machine and remove the extruder cover.

- Now reverse these steps to put it all back together

Shifting Layers/bad print quality

1. **Loose Pulleys**

- If the pulleys on the X and Y axis come loose, you may need to tighten down the set screws to hold these in place.

- Move the Extruder into the center of the printer, and find the set screws on the pulleys in the corners of the axis. There are a total of 10 pulleys that you must check (2-3 in each corner), and each has 2 set screws to make sure to tighten down.

2. **Unaligned Axis**

- Re-align your axis to be perpendicular to each other. To do this, use the orange clips that came with your printer.

- Unplug your machine, and move your extruder to the front right corner.

- Using the orange rod stabilizers, attach one at each corner of the gantry, completing a square. This should re-align your brackets and revive your print quality.

Hotend Clogged

1. **Not Heating up enough**

- Make sure all of your wiring is plugged in and firmly mounted in its correct brackets.

- Nozzle Wires should be plugged into the correct terminals on the underside of the extruder.

- Wires should be plugged in and seated correctly on the top electronics board at the top of the extruder.

2. **Material stuck below the Drive Gear**

- If your motor shaft is turning, but the drive gear is not, it means you need to tighten down your drive gear.

- To do this, turn off your machine and remove the extruder cover.

- From here, you can use the tweezers that came in your tool box to grab onto the filament that is stuck. Be sure to heat up the hotend before trying to pull out the filament.

3. **Hotend fan is not on**

- If your hotend fan is not on (the third fan on the back of the extruder), then it is most likely your hotend isn't being cooled enough and will jam your nozzle. The fan is most likely unplugged.

- Take the red and black fan wires, and look for the terminal plug that is empty on the back underside of the extruder.

Hotend Falling Out

If you are experiencing your hotend falling out from the extruder, there is a simple fix that will lock your extruder in place

1. **The tension screw is not tight enough**

   - The allen screw located on the front aluminum plate is the tensioner that holds your hotend in place. It is likely that this has come loose. Grab the allen wrench out of the the tool kit that came with your printer.

   - Make sure to turn off your printer.

   - Loosen your hotend by turning the tensioner screw counterclockwise a few turns.

   - Push the hotend as far as it can go up into the seated ring and make sure it is flat against it.

   - While you are holding it there, screw the allen screw clockwise until you feel a good amount of resistance and the hotend cannot be pulled out with your hand. Make sure you align the heater block to be parallel with the front of the extruder so the hotend cover will lay flat against the magnets when reinstalling.

   - Turn the printer back on and test. If it still falls out, try tightening the allen screw even more.

Screens Goes unresponsive or Doesn't Work

If the screen is not working there is a few steps that need to be taken to solve the issue.

1. **Loose Wiring** * First, raise your bed by manually turning the long threaded z screw until the bed is mostly all the way up. Now remove the internal lid under the bed that says Robo on it for better access to the electronics. * Here, you will see an HDMI cord that attaches the screen to a green electronics board. On the green electronics board side,

detach the HDMI cable and re-attach. * Next, you will see a ribbon cable plugged into the green electronics board that will need to be unplugged, and re-plugged back in. * Next, find the micro usb cord that is plugged into the bottom right corner of the green electronics board. Unplug this and plug it back in. * Finally, follow the micro usb cord you just unplugged and follow it to the other end on the black board. It should be plugged in on the black electronics board in a terminal labeled 5V right next to Fan2 plug in. Unplug and re-plug this back in.

2. **If your screen is still broken**

   • Contact customer support at www.robo3d.com/support

Hotend Cover is falling off

If your hotend cover is falling off when printing, or is teetering side to side and not flat against the extruder, more that likely your hotend is blocking it. To fix this, follow these steps:

1. Remove your hotend cover.

2. Loosen the hotend tensioner screw slightly. You do not need to loosen it completely, only enough to be able to rotate the hotend while it is still inside its mount.

3. Align the heater block to be parallel with the extruder carriage. Make sure the heater block is not turned in such a way that it is sticking out past the extruder carriage.

4. Tighten the hotend tensioner screw. Remember to not overtighten this screw, as it may be hard to perform maintenance later.

5. Replace the hotend cover

Drive Gear aligning and tightening

If your drive gear has come loose and/or it is not aligned with the filament to hotend pathway, take these steps to realign and retighten:

Note: Make sure there is no filament loaded into the extruder. If there is, heat up your extruder and remove any filament.

1. Remove your extruder cover.

2. Turn the extruder motor shaft so that the flat surface of the shaft is pointing at 10 o'clock (see picture below).

3. Use your allen wrench to loosen the set screw on the drive gear so that it is able to freely spin on the motor shaft.

4. Now we are going to align and tighten your drive gear. Grab a small length of filament to help you through this.

5. Apply pressure to the filament lever arm and insert the filament through the filament feed hole.

6. Push and pull the filament, while making sure it is centered with the drive gears grooves, until the drive gear is in position (it will self align when the filament starts passing through it).

7. Align the set screw with the flat surface of the motor shaft. Visually check to make sure the groove on the drive gear is aligned with the hole going down to the hotend.

8. Tighten the set screw on the flat surface of the motor shaft.

9. Replace your extruder cover and you are all set.

Filament Runout Sensor Error

If you see an error while printing that

1. **Make sure you are not bypassing the filament block**

   • In order for the filament sensor to work correctly, the filament needs to be run through the filament block on the backside of your printer. The filament sensor is located in this black block and will give an error of no filament if the filament is being run on the outside. Make sure you run all filament through this block to ensure the filament sensor will detect your material.

2. **Disable the filament runout sensor**

   • If the filament runout sensor is still reading that there is no filament inside your printer, even though it is going through the filament sensor block, you can disable this software setting via the web browser. Take these steps to disable the filament sensor:

1. Connect your printer to Wi-Fi. Go to Utilities> Network> Configure Wi-Fi and connect your printer.

2. Once you are successfully connected to the internet, lets find your IP address. Go to Utilities> Network> Network Status. Here you will find the IP address.

3. Next, open up your browser (such as Google Chrome, or Mozilla Firefox), and enter that same IP address into the address bar. You should see a dashboard come up that looks like this:

4. Click on the 'Settings' button in the top right of the interface.

5. A settings window will pop up. On the left hand side, scroll down and select the item labeled 'Plugin Manager' under 'Octoprint' about half way down the list.

6. You will now see a list of plugins that are installed onto your printer. From here click the next page over until you see the line item labeled 'Filament Sensor'. Click on the small black button to the right of the item (circled in green in the picture below).

7. Once you have de-selected this plugin, you will need to restart Octoprint. A pop up will show on the top right of the interface - click 'restart now'. You should be good to print without filament runout detection interruption.

Firmware Update

This will walk you through the steps to update your firmware from the touchscreen and a USB drive.

1. Make sure you have the latest firmware. Download here: R2_Firmware.
2. Unzip the file and place the file onto a USB drive.
3. Place the USB drive into the USB slot on the front of your Robo R2.
4. On the touchscreen, navigate to Utilities > Options > Firmware Update
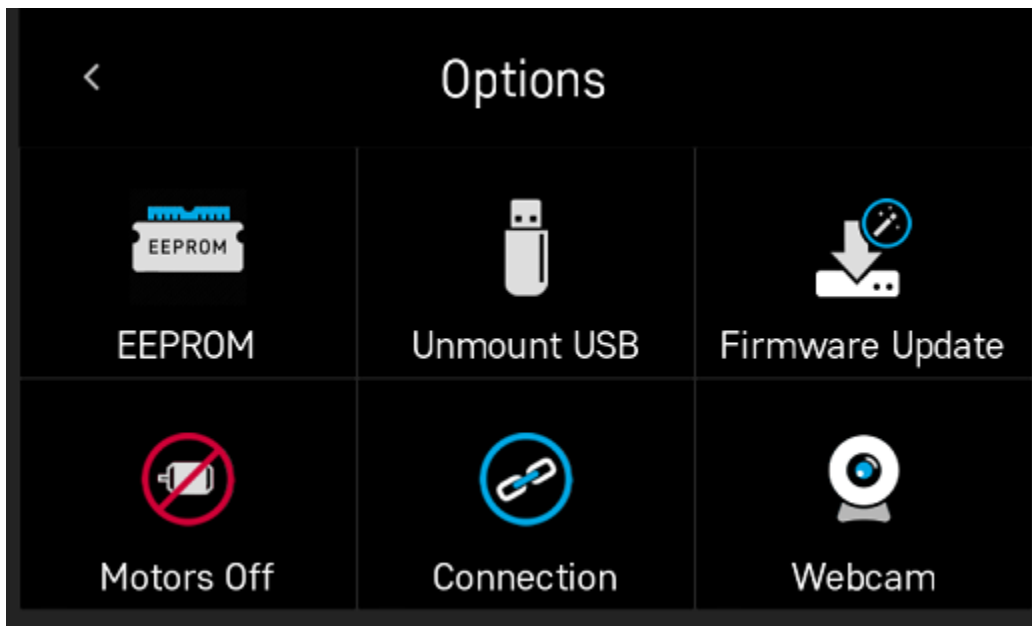
5. The next screen will show the .hex firmware file from your USB drive that you put on in step 2.

6. Click on the file name, and click 'Start' to start your firmware update.
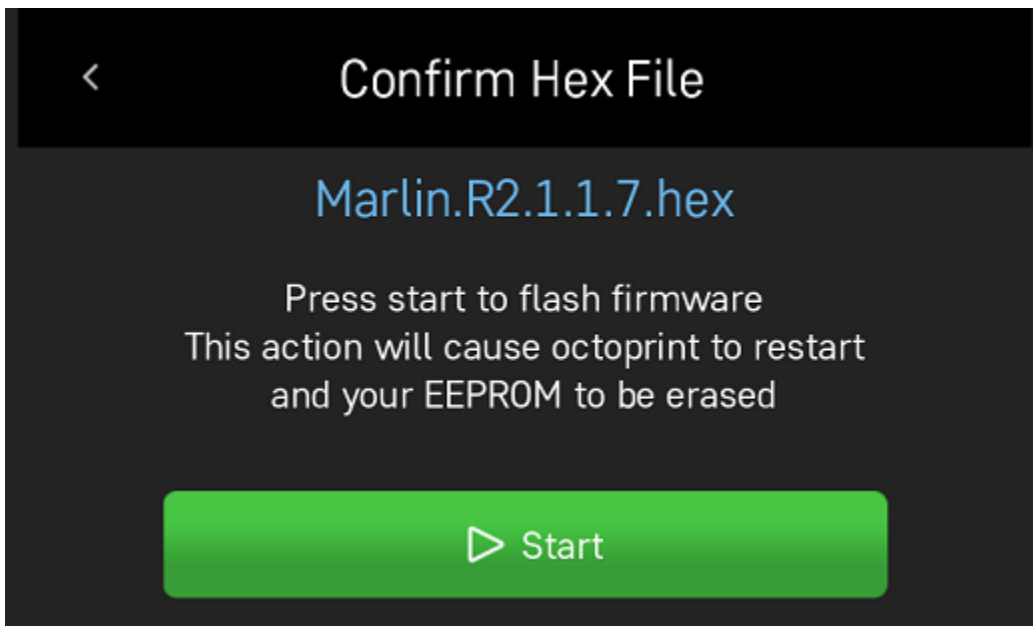
7. Wait a few minutes for the firmware to be loaded onto your Robo R2, and it will automatically reconnect.
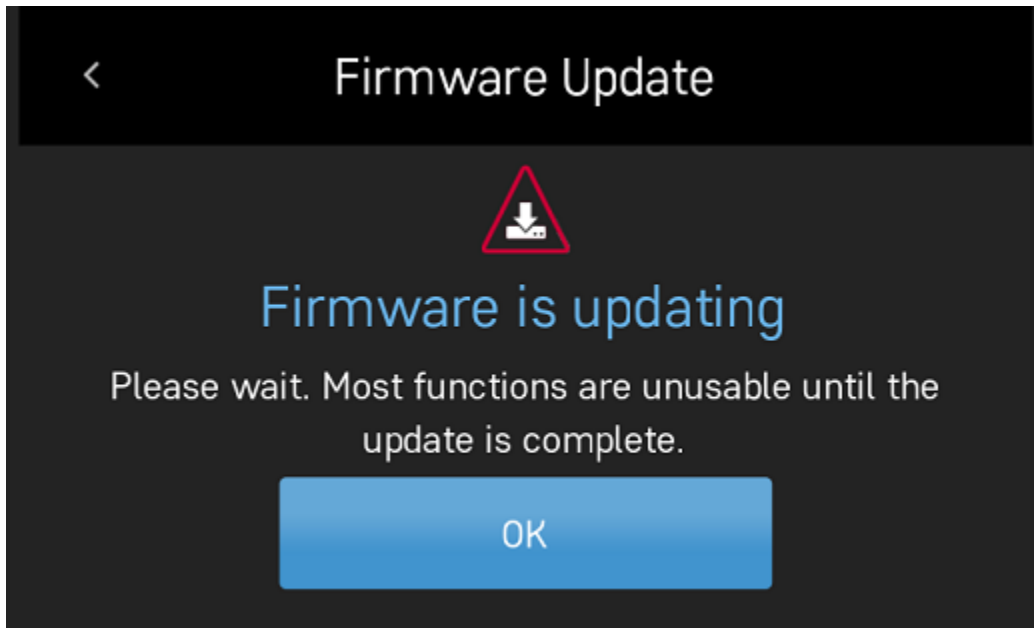
8. Your Robo R2 should now have the latest firmware updated.

Print Bed Pogo Pin Connection Replacing

If your Robo R2 gives you an error of your print bed not being recognized, even though it is on the printer, and seated properly, you may have to replace your pogo pin connection electronics. Remember to never take off your print bed when it is hot or heating - this can cause the print bed electronics to break. Also, remember to make sure your print bed is flat by adjusting the screws underneath the bed so it is not teetering back and forth when you press onto the corners - this too can cause the print bed electronics to break. To replace the electronics board, follow these steps.

1. Make sure to turn off your printer, and then take your print bed out.

2. Look toward the back of the plate that the print bed seats into, you will see a small black electronics board with gold pins on it. This is the board we will be replacing. Go ahead and unscrew the 4 screws on the corners, then carefully unplug the wire from the socket. Keep your screws close for the next step.

3. Now that you have the board out, take the new board, and first, plug in the wire to the plug socket. Then, screw in the board to the print plate.

4. Now, place your print bed back into the printer. Make sure to tap on each corner to see if the bed is teetering. If it is, adjust the thumb screws under the print plate to get it nice and even. If the print bed is teetering, this can cause the pogo pins to not contact the heat bed correctly, and result in a failed electronics board.

5. You're all set to begin printing!

Z-Limit Switch Replacing

If your Robo R2 seems to be not homing correctly when the print bed moves all the way to the bottom of the printer, you may have a faulty z limit switch. In order to replace this switch, follow these steps:

1. Turn your printer on, and navigate to the motors controls from the main screen. In the top right corner, select to move the print bed to the top of the printer so you can have easier access to the z limit switch.

2. Next, remove the internal hatch to gain access to the internal parts.

3. Now, in the back of the area you just uncovered, on the middle left, you will see the z axis limit switch. Take a screwdriver and remove the two screws shown below. Be sure to keep the screws where you can easily find them.
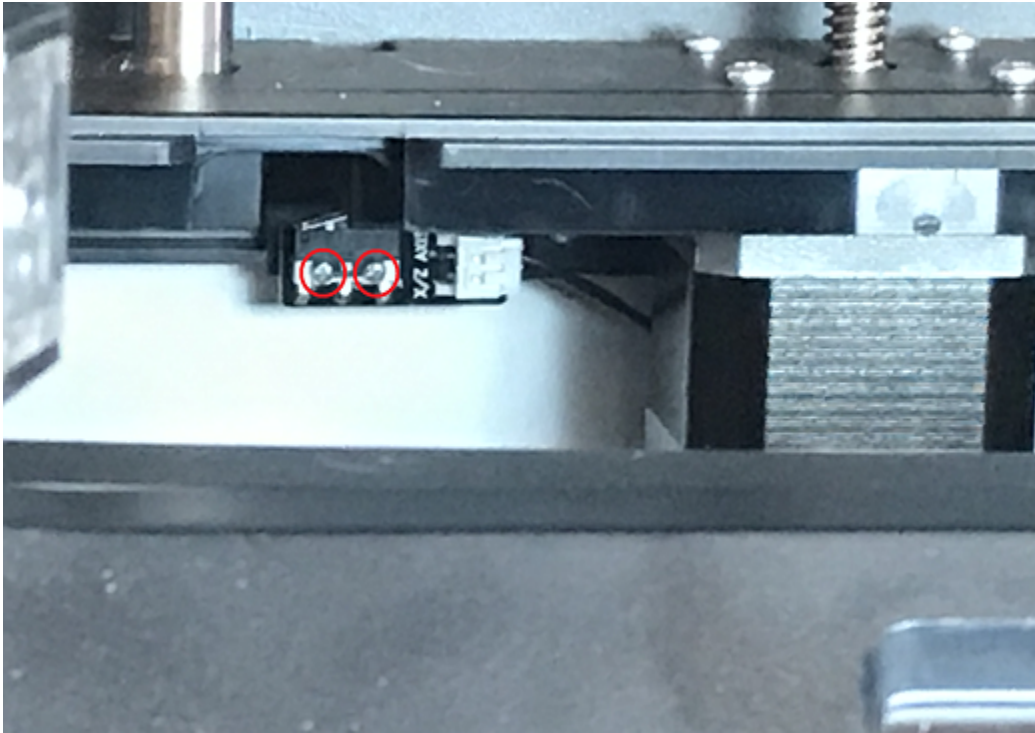
4. Once you have removed the screws, the limit switch will only be connected by a plug. Carefully unplug the limit switch from its wires.
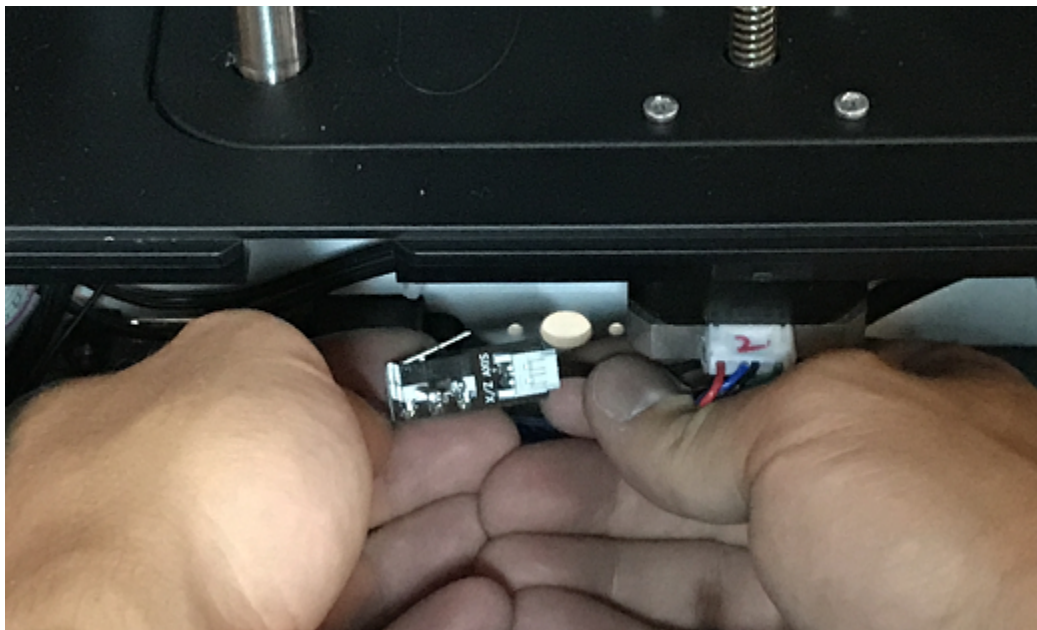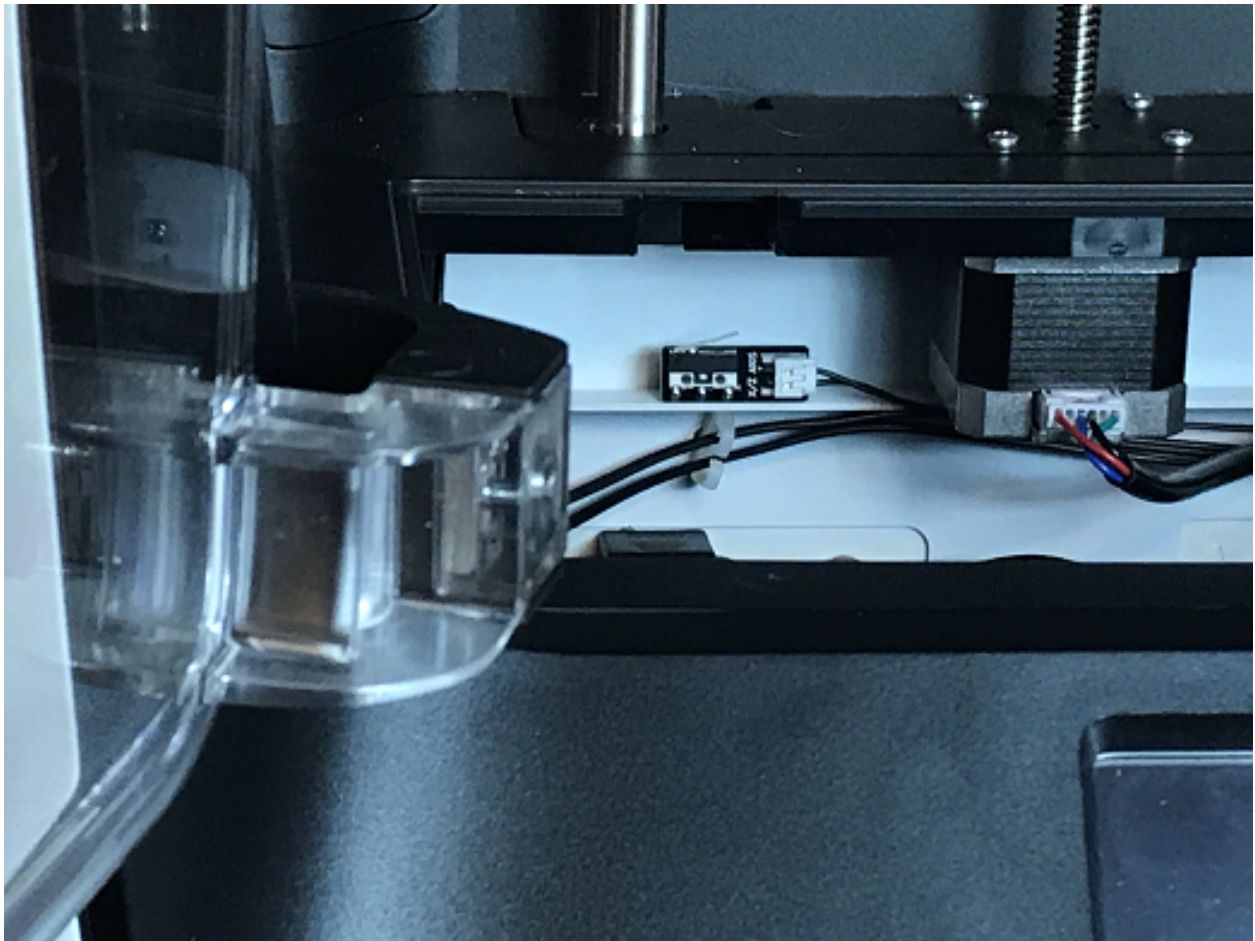
5. Now, find your new z limit switch. It is easiest to start by inserting the screws into the switch before plugging in.
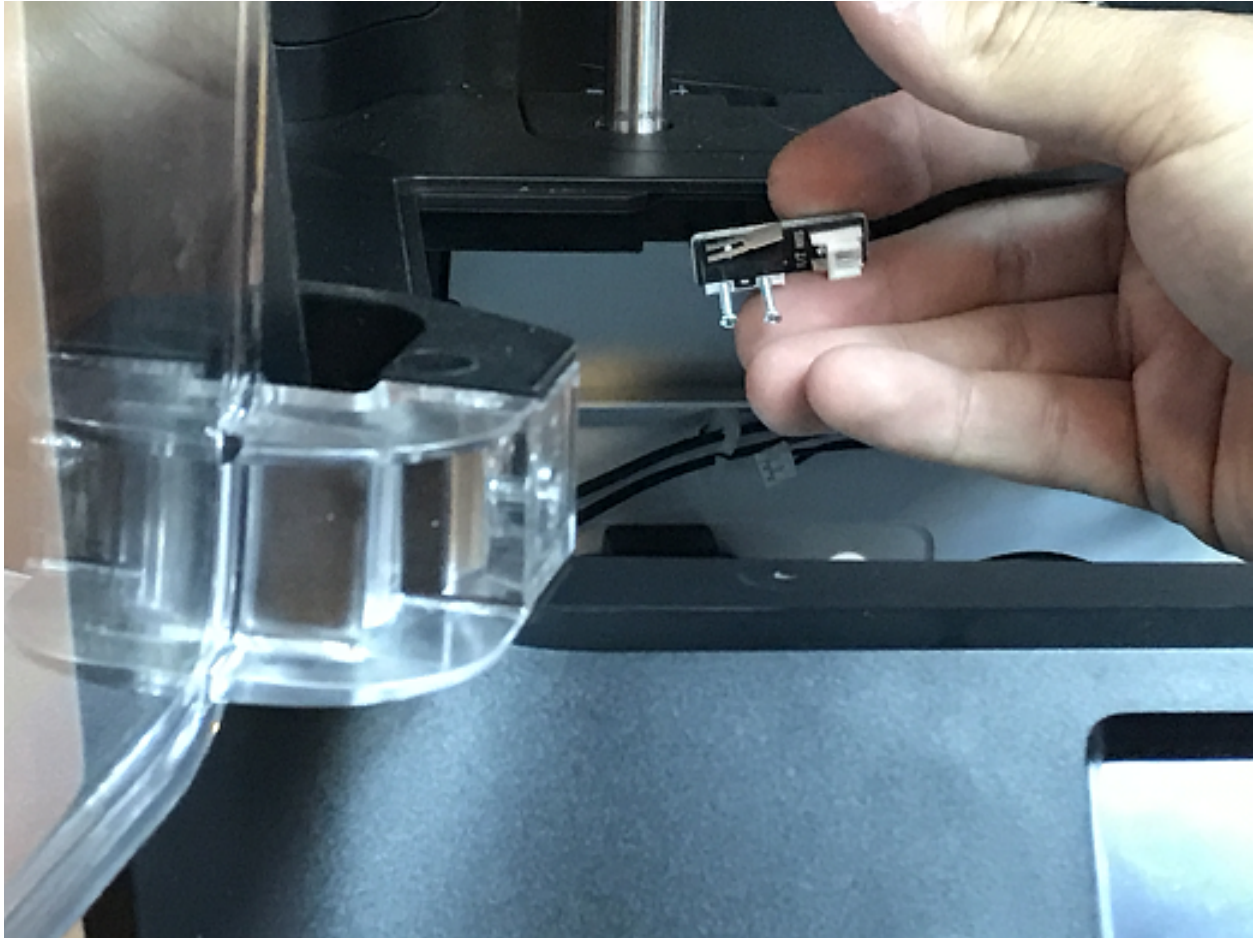
6. Plug the switch into the wires, and screw back in your limit switch to the proper placement. The screw holes are shown below, as they are a little hard to find.
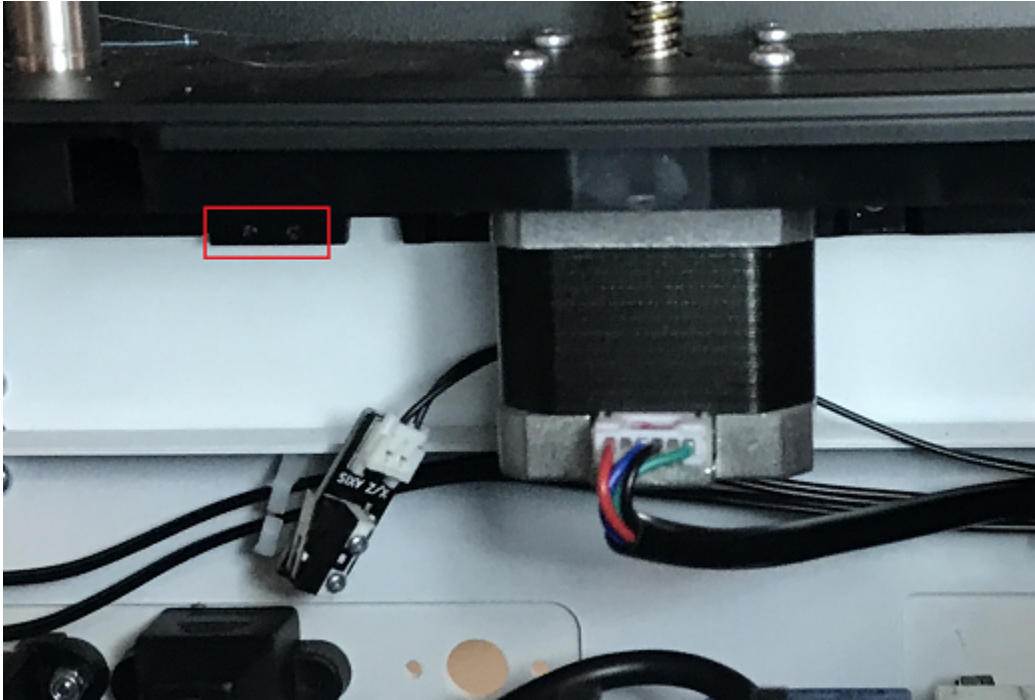
7. You're all set to begin printing!

Door Replacement

If you have received a replacement door for Robo R2, follow these quick few installation steps to have you back up and running in no time.

1. Remove the door you wish to replace. It is easiest to open the door all the way in order to access the hardware. There are 2 screws holding the door to its hinges, one screw per hinge. Carefully unscrew the door from each hinge, starting with the bottom hinge. Remember to keep the screws and magnets that are inside this door.
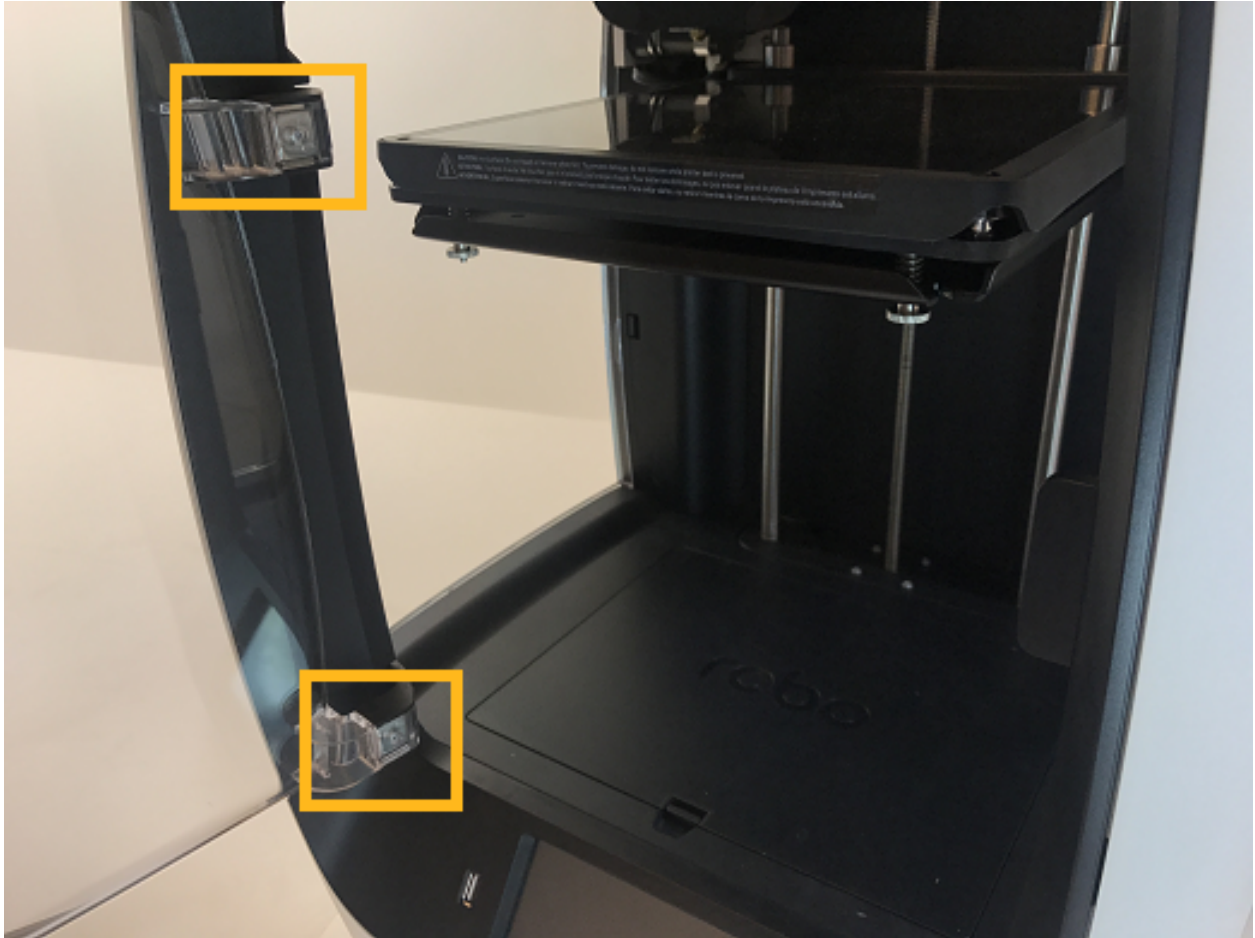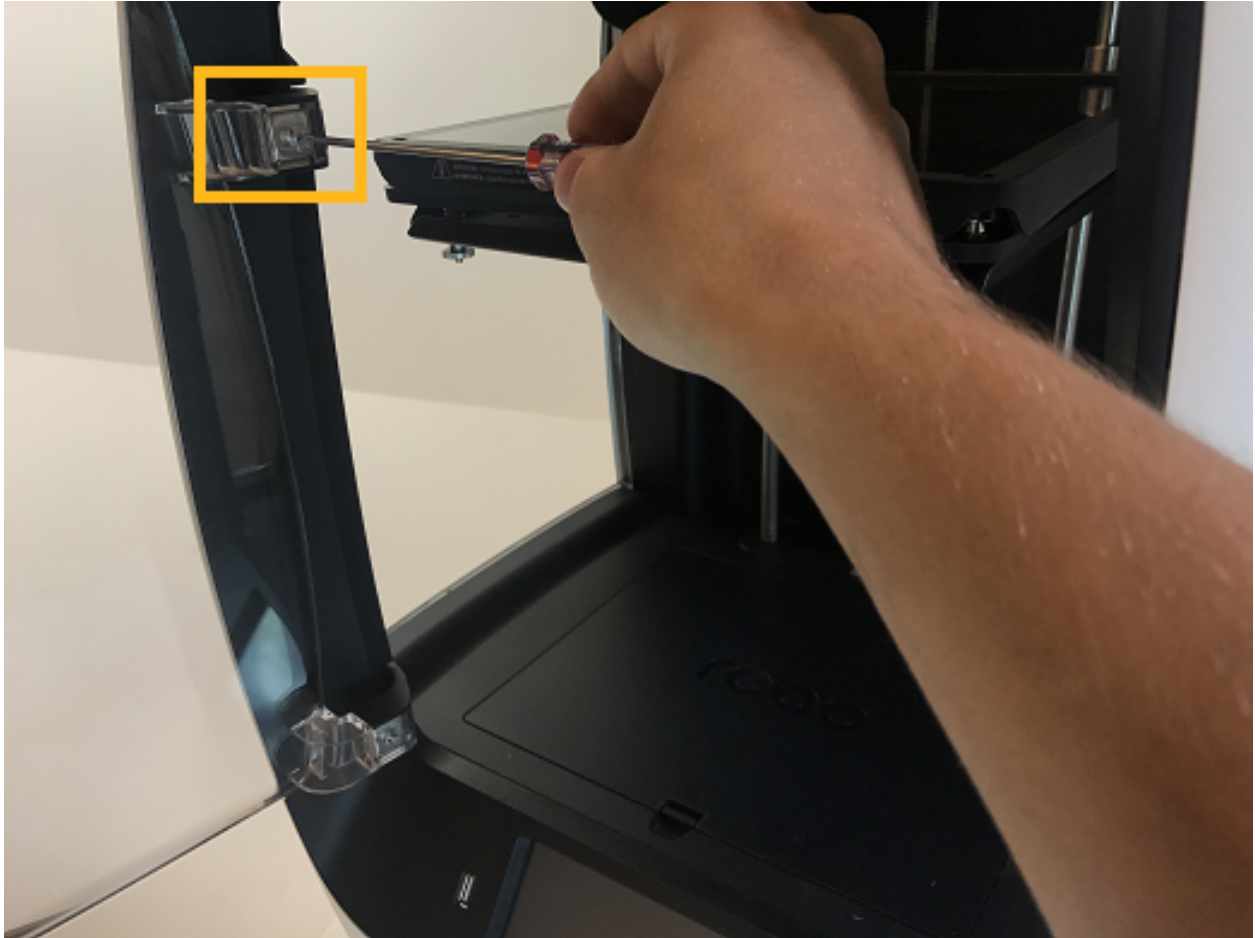
2. Take out the hardware - 2 magnets and a screw per hinge, and set it to the side.
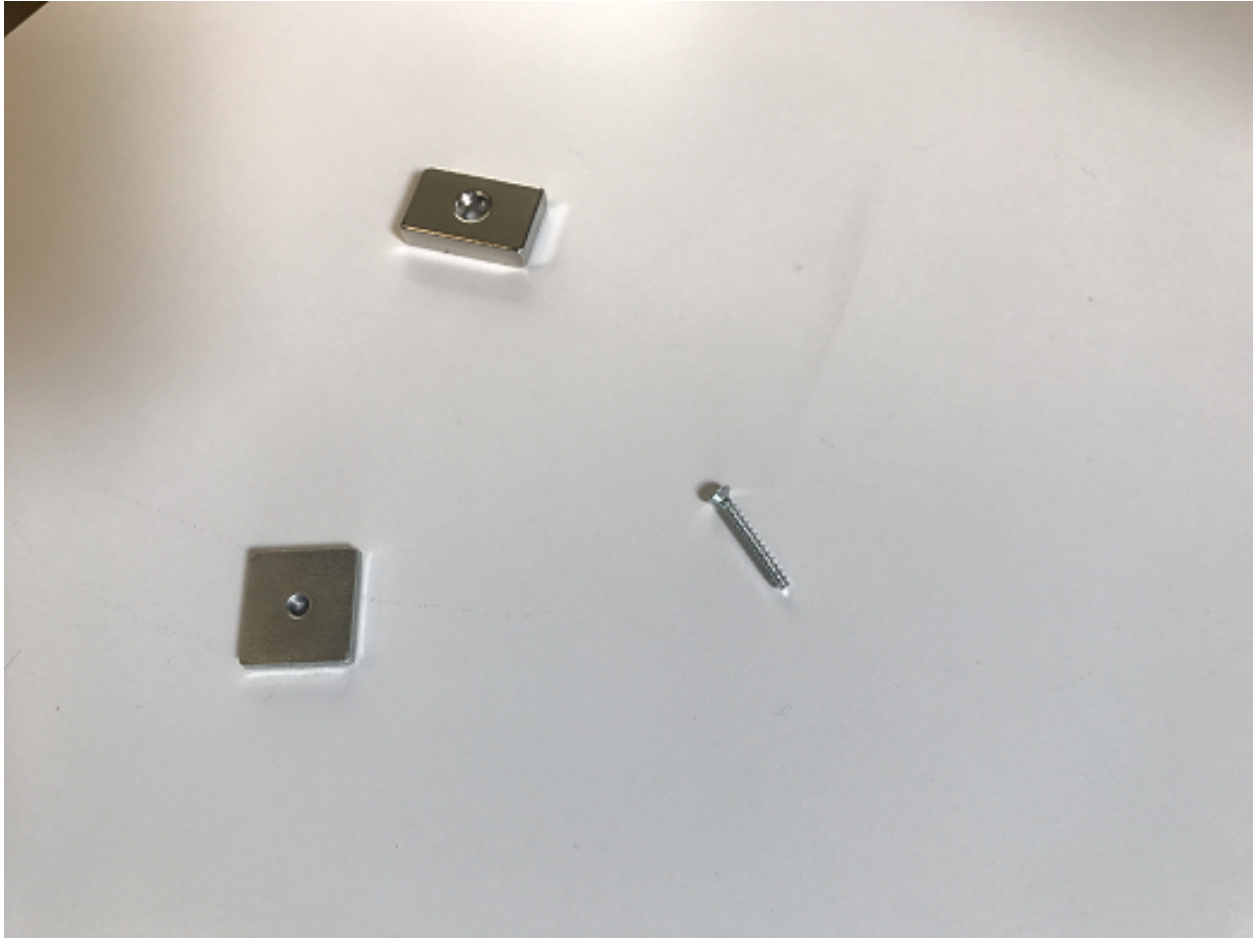
3. Next, to make installation easiest, place the screw through the hole in the door, then place the square magnet on the other side. Now, place the rectangle magnet behind the square magnet.
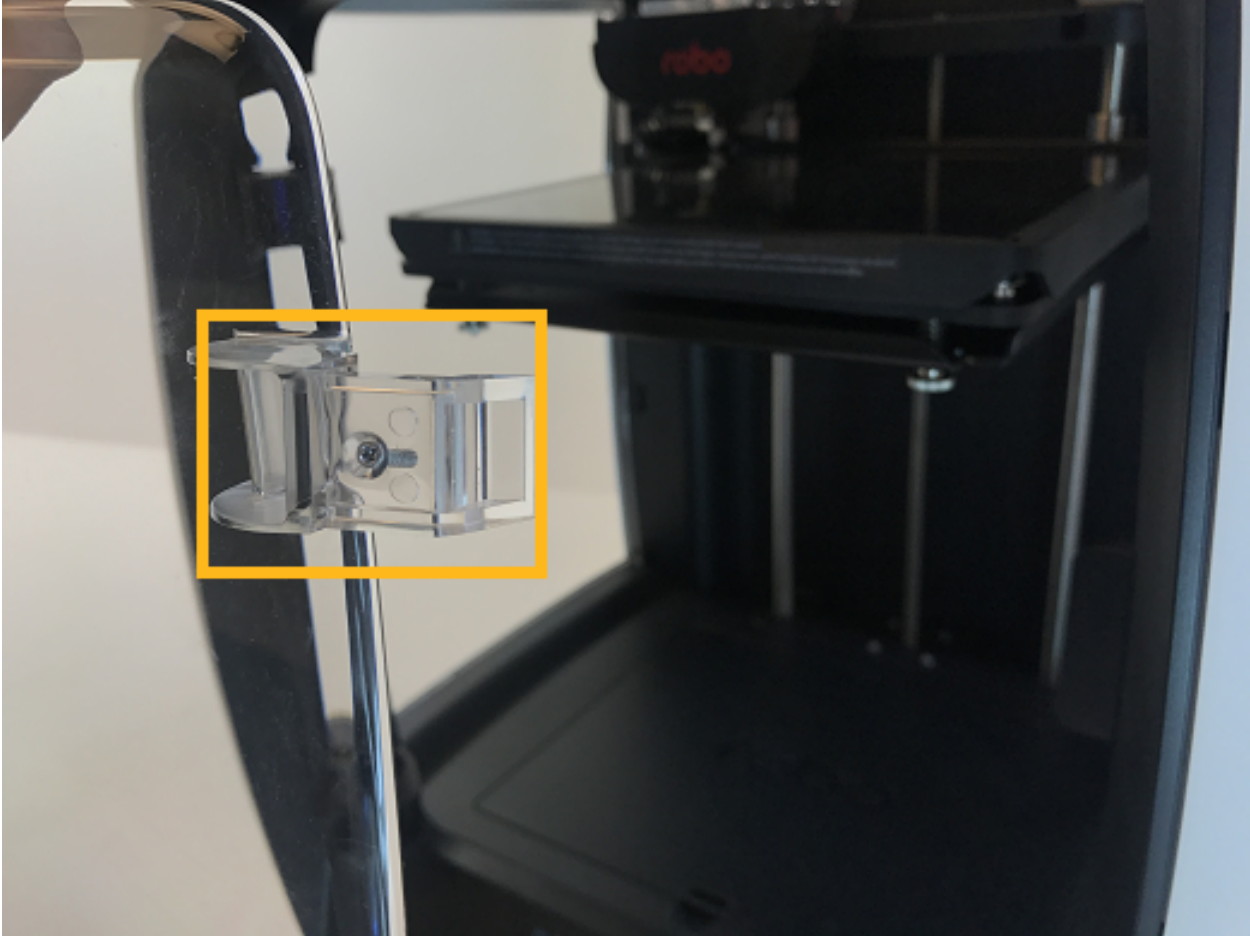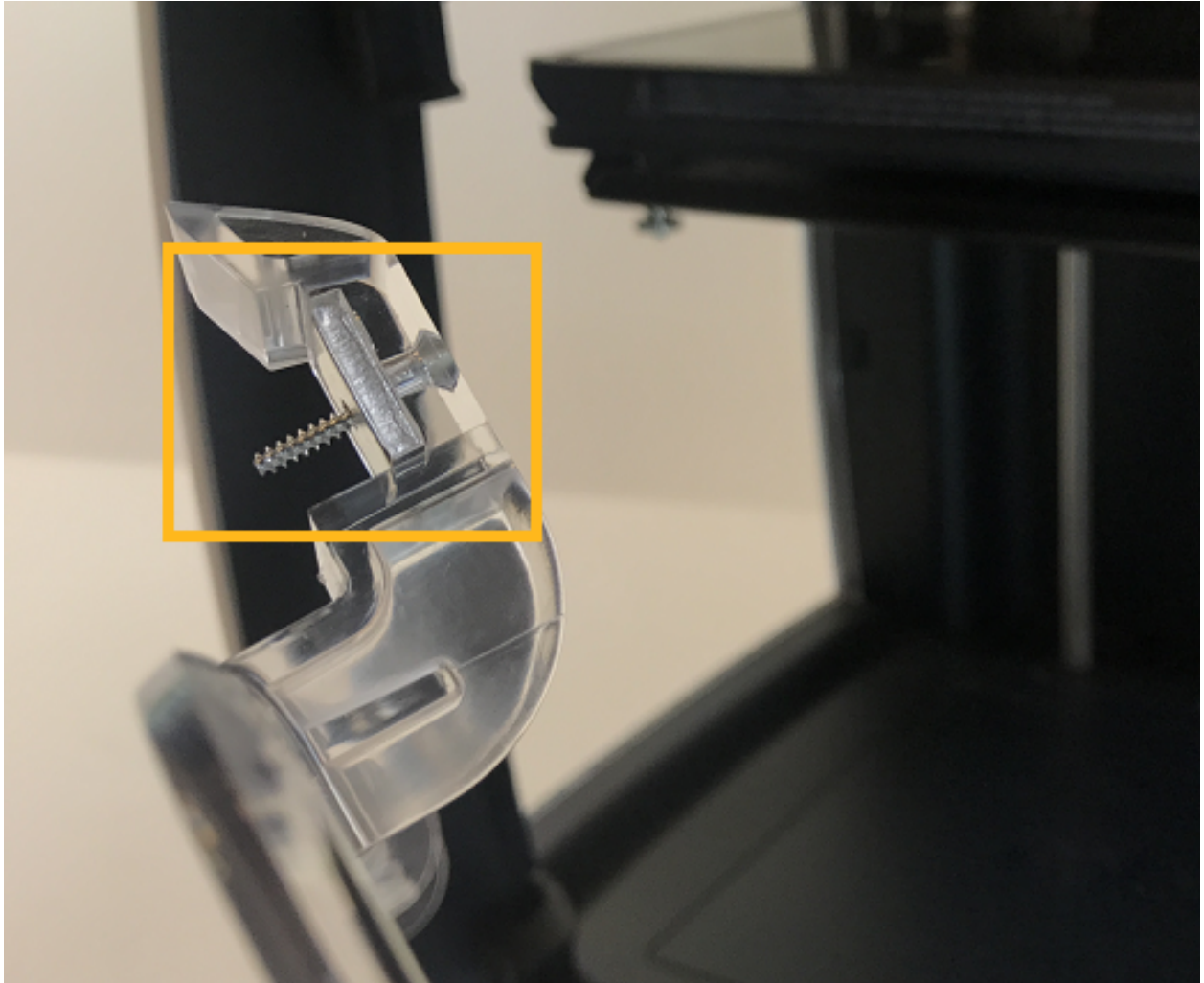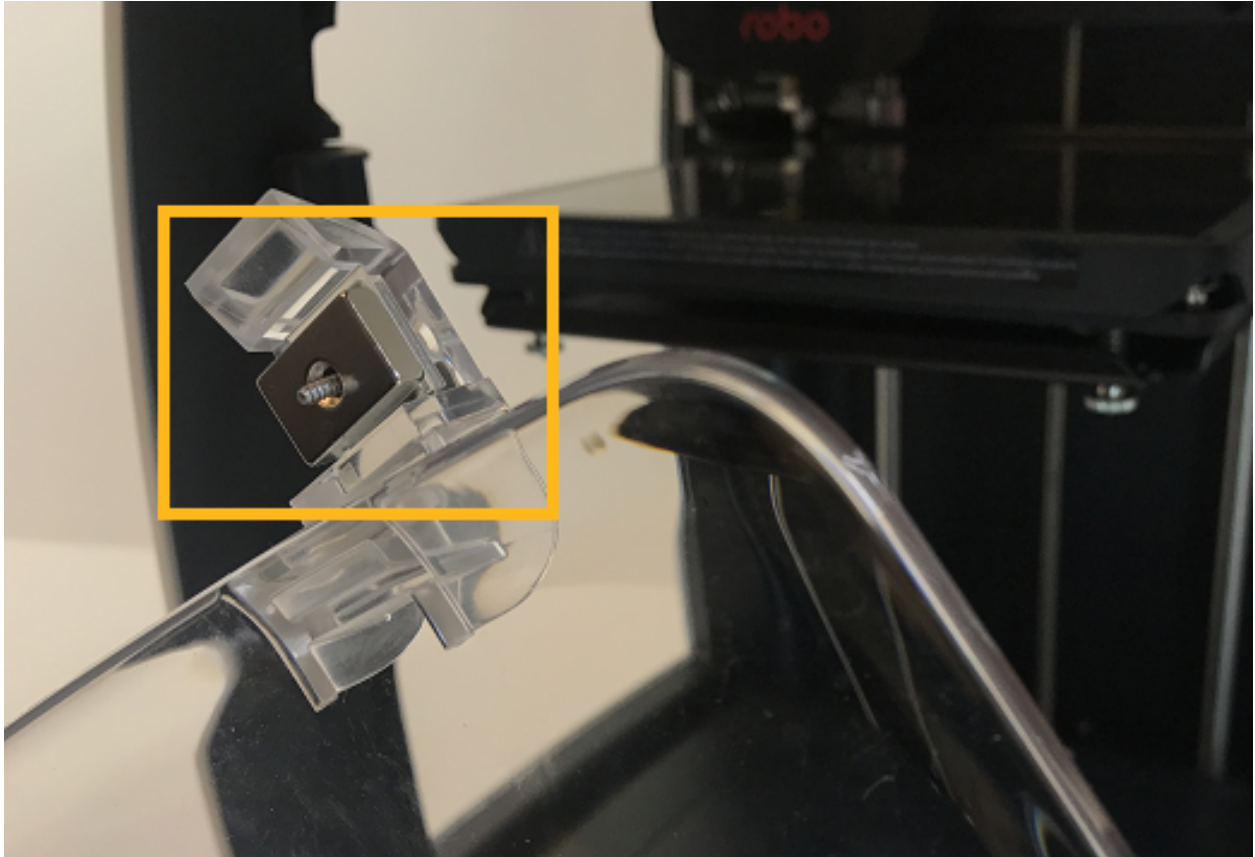
4. Next, place the new door onto the hinges, making sure the rectangle magnets seat all the way into the cavity, and the door sits flush. Then, start screwing the door into the hinges.

5. Finally, push the door all the way into the hinges so they are seated all the way in and flush. Now, screw the two screws all the way into the hinges.

Error Messages

If you are receiving error messages on your Robo R2, the following instructions will give you information about them, and also show you how to fix them and get you back up and running in no time.

Connection Interrupted

This connection interrupted error is a result of the main electronics board not being detected. There are a few ways this can happen - more discussed below.

1. First step in resolving this error is trying to reset the connection to the printer. A button is displayed within the error message labeled 'Reset'. Press that to initiate an electronics reset. If this doesn't work, look to the next step to try and resolve the problem.

2. Check your wiring on the top of your extruder. Make sure the two ribbon cables on the top of extruder are locked into place. Also, make sure the other white plugs are seated into their sockets all the way.

3. Check the wiring on your hotend. Sometimes these can come loose and send an error to the electronics. There will be two sets of wires. One for the temperature reading, and one for the heating power. Make sure these plugs are seated all the way up into their sockets. The wires should be seated all the way to the left. The thinner wires are the ones that go toward the front of the extruder, and the thicker, all red wires should be plugged into the plug towards the back of the extruder.

4. Check the wiring on your main electronics board. Every so often, the ribbon cable coming from the main electronics board can come loose. You will need to first take the inner panel out, located inside the printer below

the bed, to get to the inside of the printer. Once that is out, you will see two electronics boards. We want to look at the one on the left, which is black. On the back right of the black electronics board, there is a ribbon cable plugged in. Make sure this ribbon cable is seated all the way down into its plug to ensure there is a proper connection.

Cura for Robo Desktop

To get your 3d prints out looking great, Cura for Robo Desktop Software is the recommended software. This software takes your 3d models, and turns them into a language that the Robo C2 can read, and uses it to produce an object.

For the Quick Start Guide on using Cura for Robo, click here: Cura_for_Robo_QSG.

Get Started

To Download Cura for Robo, click here: Cura_for_Robo.

Requirements

1. Operating Systems

- Windows Vista or higher, 64 Bit

- For Mac instructions, follow this link: Cura_for_mac.

2. Hardware

- OpenGL 2 compatible graphics chip

- Intel Core 2 or AMD Athlon 64 or newer

Installing and Setup

1. Starting Cura for Robo for the first time

   - After installing Cura for Robo, go ahead and open the application from your applications folder (or wherever you have installed it).

2. Selecting a printer

   - The first time you open Cura for Robo, you will see a Add Printer Wizard window. Here is where you will select which printer you have by selecting either the Robo C2 or the Robo R2. Once selected, click the 'Add Printer' Button and your profile will be saved with the correct settings for your printer for optimal printing.
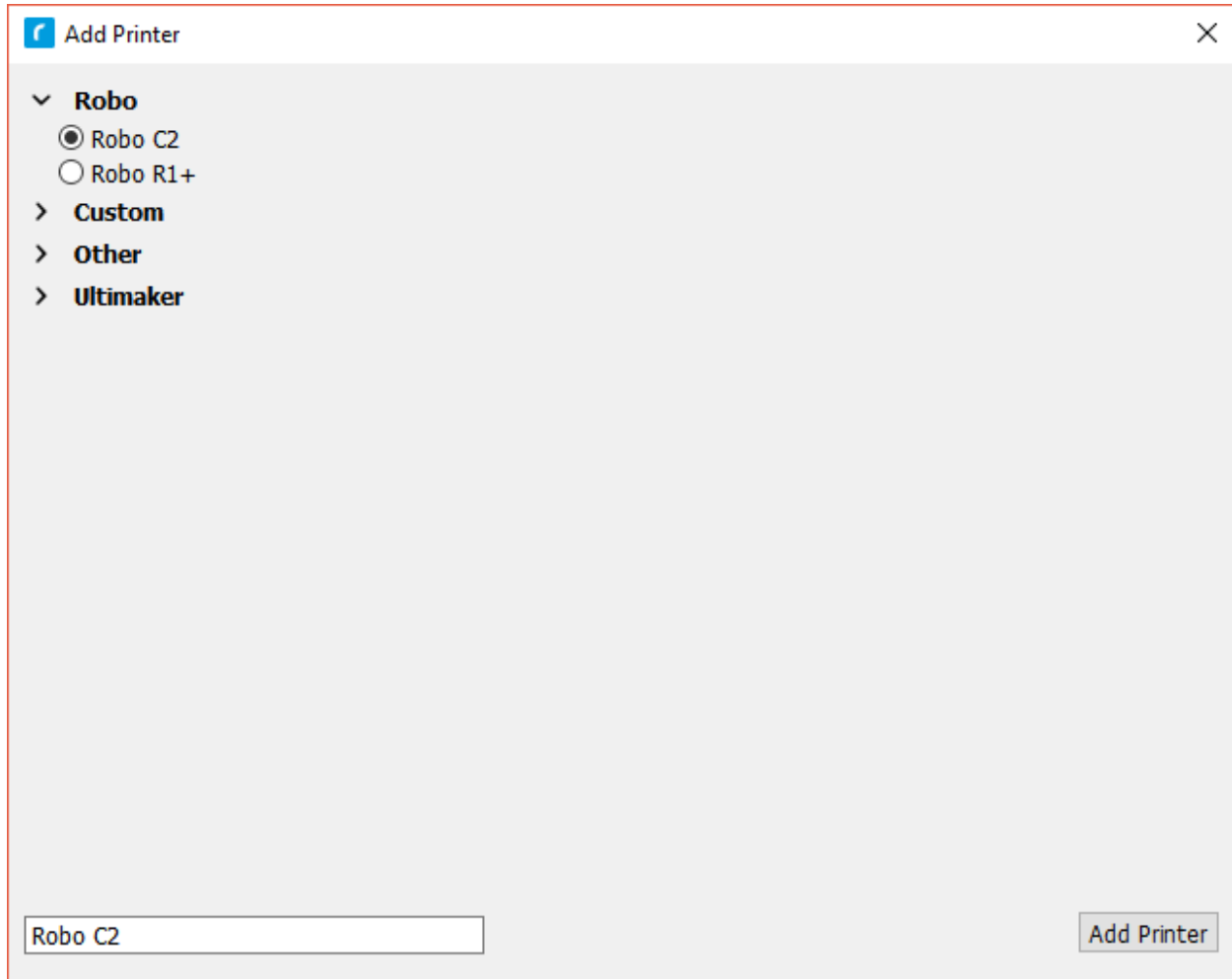
Overview

This is the main view of Cura for Robo. You can reference back to it if you ever need a quick refresh of where things are located within the software.
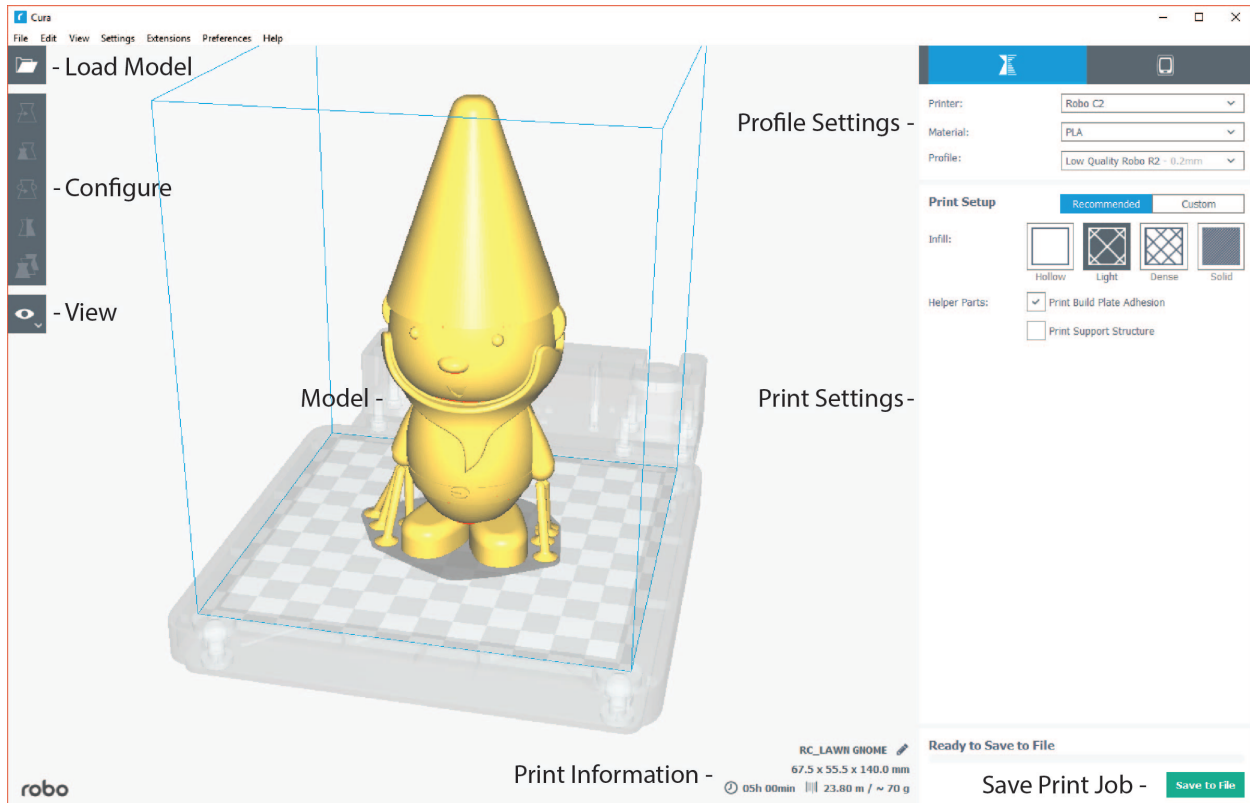
1. Loading a model

   - Click on the 'Open File' icon at the top left of the screen. Find your .stl file you would like to load and click 'open'. Once this is done, the model should appear on the build platform in the main viewer.

2. Selecting Material

   - Once your model is loaded, the next option you will need to select is your material. Make sure the material you select is the same one that is loaded into your printer.

3. Selecting a Profile

   - Next, click on the dropdown menu marked 'Profile'.

   - Here, you will see different profile settings that will determine the quality of your print.

   - Select the profile desired - Low, Medium, High, Ultra High Quality.
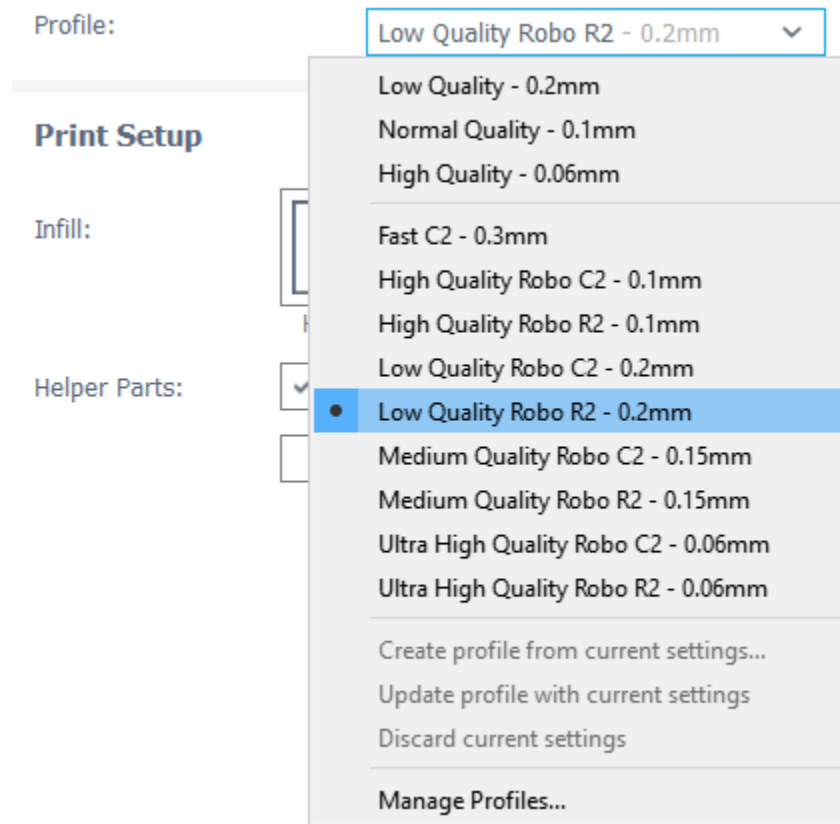
- Below the Pofile settings, you will find the simple recommended print settings. Here you can change infill density, as well as using print build plate adhesion for better adherance on your first layer, and support structure for generating scaffolding to support overhangs and bridges.
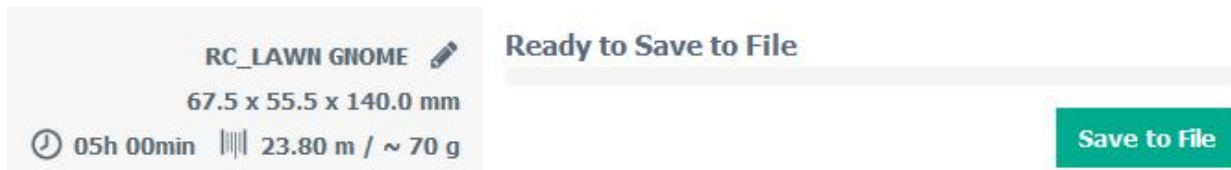
Configure and View the Model

Configuring the Model

To further configure your model for printing after you have loaded it onto the build platform, click on the model so it becomes highlighted.

1. Move

- You can move your model around the build platform with the Move tool. Either by the click-and-drag method, clicking the arrows projecting from the model, or entering values in the fields provided.
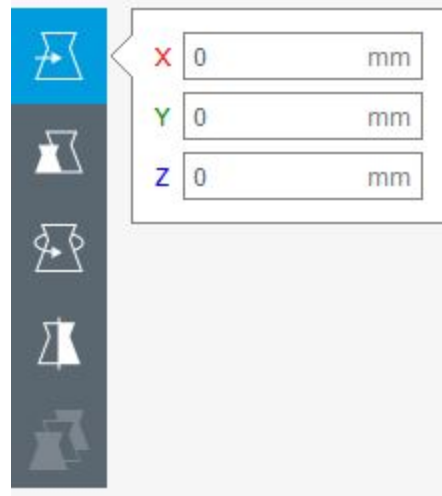
2. Scale

- Selecting the Scale tool will allow you to scale the model in 3 different ways;

- Dragging the handles located on the model itself will scale the model in whichever way the handle is oriented

- Entering the size desired into the number field scales the model into an exact dimension desired

- Selecting a percentage to scale will allow you to scale the model by a certain percentage based on its original dimensions

- Note; if you want your model to come out uniform, select the 'Uniform Scaling' check box when scaling
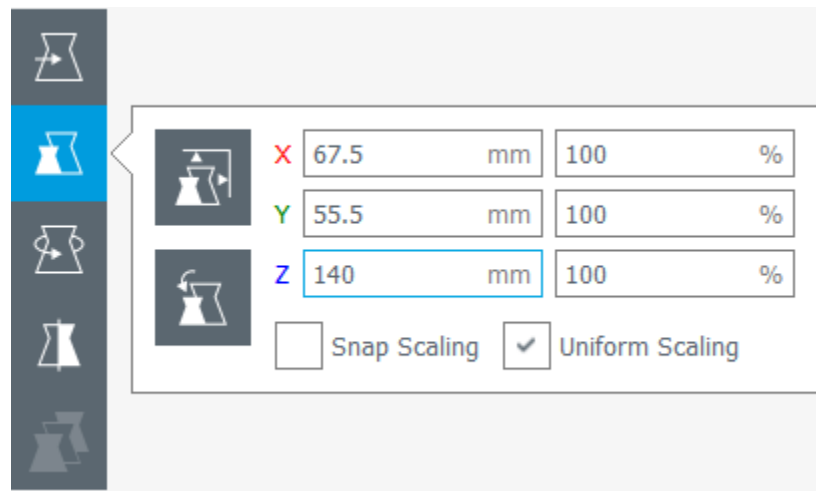
3. Rotate

- Selecting the rotate tool will bring up different ways to rotate your model

- You will notice colored rings around your model for different axis. Click and drag one of these rings to rotate in that direction

- Also shown is the 'Reset' and 'Lay Flat' buttons to orient you model in a way that best suites you
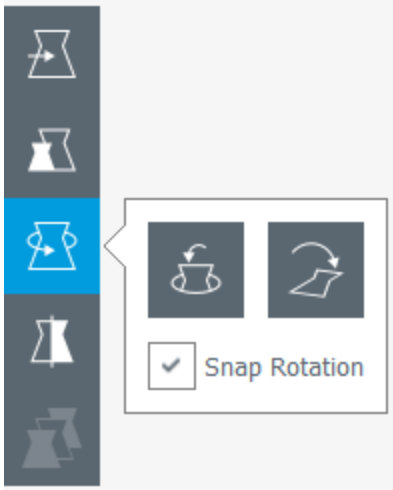
4. Mirror

  - The Mirror tool will allow you to mirror the model in the X, Y, and Z axis.

  - Simply click on one of the arrowheads that pop up on your model to mirror it in that direction.

Viewing the Model

Once you have satisfied all of your configuration and profile settings, you can view the model in layer mode. Layer mode allows you to inspect the way your model is sliced and will be printed. It is usually best to inspect your model this way to see if it will be printed the way you are intending.
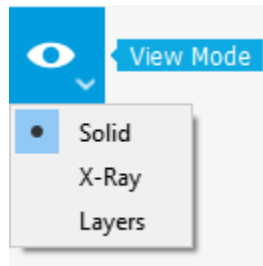
1. Solid

  - Solid view is the defualt view when the program is started. You can view the digital model to see if it is created like it was intended, and also see where it might have imperfections when examining it.

  - The model will be colored yellow if it is selected and within the usable print area, and grey if it is either deselected or out of the printable build area.

2. X-Ray

  - With X-Ray view, your model will show gaps and intersections throughout your model. These will be shown in red.

  - If an error is located in your model, go ahead and adjust it in your 3d design software and reload the model to check if the error has been fixed.

3. Layers

  - Layers view is one of the more important views to check before you start printing your model. The Layers view is a virtual representation of the where your nozzle is going to move throughout the print process of the physical model.

  - When the Layers view is selected, a slider will appear beneath the button.

- Use the slider to look through your layers one by one and see how your model will be built.

- You can also input a layer number to jump directly to the specified layer of your model.

- Note: Every time a setting is changed, the view has to be completely reloaded with the new settings in layer view.
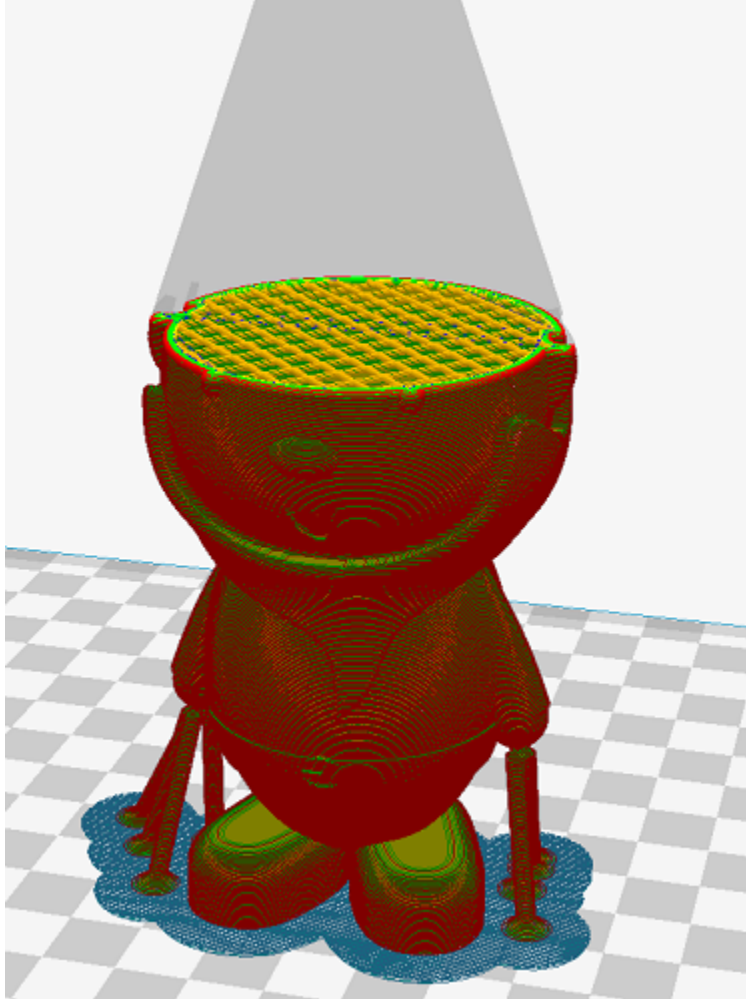
Settings

Settings profiles are provided to you as defaults, but depending on the specific model or personal preference, you can modify your settings by clicking on 'Custom' under Print Setup on the left hand side of the main window. Below are what different settings that may be changed.

Quality

1. Layer Height

   The layer height of your model will ultimately determine how detailed your print will visibly look. Layer height refers to the thickness of a single printed layer. The smaller the layer height, the more detailed your model will look, but will take longer to print. The larger the layer height, the less detailed your model will look, but will take less time to complete compared to lower layer heights.

2. Initial Layer Height

   Initial layer height determines the first layer height of your print. More often than not, the initial layer height is thicker than the remaining layers to create a stronger bond to the build platform by laying down a bit more plastic onto it. This helps the print not come loose from the bed when printing the rest of the model. If you have a raft (build plate adhesion option) enabled, your initial layer height can be the same as your layer height. If you do not have a raft enabled, it is best to use a thicker initial layer height.

3. Line Width

   Line Width determines the width of a single printed line. Normally, the line width should equal the diameter of your nozzle for most prints. Cura for Robo will automatically calculate how much plastic should flow out of the nozzle based on line width.
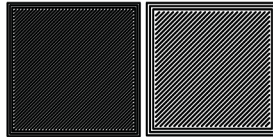
Left: smaller line width - Right: larger line width

Shell

1. Wall Thickness

   Wall thickness determines how many walls (or perimeters) your print will have. Set this value to be a multiple of line width from the section above. The larger your wall thickness, the sturdier your print will be, but the more time it will take to print. An average wall thickness is about 3 times your line width.
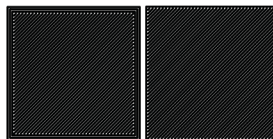
Left: 3 walls - Right: One wall

2. Wall Line Count

   You can also set a wall line count if you do not want to set your wall thickness. The wall thickness will be automatically calculated if you enter a wall line count number into this field based on your line width.

3. Top/bottom thickness

   The top/bottom thickness setting will determine how many solid (fully filled in) layers of plastic you will print on the top and bottom of your print. The higher the thickness count is, the less gaps you will see in the top and bottom layers, but will increase print time and use a bit more filament. When setting this value, set it as a multiple of your layer height to ensure even distribution of plastic. For thicker layer heights (.2 mm), .6 or .8 mm thickness should be sufficient. For thinner layer heights (.1 mm), use .8 or 1 mm thickness to get a clean top and bottom layer.

4. Top or Bottom thickness

Here you can set different thickness for both the top and bottom of your print independently. In general, bottom thickness does not need to be set as high as the top layers because you are printing onto a flat surface. For the top layers, it is better to have more layers to fill in all voids in the print sufficiently.

5. Number of Top/Bottom layers

Instead of setting the thickness of your top and bottom layers, you can adjust the specific number of layers if you wish. When you do this, the top/bottom thickness will be automatically calculated to match the layers input.

6. Top/bottom pattern

You are able to change the pattern of your top and bottom layers. There are 3 options; concentric, lines, and zig zag. Concentric fills in your layers with the same pattern from the outside in. Lines and zig zag both fill in your layers with a diagonal patern, either connecting to the shell or moving around the shell to infill the layers.
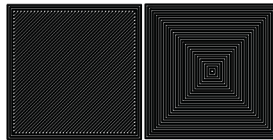
Left: lines pattern - Right: concentric pattern

7. Z seam alignment

On most prints, there is a visible seam that appears on a model from when your printers' nozzle pauses to change layers in the z direction. Z seam alignment allows you to place where each new layer in the z direction starts, effecting where the seam will be. There are 3 options to choose from; shortest, back, random.

- Shortest will use the z seam wherever the last layer left off and will start the new one right away, producing a shorter print time, but a visible seam.

- Back will simply put all layer changes at the back of the model, so make sure to rotate the model towards the back of the build plate where you dont want the seam to show up.

- Random will choose a different spot to put the seam, which will eliminate visibility, but increase print time.

Infill

1. Infill density

The infill density determines how dense your print will be by filling in your print with plastic by a certain percentage. 100% infill density means your print will be totally and completely filled in with plastic, while 0% infill density means your print will only print the perimeters with no plastic filling in the middle, making it hollow. More infill produces a sturdier print, but takes more time, whereas less infill produces a weaker print, and takes less time to print. An average infill density is around 20% for visual models, whereas higher infil density parts are used more for structural or mechanical use models.
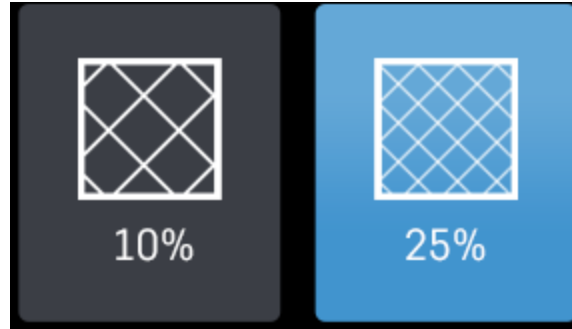
2. Infill pattern

   Infill pattern will vary depending on what you are looking for in the use of your model. There are 7 options;

   - Grid: A grid shaped infill, with lines in both diagonal directions on each layer. This option is the most common to use.

   - Lines: Creates a grid shaped infill, printing in one diagonal direction per layer.

   - Triangles: Creates a triangular shaped infill pattern.

   - Cubic: A 3D infill of tilted cubes.

   - Tetrahedral: A 3D infill of pyramid shapes.

   - Concentric: The infill prints from the outside towards the center of the model. This way infill lines won't be visible through the walls of the print.

   - Zig Zag: A grid shaped infill, printing continuously in one diagonal direction.
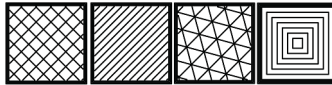
These are a few of the infill options

3. Infill layer thickness

   Infill layer thickness determines how thick your infill layers are. Because you do not see the infill of a print, you can choose to make these layers less detailed and drastically reduce print time. If this setting is used, make sure the thickness is a multiple of the layer height (i.e. .1 layer height, .2 infill layer thickness). This will allow your printer to print two layers of perimeters, and then go back in and fill in the inside of the print, essentially printing the equivalent of two infill layers at a time.

4. Infill before walls

   If infill before walls is enabled, the layer being printed will fill in the infill before the perimeters. Printing the infill first leads to sturdier walls, but the infill pattern might sometimes show through the surface. Printing the walls first may lead to more accurate walls, but overhangs may print worse.

Material

1. Printing temperature

   Printing temperature determines the heat of the nozzle while printing. Most filaments print between 175°C and 250°C, although some can print lower or higher than this. For PLA, a temperature of 190°C is optimal for Robo branded filaments, while ABS has an optimal printing temperature of 230°C.

2. Build plate temperature

Build plate temperature determines how hot your heated build platform will get in order to adhere the plastic down to it. The Robo C2 does not have a heated build platform, while the Robo R2 does. For the Robo R2, PLA is best printed around a 50°C build platform, and ABS plastic at 80°C for best stick on the first layer.

3. Enable Retraction

   Retraction is used when the printer is traveling from one point to another without laying down any plastic. During this time, there can be melted plastic in the nozzle, which could ooze out and cause unwanted plastic on your model. In order to eliimate this ooze, enable retraction to retract, or pull back, the filament while on these travel moves. Different material require different settings for best results. Contact your material manufacturer for best retraction settings.

4. Retraction distance

   Retraction distance determines how far the material, in millimeters, will get pulled out of the nozzle when performing a retraction move. A short retraction distance will result in less potential damage to your material, such as snapping or clogging, but will cause more oozing. A long retraction distance will result in more potential damage to your material, but will have less oozing and a nicer print finish.

5. Retraction speed

   Retraction speed determines how fast or slow the motor pulling the material up the nozzle will turn. A fast retraction speed will result in a larger potential damage to your material and drive gear, but will have less oozing. A slow retraction will have less potential damage, but result in potentially more oozing.

6. Retraction minimum travel

   This determines how far your nozzle must travel in order to execute a retraction move. If your model has a lot of small areas, this will cause the printer to retract a lot, and will be more prone to clogs and potential errors. To decrease the chance of errors on a lot of retraction moves in a small area, increase the retraction minimum travel. Be mindful that increasing this setting too much can result in stringing and unwanted artifact on your printed part due to oozing.

Speed

1. Print speed

   Print Speed determines the speed of the print head while printing (in mm/sec). Printing faster will get your print done faster, but also risk the print job failing duo to motors failing or material not being extruded properly or heated optimally. The default profiles set for the C2 and R2 are best used to keep the machine lasting longer, at the same time as printing quickly.

2. Infill speed

   This setting changes the speed in which your infill is printed. Note that because the infill of a print is not seen, you can increase this speed if you would like. Be mindful that a faster infill speed can potentially affect the strength of your print.

3. Outer wall speed

   The speed of the outer wall, or outer perimeter. Printing the outer wall slower than the inner walls and infill will result in a better surface finish of your printed model, while not adding too much time to your printing job.

4. Inner wall speed

   The speed of the inner walls, or inner perimeters. Because this does not affect the surface quality of your printed model, this speed can be as fast as your infill or print speed setting.

5. Top/bottom speed

Top/bottom speed determines how fast your solid top and bottom layers are printed. Note that the slower bottom layers give you more reliability of the model by giving it a dependable base, and slower top layers give you a more reliable roof on your print to give it a nice surface and close off all gaps.

6. Travel speed

   Travel speed determines how fast your print head will move when it is not extruding material and printing your model. This move can be higher than your print speed to make printing time lower, but be mindful of moving too fast and motors or belts failing.

7. Initial layer speed

   The speed for the first layer. A lower value is used here to improve adhesion to the build platform and get a reliable first layer down.

8. Initial layer travel speed

   The travel speed for the first layer. A lower value is used here to ensure that the print nozzle does not potentially touch existing plastic laid down on the build platform and pull it up, resulting in a failed print.

9. Number of slower layers

   The number of slower layers determines how many layers from the beginning of the print are going to be slower than the rest. The overall success rate of a print is relying on the first layers adhering to the bed correctly. The speed of your print is gradually increased over these layers.

Travel

1. Combing mode

   Combing mode keeps the print nozzle within the interior of the model whil traveling from one point to another. This reduces the number of retraction moves because the extruder wont retract if enabled, but will increase print time. If combing mode is off, the print nozzle will travel the shortest distance from where it stopped to the next point it needs to go, not minding what is in its path underneath it.
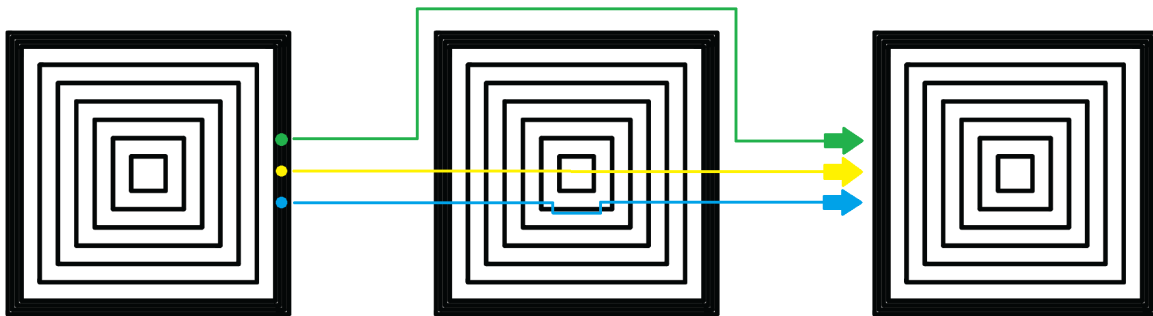
Green: Combing ON, avoid distance ON - Yellow: Combing OFF - Blue: Combing ON, avoid distance OFF

2. Avoid printed parts when traveling

   Avoid printed parts when traveling will move the nozzle around printed parts to make potential oozing not get hit by the printed part. Sometime this can lead to the nozzle hitting an existing printed part and knocking it over as well. Enabling this will increase the surface quality of your printed part.

3. Travel avoid distance

   Travel avoid distance determines how far a distance your print nozzle will will be from your existing printed parts when 'avoid printed parts when traveling' is enabled. The further this distance is away, the less chance you have at running into a part with your nozzle, but will increase printing time of your model.

4. Z-hop when retracted

When z-hop when retracted is enabled, the build platform of your printer will drop by a certain height. The reason for this is to prevent your nozzle from hitting already printed parts on your build platform, as well as eliminates unwanted extra plastic on your parts due to oozing or stringing.

5. Z-hop height

The z-hop height determines how far down your build platform will lower every time there is a retraction. The larger the height, the safer it is, but the longer your print will take.

Cooling

1. Enable print cooling

Cooling fans are essential when printing with certain materials. Print cooling will make sure that the previous layer of material that is extruded is cooled enough so that the next layer can be printed on top of it with a solid base beneath it. Cooling also is needed for overhangs and will dramatically increase the surface quality of prints. For some materials (like ABS plastics), cooling is not needed because of the material inducing uneven shrinking and bad print layer adhesion.

2. Fan speed

Different materials require different fan speeds to optimize print quality. Some materials can shrink more than others when cooled faster, while some dont need fans at all.

3. Regular/maximum fan speed threshold

 • Regular fan speed is the speed when the printer is doing most of the work.

 • Maximum fan speed is the speed when your printer is spending a minimal time on a layer and needs to cool down the plastic very quickly to make sure it is hardened before moving to the next layer up.

4. Regular fan speed at height

The regular fan speed at height value determines at which layer the fans will turn on. Because the Robo C2 and Robo R2 are suggested to use rafts, we determined this value to be higher due to the fact that fans can cool the bottom layers too well, and cause warping of your print and ultimately delaminate the plastic from the bed and causing a failed print.

5. Minimum layer time

The minimum layer time determines how long the printer should take to at least print a single layer. If the actual print time of a single layer is below this value, the printer will automatically slow down so the minimum layer time is reached, allowing the plastic to cool properly before the next layer is printed on top of it.

6. Minimum speed

The minimum speed determines the lower threshold of how slow the printer will actually print regardless of minimum layer time. This will make sure that the printer is not printing too slow, causing extrusion and motor issues, and degrading the surface finish of the printed model.

Support

1. Enable support

Enabling support will give your model a scaffolding underneath parts of the model that may need some support underneath their overhangs. Overhangs are part of your model where the plastic is being laid down in mid air. Instead of the model being printed onto air, the support structure will be able to assist the overhangs to be held up when being laid down.

2. Placement

Placement determines where the support structure is placed. There are two options to choose from:

- Touching Buildplate: The support structure is only printed on overhangs that are directly over the build platform.

- Everywhere: The support structure is printed everywhere there is an overhang, even if it is somewhere inside or on the model itself.
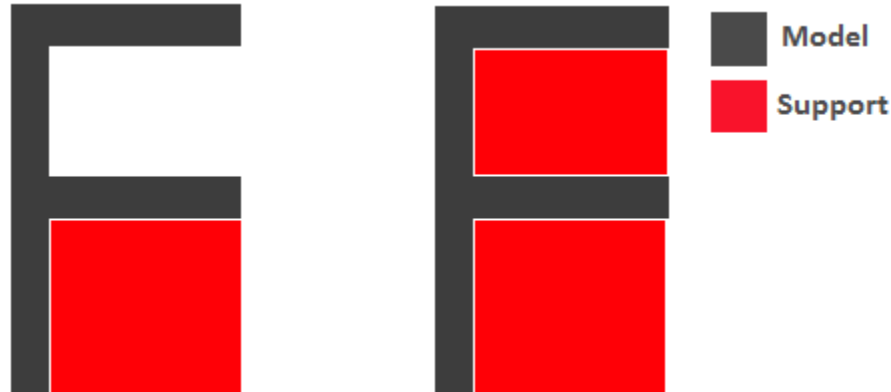
Left: Touching buildplate - Right: Everywhere

3. Overhang angle

   The overhang angle determines the angle at which support material will be used. The larger the angle, the less support material is used. If set at 90°, there will be no support material, whereas a 0° angle will use supports everywhere on the model.

4. Support pattern

   Support pattern determines the ease of removal and sturdiness of the support structure. There are five patterns to choose from:
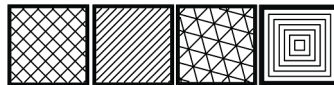
5. Support density

   The density of your support will result in different strength of your support structure. A lower density will be easier to remove, but not as strong compared to a higher density, which will be harder to remove from the finished print, but give you a stronger support structure.

6. X/Y distance

   X/Y distance determines the distance between the support structure and the model itself in the x and y directions. A bigger value increases the distance, which will make the support structure less likely to touch the model and fuse the support to the model. Be aware that as the value increases, the more likely a small overhang in the x or y direction would not be supported because the distance is further away.

7. Z distance

Z distance determines the space between the top and bottom of the model and the support structure. Top distance determines the distance between the top of the support structure and the bottom surface of the overhang. Likewise, the bottom distance determines the distance between the bottom of the support structure and the top area of the model. This value should always be small, but depending on the model, might need to be tweaked higher and lower. A smaller value will result in a cleaner surface finish of the model, but will be harder to remove from the model. A higher value will be easier to remove, but will result in a more rough surface finish on the model.
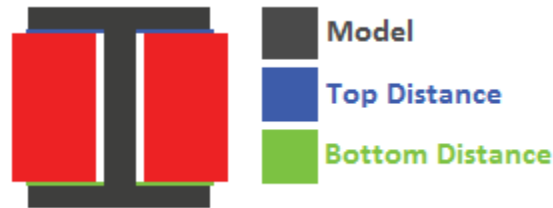
8. Horizontal expansion

   Horizontal expansion determines how much the support structure will be printed beyond the model in the x and y direction. A higher value will result in a stronger support structure, but small areas where there are support structure may be harder to remove. A lower value will result in less support structure, which may be hard to remove on areas where there is a lot of support needed to remove after the print is finished.

9. Enable support roof

   If a support roof is enabled, the support structure will create a solid layer of plastic at the top of the support structure. When using a support roof, the model will come out with a very clean surface finish, but may be very hard to remove compared to not using a support roof.

Platform Adhesion

1. Brim

   Using a brim adds a single layer around your object, fused to the outline of your model to improve adhesion to the bed and prevent warping. A brim is very useful for models that have very small surface area as the first layer as the brim prevents those small surfaces from curling up.
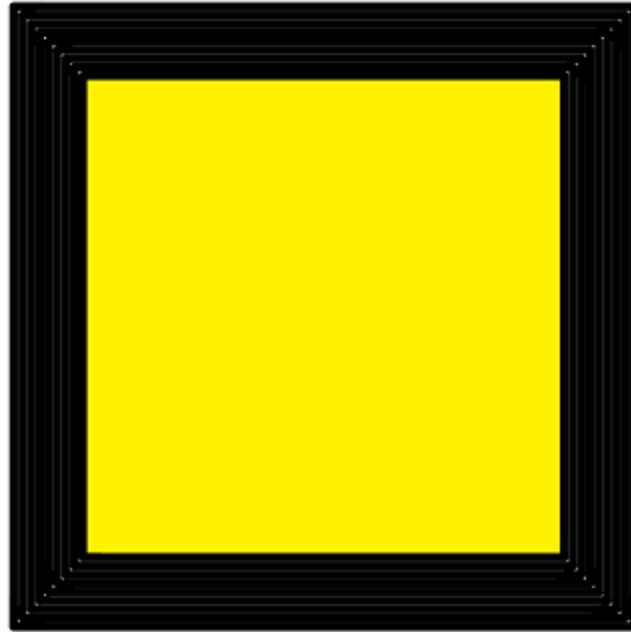
2. Raft

   A raft is the best method for using platform adhesion on a Robo C2 and Robo R2. A raft is a couple layers of plastic that will adhere to both the bed platform and the print itself. If the model has very small surface area, a raft is also the best option for platform adhesion. A raft is comprised of three main parts: Base layer, middle layer, and top layers.

   • Base layer: This is the first layer of plastic put down and should have a larger layer width, looking almost smushed, to help adherance to the bed.

   • Middle layer: Layers that are between the base and top layers. The middle layer gives more surface area for the top layer of the raft to lay down upon. Normally, there is only one middle layer.

   • Top layers: The top layers are the layers which adhere the model to be printed to the raft iself. Top layers work best when printed with 100% fill and two or more are printed to give it a nice clean surface area for the model to be printed onto.
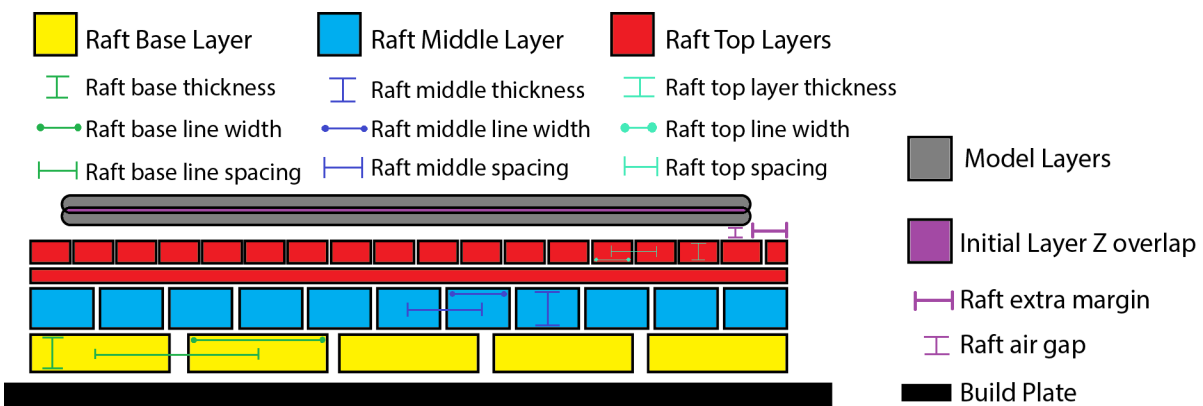
   • Raft air gap: This creates a gap from the top layer of the raft to the actual print in order to remove the raft after printing is finished. A higher value will result in an easier removal of the raft from the print, but can make it harder for the first layer of the print to lay down and adhere correctly. Likewise, a smaller value will lay down the first layer well, but can result in a harder to remove raft from the model due to fusing of the plastics.

3. Skirt

A skirt is a line printed around the model, but is not fused to the model directly. The skirt acts as a priming line to help make sure the material is flowing out of the nozzle properly before beginning to print the model.

cura-for-robo-desktop/images/skirt.png
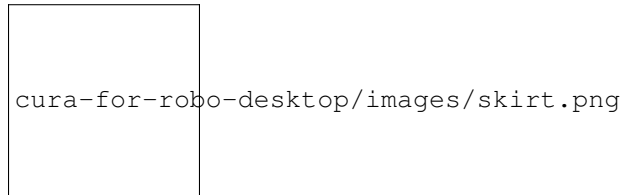
Connecting a Printer via Wifi

There is a way to connect Robo C2 directly to Cura for Robo enabling you to print right from within the software. Take these steps to connect your printer;

1. Click on the Robo C2 icon in the top right of the interface.

Printer: Robo C2

Printer Monitor

The printer is not connected. You may need to add your Octoprint API key under Settings/Printer/Manage Printers.

Temperatures

Hotend

Active print

Job Name

Printing Time

Estimated time left
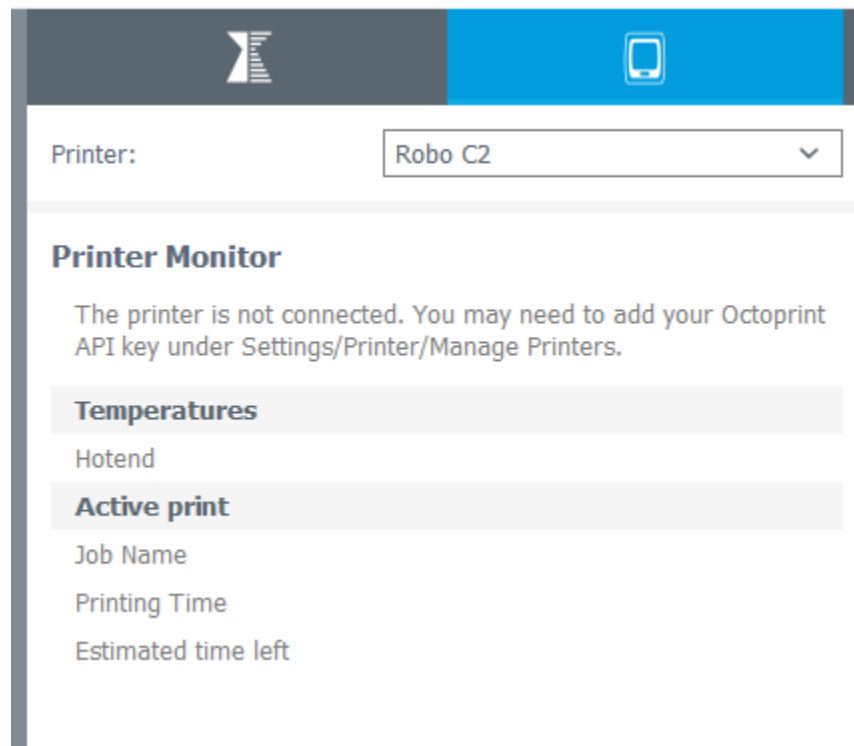
2. Under the 'Printer' dropdown menu, select 'Manage Printers'.
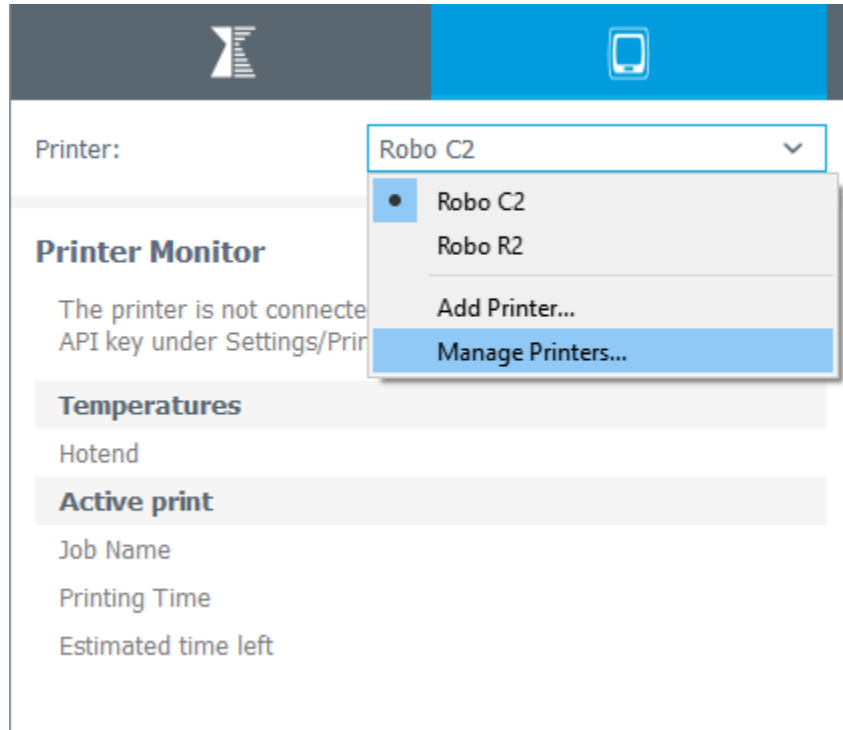
3. A 'Printers' window will pop up. In the middle right of this pop up window, click on the button labeled 'Connect Octoprint'.
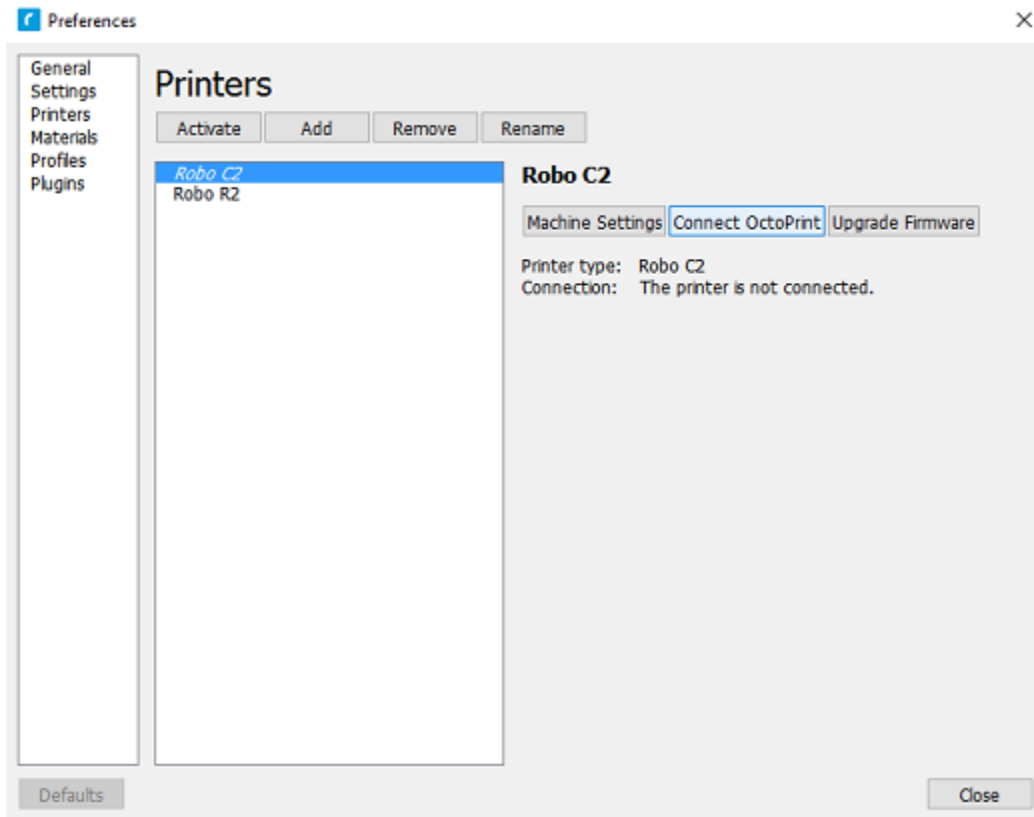
4. A new window labeled 'Connect Octoprint' will pop up. In the top middle of this window, click on the button

labeled 'Refresh'. This will bring up all of the printers that are connected to the same wifi network that your computer is connected to.
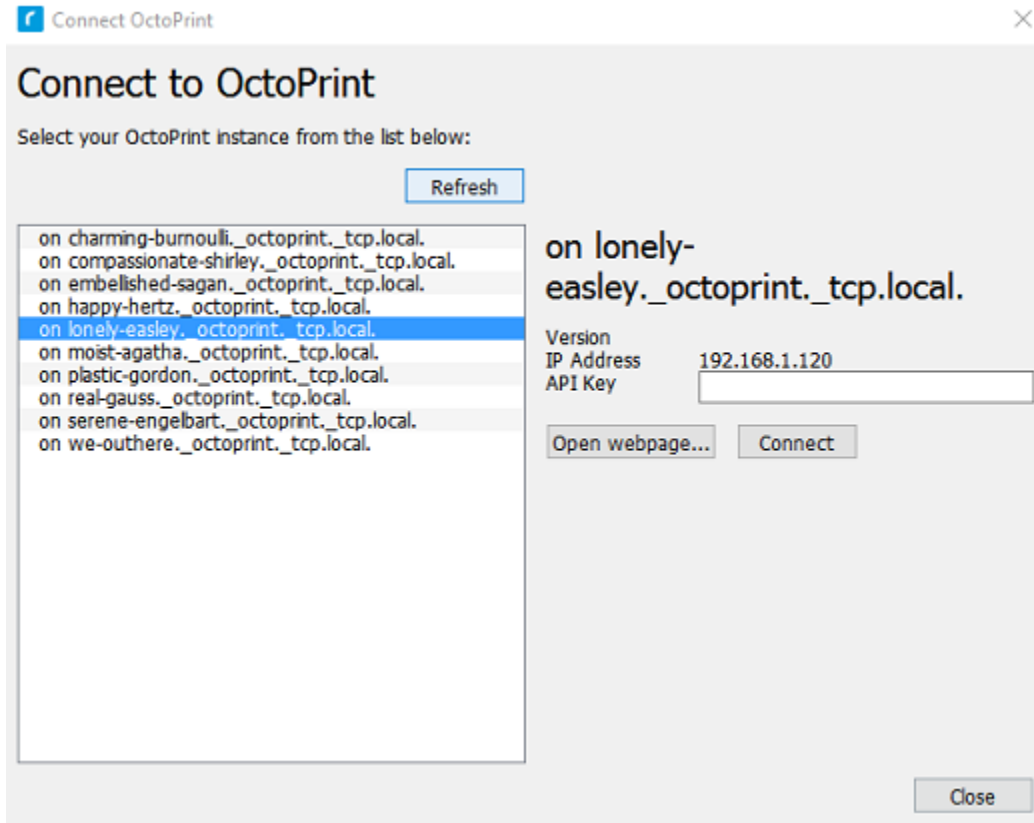
5. Once you see your printer name populated in the list of printers, select it. Next, select the button labeled 'open webpage' located in the middle right of the window. This will then open your browser and direct you to the printers' web interface.

6. Once you are in the web interface you will see a webpage that looks like this.
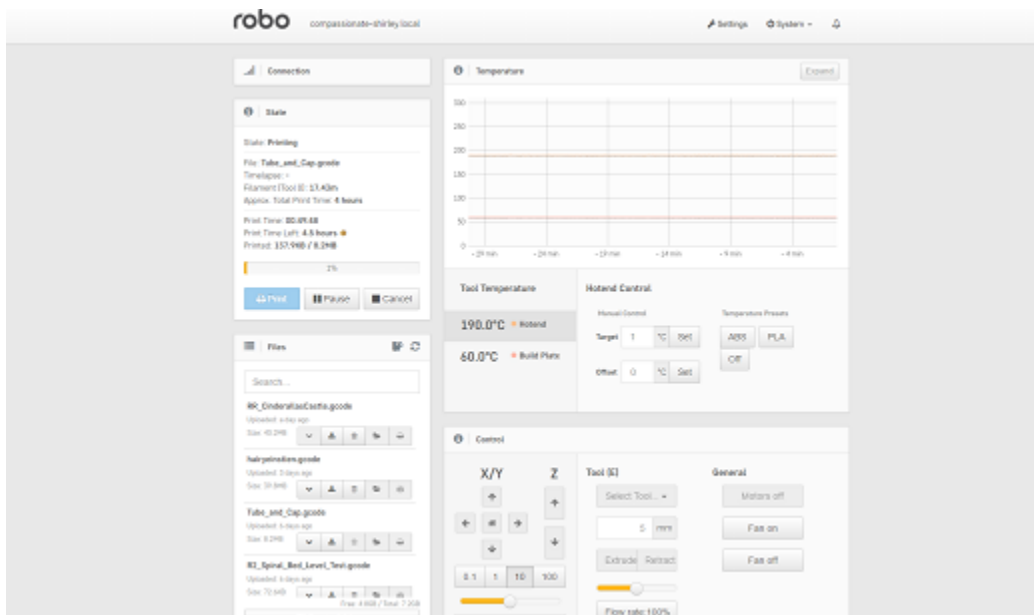
7. Click on the 'settings' button in the top right corner of the window.
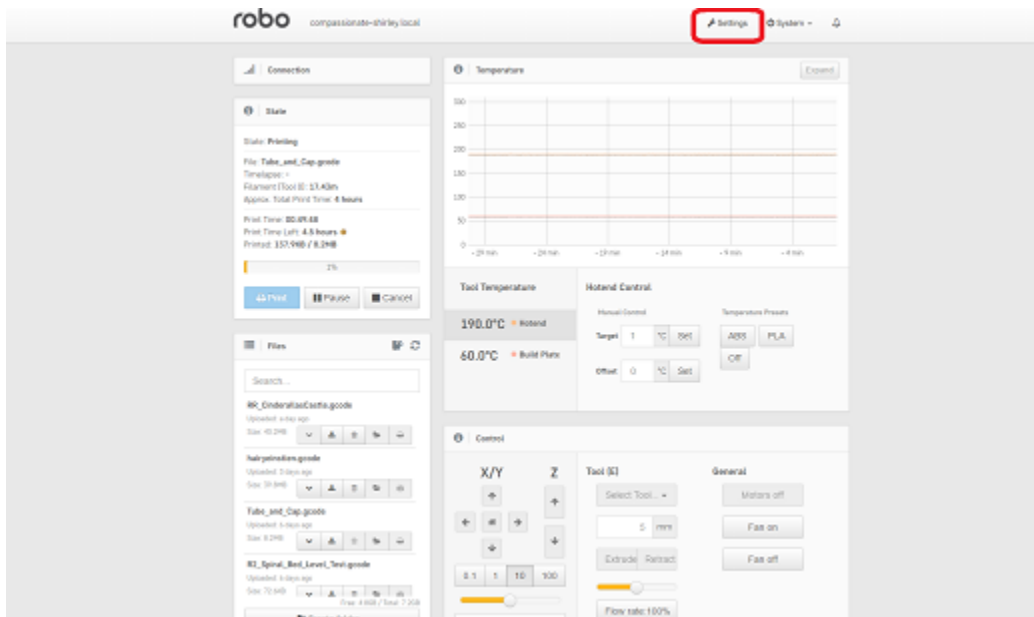
8. A settings window will pop up. On the left hand side, scroll down and select the item labaled 'API' under 'Features'.

9. An API key will be present just above a QR code. It is usually a long string of numbers and letters. Go ahead and highlight this number and copy it by pressing ctl+C on windows or command+C on a mac.
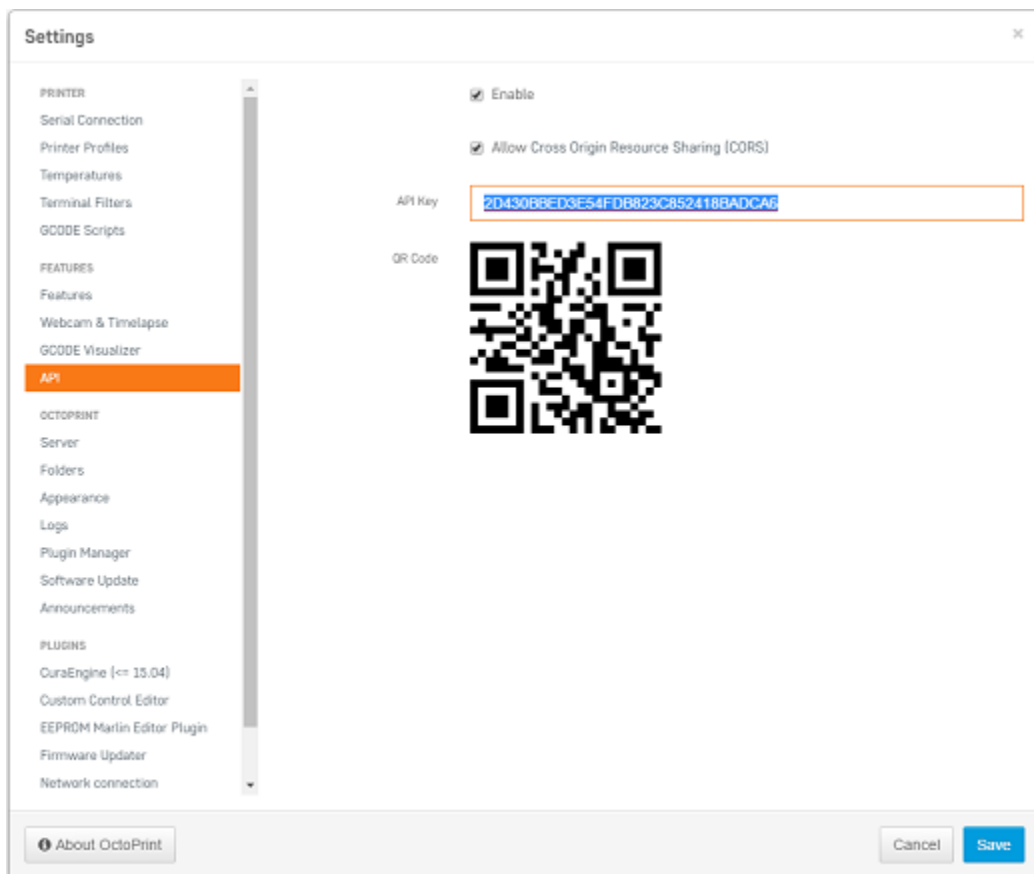
10. Next, go back into Cura for Robo desktop application. Paste this API key into the field provided by pressing ctl+V on windows or command+V on a mac.
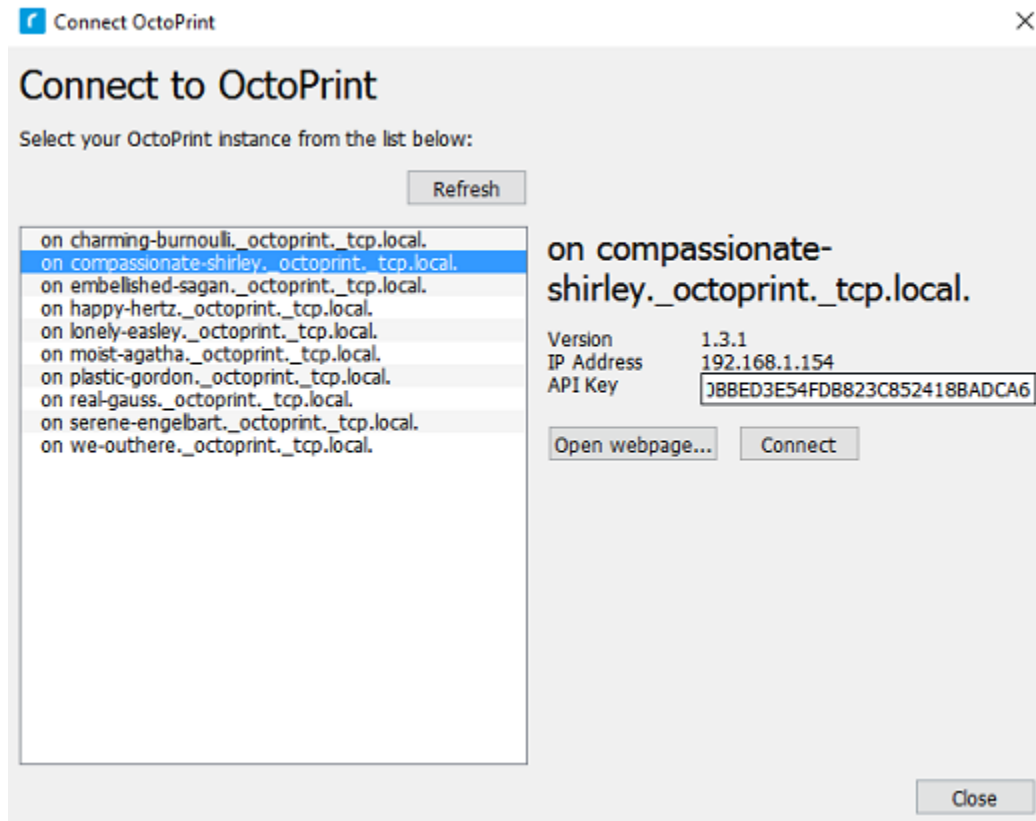
11. Finally, click on the 'Connect' button. Then press 'close'.

12. Congratulations! You can now not only monitor your printer from within Cura for Robo, but you can also send your print jobs directly to the printer with a single click!

Note; You should see a green check mark on the printer icon in the top right of the main interface. If you see a question mark, try restarting the program. If you are still seeing a question mark, make sure both the printer and your computer are connected to the same network.

Troubleshooting

Connecting Octoprint plugin for Mac

If you have downloaded the Mac version of Cura and are having problems seeing the 'Connect Octoprint' button in your machine settings, follow these steps:

1. Find Cura 2.5 in your Applications folder.

2. Right click on Cura 2.5 and select "Show Package Contents".

3. Navigate to the folder shown in the picture below:
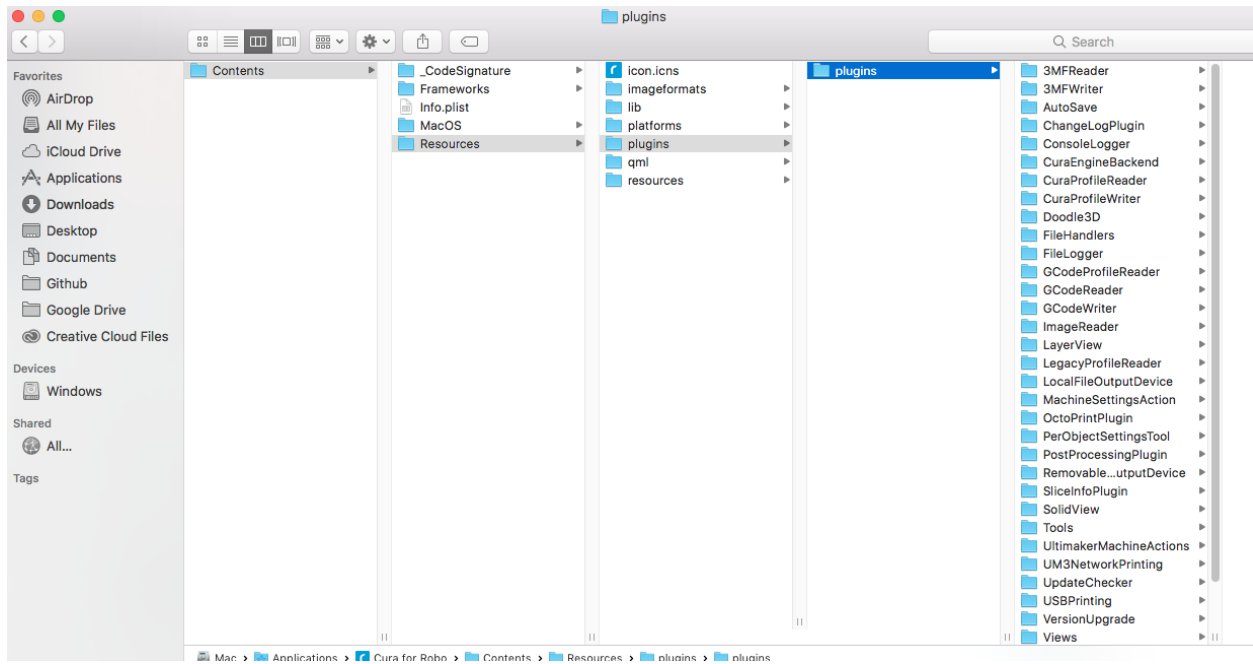
4. Unzip, and add the folder labeled OctoPrintPlugin to the "plugins" folder. Download here: OctoPrintPlugin.

5. Restart cura 2.5

.dll error for HP computers

If you are having trouble opening Cura for Robo Desktop because of the dll error, follow these steps to get you to be able to run the software.

1. Download http://ftp.hp.com/pub/softpaq/sp78001-78500/sp78033.exe and extract the files.

2. Open windows Control Panel by right clicking on the windows start icon.

3. Open Programs and Features, right click the entry for HP 3D DriveGuard and select Uninstall. (If it is not in the list, just run the setup file from step 1 and select Remove if that option is available)

4. When this has completed, restart your computer.

5. Run the setup again from step 1. If you get an INI error during setup, it doesn't matter, the necessary files have been deployed, just close it.

6. Cura for Robo should now run properly.

Robo Web Dashboard

For the Quick Start Guide on using the Robo Web Dashboard, click here: Robo_Web_Dashboard_QSG.

Overview

How to connect

There are three different ways to connect to the web dashboard from your browser:

Note: Make sure your Robo C2 or Robo R2 is connected to the wireless network or in hotspot mode or else you wont be able to connect to your printer in the web browser.

IP Address

1. Here we can use the IP address of your printer to login to the web dashboard. On the screen of the Robo C2 or Robo R2, go to Utilities> Network> Network Status. Here you will see an IP address. Copy this IP address down and bring it over to your computer.

2. Open up your web browser (such as Google Chrome or Mozilla Firefox), and enter this IP address into the address bar. If you entered it correctly, you will see a web dashboard come up.
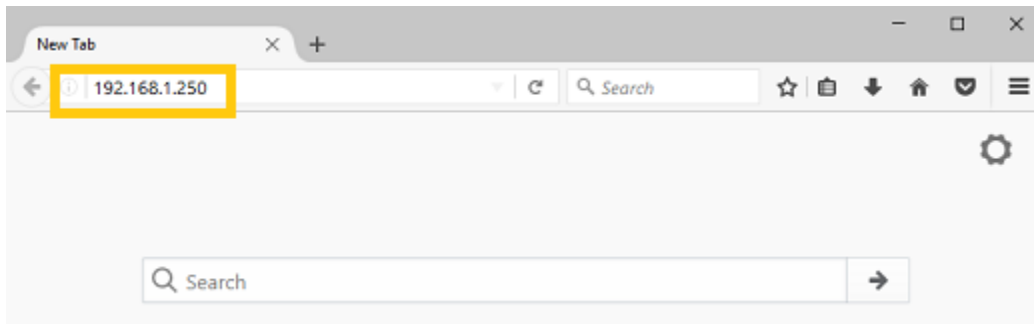
Note: You can also connect via a web browser on a smartphone for on-the-go connectivity

Printer name via Bonjour

1. Mac and iOS Users

   • First, locate the printer name. There are three places this is shown; On the back of the printer, on the screen under Utilities> Network> Network Status, and on the bar code sticker that came on original box

   • With this name known, go to your web browser and type the name into the web browser address bar followed by a .local/ (examples below).

   • Example - Printer Name: **plastic-gordon**, you would enter **plastic-gordon.local/** into your web browser address bar.

   • Example - Printer Name: **compassionate-shirley**, you would enter **compassionate-shirley.local/** into your web browser address bar.
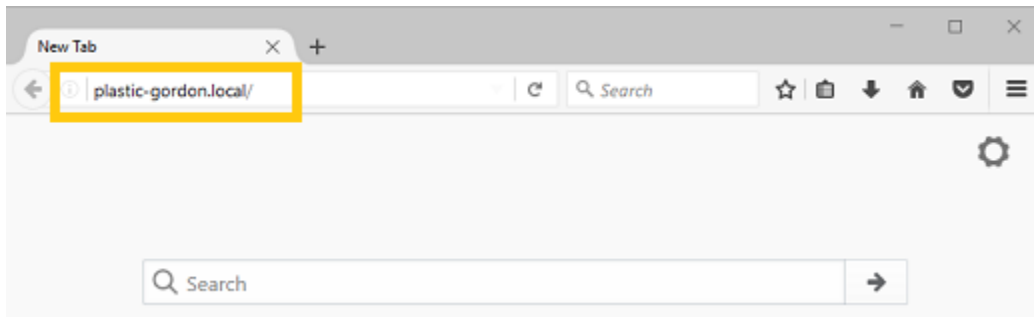
2. Windows and others

   • In order to use bonjour to connect to your printer on a browser via it's name, you will need to install the bonjour extension in order for your computer to recognize names as IP address'. Download here

   • Once installed follow the steps used for Mac and iOS users above.

Hotspot Mode

1. To use hotspot mode, select hotspot mode on your printer via Utilities> Network> Start WiFi Hotspot

2. Now look for your IP address under Utilities> Network> Network Status

3. Next, go to your computer and make sure to connect to the printers wifi hotspot.

4. Now, type the IP address into your web browsers web address bar and the dashboard should pop up.

Uploading gcode Files

If you have already sliced your file via Cura for Robo, or another slicer program, there are two main ways to upload gcode files to your printer. By the 'Upload' button, as well as a 'drag-and-drop' approach.

1. The 'Upload' Button is located where the file list is towards the bottom of the list.
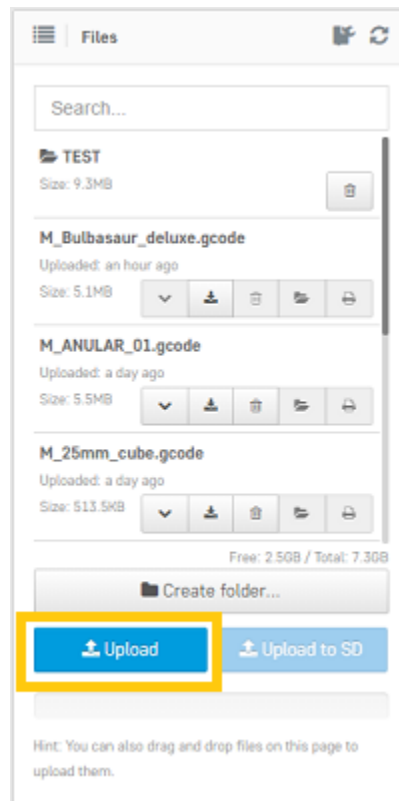
2. You can also simply drag your gcode file from your computer into the dashboard. The dashboard will get dark, and you may then drop the file onto the left side of the dashboard where it says 'upload'
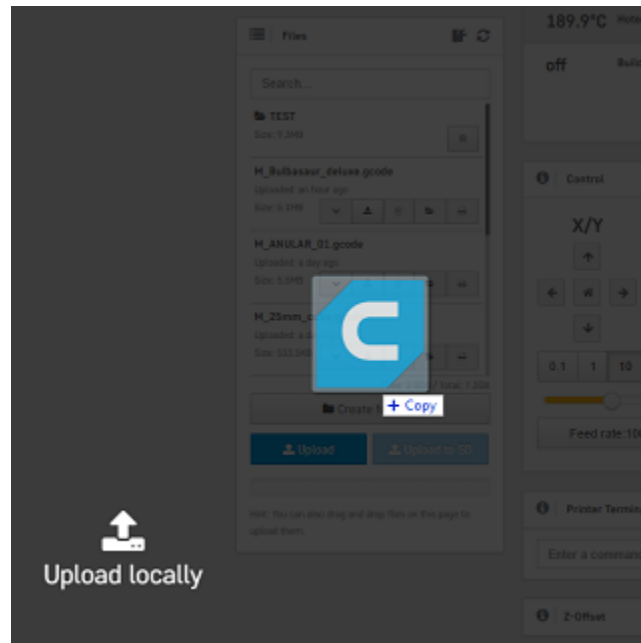
Uploading stl Files

If you have an stl file that you want to print, you can slice it on your printer directly through the web dashboard. You can grab an stl model from places like www.thingiverse.com, www.myminifactory.com, or upload your own from your 3d modeling software.

Once you have your stl file, go ahead and upload it to your printer by either of the two ways from the section above Uplading gcode Files (link)

Once you upload your stl file to the printer via the web dashboard, a pop up window will show up asking you if you would like to slice the file, and with what settings.
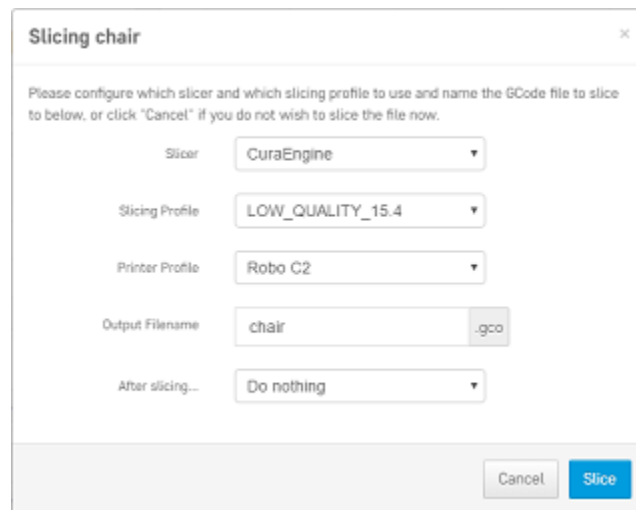
Choose from your print profile settings of Low, Medium, High, or Ultra High - with or without a raft. Once your profile settings have been selected, you can choose to name your file and choose to start printing or do nothing after slicing.
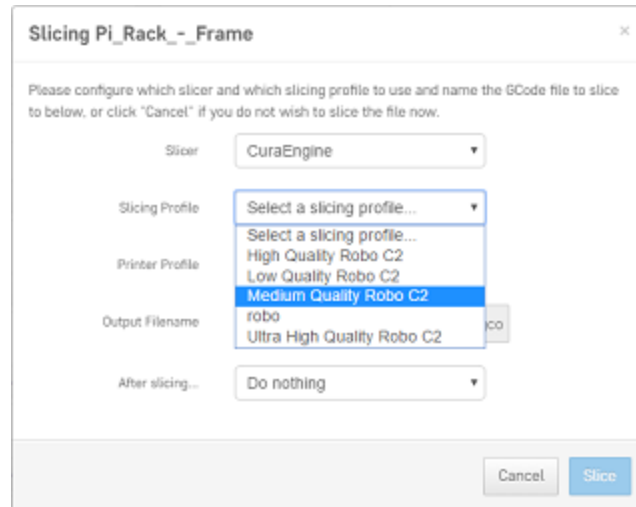
Set temperature and move motors

1. Under the 'Temperature' section of the web dashboard, you can set temperatures for your nozzle and your bed (Robo R2 only). This is a good place to toggle your temperatures if your material needs more or less heat.
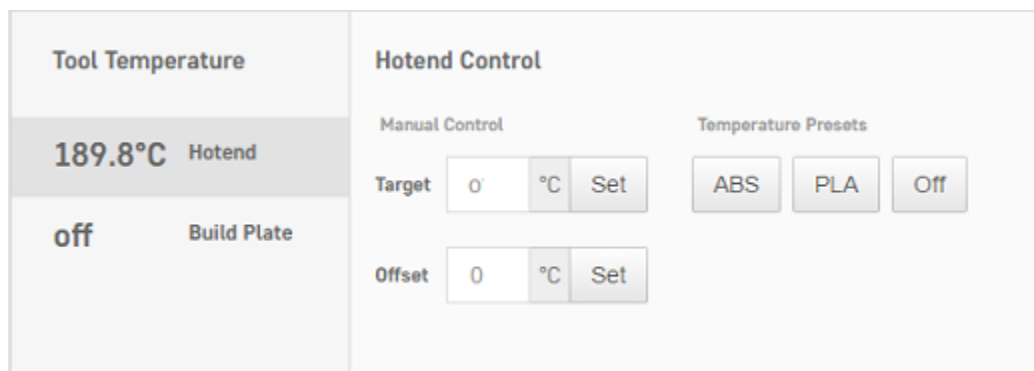
2. Under the 'Control' section of the interface, you can move your motors and extrude filament. Use the arrows and the distance to move ijn the desired location. Remember to heat up your nozzle before using the 'extrude' and 'retract' buttons.
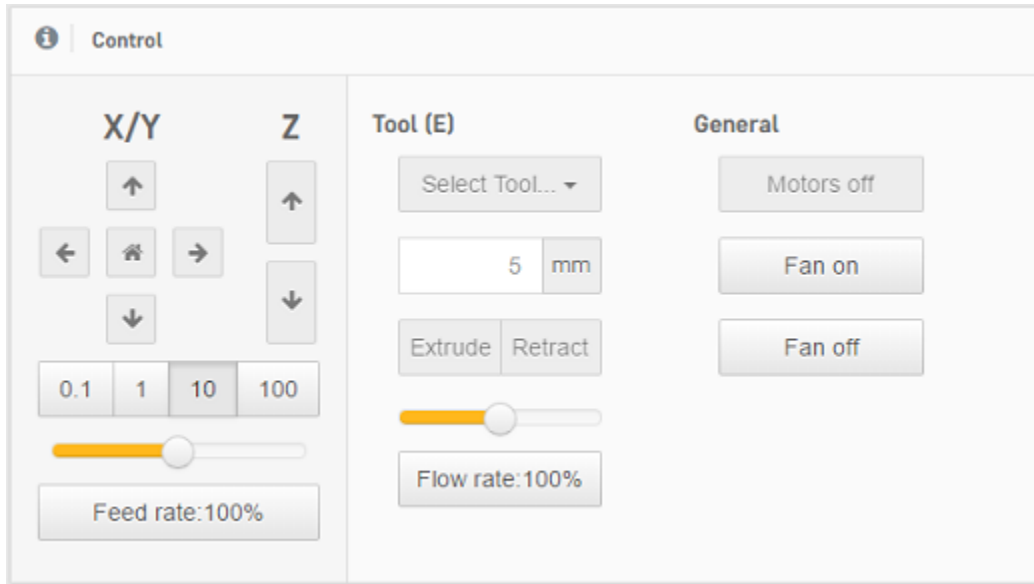
View on-board camera + timelapse (Robo R2 only)

1. Viewing your print with the camera

- Under the 'Webcam' section of the web dashboard you will see a live stream of the inside of your Robo R2. Here you can monitor not only your current print project, but also if the printer is clear of any print on the print platform, and if it is ready to start another print.

2. Timelapse feature

- Under 'Additional Controls' you will find 'Timelapse Configuration'. This will allow you to take intermittent snapshots of your print, which will automatically put together in a timelapse video. Here, you can control the

settings such as: on/off, timelapse frame rate, and timelapse post roll. Right below this, you will find a list of all the Finished Timelapses on that particular Robo R2.

Terminal

The terminal is where you can see all of the commands being sent to your printer. You can also send specific commands in the terminal to troubleshoot and get feedback on your printer.
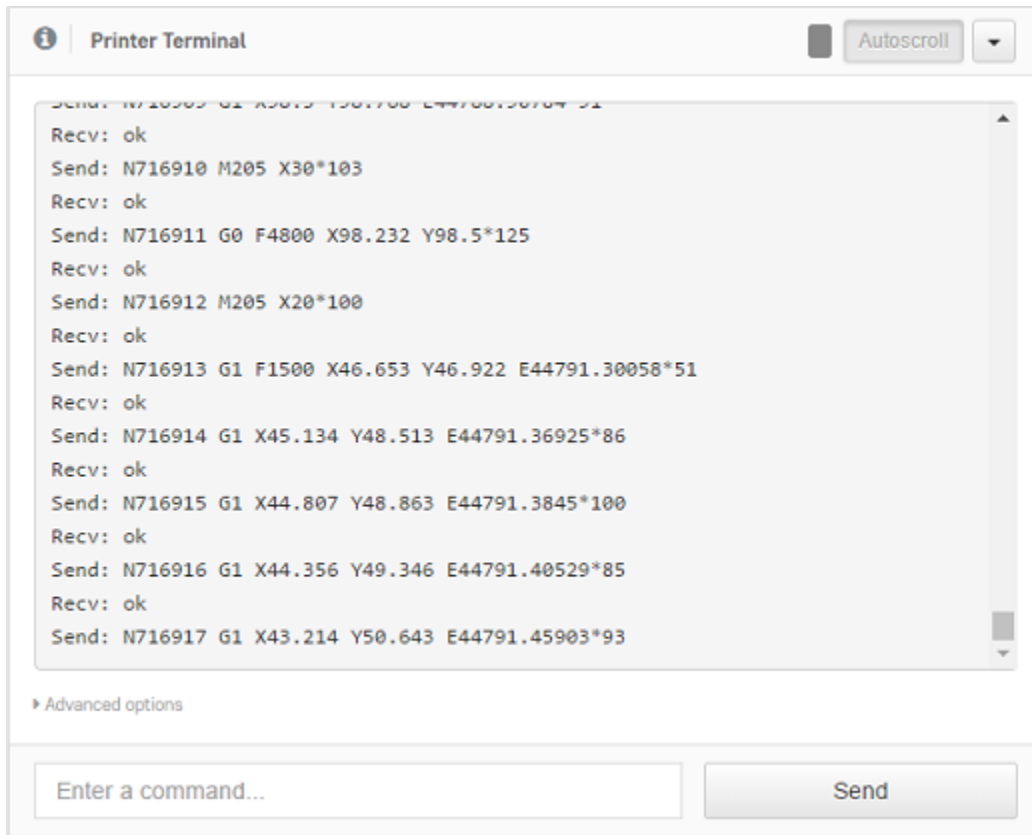
Manage plugins

Plug-ins are a great way to add functionality to your Robo C2 and Robo R2. There a several plugins that make the entire experience of using your 3d printer easy and accessible. You can manage all of your plug-ins from the web dashboard by going to the 'settings' button in the top right of the main interface. A 'settings' pop up window will show up, where you can locate the 'plugin manager' on the left hand menu about half way down. There are many plugins installed on your printer, but here are explained a few essential ones that are made to make the experience better;

EEPROM Marlin Editor Plugin

- The EEPROM Marlin Editor Plugin allows the user to pull the EEprom setting directly through the web dashboard. This plugin also directly talks to the Robo C2 and Robo R2 LCD screen and translates the information quickly and accurately.

Filament Sensor

- The filament sensor plugin has been designed to take an input from a sensor located in the filament bracket, and output that signal to the on-board computer. If it realizes there is no filament loaded in the filament bracket, it will pause the print and show a pop-up on the screen to let you know to add more filament before proceeding.

Lani

- The Lani plugin enables Robo C2 and Robo R2 to be remote monitored with admin access through the Lani platform www.lanilabs.com.

    How to view the Lani plugin

In order to view the Lani plugin, you must first disable the Robo Theme plugin. To do this, see section "How to enable and Disable Plugins" below. Next, you must enable the Lani plugin from the plugins list. Now, when you restart

Octoprint, you will be able to view Lani and all of its contents.

Mainboard Connection Plugin

- This connection plugin is built to maintain a connection from the on-board computer to the main board that drives the hardware on the printer.

Robo Theme

- This is a theme that has been created specifically for Robo 3d printers. It is a more unique experience, and has been built to layout the web dashboard so it is easier to access and view.

RoboLCD

- RoboLCD is the plugin that lets the on-board computer run the front facing LCD screen on the Robo C2 and Robo R2.

How to Enable and Disable Plugins

Below is a way of disabling a plugin, but you can use this method for other plugins as well as enabling them.

From the plugins section of the settings, click the next page over until you see the line item labeled 'Filament Sensor'. Click on the small black button to the right of the item (circled in green in the picture below). This will disable the plugin. (If you are trying to enable the plugin, it will be an unshaded circle. Click it to enable and it will fill in to be a solid black circle).
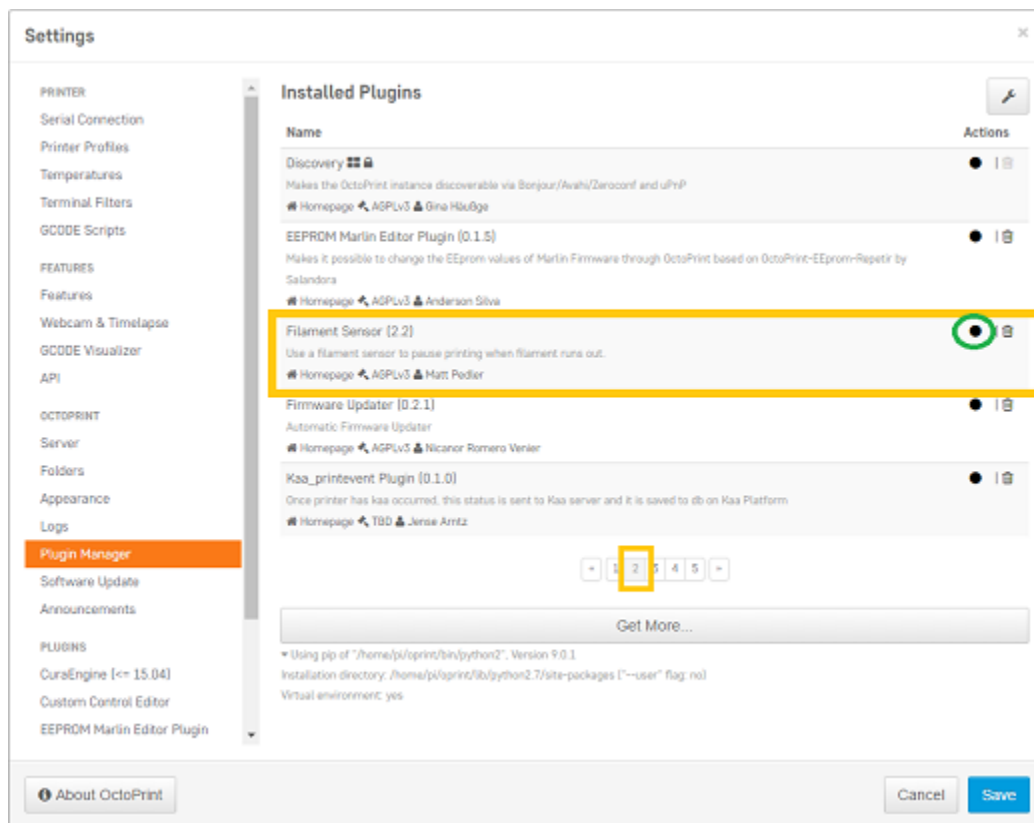
Once you have de-selected this plugin, you will need to restart Octoprint. A pop up will show on the top right of the interface - click 'restart now'. Your plugin will now be disabled and ready for printing.
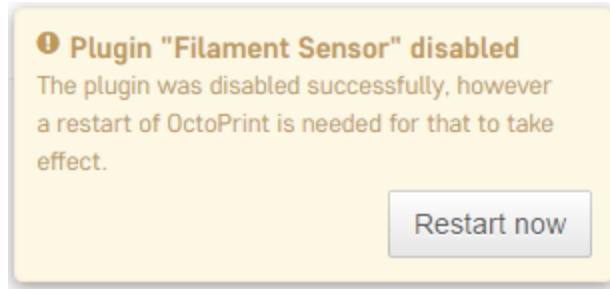
How to connect the printer to the wireless network through hotspot mode

If you are having trouble connecting to a wireless network directly through the Robo C2 or Robo R2 screen, you can use the web dashboard to get around this issue.

1. First, we must connect to the printer via hotspot mode. Once we have secured a connection through hotspot mode, click on your 'Settings' button in the upper right of the interface.

2. Next, scroll down to 'Network connection' at the bottom of the left hand menu. Here you will see a list of available wireless networks that you can connect to.

3. Choose a wireless network that you wish to connect to, and press 'Connect'.
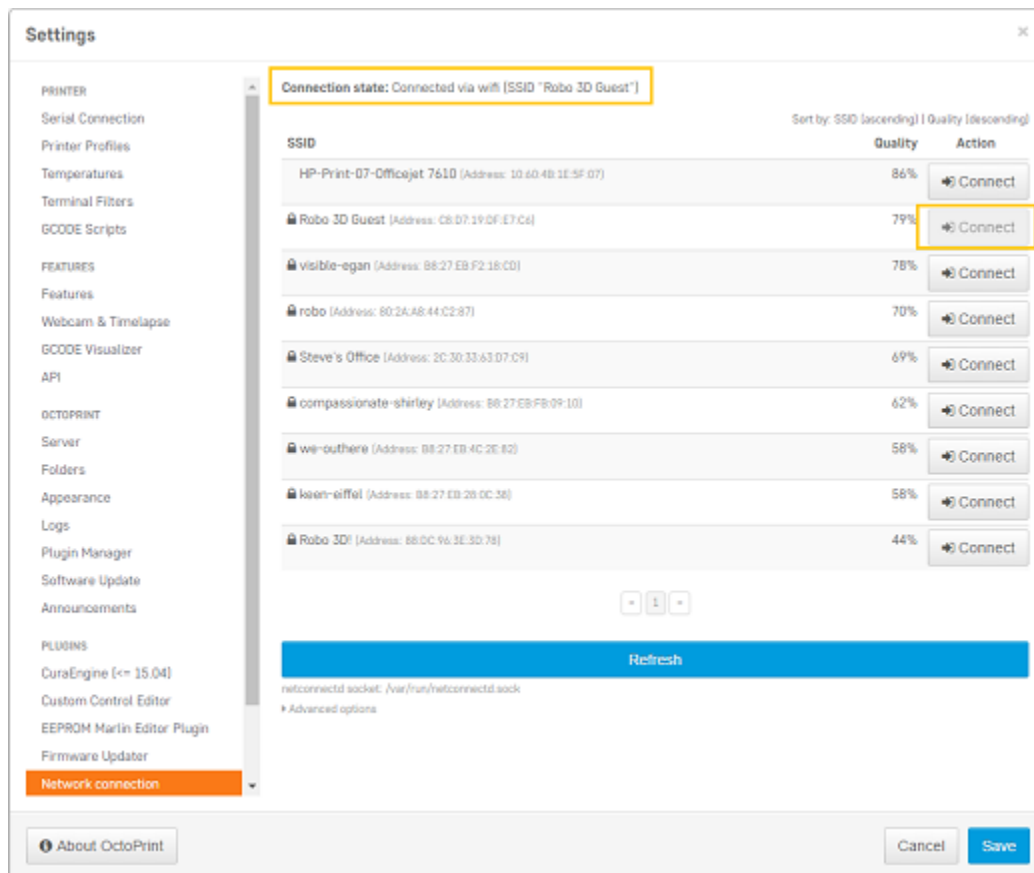
4. A pop up will come up to enter a password. Enter it and press 'confirm'. If you connected correctly, the 'connection state' will show you if you are connected to the wireless network of your choice.
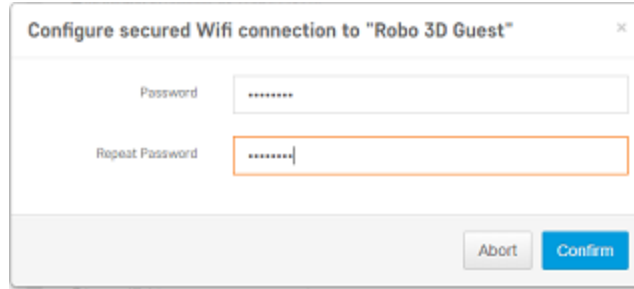
View history and statistics of printer

There are a few modules on the web dashboard that allow you to view some statistics of your printer. Some of the things you can get info on are; history, prints per day and success rate, printer statistics, and power usage. This is a good way to track your printer and will be displayed as the following;
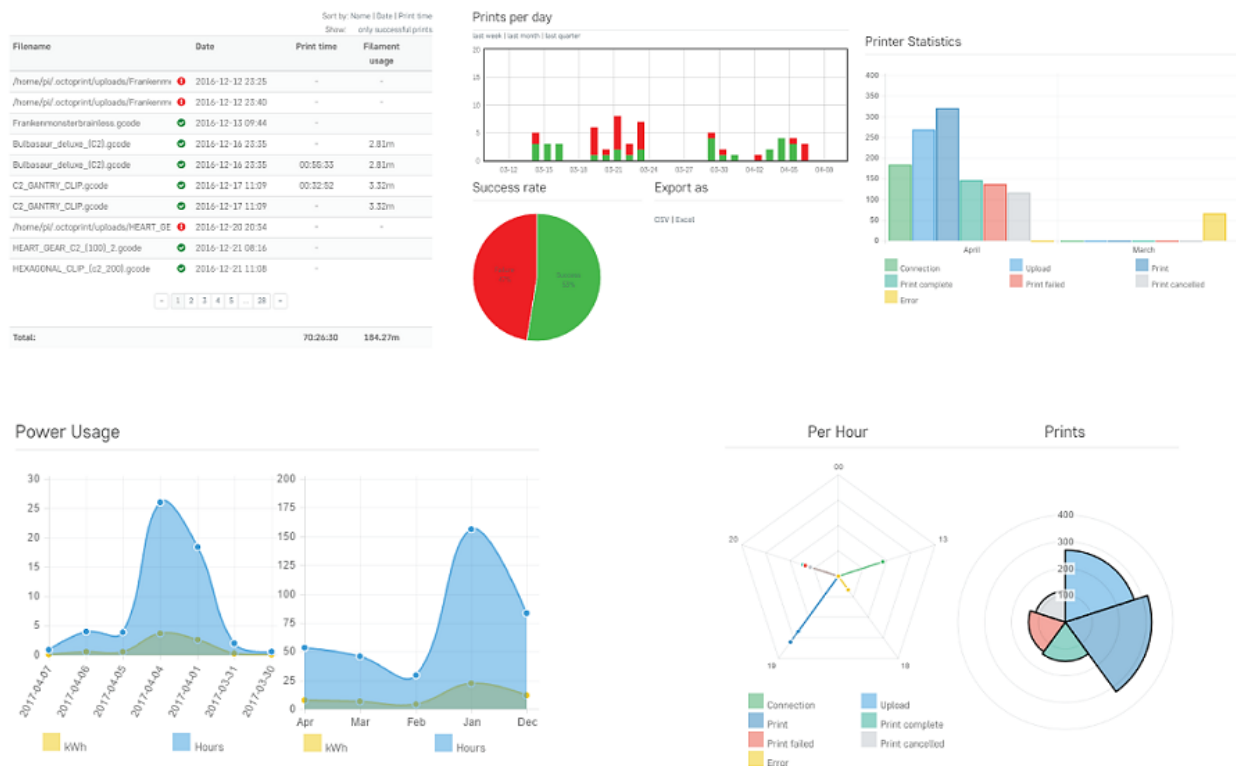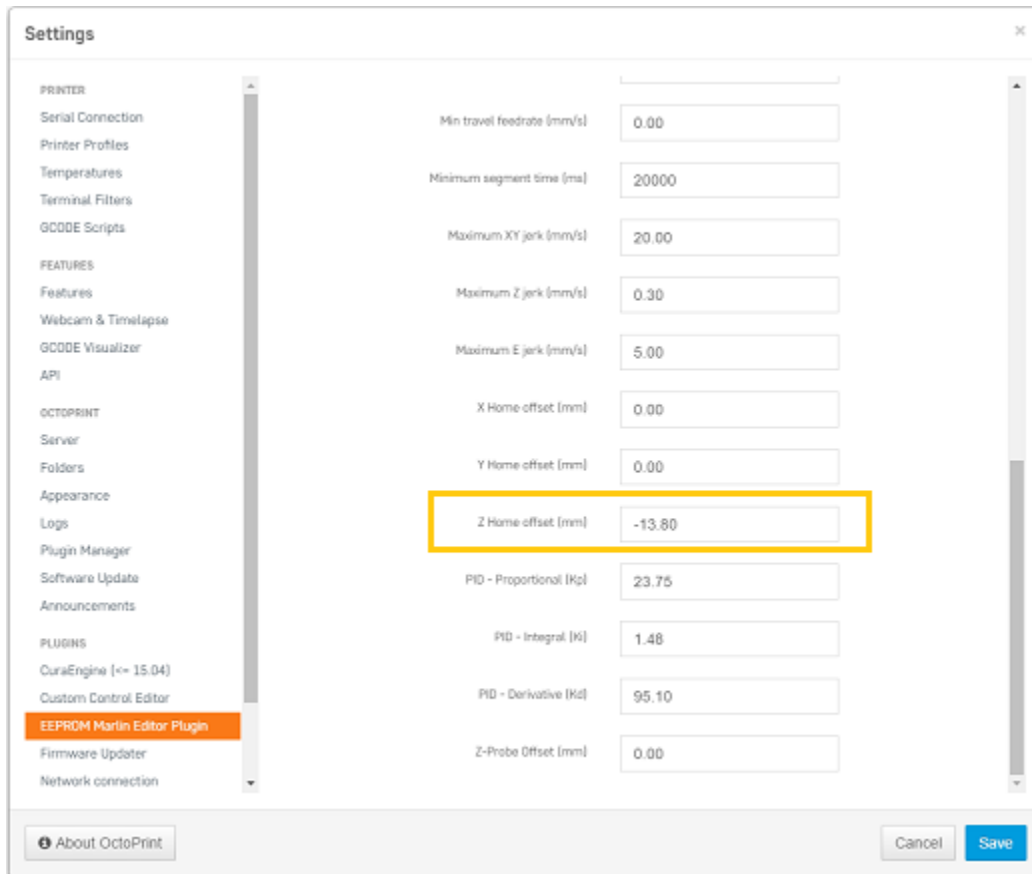
Set your z-offset

With the web dashboard, you can manually adjust your z-offset value. To do this, click the 'Settings' button in the upper right of the interface. When the settings window pops up, scroll to the bottom of the menu on the left hand side. Here you will find a menu option named 'EEPROM Marlin Editor Plugin' that you will need to select. This will bring up an almost empty page. There are two buttons labeled 'Load EEprom' and 'Save to EEprom'. Go ahead and click the 'Load EEprom' button.
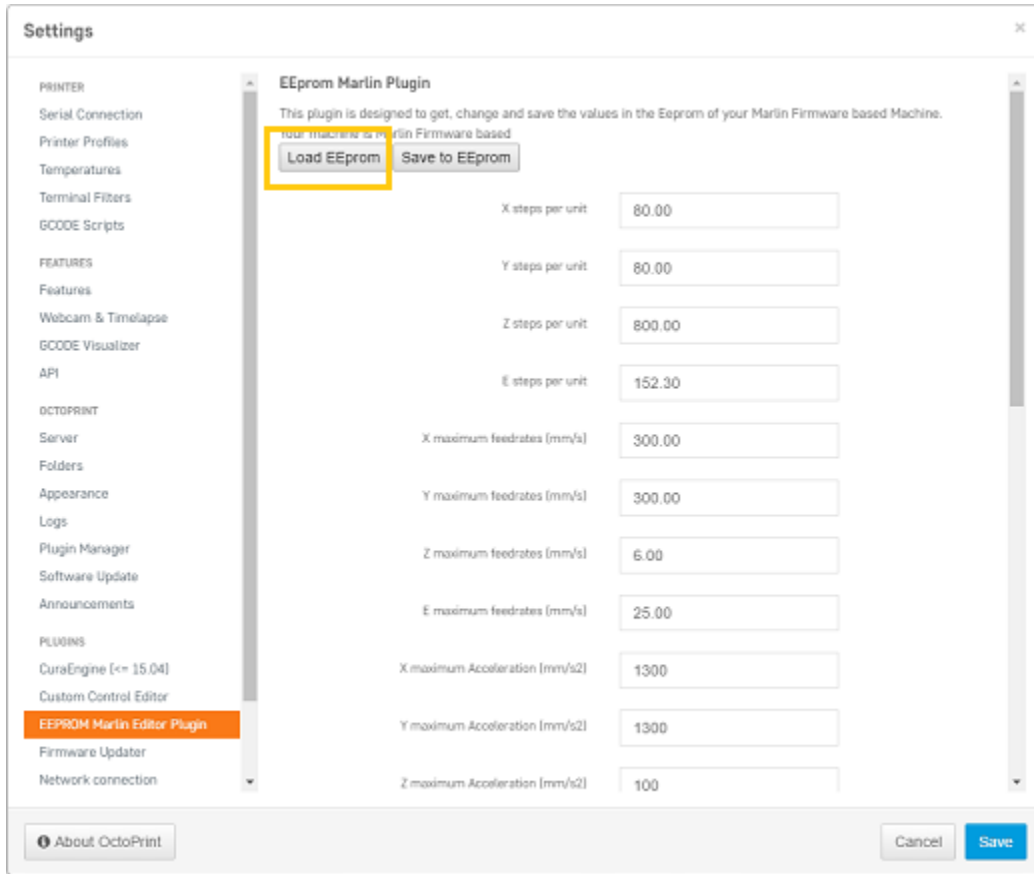
This will load the values of some of the core settings that your printer runs on. From here, scroll down and find the 'z-offset' value. Here, you can manually adjust this value (note: a higher negative number will increase your z-offset, meaning the bed will be farther away from the nozzle).

From here, you will need to scroll back to the top of the page and select 'Save to EEprom' to correctly save the value to your printer. Once that is saved, you can then click save on the bottom right of your window. Remember: if you don't click the 'Save to EEprom' button, your new z-offset will NOT be saved and will use the old value entered previously.
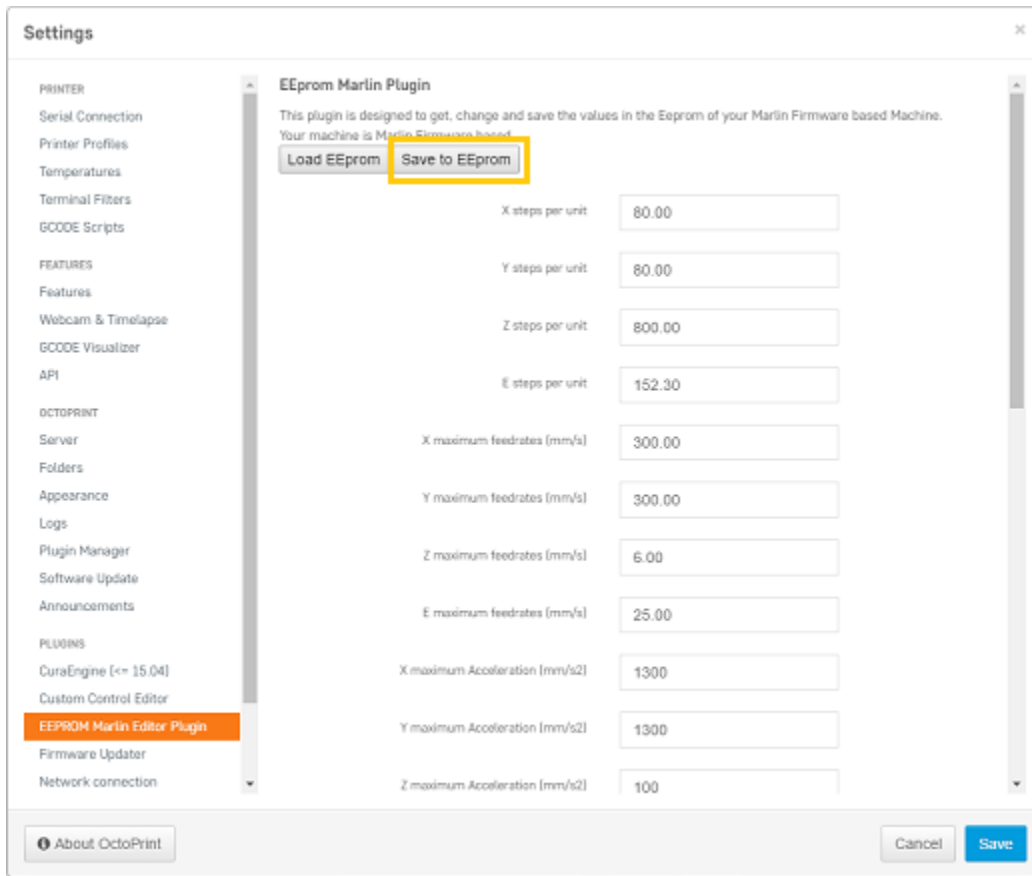
Monitor your print
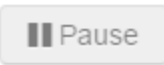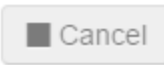
From the web dashboard, you are able to monitor your print, as well as start, pause, and cancel a print. In the top left of the interface under 'state', you will find information such as: the file selected, total print time, elapsed print time, print time left, as well as the option to print, pause, and cancel your current file.

State: **Operational**

File: **ring_holder.gco**
Timelapse: **-**
Filament (Tool 0): **2.38m / 5.72cm³**
Approx. Total Print Time: **1 hour**

Print Time: **-**
Print Time Left: **-**
Printed: **- / 1.6MB**

🖨 Print   ‖ Pause   ■ Cancel

Robo App for iOS

robo

🇷 Robo App

Overview

Dashboard   Slicing   Controls   Library
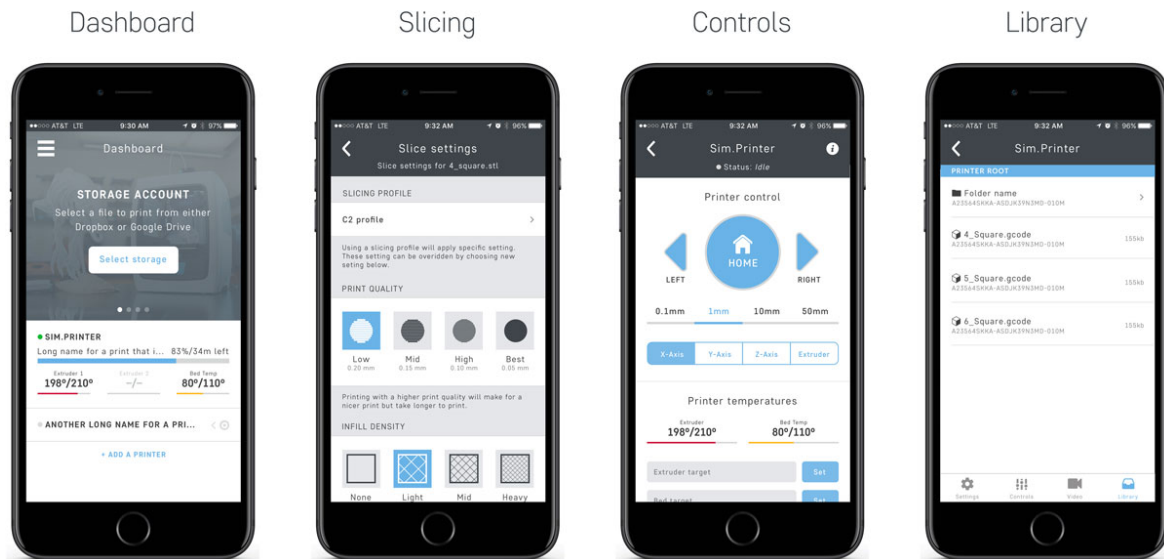
- Connect to your local Robo C2 or Robo R2 3d printer

- Slice models directly on Robo C2 or Robo R2

- Monitor progress via the dashboard

- View your creation via Robo R2's integrated camera

- Remotely control your Robo C2 and Robo R2 via your iPhone or iPad

Logging In

The first time opening the Robo app you will be brought to a End User License Agreement. Once you accept, you will be brought to a login page.

To you the Robo app, you can either link your Facebook account or continue as a guest. Once this is done, you will be taken you to your dashboard.
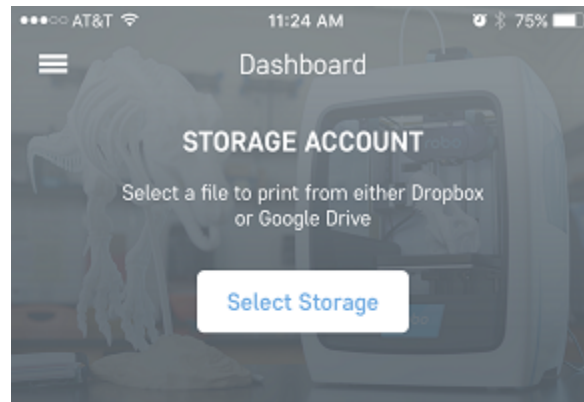
Adding a Printer

Once you are in the Robo app, the first screen that will appear is the dashboard. From here you can add a printer that is on the local network (make sure your printer is connected to a wifi network).

First, click the 'Add Printer' button towards the middle of the screen. This will take you through a series of steps to set up the new printer on the Robo app.
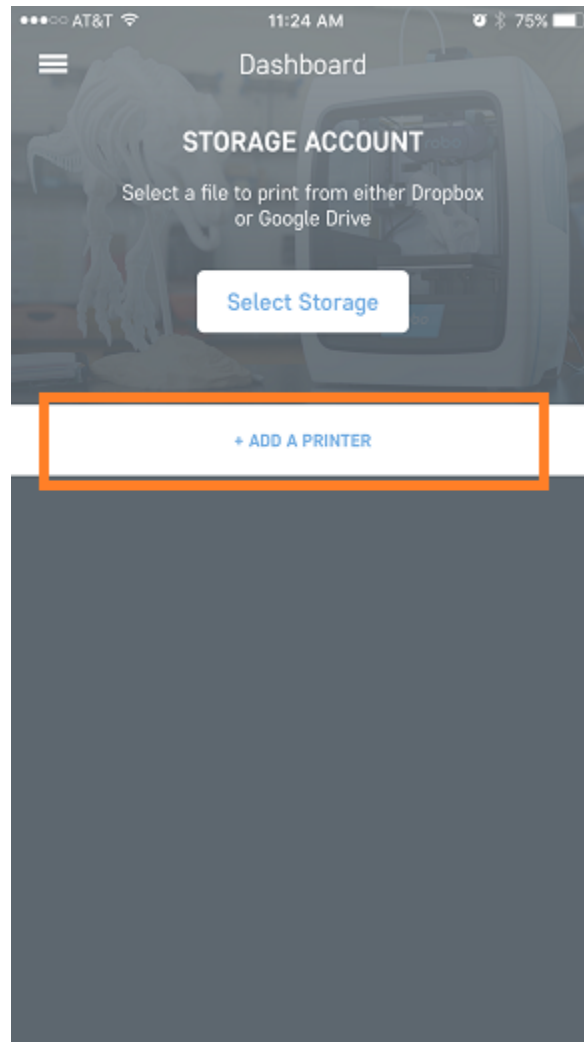
Next, follow the steps to add a printer. Scan for local printers that are the network by pressing the scan button. This will bring up a pop up that will show all of the available printers on the local network. Choose your printer and it will add it to the line automatically. You can name the printer as well in the provided text box.
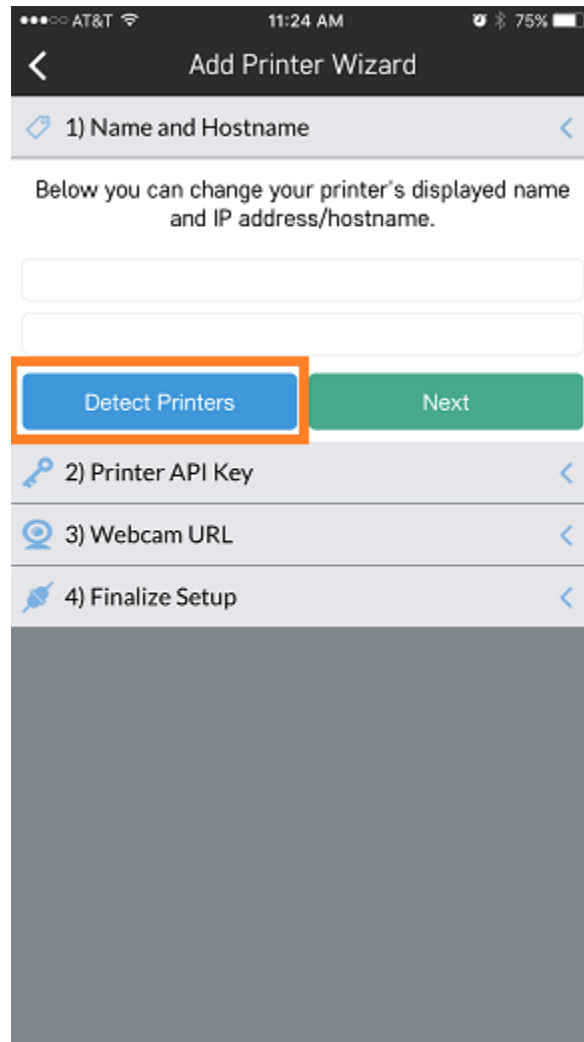
Then, you will want to add the API key that is located on your printer. Press the 'scan' button and it will bring up the camera. Now, you will need to scan the QR code that is physically located on your printer. Go to your printer and from the main screen go to Utilities> Network> API Key. Here, an API key will show. Go ahead and scan this API key with your iOS device and it will get added automatically to that section of the app.
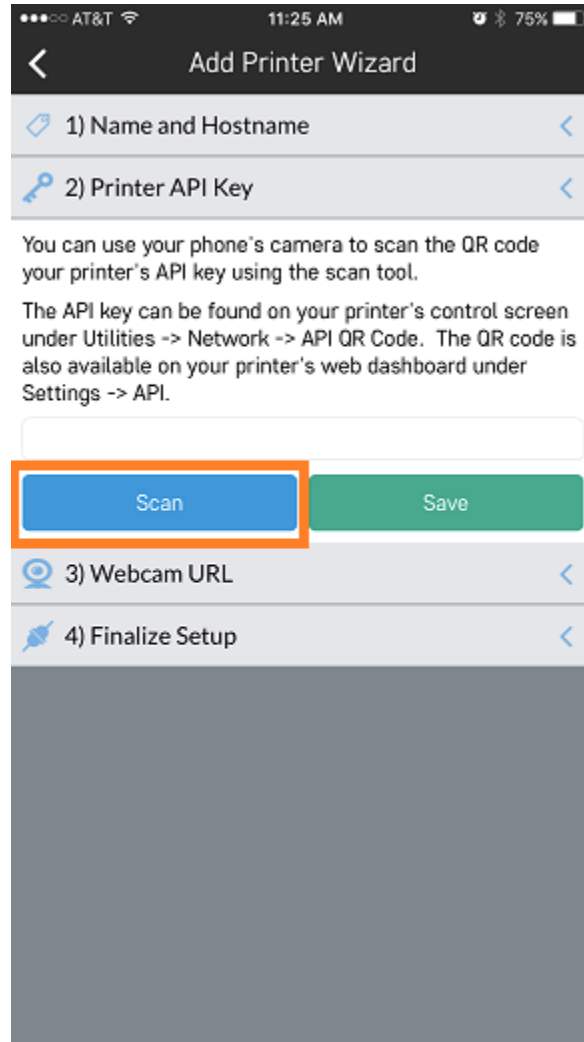
The next section is the video section. If you have a Robo C2, you can skip this part. If you have a Robo R2, go ahead and scan for video. It should find it automatically and add it.

Next, it will ask if you want to set up profiles automatically. If it is a new printer and you want to add profiles that are built for the Robo C2 or Robo R2, go ahead and click the add profiles button. If you would like to manually set up your profiles, you can do that too.
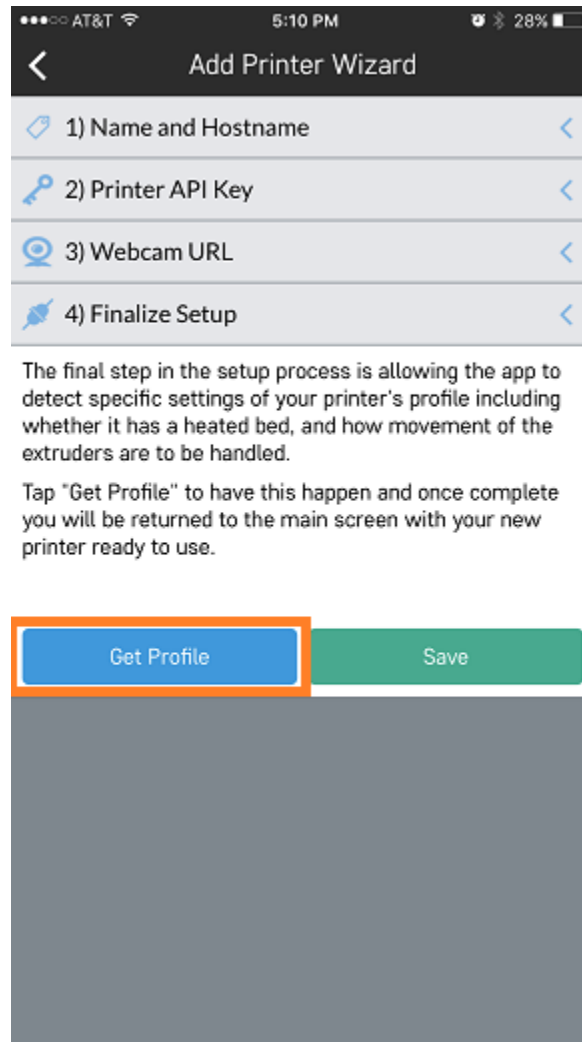
Once these profiles are added, you will be taken to the dashboard screen and you should see your new printer ready to go.
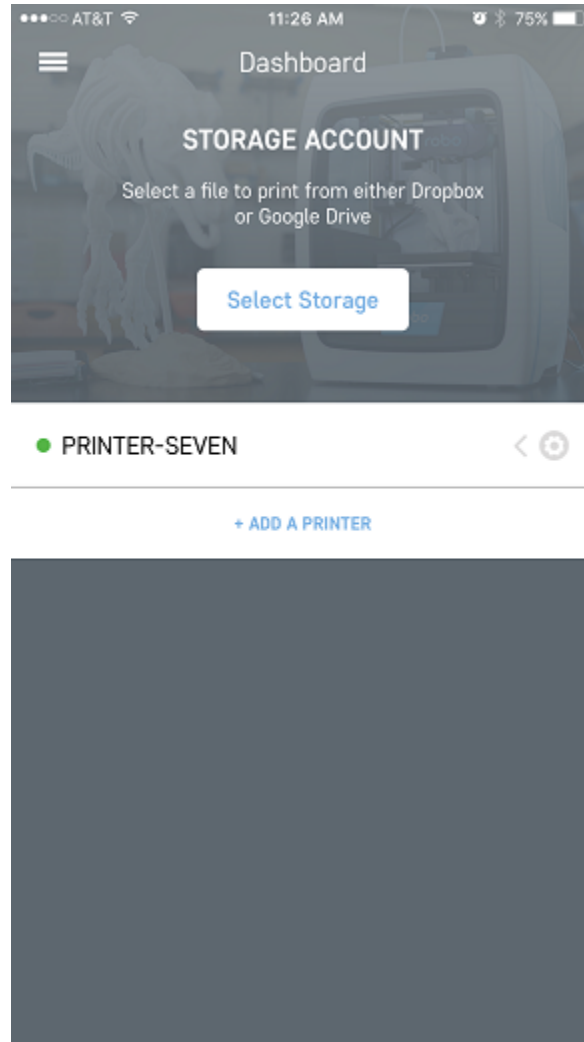
Congratulations, you have now added your printer to remotely monitor it from the Robo app..

Linking Cloud Storage

Within the Robo app, the ability to link cloud storage makes it easy to access your files from anywhere, without the need for a computer.

From the dashboard view, click on the menu tab in the upper left hand side of the screen. This will open up a menu list. From here, click on 'Your Settings' menu item.
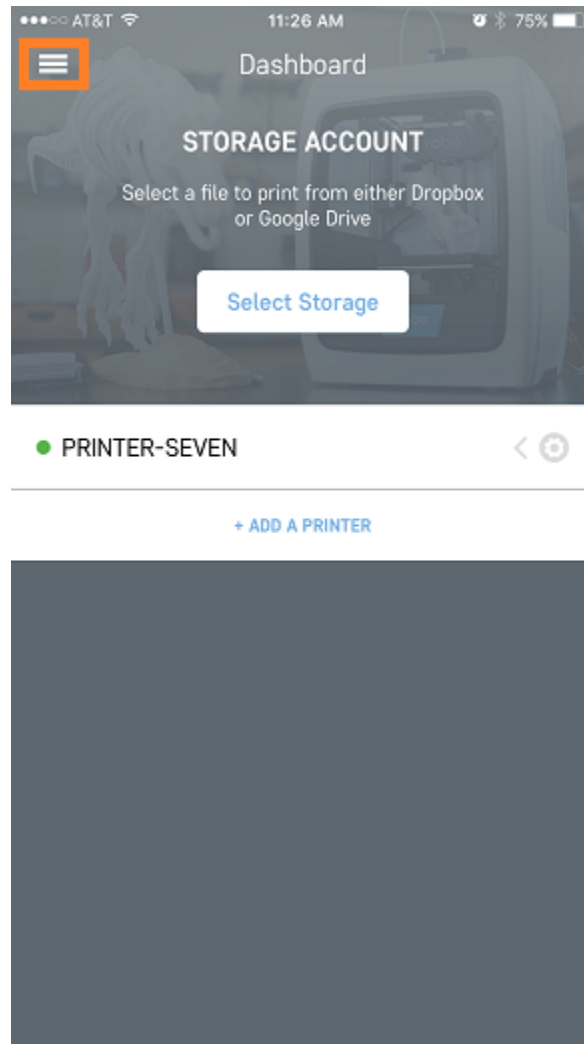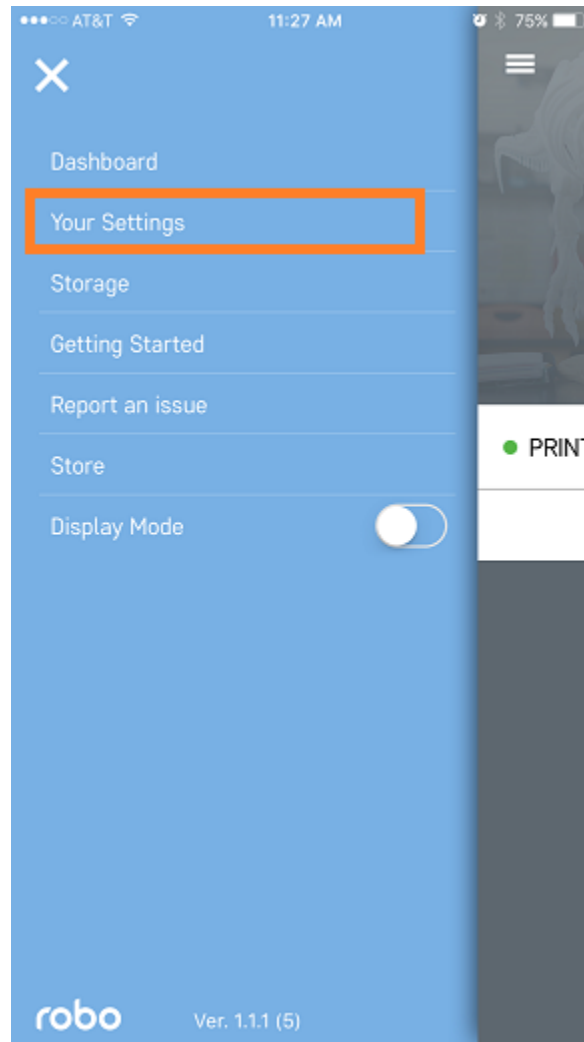
Once in your settings, log into your Dropbox and Google Drive accounts by clicking 'Log In' next to their respective names.
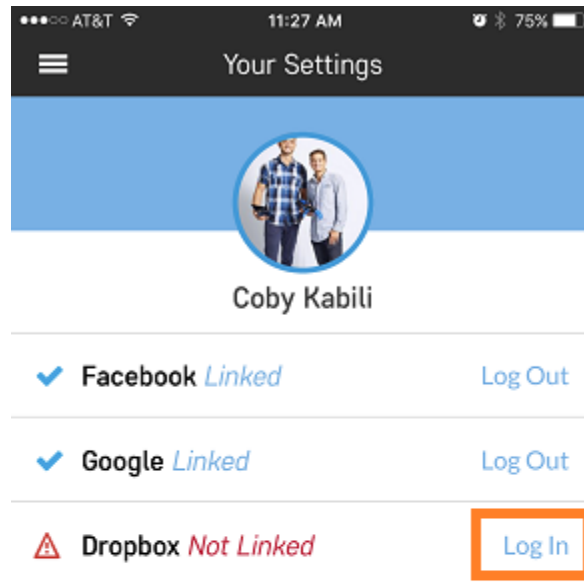
Now, since you are logged into your cloud storage accounts, you can click on 'select storage' from the dashboard and successfully see all the files that are in your cloud stage accounts.
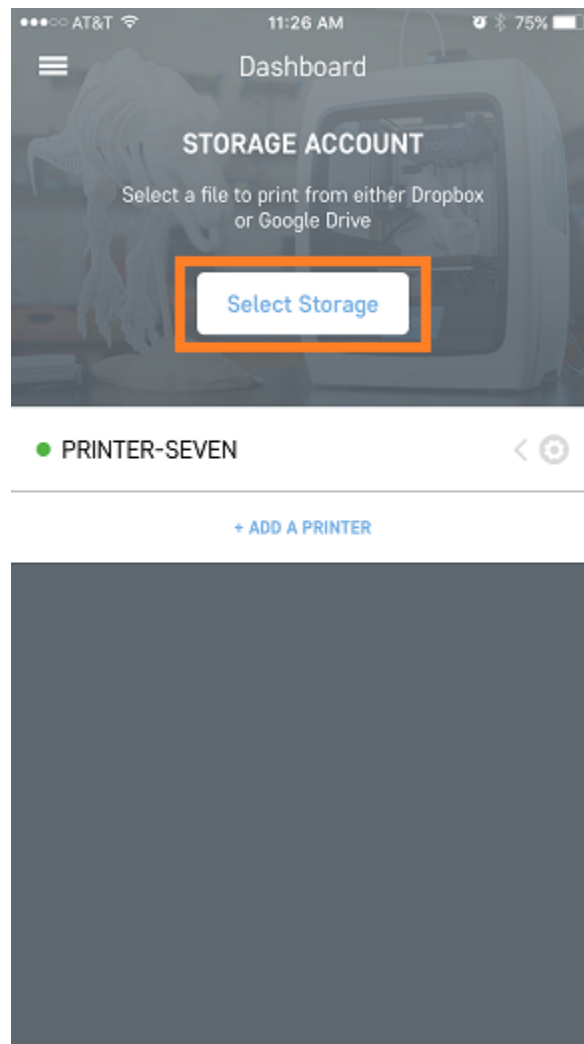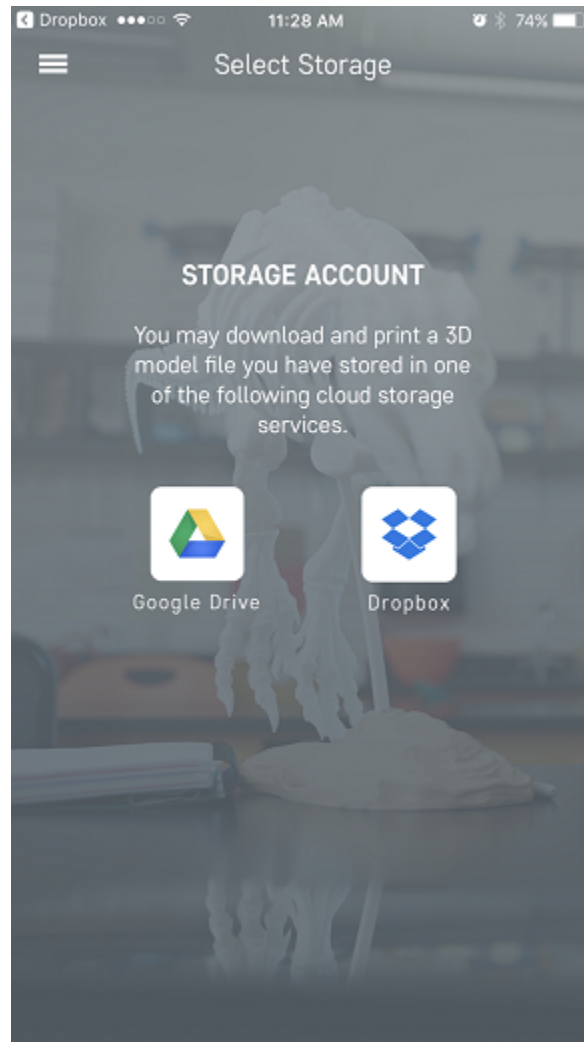
Quick Workflow

There is an easy workflow to get from file to printing and these are the steps to do it:

1. Make sure you are logged into your Google Drive or Dropbox account.

2. Go to your browser on your iOS device, and find a file on a file sharing site. We suggest www.thingiverse.com or www.myminifactory.com

3. While still in the browser, upload that file to your Google Drive or Dropbox account.

4. Next, go into the Robo app.

5. In the dashboard, click on the button labeled 'Select Storage'.

6. Now select the storage where you had uploaded the file to.

7. Once you are in here, find the file that you had uploaded and click on it. This will bring up a pop-up of which printer you would like to send the file to.

8. Select the printer you want to print the file with, and it will go directly into either slicing mode, or a page that will allow you to start the print.

Printer Controls

If your printer is not currently in a printing state, you can control different aspects by clicking directly on the name of the printer you want to control from the dashboard.
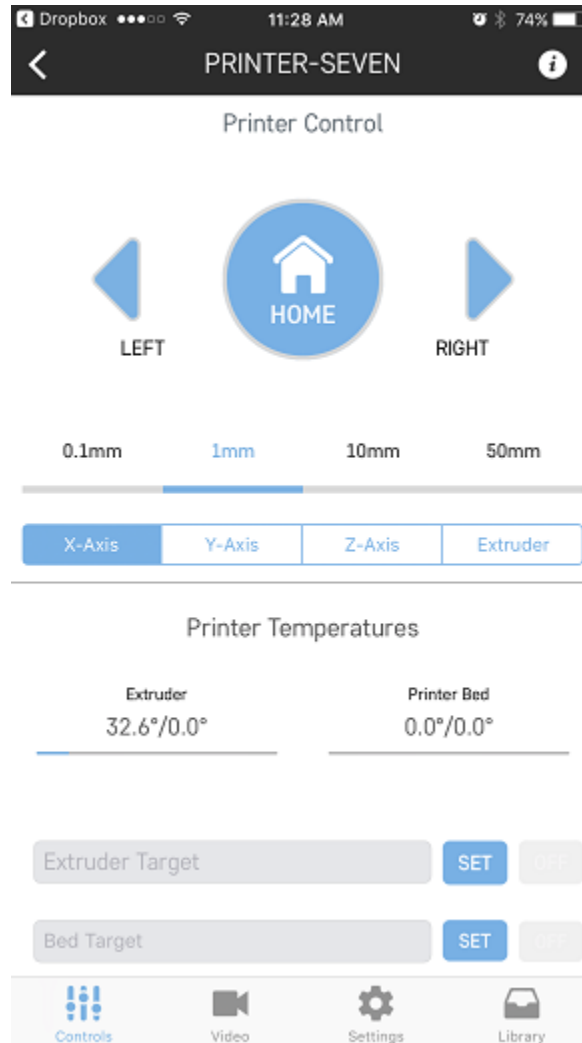

Here you can move motors, heat up your nozzle, as well as view your terminal, which will show you what commands your printer is currently reading.

Slicing a model

If you have an STL file that is saved in your cloud storage or on the printer itself, you can slice the file and get it ready for printer through the app by using these steps:

1. Go to your library either on your cloud storage or on the library within the printer. Once you click on an stl file you wish to print, you will be taken to a slicing wizard screen.
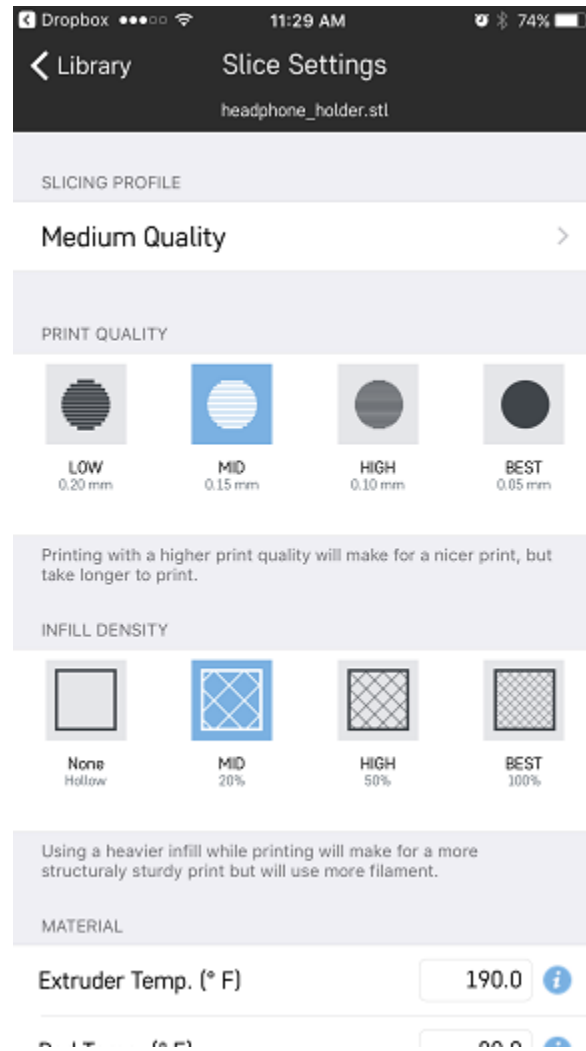
2. On this slicing wizard screen, you have the choice to change your layer height, infill percentage, temperatures, and printing with supports and rafts.

3. Once you have selected your settings, click the 'Send to Printer' button at the bottom of the page and choose which printer your would like to send it to.
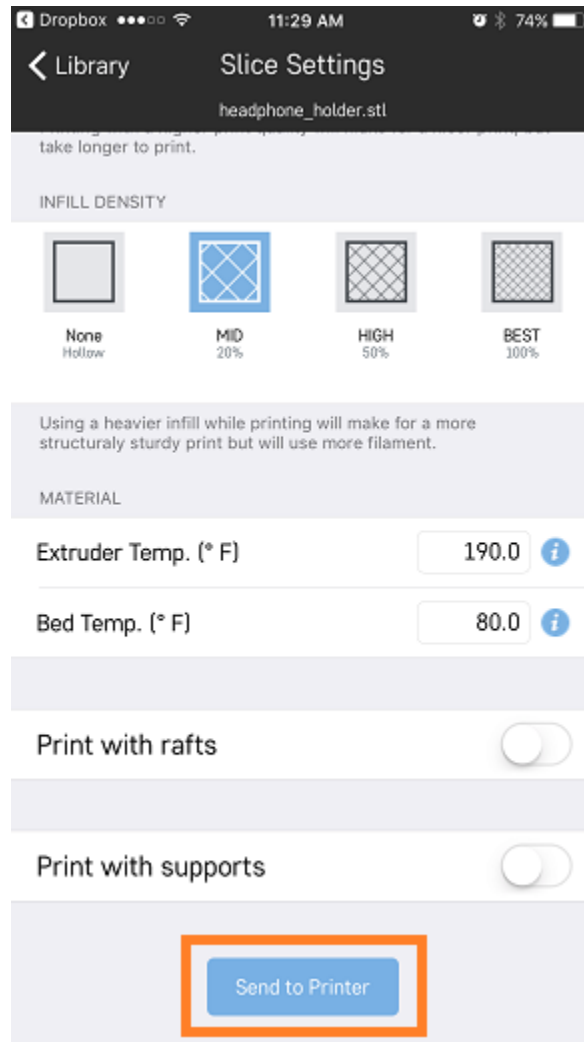
Library

If you want to see which files are currently on your printer, first, click on the printer name from the dashboard. Next, in the bottom right, click on the library button to view all of the files on the printer.
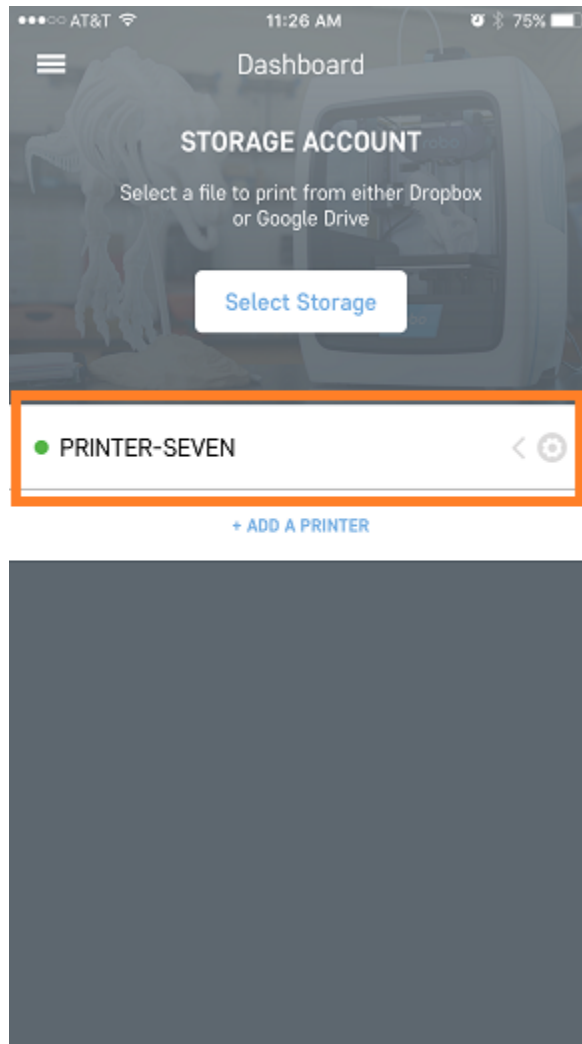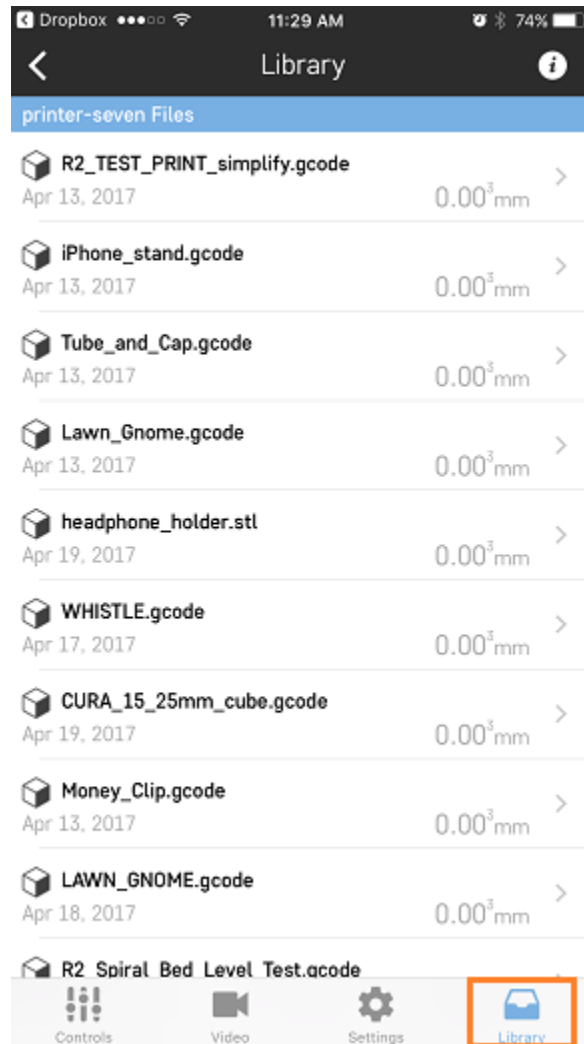
Connecting your printer to wifi

If you want to connect your printer to a wifi network, or change the wifi network through the Robo app, there are a few steps to take.

1. First, make sure your iOS device is connected to the same signal as your printers wifi signal. If the printer is in hotspot mode, connect your iOS device to that same network.

2. Now, go into the Robo app and go to your dashboard.

3. Look for the printer you would like to connect to a local wifi network.

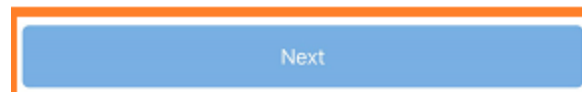4. Swipe left on the printer name from the dashboard screen, and click the 'wifi' button that is shown.
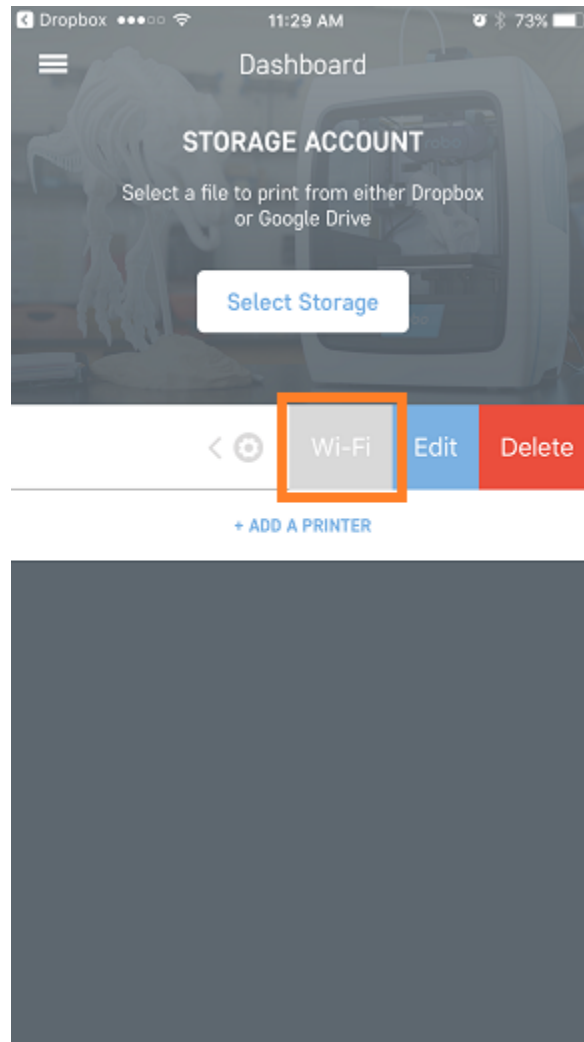
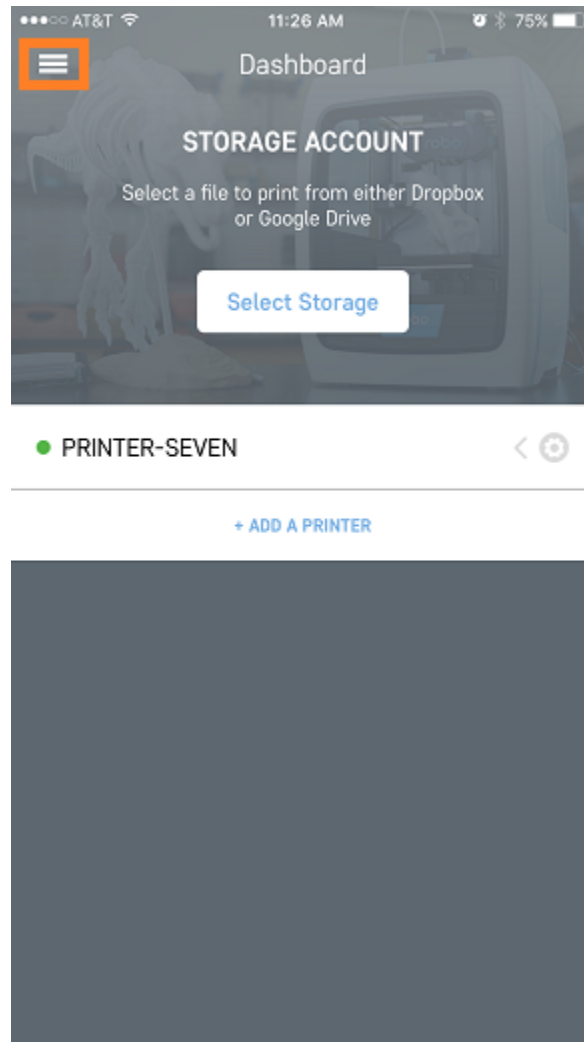5. Follow the on screen instructions to connect your printer to a wifi network.

Your Settings

Your Settings is the area of the Robo app where you can log into your Facebook, Google Drive, and Dropbox accounts. Tap on the 'Menu' button in the top left corner of the dashboard screen. On the left hand side, click on 'Your Settings'.
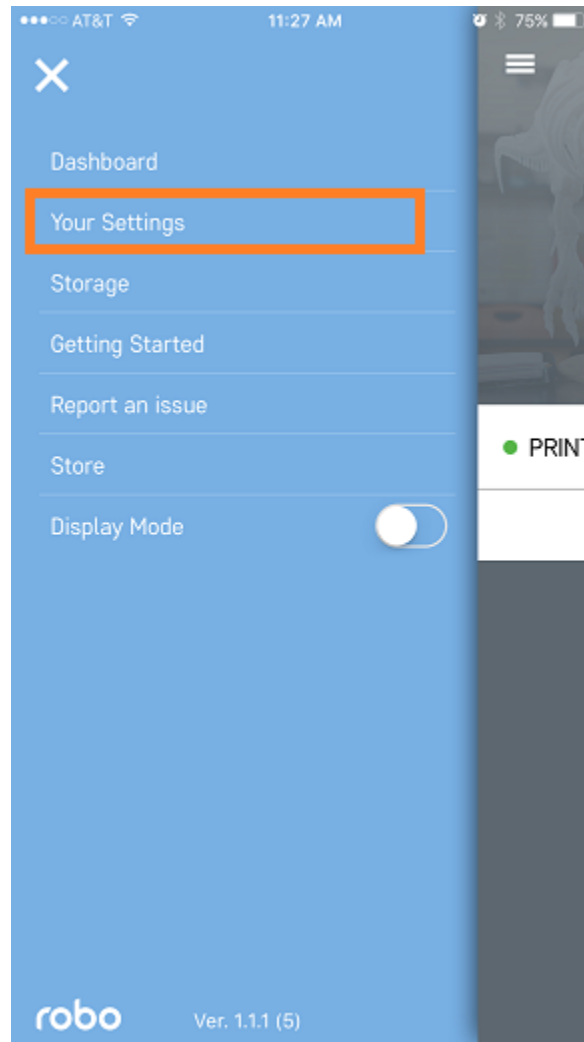
You will see three accounts you can log into: Facebook, Google Drive, and Dropbox. If you are logged into Google Drive and Dropbox, you will be able to access your cloud libraries and print directly from the app by downloading these cloud files to your printer.
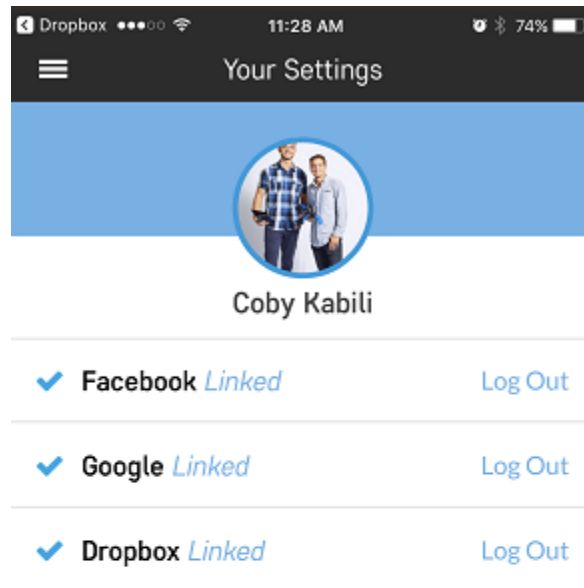
Store

If you want to visit the Robo store for filament, accessories, or new 3d printers, you can access it right from the Robo app. First, click on the menu icon from the dashboard. Then, click on the 'store' menu item from the menu on the left. This will take you to the Robo store in your browser on your iOS device.
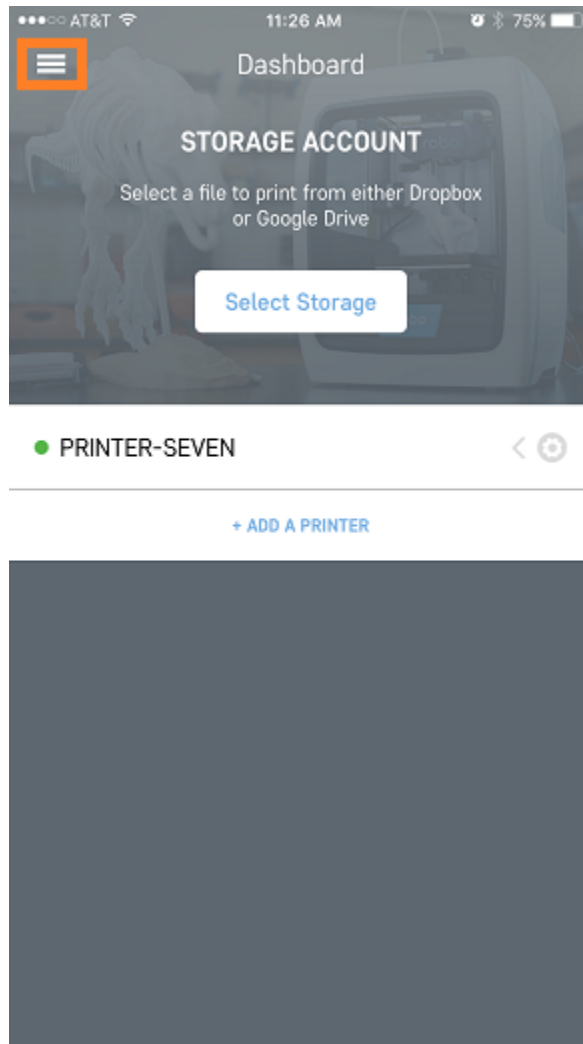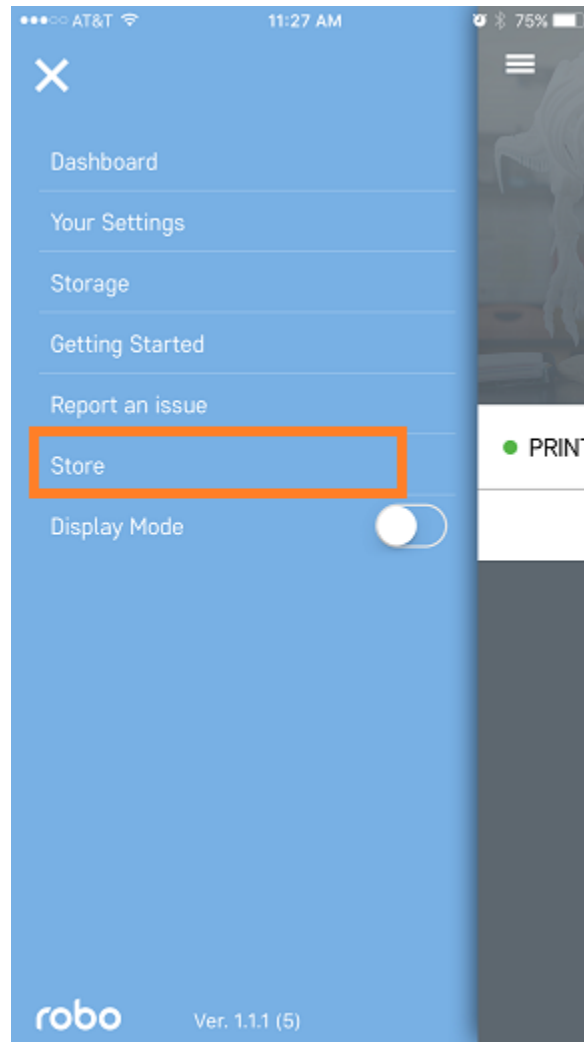
Multiple Printers

If you have multiple printers on the same network, you can manage them all from within the Robo app. To add an additional printer to your dashboard, simply select the 'Add Printer' button below the last printer on your dashboard, and follow the instructions listed from the section 'Adding a Printer'.
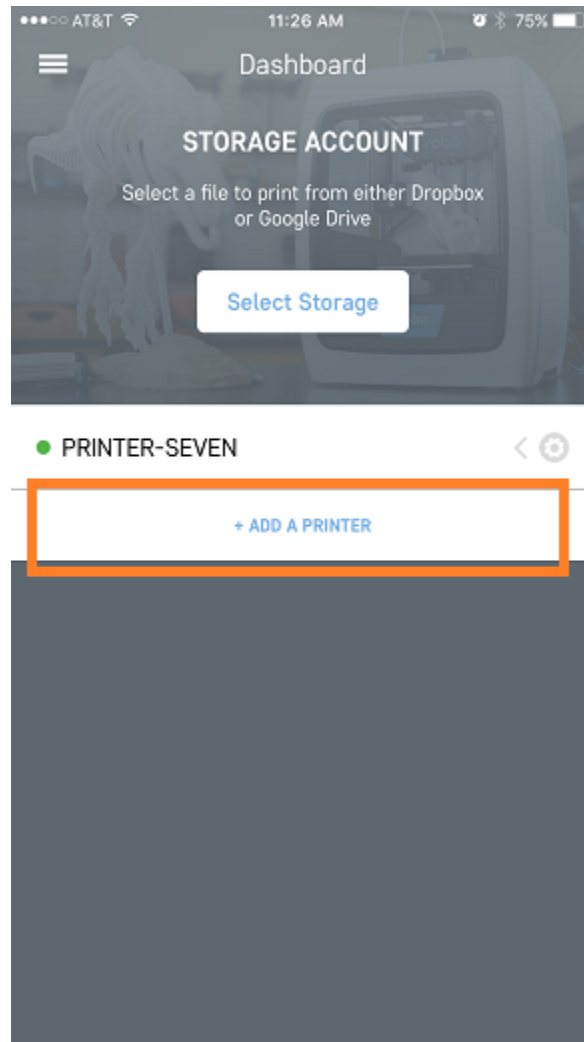
Safety & Compliance

Before you begin printing, take a look at the following safety precautions.

Radio and television interference This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reposition or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver.

- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.

You may also find the following FCC booklet helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under FCC rules.

The following indicate potential safety hazards that could harm you or others or cause product or property damage.

Warning - High temperatures: Robo C2 generates high temperatures. Always allow Robo C2 to cool down before you reach inside. Warning - Moving parts: Robo C2 includes moving parts that can cause injury. Never reach inside the Robo C2 while it is in operation.

Warning - Risk of electric shock - There is a risk of shock with Robo C2. This product is not user serviceable.

Warning - Do not leaving the printer unattended: Do not leave the Robo C2 unattended during operation.

Caution - Do not using incorrect / unapproved printing materials: Do not print using materials that have not been approved by Robo for use with the Robo C2. We highly recommend only using the following when you print:

PLA filament Wood filament Carbon fiber filament

Caution - Use a proper wall socket location: The wall socket outlet must be located near Robo C2 and must be easily accessible.

Caution - Disconnect from wall socket in case of emergency: In case of emergency disconnect the Robo C2 from the wall socket.

Caution - Operate Robo C2 in a well-ventilated area: Robo C2 melts plastic during printing. Plastic odors are emitted during this operation. Make sure to set up Robo C2 in a well ventilated area.