AICLITH

Pioneer Pusher AF2013

User Manual

WALK-BEHIND FLOOR SCRUBBER

Instructions for operation and maintenance

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List

Standard Packing List

order	name	unit	quantity
1	Machine	set	1
2	Lithium battery	set	1
3	Battery charger	set	1
4	floor scrubber brush	set	1
5	Rubber Strip	Kit (2pcs)	1
6	Squeegee assembly	set	1
7	Suction pipe	piece	1
8	Manual	piece	1

Replacement Cycle and Warranty Specification for Easily Wounded and Consumption Parts

name	Recommended replacement cycle	warranty statement
Lithium battery	5000 charge-discharge cycles	5 years
Front squeegee blade rubber	300 hours	No warranty
Rear squeegee blade rubber	500 hours	No warranty
Brush	700 hours	No warranty
suction motor	1200 hours	24 months
Brush motor	4000 hours	24 months
Suction hose	1000 hours	No warranty
exhaust pipe	1000 hours	No warranty

EXECEPTION CLAUSE

1. Read and check the power supply size indicated on the nameplate before use，And confirm that the current power supply meets the requirements of this product. In case of product damage or personal injury caused by incorrect use of power supply ,our company is not liable.
2. Do not use it beyond its rated load. If this causes damage to the parts，our company is not liable.
3. Do not use in ultra-extreme environments (acidic, alkaline, too low or too high ambient temperature)，If any damage, accident or injury is caused by it, etc，our company is not liable.
4. Our company is not liable for failure and damage caused by failure to use, maintain, keep or put foreign bodies in.
5. Our company is not liable for damage or injury caused by unauthorized refitting of washing trucks ,etc.

ATTENTION

To avoid harm to the operator and damage to the machine, please read the contents marked this symbol  carefully.

ATTENTION: Danger of exhalation of gas  and leakage of corrosive liquids. 

 ATTENTION: danger of fire: do not go near with free flames.

ON CONSIGNMENT OF THE MACHINE

When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents has been received, and also to check the machine has not suffered damage during transportation. If this is the case, the carrier must ascertain the extent of the damage at once, informing our customer service office. It is only by prompt action of this type that the missing material can be obtained, and compensation for damage successfully claimed.

INTRODUCTORY COMMENT

Floor scrubber-dryer, via the mechanical action of the rotating brush and the chemical action of a water/detergent solution, can clean any type of flooring. As it advances, it also collects the dirt removed and the detergent solution not absorbed by the floor. Even the best machines will only work well if used correctly and kept in good working order. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine. If necessary, remember that our assistance service (organized in collaboration with our dealers) is always available for advice or direct intervention.

INTENDED USE

The scrubbing machine is designed exclusively for the professional cleaning of surfaces and floors in industrial, commercial and public environments. The machine is only suitable for use in closed - or at least covered - locations.

The machine is not suitable for use in the rain, or under water jets. It is FORBIDDEN to use the machine for picking up dangerous dusts or inflammable liquids within places with a potentially explosive atmosphere. In addition, it is not suitable as a means of transport for people or objects.

TECHNICAL DESCRIPTION

Clean width	Inch	20
Squeegee width	Inch	33
Max. Forward Speed	mi/h	2.80
Max. Capacities	sqft/h	24000
Brush Pressure	lb	66
Disc brush rotations	RPM	155
Brush motor	V/W	24V/550W
Suction Motor	V/W	24V/500W
Drive Motor	V/W	-
Full Charging Time	H	4
Solution tank	Gal	11
Recovery tank	Gal	13
Battery	V/AH	25.6V/100AH
Battery weight	lb	50
Net weight	lb	143

SYMBOLS USED IN THE MANUAL



Attention



Recycle



Manual



Information



Watch Your Hand



Warning corrosion



Warning injure hand



Caution shock



No open flames



Dangerous waste



Caution Danger of exhalation of gas



Lifting means

GENERAL SAFETY REGULATIONS

The regulations below must be carefully followed in order to avoid harm to the operator and damage to the machine.

- Read the labels on the machine carefully. Do not cover them for any reason and replace them immediately if they become damaged.
- The machine must be used exclusively by authorized, trained personnel.
- During the working of the machine, pay attention to other people and especially to children.
- Do not mix different types of detergent as this may produce harmful gases.
- Do not pack the machine when there is residual liquid in it.
- The storage temperature must be between -25°C and +55°C.
- Conditions of use: room temperature between 0 ° C and 40 ° C with relative humidity between 30 and 95%.
- Do not use the machine in an explosive atmosphere.
- Do not use the machine as a means of transport.
- Do not use acid solutions, which may damage the machine or harm the operator.
- Avoid working with the brushes when the machine is standing still, so as not to damage the floor.
- Do not vacuum inflammable liquids
- Do not use the device to collect dangerous powders.
- In the event of a fire, use a powder extinguisher. Do not use water.
- Do not knock against shelving or scaffolding, where there is a danger of falling objects.
- Select the operating speed according to the traction status.
- Do not use the machine on surfaces with an inclination greater than the one shown on the plate.
- When not in use, remove the keys and place the machine in a proper way to keep still.
- The machine is designed to carry out the washing and drying operations simultaneously. Different operations should only be carried out in areas where the passage of unauthorized persons is prohibited. Signal the presence of damp floors with suitable signs.
- If the machine does not work properly, check this is not caused by failure to carry out routine maintenance. Otherwise, request the intervention of your dealer After-sale Service Centre.
- If you need to replace any components, request the ORIGINAL spare parts from a dealer or Authorized Retailer.
- Only use the brushes supplied with the device, or those specified in the Use and Maintenance Manual.

- Pull down the emergency brake immediately when there is an operation risk.
- Before carrying out any maintenance work, switch off the machine and disconnect the battery connector.
- Make sure the whole electrical connection is recovered after maintenance.
- Do not remove any protection devices which require the use of special tools.
- Do not wash the machine with corrosive substances or with pressurized water.
- Send the machine to a Service Center nearby for servicing after 200 hours of use.
- To prevent the formation of scale in the solution tank filter, do not fill the tank with detergent solution many hours before using the machine.
- Before using the machine, check that all the hatches and covers are positioned as shown in this Manual.
- Before moving the recovery tank, empty the water.
- When disposing of consumption materials, observe the laws and regulations in force.
- When your machine has reached the end of its long working life, dispose of the materials it contains in an appropriate manner (e.g. oil, batteries and electric parts), and bearing in mind that the machine itself was constructed using 100% recyclable materials.

Ⅰ. MACHINE PREPARATION

HANDLING THE PACKED MACHINE

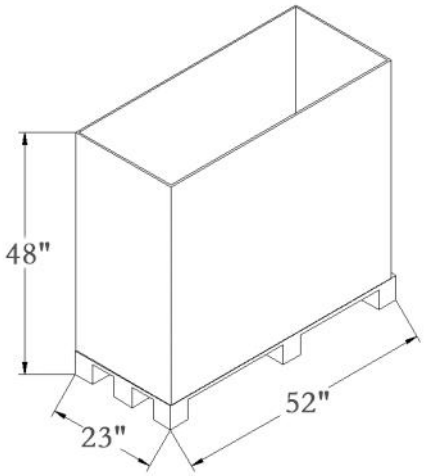
The machine is fixed to a pallet, which is specially designed for forklift handling.

Overall dimensions of the package:

L: 52"

W: 23"

H: 48"



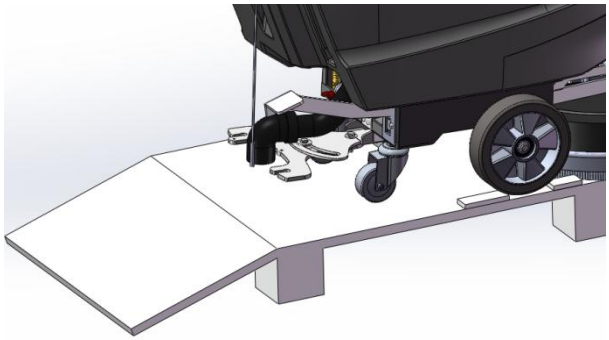
HOW TO UNPACK THE MACHINE

1.Remove the outer packaging (as figure)

2.The machine is fixed to the pallet with wedges and belts which block the wheel.

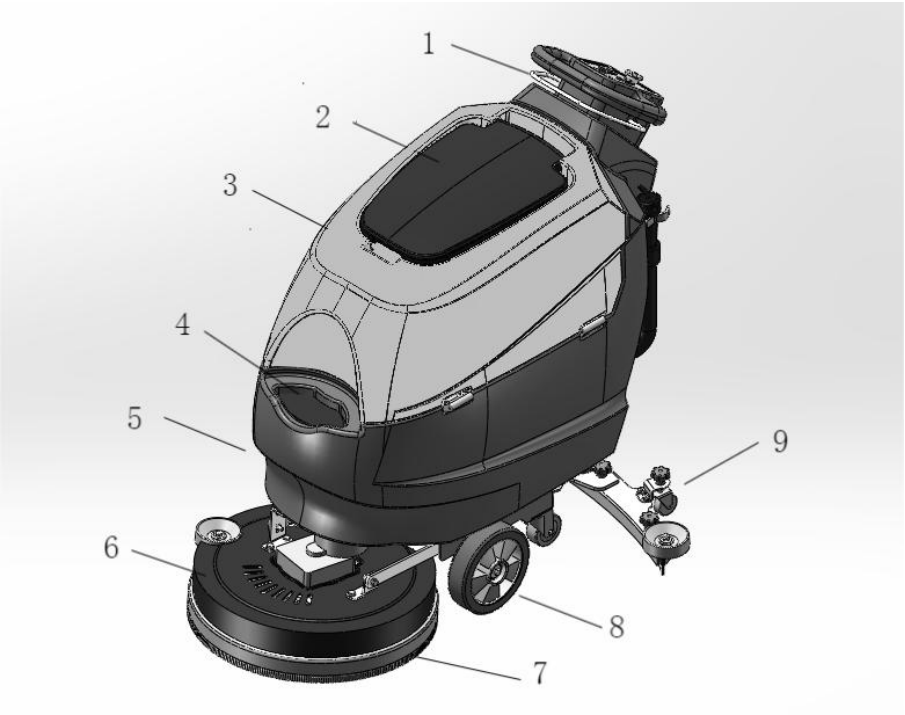
3.Remove these belts.

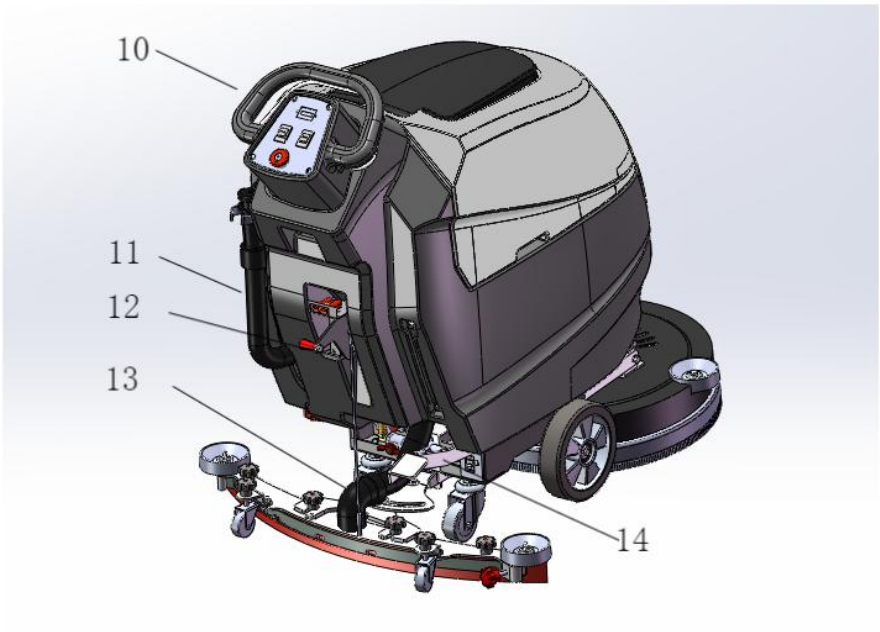
4. Get the machine down from the pallet.



Keep the pallet for any future transport need

OVERALL INTRODUCTION





1.Handle	2.Recovery tank cover	3.Recovery tank	4.Water filling port
5.Solution tank	6.Brush disk	7.Waterproof Skirt	8.Large Steering Wheel
9.Squeegee assembly	10.Handle	11.Sewage pipe	12.Squeegee lifting lever
13.Suction pipe	14.Brush Plate Lifting Pedal		

SAFETY PRECAUTIONS

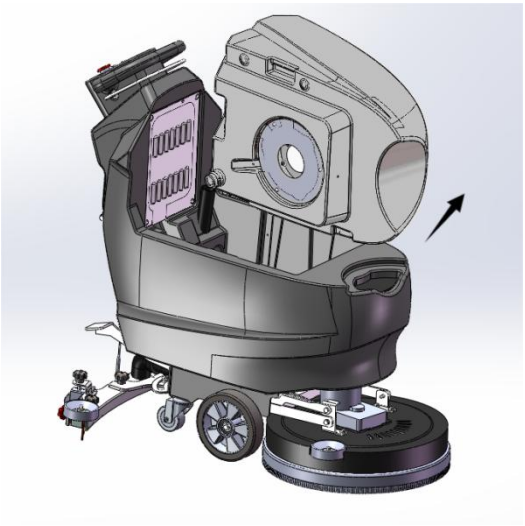
Lithium Iron Phosphate (LiFePO4) batteries are an inherently safe chemistry. However,as with any electronics,safety measures should always be taken.

1. Always wear protective gear when handling batteries.
2. Use proper tools, such as a wrench with a rubber-coated handle, to avoid short-circuits.
3. Keep batteries away from metallic surfaces and flammable materials.
4. Ensure all cable connections are secure and corrosion-free.
5. Store and transport batteries using the provided lifting handles.
6. Warm Tips for Battery Application: This 24V 100Ah lithium battery is not suitable for operating golf carts, engines, or any equipment that generates a high current during startup.

INSERTING THE BATTERY (apply to AF2013)

The battery should be correctly placed in the battery box below the recovery tank. Inserting the battery as follows (as figure) :

1. Make sure the sewage tank is empty, and then lift it up.
2. Put the battery on the pallet in place.
3. Connect all cables.
4. Do not connect batteries in series or parallel without proper guidance.
5. The front and the top of this 24V100Ah batteries can not be upside down.



BATTERY STORAGE

1. Store batteries at temperatures between 32°F to 95°F (0°C to 35°C) for short-term and 32° F to 77°F (0°C to 25°C) for long-term storage.
2. Maintain a state of charge above 50% and cycle batteries every 6 months during extended storage.

BATTERY DISCHARGING

1.LiFePO4 batteries are safe to operate between -4°F to 140°F (-20°C to 60°C).

2.LiFePO4 batteries are designed to allow for complete discharge down to zero percent, but it is generally recommended to begin charging when the battery level drops to 20% to maintain the health of the battery and extend its lifespan.

BATTERY CHARGING



For charging safety, please ensure that the machine's power is turned off or the forward/reverse switch is set to the neutral position during the charging process.

1. Please use the charger provided with the AF2013 Scrubber-Dryer, which is specifically designed for the lithium-ion battery. This charger ensures that the charging parameters, including voltage and current, are correctly matched to the battery's specifications.

2. LiFePO4 batteries do not require charging after each use and can be safely stored at partial states of charge.

3. The recommended charging temperature range is 32°F to 131°F (0°C to 55°C). For temperatures below 32°F (0°C), use batteries equipped with a heating module.

4. In the event that the lithium battery is unable to charge due to an extended period without power, utilize the emergency charging port to perform a forced charge and reactivate the battery cells.

BMS OPERATION

1. The internal BMS protects against under-voltage, over-voltage, over-current, over-temperature, and short-circuit conditions.

2. If the BMS disconnects the battery due to any regulatory restrictions, please follow the instructions provided in "Troubleshooting" to restore normal operation.

TROUBLESHOOTING

1. In case of operational issues, check the charger model and functionality. Replace if necessary.

2. Over-current Protection: If the battery activates its protection due to a high current, promptly disconnect it from the charger or any electronic load it's connected to. The battery should automatically resume normal operation after a short period.

3. Short Circuit Protection: Should your battery experience a short circuit, immediately remove any objects causing the short. Following this, use a suitable charger to replenish the battery at the standard current rate, which will assist in the battery's recovery from the short circuit condition.

4. Persistent Issues: If the aforementioned steps fail to address the problem, please reach out to a qualified service technician without delay. Avoid opening the battery casing yourself to prevent further damage or safety hazards.

BATTERY RECYCLING

Dispose of batteries at an authorized lithium recycling facility. Cover terminals with a protective cap or non-conductive tape before disposal.

VOLTMETER

The battery gauge of your floor scrubber provides crucial information regarding the status of the battery and the remaining operational time. Below is a detailed description of each section of the battery gauge:

1. Remaining Battery Percentage: Displays the remaining battery charge as a percentage. For instance, when it shows "80%", it means that the battery has 80% of its charge left.

Warm Reminder: When powering on, the battery percentage may temporarily show as 0%. This is a normal phenomenon as the system initializes communication with the battery. Please wait for a moment, and the actual battery percentage will be displayed accurately. Thank you for your patience.

2. Battery Status Indicator: The battery gauge of the floor scrubber provides real-time information about the battery's status, which includes the following six modes:

Standby: Indicates that the battery is not currently charging or discharging, and the floor scrubber is in a standby state.

Chg (Charging): Indicates that the battery is currently being charged.

Disch (Discharging): Indicates that the battery is discharging, meaning the floor scrubber is operating on battery power.



Eoc (Error: Over-current): Indicates an over-current fault with the battery, which may be due to excessive current flow.

Etemp (Error: Over-temperature): Indicates an over-t emperature fault with the battery, which may be due to the battery temperature exceeding safe levels.

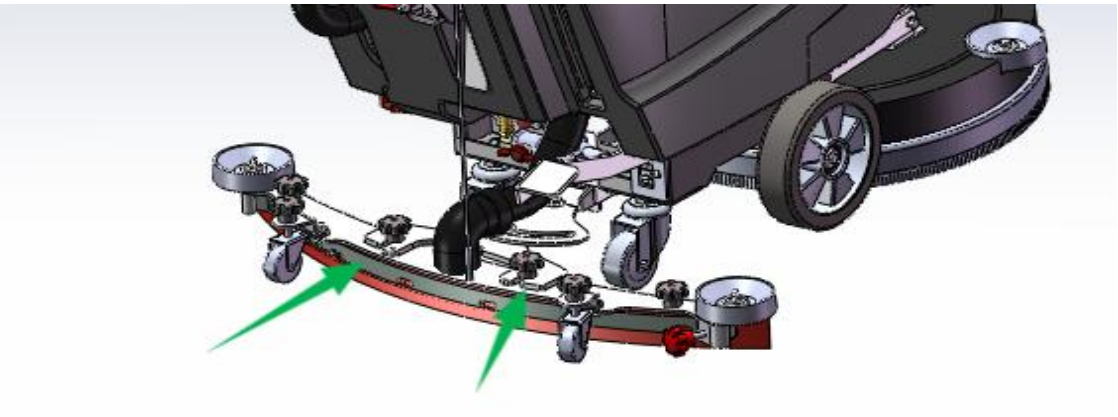
Evol (Error: Over-voltage): Indicates an over-voltage fault with the battery, which may occur if the battery voltage goes beyond the safe range.

3. Remaining Working Time: Displays the time that the floor scrubber can continue to work with the current remaining battery charge. The time is formatted in hours (h) and minutes (m).

To ensure the performance of the floor scrubber and the lifespan of the battery, please regularly check the battery gauge and charge or replace the battery as needed. If a fault indicator appears, please stop using the machine immediately and contact a professional technician for inspection and repair.

ASSEMBLING THE SQUEEGEE

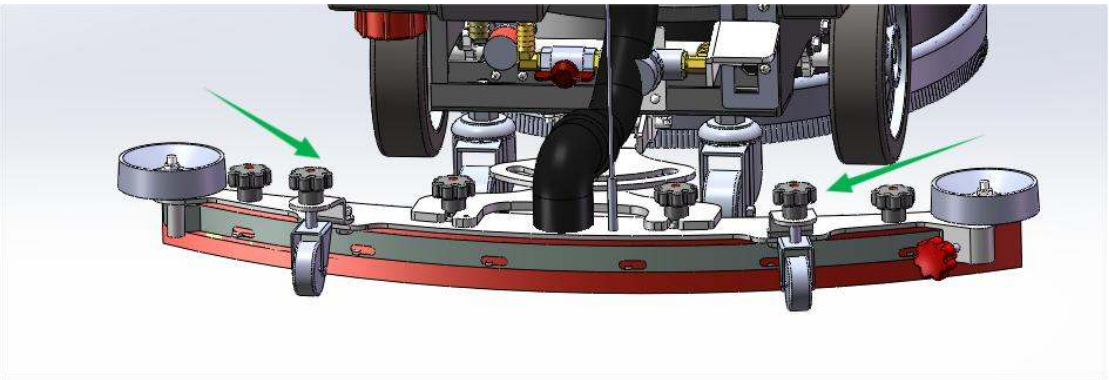
Due to the packaging, the suction head is separately packaged and supplied. The suction head should be fixed on the bracket assembly of the suction head until the cable is loosened and the suction pipe is connected to the suction port.



ADJUSTING THE HEIGHT OF SQUEEGEE

The height of the suction head should be adjusted according to the rubber of the suction head, and the specific adjustment methods are as follows:

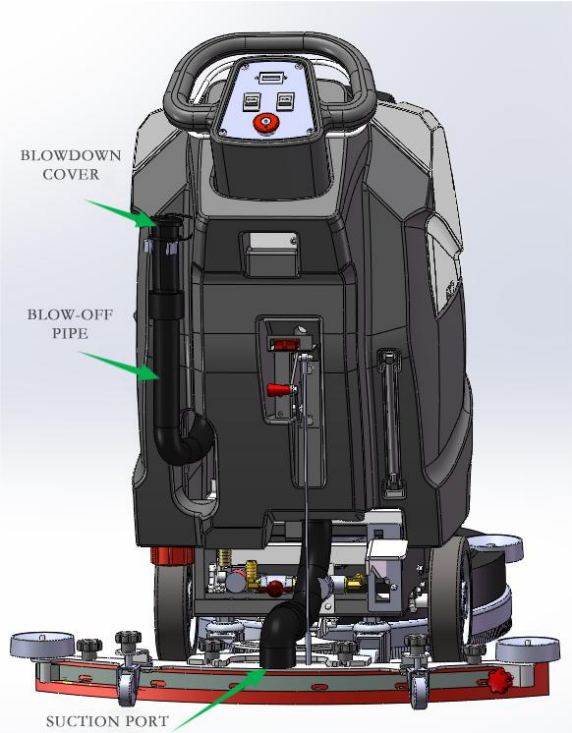
Turning the adjusting nut counterclockwise raises the suction head, and turning the adjusting nut clockwise lowers the suction head.



Rotate the adjuster of both sides simultaneously to keep the squeegee parallel with the ground.

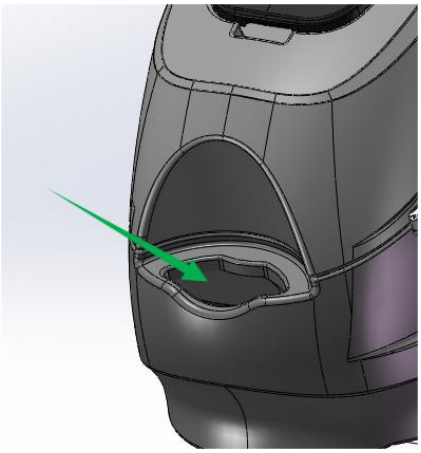
RECOVERY TANK

Turn over the sewage tank, check the suction pipe, sewage pipe and sewage tank joints, to see whether the components are connected correctly and sealed, and further check whether the suction pipe and the suction port, sewage pipe and sewage pipe cover are connected correctly and sealed.



SOLUTION TANK

Remove the front inlet cap, fill it with clean water.



CLEAN WATER

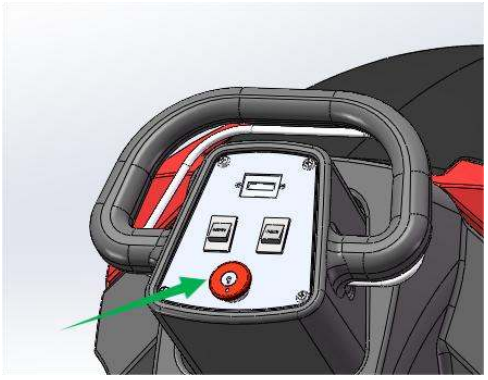
Fill the solution tank with clean water at a temperature not exceeding 50°C.Add the liquid detergent to the tank in the concentration and manner indicated on the detergent manufacturer's label. The formation of excess foam could damage the suction motor, so use only the minimum amount of detergent necessary. Cover the tank with cap.

You are advised to always use low foam detergents and add a little anti-foam reagent to solution tank. Do not use pure acids !

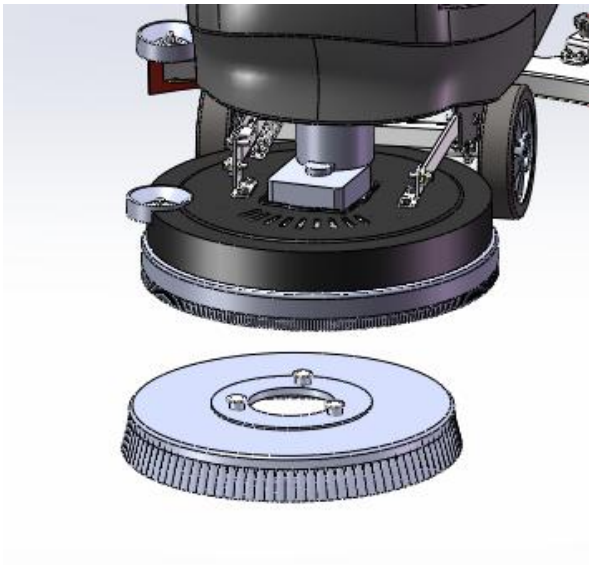
ASSEMBLING THE BRUSH

1. At first,Turn the key clockwise to activate the main switch.

This operation must be carried out after switch off the power supply to protect your hands.



2. With the base up, place the brushes into the plate housing beneath the base, turning the brushes until the three pins enter the niches in the plate itself; turn until the pin is pushed towards the coupling spring and is locked into place. The figure shows the rotation direction for coupling the brush.





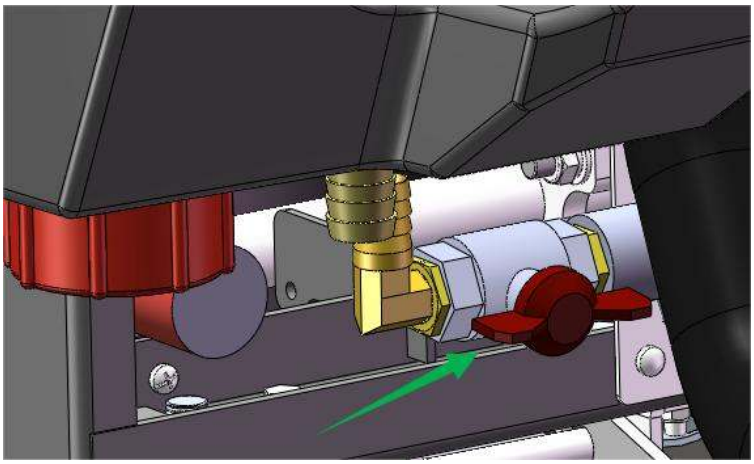
Ⅱ.WORK

PREPARING TO WORK

1. Connect the battery;

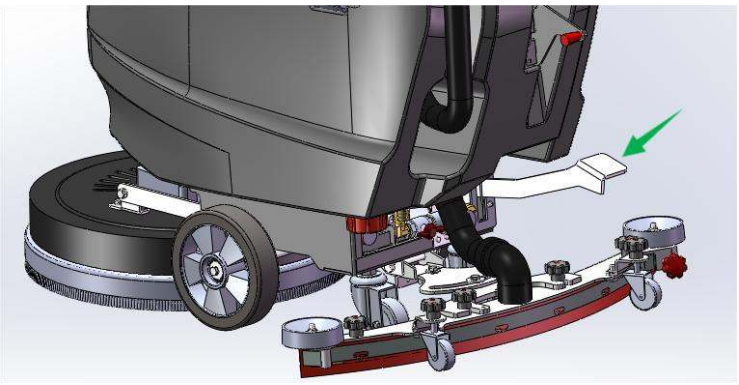
2. Turn the key clockwise to activate the main switch, and the battery meter will immediately light up;

3. Rotate the water tap to adjust the flow. Select an appropriate level. The water falls automatically while the brushes are turning. You are advised to adjust the level according to the movement speed and the type of floor and dust.



4. Lean the head of the machine toward the front and lower the base;

5. Lower the squeegee, rotating the squeegee lifting lever.



WORKING

Walk forward：Press the brush switch and Squeegee switch.

Then hold the handle with the machine working.

When making even brief reverse movements, check the squeegee is raised.

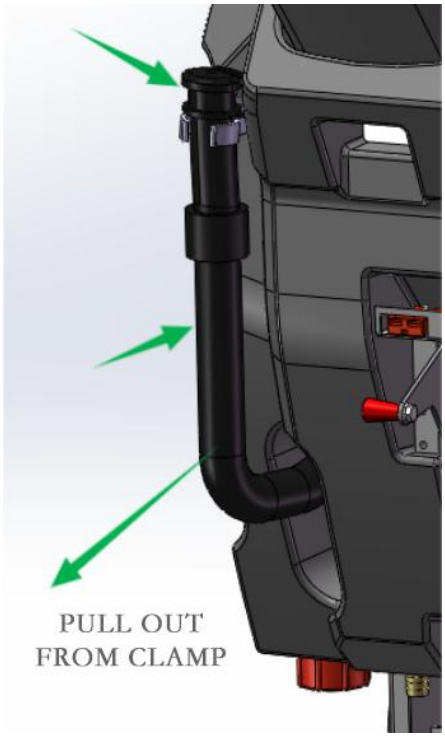
Check that there is sufficient solution and that the squeegee dries well during the initial operation. The machine will operate efficiently until the battery is depleted or the detergent solution is used up.

When there is an operation risk. Please turn down the power including the Key switch. Restart the machine after trouble shooting.

OVERFLOW DEVICE

The machine is fitted with a float which intervenes when the recovery tank is full, causing the suction tube to close. In this case, to avoid harming the motor, it is MUST to empty the recovery tank,

This operation must be carried out using gloves to protect against contact with dangerous solutions.



AT THE END OF THE WORK

1. Press the brush pedal to rise the brush.
2. Raise the squeegee by means of lifting lever.
3. Bring the machine to the place provided for draining the water.
4. Press the switch vertically to turn off the machine.
5. Remove the drainage tube from its compartment.
6. Unscrew the drainage cap and empty the recovery tank.

These operations must be carried out using gloves to protect against contact with dangerous solutions

7. Disassemble the brushes and clean them with a jet of water (to disassemble the brushes, see “DISASSEMBLING THE BRUSHES” below).

III . DAILY MAINTENANCE

CLEANING THE RECOVERY TANK



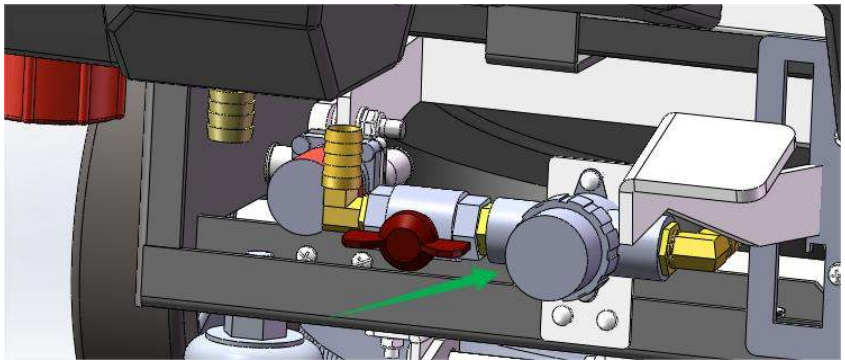
1. Remove the Sewage pipe.
2. Remove the cap and empty the tank.

These operations must be carried out using gloves to protect against contact with dangerous solutions

3. Rinse the inside of the tank well with a jet of water, then empty the tank ;
4. Rinse all the elements with a jet of water to make clean
5. Reassemble all the elements.

CLEANING THE SUCTION FILTER

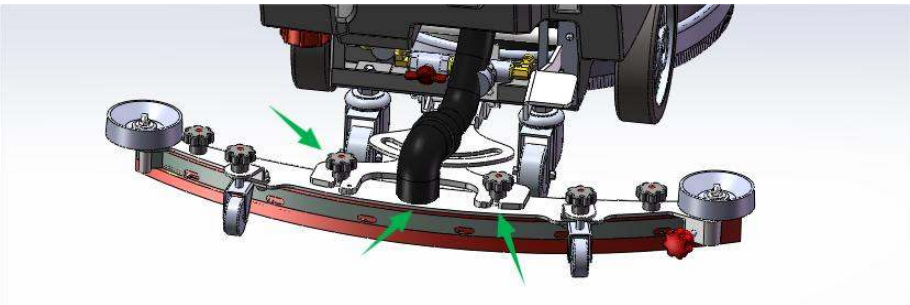
1. Remove the suction filter from its seat.
   Use a jet of water to clean the walls and base of the filter.
2. Reassemble all the elements.



CLEANING THE SQUEEGEE

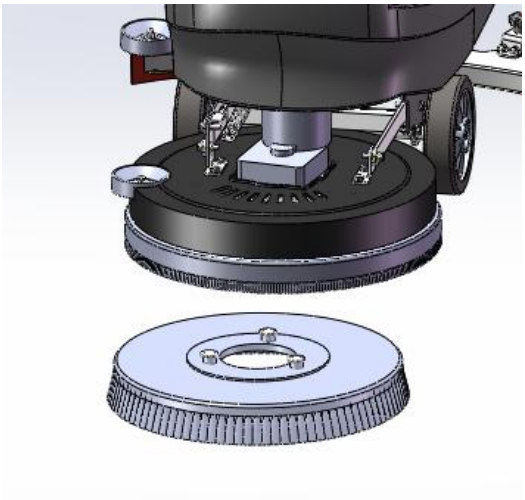
Check the squeegee is always clean, for better drying results, to clean it you must:

1. Remove the suction pipe from the suction port;
2. Loosen the nut on the bracket and remove the suction bracket.
3. Remove the suction pipe interface and clean it.
4. Clean the suction head thoroughly from the inside out;
5. Thoroughly clean the absorbent head and rubber;
6. Check whether the suction pipe on the suction head is blocked regularly or when the suction device is not working well
7. Reassemble all the parts again.



DISASSEMBLING THE BRUSH

1. Tilt back fuselage to lift brush plate base;
2. Park the machine;
3. Turn the brush tray in the direction shown, and then remove the brush tray;
4. If it is not used for a long time, remove the brush tray and clean it, and dry it.



CLEANING THE BATTERY BOX

Whenever keep the battery and box clean with duster. Check out jumper cables and insulation base to make sure connecting firmly. If not it will lead to the jumper cables heat. Then the battery will be under the influence of that.

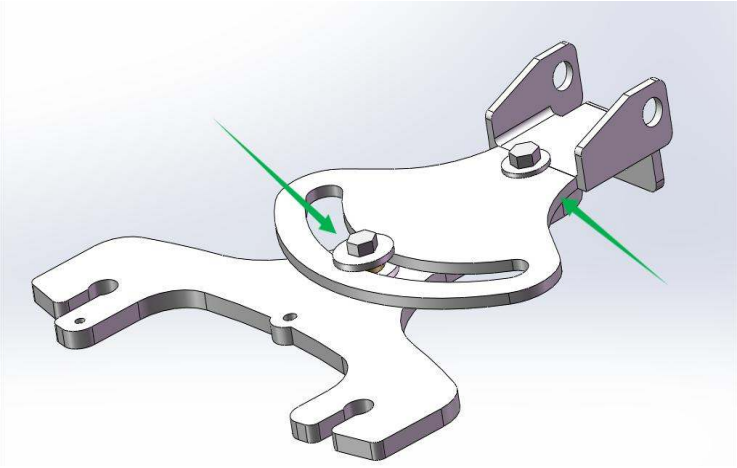
 This operation must be carried out using gloves to protect against contact with dangerous solutions.

 Danger of exhalation of gas and leakage of corrosive liquids.


Danger of fire: do not go near with free flames.

IV. WEEKLY MAINTENANCE

1. Regularly add grease or lubricating oil to the sliding part (as shown below)



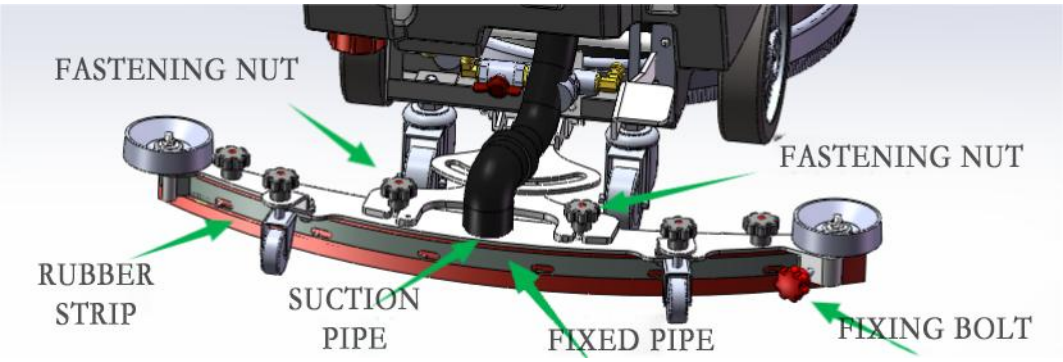
support frame assembly

2. REPLACING THE SQUEEGEE RUBBERS

Check the wear of the rubber. If the wear is severe, please replace it according to the following procedure:

1. Remove the suction pipe from the suction mouth of the suction head;
2. Turn the nut on the pick-head assembly;
3. Remove the suction head from the support;
4. Loosen the fixing bolt on the rubber fixing plate and remove the fixing plate;
5. Replace the rubber.

Reinstall the suction head as described above.



V. TROUBLE SHOOTING

Before you take it to repair or call our customer service to help,you should check out those problems.

Phenomena	Reason	Method
Brush motor can't work	1.Check out whether electricity is good; 2.Check out whether motor switch is on; 3.Check out whether the voltage is good.	1.Plug in the power and make sure the fuses are normal work; 2.Turn on the switch of motor; 3.The battery are fully charged.
Water can't come out from the brush or slightly	1.Filter or joint is clogged; 2.Clean the drier ground at first ,so the water can't catch up with it; 3.The solenoid valve is clogged or rejected.	1.Take down the filter and joint ,then wash them; 2.If the ground is drier,you must spray it extra; 3.Take down the solenoid valve,then wash it.
Suction abate	1.The cover of recovery tank is not sealed; 2.Hose clamp loose; 3.Suction Motor loose or defection; 4.The suction hose is not completely blocked; 5.Battery low.	1.Check the seal rubber of cover and make sure the cover will be sealed; 2.Check out and lock the hose clamp; 3.Make sure the motor install well and tighten the screw; 4.Dredge the pipe; 5.Charge the battery.
Water absorption is not clean	1.Suction motor do not work; 2.Suction hose is blocked; 3.The squeegee is blocked with something; 4.The squeegee is totally worn-out; 5.The height of the squeegee is not suitable.	1.Check out the motor (according to above) ; 2.Clean them; 3.Clean them; 4.Change squeegee blade rubbers; 5.Adjust the height of the squeegee.
The brush do not clean well	1.The motor of the brush can not work; 2.Dirt is too stubborn; 3.Brush is serious abrasion; 4.Something twine round the brush.	1.Check out the motor; 2.Use appropriate cleaning fluid; 3.Change the brush; 4.Clean them.

VI. CHOOSING AND USING THE BRUSHES

POLYPROPYLENE BRUSH (PPL)

Used on all types of floors. Good resistance to wear and tear, and hot water (no greater than 60°C). The Polypropylene brush is non-hygroscopic and therefore retains its characteristics even when working in wet conditions.

NYLON BRUSH

Used on all types of floors. Good resistance to wear and tear, and hot water (no greater than 60°C). The Nylon brush is hygroscopic and easy-extended; as a result it cannot retain its characteristics when working in wet conditions.

ABRASIVE BRUSH

The bristles of this type of brush are extremely hard. It is used to clean very dirty floors. To avoid floor damage, work only with the pressure strictly necessary.

STEEL BRUSH

It is made up of steel wire and artificial fiber blends and used to clean rough roads, floors with big joints or dirt which is difficult to clean up.

THICKNESS OF THE BRISTLES

Thicker bristles are more rigid and are therefore used on smooth floors or floors with small joints.

On uneven floors or those with deep joints, it is advisable to use softer bristles which can enter the gaps more easily.



Remember that when the bristles are worn and therefore too short, they will become rigid and are no longer able to penetrate and clean deep down. In this case, like with over-large bristles, the brush tends to jump.

Where Aiolith Blows, Cleanliness Follows

THANK YOU FOR CHOOSING US

Aiolith Inc.