ELEGOO CA-EL-3D-N4PL

ELEGOO Neptune 4 Plus 3D Printer User Manual

Model: CA-EL-3D-N4PL

1. Introduction

The ELEGOO Neptune 4 Plus is a high-speed FDM 3D printer designed for efficient and precise additive manufacturing. Featuring Klipper firmware, a large build volume, and advanced extrusion and cooling systems, it is suitable for both large models and multiple smaller objects. This manual provides essential information for setting up, operating, maintaining, and troubleshooting your Neptune 4 Plus 3D printer.



Figure 1.1: The ELEGOO Neptune 4 Plus 3D Printer alongside a completed 3D printed robot model, showcasing its capabilities.

2. Setup

Proper setup is crucial for optimal performance of your 3D printer. Follow these steps carefully.

2.1 Assembly

The Neptune 4 Plus requires some assembly. Refer to the included assembly guide and any official ELEGOO video tutorials for detailed instructions. Assembly typically takes approximately 45 minutes. Ensure all components are securely fastened.

2.2 Initial Power-On and Firmware Update

After assembly, connect the printer to power. It is recommended to check for and update the screen and mainboard

firmware to the latest version. If the provided SD card is not formatted correctly, back up its contents, reformat the card, and then copy the firmware files back before proceeding with the update.

2.3 Bed Leveling

The printer features automated bed leveling. This process is generally straightforward and takes about 5 minutes. It is advisable to use a thickness gauge for precise calibration, although a piece of paper can be used as an initial guide. Ensure the Z-axis offset is correctly set to prevent the nozzle from digging into the PEI sheet or printing too high.



Figure 2.1: The Klipper high-speed motherboard, central to the printer's fast operation and precise control.

2.4 Filament Loading

Load your chosen filament into the direct drive extruder. Ensure the filament feeds smoothly without kinks or resistance. The dual-gear direct drive extruder is designed for powerful and consistent filament feeding.

3. Operating Instructions

This section details the process of preparing and executing a 3D print.

3.1 Slicing and File Transfer

Prepare your 3D model using a compatible slicing software, such as the ELEGOO version of Orca Slicer. This software allows you to configure print settings and generate G-code. The Neptune 4 Plus supports various connection options including Wi-Fi, U disk (USB drive), and LAN for convenient file transfer. The built-in web interface allows for wireless model uploads.

3.2 Starting a Print

Once the G-code file is transferred, select it from the printer's touchscreen interface to begin printing. The interface is designed to be responsive and easy to navigate.

3.3 Monitoring Prints

You can monitor print status, temperatures, and other metrics via the printer's web interface, which provides real-time data and control. This feature enhances convenience by eliminating the need for constant USB drive transfers.

3.4 Filament Compatibility and High-Speed Printing

The Neptune 4 Plus is equipped with a 300°C high-temperature nozzle, allowing it to handle a variety of filament materials including PLA, PETG, ABS, TPU, and Nylon. With Klipper firmware, the printer can achieve impressive printing speeds of up to 500mm/s and accelerations up to 12000mm/s². For optimal results at high speeds, rapid filament is recommended.

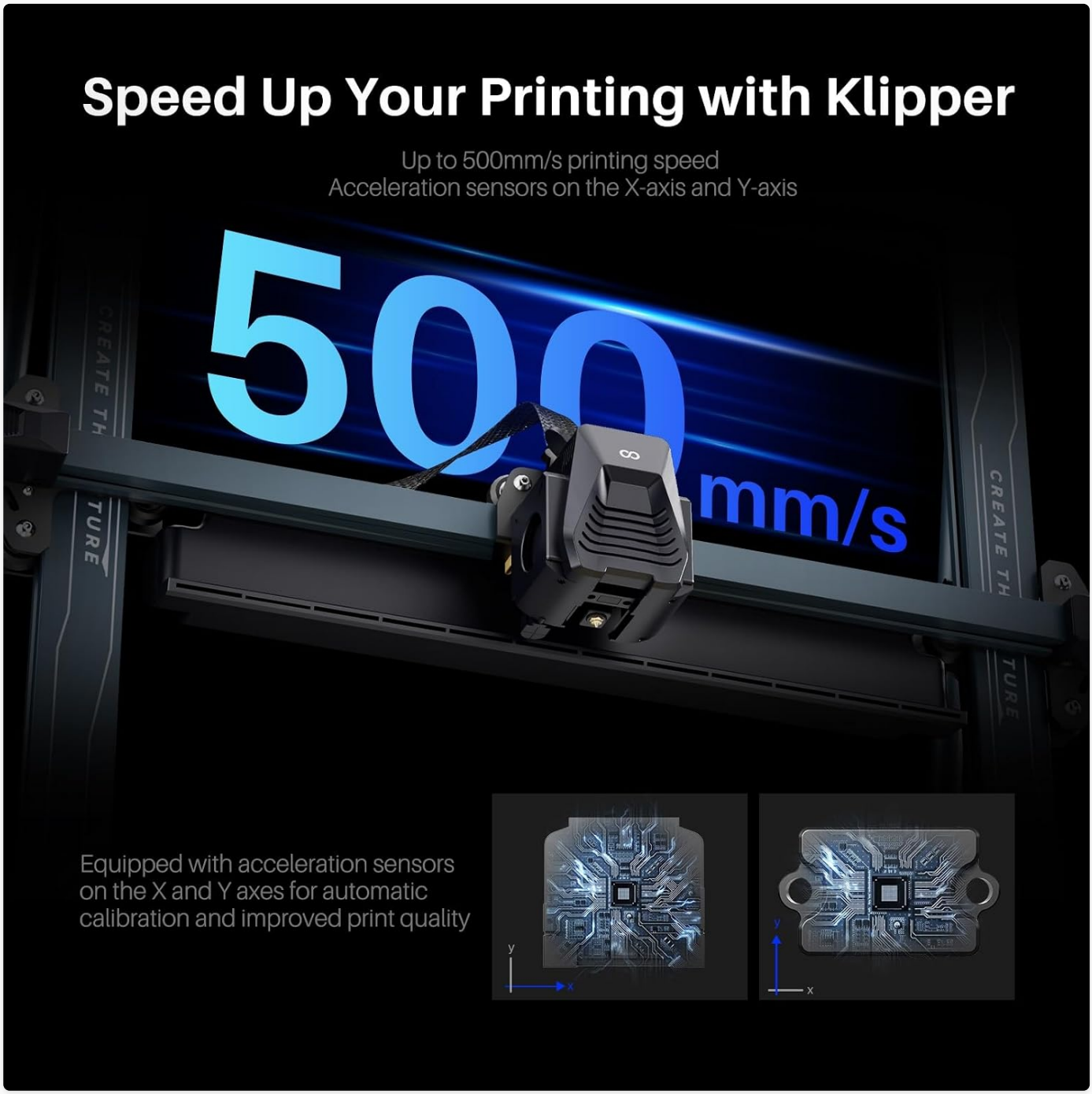


Figure 3.1: Visual representation of the printer's high-speed capabilities, reaching up to 500mm/s.



Figure 3.2: The spacious build volume of 320x320x385mm³, ideal for large prints or batch production.



Figure 3.3: Close-up of the dual-gear direct extruder and the 300°C high-temperature nozzle, ensuring precise and consistent extrusion.

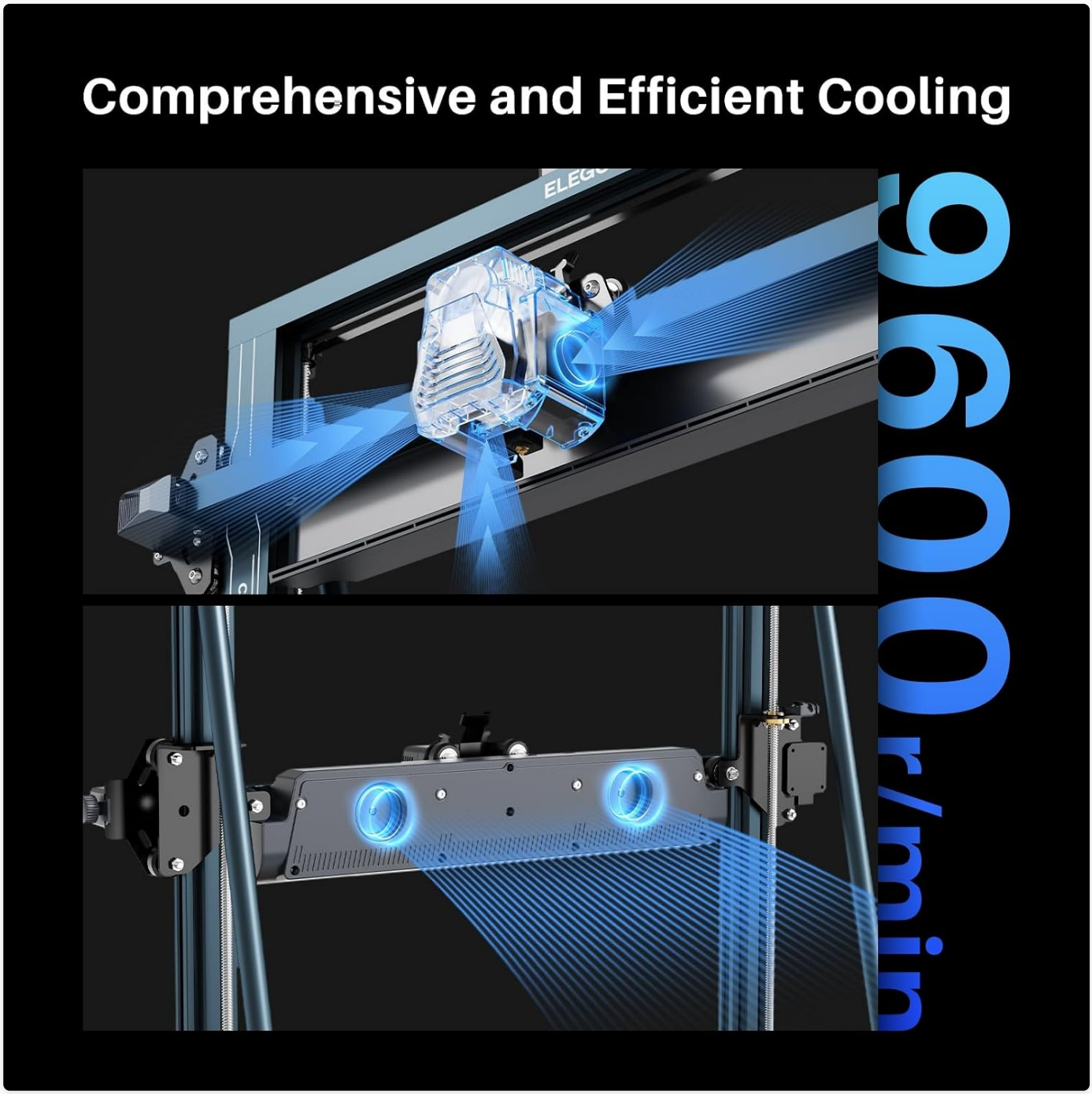


Figure 3.4: The printer's efficient cooling system, featuring powerful fans to prevent warping and improve print quality.



Figure 3.5: A highly detailed 3D printed component, illustrating the precision and quality achievable with the Neptune 4 Plus.

4. Maintenance

Regular maintenance ensures the longevity and consistent performance of your printer.

4.1 Nozzle and Hotend Care

Periodically inspect the nozzle for wear or clogs. The 300°C high-temp nozzle with its extended hot end design and 60W ceramic heating element is designed for durability, but replacement may be necessary over time. Ensure the metal throat pipe and air duct are clear to reduce clogging risks.

4.2 PEI Magnetic Platform

Clean the PEI magnetic platform regularly with isopropyl alcohol to maintain good bed adhesion. Avoid using abrasive materials that could damage the surface. If the sheet becomes damaged, it should be replaced.

4.3 Extruder and Gantry Inspection

Check the dual-gear direct drive extruder for any filament debris or wear. Ensure the gantry and Z-axis components are clean and free from obstructions. Occasionally, inspect for any burrs or misalignments, such as on the Z-frame, which can affect print quality and bed leveling.

4.4 Cooling System

Keep the powerful double-sided cooling fans and model cooling blower fans free of dust and filament scraps to ensure efficient cooling and prevent warping.

5. Troubleshooting

This section addresses common issues you might encounter.

5.1 Print Quality Issues

- **Stringing:** Adjust retraction settings in your slicer. Ensure filament is dry.
- **Poor Bed Adhesion:** Re-level the bed, clean the PEI sheet, adjust Z-offset, or increase bed temperature.
- **Layer Shifting:** Check belt tension and ensure the printer is on a stable surface.
- **Inconsistent Extrusion:** Inspect the extruder for clogs or wear. Check filament quality.

5.2 Bed Leveling Problems

If automated bed leveling yields inconsistent results (e.g., nozzle too high or too low, or uneven prints), perform the leveling process again. If issues persist, manually verify the flatness of the bed and inspect the Z-axis for any physical obstructions or misalignments. Precise Z-axis calibration is critical.

5.3 Nozzle Clogging

If the nozzle is clogged, attempt a cold pull or carefully clean it. Ensure the hotend temperature is appropriate for the filament being used. The unique air duct design helps mitigate this, but proper maintenance is key.

5.4 Noise During Operation

The printer's cooling fans can generate some noise, especially during high-speed printing. This is normal for efficient cooling. If unusual noises occur, inspect moving parts for lubrication needs or loose components.

6. Specifications

Feature	Specification
Model	CA-EL-3D-N4PL
Printing Technology	FDM (Fused Deposition Modeling)
Build Volume	320x320x385mm³ (12.59x12.59x15.15 inches)
Printing Speed	Up to 500mm/s (default 250mm/s)
Acceleration	Up to 12000mm/s²

Firmware	Klipper
Extruder Type	Dual-gear Direct Drive (5.2:1 reduction ratio)
Nozzle Temperature	Up to 300°C
Hotbed Temperature	Up to 110°C
Auto Bed Leveling	121-point
Cooling Fans	2x4015 model cooling fans, 3010 blower fan, 2x6025 blower fans
Connectivity	Wi-Fi, USB, Ethernet
Material	Metal
Product Dimensions	53.3D x 51.7W x 63.8H Centimetres
Item Weight	14.4 Kilograms

7. Warranty and Support

ELEGOO provides dedicated customer support for its products. For warranty information, please refer to the documentation included with your printer or visit the official ELEGOO website. If you encounter any issues or require assistance, contacting ELEGOO directly via their official support channels (e.g., email) is recommended, as their support team is known for being responsive and helpful.
For further assistance, please visit the official ELEGOO website or contact their customer service department.

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