

# **Grizzly** **Industrial, Inc.**®

## **MODEL G0923** **3D PRINTER** **OWNER'S MANUAL** *(For models manufactured since 05/20)*



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**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE  
OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.**

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 **WARNING!**

**This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.**

**Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.**

**The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.**

**The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.**

 **WARNING!**

**Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:**

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

**Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.**

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# INTRODUCTION

## Contact Info

We stand behind our machines! If you have questions or need help, contact us with the information below. Before contacting, make sure you get the **serial number** and **manufacture date** from the machine ID label. This will help us help you faster.

Grizzly Technical Support  
1815 W. Battlefield  
Springfield, MO 65807  
Phone: (570) 546-9663  
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager  
P.O. Box 2069  
Bellingham, WA 98227-2069  
Email: manuals@grizzly.com

## Manual Accuracy

We are proud to provide a high-quality owner's manual with your new machine!

We made every effort to be exact with the instructions, specifications, drawings, and photographs in this manual. Sometimes we make mistakes, but our policy of continuous improvement also means that **sometimes the machine you receive is slightly different than shown in the manual.**

If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at [www.grizzly.com](http://www.grizzly.com).

Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **Manufacture Date** and **Serial Number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation is available for your machine.

		MODEL GXXXX MACHINE NAME	
SPECIFICATIONS		▲ WARNING!	
Motor:	To reduce risk of serious injury when using this machine:		
Specification:	Read manual before operation.		
Specification:	Wear safety glasses and respirator.		
Specification:	Ensure safety glasses/respirator are properly adjusted/setup and		
Specification:	power is connected to grounded circuit before starting.		
Weight:	4. Make sure the motor has stopped and disconnect power before adjustments, maintenance, or service.		
	5. DO NOT expose to rain or dampness.		
	6. DO NOT modify this machine in any way.		
	7.		
	8.		
	9. Do not operate if you are tired, drowsy, or under the influence of drugs or alcohol.		
	10. Maintain machine carefully to prevent accidents.		
Manufactured for Grizzly in Taiwan			

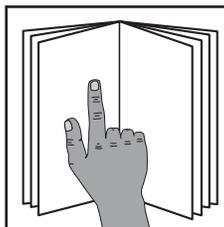
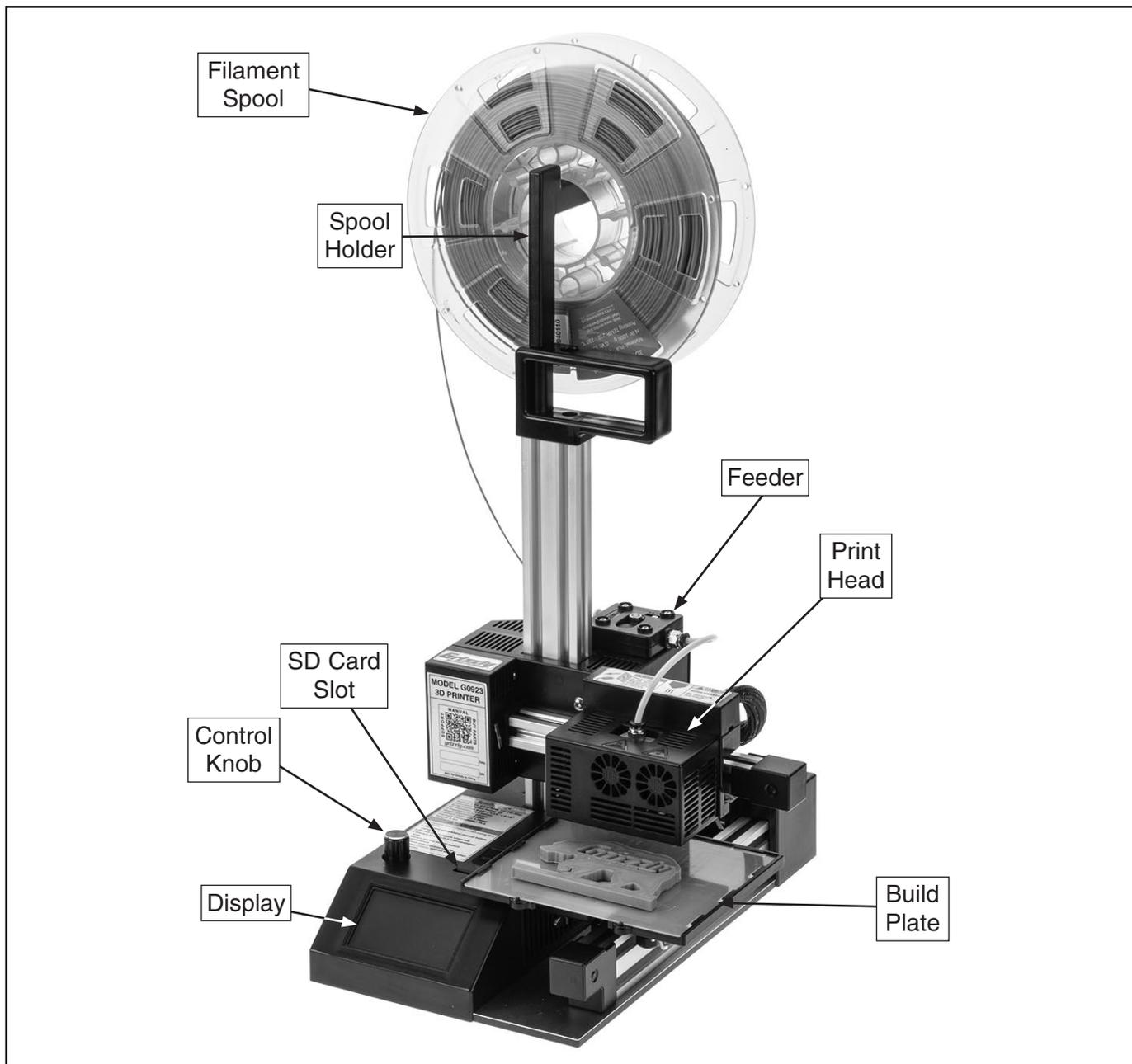
Manufacture Date

Serial Number



# Identification

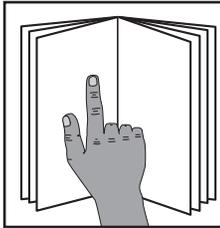
Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.



**⚠ CAUTION**  
To reduce risk of machine damage and injury, read this entire manual **BEFORE** using machine.



# Controls & Components



## ! WARNING

To reduce your risk of serious injury, read this entire manual **BEFORE** using machine.

Refer to the following figures and descriptions to become familiar with the basic controls and components of this machine. Understanding these items and how they work will help you understand the rest of the manual and minimize your risk of injury when operating this machine.

## Controls



Figure 1. Printer controls.

- A. Control Dial:** Press control dial to open menu or select menu item. Rotate control dial to move through menu options or change input value.
- B. SD Card Slot:** Printer reads G-code from SD card to print objects.
- C. Display:** Shows print status and machine menus. Refer to **Display** on next page for more information.

## Feeder & Print Head

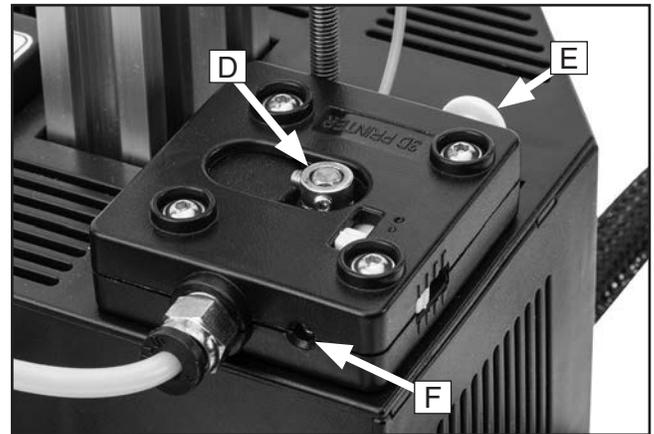


Figure 2. Feeder components.

- D. Hobbed Gear:** Rotates to push filament through feeder towards print head.
- E. Tensioner:** Presses filament against feed motor shaft.
- F. Tension Adjust Screw:** Adjusts tension that presses filament against hobbed gear.

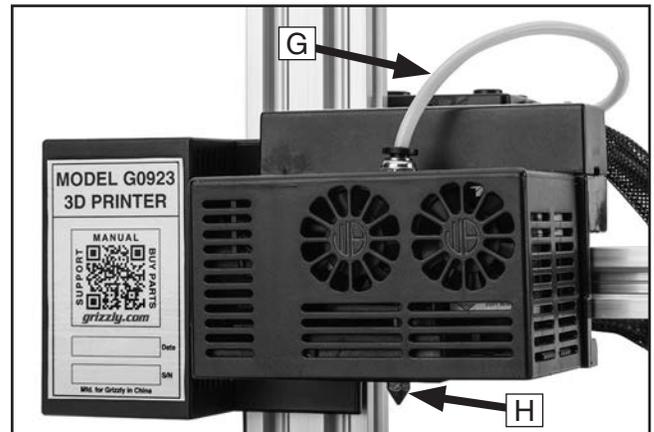
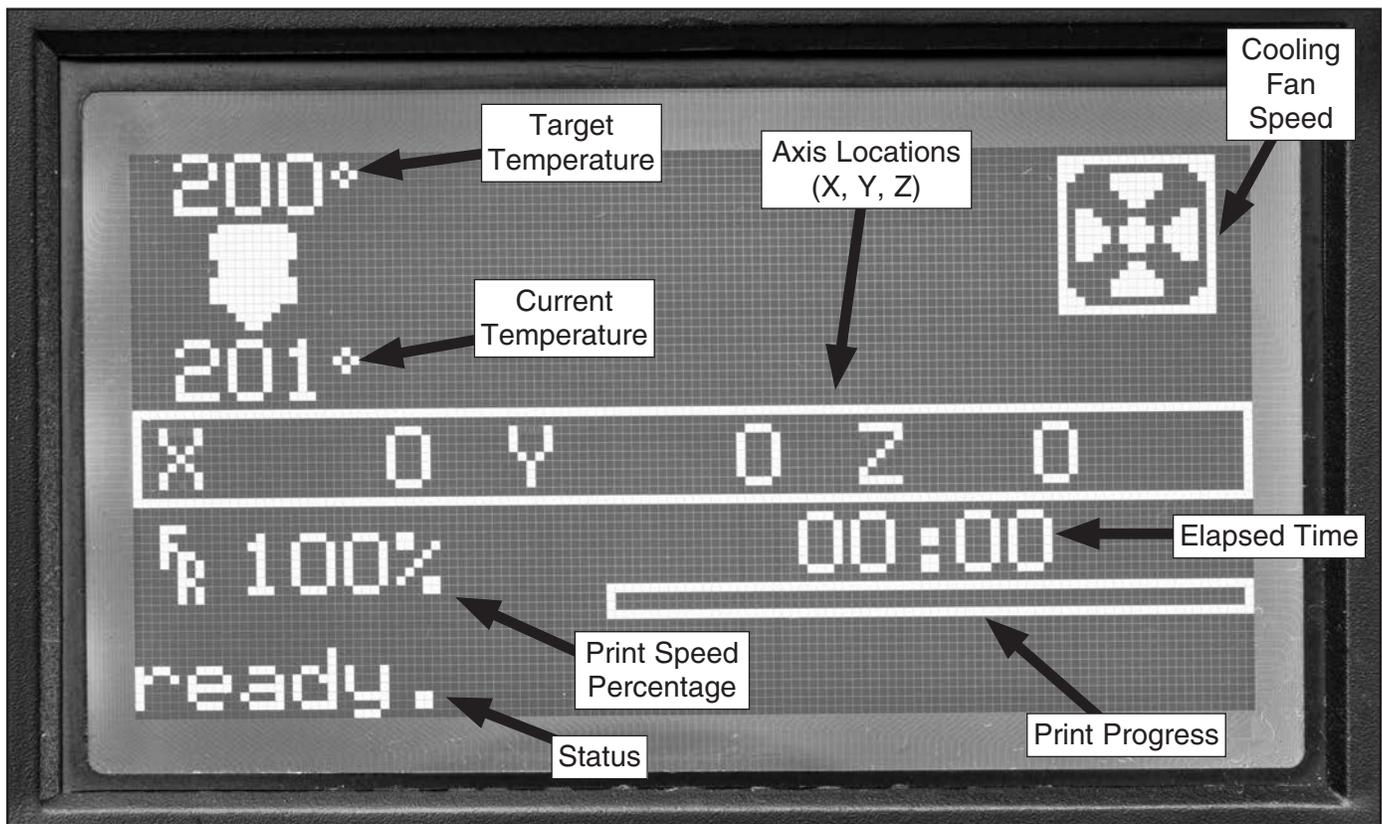


Figure 3. Print head.

- G. Bowden Tube:** Prevents filament from bending and breaking as it enters print head.
- H. Nozzle:** Extrudes molten filament at fixed diameter.



# Display



**Figure 4.** Display panel.

**Target Temperature:** Shows target nozzle temperature during preheating, cooling, or printing.

**Current Temperature:** Shows current nozzle temperature.

**Print Speed Percentage:** Shows print speed as a percentage of value set in G-code.

**Status:** Displays status of printer.

**Cooling Fan Speed:** Shows speed of cooling fan as a percentage of max speed.

**Axis Locations:** Shows current locations of each axis.

**Elapsed Time:** Shows time since print began.

**Print Progress:** Shows approximate progress of print as a progress bar.



# Glossary of Terms

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The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this 3D printer and 3D printing in general. Become familiar with these terms for assembling, adjusting or operating this machine.

**Axis:** Direction of movement. Three geometric axes are typically X (left-right), Y (front-back) & Z (up-down). In addition, G-code for 3D printers has an E-Axis that describes the length of filament that moves through the extruder.

**Bowden Tube:** A flexible tube that guides filament from the feeder to the print head. Bowden tubes are used in Bowden extruders, in which the feeder is not directly mounted to the print head.

**Build Plate:** A flat surface where the printer deposits molten filament.

**CAD (Computer-Aided Design):** CAD software is used to create a digital model of a project.

**Extruder:** The mechanism that pushes and pulls filament and deposits it on the build plate, including the feeder, heating elements, and nozzle.

**FFF (Fused Filament Fabrication):** A 3D printing process in which filament is extruded through a heated print head and deposited on the object being printed. Also known as FDM (fused deposition modeling), a trademarked term for the same process.

**G-Code:** A machine language that uses axis points and commands.

**Home Position:** A fixed point on the machine set with proximity switches. It is the zero point for X, Y, and Z axes.

**Hot End:** The heated portion of the extruder including heat sinks, heating block, and nozzle.

**Infill:** The interior material of a 3D printed object. Can often be printed at a lower density than the shell.

**Nozzle:** The component that funnels molten filament out of the print head, usually made of brass. The nozzle diameter determines the width of extruded filament.

**PLA:** A popular material used for 3D printer filament because it is non-toxic, affordable, and prints at a low temperature. It is often the first choice for rapid prototyping.

**Print Head:** The assembly of components from which filament is extruded. Often moves along all axes, although in some printers the build plate also moves.

**Print Speed:** Speed at which axis movement occurs, typically measured in mm/s.

**Resolution:** Often referred to as "build resolution" or "print resolution." It is the height of each layer of printed material.

**Support:** Extra material printed in order to allow overhangs and intricate geometry. Supports are typically printed at low density and can be removed from the object after printing.

**Shell:** The exterior surface of a 3D printed object. Typically the first part of each layer to be printed.

**Slicer:** Software that converts 3D models into G-code by "slicing" the model into many layers of movement commands.

**STL:** A common file type used to create and store 3D models.





# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G0923 3D PRINTER

### Product Dimensions:

Weight ..... 9 lbs.  
Width (side-to-side) x Depth (front-to-back) x Height ..... 12-1/2 x 13-1/2 x 17 in.  
Footprint (Length x Width) ..... 13-1/2 x 12-1/2 in.

### Shipping Dimensions:

#### Carton #1

Type..... Cardboard Box  
Content ..... Machine  
Weight ..... 15 lbs.  
Length x Width x Height..... 16 x 14 x 19 in.  
Must Ship Upright..... Yes

### Electrical:

Power Requirement ..... 120V, Single-Phase, 60 Hz  
Full-Load Current Rating..... 6A  
Minimum Circuit Size ..... 15A  
Connection Type..... Cord & Plug w/AC Adapter  
Power Cord Included ..... Yes  
Power Cord Length ..... 5 ft. w/Adapter  
Power Cord Gauge ..... 18 AWG  
Plug Included ..... Yes  
Included Plug Type ..... 5-15  
Switch Type ..... Toggle Switch on AC Adapter

### Motor:

#### X-Axis Stepper Motor

Frame Size ..... NEMA 17  
Amps ..... 1.5A  
Speed ..... 0 - 600 RPM  
Type..... Stepper (Brushless, Permanent Magnet)  
Power Transfer ..... Belt  
Step Resolution ..... 1.8 deg. Per Step

#### Y-Axis Stepper Motor

Frame Size ..... NEMA 17  
Amps ..... 1.5A  
Speed ..... 0 - 600 RPM  
Type..... Stepper (Brushless, Permanent Magnet)  
Power Transfer ..... Belt  
Step Resolution ..... 1.8 deg. Per Step



**Z-Axis Stepper Motor**

Frame Size .....	NEMA 17
Amps .....	1.5A
Speed .....	0 - 600 RPM
Type.....	Stepper (Brushless, Permanent Magnet)
Power Transfer.....	Belt
Step Resolution .....	1.8 deg. Per Step

**E-Axis Stepper Motor**

Frame Size .....	NEMA 17
Amps .....	1.5A
Speed .....	0 - 600 RPM
Type.....	Stepper (Brushless, Permanent Magnet)
Power Transfer.....	Belt
Step Resolution .....	1.8 deg. Per Step

**Main Specifications:**

**Printing Information**

Maximum Build Volume.....	4-5/8 x 4-5/8 x 6-1/8 in.
XY Resolution.....	12.5 micron
Layer Resolution .....	40 - 250 micron
XY Precision .....	12.5 micron
Z Precision .....	0.25 micron
Print Speed.....	50 - 100 mm/s
Number of Extruders .....	1
Nozzle Diameter.....	0.4 mm
Filament Compatibility .....	PLA
Filament Diameter .....	1.75 mm
Print File Type .....	.GCODE

**Software Information**

Included Software.....	Grizzly Winware
Supported OS.....	Windows
Supported Object File Types.....	.STL, OBJ, DAE, AMF, 3MF

**Construction**

Build Plate .....	Plastic
Rails.....	Steel

**Other Related Information**

Connectivity .....	USB, SD Card
Display.....	3.2 in. LCD
Controls .....	Rotary Dial
Build Plate Leveling.....	Factory Leveled
Print Technology .....	FFF
Operating Temperature .....	50 - 104 deg. F
Storage Temperature .....	50 - 104 deg. F

**Other Specifications:**

Country of Origin.....	China
Warranty.....	1 Year
Serial Number Location .....	ID Label
ISO 9001 Factory.....	Yes

**Features:**

- Portable Design w/Handle
- Plastic Build Plate
- Digital Display
- Prints from PC via USB Cable or SD Card



# SECTION 1: SAFETY

## For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE**

Alerts the user to useful information about proper operation of the machine to avoid machine damage.

## Safety Instructions for Machinery

### **WARNING**

**OWNER'S MANUAL.** Read and understand this owner's manual **BEFORE** using machine.

**TRAINED OPERATORS ONLY.** Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make your workshop kid proof!

**DANGEROUS ENVIRONMENTS.** Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

**MENTAL ALERTNESS REQUIRED.** Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

**ELECTRICAL EQUIPMENT INJURY RISKS.** You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

**DISCONNECT POWER FIRST.** Always disconnect machine from power supply **BEFORE** making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

**EYE PROTECTION.** Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are **NOT** approved safety glasses.



# WARNING

**WEARING PROPER APPAREL.** Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

**HAZARDOUS DUST.** Dust created by machinery operations may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material. Always wear a NIOSH-approved respirator to reduce your risk.

**HEARING PROTECTION.** Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

**REMOVE ADJUSTING TOOLS.** Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

**USE CORRECT TOOL FOR THE JOB.** Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

**AWKWARD POSITIONS.** Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

**CHILDREN & BYSTANDERS.** Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

**GUARDS & COVERS.** Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly BEFORE operating machine.

**FORCING MACHINERY.** Do not force machine. It will do the job safer and better at the rate for which it was designed.

**NEVER STAND ON MACHINE.** Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

**STABLE MACHINE.** Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

**USE RECOMMENDED ACCESSORIES.** Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

**UNATTENDED OPERATION.** To reduce the risk of accidental injury, turn machine **OFF** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

**MAINTAIN WITH CARE.** Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

**DAMAGED PARTS.** Regularly inspect machine for damaged, loose, or mis-adjusted parts—or any condition that could affect safe operation. Immediately repair/replace BEFORE operating machine. For your own safety, DO NOT operate machine with damaged parts!

**MAINTAIN POWER CORDS.** When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

**EXPERIENCING DIFFICULTIES.** If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.



# Additional Safety for 3D Printers

## **WARNING**

Serious burns can occur from contact with the nozzle. Gas and ultrafine particles may be released during operation. Avoid extended proximity to printer when printing in an enclosed space. To reduce these risks, anyone operating this machine **MUST** completely heed the hazards and warnings below.

**HOT COMPONENTS.** When heated, nozzle and heated build plate can burn immediately on contact. Do not touch nozzle or build plate when hot. Allow components time to cool before performing maintenance.

**MAINTENANCE/SERVICE.** Always stop printer and wait for parts to come to a stop before making adjustments or servicing.

**PINCH HAZARD.** Do not reach into machine or touch built plate during operation. Injury may occur if operator comes into contact with moving parts.

**ADEQUATE VENTILATION.** Filament may produce ultrafine particles or toxic gasses. Exact health risks vary depending on filament used. Make sure work area is adequately ventilated. PLA filament is recommended to minimize health risks.

**FIRE HAZARD.** Do not leave printer unattended for extended periods of time, and always stop and unplug printer if printing error occurs. Ensure smoke alarms are installed near printer and fire extinguishers are easily accessible.

## **WARNING**

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

## **CAUTION**

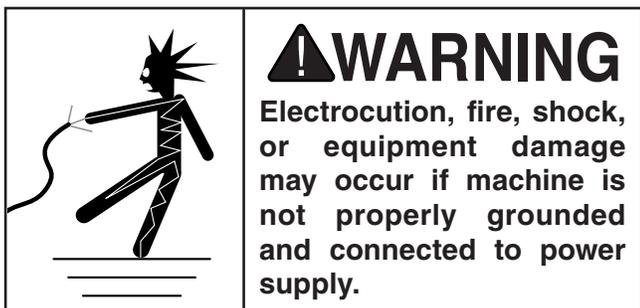
No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.



# SECTION 2: POWER SUPPLY

## Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with all applicable codes and standards.



## Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

### Full-Load Current Rating at 120V ..... 6 Amps

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

## **! WARNING**

**Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.**

## 120V Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

**Nominal Voltage ..... 110V, 115V, 120V**  
**Cycle ..... 60 Hz**  
**Phase ..... Single-Phase**  
**Power Supply Circuit ..... 15 Amps**

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

## **! CAUTION**

**For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.**

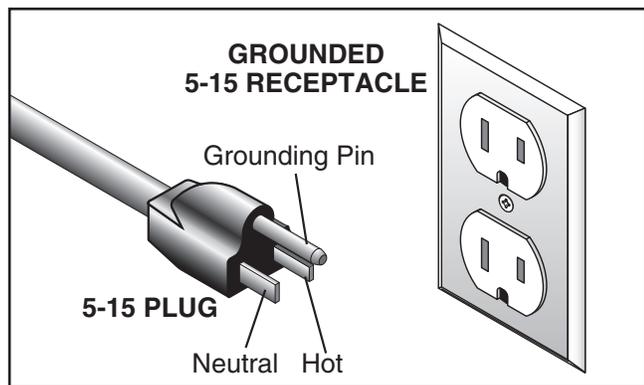
**Note:** *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*



## Grounding & Plug Requirements

This machine **MUST** be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. **DO NOT** modify the provided plug!



**Figure 5.** Typical 5-15 plug and receptacle.

**⚠ CAUTION**

**SHOCK HAZARD!**

**Two-prong outlets do not meet the grounding requirements for this machine. Do not modify or use an adapter on the plug provided—if it will not fit the outlet, have a qualified electrician install the proper outlet with a verified ground.**

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

## Extension Cords

We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which can damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

**Minimum Gauge Size ..... 16 AWG**  
**Maximum Length (Shorter is Better).....50 ft.**



# SECTION 3: SETUP

## Unpacking

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. ***If items are damaged, please call us immediately at (570) 546-9663.***

**IMPORTANT:** Save all packaging materials until you are completely satisfied with the machine and have resolved any issues between Grizzly or the shipping agent. ***You MUST have the original packaging to file a freight claim. It is also extremely helpful if you need to return your machine later.***

## Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Main Inventory (Figure 6)	Qty
A. 3D Printer .....	1
B. PLA Filament 1.75mm .....	1
C. USB Type B Cable .....	1
D. Glue Stick .....	1
E. Build Plate .....	1
F. Bowden Tube (Spare Part) .....	1
G. Socket Wrench 6mm .....	1
H. Spool Hanger .....	1
I. Power Adapter .....	1
J. SD Card 8GB .....	1
K. SD to USB Reader .....	1
L. Power Cord .....	1

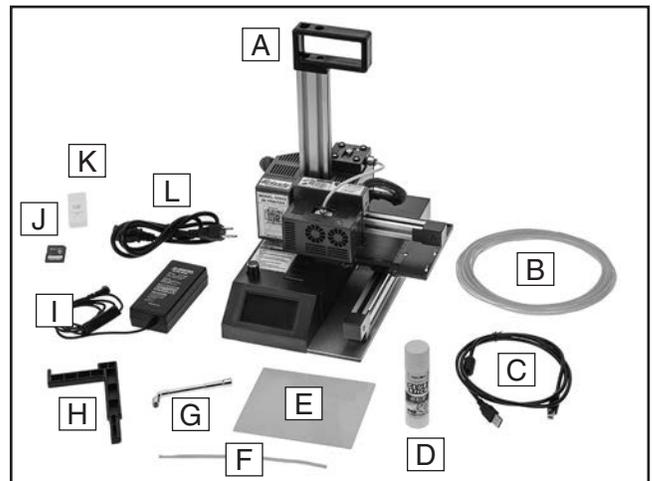


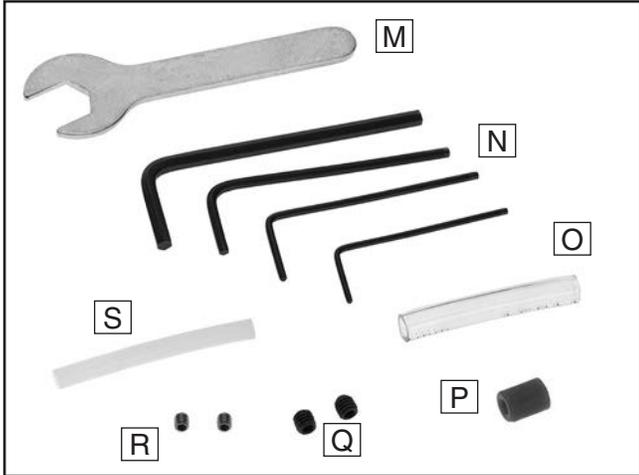
Figure 6. Main inventory.

## NOTICE

**If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.**



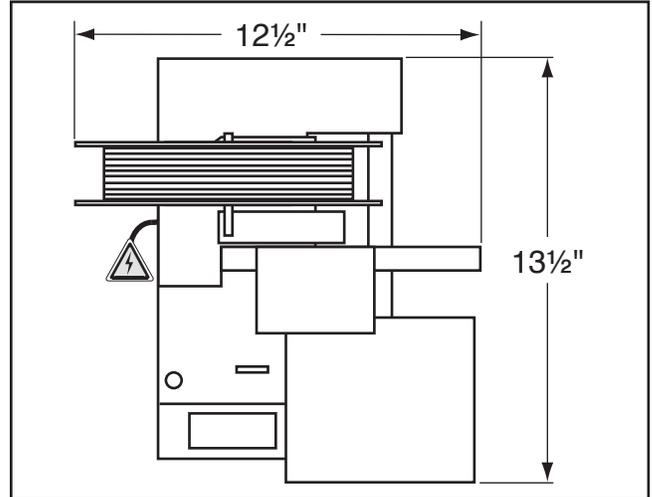
<b>Parts &amp; Tools Bag (Figure 7)</b>		<b>Qty</b>
<b>M.</b>	Open-End Wrench 10mm.....	1
<b>N.</b>	Hex Wrenches 1.5, 2, 2.5, 3mm.....	1 Ea
<b>O.</b>	Leadscrew Connection Housing (Spare Part) .....	1
<b>P.</b>	Insulated Spacer (Spare Part) .....	1
<b>Q.</b>	Set Screw M4-.7 x 4 (Spare Parts).....	2
<b>R.</b>	Set Screw M3-.5 x 3 (Spare Parts) .....	2
<b>S.</b>	Insulated Tubing (Spare Part).....	1



**Figure 7.** Parts and tools bag.

## Site Considerations

Consider anticipated space needed around printer to access printed objects and other machinery nearby when establishing a location for this machine. Below is the minimum amount of space needed for the printer.



**Figure 8.** Minimum working clearances.

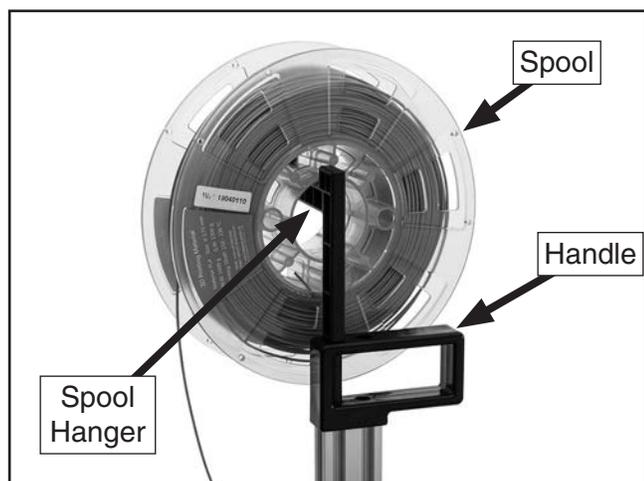


# Assembly

The Model G0923 is nearly ready to print right out of the box! Assembly includes attaching the spool hanger and connecting the power cord.

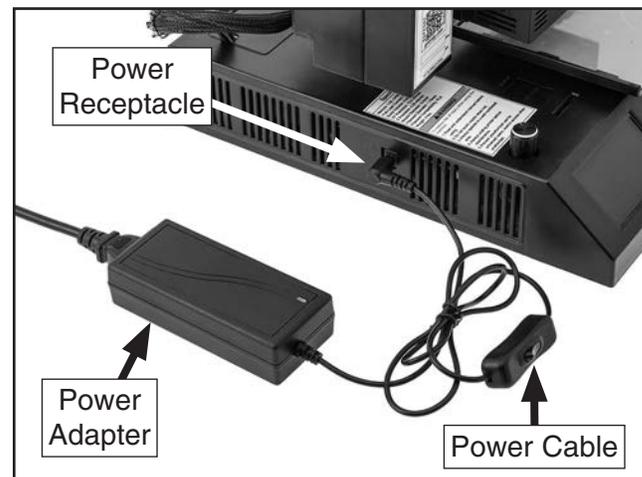
## To assemble machine:

1. Insert spool hanger into handle (see **Figure 9**).
2. Hang spool of PLA filament on spool hanger (see **Figure 9**).



**Figure 9.** PLA spool and hanger.

3. Connect power adapter to power cord (see **Figure 10**).
4. Connect power adapter to machine (see **Figure 10**).



**Figure 10.** Power adapter connected to machine.



# Test Run

---

Once assembly is complete, test run the machine to ensure it is properly connected to power and safety components are functioning correctly.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The **Troubleshooting** table in the **SERVICE** section of this manual can help.

The Test Run consists of verifying the following: 1) The machine powers up correctly, and 2) the axis motors run correctly and the machine properly homes.

## CAUTION

**Injury or product damage can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.**

## CAUTION

**DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to injury, poor work results, or machine/property damage.**

### To test run machine:

1. Clear all setup tools away from machine.
2. Connect machine to power supply.
3. Press switch on power adapter to turn machine **ON**.
4. Press control dial to enter main menu, then navigate to "Auto Home." Verify that the X-, Y-, and Z-axis motors operate smoothly and that all axes move to machine zero.

# Installing Software

---

Grizzly Winware slicer software is included on the SD card that comes with the Model G0923.

**Note:** *We recommend backing up the installation files by copying them from the included SD card to a location on your computer. If installation files are lost, they can also be downloaded from the G0923 product page at [www.grizzly.com](http://www.grizzly.com).*

### To install slicer software:

1. Insert SD card into USB adapter, then insert adapter into PC.
2. On the SD card, navigate to and open .EXE installation file.
3. Follow directions in installation wizard.
4. When opening the software for the first time, select Model G0923 as the default printer.



# SECTION 4: OPERATIONS

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## Operation Overview

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The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual, seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.



## NOTICE

If you are not experienced with this type of machine, **WE STRONGLY RECOMMEND** that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

To complete a typical operation, the operator does the following:

1. Creates or downloads 3D model.
2. Uses slicer software to prepare .GCODE file, then loads file onto SD card.
3. Ensures build plate is clean and level.
4. Applies adhesive to build plate.
5. Preheats nozzle.
6. Loads filament into machine.
7. Starts print.
8. Removes model from build plate when print is complete.



# Preparing 3D Models

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Before an object can be printed, a 3D model must be converted into G-code by slicer software. Most 3D models are saved as .STL files, and there are many resources available to download .STL files for use with 3D printers. In addition, there is a wide range of free CAD software available for those interested in creating their own models.

## Downloading 3D Models

Many free resources exist that provide 3D models for download. Of note, [www.thingiverse.com](http://www.thingiverse.com) is a repository of over a million 3D models available for free download. Most of these are shared via a creative commons license, allowing users to adapt and redistribute models for non-commercial purposes as long as proper credit is given.

## Creating 3D Models

**TinkerCAD**, **FreeCAD**, **SketchUP Free**, and **Blender** are free-to-use design software. These programs have different strengths and weaknesses, and are listed here in approximate order of complexity. The details of using CAD software are beyond the scope of this manual, but any of the software above is a great place to start for anyone interested in creating their own 3D models.



**Figure 11.** Grizzly bear model created in TinkerCAD.



# Navigating Slicer Software

Slicer software converts 3D models from their inherent format (typically .STL) into G-code that can be interpreted by the Model G0923. This conversion is mostly automated, but users have the ability to manipulate the model and change print settings in order to customize the print and maximize quality.

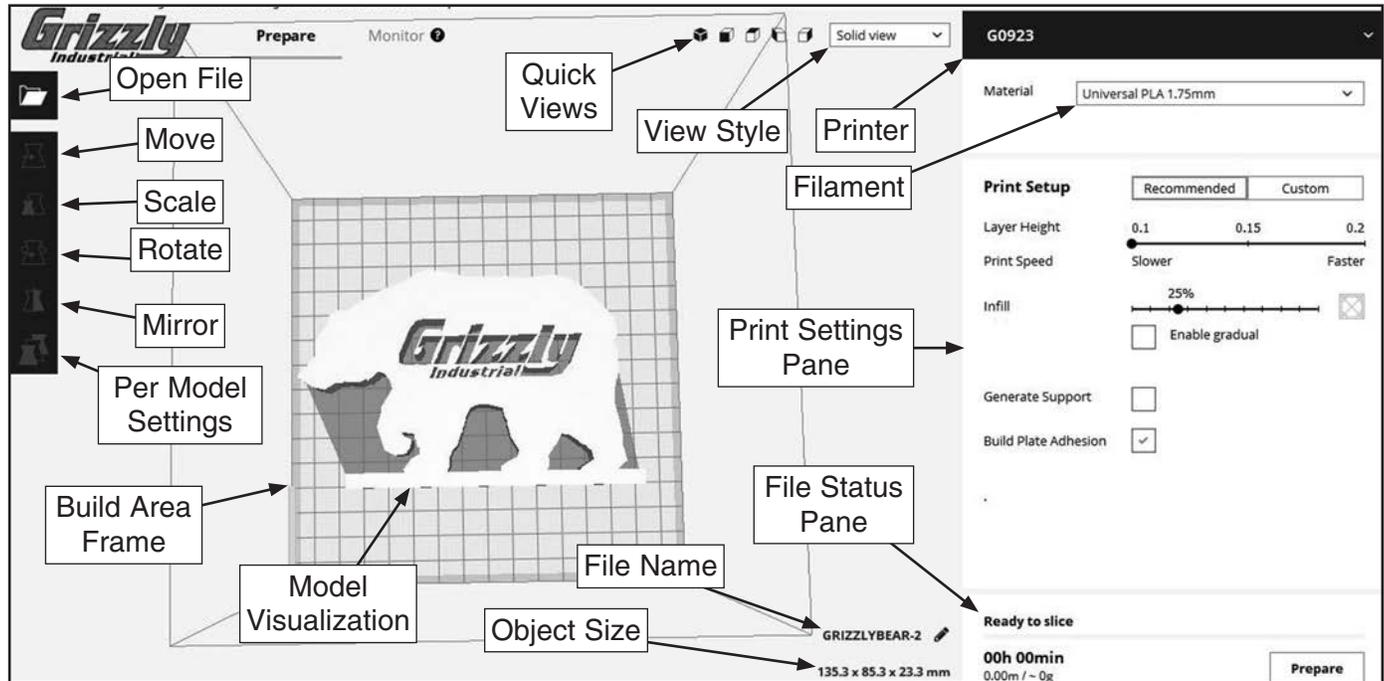


Figure 12. Slicer software user interface.

**Open File:** Opens 3D model in Grizzly Winware slicer.

**Move:** Enters move model mode. Refer to **Manipulating Models** on **Page 22**.

**Scale:** Enters scale model mode. Refer to **Manipulating Models** on **Page 22**.

**Rotate:** Enters rotate model mode. Refer to **Manipulating Models** on **Page 22**.

**Mirror:** Enters mirror model mode. Refer to **Manipulating Models** on **Page 22**.

**Per Model Settings:** Opens menu for model-specific settings when printing multiple models at once.

**Build Area Frame:** Shows build area of selected printer.

**Model Visualization:** Shows model within build area. Right-click and drag to rotate view. Scroll mouse wheel to zoom.

**Object Size:** Shows print object max dimensions based on current scaling.

**File Name:** File name of .GCODE file to be exported. Defaults to name of 3D model file.

**File Status Pane:** Location of button to slice model and save .GCODE file. Once sliced, shows file size and print time.

**Print Settings Pane:** Location of settings that modify print quality. Can toggle between recommended (simple) and custom settings. Refer to **Adjusting Print Settings** on **Page 23**.

**Filament:** Use dropdown to choose filament.

**Printer:** Use dropdown to choose appropriate printer or add new printer.

**View Style:** Choose between solid, layer, and X-ray view. Solid view is default.

**Quick Views:** Changes camera orientation.

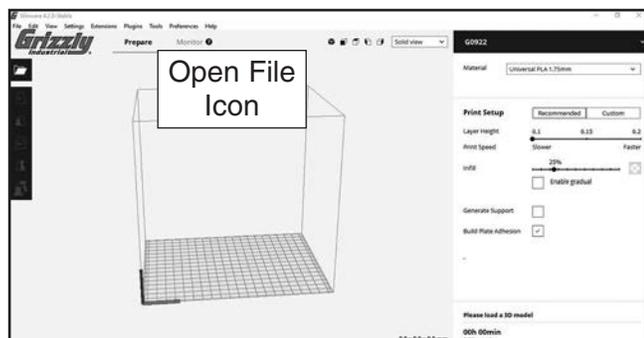


## Slicing

Once you have a 3D model to print, it must be processed with slicer software. The slicer takes a 3D model and breaks it into layers (slices), converting each into a series of G-code commands that instruct the printer how to move. The end result is a text-based .GCODE file that your printer can read.

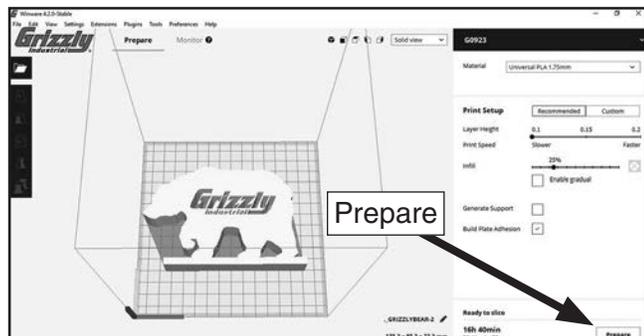
### To generate G-code in slicer software:

1. Insert SD card into USB adapter, then insert adapter into computer.
2. Open Grizzly Winware slicer software.
3. Select "Open File" icon (see **Figure 13**), then navigate to and select .STL file to print. A visualization of 3D model will appear in object viewer.



**Figure 13.** Location of open file icon.

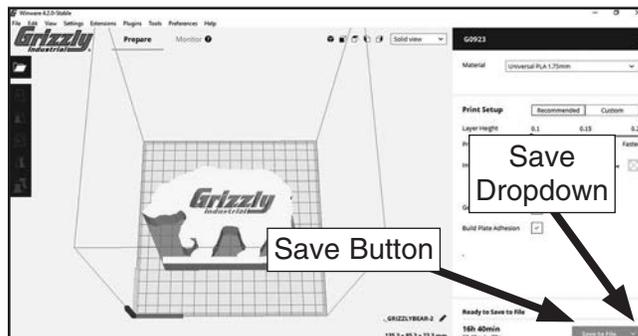
4. Adjust model based on your printing needs. Refer to **Manipulating Model** on **Page 22** and **Adjusting Print Settings** on **Page 23** for more detailed information.
5. Select the "Prepare" button (see **Figure 14**). It will take a few seconds to prepare the file.



**Figure 14.** Location of prepare button.

6. Select "Save to File" (see **Figure 15**).

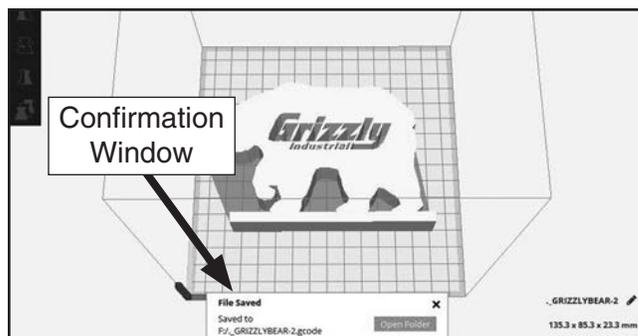
— If "Save to File" is not shown, open save dropdown and select "Save to File" option.



**Figure 15.** Location of save button.

**Note:** We recommend saving file to computer hard drive, then moving it to SD card in order to minimize chance of file corruption.

7. Navigate to save location and select OK. A window will open confirming save location (see **Figure 16**).



**Figure 16.** File saved confirmation.

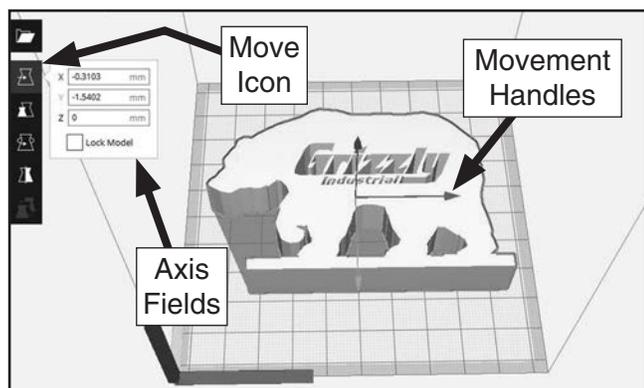


## Manipulating Models

The slicer software has controls that allow the .STL model to be manipulated—moved, scaled, and rotated—before it is printed.

### Moving Models

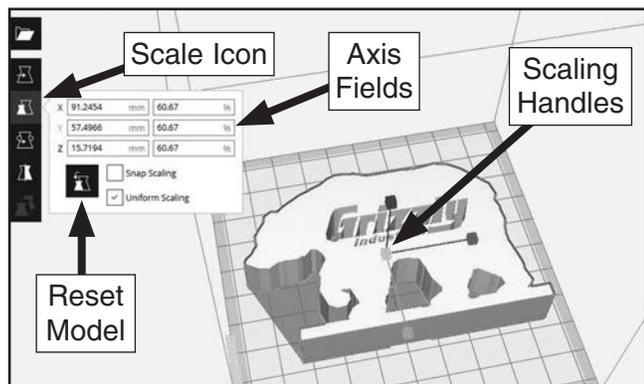
The Move icon (see **Figure 17**) opens move model mode. When this mode is active, the selected model can be moved by dragging the X, Y, and Z handles. Alternatively, the model can be moved a set distance by inputting a value in the appropriate axis field. Selecting "Lock Model" will prevent the model from being moved.



**Figure 17.** Move model mode.

### Scaling Models

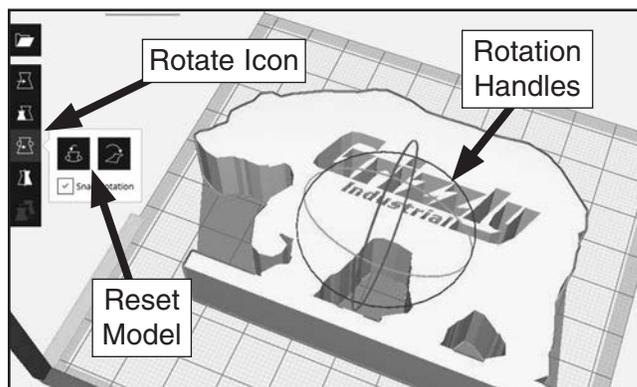
The Scale icon (see **Figure 18**) opens scale model mode. When this mode is active, the selected object can be scaled by dragging the X, Y, and Z handles. Alternatively, the model can be scaled a set amount by inputting a distance or percentage value in the appropriate axis field. While "Uniform Scaling" is selected, axes are linked and will scale equally. Scaling while this option is deselected will only scale the selected axis, stretching the model. Select "Reset Model" icon to return model to the size defined by the .STL file.



**Figure 18.** Scale model mode.

### Rotating Models

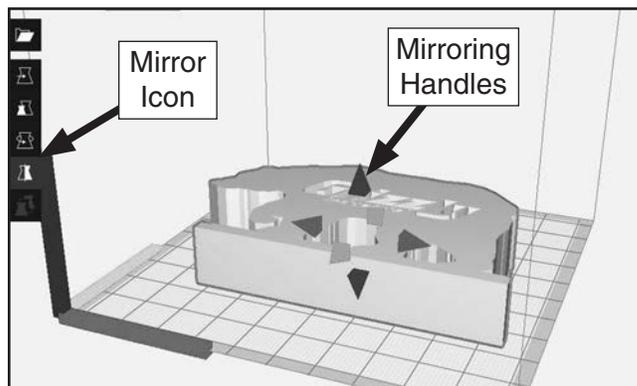
The Rotate icon (see **Figure 19**) opens rotate model mode. When this mode is active, the selected model can be rotated around an axis by dragging the corresponding handles. While "Snap Rotation" is selected, the model rotates in 15° increments. Selecting the "Reset Model" icon returns the model to the position defined by the .STL file.



**Figure 19.** Rotate model mode.

### Mirroring Models

The Mirror icon (see **Figure 20**) opens mirror model mode. When this mode is active, the selected model can be flipped over an axis by selecting the corresponding handle that appears in the visualizer.



**Figure 20.** Mirror model mode.

### Camera Orientation

The camera angle can be changed by clicking the quick view buttons at the top of the screen (see **Figure 12** on **Page 20**). The view can be rotated by right-clicking the mouse and dragging it, or panned by alt-clicking the mouse (usually the middle-mouse button) and dragging it. Scrolling the mouse wheel zooms the view in and out.

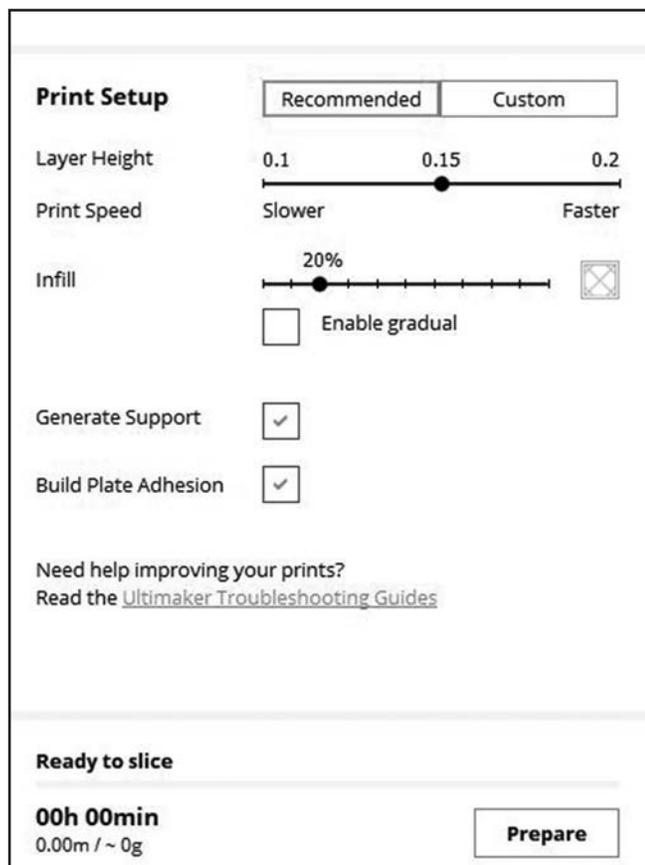


## Adjusting Print Settings

The included slicer software has many options for adjusting the parameters of a print. Learning how to fine-tune your printing is an essential part of producing high-quality 3D printed objects.

### Recommended Print Setup

The recommended print setup pane is selected by default. This pane includes basic settings that modify the speed and durability of your prints. Most prints can be set up using the recommended setup pane (see **Figure 21**).



**Figure 21.** Recommended print settings.

**Layer Height/Print Speed:** This slider can change the layer height between 0.1, 0.15, and 0.2mm. A smaller layer height results in more layers overall, which increases overall resolution of the printed object but drastically increases the print time.

**Infill:** Changes the percentage infill for the print from 0–100%. 100% infill will result in a completely solid object. 0% infill will result in a hollow interior. Depending on the model, 0% infill may not be possible if the shell cannot support itself. In general, an infill of 15–30% is appropriate for most prints, but can be modified for an expedited print time or to create an object that needs extra durability.

**Enable Gradual:** This setting automatically determines the infill based on the model, increasing the infill percentage towards the top and bottom of the print. This setting can be used to resolve "bubbling" that occurs, where the top layers of the print do not cool properly and sink into the infill.

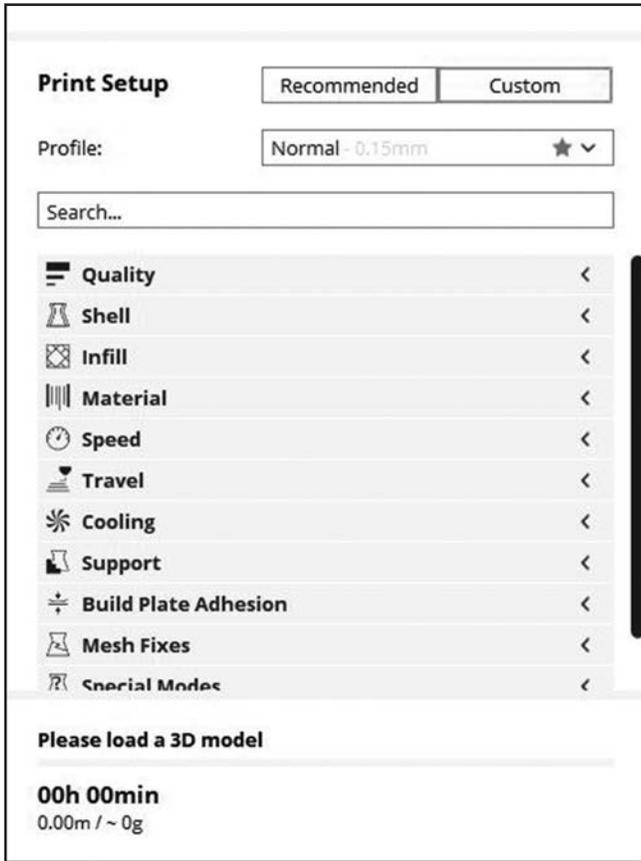
**Generate Support:** This setting automatically generates support structures wherever the model overhangs. In general, this setting should be selected.

**Build Plate Adhesion:** The setting automatically prints a rim around the base of the object. A rim makes the printed object easier to remove from the build plate and reduces the likelihood of warping. The rim must be removed from the object after completion.



### Custom Print Setup

For tasks that require very specific settings and resolving print-quality issues, print settings can be precisely calibrated through the custom print setup pane. To open the custom pane, select the "Custom" button (see **Figure 22**).



**Figure 22.** Custom print settings.

We suggest using the recommended settings with your initial prints and moving to the custom settings when you have a specific need. Because the range of options is so wide, giving detailed instructions for the custom settings is beyond the scope of this manual. However, most settings are universal across 3D printers and slicer software. As you learn about 3D printing from other sources, you will find that the custom print setup has the options you need to make successful prints.

## Leveling Build Plate

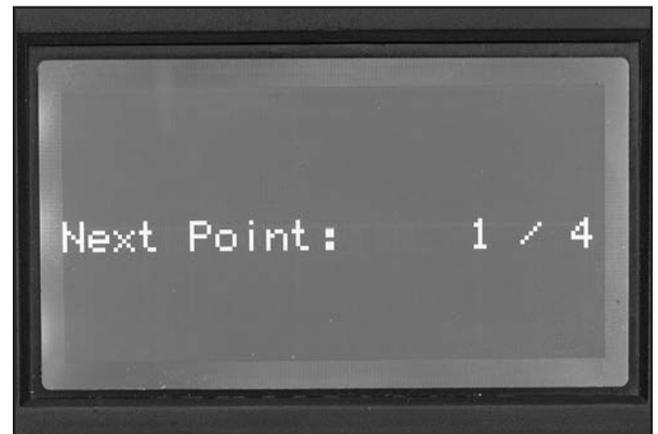
The build plate must be level to ensure molten filament adheres properly and the nozzle does not snag on previous layers. In addition to providing a flat surface, leveling the build plate sets the Z height of your nozzle, which is essential for proper build plate adhesion.

### Automatic Leveling

Tools Needed	Qty
Sheet of Paper .....	1

#### To level build plate with automatic function:

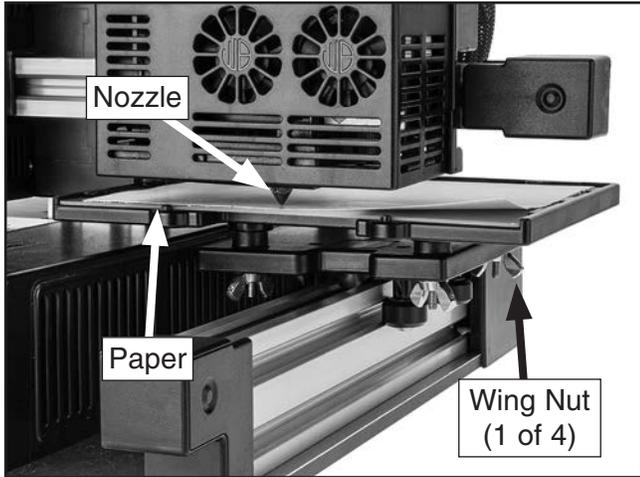
1. Press control dial to open main menu.
2. Navigate to "Prepare," then to "Level bed." Axes will home, and "Click to Begin" will appear on display.
3. Press control dial to begin. Nozzle will move to a corner of the build plate and lower until Z-axis limit switch is engaged. Display will indicate next axis position (see **Figure 23**).



**Figure 23.** Display during leveling.



- Slide paper under nozzle (see **Figure 24**). Adjust wing nut under nozzle until nozzle barely touches paper.



**Figure 24.** Paper used to measure leveling adjustments.

**Note:** *There should be noticeable resistance, but paper should not be difficult to move.*

- Remove paper and press control dial. Nozzle will move to next corner.
- Repeat **Steps 4–5** until each corner has been leveled. Axes will home.
- Repeat **Steps 1–5** and check that nozzle height remains equal across all four points.
  - If distance between nozzle and build plate is equal across all four points, the leveling process is complete.
  - If distance between nozzle and build plate is NOT equal across all four points, repeat the leveling process.

## Manual Leveling

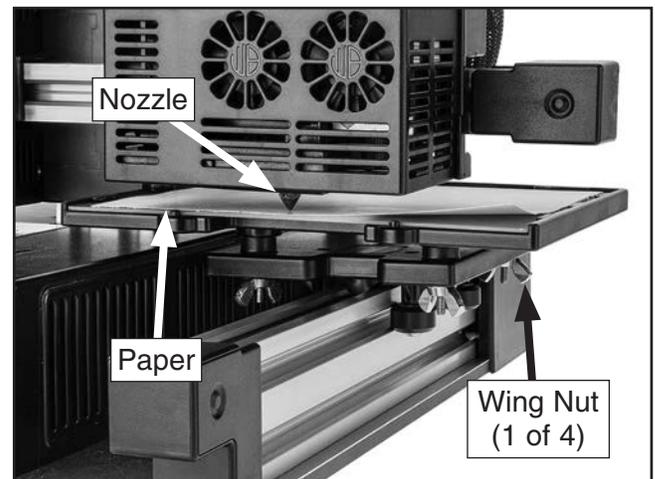
### Tools Needed

**Qty**

Sheet of Paper ..... 1

### To level build plate:

- Navigate to "Auto Home" from main menu. Wait for axes to home.
- Move axes so nozzle is over front-left corner of build plate. For more information, refer to **Moving Axes on Page 30**.
- Slide paper under nozzle (see **Figure 25**). Adjust wing nut under nozzle until nozzle barely touches paper.



**Figure 25.** Paper used to measure leveling adjustments.

**Note:** *There should be noticeable resistance, but paper should not be difficult to move.*

- Remove paper and repeat **Steps 2–3** for each corner of build plate.
- Move axes so nozzle passes over each corner of build plate and check that nozzle height remains equal.
  - If distance between nozzle and build plate is equal across entire build plate, the leveling process is complete.
  - If distance between nozzle and build plate is NOT equal across entire build plate, repeat the leveling process.



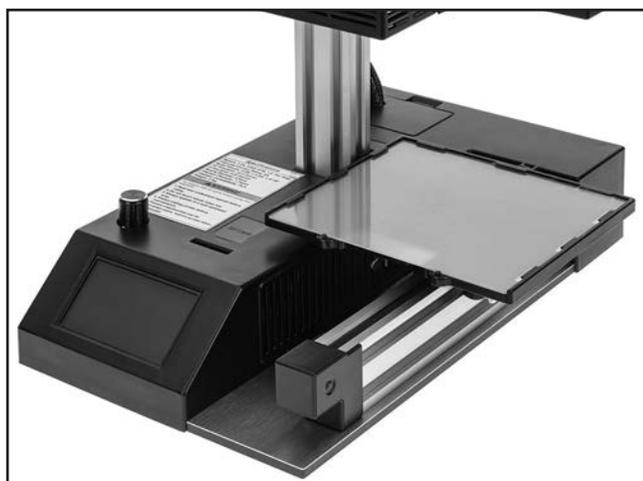
# Preparing Build Plate

---

Before printing, adhesive must be applied to the build plate to ensure first layer of filament sticks and does not warp.

## To prepare build plate:

1. Use glue stick to apply thin layer of glue to surface of build plate. Glue should be evenly distributed, without noticeable chunks or high points.
2. Slide build plate into build platform. Ensure build plate slides fully into position (see **Figure 26**).



**Figure 26.** Build plate with glue applied and in position on build platform.

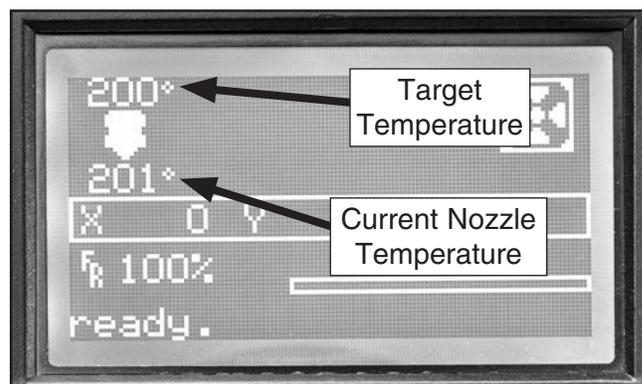
# Preheating Nozzle

---

The nozzle must be preheated before changing filament or starting a print. 200-205° C is the typical print temperature for PLA filament. Always use temperature settings recommended by the filament manufacturer.

## Preheating

1. Press control dial to open main menu.
2. Navigate to "Preheat" and press control dial to start process. Display will return to status screen and current temperature will begin to change as nozzle heats up. Preheating stops when current nozzle temperature matches target temperature (see **Figure 27**).



**Figure 27.** Preheating temperature indicators on status screen.

## Canceling Preheating Process

1. Press control dial to open main menu.
2. Navigate to "Cooldown" and press control dial to start cooldown process.

## Changing Preheat Temperature

1. Press control dial to open main menu.
2. Use control dial to navigate to "Control" > "Temperature" > "Preheat Conf" > "Nozzle."
3. Rotate control dial to change preheat temperature. Press control dial to confirm.

**Note:** *Changing preheat temperature does not change print temperature. Once printing starts, G-code controls the print temperature based on print settings in the slicer software.*



# Printing

Typically, the Model G0923 prints from a .GCODE file stored on an SD card. Print settings such as print speed, fan speed, and nozzle temperature can be changed during printing, and the operation can be paused for an extended period of time and resumed.

## Starting Print

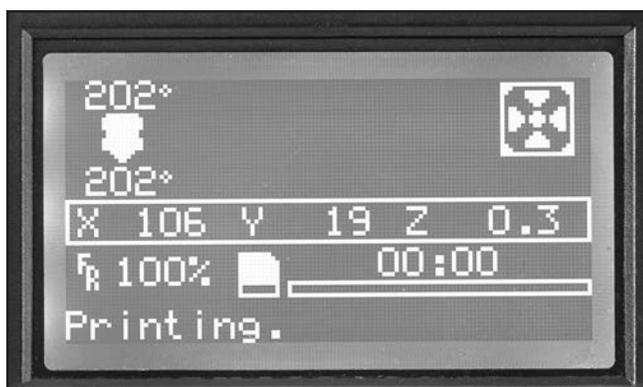
1. Prepare .GCODE file following instructions, in **Slicing** on **Page 21**, and load it to SD card.
2. Insert SD card into SD slot (see **Figure 28**).



**Figure 28.** SD slot above display.

3. Press control dial to open main menu.
4. Use control dial to select "Print from SD," navigate to prepared file, then press control dial. Axes will home, then printing will begin.

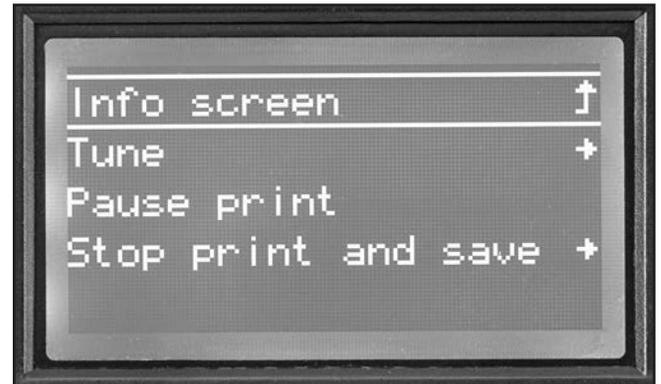
**Note:** During printing, display returns to status screen (see **Figure 29**).



**Figure 29.** Print status screen.

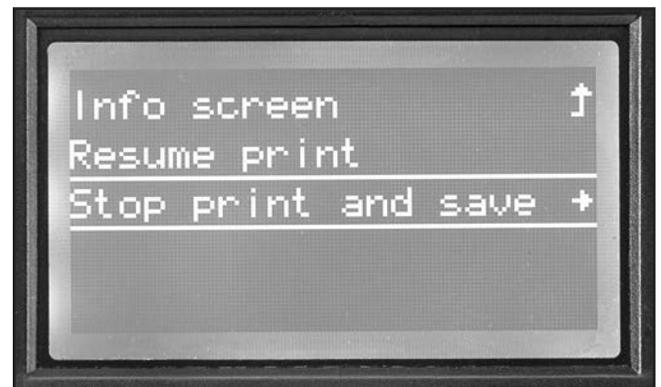
## Pausing Print

1. During printing, press control dial to open print menu (see **Figure 30**).



**Figure 30.** Print menu.

2. Select "Pause print." Z-axis will raise while X and Y axes home, then printer will stop and pause menu will open (see **Figure 31**).



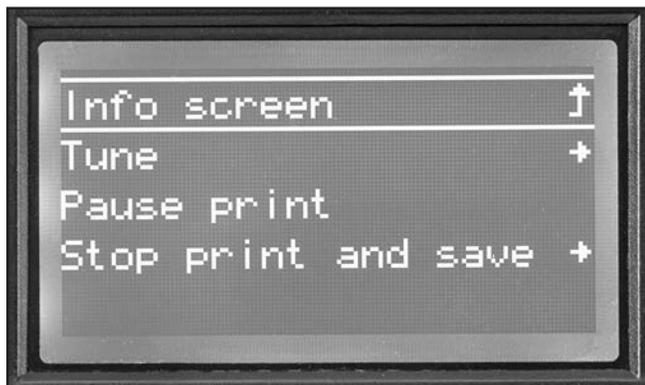
**Figure 31.** Pause menu.

- Select "Resume print" to resume printing from last position.
- Select "Stop print and save" to save stop location. Refer to **Stopping Print** on **Page 28**.



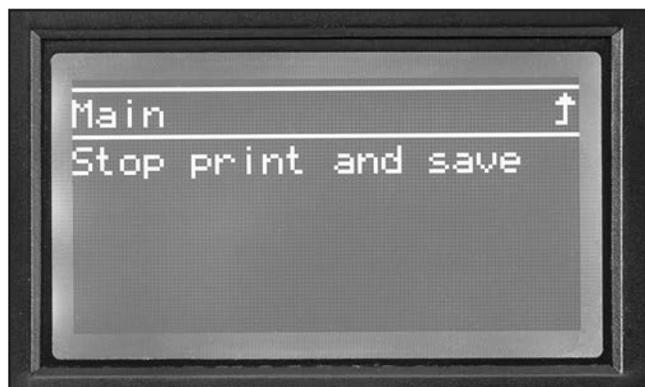
## Stopping Print

1. During printing, press control dial to open print menu (see **Figure 32**).



**Figure 32.** Print menu.

2. Select "Stop print and save." Stop menu will open (see **Figure 33**).



**Figure 33.** Stop menu.

— Select "Main" to return to print screen and cancel stop.

— Select "Stop print and save" to stop print. Z-axis will raise, X and Y axes will home, then printer will stop. Print location is saved on SD card as file called "GRIZZLY.G." Printer can be powered off at this time.

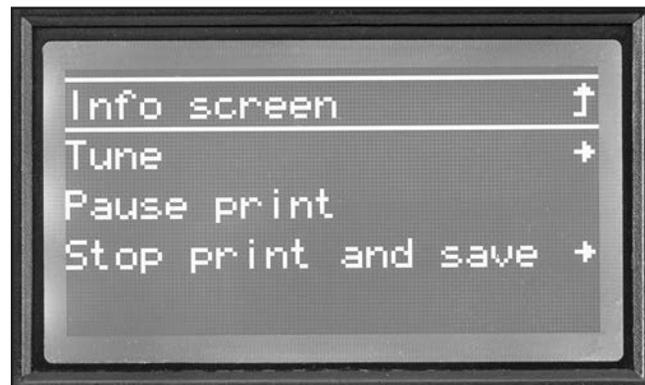
3. Restart printing by starting a print normally (see **Starting Print** on **Page 27**). Instead of .GCODE file, choose GRIZZLY.G file. Printer will resume printing from last position.

## Changing Print Settings

Settings can be changed during printing. This includes nozzle temperature, print speed, and print head position.

### To change print settings:

1. During printing, press control dial to open print menu (see **Figure 34**).



**Figure 34.** Print menu.

2. Select "Tune." Print settings include:

**Speed:** Changes speed of printing.

**Nozzle:** Changes temperature of nozzle.

**Fan Speed 1:** Changes speed of cooling fan.

**Change Filament:** Pauses printing and begins change filament process. Refer to **Changing Filament** on **Page 29**.

**Flow:** Changes amount of filament extruded.

**Babystep X:** Changes X-axis position.

**Babystep Y:** Changes Y-axis position.

**Babystep Z:** Changes Z-axis position.



# Changing Filament

Use the "Change Filament" process from the main menu to load or change filament. If you are printing frequently, filament can remain in your printer. However, filament absorbs humidity, so it is best to remove it and store in a sealed container. Store container in a cool, dry location when not in use for an extended period of time.

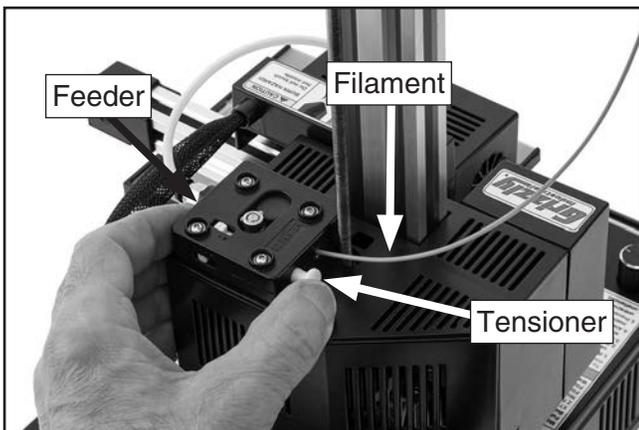
## To change filament:

1. Press control dial to open main menu.
2. Select "Change filament." Nozzle will begin preheating, then feeder will begin to retract filament from the print head (see **Figure 35**). When process is complete, filament status screen changes to "Insert filament and press button to continue."



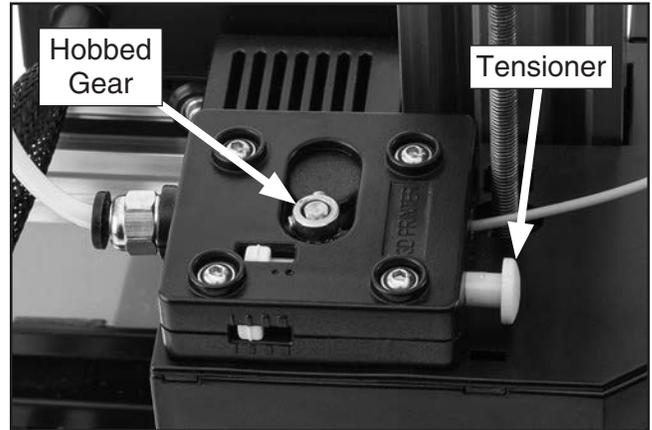
**Figure 35.** Unloading filament status screen.

3. Press tensioner and pull filament from feeder (see **Figure 36**).



**Figure 36.** Removing filament from feeder.

4. Remove old spool from printer and replace with new spool.
5. Press tensioner on feeder and insert filament. When tensioner is released, filament should be pinched against hobbed gear (see **Figure 37**).



**Figure 37.** Filament installed in feeder.

6. Press control dial. Feeder will begin to push filament into print head. Wait for process to complete (see **Figure 38**).



**Figure 38.** Loading filament status screen.



# Cleaning Build Plate

After printing, clean build plate to ensure it does not attract debris. Accumulation of dust and filament residue on the build plate prevents printed layer from adhering evenly.

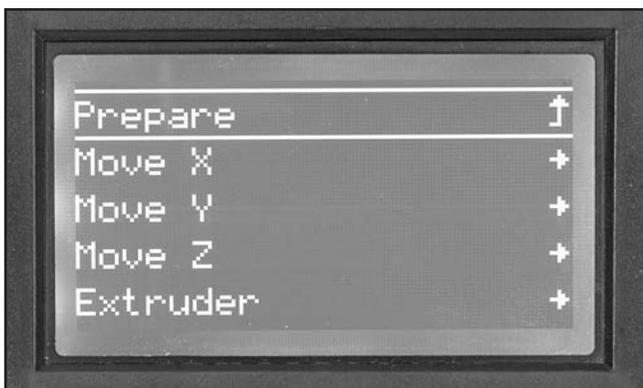
Dried glue can be scraped off using a flat edged tool such as a putty knife. Alternatively, run build plate under warm water until glue softens and rinses off. Dry build plate before use.

## Moving Axes

Sometimes it is necessary to move the axes to a location other than home. All axes can be moved through the command interface. The X and Y axes can also be moved by releasing stepper torque and moving them manually.

### Moving Axes via Command Interface

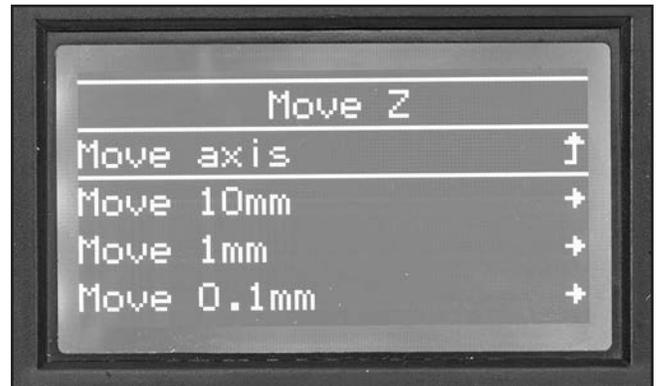
1. Press control dial to open main menu.
2. Select "Prepare," then "Move axis." Axis select menu will open (see **Figure 39**).



**Figure 39.** Axis select menu.

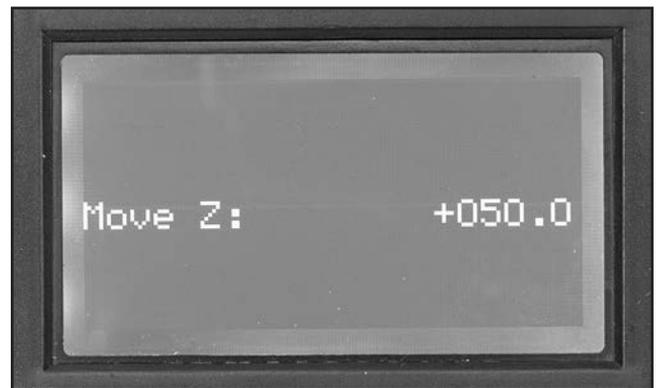
**Note:** Extruder (E-axis) will not move unless nozzle is preheated.

3. Select axis to move. Axis movement menu will open (see **Figure 40**).



**Figure 40.** Axis movement menu.

4. Select increment of movement. Axis movement screen will open (see **Figure 41**).



**Figure 41.** Axis movement screen.

5. Rotate control dial to change axis position.

**Note:** Position shown on axis movement screen is based on position when printer was last homed. If axis has not been homed since machine powered on, it is possible to run steppers beyond soft limits. Although this is unlikely to damage the machine, it should be avoided when possible.



## Moving X and Y Axes Manually

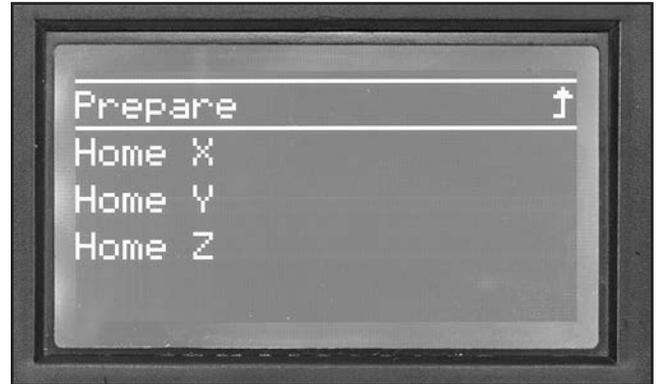
1. Press control dial to open main menu.
2. Select "Prepare," then "Stop motors." Stepper motors will release.
3. Change position of X and Y axes by manually moving print head and build plate along axis rails.

## Homing All Axes

1. Press control dial to open main menu.
2. Select "Auto Home." X, Y, and Z axes will move to machine zero, as determined by axis limit switches.

## Homing Individual Axes

1. Press control dial to open main menu.
2. Select "Prepare," then select "Single axis home." Single axis home menu will open (see **Figure 42**).



**Figure 42.** Single axis home menu.

3. Select axis to home. Chosen axis will move to machine zero, as determined by axis limit switch.



# SECTION 5: ACCESSORIES

## **!WARNING**

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended for this machine by Grizzly.

## **NOTICE**

Refer to our website or latest catalog for additional recommended accessories.

### **T31840—3D Printer Nozzle for G0923**

Replacement nozzle compatible with the Model G0923. Nozzle diameter: 0.4mm.



**Figure 43.** T31840 3D Printer Nozzle for G0923.

### **PLA Filament Spools**

**T31834—Clear Filament for 3D Printers**

**T31835—Red Filament for 3D Printers**

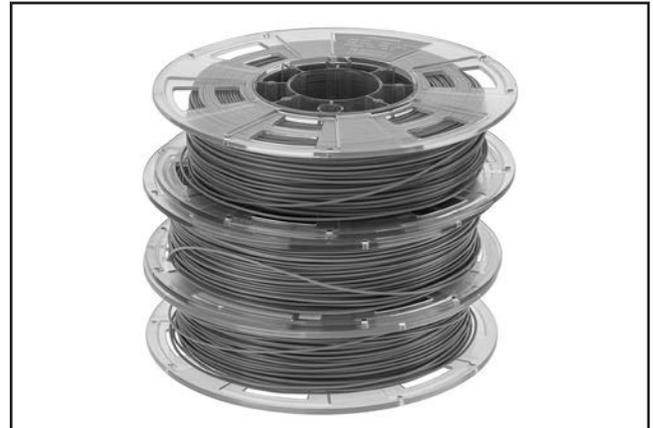
**T31836—Blue Filament for 3D Printers**

**T31837—Yellow Filament for 3D Printers**

**T31838—White Filament for 3D Printers**

**T31839—Black Filament for 3D Printers**

1.75mm diameter PLA filament for use with Grizzly 3D printers.



**Figure 44.** Grizzly PLA filaments.

***order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777***



# SECTION 6: MAINTENANCE

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## Schedule

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For optimum performance from this machine, this maintenance schedule must be strictly followed.

### Ongoing

To maintain proper machine operation, if you ever observe any of the items below, fix the problem before continuing operations:

- Clogged nozzle.
- Worn or damaged wires.
- Any other unsafe condition.

### Weekly Maintenance

- Wipe down dust/filament residue.

### Monthly Maintenance

- Clean nozzle with brush and needle (**Page 37**).
- Clean feeder & Bowden tube (**Page 43**).

## Cleaning & Protecting

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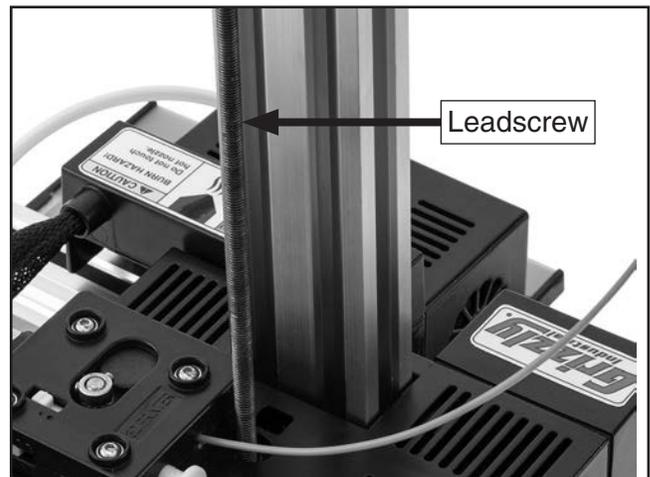
Cleaning the Model G0923 is relatively easy. Remove excess filament that has build-up on the machine and wipe away dust or residue with a dry cloth.

## Lubrication

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Wipe dust and residue off Z-axis leadscrew and apply light machine oil (see **Figure 45**). Wipe away excess oil, then turn on machine and raise/lower print head to spread oil.



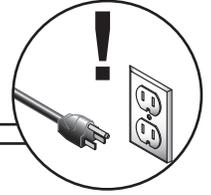
**Figure 45.** Leadscrew.



# SECTION 7: SERVICE

Review the troubleshooting procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** *Please gather the serial number and manufacture date of your machine before calling.*

## Troubleshooting



### Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start, or power supply breaker immediately trips after startup.	<ol style="list-style-type: none"> <li>1. Incorrect power supply voltage, circuit size, or connections.</li> <li>2. Power supply circuit breaker tripped or fuse blown.</li> <li>3. Wiring broken, disconnected, or corroded.</li> <li>4. Motherboard at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure correct power supply voltage, circuit size, and machine is properly connected.</li> <li>2. Ensure circuit is sized correctly and free of shorts. Reset circuit breaker or replace fuse.</li> <li>3. Fix broken wires or disconnected/corroded connections.</li> <li>4. Inspect/replace if at fault.</li> </ol>
Machine stalls or is underpowered.	<ol style="list-style-type: none"> <li>1. Belts slipping/pulleys misaligned.</li> <li>2. Motor wired incorrectly.</li> <li>3. Drive sprockets slipping on shaft.</li> <li>4. Motor at fault.</li> <li>5. Motherboard at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tension/replace belt(s); ensure pulleys are aligned (<b>Page 44</b>).</li> <li>2. Wire motor correctly (<b>Page 46</b>).</li> <li>3. Tighten/replace loose drive sprockets.</li> <li>4. Test/repair/replace.</li> <li>5. Test/repair/replace.</li> </ol>
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>1. Cooling fan loose or damage.</li> <li>2. Motor loose.</li> <li>3. Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Test/repair/replace.</li> <li>2. Tighten motor to chassis.</li> <li>3. Test/repair/replace.</li> </ol>

### Machine Operation

Symptom	Possible Cause	Possible Solution
Filament does not extrude during printing.	<ol style="list-style-type: none"> <li>1. Build plate too close to nozzle.</li> <li>2. Temperature too cool for type of filament.</li> <li>3. Filament tangled on spool.</li> <li>4. Nozzle clogged.</li> <li>5. Heating block at fault.</li> <li>6. Feed motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Level build plate (<b>Page 24</b>).</li> <li>2. Increase temperature and restart preheating process (<b>Page 26</b>).</li> <li>3. Unwind filament from spool until it is not tangled or overlapping.</li> <li>4. Clean (<b>Page 37</b>) or replace (<b>Page 41</b>) nozzle.</li> <li>5. Test/repair/replace.</li> <li>6. Test/repair/replace.</li> </ol>
Object does not stick to build plate.	<ol style="list-style-type: none"> <li>1. Build plate too far away from nozzle.</li> <li>2. Insufficient adhesive.</li> <li>3. Object has small footprint.</li> <li>4. Incorrect temperature for type of filament.</li> <li>5. Print speed too fast for type of filament.</li> </ol>	<ol style="list-style-type: none"> <li>1. Level build plate (<b>Page 24</b>).</li> <li>2. Clean build plate, then re-apply adhesive (<b>Page 26</b>).</li> <li>3. In slicer software, turn on brim, raft, or add supports.</li> <li>4. Adjust temperature and restart preheating process (<b>Page 26</b>). Lower temperature may require slower print speed.</li> <li>5. In slicer software, reduce print speed.</li> </ol>



## Machine Operation (Cont.)

Symptom	Possible Cause	Possible Solution
Molten filament runs freely from nozzle.	1. Temperature too hot for type of filament.	1. Lower temperature and restart preheating process ( <b>Page 26</b> ). Lower temperature may require slower print speed.
Printing stops in middle of job.	1. Insufficient filament. 2. Nozzle clogged. 3. Feeder tension too low. 4. Feeder tension too high.  5. SD card at fault. 6. SD card reader at fault.	1. Replace filament ( <b>Page 29</b> ). 2. Clean ( <b>Page 37</b> ) or replace ( <b>Page 41</b> ) nozzle. 3. Tighten feeder tension ( <b>Page 4</b> ). 4. Remove filament from hobbed gear, clean ground filament from feeder and Bowden tube, then lower feeder tension. 5. Use different SD card. 6. Test/repair/replace.
Nozzle catches on print object.	1. Build plate not level. 2. Incorrect print speed for type of filament.	1. Level build plate ( <b>Page 24</b> ). 2. In slicer software, select print speed settings appropriate for type of filament.
"Under extrusion" occurs, e.g. object prints with very thin or missing layers.	1. Incorrect temperature for type of filament.  2. Filament tangled on spool.  3. Filament stored in humid environment. 4. Nozzle too close to or too far from build plate. 5. Incorrect print speed for type of filament.  6. Feeder tension too low. 7. Feeder tension too high.  8. Nozzle clogged. 9. Nozzle loose in heater cartridge or stripped threads. 10. Heating block at fault.	1. Adjust temperature and restart preheating process ( <b>Page 26</b> ). Lower temperature may require slower print speed. 2. Unwind filament from spool until it is not tangled or overlapping. 3. Replace filament ( <b>Page 29</b> ). 4. Level build plate ( <b>Page 24</b> ). 5. In slicer software, select print speed settings appropriate for type of filament. 6. Tighten feeder tension ( <b>Page 4</b> ). 7. Remove filament from hobbed gear, clean ground filament from feeder and Bowden tube ( <b>Page 43</b> ), then lower feeder tension ( <b>Page 4</b> ). 8. Clean ( <b>Page 37</b> ) or replace ( <b>Page 41</b> ) nozzle. 9. Replace nozzle and/or heating block. 10. Test/repair/replace.
"Over extrusion" occurs, e.g. object prints with thick layers that have drips, strings, or blobs.	1. Incorrect temperature for type of filament.  2. Filament setting incorrect. 3. Incorrect extrusion multiplier selected. 4. Flow setting too high. 5. Heating block at fault.	1. Adjust temperature and restart preheating process ( <b>Page 26</b> ). Lower temperature may require slower print speed. 2. In slicer software, select correct filament type. 3. In slicer software, select correct extrusion multiplier. 4. In slicer software, decrease flow setting. 5. Test/repair/replace.
"Pillowing" occurs, e.g. top layer is poor quality with bubbles and gaps across its surface.	1. Top layer too thin. 2. Cooling fans at fault. 3. Temperature too hot for type of filament.	1. In slicer software, increase top/bottom layer settings. 2. Test/repair/replace. 3. Lower temperature and restart preheating process ( <b>Page 26</b> ). Lower temperature may require slower print speed.



## Machine Operation (Cont.)

Symptom	Possible Cause	Possible Solution
"Stringing" occurs, e.g. strands of filament hang off object.	<ol style="list-style-type: none"> <li>1. Insufficient retraction.</li> <li>2. Temperature too hot for type of filament.</li> </ol>	<ol style="list-style-type: none"> <li>1. In slicer software, turn on or increase retraction.</li> <li>2. Lower temperature and restart preheating process (<b>Page 26</b>). Lower temperature may require slower print speed.</li> </ol>
"Warping" occurs, e.g. edges of object separate from build platform.	<ol style="list-style-type: none"> <li>1. Insufficient adhesive.</li> <li>2. Build plate not level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean build plate, then re-apply adhesive (<b>Page 26</b>).</li> <li>2. Level build plate (<b>Page 24</b>).</li> </ol>
Layers are misaligned or object skews in one direction.	<ol style="list-style-type: none"> <li>1. Belts slipping/pulleys misaligned.</li> <li>2. Drive sprockets slipping on shaft.</li> <li>3. Z-axis leadscrew dirty.</li> <li>4. Bent or misaligned axis rods or leadscrew.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tension/replace belt(s); ensure pulleys are aligned (<b>Page 44</b>).</li> <li>2. Tighten/replace loose drive sprockets.</li> <li>3. Clean and lubricate leadscrew (<b>Page 33</b>).</li> <li>4. Test/repair/replace.</li> </ol>
Occasional layer is missing.	<ol style="list-style-type: none"> <li>1. Z-axis leadscrew dirty.</li> <li>2. Bent or misaligned axis rods or leadscrew.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and lubricate leadscrew (<b>Page 33</b>).</li> <li>2. Test/repair/replace.</li> </ol>
Fine detail does not print.	<ol style="list-style-type: none"> <li>1. Print resolution too low.</li> <li>2. Build plate not level.</li> <li>3. Nozzle diameter too large for object details.</li> <li>4. Nozzle clogged.</li> <li>5. Print speed too fast for type of filament.</li> </ol>	<ol style="list-style-type: none"> <li>1. In slicer software, increase resolution by decreasing layer height.</li> <li>2. Level build plate (<b>Page 24</b>).</li> <li>3. Replace with smaller nozzle (<b>Page 41</b>).</li> <li>4. Clean (<b>Page 37</b>) or replace (<b>Page 41</b>) nozzle.</li> <li>5. In slicer software, reduce print speed.</li> </ol>
Feed motor grinds or skips.	<ol style="list-style-type: none"> <li>1. Feeder tension too high.</li> <li>2. Nozzle clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove filament from feeder, clean ground filament from hobbed gear and Bowden tube, then lower feeder tension.</li> <li>2. Clean (<b>Page 37</b>) or replace (<b>Page 41</b>) nozzle.</li> </ol>



# Cleaning Nozzle

A clogged nozzle often leads to major printing issues. Regularly performing brush and needle cleaning will help keep the Model G0923 printing smoothly for many hours of work.

Performing a "cold pull" when changing filaments helps remove old filament from the interior of the nozzle. This process uses partially cooled molten filament to pick up and remove burned filament from the inside of the nozzle. A cold pull is especially useful when switching from a dark filament to a lighter one. If significant buildup occurs inside the print head, it may be necessary to fully dismantle and clean it.

## Brush Cleaning

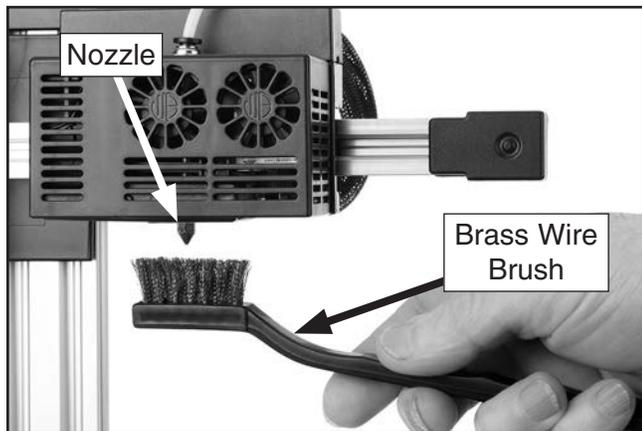
If the exterior of the nozzle has substantial filament buildup, it can interfere with filament extrusion. A soft wire brush is used to clear away accumulated debris.

Tools Needed	Qty
Brass Wire Brush .....	1

**IMPORTANT:** Only use a brass wire brush. Using a steel wire brush or equivalent may result in damage to the nozzle.

### To clean nozzle exterior:

1. Use brass wire brush to remove residue from nozzle (see **Figure 46**).



**Figure 46.** Cleaning nozzle with brass brush.

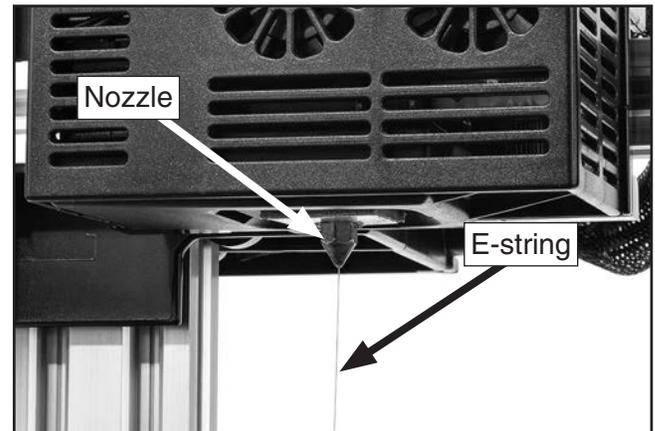
## Needle Cleaning

If residue is clogging the interior of the nozzle, a thin, flexible needle can break up the blockage and allow filament to pass freely. An acupuncture needle or guitar high E-string are ideal tools for this process.

Tools Needed	Qty
"E-String" or Acupuncture Needle .....	1

### To clean nozzle interior:

1. Preheat nozzle (refer to **Preheating** on **Page 26**).
2. Insert needle or guitar string into end of nozzle (see **Figure 47**). Move it around gently to break up particles and trapped debris.



**Figure 47.** Breaking up residue inside nozzle using a guitar string.

**Note:** Material will not be removed by the needle or guitar string, but it will be loosened so it can freely flow out during extrusion.

3. Extrude filament to clean nozzle of broken debris. For instructions on manually extruding filament, refer to **Moving Axes** on **Page 30**.

**Note:** Extrude filament incrementally until it is clean when it leaves nozzle.



## Performing a Cold Pull

The "cold pull" is a method of cleaning the interior of the nozzle. Molten filament is allowed to partially cool within the nozzle and is then removed. Carbonized printing residue adheres to the filament as it is pulled out.

Tools Needed	Qty
Filament 1.75mm .....	As Needed

**Note:** *These instructions assume PLA filament is used in this process. Although PLA can get the job done and is easy to acquire, it is brittle and breaks easily when pulled out of the print head. For a more reliable pull, consider using white or clear Nylon filament. If filament other than PLA is used, adjust preheating temperatures accordingly.*

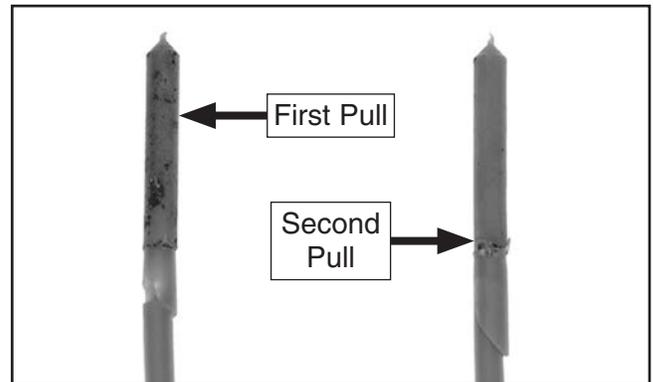
### To clean nozzle using a cold pull:

1. Unload filament (refer to **Changing Filament** on **Page 29**).
2. Remove Bowden tube from print head by pressing down on tube coupler and pulling firmly on the Bowden tube (see **Figure 48**).



**Figure 48.** Removing Bowden tube.

3. Preheat nozzle (refer to **Preheating Nozzle** on **Page 26**).
4. Manually push filament into print head until it extrudes from nozzle.
5. Reduce nozzle temperature to 80–90° C. Refer to **Changing Preheat Temperature** on **Page 26**.
6. Gently pull filament out of print head and inspect end (see **Figure 49**).



**Figure 49.** Cold pull filament ends.

- If removed end has carbonization and residue on it, repeat **Steps 3–6**.
- If removed end is clean, cold pull process is complete.



## Dismantling Print Head

If a clog is located higher up in the print head, or if "heat creep" has occurred—molten plastic rising into the heat sink and cooling—then the print head may need to be disassembled and cleaned.

Tools Needed	Qty
Pair of Work Gloves.....	1
Small Crescent Wrench.....	1
Socket Wrench 6mm.....	1
Hex Wrench 2mm.....	1
Blowtorch or Heat Gun.....	1

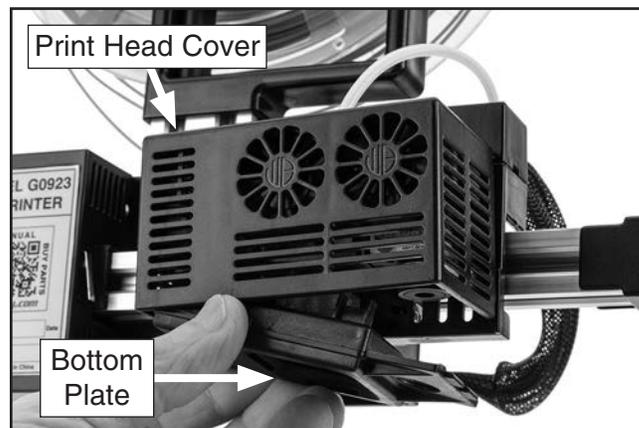
### To dismantle print head:

1. Unload filament (refer to **Changing Filament** on **Page 29**).
2. Remove Bowden tube from print head by pressing down on tube coupler and pulling firmly on the Bowden tube (see **Figure 50**).



**Figure 50.** Removing Bowden tube.

3. Remove bottom plate of print head cover (see **Figure 51**).
4. Remove print head cover from print head (see **Figure 51**).



**Figure 51.** Print head cover components.

5. Preheat heating block to printing temperature (refer to **Preheating Nozzle** on **Page 26**).

**⚠ CAUTION**

Before proceeding with the next step, wear gloves to protect your hands while handling the hot nozzle and heating block.

6. Hold heating block in place using crescent wrench while removing nozzle with 6mm socket wrench (see **Figure 52**).

**IMPORTANT:** Do not loosen, remove, or tighten nozzle unless heating block is heated. Heating block and nozzle threads may be damaged if threaded while cold.



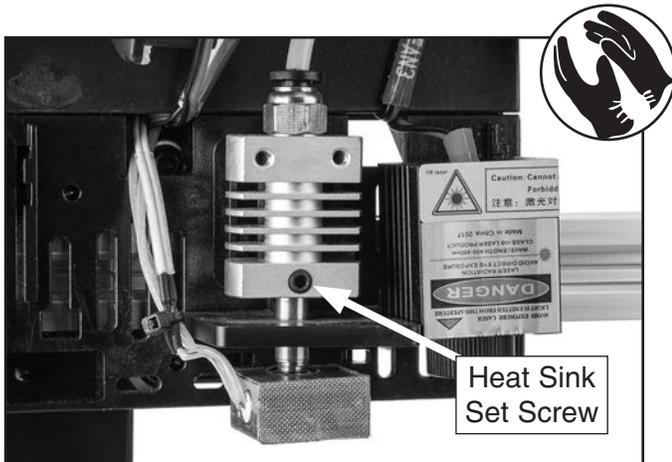
**Figure 52.** Removing nozzle from heating block.



7. Quickly move heat gun or blowtorch over nozzle to burn filament and debris away.

**IMPORTANT:** DO NOT hold heat in place over nozzle. Direct heat can melt or deform nozzle.

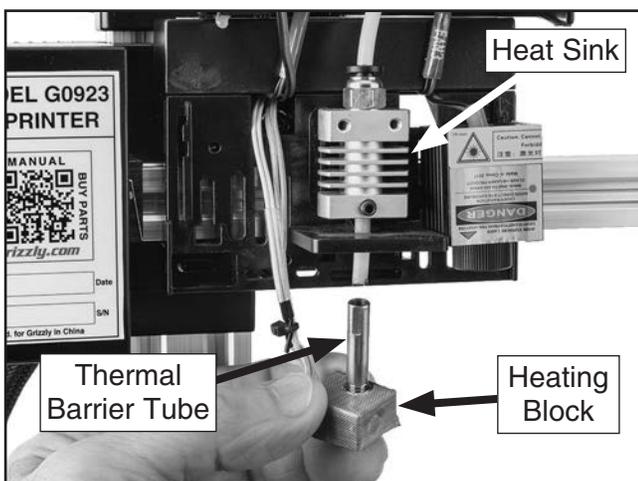
8. Remove set screw from heat sink (see **Figure 53**).



**Figure 53.** Heat sink.

**⚠ CAUTION:** If heating block is still hot, wear gloves to protect hands during following step.

9. Pull down firmly on heating block to remove it from heat sink (see **Figure 54**).

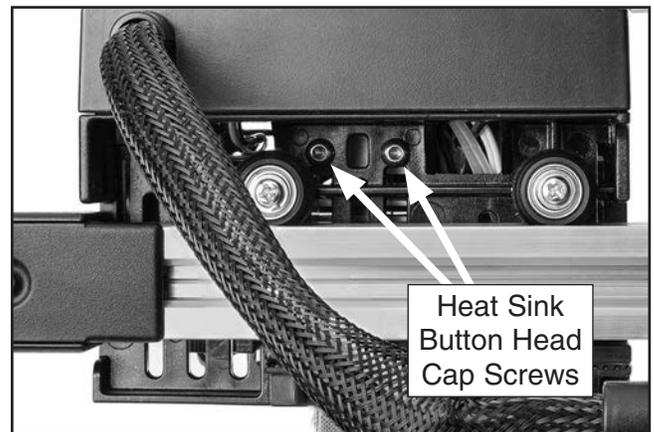


**Figure 54.** Removing heating block from heat sink.

10. Remove external debris and filament buildup from heating block and thermal barrier tube.

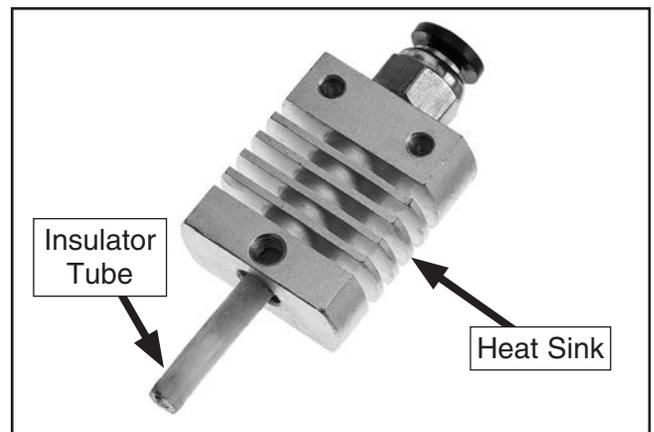
— If thermal barrier tube has excessive build-up, it can be unscrewed while heating block is hot, then cleaned with a blowtorch in the same manner as the nozzle (refer to **Step 7**).

11. On back side of print head, loosen (2) button head cap screws that secure heat sink (see **Figure 55**).



**Figure 55.** Heat sink screw location.

12. Remove heat sink and insulator tube from print head (see **Figure 56**).



**Figure 56.** Insulator tube and heat sink

13. Remove insulator tube from heat sink.
14. Remove external debris and filament buildup from heat sink.



15. Inspect insulator tube.
  - If insulator tube is in good condition, remove debris and filament buildup.
  - If insulator tube is damaged or if there is buildup inside tube, discard and replace it.
16. Insert insulator tube into heat sink.
17. Connect heat sink to print head with (2) button head cap screws (see **Figure 55** on **Page 40**).
18. Push heating block into heat sink.
19. Secure heating block with set screw (see **Figure 53** on **Page 40**).
20. Preheat heating block to printing temperature (refer to **Preheating Nozzle** on **Page 26**).

**⚠ CAUTION**

Before proceeding with the next step, wear gloves to protect your hands while handling the hot nozzle and heating block.

21. Hold heating block in place using crescent wrench and install nozzle with 6mm socket wrench (see **Figure 52** on **Page 39**).

**IMPORTANT:** DO NOT loosen, remove, or tighten nozzle unless heating block is heated. Heating block and nozzle threads may be damaged if threaded while cold. DO NOT overtighten.

22. Attach print head cover to print head and print head cover bottom plate to print head cover.
23. Press down on tube coupler, then insert Bowden tube into print head.
24. Load filament (refer to **Changing Filament** on **Page 29**).

## Replacing Nozzle

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Nozzles are consumable parts. After 3–6 months of regular use, the diameter of the nozzle will increase and the tip will begin to look dull and curved. When this happens, it is time for a replacement.

<b>Tools Needed</b>	<b>Qty</b>
Pair of Work Gloves.....	1
Small Crescent Wrench.....	1
Socket Wrench 6mm .....	1
Replacement Nozzle .....	1

### To replace nozzle:

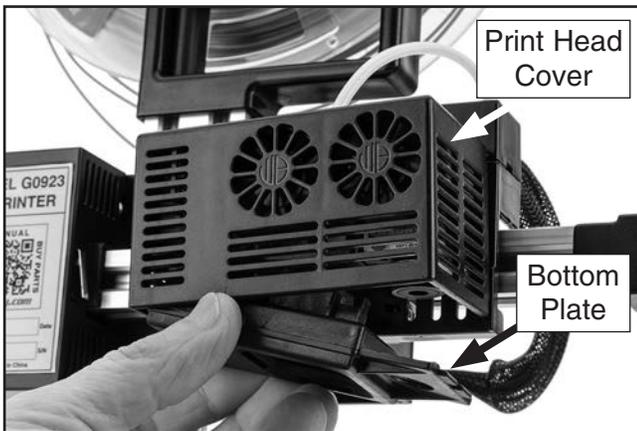
1. Unload filament (refer to **Changing Filament** on **Page 29**).
2. Remove Bowden tube from print head by pressing down on tube coupler and pulling firmly on the Bowden tube (see **Figure 57**).



**Figure 57.** Removing Bowden tube.



3. Remove bottom plate of print head cover (see **Figure 58**).
4. Remove print head cover from print head (see **Figure 58**).



**Figure 58.** Print head cover components.

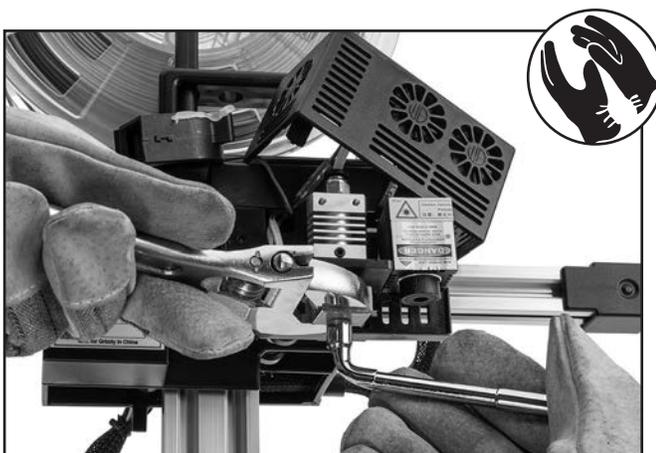
5. Preheat heating block to printing temperature (refer to **Preheating Nozzle** on **Page 26**).

**⚠ CAUTION**

**Before proceeding with the next step, wear gloves to protect your hands while handling the hot nozzle and heating block.**

6. Hold heating block in place using crescent wrench while removing nozzle with 6mm socket wrench (see **Figure 59**).

**IMPORTANT:** DO NOT loosen, remove, or tighten nozzle unless heating block is heated. Heating block and nozzle threads may be damaged if threaded while cold.



**Figure 59.** Removing nozzle from heating block.

7. Hold heating block in place using crescent wrench and install new nozzle with 6mm socket wrench.

**IMPORTANT:** DO NOT loosen, remove, or tighten nozzle unless heating block is heated. Heating block and nozzle threads may be damaged if threaded while cold. DO NOT overtighten.

8. Attach print head cover to print head and print head cover bottom plate to print head cover.
9. Press down on tube coupler, then insert Bowden tube into print head.
10. Load filament (refer to **Changing Filament** on **Page 29**).



# Cleaning Feeder & Bowden Tube

Small particles of filament will get caught in the feeder and Bowden tube. The Bowden tube can be cleaned by running a small piece of material through it to remove trapped residue. The feeder can be cleaned by blowing air into it.

Tools Needed	Qty
Tissue or Sponge .....	1
1.75mm Filament .....	As Needed
Compressed Air.....	As Needed

## To clean feeder and Bowden tube:

1. Unload filament (see **Loading/Changing Filament** on **Page 29**).
2. Remove Bowden tube from print head by pressing down on tube coupler and pulling firmly on Bowden tube (see **Figure 60**).



**Figure 60.** Removing Bowden tube from print head.

3. Remove Bowden tube from feeder by pressing down on tube coupler and pulling firmly on Bowden tube (see **Figure 61**).



**Figure 61.** Removing Bowden tube from feeder.

4. Cut small piece of sponge or ball up piece of tissue small enough to fit inside Bowden tube (see **Figure 62**).
5. Push material through Bowden tube with section of filament (see **Figure 62**).



**Figure 62.** Cleaning Bowden tube.

6. Repeat **Steps 4–5** until material leaves Bowden tube clean.
7. Blow compressed air into feeder to remove collected filament residue.
8. Connect Bowden tube to print head and feeder by pressing down on tube coupler and inserting Bowden tube.



# Aligning Axis Pulleys

The X and Y axes are driven by timing belts that run along the axis rails, between the drive and idler pulleys. If the pulleys are out of alignment or loose, the axes will not travel properly, resulting in skewed print results. Adjusting the drive pulleys is normally sufficient to resolve these issues.

## Accessing X-Axis Drive Pulley

1. Remove front motor cover (see **Figure 63**).

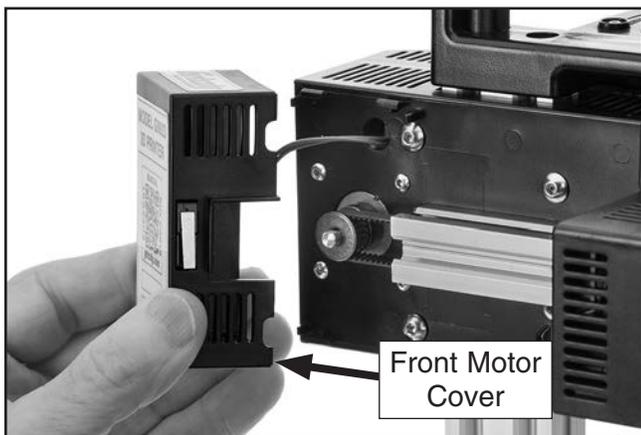


Figure 63. Front motor cover.

## Accessing Y-Axis Drive Pulley

Tools Needed	Qty
Hex Wrench 2.5mm.....	1
Phillips Head Screwdriver.....	1

### To access Y-axis drive pulley:

1. Remove (7) tap screws, (2) Phillips head screws, and (3) button head cap screws from bottom of base plate (see **Figure 64**).

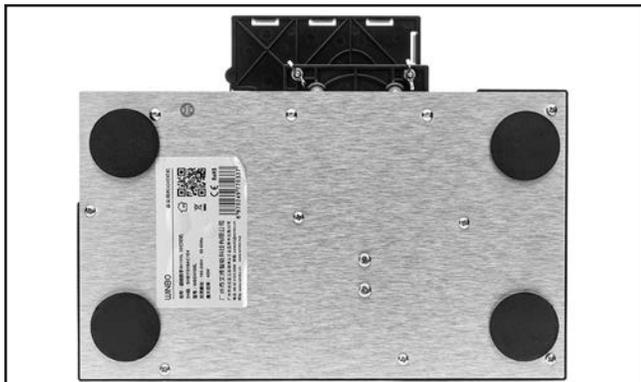


Figure 64. Underside of base plate.

2. Remove Y-axis rail and stepper assembly from underside of cover.

**Note:** Stepper motor 6-pin connector can be disconnected to fully remove the assembly from the printer.

## Adjusting Drive Pulleys

The drive pulleys are secured to the stepper motor shaft by (2) set screws (see **Figure 65**). Set screws must be snug to prevent pulley from slipping on the shaft. Drive pulleys must be positioned laterally so that the timing belt does not rub on either side of the axis rail.

### To adjust drive pulley:

1. Loosen (2) set screws until drive pulley is loose on shaft (see **Figure 65**).
2. Position drive pulley so that timing belt is centered on axis rail (see **Figure 65**).
3. Tighten (2) set screws (see **Figure 65**).

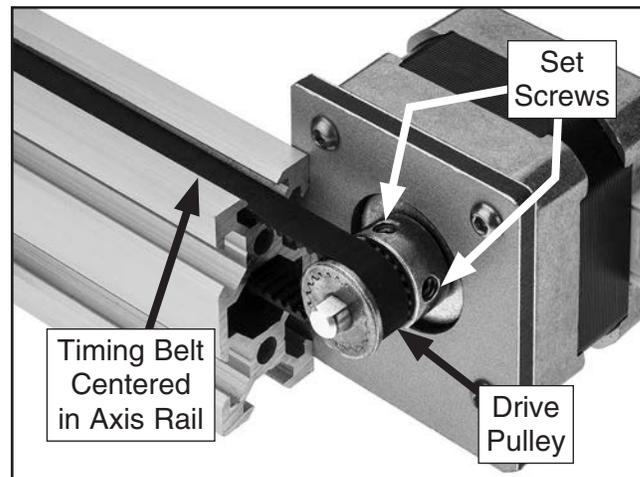


Figure 65. Drive pulley, belt, and axis rail.



# Updating Firmware

If essential operating updates are made to the G0923 firmware, the updated firmware will be available at [www.grizzly.com](http://www.grizzly.com) on the G0923 product page.

<b>Tools Needed</b>	<b>Qty</b>
Windows Computer with Grizzly Winware.....	1
USB Type B Cable .....	1

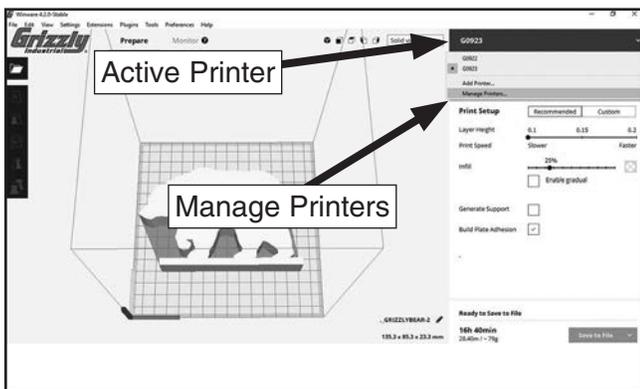
## To update firmware:

1. On computer, download latest firmware update from [www.grizzly.com](http://www.grizzly.com).

**Note:** Firmware files will have the ".HEX" file extension.

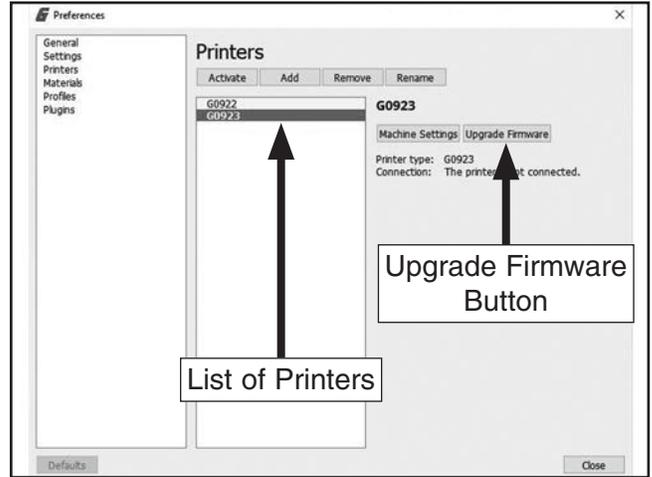
2. Connect printer to computer using type B USB cable.

3. Open Grizzly Winware software, select active printer, then navigate to "Manage Printers" (see **Figure 66**). Printer preferences window will open.



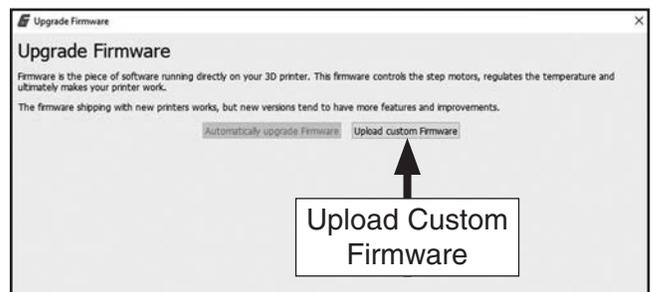
**Figure 66.** Active printer menu.

4. Highlight correct printer, then select Upgrade Firmware (see **Figure 67**). Upgrade Firmware window will open.



**Figure 67.** Printer preferences window.

5. Select Upload Custom Firmware (see **Figure 68**). A file selection window will open.



**Figure 68.** Upgrade Firmware window.

6. Within file selection window, navigate to .HEX file downloaded in **Step 1**. Highlight file and select "Open." A progress bar will show installation progress.
7. Once installation is complete, disconnect printer from computer.



# SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

## WARNING

### Wiring Safety Instructions

**SHOCK HAZARD.** Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

**MODIFICATIONS.** Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved after-market parts.

**WIRE CONNECTIONS.** All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

**CIRCUIT REQUIREMENTS.** You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

**WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

**MOTOR WIRING.** The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

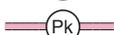
**CAPACITORS/INVERTERS.** Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

**EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

#### NOTICE

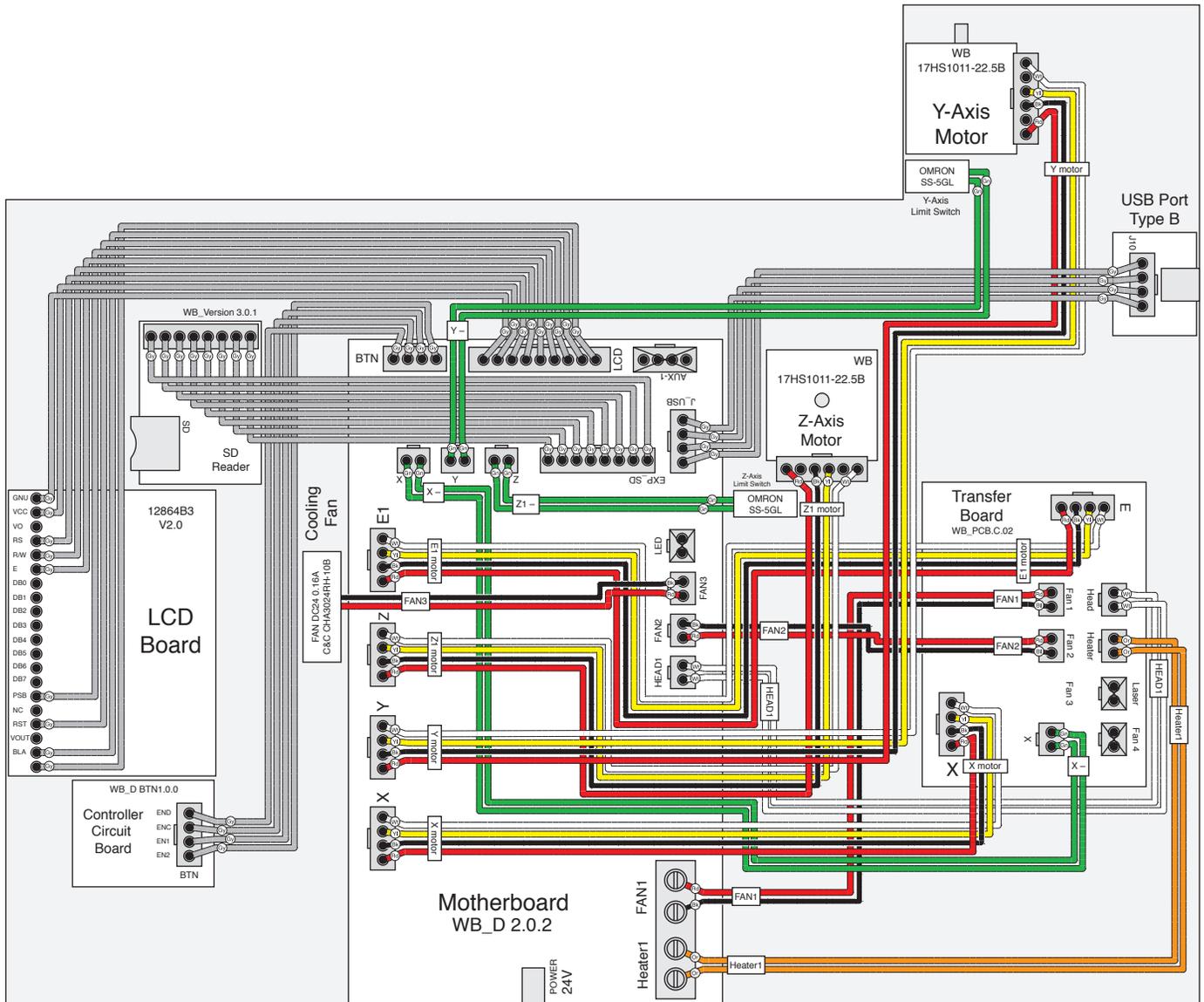
The photos and diagrams included in this section are best viewed in color. You can view these pages in color at [www.grizzly.com](http://www.grizzly.com).

#### COLOR KEY

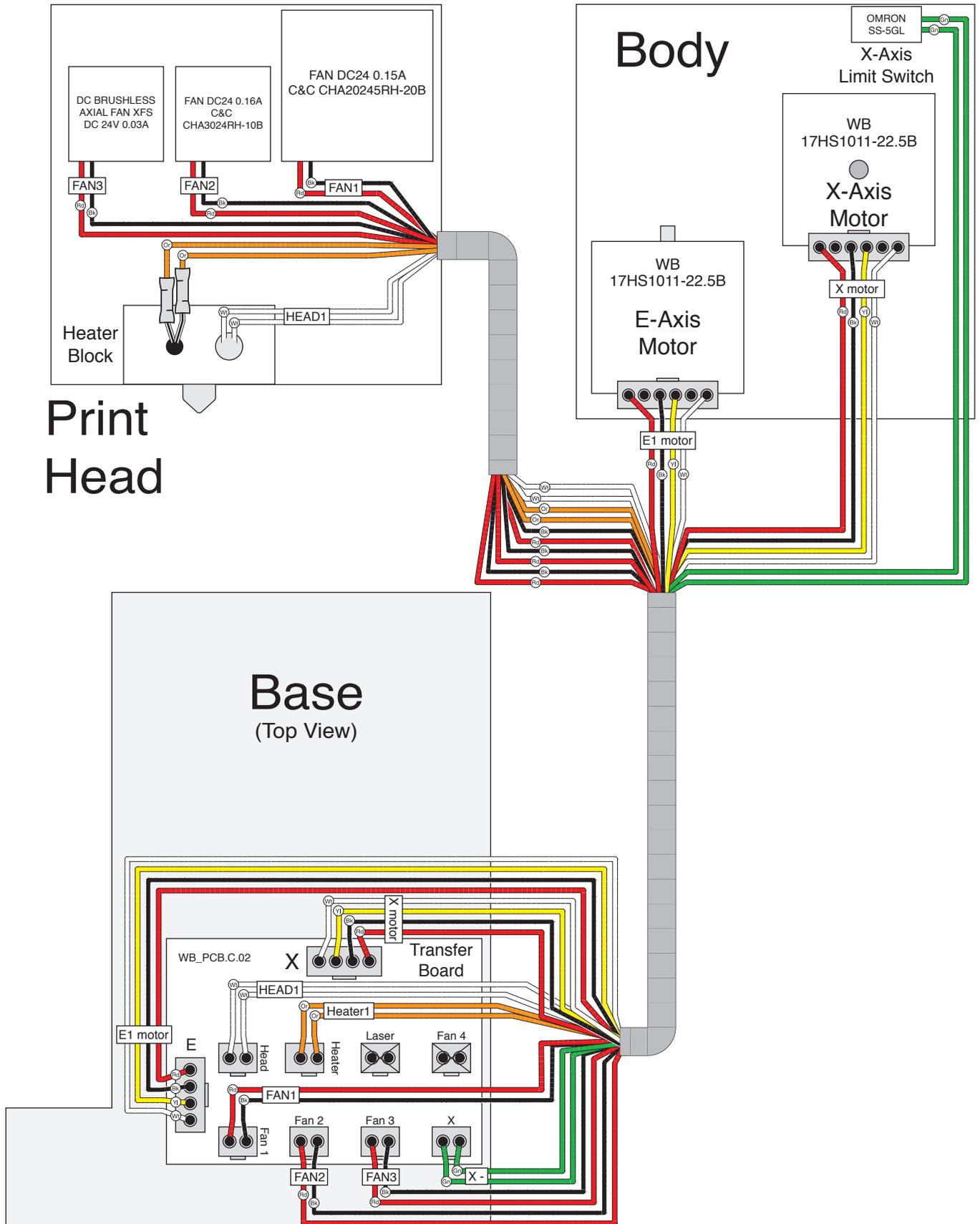
BLACK		BLUE		YELLOW		LIGHT BLUE	
WHITE		BROWN		YELLOW GREEN		BLUE WHITE	
GREEN		GRAY		PURPLE		TURQUOISE	
RED		ORANGE		PINK			



# Internal Wiring Diagram



# External Wiring Diagram



# Wiring Images

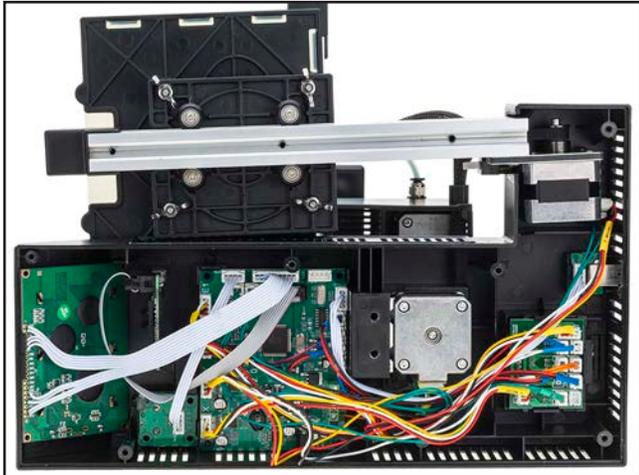


Figure 69. Internal wiring.



Figure 72. Top of transfer board.



Figure 70. Print head cooling fans.



Figure 73. Heating cartridge.

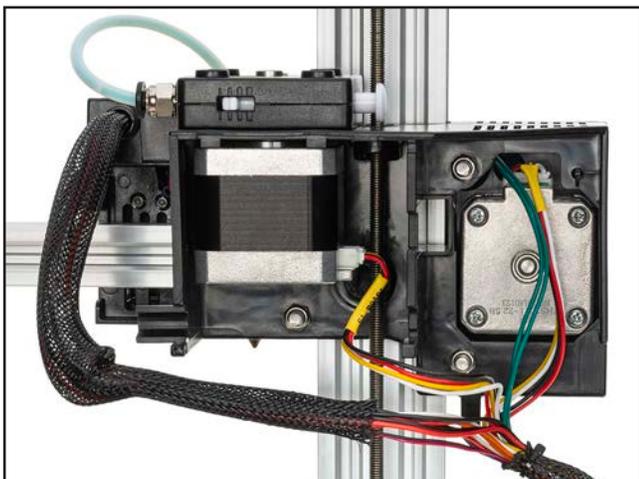
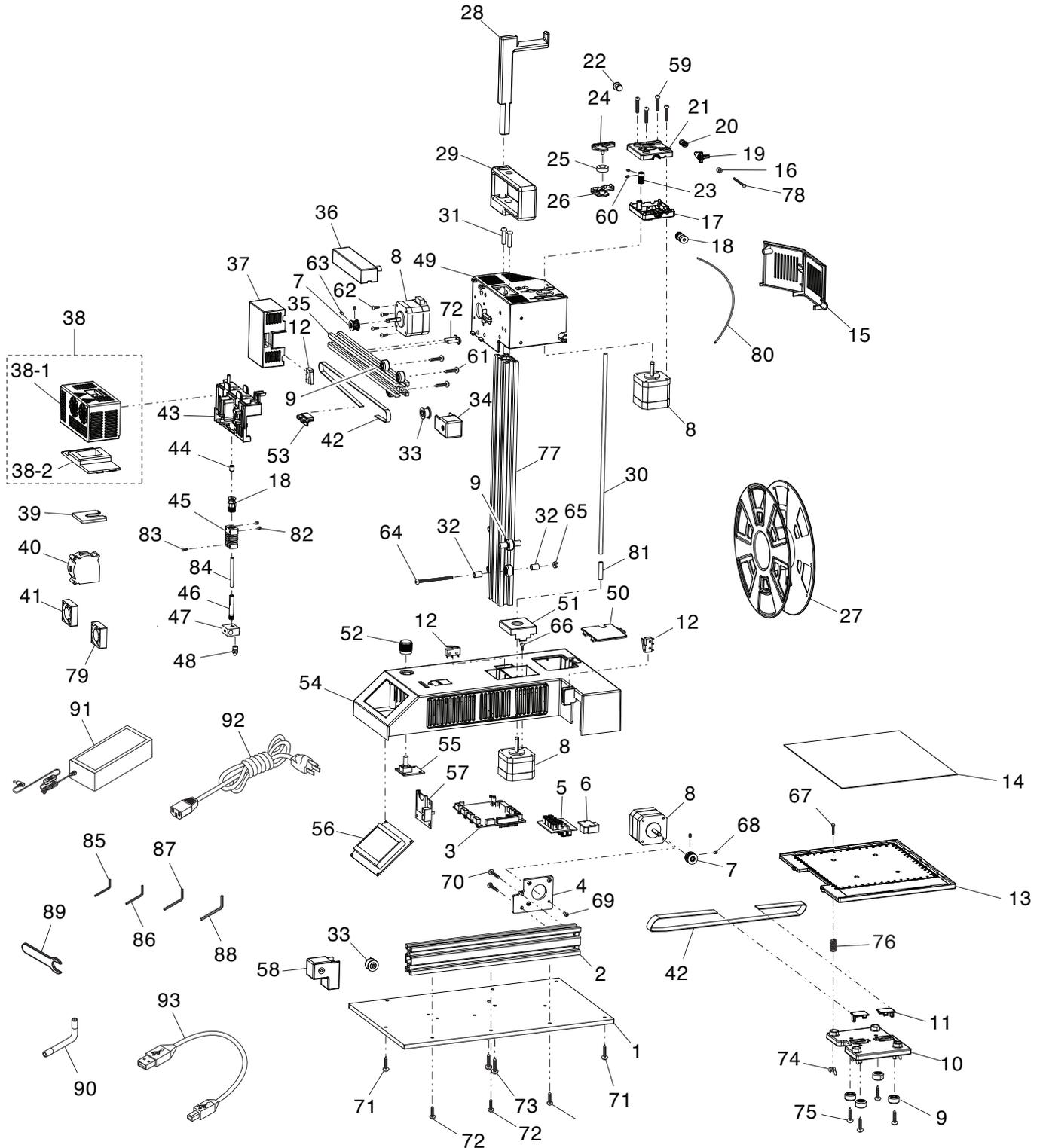


Figure 71. E- and X-axis motors.

# SECTION 9: PARTS

We do our best to stock replacement parts when possible, but we cannot guarantee that all parts shown are available for purchase. Call (800) 523-4777 or visit [www.grizzly.com/parts](http://www.grizzly.com/parts) to check for availability.

## Main



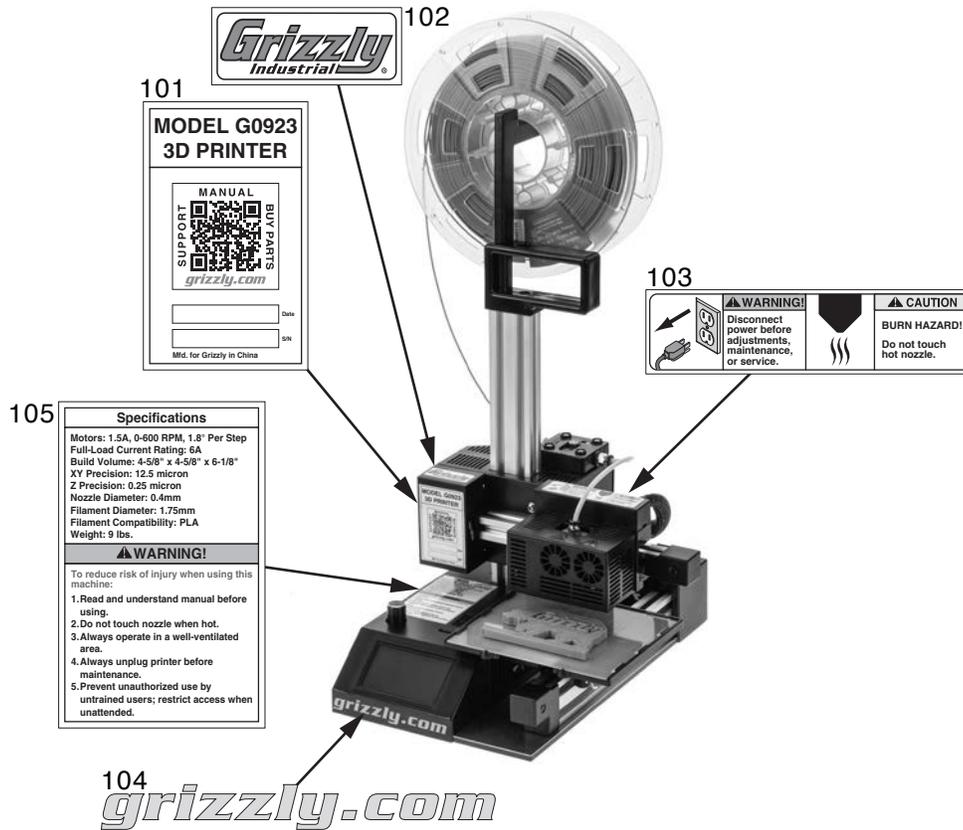
# Main Parts List

REF	PART #	DESCRIPTION
1	P0923001	BASE PLATE
2	P0923002	RAIL (Y-AXIS)
3	P0923003	MOTHERBOARD WB_D 2.0.2
4	P0923004	MOTOR MOUNT (Y-AXIS)
5	P0923005	TRANSFER BOARD WB_PCB.C.02
6	P0923006	USB PORT
7	P0923007	TIMING BELT DRIVE PULLEY
8	P0923008	STEPPER MOTOR NEMA 17
9	P0923009	RUNNER
10	P0923010	BUILD PLATFORM BRACKET
11	P0923011	TIMING BELT CLIP (Y-AXIS)
12	P0923012	LIMIT SWITCH OMRON SS-5GL
13	P0923013	BUILD PLATFORM
14	P0923014	BUILD PLATE
15	P0923015	MOTOR COVER (REAR)
16	P0923016	HEX NUT M3-.5
17	P0923017	FEEDER COVER (BOTTOM)
18	P0923018	BOWDEN TUBE CONNECTOR
19	P0923019	ADJUSTMENT KEY
20	P0923020	COMPRESSION SPRING 1 X 8 X 17
21	P0923021	FEEDER COVER (TOP)
22	P0923022	FEEDER RELEASE BUTTON
23	P0923023	HOBBED GEAR
24	P0923024	FEEDER CLAMP (TOP)
25	P0923025	BALL BEARING 688ZZ
26	P0923026	FEEDER CLAMP (BOTTOM)
27	P0923027	SPOOL
28	P0923028	SPOOL HANGER
29	P0923029	HANDLE
30	P0923030	LEADSCREW (Z-AXIS)
31	P0923031	BUTTON HD CAP SCR M5-.8 X 16
32	P0923032	SPACER 10 X 7.5 X 5
33	P0923033	TIMING BELT IDLER PULLEY
34	P0923034	RAIL CAP (X-AXIS)
35	P0923035	RAIL (X-AXIS)
36	P0923036	PRINT HEAD COVER (TOP)
37	P0923037	MOTOR COVER (FRONT)
38	P0923038	PRINT HEAD COVER (MAIN)
38-1	P0923038-1	PRINT HEAD COVER
38-2	P0923038-2	BOTTOM PLATE
39	P0923039	NOZZLE SHIM
40	P0923040	FAN DC 24V 0.15A
41	P0923041	FAN DC 24V 0.16A
42	P0923042	TIMING BELT S2M
43	P0923043	HEAD BRACKET
44	P0923044	INSULATED SPACER
45	P0923045	HEAT SINK
46	P0923046	THERMAL BARRIER TUBE

REF	PART #	DESCRIPTION
47	P0923047	HEATING BLOCK
48	P0923048	NOZZLE 1.75 X 0.4MM
49	P0923049	MOTOR HOUSING (X AND E)
50	P0923050	ACCESS COVER
51	P0923051	MOTOR COVER (Z-AXIS)
52	P0923052	CONTROL DIAL
53	P0923053	TIMING BELT CLIP (X-AXIS)
54	P0923054	COVER (BASE)
55	P0923055	RADIAL DIAL CONTROL BOARD
56	P0923056	LCD DISPLAY
57	P0923057	SD CARD PORT
58	P0923058	RAIL CAP (Y-AXIS)
59	P0923059	FLANGE SCREW M3-.5 X 25
60	P0923060	SET SCREW M3-.5 X 3
61	P0923061	TAP SCREW M3 X 20
62	P0923062	BUTTON HD CAP SCR M3-.5 X 8
63	P0923063	SET SCREW M4-.7 X 4
64	P0923064	BUTTON HD CAP SCR M5-.8 X 45
65	P0923065	LOCK NUT M5-.8
66	P0923066	BUTTON HD CAP SCR M3-.5 X 8
67	P0923067	HEX BOLT M3-.5 X 30
68	P0923068	SET SCREW M4-.7 X 4
69	P0923069	BUTTON HD CAP SCR M3-.5 X 8
70	P0923070	BUTTON HD CAP SCR M4-.7 X 16
71	P0923071	TAP SCREW M4 X 16
72	P0923072	BUTTON HD CAP SCR M4-.7 X 16
73	P0923073	PHLP HD SCR M5-.8 X 16
74	P0923074	WING NUT M3-.5
75	P0923075	TAP SCREW M3 X 20
76	P0923076	COMPRESSION SPRING 1 X 8 X 17
77	P0923077	RAIL (Z-AXIS)
78	P0923078	BUTTON HEAD CAP SCREW M3-.5 X 16
79	P0923079	FAN DC 24V 0.03A
80	P0923080	BOWDEN TUBE
81	P0923081	LEADSCREW CONNECTION HOUSING
82	P0923082	SET SCREW M4-.7 X 4
83	P0923083	BUTTON HD CAP SCR M3-.5 X 20
84	P0923084	INSULATED TUBING
85	P0923085	HEX WRENCH 1.5MM
86	P0923086	HEX WRENCH 2MM
87	P0923087	HEX WRENCH 2.5MM
88	P0923088	HEX WRENCH 3MM
89	P0923089	WRENCH 10MM OPEN-END
90	P0923090	SOCKET WRENCH 6MM
91	P0923091	POWER ADAPTER AC/DC
92	P0923092	POWER CORD 18G 3W 46" 5-15
93	P0923093	USB CABLE TYPE-A TO TYPE-B



# Labels & Cosmetics



REF	PART #	DESCRIPTION
101	P0923101	QR CODE LABEL
102	P0923102	GRIZZLY INDUSTRIAL LOGO LABEL
103	P0923103	DISCONNECT/HOT NOZZLE LABEL

REF	PART #	DESCRIPTION
104	P0923104	GRIZZLY.COM LABEL
105	P0923105	SPECIFICATIONS/WARNINGS LABEL

## WARNING

Safety labels help reduce the risk of serious injury caused by machine hazards. If any label comes off or becomes unreadable, the owner of this machine **MUST** replace it in the original location before resuming operations. For replacements, contact (800) 523-4777 or [www.grizzly.com](http://www.grizzly.com).



# WARRANTY & RETURNS

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Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

In the event you need to use this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

To take advantage of this warranty, you must register it at <https://www.grizzly.com/secureforms/warranty-card>, or you can scan the QR code below to be automatically directed to our warranty registration page. Enter all applicable information for the product.



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