SAL-UG124

“One-to-Four” Separate Hopper Loader

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Version: Ver.F (English)

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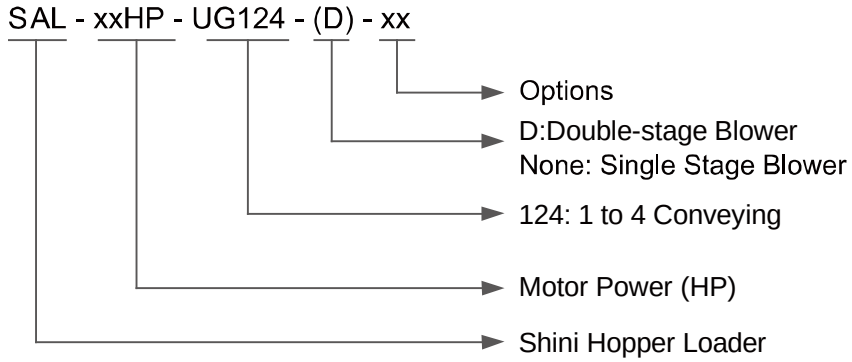
1. General Description

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

"One-to-Four" Separate hopper loaders are designed and developed on the basis of original European separate-vacuum hopper Loaders. They have more functions, and are easy to operate and convenient to install. Collocated with four European vacuum hopper receivers SHR-U-S, it is suitable for conveying materials of two dehumidifying dryers (such as two-in-one SDD). In addition, the machine also can achieve "One-to-Four" material conveying to different injection molding machines or hoppers, thus largely saving the costs.

Picture1-1：SAL-5HP-UG124Main Unit + SHR-12U-S Hopper

1.1 Coding Principle



1.2 Feature

- SAL-5HP-UG124 (-D) adopts the integrated design of cyclone filter to reduce the filter load effectively.
- SAL-10HP-UG124 (-D) has non-stop cleaning function that supports work for a long time.
- SALUG124 models have vacuum breaking valve to protect the blower.
- SAL-UG124collocated with the European stainless steel central hopper to ensure no contamination of the materials.
- SAL-UG124 models adopt LCD display + microcomputer controller to ensure intuitive display and easy operation.
- SAL-UG124 series models have independent shut-off output function that can directly control the shut-off valve SBU.
- SAL-UG124 series are equipped with RS485 interface and acoustooptic alrm light.
- SAL-5HP~20HP-UG124 series are equipped with the filter spraying device.

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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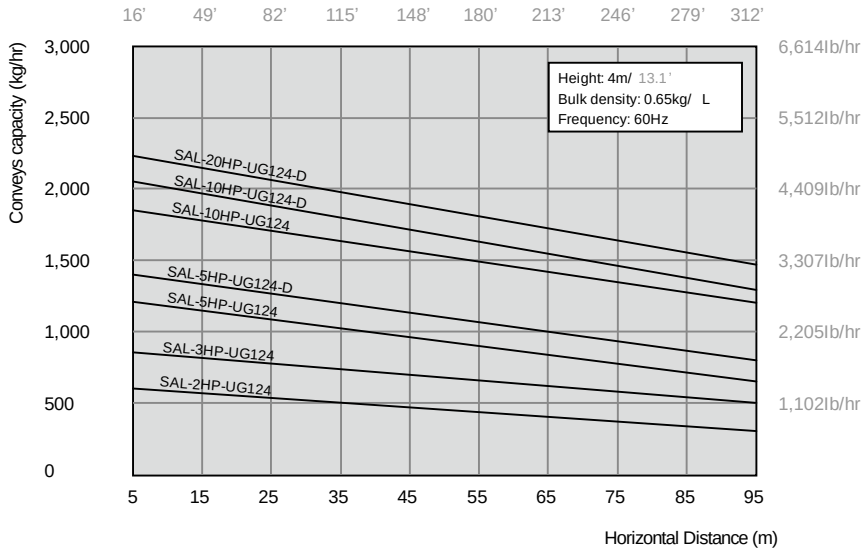
1.3 Loading Capacity



Picture 1-2: Loading Capacity

1.4 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of themachine or personal injuries.

1.4.1 Safety Signs and Labels

All the electrical components should be installed by professionaltechnicians.

Turn off the main switch and control switch during maintenance or repair.

Warning! High voltage!

This sign is attached on the cover of control box!

Warning! Be careful!

Be more careful at the place where this sign appears!

Attention!

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

1.4.2 Signs and Labels

	1. Please clean the suction filter regularly to avoid clogging and ensure proper loading capacity and long life span. 2. The one year warranty does not cover the suction filter, please clean the filter carefully.

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:

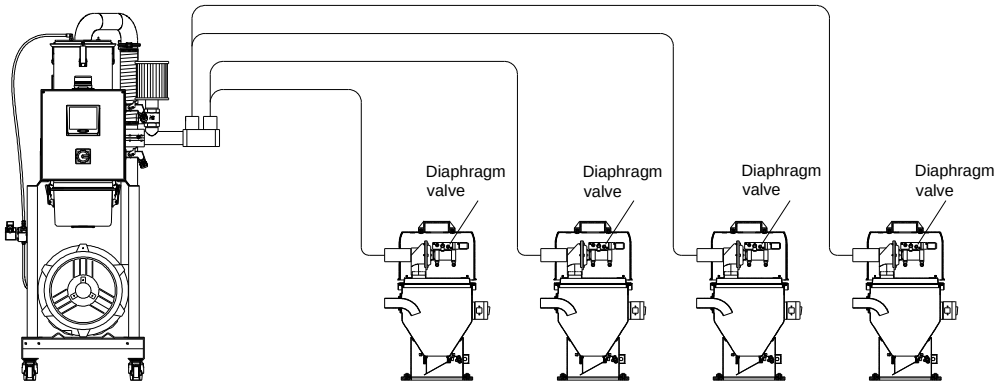
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberatedamages or abnormal power, and machine faults caused by irresistible natural disastersincluding 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 Main Functions

SAL-UG "Euro" separate-vacuum hopper loader is applicable to convey plastic granule. Its principle is to make use of motor generated vacuum to form a pressure gap and to convey plastic material by this way.

2.1.1 Working Principle



Picture 2-1: Working Principle

Turn on the switch of the feed station to start the wind blower and open the relevant diaphragm valve of the hopper. A high pressure vacuum is generated in the hopper and the non-return flap is thus closed. The crew material is thereafter suctioned into the hopper due to differential pressure. After finishing the suctioning action, stop the motor and the vacuum breaking valve is opened. The crew material is dropped by gravity. Whenthe magnetic proximity switch detect that there is no material, the motor starts up again. When in continuously 3 times failed to load material, the red alarming light for relevant feeding station on electrical control box starts to sound the alarm.

When all the suction switches are turned on, the system will work from feeding station1 to 4 circularly.

3. Installation and Debugging

This series of models can only be used in well-ventilated working environmen

Read this chapter carefully before installation of the machine. Install the machine by following steps.

Power supply should be fixed by qualified technicians!

3.1 Installation Space

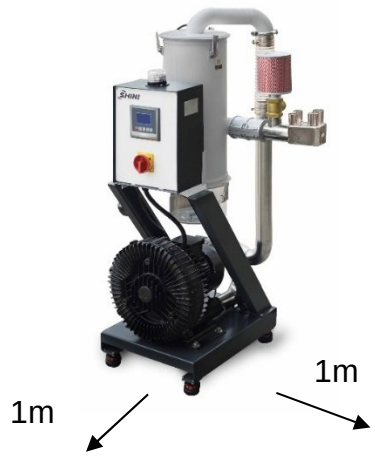
The notice of installation and positioning:

1) The machine can only be installed in a vertical position, so as to ensure there’re no pipes, fixed structures or other objects above and adjacent to theselected installation positionthat may hinder machine installation, damage the object or cause human injuries.

2) For easymaintenance, it’s recommended to leave 1m space around the machine. Keep 2mdistance between the machine and inflammables.

Notes: keep 2mdistancebetween the machine and inflammables.

3) The machine shall be placed on a plane surface to ensure the balance and eliminate the accumulated condensed water. If it has to mount the machine on a rising surface (scaffold, interlayer etc.), it must ensure the structure can withstand the machine’s weight and size.



Picture3-1：Installation Space

3.2 Power Connection

1) Make sure the voltage and frequency of the power source comply with those indicated on the manufacturer nameplate that attached to the machine.
2) Power cable and earth connection should conform to your local regulations.
3) Use independent electrical wires and power switch. Diameter of electrical wire should not be less than those used in the control box.
4) The power cable connection terminals should be tightened securely.
5) The machine requires 3-phase 3-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: +/- 2%

7) Please refer to electrical drawing of each model to get the detailed power supply specifications

Note: Make sure the power switch is off before connecting the power wire!

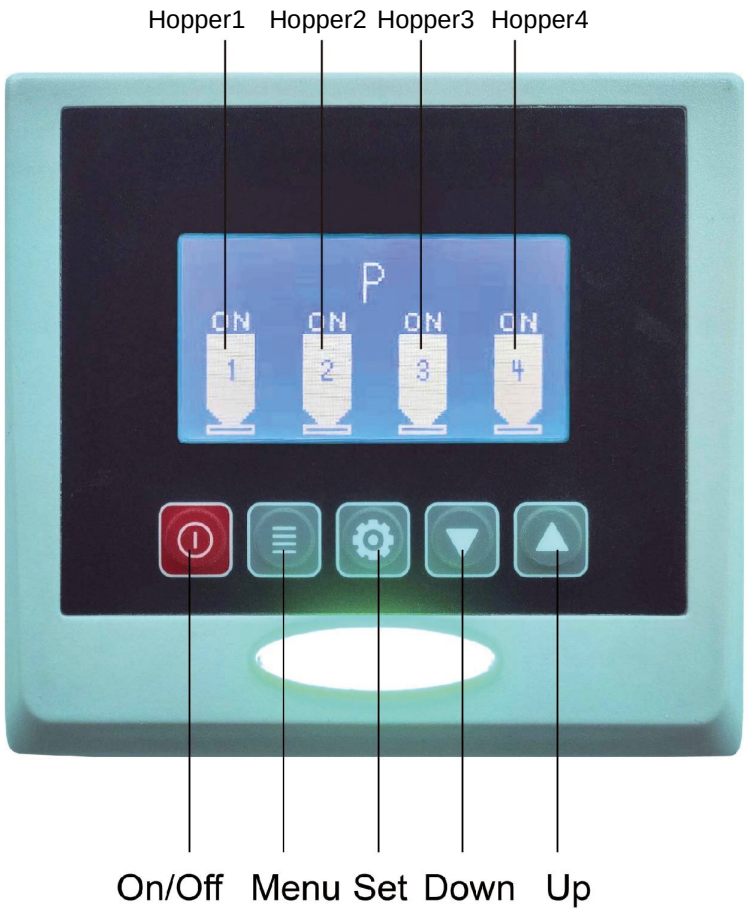
3.3 Compressed Air Supply

Table 3-1:Compressed Air Specification

Items	Value	Remark
Quality Grade	335	Solid particle content ≤ 5mg/m3, dew-point temperature≤-20℃, oil content ≤ 25mg/m3, oil content ≤ 25mg/m3. (Chinese standard: GB/T 13277-1991)
Air pressure (bar)	3~5bar	-
Air quantity (L/hr)	10L/hr	-
Pipe dimension	PM20	Quick coupler(Chinese standard)

4. Application and Operation

4.1 Panel Description



Picture4-1：Control Panel

NO.	Symbol	Name	Meaning	Description
1		ON/OFF	Startup /shutdown	Start/stop the machine
2		MENU	Menu	Enter or exit parameter setting
3		SET	Setting	Modify or confirm machine parameters
4		DOWN	Down key	Move the menus down, and reduce the value
5		UP	Up key	Move the menbus up, and increase the value

4.2 Parameter Setting

4.2.1 Machine Start and Stop

After powering on, press the<ON/OFF>button to start the machine and the loader starts working, and press the<ON/OFF>button again to stop the machine;

4.2.2 Suction Time Setting

For example, when setting the suction time to 15S in the OFF state, long press the <MENU>key for 5S, and select "individual parameters". Press the<SET> button to enter, select hopper 1 and "suction time", and press the <SET> button to enter. Then, adjust the value to 15 by the <DOMN> or <UP> key, and press the<SET> button to confirm.

4.2.3 Hopper Startup and Stop

For example, set the hopper startup and stop, and press the<MENU> button to enter the hopper startup or stop settings. Then, press the <SET> button to select the "hopper", and press the<DOMN>or<UP> key to "Start or Stop the Hopper". Press the<SET> button to "confirm", and press the<MENU> button to exit the hopper settings.

4.3 Parameter Specification

Each parameter (hopper)

Notes: “*”stands for two hopper’s function

Parameter Name	Function Description	Parameter Values	
		Factory Default	Range
Hopper action	the hopper is opened or closed	start	
Preparation time	Start thehopper, and it will work after the preparation time.	3S	0-99S
Suction time	Suction valve action time	15S	0-999S
Shut-off time	Shut-off valve action time	0S	0-99S
Filter cleaning time	Spraying valve action time Set it to 0: Not clean after action	3S	0-99S
Filter cleaning cycle	The time for each cleaning after several suction actions repeated. Set it to 1: Clean the filter screen after each suction	3 times	0-99
*Mixing time	Start with the suction action together, and set the mixing time Time calculation method: set the suction time *xx%; Set it to 0: not start	0S	0-100%
* Mixing proportion	Start with the suction action together, and set the mixing proportion Time calculation method: suction time *xx%; Set it to 0: not start	0S	0-100%

*Mixing method	When the machine starts mixing, the layers of its mixing actions For example: the suction time is 20sec, the mixing proportion is 10%, the number of layers is 2, then the mixing action is 9s—1s ----9s---1s Set single layer‘s operation, and the suction time range is 5-99 secs. Set two layer‘s operation, and the suction time range is 17-99 secs. Set three layer‘s operation, and the suction time range is 32-99 secs. Set four layer‘s operation, and the suction time range is 46-99 secs. If it changes suction time, mininmum suction action of each layer is less than 1 secs. by calculation, and the program will force to change the action time to 1 secs.	1	1-4

Common Parameters（whole machine）

Parameter Name	Function Description	Parameter Values	
		Factory Default	Range
Shortage counting alarm	Set the times that materials not dropped into the hopper and for the alarm	3S	0-99S
Vacuum breaking valve	Vacuum breaking valve action time	2S	0-999S
Host unit's filter cleaning cycle	The times of several repeated suctions before each filter cleaning action	3次	0-99 times
Waiting before the host unit cleaning the filter	The waiting time before filter cleaning, and after that it stops filter cleaning	2S	0-99S
Waiting after the host unit cleaning the filter	The waiting time before filter cleaning, and after this process it starts next action	2S	0-99S
Host unit's cleaning time	Total filter cleaning time	0S	0-99S
Cleaning ON time	Intermittent cleaning action, the running time before it stops	2S	0-99S
Cleaning OFF time	Intermittent cleaning action, the stop time before it starts	2S	0-99S
Motor delay time	After the suction, motor delay time after it stops	90S	0-99S

Communication Parameters

Press <MENU> + <UP> key for 3 secs. to enter the setting

Parameter Name	Function Description	Parameter Values	
		Factory Default	Range
Communication address	Communication address	1	1-99
Baud rate	4800 9600 19600	9600	

Check bit	None parity odd even parity	None	
Stop bit	1 bit 2 bit	1	

4.3.1 Code Description

M	suction motor running	C	shut-off
R	spraying	P	standby
N	waiting time	OL	motor overload
D+time	suction time	N+time	Motor delay stop time
HP	high pressure	PV	mixing valve

4.3.2 Action Specification

Action Specification	**Parameter Description**	
	Default Set	**Range**
Filter cleaning before suction	15 secs.	0-99 secs.
Waiting time after cleaning	2secs.	0-99secs.
Material suction (vacuum breaking valve action)	30secs.	0-999 secs.
Shut-off action	3 secs.	0-99 secs.
After this operation, the vacuum breaking valve will close	2secs.	0-999 secs.
Waiting time before filter cleaning	2 secs.	0-99secs.
Filter cleaning after suction	15 secs.	0-99secs.
Waiting time before filter cleaning	2 secs.	0-99 secs.
Wait for the materials fully dropped into the hopper	10 secs.	5-99secs.

4.1 Communication Address（protocol modbus-RTU）

Address (keeping deposit zone） (decimal)	Parameters	Reading R/ Writing W	Default Parameter	Min. Value	Max. Value	Unit
0	Current action	R	/			/
	bit 0 shutdown			0	1	
	bit 1 standby			0	1	
	bit 2 absorb materials			0	1	
	bit 3 wait for material discharge			0	1	
	bit 4 cleaning the screen			0	1	
	bit 5 wait for motor stopping			0	1	
	bit 6 screen blocking alarm			0	1	
	bit 7 shortage alarm			0	1	
	Bit 8~bit 16 undefined					
1	Real-time info.	R	/			/
3	Suction action time	R/W	15	5	127	S
4	Screen cleaning action cycle	R/W	10	1	99	Once
6	Screen cleaning setting time	R/W		0	99	S
7	Discharge checking time	R/W	10	5	99	S
8	Standby time after motor running	R/W	0	0	99	S
9	Screen cleaning setting time after suction	R/W	5	0	99	S
10	Waiting time for circulating suction	R/W	0	0	9990	10S
13	Input and output status	R	/			/
	bit 0 shortage input signal			0 full mat.	1 mat. shortage	
	bit 1 filter screen blocking input signal			0 no blockin	1 blocking	
	bit 4 suction output			0 no	1 output	
	bit 5 spraying valve output			0 no output	1 output	

	bit 6 alarm output			0 no output	1 output	
	bit7~bit15 undefined					
14	Current action	R	/			/
	bit 0 shutdown			0	1	
	bit 1 standby			0	1	
	bit 2 absorbing			0	1	
	bit 3 waiting for material discharge			0	1	
	bit 4 clean the filter screen			0	1	
	bit 5 wait for motor stop			0	1	
	bit 6 filter blocking alarm			0	1	
	bit 7 shortage alarm			0	1	
	bit8~bit15 undefined					
15	Startup & shutdown	W	/	0	1 shutdown	/
16	Suction action time	R/W	15	5	127	S
17	Mixing proportion	R/W	0	0	100	%
18	Circulating startup setting of mixing action counting	R/W	1	1	9	times
19	Filter screen action cycle	R/W	3	1	99	times
20	Circulating suction waiting time	R/W	0	0	9990	10S
21	Screen cleaning setting time before suction	R/W	0	0	99	S
22	Screen cleaning setting time after suction	R/W	5	0	99	S
23	Discharge checking time	R/W	10	5	99	S
24	Material shortage counting alarm	R/W	3	1	9	times
25	Material shortage counting stop alarm	R/W	3	Mat. shortage	99	times
26	Standby time after motor running	R/W	20	0	99	S
27	Buzzer alarm type	R/W	1	0	2	/
29	Motor working time record	R/W	0	0	999	10h
30	Full mat. detecting time	R/W	3	1	9	S
31	Mat. shortage detecting	R/W	3	1	9	S
32	Mat. shut-off time	R/W	0	0	100	S
34	Motor delay stop time	R/W	0	0	999	S
35	Accumulating times of mixing actions	R	0	0	0x03 set value	times
36	Accumulating times of screen cleaning actions	R	0	0	0x04 set value	times

37	Accumulating times of material shortage alarm	R	0	0	99	times
38	Startup & shutdown control	W		0 startup	1 shutdown	/
39	Current action	R	/			/
	bit 0 startup			0	1	
	bit 1 standby			0	1	
	bit 2 cleaning the filter screen			0	1	
	bit 3 wait for motor			0	1	
	bit 4 absorb the material			0	1	
	bit 5 absorb the masterbatch material (mixing)			0	1	
	bit 6 wait for material			0	1	
	bit 7 wait for circulating			0	1	
	Bit 8 ~bit 15 undefined					
40	real-time information	R	/			/
41	Input and output state	R	/			/
	bit 0 shortage input signal			0 full	1 mat.	
	bit 1 filter blocking input			0 no	1 blocking	
	bit 2 suction output			0 no	1 output	
	bit 3 vacuum breaking output			0 no output	1 output	
	bit 4 mixing output			0 no	1 output	
	bit 5 spraying valve output			0 no output	1 output	
	bit 6 alarm output			0 no	1 output	
	bit7~bit15undefined					
42	alarm state	R	/			/
	bit 0 shortage alarm			0	1	
	bit 1 mat. shortage stop			0	1	
	bit 2 filter blocking			0	1	
	bit 3~bit 15 undefined					
45	The number of mixing	R/W	1	1	4	layer
46	Action mode (only can be set in shutdown)	R/W	5	1	5	/

Notes：R means only reading
W means only writing
R/W means writing and reading

Note: The password is not set in factory, which can be set by users. In case of loss, please contact us.

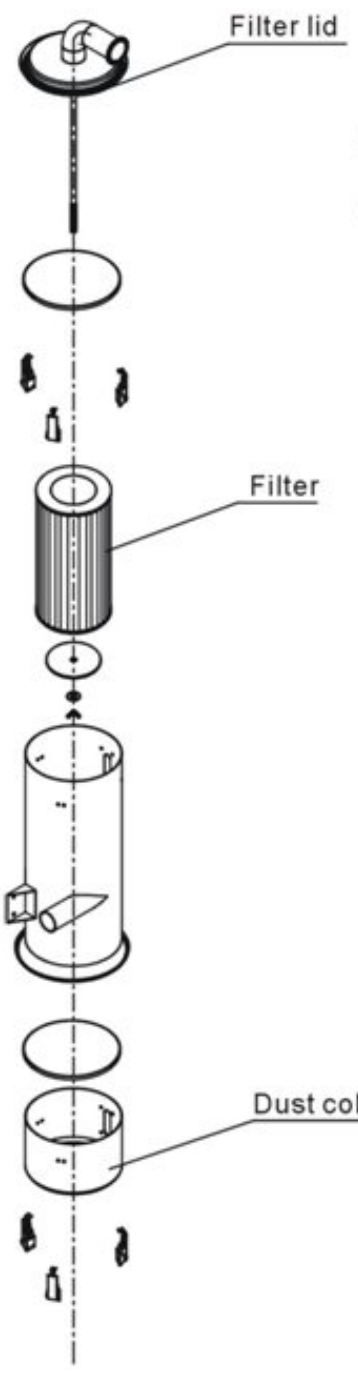
5. Trouble-shooting

Failures	Possible Causes	Troubleshooting
The controller doesn't work or the panel is not on after powering on.	Power disconnected.	Power on.
	Main power switch damaged.	Replace the main power switch.
	Power cable fault.	Check the power circuit.
	Control circuit breaker tripped.	Check the cause of the tripping and start the circuit breaker.
	Control transformer damaged.	Replace the transformer.
	Controller damaged.	Replace the controller.
	Short circuit fuse burnt	Replace the fuse.
The hopper is short of material for a long time, and the loader doesn't work.	Reed switch induction insensitive	Check and adjust the height of the hopper reed switch housing, and confirm that the light is on when the discharge plate is closed.
Blower overload alarm	Filter blocked.	Clean the filter.
	Phase shortage	Check the circuit.
The hopper is full, and blower works continuesly.	Suction time is too long	Reset the suction time.
	The reed switch is connected through	Adjust the height of the reed switch.
	Signal wire short circult	Check and repair the signal wire.
	Contactor mechanical failure or contact bonded.	Repair or replace.
	Contactor fault	Check and replace.
Suction motor doesn't work.	Motor damaged.	Repair or replace.
	Contactor damaged	Repair or replace.
	Controller damaged.	Repair or replace.
	Circuit fault.	Repair or replace.
	Signal wire disconnected.	Reconnect the plug.
The hopper can't be fully loaded after several suctions or shortage alarm occurs.	The material is used up.	Add the materials.
	Air pipe leakage.	Lock or replace the air pipe.
	Hopper filter bag or loader filter blocked	Clean filter bags or filters.
	The hopper discharge plate air leaked due to deformation	Check or replace the discharge plate.
	Filter hopper cover air leaked.	Check the filter barrel cover's rubber fastener
	Vacuum breaking valve leaked.	Check whether the vacuum breaking valve diaphragm is damaged.
	Poor fluidity in the material pipe.	Adjust the suction pipe airflow to avoid excessive material sucked in the pipe.
	The suction time is too set in long conveying distance result in no material can be sucked.	Reset the suction time.
	Suction pipe blocked.	Check the conveying pipe.

6. Maintenance and Repair

Note: All the repair work should be done by professionals in order to prevent personal injuries and damage of the machine.

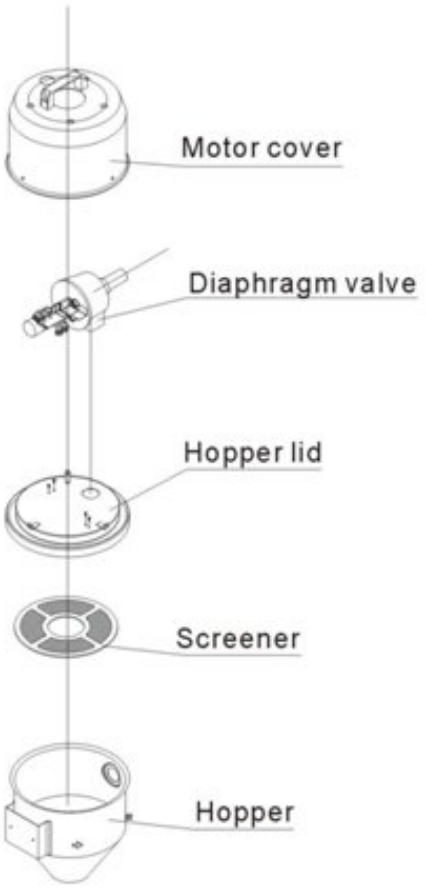
Main body, Filter Inspection and Storage Hopper Cleanup



1. First, pull out the spraying air pipe, open the filter lid, take out the filter, and use a high-pressure air gun to blow the dust on the filter from inside to outside.
2. Clean the filter.
   Period: daily
3. Clean the dust collection bin.
   Period: daily

Hopper, Screener

1. Loosen the snap hook of the tank, remove the filtering barrel lid, take out the plate filter and eliminate the dust on it.
2. Clean the plate filter. Period: daily



6.1 Material Hopper

Clean material hopper periodically or when you find conveying capacity reduced. Please loose the spring clips, take down the hopper lid, and take out filter screen. Remove all the dusts and fines on filter screen and inside of material hopper.

6.2 Main Body

Take out the air filter to make it clean periodically or when you find conveying capacity reduced. Always keep smooth air flow through air filter to maintain good conveying capacity.

Cleaning steps:

1) Loosen spring clips of filter cover and butterfly screws, and take out the filter.
2) Remove the dusts adhering to the filter to keep good suction power.

6.3 Reed Switch, Photoelectric Switch

Reed switch

When the indicator of the reed switch doesn't work, check the switch contact and replace with a new one if it doesn't work well.

1) Unscrew the outer box of the sensor.
2) Adjust the depth or move position the sensor inserted into the box, the indicator lamp lights means that magnetism has been detected and the swith is well worked.
3) If magnetism cannot be detected by magnets, please check whether the switch is bad contacted or damaged.

Photoelectric Switch

When the indicator of the photoelectric switch doesn't work, check the switch contact and replace with a new one if it doesn't work well.

1) Check whether the wires are bad contacted.
2) Please replace with a new one if the switch is damaged.

6.4 Weekly Checking

1) Check if there are broken electrical wires or not. Replace the broken wires

immediately.

2) Check the function of the keys on the control panel.

3) Check if conveying hose connections at material inlet are loose or not, and if the seal ring is sealed up.

Note: Cut off power supply when you check electrical wires.

6.5 Monthly Checking

1) Check if the clips of hopper lid are loose or not.
2) Check if the stopping flap is out of shape. If it is, please replace it.
3) Check the performance of magnetic proximity switch or photo sensor. If there is poor contact, adjust or replace it.
4) Check the working condition of the suction motor.

6.6 Maintenance Schedule

6.6.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____ V Frequency _____ Hz Power _____kW

6.6.2 Installation & Inspection

☐Check if the takeover pipe has been correctly connected.

☐Check if that pipe is locked up by clips.

☐Check if mounting base is locked tightly.

Electrical Installation

☐Voltage: _____ V _____ Hz

☐Fuse melting current: One-phase: A _____ Three-phase: _____ A

☐Check phase sequence of power supply.

6.6.3 Daily Checking

☐Check main power switch.

☐Check filter mesh.

☐Check working statusof the motor.

6.6.4 Weekly Checking

☐Check all the electrical cables.

☐Check if there are loose connections of electricalcomponents.

☐Check the screw of the feed-in pipe's flange isloosed or not.

☐Check the air filter.

6.6.5 Monthly Checking

☐Check the spring lock on the hopper cover isloosed or not.

☐Check the reversal stop piece is deformed or not.

☐Check the function of the magnetic proximity switch.