

## 9) Other fault information of the control board

Code	Default error	Failure	Corrective action
E00	Battery under voltage	Downtime	Charge battery
E01	PCB board overheat	Downtime	Cooling down for 15/20 minutes
E02	PCB board malfunction	Downtime	Replace ore repair
E03	The clean water tank is empty	Delay	Refill water tank
E04	Recovery tank full	Delay shutdown of suction motor	Empty the waste water tank
E11	Brush motor current overload	Downtime	Cooling down and after restart
E12	Brush motor short circuit	Downtime	Cooling down and after restart
E13	Brush motor thermostat break out	Downtime	Cooling down and after restart
E21	Suction motor overload	Downtime	Cooling down and after restart
E22	Suction motor short circuit	Downtime	Cooling down and after restart
E23	Suction motor thermostat break out	Downtime	Cooling down and after restart
E30	Solenoid valve malfunction	Downtime	Check if there is dirt in it after cleaning restart

## 7. The product quality commitment

All products are carefully tested and inspected by factory quality inspectors to ensure that the products are free of defects in parts and assembly when they leave the factory.

We provide a one-year warranty for the product (except for vulnerable parts or man-made damage!), regular return visits during the warranty period, all repair costs and accessories costs caused by product quality problems are borne by the seller. Or after-sales service by local dealers Contact Ma Zhaoli (Guangdong) Technology Co., Ltd.

Note: This warranty does not apply to any accidents caused by maintenance, negligence, abuse, product damage caused by fire, or operation of the machine not in accordance with the operating requirements.

In addition, wearing parts (wheels, rubber strips, absorbent strips, brush trays, needle holders) are not covered by the warranty. The storage battery is a special commodity, which is related to the standard use of the operators. The warranty period is 6 months. If the product is used for other purposes than the product function, the warranty is invalid. Please read the product manual and maintenance manual carefully. All communication and transportation costs, including insurance costs, are paid by the user. Does not include other claims of any nature.

## F60 Walk-Behind Floor Scrubber User Manual

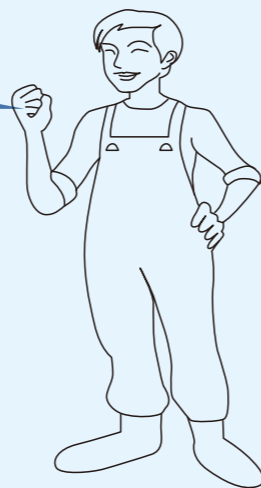


Attention: please read carefully, and after training before operation

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Ma Zhaoli (Guangdong) Technology Co., Ltd. will serve you wholeheartedly, please rest assured to use and read this manual carefully



### 1. Product overview

The F60 series fully automatic floor scrubber is a green and environmentally friendly product powered by storage battery. It can clean in public areas or industrial environments. It automatically integrates the functions of cleaning, water absorption, and drying. Reasonably and evenly distributed on the ground can decompose and remove dirt, and is especially suitable for use in places with a work area of 1000–5000 square meters.

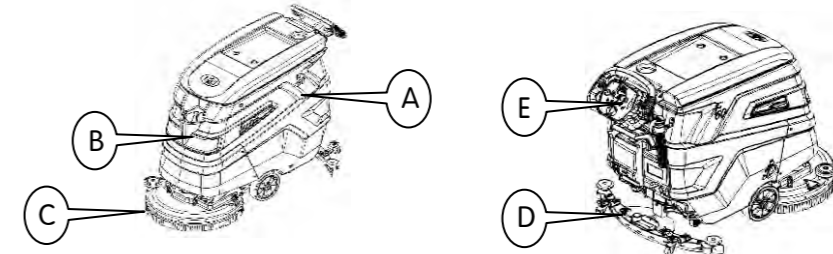
The F60 series fully automatic scrubber has a variety of configuration combinations for you to choose from. You can choose the configuration of the machine through your local dealer to make the product more suitable for your needs.

They are mainly divided into two products: F60–A auxiliary self-propelled automatic floor scrubber / F60–B hand-push automatic floor scrubber can make your cleaning work easier and faster, it can quickly remove the dirt from the ground, and At the same time, it can completely take the dirt away from the scene, protect your ground to the utmost extent, and make your ground clean quickly. The entire work area does not need to close the passage, does not affect others to the greatest extent, only needs one person to operate, and can complete a cleaning efficiency of about 2000 square meters per hour.

The above two models have the advantages of imported similar models. The water tank has a large volume, a clean water tank and a sewage tank. The failure rate is small, the body is firm, the working noise is low, the gyration radius is small, and the water absorption effect is good. The design, coupled with our perfect after-sales service, will definitely make you feel more at ease.

Item	Name	F60–A/F60–B Parameter
1	One key control	Standard
2	PCB control	Standard
3	Electronic water flow controller	Standard
4	Propulsion speed adjustment	F60–A Standard
5	Electronic control water	Standard
6	BRS system	Standard
7	Theoretical efficiency	F60–A 3000m <sup>2</sup> /h F60–B 2000m <sup>2</sup> /h
8	Cleaning width	560mm
9	Squeegee width	800mm
10	Clean water tank capacity	60L
11	Recovery tank capacity	65L
12	Rotation method of brush plate	Aluminum gear reduction
13	Brush pressure	25Kg
14	Brush speed	175rpm
15	Main brush motor	550W
16	Water suction motor	400W
17	Traction motor	F60–A 90W
18	Working voltage	DC 24V
19	Max working Duration	5h@ECO Mode
20	Battery configuration	12V*2–100Ah
21	Product size	1450x800x1100mm
22	Net weight	165Kg

### 2. Introduction of main components and functions



#### Main function introduction

- A. Recovery tank: It is the place where sewage is recycled and stored. When working, make sure to cover the drain pipe cover, the suction pipe and the squeegee are connected, and the recovery tank can work normally!
- B. Clean water tank: It is a container for storing clean water or a mixture of clean water and detergent. It is a key part of the whole machine. Please confirm whether there is liquid in the water tank before the machine works!
- C. Brush plate system: The brush plate is driven by a high-performance brush plate motor and a reduction gear machine, which can quickly separate the dirt from the ground;
- D. Squeegee system: adopts a special structure and imported rubber strip, so that the sewage can be collected and sucked into the sewage tank through the suction port.

The original factory-configured rubber strip is an imported special rubber strip (red), which is very suitable for use in an oil-free environment. If you need to use it in an environment with more engine oil, please purchase a special oil-resistant rubber strip

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## E control panel system:

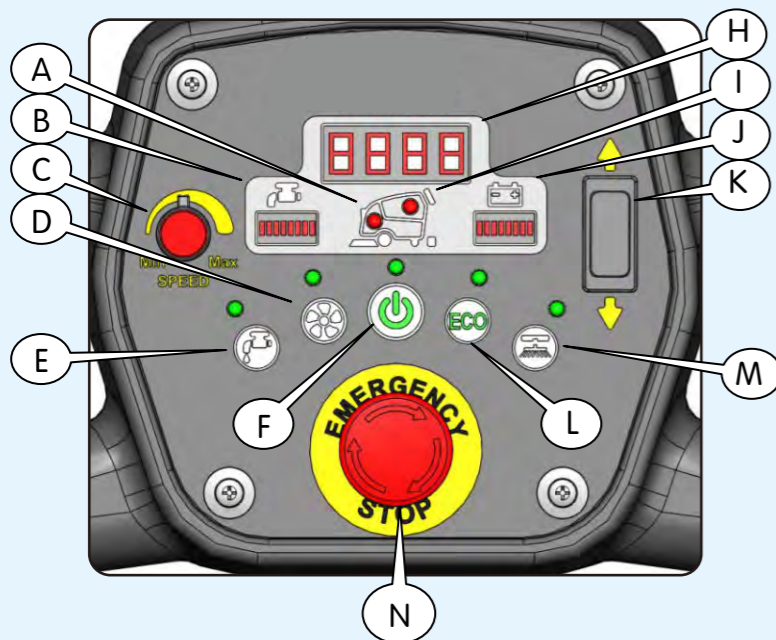
1. With automatic battery capacity detection device and battery low voltage protection function;
2. With working time management and maintenance reminder functions;
3. When the recovery tank is about to be full of water, it can automatically turn off the suction motor function;
4. It has the function of brushing auxiliary walking adjustment; (optional configuration);
5. It has the linkage function of squeegee and suction motor (optional configuration);
6. With the linkage function of brush plate and water outlet control
7. With "one-key start" function
8. Power switch with key
9. Emergency stop, clear water flow control function

The battery: The standard configuration battery is an ordinary lead-acid battery, you can also have the following configuration options

- 1 Deep-cycle low-maintenance battery-good discharge performance, the frequency of checking and adding distilled water is lower than that of ordinary lead-acid batteries;
- 2 Lithium battery-high capacity and high performance, no need to add liquid, high price:

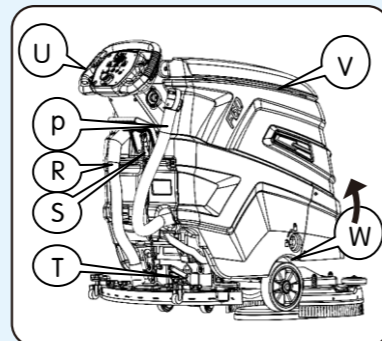
This product is a professional equipment tool, which requires special training, special operation, and special storage. The operator must properly keep the key to ensure the safety of the equipment and others!

## 3. Operation panel and other functions introduction



- A: Display of lack of clean water
- B: Water volume display
- C: Forward/backward speed adjustment knob (assisted self-propelled) F60-A configuration
- D: Suction motor switch
- E: Water volume switch
- F: One-key start mode
- H: Boot time/fault display
- I: Sewage full display
- J: battery display
- K: Forward/backward switch (auxiliary self-propelled) F60-A configuration
- L: E CO energy saving mode
- M: Brush removal switch

- N: Emergency stop
- O: Drive rod
- P: Sewage discharge pipe (remember to cover the pipe cover when using it, otherwise the ground will not absorb water)
- R: squeegee vacuum tube
- S: squeegee lever
- T: Brush plate lifting pedal
- U: Direction handle
- V: Recovery tank cover
- W: Water tank tipping switch (when there is no water in the clean water tank, turn on the switch to the left, and pull the water tank upward to raise the water tank)



## 4. Quickly operate diagrams and use precautions

### A、Unpacking installation and selection of brushes

- 1) Install the squeegee,
- 2) Install the battery connection, pay special attention to the danger of short circuit!
- 3) Install the brush, step on the lift pedal to raise the brush plate, place the brush in the middle of the brush plate, then lower the brush plate, start the brush plate switch, raise the drive lever, and the brush rotates to complete the brush installation work. If the brush cannot be installed successfully, Please adjust the brush position (place it in the middle). Repeat the above operation.
- 4) Brush unloading: Step on the lifting pedal to raise the brush tray, start the brush unloading switch, lift the drive lever for 2 seconds, keep the brush plate moving, and then release the drive lever, the brush will fall off naturally.

- Soft brush: used for cleaning smooth floors or polishing.
- Nylon brush: used for ordinary floor cleaning (standard configuration)
- Hard brush: used to remove stubborn ground dirt.

- White pad: used for ordinary cleaning and polishing of marble and smooth floors
- Red pad: used for ordinary floor cleaning
- Black pad: used to remove stubborn ground dirt

The purpose of cleaning is to remove surface dirt on the premise of protecting the ground. Improper selection of brush plate and mat may harm your ground. Please pay attention!

### B、Note before use:

- 1) When using the machine for the first time, the operator should attend face-to-face training with sales engineers. And operate the familiar machine under the supervision of the engineer.
- 2) When a new person is replaced during the work process, the original operator or the foreman supervisor should teach the new operator the essentials and precautions to avoid unnecessary accidents.
- 3) Understand and be familiar with the place to be cleaned, determine the route of the machine in mind, and complete the work with the simplest and safest itinerary.
- 4) Check the battery capacity (new machines or machines that have not been used for a long time should be fully charged before use).
- 5) Choose a brush or a cleaning pad according to the nature of the floor?

### Prepare operation:

- 1) Choose the appropriate cleaning agent and cleaning agent concentration according to the soiled state of the ground; generally, only 3/4 cups of cleaning liquid (commonly used disposable water cups) of the disposable water cup are shown in the figure above;



In order to protect the environment, please minimize the amount of detergent! Please use a neutral low-foaming detergent! When using foamed detergent, use defoamer at the same time to eliminate the foam in the recovery tank and extend the service life of the suction motor!

- 2) Add detergent and water into the inlet.
- 3) (One-key start) mode, manual configuration method Start the machine with one button, step on the foot pedal to lower the front brush, and lower the squeegee. After pulling the drive rod, push the machine forward to start work.

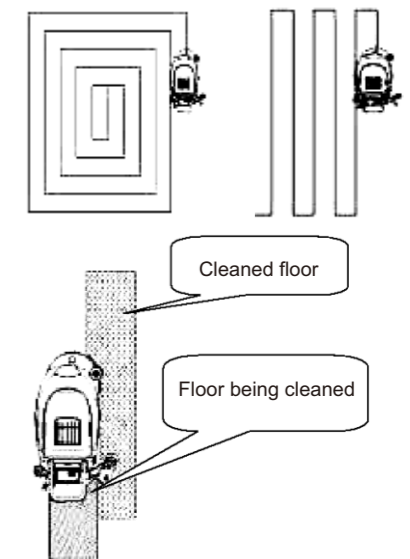
### Use method with auxiliary self-propelled configuration

Under the one-key start or non-one-key start method (press above), press the forward/backward switch, pull the drive rod, and the auxiliary device has started to start, depending on whether the forward speed is suitable for the operator's forward speed or the ground dirt (the dirt is more adjustable) Slow speed) adjust the speed switch

How to move the machine when not working  
1. Raise the squeegee 2. Use the foot pedal to lift the brush plate 3. Move machine

### Start operation:

- 1) Add water, install brushes or mats and you can start working. Depending on the size of the cleaning site, you can have the following options:  
When cleaning a relatively open and large area, you can choose to go back to the shape of the font, enter from the right direction, walk counterclockwise, layer by layer and shrink toward the middle. (As shown on the right) When the cleaning area is narrow and long, you can choose "S" to go back and forth; please decide according to the actual situation. (As shown on the right)
- 2) The key to efficient cleaning is to "keep the dirt off the ground and take the dirt away from the scene".
- 3) In order to improve your work efficiency, pay attention to control while on the move. Try to make the Wei cleansing face one by one, without missing washing, and complete the operation with the least stroke. (As shown on the right)
- 4) When the sewage tank is full, the suction motor will automatically shut down. At this time, the sewage should be discharged in time, and the clean water tank should be reinstalled to continue working.
- 5) Repeat this, can you do it?



### Precautions:

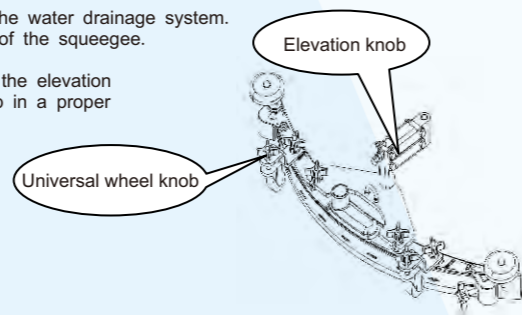
- 1) It is strictly forbidden to add corrosive liquids (such as corrosive, hydrochloric acid or other strong corrosive agents) into the clean water tank. This will cause serious damage to the machine, and the cleaning must be carried out in accordance with local environmental protection requirements.
- 2) When charging the machine, turn off the power lock and remove the key. Charging should be completed at one time, don't stop charging randomly.
- 3) The charger and battery are used in a matched manner. Do not use non-equipped chargers to avoid damage to the battery.
- 4) It is strictly prohibited to turn on when charging.
- 5) When using ordinary lead-acid batteries, check the battery liquid level every week, and add distilled water in time for lack of liquid.
- 6) It is strictly forbidden to add any water other than distilled water into the battery, as this will cause damage to the battery.



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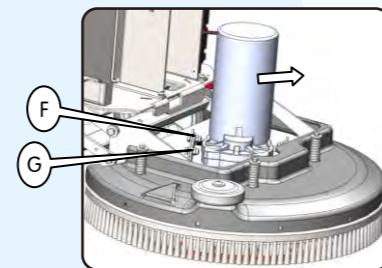
- 8) To keep the clean water tank clean, debris falling into it may block the water drainage system.  
 9) The adjustment of the squeegee will directly affect the suction effect of the squeegee. Keep the squeegee at 90° perpendicular to the ground. When the squeegee is worn out, adjust the squeegee swivel knob or the elevation knob as shown in the right picture. To keep the squeegee rubber strip in a proper position with the ground.

If the squeegee is not in the 90° position with the ground, it may cause bad wiping at the center of the squeegee, and cause the rubber strips at both ends to be too close to the ground, excessive wear of the rubber strips, and even dislocation of the front rubber strips;



- 10) This machine adopts the brush plate to assist the adjustment of the vessel. When you feel that the advancement is laborious during use, you can adjust this knob to adjust; please refer to the figure

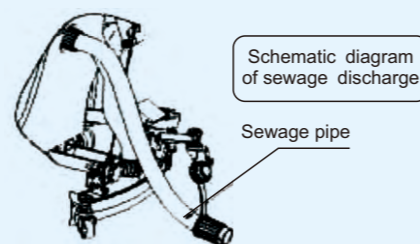
Loosen the screws at positions F and G (including the two opposite ones), let the motor tilt 5 to 10 degrees to the left in the forward direction, and then tighten the screws.



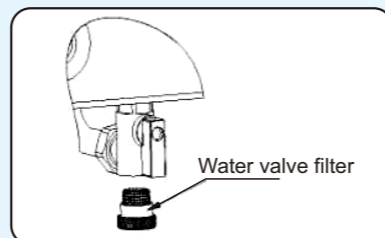
- 11) Keep the adhesive strips clean during work, prepare a towel and a pocket, and clean up when the adhesive strips get stuck in debris

## 5. Daily maintenance

- At the end of each work, check the capacity status of the battery and decide whether to charge, so as not to affect the next day's work.
- After the work is finished, empty the sewage and clean the sewage tank. Do not leave the sewage in the sewage tank, otherwise the service life of the suction motor will be affected.
- At the end of the work day, it is best to use up the cleaning agent in the clean water tank, and do not leave the liquid in the tank for a long time;
- After working every day, it is best to rinse the parts of the machine in contact with the cleaning agent with clean water, and use a dry cloth Wipe clean
- After the work is completed, the squeegee must be lifted and removed for cleaning to maintain the elasticity and life of the rubber strip.
- There is a filter screen in the water valve, and the filter screen should always be removed for cleaning. To ensure that the water discharge system is unblocked; (as shown on the right)

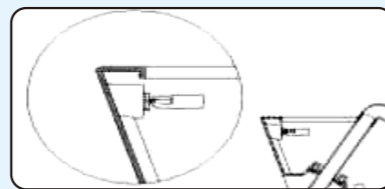


Note: The new machine may leave processing residues in the clean water tank, so it is necessary to increase the frequency of cleaning the filter in the early stage of use.



- 7) When cleaning the sewage tank, check that there is no entanglement on the floating rod of the liquid level sensor. If there is entanglement, remove it in time. The level of the liquid level sensor is shown on the right.

- 8) When the power is lower than the specified value during use, the machine will automatically stop working, and there will be a buzzer alarm. At this time, the machine needs to be charged. Only turn off the key to stop the buzzer alarm. If there is still a small amount of work that has not been completed, you can turn on the key again and use the single-motor working mode to operate. When the motor operation also alarms, the machine must be charged.



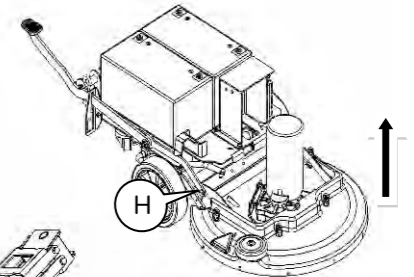
Charging must be completed continuously at one time to reduce the number of charging and discharging and improve battery life

Choosing high-efficiency power-type maintenance-free batteries can bring you greater convenience. When using high-efficiency maintenance-free batteries, you must maintain an effective charging time and do not interrupt normal charging at will. Use the maintenance-free charging charger that is randomly configured. The battery charger is used for maintenance-free battery charging, which will cause the battery to "burst"!

## 6. Abnormal problems and troubleshooting methods

- 1) If the machine easily deviates to the left or right during the working process, the troubleshooting method: adjust the knob according to the method shown in the figure;

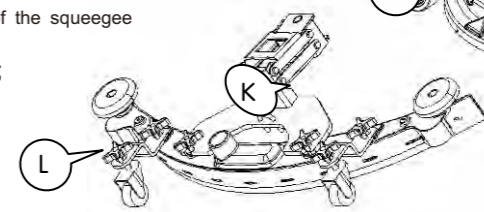
Loosen the screw H1 (including the opposite side) and lift the brush tray assembly 0.5 to 1cm upwards and tighten the screw. Note: If you run off to the left, adjust the brush plate assembly side down



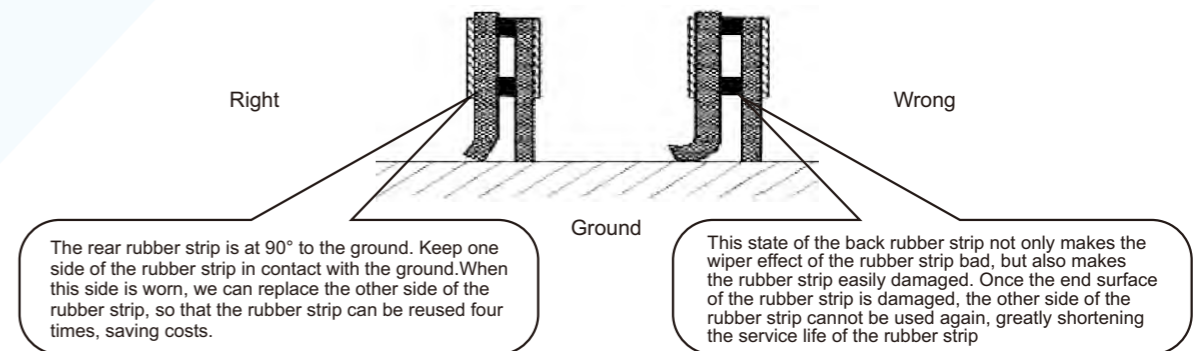
- 2) Bad wiping in the middle or bad at both ends of the squeegee

Adjust the knob as shown in the figure;

When the two ends of the rubber strip are tilted up, the two ends are not scratched well, turn clockwise to adjust K  
 When the rubber strip is tilted up in the middle, the two ends are not scratched well, turn K counterclockwise



When using, adjust the knob L to make the water-absorbent tape contact the ground in the best state;



The squeegee strip of this machine is designed for double-sided and four-way use, which can effectively reduce your use cost and maximize your value. To purchase rubber strips or to purchase oil-resistant rubber strips, please contact your local distributor or equipment manufacturer

### 3) Classification and exclusion of water absorption effect

"Bad effect in the middle", "Bad effect at both ends" -----Adjust the verticality of the squeegee "The squeegee can be scraped, but the water overflows from both ends of the squeegee."-----Check whether the suction port of the squeegee has suction power, whether it is blocked, whether the recovery tank is full, whether the recovery tank sealing strip is not installed, and whether it is dirty Whether the cap is not covered;

- 4) There is no response after the water suction motor or the brush motor is turned on;  
 Remedy: Check whether the fuse is damaged; whether the battery connector is loose or oxidized;

- 5) The power display is good, and the motor is running weakly.

Check whether the battery output terminal is loose: check whether the connecting connection to the motor is damaged; whether the machine has maintenance prompts, if so, ask a professional to check whether the carbon brush of the motor is worn;

- 6) The battery voltage is displayed normally, and the use time is getting shorter and shorter. Inspection method:

Check whether the battery is short of liquid? Is each charge completed continuously and uninterrupted as required? Is the green light on each charge? Elimination method: please add distilled water for lack of liquid: be sure to complete the uninterrupted charging according to the regulations; each charge must be completed automatically (green light is on): Repeat several times to see if the battery can recover, if not, replace the battery.

- 7) The suction motor is running, but the squeegee has no suction check:

- Check whether the intake pipe in the sewage tank is blocked or the sewage pipe cover is not installed
- Check whether the water inlet of the squeegee is blocked by foreign objects
- Remove the hose connected to the squeegee and check if the hose port is blocked?

- 8) Check that the machine does not flow out of water or does not flow out smoothly:

- Whether the drain switch is turned on
- If it is a "one-key start" switch model. Water will only be discharged after starting
- Whether the water volume valve adjustment is in place
- Unscrew the filter of the water valve to check whether it is blocked
- Check whether the water pipe at the bottom of the chassis is compressed