

# Monoprice Select Mini 3D Printer



The purpose of this document is to serve as a ‘Knowledge Base’. It is the hope of all those that contribute, that the information contained herein will help others looking to start out, experiment, and/or improve the Monoprice Select Mini 3D Printer.

As with all documentation, especially with equipment that runs on software, accuracy is important. To ensure that the “suggested edits” are accurate, the “source” of said suggestion(s) will be required (and cited in the final edit), more so as the number of inexperienced users come to rely on documents such as this.

Included in Appendix C, are links to articles, manuals and more. Such finds have been included in this document to help those looking to push the limit of their knowledge as well as their 3D printer.

Enjoy, and “Thank You” to those who help with suggestions and edits!

**NOTE:** If a reader suggests certain information to be deleted, said reader needs to provide supporting documentation to backup request. Any request without such will be disregarded. This also applies for those that want to “add” information. Any information, once verified with supporting “documentation” (i.e. URL), will be “added” with the “submitter’s” name. Info provided via “anonymous” will not be added.

**2020-08-21:** Due to too many ‘anonymous’ individuals making bad edits as well as resolving issues when they shouldn’t be, ‘editing’ has been turned off. Please email me (James) if submitting edits, comments, suggestions, tips, etc.

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## Updating UI Controller Firmware

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### CORRUPT LCD FIX

[If UI on LCD panel becomes corrupted, please follow the procedure below to recover:](#)

[Download ui.bin from the Google Drive share <http://firmware.mpselectmini.com>](#)

[“Firmware > UI LCD - Firmware Individual > Corrupt UI LCD Fix > ui.bin”.](#)

[\(Also found in “Firmware Pack > Firmware pack ##.##.zip”\)](#)

[Setup WiFi](#)

[Open web browser on computer, input \[http://printer\\\_ip\\\_address/up\]\(http://printer\_ip\_address/up\) E.g.,  
<http://192.168.1.104/up>](#)

[Browse to the location where ui.bin was saved to and click “Upload UI”. DO NOT UPLOAD  
lcd.bin](#)

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## Appendix B: Resources (Miscellaneous)

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## Appendix C: Articles, Manual & More Resources

[This Document](#)

[The Select Mini 3D Printer Manual \(P/N 15365\)](#)

[\[Ethan Anderson's\] latest stable Simplify3D profile here:](#)

<https://drive.google.com/file/d/0B35tvR0CrHLvS0x4U19BS25pQIE/view?usp=sharing>

[Google+ Community: MP Select Mini](#)

[MPSelectMiniOwners \(Reddit\)](#)  
[Monoprice Select Mini 3D Printer Users](#)  
[Monoprice Select Mini 3D Printer Users Forum](#)  
[MP Select Mini Community \(Wiki, setup by Matthew Upp\)](#)  
[Malyan Community](#)  
[Mark's Tech Journal: MP Growing Pains](#)  
[MP Select Mini Upgrades \(by Adam M\)](#)  
[Monoprice Select Mini E3D V6 Hotend Installation \(by Tyler Wojciechowicz\)](#)  
[Things to Print For the Monoprice Select Mini \(Great doc on what to print IMHO, JS\)](#)  
[Suggested Layer Heights for Monoprice Select Mini](#)  
[3D Printer Tips I wish I knew 3 years ago](#)  
[Skill Builder — Finishing and Post-Processing Your 3D Printed Objects](#)  
[Print Quality Troubleshooting Guide \(you don't have to own the software to view it\)](#)  
[Pilling \(When the top surface of a print is not completely closed or shows bumps\)](#)  
[Preventing warping and improving adhesion of high temperature PLA: A practical guide](#)  
[HOW TO SUCCEED WHEN PRINTING IN PLA](#)  
[Ten Quick Steps to Modifying an Inexpensive ATX PSU for RepRap Use - with pictures!](#)  
[Cura \(Documentation for version 15.04.06\)](#)  
[Cura 2.1.x / 2.3.x \(.json\) Configs](#)  
[Slic3r configs \(Joe Lenox, 1:09 PM Dec 29, 2016\)](#)  
[Adding 3D Printed Z-Axis Rod Stabilizers](#)

#### [Appendix D: Builds for the Select Mini](#)

[MP Select Mini Controller Board Fan Mount, by jason jones, uploaded Jul 20, 2016](#)  
[MP Select Mini Controller Board Fan Mount, by NF6X, published Jul 10, 2016](#)  
<http://www.thingiverse.com/thing:1667026>  
[Fan Holder for the Monoprice MP Select Mini PCB](#)  
[MP Mini Select 3D PLA & PETG 40mm Fan Shroud](#)  
[MP Select Mini E3D Hotend Adapter](#)  
[Select Mini Glass Bed Spacer](#)  
[Select Mini X-Axis Sheet Metal Spacer](#)  
[MP Select Mini Side Cooling Panel Mod](#)  
[MP Select Z-Axis Bracket](#)  
[Spool roller 3 - universal](#)  
[One piece spool holder](#)  
[Ultimaker Belt Tensioner](#)  
[Belt Tensioner 2X](#)  
[6mm Belt Tensioners for Monoprice Select Mini 3D Printer](#)

[MP Select Mini Tool Bracket/Holder](#)

[MP Select Mini Mount \(for 75mm vesa Pi case\)](#)

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[Thermistor Problem](#)

[Appendix F: Discussions, Questions, Answers](#)

[Infographic Sam Schmidt, 08/22/2016 \(via Facebook\)](#)

[Unit Freezes with White LCD Screen Ryan Echlin, 2:48 PM Jul 5, 2016](#)

[Replacement Bed Screws Bradford Casey, 8:37 PM Jul 5, 2016](#)

[Filament Retracting Ryan Echlin, 2:44 PM Jul 5, 2016](#)

[Power Supply Replacement Patrick Hill, 8:10 AM Jul 9, 2016](#)

[ABS vs PETG Robert Christopher Gouge, 7/23/16 \(via Facebook\)](#)

[Knob Removal Max McGrumpy, 8/6/16 \(via Facebook\)](#)

[Pillowing Eugene Stoner, 8/28/2016 \(via Facebook\)](#)

[Maximum Speeds? B3wijby Sahekzyu, 9/3/2016](#)

[BuildTak vs Glass, One Person's Experience Bruce Clark, 09/03/2016 \(via Facebook\)](#)

[Build changes over time Jeff Epler, 12/19/2016 \(via google docs\)](#)

## Specifications (via Monoprice's website)

<b>Model</b>	15365	<b>Connectivity</b>	Micro USB, MicroSD™ card
<b>Extruder Type</b>	Single Extruder	<b>Offline Printing</b>	Yes, with MicroSD card
<b>Printing Technology</b>	FDM	<b>Supported File Formats</b>	.stl and .obj
<b>Supported Filament Size</b>	1.75mm	<b>Supported Operating Systems</b>	Windows® 7 and later, Mac® OS X®, Linux
<b>Supported Filament Types</b>	PLA, and others	<b>Supported Software</b>	Cura, Repetier-Host
<b>Max Extruder Temperature</b>	482°F (250°C)	<b>Display Type</b>	Wide viewing angle color LCD screen
<b>Max Platform Temperature</b>	140°F (60°C)	<b>Max Power Consumption</b>	120 watts
<b>Nozzle Diameter</b>	0.4mm	<b>AC Adapter Input Power</b>	100 ~ 240 VAC, 50/60 Hz
<b>Max Printing Speed</b>	55mm/sec	<b>Input Power</b>	12 VDC
<b>Layer Resolution</b>	0.1mm	<b>Dimensions (H x W x D)</b>	13.5" x 11.3 x 7.5" (343 x 287 x 190 mm)
<b>Build Area</b>	4.7" x 4.7" x 4.7" (120 x 120 x 120 mm)	<b>Weight</b>	9.9 lbs. (4.5 kg)
<b>Build Volume</b>	103.8 cu-in (1728 cc)	<b>Gcode flavour</b>	RepRap
<b>User's Manual (as of April 15, 2016)</b>		<b>Software Package (Cura and Repetier) (as of June 15, 2016)</b>	

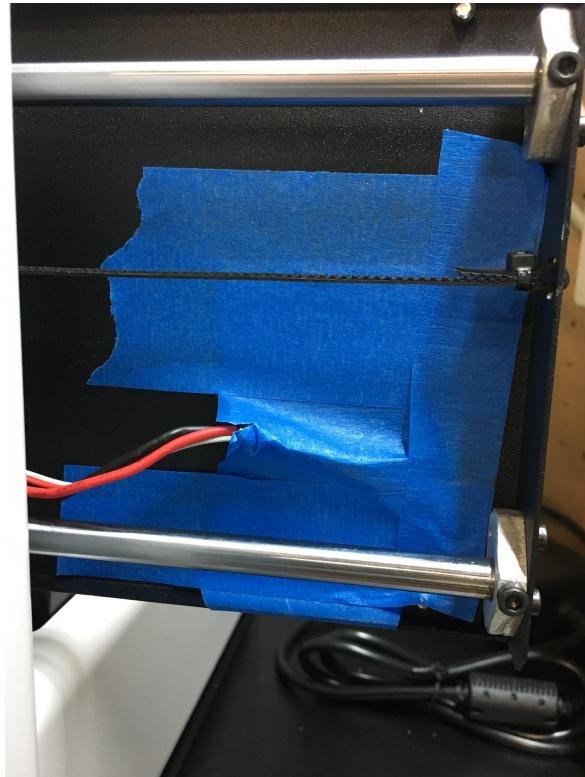
# Before We Begin

When you first get your Mini select, take the time to go over your 3D printer thoroughly. Check for any loose connections, loose bolts, etc. Turn on the printer to make sure the power supply is working. Take note of the firmware version. And most importantly, read the manual - it WILL help you become more familiar with your printer.

Knowing your printer, inside & out, will help when addressing any issues that may arise in the future. For example, as I began my start with this unit, I noticed that the wiring for the heating bed was not allowing the entire assembly to move forward fully (see pic). With different thoughts on how to fix this as well as trial and error, I found blue tape to work (for now - I'll keep you posted).

Another suggestion would be to keep a notebook. This notebook will be a godsend in keeping notes on what worked, but more so, what DIDN'T work. Below is a picture of what my (James) setup looked like prior to any modifications - notice my notebook?

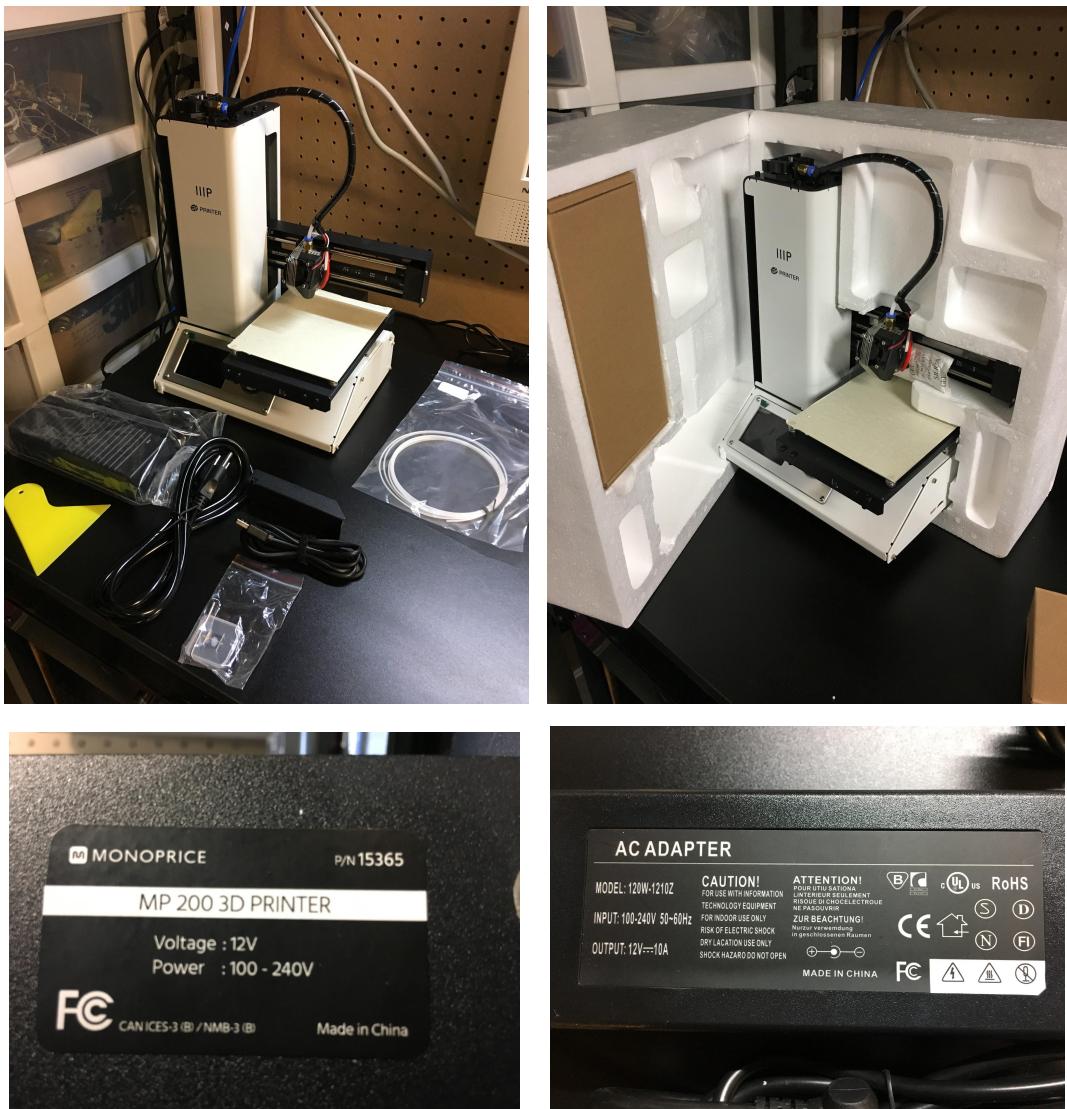
And lastly, let Ethan and I know how this document helps with your Mini Select builds. Enjoy!



# Assembly/Disassembly

The entire chassis of the Monoprice Select Mini is constructed from formed sheet metal and fastened with machine screws. The vast majority of these machine screws have M3 x 0.5 threads, are 6mm long, and can be driven by either the supplied 2 mm hex key or a 2.5mm hex key. The machine screws mate with tapped holes in the sheet metal, which can be stripped easily. Exercise caution when reassembling parts of the printer and make sure not to over-torque the machine screws.

## Packaging

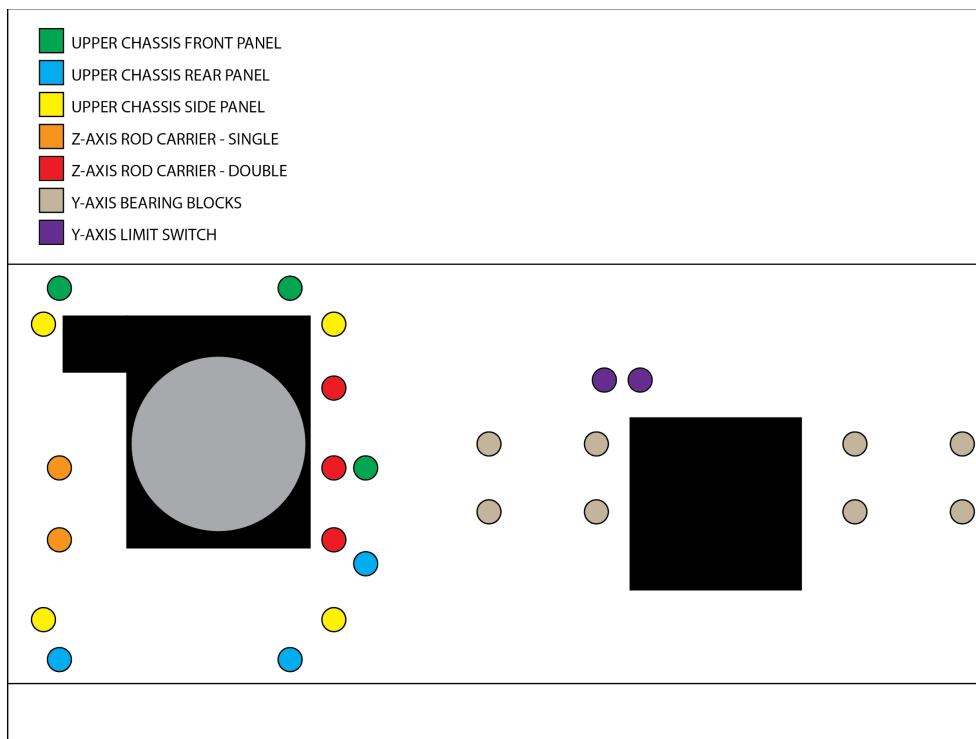


## Bottom

The bottom panel of the printer is fastened to the rest of the chassis by six (6) machine screws. Be careful when removing the bottom panel, as the controller for the printer is mounted to it on the left edge. For this reason, you will not be able to *fully* separate the bottom panel from the rest of the printer unless you either unscrew the controller from the bottom panel or detach all the connectors from the controller. It is not often necessary to fully separate the bottom panel from the rest of the printer, as it can be rotated out of the way to access all the screws inside the lower chassis.

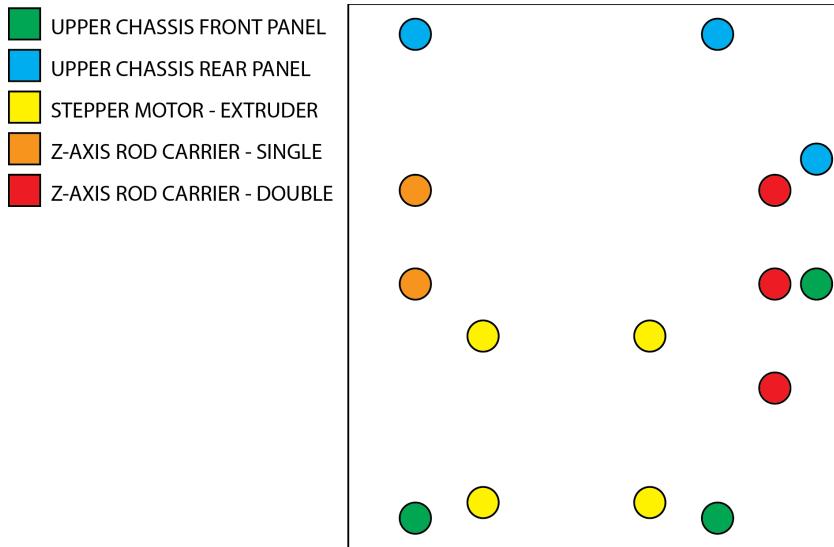
### A guide to screws inside the lower chassis

After removing the bottom panel, you will be presented with a dense cluster of screws inside the lower chassis. Be careful not to lose the lock washers that are present under the heads of some screws.



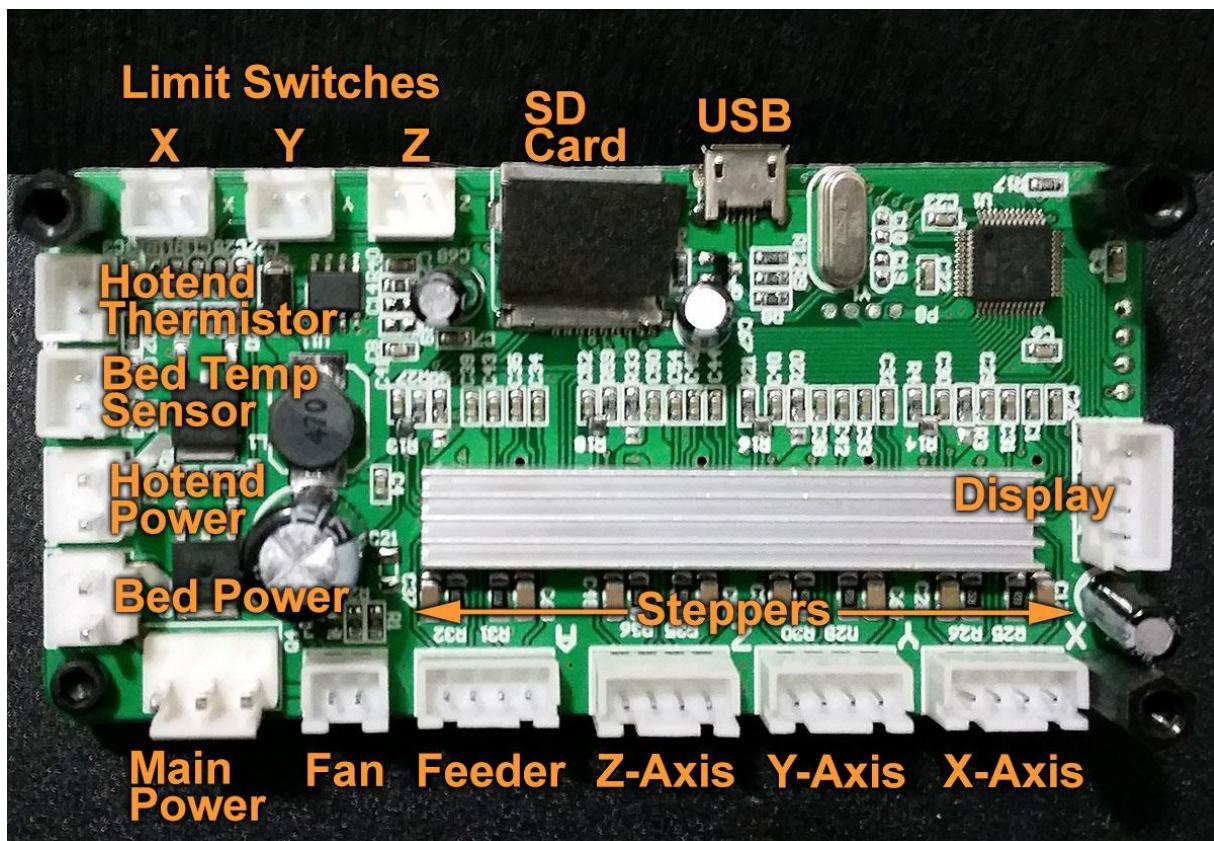
### A guide to screws on top of the upper chassis

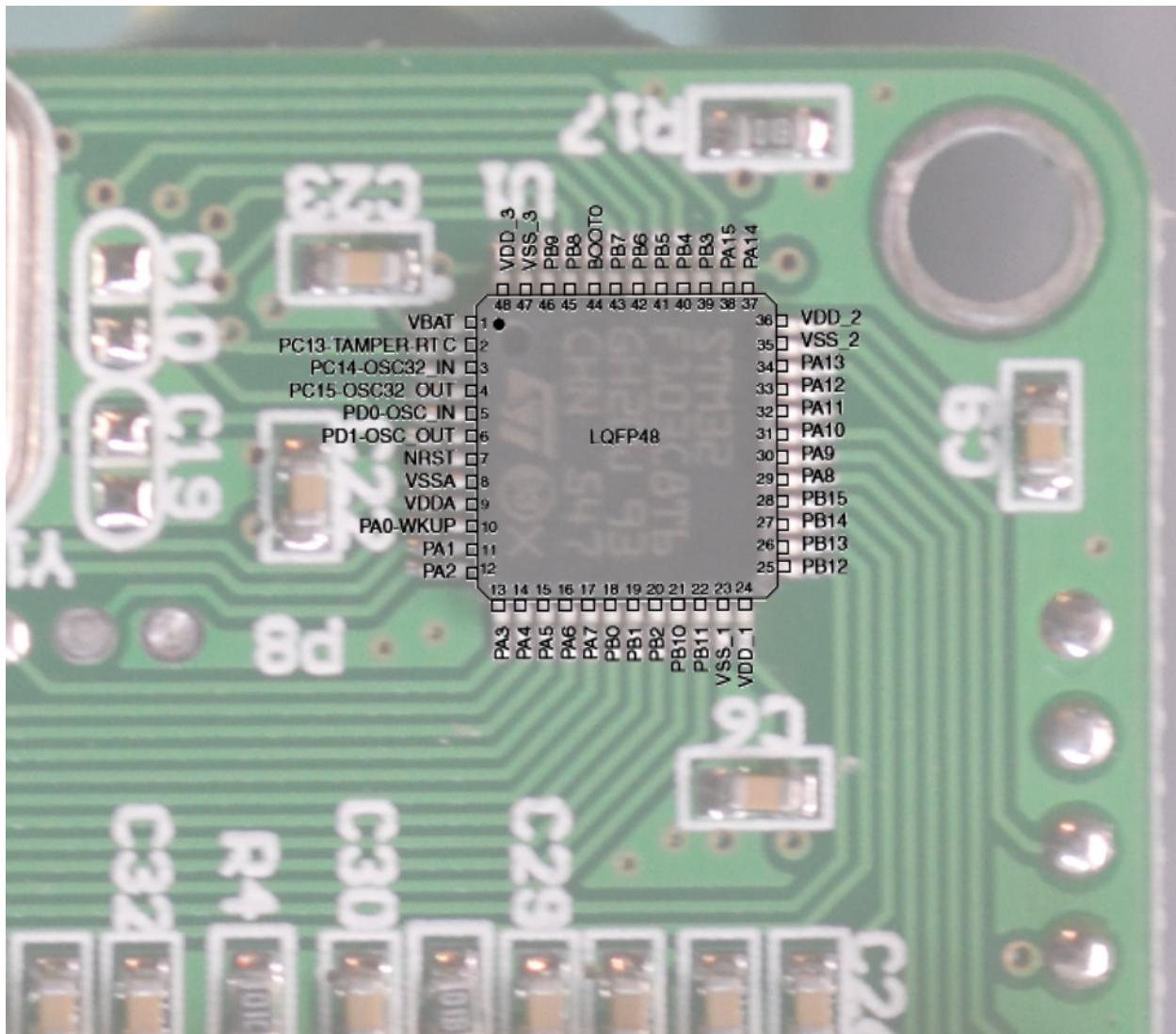
The screws on top of the upper chassis are similar to those on the lower chassis, with the addition of screws for the extruder.



## Main Board Connectors

First version of main board in printer with connectors labeled





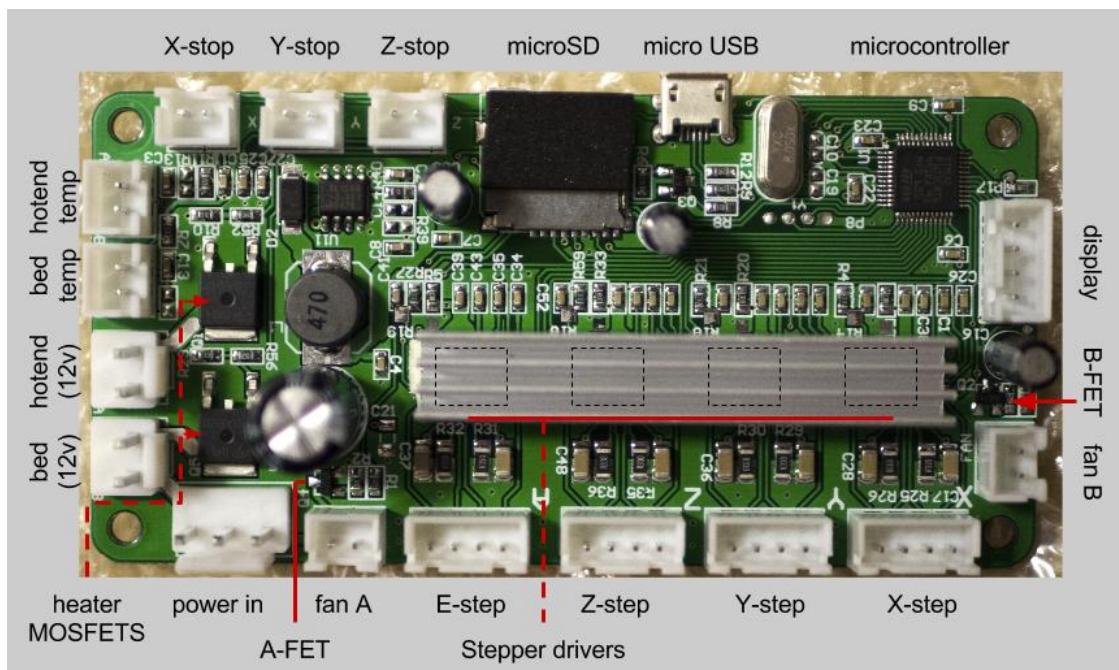
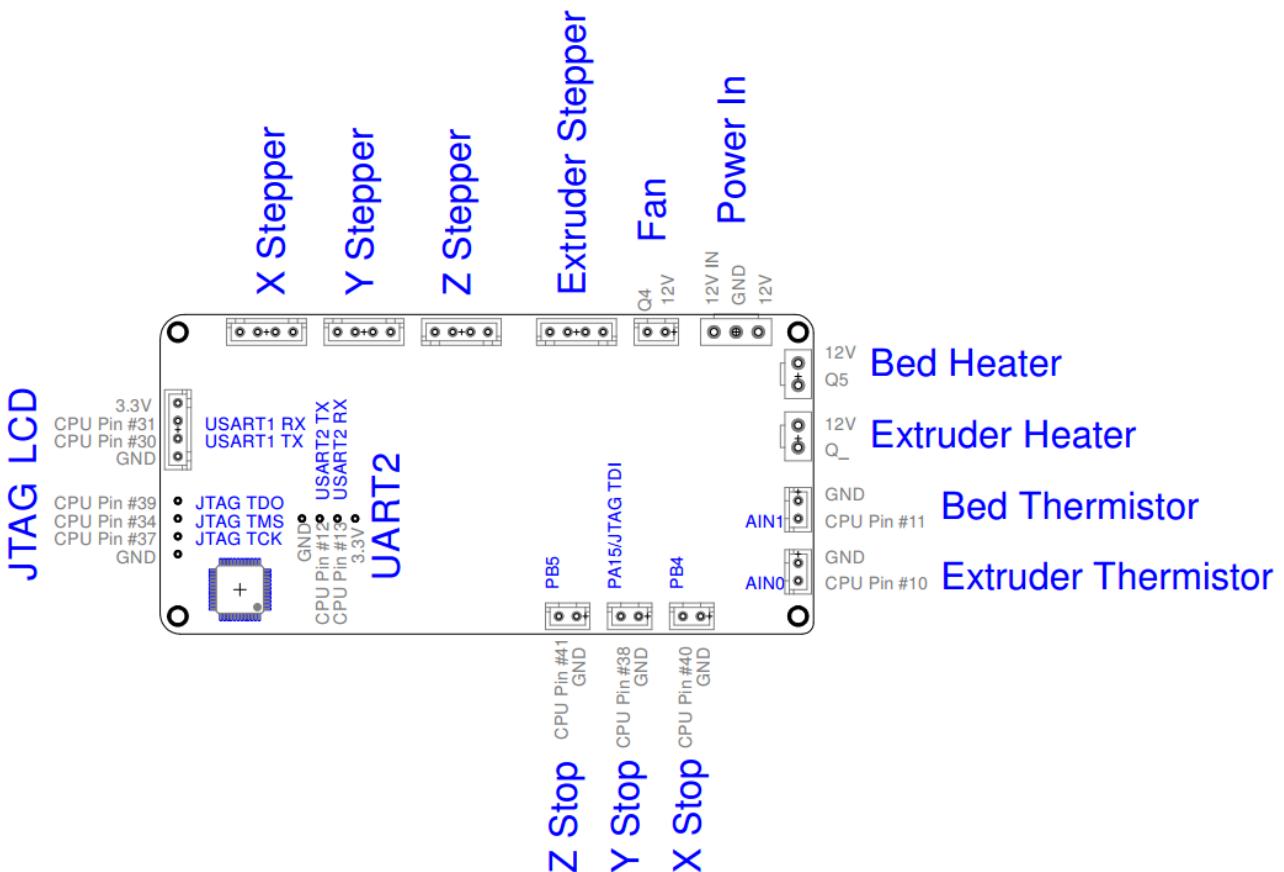


Image from <http://troglobit.net/content/P9070022.jpg>. No further attribution available for this image or domain. Posted by Bradford Casey, 09/10/2016.



(Flipped view of the first version of the main board with a bit more info.)

# Bed Leveling and First Layers

Let's start with terminology. This is super important.

## Leveling the bed

When we level the bed, we are adjusting the angle of the bed along the X and Y axes, such that as the print head traverses the bed in these axes, it remains at a constant height above the bed. On the Monoprice Select Mini, this is accomplished by moving the print head around to the four corners of the bed and adjusting the screws for each corner. Loosening each screw raises its corner, while tightening lowers it. *Leveling the bed is a separate task from adjusting the overall height of the bed, setting the first layer height, etc. Do not mix these up.*

~ Ethan

When leveling, I employed **Chris Brown's** (<https://www.youtube.com/watch?v=s04b7EpF6Zs>) technique. However I used one of my business cards, following Chris' suggestion of hitting all four corners as well as the middle of the bed.

~ James

## Adjusting the bed height

Bed leveling does not address the overall height of the bed, even though these tasks are accomplished using the same four screws on the Monoprice Select Mini. This is, in my opinion, the worst part of the printer. Let's take a look at all the major components that contribute to what we call "bed height" and see why.

1. The location (in Z) of the Z-axis limit switch.
2. The location (in Z) of the nozzle relative to the point of contact of the Z-axis limit switch
3. The location (in Z) of the bed relative to the nozzle when the Z-axis limit switch is engaged (i.e. the printer is homed in Z)

All of these are relative, and dependent upon manufacturing tolerances and assembly tolerances. That's why it all has to be adjustable - because no two 3D printers can be manufactured and assembled exactly the same. On most 3D printers, there is a screw that adjusts #2 from the list above. This means that you can level your bed without worrying about its height, then fine-tune the height of your print head relative to the bed when it homes independently.

On the Monoprice Select Mini, this is not possible. That means that after leveling the bed, you have to go back and either loosen or tighten all the screws collectively to adjust the overall height of the bed relative to the print head in its Z-homed position.

This process can be painstaking, and may be exacerbated if the Z-axis limit switch in your printer is not secured tightly enough (see *Inconsistent height of first layer from print to print* under *Issues List - Hardware*).

## First layer height

This is a setting you'll see in your slicer (Cura, Simplify3D, slic3r, etc.). It refers to the height at which your printer will print the first layer, *assuming your bed is leveled and at the right height to do so*. This is entirely relative. The difference between a 0.2mm first layer height setting and a 0.3mm first layer height setting will be 0.1mm, but your actual first layer heights could be 0.27mm and 0.37mm in reality, if your bed is not set at the right height. It is incredibly useful to have a set of digital calipers in order to check the height of your first layer. You can eyeball it, too, but unless you know exactly what you're looking for, it'll be tough. A number is a number.

If the bed is level (that is, parallel with the hot end's plane of movement), you can make adjustments to the first layer height in your slicer software. For example, Slic3r has, under Printer Settings, a "Z offset" setting. It is often easier to make small adjustments this way instead of moving the screws. However, the offset will affect the entire platform so you can't level like this. Example: you are printing with blue tape and your bed is fine. You remove the blue tape and replace it with BuildTak. Not only is BuildTak thicker, it also requires a higher first layer height. If you start twisting the bolts in the bed, you may lose the leveling. But if you set your Z offset to, say, 0.1mm then the first layer will start 100 microns (0.1mm) above the position the end stop reports as zero. [per Al Williams, 12/10/2016]

## Troubleshooting the first layer

It should be pretty clear at this point what you need to do in order to achieve a correct first layer, but let's look at what's actually going on and causing the issues associated with bad first layers. It's important to understand what your slicer is doing when it's taking your settings into account. Let's say your first layer height is set to 0.3mm in your slicer. With that information, it knows how much plastic (in volume) it should be extruding per length traveled in order to fill the space exactly right.

But what if your bed is too high (too close to the print head on the first layer)? Your slicer and your printer don't know that - they assume everything is setup correctly. So the

printer extrudes too much plastic for the available volume, since the volume of a shorter layer is less than that for a taller layer. That extra plastic has to go somewhere, so it goes out to the sides, and sometimes forms mountains between the paths traveled by the extruder. The effect is that holes are too small and outlines are too big, and you lose dimensional accuracy.

What about when your bed is too low (too far from the print head on the first layer)? Again, your software and hardware are oblivious, so not enough plastic is extruded to fill the available space. This is where you get adhesion issues. The surface area of plastic in contact with the bed is considerably less than the total surface area of the model in contact with the bed (the extrusion is round, so we're relying on a layer height less than our nozzle diameter in order to squash it flat against the bed). If the bed is way too low, such that the distance between the nozzle and bed is greater than the nozzle diameter, it's unlikely that you'll get any real adhesion at all.

## Test Print / Getting the Temperature Right

Do a test print. And do it prior to any fancy mods, or even a firmware update (see Matt Upp's notes on firmware further on). Again, this refers back to knowing your printer: Knowing what works & what doesn't work will save time and (maybe) prevent headaches.

As for "getting the temp," this process was/is a trial by error. After reading up on temp settings on Reprap, matterHacker(.com), as well as mpselectminiusers(.com), I started out with the extruder at 200 degrees celsius and the bed at 50. From there I looked at layer height/thickness along with any warping.

Again, this will be slightly different for each unit as there are minor variations in +/- thresholds.

## Bed Coverings (Tape, Glass, Other)

This section will help address those looking to find a bed covering type that works for them. Each person's "taste" is their own, and below are only suggestions and/or guidelines if choosing one versus the other.

## Glass Screen Protector

By [John Taveller](#) via Facebook, July 12, 2016 at 11:16pm

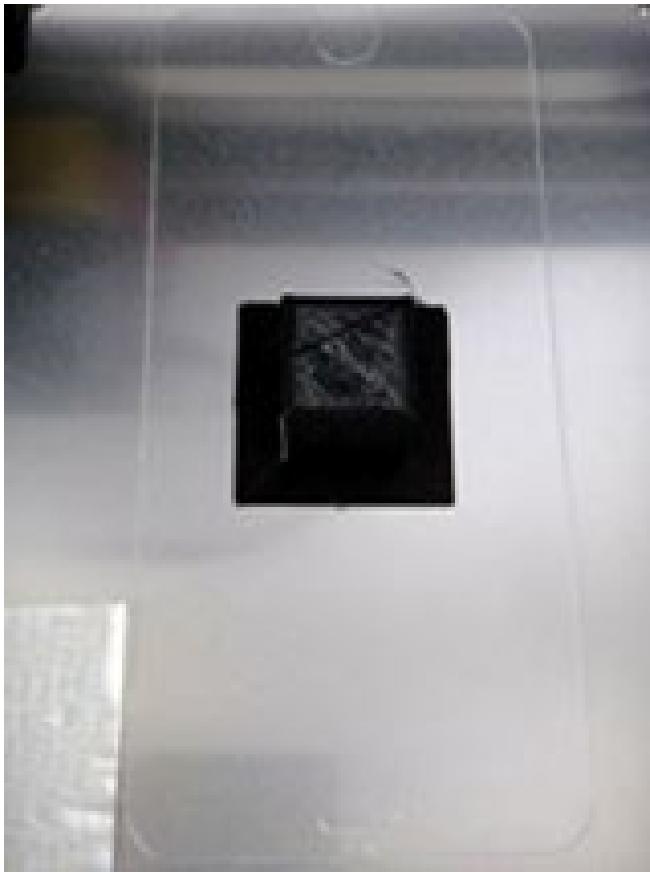
You can install a glass bed on your mini for \$1. A few weeks ago, I asked about whether a tempered glass screen protector would make a good build surface. Well, I went ahead and started using one when my factory masking tape needed changing. It works. It works really, really well. When I need the filament to stick, it sticks so well that I think I could pickup the printer with it. When I need it to release, it pops right off leaving no residue behind. I've put away my scraper, no longer needed. They are thin, not much thicker than tape, so fit nicely on the mini without a z-offset adjustment.

The details. These glass screen protectors are a \$1 at Dollar Tree. They have a variety of sizes for different phones. I got the biggest one I could find, for the iphone 6s. It's almost the same length as the length of the mini bed. I have mine installed in the middle covering roughly the middle 3 inches leaving about an inch on either side. Two of these would be too big to fit on the bed and cover up the bed leveling screws. I'm thinking about putting down 2 iphone 5s sized ones side by side. That should cover the usable part of the bed and leave the bed leveling screws accessible. The seam should be pretty much undetectable due to the nature of these things. They are precisely made with very straight edges and consistent thickness. I do have a tiny square of masking tape at the home position so that the printer can wipe off the nozzle before starting the print.

They lay down easily and securely yet are easy to lift back up and reposition if needed. They are flexible so will flex to meet the curvature of the bed. My bed is not flat but a very shallow bowl. I put mine on like I would put down a screen protector by putting down one edge then squeezing out the air bubbles. It's stuck on without any problems. I have repositioned it a couple of times. I simply stick a nail under an edge and pull it back off. It leaves no sticky residue.

I've only printed PLA but I have not needed glue or hairspray. I simply heat the bed up to 50C and it lays down and sticks really well. So well that I can't get the print off when I'm done. I tried letting it cool but it was just as stuck. I found that if I heat up the bed to more than 60C that it will easily pop off when I pull on it. It pulls off clean without any residue. I don't even wipe it down before another print.

So far it's been working great with no apparent wear. Which should be the case since it's sold as a scratch resistant shatter proof surface. It was cheaper than buying a roll of masking tape and just as easy to put down. A big plus is that the bed side of the object comes out very smooth and shiny.



Comments from [Eric Schuyler](#) (via Facebook) suggests the following: "I just did the same thing with two Samsung S5 protectors. There is a small (~1/4") overhang on each side, and they cover the entire bed with clearance for the adjustment screws - perfect! Thanks for this great idea."

Comments from Daniel Elliott (via [Facebook](#)) suggests the following: "Tempered glass screen protectors were a wonderful idea. 2x HTC One M7 protectors are a perfect fit for the build area"

## Glass

For those who are using a glass bed and are wondering what thickness to use, what type of glass, and even what temperature to adjust the bed at, here are some suggestions.

- from [Bryan Russell](#) (via Facebook): Using regular window glass 3/32" from Lowes. Only \$7 for a 12"x36" piece and could make several for extras. Glass works great! And with regards to temperature, I haven't changed what I was doing before. Depending on

the type of print, I may run anywhere from 0 to 50 on the bed. I just use a thin layer of glue stick and have had no issues.

- from **Tony Sleck** (via Facebook) [Link provided by Allen Derusha, 01/02/2017]:  
I used a 1/8" thick Borosilicate glass sheet I got from McMaster-Carr. I used small binder clips to attach it to the bed on the printer. I did use the Z axis offset clip. Works perfect.

- from **Capitán Pamplinas** (via Facebook): I use (in Spain) a 2mm regular sheet of glass, it's 160x130mm with 16mm diagonal corner cuts. It cost me 6 euro at a local glass shop (windows, bathroom stuff, glass doors...) but if it breaks anytime I would rather order a 130mm square one. And dollar store hairspray on top, of course!!

- from **Kevin Wong** (posted 04/20/2019): I found this on Amazon but the origin of this glass plate was from the link below. I just ripped off the plastic that was on top of the aluminium bed, kept the tape, and placed this glass on top. I didn't need to use clips at all.

<http://www.go-3dprint.com/products/130mm-x-160mm-borosilicate-glass-plate-w-corner-cut-for-mp-mini-select-3d-printer.html>

## PEI (Polyetherimide) Sheet

By Mark Lorich, August 19th, at 09:40pm

<https://amzn.com/B0013HKZTA> 12" x 12" x 0.03" thickness: 17\$

<https://amzn.com/B007Y7D5NQ> 12" x 12" pack of 6: 17\$

Using this surface I've made prints stick in ABS and PLA without turning my bed on, without using acetone or glue or hairspray or anything else. Heated bed is recommended, best results for IC3D Natural ABS was 220/50.

If you measure twice and cut once, this is enough for 4 beds worth of sheets. I cracked two in less than a month because I didn't wait for the sheet to fully cool when removing parts, these cracks eventually cause issues removing parts or having flat/even bottom surfaces. Removing the adhesive is a nightmare best tackled with putting your bed in the freezer for an hour, pull it out, blast with WD40, scrape with razor blade, repeat ad nauseum (more than one blade req'd).

Unlike glass, you do not need the Z bracket spacer to make this work, and also unlike glass, your bed still has the ability to warp, especially when removing parts. Again use patience and caution as this is what broke my bed thermistor. If you don't damage it, users report the surface lasting over thousands of prints. Your only cleanup step is to wipe it down lightly with isopropyl alcohol once you remove your previous part.

When printing in ABS you can lay down acetone for extra adhesion without worrying about the surface taking damage. A reliable, no-nonsense surface that seemed appealing to me because no printed mods were required and I worried about binder clips hitting my nozzle. Based on the internet hate machine view of ABS I thought it would be an issue on this printer but I'm convinced this surface made ABS trivial to say the least.

An additional tip on PEI, by Michael Kidd (03/13/2017)

When printing to it, if you ensure it's heated during the print, your parts will quite literally 'pop' right off as the PEI cools. I changed my Lulzbot Taz 4 from PET to PEI and now, after a few prints on the masking tape it came with, I've added PEI to my MPSM with great success. I'll never go back!

## BuildTak

By Al Williams, 12/10/2016 @ 12:29AM

BuildTak works well. The 4.5" square sheets are fairly inexpensive and cover most of the build plate you can use if you apply it carefully. You can also get a larger sheet (e.g., 6x6) and cut it down.

There are several things you should know. First, do not print on this until you raise your nozzle height either by tightening the bed bolts or by setting a Z offset in the slicer. If you print at "normal" height you use for a blue tape or Kapton bed, the print will probably stick HARD.

The other thing you should know is do NOT clean the material with acetone. You usually don't need to clean it but if you do, use alcohol.

When prying off a part, be careful not to bend the aluminum plate. This really goes for any surface you print on, but you can get a part really stuck to the BuildTak if you aren't careful.

I have heard that you should not heat this for PLA, but I was unable to get adhesion without a slightly warm bed (40C). It is also easier to remove the parts when the temp is slightly warm. If you have let the bed cool off, try heating it before removing. PETG also sticks really well. I heat to 60C for that, but should try without heat to see how that works.

Update (11:52 PM Dec 22, 2016): PETG seems to work pretty well without heating and is definitely easier to remove if not heated. Very large flat objects may still need a little heat.

## Sheet of Kapton

- Created by [Evan Nguyen](#) (via FB), and tested by James Stoffel

This is a print plate using a thick sheet of kapton and backed with 3M high temp double sided tape. Evan has been printing very successfully with it without needing glue, hairspray, etc. It should also work with PETG and ABS. I (James) am testing this product for the sake of doing a writeup for others. Per Evan, you can cut this product with scissors. The product is about as thick as the Buildtak, but more resilient.

I asked Evan if the bed needed to be re-leveled and he said no (see the following):

[\*\*Evan Nguyen\*\*](#) I didn't have to readjust the bed. If you have masking tape on there now it's just a straight swap.

- Once I (James) receive the product there will be a more thorough writeup in this section.

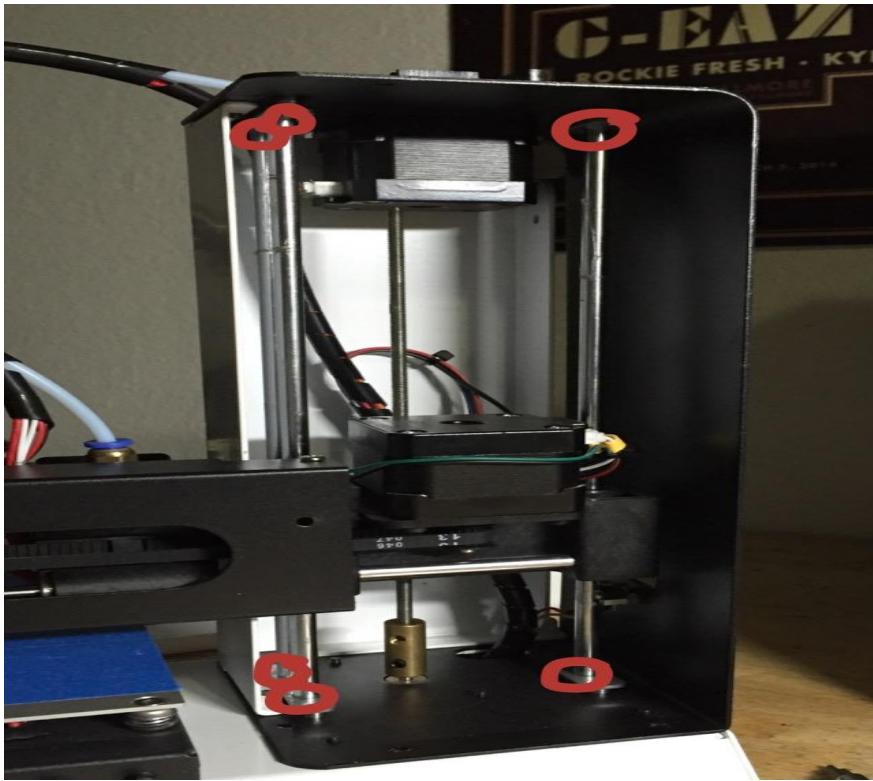
## Issues List - Hardware

### Rattling sound from Z-axis rods - **CLOSED**

When printing, the Z-axis rods rattle in their carriers (top and bottom) due to the movement of the print head in the X-axis.

Solved by removing the front and/or back panel of the upper chassis and applying hot glue to the interface between the Z-axis rods and their carriers.

See next page for photos of where the hot glue was applied.



(Picture enlarged so you can see the marked areas.)



**Base of printer rocks on a flat surface - CLOSED**

My printer came out of the box with a tweaked base, such that it rocked diagonally when set on a table.

Solved in an overkill manner by replacing the stock rubber feet with 1" adhesive-backed Sorbothane hemispheres. These have a low durometer (50 Shore OO) which allows them to conform to uneven surfaces.

Product link: <http://amzn.com/B0042U6ZDU>

**Vibrations from printing are amplified through base - CLOSED**

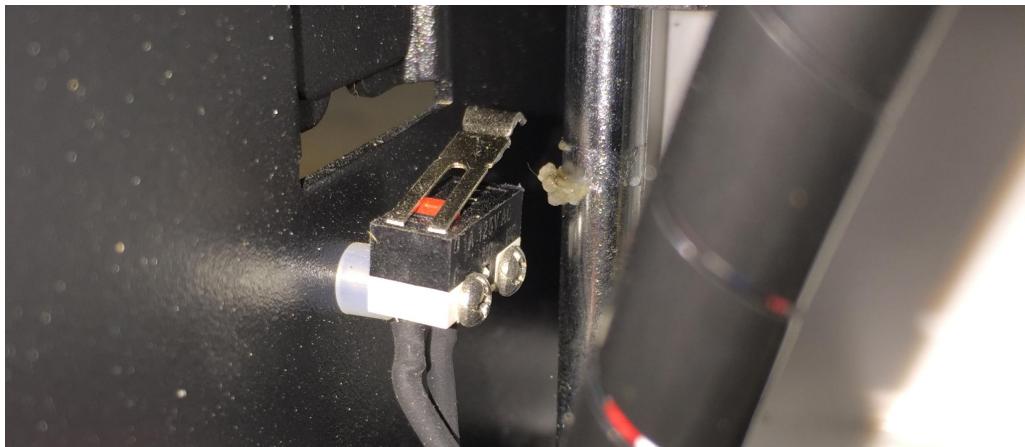
Vibrations can be amplified through tables, shelves, and other surfaces.

See "Base of printer rocks on a flat surface" for solution.

**Inconsistent height of first layer from print to print - CLOSED**

Not an issue regarding bed leveling. After carefully adjusting the bed level and height for a correct first layer height and getting a successful print, bed or print head seems to change in height, causing subsequent prints to have a first layer that is either too high or too low.

Solved by removing the front panel of the upper chassis and tightening the loose screws holding the Z-axis limit switch to the side panel of the upper chassis.

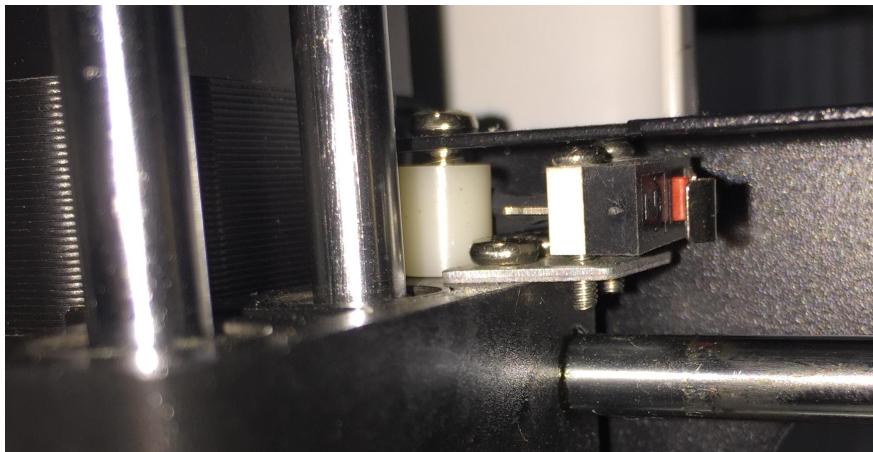
**Loose X-axis sheet metal panel - CLOSED**

The sheet metal panel shrouding the top, back, and bottom of the X-axis gantry is loose and can rattle during printing. The root cause of this issue is a severely undersized spacer between the Z-axis block and X-axis sheet metal panel, located just behind the X-axis limit switch.

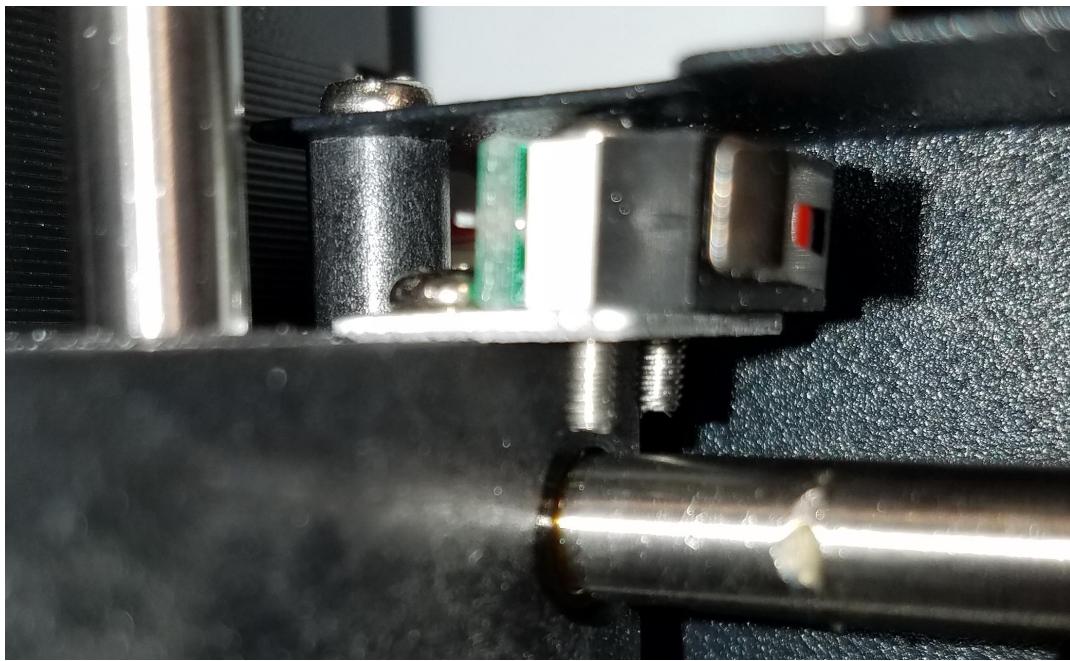
Solved by designing and printing a new, properly sized spacer that can be installed in the existing location. Can be installed without any disassembly, but installation is much easier if the front panel of the upper chassis is removed. At least some units shipped in Mid-2016 have an updated black plastic bushing used in these areas that is sized more appropriately.

STL for new spacer here: <http://www.thingiverse.com/thing:1614059>

Old spacer seen here:



New spacer seen here, as shipped with my mid-2016 printer:



Erik Black, 6:04 PM 8/21/2016, Solved this by:

I ended up removing the sheet metal entirely and never put it back on. I've had no issues with the functionality of the printer and find it easier to access the screws behind the belt without it

### Open space in print head - **CLOSED**

There's a span between the quick-connect tube fitting and the entrance to the hot end that has no guidance for the filament. This is a prime spot for filament to get kinked.

Solved by installing a short length of PTFE tubing to withstand the temperatures of the hot end (pictured in white below, above a piece of filament damaged by the original gap).



[Photo by Isaac B]

Hot end teardown and commentary: <https://www.youtube.com/watch?v=ab1QN9P5fkE>

### Thumping noise on some retractions (submitted by Al Williams 12/12/2016)

I had a thumping noise that would occur on some retraction moves. Almost like the extruder was skipping, but not quite. I removed the hex bolt from the extruder arm and removed it, being careful not to let the spring pop out. Nothing seemed wrong, but when I reinstalled the arm, the thumping stopped. Print quality seems the same (the thumping didn't seem to bother anything) but the machine is much quieter now.

### Extruder Skipping (submitted by Al Williams 12/24/2016)

If the extruder skips, there are several possible problems. First, the ones that can affect all printers:

- Extruder arm is cracked/broken  
**Fix:** Print a new extruder arm if cracks are found. (per Russell Stout 4/5/17)
- Printing too fast
- Printing too cold
- Filament jammed, misfed, or otherwise obstructed
- Misconfiguration (extruder steps, extruder multiplier, etc.)

These are interrelated. For example, a temperature that works at a slower speed may not work well at a faster speed. However, there are a few issues that may occur specific to the MP Mini:

- The controller board may be overheating. There are several ways to mount fans on or around the controller board.
- The PTFE Bowden tube may not be seated properly on one end or the other.
- The PTFE Bowden tube may be binding.

For the last two, it is easy to push the blue ring down on each push to connect connector and free both ends of the tube. Then you can pull the tube from the top until it is out of the wrap that holds it to the electrical wiring. Then push down on the blue ring and push the tube back in fully.

### Extruder Failing To Extrude (submitted by Russell Stout 4/5/2017)

If the extruder fails to properly extrude, check to make sure the extruder arm is not cracked or broken. A single replacement arm is often included with the printer.

Replacement printing arms can also be printed or purchased (see Appendix A for parts).

### Wiring contacts Y belt

I noticed that the back part of surfaces in the Y direction were inconsistent. A little research turned up this:

<https://hackaday.io/project/14823-monoprice-select-mini-maximum-3d-printer-mods/log/48318-fixing-y-axis-wobbleerrors>

Sure enough, if you put your hand under and move the Y table, you can feel the wires hitting the belt when the print head it towards the back. The fix is rather involved, but for the time being you can at least print smaller things further forward on the bed to minimize the problem.

## Issues List - Software

### Unstable extruder temperature - **CLOSED**

The factory settings cause indefinite temperature swings of  $\pm 5^{\circ}\text{C}$  with a period of 60-80 seconds. M303 (PID auto-tune) causes the printer to crash/reboot in firmware versions preceding 18.37. In 18.37 and later firmwares, M303 works, but the results are on par with the PID settings from the factory. The stored value of the I parameter is 1000th of what it actually uses and autotunes to, therefor after M303 autotune you will need to manually reset the M301 I value to 1/1000th of what the autotune reports.

Solved by starting from square one with *P*, *I*, and *D* values at zero. Raised *P* until the temperature stabilized, then raised *I* to properly offset the stabilized temperature to match the requested temperature, then experimented with *D* to minimize the time taken to stabilize.

The factory settings are: M301 P63.00 I2.25 D440.00

My new settings are: M301 P20 I0.02 D250

→ If you're interested in reading more about PID tuning, please have a look at my findings here: <https://hackaday.io/project/12696/log/42735> (by Michael O'Brien)

The full M301 has P, I, D, C, and L components. I did not change C or L, as I'm not entirely sure what they're for [see Michael O'Brien's link above]. I couldn't find any reference to them, but I think they may be the same as T and S (seen here [http://reprap.org/wiki/G-code#M301:\\_Set\\_PID\\_parameters](http://reprap.org/wiki/G-code#M301:_Set_PID_parameters)). If anyone knows I'd love to hear it!

### Better Heated Bed PID Variables

There is over-under shoot with the stock variables in firmware 20 & 22. If you modified the heated bed PID variables with M304, you can reset them with M502 & M500. I spent a couple hours to see if I can smooth things out and set some that work for temps of 45 °C to 80 °C. These are derived from PID auto tuning. You can read here about them: <https://hackaday.io/project/12696/log/43193>.

**Update:** I lowered 'D' & 'I' and was able to increase 'P' to make it more responsive. Also, 'I' for M304 also has thousandths resolution despite the display, just like M301.

My new settings are: M304 P48.94 I0.03 D187.31

Update to heated bed settings: M304 P106.56 I0.024 D93.81

### Ending G-code lacking - **CLOSED**

There is no ending G-code provided out of the box.

My current ending G-code is as follows:

M104 S0 ; turn off extruder  
M140 S0 ; turn off bed  
G4 P300000 ; wait 5 minutes before turning off the fan \*\*  
M106 S1 ; turn off fan (See comments from others regarding this code change.)  
G28 X ; home x axis  
G1 Y120 ; move platform forward for access  
M84 ; disable motor

I am using M106 S1 instead of M106 S0, as the printer will automatically turn the fan back on if you try to turn it off. S1 (a duty cycle of 1/255) is not technically off, but it is low enough that the fan does not move nor make a "PWM sound", and it tricks the printer into thinking it's still on.

\*\* Kin Wong, as of Oc 16th: I have tested this on both ABS and PLA prints, it works perfectly, the fan will stay on for 5 min after the end of the print, by that time the nozzle temp is cooled way down to safely turn off the fan.]

## Z-Axis travels very slowly - **CLOSED**

The Z-axis is limited in firmware to 1.5mm/sec.

Solved by updating M203 in the firmware to Z2.5. I experimented with higher speeds but the Z-axis stepper motor skips steps when trying to move the Z-axis faster than 4-5 mm/sec. Z3.0 seemed fine, but sounded like it may have been skipping steps occasionally.

## No travel bounds set in firmware - **OPEN**

The firmware has no bounds set for physical travel in all axes (M208), which means that it can be commanded to travel farther than its physical limits and it will try to do so, causing skipped steps in the stepper motors (or potentially worse, in the case of the Z-axis).

Discovery: This is definitely not a RepRap board. It uses M200 for filament diameter, which is unique to Marlin, Repetier, and Smoothie (and MakerBot). It also uses M203 in mm/s, which means it is a Marlin board. Marlin's max travels are set deep in the firmware.

DISCOVERY: I found that, when my printer found it amusing run off the side, and you use cura for slicing, DO NOT save directly to the micro SD. (From Logan Pachulski 10/28/2106)

NOTE: Marlin itself is released under GPL v3, so if the firmware is derivative Malyan/Monoprice are required to release the source. Has anyone found this? On the other hand, their [docs page](#) just says compatible with the Marlin instruction set.

DISCOVERY [by 807wer Endie, 2018/02/29]: I have had the issue of the print head crashing off of both the X and Y axes when I home the printer, I was able to solve it with  
M206 X1 Y1  
M500

This offsets the X and Y axes by one and then saves the settings.  
Additionally if you have this issue check to make sure that your X axis stop switch is not flipped up where the print head is not engaging it, you can check this by turning off the printer and then moving the print head to the left all the way, you should hear a click, if you do not look for the switch and pull downwards on it.

This was all on the version 1 not the version two.

### Instantaneous change in speed during rapid movement - **OPEN**

When performing a rapid movement farther than ~30mm during a print, rapid movement speed will accelerate normally, then increase dramatically, the decrease dramatically before decelerating normally. Causes the printer to physically shudder. This occurs in both X and Y axes.

Possible causes:

- Acceleration/jerk settings in firmware incorrect
- Simplify3D?

#### Work-Around:

Setting travel to 100mm/s significantly reduces the shudder, but doesn't eliminate the acceleration change

### Method for updating firmware and enabling WiFi - **CLOSED**

Updating firmware can be found at what appears to be the original manufacturer's wiki:  
[http://wiki.malyansys.com/doku.php?id=firmware\\_update\\_procedure&rev=1465820046](http://wiki.malyansys.com/doku.php?id=firmware_update_procedure&rev=1465820046)

Note that this is a slightly older revision of the wiki, and it looks like Malyan removed it in a newer revision, most likely due to these firmwares being somewhat untested beta versions, and as such, should only be used at your own risk. This method has been tested by myself and others, and works. I am currently running firmware V15.36 on my Monoprice MP Select Mini, (AKA, Malyan M200). After updating the firmware, the wifi becomes enabled.

After reviewing a specific revision of the Malyan wiki at  
[http://wiki.malyansys.com/doku.php?id=home&rev=1465823696#software\\_for\\_m200](http://wiki.malyansys.com/doku.php?id=home&rev=1465823696#software_for_m200), it appears that after the firmware update, there are two options to configure the wifi. This can be done via the android apk, (downloadable via the previous link), or through M commands, (M550 SSID, and M551 PASSWORD).

After the Android application or the M commands are used to configure the wifi, the Malyan Link software, (also downloadable via the previous link), and the drivers it comes with can be installed on a computer connected to the same network. After the printer is discovered by the Malyan Link software, the printer can be controlled over wifi through Repetier Host. A limited port scan of the printer revealed the telnet port and a very limited web interface for uploading G Code files are also featured on the printer, although from my experience the web interface doesn't appear to be fully implemented. Also of note is that after decompiling the Android apk file, some of this same web code appears, but doesn't appear to be implemented?

Steps necessary to configure wifi with the Android app and control the machine through Malyan Link via Repetier Host can be viewed at:

<https://www.youtube.com/watch?v=UQkVYsSrpVw>

I found it necessary to update Repetier Host to its newest version in order to successfully connect Repetier Host through Malyan Link.

### **Extruder calibration (submitted by Artem Belevich) - OPEN**

Extruder should be calibrated. Out of the box my printer only fed 94mm of filament when gcode requested 100mm. EEPROM originally had M92 E97. Setting it to "M92 E103" (YMMV) gives almost perfect extraction rate. It could be worked around by bumping up feed rate by about 6%.

### **Hotend Carriage Occasionally tries to Run off End of Gantry**

**(submitted by John McNelly as of Jan 14th, 2017)**

For some reason, every once in a while the hotend carriage will attempt to run off the end of the gantry at the beginning of a print, while the heated bed simultaneously tries to run off the end of its stops as well. This occurs shortly after the homing sequence, at the time when the print head usually slowly descends to the print bed to start extruding--instead of beginning the print, it rockets to the end of the gantry at full print speed, and the bed moves outwards (towards the display) at high speed as well. This results in the belts for the printbed and the hotend carriage skipping on their stepper motors. Bed size in cura is set to 120mmx120mmx120mm, and this only happens very occasionally, and with prints that normally work fine. If I encounter the error and reboot, it usually goes away but may resurface a print or two later if the printer is not power cycled. I have been unable to pinpoint a cause for this. Any ideas?

Video of the issue: <https://www.youtube.com/watch?v=WBADhBr8N5s>

~ Confirmed by Ward Fisher on 01/18/2017. I can confirm observing this issue as well; a reboot has corrected this issue 100% of the time, but there is no clear cause that I can find.

~ Confirmed by Chris Nicholson on 02/24/2017

I have also had this issue occur. In one case it was after leaving the printer on preheat for about 3 hours (was prepping a print to transfer and had to leave suddenly). Upon return this issue occurred again for me. A reboot has fixed it for me, but I thought mentioning the potential heat cause was worthwhile. Possibly related new issue - the x axis will only stutter and skip during homing, prints and/or manual movement. Occurred during a reprint attempt following a cancelled print. Multiple reboot attempts have not resolved this issue.

~ Confirmed on V2 by John on 05/03/2017

This problem still exists in V2 of the printer. Every so often during the beginning of a print it will attempt to run the gantry and bed past its maximum limits. A reboot is the only thing that fixes it.

~ Confirmed with possible fix on V2 by Josh on 05/14/2017

This problem occurred for me regularly on my second or third print without rebooting on the V2 of the printer. I have not had the problem recur even once since I made several configuration changes, so I believe one of the following things fixed it for me from this guide:

<http://www.thetylergibson.com/monoprice-select-mini-part-3-tuning-and-slicing/>

- Pronterface PID tuning
- Cura custom printer settings including the unintuitive “X min: 20, Y min: 10, X max: 10, Y max: 10”
- Cura Start Gcode and End Gcode

# Firmware, Software, Recovery, Corrupt LCD Fix, Windows Driver

By Matthew Upp (Via Facebook)

## ***Disclaimer:***

***THE FOLLOWING IS NOT INTENDED FOR MONOPRICE SELECT MINI PRODUCT #15365 BUT WILL WORK - (PLEASE IGNORE ANY MENTION OF THE SELECT MINI THAT YOU MAY SEE). THE FOLLOWING IS INTENDED FOR MALYAN SYSTEMS M200 3D PRINTER. ASSUME THAT USING THE FOLLOWING INSTRUCTIONS, FILES, LINKS, VIDEOS, AND WHATEVER ELSE I MISSED WILL MAKE YOUR PRINTER A PAPER WEIGHT.***

***WARNING: BETA VERSIONS, ONLY FOR WHO HAVE TECHNICAL BACKGROUND IN CASE OF UPDATE FAILURE. PROCEED WITH CAUTION. UPDATING THE FIRMWARE IS NOT SUPPORTED BY MONOPRICE.***

I have tried to include everything in one posting to make searching easier. I have probably left some things out but I wanted to get something posted so I only have to edit one post if updates or changes need to be made. Please leave comment if you noticed something is incorrect, missing, can be improved, or think something should be added or removed.

**\*\* Updated by Matthew Upp, As of 01/2022,**

**LINKS TO FIRMWARE & SOFTWARE I HAVE SAVED & SHARED USING GOOGLE DRIVE**  
<https://drive.google.com/drive/u/0/folders/0BxyFl3iDaicLODVZOHI4SzZBNIE?resourcekey=0-bUBCpfJxeD-YreH5Q2M0Qw>

**DO NOT UPDATE THE FIRMWARE BEFORE COMPLETING A FEW PRINTS.**

**If you update the firmware right away what are you going to say when asking for help after something doesn't work?**

**YOU:** "I updated my firmware and my printer doesn't work."

**COMMUNITY:** "Was it working before you updated the firmware?"

**YOU:** "I don't know, I didn't try."

**Updating the firmware before using the printer introduces another variable to the troubleshooting session you may have to go through.**

**Note: If you have trouble updating, please format microSD card or use another microSD card and try again. Try a microSD card that is 4GB or less formatted with FAT. The printer can be picky at which cards it will update from so try a few cards.**



## INSTRUCTIONS & VIDEOS

See below at end of this section.

### Updating Motion Controller Firmware

#### Force Update

This method takes a little more work but has a nearly 100% chance of working the first time.

(Same instructions as [recovery mode](#))

1. Copy any version “update.bin” firmware file from the firmware folder to the SD card.
2. Create an empty file named “fcupdate.flg” and copy to the SD card.
3. Power on the printer. When the printer is powered on, it will force the update.
4. **IMPORTANT:** After successfully updating, remove the SD Card and delete the “fcupdate.flg” file. You may also delete the “update.bin” file.
5. *(If recovering to a different version then follow the steps below)*
6. Export/Save any calibration you have done as the next step will erase/reset everything back to defaults.
7. Reset EEPROM using “M502” and save EEPROM using “M500”
8. Need help on how to send these commands? See [Sending G-code](#)
9. (Optional) Run [PID Autotune](#)

#### Printers LCD

1. Copy update.bin to SD card and put into printer while powered off.
2. Move the x-axis (x-carriage) away from the tower. This is to ensure the endstop is not activated.
3. Power up printer and select file update.bin in print menu.
4. Machine will start to update.
5. Restart printer
6. Export/Save any calibration you have done as the next step will erase/reset everything back to defaults.
7. Reset EEPROM using “M502” and save EEPROM using “M500”
8. Need help on how to send these commands? See [Sending G-code](#)
9. (Optional) Run [PID Autotune](#)

#### G-code - M560

1. Copy update.bin to SD card and put into printer while powered off.
2. Power up printer
3. Connect using USB
4. Type command “M560” into communication terminal update
5. USB connection will disconnect while updating

6. Restart printer
7. Export/Save any calibration you have done as the next step will erase/reset everything back to defaults.
8. Reset EEPROM using “M502” and save EEPROM using “M500”
9. Need help on how to send these commands? See [Sending G-code](#)
10. (Optional) Run [PID Autotune](#)

Please use command M115 to check version and model. If model incorrect, please type “M115 S1” to correct.

## Trouble updating?

- Format microSD card or use another microSD card and try again.
- Try a microSD card that is 4GB or less formatted with FAT
- Verify the x-axis endstop is not pressed in.

YouTube link: <https://youtu.be/zAj9wqvPNfA> - Updating motion controller firmware - A quick video showing the update process.

## Recovery Mode - Motion Controller

Link to firmware: <https://mpselectmini.com/downloads/start>

The recovery mode method can be used as follows:

1. Copy any version “update.bin” firmware file from the firmware folder to the SD card.
2. Create an empty file named “fcupdate.flg” and copy to the SD card.
3. Power on the printer. When the printer is powered on, it will force the update.
4. **IMPORTANT:** After successfully updating, remove the SD Card and delete the “fcupdate.flg” file. You may also delete the “update.bin” file.
5. *(If recovering to a different version then follow the steps below)*
6. Export/Save any calibration you have done as the next step will erase/reset everything back to defaults.
7. Reset EEPROM using “M502” and save EEPROM using “M500”
8. Need help on how to send these commands? See [Sending G-code](#)
9. (Optional) Run PID Autotune [http://mpselectmini.com/pid\\_autotune](http://mpselectmini.com/pid_autotune)

## Trouble recovering?

- Format microSD card or use another microSD card and try again.
- Try a microSD card that is 4GB or less formatted with FAT
- Verify the x-axis endstop is not pressed in.

## Updating UI Controller Firmware

1. Disconnect USB cable
2. Copy the lcd.bin file to the micro SD card and put into printer while powered off
3. Move the x-axis (x-carriage) all the way to the left making sure the endstop stays pressed in.
4. Slide the y-axis (bed) all the way to the back making sure the endstop stays pressed in.
5. Press and hold down the control dial/button
6. While keeping the control dial/button pressed down, power on the printer. Keep the control dial/button pressed down until the fan on the hotend starts spinning (about 3-5 seconds).
7. The LCD will stay black until the update process is finished which is about one minute or less. The LCD will turn on when the update is complete.
8. Restart Printer
9. Delete lcd.bin from micro SD card if printer keeps restarting.

## Troubleshooting

### Update not starting? Fan doesn't start spinning?

- If the fan doesn't come on, check to make sure the x and y endstops are pressed in.
- Verify the USB cable is disconnected from the printer
- Format microSD card or use another microSD card and try again.
- Try a microSD card that is 4GB or less formatted with FAT.
- Try updating the motion controller firmware first. Older firmware version had problem updating the UI controller firmware.

YouTube link: <https://youtu.be/8nELO68ueNY> - Updating UI Controller firmware

## Behind the Scenes

A simplified version of what is happening at the start of the UI Controller firmware update process.

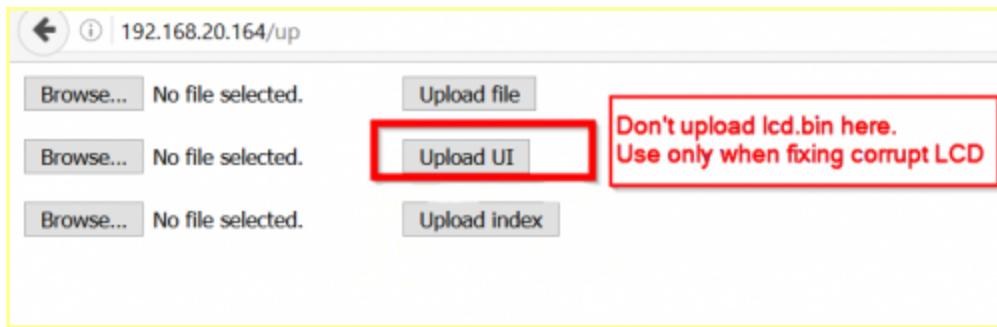
*User needs to be pressing the button to force the LCD module into recovery mode.*

1. Bootloader jump to main app
2. Initialize all IO and read both X & Y endstops
3. If both endstops are triggered, check microSD is available. Check 3 times, if failed go to standard boot.
4. If microSD available and lcd.bin file exist. Turn on FAN to indicate updating has started.
5. Re-initialize IO and upload firmware for the LCD module.

## CORRUPT LCD FIX

If UI on LCD panel becomes corrupted, please follow the procedure below to recover:

1. Download ui.bin from the Google Drive share <https://mpselectmini.com/downloads/start>
2. “Firmware > UI LCD - Firmware Individual > Corrupt UI LCD Fix > ui.bin”.
3. (Also found in “Firmware Pack > Firmware pack ##.##.zip”)
4. Setup WiFi
5. Open web browser on computer, input [http://printer\\_ip\\_address/up](http://printer_ip_address/up) E.g., <http://192.168.1.104/up>
6. Browse to the location where ui.bin was saved to and click “Upload UI”. **DO NOT UPLOAD lcd.bin**



## CONNECTING MALYAN M200 TO WIFI

Note: Wifi and USB cannot access simultaneously. Please disconnect USB from printer if you want to use wifi function.

Note that the wi-fi module does not have 5ghz support, and is restricted to 2.4ghz bands.

Wifi usage(Method A):

1. Update to latest firmware.
2. Press and holding center button on "Move" menu will enter config status. Release button when smart config dialog show. Run android app to config wifi.

Wifi usage(Method B):

1. Using command "M550 SSID" & "M551 PASSWORD" to enter AP information through terminal.
2. You will see IP show up in title bar.

Wifi usage(Method C): (I am still testing this method)

Using Windows application Malyan Link

1. Install Malyan Link

2. Once installed and running right click the Malyan Link icon in the Windows taskbar. It is a black "M" with a circle around it.
3. Select Wifi wizard. "wifi" dialog should box appear
4. Select your wireless network from the list or manually input your wireless networks SSID if using a computer without WiFi. If the option to manually input your SSID is not available please download the newest version.
5. Input network password
6. Connect
7. Disconnect USB when told

Access through web browser:

Check IP address displayed on LCD, copy this address to web browser in computer.

Connecting Malyan M200 (Monoprice Select Mini) to WiFi and Controlling with Repetier-Host:

<https://youtu.be/UQkVYsSrpVw>   Or   [https://youtu.be/XuO\\_UaUFIBI](https://youtu.be/XuO_UaUFIBI)

## LINKS TO ORIGINAL FIRMWARE & SOFTWARE

*[This section will updated to keep up with what Matt is posting. PER James Stoffel]*

- Malyan Systems M200 Product Page - [http://malyansys.com/en/?page\\_id=315](http://malyansys.com/en/?page_id=315)
- Corrupt LCD FIX
- Source: [http://wiki.malyansys.com/doku.php?id=lcd\\_ui\\_corrupted](http://wiki.malyansys.com/doku.php?id=lcd_ui_corrupted)
- Firmware Packs:  
Firmware now divided into two part, motion controller and UI controller. The major part of version number is motion controller version, the minor is UI controller version. Ex: 12.34 means motion controller version 12 with UI controller version 34.
  - ❖ Version 15.36 (Undocumented):  
<http://www.malyansys.com/downloads/m200-160615.rar>
  - ❖ Version 14.34 (Fix UI restart problem):  
<http://www.malyansys.com/downloads/m200-160611.rar>
  - ❖ Version 14.33 (Added smart config for wifi):  
<http://www.malyansys.com/downloads/m200-160609.rar>
- Software (Android and Windows) for M200: **[Site appears down for now 3/30/2019]**  
Android app: <http://malyansys.com/downloads/mm32/3dcraft.apk>  
Windows app: <http://malyansys.com/downloads/mm32/setup.exe>
- <http://wiki.malyansys.com/doku.php...>
- [http://wiki.malyansys.com/doku.php?id=home&rev=1465823696#software\\_for\\_m200](http://wiki.malyansys.com/doku.php?id=home&rev=1465823696#software_for_m200)
- Firmware & Firmware update procedure for M200:  
<http://wiki.malyansys.com/doku.php...>  
<http://web.archive.org/.../http://wiki.malyansys.com/doku.php...>

# Appendix A: Parts Sourcing

Need to find a replacement part? Want to upgrade something? Here's the parts I've identified so far and where to source them.

## Whole Printer

Monoprice.com

[http://www.monoprice.com/product?p\\_id=15365](http://www.monoprice.com/product?p_id=15365)

Jet.com

<https://jet.com/product/MP-Select-Mini-3D-Printer/6aacb19912cd471b9a4bfa697da6cc24>

Malyan M200 from Zhangzhou Echo Technology Co., LTD.

[http://wholesaler.alibaba.com/product-detail/Malyan-3d-printer-M200-with-heat\\_60404469308.html](http://wholesaler.alibaba.com/product-detail/Malyan-3d-printer-M200-with-heat_60404469308.html)

Hobbyking.com (in europe, promised from November / December)

[http://www.hobbyking.com/hobbyking/store/\\_103391\\_Malyan\\_M200/Desktop\\_3D\\_printer\\_US\\_Plug\\_.html](http://www.hobbyking.com/hobbyking/store/_103391_Malyan_M200/Desktop_3D_printer_US_Plug_.html)

## Stepper motors

X-axis, Y-axis, and extruder steppers are model no. JK42HS34-1334 here:

<http://www.jkongmotor.com/Product.asp?Action=View&ProductID=437&Catalog=13>

200 steps/rev., which means they could be upgraded to 400 step/rev models for 2x the precision.

## MainBoard

The M100 and M200 mainboards are not the same hardware.

V1 - <https://gigdigit.com/mainboard-select-mini-v1-normal-or-quiet-see-description/>

V2 - <https://gigdigit.com/mainboard-select-mini-v2-normal-or-quiet-see-description/>

"Pro"/V3 -

<https://gigdigit.com/mainboard-select-mini-pro-v3-normal-or-quiet-see-description/>

## Linear bearings

Z-axis & X-axis bearings are LM6LUU's like these: <http://amzn.com/B00AGAIJ1G>

Y-axis are LM8LUU's like these:

<http://amzn.com/B01GQBQKFA>

<https://www.amazon.com/dp/B00AGAIJ1G>

## Painter's tape

ScotchBlue Painter's Tape, Delicate Surface:

<http://amzn.com/B000BPRGFQ>

ScotchBlue Painter's Tape, Multi-Use:

<http://amzn.com/B00004Z4DU>

## Extruder Feeder (confirmed by Mark Lorich)

All Metal Right Arm MK8 (**confirmed by Mark Lorich**)

<https://amzn.com/B019>

4x10x4 mm bearings to use with MK8-style extruder feeder and stock extruder gear (use this combination so you don't need to remove the existing gear and re-calibrate the feed rate: [7804K1](#)

Note: the stock extruder bearing can be used with the aluminum MK8 extruder. You may need to re-use a screw from the original. (~ Bradford Casey, Jan 24th 2017)

<https://amzn.com/B0196B285>

A backup for if/when your plastic arm on the feeder cracks and causes you to lose tension for retraction and extrusion

[Al Williams, 12/01/2018]

*"Instructions on how to almost painlessly upgrade your extruder to an all metal MK8"*

I wrote up how to use an MK8 with a 4x10x4 bearing without having to remove the case or take off the gear:

<https://hackaday.io/project/28433-monoprice-select-mini-painless-extruder-upgrade>

## Replacement Heat Break for Stock Hot End (by Sarah Cole via Facebook)

Search Amazon for "M6 30 with PTFE Liner Heat Break".

There are several results but I've ordered the [Anycubic Barrel Stainless Steel 30mm\\*M6 Nozzle Throat with PTFE Tube for MK8 Tube Makerbot 3D Printer Extruder Hot End \(Non-Amazon Affiliate Link\)](#)

<https://www.amazon.com/Anycubic-Stainless-Makerbot-Printer-Extruder/dp/B0188G39MI>

## Power Supply

Winkeyes 12V 10A PSU (**confirmed by Mark Lorich**)

<https://amzn.com/B018G3ABWY>

I've confirmed it works as well as many others on the facebook group page. It's plug and play, multiple users mention better quality prints, and no soldering splicing or stripping. The big confusing adapter tangle is extra; ignore it.

**NOTE:** The specs have changed on Amazon (as of 9/19/2016) showing 6A instead of 10A

**NOTE:** As of Oct 12th 2016 the site page now shows a 10A unit.

~~Jacky LED DG 12V 10A:(US)~~ Noted by Brian Hanfin (7/31/2017)

<http://amzn.com/B00F4WY0S> This product is now underpowered; the link goes to a 2AMP power supply, NOT a 10AMP.

(UK)

<http://amzn.co.uk/dp/B00WG6Q8XY>

ATX Conversion

<https://amzn.com/B00TK0S300> barrel jack (5.5mm x 2.5mm)

<https://amzn.com/B000O7WFHA> ATX P4 extension

<https://amzn.com/B00LV8TZAG> example ATX PSU

## Thermistor

Thermistors located at both the hotend and hotbed are 100K NTC resistor with beta 3950. Source: Malyan wiki,

[http://wiki.malyansys.com/doku.php?id=type\\_of\\_thermistors\\_of\\_m200](http://wiki.malyansys.com/doku.php?id=type_of_thermistors_of_m200)

NTC 3950 100K Thermistors:

<http://amzn.com/B01B41K7OM>

## Replacement Print Bed Screws

Originals appear to be countersunk M3, with 0.5mm pitch and 16mm length.

<http://amzn.com/B018RSXSLE>

Options from McMaster-Carr:

Black Oxide Coating Class 10.9 - 100 pk: <http://www.mcmaster.com/#91294A134>

316 Stainless - 100 pk: <http://www.mcmaster.com/#93395A210>

High Visibility Blue Class 10.9 - 50 pk: <http://www.mcmaster.com/#91304A104>

## LCD Screen

F11 TM032PDZ04 -

<http://m.ebay.com/itm/New-LCD-Display-Screen-Repair-Part-For-Huawei-U8510-IDEOS-X3-T8300-Blaze-/291630682720>

## Replacement Nozzle - See Note Below

Per Rob Tynmann, Oct 9th 2016

<https://www.amazon.com/gp/product/B01I17GW4G>

Was not able to find direct replacement nozzle. The nozzle found at the link will work with a slight modification. The threaded section is 1.5mm too long and must be accounted for. I shortened the plastic spacer located between top of the throat and the bowden tube connector. My spacer was 10.5mm long. I filed it to 9.0 long. Note, the bowden tube will now have 1.5mm less thread engagement in the heat block but does not appear to be an issue.

Per Darren Hutchison, Nov 18th, 2016

<https://www.amazon.com/3maker-Extruder-Volcano-Printer-Filament/dp/B01EUWCX4Y>

seems like it has the correct thread length without needing to modify the spacer.

## Replacement Pulleys and Belt for the X-Axis

Per Henk Wall, Mar 5th, 2020

<https://www.thingiverse.com/thing:3300759>

### Pulleys:

- 1x GT2 16 teeth 3mm bore aluminium timing belt idler pulley;
- 1x GT2 5mm 20-teeth timing pulley wheel for the x-axis stepper motor.

### Belt:

- GT2 belt. 6mm

# Appendix B: Resources (Miscellaneous)

## 3D / CAD Software

- **Printrun** <http://www.pronterface.com/>
- **Onshape** <https://www.onshape.com/>
- **Tinkercad** <https://www.tinkercad.com/>
- **KiCAD** <http://kicad-pcb.org/>
- **OpenSCAD** <http://www.openscad.org/>
- **SolveSpace** <http://solvespace.com> (Open source 3D parametric CAD with a decent GUI.  
The tutorial is short and sweet.)
- **Eagle CAD** <https://cadsoft.io/>
- **FreeCAD** <https://www.freecadweb.org/>
- **Fusion 360** <http://fusion360.autodesk.com>
- **SpaceClaim** <http://www.spaceclaim.com>
- **Autodesk 123D** <http://www.123dapp.com/design>
- **Autodesk 123D Tutorials**  
[https://www2.warwick.ac.uk/fac/sci/wmg/about/outreach/3d\\_design\\_printing/cad\\_tutorials/](https://www2.warwick.ac.uk/fac/sci/wmg/about/outreach/3d_design_printing/cad_tutorials/)

## Tools

- **LulzBot Mini PEI Sheet**  
<https://www.amazon.com/dp/B018G59AOM/>
- **3D Print Removal Tool**  
<https://www.amazon.com/dp/B00VB1U886/>
- **Anycubic 1 Spool Acrylic 3D Printer Filament Tabletop Mount Rack**  
<https://www.amazon.com/gp/product/B019TRKDTC>
- **Hilitchi 210pcs M3 Stainless Steel Hex Socket Head Cap Screws Nuts Assortment Kit with Box (M3)**  
[https://www.amazon.com/gp/product/B014ONCP88?ref\\_=sr\\_ph\\_1&qid=1469859983&sr\\_=sr-1&keywords=m3%20screws&pldnSite=1](https://www.amazon.com/gp/product/B014ONCP88?ref_=sr_ph_1&qid=1469859983&sr_=sr-1&keywords=m3%20screws&pldnSite=1)

## Filament(s)

- **\$5 Spools (different colors)**

<http://www.protoparadigm.com/5DollarFilament/> (current a 404 page)

An article on the company that makes said filament & when it'll be available again:

<https://madmakerfilament.com/blogs/news/mad-maker-filament-branches-off-from-protoparadigm>

- **Monoprice.com**

[http://www.monoprice.com/search/index?keyword=filament&sort\\_rating=2.1&price\\_sale=9.49](http://www.monoprice.com/search/index?keyword=filament&sort_rating=2.1&price_sale=9.49)

## Appendix C: Articles, Manual & More Resources

### VIDEOS

#### **Extrusion Width - The magic parameter for strong 3D prints (Youtube Video)**

<https://www.youtube.com/watch?v=9YaJ0wSKKHA>

#### **Reverse Engineer the MP (Youtube Video)**

<https://www.youtube.com/watch?v=T-o-ibGUEoA>

### ARTICLES

#### **This Document**

<https://docs.google.com/document/d/1HJaLlcUD4oiUYu6In7Bxf7WxAOiT3n48RvOe5pvSHk/>

#### **[Ethan Anderson's] latest stable Simplify3D profile here:**

<https://drive.google.com/file/d/0B35tvR0CrHLvS0x4U19BS25pQIE/view?usp=sharing>

#### **Google+ Community: MP Select Mini**

<https://plus.google.com/communities/116802523766279866092/>

#### **MPSelectMiniOwners (Reddit)**

[https://www.reddit.com/r/MPSelectMiniOwners/comments/4r59bn/welcome\\_to\\_mpselectminiowners/](https://www.reddit.com/r/MPSelectMiniOwners/comments/4r59bn/welcome_to_mpselectminiowners/)

#### **Monoprice Select Mini 3D Printer Users**

<http://mpselectminiusers.com/wp/>

#### **Monoprice Select Mini 3D Printer Users Forum**

<http://mpselectminiusers.com/phpbb/>

#### **MP Select Mini Community (Wiki, setup by Matthew Upp)**

<http://mpselectmini.com/>

#### **Monoprice Mini V2 - Mods (YouTube Playlist by Frank's 3D shop)**

<https://www.youtube.com/watch?v=61CbQmwMLdQ&list=PLMxAz7x1vlz2pMbja08xxccauJRSKWYR>

#### **The Select Mini 3D Printer Manual (P/N 15365)**

[http://mpselectmini.com/\\_media/wiki/downloads/15365\\_manual\\_160415.pdf](http://mpselectmini.com/_media/wiki/downloads/15365_manual_160415.pdf)

**Overhauling a Monoprice MP Select Mini v2 MPSM v2 with SKR 1.4 board, Octoprint and More**

<https://www.tardigradeoutdoors.com/blog/overhauling-a-monoprice-mp-select-mini-v2-mpsm-v2-with-skr-14-board-octoprint-and-more>

**Malyan Community**

<http://wiki.malyansys.com/doku.php?id=home>

**Mark's Tech Journal: MP Growing Pains**

<http://www.nf6x.net/2016/07/monoprice-select-mini-3d-printer-growing-pains/>

**MP Select Mini Upgrades (by Adam M)**

<https://hackaday.io/project/12371-monoprice-select-mini-upgrades>

**Monoprice Select Mini E3D V6 Hotend Installation (by Tyler Wojciechowicz)**

<https://docs.google.com/document/d/1Jem3yd-JvqsIT2z74IHfMKatL5p4JVx3sqzUQY2tC0k/edit>

**Suggested Layer Heights for Monoprice Select Mini**

<https://docs.google.com/document/d/1UZmMaNm0vwXgY-15O6dSWbKS6hZcpRKNPg4TYu9ilxA/edit>

**3D Printer Tips I wish I knew 3 years ago**

<https://www.baldengineer.com/3d-printer-tips.html>

**Skill Builder — Finishing and Post-Processing Your 3D Printed Objects**

<http://makezine.com/projects/make-34/skill-builder-finishing-and-post-processing-your-3d-printed-objects/>

**Print Quality Troubleshooting Guide (you don't have to own the software to view it)**

<https://www.simplify3d.com/support/print-quality-troubleshooting/>

**Pilling (When the top surface of a print is not completely closed or shows bumps)**

<https://ultimaker.com/en/resources/19503-pillowing>

**Preventing warping and improving adhesion of high temperature PLA: A practical guide**

[https://cdn.thingiverse.com/assets/b9/d8/da/c1/d0/Preventing\\_warping\\_and\\_improving\\_adhesion\\_of\\_high\\_temperature\\_PLA.pdf](https://cdn.thingiverse.com/assets/b9/d8/da/c1/d0/Preventing_warping_and_improving_adhesion_of_high_temperature_PLA.pdf)

**HOW TO SUCCEED WHEN PRINTING IN PLA**

<http://www.matterhackers.com/articles/how-to-succeed-when-printing-in-pla>

## 10 Quick Steps to Modifying an Inexpensive ATX PSU for RepRap Use - w/pics!

[http://reprap.org/wiki/Choosing\\_a\\_Power\\_Supply\\_for\\_your\\_Reprap#Ten\\_Quick\\_Steps\\_to\\_Modifying\\_an\\_Inexpensive\\_ATX\\_PSU\\_for\\_Reprap\\_Use\\_-\\_with\\_pictures.21](http://reprap.org/wiki/Choosing_a_Power_Supply_for_your_Reprap#Ten_Quick_Steps_to_Modifying_an_Inexpensive_ATX_PSU_for_Reprap_Use_-_with_pictures.21)

## Cura (Documentation for version 15.04.06)

[https://drive.google.com/drive/folders/0BxyFI3iDaicLRUcxSzJLMVVyam8?resourcekey=0-CPHwrRIfcFvfDeV\\_jh6X7w](https://drive.google.com/drive/folders/0BxyFI3iDaicLRUcxSzJLMVVyam8?resourcekey=0-CPHwrRIfcFvfDeV_jh6X7w)

## Cura 2.1.x / 2.3.x (.json) Configs

[https://github.com/BobRyan530/mp\\_select\\_mini](https://github.com/BobRyan530/mp_select_mini) Pull requests encouraged

## Slic3r configs (Joe Lenox, 1:09 PM Dec 29, 2016)

This is my personal Slic3r repo; tested and used with 1.3.0-dev. Pull requests are appreciated.

<https://github.com/lordofhyphens/printer-configurations>

## Adding 3D Printed Z-Axis Rod Stabilizers

<https://hackaday.io/project/14823-maximum-3d-printer-bang-for-the-buck/log/45659-adding-3d-printed-z-axis-rod-stabilizers>

## 3D Printing Technique - Friction Welding

<http://hackaday.com/2014/12/30/3d-printing-technique-friction-welding/>

## 3D Printing An Enclosure

<http://www.whatimade.today/3d-printing-experiences-finishing-a-project-in-style/>

## VISUAL 3D PRINT FINISHING GUIDE

(I think this is a good article on ‘finishing up’ your 3D print so it looks professional. JMS)

<https://hackaday.com/2017/11/15/visual-3d-print-finishing-guide/>

## Recovering a bricked MP Mini Delta 3D Printer

I (James) know this article references the Delta printer, but figure any article on how to “un-brick” a 3D printer is a good place to start.

<http://arkorobotics.com/blog/?p=161>

## HOW TO REVERSE ENGINEER MECHANICAL DESIGNS FOR 3D MODELING

<https://hackaday.com/2018/03/27/how-to-reverse-engineer-mechanical-designs-for-3d-modeling>

## Gradient Infill Puts More Plastic Where You Want It

<https://hackaday.com/2020/01/20/gradient-infill-puts-more-plastic-where-you-want-it/>

**Advance Printer Control Aims to Stop Idle Waste**

<https://hackaday.com/2020/11/29/advanced-printer-control-aims-to-stop-idle-waste/>

-- Note: This article is here due to the suggestions of 'control' in the comment section.

## Appendix D: Builds for the Select Mini

The following are 3D prints for the Mini. These are listed here only for the purpose of trying to document them all in one place (as well as for education purposes). The listing of them does NOT mean we validate, sponsor, and or approve them.

If you see a 3D print that you like and wish to print it, please research the “why” and “how” before using so you have a good understanding as to *how it is intended to be used*. If you are someone who has used a particular 3D print, and can comment on it, then that would be great as it helps others here who are new. [Thanks in advance!]

***NOTE: Printing & using any of these 3D prints is of your own choosing - and with caution.***

MP Select Mini Controller Board Fan Mount, by jason jones, uploaded Jul 20, 2016

<https://www.thingiverse.com/make:238252>

MP Select Mini Controller Board Fan Mount, by NF6X, published Jul 10, 2016

<http://www.thingiverse.com/thing:1667026>

Fan Holder for the Monoprice MP Select Mini PCB

<https://www.youmagine.com/designs/fan-holder-for-the-monoprice-mp-select-mini-pcb>

MP Mini Select 3D PLA & PETG 40mm Fan Shroud

<http://www.thingiverse.com/thing:1676718>

Adding a Part Cooling Fan in addition to Hotend Cooling Fan

<https://hackaday.io/project/14823-monoprice-select-mini-maximum-3d-printer-mods/log/48182-a-really-cool-part-fan>

MPSM Side Cooling Vent Remix for No Drill Bed Rewiring, by JC de Dois, 7/25/17

<https://www.thingiverse.com/thing:2451362>

MPSM - Pi Zero with Camera Arm Case, by JC de Dois, 7/25/17

<https://www.thingiverse.com/thing:2406863>

**MP Select Mini E3D Hotend Adapter**

<http://www.thingiverse.com/thing:1621387>

**Select Mini Glass Bed Spacer**

<http://www.thingiverse.com/thing:1621650>

**Select Mini X-Axis Sheet Metal Spacer**

<http://www.thingiverse.com/thing:1614059>

**MP Select Mini Side Cooling Panel Mod**

<http://www.thingiverse.com/thing:1712796>

**MP Select Z-Axis Bracket**

<https://www.youmagine.com/designs/mp-select-z-axis-bracket>

**Spool roller 3 - universal**

<http://www.thingiverse.com/thing:33573>

**One piece spool holder**

<http://www.thingiverse.com/thing:656975>

**Ultimaker Belt Tensioner**

<http://www.thingiverse.com/thing:19892>

**Belt Tensioner 2X**

<http://www.thingiverse.com/thing:99858>

**6mm Belt Tensioners for Monoprice Select Mini 3D Printer**

<http://www.thingiverse.com/thing:1697171>

**MP Select Mini Tool Bracket/Holder**

<http://www.thingiverse.com/thing:1688459>

## MP Select Mini Mount (for 75mm vesa Pi case)

<https://www.thingiverse.com/thing:1718715>

(reference link:

[https://www.facebook.com/groups/1717306548519045/?multi\\_permalinks=1746687592247607  
&notif\\_t=group\\_highlights&notif\\_id=1471234640820102](https://www.facebook.com/groups/1717306548519045/?multi_permalinks=1746687592247607&notif_t=group_highlights&notif_id=1471234640820102)

## MP Select Mini Dremel Extender Mount

<https://www.thingiverse.com/thing:3196857>

## Appendix E: Errors and Resolutions

***This section is for SPECIFIC errors NOT addressed in the above sections - along with its respective solution.***

### Thermistor Problem

Gaurav Patil, 6:33 PM Jul 7

I just got my MP select mini. The extruder heats up but the temperature on the display remains at 0 and I guess that's why it doesn't start printing. The platform is heating up and displaying temperatures correctly. Any help would be appreciated

Garrett G, 6:56 PM Jul 7

Sounds like the thermistor isn't connected properly. The thermistor is what reads the temperature, and tells the heater when to turn off or on. The thermistor wires are the smaller wires going into the heater block. You should check these wires going into the mainboard to make sure there's not a loose wire. If that's not the case, you might want to remove the screw on the right side of the heat block to remove the thermistor and inspect it, as one person has said it's not always soldered properly and may have a bad joint. The polarity on the thermistor wires doesn't matter.

Gaurav Patil, 7:06 PM Jul 7

Thanks for the help. Looks like that's exactly what the problem is. I tried tugging on the thermocouple wires and they just popped out like they were not soldered at all. I talked to their customer care and they are sending me a replacement. I think I'll take the replacement instead of tinkering around.

Colin Smillie, 4:45 PM Oct 14, 2018

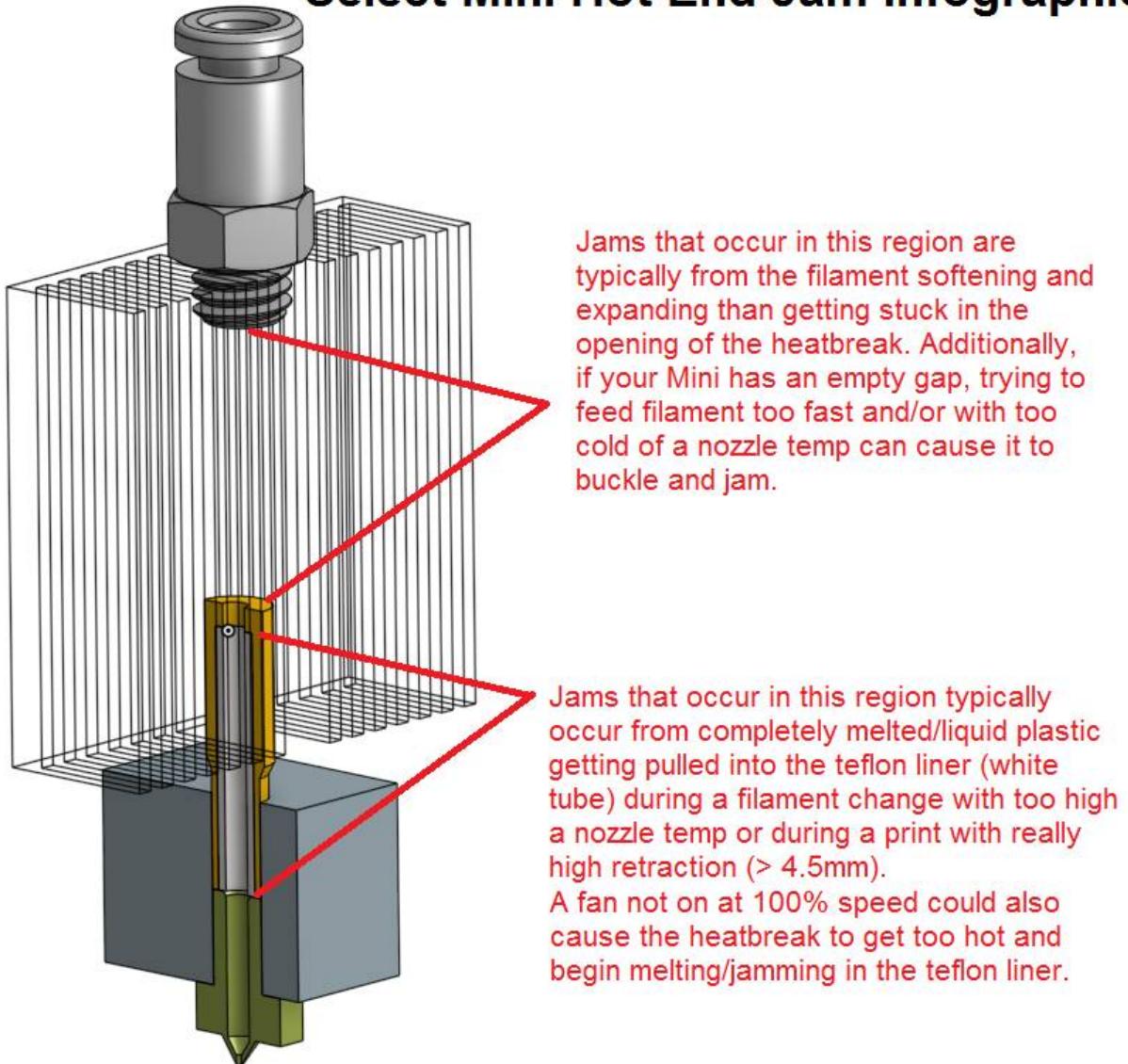
I initially switched the heat bed thermistor and the extruder ( after getting access to the controller board) to confirm the board was still reading temperatures on both thermistor ports. Then I wired a new thermistor for the extruder.

My solution was to cut the thermistor wire near the hotend and install small connector to make installing the new thermistor easier without running a new wire from the hotend to the control board.

## Appendix F: Discussions, Questions, Answers

Infographic [Sam Schmidt](#), 08/22/2016 (via Facebook)

### Select Mini Hot End Jam Infographic



Hot end jams have dominated this [FB] group recently and partial jams can also contribute to under extrusion issues as well, so I wanted to make a quick infographic (via Onshape) to help explain some of the most common jam areas/causes. These descriptions are NOT exhaustive however, and if you have resolved a jam that was caused by another factor, feel free to comment for others who may be struggling. (note, I have had 0 jams in several hundred hours of printing with the stock hot end and it is my opinion that at least 80% of jams are due to user error and incorrect slicer settings, not faulty hardware)

**Kris Jones** (via Facebook)

I'll take this opportunity to mention that all my extruder problems (with my home-built printer) went away when I finally broke down and bought an E3D-V6. I have literally 0 issues with filament feeding now.

I hadn't thought about the PTFE liner and the retraction limit with the included hot-end. Over a year ago I bought a beta-version of the Ubis-13S to replace the regular Ubis that came with my Printrbot. I was very excited because I wanted to be able to print PETG. Even though the Ubis-13 could print at a much higher temperature, it still used a PTFE liner, so they said not to use retraction over 0.5mm. Retracting melted filament into a hot-end with a teflon liner will ruin it. Even though the Printrbot has a direct-drive extruder, it still needs several mm of retraction to print nylon or PETG well. A Bowden setup requires even more. (My home-build printer uses 5mm of retraction, and that makes all the difference).

I really do think that an extruder that can't do much retraction is really only good for printing PLA. I struggled with entry-level hotends for way too long, and replacing them with an E3D-V6 was the best purchase I've made.

**Sam Schmidt** (via Facebook)

Kris Jones Good observations, though I would modify them in a few ways:

- 1) Melted plastic does not ruin Teflon, per se, (remember the end of the Teflon heat break tube is in constant contact with a 180-230C nozzle end). However if allowed to harden in the Teflon tube, trying to remove it without damage can be an issue.
- 2) What is really the Achilles heel of Teflon lined heat-breaks is the that they have more compliance and slightly larger ID than the nozzle. If you retract melted or even too soft of filament it tends to expand to fill that ID. If it begins to harden too quickly, it will be impossible for the return retraction to force it back into the slightly smaller and non-compliant nozzle ID. This is why some hot-end designs ran Teflon all way into the nozzle. The problem there is that if you even try to print ABS at 230, you will seriously degrade and eventually ruin the Teflon at the tip since it will see temps even higher than your thermistor registers.
- 3) A good chunk of Bowden retraction simply takes up the play in the tube and connectors. By the time you get to the nozzle, the filament tip is still only moving 1-2mm when properly configured.

**Unit Freezes with White LCD Screen** Ryan Echlin, 2:48 PM Jul 5, 2016

Has anyone run into an issue where when the printer is powered up it freezes at an all white screen on the LCD? It looks like just the backlight turns on. The fan will turn on sometimes and I can hear a click from somewhere in the "tower", but nothing else happens. I can normally "fix" this issue by turning off and on the printer a bunch of times. Sometimes it comes back on after 2-3 power cycles, sometimes I have to walk away from it for a while. I ordered the recommended replacement power brick from Amazon, so we'll see if that helps. I also reflowed some sketchy solder joints on the motherboard, which didn't seem to help, and also reflowed the solder joins to the "jog" dial, which made the dial work much better.

~ Nathan Henry, 11:48AM Jan 11th, 2017

I've had the white screen show up, it doesn't seem to affect operation over usb. Usually after a print on usb or reboot it will show the UI again.

-Josh Chretien, 3:53PM Sep 9, 2017

Has anyone found a proper fix to this? I'm getting the white screen and nothing more. Issue came after a few random clicking noises from the "tower" but nothing has come back since.

---

**Replacement Bed Screws** Bradford Casey, 8:37 PM Jul 5, 2016

Replacement print bed screws originals appear to be countersunk M3, with 0.5mm pitch and 16mm length.

James Stoffel, 8:42 PM Today

I haven't looked at mine yet, but are the screws hex too?

Bradford Casey, 8:46 PM Today

Yes, the bed screws are hex drive, and it ships with a small key. The quality of these is exceptionally poor, and the supplied key doesn't fit properly. Others have reported that they stripped, so I checked the size.

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**Filament Retracting** Ryan Echlin, 2:44 PM Jul 5, 2016

Maybe add a command [G-Code] retracting filament a few mms?

Ethan Anderson, 3:38 PM Jul 5

Do you have a particular reason you want to retract at the end of the print?

Ryan Echlin, 3:47 PM Jul 5

It appears that with my printer there is a possibility of a jam due to overheated filament at the end of a print, which requires me to either manually unjam the nozzle or crank up the heat ~10 degrees C on the next print to flush out the nozzle. I speculate that retracting the filament out of the hot end might prevent this behavior, but this might be an issue specific to

my printer and my operating profile. I assume this would have to be compensated for by feeding filament as part of the start gcode?

Ethan Anderson, 4:05 PM Jul 5, 2016

I see. I haven't seen that issue but it's possible that retraction would help a bit. No need to compensate in the start G-Code, the printer resets its extruder index at the beginning of each print.

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### Power Supply Replacement Patrick Hill, 8:10 AM Jul 9, 2016

Does anyone know of a higher quality power supply that would work with this printer? I'm one of those owners who had theirs die within hours of receiving the printer. The reviews on Amazon sound like the same thing is likely to happen with a replacement.

[Response by Kein Helply, 8/6/16]

An old ATX computer power supply is now running mine. The Stock power supplied died at 210 total minutes of printing last night. I'd not trust a replacement supply of the stock vintage, though I'm requesting one under warranty. Make sure the 12V AMPS are at least 10 (to get you to 120W) - and many supplies should output more than 10A at 12Volts.

<http://bit.ly/2apTrER> I removed the positive lead from the power switch and connected that to the power atx supply, and used the stock barrel receiver to connective Negative/Ground. It's ugly, but it's running

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### ABS vs PETG Robert Christopher Gouge, 7/23/16 (via Facebook)

Are there any reason to print ABS rather than PETG? Are there some applications where ABS is the better choice?

Ethan Anderson ABS tends to have a slightly higher glass transition temperature than PETG.

Robert Christopher Gouge What does that mean?

Ethan Anderson [https://en.wikipedia.org/wiki/Glass\\_transition](https://en.wikipedia.org/wiki/Glass_transition)

Josh Neta it starts to get soft at a higher temp (I know that's not technically correct, but close enough for what we're doing)

Chris Simpson You can smooth abs with acetone

Mike Piantanida ABS is also a LOT cheaper than PETG. Unless you guys have found a source for cheap PETG, which I'd love to hear about!

Additional explanation on PETG see "PETG Filament for 3D Printing: Explained & Compared"

See: <https://all3dp.com/petg-filament-3d-printing/>

(submitted by Al Williams 12/15/2016)

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### **Knob Removal** [Max McGrumpy](#), 8/6/16 (via Facebook)

Foolish noob-like question but how does one get the knob off?

[Gregg Eshelman](#) Some people work a loop of small fishing line or dental floss under it to pull it off.

[Brian Olsen](#) old 'a' string from a ukulele

[Jared Wellman](#) (08/13/16) Small suction cup worked well for me, it was oversized but could still get enough of a grip on the knob to remove it..

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### **Pillowing** [Eugene Stoner](#), 8/28/2016 (via Facebook)

What do you all think is the cause of the bubbles on this?



[Cory Harpell](#) To low percent infill and not enough top layers... I would just add 2-3 more top layers and I would think it would be fine.

[Cory Harpell](#) <https://ultimaker.com/en/resources/19503-pillowing>

Micah Dubinko (7/24/17): I've seen this happen when there was a draft/moving cool air near the printer.

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### **Maximum Speeds?** B3wjby Sahekzyu, 9/3/2016

**Does anyone have any insight into maximum speeds that they are willing to share?**

What is the fastest X/Y speed this printer will support while extruding?

What is the fastest travel speed this printer will support?

What is the fastest filament retraction speed this printer will support?

There is information above about the maximum speed in the Z axis: 2.5mm

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**BuildTak vs Glass, One Person's Experience** [Bruce Clark](#), 09/03/2016 (via Facebook)

If you have used up your supply of buildtak, why not try some glass and glue stick? The glass is cheap at Lowes and I have had excellent luck with Elmer's X-treme school glue stick. All you have to do is print out the glass Z-limit clip and get 3 small binder clips.

The best part, is after your build, just remove the clips. Take the glass off the heat bed and you can poke and pry to your hearts content. After that, just use a straight edge razor to scrape up all the old glue. Comes up in curly sheets. The best part, you do not mess with your bed level since you are not applying force to your heat bed!

Sheet of glass from Lowes, bag of small binder clips and glue stick from Office Depot is well under \$10. Probably cheaper than Buildtak and works until you drop the glass or run out of glue!

**Build Changes Over Time** Jeff Epler, 12/19/2016 (via google docs)

This document mentions a change in the main PCB, but other manufacturing changes are taking place too. Some I know about, based on my model (shipped from monoprice in November 2016):

- There is now a liner in the formerly empty space within the heatsink / hot end assembly
- The home/limit switches got small PCBs with connectors
- The X home switch mounting has gone through at least 2 iterations
- On the Y axis, older models had 4 black anodized screws securing blocks that the Y axis rods fit in; newer models have an internal thread; each end has a non-anodized screw with 2 washers. The old holes remain, possibly for the sake of people who have attached stuff there, like the camera mount
- Several of the injection molded parts have seen revisions, such as the replacement of the white plastic spacer where the X axis gantry meets the Z axis carriage; my model also has some injection-molded plastic parts at the base (but not top) of the Z axis rods.