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› Comgrow ROBO CNC 3018 Milling/Engraving Machine User Manual

Comgrow ROBO CNC 3018

Comgrow ROBO CNC 3018 User Manual

Model: ROBO CNC 3018 | Brand: Comgrow

1. INTRODUCTION

The Comgrow ROBO CNC 3018 is a versatile 3-axis CNC milling and engraving machine designed for hobbyists and small-scale production. It is capable of working with various materials such as wood, acrylic, PVC, and soft metals. This manual provides essential information for the safe and efficient operation, setup, and maintenance of your machine.



Figure 1.1: Comgrow ROBO CNC 3018 Milling Machine. This image displays the complete assembly of the CNC machine, including the main frame, spindle, control panel, and work area.

2. SAFETY INSTRUCTIONS

Always prioritize safety when operating the CNC machine. Failure to follow these instructions may result in injury or damage to the equipment.

- **Eye Protection:** Always wear safety glasses to protect your eyes from flying debris.
- **Hand Protection:** Wear appropriate gloves to protect your hands from sharp tools and materials.
- **Work Area:** Ensure your work area is clean, well-lit, and free from obstructions. Keep children and pets away from the machine during operation.
- **Emergency Stop:** Familiarize yourself with the location and function of the emergency stop button. Press it immediately in case of an emergency.
- **Power Off:** Disconnect power before performing any maintenance, cleaning, or adjustments.
- **Material Compatibility:** Only use materials suitable for the machine's capabilities. Avoid materials that produce hazardous dust or fumes.
- **Ventilation:** Ensure adequate ventilation, especially when working with materials that may produce dust or fumes.
- **Secure Workpiece:** Always securely clamp your workpiece to the workbed to prevent movement during operation.

3. PACKAGE CONTENTS

Before beginning assembly, verify that all components listed below are present in your package. If any parts are missing or damaged, please contact customer support.

- CNC Machine Frame (pre-assembled base and gantry)
- Spindle Motor
- Stepper Motors (X, Y, Z axes)
- Control Board (GRBL compatible)
- Offline Controller
- Power Adapter
- USB Cable
- Z-Probe
- Workholding Clamps (4 pieces)
- Engraving Bits/Milling Cutters (starter set)
- Safety Glasses
- Assembly Tools (wrenches, hex keys)
- User Manual (this document)

4. SETUP GUIDE

Follow these steps for the initial setup of your Comgrow ROBO CNC 3018 machine.

1. **Unpacking:** Carefully remove all components from the packaging. Retain packaging for future storage or transport.
2. **Placement:** Place the machine on a stable, level surface capable of supporting its weight and resisting vibrations during operation.
3. **Gantry Assembly (if required):** Some models may require attaching the gantry to the base. Securely fasten all screws as per the included quick-start guide.
4. **Spindle Installation:** Insert the spindle motor into its mount on the Z-axis carriage and tighten the retaining screws.
5. **Wiring Connections:** Connect the stepper motor cables, spindle cable, limit switch cables, and Z-probe cable to the corresponding ports on the control board. Ensure all connections are firm and correctly oriented.
6. **Power Connection:** Connect the power adapter to the machine's power input and then plug it into a suitable electrical outlet. Do not power on yet.
7. **Software Installation:** Install the necessary GRBL control software (e.g., Candle, UGS) on your computer. Drivers may also be required for USB communication.

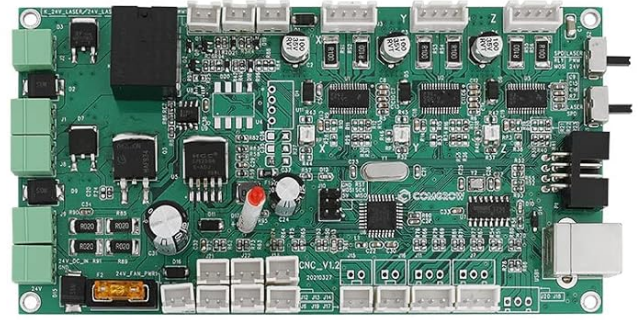
5. COMPONENT IDENTIFICATION

Understanding the key components of your CNC machine is crucial for proper operation and maintenance.

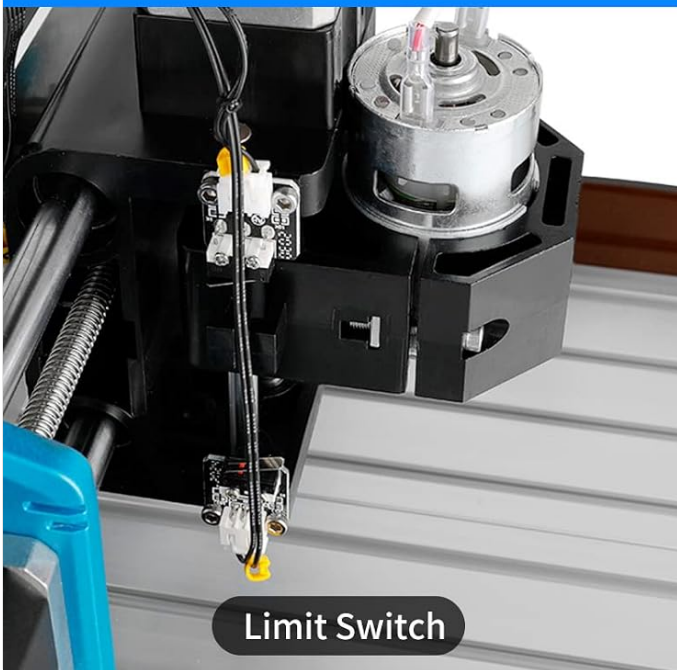
Multi-function Introduction



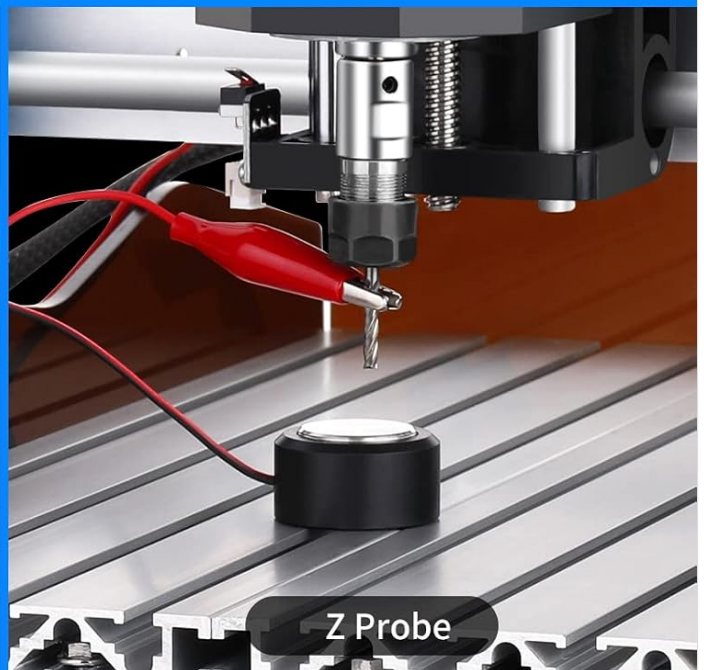
Emergency Stop



Open Source



Limit Switch



Z Probe

Figure 5.1: Multi-function Components. This image highlights key functional parts including the Emergency Stop button, the Open Source control board, Limit Switches for axis homing, and the Z Probe for automatic tool length measurement.

High Efficiency Motors



Figure 5.2: Detailed Component View. This diagram labels the 775 Spindle Motor, 42 Stepper Motors, Accurate Lead Screw Drives, Safe Barrier, Z-Probe, Offline Controller, Emergency Stop, and Anti-slip Rubber Pads, providing a comprehensive overview of the machine's mechanical and electrical parts.

6. OPERATING INSTRUCTIONS

This section outlines the general steps for operating your CNC machine.

6.1. Connecting and Control

The Comgrow ROBO CNC 3018 supports both USB connection to a PC and offline control.

Support USB And Offline Control

Note: Offline control and PC cannot be connected at the same time.



Figure 6.1: Control Options. This image illustrates the offline controller, a USB drive, and a USB cable, demonstrating the machine's flexibility in control methods. Note: Offline control and PC connection cannot be used simultaneously.

- **PC Control:** Connect the machine to your computer via the USB cable. Open your GRBL control software, select the correct COM port, and connect.
- **Offline Control:** For standalone operation, transfer your G-code files to a USB drive and insert it into the offline controller. Use the controller's buttons to navigate menus and start jobs.

6.2. Preparing a Job

1. **Design:** Create your design using CAD/CAM software (e.g., Fusion 360, Easel).
2. **Generate G-code:** Export your design as G-code, which contains the instructions for the CNC machine.
3. **Secure Workpiece:** Place your material on the workbed and secure it firmly using the provided clamps. Ensure the material is flat and stable.

Four Holders

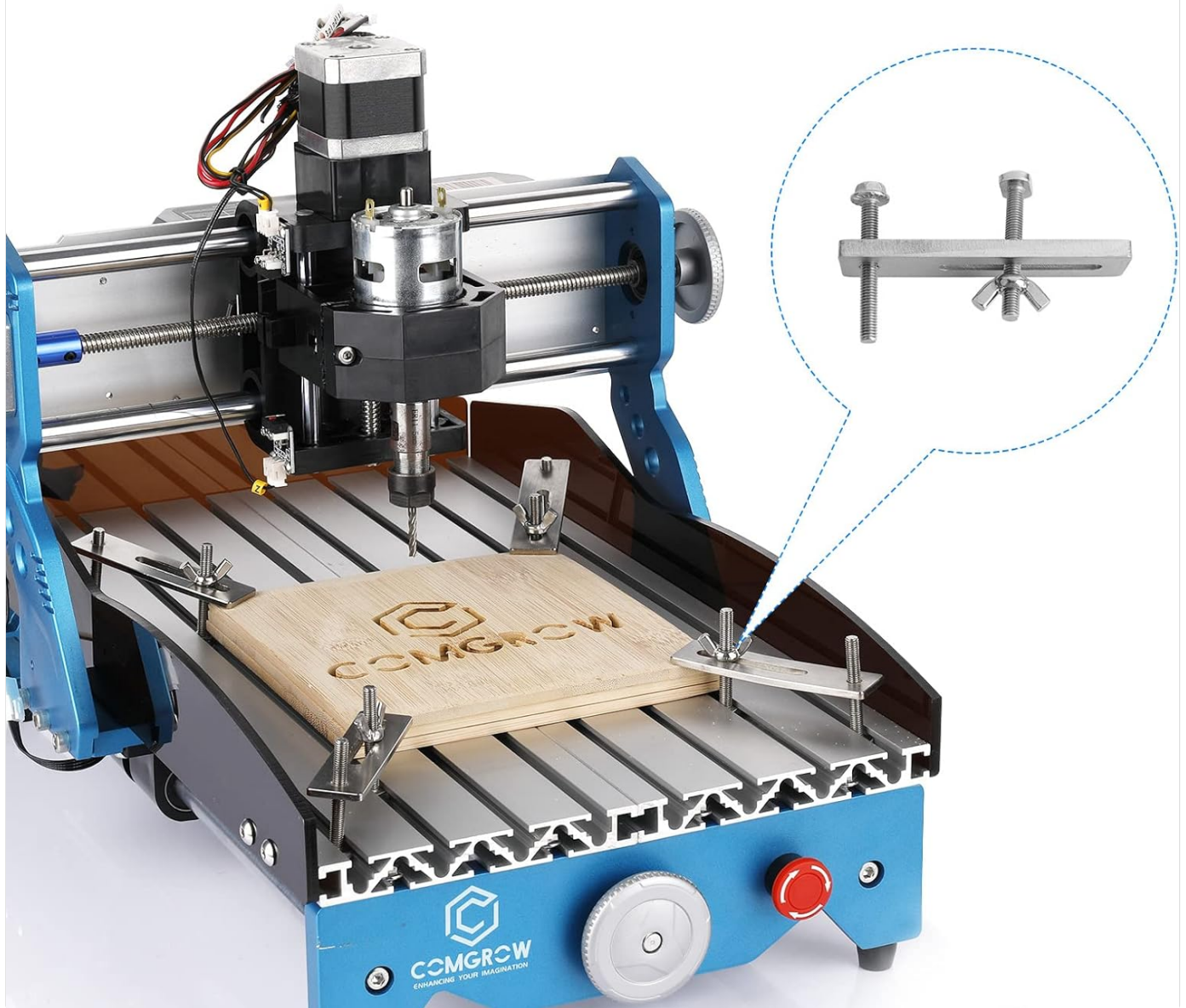


Figure 6.2: Workholding. This image shows the four included workholding clamps used to secure materials to the machine's bed, ensuring stability during the milling process.

4. **Install Tool:** Insert the appropriate engraving bit or milling cutter into the spindle collet and tighten it securely.
5. **Set Origin (Zero Point):** Manually or using the Z-probe, set the X, Y, and Z origin points for your job. The Z-probe automatically detects the material surface for accurate depth.
6. **Test Run (Optional):** For complex jobs, consider a dry run without the spindle active to verify tool paths.

6.3. Starting and Monitoring

- **Start Job:** Load your G-code file into the control software or select it from the offline controller and initiate the job.
- **Monitor Progress:** Continuously monitor the machine during operation. Be prepared to press the emergency stop button if any issues arise.
- **Dust Management:** Use a dust collection system or vacuum to manage debris and maintain visibility.

6.4. Supported Materials

The Comgrow ROBO CNC 3018 is suitable for engraving and milling a variety of materials, including but not limited to:

- Wood (softwoods, hardwoods)
- Acrylic
- PVC
- PCB (Printed Circuit Boards)
- Bakelite
- Soft Metals (e.g., Aluminum, Copper)

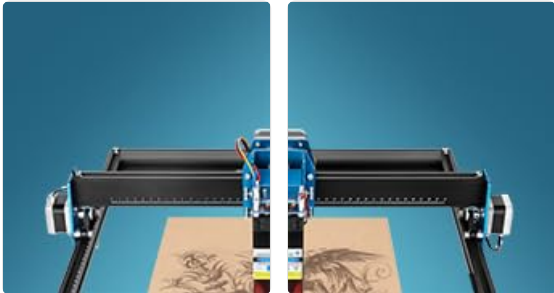


Figure 6.3: Material Examples. These images showcase the machine's capability to engrave and mill various materials, including wood and acrylic, demonstrating the quality of finished products.

7. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your CNC machine.

- **Cleaning:** After each use, clean the workbed and lead screws to remove dust and debris. Use a soft brush or vacuum.
- **Lubrication:** Periodically apply a small amount of lubricant to the lead screws and linear rails to ensure smooth movement.
- **Tool Inspection:** Inspect engraving bits and milling cutters for wear or damage before each use. Replace dull or chipped tools.
- **Tighten Fasteners:** Regularly check and tighten any loose screws or bolts on the machine frame and components.
- **Cable Management:** Ensure all cables are neatly routed and not pinched or stressed.

8. TROUBLESHOOTING

This section addresses common issues you might encounter and their potential solutions.

Problem	Possible Cause	Solution
Machine not powering on	Power cable loose; power adapter faulty; emergency stop engaged	Check power connections; test adapter; disengage emergency stop button by twisting it.
Motors not moving	Stepper motor cables loose; software not connected; power insufficient	Verify all motor connections; ensure software is connected to correct COM port; check power supply.
Spindle not rotating	Spindle cable loose; spindle motor faulty; G-code command missing	Check spindle cable connection; verify spindle motor functionality; ensure G-code includes M3 command.

Problem	Possible Cause	Solution
Inaccurate engraving/milling	Loose workpiece; dull tool; incorrect step settings; loose belts/couplings	Secure workpiece firmly; replace tool; verify software step settings; check and tighten belts/couplings.
Limit switch error	Limit switch triggered; wiring issue	Move machine away from limit; check limit switch wiring.

9. SPECIFICATIONS

Technical specifications for the Comgrow ROBO CNC 3018 machine.

- **Model:** ROBO CNC 3018
- **Working Area:** 300 x 180 x 45 mm (11.8 x 7.1 x 1.8 inches)
- **Frame Material:** Aluminum Alloy
- **Spindle:** 775 Spindle Motor, 10000 RPM (Rotational Speed)
- **Control Software:** GRBL Control (compatible with Candle, UGS, etc.)
- **Supported OS:** Windows XP, Windows 7/8/10, Linux
- **Connectivity:** USB, Offline Controller
- **Overall Dimensions:** Approximately 460 mm (18.1") L x 350 mm (13.8") W x 370 mm (14.6") H
- **Item Weight:** 9.52 Kilograms

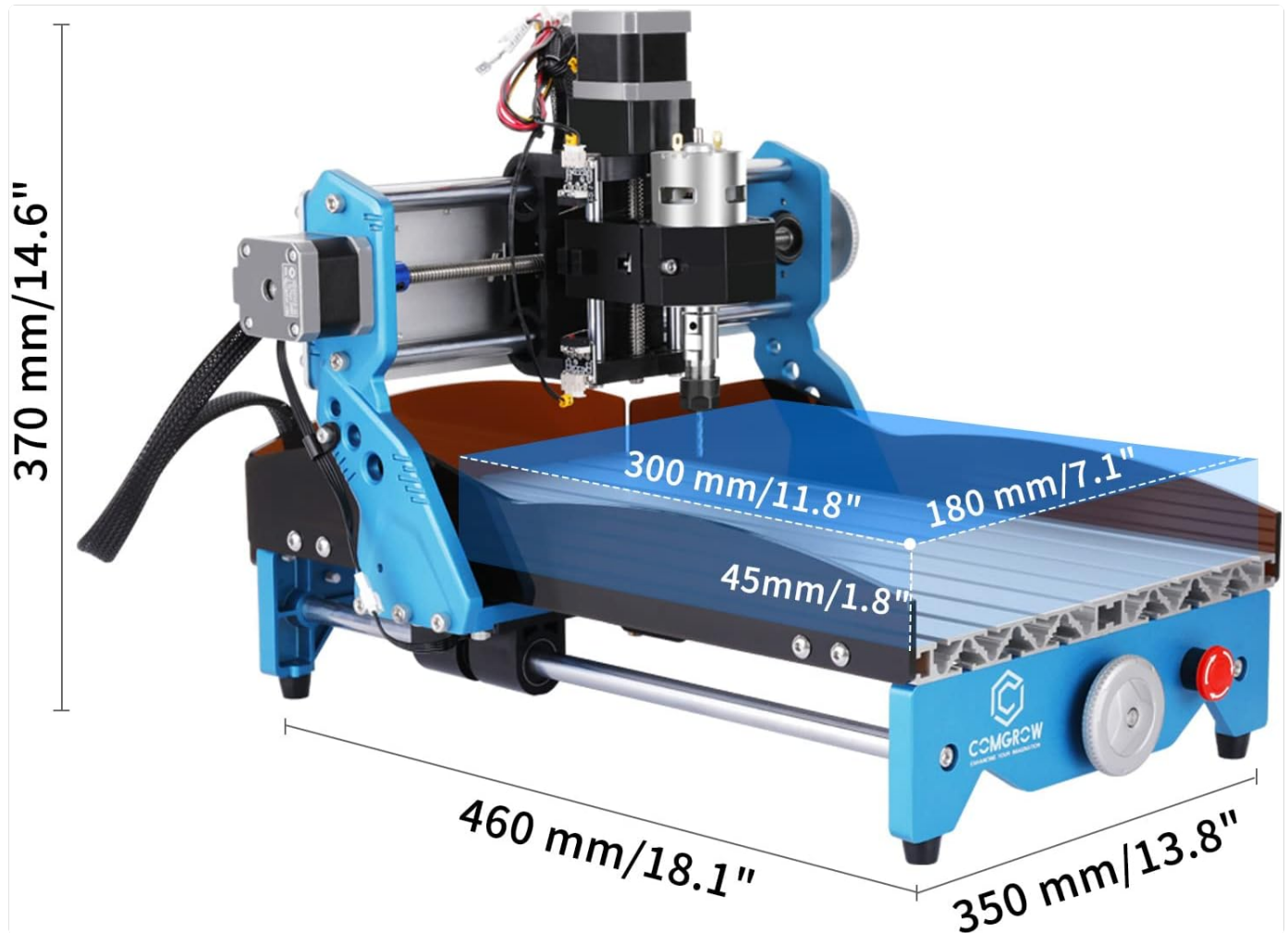


Figure 9.1: Machine Dimensions. This image provides a visual representation of the machine's overall dimensions, including length, width, and height, as well as the specific working area measurements.

10. WARRANTY AND SUPPORT

Comgrow products are designed for reliability and performance. For warranty information and technical support, please refer to the official Comgrow website or contact their customer service directly.

- **Warranty:** Please retain your proof of purchase for warranty claims. Specific warranty terms and duration may vary by region.
- **Technical Support:** For assistance with setup, operation, or troubleshooting, visit the Comgrow support page or contact their dedicated support team.
- **Online Resources:** Additional resources, including software downloads, tutorials, and FAQs, may be available on the Comgrow official website.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question

and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question