THUNDER AIR

For Thunder Air 700

Thunder Laser

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Feb 2026

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Chapter 1.Introduction

1.1 General Information

Please read this documentation carefully before installation and operation.

Injury, death, loss of property, fire, electric shock, malfunction, reduced performance & machine life, and critical failures can result from not reading, understanding, and following the Operation Manual!

Operation of the system is permitted only with equipment and spare parts supplied or listed in the spare parts and consumables lists. The use of 3rd Party components may void the warranty.

Auxiliary equipment must be adjusted to the base machine (contact us for further info).

The THUNDER AIR is used for the purification of fumes, dust and odors generated during laser engraving, marking, cutting, or additive manufacturing processes. A wide variety of processing scenarios involving materials such as rubber, acrylic, coated metal, tin, special steel, anodized aluminum, cork, cardboard, glass, leather, marble, several plastics and wood can be matched with this fume extractor for efficient air treatment.

1. The purification process must only be performed with a perfectly adjusted machine.
2. The manufacturer does not admit liability for personal injury and/or equipment damage resulting from improper use.
3. The Thunder Air system must only be operated, maintained and repaired by personnel that are familiar with laser processing auxiliary equipment and the potential hazards of fume purification systems.
4. Non-observance of the instructions for operation, maintenance and repair described in this Operation Manual excludes any liability of the manufacturer if a defect occurs.
5. Caution when purifying fumes generated from processing conductive materials (e.g., carbon fibers). Conductive dust or particles contained in the fumes might damage the purifier's electrical components and lead to short circuits. Bear in mind that those defects are not warranted.
6. Thunder is committed to continuously improving the product and related materials, and therefore reserves the right to modify and update product and contents of this manual without prior notice.

Do not dispose the machine with domestic waste!

Electronic devices have to be disposed according to the regional directives on electronic and electric waste disposal. In case of further questions, please ask your supplier. He might take care of proper disposal.

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1.2 Application Scope

The Thunder Air is an environmental protection device specially designed for the smoke, dust and harmful gases generated during laser processing. It has a wide range of applications covering multiple scenarios, and is particularly suitable for industrial facilities, laboratories and other environments with high air quality requirements.

Industrial Manufacturing Sector

❖**Laser Marking, Engraving, Cutting and Welding:** Applicable to laser processing of materials including metals, plastics, wood, acrylic and leather, with efficient purification of smoke and odors.

❖**Electronics Manufacturing:** Purification of smoke generated during processes such as soldering, wave soldering, and reflow soldering.

❖**Additive Manufacturing (3D Printing):** Ultra-fine particles and toxic gases generated during processes such as SLS and SLA.

Laboratory

❖**Laser Experimental Equipment:** For purification of smoke generated by small and medium-sized laser experiments in universities or research institutions.

The Thunder Air adopts an imported high-pressure, high-speed centrifugal fan, featuring strong suction, low power consumption, and a long service life. This device is easy to operate and simple to install, and the purified air meets indoor air emission standards. The filtration system of the Thunder Air consists of five components, arranged in the following sequence: Oil & Spark Protection Mesh → G4 Pre-Filter → F8 Medium Filter→ Activated Carbon Filter → H13 HEPA Filter.

●The Oil & Spark Protection Mesh can isolate large particles in the airflow, effectively adsorb grease, and prevent sparks from entering the main filter layer.

●The G4 Pre-Filter is capable of isolating dust particles with a particle size of over 5μm and adsorbing grease efficiently.

●The F8 Medium Filtercan effectively trap dust particles ranging from 1μm to 5μm in size.

●The Activated Carbon Filter is designed to adsorb harmful gases contained in the smoke.

●The H13 HEPA Filter can effectively prevent the emission of dust particles with a particle size of 0.3μm or above.

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1.3 Machine Parameters

Module	Thunder Air 700
Equipment Dimensions	W475 *D605 *H972mm
Packaging Dimensions	W510*D640*H1080mm
Weight	95KG/209.44 lb
Air pressure	MAX. 4000Pa
Capacity	MAX. 700m³/h（Adjustable）
Noise	≤65 dB
Current	3A (220V) 5A (110V)
Frequency	50/60Hz
Power	600w
Supported Voltage	230V±5% or 110V±10%
Recommended circuit breaker	10A
Control Mode	PLC-controlled speed regulation and differential pressure signal alarm
Filter System	Oil & Spark Protection Mesh G4 Pre-Filter F8 Medium Filter Activated Carbon Filter H13 HEPA Filter
Air duct	150mm(Standard), 100 mm & 200 mm(Optional)

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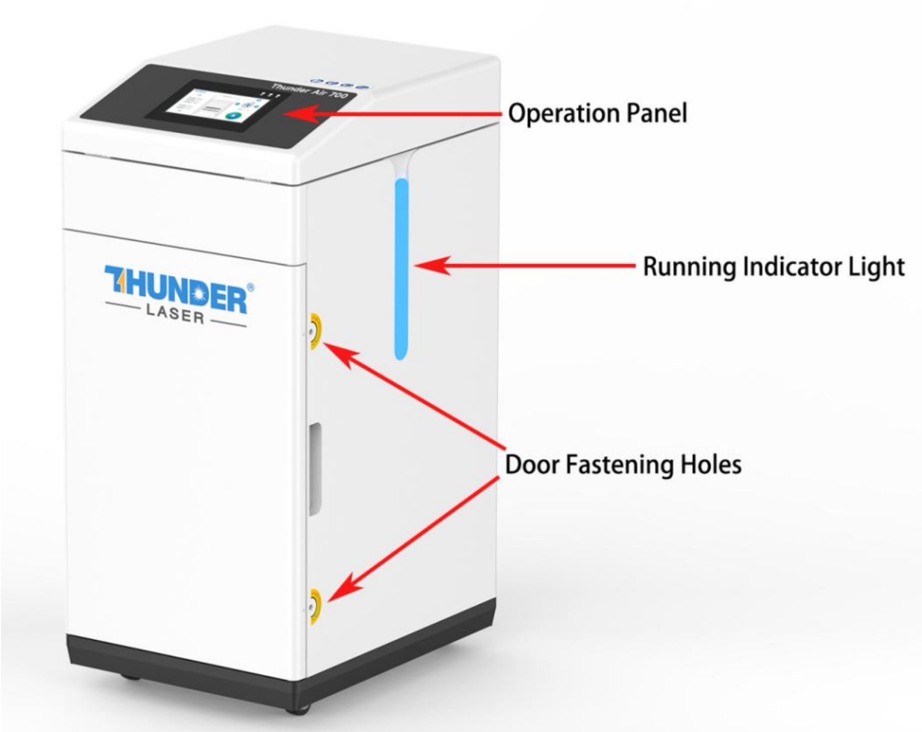
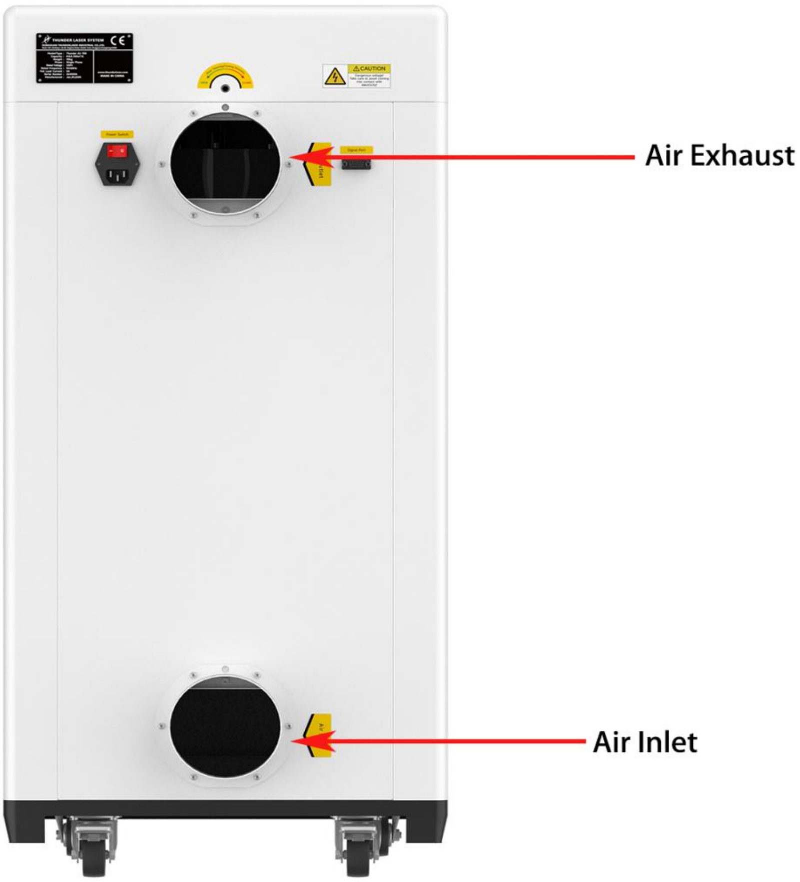
Chapter 2. Machine View





1. Operation Panel

Used for setting operating parameters, controlling the start/stop of the purifier, and checking real-time running status and fault alarms.

2. Indicator Light

The light will turn on automatically when the machine is powered on.

3. Door Fastening Holes

Used to fix the equipment door with screws or fasteners, ensuring the door is tightly closed to prevent unfiltered air from leaking out and maintain the safety of internal components.

4. Air Inlet

The entry port for contaminated air containing smoke, dust, and odors generated during laser processing. The air is drawn into the purifier through this port for filtration.

5. Air Exhaust

The outlet for clean, filtered air.

After passing through multiple layers of filtration systems, the purified air is discharged from this port to meet environmental and safety standards.

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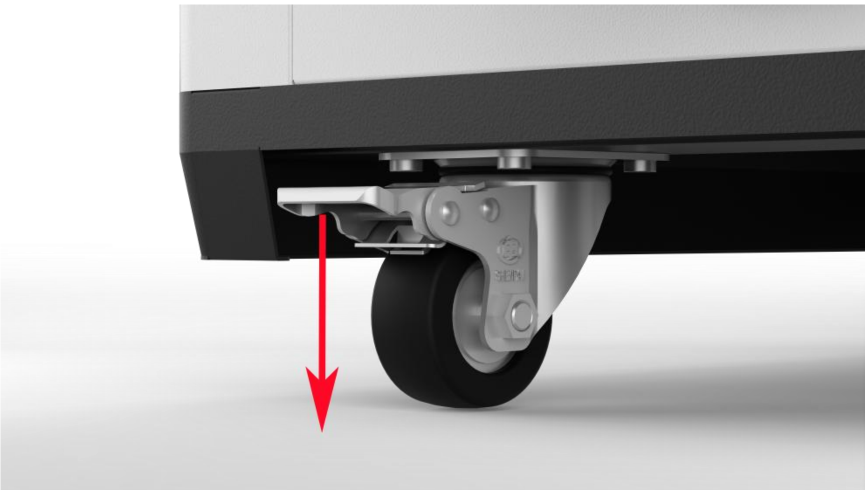

6. Caster Wheel

After positioning the machine, press down the four-corner caster brakes to lock the wheels and secure the unit.

7. Signal Port

Connect with supplied signal cable to control exhaust air volume.

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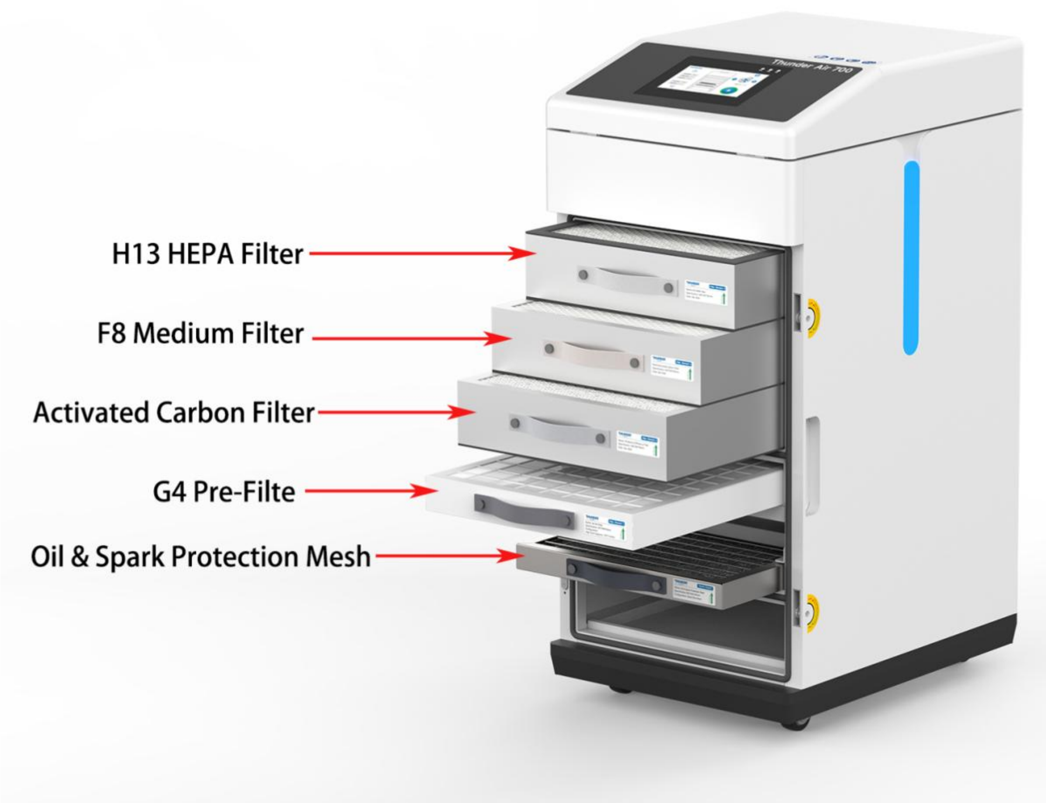

H13 High Filter: Maximum adsorption capacity for dust particles with diameter 0.5~2.5μm, 200,000μg.

Activated Carbon Layer: Maximum adsorption capacity for VOCs: 1,400,000 mg.

F8 Medium efficiency Filter Layer: Maximum adsorption capacity for dust particles with diameter 2.5~5μm, 500,000μg.

G4 Pri- Filte: Maximum adsorption capacity for dust particles with diameter ≥5μm, 700,000μg.

Oil & Spark Protection Mesh: An innovative wave-shaped labyrinth flame-arresting channel with a multi-stage reverse-flow design (over 40 layers) effectively decelerates and cools spark-laden airflow. The spark interception efficiency reaches up to 99.9%, significantly reducing fire risks.

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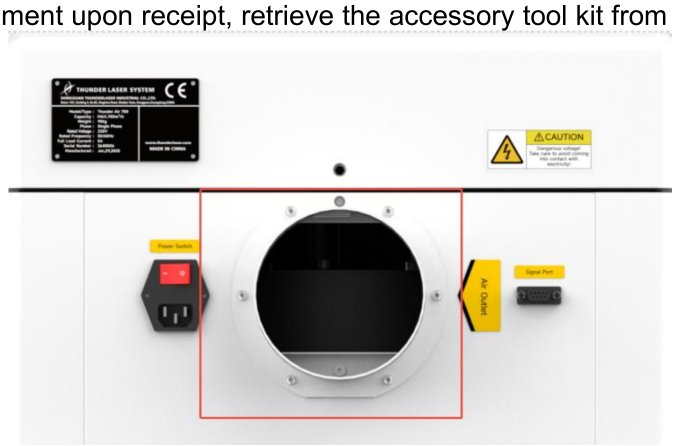
Chapter 3. Operating Instructions

1.After unpacking the equipment upon receipt, retrieve the accessory tool kit from behind the air outlet.



2.Collect to power supply

Before connecting the power supply, it is necessary to confirm that the voltage and frequency of the power source match the rated voltage and frequency of the equipment.

3.Pipeline collection

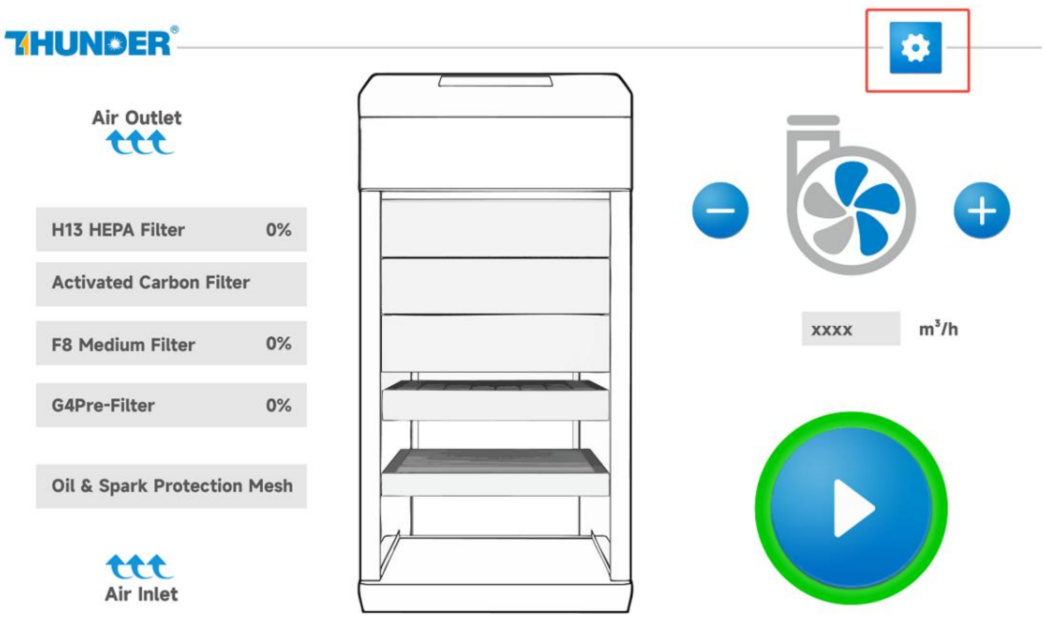
The collection between the hose and the fume purifier shall be kept sealed, and the hose must not be kinked so as to avoid obstructing airflow.

4.Machine operation

4.1.Turn on the power switch on the back of the machine;

4.2.Language Switch

You can click  ,then choose “English”.



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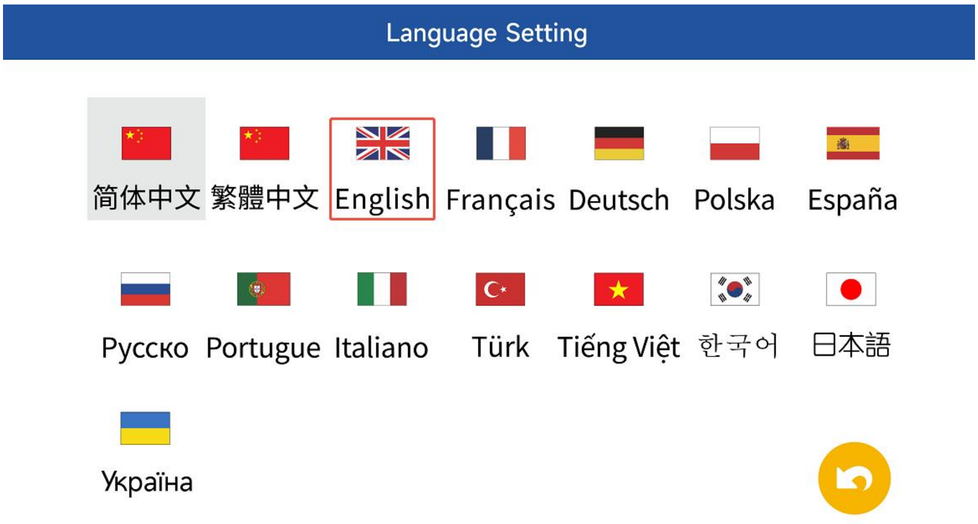
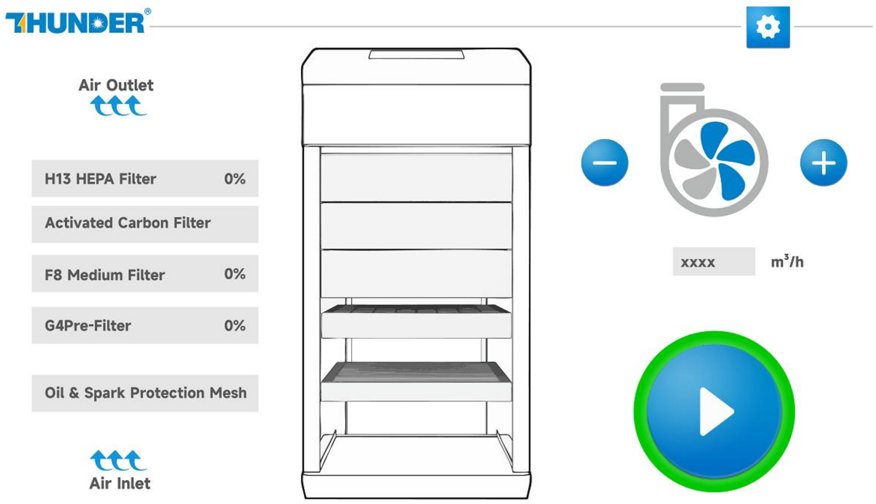
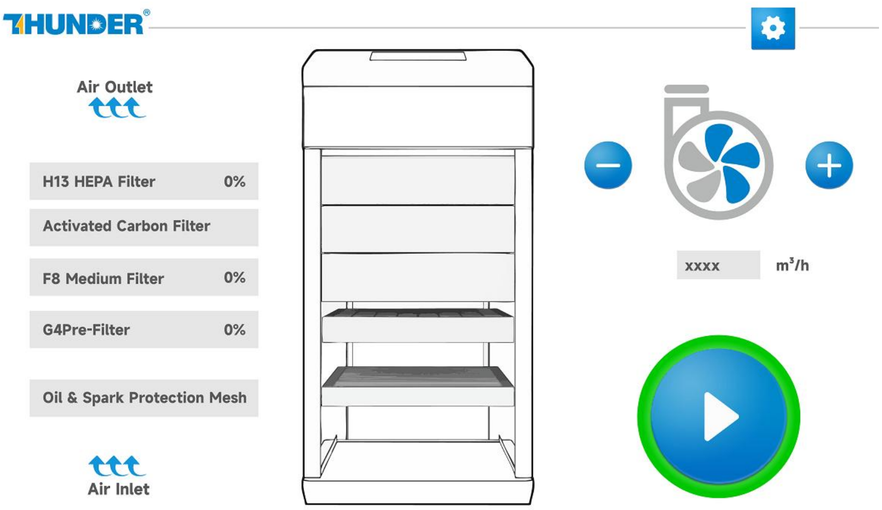




English interface

4.3.Startup: After the operation screen powers on and lights up, click  button on the screen and the machine will start operating.



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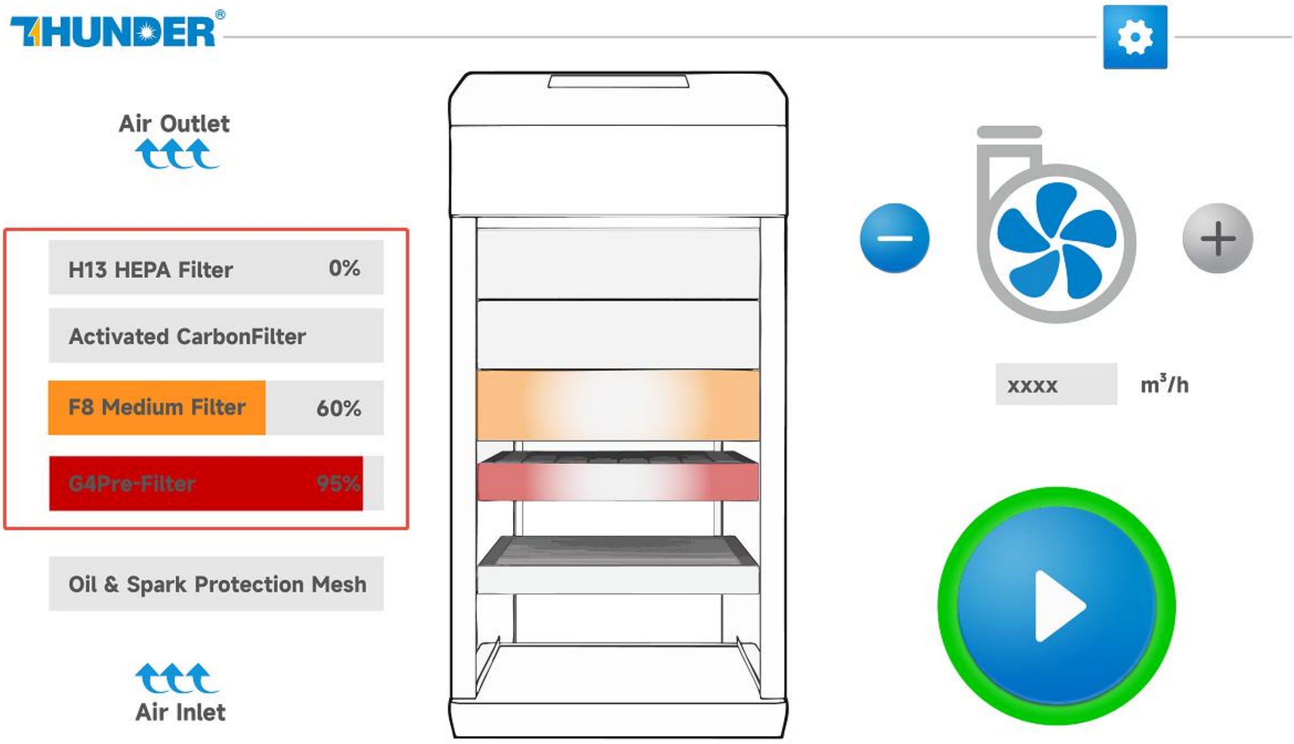
4.4.The operating display screen shows the service status of each filter layer.

Green light: Normal service of Filter element

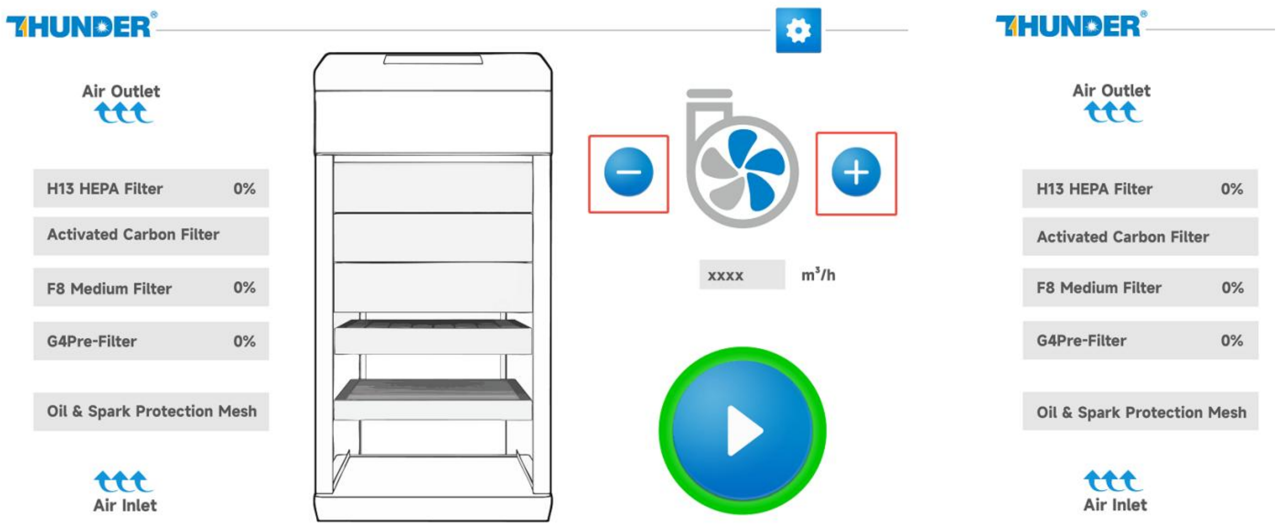
Yellow light: Filter element replacement required soon

Red light: Filter element replacement required



4.5.Fan speed setting

Click and buttons adjusted Air volume to 200, 350, 460, 600 or 700(max).



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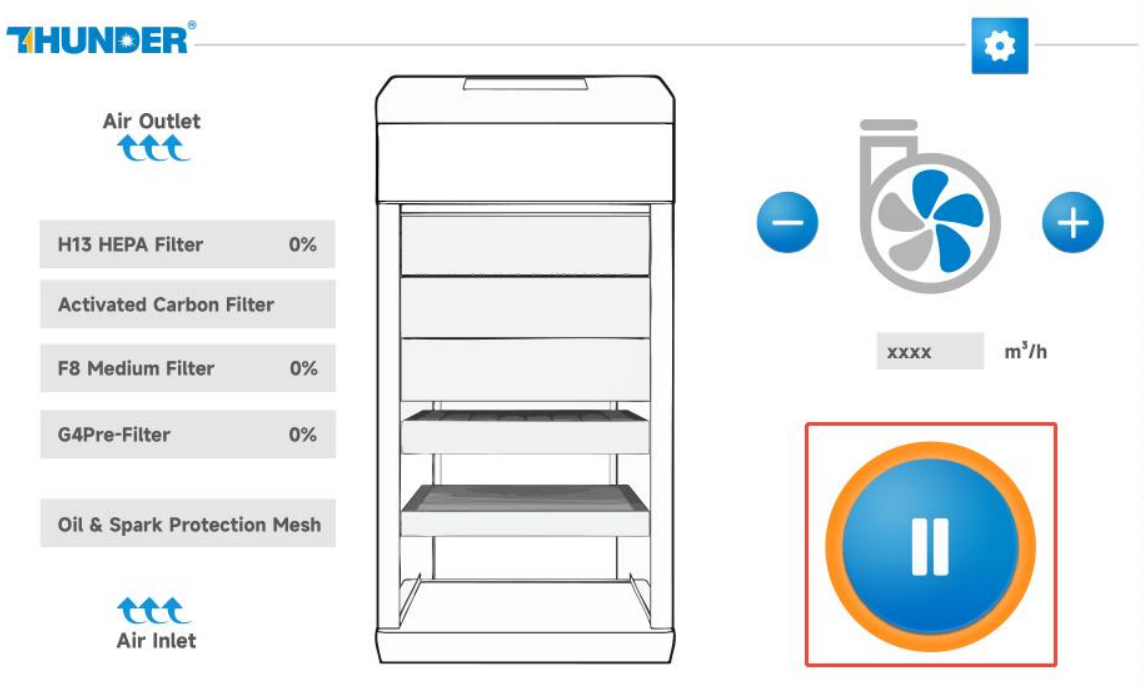
4.6.Shutdown: About one minute after the laser is turned off, click  button on the operation screen and the machine will stop running.



3.7 Turn off the power switch on the back of the machine.

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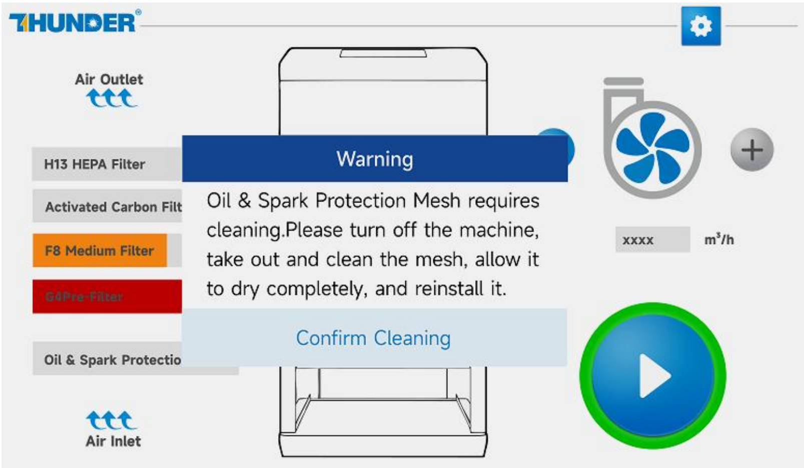
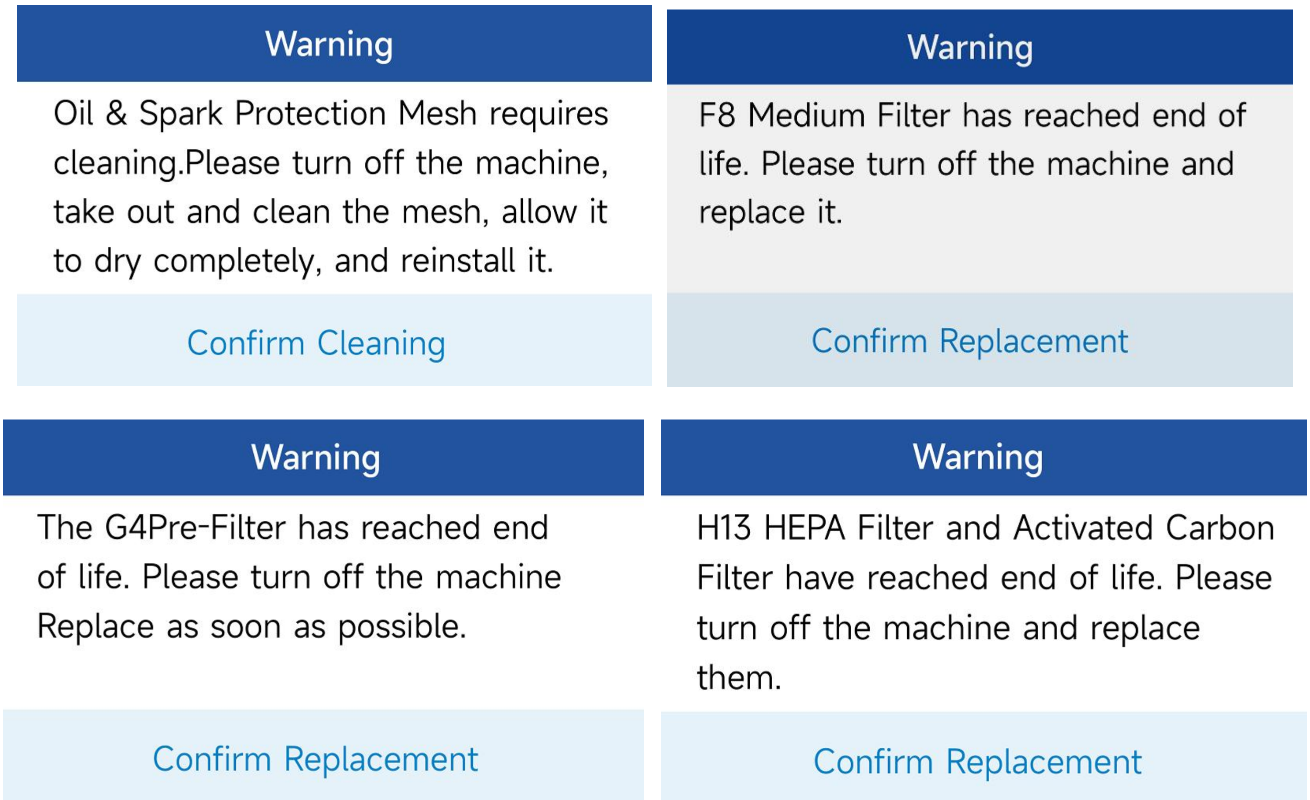
Chapter 4. Maintenance

1. Filter Cleaning & Replacement Conditions

When the filter element has been in use for a period of time, protective gloves and a face mask must be worn for safety during any operation such as replacement or removal and movement.

If the following pop-up message appears on the machine control panel, replace the corresponding filter element in accordance with the on-screen instructions.





Otherwise, it will affect the service life of the subsequent filter layer.

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2. Replacement Procedures

Turn off the purifier and the main power supply.

2. Wait at least 1 minute after shutdown to allow internal air pressure to fully release.

⚠ During operation, internal air pressure may make it difficult to open the door or remove filters.

Using a 5 mm Allen wrench, loosen the two door fastening bolts and open the front access door.

Tools: 5mm Allen wrenches

3.If only the **primary protective net** or **primary filter** requires cleaning or replacement:

1. Remove the filter directly from its slot.
2. Clean or replace it as needed.
3. Reinstall it securely in its original position.

If other filter elements require replacement, follow the steps below.

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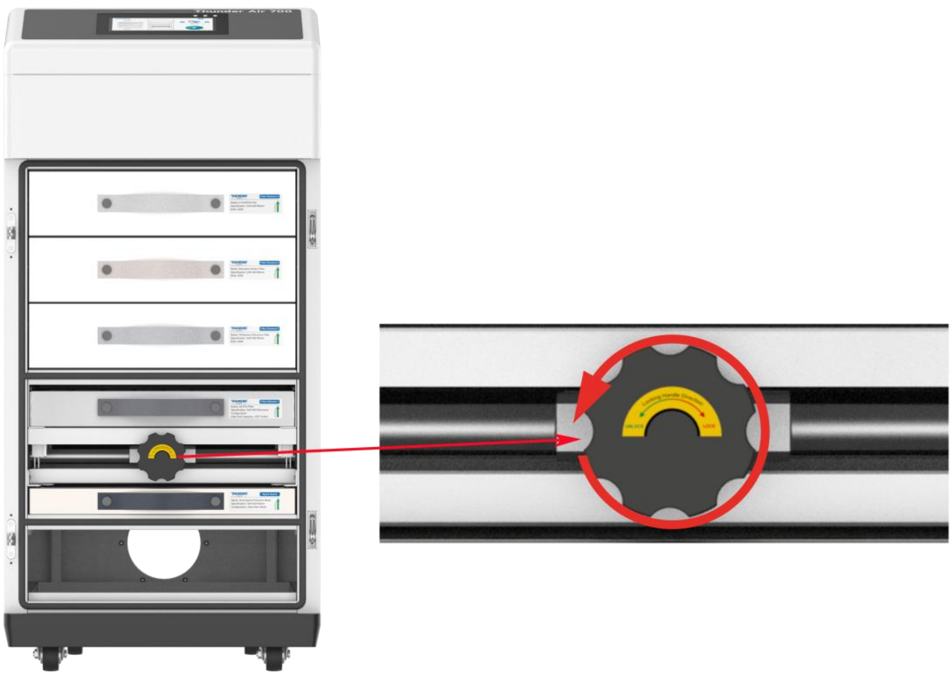
3. Replacing Filters

3.1 Loosen Filter

1.Remove the filter: Turn the knob counterclockwise to loosen the filter assembly.



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3.2 Installation and Removal Filter Layers

H13 HEPA Filter Replacement: ① Turn the tension handle counterclockwise to loosen the filter; ② Install the new filter with the arrow pointing upward, ensuring it is fully embedded and aligned vertically; ③ Turn the handle clockwise to secure the filter.

Activated Carbon Filter Replacement: ① Turn the tension handle counterclockwise to loosen the filter; ② Install the new filter with the arrow pointing upward, ensuring it is fully embedded and aligned vertically; ③ Turn the handle clockwise to secure the filter.

F8 Medium Efficiency Filter Replacement: ① Turn the tension handle counterclockwise to loosen the filter; ② Install the new filter with the arrow pointing upward, ensuring it is fully embedded and aligned vertically; ③ Turn the handle clockwise to secure the filter.

Note: Remove filter layers sequentially from top to bottom (H13 HEPA → Activated Carbon → F8 Medium Efficiency). Do not directly pull out the bottom medium-efficiency filter to prevent damage caused by gravity slip.

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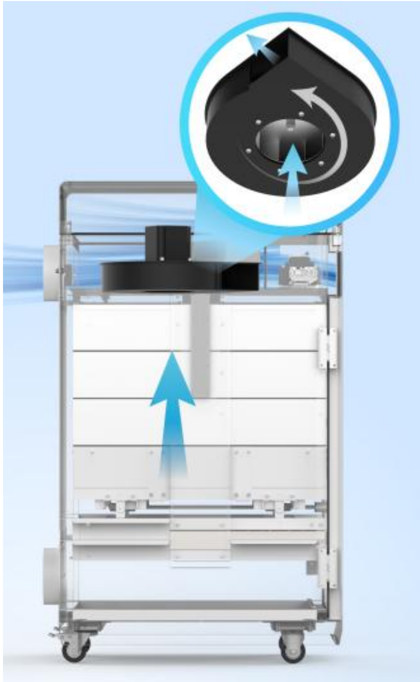
⚠ Important:

Ensure the airflow direction arrow on each filter element is correctly oriented.

Airflow direction is **from bottom to top**.

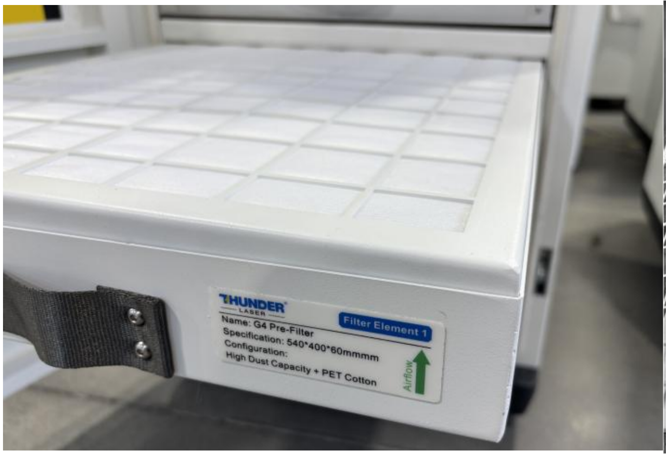


3.3 Replace and Clean the Filter

1. **Bottom Debris Collection Tray**: Remove and clean regularly.

2. **Oil & Spark Protection Mesh**: Remove and clean regularly.

3. **G4 Pre-Filter Replacement**: Only replace the filter media inside the frame. Install the new filter with the base fabric side facing upward (arrow pointing upward), and ensure it is fully seated and properly aligned.



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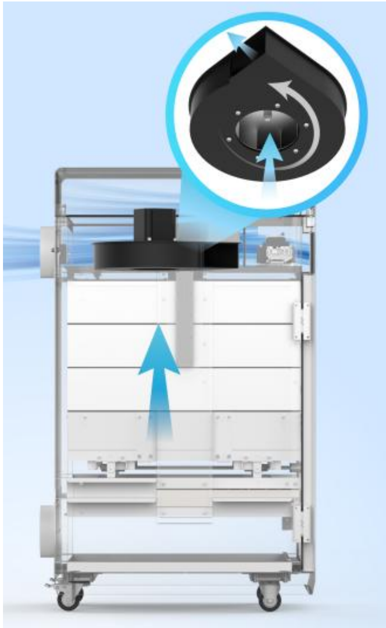
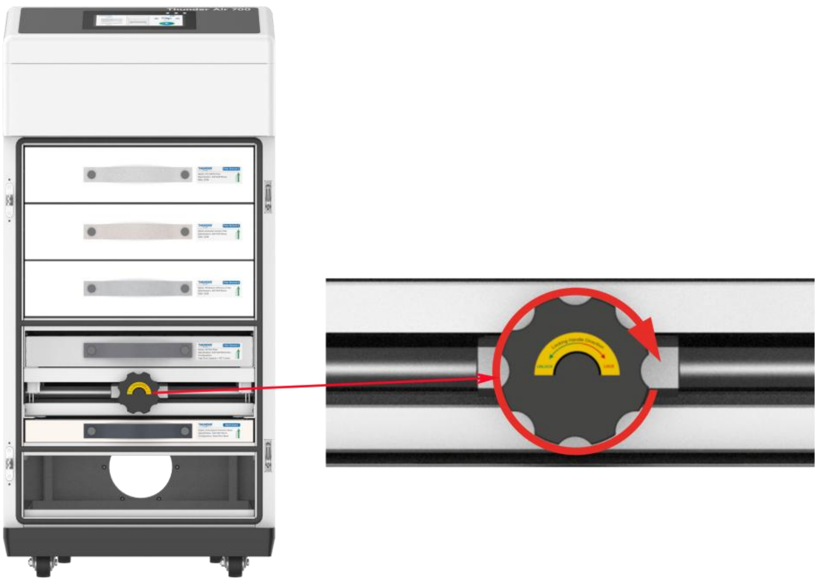


3.4 Secure and Seal the Filters

After reinstalling all filter elements:

1. Ensure all filters are tightly sealed to prevent air leakage: Turn the knob clockwise to lock and secure the filter assembly.



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2.Before closing the door cover, make sure the lock is turned to the fully open/unlocked position. The door cover can then be fully closed and manually locked.

3.Close the front door securely and tighten the bolts.

4.Then the fume purifier can be restarted for use.

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4. Recommended Maintenance Interval

For reference only. Actual maintenance frequency depends on operating hours, material type, and working environment.

Filter Component	Average Maintenance / Replacement Cycle
Oil & Spark Protection Mesh	Average cleaning cycle: 1–2 months
G4 Pre-Filter	Average replacement cycle: 3–6 months
F8 Medium Filter	Average replacement cycle: 6-12 months
Activated Carbon Filter	Average replacement cycle: 6–12 months
H13 HEPA Filter	Average replacement cycle: 12–18 months

Seal the replaced waste filter elements in a bag for disposal; hazardous chemicals must be handled in strict accordance with the specifications for hazardous waste chemicals!

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Chapter 5. Safety Precautions

1. Power Requirements:

This equipment must be operated with the specified local voltage and frequency. A reliable grounding connection is required at all times.

2.Pre-Operation Inspection

●Before operating the purifier, check the overall sealing condition, including: Whether the sealing strips are intact.

●Whether they are properly installed and seated evenly.

●Whether all pipeline connections are securely sealed.

⚠ It is strictly prohibited to operate the equipment without the filter elements installed.Direct inhalation of smoke and dust will damage the fan and control system. Any faults caused thereby shall be repaired at the user's own expense, which may result in greater losses.

3.Extended Shutdown

Disconnect the power supply if the equipment will not be used for an extended period.

4.Installation Environment

Do not install the equipment in direct sunlight, as this may cause casing deformation or operational malfunction. The equipment shall be operated under ambient conditions of +15°C to +35°C (59°F to 95°F) and humidity of 40% to a maximum of 70% in a non-condensing environment. Excessively high humidity will cause rapid filter element failure and damage internal circuits of the machine.

5.Filter Handling Safety

After the filter elements have been used for a period of time, always wear protective gloves and a face mask when replacing or handling them.

6.Abnormal Conditions

In case of any malfunction or abnormal condition, immediately disconnect the power supply and contact the seller or authorized service personnel for inspection and maintenance.

7.Filter Position Check

Before starting the equipment, open the cabinet door and verify that all filter elements are properly positioned. If any displacement is found, reposition the filters correctly before operation.

8.Explosion Safety

This machine is not explosion-proof. It is strictly prohibited to process flammable or explosive dust and fumes.

9.Prohibited Media

The equipment must not be used to extract oil mist or water mist.

10.Spark Prevention

Special care must be taken to prevent sparks from entering the purifier when extracting dust fumes.

If excessive sparks are present: Adjust the suction port to a safe distance, or implement appropriate flame isolation measures.

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Chapter 6. Common faults and remedies

1. No Power Indication

Symptom:

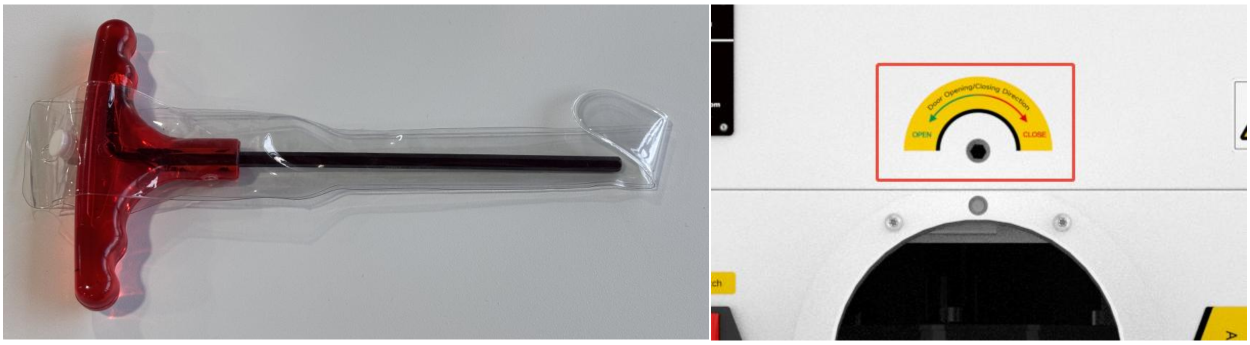
The power switch is turned on, but the indicator light and display screen remain off.

Possible Causes & Solutions:

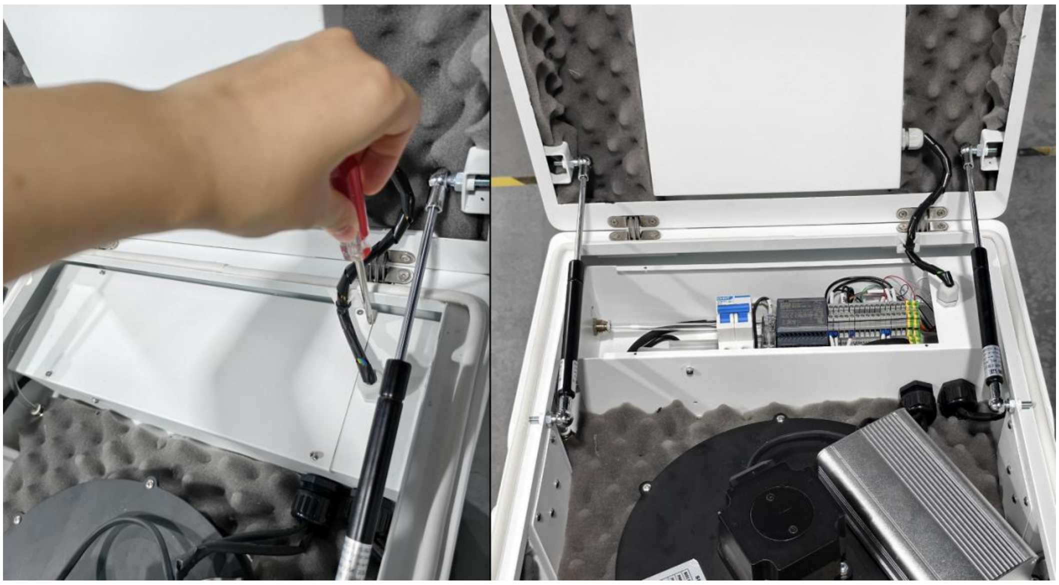
1.Check whether the power plug is properly connected to the socket.

2.If the power supply is normal but the unit still does not power on:

●Use the supplied Allen wrench to open the electrical box located at the upper rear of the purifier.



●After opening the top cover, use a Phillips screwdriver to open the electrical box. Check whether the circuit breaker inside the electrical box is switched on.



●Reset the breaker if necessary. If the issue persists, contact authorized service personnel.

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2. Weak Airflow / Insufficient Suction

Symptom:

The unit operates normally, but airflow is weak, suction power is insufficient, and the differential pressure reading is abnormal.

Possible Causes & Solutions:

1.Turn off and disconnect the power supply.

2.Check whether:

- The air inlet or outlet is blocked
- There are foreign objects inside the ducting
- The filter elements are saturated

3.Clean any blockages or replace the saturated filter elements as needed.

4.If airflow remains weak after performing the above checks, the fan speed may be adjusted appropriately to increase air volume (if adjustable).

If the problem continues, contact technical support.

3. Control Panel Not Responding

Symptom:

After powering on the purifier, the indicator light and display screen turn on, but the control buttons do not respond.

Troubleshooting Method:

1.Turn off the equipment completely.

2.Wait 1 minute.

3.Restart the unit following the proper startup procedure.

If the issue remains unresolved, contact authorized service personnel.

END.

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