

Airwolf EVO 3D Printers TRAK Edition

Installation, Printing, Maintenance & Troubleshooting Manual

Covers Current Models:

- EVO-T
- EVO22-T

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TRAK MACHINE
TOOLS



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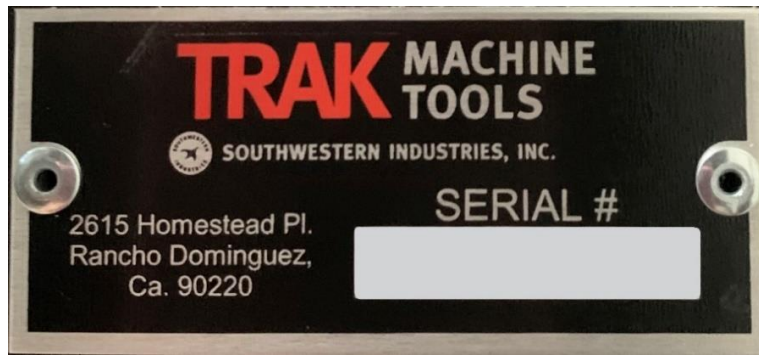
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Printer Model & Serial Number

The plate below is for you to write down your model and serial number. Keep this info handy for when you contact Customer Service.



Serial Number: _____

Buytrakparts.com Login Credentials

Login: _____

Password: _____

1.0 Safety

The safe operation of the Airwolf 3D Printers depend on its proper use and the precautions taken by each operator.

- Read and study the Airwolf 3D Printers manual carefully. Be certain that every operator understands the operation and safety requirements of this printer before its use.

1.1 Safety Publications










Please note that FFF/FDM 3D printing can produce hazardous Ultra-Fine Particles (UFP's) and Volatile Organic Compounds (VOCs). Our 3D printers come with a HEPA Filter and enclosed print chamber to help reduce the amount of UFP and VOC's you come in contact with. Always close the print chamber door and make sure the HEPA filter is replaced as recommended.

1.2 Safety Labels & Notices as Used in this Manual

- **DANGER** - Immediate hazards that will result in severe personal injury or death.
- **WARNING** - Hazards or unsafe practices that could result in severe personal injury and/or damage to the equipment.
- **CAUTION** - Hazards or unsafe practices that could result in minor personal injury or equipment/product damage.
- **NOTE** - Call attention to specific issues requiring special attention or understanding.

1.3 Safety & Information Labels Used on the EVO-T and EVO22-T

It is forbidden by OSHA regulations and by law to deface, destroy or remove any of these labels from the printers.

 Burn Hazard	 Hot Surface Hazard	 Fire Hazard
 Risk of Crush	 Crush Hazard	 Pinch Hazard
 Electromagnetic Interference Hazard	 Electrocution Hazard	 Toxic Fumes Hazard

1.4 Safety Precautions

- The heated bed can reach temperatures of 160°C and also generates heat inside the enclosed chamber of 70°C. The hot end reaches temperatures of 315°C. Never touch the heated bed or hot end while hot, and keep in mind they may take a long time to fully cool down.
- Recently extruded plastic can stick to the skin and cause burns if not careful. Always wait until the heated bed or hot end is completely cool before removing unwanted plastic or debris. The stepper motors can also generate high temperatures and contact with the skin should be avoided.
- Flammable materials or liquids should never be placed, stored next to, or in the printer.
- The internal electronic components can cause electric shock even when the printer is powered down or unplugged. Never remove the back panel without consulting TRAK first.
- ALWAYS disconnect ALL power to the printer before performing any repairs.
- Never touch moving parts or place your fingers in or on any of the belts, pulleys or gears while the printer is operational. Make sure to tie back hair and remove any dangling jewelry.
- For safety, we highly recommend hooking up an external video camera for video monitoring while printer is unattended.

1.5 Safety Features

1.5.1. HARDWARE

- Main Power: 15-amp dual-pole AC circuit breaker
- GENESIS Microcontroller: (2) 5-amp and (1) 25-amp fuses to cover MOSFETs, heaters, stepper motors, and logic
- Heated Bed: 180°C thermal fuse
- Hot End: 20W low power consumption heaters & Polyamide insulators
- Power Supply: Short circuit/overload/over voltage/over temperature

1.5.2. SOFTWARE

1.5.2.1. GENESIS Microcontroller

- Hot End: Automatic shut-off on overtemp/overcurrent
- Heat Bed: Automatic shut-off on overtemp/overcurrent
- Chamber Heater: Automatic shut-off on overtemp/overcurrent
- Stepper Motors: Automatic shut-off on overcurrent
- Fans: Automatic shut-off on overcurrent
- Lights: Automatic shut-off on overcurrent

1.5.2.2. Touchscreen

- Hot End: Automatic cool down after non-use
- Heated Bed: Automatic cool down after non-use
- Chamber Heater: Automatic cool down after non-use

2.0 Site Prep & Requirements

This section includes the printer specifications, site preparation information and requirements. Please read this section carefully and make sure all requirements are met, in order to ensure that your facility is effectively and safely prepared for printer installation.

2.1 Printer Specifications

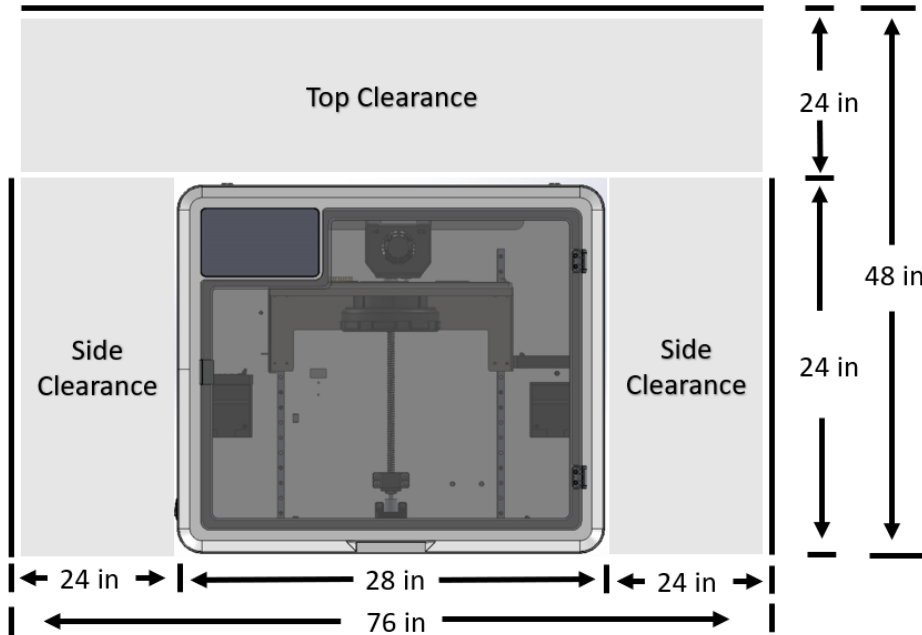
	EVO-T	EVO22-T
Printer Specifications		
Printer Dimensions (w/ doors closed)	28" x 24.5" x 24"	28" x 24.5" x 36"
Printer Dimensions (w/ doors opened)	28" x 49.5" x 24"	28" x 49.5" x 36"
Weight	60 lbs.	75 lbs.
Shipping Dimensions	48" x 42" x 35"	48" x 42" x 36"
Shipping Weight	175 lbs.	200 lbs.
Print Plate Material	Borosilicate Glass	
Frame Construction	One-Piece Aluminum Main Frame, Polycarbonate	
Network Connectivity	Ethernet, Wi-Fi	
Printing Specifications		
Build Volume Single Nozzle	12" X 12" X 11"	12" x 12" x 22"
Build Volume Dual Nozzle	12" x 11.25" x 11"	12" x 11.25" x 22"
Recommended Max. Print Speed	80 mm/s	
Minimum Layer Height	40 microns	
Recommended Layer Height	180+ microns	
Max Extruder Temperature	315°C	
Max Bed Temperature	160°C	
Extruder & Material Specifications		
Nozzle Type	Extended-Life (7075 Aluminum– Aircraft Grade)	
Print Head	Dual High-Flow AX 2	
Nozzle Size	0.35mm, 0.50mm, 0.80mm, 1.0mm	
Extruder Configuration	Planetary Direct Drive	
Filament Size	2.85mm ± 0.10	
Power Requirements		
Input	100 – 240 V 12.5 A, 50 – 60 Hz	
Output	221 W Max. 24 V Dc, 9.2 A	
Ambient Operating Temperature + Humidity	40°F - 100°F 0% - 50%	
Storage Operating Temperature + Humidity	0°F - 120°F 0% - 50%	

Slicer Requirements		
Operating System	Windows OS	MAC OSX
System Version	Windows 8 or newer	Mac Version 2013 or later
Display Resolution	1024 x 768	
RAM	2GB or higher	8GB onboard memory
Hard Disk Space	500 MB free disk space	
Core Processor	Core i3 or higher/AMD Athelon 64bit or higher	Core i5 or higher

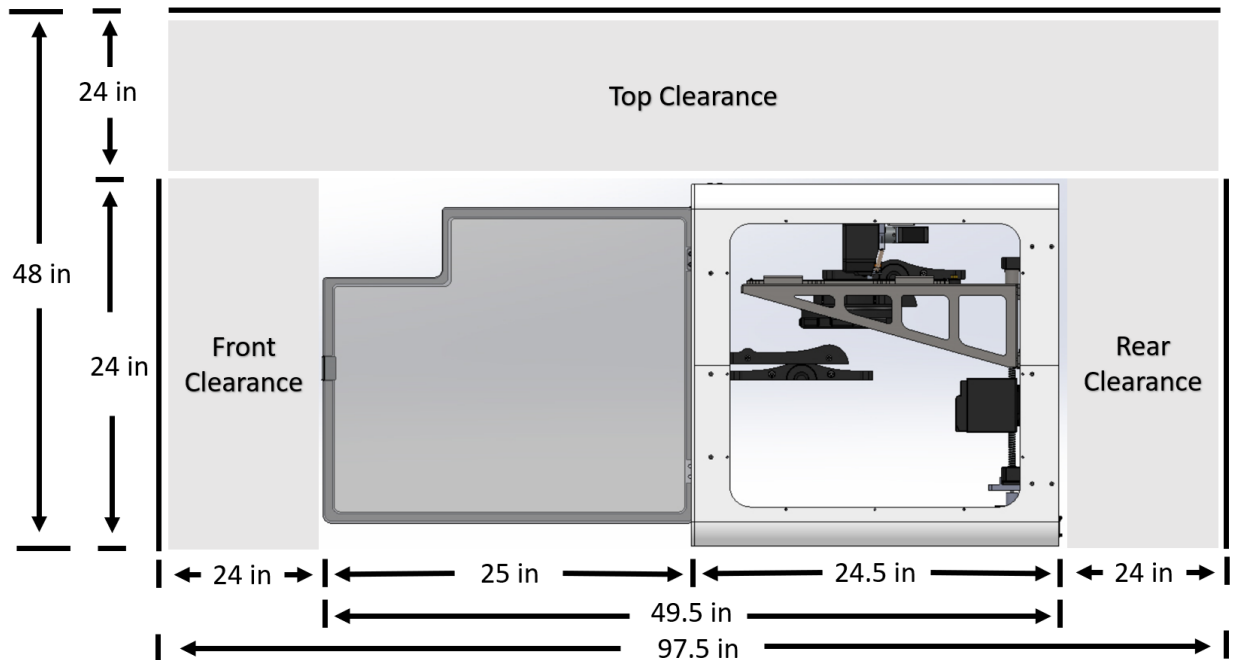
2.2 Floor Plan, Layout & Space Requirements

This section has dimension information for the EVO-T and EVO22-T.

2.2.1. EVO-T

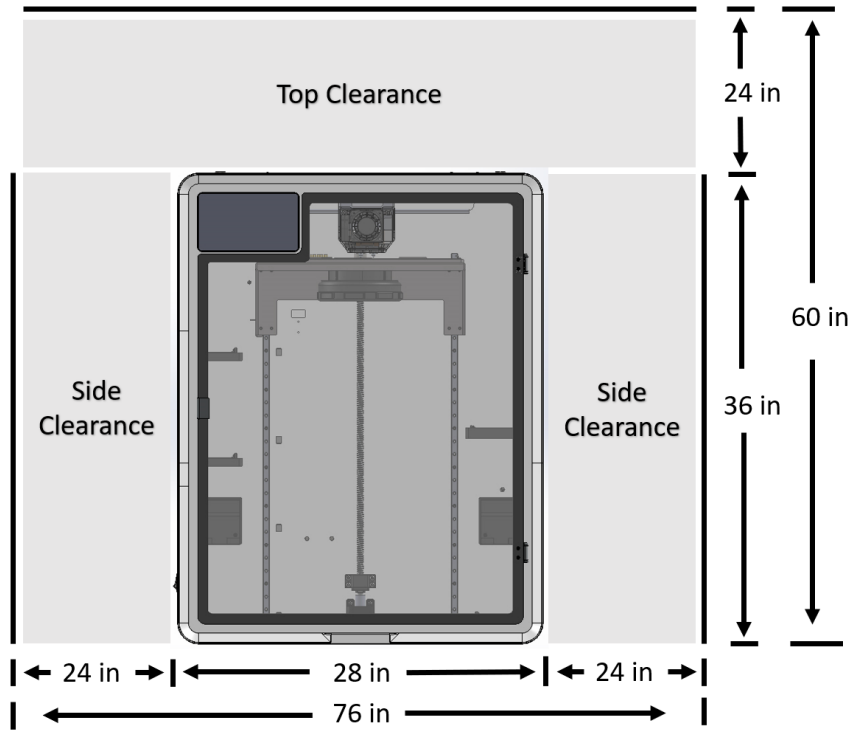


Front View

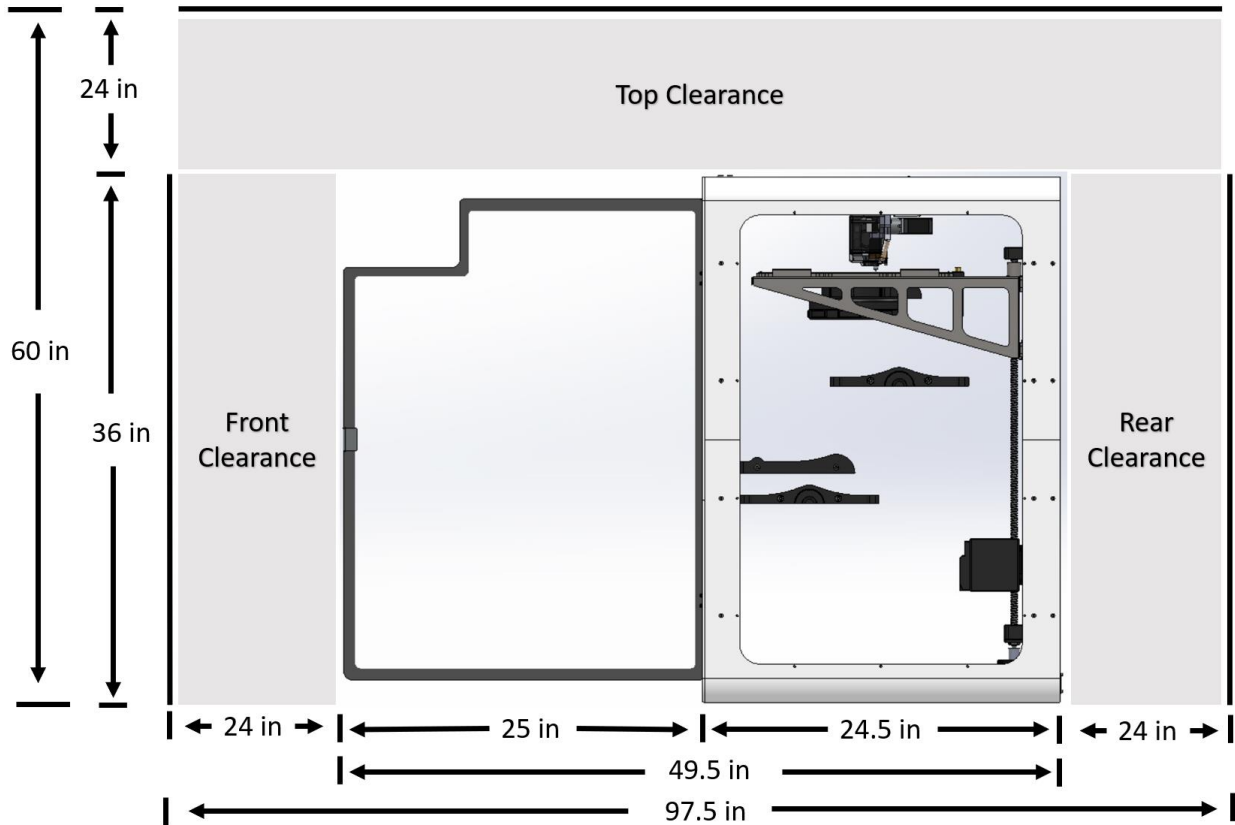


Side View

2.2.2. EVO22-T



Front View



3.0 Installation Process

In this section we will walk you through the installation process, from the moment your printer arrives, to the moment that it is powered on and ready to start printing. Do not proceed with this section, or the following sections **until** the Site Preparation & Requirements section has been completed.

3.1 Lifting, Moving, Uncrating, and Unpacking

In this section, we will go over getting your printer out of its box safely. The procedure for both printers is nearly the exact same, except for steps 6-8 due to the way they are packaged.

Lifting/Moving while on a Pallet

- The best option for lifting the Airwolf EVO-T and EVO22-T 3D Printer is a pallet jack.
- The second-best option is using four (4) people (so that each person does not carry more than 50 lbs.).

Lifting & Moving after Uncrating

- Once the printer has been removed from the pallet, it must be moved by hand. Two (2) people are recommended to move the printer by hand.

Uncrating & Unpacking

1. Cut off the straps that are holding the main box (which contains the actual Airwolf EVO-T 3D Printer) and the secondary box (which contains the 3D printer's accessories) to the pallet.
2. Remove the plastic wrapping that surrounds both the main and secondary boxes together.
3. Remove the secondary box that contains the 3D Printer accessories, and put it aside for now.
4. Cut open the taped flaps that cover the main box by using a box cutter. Be careful not to cut too deeply as you might risk damaging content inside the main box. In addition, preserve the main box in the case that it might be needed for returns and/or any possible customer service issues that might arise regarding the Airwolf EVO-T 3D Printer.
5. In addition to the Airwolf EVO-T 3D Printer, there will be shipping documents that are included inside the main box. Remove these documents, and put them aside for now.

EVO-T ONLY

6. The Airwolf EVO-T 3D Printer will be standing in an upright position while inside the main box. Remove the protective foam parts that are covering each of the 3D Printer's corners prior to removing the printer out of the box.
7. Pull the printer UP by its straps. Use two (2) people to lift the printer out of the box.
8. Lift the printer on top of a table, stand, or workstation. Cut off the straps around the 3D Printer, and remove them.

EVO22-T ONLY

6. The Airwolf EVO22-T 3D Printer will be lying horizontally on its side while inside the main box. Remove the protective foam parts that are covering each of the 3D Printer's corners prior to removing the printer out of the box.
7. Tilt the box on its side in order to remove the 3D Printer outside of the box. The Airwolf EVO22-T should now be standing upright. Use two (2) people to slide the printer out of the box.
8. Lift the printer on top of a table, stand, or workstation.

EVO-T and EVO22-T (continued...)

9. Remove the protective plastic wrapping that surrounds the 3D Printer.
10. Please note that the 3D Printer's glass cover (which is wrapped in paper) is taped on the very top part of the printer itself. Remove the tape holding the glass cover, and put it aside for now.
11. Remove the tape that keeps the 3D Printer door closed, and open the printer door.
12. Remove the two (2) zip ties around the two (2) chamber heaters inside the 3D Printer.
13. Remove both the zip ties and the white clips that are attached to the left and right belts, which are located on the upper interior surface of the 3D Printer (see image below):



NOTE – When removing the zip ties, be careful not to cut the left and/or right belts, as well as any internal cords within the 3D Printer. Doing so will cause damage to the printer.

14. Remove the clip attached to the Z Stage Ball screw by pulling on the zip tie that is attached to the clip.



3.2 Packing List

Once you have unpacked your printer, and placed it at its final location, it is time to check the packing list found within your shipment. Below we provided you with a general packing list for reference.

If you are interested in purchasing any additional options or bundles, please contact your local sales representative.

Standard Packing List for Printers*

**May vary slightly from the list that comes in the box*

Assembly Parts

- 3 – Heavy Duty Nozzles, 2.85mm, 0.5mm orifice
- 1 – Quick Change Modular Hot-end Assembly
- 1 – Build Plate – Flex-Resistant Borosilicate Glass, 4mm
- 1 – HEPA & Carbon Filter Set
- 1 – Brass Cleaning Brush
- 2 – 2lb Spool Holders
- 1 – 5lb Spool Holders

Toolkit

- 1 – Allen Wrench Toolkit, Set of 6 Hex ball Drivers
- 1 – Drill Bit Kit for Nozzles
- 1 – 5" Micro Flush Cutters
- 1 – Handheld Brass Brush
- 1 – Scraper

Accessory Bag

- 1 – Printer Power Cable
- 1 – USB Male-to-Male Cord
- 1 – TRAK USB Drive
- 1 – Benchmark Part, Euclid Block

Materials

- 1 – ABS Premium MG94, Natural, 2.85mm, 2.2lb
- 1 – WolfBite Original Adhesion Solution for ABS, 2 oz

Standard Packing List for Bundles*

**May vary slightly from the list that comes in the box*

Starter Bundle EVO-T

Includes Parts, Toolkit, Accessory Bag & Materials listed above.

- 1 – EVO-T
- 1 – Printer Workstation & Extension
- 1 – Spare Parts Kit
- 1 – ABS Value Pack

Starter Bundle EVO22-T

Includes Parts, Toolkit, Accessory Bag & Materials listed above.

- 1 – EVO22-T
- 1 – Printer Workstation & Extension
- 1 – Spare Parts Kit
- 1 – ABS Value Pack

ABS Value Pack

- 1 – ABS Premium MG94, Natural, 2.85mm, 2.2lb
- 1 – ABS Premium MG94, Black, 2.85mm, 2.2lb
- 1 – ABS Premium MG94, Natural, 2.85mm, 5lb
- 1 – ABS Premium MG94, Black, 2.85mm, 5lb
- 1 – WolfBite Original Adhesion Solution for ABS, 4 oz
- 1 – Hydrofill, Water Soluble Support Material, 2.85mm, 1lb

Polycarbonate Value Pack

- 1 – Polycarbonate, Clear, 2.85mm, 2.2lb
- 1 – Polycarbonate, Black, 2.85mm, 2.2lb
- 1 – Polycarbonate, Clear, 2.85mm, 5lb
- 1 – Polycarbonate, Black, 2.85mm, 5lb
- 1 – WolfBite Mega Adhesion Solution for PC, 4 oz
- 1 – Hydrofill, Water Soluble Support Material, 2.85mm, 1lb

Spare Parts Kit

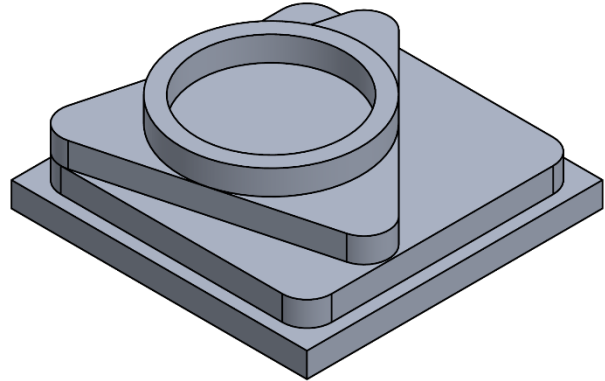
- 1 – Heavy Duty Nozzles, 2.85mm, 0.35mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 0.5mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 0.8mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 1.0mm orifice
- 1 – Quick Change Modular Hot-end Assembly
- 1 – Build Plate – Flex Resistant Borosilicate Glass, 4mm
- 1 – HEPA & Carbon Filter Set
- 1 – Brass Cleaning Brush

Nozzle Set

- 1 – Heavy Duty Nozzles, 2.85mm, 0.35mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 0.5mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 0.8mm orifice
- 1 – Heavy Duty Nozzles, 2.85mm, 1.0mm orifice

3.3 Benchmark Part: Euclid Block

In the accessory box, with your new printer, you will find a 3D printed part, called a Euclid Block. We printed it directly from your printer, using MG94 ABS, and the exact same G-Code file that we saved onto your printer's Internal Drive as "LEFT TRAK".



Purpose

The Euclid Block helps establish a printing baseline for your printer, which we can reference if/when you are experiencing any printing issues.

Because 3D printed parts can differ from one another based on many variables; material type, material care, slicer settings, printer, printer maintenance, and so on, diagnosing a problem can be difficult to isolate.

Therefore, by using the G-Code we provided, we are controlling the slicer setting variables. By using the material we provided (make sure its dried!), we are controlling the material variables.

Now we can begin to isolate the problem in a much more controlled manner!

Printing the Euclid Block

When you print it, make sure you follow the requirements below:

- Use MG94 ABS, natural color, and make sure it is DRY.
- Use the exact same G-Code we saved on your internal drive. If you need another copy, call TRAK Customer Service.
- Make sure you watch the first layer print before walking away from your printer.

Troubleshooting

Once the Euclid Block is printed, you can look at it, and see what it is telling you. Is there warping? Are the layers delaminating? Are there bubbles on the top layer? Are the top and bottoms layers bigger than the middle layers? Is the overall print quality bad?

Below is an example of how we can help you start troubleshooting, using the Euclid Block:

Example #1

The first layer of your block did not adhere to the build plate. One potential cause could be the WolfBite.

WolfBite Issues and Solutions

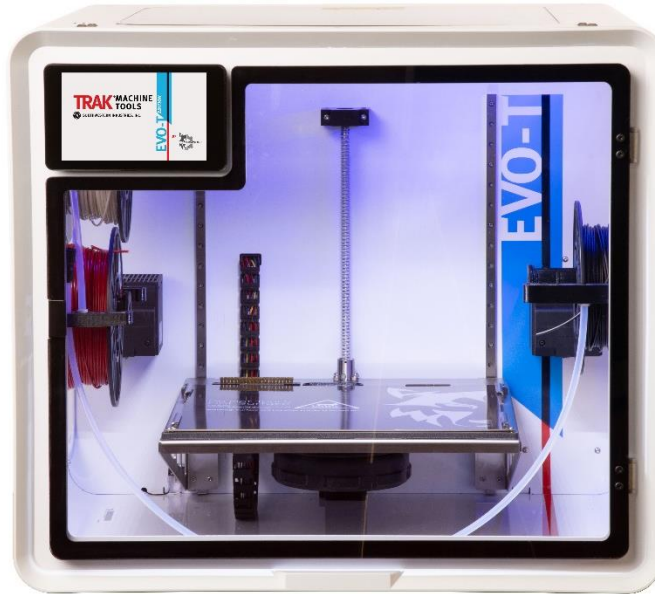
1. Not enough was applied initially. Remove & apply more before restarting the print.
2. Too much was applied initially. Remove & apply again before restarting the print.
3. It did not dry sufficiently, allow 5 minutes the next time you apply it
4. It needs to be replaced, it is either too old or the wrong kind

If the WolfBite suggestions above did not fix the problem, the next steps would be to check if the chamber heater needs to be on. If that didn't work, then you would move onto the next potential cause.

Regardless, if your printer has an issue, call TRAK Customer Service to have a Technical Support, or Applications Specialist walk you through the process – you're not alone! We're here to help.

3.4 Orientation, Controls & Functions

Once you are satisfied with the placement of your printer, and have made sure everything in your packing list has been received, it's time to go over your printer's orientation, controls and functions, so you can familiarize yourself with it.

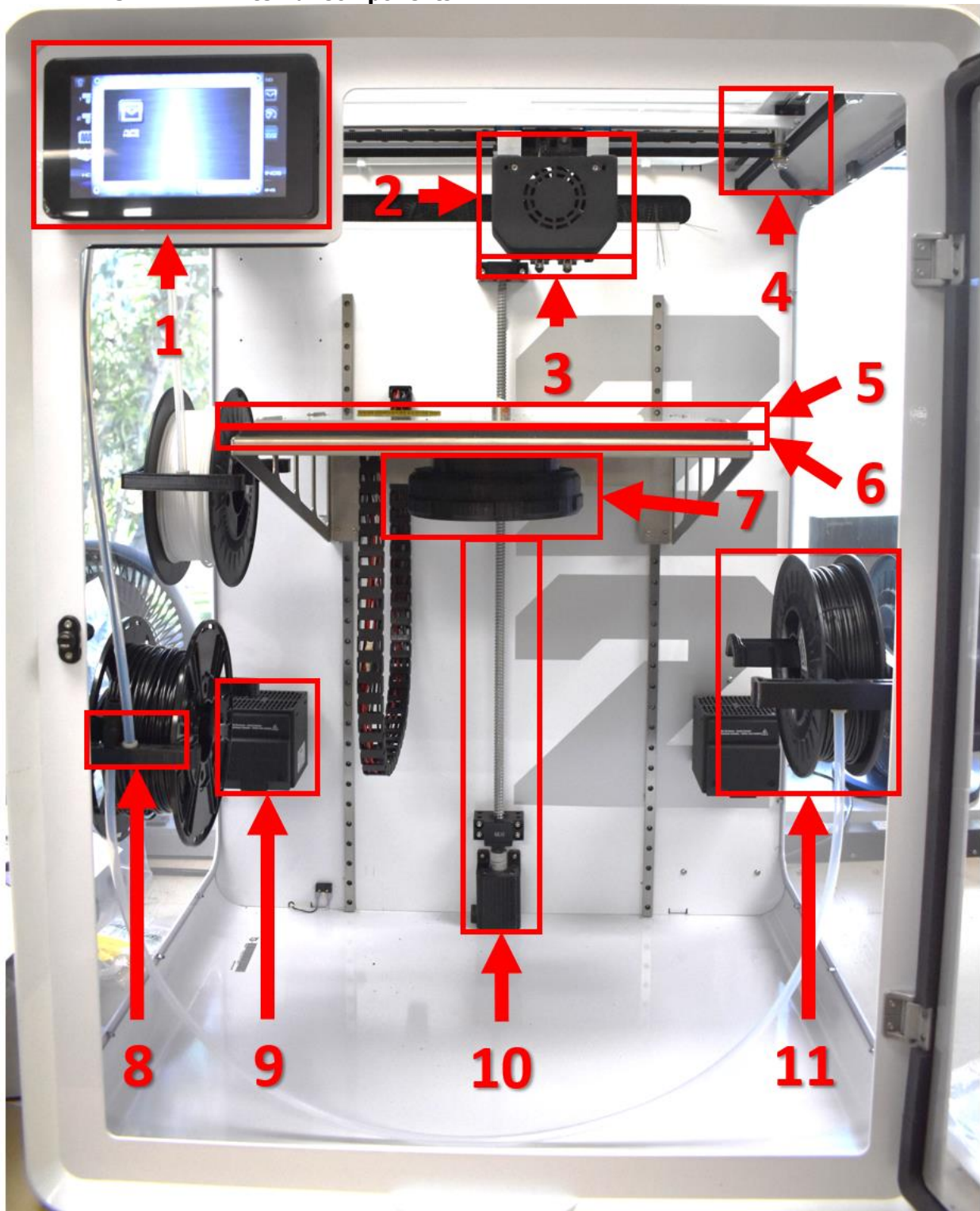








EVO-T








EVO22-T

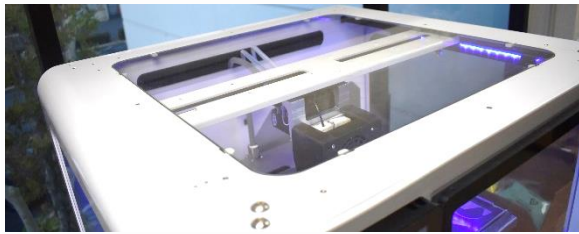



3.4.1.1. Internal Components



Component & Description	Images
<p>1. LCD Display – The LCD screen allows you to control the printer, display printer information, status, and the different menus.</p>	
<p>2. Print Head – Is comprised of the fan, its housing, nozzles, filament sensors, and mounts.</p>	
<p>3. Nozzles – The nozzle is a precision piece of metal, where melted filament is extruded out from. The nozzles are interchangeable, and come in various sizes. The nozzles heat up to 315°C, and can be found on the bottom side of the print head.</p>	
<p>4. Belts & Pulleys – Control the Print Head in the XY direction.</p>	
<p>5. Glass Build Plate – Where layers of filament are deposited and your final part is created. It heats up to 160°C.</p>	
<p>6. Print Bed – The print bed is the horizontal surface that holds and heats the glass build plate.</p>	

<p>7. HEPA Filter – Helps remove harmful VOC's and UFP's while you print.</p>	
<p>8. PTFE Tubes (3) – Used to guide and feed the filament through the printer, to the Print Head.</p>	
<p>9. Chamber Heaters – There are two chamber heaters installed to help prevent your filaments from getting wet, and to prevent part warping. The chamber heaters heat up to 70°C.</p>	
<p>10. Z Stage Ballscrew – Moves the print bed in the Z direction with precision</p>	
<p>11. Spool Holders (3) – The Spool Holders are mounted to inside of the printer and hold the spools of filament. Filament Spool - Filament Spools can come with various materials, and in two sizes: 2.2lbs and 5 lbs.</p>	



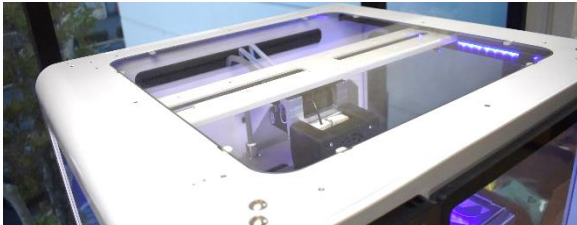
3.4.1.2. External Components

Component & Description	Images
Top View	
<ol style="list-style-type: none"> Glass Cover – Lays on top of the printer, and can be removed for better access to the Print Head, when changing filaments. 	
Side View	
<ol style="list-style-type: none"> Power Switch – Use to power your printer on/off. 	
<ol style="list-style-type: none"> LCD (Primary) USB Port – This is where you insert your USB drive that you load your G-Code files onto. It can also be used to transfer new software and firmware updates, if your printer is not connected to your network, and can work as an external hard drive. NOTE – Although there is an embedded keyboard, you may also connect your keyboard here to type. NOTE - This is NOT the place to plug in your PC to control the printer (see below). 	
Rear View	
<ol style="list-style-type: none"> Power Inlet - The Printer Power Cord plugs in here and connects to the power supply from the wall. 	
<ol style="list-style-type: none"> Ethernet Port – Use to connect to the internet through a wired connection. This is only for performing updates - there is no network control available at this time. 	
<ol style="list-style-type: none"> (Backup) USB Port – The backup USB port can be used for PC-control, which means you can stream the G-Code to print through a PC to the printer. NOTE – This connection can be interrupted by a computer freeze, update, restart, etc., so, it may not be as stable as using the primary USB, and saving the file directly to the internal drive. 	


3.5 Installation of Additional Components

In this section, you will install the printer's top cover, the build plate and connect the printer to a power source and power it on.



3.5.1. Top Cover

Steps	Images
1. Open the front printer door, and put one hand inside towards the top of the printer.	
2. With your other hand, place one side of the glass on the two rear support tabs.	
3. With the hand inside the printer, use your finger to support the bottom of the glass.	
4. Slowly lower the glass, until the glass is laying down evenly on all eight (8) support tabs.	

3.5.2. Install Glass onto bed

Steps	Images
1. Using two hands, carefully slide the build plate into the metal bed brackets located on both sides of the print bed. 2. Slide the plate all the way in until it is flush with the back of the print bed. NOTE – You may push down on the build plate slightly, to get it to slide smoothly.	

3.5.3. Connecting the Cables, Powering ON

Steps	Images
<ol style="list-style-type: none">1. Your printer was shipped with a 110v cable.2. Connect the female end to the power inlet on the back of the printer.3. Connect the male end to the power source.	
<ol style="list-style-type: none">4. Flip the power switch on (on the side of the printer)	
<ol style="list-style-type: none">5. You should see your LCD screen start to power on.	

3.6 LCD Overview

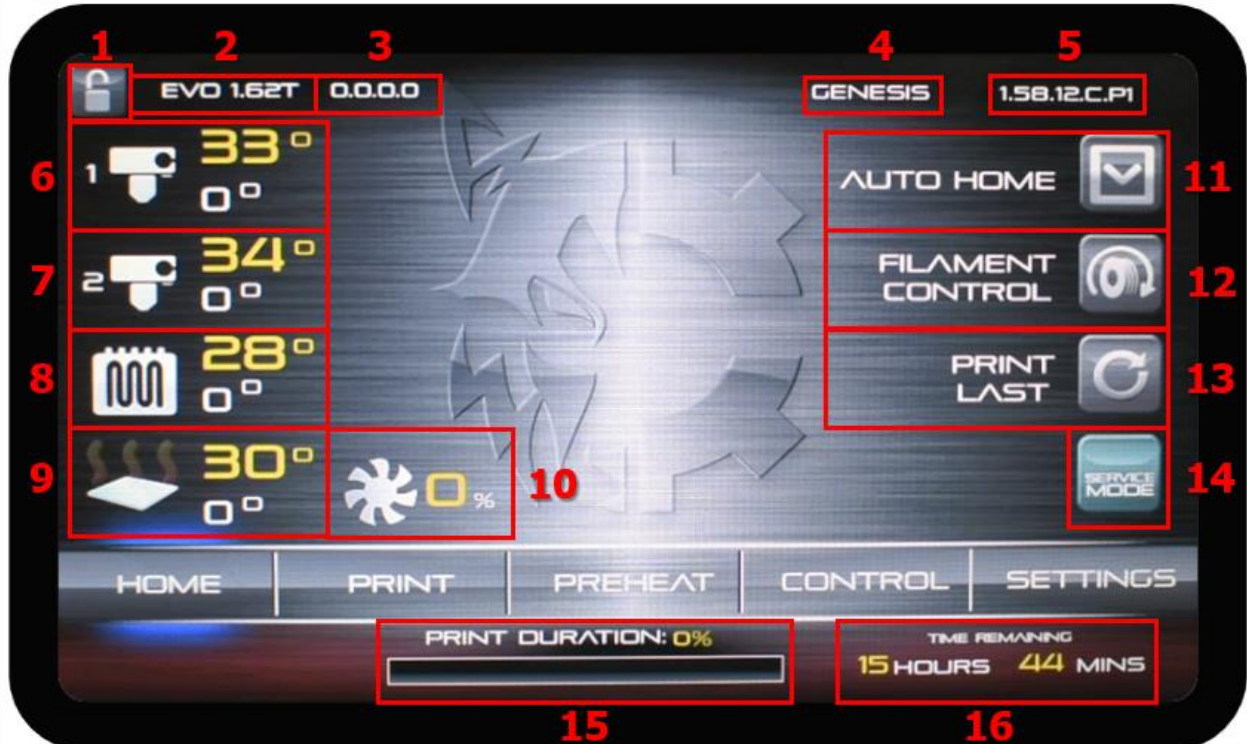
Now that you've connected your printer to a power source and powered it on, it is time to explore the LCD Display, and the menu options.

There are five main menus; Home, Print, Preheat, Control and Settings which is shown below.



3.6.1. Home Menu

The Home Menu is where you will spend most of your time.



Component & Description	
1.	Screen Lock – Screen lock has a passcode that is used to lock and unlock the LCD in order to prevent others from changing the settings on the printer. The default password is 0000.
2.	Printer Model & Touchscreen Software Version
3.	Printer I.P. Address – The IP address shows up when your printer is connected to the network for updates.
4.	Controller Name – The EVO-T & EVO22-T come with Airwolf 3D's proprietary Genesis Microcontroller that is an automotive-grade 32-bit redundant embedded controller.
5.	Controller Firmware Version – The letter after the firmware version - in this case is "C" – is the height of the nozzle from the print bed. The different heights range from "A" to "G". "A" is the height closest to the print bed, and "G" is the furthest from the print bed. The default is set to "D".
6.	Nozzle 1 Current Temp – (33°C) – Ranges from 0°C to 315°C Nozzle 1 Target Temp – (0°C) – Ranges from 0°C to 315°C
7.	Nozzle 2 Current Temp – (34°C) – Ranges from 0°C to 315°C Nozzle 2 Target Temp – (0°C) – Ranges from 0°C to 315°C

8. Chamber Current Temp – (28°C) – Ranges from 0°C to 70°C Chamber Target Temp – (0°C) - Ranges from 0°C to 70°C
9. Print Bed Current Temp – (30°C) – Ranges from 0°C to 160°C Print Bed Target Temp – (0°C) – Ranges from 0°C to 160°C
10. Cooling Fan Speed – Ranges from 0% to 100%, but will rarely go above 15%.
11. Auto Home – This function returns the printer bed and nozzles to the home position.
12. Filament Control – This option will take you to the Filament Control menu that contains options to Load/Unload filament, and Prime nozzles 1 and 2.
13. Print Last – This option will re-print the last print job you printed.
14. Service Mode – This function places the Printer Head at the center of the print bed, and moves the print bed down, providing you with the access to service your printer.
15. Print Duration – This is a progress bar that let you know what percent completion your print job is currently at.
16. Time Spent Time Remaining – Screen cycles through different print job statistics.

3.6.2. Print Menu

Everything you need in order to print can be found within this menu. You can select your G-Code file, then get your print started!



Component & Description
1. USB Drive – Lets you select the file that you want to print from your removable flash drive.
2. Internal Drive – Lets you select the file that you want to print from your printer's direct memory.
3. Files – The files from the memory location you selected will appear in this window. Select the file you want to start printing.
4. File Manager – When you select the "File Manager" icon, the "Save/Delete" icon will appear (on the right), and allow you to Save/Delete files.

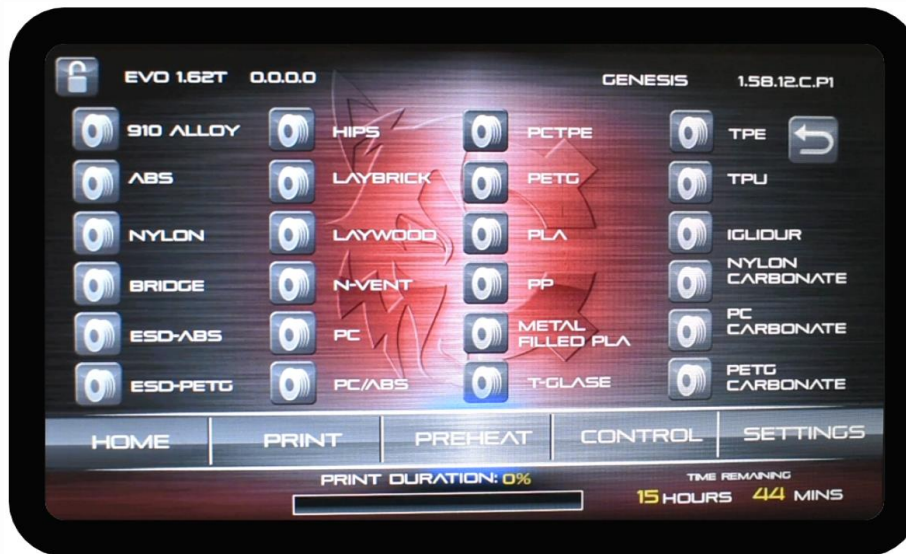
3.6.3. Preheat Menu

This function is optional. When you print, the bed is automatically preheated, but if you'd like, you could get it pre-heated before you start the print to save some time.



Component & Description

1. **Most Commonly Printed Materials** - Displays the most commonly printed materials for you to select from.
2. **More Material Options** – Takes you to a list of many additional materials you can select from.



3.6.4. Control Menu

In the Control Menu, you can control the X, Y and Z axes.



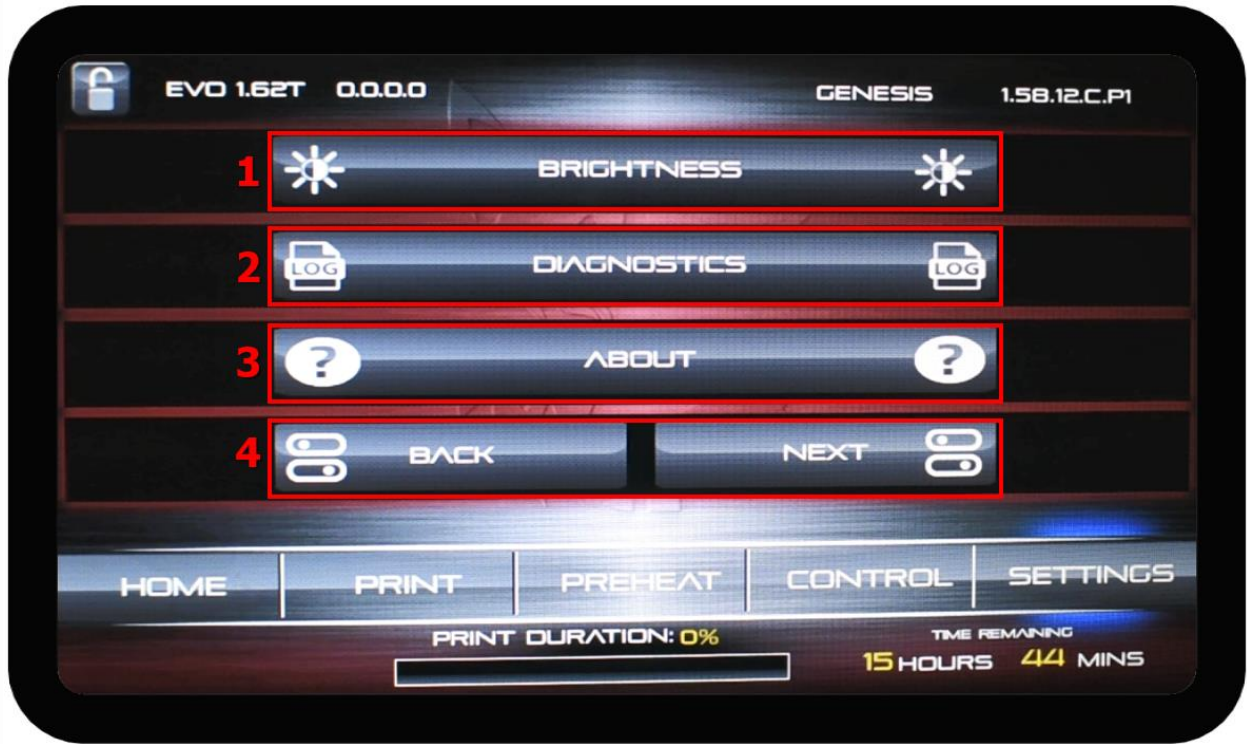
Component & Description	
1.	HOME X Y Z – If you want to home only one axis at a time, you can select X, Y, or Z.
2.	Auto Home – Auto-homes the print head and print bed.
3.	Service Mode – Moves the print head to the center of the print bed, and moves the print bed down, to make the print head accessible when servicing.
4.	XY Axis Arrows – The arrows allow you to control where you move the print head.
5.	Z Axis Slider – Use the slider to control how much you want to move the print bed up or down.
	Note – When a print job has completed, the print bed automatically resets to the bottom of the chamber.

3.6.5. Settings Menu

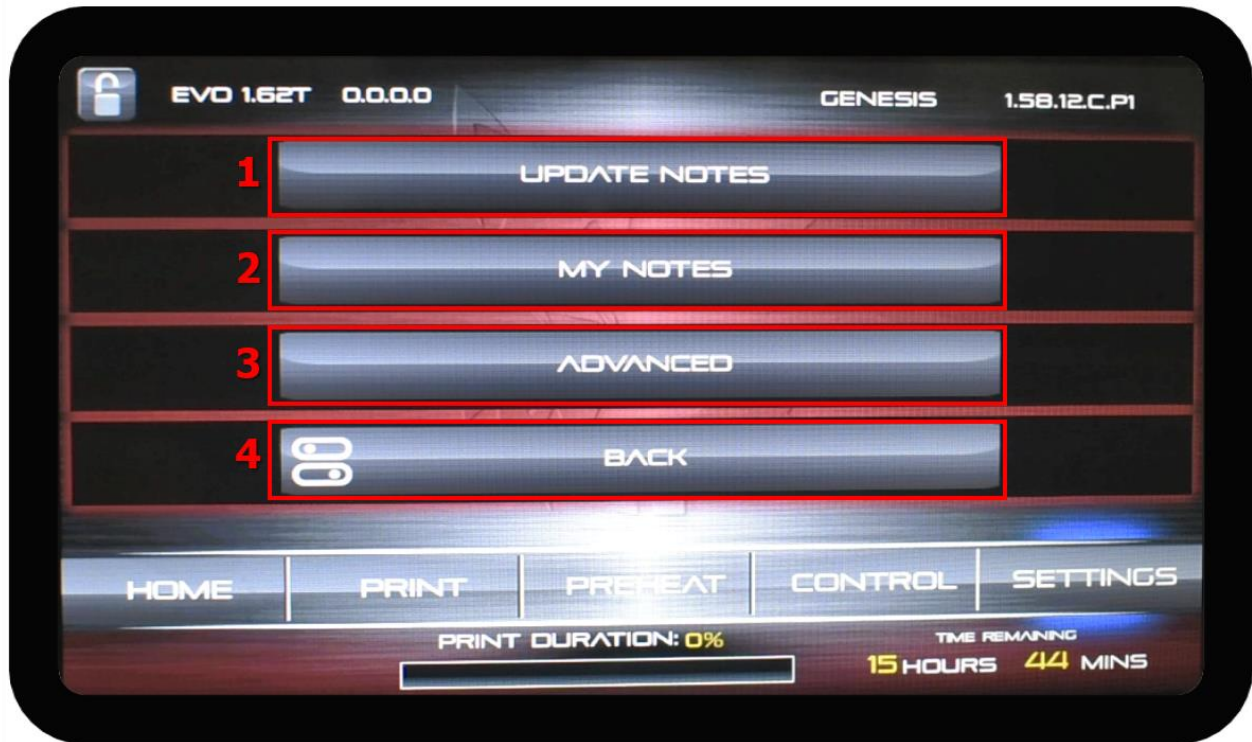
There are three primary pages within the Settings Menu.



Component & Description	
1.	Wi-Fi Settings – Allows you to find your network and connect to it.
2.	Update Genesis Firmware – You can update the firmware using a USB Drive, or the Internal Drive. NOTE – When you update the controller (touchscreen) software, any available firmware will be downloaded and saved to your internal drive. So, in order to update your firmware, you must update your software.
3.	Update Touchscreen – You can update the touchscreen software via ethernet or Wi-Fi.
4.	Next – Takes you to the next page to see more settings.



Component & Description	
1.	Brightness – Lets you select the brightness level of the screen.
2.	Diagnostics – Takes you to another menu, where you can get print logs, change your passcode, auto-home, or check your auto-level values.
3.	About – In this screen you can find important information such as your printers IP Address, Ethernet MAC address, WIFI MAC address, Firmware version, APP Version, Filament Usage, and Heater Usage.
4.	Back Next – Allows you to switch between the previous screen and the next screen




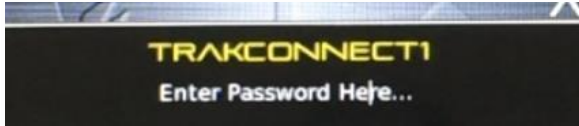
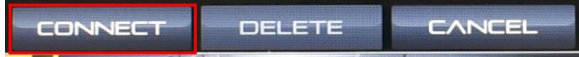



Component & Description	
1.	Update Notes – Contains all of the released features, and the bug fixes included in the latest software release.
2.	My Notes – This is where you can store any notes you would like to keep. There is an embedded keyboard that will pop up, so you can type in your notes. NOTE - You may also connect your own keyboard to the Primary USB.
3.	Advanced – Additional/Advance features will show up here, allowing you to enable/disable them. Please consult TRAK before using them, if you do not understand what they are, or do.
4.	Back – Takes you to the previous page in the settings menu.

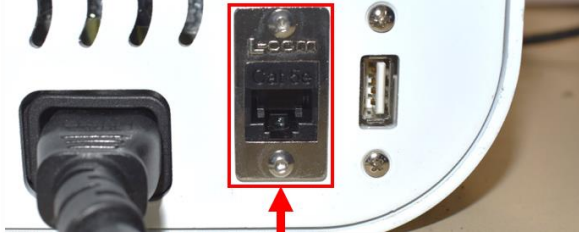


3.7 Connectivity

There are two main ways to connect your printer to the internet. You may connect via Wi-Fi or Ethernet.

3.7.1. Connect via Wi-Fi

Steps	Images
1. Select SETTINGS	
2. Select WI-FI SETTINGS	
3. Choose your network	
4. Enter your password, using the embedded keyboard. NOTE – You may connect a keyboard to the Primary USB.	
5. Select CONNECT.	
6. Once verified, your printer will be connected to your Wi-Fi! You should be able to see your IP address on the top of the screen. <i>In this example, it displays 0.0.0.0, but on your printer, you should have an actual IP Address. Ex: 192.168.0.1</i>	

3.7.2. Connect via Ethernet

Steps	Images
1. Locate the LAN port located at the rear, lower right side of the printer.	
2. Connect the Ethernet cable. A leased line or secure LAN is highly recommended.	
3. Touchscreen will display the printer's IP address. <i>In this example, it displays 0.0.0.0, but on your printer, you should have an actual IP Address. Ex: 192.168.0.1</i> 4. Your printer is now connected to the internet!	

4.0 Printing

Printing parts with your new 3D Printer is simple and easy! This section details a general 3D Printing process with our recommended best practices. Feel free to print this page out and post it on a wall next to your printer, so you never miss a step!

Basic Printing Checklist

Pre-Printing	
<input type="checkbox"/>	1. Verify all printer maintenance & firmware is up to date
<input type="checkbox"/>	2. Slice your file, and save on a USB Drive
<input type="checkbox"/>	3. Verify material type, quantity, and nozzle configuration
<input type="checkbox"/>	4. WolfBite
<input type="checkbox"/>	a. Apply
<input type="checkbox"/>	b. Remove
<input type="checkbox"/>	5. Material & Nozzle Change Procedures <i>(if needed)</i>
<input type="checkbox"/>	a. Preheating
<input type="checkbox"/>	b. Load Material
<input type="checkbox"/>	c. Priming the Nozzle
<input type="checkbox"/>	d. Unload Material
<input type="checkbox"/>	e. Change Nozzles
Printing	
<input type="checkbox"/>	6. Print your Part from USB Drive or Internal Drive
Post-Printing	
<input type="checkbox"/>	7. Let the print cool down & remove
Post-Processing	
<input type="checkbox"/>	8. Support Removal
<input type="checkbox"/>	9. Additional Post Processing


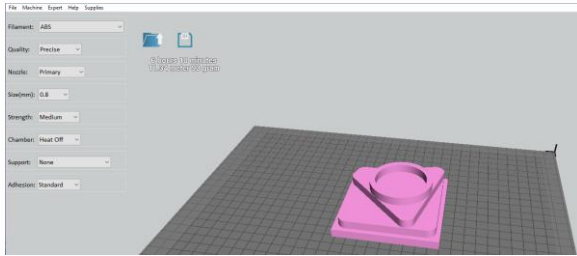
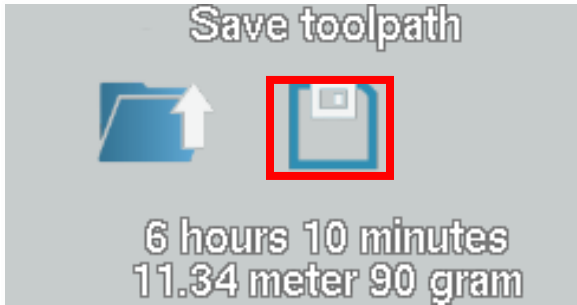

4.1 Pre-Printing Steps

Before we start printing, there are a few important things we recommend that you check or do. Some of the items below are not required, but are best practices to assure successful, reliable printing with minimal downtime.

4.1.1. Verify all printer maintenance & firmware is up to date

Printer maintenance is a critical step in the printing process that is too often overlooked. At TRAK, we implemented it into the Basic Printing Checklist as a best practice. Before you start a new print, check the last time maintenance was performed, or firmware was updated, and perform any of the tasks that are due.

4.1.2. Slice your file, and save on a USB Drive

Steps	Images
<ol style="list-style-type: none"> 1. Open APEX 2. There are two ways to upload your file; <ul style="list-style-type: none"> • Drag & Drop, or • Press the Load Button (see image on right), and then select the STL file you wish to upload. 	
<ol style="list-style-type: none"> 3. Select the settings you need, and wait for the file to finish slicing. 	
<ol style="list-style-type: none"> 4. Once the slice is complete, save the toolpath. 	
<ol style="list-style-type: none"> 5. Enter the file name, and select the location where you want to save the G-Code file. 6. Then transfer your file to the USB drive. <p>NOTE – If the flash drive is inserted to the computer, the “save” button will change to “save to flash drive” and another button will appear that says “eject”.</p>	

4.1.3. Verify material type, quantity, and nozzle configuration

These verification steps are recommended every time you print, to assure everything is setup properly, and avoid downtime down the road.

4.1.3.1. Verify the Correct Material is Loaded

Based on the print requirements, loading the correct material is a critical step in the printing process. In the event that the wrong material is loaded into the printer, it can lead to printing with the wrong temperatures which can cause print failures, nozzle clogs, or extensive maintenance and even serious damage to printer.

The same applies for materials that have not been recommended for use by TRAK. We qualify materials by performing tests, as well as printing extensively with it, in order to understand the best printing practices, and any troubleshooting that may be required, to better help you if you encounter any issues while printing.

For this reason, TRAK recommends only printing with the TRAK Qualified Materials. The list can be found on our website.

NOTE – We are actively testing materials, and will update this list as we get them qualified.

When you print with materials NOT qualified or recommended by TRAK, we cannot guarantee that we will be able to help you troubleshoot any printer issues in the event that the material caused printer damage.

Warning!


While it is tempting to go online and find the cheapest filament, believing all to be the same, this is a big mistake. Cheap imported filament **will** affect not only the quality of your prints, but also the lifespan of your printer. Cheap filament contains unknown fillers that can cause jams and ruin your hot end. Melt temperatures may be inconsistent and these filaments frequently leave residue in your hot end, making your printer inoperable.



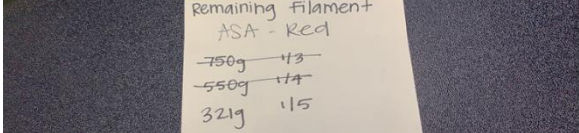
For instructions on how to change the material, see section 4.1.5.

4.1.3.2. Verify Material Quantity

When you are preparing to print, always verify that you have enough filament for the print. If you don't, you can replace the spool, or you can prepare for a mid-print filament change. For instructions on how to change the material, see section 4.1.5.

One way to check if you have enough filament, is to use a postage scale (up to 10lbs).

Steps	Images
<p>7. Weigh an empty spool, and write down the weight.</p> <p><i>Ex: 200g – weight of empty spool</i></p>	

<p>8. Weigh the spool of filament that you plan to use, and write down the weight.</p> <p><i>Ex: 750g – weight of spool + filament</i></p>	
<p>9. Subtract the weight of the spool you plan to use, from the weight of the empty, and that is how much remaining filament you have. Write it down on a piece of paper.</p>	<p><i>Ex: 750g weight of spool + filament</i> <i>-200g weight of empty spool</i> <i>550g of remaining filament</i></p>
<p>10. Then go to APEX and slice your file. Once sliced, APEX will let you know how much filament the print job requires.</p> <p><i>Ex: 229g of filament required</i></p>	
<p>11. Subtract the remaining filament from the filament required.</p> <ul style="list-style-type: none"> • If you end up with a positive number, then you have enough. • If you end up with a negative number, then you are short on filament and should either put on a new spool, or prepare for a mid-print filament change. 	<p><i>Ex: 550g remaining filament</i> <i>-229g required filament</i> <i>321g leftover filament</i></p>
<p>TIP: You can also track filament usage with a sticky note and store it with the filaments.</p>	

4.1.3.3. Verify the Nozzle Configuration

Nozzle sizes can have a huge impact on print quality, surface finish and print time. Before you print, make sure the printers’ nozzles are configured based on the settings you selected on the slicer. For instructions on how to change the nozzles, see section 4.1.5.5.

CAUTION

When printing, you must install the correct nozzle diameter size based upon the slicer settings. Failure to install the correct nozzle size may result in bad prints, and/or printer downtime.

4.1.4. WolfBite

Airwolf's WolfBite Adhesion Solution keeps parts secured to the bed while printing, but then releases them easily once completed and cooled. WolfBite comes in different formulas for different materials.

Material Compatibility

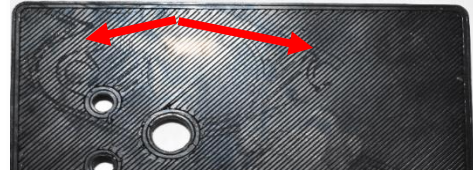
Material	Wolfbite Type
ABS	Wolfbite Original
Polycarbonate and PCABS	Wolfbite Mega

Wolfbite Lifetime on Build Plate

Material	Typical Lifetime
ABS	10+ prints
Polycarbonate (PC)	1 print

The typical lifetime on the build plate varies, depending on the material you are using.

NOTE – For customer facing parts, where surface finish is critical, TRAK recommends changing the WolfBite after every print. Reusing the WolfBite from the last print can sometimes leave a faint mark on the bottom of the newly printed part. See image to the right. If small surface defects are not an issue, then you do not need to worry about replacing the WolfBite after each print, and you should follow the recommendations on the table above.





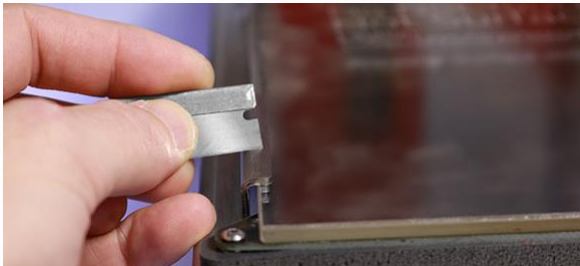
4.1.4.1. Applying WolfBite

Steps	Images
<ol style="list-style-type: none"> 1. Shake bottle well. 2. Remove lid and dip foam applicator into solution. NOTE – WolfBite may solidify if kept in temperatures under 50°F. Heating up in the microwave for 5-10 seconds may help liquify it again. 	
<ol style="list-style-type: none"> 3. Apply by painting on cold glass with long strokes, covering the entire build area evenly. 4. Allow to dry about 2-5 minutes. 	
<ol style="list-style-type: none"> 5. Clean the applicator brush with water and thoroughly dry. NOTE – If the brush is not cleaned, it will harden. 	

4.1.4.2. Removing WolfBite

Signs that the WolfBite needs to be removed & re-applied:





- The material you plan to print is not compatible with the WolfBite already on the glass.
- The part no longer sticks to the plate, hence warping.
- The WolfBite starts to look a bit burnt/yellow-brownish.

Steps	Images
1. Let build plate cool, and remove from the print bed.	
2. Clean glass plate with clean water only . 3. NOTE - Soap and other cleansers will contaminate Wolfbite solution and cause unstable performance.	
4. To remove excess formula, <ul style="list-style-type: none">• A razor blade may be used to gently scrape the glass plate under running water. Please exercise caution.• You may also use isopropyl alcohol, as a good alternative to help speed the process up. 5. Dry glass plate thoroughly.	




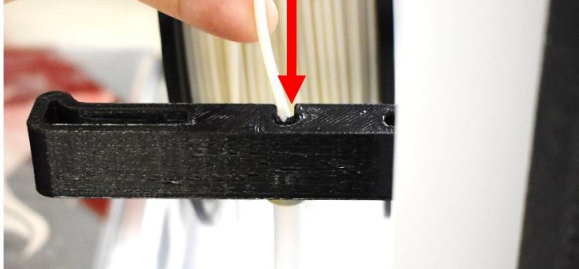
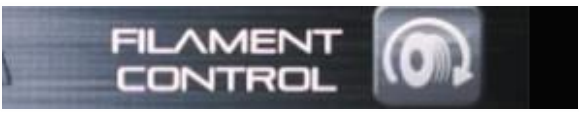

4.1.5. Material & Nozzle Change Procedures (if needed)





This section covers most filament and nozzle change procedures. Please ensure that steps are followed exactly as outline below, to avoid possible damage to the printer.

4.1.5.1. Pre-Heating the Nozzles, Bed, Chamber or All

Steps	Images
1. Select PREHEAT	
2. Select the material you loaded.	
3. You may preheat multiple components at once, one at a time, or select ALL to pre-heat both nozzles, the print bed and chamber. 4. Then, press DONE.	
5. Pre-heating will begin, and you will see "PRE-HEATING" flashing in the screen. Once preheated, the flashing sign will go away.	


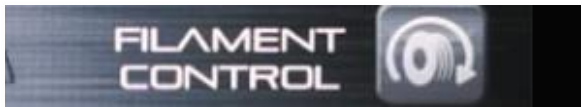



4.1.5.2. Loading Material Procedure

Steps	Images
<p>1. Preheat the nozzle you plan on loading.</p> <p>While preheating, you will see "PRE-HEATING" flashing in the screen.</p>	
<p>2. Load the new spool of filament on the spool holder.</p>	
<p>3. Cut the filament tip at an angle, for easier insertion into the feeder port.</p>	
<p>4. Push the filament through the PTFE tube until it reaches the nozzle.</p>	
<p>5. Once the nozzle reaches the target temperature, select Filament Control.</p> <p>NOTE - Feeder will not operate under 175°C.</p>	
<p>6. If needed, remove the top window for better access to the feeder port.</p>	


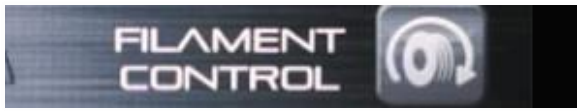




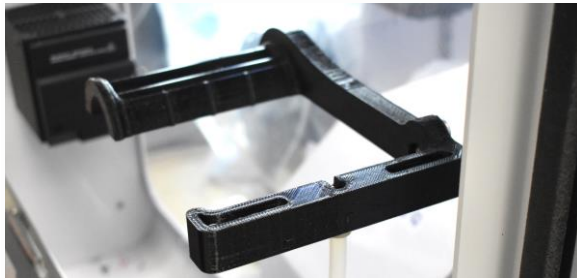
<p>7. Firmly insert the new filament vertically, into the correct feeder port.</p>	
<p>8. Select the nozzle you are loading.</p>	
<p>9. Press LOAD.</p>	
<p>10. Feeder will pull filament into the nozzle and prime a bit of filament. NOTE – If filament is not extruding, try feeding the filament some more, until it extrudes, or you feel it engage with the feeder gear. In the event that the filament is jammed, see section 7.5.</p>	

4.1.5.3. Priming the Nozzle(s)



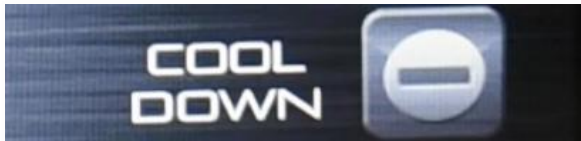



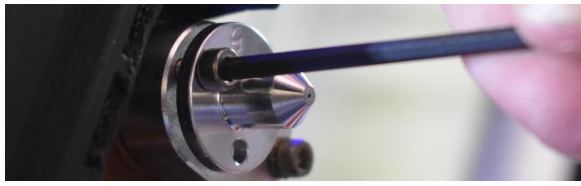

It is highly recommended that you prime the nozzle(s) before every print. Priming the nozzles before a print can help identify some potential issues such as clogged nozzles and/or feeding issues. Also priming the nozzle after loading a new filament is a good idea, in the event that the filament did not feed well into the nozzle during the loading process.

Steps	Images
1. Pre-heat the nozzle you want to prime (if the nozzle is not already pre-heated)	
2. Once the nozzle reaches the target temperature, select Filament Control. NOTE - Feeder will not operate under 175°C.	
3. Select the nozzle you will be priming.	
4. Select PRIME.	
5. A good prime will result in filament that looks straight, smooth and consistent. A bad prime will result in the filament coiling up at the nozzle tip, bubbling up and/or not flowing consistently, or at all.	

4.1.5.4. Unloading Filament Procedure



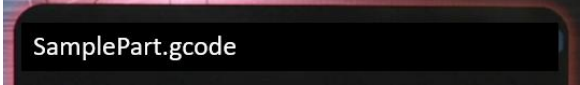
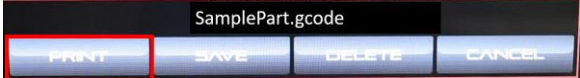
Steps	Images
11. Preheat the nozzle that you want to unload filament from.	
12. Once the nozzle reaches the target temperature, select Filament Control. NOTE - Feeder will not operate under 175°C.	
13. Select the nozzle you are unloading.	
14. Select Remove.	
15. If needed, remove the top window for better access to the feeder port.	
16. Remove filament from the nozzle to be changed, by pulling the filament out of the Feeder Port, and then rewinding the filament back onto the spool.	
17. Remove the spool of filament off the spool holder, and secure the end, so the filament doesn't unwind and cause print issues. NOTE – It is best practice to store the unused filament in a sealed bag with desiccant.	

4.1.5.5. Nozzle Change Procedure

Steps	Images
1. Unload filament from the nozzle you are changing.	
2. Select Service Mode, to move the print head to the center, and to lower the print bed down, for better access to the print head while servicing.	
3. Use the Cool Down button to cool the nozzles down, before you touch them.	
4. Use a 2.5mm hex wrench and loosen each of the three screws holding the nozzle to the heater body.	
5. Remove the nozzle.	
6. Place the replacement nozzle and screws on the print head. NOTE – The screws must be replaced with every nozzle change.	
7. Place one bolt inside the replacement nozzle and lightly screw in to print head.	
8. Repeat for the second and third bolts. Then, tighten all bolts evenly. NOTE – If the nozzles are not tightened correctly, filament will begin to ooze out between the nozzle and the print head, leading to print issues.	

4.2 Printing

Now that you have verified that everything was setup properly, let's start printing! You have two options when it comes to printing, you can print using a USB Drive or from the Internal Drive.

Steps	Images
1. Select PRINT	
2. Select the location of the G-Code file; USB or Internal Drive	
3. Select the File	
4. Select PRINT on the window that pops up. NOTE – In some cases, a window may pop up and ask if you want to resume the previous print (if it detected that the previous print was ended abruptly), press NO, to continue with your current print.	
5. From here, the printer will automatically begin to clean nozzles, auto-level, and prime filament. Once completed, the printer will begin your print job!	

4.3 Post-Printing

Once your print is finished, there are a few post-printing steps that we recommend.

4.3.1. Let print cool down

We recommend letting the print cool down inside the print chamber before attempting to take it off the build plate. Most prints, should come right off when build plate is cooled. If the part gets stuck on the build plate, washing the plate with water helps (or soaking, if the material is not highly hygroscopic).

4.4 Post-Processing

Post-processing will vary based on what you want to achieve from your prints. Very commonly, you will need to plan some time to remove the support material from your parts.

There are two different kinds of support materials: breakaway and soluble. Specific support materials adhere more effectively to some build materials than others. When you're working with all support materials, consider compatibility.

Breakaway support material can be manually removed, using your finger, or tools such as picks. It is also important to note, build material may be used as support. This is called single-material support, and it is classified as a breakaway.

Most soluble/dissolvable supports will require submerging the entire part in water, or a solution, so keep that in mind when choosing soluble support. Using soluble supports is hands-free and doesn't require further sanding and polishing to remove the marks left by supports. This process can be time-consuming

(taking several hours), but can be sped up by agitating, or warming the solvent (for some support materials).




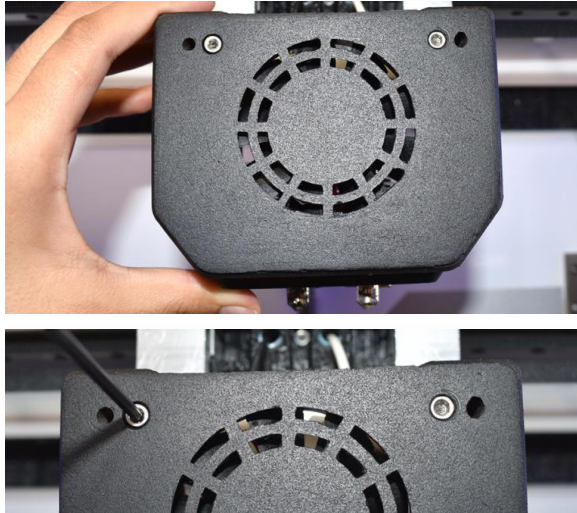
Additional Post Processing

You may choose other types of post-processing, which include sanding, gluing, painting and inserts. Specific procedures and steps depend on your individual part needs and requirements; therefore, we have not included any procedures.

5.0 Maintenance




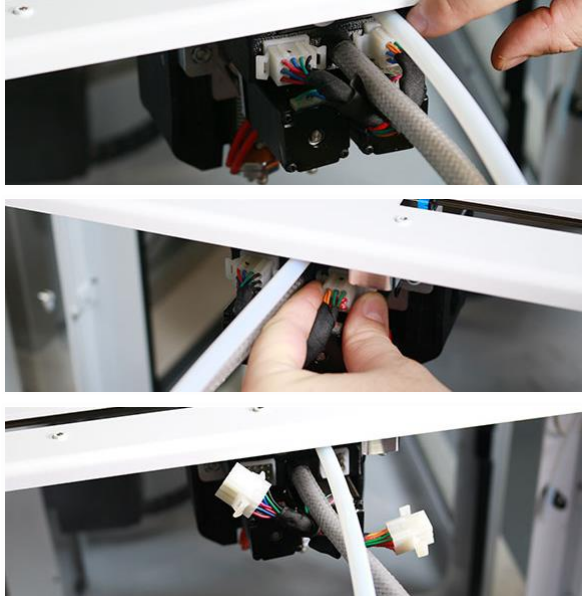
5.1 Leveling Nozzles

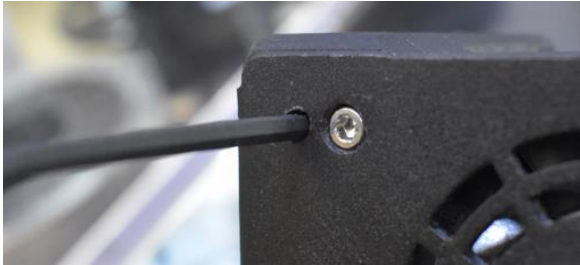

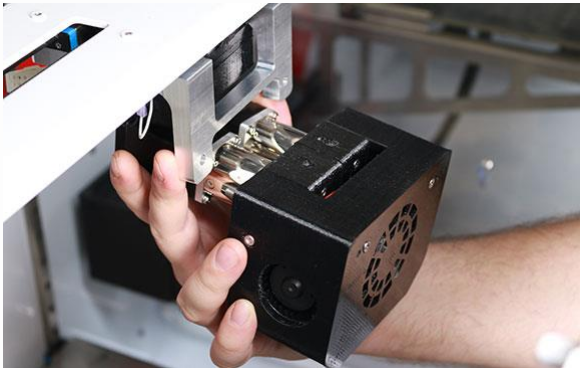

To level nozzles, perform the following steps:

Steps	Images
1. Place printer in SERVICE MODE.	
2. Cool down printer components. WARNING! Not allowing printer to cool down properly can result in serious burns.	
3. Insert 3mm allen wrench into right opening in fan cover and loosen bolt.	
4. Tilt until hot ends are level, and then tighten both bolts.	
5. Start a print and check the relation of both nozzles.	
6. If necessary, pause the print, and repeat steps 1-5.	




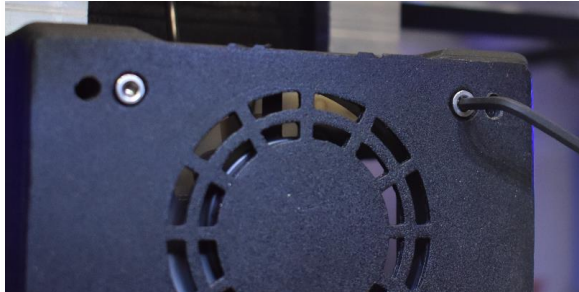
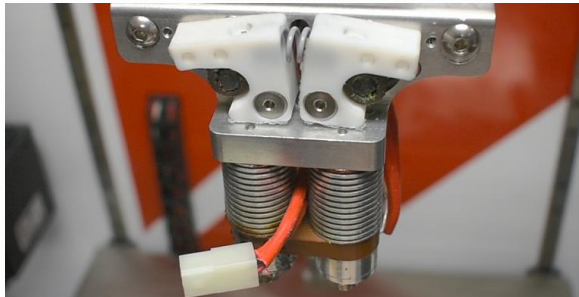
5.2 Modular Extruder Replacement

CAUTION!
Do not plug or unplug wires while printer is powered on.

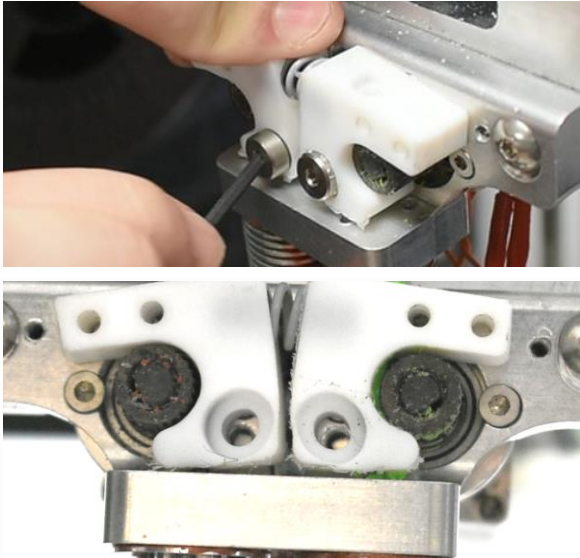

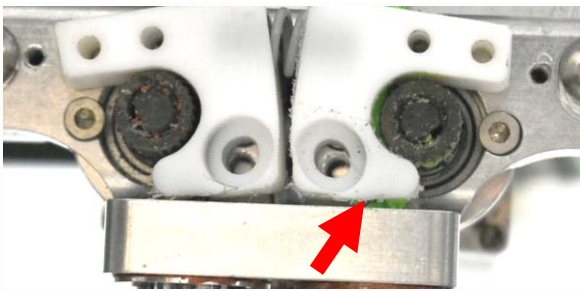

Steps	Images
1. Remove filament.	
2. Cool down printer components. WARNING! Not allowing printer to cool down properly can result in serious burns.	
3. Place printer in SERVICE MODE.	
4. Power down printer. CAUTION! Printer must be powered down to prevent damage to GENESIS board.	
5. Once the printer is cooled down, and powered down, carefully remove left and right plugs from the harness mount. NOTE – Grab the plugs, NOT the wires (plugs will be tight).	

<p>6. Insert 3mm allen wrench into left recess in fan cover and loosen.</p> <p>NOTE – Due to the depth of the hole, the loosened screws may not come out, but you will still be able to proceed.</p>	
<p>7. Repeat for right recess.</p>	
<p>8. After both bolts are completely loosened, remove extruder assembly.</p>	
<p>9. Repeat in reverse order to install new extruder assembly</p>	
<p>10. Before resuming operation of the printer, follow the Leveling Nozzle procedure found in section 6.1.</p>	

5.3 Fan Housing Removal / Replacement




Steps	Images
1. Preheat both nozzles to the required temperature for the inserted filament.	
2. Remove filament.	
3. Cool down printer components. <div style="border: 1px solid black; padding: 5px;"> <p>WARNING! Not allowing printer to cool down properly can result in serious burns.</p> </div>	
4. Place printer in SERVICE MODE.	
5. When printer is cooled, power down the printer.	
6. Remove the two (2) screws that hold front cover in place with a 2.5mm allen wrench. NOTE - The two additional holes are for modular hot end removal and adjustment.	
7. Remove the front cover.	
8. Carefully pull the fan off and separate the 4-pin connector.	
9. Repeat in reverse order to install new fan housing.	

5.4 Feeder Removal / Replacement

Steps	Images
<p>1. See steps 1-7 of Fan Housing Removal / Replacement</p> <p>NOTE – It is not necessary to remove fan connection, but if you choose to, the printer MUST be powered down.</p>	
<p>2. Loosen and remove the two (2) M3 screws that hold feeder assembly.</p> <p>NOTE – You will need to use one hand to push the feeder assembly together, while you loosen the screws with the other hand.</p> <p>The spring in between the feeder assembly, pushes the screws off their central position, making it harder to loosen them. <i>(see image to the right)</i></p>	
<p>3. Push the feeder assembly together and pull towards you to remove.</p>	
<p>NOTE – If the feeder assembly is stuck, try using a razor blade to cut the filament between the feeder assembly and hot end mount.</p>	
<p>4. Repeat in reverse order to install new feeder assembly.</p>	


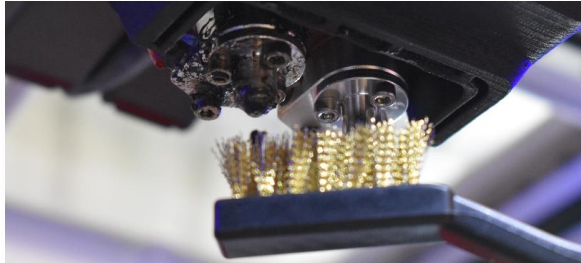
5.5 Clean Bed Rails

TRAK recommends cleaning your bed rails every 100 print hours for more accurate auto-leveling.

Steps	Images
<p>1. Cool down printer components.</p> <p>WARNING! Not allowing printer to cool down properly can result in serious burns.</p>	
<p>2. Place printer in SERVICE MODE.</p>	
<p>3. Use a scraper to remove film off steel bed rails for precise contact between rails and nozzles.</p>	




5.6 Clean Nozzles

TRAK recommends cleaning your nozzles every 100 print hours for more accurate auto-leveling.

Steps	Images
<p>1. Pre-heat nozzles to the required temperature for the loaded filament.</p>	
<p>2. Place printer in SERVICE MODE.</p>	
<p>3. Once preheated, power down printer.</p> <p>CAUTION! Printer must be powered down to prevent damage to GENESIS board.</p>	
<p>4. Carefully take the handheld brass brush to body of nozzle and scrub off the residue.</p> <p>WARNING! Wear safety goggles to avoid debris getting into your eyes.</p>	



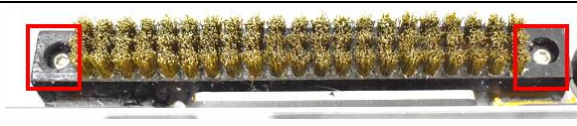
5.7 Replace HEPA Filters

TRAK recommends replacing your HEPA Filter every 1000 hours of print time, to reduce the VOCs and UFPs while printing.

Steps	Images
1. Clear the build plate.	
2. Select CONTROL.	
3. Use the Z-Axis pointer on the far right of the screen, to move the Z-axis to the top of its travel.	
4. Power down the printer.	
5. Unscrew the filter cover and both filters should easily drop out. 6. If necessary, use a small screwdriver to gently pry out the filter.	
7. Once removed, dispose of used filter.	
8. Replace in reverse order.	

5.8 Replace Brass Cleaning Brush

Brass brushes are resistant to rust and corrosion and help your 3D printer operate normally while minimizing the need for maintenance.

Steps	Images
1. Cool down printer components. WARNING! Not allowing printer to cool down properly can result in serious burns.	
2. Place printer in SERVICE MODE.	
3. Use 2.5mm allen wrench to unscrew both screws holding brush to bed plate.	
4. Remove brush.	
5. Install replacement in reverse order.	

5.9 Borosilicate Glass Build Plate

The glass used for the EVO build plate is high-temperature, borosilicate glass. Like filament, the build plate is a consumable. It will degrade over time.

To prolong the life of the build plate, practice the following:



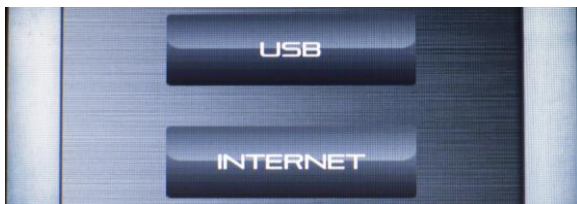
- Only apply WolfBite to a cold plate.
- After a print, be patient and let the surface slowly cool down until the part self-releases.
- Make sure the nozzle is not pressing the first layer into the glass — too close of a first layer will create a very strong bond that can damage the build plate. See section 7.3 in the event that you are experiencing issues with the first layer being too close or too far from the build plate.

5.10 Lubricate Z Stage Ballscrew

TRAK recommends lubricating your Z Stage Ballscrew every 1000 hours.

- White lithium grease is recommended.
- Any grease used should be rated for more than 80°C continuous.

5.11 Update Touchscreen

Steps	Images
1. Make sure the printer is connected to the internet via Wi-Fi or Ethernet cable. NOTE – You can confirm you are connected to the internet, if you see that the IP address says something other than 0.0.0.0	
2. Select SETTINGS	
3. Select UPDATE TOUCHSCREEN NOTE - if this does not appear, select next or back to arrive at the correct screen	
4. Select how you're going to make the update: via Wi-Fi/Ethernet connection or through a USB drive.	
5. The update process will begin, and may take a few minutes. NOTE - Do not turn off printer during update — printer will restart itself.	



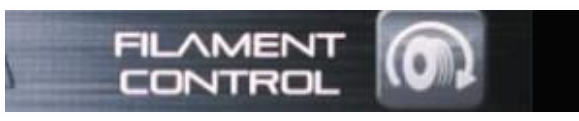

6.0 Troubleshooting

This section covers the steps to take when trying to fix your printer, when you encounter issues.

When dealing any troubleshooting issues, the first immediate steps we recommend are the following:

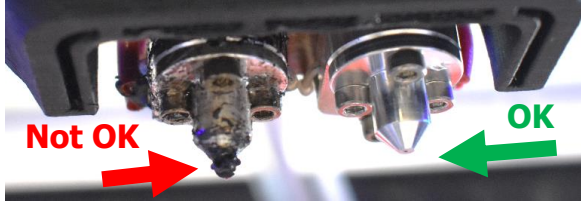
- Always run the latest firmware Version, or check for firmware Updates
- Always run the latest version of Apex Slicer Software, or check for software updates on Apex Slicer.
- Always print your Euclid Block, using dried MG94 ABS (natural color), and the G-Code stored onto your printers Internal Drive.

6.1 Running Out of Filament

Steps	Images
1. Pre-heat nozzle to required temperature, by selecting PREHEAT.	
2. Then select the material you plan on loading.	
3. Select the nozzle that you are troubleshooting.	
4. Insert new filament into feeder. <i>For instructions on Loading Filament, see Printing section.</i>	
5. Once the nozzle reaches the target temperature, select Filament Control NOTE - Feeder will not operate under 175°C.	
6. Press PRIME. PRIME will slowly feed new filament into the feeder. CAUTION – Do not press LOAD, as it will force new filament in too fast and potentially jam.	




6.2 Auto-Leveling Errors

The EVO-T and EVO22-T calculate values for auto-leveling by probing the four corners of the print bed, and then the Z values are recorded when the aluminum nozzle makes electrical contact with the stainless-steel bed.

Steps	Images
<ul style="list-style-type: none"> Most auto-leveling errors are the result of a poor connection between the nozzle and the bed such as when material is blocking the two from touching. For best results, clean both nozzles and bed rails as described in the Maintenance section. 	

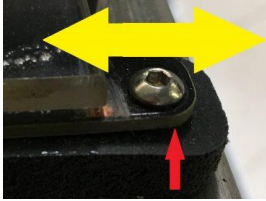

6.3 Print Too Close or Too Far from Bed

- Printing Too Close to Bed** - You can tell this when the printer can't extrude a solid bead throughout the first layer.
- Printing Too Far from Bed** - You can tell this when the first layer won't adhere to the build plate.





Steps	Images
<ol style="list-style-type: none"> 1. Make sure nozzle and bed rails are auto-leveling correctly (nozzle will quickly retract once rail is contacted — if not, refer to maintenance section to clean nozzle and rails.) 	
<ol style="list-style-type: none"> 2. Select SETTINGS, then UPDATE GENESIS FIRMWARE, or 3. Tap the Firmware version on the top right corner of the screen. 	
<ol style="list-style-type: none"> 4. Select how you would like to update the firmware; via USB drive or INTERNAL drive. 	
<p>When updating the firmware, "A" is the closest to bed, and "G" is the farthest from bed</p> <p>NOTE – "D" is the default.</p> <ul style="list-style-type: none"> If printing too close to the bed - Select a letter closer to G. If printing too far from the bed, select a letter closer to A. 	

6.4 Layer Shifting

Generally, only one type of malfunction can produce Y-axis layer shifting in the EVO: the shifting of the glass plate.

Steps	Images
<ul style="list-style-type: none"> The corner screws should NOT be fully tightened. This is to make sure the build plate is properly positioned. 	
<ul style="list-style-type: none"> The corner screw and attached nut should be able to move around (yellow arrows) as the full upward force of the spring (red arrow) clamps the underside of the glass. 	




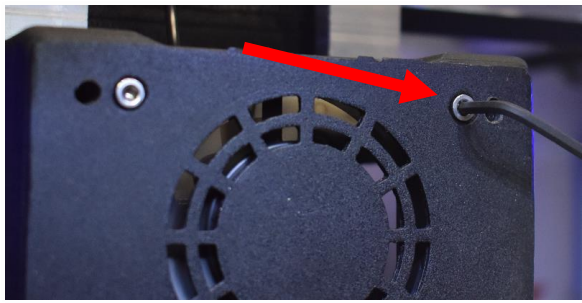
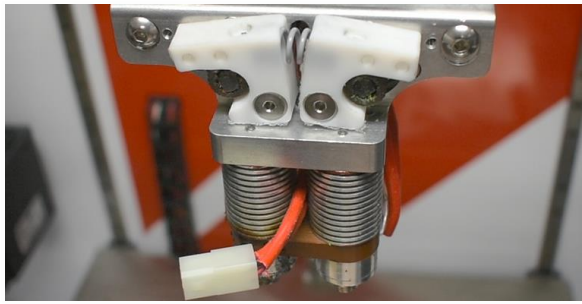
6.5 Filament Jam

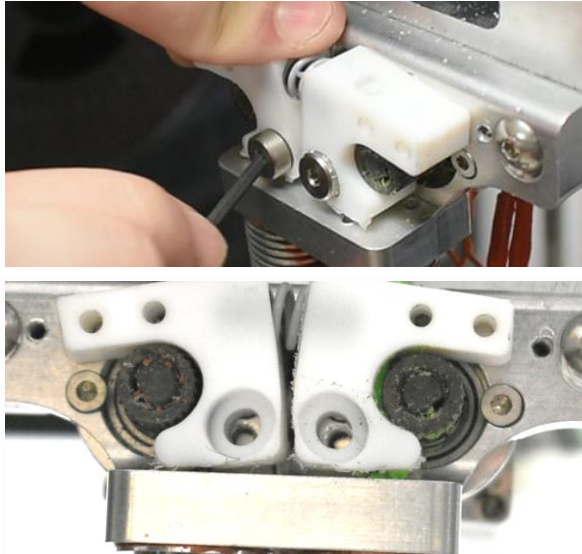

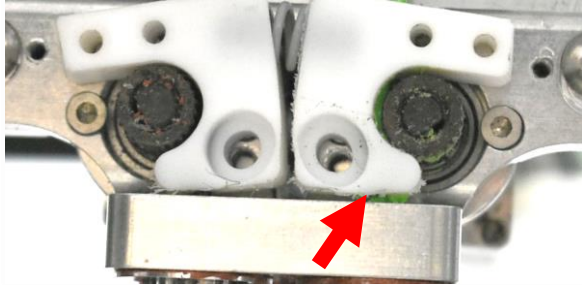
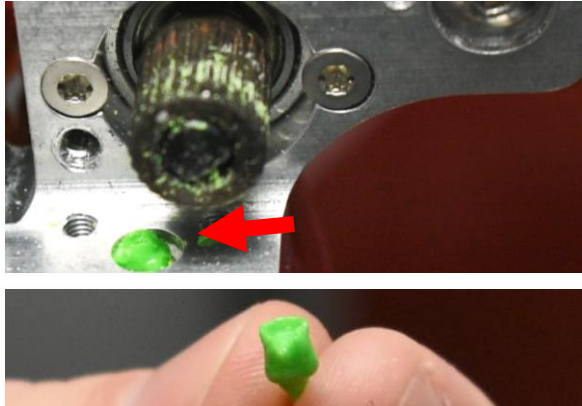

Steps	Images
<ol style="list-style-type: none"> Preheat nozzle to recommended temperature for loaded filament. 	
<ol style="list-style-type: none"> Touch the nozzle icon on the screen. 	
<ol style="list-style-type: none"> Override the target temperature by 20°, by sliding the orange needle on the dial. You may also use the left and right arrows to change the temperature. 	
<ol style="list-style-type: none"> Select FILAMENT CONTROL Select the jammed nozzle Press PRIME and push the filament into the feeder. 	
<ol style="list-style-type: none"> Repeat until filament exits tip of nozzle. 	
<ol style="list-style-type: none"> If filament will not extrude, press REMOVE, and see procedure in the following section. 	


6.5.1. Additional Filament Jam Procedure

The procedure below may be attempted if the previous procedure was not successful in clearing the jam.

WARNING!
This procedure must be followed as shown below. Any deviations from the procedure may result in serious printer damage and/or personal injury.

Steps	Images
1. Remove filament.	
2. Select COOL DOWN WARNING! Not allowing printer to cool down properly can result in serious burns.	
3. Place printer in SERVICE MODE.	
4. When printer is cooled, power down the printer.	
5. Remove the two (2) M3 screws that hold front cover in place.	
6. Remove the front cover. NOTE – It is not necessary to remove fan connection, but you may if you'd like.	

<p>7. Loosen and remove the two (2) M3 screws that hold feeder assembly.</p> <p>NOTE – You will need to use one hand to push the feeder assembly together, while you loosen the screws with the other hand.</p> <p>The spring in between the feeder assembly, pushes the screws off their central position, making it harder to loosen them. <i>(see image to the right)</i></p>	
<p>8. Push the feeder assembly together and pull towards you to remove.</p>	
<p>NOTE – If the feeder assembly is stuck, try using a razor blade to cut the filament between the feeder assembly and hot end mount.</p>	
<p>9. Clean debris off the feeder gears, entrance to the hot end, and the feeder assembly, using the handheld brass brush.</p> <p>10. See if you can locate the source of the jam. In this instance, the jam was at the entrance to the hot end.</p>	
<p>11. Once cleaned, replace the feeder assembly and the cover in reversed order.</p>	

<p>12. Power the printer back on.</p> <p>13. Test that the jam has cleared, by loading filament and priming.</p>	
<p>14. If this did not clear the jam, please contact TRAK's Customer Service for further assistance.</p>	

TRAK Warranty Policy

Warranty

TRAK products are warranted to the original purchaser to be free from defects in workmanship and materials for the following periods:

Product	Warranty Period
New TRAK/ProtoTRAK	1 Year
New 3ntr	1 Year
New Airwolf 3D	1 Year

The warranty period starts on the date of the invoice to the original purchaser from Southwestern Industries, Inc. (SWI) or their authorized distributor.

If a product, subsystem or component proves to be defective in workmanship and fails within the warranty period, it will be repaired or exchanged at our option for a properly functioning unit in similar or better condition. Such repairs or exchanges will be made FOB Factory/Los Angeles or the location of our nearest factory representative or authorized distributor.

Warranty Disclaimers

- This warranty is expressly in lieu of any other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on the part of TMT/SWI (or any producing entity, if different).
- Warranty repairs/exchanges do not cover incidental costs such as installation, labor, freight, etc.
- TMT/SWI is not responsible for consequential damages from use or misuse of any of its products.
- TRAK products are precision mechanical/electromechanical/electronic systems and must be given the reasonable care that these types of products require. Evidence that the product does not receive adequate Preventative Maintenance may invalidate the warranty. Excessive chips built up around ballscrews and way surfaces is an example of this evidence.
- Accidental damage, beyond the control of TMT/SWI, is not covered by the warranty. Thus, the warranty does not apply if a product has been abused, dropped, hit or disassembled.
- Improper installation by or at the direction of the customer in such a way that the product consequently fails, is considered to be beyond the control of the manufacturer and outside the scope of the warranty.
- Warranty does not cover wear items that are consumed under normal use of the product. These items include, but are not limited to: windows, bellows, wipers, filters, drawbars and belts.