

P E R F U M E

JINHU HENGHAI PRECISION MACHINERY CO., LTD.

Chapter 1 Safety Precautions for Perfume Machine Use

Please read this operation manual carefully before powering on, as incorrect connections may cause equipment damage or personal injury.

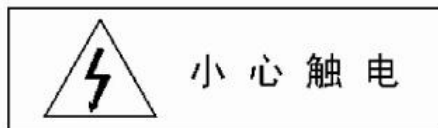
If you are unsure about the specific installation requirements, please contact the manufacturer's technical personnel or the local office.

The perfume machine contains high voltage. To prevent accidents, opening the perfume machine and its accessories must be performed by qualified electrical professionals in consultation with the manufacturer's technical personnel or the local office.

1.1 Safety Labels

Cautions and Warnings

标识名称:



设备内有高电压，不要在通电的情况下触摸接线柱和电器部件，在打开箱盖时，必须切断外界电源。为安全起见，请将设备妥善接地。请用可切断式供电方式供电，而且必须选用合适的电线以防过电流

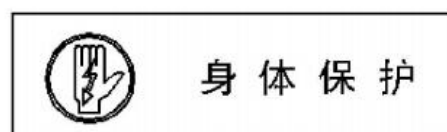
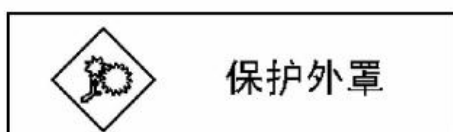
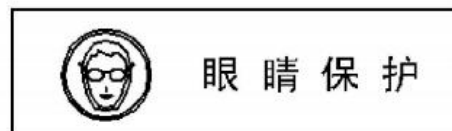
和高温，为防止事故，务必使用说明书中规定电压和保险丝，尽可能在橡皮垫上操作，请注意防水，不要在湿度较大的环境中通电。



接触熔化的热熔胶和高温部件会导致烫伤。操作时务请戴工作手套和护目镜，穿长袖工作，操作时戴一副防护眼镜非常重要，防止眼睛遭到意外伤害到。



检修设备时必须先关闭马达，打开喷枪喷出余胶，释放胶压。



1.2 General Safety Rules

Installation and Safe Operation

Please read this operation manual carefully before powering on. Incorrect connections will cause equipment damage. If you are unsure about the specific installation requirements, please contact the manufacturer's technical personnel or the local office.

Carefully check the equipment power switch, and verify that the enclosure and sockets are properly installed and connected.

Do not use impure liquids, as this may cause pump damage.

Do not place anything on the machine that may interfere with operation.

During use, the spray gun must not be pointed at yourself or others. When stopping use of the manual spray gun, please engage the safety catch.

When there is no solution in the bucket, avoid running dry for more than 10 minutes, as this may easily cause the metering pump to seize or be damaged.

Avoid operating the spray gun before it reaches operating conditions, to prevent damage to moving parts and seals.

For more technical support, please visit the official website <http://www.hhaks.com>

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Chapter 2 Perfume Machine Overview

2.1 Description

The perfume machine is designed to metric standards. The control panel features digital indicators and uses a text display / temperature controller for digital settings.

The perfume machine offers various piston pump and gear pump options. The perfume machine control terminal automatically alarms or provides prompts for water shortage and faults.

These advanced features extend the service life of the perfume machine, ensure its performance, and reduce downtime caused by water shortage.

The main unit control terminal incorporates various anti-interference measures. The control system can interlock with the parent machine and start automatically, better meeting production process requirements.

The perfume machine can use an auto-reversing piston pump, which outputs high-pressure solution with pressure adjusted by input air pressure. A gear pump can also be used, characterized by uniform pressure and precise liquid output. It is available in single-layer and double-layer gear pump types. The gear pump is driven by a motor, and proper motor control enables coordination with the production line.

The stainless steel tank can hold various solutions. It can be paired with various special spray guns — pneumatic automatic guns, electric automatic guns, and manual guns — to form different applications. The tank section offers an optional pressure gauge and heating fins.

2.2 Specifications

Working Environment

Storage / Transport Temperature	-30 ° C to 60 ° C
Normal Operating Ambient Temperature	-15 ° C to 40 ° C
Ambient Noise	<30 dB (within 1 m, excluding solenoid valve operating noise)

Performance Parameters

Dimensions	Refer to attached drawings
Connectable Outputs	1
Number of Pumps	1 – 2 (single / double layer optional)
Gear Pump Displacement	0.6 cc/rev, 1.5 cc/rev, or 3.2 cc/rev, or 4.5 cc/rev
Exterior Protection	Waterproof, dustproof, high-temperature-resistant composite material

Electrical Connection	Standard military aviation connector (optional)
Tank Capacity	AKS30 = 30 L (effective capacity)
Tank Type	Barrel type, stainless steel
Filter Type	Primary filter at tank bottom, output filter
Weight (Empty)	AKS35 = approx. 35 kg
Solution Form	All organic solvents accepted

Power Supply Requirements

Supply Voltage	220 VAC / 50 Hz depending on the system
Total System Power	500 W
Electrical Connection Method	Terminal block
Drive Motor	200 W three-phase AC geared motor
Motor Control Method	VFD (variable frequency drive)

Air Supply:

Air Pressure	≥ 0.6 MPa dry compressed air
Maximum Pump Speed	1400 rpm (gear pump)
Maximum Air Consumption	90 L/min

Equipment Parameters:

Water Shortage Pump Protection	Yes
Applicable Viscosity	0 to 2500 cP
Maximum Open-Circuit Liquid Output	0.5 kg/min
Maximum System Output Pressure	Max. 0.4 MPa

Control Method

Control System	Mitsubishi FX Series PLC (optional)
Display Type	Text display (optional)
Perfume Machine VFD Control Signal	0 – 10 VDC
Spray Gun Solenoid Valve Control Signal	24 VDC

Other

Operation Panel	Simplified graphic and numeric keys / text display / temperature controller
Water Shortage Handling	Auto power cut-off for the zone
Program Start Function	Yes (optional)

Special Notice

The perfume machine main unit itself does not have spray gun control or automatic self-control functions.

If required, please purchase a controller or high-speed compensation system.

Chapter 3 Perfume Machine Installation

3.1 Installation and Initial Use

1) Perfume Machine Handling:

The main unit can be carried by two people, one at each end, holding the bottom bracket firmly. Do not use ropes or hook-type tools, and do not stand on the machine.

2) Perfume Machine Securing:

The perfume machine can be installed on a flat surface or bracket. The main power circuit and other control / communication lines can pass through the bottom. The tank top cover can be installed in any direction to accommodate different types of production lines for adding solution.

3) Perfume Machine Installation:

After the perfume machine is secured, please follow these steps for installation:

1. Ensure that both the power supply switch and the perfume machine main power switch are in the OFF position.
2. Remove the electrical box side cover, connect the correct power supply cable to the switch, and connect the ground wire properly.
3. During installation, the customer must connect the power cable to the lower part of the main power switch (see Wiring Diagram 1).
4. Connect the water hose to the perfume machine liquid outlet.

4) Adding Solution:

The solution level in the tank should be maintained between 100 and 150 mm from the top cover. When the liquid output is large, solution should be added frequently.

5) Replacing Solution:

When switching between two different types of mutually reactive solvents, the system must be thoroughly cleaned to avoid affecting solvent properties.

6) Pump Protection Switch:

The pump protection switch is factory-set to a fixed liquid level. Customers with special requirements may note them in the order.

7) Start-Up

1. Add clean solution into the tank and immediately close the tank cover to prevent debris from entering.

2. Turn on the main power switch on the control panel.
3. Wait for the solution to mix thoroughly.
4. After all zones reach operating conditions, the motor can start running.
 - a. If the gear pump is set to automatic mode: the gear pump will start when the production line runs.
 - b. If the gear pump is set to manual mode: the gear pump will run manually after the equipment is

ready.

8) Shutdown

1. If the gear pump is in automatic mode:
 - a. Turn off the power switch.
2. If the gear pump is in manual mode:
 - a. Turn off the manual switch and set the manual knob to 0.
 - b. Turn off the main power switch.

9) Temporary Equipment Storage Method

1. Clean the system with cleaning solution; see Maintenance for specific operations.
2. Release pressure and disconnect all power.
3. Clean or replace the filter device; see Maintenance for specific operations.
4. Release residual air pressure.
5. Drain residual solution and clean components.
6. Remove all air lines and power cables.
7. Pack the equipment.
8. Store in a safe location.

10) Equipment Disposal Method

1. Turn off all air pressure and power devices.
2. Release remaining air pressure.
3. Remove all remaining solution.
4. Remove all remaining solution from the water hoses and other accessories.
5. Dismantle all accessories and sort them into mechanical and electronic parts.
6. Arrange all parts for recycling.

Chapter 4 Perfume Machine Control System Settings

4.1 Liquid Output Control Settings

The perfume machine can be set to different liquid output levels; these values are factory-set and can be adjusted according to actual production needs.

Special Note: The perfume machine is factory-set with the VFD in manual control mode. To switch to automatic control by an external controller, the perfume machine VFD parameters must be modified.

I. Manual Control Method:

1. To start, first press the  D panel. The VFD operation panel should display STPO.

2. Turn the knob on the VFD operation panel clockwise so that the display shows a number (e.g., 05.00).
At this point, opening the perfume spray gun allows normal operation.

3. To stop, first close the perfume spray gun, then turn the knob on the VFD operation panel counterclockwise to reset, so that the display shows STPO.

4. Then press the  on the VFD panel. The VFD operation panel should display 00.00 and flash.

5. Turn off the perfume machine power.

二. For automatic control mode, first modify the VFD parameters as follows:

1. Put the perfume machine VFD in standby state (disconnect the run terminals).

The VFD operation panel should display 00.00 and flash.

2. Press the  on the VFD panel. The VFD operation panel should display 00-00.

3. Press the   on the VFD panel to make the display show 00-03.

4. Press the  on the VFD panel. The VFD operation panel should display 0000 (or another value).

Press the   on the VFD panel to change the value to 0001.

5. Press the  on the VFD panel. The VFD operation panel should display 00-03.

6. Repeat steps 3 – 5 to change the value of parameter 00-05 to 0002.

7. Press the  key on the VFD panel twice. The VFD operation panel should display 00.00.

4.2 Steps for Adjusting Liquid Output Level:

1. Put the perfume machine VFD in standby state (disconnect the run terminals).

The VFD operation panel should display 0.00 and flash.

2. Press the  on the VFD panel. The VFD operation panel should display 00-00.

3. Press the   on the VFD panel. The VFD operation panel should display 00-07.

8. Press the  on the VFD panel. The VFD operation panel should display 50.00 (or another value).

9. Press the   on the VFD panel to change the value to an appropriate level.

Note: a. The larger the value, the greater the liquid output. The maximum value must not exceed 100.0.

b. The smaller the value, the less the liquid output. The minimum value must not be less than 05.00.

10. Press the  key on the VFD panel. The VFD operation panel should display 00-07.

11. Press the  key on the VFD panel. The VFD operation panel should display 00.00.

4.3 Perfume Machine VFD Control Cable:

1. When the perfume machine is in automatic control mode, a control cable must be connected to the external equipment.

2. The perfume machine VFD requires an external start/run signal (potential-free dry contact, on/off signal), connected to the perfume machine input without regard to phase sequence.

Control terminals RUN1 / RUN2

Special Note: If the perfume machine VFD run terminals are connected in parallel with those of other VFDs, the phase sequence must be observed.

If the perfume machine VFD starts when the external equipment has not started, swap the phase sequence of the start/run signal wires.

3. The perfume machine VFD requires an external frequency reference signal of 0 – 10 VDC analog signal. Observe correct polarity when wiring.

4. When the run terminals are closed and an analog signal is given, the perfume machine automatically enters the running state. At this point, the perfume machine's built-in magnetic drive pump starts running and outputs liquid material.

Chapter 5 Perfume Spray Gun

5.1 Description

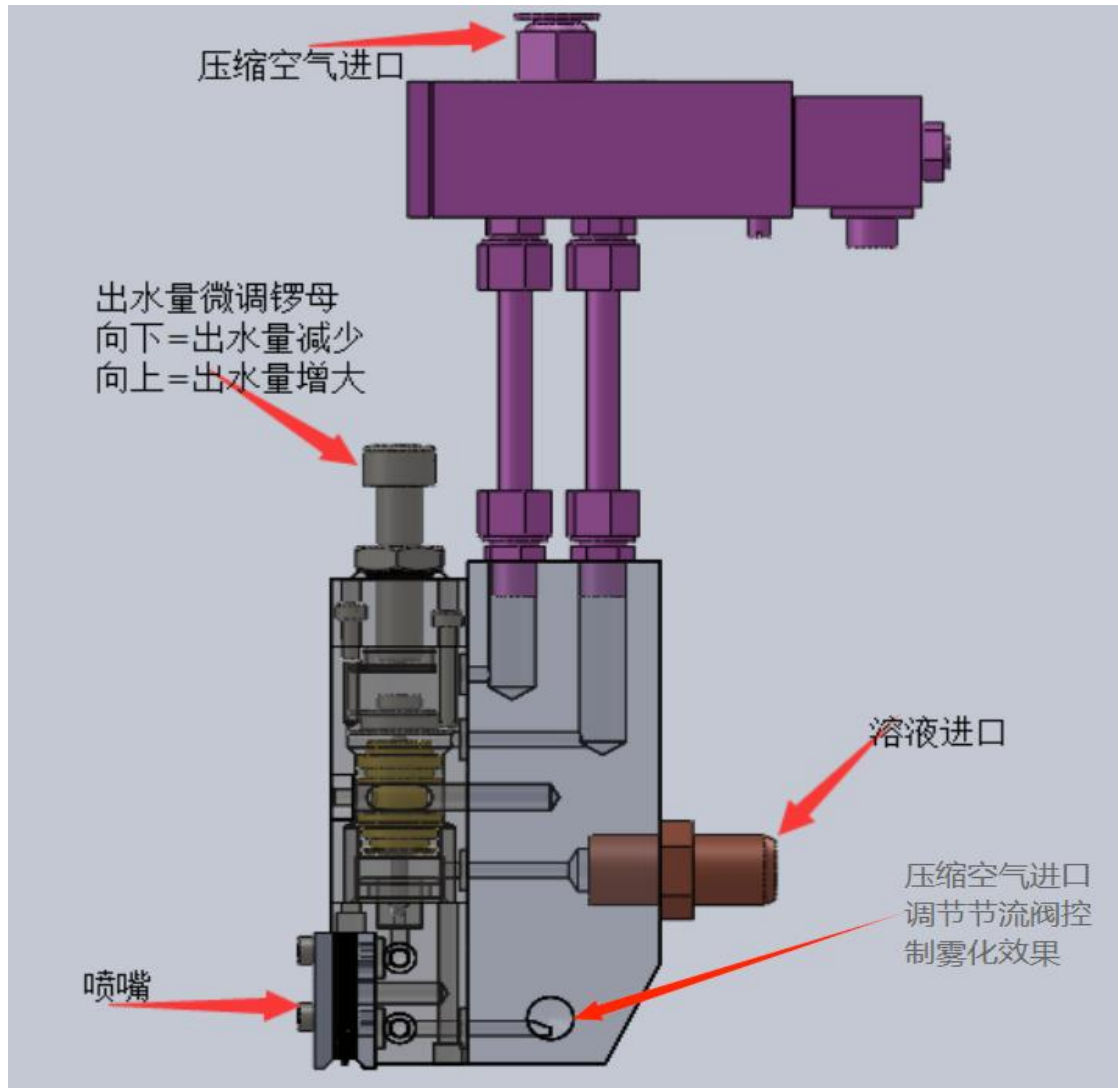
The perfume spray gun features a pneumatic switch design with a built-in filter and air filter to prevent clogging by impurities. It supports intermittent or continuous spraying. Multiple nozzles can be fitted. The needle opens and closes the liquid passage; the spray volume depends on liquid pressure and nozzle diameter, and can be fine-adjusted using the spray volume adjustment nut. The needle inside the body is driven by solenoid-controlled air pressure to open and close the liquid passage.

The liquid hose can be connected to the back or top of the gun body. Solution flows from the hose through the

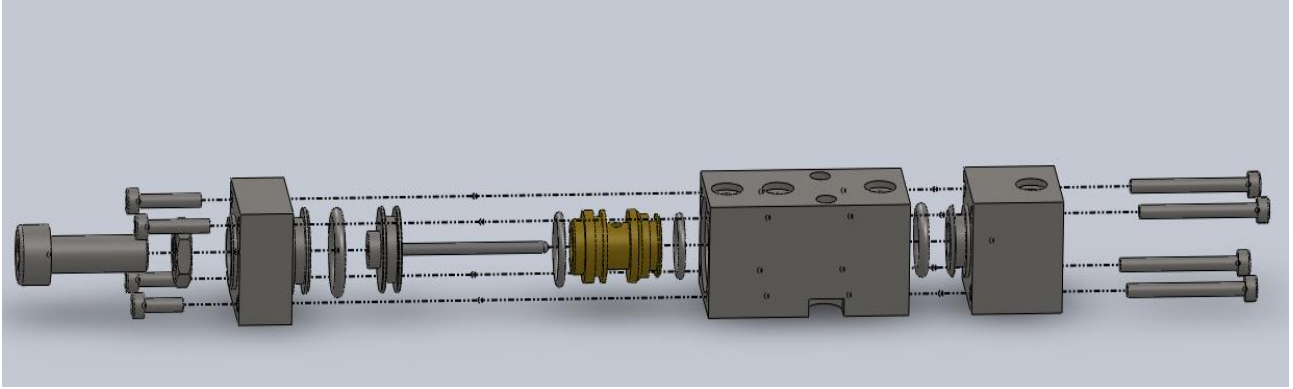
gun body to the nozzle. When air pressure pushes the piston upward, the liquid passage is immediately opened, and the solution is blown out of the nozzle in a fibrous pattern by the air stream.

Standard nozzle widths are 25 mm, 50 mm, and 100 mm. Combining these three widths allows spray guns of various widths to be designed.

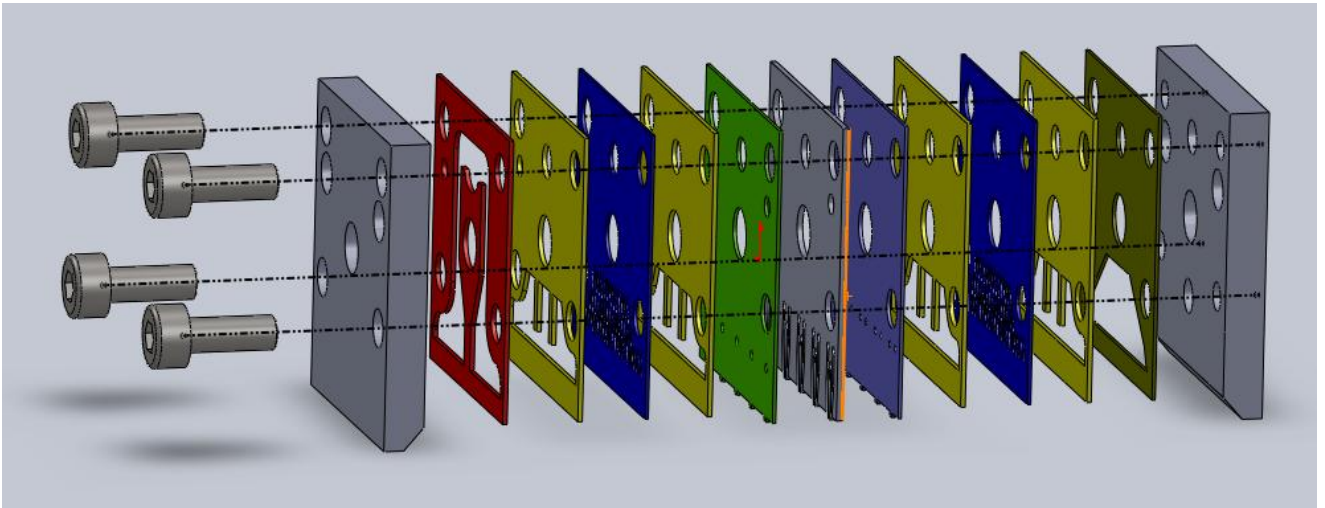
5.1.1 AKS Henghai Perfume Spray Gun Structure Flow Diagram



5.1.2 Body Assembly Exploded View



5.1.3 25 mm Fiber Nozzle Module Exploded View [Use a 3 mm hex wrench to remove the M4 bolt in the center of the nozzle module to detach it]



5.2 Installation and Start-Up

5.2.1 Storage and Transport:

The perfume spray gun is packaged in impact-resistant material and shipped in cartons; it can be transported mixed with other components.

5.2.2 Maintenance Requirements:

The air supply for the perfume spray gun is controlled by a solenoid valve. The solenoid valve should be kept clean and lubricated. Solenoid valve model: 4H210-06.

The port is 1/8 inch threaded. Outlet markings: A (outlet open), B (outlet closed).

5.2.3 Installation Instructions

The perfume spray gun is tested before shipment and can be installed and used immediately. Each perfume spray gun comes with a solenoid valve (4V110-06) to control the air supply. Due to the extremely fast response of

the spray gun switch, the solenoid valve should be installed as close to the spray gun as possible with consistent distances. Jinhu Henghai Precision Machinery Co., Ltd. can provide the solenoid valve and the corresponding water-filter pressure regulator.

The solenoid valve can be controlled by a controller, the perfume machine high-speed compensator, or a limit switch. Contacts and photoelectric sensors should be installed in adjustable positions.

The AKS perfume spray gun can be installed at the required position on the main unit. The gun body mounting bracket has 16 mm diameter mounting holes, secured with M6 bolts. The gun body incorporates a filter device and spray volume fine-adjustment function. The inspection hole in the middle of the nozzle allows checking of nozzle operation and seal condition. In typical applications, the distance between the nozzle and the object surface should not exceed 60 mm.

1. Connecting the perfume spray gun to the perfume machine: Connect one end of a $\Phi 8$ mm air hose to the perfume machine outlet, and the other end to the perfume spray gun inlet.

2. Connect the solenoid valve to the perfume spray gun electrical circuit. When the spray gun needs to close, compressed air flows from the solenoid valve to port B. When the solenoid valve is actuated, compressed air flows to port A. When the perfume spray gun opens, the air pressure is $5 - 8 \text{ kg/cm}^2$.

3. To purge air and protective oil from the perfume spray gun, manually start the metering pump and manually open the solenoid valve to expel air and oil from the gun body until the ejected fluid is entirely mixed solution.

4. Run the equipment, perform a test spray, and check that everything is working properly.

5.3 Maintenance

The AKS perfume spray gun generally does not require frequent maintenance; simply follow the maintenance schedule below.

Item	Method	Frequency	Action
Check for liquid leaks at joints	Visual inspection	As needed	Tighten
Check for air leaks in pneumatic circuit	Visual inspection	As needed	Tighten
Inspection hole	Check operation and seal condition	As needed	Clean nozzle and adjust stroke limit
Nozzle operation	Daily operation check	Weekly	Open valve
Filter drainage	Open drain valve to drain	Monthly or as needed	Clean filter, replace if necessary

5.3.1 Spray Gun Volume Fine-Adjustment

The perfume spray gun is equipped with a spray volume fine-adjustment (nozzle piston limit) bolt. Follow these steps:

1. Place the spray gun in manual spray mode;
2. Loosen the nut at the top of the nozzle;
3. Carefully adjust the nozzle piston limit screw (needle);
4. Adjustment range: $1/4$ to $1/2$ turn;
5. After adjustment, tighten the nut at the top of the nozzle.

5.3.2 Spray Gun Drainage

Note: Turn off the main unit motor.

1. Place a container below the drain port;
2. Disconnect the liquid hose between the spray gun and the main unit, and connect a compressed air hose.

Solution and impurities are expelled from the spray gun;

3. Run the pump motor until the discharged solution is clean.

5.3.3 Perfume Spray Gun Filter Replacement

Note: The main unit motor must be turned off.

1. Place a container below the spray gun drain port;
2. Use a hex wrench to slightly loosen the drain valve (do not remove it completely) until system pressure is confirmed released;
3. Use an open-end wrench to remove the filter and replace the filter screen;
4. Apply protective grease to the filter cap threads and reinstall it, taking care not to damage the O-ring.

5.3.4 Perfume Spray Gun Cleaning

When carbon deposits or other impurities inside the spray gun cause nozzle clogging, AKS Henghai provides the following series of nozzles.

Cleaning tools (nozzle cleaners)

Turn off the main unit power and confirm pressure is 0, then remove the nozzle cap and nozzle.

Ensure the tool used matches the nozzle diameter, and completely remove any foreign matter inside the nozzle.

5.4 Perfume Spray Gun Troubleshooting and Repair

5.4.1 Troubleshooting Table

Fault Symptom	Fault Cause	Solution
No solution ejected from nozzle	1. No liquid in bucket or pump not running 2. Solenoid valve not operating or damaged 3. Needle seized 4. Nozzle clogged	1. Add liquid, start the pump 2. Turn on solenoid valve power or replace solenoid valve 3. Loosen the limit needle on the nozzle 4. Remove nozzle and clean out debris
Poor solution atomization, dripping	1. Nozzle air holes clogged 2. Nozzle air volume too low	1. Remove nozzle and clean out debris 2. Adjust the air source throttle valve on the nozzle to increase air output
Solution volume too high	1. Pump output volume too high 2. Needle opening too large	1. Lower the frequency signal analog voltage or modify VFD

		parameters to reduce the upper frequency limit 2. Adjust the needle opening to reduce it
Solution volume too low	1. Pump output volume too low 2. Liquid has been used up 3. Needle opening too small	1. Increase the frequency signal analog voltage or modify VFD parameters to raise the upper frequency limit 2. Add liquid 3. Adjust the needle opening to increase it

5.5 Perfume Spray Gun Repair

5.5.1 Nozzle Replacement

Turn off the main unit motor and confirm compressed air pressure is 0.

1. Place a container below the spray gun.
2. Loosen the drain port bolt (pressure relief valve) until system pressure is confirmed to be zero.
3. Use a hex wrench to loosen the M4 fixing screw in the center of the nozzle, and remove the nozzle and the two O-rings on the back.
4. Install a new nozzle and two O-rings, and secure with the fixing screw to the valve seat.

5.5.2 Replacing the In-Nozzle Repair Kit

The repair kit (HHXSJ18747) includes the piston, seal seat, high-temperature grease, and all O-rings.

1. Apply high-temperature grease to all O-rings.

Note: High-temperature grease is indispensable and cannot be substituted! Otherwise, seals may be prematurely damaged and liquid may leak.

2. Install the O-rings in place; the seals must not have visible nicks or breaks.
3. Insert the seal seat into the nozzle and push it to the clean, flat bottom.
4. Insert the fixing screw into the nozzle so that it secures the seal seat in position.
5. Apply high-temperature grease to the sealed portion of the nozzle piston.
6. Carefully push the piston from outside to inside into the nozzle and seal seat, taking care not to

damage the O-ring inside the seal seat.

7. Secure the seat to the nozzle with four screws.

8. Insert the nozzle adjustment screw into the piston seat.

9. Place the spring between the piston and piston seat, and position the piston seat onto the nozzle. Note: Prevent the spring from deviating from center.

10. Install the piston adjustment nut, and pay attention to adjusting the piston and the position of the adjustment screw.