SD-H Series

Honeycomb Dehumidifiers

Date: June, 2021

Version: Ver.H (English)

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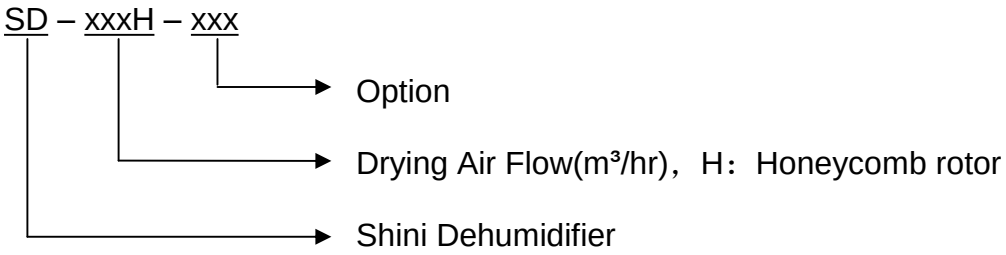
1. General Description

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

SD-H series honeycomb dehumidifiers are mainly used to dry hygroscopic engineering plastics. A honeycomb-rotor is used to offer effective drying, which under ideal conditions, can supply dehumidified dry air with a dew-point lower than -40℃.This series comprises 13 models of honeycomb dehumidifiers, the largest of which can provide dry air up to a quantity of 4,000 m^3/hr.

Model: SD-40H

1.1 Coding Principle



1.2 Feature

- Adopts P.I.D. temperature controller to accurately control regenerative temperature.
- The dehumidifying system of the SD-H series features two coolers to ensure a low return air temperature and low dew-point.
- Inbuilt return air filter ensures no contamination to the honeycomb.
- It is better to adopt molecular sieve structure honeycomb than silica gel adsorption one in dehumidifying.

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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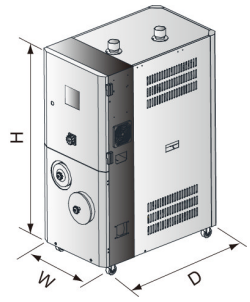
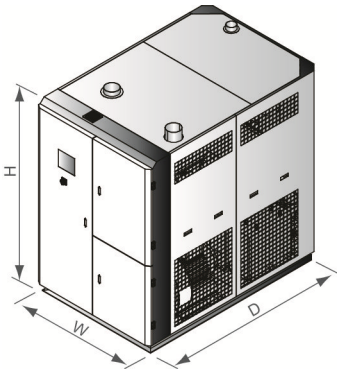
Tel: (91) 250 3021 166

1.3 Technical Specifications

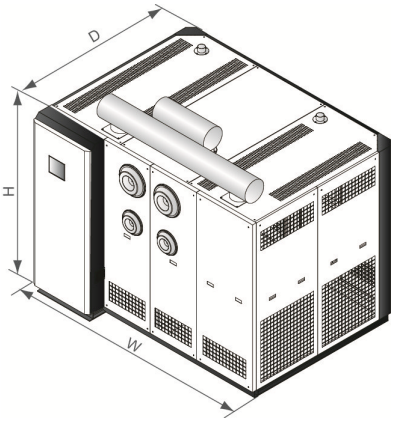
1.3.1 Outline Drawing



SD-40H~700H



SD-1000H~2000H



SD-3000H~4000H

Picture 1-1: Durline drawing

1.3.2 Specifications

Table 1-1: Specifications

Model SD-	40H	80H	120H	200H	400H	700H	1000H	1500H	2000H	3000H	4000H
Ver.	F	E	E	E	D	G	G	H	G	F	A
Regen. Heater(kW)	3	3	3	4	7.2	10	15	30	28	32	56
Regen. Blower (kW，50 / 60Hz)	0.4 / 0.4	0.4 / 0.4	0.4 / 0.4	0.4 / 0.5	0.75 / 0.9	1.5 / 0.8	3.75 / 4.7	7.5	7.5 /8.6	9 / 11	5.5×2 / 6.3×2
Drying Heater* (kW)	4	6	6	12	18	24	32	58	80	96	128
Drying Blower (kW，50 / 60Hz)	0.18 / 0.18	0.75 / 0.9	0.75 / 0.9	1.5 / 1.8	3.75 / 4.5	7.5 / 8.6	13 / 16	11/-	13×2 / 15×2	13×3 / 15×3	13×4 / 15×4
Dry Air Capacity (m^3 / hr，50 / 60Hz)	40 / 47	80 / 95	120 / 130	200 / 220	400 / 450	700 / 780	1000 / 1150	1500	2000 / 2300	3000 / 3400	4000 / 4500
Pipe Dia. (inch)	2	2	2	2.5	3	4	5	8	8	8	12
Cooling Water Quantity (L/min)	5	10	15	30	50	80	120	180	240	360	480
Dimensions											
H (mm)	1260	1360	1360	1560	1745	1935	2145	2060	2060	2240	2060
W (mm)	510	530	530	660	700	900	1300	1410	1410	2035	2750
D (mm)	860	820	820	1050	1255	1380	1550	2150	2150	2160	2250
Weight (kg)	145	170	170	265	330	480	700	1010	1300	1600	2200

Note：1) Plastic materials can be fully dried by drying air with dew-point temperature ≤-20℃.
When ambient temperature ≤-25℃ and relative humidity≤-60%, the drying air dewpoint temp. ≤-40℃.
2) "*" Stands for drying heater is optional equipment for working with "European type" hoppers.
3) Power：3Φ, 230 / 400 / 460 / 575VAC, 50 / 60Hz.

We reserve the right to change specifications without prior notice.

1.3.3 Drying Capacity

Table 1-2: Specifications

Material	Drying temp. (℃)	Time (hr)	Specific Heat (J/kg.℃)	Material Specific Gravity (kg/dm^3)	Moisture Content Before Drying (%)	Moisture Content After Drying (%)	Drying capacity (kg/hr)										
							SD-40H	80H	120H	200H	400H	700H	1000H	1500H	2000H	3000H	4000H
ABS	80	2-3	0.34	0.6	0.3	0.02	16	27	35	105	210	355	425	710	1065	1500	1600
CA	75	2-3	0.5	0.5	1	0.02	12	22	30	90	180	295	355	590	885	1200	1330
CAB	75	2-3	0.5	0.5	0.8	0.02	12	22	30	90	180	295	355	590	885	1200	1330
CP	75	2-3	0.6	0.6	1	0.02	16	27	35	106	210	355	425	710	1060	1500	1600
LCP	150	4	0.6	0.6	0.04	0.02	11	20	27	80	160	265	320	530	800	1150	1200
POM	100	2	0.35	0.6	0.2	0.02	24	40	53	160	320	530	640	1060	1600	1800	2400
PMMA	80	3	0.35	0.65	0.5	0.02	17	29	38	115	230	383	460	767	1150	1530	1730
IONOMER	90	3-4	0.55	0.5	0.1	0.04	10	17	22	66	133	220	265	442	663	750	1000
PA 6/6.6/6.10	75	4-6	0.4	0.65	1	0.05	9	14	19	58	115	192	230	383	575	960	1040
PA11	75	4-5	0.58	0.65	1	0.05	10	17	23	69	138	230	275	460	690	780	1150
PA12	75	4-5	0.28	0.65	1	0.05	10	17	23	69	138	230	275	460	690	780	1150
PC	120	2-3	0.28	0.7	0.3	0.01	19	31	41	124	250	413	495	826	1238	1400	1860
PU	90	2-3	0.45	0.65	0.3	0.02	17	29	38	115	230	383	460	767	1150	1530	2080
PBT	130	3-4	0.3-0.5	0.7	0.2	0.02	13	23	31	93	186	310	372	620	930	1100	1600
PE	90	1	0.55	0.6	0.01	＜0.01	47	80	106	318	637	1062	1275	2125	3185	3600	4800
PEI	150	3-4	0.6	0.6	0.25	0.02	11	20	27	80	160	265	320	530	800	1030	1370
PET	160	4-6	0.3-0.5	0.85	0.2	0.02	11	19	25	75	150	250	300	500	750	1150	1360
PETG	70	3-4	0.6	0.6	0.5	0.02	11	20	27	80	160	265	320	530	800	1030	1370
PEN	170	5	0.85	0.85	0.1	0.05	13	23	30	90	180	300	360	600	900	1150	1360
PES	150	4	0.7	0.7	0.8	0.02	13	23	30	90	180	300	360	600	900	1050	1400
PMMA	80	3	0.65	0.65	0.5	0.02	17	29	28	115	230	385	460	765	1150	1530	1730
PPO	110	1-2	0.4	0.5	0.1	0.04	19	33	44	133	265	440	530	885	1330	1730	2660
PPS	150	3-4	0.6	0.6	0.1	0.02	11	20	27	80	160	265	320	530	800	1030	1370
PI	120	2	0.27	0.6	0.4	0.02	24	40	53	160	320	530	640	1060	1600	1800	2400
PP	90	1	0.46	0.5	0.1	0.02	39	66	88	265	530	885	1060	1770	2655	3500	4000
PS(GP)	80	1	0.28	0.5	0.1	0.02	39	66	88	265	531	885	1062	1770	2655	3500	4000
PSU	120	3-4	0.31	0.65	0.3	0.02	12	22	29	85	173	290	345	575	865	1300	1485
PVC	70	1-2	0.2	0.5	0.1	0.02	19	33	44	135	265	442	530	885	1330	1730	2660
SAN(AS)	80	1-2	0.32	0.5	0.1	0.05	19	33	44	135	265	442	530	885	1330	1730	2660
TPE	110	3	0.7	0.7	0.1	0.02	18	30	40	125	250	413	495	826	1238	1650	1860

Notes: 1) Use separated drying hopper.

2) Specific model selection, please consult the letter easy service personnel.

1.4 Safety Regulations

Note!

Electrical installation of the machine should be done by qualified electricians.

Before connect through power supply, make sure that power switch specifications and security ratings are suitable and reliable, and also the main switch is turned to OFF. Turn off main switch and auto-start switch before service and maintenance.

1.4.1 Safety Signs and Labels

Danger!

High voltage danger!

This label is stuck on the electrical boxes.

Attention!

This label means that this area should be taken care!

Warning!

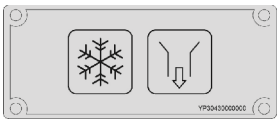
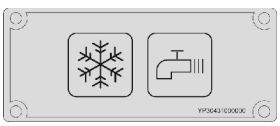
High temperature, take care of hands!

This label should be stick to the shell of heater.

Attention!

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

1.4.2 Signs and Labels

	Water outlet: cooling water outlet.
	Water inlet: inlet for replenishing water and cooling water.

1.4.3 Transportation and Storage of the Machine

Transportation

1) SD-H series honeycomb dehumidifiers are packed in crates or plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
2) After unpacked, castors equipped on the machine can be used for ease of movement.
3) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.
4) The structure of the machine is well-balanced, although it should also be handled with care when lifting the machine for fear of falling down.
5) The machine and its attached parts can be kept at a temperature from -25℃ to +55℃ for long distance transportation and for a short distance, it can be transported with temperature under +70℃.

Storage

1) SD-H series honeycomb dehumidifiers should be stored indoors with temperature kept from 5℃ to 40℃ and humidity below 80%.
2) Disconnect all power supply and turn off main switch and control switch.
3) Keep the whole machine, especially the electrical components away from water to avoid potential troubles caused by the water.
4) Plastic film should be used to protect the machine from dust and rains.

Working environment

Indoors in a dry environment with max. temperature +45℃ and humidity no more than 80%.

Do not use the machine

1) If it is with a damaged cord.
2) On a wet floor or when it is exposed to rain to avoid electrical shock.
3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.
4) This equipment works normally in the environment with altitude within 3000m.

5) At least a clearance of 1m surrounding the equipment is required during operation. Keep this equipment away from flammable sources at least two meters.
6) Avoid vibration, magnetic disturbance at the operation area.

Rejected parts disposal

When the equipment has run out its life time and can not be used any more, unplug the power supply and dispose of it properly according to local code.

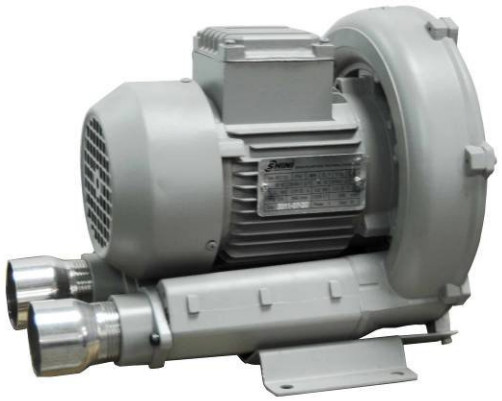
Fire hazard

 In case of fire, CO_2 dry powder fire extinguisher should be applied.

1.4.4 Safety Regulations for the Blowers

1) Under normal operation, the blowers will generate high temperature. Do not touch blower's case to avoid any physical injury.
2) Under normal operation, the blower motor's current loading will increase or reduce according to air pressure's change accordingly. While installation, an adequate motor overload protection switch should be installed with full loading test, to ensure operating safely under full-loading to avoid motor's damage.
3) To avoid any block materials, dust, powder, fiber particles and water drops entering the blower, and hence cause the deficiency of its performance. This machine is well designed with air filters, so please clean up the filter with any foreign particles (recommended to clean up this filter weekly).
4) Clean the blowers both internal and external parts (especially for the fan cooling path), and remove surface dust if necessary. If more dusts are accumulated, it will cause deficiency for ventilation, temperature rising, vacuum power reduced, vibration increased and so it will cause machine broke down.
5) Ball bearing, oil seal and soundproof are belonging to consumable parts and so it has a life period and requires regular replacement. Meanwhile, blade, external case, and metallic screen etc. should be replaced regularly for best performance.

6) Under normal operation, if the blowers are not running smoothly or abnormal noise appeared. Please immediately shut down the machine for repair.
7) Don't manual discharge material inside the hopper while its not or opening cleaning door while the material is not.



Picture 1-2: Safety Regulations for The Blowers

1.5 Exemption Clause

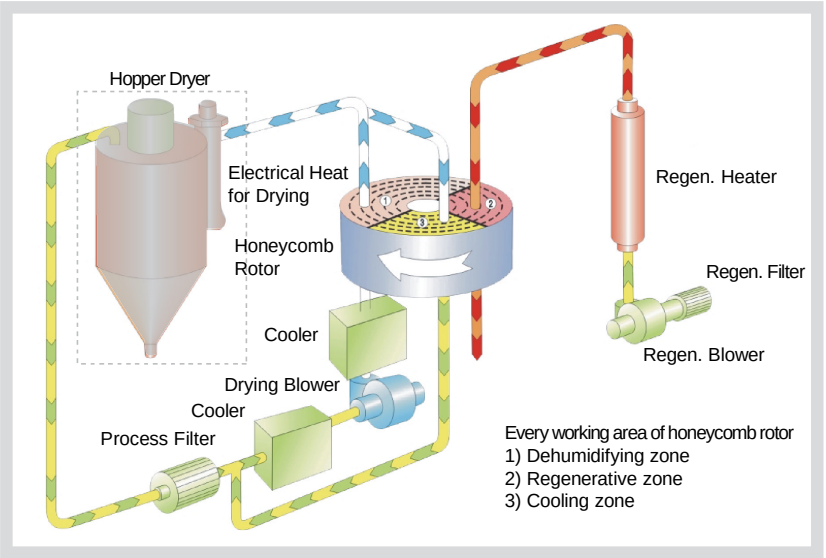
The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

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 Illustration

The moisture contained in the air which is waited for treating) will be absorbed by hygroscopic materials, hereafter, be de-absorbed by the regenerated hot air. And the two airstream work together in the rotation wheel. So, with the rotation of the wheel, moisture will be absorbed and de-absorbed continuously, and drain out via de-absorbing by regenerated air to form a steady low dew point airstream for using.

2.2 Relative Humidity and Dew-point

Relative humidity: Relative air humidity means real vapor content to saturated vapor at the same temperature in percentage.

Dew point: it means that temperature when the saturation vapor begins to dew. When the relative humidity is 100%, the ambient temperature is the dew point temperature. The more lower of dew point temperature (than the ambient temperature) is, the more less possible to dew, that also means the more drier the air is. The dew point will not be influenced by temperature, but influenced by pressure.

2.3 Why Choose SD-H

For these quality deficiencies as bubble, crazing, cracking, poor transparency are due to insufficient drying of plastic materials before molding, and the engineering plastics such as: PC, PA, PBT, PET, Nylon, etc. The hygroscopic materials used in the plastics industry such as PC, PA, PBT, PET, Nylon, etc. cannot be dried effectively by conventional hot air drying systems because the moisture enters inside the particles. According to suggestion of the manufacturer, the plastic materials can be completely dried by drying air with dew-point temperature ≤-20℃. However, the SCD sufficiently dehumidifies and dries the air inside the closed-loop system, and the dry air eliminates the moisture fast and completely as to reach the drying and dehumidifying effect.

3. Installation Testing

This series of models only could be applied in working environment with good ventilation.

Notes: After the new machine is put into operation or within two weeks after drying the virgin plastics, make sure to check whether there are a large amount of oily substances on the surface of the dry-air return filter. If there's the problem, stop using the machine and please contact Shini company to purchase the EOF oil filter to protect the honeycomb from being affected by the oil and gas separated from the material, so as to prolong the service life.

3.1 Machine Location

Picture 3-1: Installation Drawing

Installation Notice:

1) The machine can only be installed in the vertical position, make sure there’s no pipeline, fixed structure and other object which may obstruct machine installation or cause items, human injuries above the selected location and adjacent areas.
2) For easy maintenance, leaving 1m space around machine is suggested. Keep machine 2m away from the inflammable materials.
3) The machine must be placed on the ground level to ensure balance state, and to remove the accumulated condensing water. If machine is need to

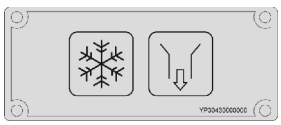
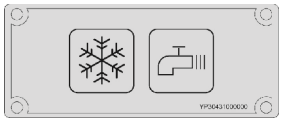
install on a higher level (scaffolding or interlayer), it should make sure that the structure and size could withstand the machine.

3.2 Power Connectors

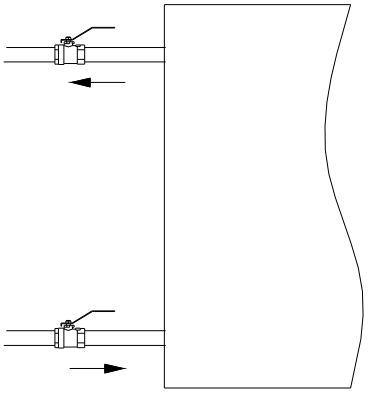
1) Make sure voltage and frequency of the power source comply with those indicated on the manufacturer nameplate, which is attached to the machine.
2) Power cable and earth connections should conform to your local regulations.
3) Use independent power cable and ON/OFF switch. The cable's size should not smaller than those wired in the electrical requirement of control panel.
4) The power cable connection terminals should be tightened securely.
5) The machine requires a 3-phase 4-wire power source, connect the power lead (L1, L2, L3) to the live wires, and the earth (PE) to the ground.
6) Power supply requirements:
   Main power voltage: ± 5%
   Main power frequency: ± 5%
7) Refer to the electrical wiring diagram to complete the electrical installation.

3.3 Water connections

The cooling water pressure is 3~5bar and the cooling water temperature should be 10~30℃.

	Water outlet: cooling water outlet.
	Water inlet: inlet for replenishing water and cooling water.

Cooling water needs to be connected the before operation. The water port is at the back of the machine.



Picture 3-2: Cooling Water Connection

3.3.1 Cooling Water Connection

Connect through the cooling water before machine operation. For the efficiency, please follow below suggestions:

1) For easy maintenance and safety, install the ball valve at cooling water inlet and outlet.
2) Water pipe diameter should not less than the diameter of cooling water inlet and outlet.
3) For water quality, it needs to sediment or filter the water before it gets into the pipe, to prevent the deposits accumulated on pipeline of cooler and performance degradation.

Cooling Water Specifications			
Model	**Flowrate of Cooling Water (L/min)**	**Model**	**Flowrate of cooling Water (L/min)**
SD-30H	4	SD-400H	50
SD-40H	5	SD-500H	60
SD-50H	6	SD-700H	80
SD-80H	10	SD-1000H	120
SD-120H	15	SD-1500H	180
SD-150H	20	SD-2000H	240
SD-200H	30	SD-3000H	360
SD-300H	40	SD-4000H	480

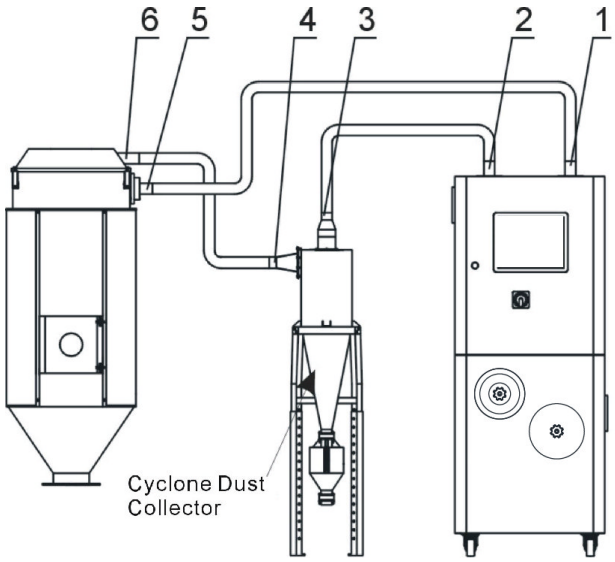
Note：1.Difference in temperature：5℃
2.Cooling water pressure：3~5Kgf/cm²

3.3.2 Condensation Drainage Pipe

During normal operation, it will generate condensation water. Connect the water pipe at drainage outlet to remove the condensation water is necessary.

1) Drainage pipe inner diameter should not less than the diameter of drainage outlet.
2) Drainage pipe should be long enough to approach the drainage channel, and be the hose. Be careful not to press or bend the pipe for smooth water flow (Use the rigid pipe if there’s need to press or bend the hose).
3) As condensation water drainage is in terms of gravity, make sure the drainage outlet is above the pipe. Otherwise the water can’t be drained out and will flow back to the machine.

3.4 Cyclone Dust Collector

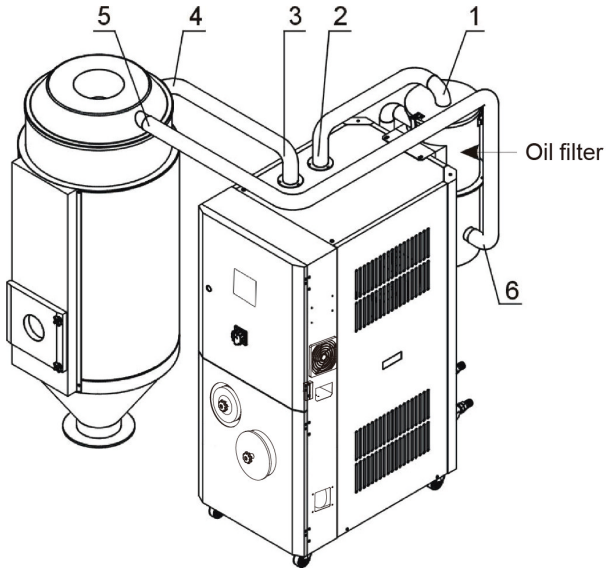


Picture 3-3: Installation Diagram of Cyclone Dust Collector

Cyclone Dust Collector Installation steps:

1) Connect 1 and 5 with a heat-resistant duct and fixed both the ends with stainless steel tube.
2) Connect 2 and 3 with a heat-resistant duct and fixed both the ends with stainless steel tube.
3) Connect 4 and 6 with a heat-resistant duct and fixed both the ends with stainless steel tube.

3.5 Oil Filter



Picture 3-4: Installation Diagram of Oil Filter

Oil filter installation steps:

1) Screw the oil filter on the top plate of the honeycomb dehumidifier.
2) Connect 1 and 2 with a heat-resistant duct and fixed both the ends with stainless steel tube.
3) Connect 3 and 4 with a heat-resistant duct and fixed both the ends with stainless steel tube.
4) Connect 5 and 6 with a heat-resistant duct and fixed both the ends with stainless steel tube.

4. Application and Operation

4.1 Panel Description

4.1.1 System Initialization Screen

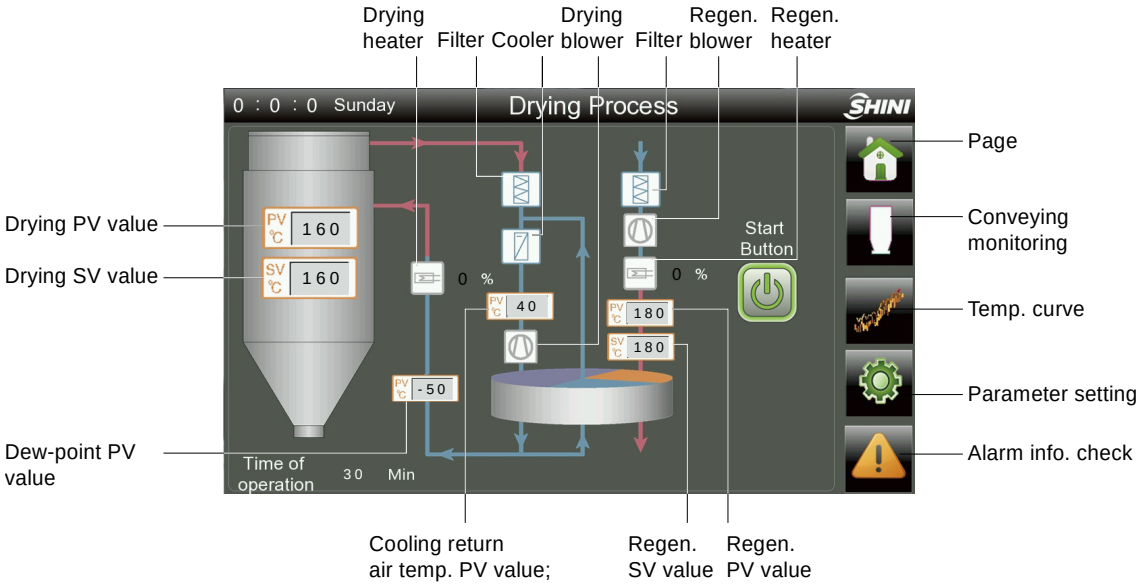
After the system is powered on, the touch screen displays the initial screen, as shown in the picture below:

Touch the <English> or <Chinese> button at the screen bottom to select the English or Chinese screen, and then enter the drying monitoring screen.

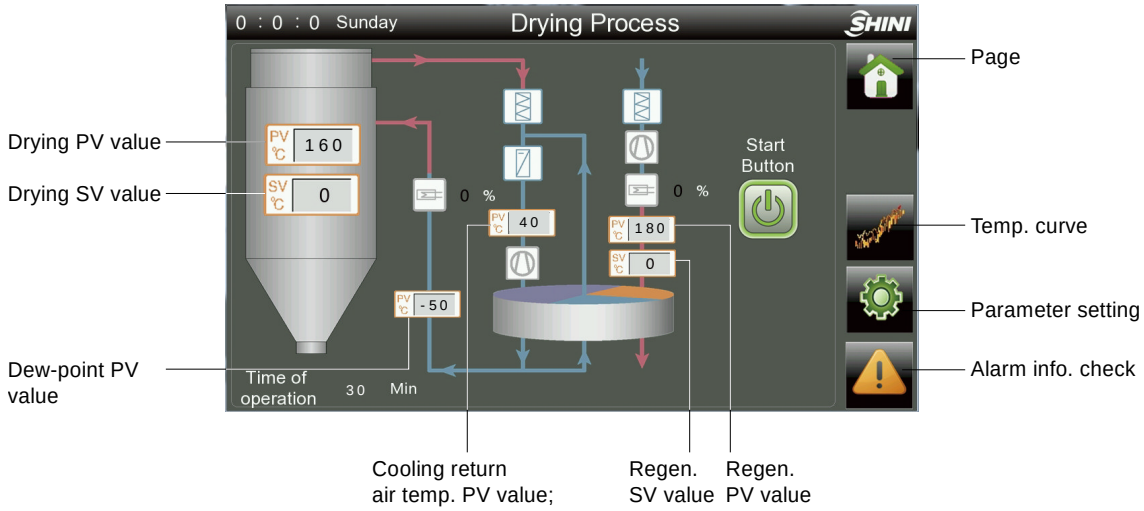
Picture 4-1: System Initial Screen

4.1.2 Drying Monitoring

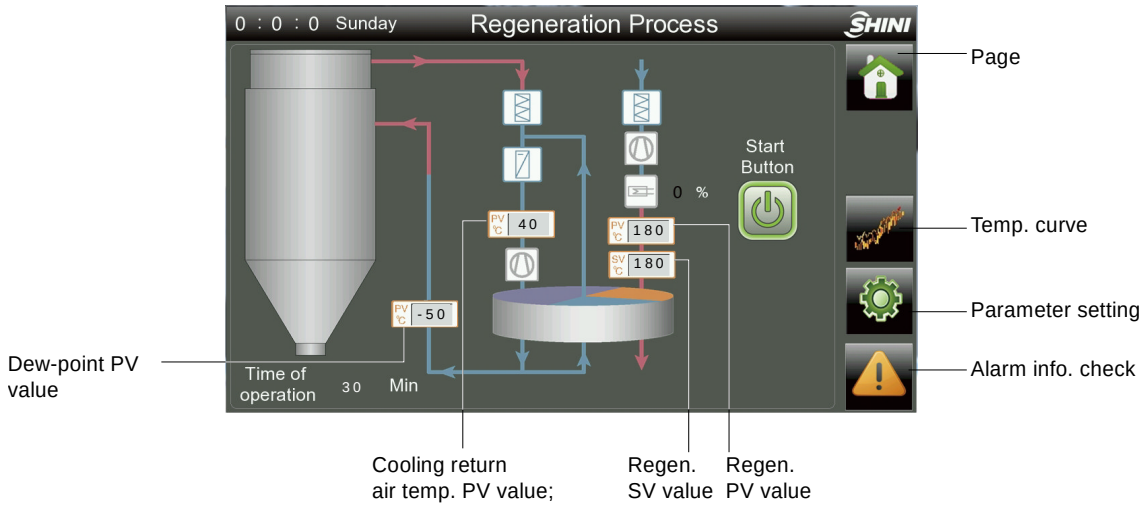
The drying monitoring screen is as shown in the Picture below:



Picture 4-2：SCD Series Drying and Monitoring Screen



Picture 4-3：SDD Series Drying and Monitoring Screen



Picture 4-4：SD Series Regenerating & Monitoring Screen

4.1.2.1 Opening System

Touch the <Running Switch> to make it display ON state, and the system is put into operation.

4.1.2.2 Shut down the system:

Click the running switch again to make it display the OFF status, and the system stops running.

Note: To improve the honeycomb's service life, the honeycomb

rotor needs a delayed shutdown cooling time after the system shutdown, which is generally set as 3 mins.

4.1.2.3 Set the Drying Temperature

Touch < drying SV value > on the drying barrel, and a numeric keyboard pops up, and enter the temperature value through the keyboard.

4.1.2.4 Set the Regen. Temperature

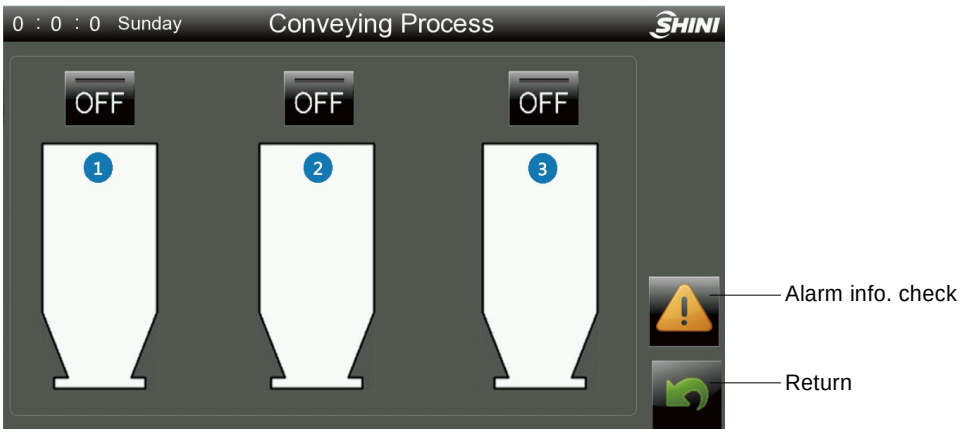
Touch the <regen. temp. set value SV> above the honeycomb, the system will pop up a numeric keyboard and input the temp.value through the keyboard.

Attention!

Drying temp. and regenerative temp. value are set within certain limits. The regenerating temp. value is already set to be 180℃ before being deliveried. Please don't reset it if no special occasion！

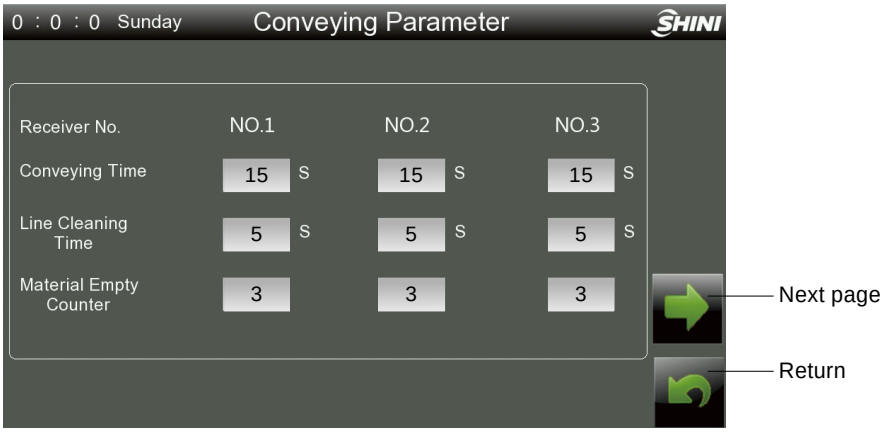
4.1.3 Conveying Monitor (Only for SCD model)

Touch the <Conveying Monitoring> button on the drying monitoring screen to enter the conveying monitoring screen, as shown in the picture below:

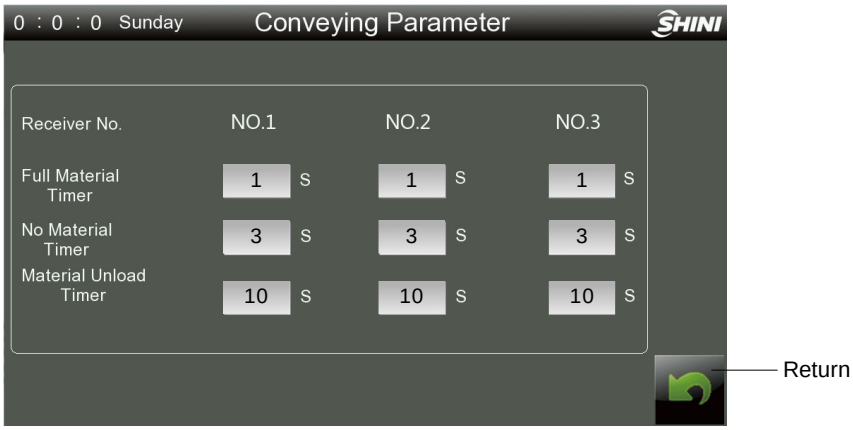


Picture 4-5：Conveying Monitoring

Click the middle area of any hopper on the "Conveying Monitoring" interface to enter the setting interface of conveying parameter.



Picture 4-6：Primary Conveying Parameter Setting



Picture 4-7：Advanced Conveying Parameter Setting

Attention!

The parameters have been set to preset values when the machine leaves the factory. No resetting is permitted without permission! The conveying time, especially, can not be set too long as to avoid pipeline blockage.

Conveying time (1~999S)

When the system detects the hopper lack of materials, it will time the material signal. When it lasts for 3 secs., the PLC outputs the driving signal to make the suction motor run and feed the injection molding machine. Meanwhile, when it times the suction, the conveying stops after the suction time is reached; and the suction times increase once.

Material shortage times (1~999 times)

When feeding the injection molding machine, it restricts the suction times in case of lasting shortage signal. After it reaches the set suction times, the system will stop feeding the machine; Meanwhile, it will give out the alarm signal of suction failure to remind users to check the storage hopper whether it is shortage or other suction failures.

Shut-off time (1~999S)

The opening time of corresponding shut-off valve during each suction.The length of time corresponds to the amount of materials discharged by the drying hopper, and the longer the time, more of materials will be discharged. Shut-off can avoid material residuals in the pipe and empty the material pipe.

In primary suction menu, click to enter the advanced suction parameters.In order to avoid abnormalities caused by operator misoperation, it's necessary to input the password when entering the advanced suction menu (3333).

Full material detection time (Unit: secs.)

After each suction, once the system detects the material level lasts for this time, it means the suction is successful (Default value: 1S);

Discharge detection time (unit: secs.)

When the system detects the hopper is short of materials, it will count down the shortage signal. When it lasts for the time, the system will judges whether is in the shortage state (Default value: 3S)

Discharge detection time (unit: secs.)

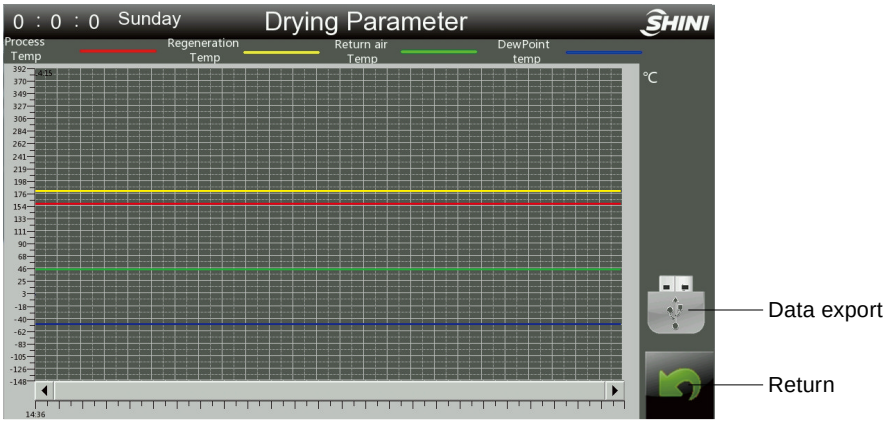
It is the time to judge the material level signal after once suction of the hopper (Default value:10S);

Attention!

It's not recommend to leave long shut-off time, otherwise material residues will be left in the pipeline due to insufficient suction, thus affecting the drying effect.

4.1.4 Temperature Curve Monitoring

Touch the <Temp. Curve> button in the drying monitoring screen to enter the temperature variation trend screen, as shown in the figure below:



Picture 4-8：Temperature Curve (Only for SCD/SDD model)

Picture 4-9：Temperature Curve (Only for SD model)

4.1.4.1 Data Export Steps

Click the < Data Export > button to export the temperature data to the USB disk.

Attention!

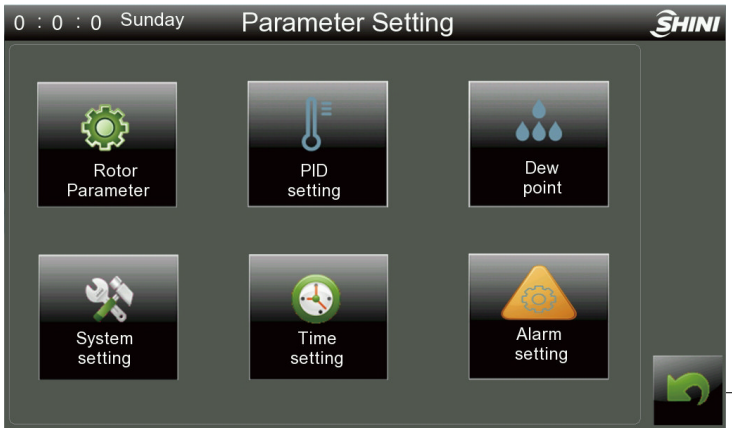
1) The data export takes 5 ~ 10s.

2) To prevent data loss, it's forbidden to plug and unplug the USB disk during data export.

4.1.5 Parameter Setting

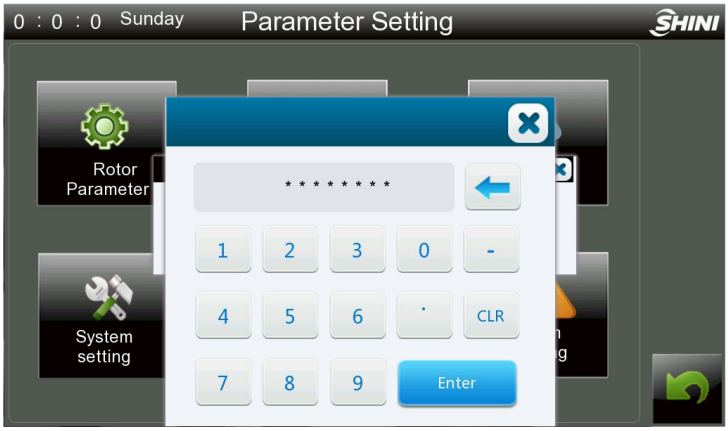
Touch <Setting Button > on the "Drying Monitoring" interface to enter the parameter setting screen. When setting relevant parameters, it needs to enter the password to determine whether the user is qualified ((Operator: 3588, Administrator: 3333).

It's unavailable to enter the screen when the password is wrong, and the system will pop up the password box to let the user input the password again. Click to return to the drying monitoring interface.



Picture 4-10：Parameter Setting

Picture 4-11： Password Input



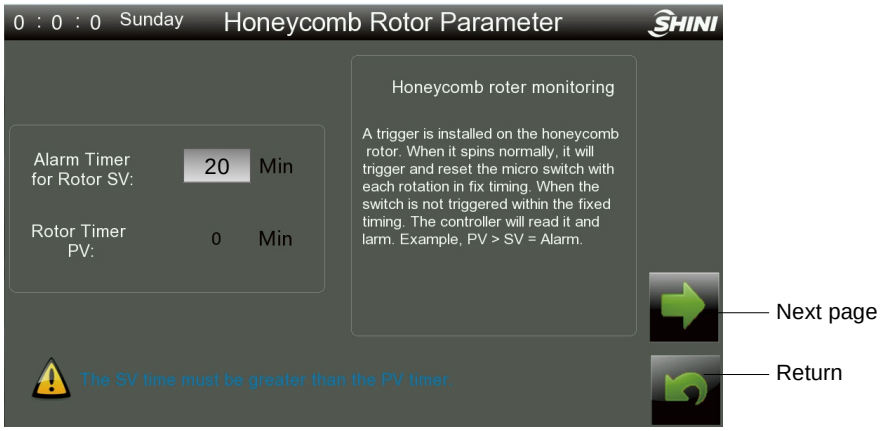
Picture 4-12：Password Keyboard

4.1.5.1 Rotor Parameter Setting Screen

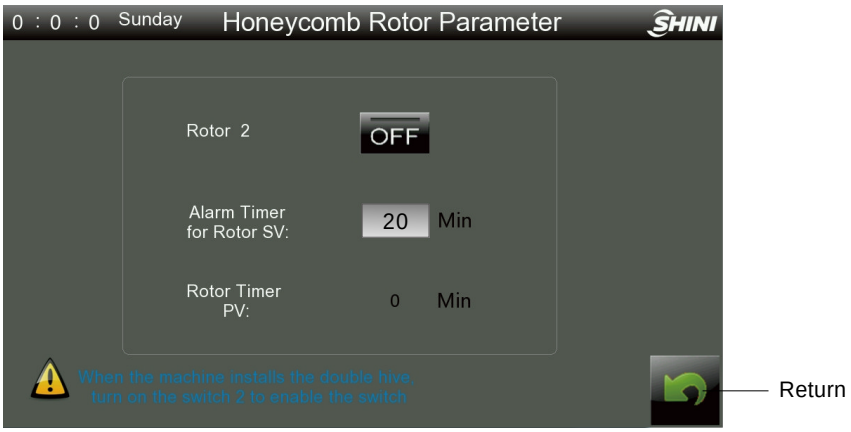
Click the rotor parameter setting button in the parameter setting screen to enter the screen:

According to the model, the warning time is set to 5-15 mins.

In the rotor parameter setting menu, click to enter the parameter setting screen of rotor 2 (Rotor 2 parameter setting interface is for SD model). In order to avoid abnormalities caused by operator misoperation, it's necessary to input the password when entering the advanced suction menu (3333). It's forbiddened to turn on the enabling switch of rotor 2 unless the machine is installed with double honeycombs. Otherwise, it will cause abnormal alarm and machine shutdown.



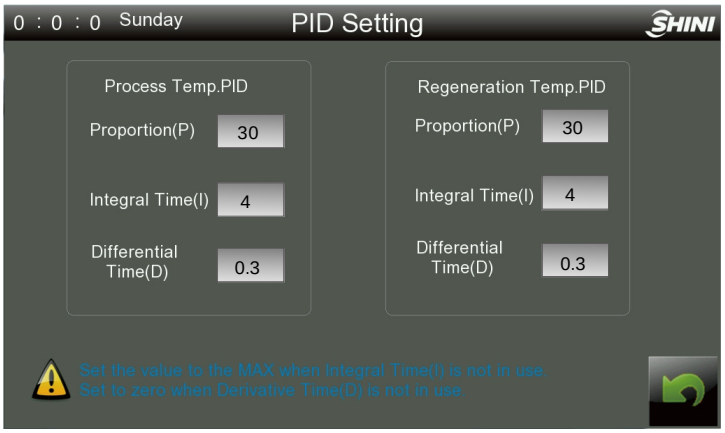
Picture 4-13：Rotor Parameter Setting



Picture 4-14：Rotor 2 Parameter Setting (Only for SD Series Model)

4.1.5.2 PID Setting

Click the “PID” button in the parameter setting screen, and the system will pop up the PID temp. control parameter screen as shown in the picture below.

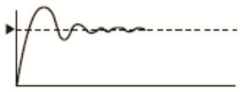
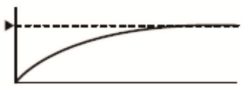


Picture 4-15：PID Parameter Setting

When the temperature control is incorrect, the user can adjust the P.I.D temperature control parameters by manual to achieve the best control effect.

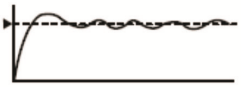
Adjustment of Proportion (P)

Table 4-1：Adjustment of Proportion

P increases		After the oscillation, the curve will be settled and back to setup point.
P decrease		The curve increases gradually in order to maintain a long reliable period against over oscillation.

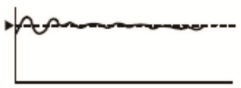
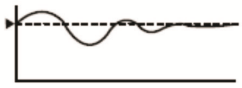
Adjustment of Integral Time (I)

Table 4-2：Adjustment of Integral Time

I increases		For default value requires a longer time for steady status. But, it still has over pulse/under pulse and oscillation occurs.
I decrease		After the occurrence of over pulse/under pulse and oscillation, but the curve tends to rise rapidly.

Adjustment of Differential Time (D)

Table 4-3：Adjustment of Differential Time

D increases		Over pulse/under pulse and steady time become less, but the curve has small oscillation.
D decrease		Over pulse/under pulse increases, the duration for setup value requires certain time.

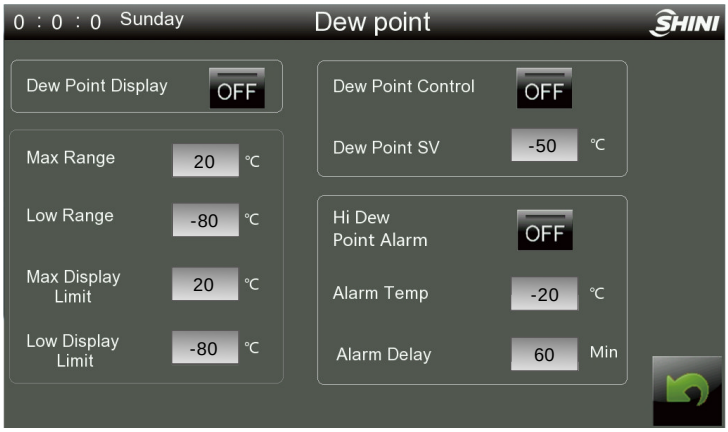
4.1.5.3 Dew-point Parameter Setting

Click the dew-point setting button to enter the dew-point parameter setting interface, which can set:

1) Dew-point range and upper and lower limit of the dew-point value.
2) Dew-point display function: After it turns on the switch, it will display the dew-point PV value on the drying monitoring screen.
3) Dew-point temp. control function: Turn on the switch, set the dew-point SV value, and the system will control the heating function of the machine automatically according to the dew-point SV.
4) High dew-point temp. alarm function: Turn on the high dew-point alarm switch, and set the high dew-point alarm temp.and time;

High dew-point alarm function principle: Turn on the switch of the high dew-point alarm, input the high dew-point alarm temp. (Default value: - 20 ℃), and input the dew-point alarm time (Default value: 60Min). After the system continues to run the dew-point alarm time, once the system detects the dew-point PV value is greater than the high dew-point alarm temp., the system will send out the high dew- point alarm, and it will release the high dew-point alarm immediately till the

dew-point PV value is less than the high dew-point alarm temp.



Picture 4-16：Dew-point Parameter Setting

4.1.5.4 System Setting

Click the system setting button in the parameter setting screen to enter the screen, which can set:

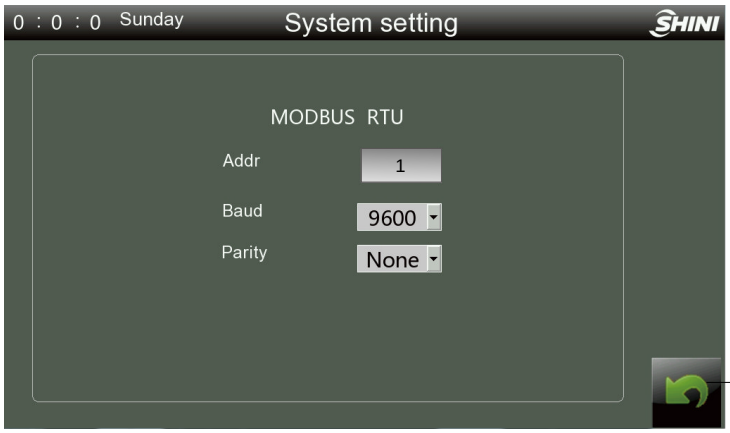
1) System delay stop time: the default min. time is three mins., if the input value is less than three mins., the system will prompt the user to enter the value again.
2) PLC system time
3) Temperature conversion between ℃ and ℉;
4) Adjust the brightness of the touch screen
5) Modbus Rtu comm. parameter（Click the <Next Page>button to enter）:
   (a) Station address：1-247
   (b) Baud rate：9600/19200
   (c) Parity check: no parity, odd parity, even parity
6) System model selection：SCD SDD SD

Note！

The model of the machine can’t be changed during its operation.

7) Hopper 1 shut-off valve function（reserved）

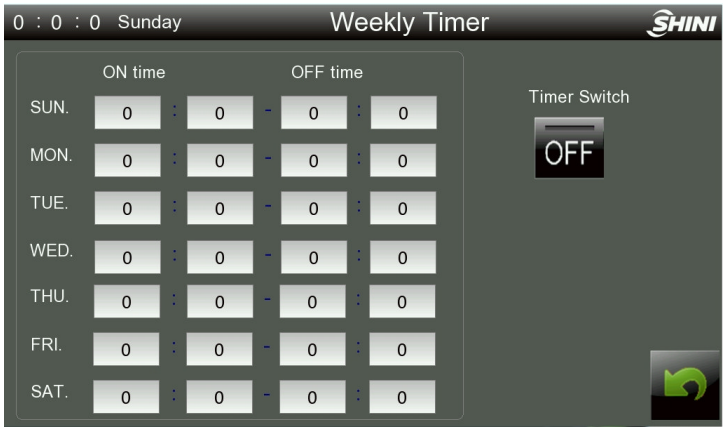
Picture 4-17：System Parameter Setting 1



Picture 4-18：System Parameter Setting 2

4.1.5.5 One-week Timer Setting Screen

Touch the “One-week Timer” button on the parameter setting menu to enter the timer parameter setting screen as shown in picture below:

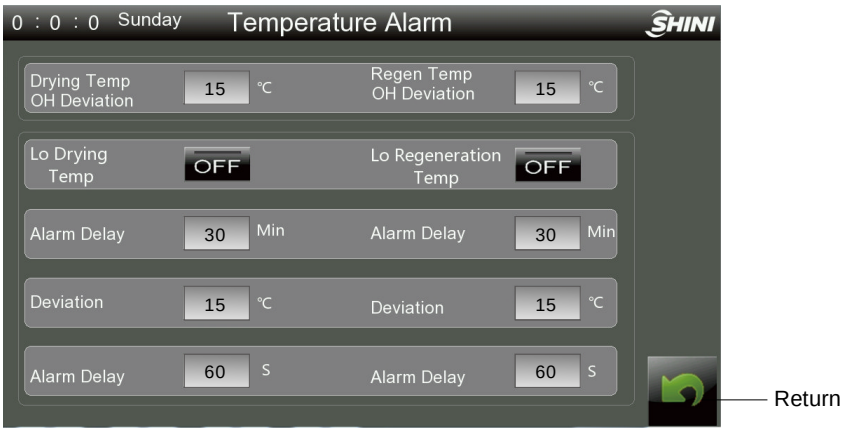


Picture 4-19：One-week Timer Setting

Prompt：After setting the auto-run time, pressing button "OFF" to activate one week timer.

4.1.5.6 System Alarm Setting

Click the alarm setting button in the parameter setting interface to enter the alarm setting, and then click to return to the parameter setting interface.



Picture 4-20：System Alarm Setting

Overheat deviation: Input the overheat deviation value (Default value is 15 ℃). In system running process, when it detects the PV value (drying or regeneration) exceeds the SV value (drying or regeneration) + overheat deviation value, the system will send out overheat alarm immediately.

Failure alarm function principle: Turn on the low temp. alarm switch, and input the heating failure alarm delay time. Within the heating failure alarm delay time, if the control temp. PV value can't reach - 5 ℃ of the set SV value, the system will send out the heating failure alarm, which will not release the alarm until the control temp. PV value reaches or even exceeds - 5 ℃ of the set SV value;

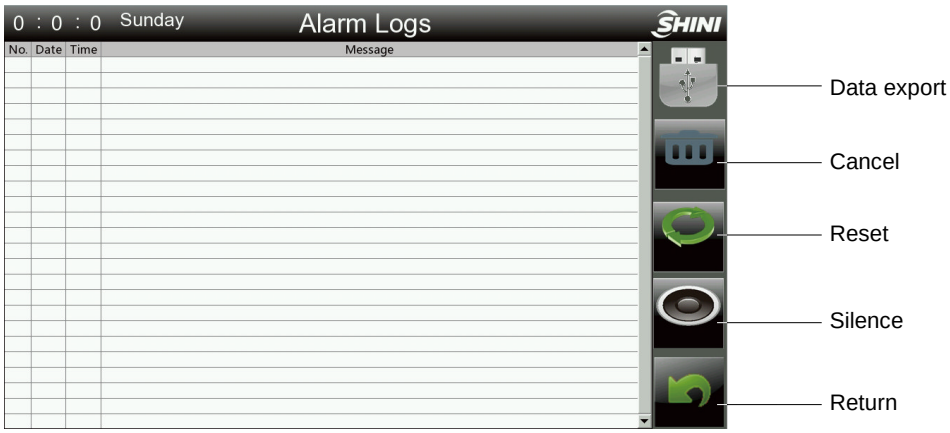
Low temp. alarm: Input the low-temp. deviation value (Default value is 15 ℃) and input the low-temp. alarm delay time (Default value is 60s). After running the system and the PV value rises to SV value, if the system detects that the PV value (drying or regeneration) is lower than the SV value - low temp.deviation value, and lasts the low temp. alarm delay time, it will send out low temp.alarm. When the system detects that PV value (drying or regeneration) is greater than the SV value - low temp. deviation value, the system will cancel the low temp.

alarm.

4.1.6 Alarms Fault Records

Touch the "Alarm Fault Records" button at the bottom of the dehumidification and drying monitoring screen or conveying monitoring screen to enter the alarm fault record screen, which is shown as below:

Click<Data Export> button to export the temp. data to U disk,



Picture 4-21：Alarm Fault Record

Attention!

It takes 5-10S to export the data.

In order to prevent data loss, it’s forbidden to plug out the U disk when exporting the data.

1) When the aarm fault records exceed the display range, you can check all the alarm information by click the scroll down and up keys.
2) According to the displayed alarm information, check the troubleshooting methods of the faults to solve the troubles.
3) Press the <Return> button to exit the alarm fault record screen.
4) Press the < Reset > button to dismiss the alarm and reset to the normal state

Table 4-4：Alarm Information List

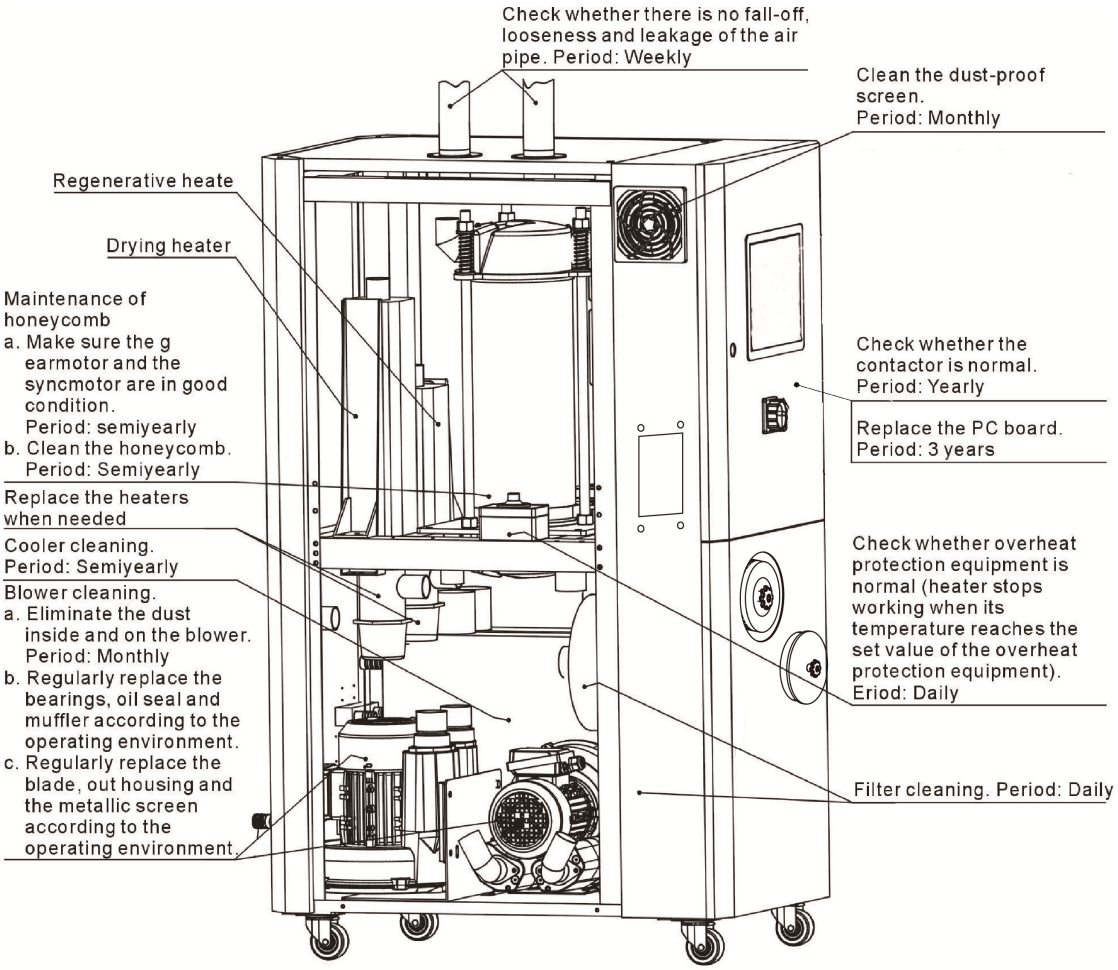
Alert Message	Results	Possible Causes
Auti-phase	System cannot operate, and the visible alarm is flickering.	Low voltage, phase shortage and phase error
Process blower overload.	Dehumidifier does not work and the visible alarm is flickering.	Low voltage, blower fault, thermal overload relay setting current is wrong.
Regenerating blower overload.	Dehumidifier does not work and red alert light is flickering.	Low voltage, blower fault, thermal overload relay setting current is wrong.
Conveying blower overload.	Material conveying stops and the visible alarm is flickering.	Motor overload setting error or motor fault.
No.1 receiver suction problem	No.1 receiver stop suction function and the visible alarm is flickering.	Material storage hopper shortage, suction detector fault, parameter setting error, shut-off valve fault;
No.2 receiver suction problem	No.2 receiver stop suction function and the visible alarm is flickering.	Drying material storage hopper shortage, suction box fault, parameter setting error, shut-off valve fault .
No.3 receiver suction problem	No.3 receiver stop suction function and the visible alarm is flickering.	Drying material storage hopper shortage, suction box fault, parameter setting error, shut-off valve fault.
Process temperature overheat	Dehumidifier does not work and the visible alarm is flickering.	Temp. control parameter setting error, contactor conglutinated, drying thermocouple failure, and drying blower failure.
Regenerating temp.overheat	Dehumidifier does not work and the visible alarm is flickering.	Temp. control parameter setting error, contactor conglutinated, drying thermocouple failure, and drying blower failure.
Temp. overheat	State information displays on the screen	The cooling water is disconnected or overheat.
Process temp. thermople broken	Dehumidifier does not work and the visible alarm is flickering.	Thermocouple disconnected or bad contact, thermocouple is reversely connected.
Regenerative thermocouple broken	Dehumidifier does not work and the visible alarm is flickering.	Thermocouple disconnected or bad contact, thermocouple is reversely connected.
Return air thermocouple broken	Dehumidifier does not work and the visible alarm is flickering.	Thermocouple disconnected or bad contact, thermocouple is reversely connected.
Rotor is not working	Dehumidifier does not work and the visible alarm is flickering.	Motor blockaged or broken, belt broken, speed controller broken, rotor parameter setting error.

Note：1) Overload Relay reset: Open control box, press "RESET" button on the corresponding overload relay.
2) Rotor Failure Alarm reset: Turn off the Drying Switch and then turn it "ON" again.
3) Over Temperature Alarm reset: Turn off the Drying Switch and then turn it "ON" again after the temperature drops down.

5. Trouble-shooting

Troubles	Possible causes	Solutions
Abnormal temp. fluctuations.	1. Too short of time since start of the machine. 2. Improper parameters for temp. controller.	1. Wait for a while. 2. Check the parameters of temp. Controller.
Heater temp. can not rise up.	1. Temp. Setting is too high. 2. Contactor of heater is bad. 3. Heater is damaged. 4. Problems of thermocouple. 5. Parameter of temp. controller is set to STOP. 6. Temp. controller output problems.	1. Set heater temp. under 180℃. 2. Replace contactor. 3. Replace pipe heater. 4. Replace thermocouple. 5. Set temp. controller under working mode. 6. Replace or repair temp. controller.
Breaker tripping off when connects with power supply.	1. Short circuits of main circuit. 2. Short circuit of transformer. 3. Problems of breaker.	1. Check the circuit. 2. Replace the breaker. 3. Replace the breaker.
Circuit breaker trips right after system switch on.	1. Blower short circuits 2. Problems of the breaker.	1. Please check the blower 2. Replace the breaker.
Blower rotating on the contrary with arrow	Blower circuit connection reverse phase.	Exchange two of theel ectrical wires.
Blower not turning	1. Motor fault. 2. Failures of solenoid switch.	1. Check and change. 2. Change or repair.
Blower not rotating and not heating	1. Overload jumped. 2. Transformer fault. 3. Micro line trip 4. Power supply fault.	1. Check and change. 2. Check and change. 3. Check and change. 4. Check if lack of phase.
No temperature for blower runs while	1. Lead sheet of heater pipe melted. 2. Magnetic switch fault. 3. Heater fault. 4. Controller fault. 5. Thermocouple fault.	1. Check and change. 2. Check and change. 3. Check and change. 4. Check and change. 5. Change.
The blower can run but temperature is too low	1. Lead sheet of heater pipe fault. 2. EGO breaked. 3. Magnetic switch is lack of phase. 4. Controller is damaged .	1. Check and change. 2. Check or re-set. 3. Check and change. 4. Change the temperature controller.
The blower can run but temperature is too high	1. Hot-air pipe is jam. 2. Controller is fault. 3. Magnetic switch contacts stuck up.	1. Cleaning. 2. Change the controller or adjust PID. 3. Change.

6. Maintenance and Repair



Note!

1) Turn off the main switch and control switch and unplug the cord from power supply before service and maintenance.
2) Be sure not to modify electrical wiring or reassemble the electrical components inside of the control box.
3) Always refer to the electrical diagram of this manual to check and maintain the electrical wiring problems.
4) Service and maintenance of the electrical parts should only be carried out by qualified electricians.

6.1 The Useful Life of the Key Parts of the Product

Table 6-1: The Useful Life of The Key Parts of The Product

Name of the parts	Useful life
Blower	Above 5 years
Process heater	Above 1 year
Regen. heater	Above 1 year
Contactor	Above 2000,000 act
Honeycomb	5 years
Filter	1 year

6.2 Filter

Please periodically clean the dust on the air filters, once per week.

Cleaning steps：

1) Take out the air filter carefully.
2) Blow off the dust on the air filter screen and the cover with pressure air.
3) Wipe off the barrel wall of air filter with dishcloth.
4) After cleaning, place all parts in reversed order carefully.
5) Please ensue that the filter is well seal with metal frame.

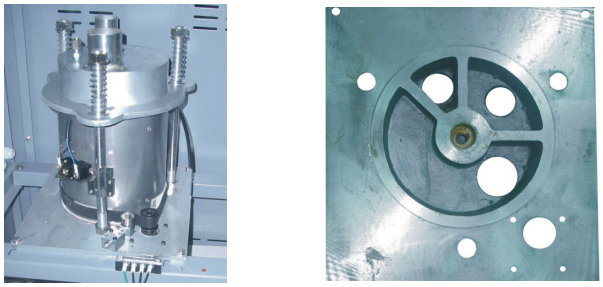
Picture 6-1: Filter

Note: Don't let foreign object enter into the barrel, when taking out the air filter.

6.3 Honeycomb-rotor

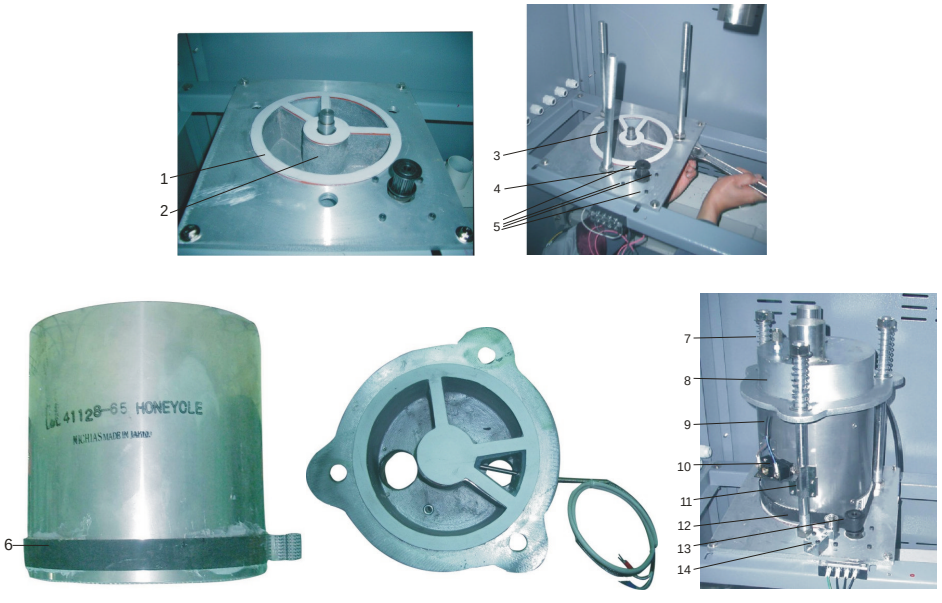
6.3.1 What is Honeycomb-rotor?

The main body of the honeycomb-rotor is a honeycomb, made by ceramic fibre and organic additives, sintered under high temperature with molecular sieve and silica gel, to be strongly bonded together and form a solid and hard surface. Not like common molecular sieve, which will produce dusts and fines to pollute raw materials when aging or become saturated requiring regular replacement, the moisture of return air is quickly absorbed by numerous tunnels before coming out of the rotor to form low dew-point air. At the same time, regenerating blower takes dry air into the honeycomb-rotor from an opposite direction to regenerate the rotor.



Picture 6-2: Honeycomb Rotor

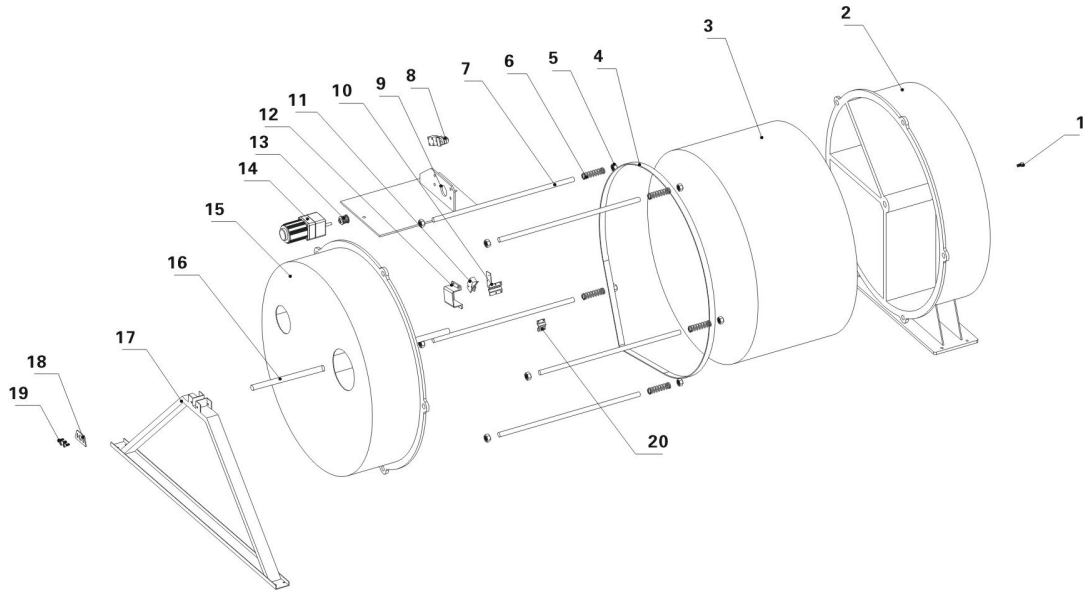
6.3.2 Installation of the Rotor (SD-40H~700H)



Picture 6-3: Installation of The Rotor (SD-40H~700H)

1) The upper and lower lid of honey-comb should install Teflon gasket (Fig. 1).
2) Use 4 screws to fix the rotor base on the machine frame firmly, and then install the shaft accordingly (Fig. 2).
3) Install the gearmotor and transmission gear (Fig. 4).
4) Install and fix the main support screws (Fig. 3).
5) Fit the transmission belt in proper position (Fig. 6).
6) Install the honeycomb-rotor (Fig. 9) and transmission belt (Fig. 12).
7) Fix the rotor top cover (Fig. 8).
8) Fit all springs and tighten the screws (Fig. 7).
9) Install both the transmission belt (Fig. 13) and belt tension regulator (Fig. 14).
10) Install micro-switch and fixed board firmly (Fig. 10).

6.3.3 Installation of the Rotor (SD-1000H~4000H)



Picture 6-4: Installation of The Rotor (SD-1000H~4000H)

1) Use one solid strap or applicable washer to lifted or block up to the wheel 3 to align the wheel bearing bore and fixed honeycomb lid 2 center hole.
2) Use honeycomb shaft 16 to penetrate the wheel 3 and fixed honeycomb lid 2, and install synchronic belt 4 on the rotor 3.

3) Install removable lid 15 on the honeycomb shaft 16, and use honeycomb mounting bracket 17 to sustain the shaft.
4) Use inner hexagonal screw 1 to fix the plate 18 on the shaft 16.
5) Use hexagonal nut 5、double-headed screw bolt 7 and spring 6 to fix the removable lid 15, which ensures good seal at the ends of the honeycomb-rotor.
6) Use fixed iron sheet 20、fixed iron sheet 10 to fix microswitch 10, this ensures that the direction of shell fragment of microswitch 10 is the same as rotating rotor 3, and then install the box of microswitch 12.
7) Use two solid straps to fix honeycomb lid 2 and honeycomb mounting bracket 17, then install components on the bracket.
8) Install motor cabinet 9 on the bracket, then install gearmotor 14 and synchronic wheel 13 and synchronic belt 4.
9) Install belt tightener on the motor cabinet to make belt tightener rotate without slipping.

6.3.4 Honeycomb Cleaning Steps

1) Use a vacuum-cleaner with brush to suck up the dust on rotor surface.
2) Blow off the dust in the rotor channels with compressed air.
3) If there is dirt sticking to the channel walls inside the rotor, cleaning steps as follows:

a. Saturate the rotor by blowing humid air (higher than 60%RH) through the rotor without having regeneration circuit on. This can be done by just turning the regeneration heater off and still have the process blower running if process air has high humidity. If the process air is too dry try to put a humidifier in the air stream. Do this for one hour.
b. Depending on the character of the dirt, sink the rotor into water with cleaning agent in it (PH value 3~2 liquid is applied to silica gel, PH value 7~10 applied to molecular valve). Greasy dirt should be put into a detergent solution with xylene. 15 minutes cleaning is suggested.
c. Take the rotor out of the liquid and let it rest with the channels vertically for 5 minutes so the liquid can run out.
d. Blow off the residual liquid in the channels with compressed air.
e. Put the rotor back into the dehumidifier and run the unit with regeneration circuit (the regeneration temperature between 50℃ and 60℃) on for at

least one hour.

Note:

1. Note that in the dry air and wet air outlets, there will be high concentrations liquid out for some time. If a solvent has been used, there will be a residual smell for several days.
2. For some dirt which is greasy and sticky in the rotor, 100% elimination is impossible. The only one thing you can do is to replace the rotor for the cleaned rotor performance can only be recovered partly.

6.4 Cooler

1) Clean the cooler and eliminate the leakage regularly.
2) Please do the above-mentioned job once a month for cooling by chilled water.
3) As for the cooling by normal water, do the same job once a quarter.

Cooler clear step:

1) Disassemble the cooler's pipe and screw, and remove the cooler out of the chiller.
2) Release the fixed screw on the upper and lower cover of cooler and disassemble the cover.
3) Use brushes, compressed ed air or low pressure water to clean the dust and sundries on the cooler fan and copper pipe.

   Notes: water residue on the cooler fan and copper pipe should be dried with compressed air.
4) Make the cooler's upper and lower cover junction clean enough and smear the silica gel then fixed the covers with screws.
5) Put the cooler on the air at least 4 hours to make the silica gel drying enough then fix the cooler on the chiller and connect all pipes.

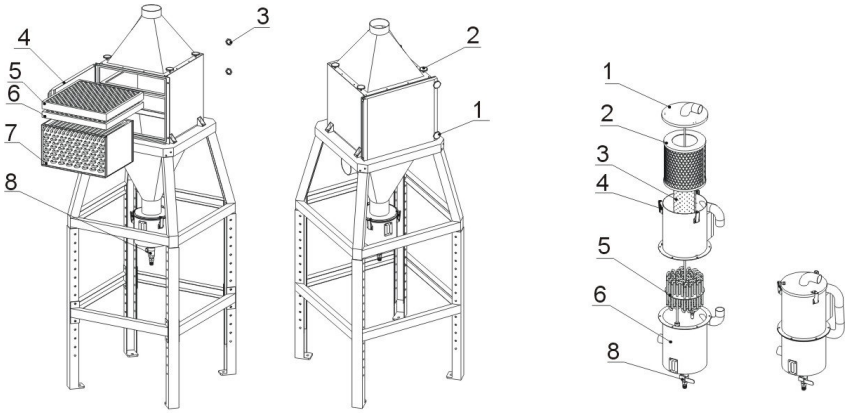
6.5 EGO

The EGO value has been setting before out factory, Don't modify it.

	Default Value
Drying	200˚C
Regenerating	200˚C

Picture 6-5: EGO

6.6 Oil Filter Cleaning



EOF-1000~4000 EOF-30~500

Picture 6-6: Oil Filter

1. Filter cleaning steps of EOP-30~500:
   1) Open snap hook 4, take out tank cover 1, stainless steel filter 2 and activated carbon filter 3.
   2) Loose butterfly nut, take out stainless steel filter 2, and remove away dust and oil from it by pressured air.
   3) Loose butterfly nut, take out activated carbon filter 3 and replace activated carbon.
   4) Open oil storage bin 6, take out cooler 5 and remove away dust and oil from it by pressured air.

5) Install oil filter after cleaning.

3. Filter cleaning steps of EOF-1000~4000:

1) Loose hexagon nut 1 and open material clearance door 4.
2) Loose hexagon nut 2, take out stainless steel filter 6 and middle efficient filter 5, remove away dust and oil from stainless steel filter and middle efficient filter by pressured air.
3) Loose fixed nut 3, take out cooler 7 and remove away dust and oil from it by pressured air.
4) Install oil filter after cleaning.

6.7 Maintenance Schedule

6.7.1 General Machine Information

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____V Frequency _____ Hz Power _____ kW

6.7.2 Check After Installation

☐Check that pipe connections are firmed locked by clips.

☐Check that the piping system is correct.

☐Check if the honeycomb-rotor is damaged or not.

Electrical Installation

☐Voltage: _____ V _____ Hz

☐Fuse melt current：1 Phase_____ A 3 Phases _____ A

☐Check phase sequence of the power supply.

☐Check the rotating direction of blower fans.

6.7.3 Daily Checking

☐Check power supply wires.
☐Check the start/stop function.
☐Check the temperature controller.
☐Clean the filter.
☐Check whether overheat protection is normal.
☐Check whether dew-point is normal.

6.7.4 Weekly Checking

☐Check if there are loose connections of electrical components.
☐Check and clean air filter.
☐Check the function of solenoid valve.
☐Check motor overload relay and anti-phase function.
☐Check whether air pipe is shed, leaked and loose.

6.7.5 Monthly Checking

☐Check if the transmission belt is loose or not.
☐Check the performance of gear motor.
☐Check if there are leakages in honeycomb-rotor.

6.7.6 Half-yearly Checking

- ☐ Check if there are damages of heat-resistant hoses.
- ☐ Check the pipe heaters.
- ☐ Check regen./process blower and blower fans.
- ☐ Check whether honey-comb rotor belt is damaged.
- ☐ Clean the cooler.

6.7.7 Yearly Checking

- ☐ Check whether the contactor is normal [1].

6.7.8 3 year Checking

- ☐ PC board renewal.
- ☐ No fuse breaker renewal.

Note: 1. Manufacturer laboratory data for AC contactor is two million times in life. we suggest service life for one million four hundred thousand times, if work eight hours per day, recommended replacing frequency is 1.5 years, if work day and night, replacement is suggested to be done every six months.