SAL-UG122 Series

"One-to-Two" Separate Hopper Loader

Date: Feb ., 2023

Version: Ver.E (English)

SHINI

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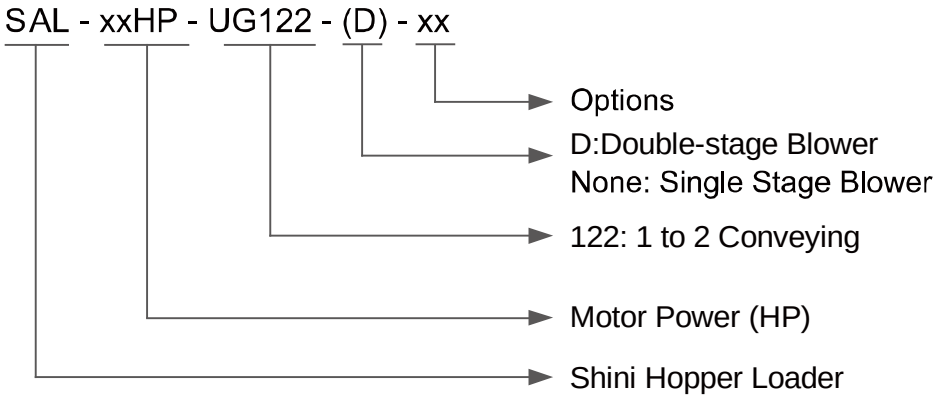
1. General Description

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

"One-to-Two" Separate hopper loaders are designed and developed on the basis of original European separate-vacuum hopper loader. They have more functions, and are easy to operate and convenient to install. Collocated with two 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-Two" material conveying to different injection molding machines or hoppers, thus greatly saving the costs.

Model: SAL-5HP-UG122 Main Unit + SHR-12U-S Hopper

1.1 Coding Principle



1.2 Feature

- SAL-5HP-UG122(-D) adopts the integrated design of cyclone filter to reduce the filter load effectively.
- SAL-10HP- UG122 (-D) has non-stop cleaning function that supports work for a long time.
- The series of SALUG122 models have vacuum breaking valve to protect the filter.
- The series of SAL-UG122 collocated with the European stainless steel central hopper to ensure no contamination of the materials.
- The series of SAL-UG122 models adopt LCD display + microcomputer controller to ensure intuitive display and easy operation.
- The controller of SAL-UG122 series models has independent shut-off output function that can directly control the shut-off valve SBU.
- SAL-UG122 series are equipped with RS485 interface and acoustooptic alrm light.
- SAL-5HP~20HP-UG122 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.

Shini Hotline Service:
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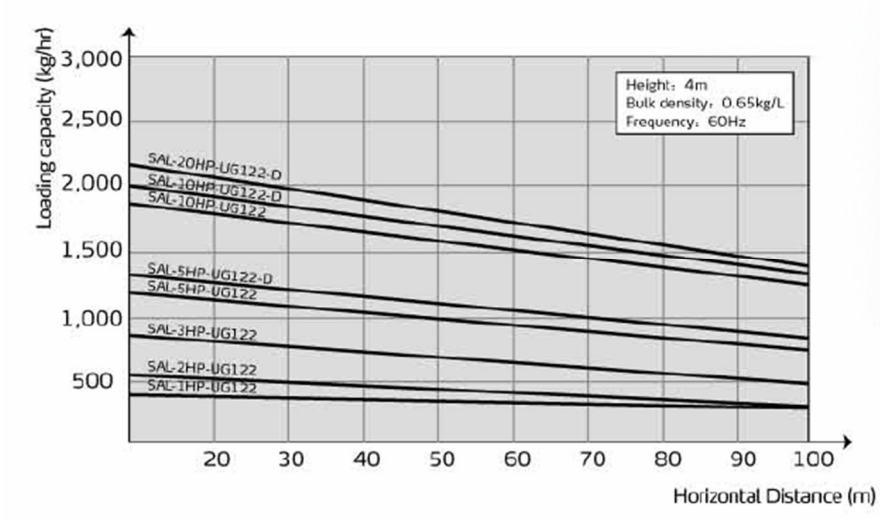
1.3 Loading Capacity



Picture 1-1: Loading Capacity

1.4 Safety Regulations

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

1.4.1 Safety Signs and Labels

All the electrical components should be installed by professional technicians.

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:

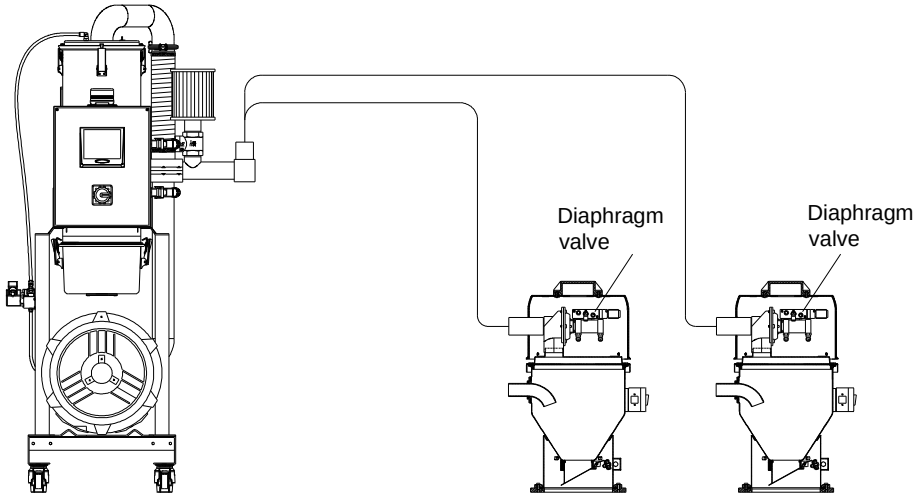
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible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

SAL-UG "Euro" separate-vacuum hopper loaders are 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

When a suction station’s switch is opened, the blower works, the vacuum breaking valve closes, and the diaphragm valve of corresponding hopper opens. Then, the high-pressure vacuum is generated in the hopper, the non-return piece closes, and materials in the storage barrel get into the hopper from the pipe due to the air pressure difference.

When the suction is completed, the vacuum breaking valve opens, the corresponding diaphragm valve closes, and the materials drop due to the gravity. When the reed switch detects no materials, the vacuum breaking valve closes, and the corresponding diaphragm valve opens to suck the materials again. When the hopper sucked no materials for three times, the alarm light will give the alarm, and the blower delayed the shutdown.

When the suction switch is on, the system will cycle from suction station 1 to station 2 in turn.

3. Installation and Debugging

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

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 and Positioning

Notices for installation：

1) Machine just can be mounted in vertical position. Make sure there's no pipe, fixed structure or other objects above the installing location and around the machine which may block machine's installation, hit objects or injure human person.

2) For easy maintenance, it's suggested to leave 1m space around the machine, and keep 2m distance from the machine and the inflammable substance.

   Note: Keep 2m distance from the machine and the inflammable substance.

3) Machine should be placed on water-level surface. If it needs to be mounted on a higher surface (e.g. the scaffold or the interlayer), should ensure its structure and size could bear the weight and size of the machine.

Picture 3-1: 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 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: +/- 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!

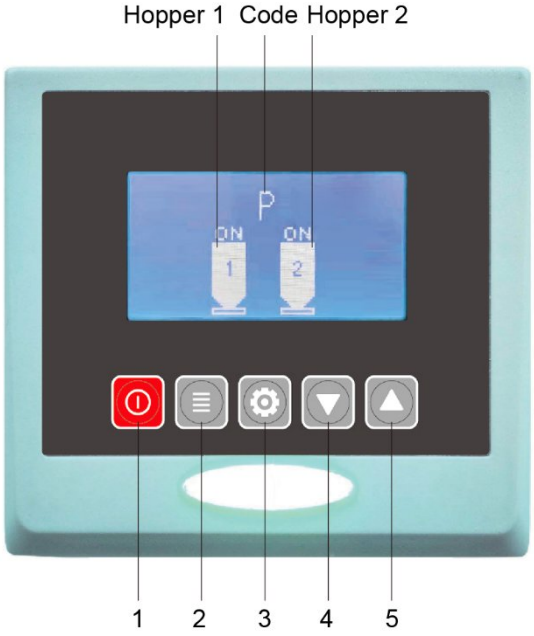
3.3 Compressed Air Connection

Table 3-1: Compressed Air Specification

Items	Range	Remarks
Quality Grade	335	According to GB/T 13277-1991, the concentration of solid particles is not more than 5mg/m^3, the temperature of dew point is about - 20 ℃, and the oil content is not more than 25mg/m^3.
Air Source Pressure (bar)	3~5	--
Air Flow (L/hr)	~10	--
Pipe Size	PM20	Quick connector

4. Operation

4.1 Panel Description



Picture 4-1: Control Panel

Table 4-1: Press Botton Description

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 Operation Instruction

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.

4.2.4 Code Interpretation

Table 4-2: Code Interpretation

Code Name	Function	Code	Description
M	suction motor running	C	shut-off
R	spray-wash	P	standby
N	waiting time	OL	motor overload
D+time	suction time	N+ time	motor overload downtime
HP	high pressure	PV	mixing valve

4.3 Parameter Description

4.3.1 Specical Parameter (hopper)

Table 4-3: Specical Parameters (hopper)

Parameter Name	Function	Parameter Value	
		Factory Default	Range
Hopper action	The hopper is opened or closed	start	

Preparation time	After the hopper started, it can work normally only after the preparation time.	3S	0-99S
Suction time	the time that suction valve works	15S	0-999S
Shut-off time	the time that shut-off valve works	3S	0-99S
Screen cleaning time	the time that spraying valve works Set it to 0: not clean the screen after suction	3S	0-99S
Screen cleaning cycle	The times of suction repeatedly started before each screen cleaning Set it to 1: clean the screen after each suction	3 times	0-99
Mixing time	Start the same time as the suction, and set the mixing time Time counting method: suction time *xx% Set it to 0: not started	0S	0-100%
Mixing proportion	Start the same time as the suction, and set the mixing proportion Time counting method: suction time *xx% Set it to 0: not started	0S	0-100%
Mixing method	When mixing, the executing layers of mixing action For example: suction time 20sec, mixing ratio is 10%, layer: two layers, then the mixing action is: 9s—1s ----9s---1s Set the single layer's work, and the suction time range is 5-99 secs. Set 2 layers' work, and the suction time range is 17-99 secs. Set 3 layers' work, and the suction time range is 32-99 secs. Set 4 layers' work, and the suction time range is 46-99 secs. If the suction time is changed, the min. suction action of each layer is less than 1 sec., and the program will force to change the action time to 1 sec.	1	1-4

4.3.2 Common Parameters (entire machine)

Table 4-4: Common Parameters (entire machine)

Parameter Name	**Function Description**	**Parameter Value**

		Factory Default	Range
Shortage times count alarm	Set the number of times for no materials discharged to the hopper, and the times before giving alarm	3S	0-99S
Vacuum breaking time	The action time of the vacuum breaking valve	2S	0-999S
Host unit screen cleaning cycle	The times it repeatly starts the suction before each screen cleaning.	3 times	0-99 times
Waiting time before host unit screen cleaning	The waiting time before screen cleaning, and after that then it starts cleaning	2S	0-99S
Waiting time after host unit screen cleaning	The waiting time after screen cleaning, and after that then it starts next action	2S	0-99S
Host unit screen cleaning time	Total time of screen cleaning	0S	0-99S
Screen cleaning ON time	Screen cleaning intermittent action, and the time it starts before shutdown	0S	0-99S
Screen cleaning OFF time	Screen cleaning intermittent action, and the time it stops before startup	2S	0-99S
Motor delay time	After the suction time, the delayed time before motor stops	90S	0-99S

4.3.3 Language Setting

Table 4-5: Language Selection Specification

Parameter Name	Function Description	Parameter Range
Language	The language can be set to Chinese or English	Chinese/English

4.3.4 Communication Parameters

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

Table 4-6: Communication Parameters

Parameter	Function Description	Parameter Values

Names		Default Value	Range
Comm. address	communication address	1	1-99
Baud rate	4800 9600 19600	9600	
Parity bit	No parity odd even parity	None	
Stop bit	1 bit 2 bits	1	

4.4 Communication Address（Protocol Modbus-RTU）

Table 4-7: Communication Address (Protocol Modbus-RTU)Parameters

Address (Keep the deposit area)（decimal system）	Parameter Content	Reading R/ Writing W	Default Parameters	Minimum	Maximum	Unit
1	Current action (machine current status)	R	/	/	/	/
	bit 0 shutdown			0	1	
	bit 1 standby			0	1	
	bit 2 suction			0	1	
	bit 3 waiting time			0	1	
	bit 4 in filter cleaning			0	1	
	bit 5 detection for discharge			0	1	
2	Real-time date	R	/	/	/	/
3	Output action 1	R	/	/	/	
	bit 0 hopper 1 shut-off valve			0 no output	1 output	
	bit 1 hopper 2 shut-off valve			0 no output	1 output	
	bit 2 hopper 3 shut-off valve			0 no output	1 output	
	bit 3 hopper 4 shut-off valve			0 no output	1 output	
	bit 4 blower			0 no output	1 output	
	bit 5 spray-wash			0 no output	1 output	
	bit 6 vacuum breaking			0 no output	1 output	
	bit 7 alarm			0 no output	1 output	
	bit 8~ bit 16 undefined			/	/	
4	output action 2	R	/	/	/	/
	bit 0 suction 1			0 no output	1 output	

	bit 1 suction 2			0 no output	1 output	
	bit 2 suction 3			0 no output	1 output	
	bit 3 suction 4			0 no output	1 output	
	Bit4~bit16 undefined			/	/	
5	output action	R	/	/	/	/
	bit 0 hopper 1 shortage			0 no output	1 output	
	bit 1 hopper 2 shortage			0 no output	1 output	
	bit 2 hopper 3 shortage			0 no output	1 output	
	bit 3 hopper 4 shortage			0 no output	1 output	
	bit 4 overload			0 no output	1 output	
	bit 5 high pressure			0 no output	1 output	
	Bit6~bit16 undefined			/	/	
6	alarm action	R	/	/	/	
	bit 0 hopper 1 shortage alarm			0 no alarm	1 has alarm	
	bit 1 hopper 2 shortage alarm			0 no alarm	1 has alarm	
	bit 2 hopper 3 shortage alarm			0 no alarm	1 has alarm	
	bit 3 hopper 4 shortage alarm			0 no alarm	1 has alarm	
	bit 4 overload alarm			0 no alarm	1 has alarm	
	bit 5 high pressure alarm			0 no alarm	1 has alarm	
	Bit6~bit16 undefined			/	/	
7	hopper 1 on/off	R/W	/	0 off	1 on	/
8	hopper 2 on/off	R/W	/	0 off	1 on	/
9	hopper 3 on/off	R/W	/	0 off	1 on	/
10	hopper 4 on/off	R/W	/	0 off	1 on	/
11	hopper 1 preparation time	R/W	3	0	99	secs.
12	hopper 2 preparation time	R/W	3	0	99	secs.
13	hopper 3 preparation time	R/W	3	0	99	secs.
14	hopper 4 preparation time	R/W	3	0	99	secs.
15	hopper 1 suction time	R/W	30	0	999	secs.
16	hopper 2 suction time	R/W	30	0	999	secs.
17	hopper 3 suction time	R/W	30	0	999	secs.
18	hopper 4 suction time	R/W	30	0	999	secs.
19	hopper 1 shut-off time	R/W	3	0	99	secs.
20	hopper 2 shut-off time	R/W	3	0	99	secs.
21	hopper 3 shut-off time	R/W	3	0	99	secs.
22	hopper 4 shut-off time	R/W	3	0	99	secs.
23	times of shortage alarm	R/W	3	1	99	times
25	times of screen cleaning	R/W	10	1	99	times

26	select to clean the screen	R/W	0	before 0 suction	after 0 suction	
27	waiting time before screen cleaning	R/W	2	0	99	secs.
28	waiting time after screen cleaning	R/W	2	0	99	secs.
29	screen cleaning time	R/W	15	0	99	secs.
30	screen cleaning start time	R/W	2	0	99	secs.
31	screen cleaning close time	R/W	2	0	99	secs.
32	motor delay time	R/W	90	0	99	secs.
33	delayed vacuum breaking time	R/W	2	0	999	secs.
34	hopper 1 shortage time	R/W	3	1	9	secs.
35	hopper 2 shortage time	R/W	3	1	9	secs.
36	hopper 3 shortage time	R/W	3	1	9	secs.
37	hopper 4 shortage time	R/W	3	1	9	secs.
38	hopper 1 discharge detection time	R/W	10	5	99	secs.
39	hopper 2 discharge detection time	R/W	10	5	99	secs.
40	hopper 3 discharge detection time	R/W	10	5	99	secs.
41	hopper 4 discharge detection time	R/W	10	5	99	secs.
43	full feeding time of hopper 1	R/W	1	1	9	secs.
44	full feeding time of hopper 2	R/W	1	1	9	secs.
45	full feeding time of hopper 3	R/M	1	1	99	secs.
46	full feeding time of hopper 4	R/W	1	1	9	secs.

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

Notes: There's no password set in factory before delivery, and it can be set by the customer. In case of loss, please contact us.

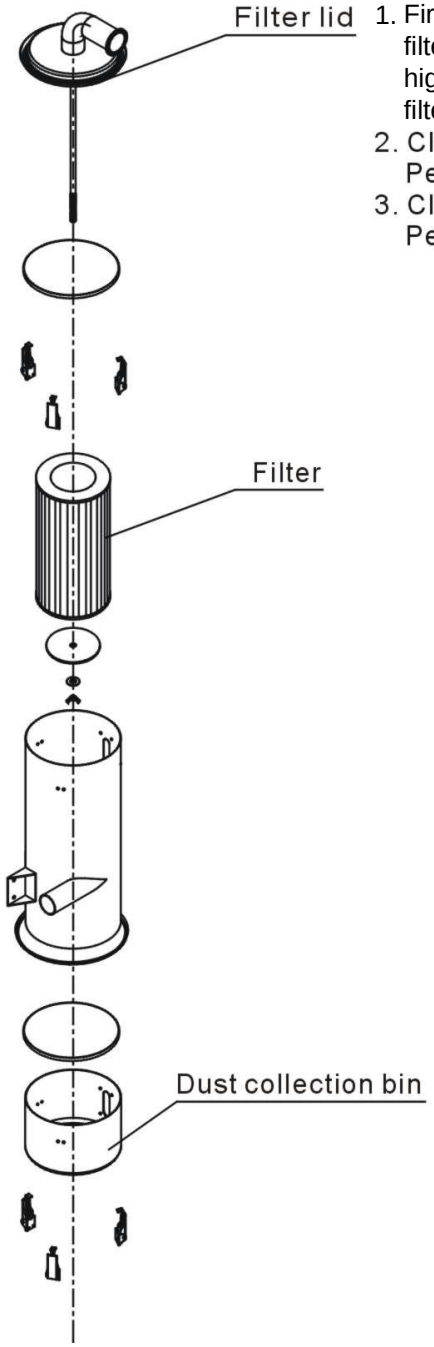
5. Trouble-shooting

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 damage	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 circuit	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 repairs work should be done by professionals in order to prevent personal injuries and damage of the machine.

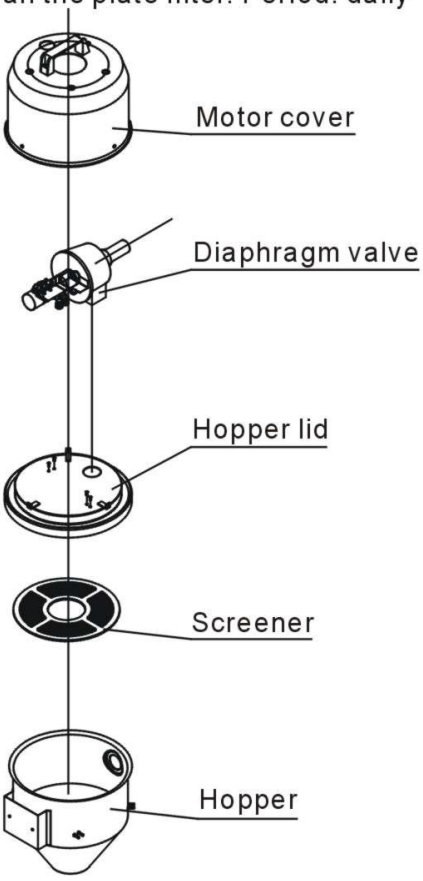
Main body, Filter Inspection and Storage Hopper Cleanup



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 status of the motor.

6.6.4 Weekly Checking

☐Check all the electrical cables.

☐Check if there are loose connections of electrical components.

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

☐Check the air filter.

6.6.5 Monthly Checking

- ☐ Check the spring lock on the hopper cover is loosed or not.
- ☐ Check the reversal stop piece is deformed or not.
- ☐ Check the function of the magnetic proximity switch.