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> Voxelab Aquila D1 3D Printer Instruction Manual: Setup, Operation, and Maintenance

Voxelab Aquila D1

Voxelab Aquila D1 3D Printer Instruction Manual

Model: Aquila D1

1. INTRODUCTION

Thank you for choosing the Voxelab Aquila D1 3D Printer. This manual provides essential information for the safe and efficient operation of your device. Please read it thoroughly before assembly and use to ensure optimal performance and longevity of your printer.



Image: Overview of the Voxelab Aquila D1 3D Printer.

2. KEY FEATURES

- **25-point Auto Leveling:** The print head features an intelligent 25-point leveling system for automatic compensation of heat bed unevenness, simplifying operation for all users.
- **PEI Spring Steel Platform:** Equipped with a wear-resistant, bendable, and unbreakable PEI flexible removable steel plate. Its magnetic design allows for easy installation and tool-free model removal in approximately 3 seconds.

- **Enhanced Print Speed:** Achieves a maximum printing speed of 180mm/s (average 100mm/s), significantly improving efficiency while maintaining print quality.
- **Increased Print Volume:** Offers a print volume of 235x235x250mm, providing ample space for various printing needs, from animation characters to household goods.
- **32-bit Silent Mainboard:** Operates at low decibel levels (average noise level of about 50 dB), ensuring a quiet printing environment.
- **Dual-Gear Direct Extruder:** Provides a strong wire feeding force of up to 70N, ensuring smoother filament feeding, especially for flexible filaments like TPU.
- **X-axis, Y-axis Linear Guide:** Utilizes linear guide rails for X and Y axes, offering motion accuracy of $\pm 0.02\text{mm}$, reducing surface texture issues from machine shaking, and enhancing print stability and detail.
- **Z-axis High-precision Double Screw:** Adopts a double screw synchronous operation to minimize printing wobbles, leading to more stable operation and reduced zeroing error.
- **Smart Sensors:** Includes power failure recovery and filament run-out detection to prevent printing failures due to unexpected interruptions.
- **Dual Cooling Adjustable Fans:** Fan speed can be adjusted based on material temperature sensitivity for smoother wire feeding and improved model quality.
- **High-Temp Printing:** Supports printing with multiple filaments up to 300°C, including PLA, ABS, PETG, TPU, Wood, and PLA-CF.

3. PACKAGE CONTENTS

Upon unboxing, please verify that all components listed below are present and undamaged:

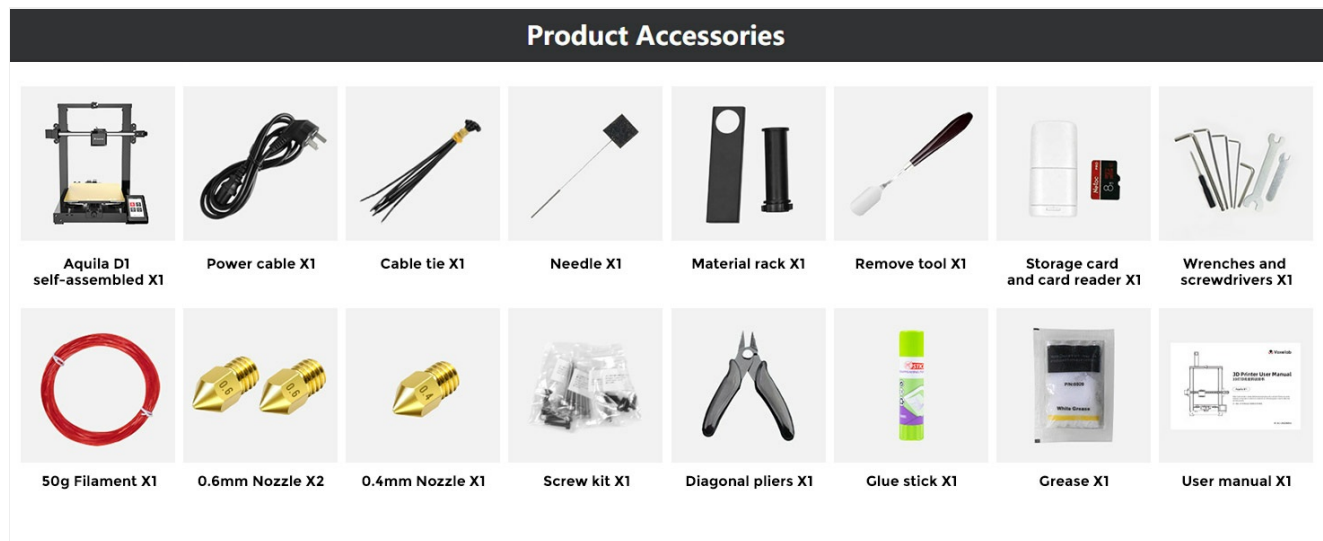


Image: Detailed view of the Voxlab Aquila D1 packing list.

- Aquila D1 (self-assembled) x1
- Power cable x1
- Cable tie x1
- Needle x1
- Material rack x1
- Remove tool x1
- Storage card and card reader x1
- Wrenches and screwdrivers x1
- 50g Filament x1
- 0.6mm Nozzle x2

- 0.4mm Nozzle x1
- Screw kit x1
- Diagonal pliers x1
- Glue stick x1
- Grease x1
- User manual x1

4. SETUP AND ASSEMBLY

The Voxelab Aquila D1 features a modular design for quick assembly. Follow these steps to set up your printer:

4.1 Unboxing and Initial Assembly

Video: Unboxing and initial assembly guidance for the Aquila D1.

1. **Unpack Components:** Carefully remove all equipment and spare parts from the packaging.
2. **Attach Gantry:** Lift the X-axis assembly and fix the gantry onto the base assembly using four M5X45 combination screws.
3. **Install Nozzle Assembly:** Cut the tape on the X-axis. Install the nozzle assembly onto the nozzle connector and secure it with 2 screws.
4. **Fasten Extruder Cover:** Place and fasten the extruder cover on the extruder. Align the holes and install the cover with two M3x6 round head screws.
5. **Assemble Material Rack:** Install the material pipe and nut onto the rack. Fix the assembled rack on the top profile with two M4X6 screws and two T-nuts.
6. **Install Filament Sensor:** Take out the filament sensor assembly from the tool kit. Pass the two screws through the sensor module mounting holes and then assemble them on the X-axis with an M3 hex wrench. Do not overtighten the screws, allowing the wire detection assembly to swing.
7. **Attach Display Screen:** Fix the display screen on the machine's right base with two M5X12 screws.
8. **Connect Cables:** Connect the display screen cable, Z-axis motor cable, X-axis motor cable, X-axis switch cable, filament sensor cable, and nozzle cable.

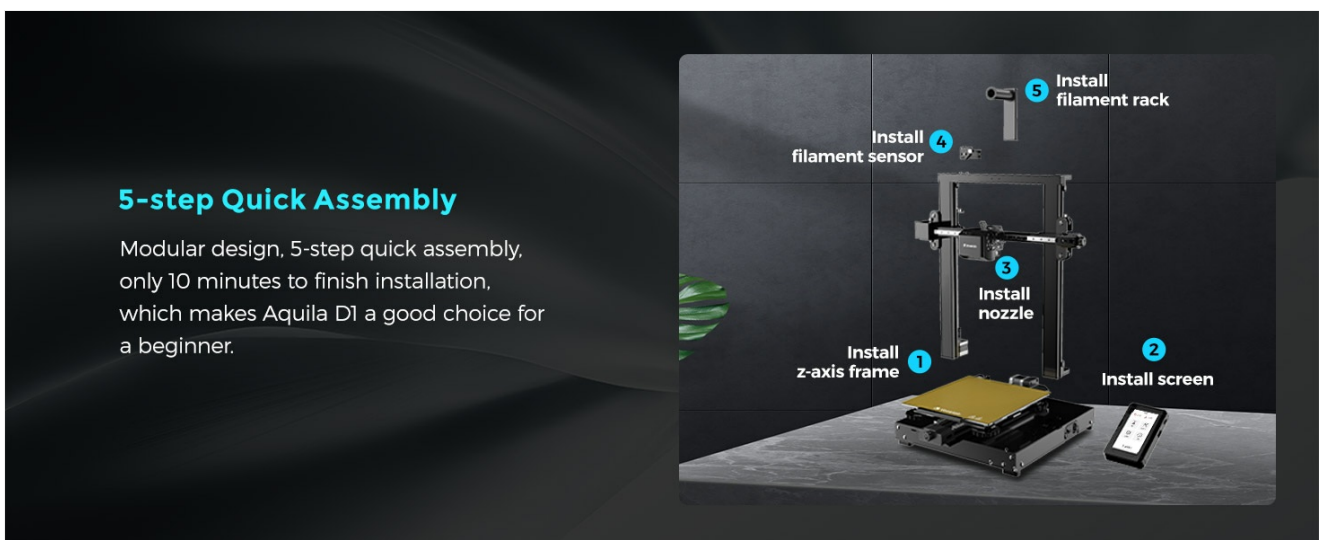


Image: Visual guide for the 5-step quick assembly process.

5. OPERATING INSTRUCTIONS

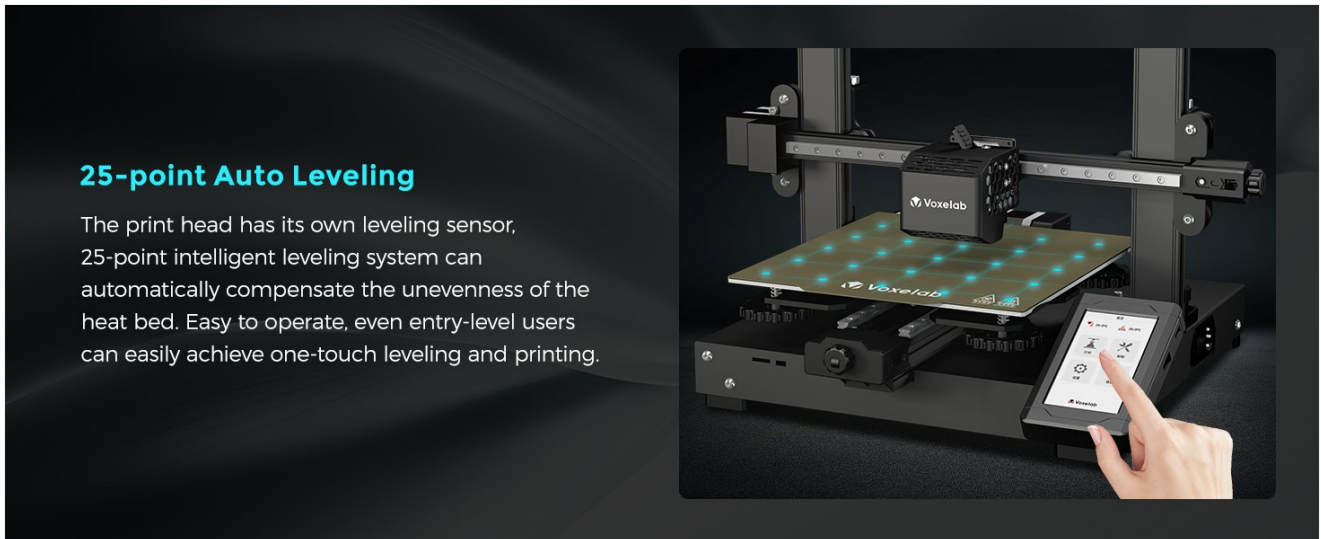
5.1 Power On and Initial Checks

1. **Check Voltage:** Before powering on, ensure the machine voltage is consistent with your local power supply.
2. **Power On:** Turn on the machine. Confirm that the back-to-zero function is working properly.

5.2 Auto-Leveling

The Aquila D1 features a 25-point intelligent auto-leveling system:

1. Navigate to the 'Control' menu on the display screen.
2. Select 'Auto-leveling' and follow the on-screen prompts. The printer will automatically probe 25 points on the print bed to compensate for any unevenness.



25-point Auto Leveling

The print head has its own leveling sensor. 25-point intelligent leveling system can automatically compensate the unevenness of the heat bed. Easy to operate, even entry-level users can easily achieve one-touch leveling and printing.

Image: The 25-point auto-leveling process in action.

5.3 Z-offset Calibration

After auto-leveling, perform Z-offset calibration for optimal first layer adhesion:

1. Place a piece of A4 paper under the nozzle.
2. On the display, click the down arrow key to slowly move the nozzle closer to the platform.
3. Continue adjusting until obvious resistance is felt when sliding the A4 paper back and forth between the nozzle and the platform.
4. Click the 'Back' key to complete the Z-offset calibration.

5.4 Loading Filament

Ensure the printer is preheated to the appropriate temperature for your filament type. Insert the filament into the extruder until it is gripped by the gears and begins to feed through the nozzle.

5.5 Starting a Print

Once leveled and filament is loaded, you can start printing:

1. Prepare your 3D model using slicing software (e.g., VoxelMaker, Cura, Simplify3D) and save it to the provided storage card.
2. Insert the storage card into the printer's card slot.
3. On the display, navigate to 'Print' and select your desired G-code file.
4. Confirm your selection to begin the printing process.

6. MAINTENANCE

Regular maintenance ensures consistent print quality and extends the lifespan of your Voxelab Aquila D1:

- **Clean Print Bed:** After each print, allow the print bed to cool and carefully remove the printed object. Clean the PEI surface with isopropyl alcohol to remove any residue.
- **Nozzle Cleaning:** Periodically clean the nozzle to prevent clogs. Use the provided needle to clear any blockages. For stubborn clogs, a cold pull or hot end disassembly may be required.
- **Lubricate Moving Parts:** Apply a small amount of grease to the Z-axis lead screws and linear guides every few months to ensure smooth movement.
- **Check Belts:** Ensure the X and Y-axis belts are properly tensioned. They should be taut but not overly tight.
- **Firmware Updates:** Check the official Voxelab website for any available firmware updates to improve performance and add new features.

7. TROUBLESHOOTING

Here are some common issues and their potential solutions:

- **Poor First Layer Adhesion:** Ensure the print bed is clean, properly leveled, and the Z-offset is correctly calibrated. Increase bed temperature if necessary.
- **Filament Not Extruding:** Check for clogged nozzle, tangled filament, or incorrect extruder temperature. Ensure the extruder gears are gripping the filament.
- **Layer Shifting:** Verify that the printer is on a stable surface and that the X and Y-axis belts are properly tensioned. Check for any obstructions in the movement path.
- **Print Quality Issues (e.g., stringing, blobs):** Adjust retraction settings, print speed, and temperature in your slicing software. Ensure filament is dry.
- **Printer Not Powering On:** Check power cable connections and ensure the power switch is in the 'ON' position. Verify voltage setting matches local supply.

For more detailed troubleshooting, refer to the Voxelab support resources or contact customer service.

8. TECHNICAL SPECIFICATIONS

Category	Specification
Printer Dimensions	22.44 x 14.96 x 8.46 inches (570 x 380 x 215 mm)
Item Weight	22 pounds (10 Kilograms)
Print Volume	235 x 235 x 250 mm
Nozzle Diameter	Standard 0.4 mm (Optional 0.6 mm)
Maximum Extruder Temperature	≤300°C
Maximum Platform Temperature	≤110°C
Print Speed	≤180 mm/s (100 mm/s normally)
Filament Compatibility	Φ1.75 mm PLA, PETG, TPU 95A, ABS, HIPS

Category	Specification
Layer Thickness	0.1 mm - 0.4 mm
Print Precision	±0.2 mm
Connectivity	USB / SD Card
Software	VoxelMaker / Cura / Simplify 3D
Supported File Format	STL, OBJ, AMF
Input / Output File Format	.gcode
Operating System Support	Win 7 / 10 / Mac OS
Running Noise	50 dB
Working Environment	15-30°C
Language Switch	Chinese / English / Spanish / French / German / Russian
Auxiliary Leveling	25-point leveling
Z-Axis	Threaded rod x 2
Power Loss Recovery	Yes
Filament Sensor	Yes
Flexible Platform	Yes
Buzzer Hint	Yes

9. SAFETY INFORMATION

- Always operate the printer in a well-ventilated area.
- Keep the printer away from flammable materials and heat sources.
- Do not touch the nozzle or heated bed during operation, as they reach high temperatures.
- Keep children and pets away from the printer during operation.
- Always disconnect power before performing any maintenance or cleaning.
- Use only recommended filaments and accessories.

10. WARRANTY AND SUPPORT

The Voxelab Aquila D1 3D Printer comes with a standard manufacturer's warranty. For specific warranty terms, technical support, or service inquiries, please refer to the warranty card included in your package or visit the official Voxelab website. You can also find additional resources and community support online.

