

# **SPV-U series**

## Proportional Valves

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Version : V2.3 (English)





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### 1. General Description



Please read this manual carefully before installation and using of the machine to prevent damage or personal injuries.

SPV-U series proportional valves mix regrind and new materials in a proper proportion, and then send them back to the process machine to achieve a proportional mixing and loading effect. It features directly mounted on loaders or mounted by the pipeline. Besides, it is applicable to Euro loaders and equipped with control box to perform when in other situations.



SPV-38U

### Main Feature :

- 1) "Euro" design, classy appearance, easy installation and operation.
- 2) Unique design of valve body, make material conveying more smoothly .
- 3) The performance of solenoid valve is so stable that the air cylinder acts accurately to ensure a proportional mixing of new and regrind materials.
- 4) There is no need of ordering control box when working with SAL - U series hopper loaders.
- 5) Instant recycling the regrind materials to reduce the production cost.
- 6) Control box is optionally available when performing in other situations.
- 7) Upon request, the one with control box can be built to comply with worldwide electrical safety standards ( For example : CE, UL, CSA, JIS etc. ).

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 7, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Headquarter and Taipei factory :

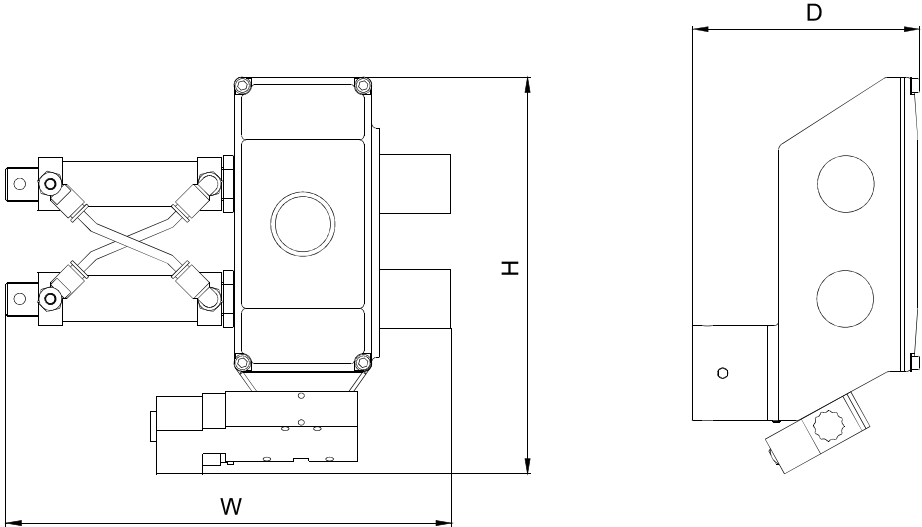
Tel: (886) 2 2680 9119

Shini USA Service Information

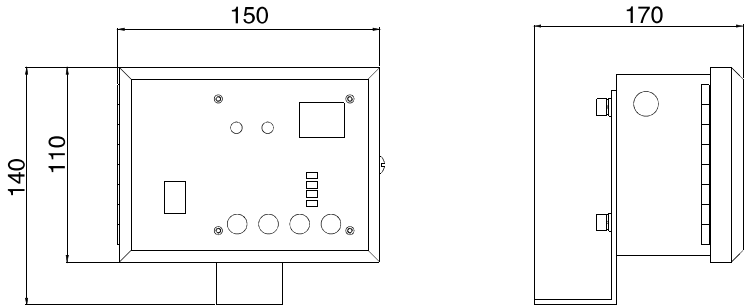
Tel: 440-530-1000

## 2. Technical Specifications

### 2.1 SPV Outer Dimensions



(Proportional Valve)



(Control Box)

### 2.2 Specification Table

Model	Compressed Air Pressure	Driven Means	Maximum Material Flow	Pipe Size (inch)	Dimensions (mm) H x W x D	Weight (kg)
SPV-38U-(C)	3kg/cm <sup>2</sup> Compressed Air	Cylinders	350 kg/hr	1.5"	270 x 300 x 150	3.5
SPV-50U-(C)	3kg/cm <sup>2</sup> Compressed Air	Cylinders	550 kg/hr	2"	270 x 300 x 150	3.8

Note:1) "C"stands for control box, there is no need of control box when working with SAL-U loaders.  
2) Power supply: 1Φ , 115 / 230V, 50/60Hz.

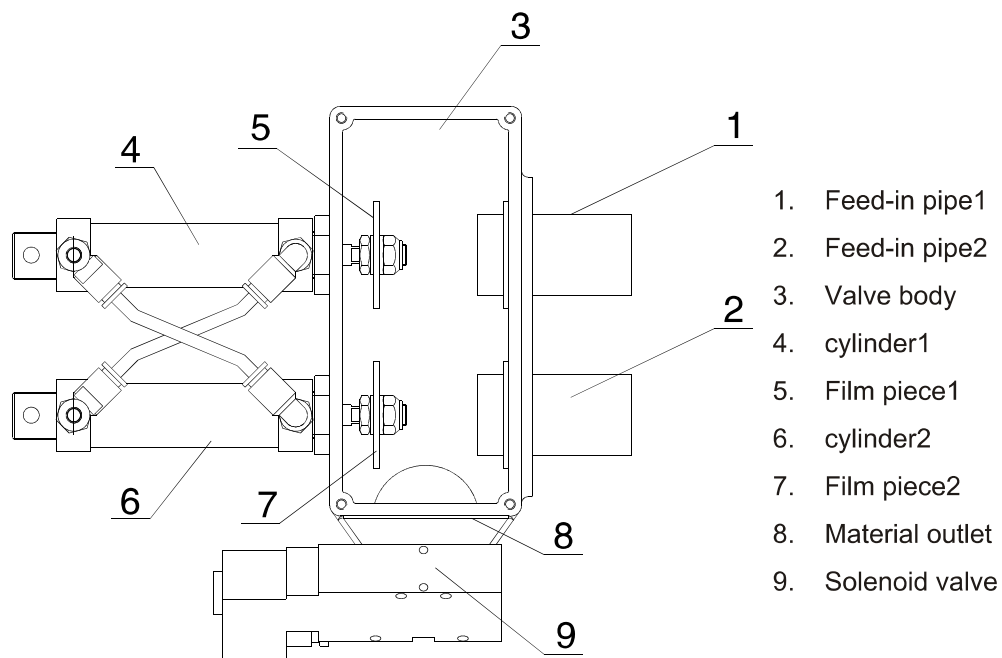
We reserve the right to change specifications without prior notice.



## 3. Function Description

### 3.1 Working Principle

SHINI "Euro" proportional valves offer a simple, economical, highly accurate way to mix regrinds and new materials in a proper proportion back to the process machine.



After feeding time for new materials and secondary materials is set by SAL-U, the air tank will control the feeding proportion of new materials and secondary materials in hopper by driving opening & closing and start time of diaphragm 1 and 2 so as to accomplish the proportioned mixing.

### 4. Safety Regulations

To avoid any body injuries and damages of the machine, please do to observe the regulations in this manual.

When operating this machine, please observe the regulations as follows.



Warning! Be careful !

This label means that this area should be taken care !



Attention !

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

### Transportation and storage of the machine

#### Transportation

- 1) SPV-U series are packed in crates or plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
- 2) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.
- 3) 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.
- 4) The machine and its attached parts can be kept at a temperature from  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  for long distance transportation and for a short distance, it can be transported with temperature under  $+70^{\circ}\text{C}$ .

#### Storage

- 1) SPV-U series should be stored indoors with temperature kept from  $5^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  and humidity below 80%.
- 2) Keep the whole machine, especially the electrical components away from water to avoid potential troubles caused by the water.
- 3) Plastic film should be used to protect the machine from dust and rains.

### Working environment

The machine should be operated:

- 1) Indoors in a dry environment with max. temperature  $+45^{\circ}\text{C}$  and humidity no more than 80%.

Do not use the machine:

- 1) If it is with a damaged cord.
- 2) On a wet floor or when it is exposed to rain to avoid electrical shock.
- 3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.

- 4) This equipment works normally in the environment with altitude within 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. In the event of loss or damage to a key of a trapped key interlocking device, the complete key lock unit shall be replaced.

### Fire hazard



In case of fire, Co<sub>2</sub> dry powder fire extinguisher should be applied.



Feeding strip materials can give rise to an entanglement hazard.

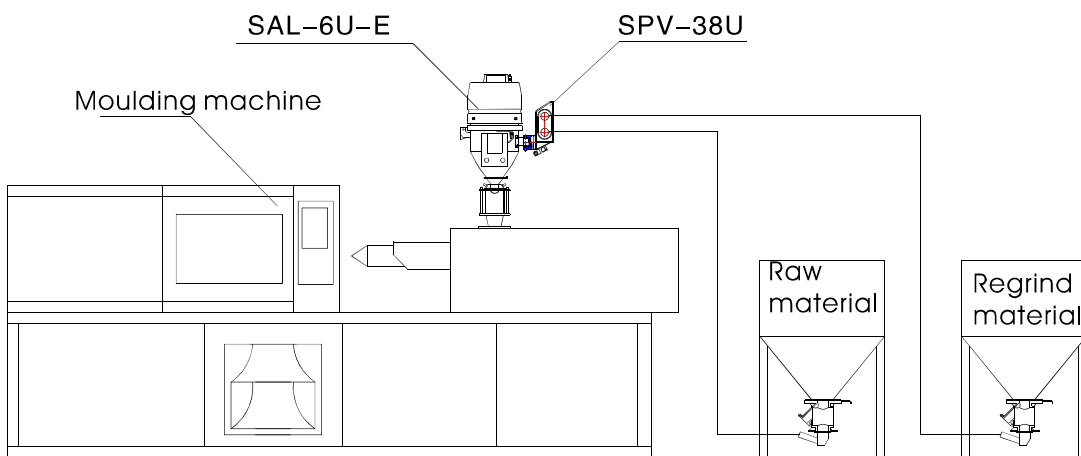
## 5. Installation

Read the instructions carefully before installation, Must observe the installation steps as follows!

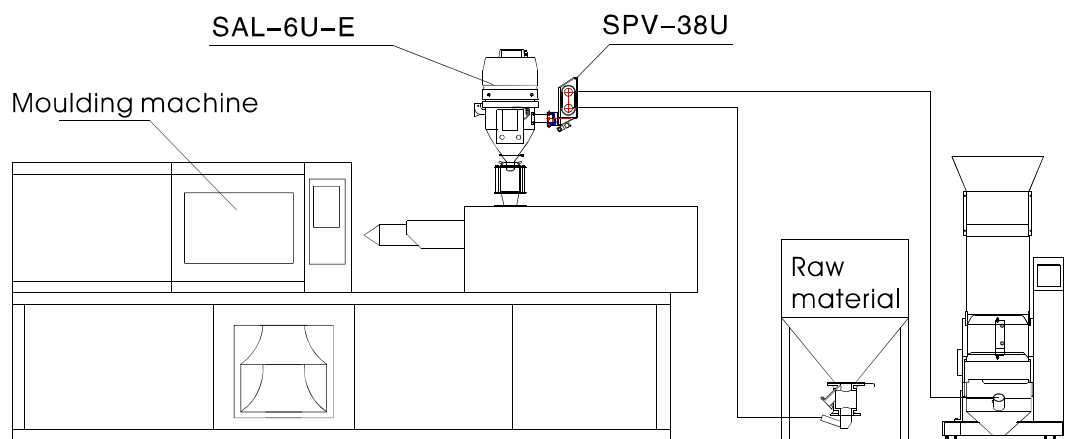


When installation SPV, Please connecting the pressure-air tube according to the requirements.

### 5.1 Working with SAL-U



### 5.2 Working with crusher



### 5.3 Installation Space

During installation of the machine, keep at least 150mm installation space around the machine as shown by the picture.

Do not install the machine in a position crowded with other objects. This would cause inconvenience to operation, maintenance and repair.

Do not sit on the machine.

Keep away flammable and explosive goods.



## 6. Operation instruction

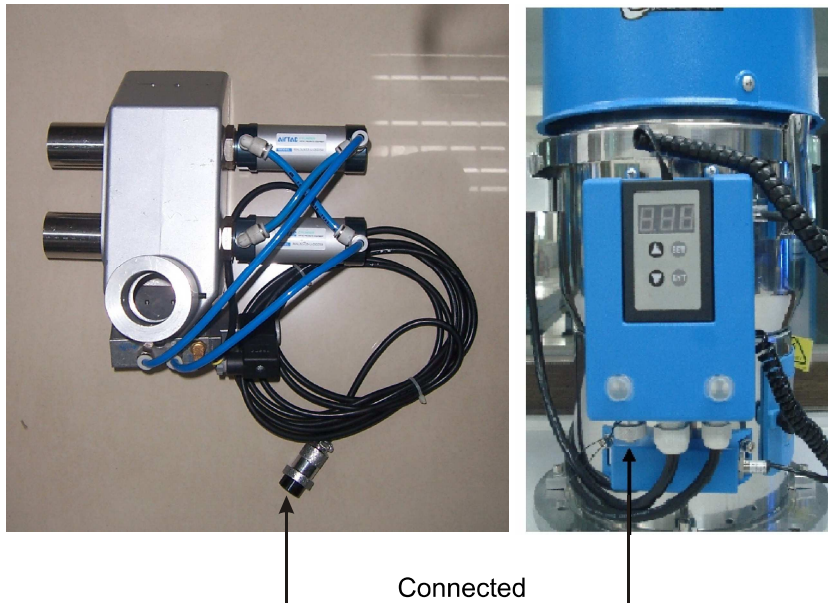
When SPV-U works with SAL-U, loading time should be set on SAL-U, please refer to SAL-U manual.

### 6.1 SAL-U Function instruction

#### 6.1.1 Parameter settings on SAL-U

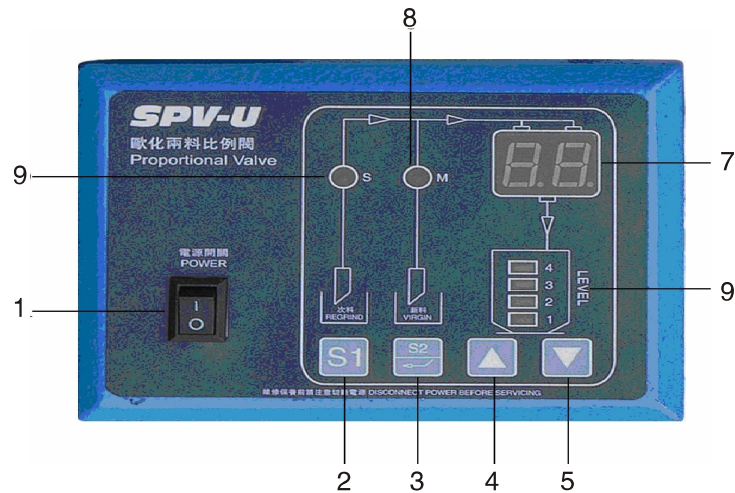
Function symbol	Function instruction	Parameter value	
		Setting before delivery	Range
F.02	<p>Mixing time</p> <p>Starting at the same time with suction, setting the time before suction time [F.02]sec.</p> <p>Action time calculate style : suction time × [F.02]%</p> <p>setting "0" means stop.</p>	No starting	0 – 100%

#### 6.1.2 Instruction diagram about connecting with "SAL-U"



## 6.2 SPV-U With Independent Control Box

### 6.2.1 About the control panel



No.	Name	Function description
1	Power	Power on to start the machine
2	Loading time set	Press this key to set loading time
3	Regrind percentage set	Press this key to set the percentage
4	Up key	Press this key to increase set value
5	Down key	Press this key to decrease set value
6	Working mode indicator	Indicating working mode
7	Display setup value or working status	Display setup value or working status
8	Indicator for setting regrind percentage	Blinks during regrind percentage setup
9	Loading indicator	Blinks during loading process











## 6.2.2 Start/Stop



1. Power on to start the machine, it will display software version "XX" (about 1second).
2. Turn off the power to stop the machine.
3. Shut off the loading signal to stop mixing.

## 6.2.3 Settings

### 6.2.3.1 Time setup

1. Displaying value will blink right after press **S1** key, new material indicator  will blink, 【 F01 】 loading time (5~99 secs) is available for setting. Press  or  key to adjust loading time, and to press **S1** or **S2** after setup to confirm and save the value, but it will bounce out automatically without save if there is no input for 5 seconds.
2. Displaying value will blink right after press **S2** key, regrind material indicator  will blink, 【 F02 】 regrind percentage (1~99%) is adjustable. Press  or  key to adjust loading time, and to press **S2** after setup to confirm and save the value, but it will bounce out automatically without save if there is no input for 5 seconds.
3. Displaying value will blink right after press  +  for 3 seconds,

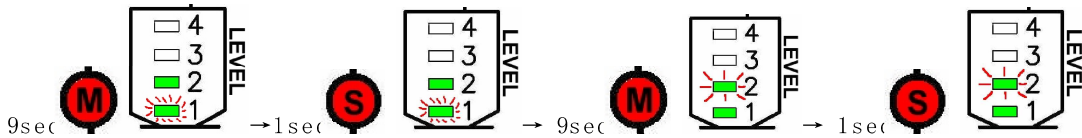


working mode indicators will blink, 【 F03 】 (use 1, 2, 3, 4 to stand for different working modes). Press  or  key to adjust working mode, and to press **S1** or **S2** after setup to confirm and save the value, but it will bounce out automatically without save if there is no input for 5 seconds.

### 6.2.3.2 Working mode selection

1. Working mode 1:  $(1 - \text{percentage}) \times \text{loading time}$  is for new material +  $\text{percentage} \times \text{loading time}$  is for regrind material.  
For example: Total loading time is 10 second.  
Regrind percentage is 10%. 9→1
2. Working mode 2:  $(1 - \text{percentage}) \times \text{half of the loading time}$  is for new material +  $\text{percentage} \times \text{half of the loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{half of the loading time}$  is for new material +  $\text{percentage} \times \text{half of the loading time}$  is for regrind material.  
For example: Total loading time is 20 second. Regrind percentage is 10%. 9→1→9→1
3. Working mode 3:  $(1 - \text{percentage}) \times \text{one third of the loading time}$  is for new material +  $\text{percentage} \times \text{one third loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{one third of the Loading time}$  is for new material +  $\text{percentage} \times \text{one third loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{one third of the loading time}$  is for new material +  $\text{percentage} \times \text{one third loading time}$  is for regrind material.  
For example: Total loading time is 30 second. Regrind percentage is 10%. 9→1 → 9→1 → 9→1
4. Working mode 4:  $(1 - \text{percentage}) \times \text{one fourth of the Loading time}$  is for new material +  $\text{percentage} \times \text{one fourth loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{one fourth of the Loading time}$  is for new material +  $\text{percentage} \times \text{one fourth loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{one fourth of the Loading time}$  is for new material +  $\text{percentage} \times \text{one fourth loading time}$  is for regrind material +  $(1 - \text{percentage}) \times \text{one fourth of the Loading time}$  is for new material +  $\text{percentage} \times \text{one fourth loading time}$  is for regrind material.  
For example: Total loading time is 40 second.  
Regrind percentage is 20%.  
8→2→8→2→8→2→8→2

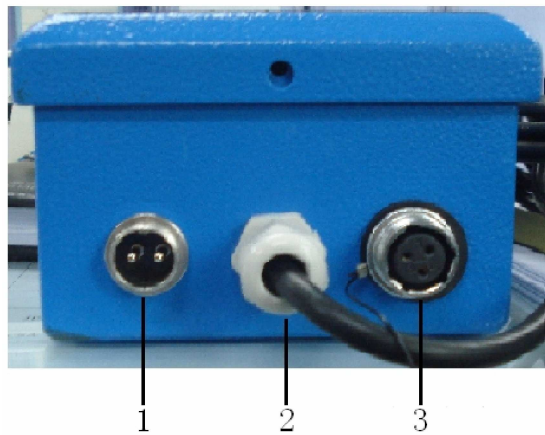
For example: working mode 2: Loading time 20sec. Regrind percentage 10%



### 6.2.3.3 Settings

1. Working mode 1: Applicable range 5~99sec
  2. Working mode 2: Applicable range 16~99sec
  3. Working mode 3: Applicable range 31~99sec
  4. Working mode 4: Applicable range 45~99sec
- ※Minimal regrind loading time is 1sec
  - ※At setting mode, if to adjust 【F01~F03】 , the software will automatically ensure regrind loading time be no less than 1sec

### 6.2.4 Connections



No.	Name	Function description
1	Input loading signal	SPV-U will be receiving an activation signal When hopper loader starts
2	Power cable	Power on to start the machine
3	Output signal for Proportioning solenoid valve	Proportioning solenoid valve will open when hopper loader is working

## 7. Service and Maintenance



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

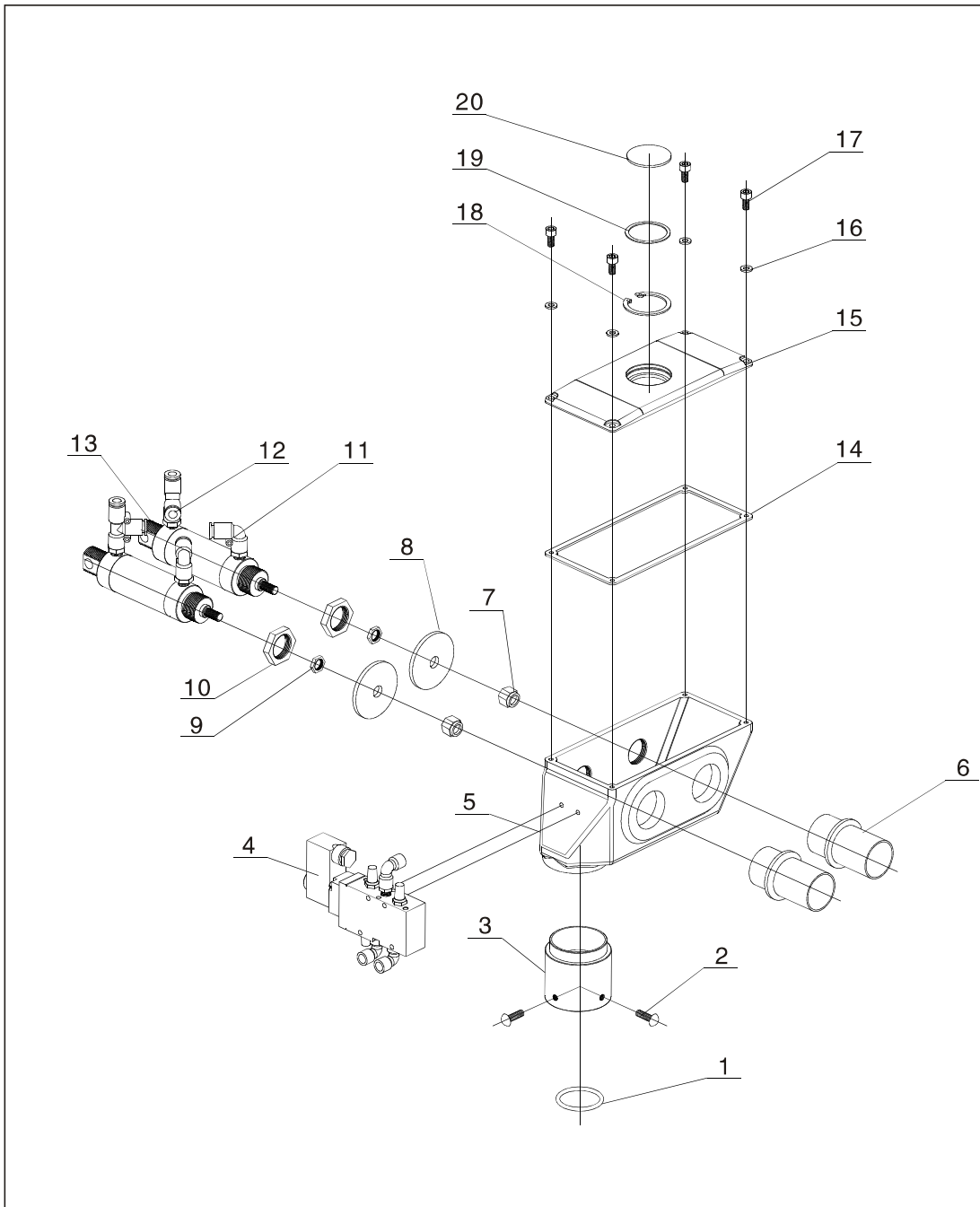
Keep the external valve body clean, attention the Solenoid valve's service.

## 8. Trouble Shooting

Failures	Possible reasons	Solutions
Cylinder does not work	Solenoid valve broken	Replace
	Did not connect the pressure-air tube	Connect
	Did not connect signal wire or broken	Connect or changed

## 9. Assembly Drawing And Part List

### 9.1 Assembly Drawing Diagram



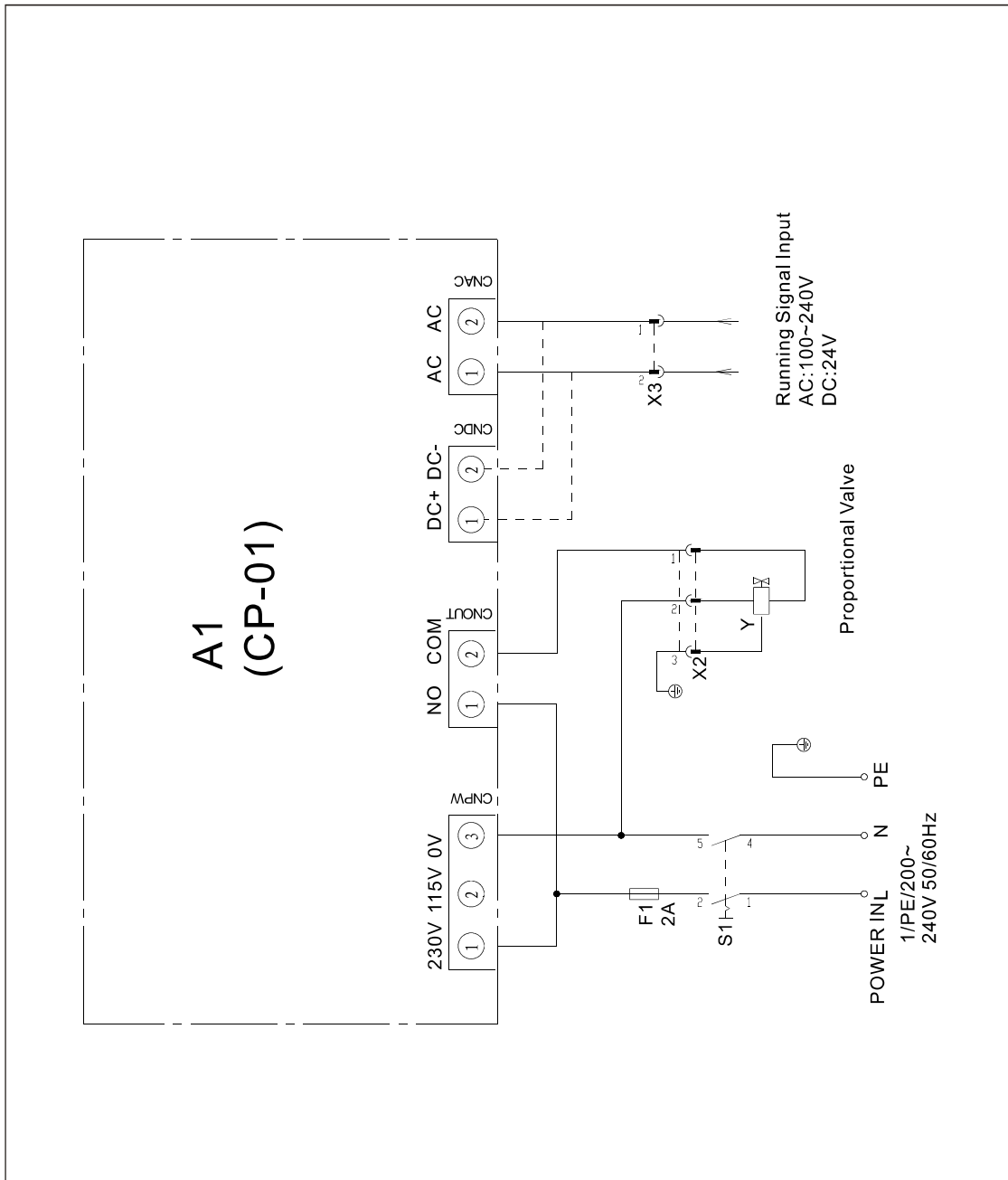
## 9.2 Parts List

No	Name	Part No	
		SPV-38U-(C)	SPV-50U-(C)
1	O sealing ring*	A3146003	A3146003
2	Flat head screw	F1306150	F1306150
3	Pipe sleeve for absorbing material	-	-
4	solenoid valve	D2105001	D2105001
5	proportional valve	M1605050	M1605050
6	feed-in pipe	-	-
7	Lock nut	-	-
8	Membrane	-	-
9	Nut	-	-
10	Nut	-	-
11	Air pipe connector	D1214007	D1214007
12	Air pipe connector	D1214011	D1214011
13	Air tank	D2102000	D2102000
14	valve cover fastener	-	-
15	valve cover	M1605051	M1605051
16	Socket screw	F1705000	F1705000
17	Socket screw	F1225008	F1225008
18	Circlip for shaft	A2242650	A2242650
19	Material observation window stringency	-	-
20	Glass lens	S1241520	S1241520

\*Indicates latent wearing parts; \*\*Indicates latent wearing parts and it's suggested to back them up.

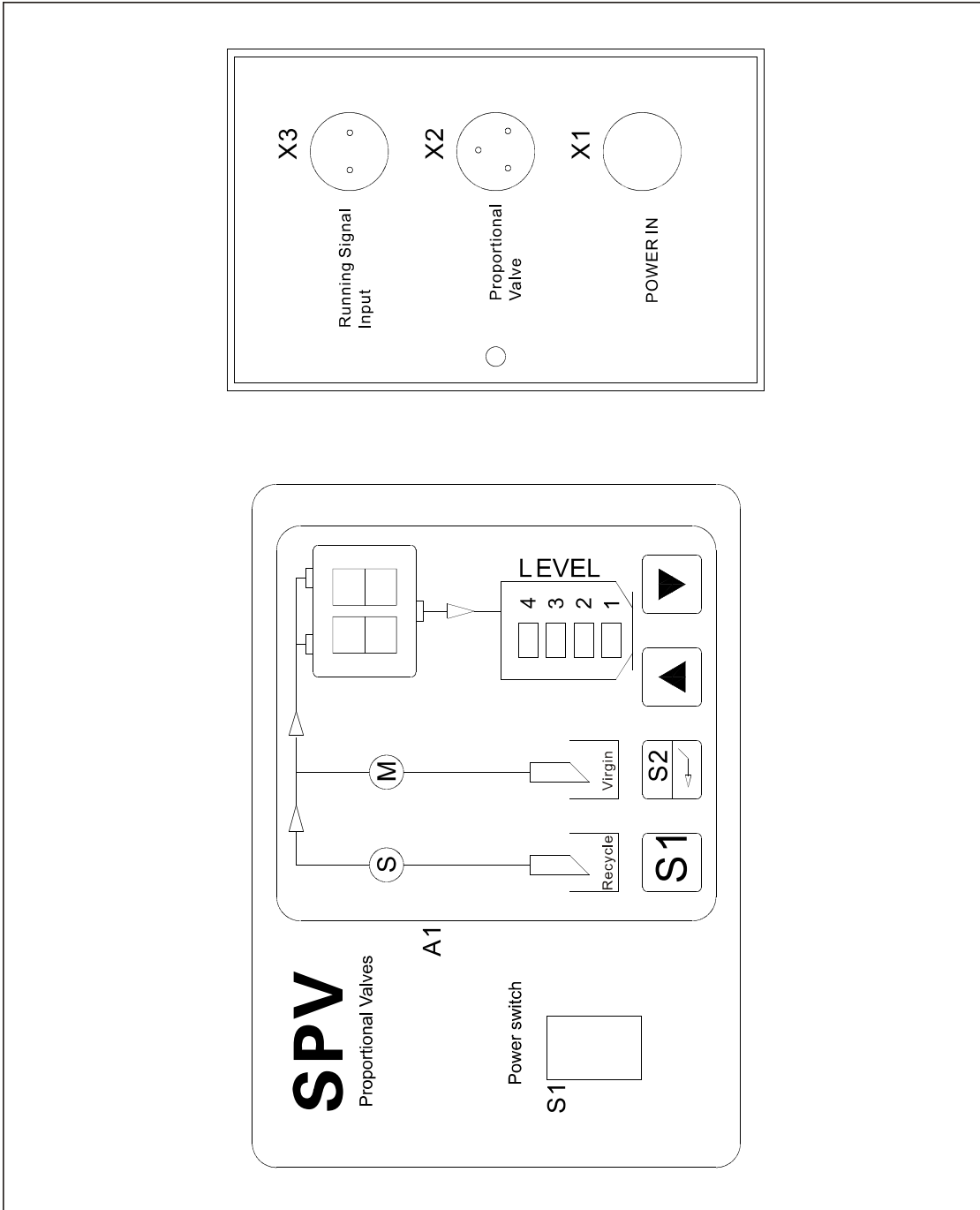
# 10. Electrical Circuit

## 10.1 Electrical Circuit





## 10.2 Electrical Components Layout



## 10.3 SPV-38U-(C) / SPV-50U-(C) Electrical Components List

No.	Symbol	Name	Specifications	Part list
1	F1	Fuse Box	250V 2A	E3202008
2	S1	Control Switch	12 × 19 5A	E1307000
3	Y	Solenoid Valve	230V 60Hz	D2105001
4	A1	Circuit Board	115 / 230VAC 50 / 60Hz	E2207005
5	X1	Power line	250VAC 10A	E5209002
6	X2	Port	3P	E5208016
7	X3	Port	2P	E5208011 E5208003

## 11. Maintenance Schedule

### 11.1 About the Machine

Model: \_\_\_\_\_ SN: \_\_\_\_\_ Manufacturing date: \_\_\_\_\_

Voltage: \_\_\_\_\_  $\Phi$  \_\_\_\_\_ V Frequency: \_\_\_\_\_ Hz Total power: \_\_\_\_\_ kW

### 11.2 Check after Installation

- Make sure the pipe connecting is correct
- Make sure the connecting pipe is lock and tighten
- Make sure the mounting base is lock and tighten

#### Electrical installation

- Voltage check: \_\_\_\_\_ V \_\_\_\_\_ Hz
- Signal wire connecting
- Pressure air connecting

## **Local Warranty Statement**

1. Local warranty applies to the country of purchase only. Once the product is transited out of the country of purchase, this warranty is invalidated.
2. The warranty is only applicable to the original purchaser and in the country of purchase.
3. The warranty covers parts and labour only; and excludes freight and on-site call-out charges.
4. Your SHINI product is guaranteed against manufacturing defects for a period of twelve (12) months from the date of purchase locally unless stated otherwise.
5. The warranty shall immediately cease and become void if the product is found to have been modified or repaired by an unauthorized person.
6. The warranty is subjected to the following limitations and exclusions:
  - (a) Malfunctions or damages resulting from not complying with the recommended manner as outlined in our operation manual in relation with the application, installation, operation and maintenance.
  - (b) Defects from using wrong electrical supply, misuse or damage by negligence and abuse.
  - (c) Malfunctions or damages resulting from natural disaster, fire, civil unrest and/or accidents.
  - (d) Wear parts and accessories.
7. If your SHINI product is not the same place of purchase, you can still send the product to your local SHINI's branch or distributor for servicing at your full costs according to the individual country service policy.
8. If there is no SHINI's branch or distributor in your country, although obviously there is no warranty covered by SHINI, you may direct contact SHINI requesting for the supply of replacement parts at your full costs.
9. All the electricity installation, connection and maintenance should be carried out by the specialists or contact , SHINI or its local agents.

10. The warranty is deemed valid only if the followings are completely filled in:

Purchaser's name and address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Your supplier's name and address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(company stamp)

Product model: \_\_\_\_\_ Serial number: \_\_\_\_\_

Invoice Number: \_\_\_\_\_ Date of purchase: \_\_\_\_\_

Please send all queries and comments to:

**Shini Plastics Technologies, Inc.**

Corporate Product & Marketing Center

1 Shini Road, Dalang, Dongguan, Guangdong, China

Tel: (0769) 8331 3588 Fax: (0769) 8331 3589

Corporate e-mail: [shini@shini.com](mailto:shini@shini.com)

Corporate internet: [www.shini.com](http://www.shini.com)