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› BIQU H2 V2S Direct Drive Extruder User Manual

BIQU H2 V2S

BIQU H2 V2S Direct Drive Extruder User Manual

Model: H2 V2S

1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of your BIQU H2 V2S Direct Drive Extruder. Please read this manual thoroughly before use to ensure proper functionality and to maximize the lifespan of your device. The BIQU H2 V2S is designed for FDM 3D printers, offering enhanced extrusion performance and compatibility with various filament types.



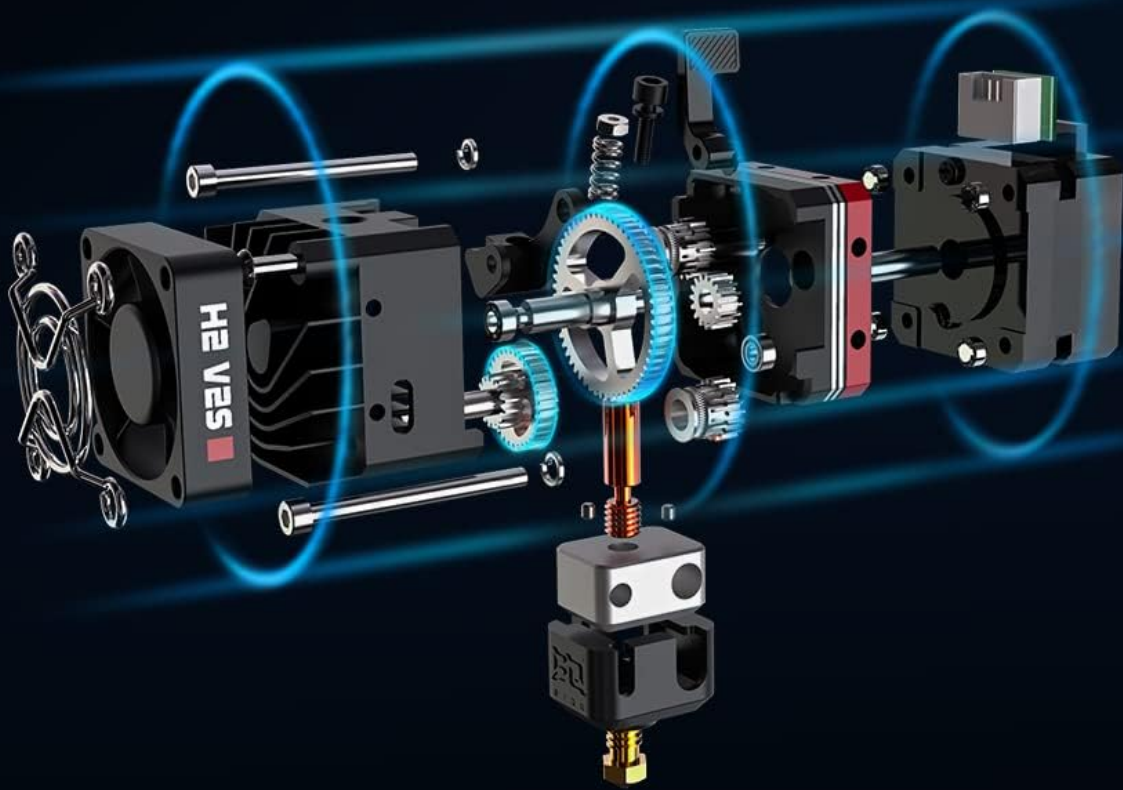
Figure 1: BIQU H2 V2S Direct Drive Extruder

2. KEY FEATURES

- **Upgraded Dual Gear System:** Features bimetallic gears (copper alloy + GRADE5 titanium alloy) for high temperature resistance, durability, and precision. The refined gear modulus (0.25 from 0.5) reduces the outer diameter, addressing previous V1.0 gear jamming issues and ensuring smoother extrusion.
- **All-in-One Direct Drive Design:** Integrates the hot end, extruder, stepping motor, and cooling fan into a compact unit. This short-range extrusion design provides precise control over filament feeding and retraction, leading to improved print quality.
- **Enhanced Clog Prevention & High-Temperature Capability:** The throat and nozzle inner walls have a smoothness of Ra0.4 to prevent clogging. A high-quality titanium-copper alloy hose with a silicone protector allows for printing temperatures up to 270°C, ensuring efficient heat dissipation.
- **Lightweight and Powerful:** Weighing only 195 grams, the H2 V2S minimizes print head inertia, making it suitable for various printer types. Its dual drive gears with a 7:1 internal gear ratio deliver a powerful extrusion torque of 770mN.m.
- **Versatile Mounting Options:** Designed with multiple mounting points to accommodate part cooling fans and auto-leveling sensors, offering flexibility in integration with your 3D printer setup.

Powerful Extrusion System

Dual gear and a gear ratio of 7:1 for exceptional pushing force.



770N
Extrusion Force



7:1
Gear Ratio

Figure 2: Powerful Dual Gear Extrusion System

3. PACKAGE CONTENTS

Verify that all components are present in your package:

- BIQU H2 V2S Extruder Assembly
- Cooling Fan
- Fan Guard
- Heater Cartridge
- Thermistor
- Motor Cable
- Assorted Screws and Hex Wrenches
- Open-end Wrenches
- User Guide (this document)

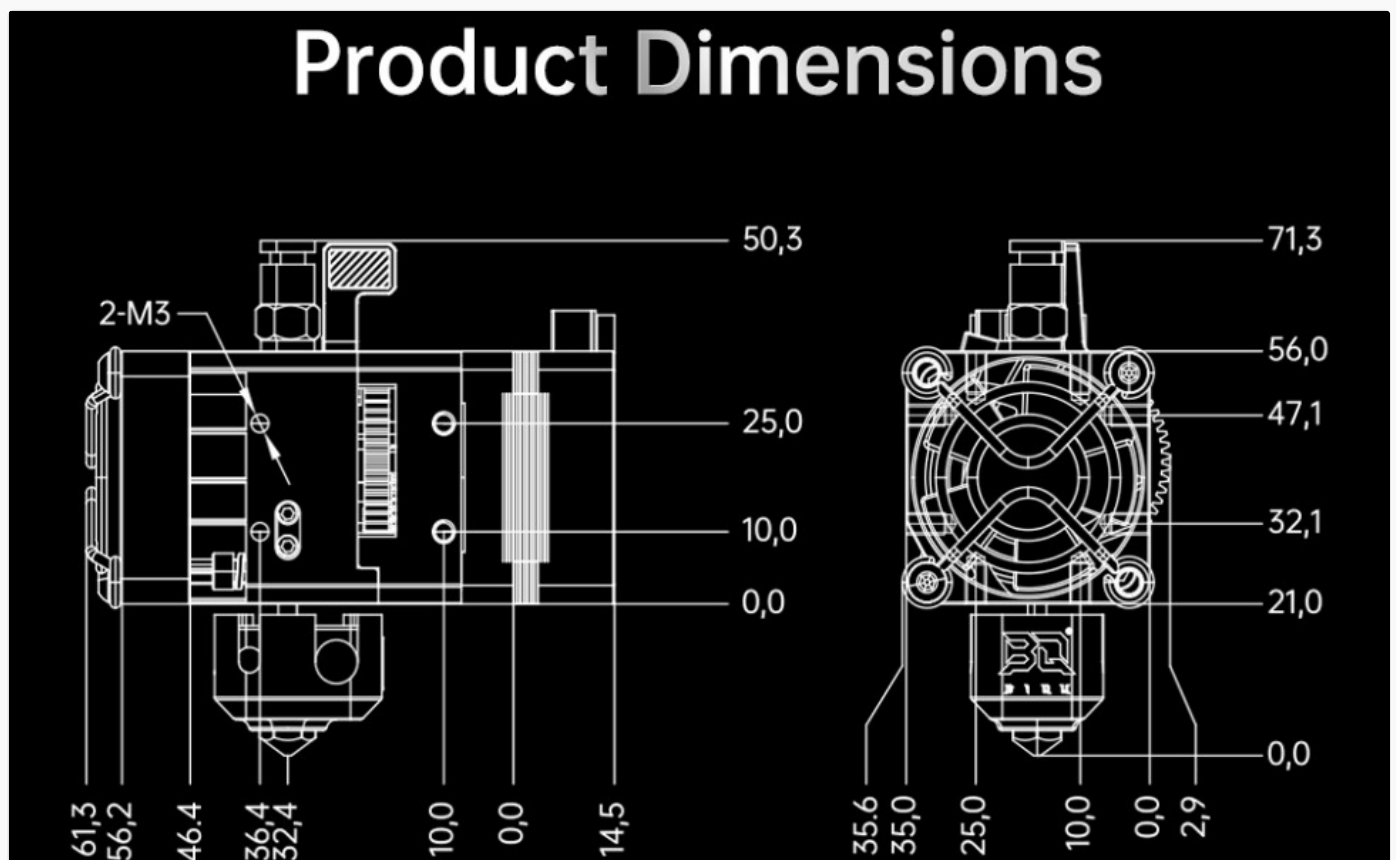


Figure 3: BIQU H2 V2S Extruder Package Contents

4. SETUP AND INSTALLATION

Installation of the BIQU H2 V2S Extruder requires mechanical assembly and firmware configuration. It is recommended to consult your 3D printer's specific documentation for mounting points and wiring diagrams.

4.1 Mechanical Installation

1. **Power Off:** Ensure your 3D printer is powered off and unplugged before beginning installation.
2. **Remove Old Extruder:** Carefully remove your existing extruder and hot end assembly from the printer's carriage. Disconnect all wiring.
3. **Mount H2 V2S:** Attach the BIQU H2 V2S Extruder to your printer's carriage using appropriate screws and mounting brackets (not included, typically printer-specific). The H2 V2S offers versatile mounting points for compatibility.

4. **Connect Wiring:** Connect the motor cable, heater cartridge, thermistor, and cooling fan to the corresponding ports on your printer's mainboard or breakout board. Ensure correct polarity for the fan and thermistor.
5. **Secure Cables:** Route and secure all cables to prevent interference with printer movement.

4.2 Firmware Configuration

After mechanical installation, firmware adjustments are necessary for optimal performance. Specific values may vary based on your printer and mainboard.

1. **Update E-steps:** The BIQU H2 V2S uses a dual-gear system with a 7:1 gear ratio. You will need to update your printer's E-steps (steps per millimeter for the extruder) in the firmware. A common starting value for the H2 V2S is around 932 steps/mm, but precise calibration is recommended.
2. **PID Tuning:** Perform PID tuning for the new hot end to ensure stable temperature control. This is crucial for consistent printing.
3. **Retraction Settings:** Due to the direct drive nature, retraction distance should be significantly reduced compared to Bowden setups. A starting point of 0.5mm retraction distance and a retraction speed of 4mm/s is often effective. Adjust as needed for your specific filament.
4. **Z-Offset Calibration:** Recalibrate your Z-offset to ensure proper first layer adhesion, as the new extruder may alter the nozzle's position relative to the print bed.

Refer to your 3D printer's documentation or community resources for detailed instructions on firmware modification and calibration procedures.

5. OPERATING INSTRUCTIONS

5.1 Filament Loading

1. **Preheat Hot End:** Heat the hot end to the appropriate temperature for your filament type.
2. **Engage Lever:** Press the filament loading lever to open the extruder gears.
3. **Insert Filament:** Carefully insert the 1.75mm filament into the extruder's input hole, guiding it past the gears and into the hot end.
4. **Release Lever:** Release the loading lever. The gears should now grip the filament.
5. **Extrude Manually:** Manually extrude a small amount of filament through your printer's interface until molten filament emerges cleanly from the nozzle, indicating successful loading.

5.2 Filament Unloading

1. **Preheat Hot End:** Heat the hot end to the appropriate temperature for your filament type.
2. **Engage Lever:** Press the filament loading lever.
3. **Pull Filament:** While holding the lever, gently pull the filament upwards and out of the extruder.
4. **Store Filament:** Store the filament properly to prevent moisture absorption.

Great for Flexible Filaments

Adjust the screw tensioner to accommodate different drive gear tension and improve printing with flexible filament.

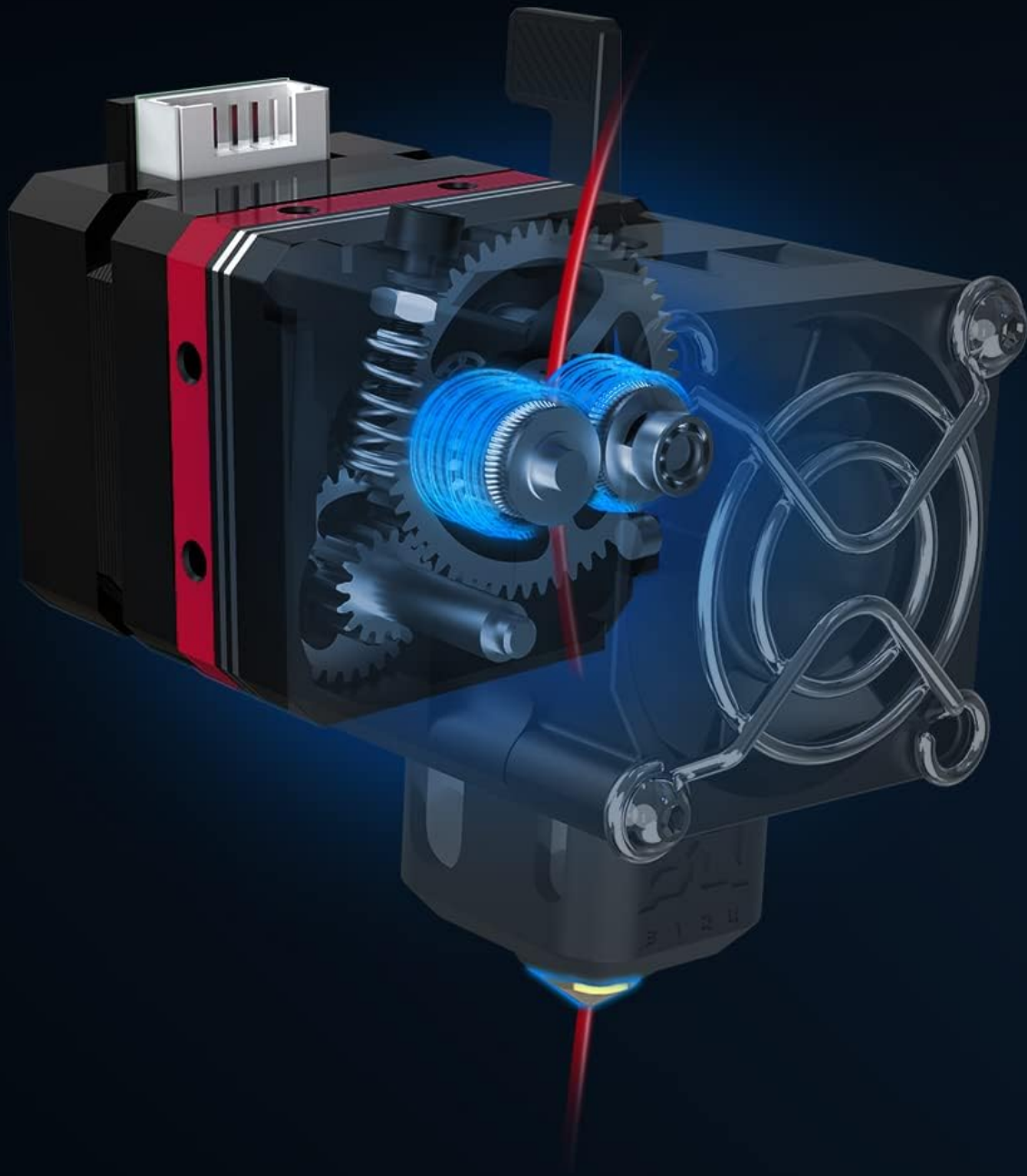


Figure 4: Filament Path and Dual Drive Gears

Regular maintenance ensures consistent performance and extends the life of your BIQU H2 V2S Extruder.

- **Nozzle Cleaning/Replacement:** Periodically inspect the nozzle for wear or clogs. Replace the nozzle if it shows signs of damage or significant wear. Ensure the hot end is heated when replacing the nozzle to prevent damage.
- **Extruder Gear Cleaning:** Over time, filament dust can accumulate on the drive gears. Use a small brush or compressed air to clean the gears.
- **Heat Break Inspection:** The bimetallic heat break is designed for durability. If you experience persistent clogging not resolved by nozzle cleaning, inspect the heat break for any blockages or damage. The hose is designed for easy disassembly.
- **Fan Cleaning:** Keep the cooling fan free of dust and debris to ensure efficient heat dissipation.
- **Screw Tensioner Adjustment:** The screw tensioner allows adjustment of the drive gear tension. Adjust this as needed, especially when printing with flexible filaments, to optimize grip without crushing the filament.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your BIQU H2 V2S Extruder.

7.1 Filament Not Extruding

- **Clogged Nozzle:** Perform a cold pull or replace the nozzle.
- **Incorrect Temperature:** Ensure the hot end is at the correct temperature for the filament.
- **Filament Path Blockage:** Check the filament path for any obstructions, including within the heat break.
- **Extruder Gears Not Gripping:** Adjust the screw tensioner to increase pressure on the filament. Ensure the filament is correctly seated between the gears.

7.2 Inconsistent Extrusion / Under-extrusion

- **E-steps Calibration:** Recalibrate your E-steps for precise filament delivery.
- **Partial Clog:** A partial clog can lead to inconsistent flow. Refer to nozzle cleaning.
- **Heat Creep:** Ensure the hot end cooling fan is functioning correctly and is free of dust.
- **Filament Quality:** Poor quality or inconsistent diameter filament can cause issues.

7.3 Clicking Sound from Extruder

- **Nozzle Clog:** The most common cause. The extruder motor skips steps when it cannot push filament through.
- **Too Much Back Pressure:** Printing too fast, too cold, or with excessive retraction can cause back pressure.
- **Insufficient Tension:** The gears might be slipping on the filament. Adjust the screw tensioner.

8. SPECIFICATIONS

Specification	Value
Product Dimensions	3.04 x 3.02 x 1.5 inches (7.72 x 7.67 x 3.81 cm)
Item Weight	7.4 ounces (211 grams)
Model Number	UUU001870

Specification	Value
Brand	BIQU
Material	Aluminum (6061 T6)
Color	Black
Filament Diameter	1.75mm
Max Printing Temperature	270°C (with bimetallic heat break and silicone sock)
Gear Ratio	7:1
Extrusion Force	770mN.m



Figure 5: Lightweight Design of the H2 V2S Extruder

9. COMPATIBILITY

The BIQU H2 V2S Extruder is designed for wide compatibility with many FDM 3D printers. It can be installed on models such as:

- BIQU B1
- Ender 3 (V2)
- Ender 6
- CR-10S Pro
- CR-10 V2/V3
- Mega X
- X1 Genius

Users may need to perform DIY modifications and update corresponding firmware to integrate the extruder with their specific printer model.

Perfect Compatibility

Easily print ABS, PLA, PVA, HIPS, PET, TPU, etc.

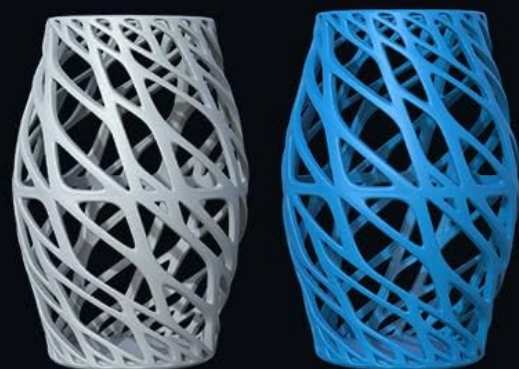


Figure 6: Diverse Printing Capabilities

For warranty information and technical support, please refer to the official BIQU website or contact your retailer. Keep your proof of purchase for warranty claims. BIQU is committed to providing assistance for product-related inquiries and issues.

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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

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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