

SHD-EB

Budget Hopper Dryer

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Version: Ver.E



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1. General Description

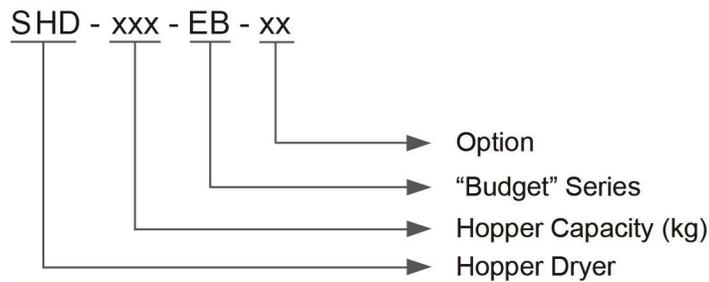


Please read through this operation manual before using the machine to prevent damages of the machine or personal injuries.



Mold: SHD-12EB

1.1 Coding Principle



1.2 Feature

- Adopt hot air diffuser to gain an even hot air flow to improve drying efficiency.
- Hot air inlet elbow design can prevent dust piling up at bottom of the pipe heaters so as to avoid burning.
- All material contact surfaces are made of stainless steel to eliminate material contamination.
- Hopper separated from its base, ensuring convenient cleaning.
- Adopts heat-insulated blower to prolong blower lifespan.
- SHD-EB series has standard timer
- SHD-EB series of blowers equip with overheat protectors

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.

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Table 1-1: Dryer Drying Capacity(kg/hr)(Selection Guide)

Material Mode SHD-	12- EB	25- EB	50-E B	75-E B	100- EB	150- EB	200- EB	300- EB	400- EB	Drying Time	Drying Temp.
Polystyre (PS)	8	20	50	75	100	150	200	300	400	0.75hrs	80°C
Polyethylen (PE)	8	20	50	75	100	150	200	300	400	0.75hrs	80°C
Poly propyrene (PP)	8	20	50	75	100	150	200	300	400	0.75hrs	80°C
Polystyrene (EPR)	6	14	38	57	80	115	150	225	300	1hrs	80°C
ABS	4	8	20	30	40	60	80	120	160	1hrs	80°C
Nylon 11,12	2	4	10	13	20	27	35	60	80	4hrs	75°C
Nylon6/6,6/10	1.5	3.2	8	11	16	22	30	45	65	5hrs	75°C
Nylon 6	1	2	5	7	10	15	20	35	50	7hrs	75°C
Acrylic fiber	2.5	6	12	22	30	45	60	100	140	2.5hrs	80°C
Cellulose acetate	2.5	6	17	26	35	52	70	110	150	2.25hrs	75°C
Butyrate	4	10	25	37	50	75	100	160	220	1.5hrs	-
Polycarbonate (PC)	1.5	4	10	15	20	30	40	75	90	3hrs	120°C
Rigid PVC	5	12	30	45	60	90	120	185	250	1.25hrs	70°C

Notes:Based on relative humidity 65% with ambient temperature of 20°C,moisire content after drying can be 0.2% ro less.

1.3 Safety Regulations

1.3.1 Safety Signs and Labels



Note!

Electrical installation should be done by qualified electrician only.

Before connecting to AC Power Source, turn power switch to OFF position. While AC power source is connected, make sure specifications and overload protection rating of the power switch are suitable and reliable. When the machine is under care or maintenance, turn off both power switch and automatic operation switch.



Danger!

High pressure!

It is attached to the control box.



Warning!

High temperature surface may burn hands!

It is attached on the cover of pipe heater.



Attention!

This mark reminds you to be more careful!



Warning!

High temperature surface may burn hands!

This label should be stick to the shell of electric heating box.

1.3.2 Signs and Labels

<p>⚠ 超溫時，保護裝置動作；解除故障後，按藍色鍵復位並合上開關，重新通電運行。 Protection device activates when overheat occurs; after faults are discharged, press blue key to reset and turn on the switch to restart operation.</p> <p>超溫保護裝置 Overheat protection device</p> 	<p>Protection device activates when overheat occurs; after faults are discharged, press blue key to reset and turn on the switch to Restart operation.</p>
	<p>Push-and-pull switch for shut-off plate: I: Means "Pull" O: Means "Push"</p>
<p>請定期清理過濾網以免阻塞而影響乾燥 Regularly clean the filter screen to avoid insufficient drying caused by blocking.</p>	<p>Regularly clean the filter screen to avoid insufficient drying caused by blocking</p>

1.4 Exemption Clause

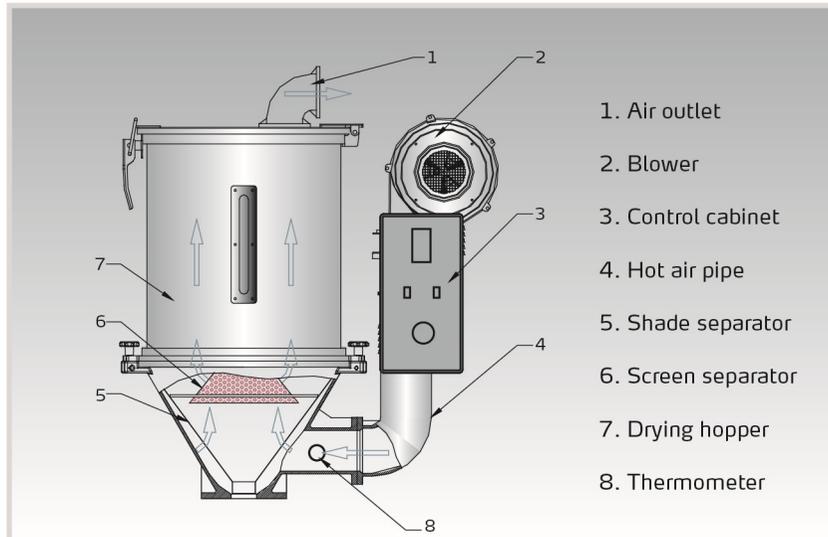
The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

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. Structure Characteristics and Working Principle

2.1 Working Principle



Picture 2-1: Working Principle

In the drying process, hot air with constant temperature is blown by a blower into a two-layer insulated hopper to dry the materials. Moisture will be separated out and taken away by hot air, thus to gain a satisfied drying effect.

Air blown out of blower became high temperature drying air after being heated. Through screen protector and hole screen, hot air can be equably dispersed in the material of storage tank (see picture). Hot air recycler is optional so the air enter drying blower after being filtered to form a closed loop circle and save electricity.

2.2 Options

2.2.1 Magnetic Base



Model	Applied to
MB-12EB	SHD-12EB
MB-50	SHD-25EB~75EB
MB-100EB	SHD-100EB~150EB
MB-200EB	SHD-200EB~300EB
MB-400EB	SHD-400EB

Made of aluminum with built-in hopper magnet, can effectively separate metal scraps out to avoid material contamination.

2.2.2 Hot Air Recycler



Model	Filtering Barrel Dia. (mm)	Inlet Air Pipe Dia. (inch)	Flange of Air Outlet (inch)	Applied to
HAR-12	157	2		SHD-12EB
HAR-25EB	157	2.5		SHD-25EB
HAR-50	177	3		SHD-50EB/75EB
HAR-100EB	219	3		SHD-100EB/150EB
HAR-200EB	249	4		SHD-200EB/300EB
HAR-400EB	221	4		SHD-400EB

Work with hopper dryer to make the hot air form a semi-closed circulated loop and has features as follows:

- 1) Hot air recycling and circulating avoids indoor temperature rising up.
- 2) Keep air in factory clean and ensure good product quality.
- 3) The energy consumption can be reduced by fast heating speed of the hot air circulation, which saves 40% of the energy.

2.2.3 Exhaust Air Filter



Model	Applicable Models
ADC-1	SHD-12EB
ADC-2EB	SHD-25EB ~150EB
ADC-3EB	SHD-200EB ~400EB

It can effectively filter the dust air discharged from the dryer to prevent air pollution, and the efficiency can reach 99%.

2.2.4 Blower Inlet Filter



Model	Filter Dia. (mm)	Height (mm)	Applied to
AIF-12	157	195	SHD-12EB
AIF-25EB	157	195	SHD-25EB
AIF-50	177	201	SHD-50EB ~75EB
AIF-100EB	219	191	SHD-100EB ~150EB
AIF-200EB	249	268	SHD-200EB ~300EB
AIF-400EB	221	380	SHD-400EB

Note: Refill air input of the blower is adjustable.

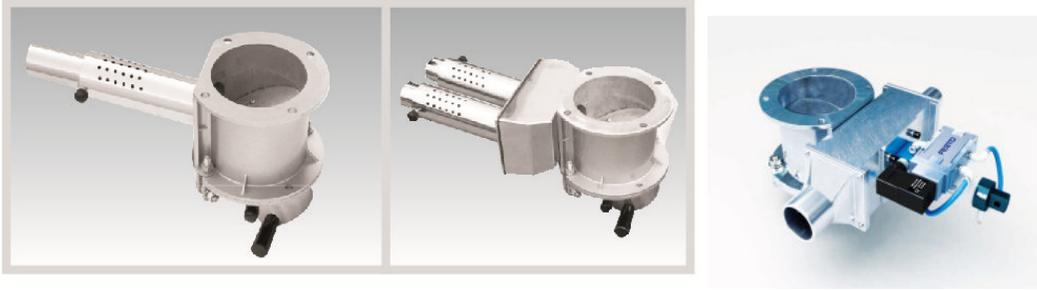
2.2.5 Hopper Magnet



Model	Applied to
MR-5	SHD-12EB
MR-7	SHD-25EB~75EB
MR-9	SHD-100EB~400EB

Absorb metal scraps in the material to avoid the damage of molding screw.

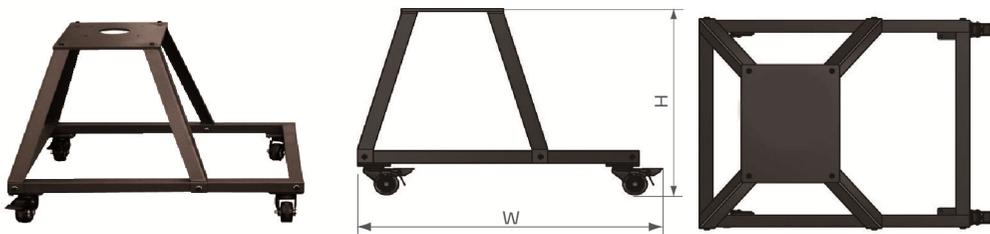
2.2.6 Material Suction Box/Shut-off Suction Box



Model	Applied to	
	SHD-12EB~75EB	SHD-100EB~400EB
SBU	-20-38S	-160-38S
SBU	-20-50S	-160-50S
SBU	-20-38D	-160-38D
SBU	-20-50D	-160-50D

- Notes: 1) Install pneumatic shut off valve (add "V" at the end of the model code).
 2) Change into stainless steel material (add "S" at the end of the model code).
 3) Stainless steel polishing (add "P" at the end of the model code)
 4) "S" stands for single tube suction box and "D" stands for double tubes suction box.

2.2.7 N-type Floor Stand



Model	Applied to	Dimension H×W×D(mm)	A / B / C (mm)
FSN-50	SHD-12EB~75EB	600 × 700 × 640	140/54/ 9
FSN-100	SHD-100EB/150EB	615 × 800 × 710	210/90/11
FSN-200	SHD-200EB/300EB	680 × 1000 × 840	210/90/11
FSN-400	SHD-400EB	700 × 1200 × 1010	260/116 /13

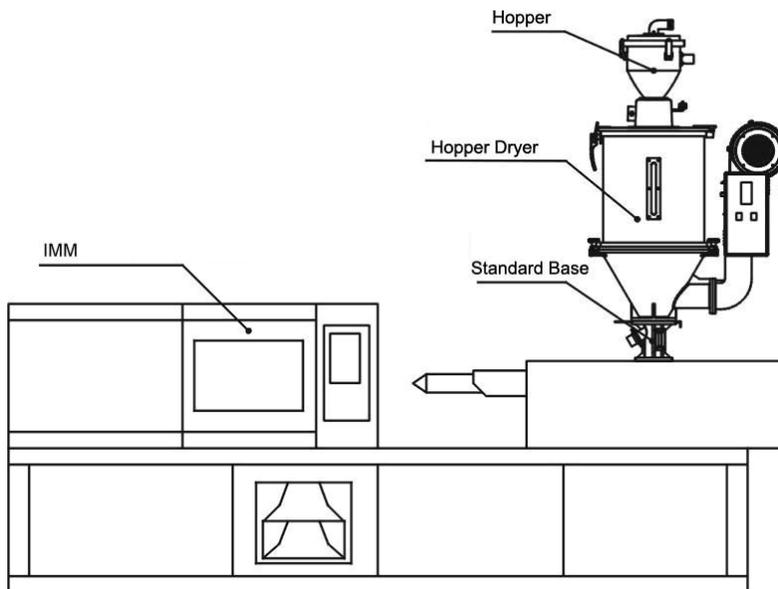
With which machines can be easily moved out of workplace which is suitable for the factories with height limited workshops, also it can make operations more convenient.

3. Installation and Debugging

Notes for Installation and Positioning:

- 1) Machine just can be mounted in vertical position. Make sure there's no pipe, fixed structure or other objects above the installing location and around the machine which may block machine's installation, hit objects or injure human person.
- 2) In order to maintain convenient operation, it's suggested to keep 1m space around the machine. Please keep at least 2m distance between the device and the inflammable goods.
- 3) This series of models only could be applied in working environment with good ventilation.

3.1 Direct Installation



Picture 3-1: Direct Installation

Direct installation type is to mount the hopper dryer directly on the molding machine via a standard base.

When using the method to mount the dryer, the equipped standard base must according to material inlet diameter of the molding machine mounting drill holes. Then use the screw to fasten the base and the molding machine inlet.

3.2 Connecting the Power Source

Open the control box and connect the power source in accordance with wiring diagram. Notice should be taken concerning if the power voltage is in compliance with the required specifications, also if the switch and load are proper and safe.

Notes: Before connecting, the main switch and heat switch should be off.

3.3 The Hopper Dryer Test

After ensuring all the circuits have been connected firmly, turn on the blower switch to "ON" status and turn on the heater switch on control box to "ON" status. Then light indicator of the switch would turn on, observe whether the rotating derrection of the blower is same as the arrow indicated direction. If it is not, randomly exchange two of the three power firing lines and connect them firmly.



Picture 3-2: Blower

3.4 Installation of the Options

3.4.1 Installation of Air-Exhaust Filter

If the materials contain dust or to avoid the dust-contain air exhausted by dryer polluting the workshop's environment. Option with air-exhaust filter ADC can filter the exhausted air from the dryer. ADC can reach filter efficiency of 99%. ADC are installed on air-exhaust elbow of the dryer. Point it to the installed holes then tighten up the screws, use rubber ring to seal the combined place.



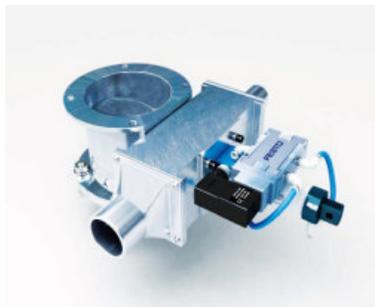
Picture 3-3: Left : Air-exhaust Elbow of Dryer
Right: Air-exhaust Filter

3.4.2 Suction Box Installation



Picture 3-4: European Suction Box

When installing the SHD-EB on the floor stand, the suction box SBU is required, so conveyor can take away the dried plastics. The installation of European suction box and shut-off suction box is simple, which are mounted at the hopper bottom, and it must lock corresponding holes with screws.



Picture 3-5: Shut-off Suction Box

3.4.3 Blower Inlet Filter Installation

When dryers in the dust-contain environment or hot air requires high cleanliness, it can option with AIF blower inlet filter.



Picture 3-6: AIF Blower Inlet Filter

AIF is installed at the blower air inlet. Firstly, loosen the set screw at the blower air inlet to remove the air screen; Then, install the AIF at the blower air inlet, and lock corresponding holes with screws.

3.4.4 Hot Air Recycler Installation

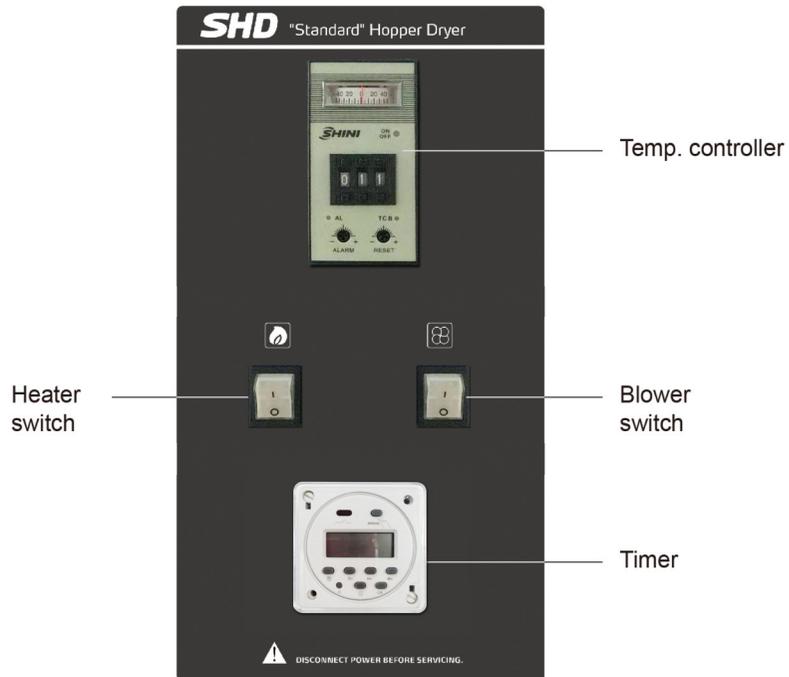
Based on AIF blower inlet filter, using a hear-resistance pipe to connect the hopper exhausting air to AIF. Thus to form a hot air recycler. By recycling the hot air can at most save energy consumption by 40%.



Picture 3-7: Hot Air Recycler

4. Operation Guide

4.1 Control Panel

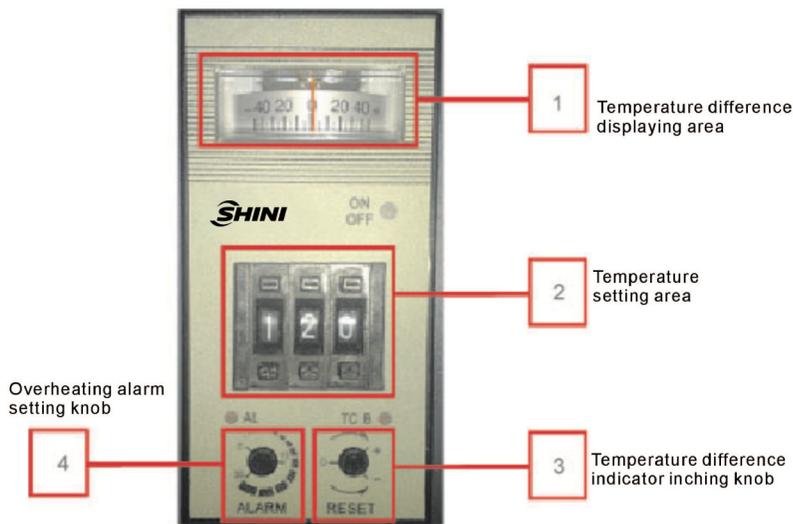


Picture 4-1: Control Panel

4.1.1 Panel Operation

- 1) Turn on the blower switch;
- 2) Turn on heater switch, and start heating operation;

4.1.2 Setting Temperature



Picture 4-2: Temperature Controller

As figures on above picture 4-2:

1. Temperature difference display area. It is used to display difference value between actual temp. and set temp. For example, if actual temperature is lower than set temp., the pointer turns left (negative direction), otherwise, it turns right(positive direction).
2. Temperature set area. Set value range: 0~199°C, when heating process lasts for some time, “on/off” indicator light on temperature controller will display yellow and green light alternatively. It means the set temperature is reached. At the same time, observe if the value on temperature controller is consistent with the thermometer or not. The acceptable deviation is $\pm 2^{\circ}\text{C}$.
3. Inching knob of temperature difference pointer. When the working temperature runs stably (about 1 hr after the start), the pointer should be at “0” (the difference value between actual temperature and set value), otherwise adjust the pointer to “0” is available by rotating the inching knob.
4. Overheat indicator setting knob. When actual temperature is no less than set value alarming value, temperature controller has alarming output, the factory set value is 15°C .

Temperature controller panel indicator light description as below:

ON/OFF: ON status green light on, OFF status red light on;

AL: light on means over temperature alarm output;

TC B: light on means temperature sensor line breaks

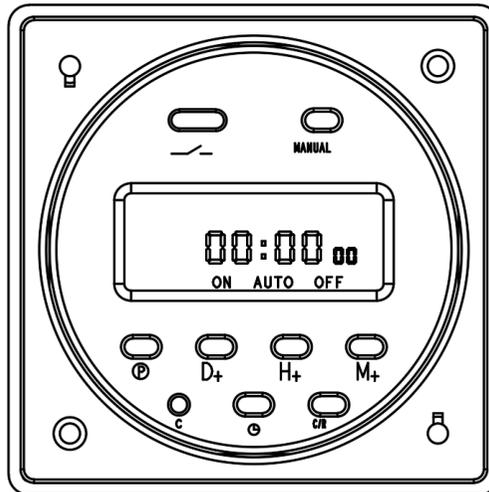
Notes: Drying temperature setting of plastic material must be in accordance with related drying temperature. If temperature gets too high, it would make material blocked and potentially cause serious accident. Thus the temperature setting must collocate with actual experience.

Moreover, the hopper is equipped with overheat protector that mounted on the fixing pole at the back of the control box. When detecting the temperature of fixing pole exceeds 130°C, the protector will cut off the power supply.



Picture 4-3: Overheating Protector

4.1.3 Timer Setting



Picture 4-4: Timer

Table 4-1: Key Instructions

No.	Code	Meaning
1	Ⓟ	setting
2	D+	week
3	H+	time
4	M+	minute
5	⌚	clock
6	C	reset
7	MANUAL	mode selection
8	C/R	cancel / recover

4.1.3.1 Using Method

1) Adjust current time

Press and hold the "Ⓟ" key, and press the " D+ " key to adjust current week; Then, press the " H+ " key to adjust current hour, and press " M+ " key to adjust current minute. After the adjustment, release the "Ⓟ" key, and setting of current time is finished.

2) Timer Adjustment

This timer can set 20 different timing groups in total, and the setting method is as follows:

Week timing: click "Ⓟ" key, and the screen will display "1ON -- : --", which means the start time of the first group timer. Press "D+" key to adjust the week of the timer to be started. At this time, the timer has preset 15 modes of the week timer (as below), and press the "D+" key to circle the selection.

Table 4-2: Week Timer Mode Specification

No.	7-Days Timer Mode
1	MO TU WE TH FR SA SU
2	MO
3	TU
4	WE
5	TH
6	FR
7	SA
8	SU
9	MO WE FR
10	TU TH SA
11	SA SU
12	MO TU WE
13	TH FR SA
14	MO TU WE TH FR
15	MO TU WE TH FR SA

Hour timing: Continue to press the "H+" key to adjust the hour of the timer.

Minute timing: Continue to press the "M+" key to adjust the minute of the timer.

At this time, press the "Ⓟ" key again, the screen will display "1 OFF - - : - -", which means the close time of the first group timer, and adjust the timer according to above method. At this time, the first group timer has set up,

and then click the "Ⓟ" key to repeat above operations that can adjust the timers of other 19 groups.

3) Mode Adjustment

After setting, press the "Ⓟ" key to return to the clock interface, and press "MANUAL" key to select the timer mode:

When the screen displays "AUTO", the timer is activated, and the machine will start/shut down according to the settings; When the screen displays "OFF", the machine stops running; When the screen displays "ON", the machine will run for a long time without timing limit.

When running the machine, the indicator lights on; When the machine stops running, the indicator goes out.

When all the timers are set, if you want to cancel a certain group of timer, press "Ⓟ" key to find the timer to be cancelled, and then press "C / R" key to cancel / restore the group of timer, or press "C" key to clear all the settings, and then reset.

Note: When the screen displays "--:--", it means that the group is cancelled. If the screen displays "00:00", it means the zero o' clock.

5. Maintenance and Repair

5.1 Blower

- 1) Clean the blower regularly (especially the air inlet path).
- 2) Eliminate the fan's dirt regularly to avoid the damage to the blower.



Attention !

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

6. Troubleshooting

Fault	Possible Reasons	Solution
The blower running direction is opposite	Blower reverse connection	Replace any two blower power cables
The blower doesn't work and has smoke.	<ol style="list-style-type: none"> 1. Blower fault 2. The solenoid switch contact open 	<ol style="list-style-type: none"> 1. Check and replace 2. Check, replace or repair
The blower doesn't running and heater doesn't work.	<ol style="list-style-type: none"> 1. Overload relay trips 2. Transformer fault 3. Fuse burnt 4. Power fault 	<ol style="list-style-type: none"> 1. Check and replace 2. Check and replace 3. Check and replace 4. Check if there's phase shortage
The blower is running, but the heater doesn't heating.	<ol style="list-style-type: none"> 1. Pipe heater connecting lead sheet burnt 2. The solenoid switch fault 3. Pipe heater fault 4. Temperature fault without output 5. Thermocouple fault 	<ol style="list-style-type: none"> 1. Check and replace 3. Check, replace or repair 3. Check and replace 4. Replace the temperature controller 5. Replace the thermocouple
The blower is running, and the heater temperature is not high enough.	<ol style="list-style-type: none"> 1. Pipe heater or lead sheet is defective 2. Temperature protector breaks or trips 3. Solenoid switch phase shortage 4. Temperature controller is broken or large error 	<ol style="list-style-type: none"> 1. Check and replace 2. Check or reset 3. Check and replace 4. Replace the temperature controller
The blower is running but the heater is overheat.	<ol style="list-style-type: none"> 1. Pipe heater blockage 2. Temperature controller fault or large error 3. Solenoid switch contact is bonding 	<ol style="list-style-type: none"> 1. Clean up 2. Replace temperature controller or adjust the fine tune button. 3. Replace



Notes: Before inspecting or changing spare parts, ensure the main switch should be off.