



HIGH-SPEED CENTRIFUGAL BLOWER USER MANUAL

Applicable to G15 Series 3.5kW-50kPa/4.0kW-40kPa Models



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Ver1.0.2

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Safety

When the mechanical components of the high-speed centrifugal blower are in operation, they exhibit a very high rotational speed, and there is a high voltage on the electrical components. Incorrect or non-compliant operations may result in severe injuries, fatalities, or significant property damage. Therefore, before operating and performing maintenance, please carefully read the safety regulations in this section.

I. Safety Regulations

The equipment manufacturer is not responsible for personal injuries or property damage caused by incorrect or improper installation or disassembly, operation in extreme temperatures, dust, corrosive environments, or overloading.

For your personal and property safety, please pay close attention to the following safety warning signs.

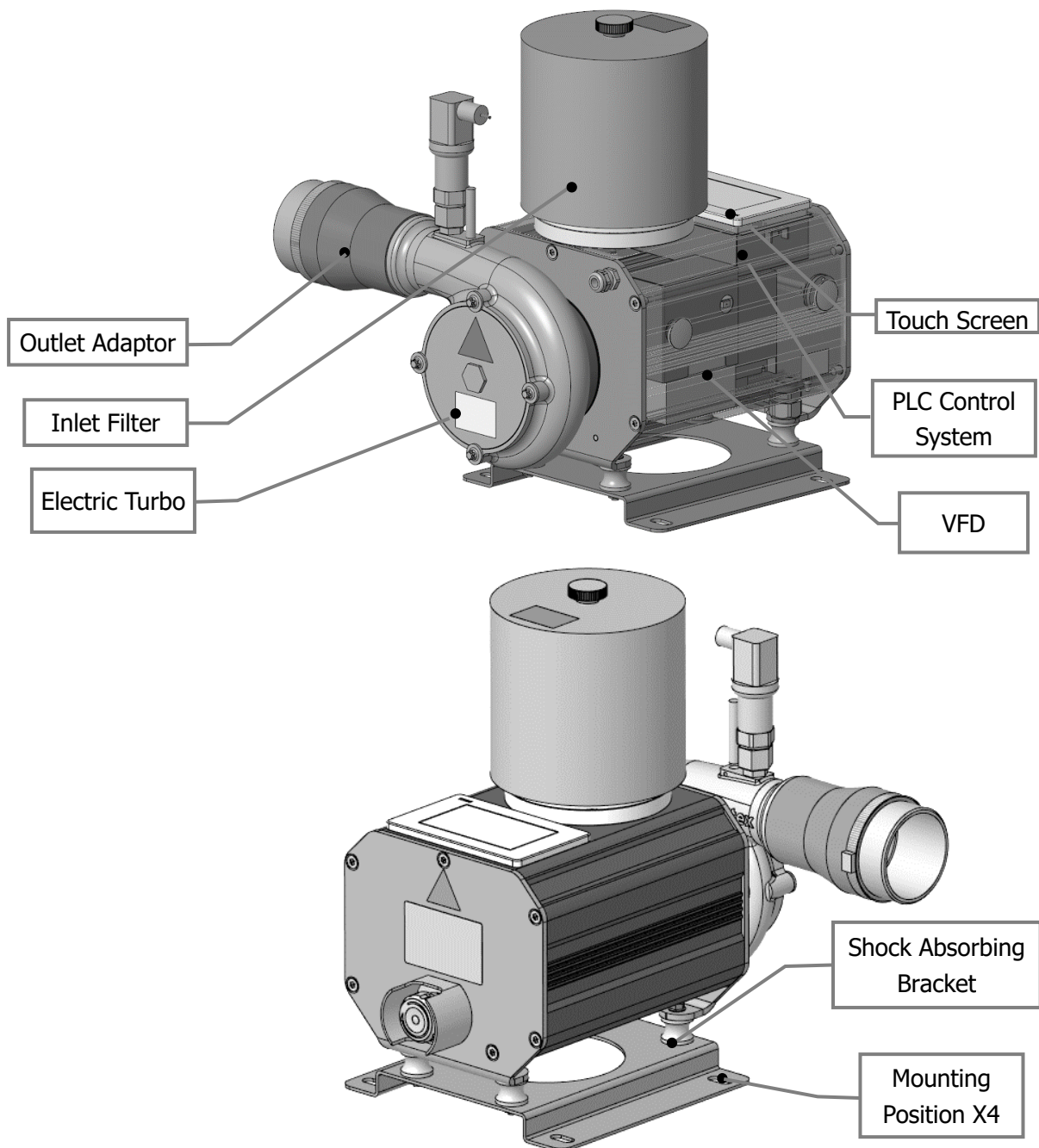
	If operated improperly, it may result in serious personal injury, death, significant property damage, or pose a high risk of injury and physical harm.
	When the equipment is running, refrain from any operations other than changing parameters or replacing filters.
	Do not overload the blower to avoid property damage or even personal injury.
	While the probability of causing severe harm to the user through improper operation is low, there is still a possibility of causing personal injury and property damage.
	Before powering up the equipment, ensure that the site and the cables connecting to the equipment comply with the standards set by the country. The equipment integrates high-voltage electrical components, and incorrect or improper operations may lead to electric shock injuries or even death.

	If the equipment operates in a flammable or explosive environment, it may cause fire or explosion.
	Do not open the turbo blower casing without authorization. The blower contains high-speed rotating mechanical components, and incorrect operation or running may result in personal injury, death, or significant property damage.
	The blower outlet may have high temperatures, and incorrect operation may cause personal injury.
	Do not operate the equipment for an extended period in a high-frequency noise environment without any protection to avoid potential damage to the hearing of personnel.

Product Introduction

I. Product Structure and Characteristics

The main components of the Turbo Blower high-speed centrifugal blower include: electric turbo main unit, frequency converter, PLC control system, and human-machine interface. The electric turbo main unit is composed of an efficient high-speed permanent magnet motor, impeller, and volute.



To ensure the reliable operation of the blower, the equipment has the following features:

1. In order to ensure the service life of the centrifugal blower, the blower is controlled by the program to operate within its rated power and speed range. Therefore, in high-temperature environments, the maximum output performance of the blower will decrease due to the influence of high-temperature, low-density air.
2. The main operating parameters of the blower, such as motor temperature, inverter temperature, inlet temperature, outlet temperature, and outlet pressure, are pre-set within safe ranges.

When exceeding these safety ranges, the blower will take self-protection measures to shut down.

After checking the operating environment and reset errors, it can resume operation.

When the safety parameters reach 95% of the preset threshold, an alarm message will be displayed on the HMI.

3. For the surge and blocking characteristics of the centrifugal fan, the control system adopts automatic detection and protection measures.
4. The G15 series fan is equipped with multi-mode control, and you can consult the manufacturer or dealer to choose the most suitable operating mode before use.

II. Equipment Parameters:

Equipment Parameters		
Blower Type:	High-Speed Centrifugal Blower	
Model:	G15-3.5kW-50kPa	G15-4.0kW-40kPa
Input Voltage:	Single Phase 220VAC	Single Phase 220VAC
Rated Power:	3.5kW	4.0kW
Max Output Pressure:	50kPa	40kPa
Max Flow Rate:	4.7m ³ /min	7m ³ /min
Max RPM:	80krpm	80krpm
Weight:	10kg	12kg

III. Component Functions

1. Air Intake Filter
 - It removes the majority of particulate impurities, such as dust, from the gases, ensuring the filtered and purified gases entering the turbocharger. This prevents the

turbocharger from being hindered by inhaling impure gases, maintaining its normal operation, and extending its lifespan. It is recommended to always use genuine air filters for replacement.

- Air Intake and Exhaust Gas Flow Circuit:

External Air → Intake Filter → Air-to-Air Intercooler → Turbocharger Inlet Air → Turbocharger Compressed Air → Exhaust Outlet.

2. Low-voltage direct current power supply

- A low-voltage direct current power supply used to provide power for controllers, PLC systems, and human-machine interface.。

3. Motor Variable Frequency Drive (VFD)

- Control the motor speed.
- Possess motor operation monitoring and protection functions.

4. PLC Controller

- Control the operation of the equipment.
- Communicate with the Human-Machine Interface (HMI), set various operating parameters, and visually monitor motor and sensor signals.

5. Internal air-cooling system

- Cooled through an air-cooled fin-type radiator.

Installation

I. Installation Environment Requirements

If the turbo blower operates in an improper environment, it will affect the performance and lifespan of the blower. Before installation, please ensure the following environmental requirements:



1. The normal operating temperature for the blower is between -15°C and 45°C. If the ambient temperature does not meet these conditions, consult the manufacturer or dealer.
2. The blower requires a relatively clean and dry indoor environment with sufficient space to ensure air circulation. Do not expose the blower directly to outdoor, rainy, snowy, or humid environments.
3. To facilitate equipment operation and maintenance, maintain at least 1 meter of unobstructed space around the equipment and ensure smooth air circulation.
4. Avoid installing the blower in environments with high salt content, corrosion, and excessive dust, as this can lead to corrosion and wear of turbo components, as well as electrical component failures.



5. Prohibit the installation of the blower in environments with flammable and explosive gases.

II. Inlet Filter Installation



After removing the turbo blower from the packaging box, it should be promptly equipped with an inlet filter to prevent foreign objects from entering due to the removal of the inlet protection sticker!

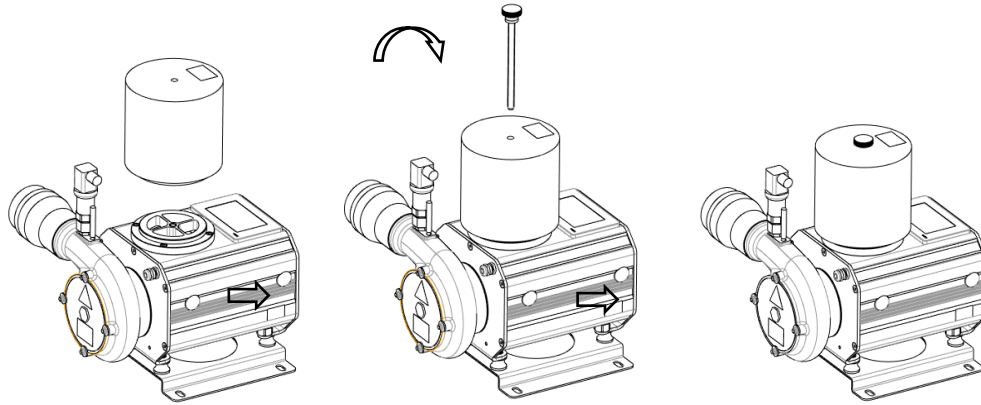


Do not proceed with subsequent installation operations without installing the filter!

1. The packaging includes two cylindrical filters for the turbo blower. Please unwrap the filter packaging and install them as soon as possible.
2. Before the first installation of the filter, ensure that the protective sticker on the air intake has been removed and check that no foreign objects have entered the machine. If

any foreign objects are found, use suitable tools to remove them. Do not invert the machine or blow air into the machine.

3. Use the included fastening bolts to secure the filter above the air intake. Ensure that the bolts are securely tightened.



III. Main Unit Installation



During the transportation and installation of the turbo blower, avoid severe impacts.

1. The equipment should be installed on a sturdy, level surface, or a support frame. Ensure that the machine frame makes full contact with the installation surface, with a maximum angular error of 5° in any direction.
2. When this equipment is in operation, the vibration generated is extremely low, and there is no need to take external vibration reduction measures.

IV. Outlet Pipeline Installation



1. The turbo blower outlet is equipped with a G2.5 external thread interface. All exhaust pipelines must ensure no leakage; otherwise, it will affect the performance of the turbo blower and cause a rise in the surrounding environment temperature.
2. During the operation of the turbo blower, the temperature of the outlet pipeline will increase with rising pressure, requiring sufficient safety warnings.
3. A check valve should be correctly installed at the outlet of the turbo blower or in the air delivery pipeline to prevent compressed air from flowing back to the turbo blower. For

example, during the shutdown process, if a check valve is not installed, the turbo blower may be damaged by the backflow of air.

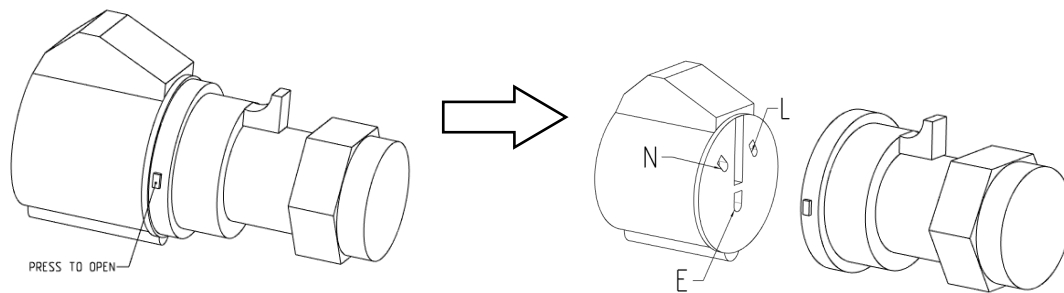


Check Valve

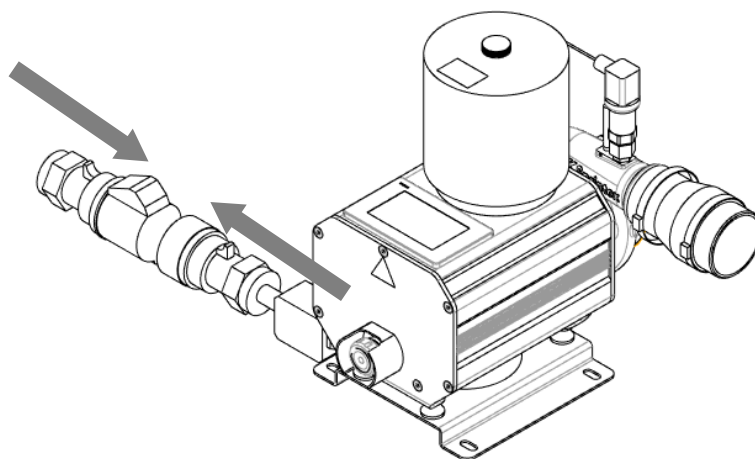
V. Electrical Installation



1. The installation and maintenance of the electrical components must be carried out by **qualified electrical engineers**.
2. Ensure that the power supply cables and grounding conditions comply with **national standards!!!**
3. Provide a power source that meets the voltage, voltage standard, and frequency characteristics consistent with the nameplate parameters of the turbo blower. Pay special attention to the wiring differences between single-phase input and three-phase input models!
4. During the startup of the turbo blower, a minimum of 90% of the rated voltage is required. During normal operation, the fluctuation of the input voltage should be within $\pm 10\%$ of the rated voltage, and the voltage difference between the three phases should be kept within 3%.
5. The power supply cable for the turbo blower should have a minimum cross-sectional area of 2.5mm^2 or 13AWG. The power socket should be wired by the user, and the power plug is pre-connected to the equipment body. The wiring is as shown in the diagram below.

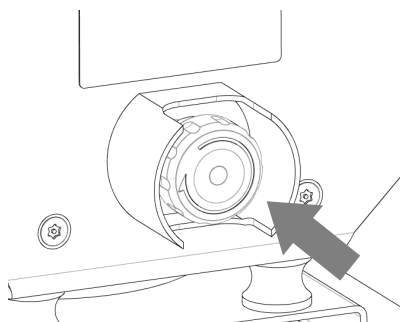


Using a screwdriver or another tool, press against the black latch position of the socket, **rotate** the plug head to the **OPEN** position following the triangular mark direction, and open the plug terminal box.

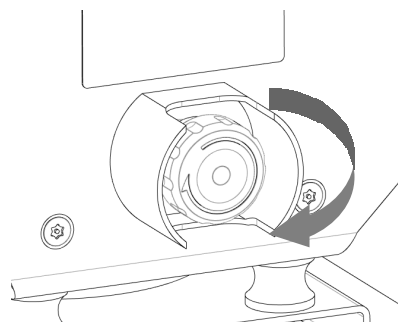


After connecting the wiring harness as shown in the diagram, insert it into the corresponding socket on the equipment to complete the connection.

6. Emergency Stop Button



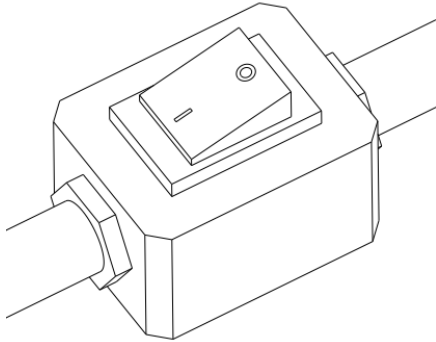
Pressing the emergency stop button will disconnect the power supply to the machine.



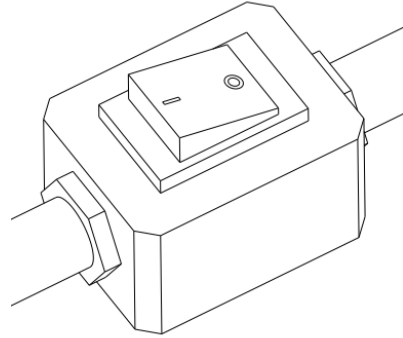
Rotate and release the emergency stop button to restore power to the machine.

7. Power Switch

When the power is on, the power switch's red indicator light will be illuminated.



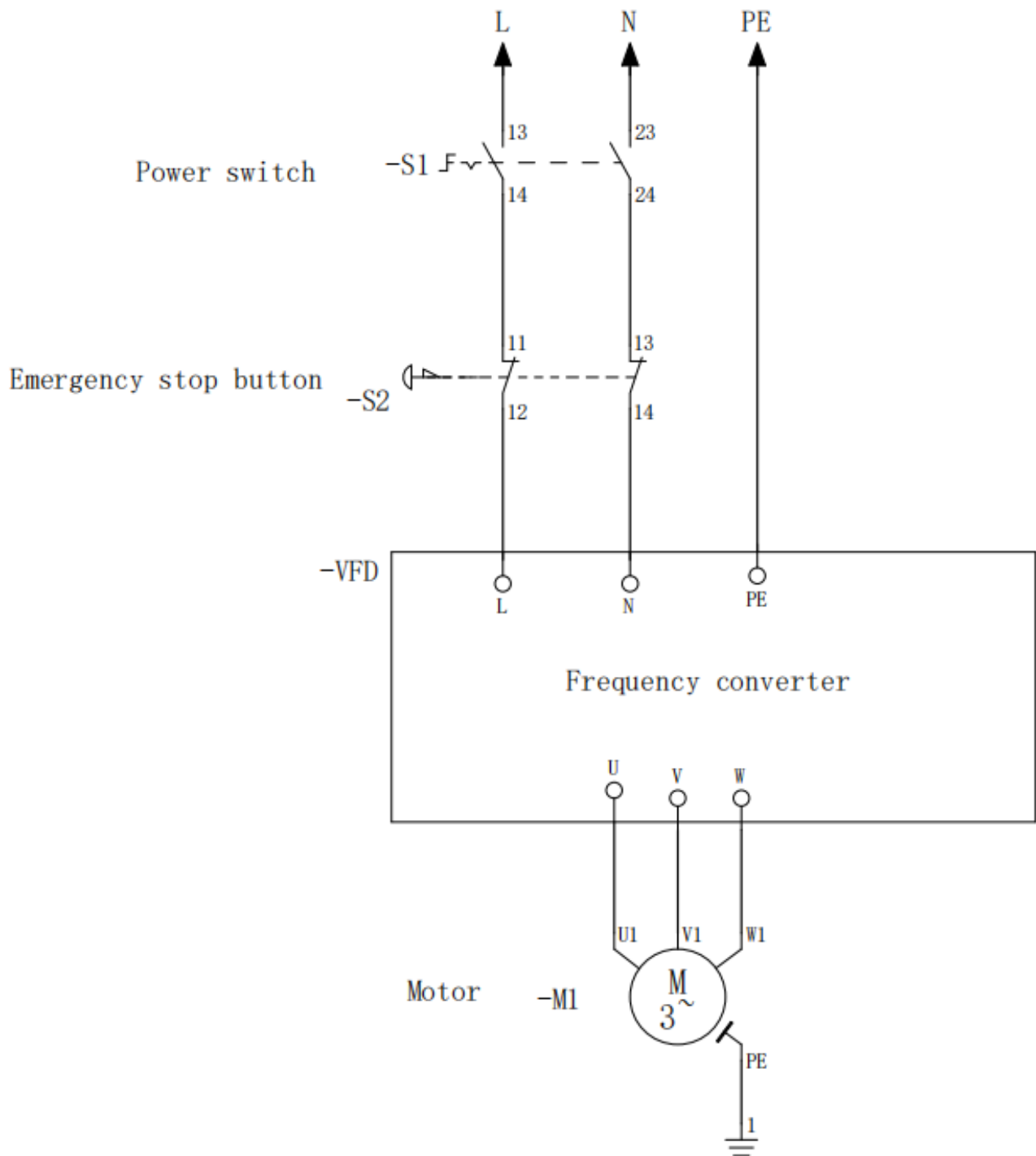
When the "I" symbol is pressed, the power is turned on.



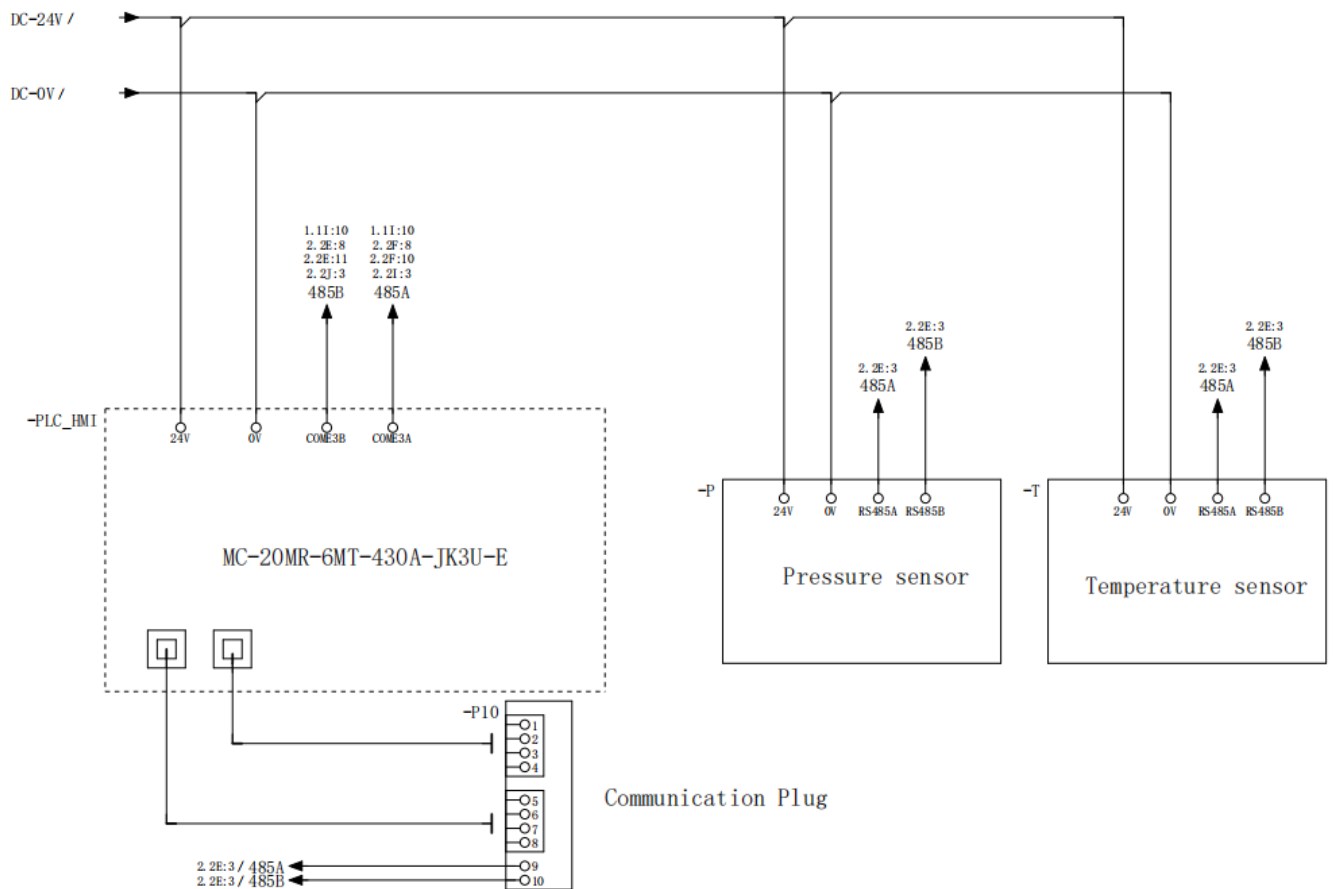
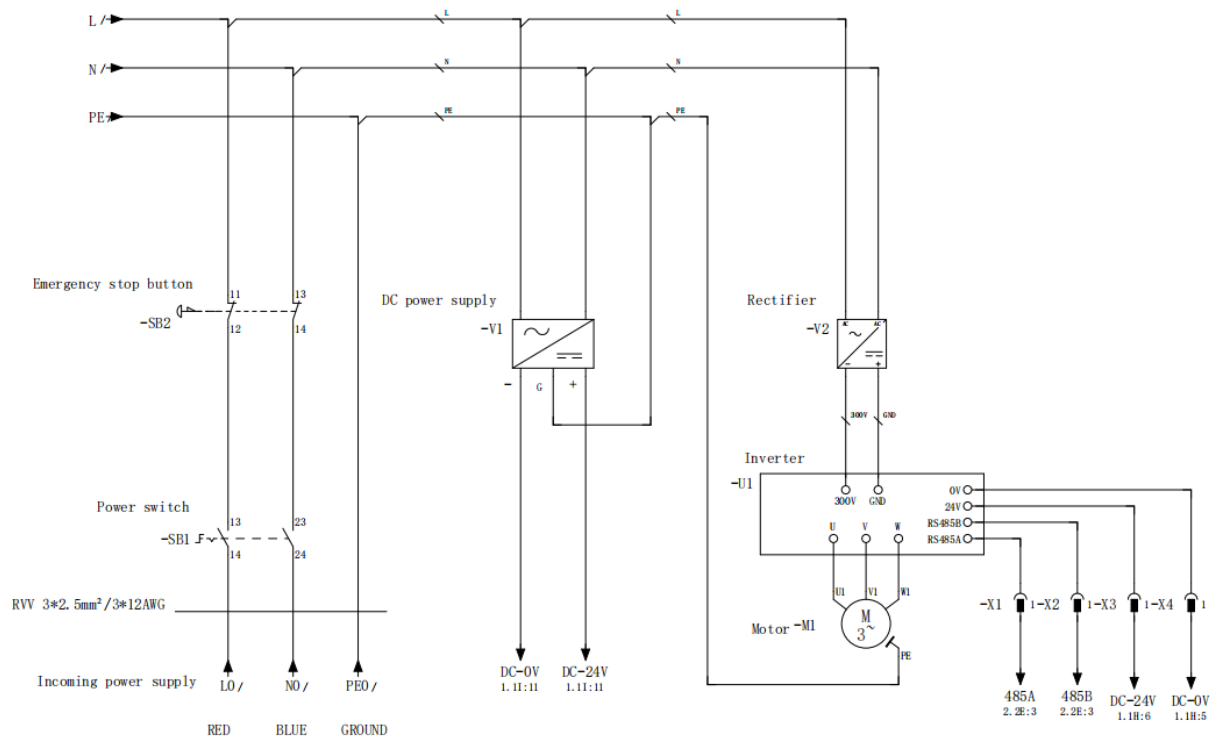
When the "O" symbol is pressed, the power is turned off.

VI. Electrical Schematic Diagram

1. Emergency Stop Schematic Diagram



2. Electrical Schematic Diagram



3. Electrical Components List

No.	Part Name	Pcs
1	Industrial Control Touchscreen	1
2	Pressure Sensor	1
3	Temperature Sensor	2
4	24V Switching Power Supply	1
5	Rectifier	1
6	Inverter	1
7	Emergency Stop Button	1
8	Power Switch	1

Operating Manual

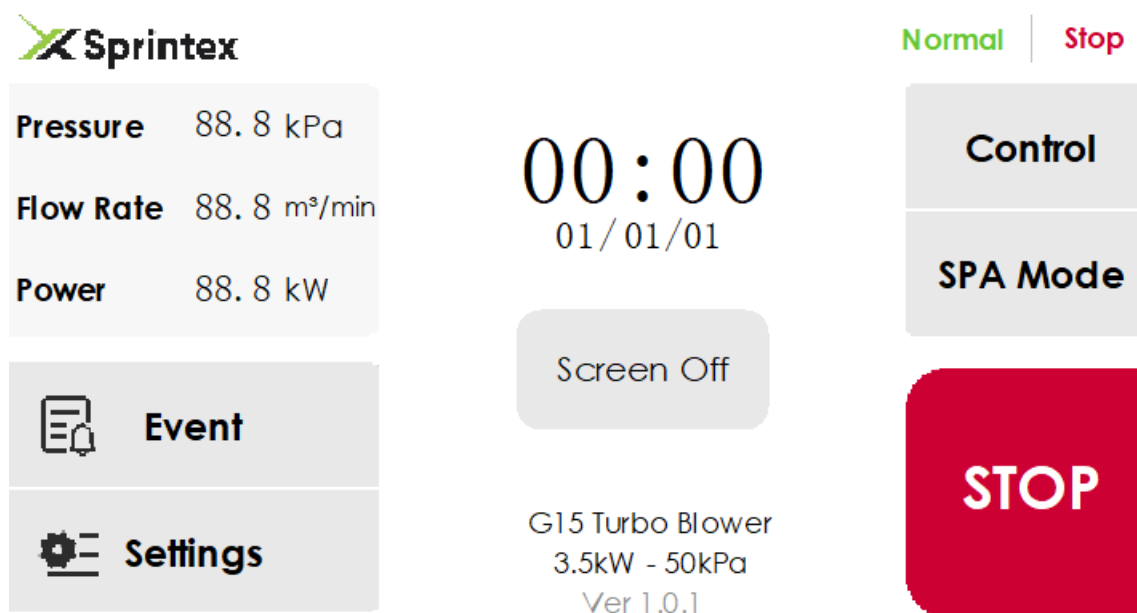
I. Control Panel

The software parameters of the turbo blower are pre-set at the factory. Some parameters cannot be modified by users, while certain operational or monitoring parameters can be adjusted based on the on-site conditions.

Before powering on, ensure that the power supply lines are properly connected. Press the power switch to energize the system, and after the screen lights up, wait for 30 seconds for the initialization to complete before proceeding with further operations.

(Note: In case of an emergency, press the emergency stop button.)

1. Main Screen



Control: Access the pressure, flow, power, and speed control mode interface.

SPA Mode: Access the pulse operation mode interface.

Screen Off: Put the screen into sleep mode.

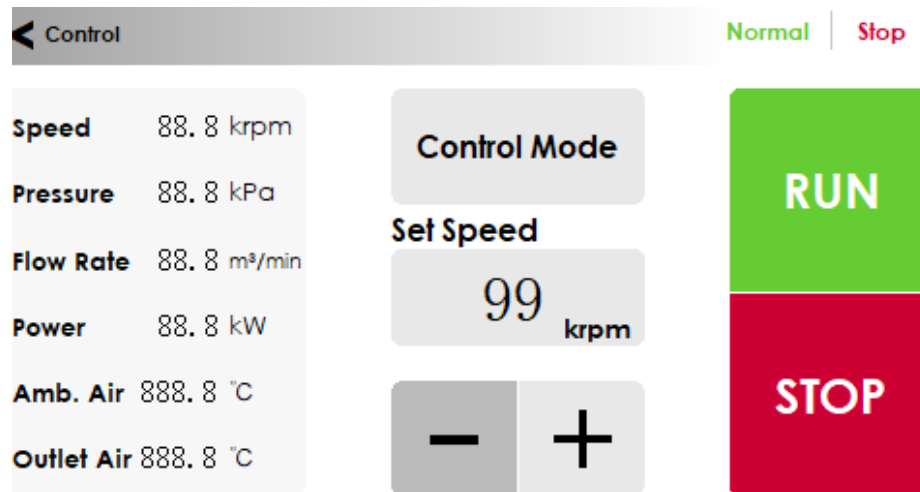
Event: In case of an error displayed in the top right corner, access this page to handle the alarm.

Settings: Operational and time settings.

STOP: Stop the motor operation.

The status in the top right corner, either Running/Stopped, indicates the operational status, while Normal/Fault indicates whether there is an alarm.

2. Control Screen



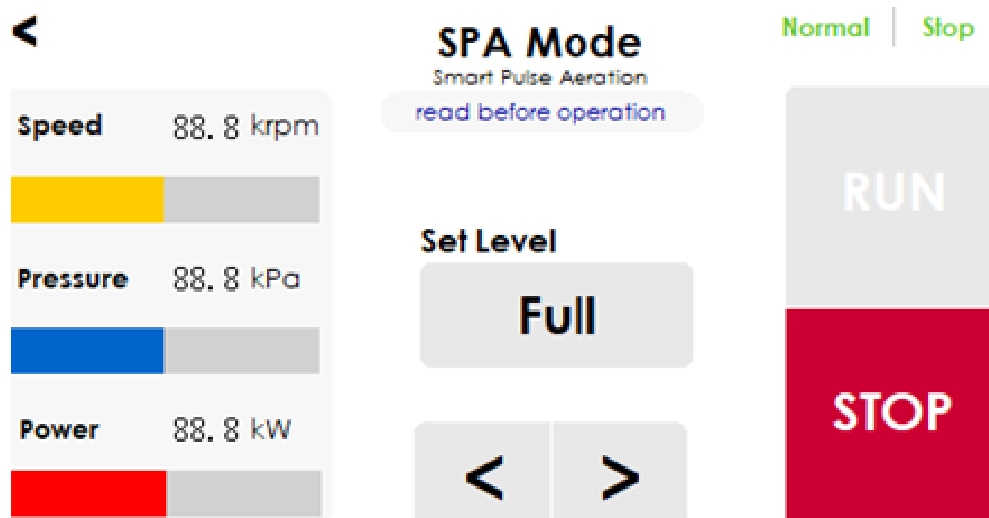
Control: Used to switch between speed, flow, pressure, and power modes.

Please switch between different modes when the motor is not in operation.

+ - Buttons: Used for parameter adjustments in various modes..

RUN: Press this button after completing the settings to start operation.

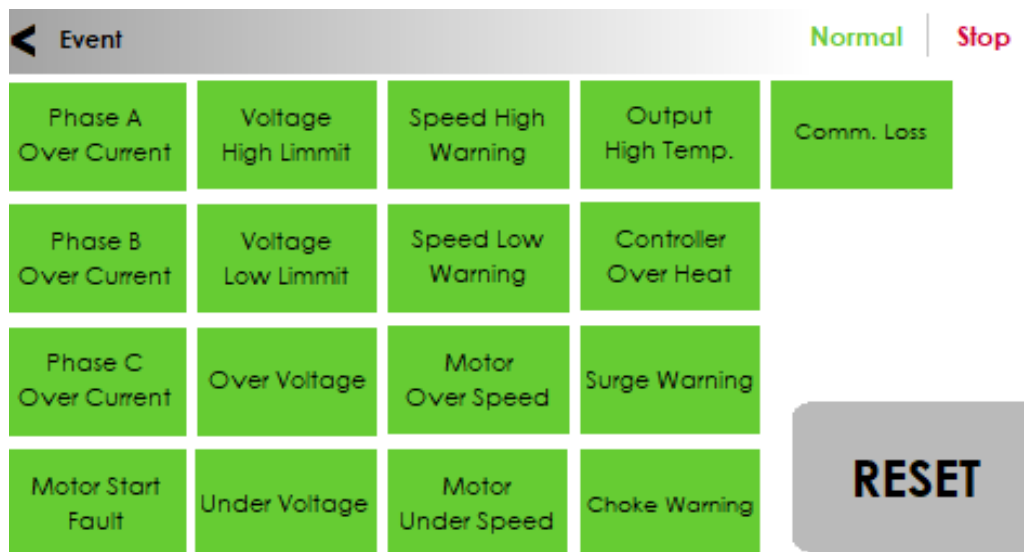
3. SPA Mode Screen



< > Buttons: Used to switch between the low, high, and full modes (Switch when the equipment is not in operation). The 'low' mode has the smallest average airflow, 'high' mode has the largest average airflow, and 'full' mode exhibits the most significant energy-saving effect.

RUN: Press this button after completing the settings to start operation.

4. Event Screen



This page displays potential faults, with all indicators in green when there are no issues. In the event of a fault, the corresponding item will turn red. You can press RESET to clear the fault. If a reset is not successful, power must be disconnected and restarted, and further attempts to reset should be made.

5. Settings Screen



Time Settings
Normal
Stop

Y: 99999 h: 99999

M: 99999 m: 99999

D: 99999 s: 99999

Save

Alarm Disable

Normal Stop

Surge Protection Off

Choke Protection On

Temp Protection Off

Time Setting: Set the time, and click Save when finished.

Alarm Disable: Turn on or off the blocking, surging, and high-temperature protection of the compressor.

II. Fault Handling

1. For the high-temperature alarm in Figure 1, this fault indicates that the motor temperature is too high. Please check if the outlet is blocked. If it is not blocked, wait for the outlet to cool down, then press the touchscreen reset button before restarting. If there is an urgent need, enter the settings interface and click to enter the protection shutdown interface to disable the high-temperature protection as shown in Figure 2, allowing temporary operation. It is strictly prohibited to operate for an extended period with high-temperature protection turned off.



Figure 1



Figure 2

2. For the undervoltage alarm in Figure 3, this fault indicates that the supplied voltage is low. Please check if the power supply and lines are normal. If they are normal, press the reset button; otherwise, ensure that the voltage is within the range of AC 220V $\pm$ 20V, then press the touchscreen reset button.

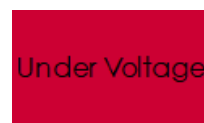
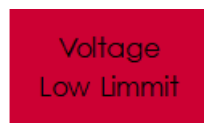


Figure 3

3. For the overvoltage alarm in Figure 4, this fault indicates that the supplied voltage is high. Please check if the power supply and lines are normal. If they are normal, press the reset button; otherwise, ensure that the voltage is within the range of AC 220V $\pm$ 20V, then press the touchscreen reset button.

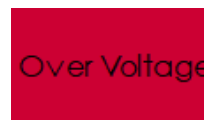
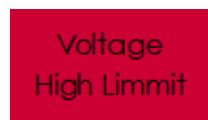


Figure 4

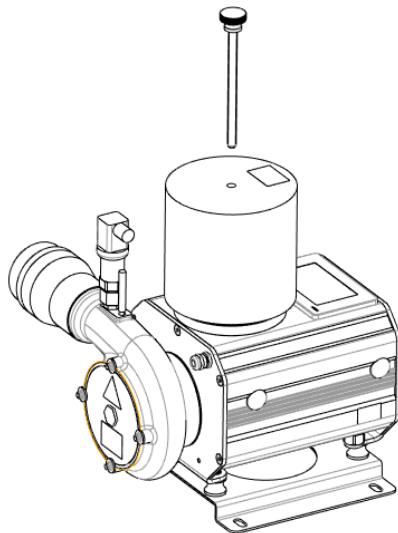
4. After pressing the emergency stop button, pressing the touchscreen reset button is required to restart; otherwise, it will not start.

5. If other alarms appear on the screen, try pressing the reset button. If resetting is not possible, power off and restart. If unable to reset or if the alarm persists, please contact the manufacturer.

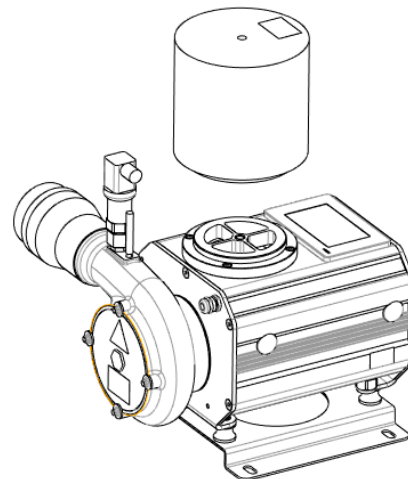
Maintenance and Care

Filter Replacement

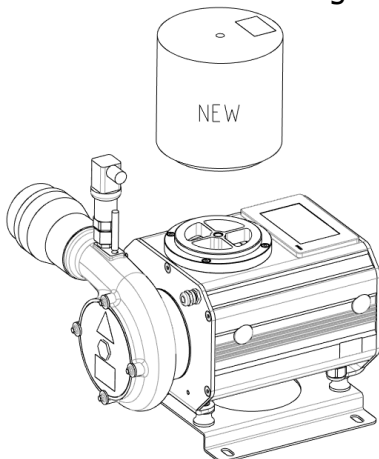
1. Replace the filters provided by the original manufacturer within a maximum operating period of 1000 hours, and ensure to use the correct filter model.
2. Replace the filters ahead of schedule based on the actual degree of contamination for better equipment protection and maintenance of operational efficiency.
3. Stop the equipment before replacing the filters.
4. Unscrew the filter bolts, remove the contaminated filters, and prevent foreign objects from entering the machine.
5. Install the new filters and tighten the bolts securely.



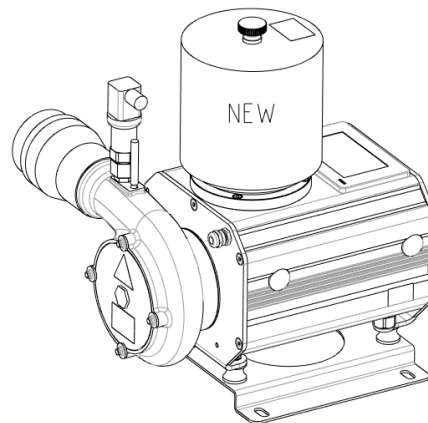
1. Unscrew the securing bolts.



2. Take off the old filter.



3. Install the new filter.



4. Tighten the securing bolts.

Inspection Items		
Intervals	Items	Content
Daily	Touchscreen Display Values	Power, Speed, Outlet Pressure, Flow, Inlet and Outlet Temperatures
	Equipment Vibration	Place your hand on the top of the equipment to confirm the magnitude of the vibration and check the magnitude of the vibration transmitted to the pipes. If the equipment exhibits regular and strong oscillations per second, promptly reduce the outlet back pressure.
	Outlet Air Leakage	Inspect each exhaust outlet for signs of air leakage and check the pipes and flange interfaces for any indications of air leakage.
	Noise	Verify if there is any abnormal noise.
	Power Input Section	Abnormal Heating of Power Cord
	Filter	Check if there is any obvious blockage on the surface of the filter.
Monthly	Monthly Operational Data Comparison	Pressure, Flow Rate, Temperature, Current, Voltage.
	Inspect Equipment Installation Status	Inspect the equipment's horizontal orientation, check the connector status, and examine the check valve's condition.