

# **SDL-U-HD Series**

**Heatless Dehumidifying Compact Dryer**

Date: Sep. 2017

Version: Ver.D (English)





## Contents

<b>1. General Description .....</b>	<b>7</b>
1.1 Coding Principle .....	8
1.2 Feature .....	8
1.3 Technical Specifications .....	10
1.4 Safety Regulations .....	11
1.4.1 The Attentions for Using the Blower .....	11
1.4.2 Safety Signs and Labels .....	12
1.4.3 Transportation and Storage of the Machine .....	12
1.5 Exemption Clause .....	14
<b>2. Structure Characteristics and Working Principle .....</b>	<b>15</b>
2.1 Working Principle .....	15
<b>3. Installation and Debugging .....</b>	<b>16</b>
3.1 General Safety Regulations .....	16
3.2 Installation diagram .....	16
3.3 Power Supply .....	17
3.4 Pipe Heaters .....	17
3.5 Blower .....	18
3.5.1 Drying Blower .....	18
3.5.2 Conveying Blower .....	18
3.5.3 Installation of Drying Hopper .....	19
3.5.4 Filter & Pressure Regulating Valve .....	19
3.5.5 GXW/GW Heatless Dehumidifying Compact Dryer .....	19
3.5.6 Filter .....	20
<b>4. Application and Operation .....</b>	<b>21</b>
4.1 Operation of control drying system .....	21
4.2 Operation of conveying system .....	21
<b>5. Trouble-shooting .....</b>	<b>22</b>
<b>6. Maintenance and Repair .....</b>	<b>23</b>
6.1 Filter & Pressure Regulating Valve .....	24
6.1.1 Filter & Pressure Regulating Valve Drawing .....	24

6.1.2	Filter & Pressure Regulating Valve Operation steps.....	24
6.2	Air Filters .....	24
6.3	Blower Motors .....	25
6.4	GXW/GW Heatless Dehumidifying Compact Dryer .....	25
6.4.1	Operation Instruction .....	25
6.4.2	Specifications .....	26
6.4.3	Installation .....	26
6.4.3.1	Inspect .....	26
6.4.3.2	Warning.....	26
6.4.3.3	Installation.....	26
6.4.3.4	Working Instruction .....	27
6.4.3.5	Electrical Connections.....	27
6.4.3.6	Controller .....	28
6.4.4	Technical Parameters.....	28
6.4.5	Maintenance .....	28
6.4.5.1	Adjustment and Monitoring .....	28
6.4.5.2	Semi Year Inspect.....	28
6.4.5.3	Regeneration Air Adjustment .....	29
6.4.5.4	Controller .....	29
6.4.5.5	Drying Tower.....	29
6.4.5.6	Improper Operation .....	29
6.4.5.7	Oil Pollution.....	29
6.4.5.8	Adsorbent Replacement.....	29
6.4.5.9	Filter Element Replacement.....	30
6.4.5.10	Troubleshooting .....	32
6.5	Maintenance Schedule.....	33
6.5.1	About the Machine.....	33
6.5.2	Installation & Inspection.....	33
6.5.3	Daily Checking.....	33
6.5.4	Weekly Checking .....	33
6.5.5	Monthly Checking .....	33
6.5.6	Half-yearly Checking .....	33

## Table Index

Table 1-1: Specifications.....	10
--------------------------------	----

### Picture Index

Picture 1-1: Outline Drawing .....	10
Picture 1-2: Blower.....	11
Picture 2-1: Working Principle.....	15
Picture 3-1: Installation diagram.....	16
Picture 3-2: Power Supply.....	17
Picture 3-3: Pipe Heaters .....	17
Picture 3-4: Drying Blower .....	18
Picture 3-5: Conveying Blower.....	18
Picture 3-6: Installation of Drying Hopper.....	19
Picture 3-7: GXW/GW Heatless Dehumidifying Compact Dryer .....	19
Picture 3-8: Filter.....	20
Picture 6-1: Filter & Pressure Regulating Valve Drawing.....	24



## 1. General Description



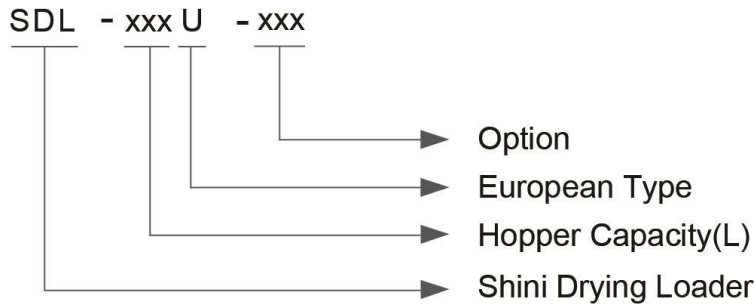
Read this manual carefully before operation to prevent damage of the machine or personal injuries.

SDL-U series of drying loaders combine conventional hot air drying and two-stage conveying functions into a compact unit. It is particularly suitable for using with the big tonnage moulding machines when height restriction is concerned at the workshop. The SDL-U series has a unique function of two-stage conveying that can transport both raw material to its own drying hopper and dried material to the moulding machine.



Model: SDL-300U-HD

## 1.1 Coding Principle



## 1.2 Feature

- SDL-U-HD integrates dehumidifying, drying and autoloading into one unit.
- Adopts microprocessor and P.I.D. control system to accurately control drying temperature.
- Occupy a small place, making movement easily and replacing units conveniently. .
- Hoppers are made of stainless steel to avoid contamination.
- Full functional alarming system can immediately show faults.
- Closed-loop conveying device eliminates the possibility of moisture reabsorption during dried material conveying.
- Hot air recycling device is equipped as a standard, featuring energy saving, no exhaust of hot air and dust, and environmental protection.
- Standard shut-off suction box ensures no residual material after each loading process.
- European type heat insulated hopper ensures no heat loss and no material pollution.
- 7-day start/stop timer is standard equipment, which can be customized.



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.

Headquarter and Taipei factory:

Tel: (886) 2 2680 9119

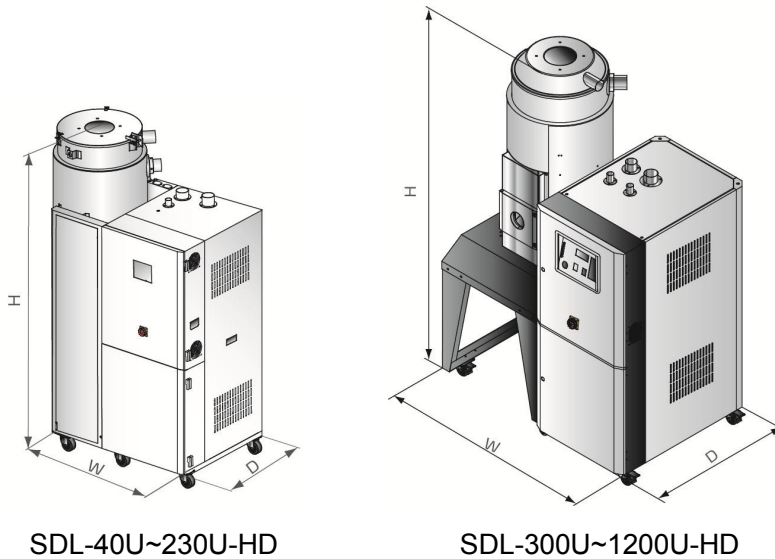
Shini Plastics Technologies (Dongguan), Inc:

Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.:

Tel: (91) 250 3021 166

### 1.3 Technical Specifications



Picture 1-1: Outline Drawing

Table 1-1: Specifications

Model	SDL-	40U -HD	80U -HD	120U -HD	160U -HD	230U -HD	300U -HD	450U -HD	600U -HD	750U -HD	900U -HD	1200U -HD
Ver.		C	C	C	D	C	B	A	B	A	A	A
Drying Blower (kW, 50/60Hz)		0.12 /0.14	0.12 /0.14	0.12 /0.14	0.12 /0.20	0.12 /0.20	0.18 /0.28	0.18 /0.28	0.55 /0.63	0.55 /0.63	0.55 /0.63	1.1 /1.25
Feed Blower (kW, 50/60Hz)		1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	1.5 /1.8	3.75 /4.7	3.75 /4.7
Heater (kW)		3	3.9	3.9	6	6	12	12	18	18	18	24
Air Inlet Pipe (inch)		2	2.5	2.5	3	3	3	3	4	4	4	4
Air Return Pipe (inch)		1.5	2	2	2.5	2.5	2.5	2.5	3	3	4	4
Feed Pipe (inch)		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	2
Drying Hopper Capacity		40	80	120	160	230	300	450	600	750	900	1200
SHR-U-E Hopper(L)		3	6	6	6	12	12	12	12	12	24	24
SHR-U Hopper (L)		3	6	6	6	12	12	12	12	12	24	24
Dimension (mm)	W	734	734	734	734	734	1400	1400	1960	1960	1960	1960
	D	1051	1066	1125	1125	1223	1000	1000	1450	1450	1450	1450
	H	1672	1751	1957	2102	2102	2020	2420	2450	2720	2610	3030
Weight (kg)		120	130	195	215	240	310	350	435	500	550	600

Note: 1) 4~6 bar compressed air supply.

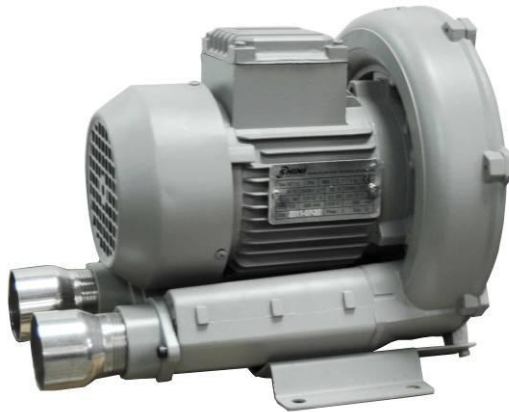
2) Power supply: 3Φ, 230 / 400 / 460 / 575V, 50 / 60Hz.

We reserve the right to change specifications without prior notice.

## 1.4 Safety Regulations

### 1.4.1 The Attentions for Using the Blower

- 1) The blower cover will be heated up during operation. Keep hands away high temperature blower cover to avoid hands burning.
- 2) Motor under load current will be varied with air pressure of the blower. Overload relay should be used and keep motor working current within full-load current to avoid motor burning out.
- 3) Air filter is used to keep off dirts, particles, fibres, and water drops. Clean the filter about once a week.
- 4) Clear up inside and outside of the blower regularly. If there are too much dirts accumulated on the blower, the function of the blower will be affected, such as temperature rising, reduced air volume and higher noise level due to vibration. All the above factors are liable to cause mechanical problems.
- 5) The bearing, seal ring and silencer are all consumable parts. They should be replaced after a period of time. And also the fans, covers, and metal grids need to be changed when necessary.
- 6) If the blower can not work properly or makes loud noises, please turn off the power supply to have a check.



Picture 1-2: Blower

## 1.4.2 Safety Signs and Labels



Danger!

High Voltage!

It is attached to the control box.



Attention!

This mark reminds you to be more careful.



Warning!

High temperature surface may burn hands!

It is attached on the cover of pipe heater.



Attention!

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



Attention!

To prevent over-temperature alarm from causing machine shutdown, don't randomly adjust EGO setting temp.

## 1.4.3 Transportation and Storage of the Machine

### Transportation

- 1) SDL-U-HD series 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  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  for long distance transportation and for a short distance, it can be transported with temperature under  $+70^{\circ}\text{C}$ .

## Storage

- 1) SDL-U-HD series should be stored indoors with temperature kept from 5°C to 40°C 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

The machine should be operated:

- 1) Indoors in a dry environment with max. temperature +45°C 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 3,000m.
- 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<sub>2</sub> dry powder fire extinguisher should be applied.

## 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.

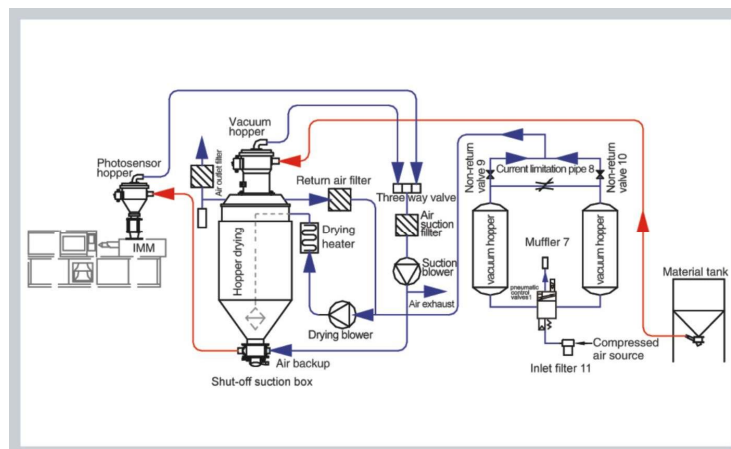
## 2. Structure Characteristics and Working Principle

### 2.1 Working Principle

**Drying:** based on the principle of water high temperature gasification, moisture of material would be blown away by high pressure air from blower after being high temperature gasified. A part of air with moisture discharges through filter of moisture outlet; most part of air are recyclable after being filtered through return air pipe.

**Conveying:** suction force of high pressure blower makes a vacuum inside hopper also produces differential pressure between hopper and outer space. With the common force of differential pressure and continuous suction, materials and air mixture will be sucked into hopper. Due to the filter block of hopper, materials will be accumulated in hopper and the air is expelled from air outlet. Double-stage conveying is mainly accomplished by shifting three way valve of suction machine to control suction return circuit.

**Heatless regeneration:** The compressed air after passing through inlet filter 11 enters into dry barrel 1 (or dried barrels 2) through pneumatic control valve 1. Then it make absorption dry with desiccant bed layer, and later exist from non-return valve 9 (or 10) , finally exist from the outlet to dry and purify air. A part of dry air (about 15%) enters dry barrel 2 (or dried barrel 1) through current limitation pipe 8 to blow and regenerate desiccants with saturated water, then air passes through pneumatic control valves 1 to exist out of muffler 7. Drying barrel1, 2 work alternately to regenerate.



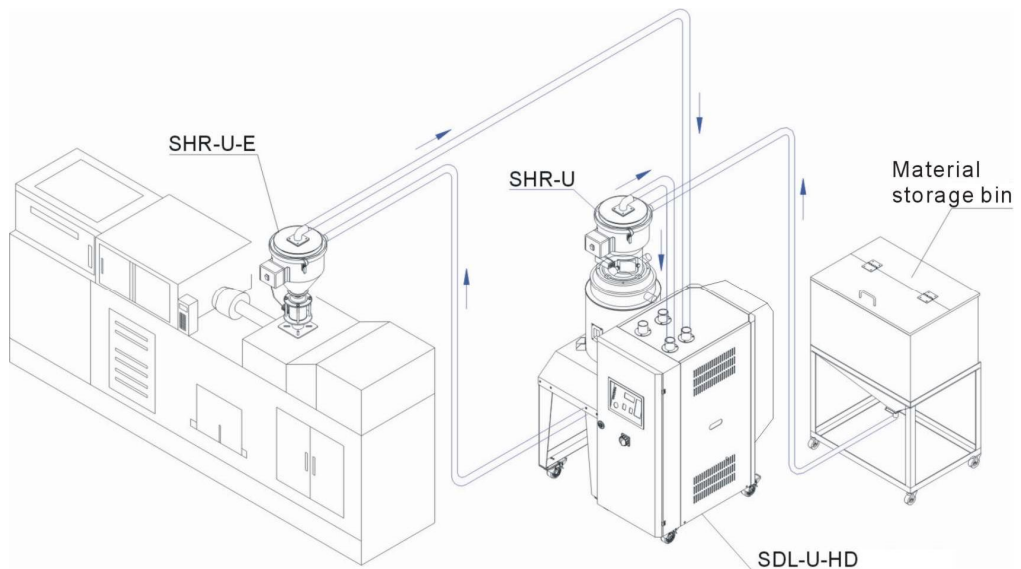
Picture 2-1: Working Principle

## 3. Installation and Debugging

### 3.1 General Safety Regulations

- 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:  $\pm 5\%$   
Main power frequency:  $\pm 2\%$
- 7) Refer to the pipe connection diagram to complete the installation.

### 3.2 Installation diagram

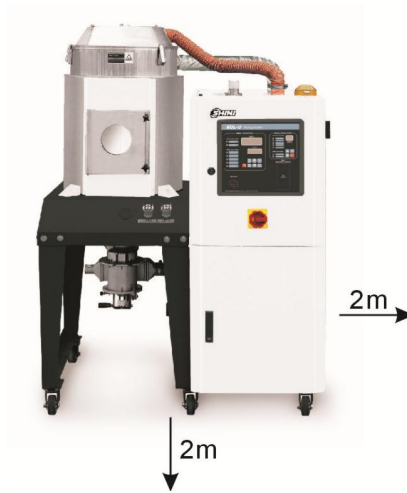


Picture 3-1: Installation diagram



### 3.3 Power Supply

Make sure that the power supply conforms with required specifications before installation. SDL-U-HD are generally set to be used with 3Φ400V 50Hz power supply or other specifications if required.



Picture 3-2: Power Supply



Notes!

Keep the machine 2M from the combustible distance.

### 3.4 Pipe Heaters

- 1) Put the heating pipe into the heating chamber.
- 2) Fix the heating chamber on the machine housing.



Picture 3-3: Pipe Heaters



Warning!

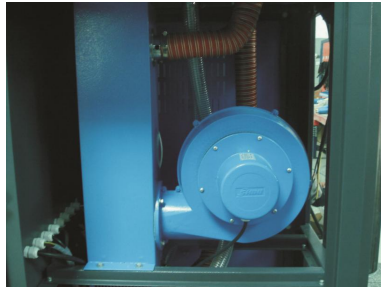
High temperature, take care of hands!

This label is attached on the surface of heating pipes.

## 3.5 Blower

### 3.5.1 Drying Blower

- 1) Fix inlet/outlet flange of blower, and tighten 4 screws securely.
- 2) Connect the blower with electrical source.
- 3) Install the blower on the Machine frame.



Picture 3-4: Drying Blower

### 3.5.2 Conveying Blower

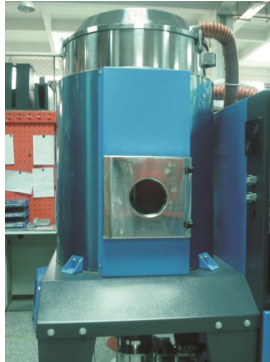
- 1) Fix inlet/outlet flange of blower, and tighten 4 screws securely.
- 2) Connect the blower with electrical power source.
- 3) Install the blower on the Machine frame.
- 4) Fix the three-way valve (See Fig.13).
- 5) Install the solenoid valve, and then tighten 2 screws on the machine frame (See Fig.14).



Picture 3-5: Conveying Blower

### 3.5.3 Installation of Drying Hopper

- 1) Install drying hopper on the machine frame.
- 2) Fix the shut-off valve adaptor on the suction box.
- 3) Install the shut-off valve on the suction box.



Picture 3-6: Installation of Drying Hopper

### 3.5.4 Filter & Pressure Regulating Valve

- 1) Switch on the air source.
- 2) Pull the black pressure adjusting knob 1 upward and rotate it, observe the pressure gauge 2, generally a 0.5 Mpa pressure is advisable.
- 3) Push back the black knob 1.

### 3.5.5 GXW/GW Heatless Dehumidifying Compact Dryer

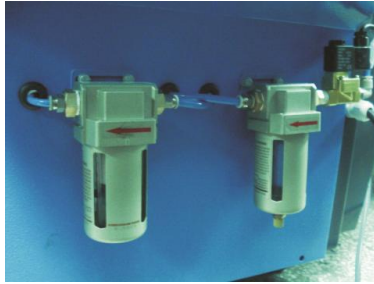
- 1) Install the dryer on the machine floor stand with screws.
- 2) Connect with the inlet/outlet tube.



Picture 3-7: GXW/GW Heatless Dehumidifying Compact Dryer

### 3.5.6 Filter

- 1) Fix the filter on filter support.
- 2) Install the filter and its support on the rear plate with screws.
- 3) Connect to the compressed-air tube.



Picture 3-8: Filter

## 4. Application and Operation




Turn on the main switch to connect through power supply and also the main switch on the control panel should be turned on.

### 4.1 Operation of control drying system

Press the ON/OFF key on the control panel, it will display the practical

value and the setting value. Press the TEMP/TIME key to set temperature and automatic drying time. Press SET and ▲ ▼ key to set the temperature. Then confirm the temperature setting by pressing ENTER key.

### 4.2 Operation of conveying system

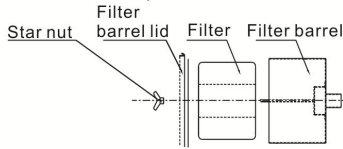
- 1) Press  once to set the suction time of the hopper 1.  
Press  twice to set the suction time of the hopper 2.  
Press  three times to set the time for opening the valve.
- 2) Change the required time with ▲ ▼ key.
- 3) Press RUN/STOP once, hopper 1 turned on but hopper 2 turned off.  
Press RUN/STOP twice, both hopper 1 and 2 turned on.  
Press RUN/STOP three times, hopper 1 turned off but hopper 2 turned on.
- 4) Press RUN/STOP four times, both hopper 1 and 2 turned off.

## 5. Trouble-shooting

Fault	Possible reasons	Solution
System cannot operate	1. Main AC power supply unconnected	1. Close main AC power source
	2. Put timer switch into ON status	2. Reset timer button and restart again
	3. Motor overload or Phase reverse	3. Check close-loop, regenerative motor and AC power source are connected correctly.
Long lack time but suction fan not work	1. Main AC power source unconnected or touch button is not in ON position	1. Close main AC power supply
	2. Funnel's sensor, micro switch are bad contact	2. Adjust or replace
	3. Signal cable is broken	3. Re-connect or replace
Motor does not run	1. Heat relay off load	1. Check reason and reset
	2. Connector is not working	2. Check it is burnt out or not
	3. Power source lack of phase or motor is burnt out	3. Check and replace
Material is full but suction fan still working	1. LED sensor or micro switch is On status	1. Adjust or replace
	2. Signal's cable is broken	2. Check signal cable
	3. Mechanical problem or connector point is melt	3. Repair or Replace
	4. PLC problem	4. Check and replace
Continuous running but cannot fill up funnel	1. Material is used up	1. To add more materials
	2. Pipe is leakage	2. Repair or replace
	3. Filter is blocked	3. Clean
	4. Diaphragm valve or shutoff valve is closed	4. Check diaphragm valve or shutoff valve's pressure, electric valve may be burnt out, circuit is well connected or not
	5. Motor's blade problem	5. Check and repair

## 6. Maintenance and Repair

Clean the return air filter and material suction filter with high pressure air.  
 Period: Weekly  
 Replacement: Loosen the screw nut and open the filter cover and replace with a new filter.



Clean whether the EGO works properly.  
 Period: Daily

Clean whether the heat resisting air pipe is damaged and the air inlet and outlet is sealing well  
 Period: Weekly

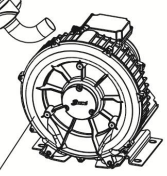
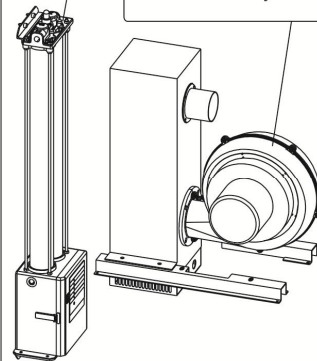
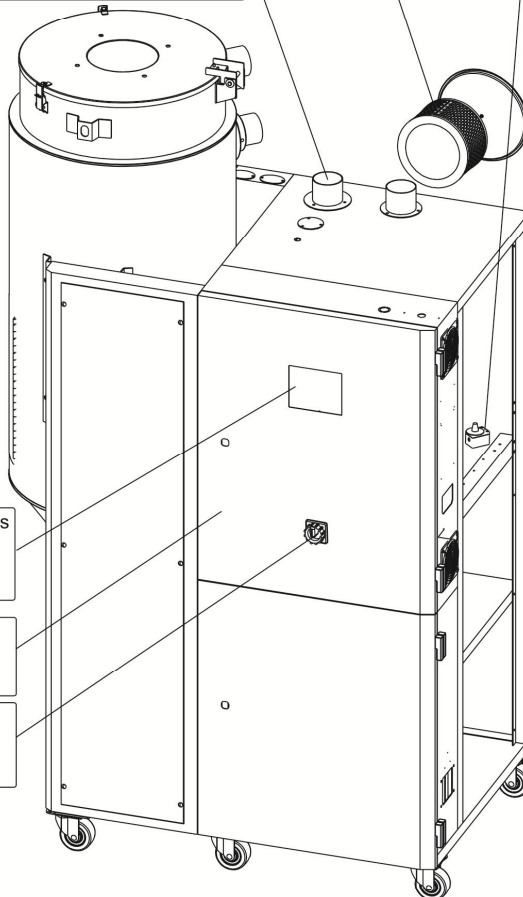
Heatless dehumidifying and regenerating dryer.  
 Installation: install the dryer with 4xM6 inside hexagon cap head screw.  
 Replace the adsorbent.  
 Maintenance and Repair: see the instruction manual of HAD

Blower cleaning remove the dust from both the inside and outside blower.  
 Period: Monthly  
 Check the working condition of the blower  
 Period: Monthly

Check the machine's function of weekly schedule setting  
 Period: Weekly

Clean whether the contactor is normal  
 Period: Yearly

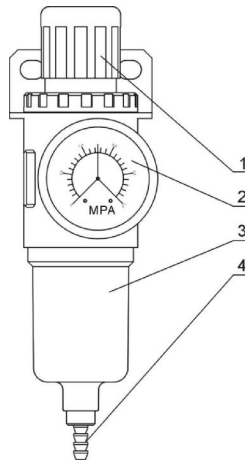
Clean the main power switch  
 Period: Daily



Suction blower:  
 1. Regularly remove the dust inside and on the blower.  
 Period: Monthly  
 2. Regularly check the blower bearing oil seal and muffler.  
 Period: Monthly

## 6.1 Filter & Pressure Regulating Valve

### 6.1.1 Filter & Pressure Regulating Valve Drawing



Parts list:

1. Pressure adjusting knob    2. Pressure gauge    3. Cup    4. Water outlet

Picture 6-1: Filter & Pressure Regulating Valve Drawing

### 6.1.2 Filter & Pressure Regulating Valve Operation steps

- 1) Switch on the air source.
- 2) Pull the black pressure adjusting knob 1 upward and rotate it, observe the pressure gauge 2, generally a 0.5 Mpa pressure is advisable.
- 3) Push back the black knob 1.

## 6.2 Air Filters

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 rag.
- 4) After cleaning, place all parts in reversed order carefully.



Note!

Don't make sundries fall into the barrel, when taking out the air filter.



## 6.3 Blower Motors

- 1) To clean blower both internal and external parts (especially the fan cooling path), by removing surface dust. If more dusts are accumulated, it will cause deficiency for ventilation, temperature rising up, blower power reduced, vibration increased and so it will cause machine broke down.
- 2) Ball bearing, oil seal and sound-proof are belonging to consumable parts and so it has a life period and requires regular replacement.

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
Contactora	Above 100,000 act

## 6.4 GXW/GW Heatless Dehumidifying Compact Dryer

Thanks for using GXW athermal regeneration type of air dryer. Please read through this operation manual before using the machine to ensure good performance, safety and free maintenance operation!

The wall-type GXW series is a heatless regeneration adsorption type dryer which dry the compressed air according to Pressure Swing Adsorption (PSA) principle. Adopt the compact design and high reliability of US technology, GXW series has been proved advanced purification equipment for various industries.

### 6.4.1 Operation Instruction

GXW small-sized dehumidifying compact dryer can operate automatically and almost needs no maintenance. Equipped with 2 hoppers, 2 shuttle valves, 2 solenoid valves and 1 regeneration adjusting valve, the dryer is controlled by the controller. When the wet air goes into a drying tower the vapor is adsorbed and at the same time another drying tower is in regeneration process which is followed immediately by a pressing process. The processes repeat regularly to ensure continuous and constant-pressured compressed dry air.

## 6.4.2 Specifications

GXW*	-0.1/1	0.15/1	0.2/1	-0.3/1	-0.4/1	-0.6/1	-0.9/1	-1.2/1
Parameters								
Actual handing capacity (m <sup>3</sup> /min)	0.1	0.16	0.23	0.33	0.44	0.71	1.0	1.4
Caliber of Inlet & Outlet (Pipe Thread)	1/4"	1/4"	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"
Length A(mm)	195	195	195	195	260	260	260	260
Width B(mm)	135	135	135	135	163	163	163	163
Height C(mm)	525	605	675	765	745	845	945	985
Mounting hole length D(mm)	178	178	178	178	224	224	224	224
Equipment Hole Height E(mm)	212	292	362	452	432	532	632	672
Equipment Weight (kg)	13	15	16	17	22	24	26	28

Note: "\*" in "GXW \*" represents the level of dew point, 1 for dew point -70 °C; 2 for -40 °C and 3 for -20°C.

## 6.4.3 Installation

### 6.4.3.1 Inspect

Check whether there is any apparent damage caused in transportation process.

### 6.4.3.2 Warning

Please read through this operation manual carefully before installation.

### 6.4.3.3 Installation

- 1) The dryer should be installed in a clean air environment and at a temperature of 4~52°C, for the dryer can be damaged in frozen temperature.
- 2) Install 4 expansion bolts of Φ6 at an appropriate height on the wall and connect them to the 4 mounting hole of Φ7 on the dryer, install the dryer at a upright position.
- 3) Pipeline connection: the wet air enters the dryer from the lower port (solenoid valve end) and come out from the upper port after dried. Plug a Φ10 (caliber is G1/2) or Φ8 (caliber is G1/4) air hose into the quick exchange coupler. Steel pipe of caliber G1/2 or G1/4 internal thread is also available. Bigger pipes should be applied to avoid backpressure in long distance moisture emissions.

- 4) When using steel pipe, use Teflon seal tape or sealant on the threads and when connecting, use soup water to check whether there is water leakage.
- 5) Bypass pipelines are suggested for better dryer maintenance.
- 6) There should install a front filter before the dryer to filter the granules and oil, and after dryer there should install a back filter to filter the dust particles.
- 7) GXW small dryer configure filters model

GXW*	-0.1/1	0.15/1	0.2/1	-0.3/1	-0.4/1	-0.6/1	-0.9/1	-1.2/1
Filter Model								
Front filter	LN12-0.5/1A				LN12-1/1A		LN12-2/1A	
Back filter	LN24-0.5/1A				LN24-1/1A		LN24-2/1A	

The table above shows the standard configurations. If there is lube air compressor ahead, a 1~2 level higher high efficiency oil filter should be installed to prevent the adsorbent from being polluted, or the service life will be shortened.

#### 6.4.3.4 Working Instruction

- 1) GXW series can work under any pressure of 0.3~1.0MPa while the dew-point value must be acquired under the pressure of 0.7MPa and the air inlet temperature of 40°C.
- 2) The highest air inlet temperature is 52°C and the dew-point will increase, never run the machine at a freezing temperature.
- 3) Regularly draw off the water in the front filter manually or install an automatic drainage device to prevent the water from entering the dry tower and caused damage.
- 4) In LN12-0.5/1A and LN12-1/1A, the copper valve on the bottom of the front filter is a differential pressure valve which can be automatically open to drain off water or close according pressure variation. When there is water in the filter cup during the working process, please drain away the water by pressing the valve. LN12-2/1 front filter contains a manual ball valve to drain the water regularly.
- 5) Dismantle the muffler when the exhaust sound is too loud; link the exhaust port out-of-door with oversized pipes.

#### 6.4.3.5 Electrical Connections

Before plugging in, read carefully the date on the nameplate, the reference voltage is 220V/50Hz.

#### 6.4.3.6 Controller

- 1) There are four periods of to control the solenoid valve, respectively 1 minute, 2 minutes, 3 minutes and 10 minutes. When the dew-point is low, 1 or 2 minutes period can be chose with big volume of air consumption. Therefore, 5 or 10 minutes period can be chose when the requirement is not so high. The switch O2 stands for 1 minute period, ON for 2, 12 for 5 and 1N for 10.
- 2) The red light stands for power on; the green light on the left stands for the solenoid valve on the left is charged with electricity and the green light on the right stand for the solenoid valve on the right is power on.

#### 6.4.4 Technical Parameters

Inlet pressure	0.3-1.0MPa	Inlet temperature	≤ 40℃
Dew-point temperature	-40, -70℃	Pressure loss	≤ 0.03MPa
Regeneration method	Heatless regeneration	Regenerative air consumption	5%-25% rated handling capacity
Inlet oil content	≤ 0.1ppm	adsorbent	Alumina, molecular sieve
Working period	1、 2、 5、 10 minutes	Power supply/ power consumption	220V/50Hz, 12W
Installation method	integrated	Installation site	Indoor wall-hanging style

#### 6.4.5 Maintenance

##### 6.4.5.1 Adjustment and Monitoring

No need of on-site adjustment and lubricant.

- 1) Regularly check the solenoid valves. When the exhausting sounds of the two towers are louder or different, separate the solenoid valves and check whether there is dust chocks the passageway or the solenoid valve need to be replaced.
- 2) Check whether there is water in the front filter, drain away the water by pressing the valve on the bottom of the filter cup (or turn on the manual valve).

##### 6.4.5.2 Semi Year Inspect

- 1) Semiyearly check after first use is suggested. Estimate the worn condition of the adsorbent by the following methods: listen to the variable pressure and

regenerative air flow in the drying tower; check whether there is too much dust and oil at the air outlet and the regeneration discharge port. If there installs a muffler, remove it and check whether there is excessive pressure drop, or replace the muffler.

2) Check the filter elements; replace it after a 3,000~4,000 working hours.

#### 6.4.5.3 Regeneration Air Adjustment

Regeneration air changes according to the operation condition (e.g. inlet pressure, outlet flow). The regeneration air should be enlarged when the inlet pressure decreases, the inlet temperature increases or in summer, vice versa. Notice that the quantity of regeneration air is very important to the dryer. Too small regeneration air quantity will lead to improper operation.

#### 6.4.5.4 Controller

No need of maintenance, replacement can be done in the working field.

#### 6.4.5.5 Drying Tower

With a welded structure, if damaged, a new one must be purchased.

#### 6.4.5.6 Improper Operation

E.g.: low inlet pressure, high air temperature, large outlet flow; the dryer continues to work after the outlet valve shut down for several hours; regenerate overwet hopper, etc..

#### 6.4.5.7 Oil Pollution

Oil pollution will cause complete failure of adsorbent. If there is oil in the drying tower or other parts, the adsorbent must be replaced. Other proper maintenance is also imperative.

#### 6.4.5.8 Adsorbent Replacement

The service life of the adsorbent is 2 year. Adsorbent replacement is a must if the dust at the outlet increases or the dew-point decreases obviously. Replacing steps are as follows:

- 1) Power off; release the pressure in the dryer.
- 2) Dismantle the muffler and solenoid valve.

- 3) Unscrew the copper connector on the dryer beside the regeneration valve and the two oil screws on both ends of the drying tower.
  - 4) Unscrew the T-joint (four in total) on both ends of the drying tower.
  - 5) Put a M6×100 screw in the tower and connect it to the M6 screw nut on the screen board, tightly hang up the spring in the tower.
  - 6) Unscrew the diffuser with a wrench and remove the adsorbent.
  - 7) Replace the adsorbent and install the diffuser. (adsorbent selection: with a dew-point of  $-40^{\circ}\text{C}$ ,  $\Phi 3\sim 5\text{mm}$  aluminum trioxide is suggested, while the dew-point is  $-70^{\circ}\text{C}$ ,  $\Phi 3\sim 5\text{mm}13\text{x}$  molecular sieve can be adopted.)
  - 8) Loosen the spring of the M6×100 screw and make sure the adsorbent is pressed out.
  - 9) Install the dryer step by step.
  - 10) Use soap water for air tightness test. The qualified machine has no leakage.
- Note: leakage will lead to pressure and dew-point increase.

#### 6.4.5.9 Filter Element Replacement

1. Filter element replacement steps (in LN24-0.5/1A and LN24-1/1A):
  - 1) Release the pressure in the filter.
  - 2) Dismantle the automaticsewer valve (if there has one).
  - 3) Pull down the locating block and unscrew the filter cup shield.
  - 4) Take down the filter cup.
  - 5) Firmly grasp the filter element and unscrew the screw. The hanger bolt and filter element is integrated.
  - 6) Take out the old filter element and put it away according to the relevant regulations for environmental protection.
  - 7) Only soap water or pure water can be used to clean the inner filter cup.
  - 8) Tighten the screw and install the new filter element.
  - 9) Check whether the O ring on the bottom of the filter cup is in good condition and then put the filter cup in the filter cover.
  - 10) Put on the filter cup shield and rotate, make the locating block drop into the slot.
2. Filter element replacement steps (in LN24-2/1):
  - 1) Release the pressure in the filter.
  - 2) Dismantle the automaticsewer valve (if there has one).
  - 3) Unscrew the filter with pulley wrench or spanner.

- 4) Unscrew and dismantle the hanger bolt which is used to locating the filter element.
- 5) Take out the old filter element and put it away according to the relevant regulations for environmental protection.
- 6) Only soap water or pure water can be used to clean the inner filter cup.
- 7) Tighten the screw and install the new filter element.
- 8) Check whether the O ring on the end of the filter cup is in good condition and manually tighten the filter cylinder and connect the sewer valve.

### 6.4.5.10 Troubleshooting

Symptom	Possible Reasons	Suggestions
A. over pressure	<ol style="list-style-type: none"> <li>1. Filth blockage of front filter.</li> <li>2. Filth blockage of back filter.</li> <li>3. Filth blockage of diffuser.</li> <li>4. Air inflow or air consumption is too big.</li> <li>5. Inlet pressure is too low.</li> <li>6. Adsorbent is badly broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the front filter element.</li> <li>2. Replace the back filter element.</li> <li>3. Check and clean the diffuser.</li> <li>4. Keep the air inflow or air consumption to the flow provision.</li> <li>5. Increase the inlet pressure to the stated value of work.</li> <li>6. Replace the adsorbent.</li> </ol>
B. switch failure of the two tower (shuttle valve )	<ol style="list-style-type: none"> <li>1. Muffler jams.</li> <li>2. Timing controller breakdown.</li> <li>3. Solenoid valve get stuck (by powder).</li> <li>4. Regeneration air low is too small.</li> <li>5. Inlet pressure is lower than 0.3MPa.</li> <li>6. O ring in the shuttle valve drops off.</li> <li>7. Shuttle valve is polluted.</li> <li>8. Magnet coil break or burned.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the muffler.</li> <li>2. Replace the timing controller.</li> <li>3. Dismantle and clean the solenoid valve or replace it.</li> <li>4. Increase the regeneration air flow.</li> <li>5. Increase the inlet pressure.</li> <li>6. Replace the O ring (use the glue) or install a new one.</li> <li>7. Clean, repair or replace the shuttle valve.</li> <li>8. Repair or replace the magnet coil.</li> </ol>
C. Dew-point is too high	<ol style="list-style-type: none"> <li>1. Regeneration air flow is not enough or overlarge.</li> <li>2. Inlet pressure is lower than selection condition.</li> <li>3. Air inflow is bigger than selection condition.</li> <li>4. Liquid water in the dryer.</li> <li>5. Inlet temperature is higher than selection condition.</li> <li>6. Dust in the adsorbent.</li> <li>7. Adsorbent is polluted by oil.</li> <li>8. Muffler jams or high backpressure when exhausting.</li> <li>9. Leakage in the outlet.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the regeneration air flow by the control valve.</li> <li>2. Increase the inlet pressure to the selection condition.</li> <li>3. Decrease the air inflow to the selection condition.</li> <li>4. Check if there is any leakage in cooling pipeline of back cooler and cooling-water system; check the inlet air pipeline; check if the filter element of the filter and the bottom sealing is loosened; check if the sewer valve can normally discharge water</li> <li>5. Check the back cooler and cooling-water system and adjust the inlet temperature to the selection condition.</li> <li>6. Execute check and modification in accordance with actual requirements; check if there is any surge in pressure and flow capacity of the compressed air.</li> <li>7. Check the front filter and sewer valve.</li> <li>8. Clean, repair or replace muffler. If air exhaust still does not work after dismantling the muffler, please contact equipment maintenance and repair department of SHINI.</li> <li>9. Check air pipeline and execute air leakage test with the use of soap water.</li> </ol>



## 6.5 Maintenance Schedule

### 6.5.1 About the Machine

Model \_\_\_\_\_ SN \_\_\_\_\_ Manufacture date \_\_\_\_\_

Voltage \_\_\_\_\_  $\Phi$  \_\_\_\_\_ V Frequency \_\_\_\_\_ Hz Power \_\_\_\_\_ kW

### 6.5.2 Installation & Inspection

- Check if the pipe joint is tightly locked by clips or not.
- Check that the material clearance door is firmly closed.

#### Electrical Installation

- Voltage: \_\_\_\_\_ V \_\_\_\_\_ Hz
- Fuse melt current: 1 Phase \_\_\_\_\_ A 3 Phase \_\_\_\_\_ A
- Check phase sequence of the power supply.

### 6.5.3 Daily Checking

- Check power supply wires.
- Check the start/stop function.

### 6.5.4 Weekly Checking

- Check all the electrical cables.
- 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.

### 6.5.5 Monthly Checking

- Check whether the material inlet pipe leaks air.
- Check whether the motor works normally.
- Check whether the process heater works normally.

### 6.5.6 Half-yearly Checking

- Check if there are damages of heat-resistant hoses.
- Check the pipe heaters.
- Check process blower and blower fans.