SAL-UG124

“One-to-Four” Separate Hopper Loader

Date: Jun., 2021
Version: Ver.E (English)

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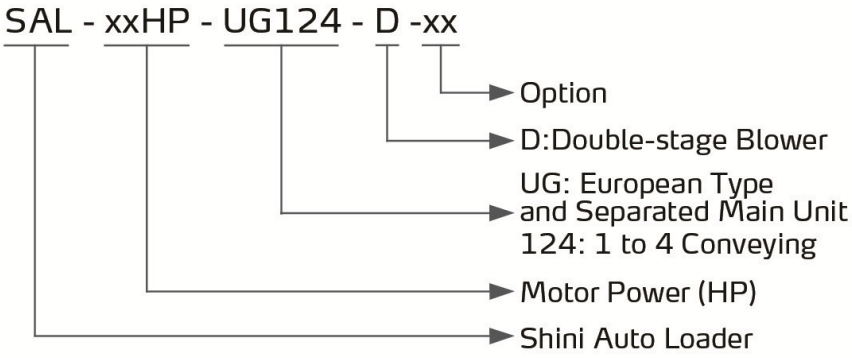
1. General Description

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.

Picture 1-1：SAL-5HP-UG124-D Main Unit + SHR-12U-S Hopper

1.1 Coding Principle



1.2 Feature

- One main vacuum unit for 2 or 4 hopper receivers, suitable for height or long-distance conveying.
- Two-stage cyclone and filter technology with large dust bin for quick and easy maintenance.
- Standard vacuum breaking valve for quick material discharge, maximize load, and energy consumption.
- Industrial grade safety plug ensures safe and reliable operation.

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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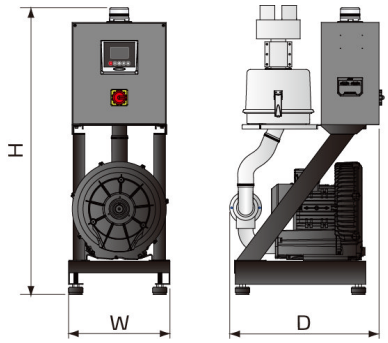
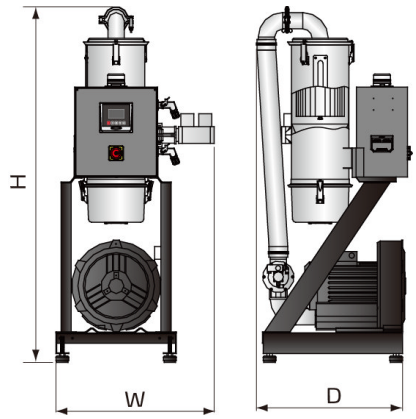
1.3 Technical Specifications

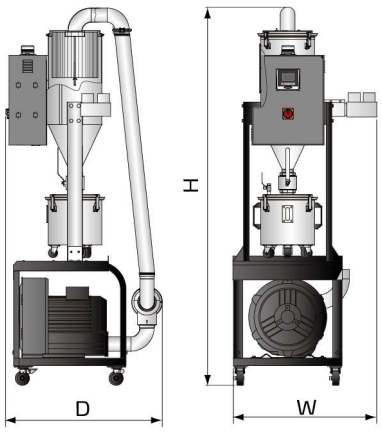
1.3.1 Dimensions (Main Unit)



Picture 1-2：SAL-2HP~3HP-UG124

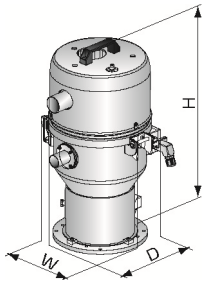


Picture 1-3：SAL-5HP-UG124



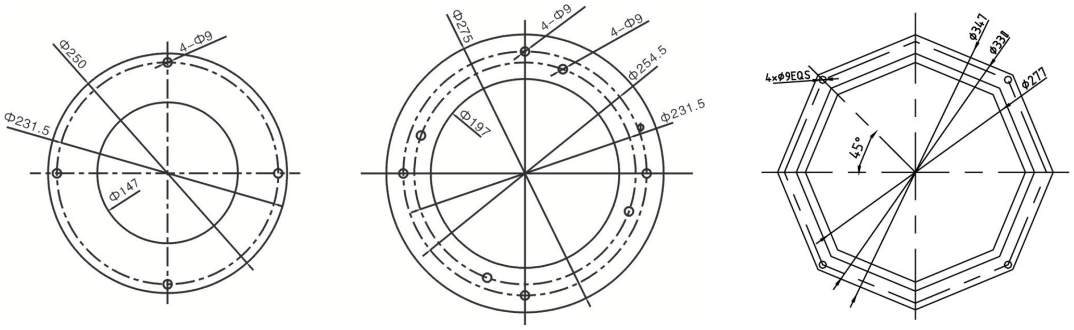
Picture 1-4：SAL-10HP-UG124

1.3.2 Hopper



Picture 1-5：Hopper SHR-U-S

1.3.3 SHR-U-S SHR-U-S Hopper Base Installation Size



SHR-3U-S SHR-6U~12U-S SHR-36U-S

Picture 1-6：Hopper Base SHR-U-S

1.3.1 Specifications

Table 1-1: Specifications

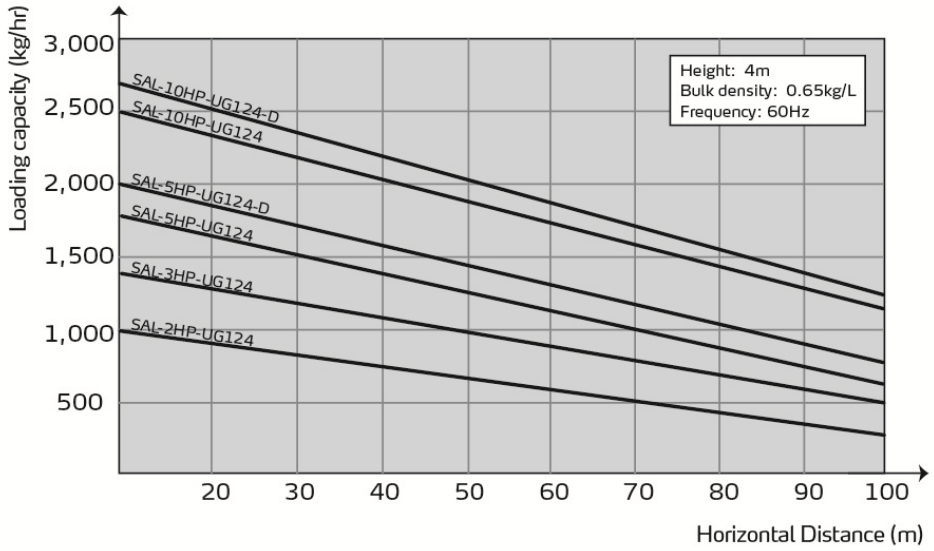
Main Unit					Hopper Receivers				Loading Pipe Dia. (Inch))	Air Suction Pipe Dia. (Inch)	Loading Capacity (kg / hr)
Model	Ver.	Motor Power (kW) (50 / 60Hz)	Dimensions (mm) H×W×D	Weight (kg)	Applicable Model	Capacity (L)	Dimensions (mm) H×W×D	Weight (kg)			
SAL-2HP-UG124	D	1.5 (3Φ)	985×350×516	60	4×SHR-3U-S	3	600×270×340	7.5	1.5	2	550
SAL-3HP-UG124	C	1.85(3Φ)	985×350×516	65	4×SHR-6U-S	6	560×305×375	9	1.5	2	850
SAL-5HP-UG124	E	3.75 (3Φ)	1384×620×571	175	4×SHR-12U-S	12	615×335×405	9	1.5	2	1200
SAL-5HP-UG124-D	E	3.4(3Φ)	1384×659×571	180	4×SHR-12U-S	12	615×335×405	9	1.5	2	1350
SAL-10HP-UG124	E	7.5 (3Φ)	2020×765×836	185	4×SHR-36U-S	36	1054×394×469	12	2	2.5	1800

SAL-10HP-UG124-D	E	7.5 (3Φ)	2020×934×836	192	4×SHR-36U-S	36	1054×394×469	12	2	2.5	2000

Note: 1) Test condition of conveying capacity: Plastic material of bulk density 0.65kg/L(5.5Ib/gal), dia.3~5 mm/0.12~0.2inch, vertical conveying height: 4m/13.1feet, horizontal conveying distance: 5m.

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

1.3.2 Loading Capacity



Picture 1-7: 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:

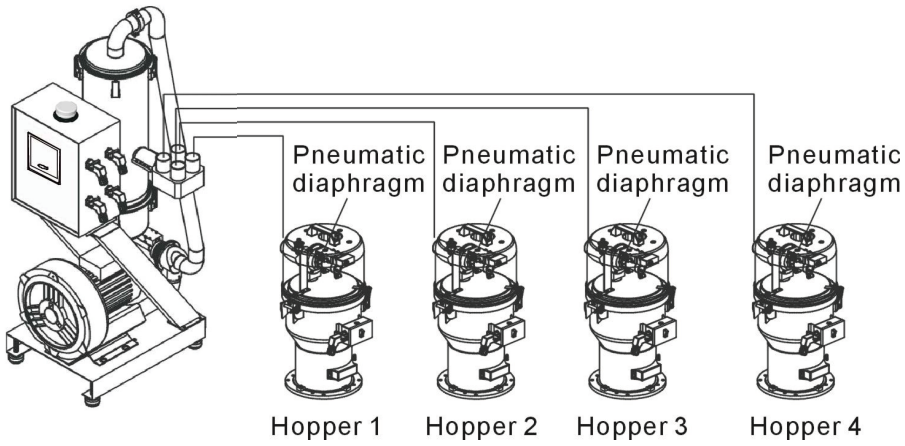
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible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

2.2 Optional Accessories

2.2.1 Air Accumulator

2.2.1.1 Function of air Accumulator

In the case of much impurity or recycled materials included in raw materials, main unit can be equipped with air accumulator auto washing unit as options, and add "A" at the end of model code. (Suitable for SAL-5HP-UG124 and models above)

Picture 2-2：Air Accumulator

2.2.1.1 Specification of air Accumulator

Air accumulator: HxD=170x76mm

Note: Please fix the air supply correctly. Air pressure 4~6 bar.

3. Installation and Debugging

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 the selected installation position that may hinder machine installation, damage the object or cause human injuries.
2) For easy maintenance, it's recommended to leave 1m space around the machine. Keep 2m distance between the machine and inflammables.
   Notes: keep 2m distance between the machine and inflammables.

   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.

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 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%

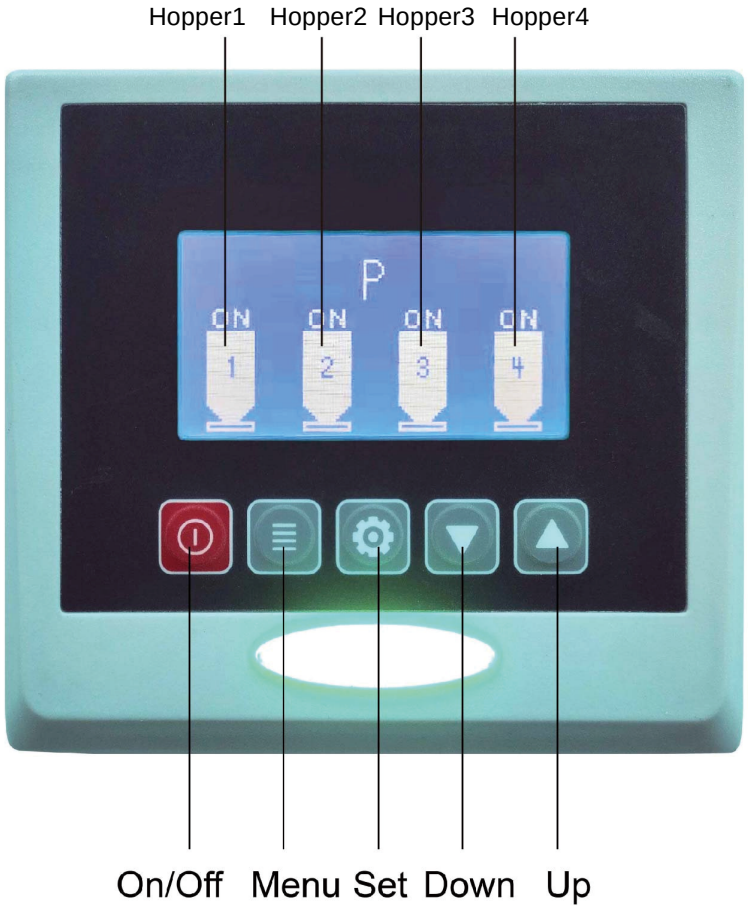
7) Please refer to electrical drawing of each model to get the detailed power supply specifications

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



Picture 4-1：Control Panel

NO.	Graphical	Interpretation
1		ON/OFF
2		MENU
3		SET
4		DOWN
5		UP

4.1 Parameter Setting

In OFF mode，Press  , and enter parameter setting.

Press  or  to select parameter，press  enter setting.

Press  or  modify parameters，press  Confirm revision.

E.g：set “Suction time setting” 15S

In OFF mode，Press  and enter parameter setting.

Press  or  key to select the function code F.01, and press  key to enter.

Press  or  key to change it to parameter 15, and press  key to confirm after modification.

4.2 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 the hopper, and it will work after the preparation time.	3S	0-99S
Suction time	Suction valve action time	30S	0-999S
Shut-off time	Shut-off valve action time	3S	0-99S
Filter cleaning time	Spraying valve action time Set it to 0: Not clean after action	0S	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	0 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	10 times	0-99 times
Waiting before the host unit cleaning the filter	The waiting time before filter cleaning, and after that it stops filter cleaning	0S	0-99S
Waiting after the host unit cleaning the filter	The waiting time before filter cleaning, and after this process it starts next action	0S	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	0S	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	60S	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	

4.2.1 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

4.2.2 Action Specification

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

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~bit15 undefined					
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

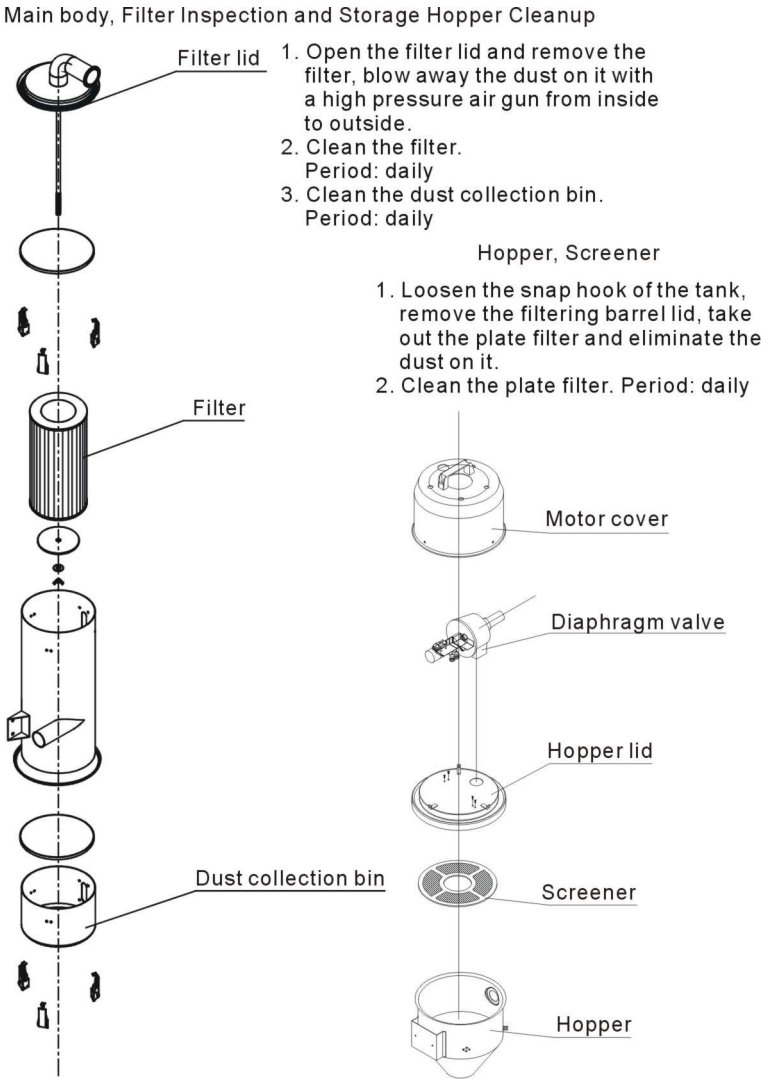
Note: The password is not set in factory, which can be set by users. In case of loss, please contact us.

5. Trouble-shooting

Failures	Possible reasons	Solutions
Motor does not work long after material discharge.	1. Main power switch or control switch is off or poorly connected.	1. Turn on main switch and control switch and make sure they are well connected.
	2. Poor contact of magnetic proximity switch.	2. Adjust or replace.
	3. Signal wire is broken.	3. Reconnect
Motor can not fully load material hopper, or machine sounds material shortage alarm.	1. No materials left for conveying.	1. Adding material.
	2. Air pipe breakage.	2. Firmly lock it or replace.
	3. Cloth filter is blocked.	3. Clean cloth filter.
Motor can not work.	Phase shortage or motor is burt out.	Check or replace.
Fuse melts each time you turn on the machine.	Short circuit or motor is burt out.	Check electrical circuit.
Motor overload alarm	1. Filter screen is blocked.	Clean the filter screen and press Reset on the overload relaly.
	2. Phase shortage	Check the electrical circuit and press Reset on the overload relaly.
Poor material liquidityin the pipe	Over or lack of air quantity	Adjust air inlet location of the suction box. Avoid small bending of the elbow.

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.



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:

Loosen spring clips of filter cover and butterfly screws, and take out the filter. 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.

Unscrew the outer box of the sensor.

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.

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.

Check whether the wires are bad contacted.

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.