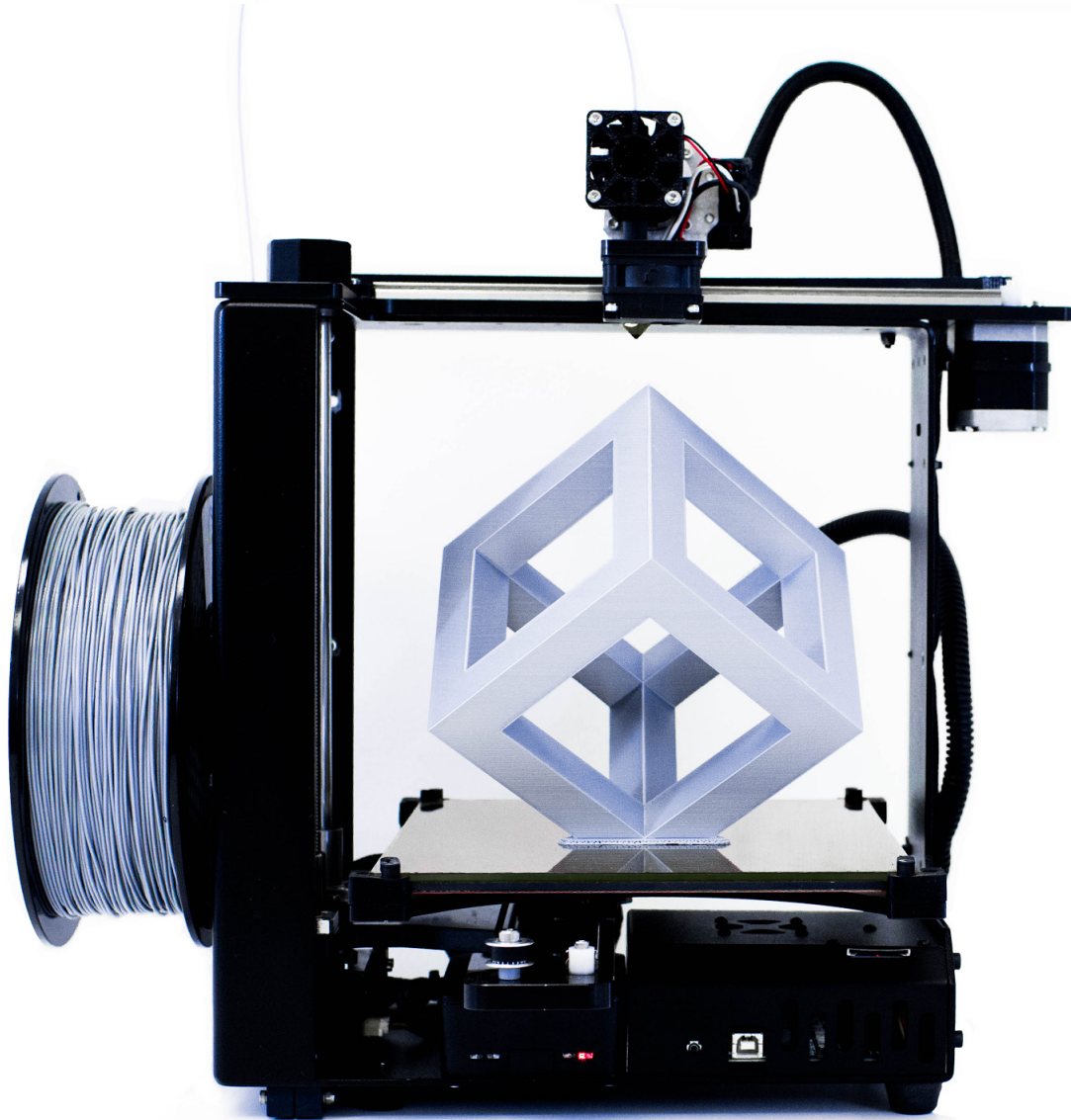

















# USER GUIDE



**MAKERGEAR**

**M3** Single   
Extrusion

# Contents

-  1 - Welcome
-  2 - Important Safeguards
-  3 - What's Included
-  4 - Hardware Setup
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# Welcome



## Your MakerGear M3 3D Printer has arrived!

Following minimal setup, your M3 is ready to print out-of-the-box. To ensure safety as well as high quality printing, carefully follow the Setup instructions included in this booklet.

This machine was assembled at the MakerGear shop in Beachwood, Ohio, USA, and was tested for at least six hours to ensure that it was fully operational at the time of shipping.



Do not remove the film of yellow polyimide tape from your M3's glass bed; this functions as your print surface, and should be facing up.



Do not change your M3's firmware unless you know exactly what you're doing or have been instructed to do so by MakerGear support.

**This booklet can also be found on the MakerGear website at [setup.makergear.com](http://setup.makergear.com), where you can access additional, more specific information and resources.**



# Important Safeguards



1. To protect against electrical shock, do not put the machine body, cord, or electrical plug in liquid. If your printer falls into liquid, do not touch it. Instead, unplug the unit, then remove it immediately. Do not reach into the liquid without unplugging the unit first.
2. This machine should not be used by children unless supervised by an adult who understands the risks and precautions involved in its use. To avoid potential injuries, close supervision is necessary when the unit is used by or near children.
3. Unplug the power cord when this machine is not in use. To unplug, grasp the plug and firmly pull it from the electrical outlet. You should never pull the cord.
4. Avoid any contact with moving parts.
5. Keep hands/hair/clothing away from printer attachments while the unit is operating to reduce risk of injury to persons and/or damage to the unit.
6. Do not operate your unit if it has a damaged cord/plug, is malfunctioning, or has been dropped or damaged in any way.



# What's Included



Power supply and cord: ensure that the voltage setting is correct for your outlet before powering on.



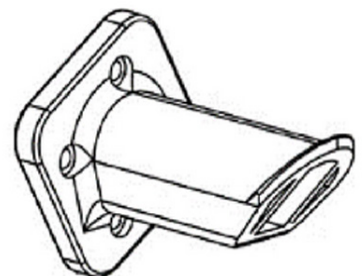
Tool kit: M3 driver, hex keys, tweezers, filament guide tube, feeler gauge, brush, and 4 extra bed hold-down clips.



1 kg spool of 1.75 mm black PLA (color may vary).

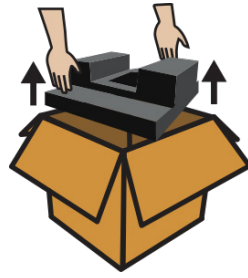


Spool holder with screws and sample container, both of which were printed on an M3.

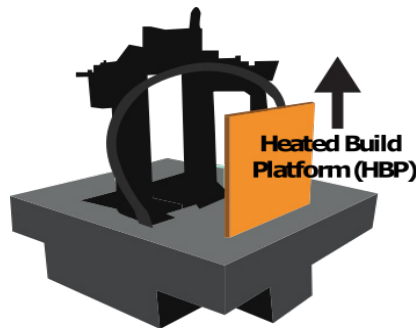




# Hardware Setup



1. Carefully compress and remove the foam from the top of the printer and from inside the printer frame.



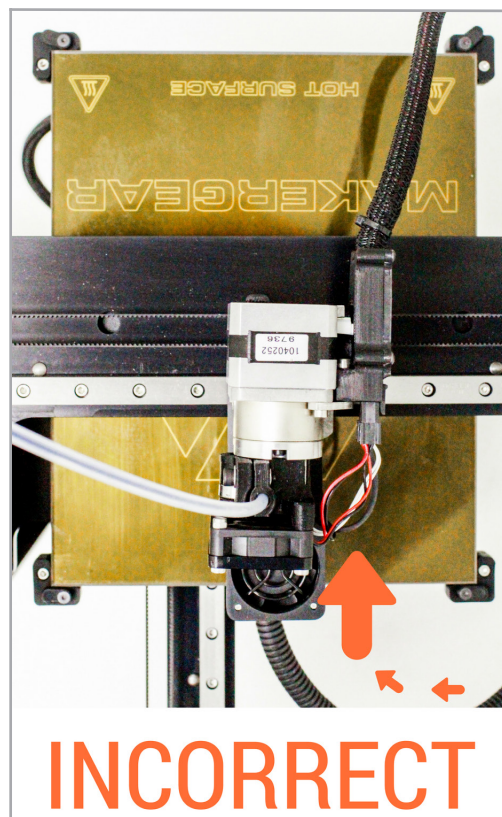
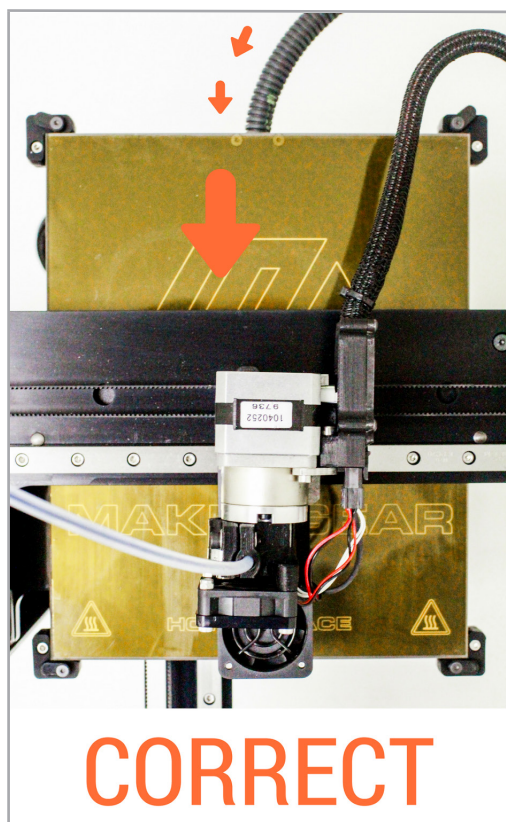
2. Remove the Heated Build Platform from its slot in the foam and place it on the 4-legged “Spider” inside the frame, with the glass facing up. Remove the printer from the bottom foam.



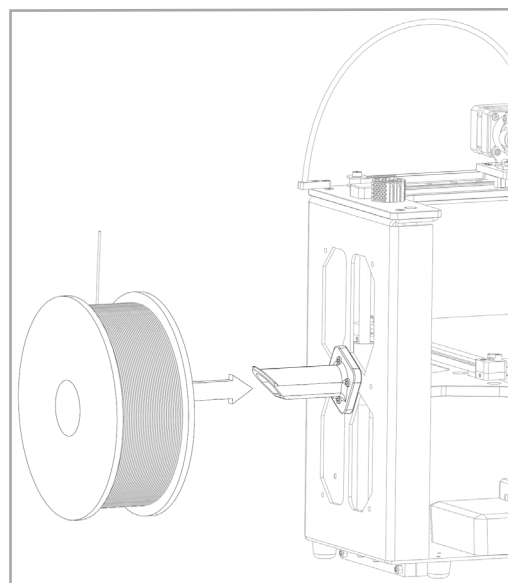
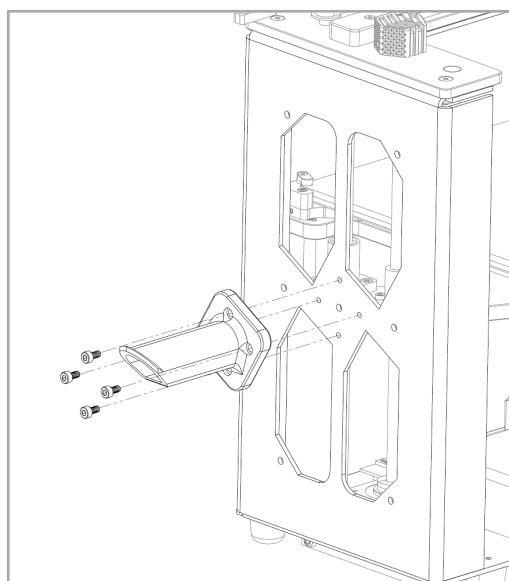
3. Remove (and please read) WARNING sheet from underneath the glass bed by removing the binder clip.



4. Rotate the bed hold-down clips to point toward the front and back of the bed in order to secure the glass in place.

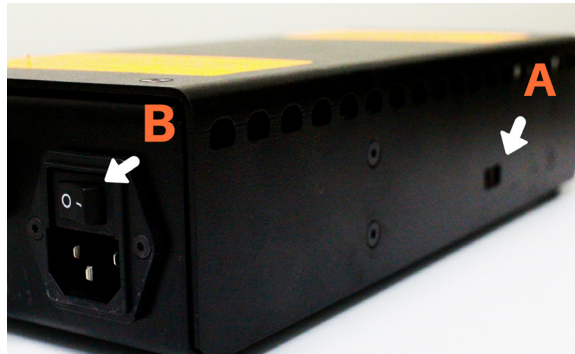


5. **Install the Spool Holder** with the 4 included screws using the 3 mm allen key, ensuring that the longer side is facing up. Place your PLA spool on the Spool Holder so that the filament unwinds upward.

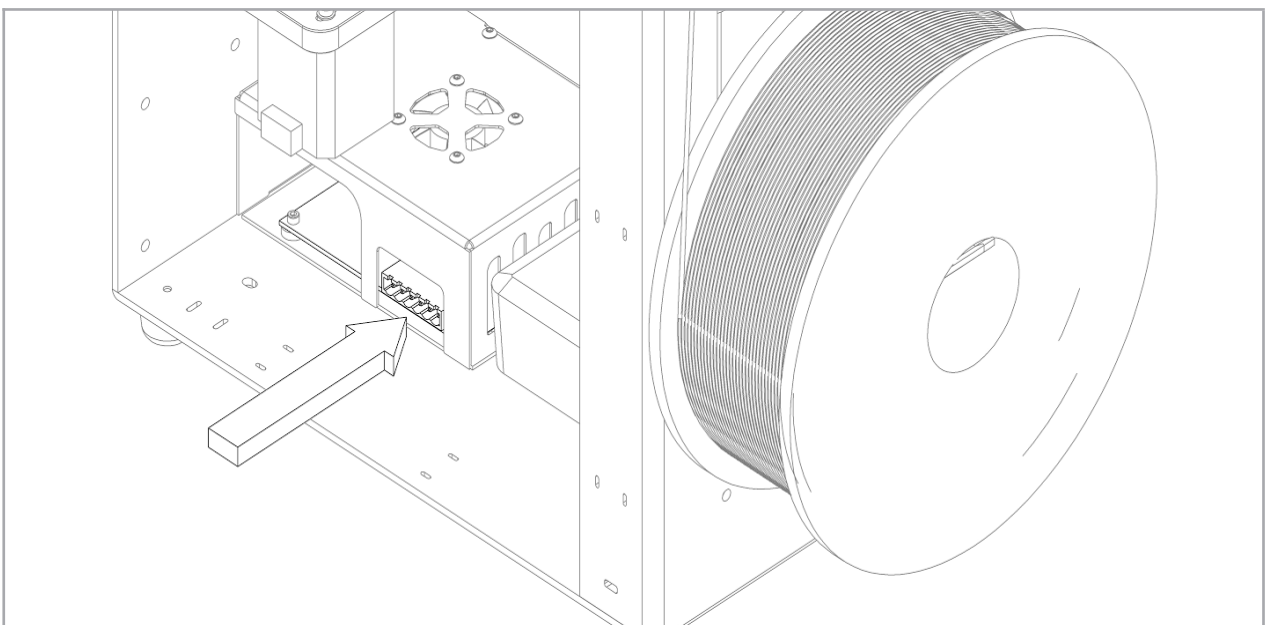


6. Unpack the power supply and set the voltage switch (**A**) to the voltage supplied through your outlet. There are only two settings: 115 V (for 100–130 V) and 230 V (for 220–240 V). To find the standard voltage level for your country, visit

[www.worldstandards.eu/electricity/plug-voltage-by-country/](http://www.worldstandards.eu/electricity/plug-voltage-by-country/)



7. Insert the 6-Position Power Supply Connector into the 6-Position Electronics Connector, making sure that it is SECURELY IN PLACE in the electronics case. Connect the power supply cord to the power supply. Next, plug the power supply into a wall outlet and flip the switch (**B**) to the on position.





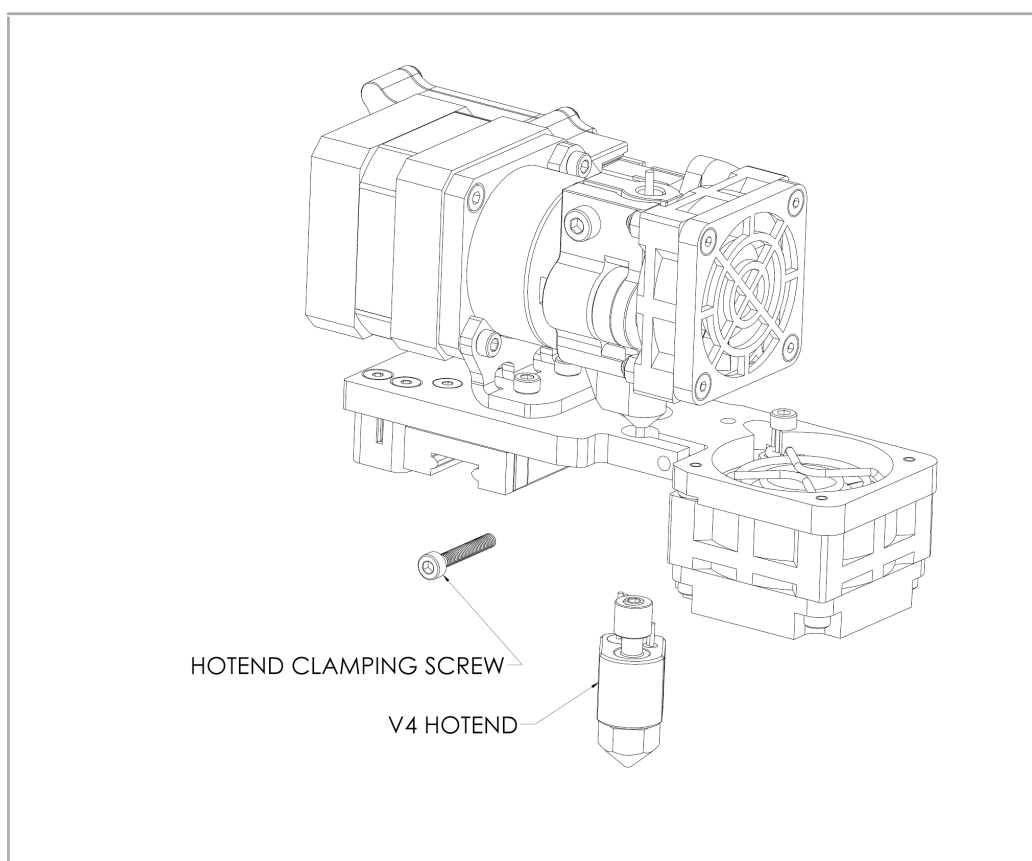


# A Note About Nozzles



**If you wish to remove or change your nozzle, you must first remove the entire hot end. Attempting to unscrew the nozzle directly from your M3 will damage the hot end.**

Some of our users choose to print with nozzles that are either larger or smaller than the 0.35 mm nozzle included on the M3 in order to accommodate specific printing needs. If you plan to print with different-sized nozzles, we recommend keeping each nozzle installed in a separate hot end, as this allows you to switch between nozzles more easily.



Visit our [YouTube channel](#), MakerGear, for step-by-step instructions on how to remove the V4 hot end and remove/mount a nozzle.



# Software Setup



MakerGear 3D printers are compatible with a wide variety of hosting and slicing programs. The free onboard software supplied with the MakerGear M3 is a specialized version of OctoPrint called **OctoPrint for MakerGear**. It is an open-source, easy-to-use tool that gives users total control over their 3D printing workflow.

OctoPrint's basic functions include simple tasks such as controlling and monitoring your printer, as well as more advanced operations like slicing files. It can be expanded through its versatile plugin system, a diverse library of community-developed plugins offering specialized functionality, which is useful for all users.

Using a desktop or laptop computer, navigate to [setup.makergear.com](https://setup.makergear.com) and follow the provided steps.

**Step 1:** On the Setup page, enter your printer's serial number, which is located on the back of the printer. Next, connect your computer to your M3's Wi-Fi, using the provided network name and password, in the same way that you would connect to any other Wi-Fi source.

**Step 2:** After moving to the Step 2 tab, click the temporary setup link and log in to OctoPrint with the provided username and password.

**Step 3:** OctoPrint will inform you that you are not connected to the internet. Click “**Wireless Configuration**,” then select your home network and enter your home network’s password. Connecting may take a few minutes. If OctoPrint continues to say you are not connected to the internet, refresh the page.

After you’re connected to the printer, proceed to OctoPrint’s Quick Check, which will help you load your filament and ensure that the bed of your machine stayed level during shipping. Once you complete the Quick Check, your machine will be ready to print. You will not have to go through the setup process again unless you change networks or reset your printer.



## Changing Filament

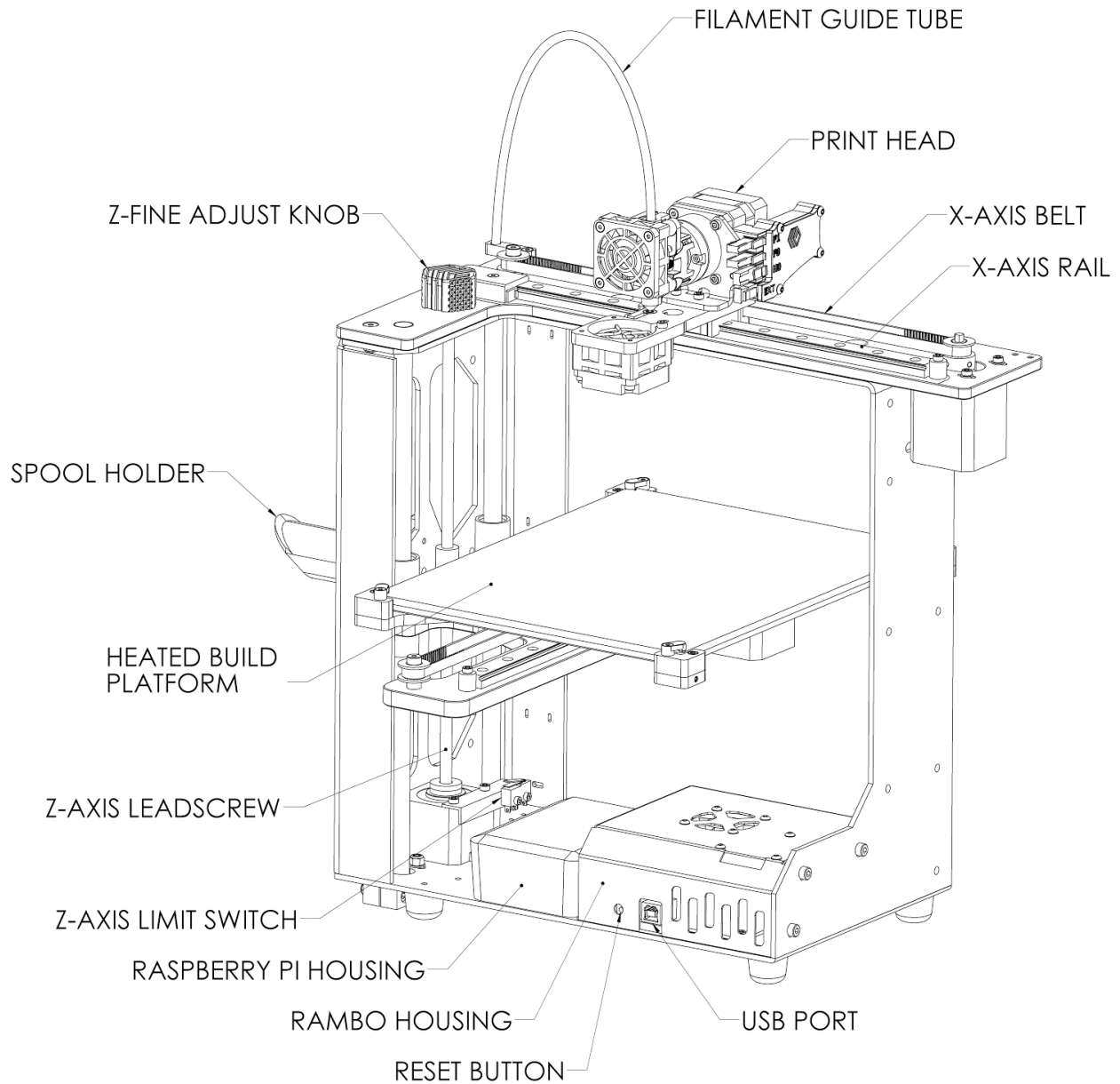


1. In OctoPrint, heat your extruder to the appropriate temperature in the “Temperature” tab. If switching between filament materials (e.g., PLA to ABS), heat your extruder to the hotter of the two materials’ printing temperatures in order to purge the old material and properly extrude the new material.
2. In the “Control” tab, click “Retract” while pulling gently on the old filament until it is released from the filament drive.
3. Cut the end of your new material so the tip is flat, and feed it into the filament drive. While applying gentle downward pressure, click “Extrude” until you can see the filament extruding from the nozzle.
  - \* If you are unable to feed filament properly, try cutting the tip at an angle.



# M3 Features

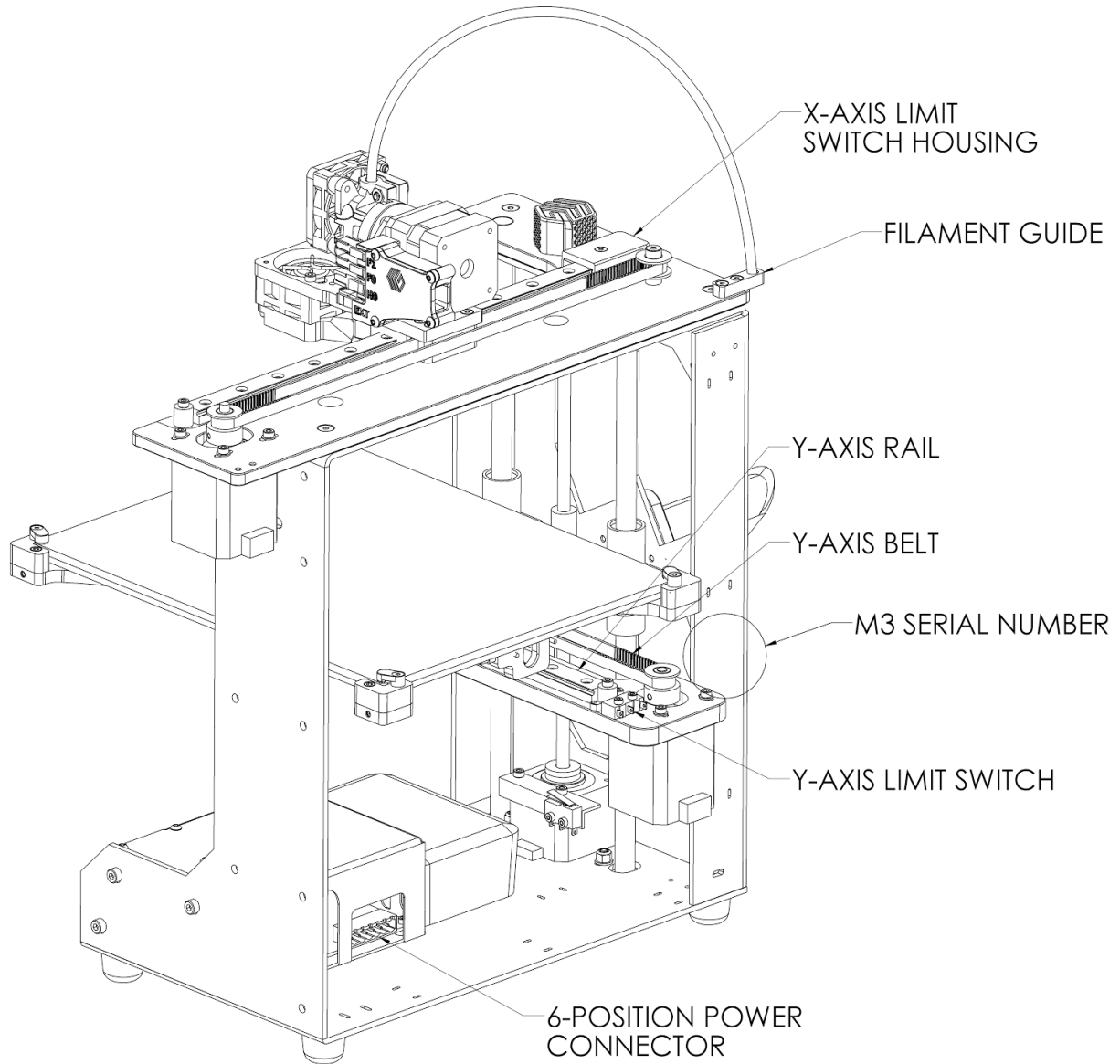
## Front





# M3 Features

## Rear



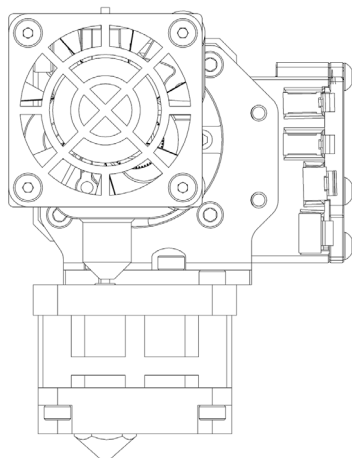


# M3 Features

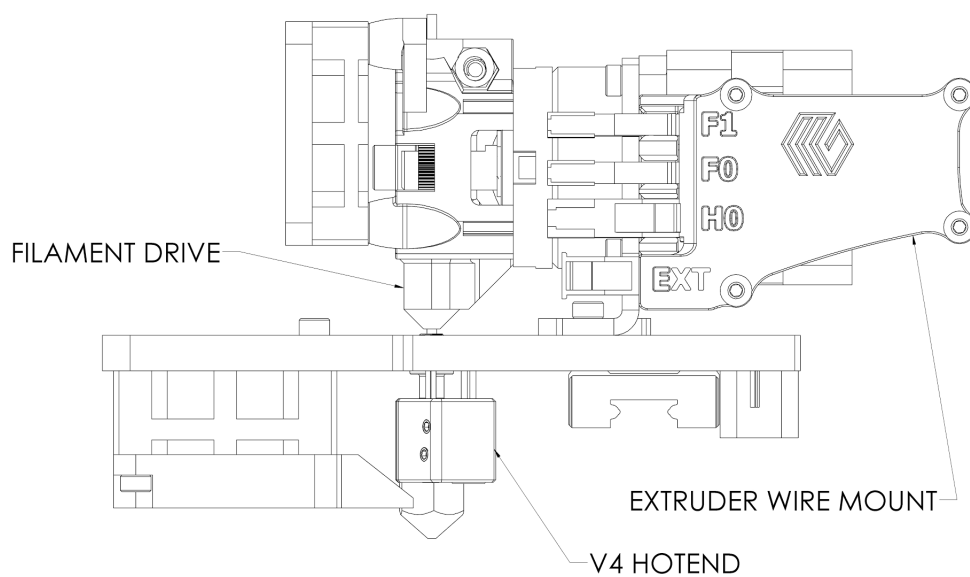
## X-Stage Assembly



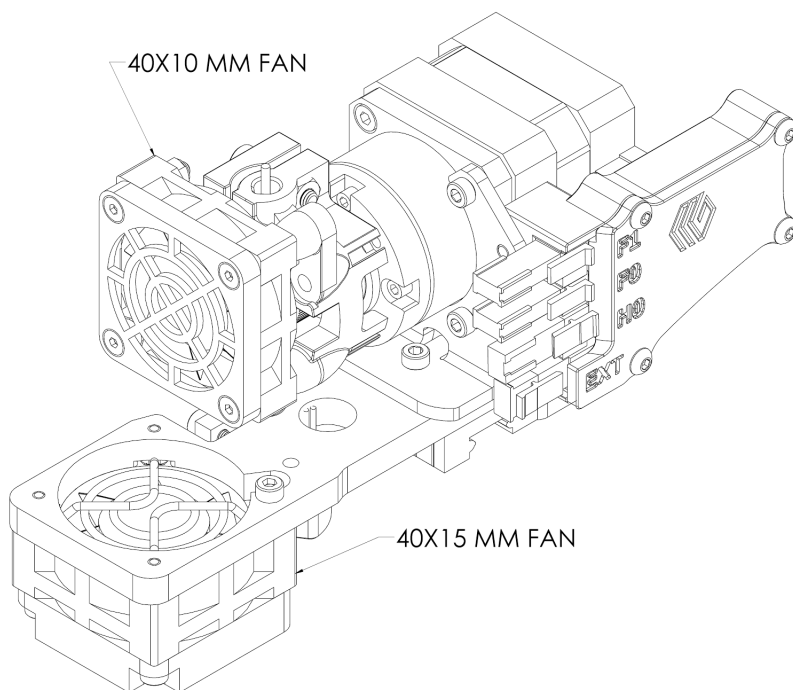
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW







# What's the Function?

## Simple explanations of M3 Features

**Z-Fine Adjust Knob** is for last-minute changes to the distance between nozzle & bed.

**Spool Holder** keeps filament spool secure during printing.

**Heated Build Platform (HBP)** controls glass bed temperature.

**Z-Axis Leadscrew** rotates to move bed up & down.

**Z-Axis Limit Switch** sets “home” position for Z-axis motion.

**Raspberry Pi Housing** shields Raspberry Pi.

**RAMBO Housing** shields and cools RAMBO board.

**Reset Button** resets the control electronics.

**USB Port** allows communication between external computer and RAMBO.\*

**Filament Guide Tube** guides filament from spool to filament drive.

**Print Head** deposits printing material and cools print.

**X-Axis Belt** keeps extruder in-sync with X-motor.

**X-Axis Rail** guides extruder during side-to-side movement.

**X-Axis Limit Switch** sets “home” position for X-axis motion.

**Filament Guide** guides filament from spool to guide tube.

**Y-Axis Linear Rail** guides bed during front-to-back movement.

**Y-Axis Belt** keeps bed in sync with Y-motor.

**M3 Serial Number** is a unique identifier to help track the printer.

**Y-Axis Limit Switch** sets “home” position for Y-axis motion.

**6-Position Power Connector** brings power to M3.

**Filament Drive** pulls filament into extruder.

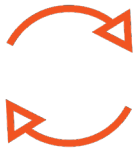
**Extruder Wire Mount** locates and clamps connectors for extruder.

**V4 Hot End** melts filament and controls extruded diameter of filament.

**40x10 mm Fan** cools filament drive.

**40x15 mm Fan** helps cool printed layers (as needed).

\*USB use is not recommended—see Software Setup on page 8.



# Shutdown & Reset Procedures



## M3 Shutdown Procedures

Do not switch off the power supply to turn off your MakerGear M3. There are two ways to properly shut it down:

1. Navigate to your printer's OctoPrint interface and click the power button icon. Next, click "Shutdown system," then, "Proceed." Wait a few moments for your M3's Raspberry Pi to shut down. Once the Raspberry Pi's green light has turned off, it is safe to switch off your M3's power supply.
2. To manually shut down your M3, hold down the reset button for 10 seconds before letting go. You will hear a series of tones indicating that your printer has **a)** started the shutdown procedure and **b)** finished the shutdown procedure.

## M3 Reset Procedures

The manual reset button, which is located on the front of your M3, resets its control electronics. The manual reset button should not be used while your M3 is printing, unless you wish to stop the printer as quickly as possible.

- Pushing and releasing the reset button will reset the control electronics board.
- Holding down the reset button for more than 60 seconds before releasing will begin the system reset process. This should only be done in special circumstances, such as when passwords are irretrievable. The system reset performs the following operations:
  1. Disconnects your printer from its current network and returns it to Access Point mode (AP mode).
  2. Resets the access point network name/password to its original factory state.
  3. Resets your OctoPrint username/password to its original factory state.



# Maintenance & Storage



## Weekly Maintenance (every 50 hours)

Ensure that your bed is at the correct height and properly leveled. To do so, log in to OctoPrint and proceed through the QuickStart process in order to complete the following steps:

- 1) Check Starting Height
- 2) Check Bed Level

Ensure that the print surface is free of defects (torn or bubbled polyimide tape) and dust/dirt/grease, and replace tape or clean surface with appropriate cleaner (alcohol/water at 50%/50% is recommended).

## Monthly Maintenance (every 200-250 hours)

Ensure that the machine is free of dust and filament debris, and clean it if necessary. Focus areas include fans and fan guards, filament surface and filament drive, and the entire frame. Clean oil from the X and Y linear rails and apply a fresh coat to each. A dot of oil in each of the long grooves on the X and Y rails is sufficient. Once applied, move each axis through its full travel multiple times to spread the oil.

## M3 Storage

- If you are using your M3 regularly, turn off and unplug the power supply when finished.
- If you are storing your M3 for a period of 1-2 weeks, follow the instructions listed above. Additionally, fully seal the filament spool in its original bag, with the dessicant packet inside.
- If you are storing your M3 for a period of 2 weeks or more, follow all above instructions, THEN cover your entire machine in order to protect it from the buildup of dust and other airborne particles.

**DO NOT unscrew your nozzle directly from your M3!** To change or remove its nozzle, you must first remove the entire hot end. Visit our website and YouTube channel, MakerGear, for step-by-step instructions on how to remove the hot end and change its nozzle.



# Warranty & Support



## Warranty

New M3s ordered from MakerGear or from an authorized MakerGear distributor have a Twelve-Month Non-Transferrable Limited Warranty. New hot ends have a Six-Month Non-Transferrable Limited Warranty. MakerGear will replace defective parts on M3s and hot ends that are under warranty. Replacement parts may be new or refurbished and include free shipping in the US. Non-US customers are responsible for shipping costs for replacement parts.

## Exceptions

The M3 has an open design (no proprietary cartridges) and M3 owners are free to use third party filament. However, the MakerGear hot end is only covered when MakerGear filament and authentic MakerGear components are used. Due to variances in quality, MakerGear is unable to provide tech support for issues related to third party filament. If you are using filament or extruder components from a third party, you must contact your vendor for technical support. The twelve-month warranty offered by MakerGear does not cover machine abuse.

## Support

**Technical Support lives on our website at**  
**[www.makergear.com/pages/support](http://www.makergear.com/pages/support)**



# About Us



## Welcome to the family!

**Our company** began as a hobby in an unheated garage, way back in 2009, when our Founder & CEO, Rick, was hand-making parts for the fledgling desktop 3D printing community. Today, we apply strict standards to our machines, which are made and tested in the USA using domestic and foreign parts. Yet despite countless improvements and advancements during the years since MakerGear's humble beginnings, our dedication to quality and community remains unchanged.

**Our work** revolves around providing three things: quality machines, excellent customer service, and a user-centric 3D printing experience. Focusing on these three pillars has resulted in outstanding customer reviews, awards, and top-rated recognition in publications both in and out of the 3D printing world.

**Our customers** include schools, engineers, entrepreneurs, designers, businesses, and DIYers in more than 75 countries, many of whom are involved in our active, growing and extremely helpful community, located at [forum.makergear.com](http://forum.makergear.com).

**For general inquiries**, you can reach us by email at [info@makergear.com](mailto:info@makergear.com).

**For technical assistance**, please visit our website's support page to access our support resources as well as instructions for how to submit a support ticket.

We're here when you need us. Now it's time to roll up your sleeves and create something! Thanks for choosing MakerGear.

The **MakerGear** Team

What are you making? Tag  
**#madewithMAKERGEAR**  
for a chance to be featured!



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23632 Mercantile Road Unit G  
Beachwood, Ohio, US 44122