SVM Series

"Econo" Vertical Mixers

Date: June, 2010

Version: V4.0 (English)

SHINI®
plastics technologies

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1. General Description

Read this manual before installation and using of the machine to prevent personal injuries and damage of the machine.

SVM series "Econo" vertical mixers are for powder and granule - like materials. They feature simple structure, fast mixing speed, easy for operation, maintenance and cleaning. It is mainly applied in plastic material mixing and also widely used in different industries, such as: powder metallurgy, pottery, chemical industry and food industry. It is an ideal mixing facility with five models, handling capacity ranging from 25 ~ 300kg.

Model: SVM-100

1.1 Feature

1) Both mixing barrel and mixer are made of stainless steel and polished, so has a very high brightness, easy to clean and absolutely no material contamination.
2) Mixing can be done in short period of time to save energy and has high performance.
3) Auto stop device can be set within 0 ~ 300 hours.
4) Material discharging outlet has a manual shut-off plate for easy material clearance.
5) Both the body and its stand are fully welded to ensure solid structure.

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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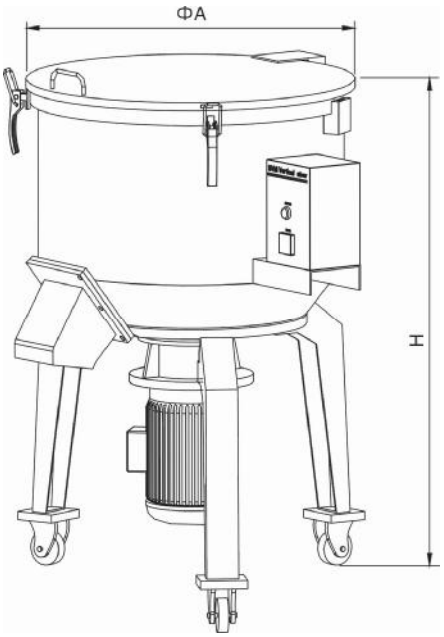
1.2 Technical Specifications

1.2.1 Technical Specifications



Picture 1-1: Technical Specifications

1.2.2 Specifications

Table 1-1: Specifications

Model	Motor Power (kW, 50 / 60Hz)	Rev (r.p.m.) (50 / 60Hz)	Mixing Capacity*(kg))	Dimension (mm) ΦA×H	Weight (kg)
SVM-25	1.1 / 1.3	80 / 92	25	510×1040	90
SVM-50	1.5 / 1.8	80 / 92	50	650×1090	131
SVM-100	3.0 / 3.6	80 / 92	100	800×1300	201
SVM-150	4.0 / 4.8	80 / 92	150	910×1400	287
SVM-200	5.5 / 5.6	80 / 92	200	980×1600	368
SVM-300	7.5 / 8.6	80 / 92	300	980×1600	368

Note: 1) " * " Normal mixing time is 3 mins.
2) Max. Noise Level is 70 dB (A).
3) Max.mixing capacity is tested based on continuous processing material of 0.65 in density and 2 - 3 mm in size.
4) Power supply 3Φ, 230 / 400 / 460 / 575V, 50 / 60Hz.

We reserve the right to change specifications without prior notice.

1.3 Safety Regulations

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

1.3.1 Safety Signs and Labels

 All the electrical components should be installed by qualified electricians. 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!

1.3.2 Transportation and Storage of the Machine

Transportation

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

Storage

1) SVM series vertical batch mixers should be stored indoors with temperature kept from 5℃ to 40℃ and humidity below 80%.
2) Disconnect all power supply and turn off main switch and control switch.
3) Keep the whole machine, especially the electrical components away from

water to avoid potential troubles caused by the water.
4) Plastic film should be used to protect the machine from dust and rains.

The machine should be operated:

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

Do not use the machine:

1) If it is with a damaged cord.
2) On a wet floor or when it is exposed to rain to avoid electrical shock.
3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.
4) This equipment works normally in the environment with altitude within 3000m.
5) At least a clearance of 1m surrounding the equipment is required during operation. Keep this equipment away from flammable sources at least two meters.
6) Avoid vibration, magnetic disturbance at the operation area.

Rejected parts disposal

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

Fire Hazard

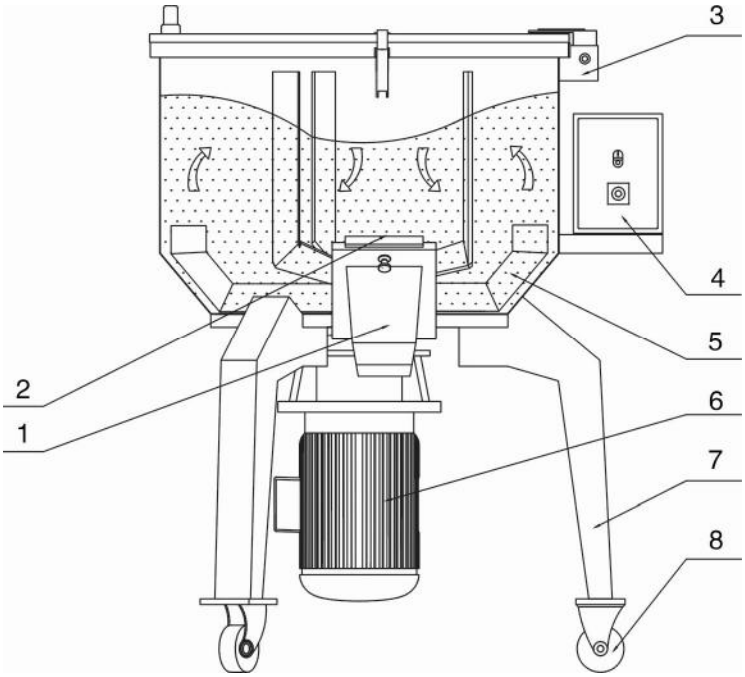
 In case of fire, Co_2 dry powder fire extinguisher should be applied.

2. Structure Characteristics and Working Principle

2.1 Main Functions

SVM series working principle is that blending material continuously by using a stainless steel blender. Upper and lower blender rotate continuously to make raw material blended quickly and evenly.

2.1.1 Working Principle Illustration



Names of Parts:

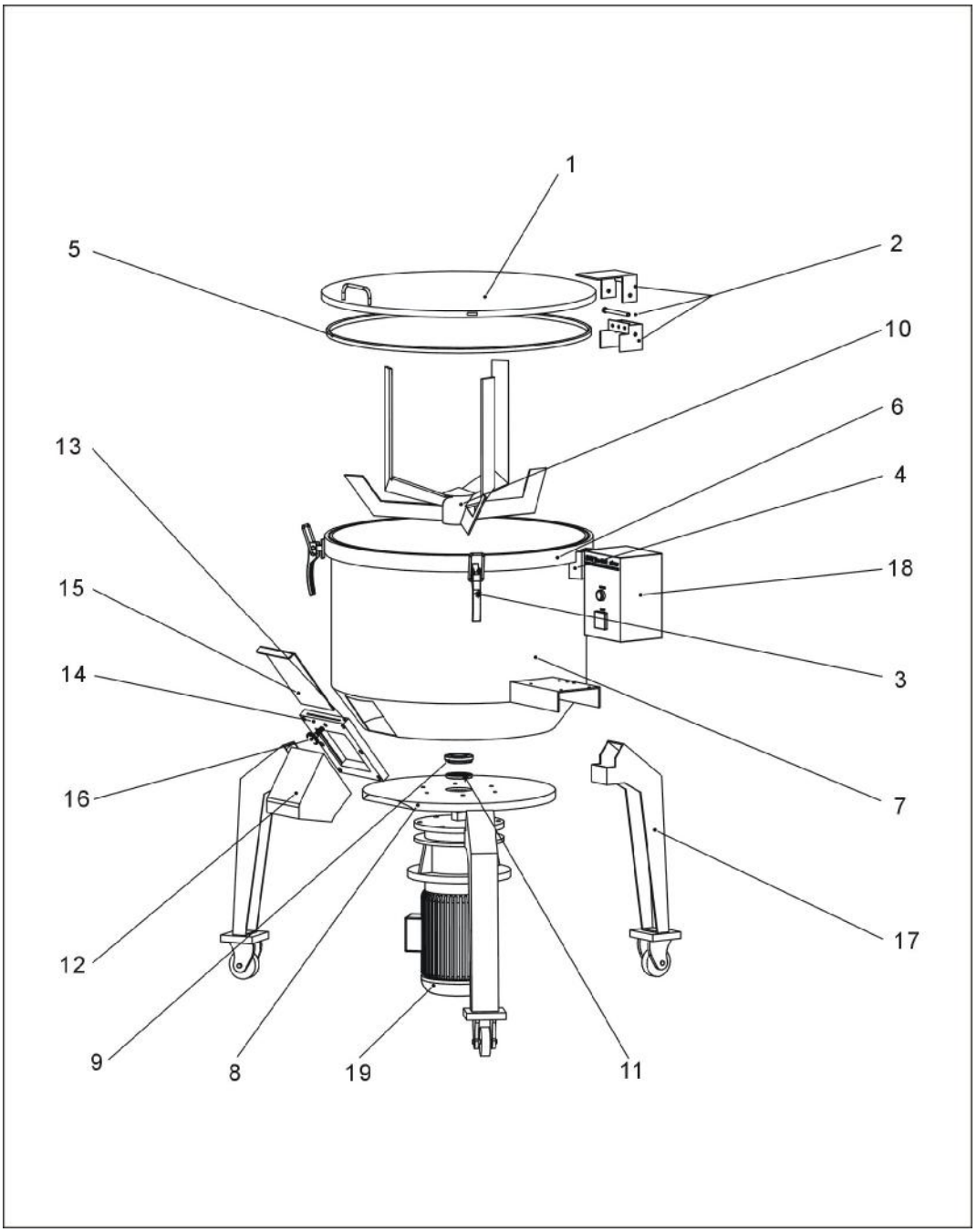
1. Funnel Flow combination
2. Shut-off Plate
3. Tank cover connection combination
4. Control box
5. Blending combination
6. Blending motor
7. Castor combination
8. Castor

Picture 2-1: Working Principle Illustration

Signals from the control box will be sent to blending motor which drives the blending screw to start material blending. Then material conveyed along the cylinder up to the top is evenly spread in the blending barrel. This process mixes material evenly in a short time, saving energy. After blending, draw open the shut-off plate to discharge the material.

2.2 Drawing and Parts List

2.2.1 Assembly Drawing (SVM-25/50/150/200)



Remarks: Please refer to material List 2.2.2 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-3: Assembly Drawing (SVM-25/50/150/200)

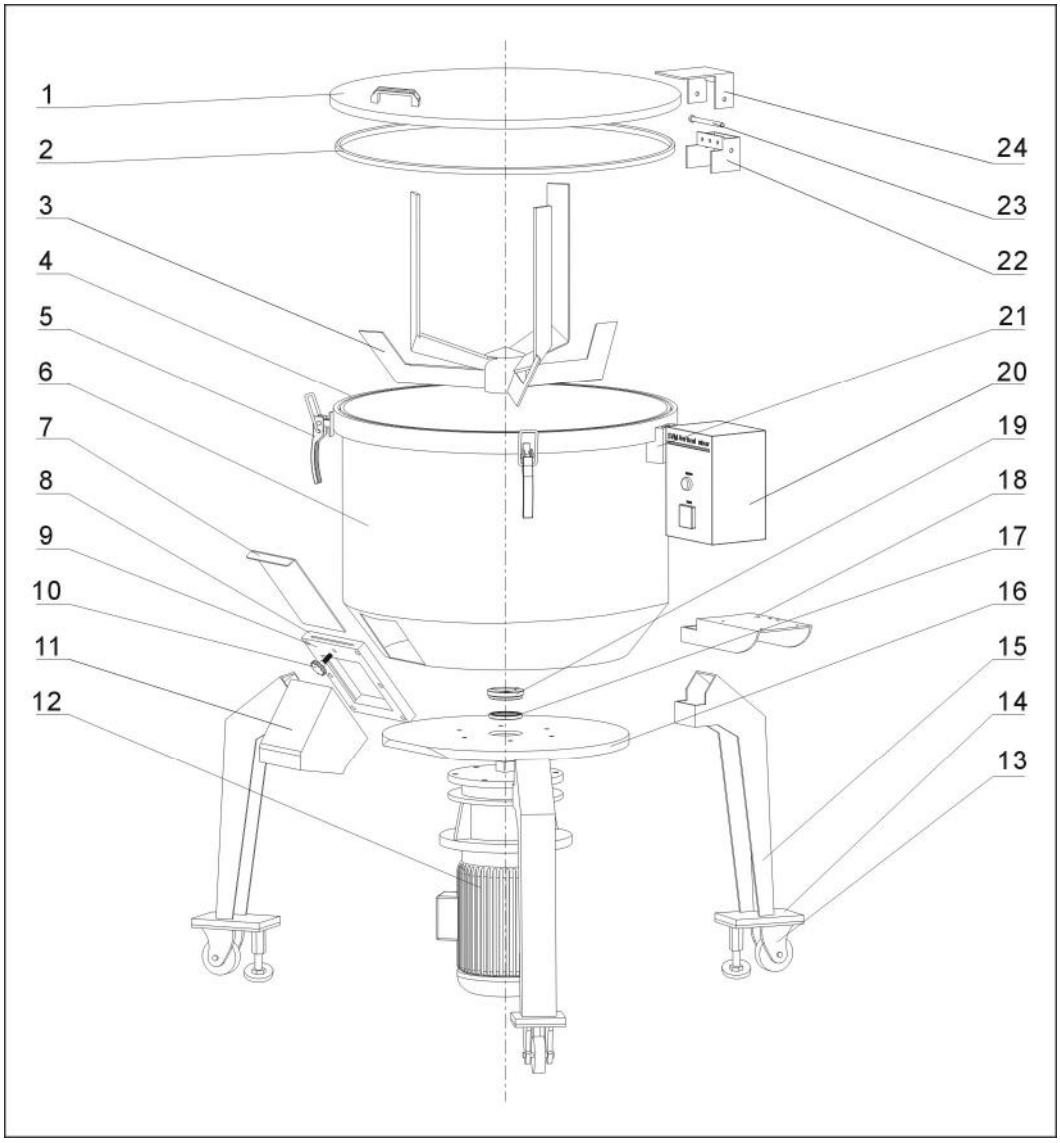
2.2.2 Parts List

Table 2-1: Parts List

No.	Name	Part No.			
		SVM-25	SVM-50	SVM-150	SVM-200
1	Lid	BL33025002021	BL33005040720	BL33015040720	BL33203040520
2	Lid connection base	BL33025000121 BL33025000221	BL33501040320 BL33501040120	BL33153040320 BL33153040120-	-
3	Knob combination	YW00121000000	YW00121000000	YW00121000000	YW00121000000
4	Limit switch	YE14450000000	YE14450000000	YE14450000000	YE14450000000
5	Washer	-	-	-	-
6	Aluminum base ring	BW21002500310	BW21005000310	BW21015000310	BW21020000310
7	Barrel	BL33025001120	BL33005040120	BL33015040120	BL33020040120
8	Barrel base board	BL33025001121	-	-	-
9	Screw	BL33025000000	BW90005000000	BW90015030000	BW90020000000
10	Mixer assembly	BL31025000020	BW33005000320	BW33015000320	BW33020000320-
11	Oil seal	YR20304707000	-	-	-
12	Funnel base combination	BL33250000320	BL33005040320	BL33015040220	BL33203040220
13	Funnel base bottom plate	BL33250000120	-	-	-
14	Funnel base panel	BL33250000420	-	-	-
15	Material discharge gate	BL33225000020	BL33005041320	BL33015041320	BL33203041120
16	Screw	BH10105600010	BH10105600010	BH10105600010	BH10105600010
17	Castor combination	BL33025000020	BL33005040620	BL33015040620	BL33020040320
18	Electrical control box	BL33002540120	BL33002540120	BL33002540120	BL33002540120
19	Gearmotor cover	YM50112100100	YM50153100000	YM50451700000	YM50556100000

* means possible broken parts.
** means easy broken part. and spare backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.2.3 Assembly Drawing (SVM-100)



Remarks: Please refer to material List 2.2.4 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-3: Assembly Drawing (SVM-100)

2.2.4 Parts List

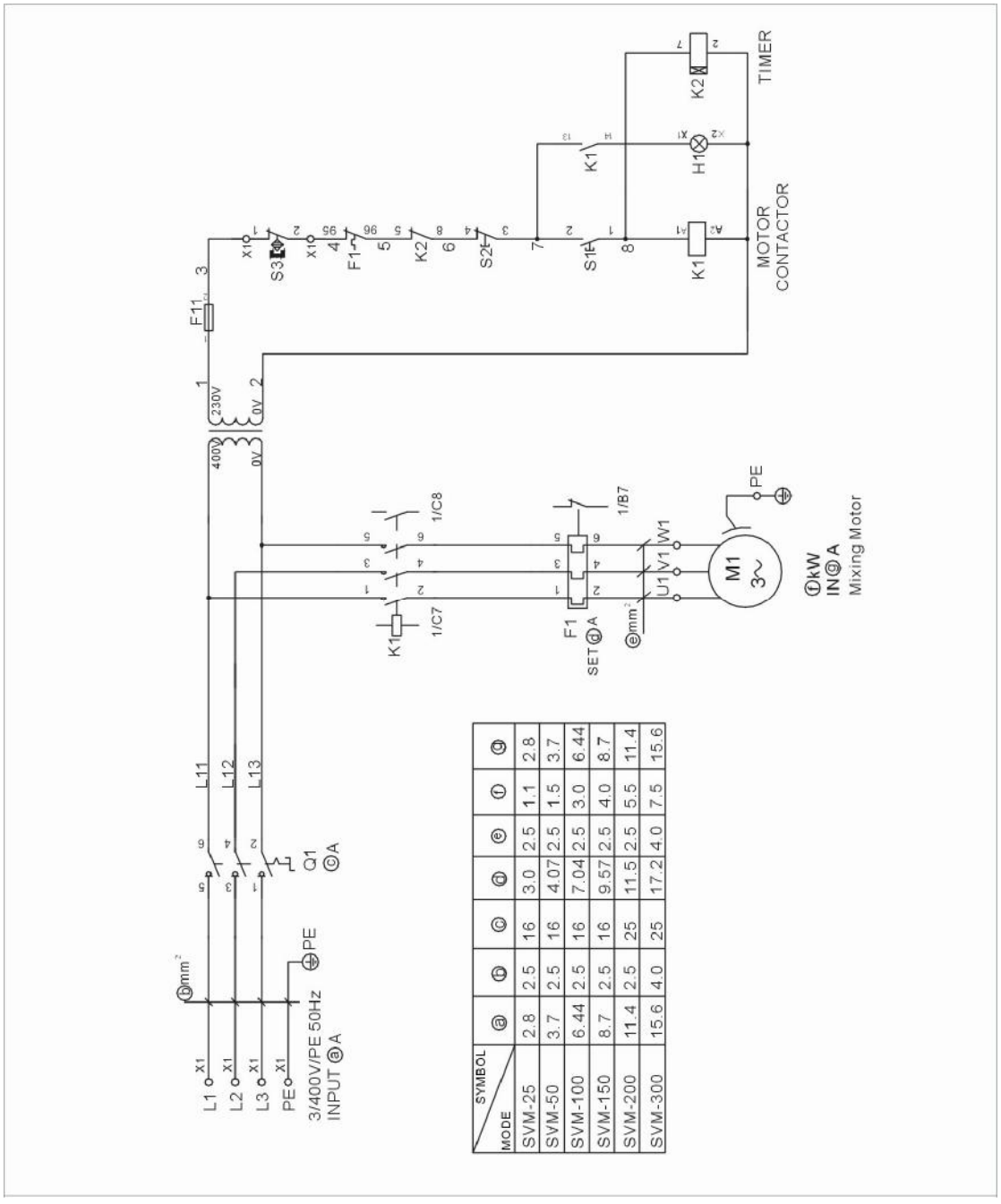
Table 2-2: Parts List

No.	Name	Part No.
		SVM-100
1	Lid combination	BL33110006020
2	Lid rubber ring	YR10005000200
3	Blending motor	BL33100011020
4	Aluminum base ring	BW21010000310
5	Tension handle	YW00251000000
6	Barrel	BL33010040120
7	Material discharge gate	BL33010041320
8	Funnel base bottom plate	BH33232200110
9	Funnel base panel	BH33232200010
10	Star combinationm10	BH10105600010
11	Material outlet	BL33100002020
12	Gearmotorxld3-4-17	YM50341700000
13	Castor	YW03000301000
14	Castor connection bottom plate	BL33100011021
15	Castor	BL33100010021
16	Barrel base board	BL33110000120
17	Oil seal	YR20456512000
18	Electrical control box base	BL33120006020
19	Screw	BL33100000000
20	Electrical control box	BL33100009020
21	Magnetic proximity switch fixation base	-
22	Lid connection base lower	BL33110008020
23	Shaft pin	BL33100000042
24	Lid connection base top	BL33110007020

* means possible broken parts.
** means easy broken part. and spare backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3 Electrical Circuit

2.3.1 Main Circuit



SYMBOL / MODE	ⓐ	ⓑ	ⓒ	ⓓ	ⓔ	ⓕ	ⓖ
SVM-25	2.8	2.5	16	3.0	2.5	1.1	2.8
SVM-50	3.7	2.5	16	4.07	2.5	1.5	3.7
SVM-100	6.44	2.5	16	7.04	2.5	3.0	6.44
SVM-150	8.7	2.5	16	9.57	2.5	4.0	8.7
SVM-200	11.4	2.5	25	11.5	2.5	5.5	11.4
SVM-300	15.6	4.0	25	17.2	4.0	7.5	15.6

Picture 2-2: Main Circuit

2.3.2 Electrical Components List

Table 2-3: Electrical Components List (SVM-25)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10200300000
2	K1	Contactor*	220VAC	YE00301000000
3	F1	Overload relay*	2.5~4A	YE01025400000
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	32A	YE61250040000
10	-	-	-	-
11	M1	Motor	1.1kW 380VAC	YM50112100100

Table 2-4: Electrical Components List (SVM-50)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10200300000
2	K1	Contactor*	220VAC	YE00301000000
3	F1	Overload relay*	4~6.3A	YE01046300100
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	32A	YE61250040000
10	-	-	-	-
11	M1	Motor	1.5kW 380VAC	YM50153100000

* means possible broken parts.
** means easy broken part. and spare backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-5: Electrical Components List (SVM-100)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10200300000
2	K1	Contactor*	220VAC	YE00311000000
3	F1	Overload relay*	5~8A	YE01631000100
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	32A	YE61250040000
10	-	-	-	-
11	M1	Motor	3kW 380VAC	YM50341700000

Table 2-6: Electrical Components List (SVM-150)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10200300000
2	K1	Contactor*	220VAC	YE00321100000
3	F1	Overload relay*	8~12.5A	YE01812500100
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	32A	YE61250040000
10	-	-	-	-
11	M1	Motor	4kW 380VAC	YM50451700000

* means possible broken parts.
** means easy broken part. and spare backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-7: Electrical Components List (SVM-200)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE01063100400
2	K1	Contactor*	220VAC	YE00321100000
3	F1	Overload relay*	10~16A	YE01101600100
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	32A	YE61250040000
10	-	-	-	-
11	M1	Motor	5.5kW 380VAC	YM50556100000

Table 2-8: Electrical Components List (SVM-300)

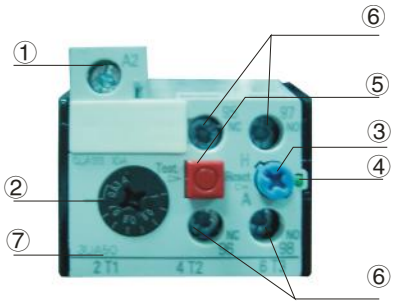
NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE01063100400
2	K1	Contactor*	220VAC	YE00321100000
3	F1	Overload relay*	12.5~20A	YE01125200100
4	K2	Timer**	220VAC	YR40000000000
5	F11	Plug in fuse **	2A Fuse	YE41001000000
6	T	Transformer*	400V/230V/300mA	YE70040000200
7	S1,S2	Control switch	600V 10A	YE11000200000
8	S3	Reed switch *	220VAC	YE15123000100
9	X1	Terminal board	41A	YE61043500000
10	-	-	-	-
11	-	-	32A	YE61250040000
12	M1	Motor	7.5kW 380VAC	YM50756100000

* means possible broken parts.
** means easy broken part. and spare backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3.3 Main Electrical Components Description

Overload Relay

At delivery, the overload relay is set for manual reset. (the reset button pointing to H). Manually reset the relay at the tripping of the switch. When motor overload occurs, stop the machine, then check and solve the problem. After that open the door of control box, press down the reset button of overload relay (if you can not press down the reset button, wait for one minute).



Picture 2-3: Overload Relay

1) Terminal for contact coil A2.
2) Setting current adjusting scale.
3) Reset (blue).

H: manual reset

A: automatic reset

4) Switch position indication (green).
   Tripping of a manual-resetting is indicated by a pin projecting from the front plate.
5) Test button (red).
6) Auxiliary contact terminals shown in 95.96.97.98. NC and NO contacts are shown in position 95.96. and 97.98. respectively.
7) Main circuit connection No. must be correspond with terminal Number of contactor.

2.3.4 Timer

Picture 2-4: Timer

Function Description:

1 Adjusting scale.

2 Choose sec/min/hrs/10h as a time unit by turning this button.

3 Set the time-rate by just turning this button.

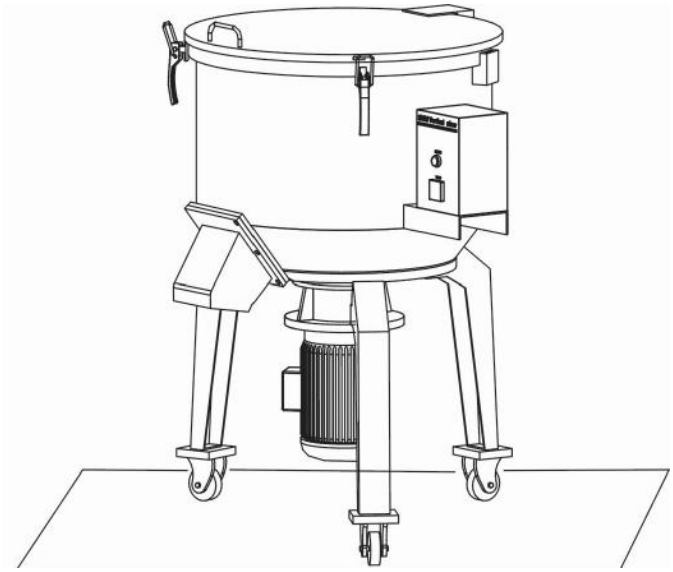
3. Installation and Debugging

Before installation, read this chapter carefully. Install the machine according to following steps!

Power supply of the mixer should be connected by qualified electricians!

3.1 Install the Machine on a Water-level Floor

Place SHINI vertical batch mixer on the flat ground, and connect to the three-phase power. Switch the main power switch to the “ON” state, and press the green start button on the control panel. Detect whether the direction of motor operation is the same as arrow. If not, please exchange the position of two live wire.



Picture 3-1: Install the Machine on a Water-level Floor

Vertical batch mixer should be placed on a water-level floor with castors locked, ensuring the machine well-balanced and no vibration.

3.2 Installation Space

Keep at least 500mm space around the machine when installing it. As the following figure shows: Do not install the machine in a narrow space, because this will make it uneasy to repair or maintenance. Do not sit on the top of the

machine or place any inflammable objects around the machine.

Picture 3-2: Installation Space

3.3 Installation of Motor

Do not enforce any force on the output parts of decelerate motor or case. Pleases meet the machine and gear motor's respective requirement for concentricity or verticality.

3.4 Installation of Blending Vanes

Pleases meet the blending screw and gear motor's respective requirement for concentricity or verticality when install the machine.

3.5 Power Connection

Connect the control box of the vertical batch mixer to power line and earth wire as indicated by the nameplate. Usually adopts 3Φ400V power supply and it can be also made on customer's special demand.

Check the motor's running direction after connects to power，if it is running reversely，please cut off the power and transpose any two lines of the three lines from the main power.(warning: reverse running is not allowed when the machine is in operation otherwise it will cause obstruction and lead to motor damage)

4. Application and Operation

4.1 Description of Control Panel

Picture 4-1: Description of Control Panel

4.2 Control Panel Description

No.	Name	Function Description	Remarks
1	Main power	Main power switch of the control system.	
2	System run	Start/stop of blending motor.	Red for stop and green for start.
3	Auto-timer	Timer for auto-stop after set material blending time.	When system is turned on, use the timer to set motor blending time after which the machine will stop working automatically.

4.3 Start / Stop of the Machine

1) Check power supply is turned on.
2) Turn on the main switch on control panel.
3) Press the green button to start material blending.
4) Use the red button to stop the machine, and main power switch to cut off power supply.

4.4 Operation Guide

1) Open blending barrel lid, fill in materials.
   Note: material level should not higher than the top opening of the cylinder.
2) Close blending barrel lid, plug in safety switch and fasten the snap hook.
   Note: tightly close the blending barrel lid to secure safety switch, or the machine cannot be started.
3) Turn on main power switch on the control panel.
4) Press the green button on control panel to start the machine.
5) Turn the adjusting scale of the timer if needed to set material blending time. The machine will stop working automatically after set time.
6) Press the stop button to stop material mixing after the material is evenly mixed if the timer is not set for automatic stop.

4.5 Material Cleaning Method

Use a velvet cleaning cloth to remove material in the mixing tank, leaving remaining material discharged from hopper.

5. Trouble-shooting

Failures	Solutions
After turning on main power and pressing down green system run button, the indicator cannot turn bright, motor does not work.	Check the electrical circuit, the reasons may be: 1. Electrical wire break. 2. Fuse melted 3. The shut-off plate for Blending barrel lid not closed or safety switch not fully connected. 4. Material blending time is set to 0. If motor can work, but indicator cannot turn bright, it shows that the indicator is broken. If indicator turns bright, but motor can not work, this may caused by motor failures or solenoid valve problems.
Machine cannot stop after setting time.	Check the electrical circuit, the reasons may be: 1. The timer is broken. 2. Electrical wire problems.
Overload relay frequently tripping off.	Check the electrical circuit, the reason can be: 1. Adjust overload relay setting current 1.1 times of motor rated current. 2. Wires of solenoid valve short circuit or break. 3. Overload relay is burnt out. 4. Motor problems. 5. Motor runs reversely.
Cannot stop the working of material blending by pressing the stop button.	The contact of stop button may be stuck together. If so, please replace the stop button.
Materials can not be well mixed, although no problems with machine start and stop function.	Material mixing time not enough, increase material mixing time.

Motor Overload

Motor overload will cause overload relay to trip off, which stops working of the motor. Switch position is indicated by a pin (blue)(A) projecting at the front plate. Press "Reset" button to reset the relay. Please refer to chapter 2.3.3 has details.

6. Maintenance and Repair

6.1 Service

All the repair work should be done by qualified technicians to prevent personal injuries and damage of the machine.

6.2 Maintenance

6.2.1 Maintenance of Blending Motor

Replace the lubricating oil of the gear motor after first 400 hours running. After that, replace the lubricating oil at about every 4000 hours. Check on times that there's enough lubricant in the gear box. Add or replace the lubricant before oil used up or when oil is turned bad. Keep motor and gear box covers clean from dusts or dirt’s for quick cooling.

6.2.2 Maintenance of Blending Barrel and Blending Screw

Disassemble blending barrel lid, motor, blending screw, and control box; use a piece of soft cloth to clean blending barrel from material remains.

Note!

Turn off the main switch and control switch before repairing or maintenance.

6.3 Maintenance Schedule

6.3.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____V Frequency _____ Hz Power _____ kW

6.3.2 Check after Installation

- ☐ Check the machine is installed on a water-level floor.
- ☐ Check the installation of the motor.
- ☐ Check the safety switch of blending barrel.

Electrical Installation

- ☐ Power supply: _____ V _____ Hz
- ☐ Fuse melt current: 1Φ _____ A 3Φ _____ A
- ☐ Check the electrical wire connections of the control.

6.3.3 Daily Checking

___/___/___
- ☐ Check the main power switch
- ☐ Check system start button
- ☐ Check the safety switch

___/___/___
- ☐ Check the main power switch
- ☐ Check system start button
- ☐ Check the safety switch

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- ☐ Check the main power switch
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- ☐ Check the safety switch

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- ☐ Check the main power switch
- ☐ Check system start button
- ☐ Check the safety switch

___/___/___
- ☐ Check the main power switch
- ☐ Check system start button
- ☐ Check the safety switch

___/___/___
- ☐ Check the main power switch
- ☐ Check system start button
- ☐ Check the safety switch

6.3.4 Weekly Checking

___/___/___

☐ Check all the electrical wires
☐ Check motor overload protection function

___/___/___

☐ Check all the electrical wires
☐ Check motor overload protection function

___/___/___

☐ Check all the electrical wires
☐ Check motor overload protection function

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☐ Check all the electrical wires
☐ Check motor overload protection function

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☐ Check motor overload protection function

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☐ Check all the electrical wires
☐ Check motor overload protection function

___/___/___

☐ Check all the electrical wires
☐ Check motor overload protection function

6.3.5 Monthly Checking

Replace the lubricating oil of the gear motor after first 400 hours running. After that, replace the lubricating oil at about every 4000 hours. Check on times that there's enough lubricant in the gear box. Add or replace the lubricant before oil is used up or when the oil is turned bad.