STCM-W

Tube Cleaning Machine

Date: Jan., 2024

Version: Ver. A (English)

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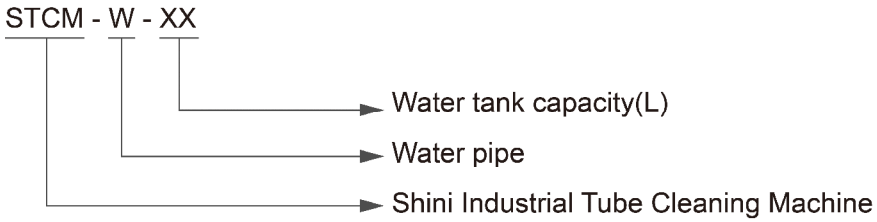
1. General Description

Please read through this operation manual before using and installation to avoid damage of the machine and personal injuries.

The STCM-W tube cleaning machine is mainly used when there's low pipe heater heating efficiency, pipe scaling, blockage and other issues during water heater operation; It plays a role in unblocking moulds and pipes and improving the energy efficiency; and is applicable to industrial mould manufacturing, air conditioner and other heating and cooling equipment; It is also widely used in industries such as home appliances, automobiles, communications, and healthcare. The default time from pump start to stop is 120 mins. (the best effect), with a default working temp. of 50 ℃ and a maximum of 60 ℃;

Picture 1-1: Tube Cleaning MachineSTCM-W-35

1.1 Coding Principle



1.2 Feature

1) Vertical pump, stable flow rate, high pressure, and noise is below 80dB
2) Quick pipe heating of water temperature can accelerate scale dissolution.
3) Micro switch, real-time monitoring of level in water tank to avoid pump idling caused by low water level;
4) Water pump timer, and the running time can be set at free without manual On/Off.
5) Cleaning intensity can reach 70%~80%.
6) Capable of working with different models;

1.3 Options

1) Inlet solenoid valve is optional, and it can shut off the mould end return flow immediately after shutdown to prevent overflow. Add “IS” at the end of the mode code.

1.4 Cleaning Agent Injection Amount

Table 1-1: Cleaning Agent Injection Table

Model	Quantity	Cleaning Agent Injection Amount
STM-607W	1TA	2~3L
STM-910W	1TA	2~3L
STM-1220W	1TA	2~3L
STM-2440W	1TA	3~4L
STM-3650W	1TA	4~5L

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Shini Hotline Service:

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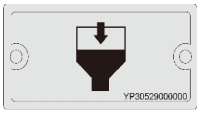
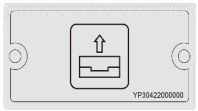
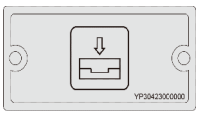
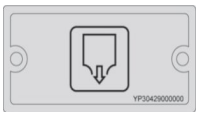
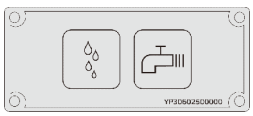
Tel: +86 (0)573 8522 5288

Shinden Precision Machinery (Chongqing), Inc.:

+86 (0)23 6431 0898

1.5 Signs and Labels

Table 1-2: Label Specification

	Please according to schedule to make regular maintenance.
	Pump pressure gauge: display actual pressure of cold water system.
	Injection port（cleaning agent）
	Cold water return port (return from the mould)
	Cold water export (to the mould)
	Water tank drainage outlet
	Purified water filling port
	Overflow port
	Level indicator

1.6 Operation Notices

1) Before startup, check whether the inlet and outlet pipes connecting the mould end are locked tightly to avoid liquid spray leakage caused by looseness;
2) After pipe connection, it should add a certain amount of industrial cleaning agent to the injection port, and then replenish the water tank. The water pump can start running after the water is fully filled.
3) If the pipe drainage is poor, please clean the solenoid valve and filter or check whether the water tank drainage port is blocked;
4) The industrial cleaning agent is acidic liquid, and it should avoid long term touch during use; After machine cleaning, it should inject the PH agent (alkaline) into the inlet port directly until the water quality becomes neutral and meets the basic regional standard of water quality.
5) After each cleaning, it's necessary to clean the liquid agents and impurities in the discharge water tank and pipelines. If it is used with the mould temperature controller, it should unscrew the pump water outlet of the machine, and eliminate it completely; Then, replenish the water tank, and transport the clean water to the mould pipeline through the water pump, and wash it continuously; Finally, exhaust the water. (It's suggested to clean it with water twice for better effect). Meanwhile, clean the surface of each pipe connector in time to avoid long-term corrosion of residual liquid agents;

1.7 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

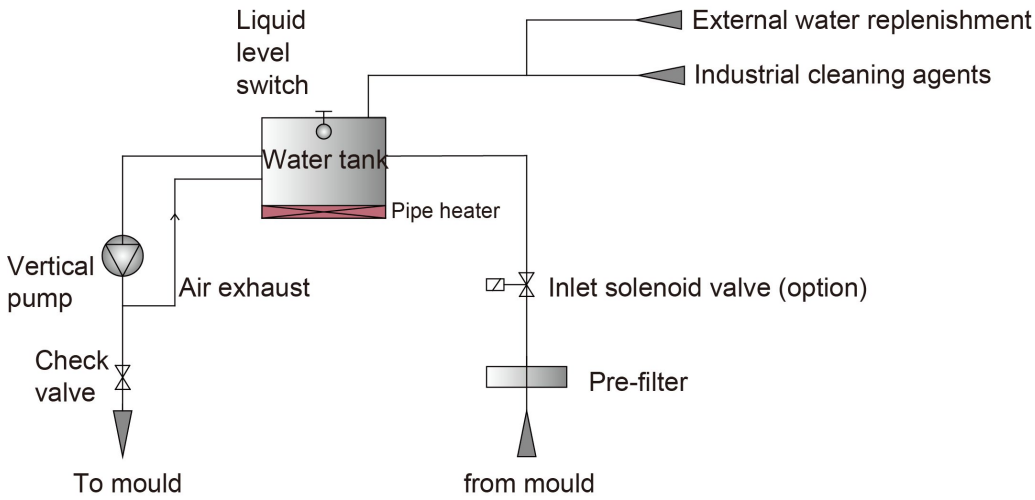
1) Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2) Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and

machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.

3) Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4) Employing consumables or oil media that are not appointed by Shini.

2. Structural Features and Working Principle

2.1 Working Principle



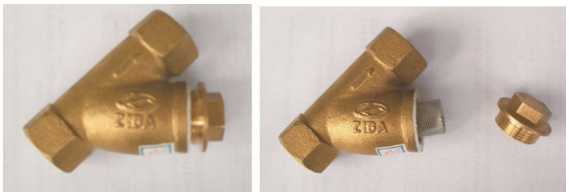
Picture 2-1: Working Principle

The tube cleaning machine STCM-W first collects a certain ratio of industrial cleaning agent into the water tank for replenishment, and then delivers a certain amount of water agent to the mould pipeline through a power driven pump, thus sucking and discharging the water repeatedly. By combining large flow flushing with chemical reactions of liquid agents, it can effectively clean the hard salt alkali scaling and rust substances inside the mould pipe, thus dredging the mould pipeline and improving the energy efficiency.

2.2 Main Components and Function

2.2.1 Y Type Strainer

1) During machine normal working, using the Y-type water filter can prevent large foreign objects or impurities from getting into the water tank.
2) Cleaning steps: After cutting off the power and main water supply valve, open the cover under the Y-type filter valve and clean the inside.



Picture 2-2: Y- type Strainer

2.2.2 Check Valve

It effectively ensures the liquid in the water tank flows to the mould in one direction and prevents the liquid from flowing back;

Picture 2-3: Check Valve (SUS304)

2.2.3 Solenoid Valve(Optional)

Function: When the pump starts and stops, the solenoid valve cut off the return water pipe at the mould end to prevent high water level from quickly flowing back to the water tank that resulting in overflow.

Picture 2-4: Solenoid Valve

2.2.4 Industrial cleaning agents -(SZ-821)

Ingredients: Composed of monobasic acids, organic acids, corrosion inhibitors, and surfactants;

Function: It can melt more types of scale, silt, rust, and sediment. Suitable for cleaning industrial mould equipment.

Picture 2-5: Industrial cleaning agents - (SZ-821)

2.2.4.1 PH conditioning agent - alkaline (optional)

Ingredients: mainly composed of organic alkali neutralizing agents;

Function: It is a product that neutralizes the pH of waste liquid after cleaning, so as to meet environmental requirements for emissions. Its main function is to regulate the pH value of water source.

Picture 2-6: PH conditioning agent - alkaline (optional)

3. Installation and Debugging

Before installation, please read this chapter carefully and install according to the procedures as follows!

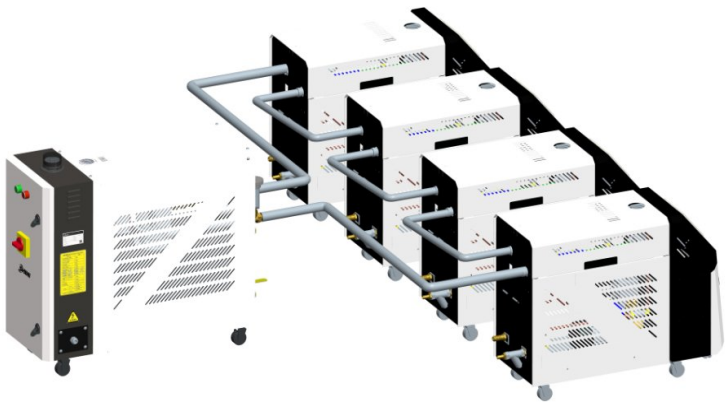
3.1 Machine positioning

The tube cleaning machine is not always working that can be placed indoors or in dry and shaded areas. Avoid long exposure to sunlight, which may damage the tube cleaning machine.

When using the tube cleaning machine, it only needs to connect the inlet and outlet with the mould end in series.

It's recommended to place it in a open area close to the drainage channel for cleaning, and it's conducive to discharging impurities and liquid agents in the mould pipeline.

Please ensure that there's 500mm of installation and maintenance space at least around the machine.



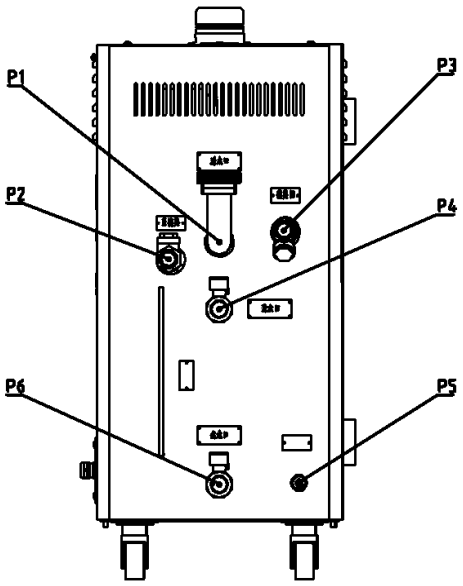
Picture 3-1: Machine Positioning Diagram

3.2 Power Connection

1) Make sure the voltage and frequency of the power source comply with those indicated on the manufacturer nameplate that attached to the machine.
2) Power cable and earth connection should conform to your local regulations.

3) Use independent electrical wires and power switch. Diameter of electrical wire should not be less than those used in the control box.
4) The power cable connection terminals should be tightened securely.
5) This series of water chiller adopts single-phase power, with earth grounding.
6) Power supply requirements:
   Main power voltage: +/- 5%
   Main power frequency: +/- 2%
7) Please refer to electrical drawing of each model to get the detailed power supply specifications.

Power connection must be conducted by professional electricians!
Do not change the circuit of the water chiller without our company's authority. If the machine is damaged by unauthorized change we are not responsible for this.



Picture 3-2: Interface Diagram

Interface specification:

P1: Cleaning agent inlet P2: To mould outlet P3: Mould return water inlet

P4: Water tank refilling port P5: Water tank drainage port P6: Water tank overflow port

4. Application and Operation

4.1 Startup Pre-checking

1) Check whether the tube cleaning machine is in level statue.
2) Check the level in water tank and ensure the inside of water tank is filled with water.
3) Check if the power cable is properly connected and the connections.

Initial startup:

1) Observe whether the water pump is running reversely.
2) Notice whether there's any abnormal noise in the machine.

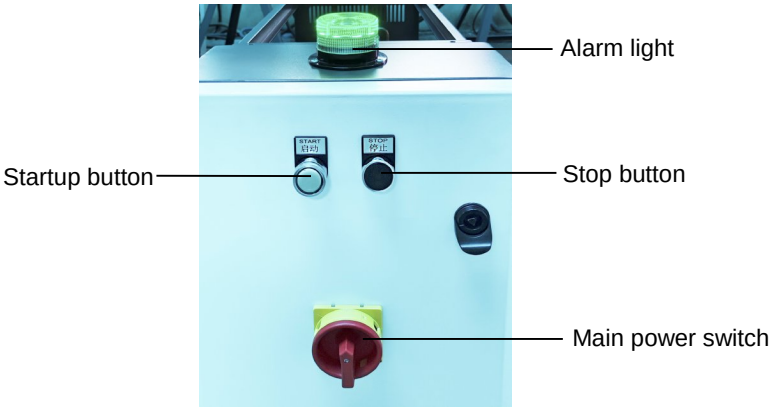
10 mins. after initial startup

1) Check whether the water temperature can be heated up normally.
2) Check whether the time relay can time properly.
3) Check whether the pump has serious heating problem.

2 hrs. after initial startup

1) Observe whether the machine stops.
2) Observe whether the time relay has been powered off.

4.2 Start and Stop Operation



Picture 4-1: Main Power Switch, Start / Stop button and Alarm Light

4.2.1 Startup Steps

1) Switch ON the <Main Power Switch>

Picture 4-2: ON

2) Press the<Start>button, and start up the water pump and pipe heater

Notice!

The pump running direction must be correct!

Notice!

Before water pump startup, please confirm that the water tank has enough water flow;

Don’t run the system without water. Otherwise, it will result in water pump damage, and our company is not responsible.

Notice!

To reduce machine damage, and extend its lifespan, please shut down the machine as following steps correctly.

4.2.2 Shutdown Step

1) Press the <Stop>button, and turn off the water pump and pipe heater.
2) Switch OFF the main power switch.

OFF

Picture 4-3: Shutdown Step

Notice !

Switch ON the main power switch, and please be noted the electric shock hazard!

Notice !

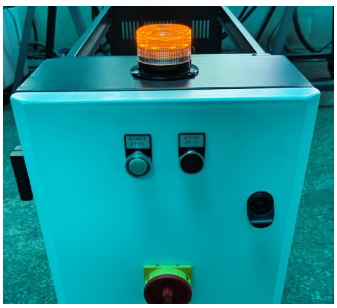
To reduce machine damage, and extend its lifespan, please shut down the machine as following steps correctly.

4.2.3 Operation Steps

Press the <Start > button, the pump and heater start, the machine is at standby status, and the alarm light turns green.

Picture 4-4: Green Alarm Light

Press the <Stop > button, the pump and heater stop, the machine is at standby mode, and the alarm light turns yellow.



Picture 4-5: Yellow Alarm Light

The water temperature is regulated by a temp. controller, with a range of 0-200 ℃; The heating stops after the temperature gets to the set value, and it starts when the temperature is lower than the set value, and maintain the water temperature at the set value. The default water temperature is set to 50 ℃.

Picture 4-6: Temp. Controller

The running time is adjusted through a timer relay, with a range of 1s-99h; After it gets to the running time, the machine will stop automatically, and the default auto shutdown time is set to 2h.

Picture 4-7: Timer Relay

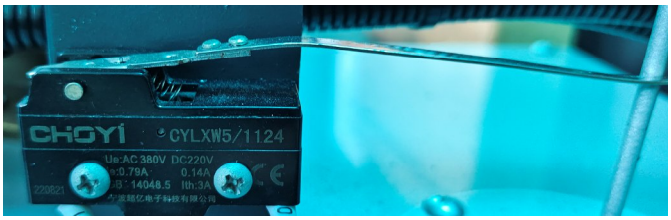
4.3 Protective Device

4.3.1 Sudden-jump temp. protection switch

Picture 4-8: Sudden-jump Temp. Protective Switch

4.3.2 Micro-switch

Protect against low level in water tank



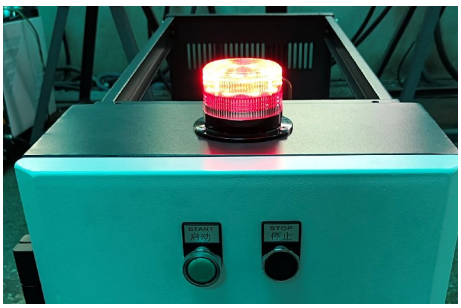
Picture 4-9: Micro-switch

4.3.3 The water pump has protective thermal overload relay

Picture 4-10: Thermal Overload Relay

4.3.4 Alarm Light

When the machine is in an alarm state, the alarm light flashes red and buzzer sounds.



Picture 4-11: Alarm Light

5. Maintenance and Repair

5.1 Maintenance of Assemblies

1) Y-type filer
   It’s necessary to clean the impurities in the filter screen in time to avoid filter blockage;
2) Stainless steel water tank
   After each cleaning, it’s necessary to discharge the waste liquid and accumulated impurities in the water tank, and keep the inside clean;
3) Pipe connector
   It should wipe liquid stains on the surface of pipe connector in time after each cleaning; and avoid long-term corrosion; Check whether the pipe connector is loose weekly to avoid liquid spray leakage due to looseness;
4) Solenoid valve(option)
   Check whether the function of solenoid valve works normally every month;
5) Water Pump
   Check whether the pump has abnormal sound monthly;
6) Level switch, contactor, pipe heater
   Check whether the level switch, contactor, and pipe heater work normally every three month;
7) Indicator, buzzer
   Check whether the indicator and buzzer work normally half yearly;

5.2 Maintenance Schedule

5.2.1 General Machine Information

Model: _____ SN: _____ Manufacture date: _____

Voltage: ____ Φ_____ V Frequency: ____ Hz Total power: _____ kW

5.2.2 Installation & Inspection

☐ Check if the pipeline is connected correctly.

☐ Check for leaks in the pipeline.

Electrical Installation

☐ Voltage: ____ V _____Hz

☐ Circuit breaker: ____ A

5.2.3 Daily Checking

☐ Check the machine on/off function

☐ Check all cables of the machine.

☐ Check whether all water pressure gauges are normal.

☐ Check whether the outlet flow rate is normal.

5.2.4 Weekly Checking

☐ Check all the electrical cables of the machine.

☐ Check the alarm function for insufficient original liquid level.

5.2.5 Monthly Checking

☐ Check if there's any abnormal sound of the pump.

☐ Check whether there's scaling in the water tank.

5.2.6 Tri-monthly Checking

☐ Check the scaling in the pipes.

5.2.7 Half-yearly Checking

☐ Check the working state of the machine.

5.2.8 Yearly Checking

☐ Replace the filter.