

METALMASTER

**Operation and
maintenance manual**

Cutting Coolant Treatment

MMC-3IN1

Order Code: (W2740)



CE

Table of contents

General Safety Precaution & Guideline

Specification and Description of Machine

- (1) Functional condition and Specification ----- 7
- (2) Electrical board Floor space ----- 8-9

Machine installation and setting unit

- (1) Notes ----- 10
- (2) Oil collector type ----- 11
- (3) Accessory items ----- 12
- (4) Machine installation steps ----- 13
- (5) Installation of pipelines and settings ----- 14-19
- (6) Notes for moving machine ----- 20
- (7) Control panel settings ----- 21
- (8) Level switch abnormal description ----- 22

Maintenance unit

Filter maintenance	24
Oil skimmer (oil removal device) maintenance	24
Oil collector seat and buoy maintenance	25
Waste oil sump (oil-water separation tank) maintenance	26
Internal maintenance of degreasing drum	26
Small motor and belt replacement	27
Belt replacement	28-29
Control panel group replacement process	30

Troubleshooting

The cutting fluid is overflowing	31
Unable to start, waste oil cannot be discharged, the machine pipeline is leaking	32-33
(5) No suction or suction weakened	33
(6) Pneumatic pump maintenance & replacement	34-35
(7) Ozone device maintenance & replacement	35-37

General Safety Precaution & Guideline

When installing this product, note the following.

- 1** Confirm the voltage is correct and confirm to connect the power supply.

- 2** Before installation, make sure that there is no corrosive solvent in the cutting fluid of the water tank to avoid damage to the machine.

- 3** If there is any abnormal sound or smoke and fire during operation, please turn off the power immediately and contact our local agent.

- 4** When engaging in inspection, adjustment or cleaning, the power must be turned off to prevent any liquid from seeping into the controller body, to avoid leakage and failure.

- 5** The belt attached with oil is subject to be recovered. Its characteristics will be naturally degraded and lead to other phenomena due to the environment, so after the use of a year, propose the replacement of the new belt to maintain a good recovery.

- 6** If the water tank has suspended matter, please clear or remove it.

- 7** It's recommended to not operate the ozone device more than 3 hours a day unless in special conditions.

Specification and Description of Machine

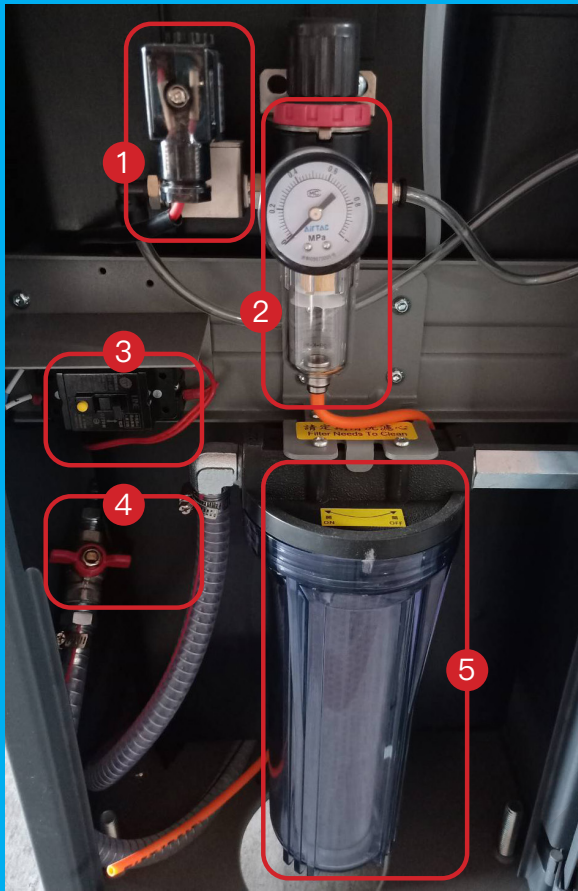


1. Digital LCD panel (Touch panel)

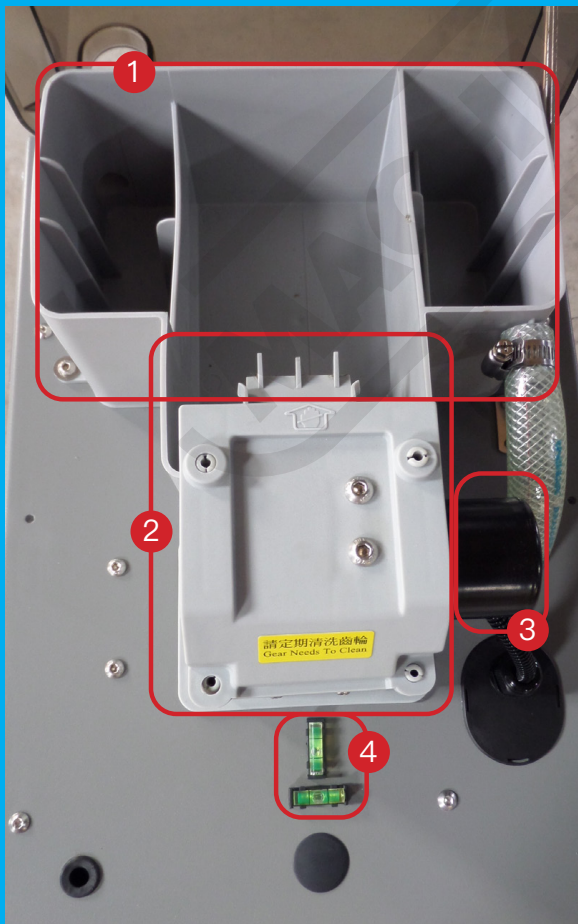
2. Emergency switch

3. Power outlet

4. Leveling adjustment pad



1. Solenoid valve set
2. Three-point combination
3. Leakage circuit breaker
4. Drain valve for oil filter
(storage) tank
5. Filter Set



1. Oil and water separation tank
2. Oil skimmer (oil removal device)
3. Small motor
4. Bubble Level

1. Functional conditions :

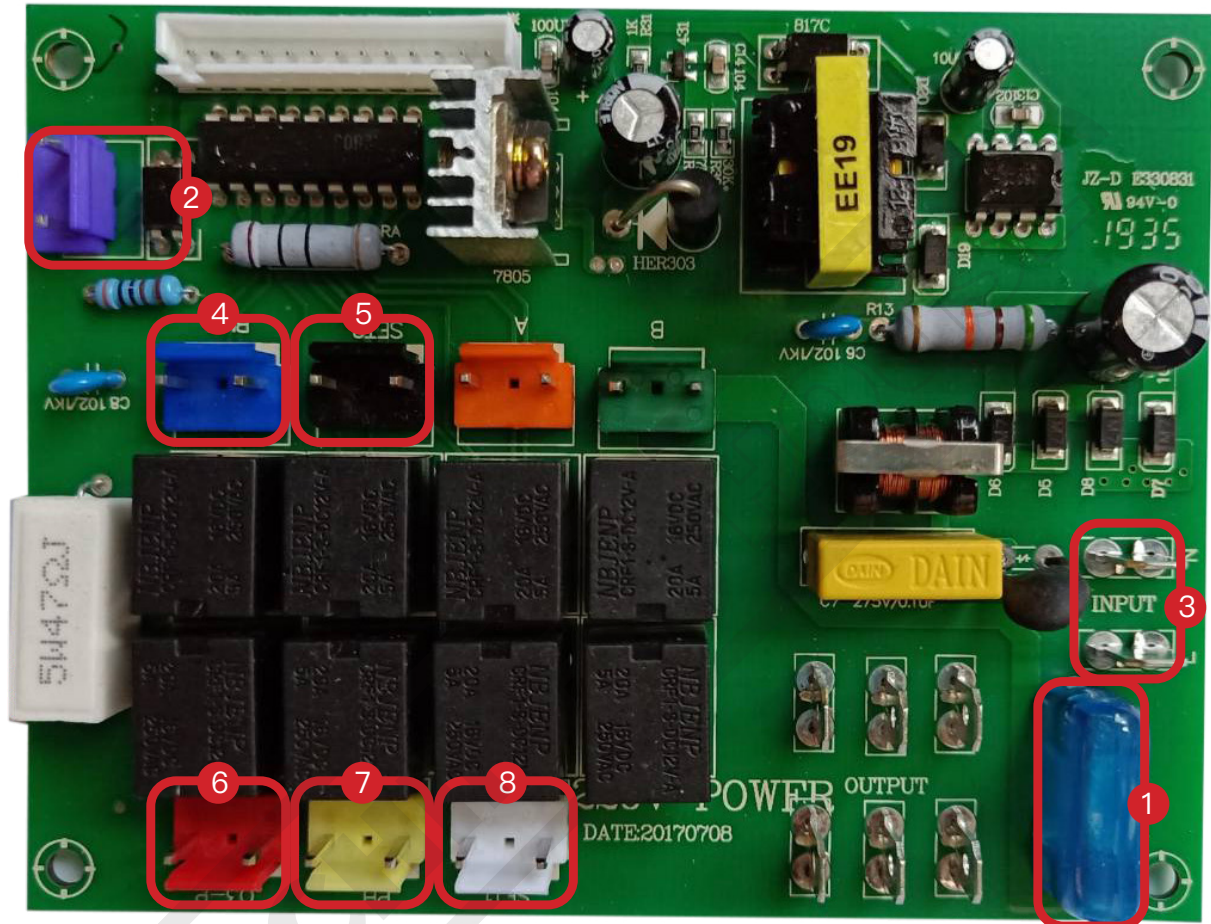
The main liquid: water-soluble liquid with a specific gravity of 1.0 or more, a viscosity of 1.0PC or less, and surface tension of 70dgn / cm or more.

Discharged-Oil: Oily with a specific gravity of 0.9 or less, a viscosity of 1.5 or more, and a surface tension of 40dgn / cm or less.

Specification

Item No.	Description	Remarks
Model	MMC-3IN1	
Machine size	520×410×880mm	
Packing size (by carton)	560×450×930mm	
Machine net weight	45Kgs	
Capacity of the barrel	35 L	
Power supply capacity	Single Phase. 220V. AC50HZ	
Power consumption	Consumption of 1KWH of Electricity in 24 hours	
Filter mesh size	0.4mm	(Max. particle)
Pump flow speed	10~30L / min.	(Max. amount)
Pump Inlet	3/8"	
Machine liquid outlet dia.	1"	
Skimmer Motor	AC-220V.50HZ	
Skimmer speed	15 RPM/min	
Ozone production	500mg / hr.	(Inner barrel)

2. Electrical board



1. Fuse

5. (Black) Oil Skimmer

2. Level Switch

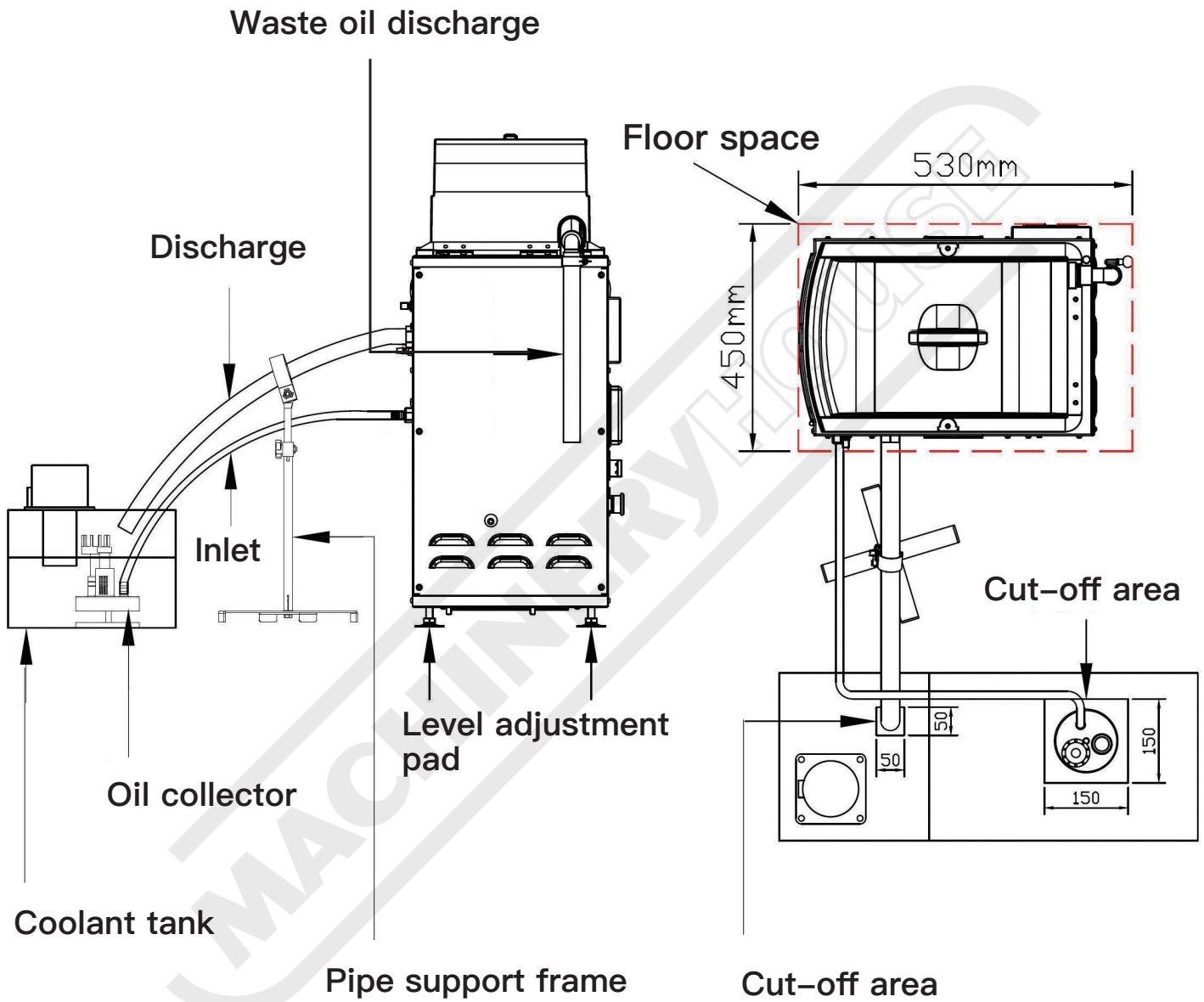
6. (Red) Ozone Generator

3. Power Supply

7. (Yellow) Not used

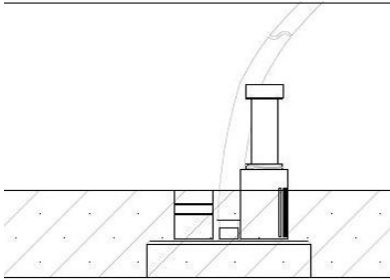
4. (Blue) Ozone pump

8. (White) Three-point combination

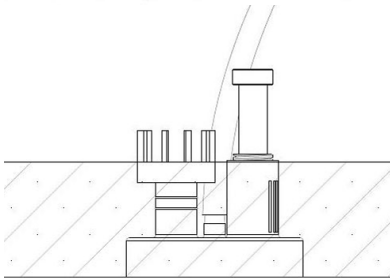


Installation and setting

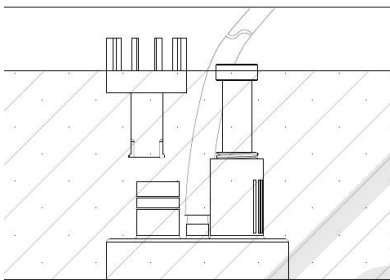
(1) Notes :



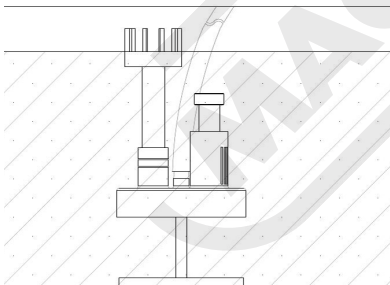
- ← The lowest water level absorption height :
1. When drawing coolant without using the buoy, the water level should be between 60mm – 75mm high.



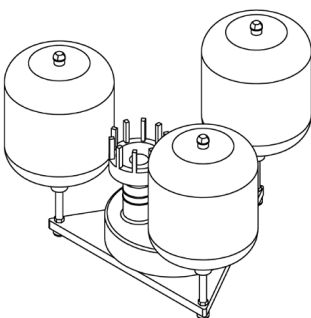
2. When drawing coolant by using a short buoy, the water level should be between 75mm – 100mm high.



- ← Incorrect water level :
- The buoy is separated from the oil collector, It results in suction effect failure.



- ← Please install the elevated seat when the water level of the coolant tank is higher than 175mm.
- The water level must be between 175mm – 210mm.



- ← Please install the floating type foundation when the water level of the coolant tank is higher than 240mm.
- Informing us of the size of the cutting hole of the water tank.

(2) Oil collectors type : Standard type, Riser type, Floating type(Optional)

A. Standard type



B. Riser type



C. (Optional) Floating type The floating type needs to be assembled with the oil collector.



Floating type must work with short buoy

Assembled completely photo

(3) Accessories

Item	Quantity
Fuse	1
1-1 / 2" pipe bundle ring	2
3/4" pipe bundle ring	2
Filter tank O-ring	1
L-type waste oil elbow with o-ring	1
handle for filter tank	1
stainless filter	1
cleaning brush	1
Oil collector with riser type	1
Elevated seat buoys	2 (medium *1 + short * 1)
power cord	1
1/2 water pipe	1
1" water pipe	1
1" transparent tube	1
Operation and maintenance manual	1

(4) Machine installation steps



【Positioning of machine 4-1】

Position the Best-1 unit next to the coolant tank and shorten the distance between the two as much as possible by facing the side of the inlet/outlet to the coolant tank. Make sure the hoses are not bent and of over-length.



【Level adjustment 4-2】

Adjust the leveling pads to make the tramp oil to be skimmed more efficiently. Please follow the next steps.



【Level Adjustment 4-3】

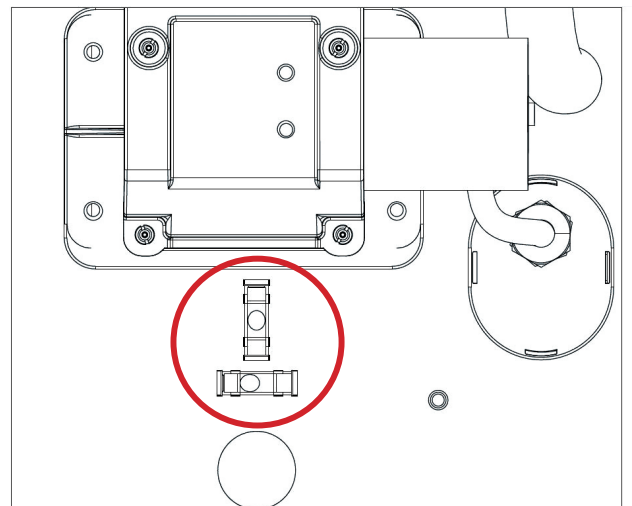
Elevate the two leveling pads on the right side (the side with the inlet/outlet) for about 5 cm.

【Level adjustment 4-4】

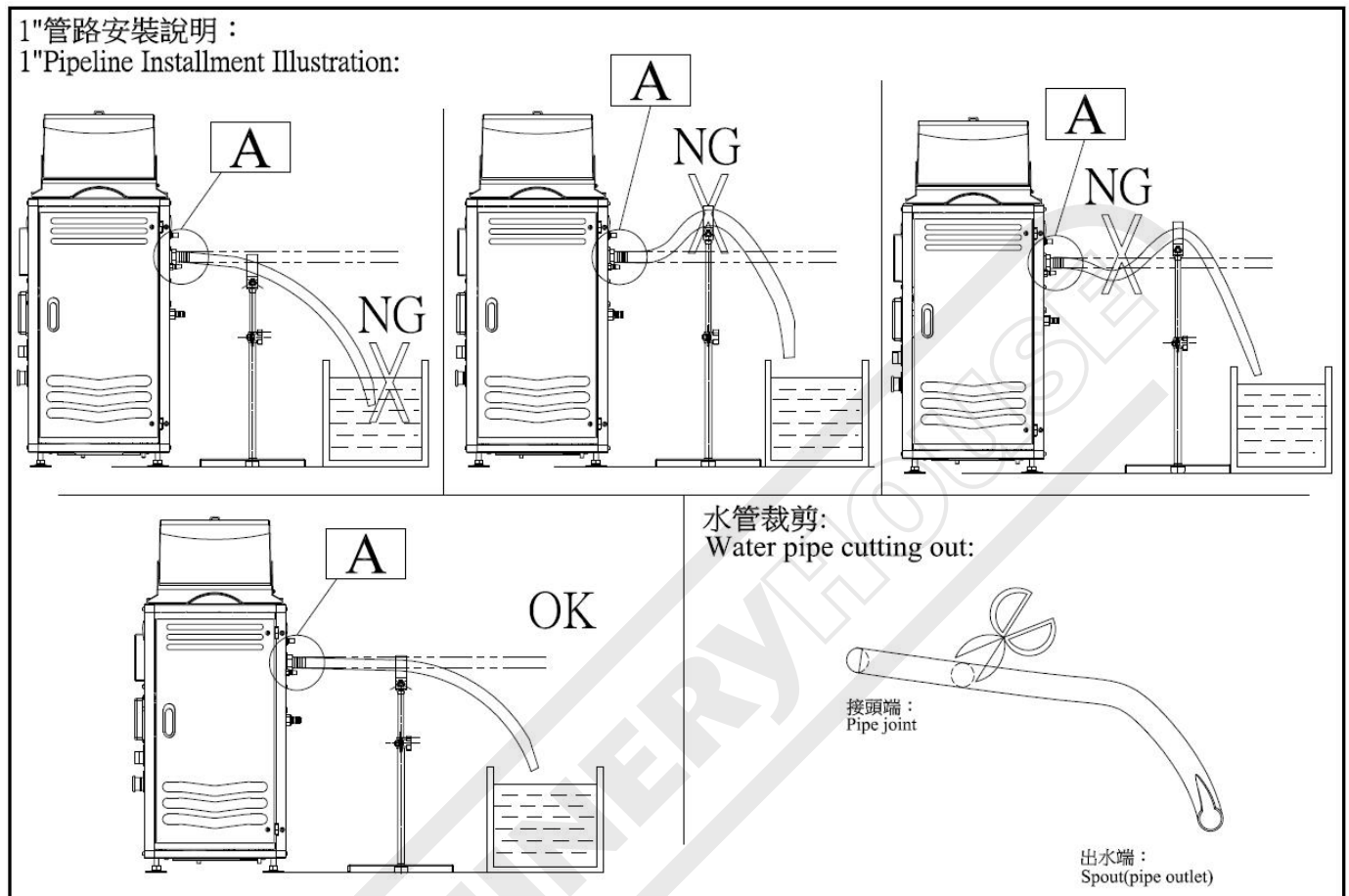
Elevate the two leveling pads on the left side (the side with the control panel) and make them higher than the right side. Make sure the bubble of the bubble level is close to the left end.

**【Level adjustment 4-5】**

After the adjustment of the previous two steps, the bubble level should be as shown in this figure. As the thickness of oil is around 2mm above the water surface, it will result in higher separation efficiency with the left side higher.



(5-1) Pipeline installation illustration

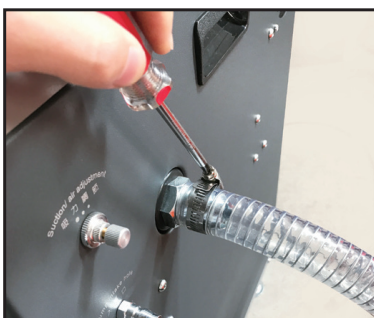


(5-2) Installation of pipelines and settings



step 1

Take out all parts from the accessory kit.



step 2

Take out the 1" pipe and a 1-1 / 2" iron binding ring. Install and tighten it to the outlet connector.

**step 3**

Use a telescopic tripod to keep the return pipe high, so that the return water is smooth, and the return pipe will be suspended in the cutting fluid surface. Do not insert into the water.

**step 4**

Take out the 1/2" inlet and a 3/4" iron binding ring. Install and tighten it to the inlet (suction) connector.

**step 5**

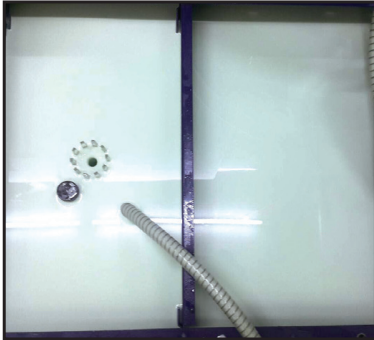
Take out the 3/4" iron binding ring and the oil collector base connect the other end of the suction pipe to the oil collector seat and lock it.

**step 6**

Adjust the elevated seat, and select the appropriate buoy.

**step 7**

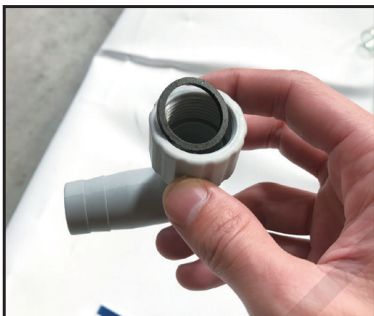
Put it into the coolant tank.

**step 8**

Make the height of the buoy between the floating oil and cutting fluid.

**step 9**

Connect the air hose to the air input connector.

**step 10**

Take out the L-shaped waste oil bending pipe and O-ring and place the O-ring into the L-shaped waste oil bending pipe.

**step 11**

The L-shaped waste oil elbow is fitted to the oil recovery hole, and tightened to 90 degrees.

**step 12**

Take out the 1-1/2" iron binding ring and lock it.



step 13

Put a 5-gallon bucket under the waste oil recycling pipe to reclaim the waste oil.



step 14

Confirm the voltage is correct and connect the power.



step 15

Turn the emergency switch clockwise and press the power supply button on the control panel to turn on the machine.



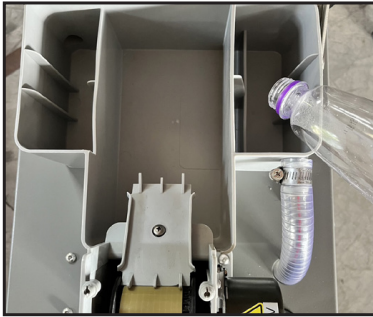
step 16

The settings of the control panel are completed before delivery. For more details, please refer to page 21, section (7) control – panel settings.



step 17

Adjust the suction (suction shall be regulated moderately, and cannot be too large.)

**step 18**

Pour clean water into the right section of the oil removal device and ensure the water level to align with the left partition.

**step 19**

Because the machine barrel has an amount of content of 35L, first put the suction tube into the 5-gallon bucket full of cutting fluid to draw, so as not to require further adding of water during processing when the water level lowers.

Complete all settings listed above, and now you can begin the operation to immediately solve these waste oil issues.

(6) Note for moving the machine



step 1

Take out the oil collector seat and remove the water pipe.



step 2

Take the water pipe to the waste oil tank to thoroughly absorb all the liquid in the waste oil tank to prevent the liquid from flowing out and causing damage to the panel during movement.



step 3

Unscrew the throttle valve to remove the cutting fluid from the water tank of the machine, so as not to shake the machine to make the liquid from flowing out during movement.



step 4

Unplug the power supply and remove the other lines sequentially.

After completion the above actions and moving the machine to locate, please refer to page 13,section (4) machine installation step,page15,section(5-2) Installation of pipelines and settings, the machine setting can be completed.

(7) Control panel settings

Power On/Off :
Press and hold for 3 sec to turn on/off the power.

Ozone disinfection:
(24-hour automatic cycling)

Action time: Each time you press, it jumps forward one hour. 1.2.3...8.9 cycle.

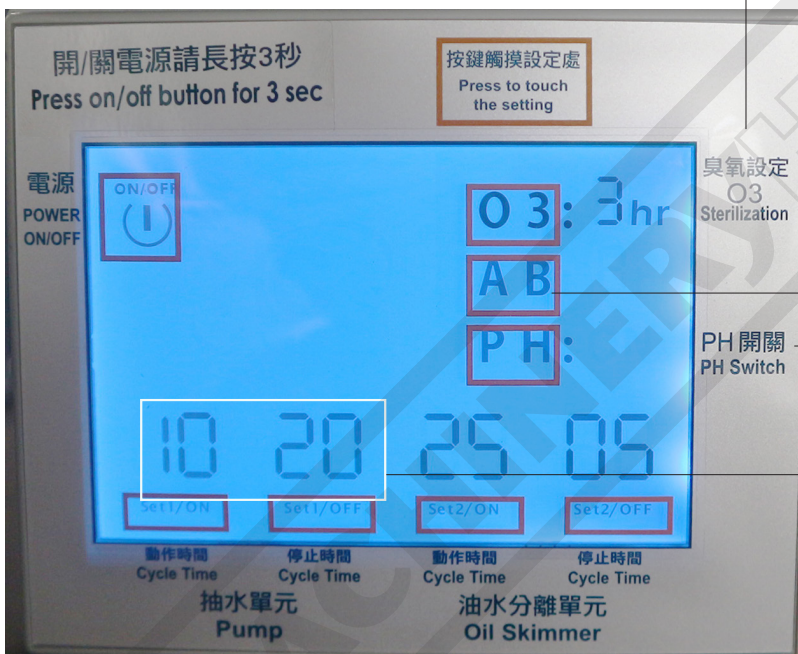
It is recommended to set it to be 3 hours a day.

O3: Blank (no display) "O3 function continuous on"
O3: 0hr means "O3 function turn off"

One-on-two AB switch:
This button is the reserved button (product to be developed) which can be disregarded.

pH value display: (Optional)
Turn on the pH value display.

Level switch:
When the water level (Level switch) is too high, the pumping unit will flash and beep.



Pumping Unit:
(24-hour automatic cycling)
Action time: Each time you press, it jumps forward 5 minutes. 0.5.10.15.20.25.30 cycle.
It is recommended to set it to 10 minutes.

Resting time: Each time you press, it jumps forward 10 minutes. 0.10.20.30.40.50.60 cycle.
It is recommended to set it to 20 minutes.

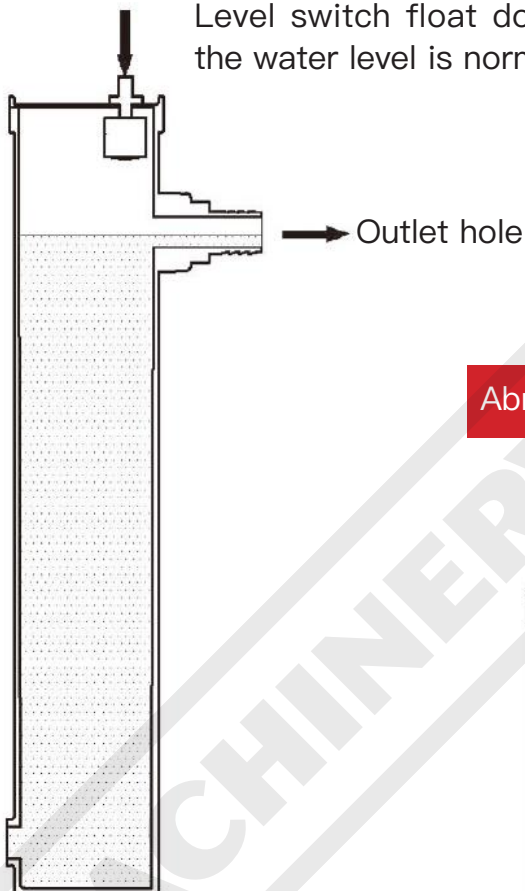
Oil-water separation unit:
(24-hour automatic cycling)
Action time: Each time you press, it jumps forward 5 minutes. 5.10,15.20.25.30 cycle.
It is recommended to set it to 25 minutes.

Resting time: Each time you press, it jumps forward 5 minutes. 5.10.15.20.25.30 cycle.
It is recommended to set it to 5 minutes.

(8) Level switch abnormal description

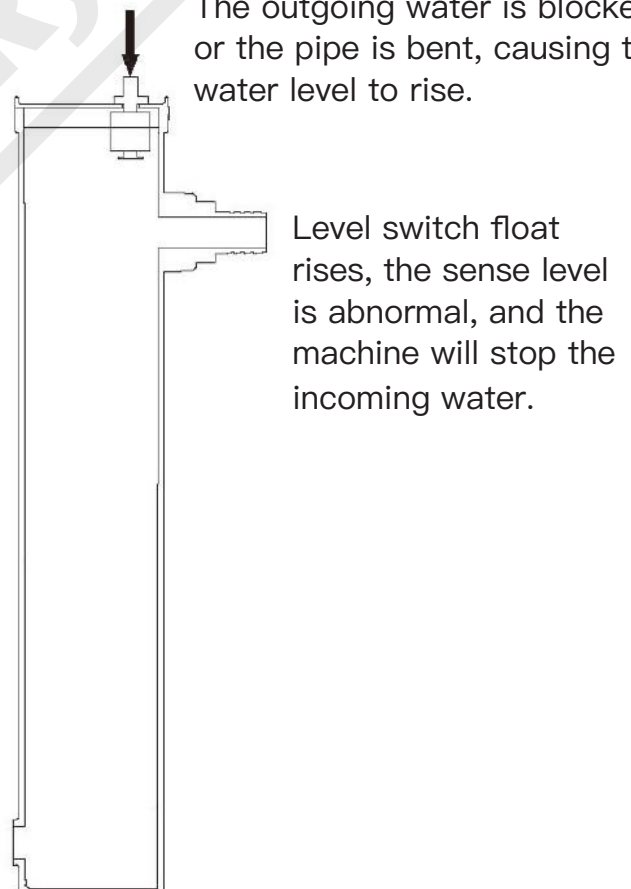
Normal water level

Level switch float does not rise :
the water level is normal.



Abnormal water level

The outgoing water is blocked
or the pipe is bent, causing the
water level to rise.



Maintenance Unit 【Level 1 ~ 5】

[Attention] Before engaging in maintenance and cleaning, be sure to turn off the power in advance.

Level 1 [Daily Maintenance]

- (1) Filter : Regularly clean the filter. Please refer to (1) filter maintenance on page 27.
 - (2) Water level height of the oil collector seat: note the water level is correct.
 - (3) Buoy position : Check to see if it's at the correct water level.
-

Level 2 [Weekly Maintenance]

- (1) Degreaser scraper: Clean silt and impurities near the blade.
 - (2) Oil collector seat maintenance: Rinse impurities and iron chips inside the oil collector seat.
-

Level 3 [Monthly Maintenance]

- (1) Oil skimmer region gears and belts: Use a brush to remove sludge and contaminants.
 - (2) Pipeline: Check whether there is clogging in the pipeline.
-

Level 4 [Seasonal Maintenance]

Waste oil sump (oil–water separation tank):

Remove this tank and clean the interior. Please wash and then add clean water to the tank.

Please refer to the waste sump (oil–water separation tank) maintenance unit.

Level 5 [Annual Maintenance]

Degreasing drums cleaning: Refer to the internal maintenance of degreasing drums.

(1) Filter maintenance :

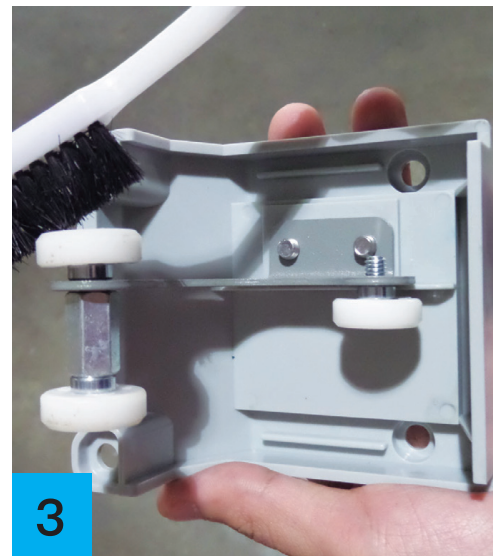


Remove the filter, clean with water or air gun.

After cleaning, ensure the black O-ring is in the correct position.

(2) Oil skimmer (oil removal device) maintenance

1. Pick up the oil skimmer upper cover.
2. Use the brush to clean the impurities of the scraper and the belt.
3. Use the brush to clean the rollers of the oil skimmer upper cover.



(3) Oil collector seat and buoy maintenance

(3-1) Oil collector

1. Take out the oil collection seat from the water tank.
2. Remove buoy.

When the suction side of the oil collector seat is blocked, insert the air gun and use a gas discharge to clear the impurities in the water pipe, and make sure the interior of the oil collecting seat and the water pipe is not blocked.



(3-2) Buoy maintenance

Remove the buoy and remove the surface impurity and sludge with a brush. and make sure the interior of the oil collecting seat and the water pipe is not blocked.



(4) Waste oil sump (oil–water separation tank) maintenance.



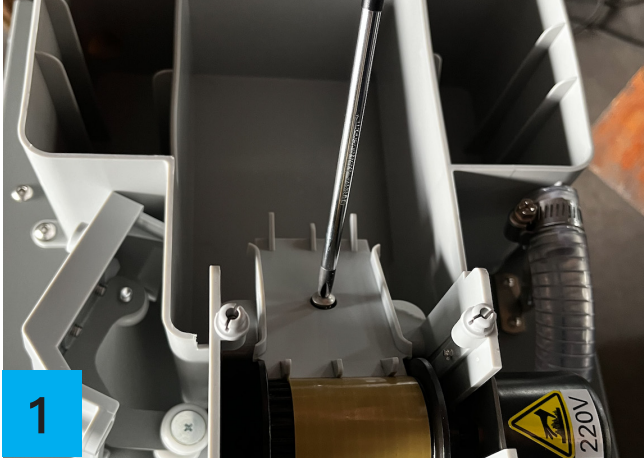
1. Take out the oil collector seat and uproot the water pipe.
2. Put the uprooted water pipe into the waste oil tank and draw sludge and impurities.
3. When cleaning is done, pour clean water into the right side backwater tank.



(5) Internal maintenance of degreasing drum

Remove the drain line on the left side, open the drain valve, and discharge wastewater from the inner tub.

(6) Small motor and belt replacement



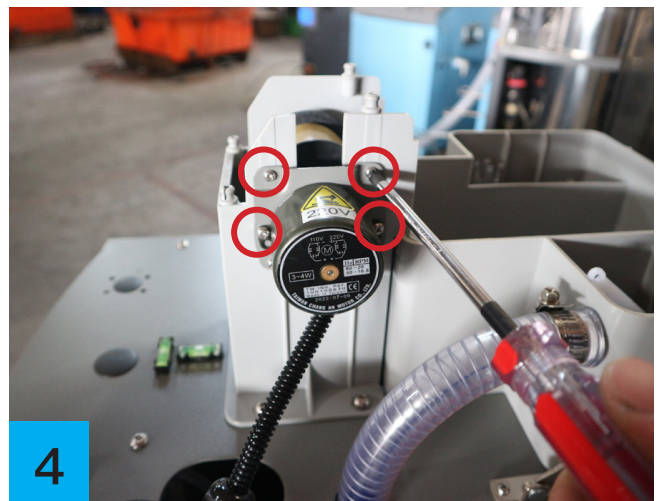
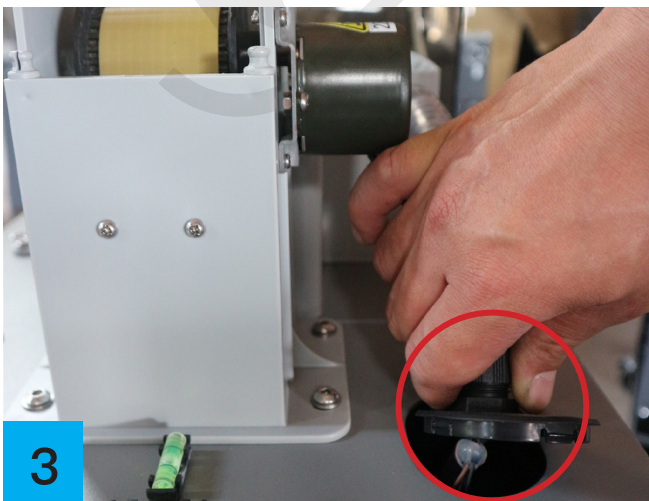
1. Loosen the screws on the scraper and lift the scraper.
2. Unplug the white plug from the power supply of the small motor.
3. Pull up the lid cover of the small motor hole.
4. Remove the four screws at the 4 corners of the small motor and take out the small motor.

There are two methods to replace the belt.

(Replacement of the belt: Method 1)

Please repeat small motor replacement steps 1–4. Then follow step 5.

(Step 1~4)

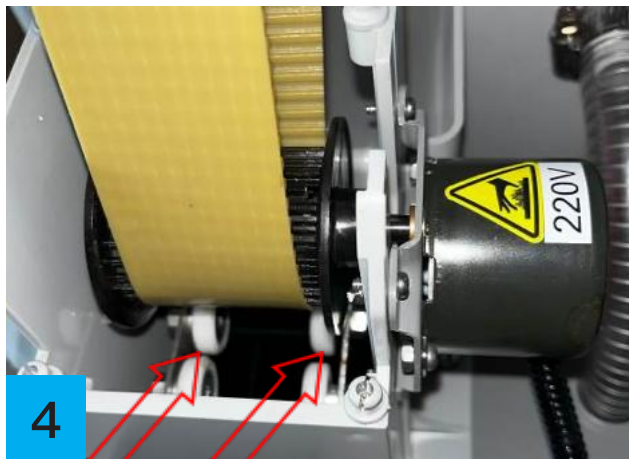
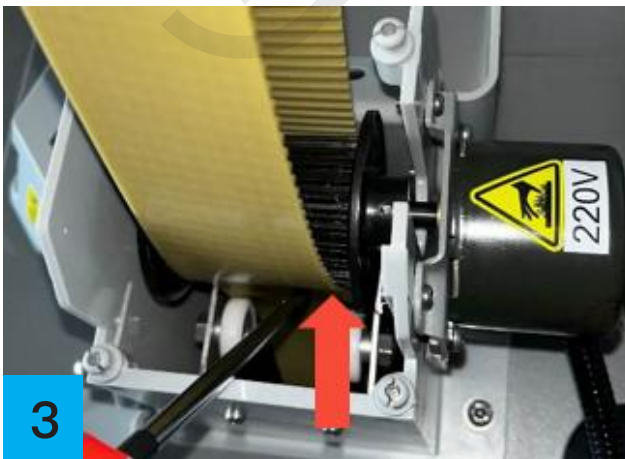
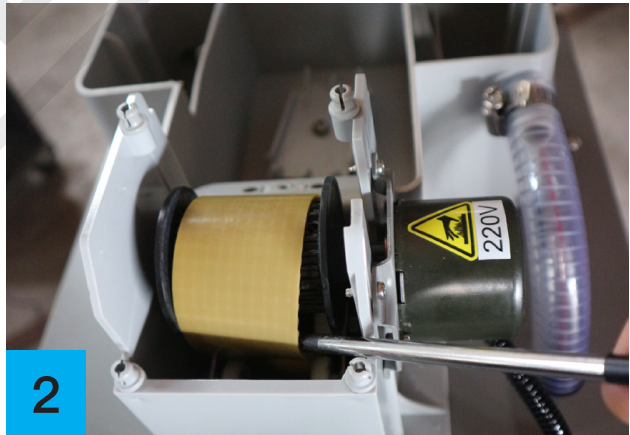
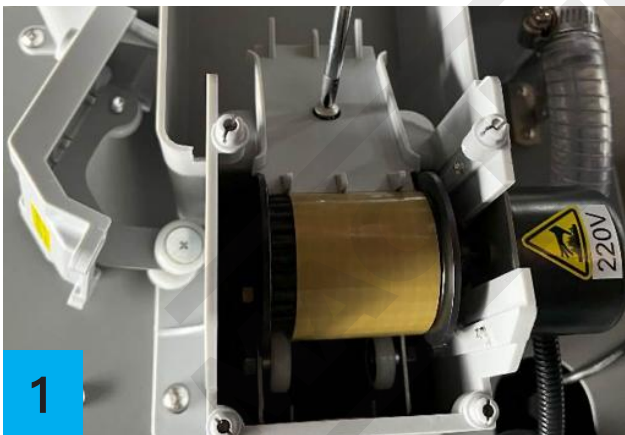


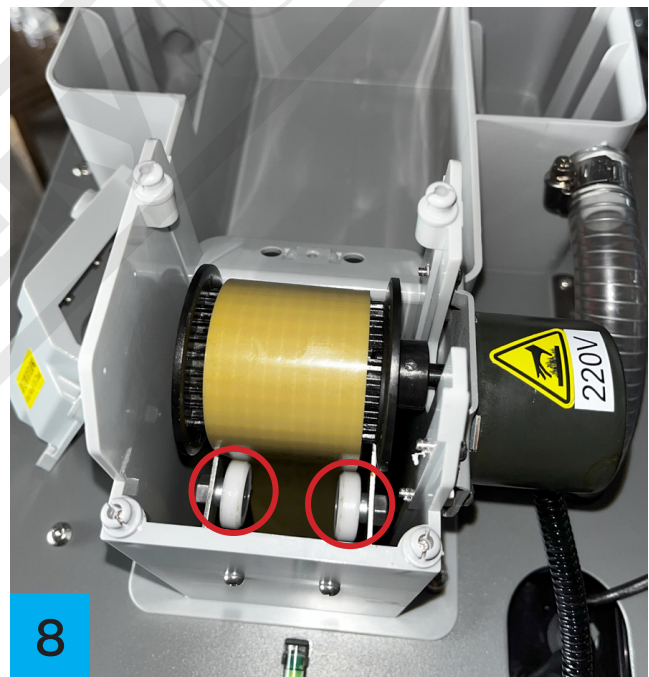
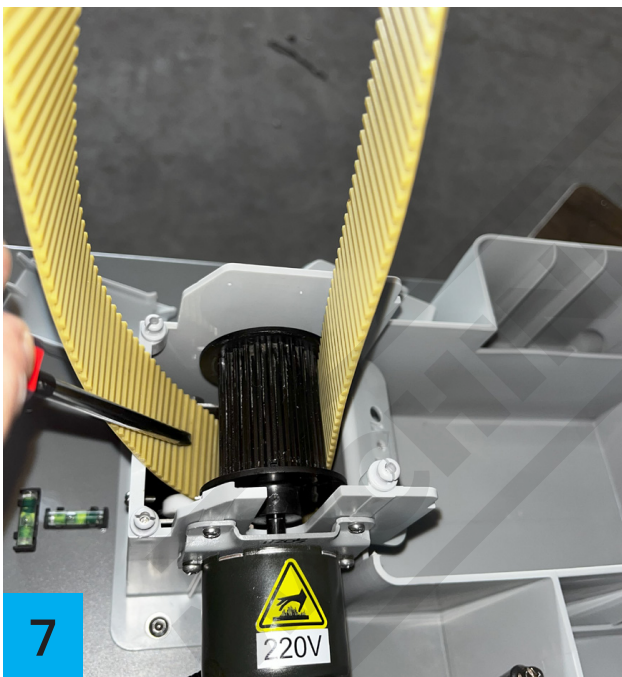
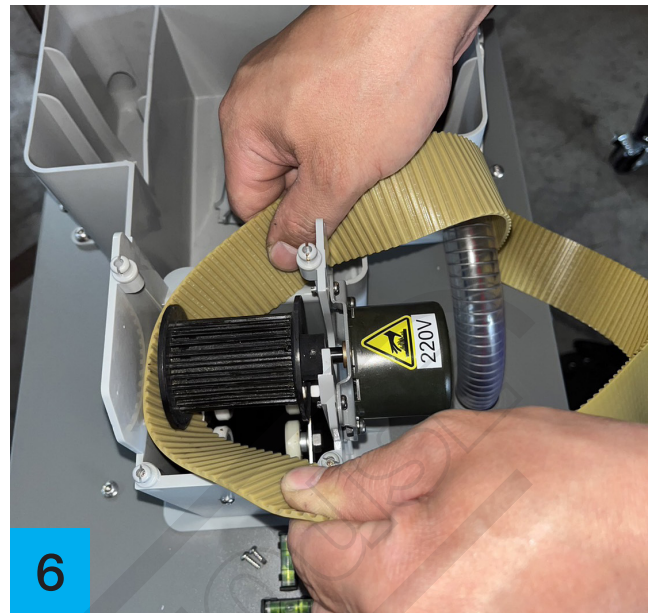


5. After picking up the belt, push the belt away from the white roller from the roller, then take it out and replace it.

(7) Replacement of the belt: Method 2 :

1. Loosen the screws on the scraper and lift the scraper.
2. Using a screwdriver, hook up the belt from the side of the belt.
3. Pushing the belt away from the white rollers with a screwdriver towards the rollers.
4. Pull the belt up when the belt is completely off the white roller.





5. To replace a new belt, put the concave and convex side faces toward the gear.
6. Tilt the belt at 70 degrees and it can be taken out.
7. Use a screwdriver to push the belt down to the white rollers when placing.
8. Make sure that the belt is stuck in the white roller and the it is completed.

(8) Control panel group replacement process

1. Loosen the machine body back plate screws and dismantle the machine body back plate.
2. Dismantle the back plate of the control panel group.
3. Pull out all circuit connectors.
4. Take out the control circuit board group and install the new control circuit board group.
5. Plug all the control circuit connectors into the correct positions relatively. (refer to illustration of P5)
6. Install the back plate of the control box panel group.
7. Locking the machine body back plate, be sure that the iron plate must be aligned and secured to the tenon of the control box.



Troubleshooting

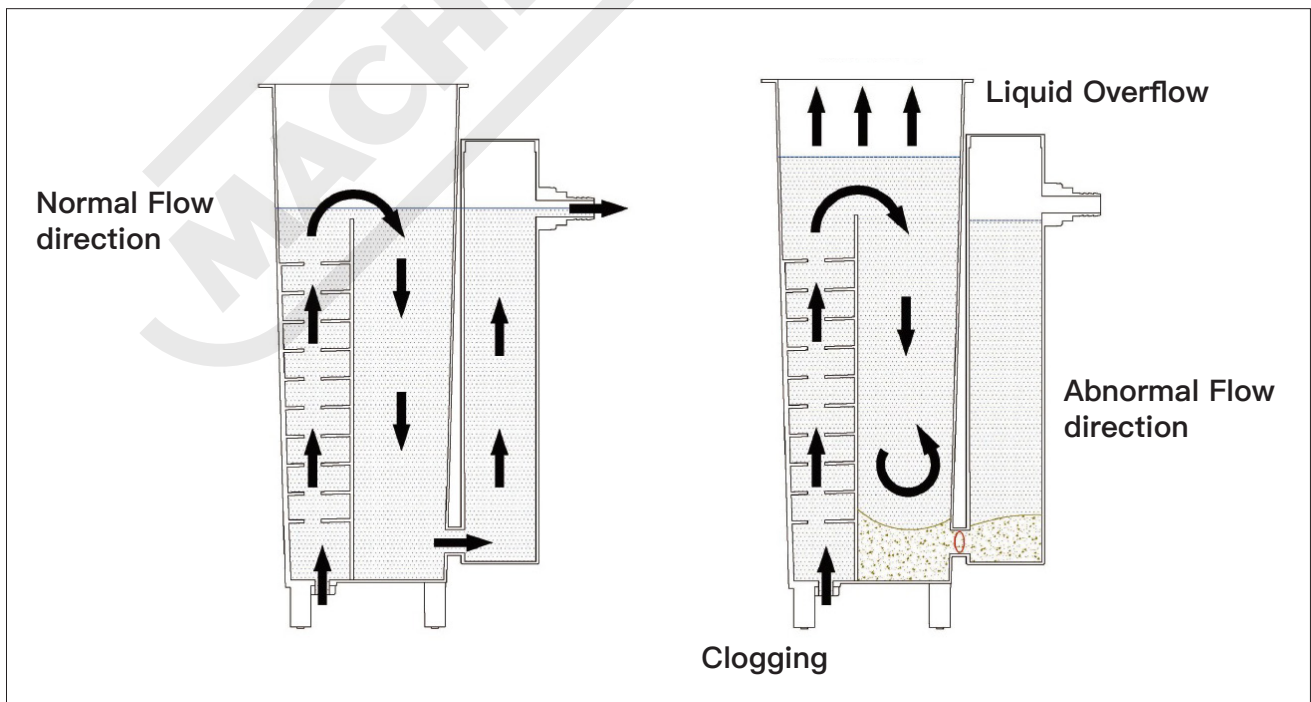
1. Cutting fluid is overflowing from the machine side.

Reason (1) : 1” return pipe is blocked or back pressure issue prevents water from coming out.

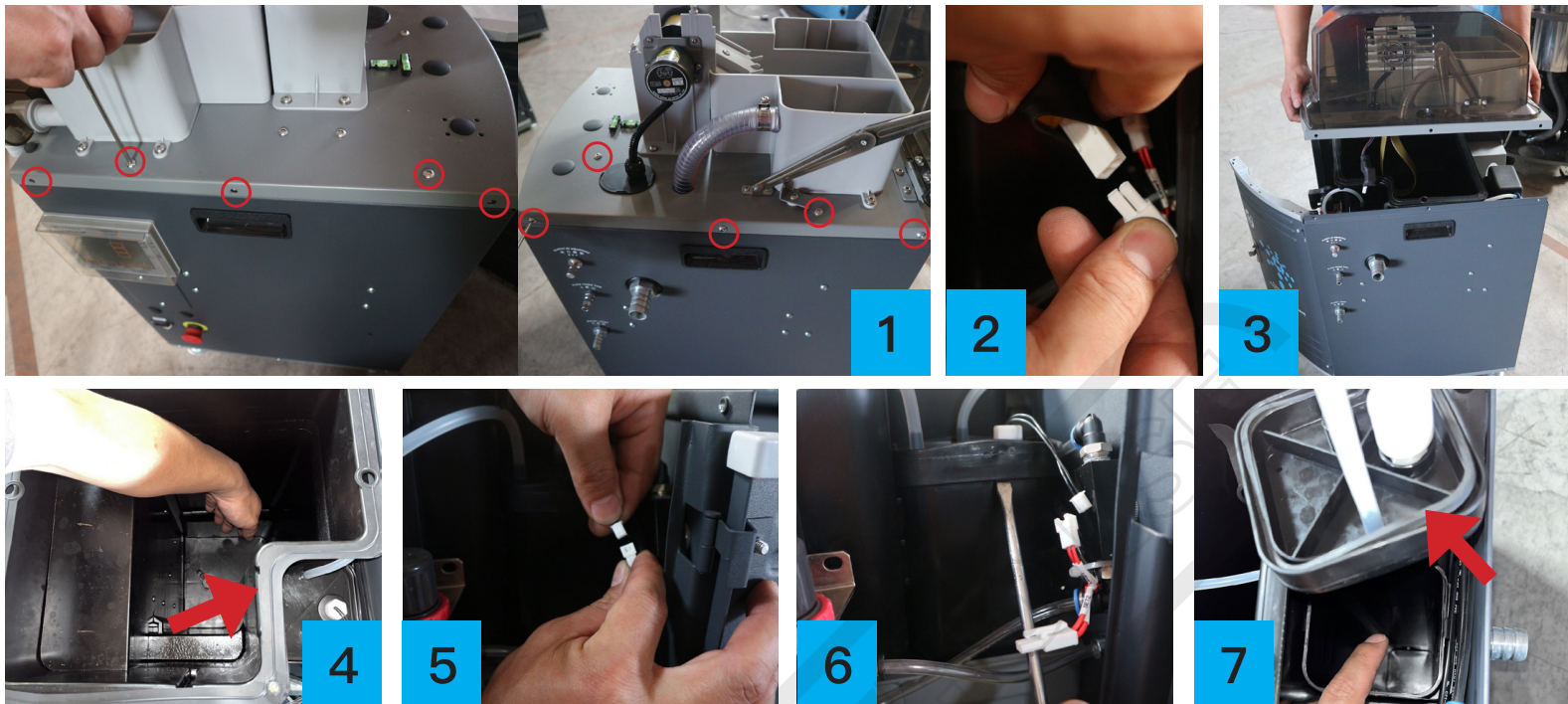
Remedy:

- (1) Check if the pipeline is blocked.
- (2) Check whether the return pipe is higher than the outlet.
- (3) Check whether the end of the return pipe is too deep into the water tank causing the water pressure to be too high and block the water out.

Reason (2) : Back-flow hole on the bottom blocked by sludge and metal chip, lead to liquid unable to backflow, will overflow upward.



Degreasing drum illustration



Remedy : Clean up the impurities in the bottom of the degreasing drum.

- (1) Remove the 3 screws on both left & left right side and 2 screws on the top surface.
- (2) Unplug the connector of a small motor.
- (3) Pick up the upper plate.
- (4) Clean up the impurities (sludge and metal chip...) on the bottom.
- (5) Unplug the connector of the Level Switch.
- (6) Pick up the upper cover of the water tank with a slotted screwdriver.
- (7) Clean up the bottom of the water tank, the problems can be solved.

***Please note that two O-ring at the arrow point cannot be lost.**

2. Unable to start

Reason (1) Power supply problems

Remedy:

1. Check whether the power supply is normal, and whether the use of the voltage is correct.
2. Check whether the leakage circuit breaker trips. Because the water of the machine end overflows and flows to the leakage circuit breaker to cause trip, after drying power cord of the leakage circuit breaker with air gun, reset leakage circuit breaker and it can be started. If a trip occurs again, please replace with the new leakage circuit breaker.

3. Check if the emergency stop switch is off.
4. Check whether the fuses and circuit breakers on the circuit board are burnt, and whether the leakage circuit breaker is activated. After replacement, it can be solved.

3.Waste oil cannot be discharged

Reason (I) Oil skimmer failure

Remedy: Check whether the small motor is acting or replace it if it cannot operate

Reason (II) the error in the level setting of the machine

Remedy: Check if the oil content in waste oil drum is too high. If too high, please lower the foot of the left side by half a turn.

Reason (III) recycling hole of the waste oil sump is blocked.

Remedy: Take the suction pipe to remove the waste oil from the waste oil tank, and then use a toothbrush or air gun to clean the hole

4.The machine pipeline is leaking

Reason (I) pipeline damage, binding ring loosen.

Remedy: Replace the pipe or the binding ring.

5. No suction or suction weakened

Reason (I) Filter canister cannot be airtight (vacuum)

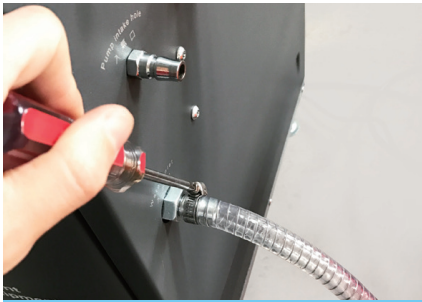
Remedy :

1. Check whether the filter canister and filter are cleaned, and the O-ring is installed correctly.
2. Check if the pipeline or oil collector seat is blocked.

Reason (II) pneumatic pump failure

Remedy : Repeatedly start the power switch several times or adjust the suction to the maximum, or press the switch in the rear sheet metal round hole (as shown in figure). If it still cannot start , please contact the maintenance department to remove.





A. Uninstall the pipeline.



B. Using the air gun to clean.



C. Remove the filter canister.



D. Clean the suction hole.



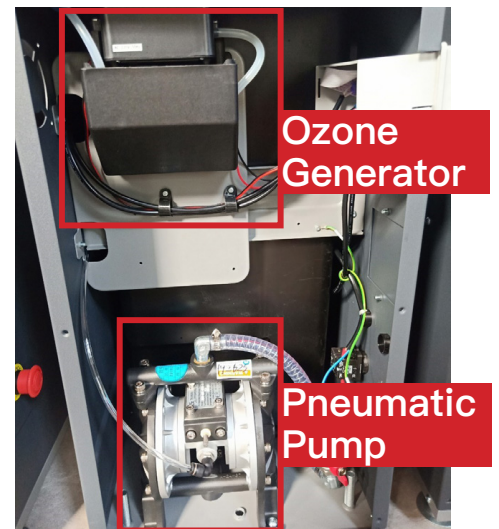
E. Clean the oil collector.

Reason (III) blockage in the pipeline

Remedy : After the pipeline is removed, using the air gun to pray out the iron chips and the dirt inside the pipe.

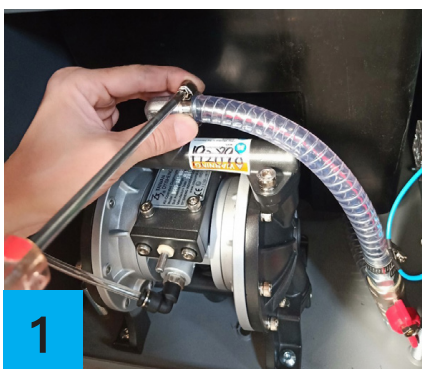
6. Pneumatic pump maintenance & replacement

1. Loosen the screw and detach the outlet hose.
2. Take out the air hose.
3. Loosen and take off the bottom screw.

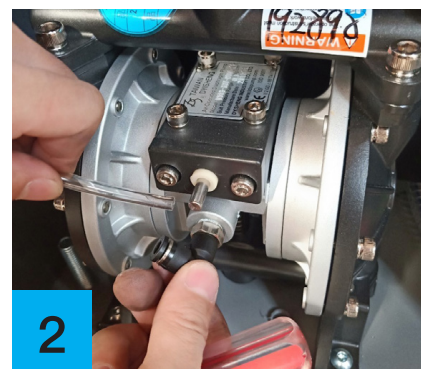


Ozone Generator

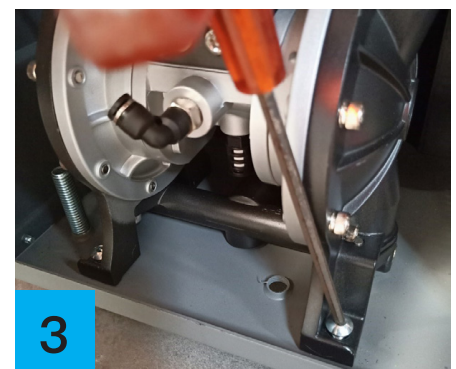
Pneumatic Pump



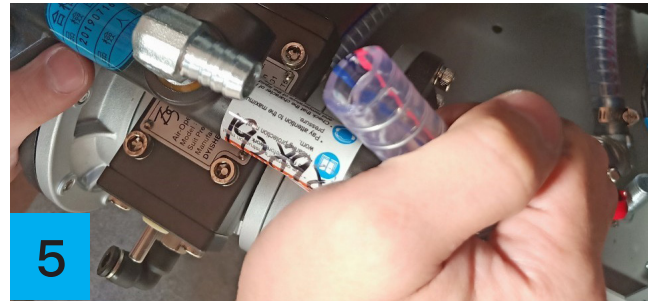
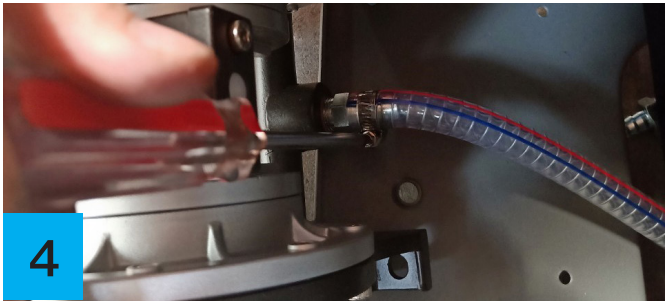
1



2



3



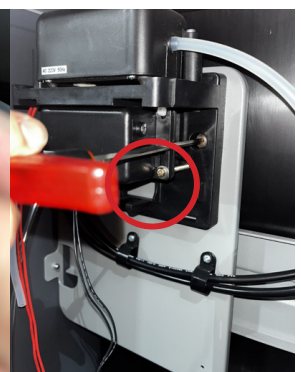
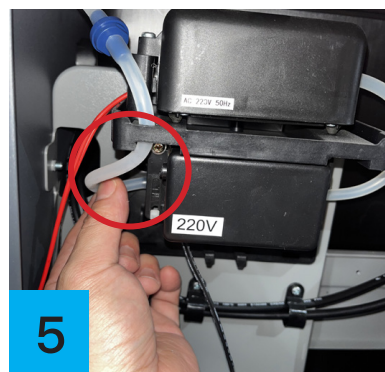
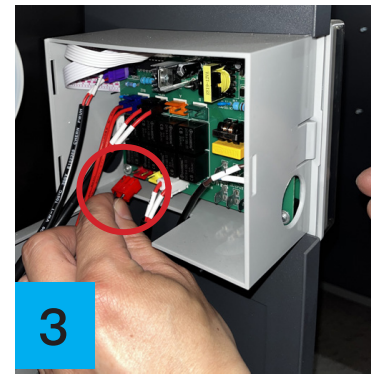
4. Loosen the screw and detach the inlet hose.

5. Replace the pneumatic pump.

7. Ozone device maintenance & replacement

Replacement of Ozone

1. Turn off power and dismantle the machine body back plate.
2. Remove the back plate of the control panel and remove the ozone cover.
3. Unplug the (Red) Ozone Generator connector.
4. Unplug the (Blue) Ozone pump connector.
5. Unplug the left side Ozone pipe.
6. Loosen the screws on the left and right sides of the black base to remove the ozone device for replacement.

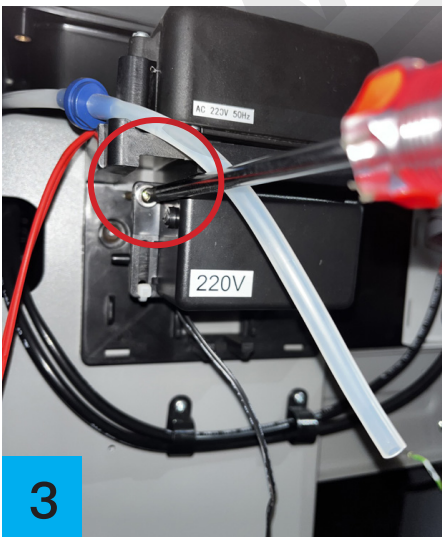


Replacement of Ozone Generator

1. Unplug the (Red) Ozone Generator connector.
2. Detach Ozone hoses from the right and left sides.



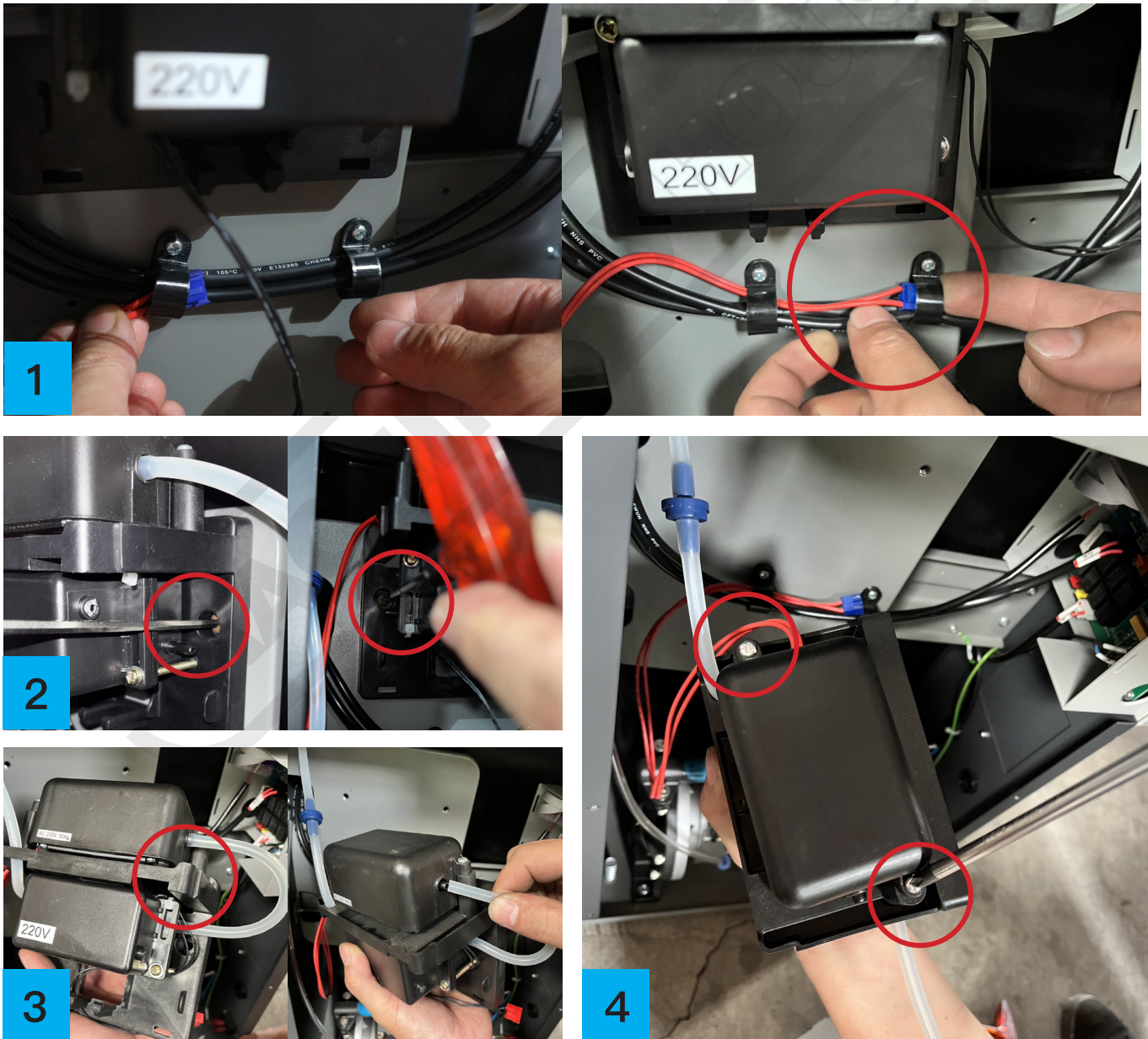
3. Remove the left and right screws of the Ozone Generator to replace it.



Replacement of Ozone pump

Referring to steps 1~4 of the Replacement of the Ozone Generator.

1. Take out the Ozone pump wire. If it is not easy to take out, you can remove the wire fixing buckle and take it out again.
2. Remove the screws on the left and right sides of the black base.
3. Remove the Ozone device and unplug the Ozone tube on the Ozone pump.
4. Remove the 2 screws on the Ozone pump to replace it.





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