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# **Operation Manual**

## **VFG-3S**






东莞汇乐环保股份有限公司

DONGGUAN VILLO ENVIRONMENTAL PROTECTION INC.















## Safety Precautions

**Must read this operating manual carefully before us**

Warning symbol

  	Operators must do not carry out the designated operating steps
 	operator must read the designated operating steps before using

	Safety precautions
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-  People who do wiring and inspecting must have the professional experience and expertise.
-  The power lines must not be placed at the place where workers can easily step on; once some damages found on the power lines, they must be replaced with new ones. .
-  Must use the power cord originally installed in the machine; please contact the manufacturer in case of extending the power line.
-  Do not do wiring in a humid environment or with wet hands.
-  Be sure the power plug has ground wire and the power socket has circuit breaker
-  Please plug out if don't use the machine for a long time. Otherwise, it will reduce the insulating property and lead to electric shock, electric leakage or fire accident.
-  Do not climb, stand or place stuffs on the machine during its running
-  Do not try to repair or refit the machine personally if something wrong goes with it; please contact the manufacturer for discussing and choosing the best maintenance solution
-  Suggest using the original filter cartridge or bag if needed.
-  This operating manual should be placed with an unbroken condition near to the machine for the convenience of reading by the operator.
-  Please cut off the powder before the overhauling.
-  The casters must be in the state of being stopped before the machine runs.
-  This vacuum must not be plugged in the socket that other electric equipments are using, just in case of fire accident or electric shock due to the overloaded current.
-  The machine cannot suck up the kind of oily or flammable and combustibile smoke dust



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## 1 Product Introduction

VFG-3S Vacuum cleaner is special designed for the floor grinding and polishing industry. With the characteristic as below: Strong suction, two-stage filter unit, stable and reliable, space saving, flexible mobility and easy operation.

Apply to the three phase condition, which requires 24 hours continuous working, and superfine dust collection. It can works with the diamond surface grinders, and other floor grinding& polishing machines very well.

## 2 Working principle

### 2.1 Filtering process

The filter unit consists of one unit of star shape pre-filter and two units of HEPA filter cartridges, under the action of the turbine blower, the dusty air will enter the pre-filter first. At the moment, the bigger particle will drop down to the bottom directly; the superfine dust will go through the pre-filters and come into the HEPA filter cartridge unit. The clean air will discharge from the air outlet at last, and the superfine dust will attache on the HEPA filter

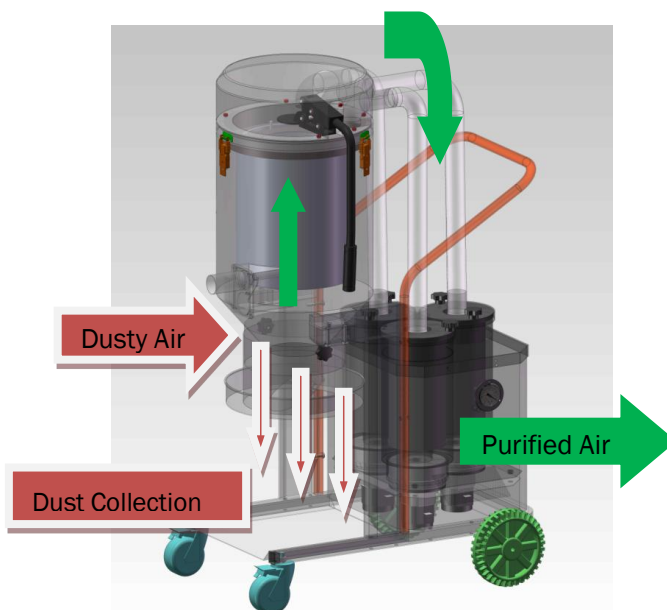


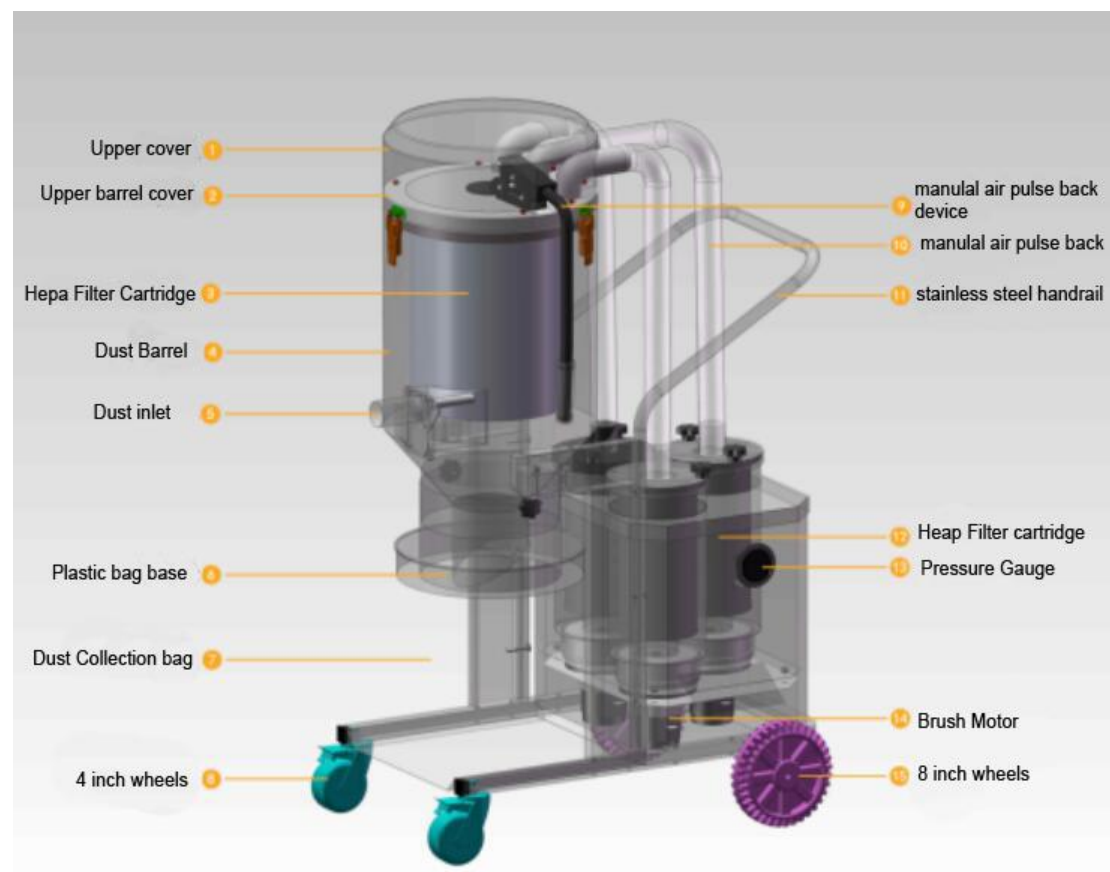
Fig 2.1 Filtering Process

## 2.2 Cleaning process of Filter

The pre-filters can be cleaned from outside of the barrel by the Jet pulse negative pressure. And before the cleaning process, the air inlet should be closed first, and then pull the rod over and over again. Regards to the HEPA filter cartridge, it should be cleaned every 3 days, to guarantee the vacuum cleaning effect and the sustained usage of the machine.

## 3 Product structure and characteristic

### Main parts



**Fig. 3.1 structure diagram**

### 3.1 Exterior Structure

VFG-3S industrial vacuum clear features in the compact and simplified design that gives excellent heat dissipation to the turbine. The prominent advantage of this model is the structure that uses a kind of special designed continuous packing bag to collect the dust, which, taken as a whole, largely decrease the volume and weight, so that it could be easy for using. The main body adopts the SPCC metal plate with thickness of 2 mm. This ensures good endurance and heat resistance for the whole machine and thereby guarantees the structural strength; besides, the metal plates are cut by laser cutting machine that greatly improve its size accuracy. For the surface preparation, it adopts the process of spraying and high temperature baking that provides a shining surface and a beautiful appearance with durability.

### 3.2 Manual Filter Cleaning Structure

VFG-3S is installed with a mechanical airflow reversing structure that conforms to the ergonomic design. Such unique manual filter cleaning system can effectively clean the dust accumulated on the surface of the filter bags over time. User could flexibly clean up the filter bag according to the job requirements. It is a very cost-effective and handy design



**Fig. 3.2 air pulse back device**

### 3.3 Filtration System

VFG series vacuums adopt two-stage filtering units. The first stage will be the anti-static filter cartridge which can filter the dust particle size of  $3.0\mu\text{m}$  with filter efficiency up to 99%. The secondary stage is the cartridge filter with polyester fiber material which is imported from Japan “TORAY” company. This cartridge filter coated with PTFE film can ensure the filter efficiency up to 99% for dust particle size of  $0.3\mu\text{m}$ . This kind of cartridge filter can effectively clean the PM2.5.



**Fig. 3.3 1<sup>st</sup> stage Filter Cartridge**



**Fig. 3.4 2<sup>nd</sup> stage filter cartridge**

### 3.4 Dust Collection Bag

VFG-3S uses the continuous packing bag that could be hooked and buckled up on a tube base that fixed on the dust outlet easily. The continuous packing bag is kind of foldable long tube plastic bag that can pull out continuously.



**Fig. 3.5 dust collection bag**

### 3.5 Control Board

The Control board is combined with the socket as an compact control box.



**Fig. 3.6 Control box**



**Fig. 3.7 motor**

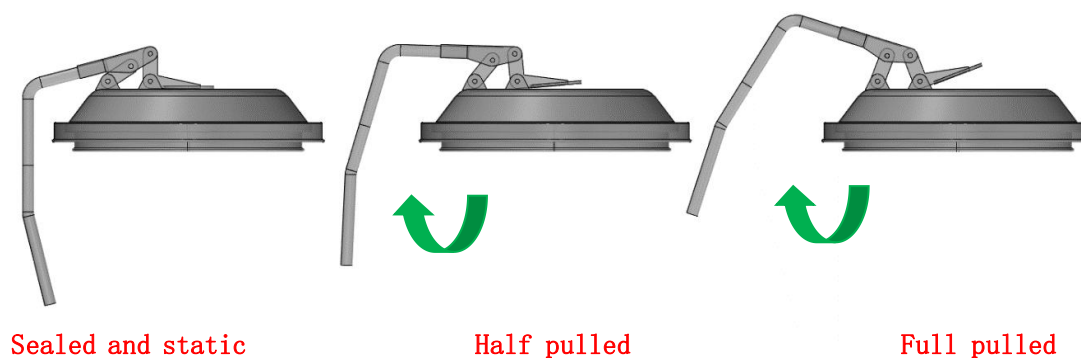
### 3.6 Carbon Brush Motor

VFG-3S vacuum is equipped with three parallel type carbon brush motor, each motor is 1.2 kilowatt. User can control the airflow by using the motors according to the actual working requirements.



## 4 Operations

### 4.1 Manual Air-pulse back Operation



**Fig. 4.1 operation**

Please note that it needs to stuff up the dust air inlet ( push down the baffle)while the first stage filter system is ongoing, and then pull the rod repeatedly. The filter will be pulsed sequentially by a sudden burst of air from the flow-back air inlet. This mechanical filter cleaning process ejects all the dust from the surface of the filter, allowing for a very effective dust cleaning result.

### 4.2 Operation of the Control Board



**Fig. 4.2 Control board**

Just simply connect the plug in the socket, then it can come to use.

#### Connecting the power supply (four-pin plug)

Open the end cover of the four-pin socket on the machine and directly plug in the socket, and then connect the other end of wire to the power supply.

#### Start button

When the power is on, the indicator ①/②/③ will be light. Just simply press the button one by one, each motor will start working.

#### Stop button

Press the button to the off side, the motor will be off work; Unplug the vacuum the light will be off.

### 4.3 Operation of Dust Cleaning

Two areas need to be clean: the first area is to clean up the 1st filter cartridge and collection bag; the second area is to clean up the cartridge filters.

#### 4.3.1 Operation of the Collection Bag

Regarding to clean up of the 1<sup>st</sup> filter cartridge, please refer to **Fig. 4.1**. As for the foldable long tube plastic bag,, it could be continuously pulled out. When it collects a certain amount of dust, it could be sealed by the nylon cable tie and then cut it off with a scissor. See the photos below:



Step 1



Step 2

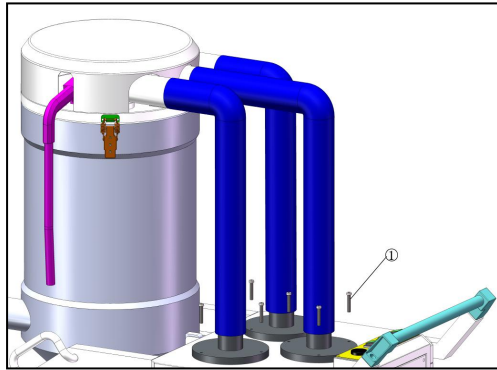


Step 3

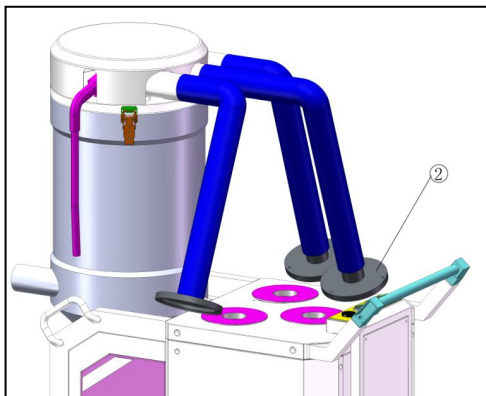
**Fig 4.3 Operations**

#### 4.3.2 Cleaning for the 2nd stage filter (cartridge filter)

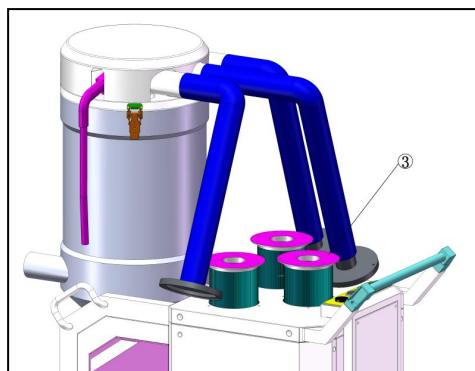
Take the cartridges out from the box, and use gas gun or brush to clean the cartridge filter. Steps please refer to the following diagram:



Step 1: loose the screws on the lid:  
(as shown on Fig. 4.4)



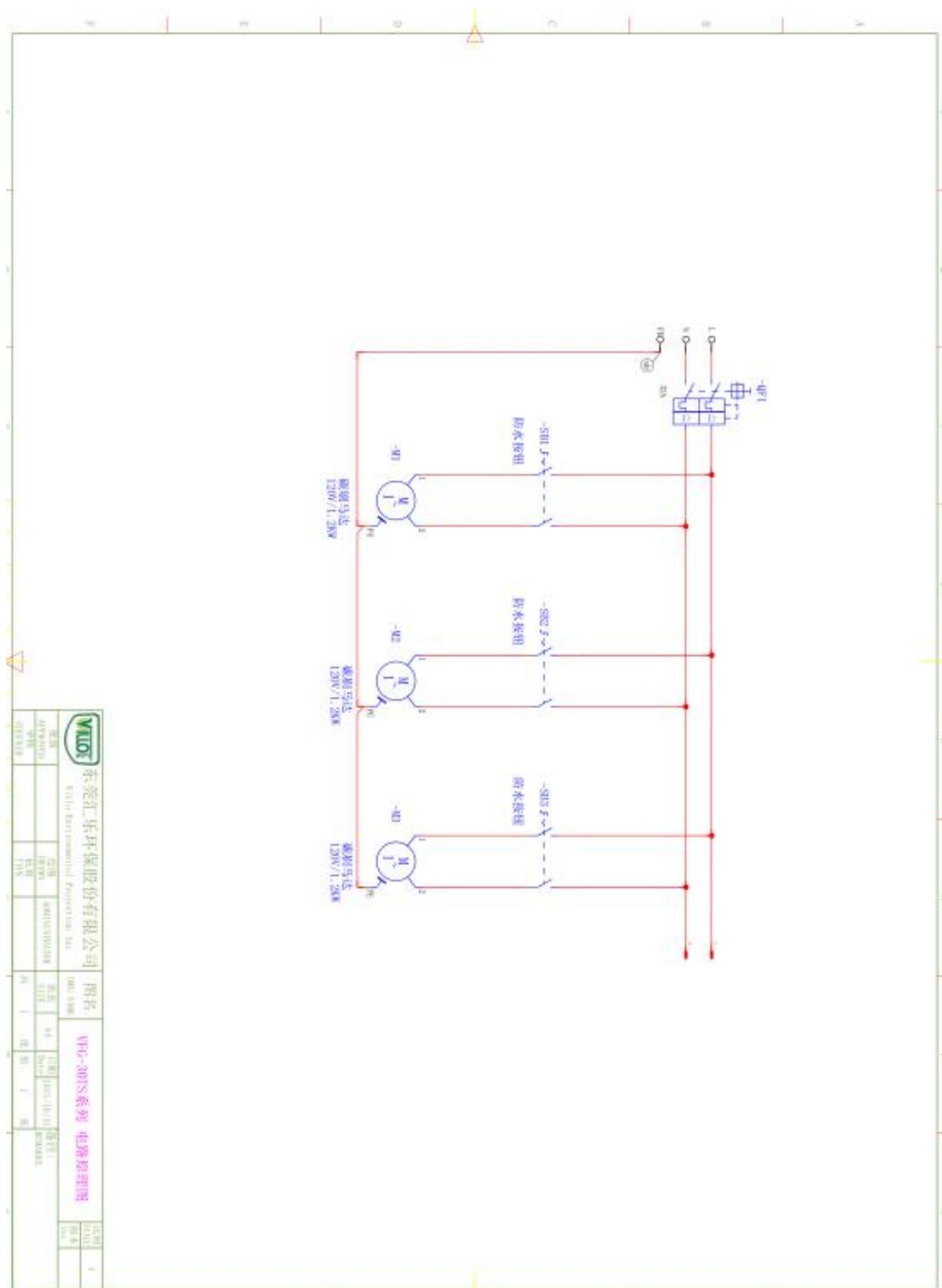
Step2: loose the cartridge lid from  
the top lid. (as shown on Fig. 4.5)



Step 3 : take the cartridges out,  
and use gas gun or brush to  
clean the filter cartridge. (as  
shown on Fig. 4.6)

**Fig. 4.6 cartridge filter cleaning**

## 5 VFG-3S Circuit Diagram



**Fig. 5.1 Circuit diagram**

## 6 Routine maintenance and inspection

### 6.1 Daily maintenance

- (1) During the running of equipment, designated person must be in charge of it and make records;
- (2) Designated person must be requested to operate and service the vacuum and electrical control parts. User must know its performance, structure and operation manual and know to deal with any problems timely and make sure the system can run normally.
- (3) Test the technical parameters, such as air flow, temperature, pressure and etc. on a regular basis. Any abnormal problems must be deal with timely.
- (4) Inspect the air system, dust discharge system working condition regularly, ruled out timely when find any discrepancy.
- (5) When stop the machine, after the process system stopping, user should leave the vacuum cleaner and induced draft fan to no load work for a while to get rid of the wet air and dust inside the machine. Please kindly noted: when stop the vacuum, user has to do cleaning job for the filter cartridge over and over again (can do manual cleaning) to avoid filter blocking affected by the wet air.

## 6.2 Troubleshooting and elimination method

Feature	Reason	Elimination method
Vacuum cleaner doesn't work	Phase sequence inversed	Exchange power cord L1 and L2
	Factory voltage fluctuation is too big, cause undervoltage or overvoltage	Factory provides solution themselves
	High electricity current cause thermal overload protector to disconnect.	Inspect if the motor is still working, if yes, the thermal overload device may disconnect.
Abnormal running resistance	Flue gas moisture condensation dust block the filter cartridge/bag	Blocking air leakage, increase the temperature of the flue gas.
	Process system doesn't work	Recover to work
Lack of suction power	Suction hose blocked or damaged	Clean or replace
	Filter cartridge blocked	Clean or replace the filter
Emission concentration is too large	Filter cartridge/bag is with wrong installation	Install and adjust the position of the filter units.
	Filter cartridge/bag damaged	Replace
	The first time using after replacement of the filter	Use the filter continuously for about 15minutes.

PS.: If there is a special malfunction happen to the vacuum or the received vacuum has a big difference with original design, please contact us in time for solution.

## 7 Technical Parameter

Model	VFG-3S
Voltage/Hz	220V/60HZ
Power	3*1.2Kw
Airflow	330CFM based on dia2.5inches inlet
	270CFM based on dia2inches inlet
Vacuum	86.6inchesH2O
QTY of 1st stage filters (unit)	1
QTY of 2nd stage filters (unit)	3
Air inlet	Ø2inches (standard)
Noise	85±2dB
Filter efficiency	99%
Material of 1st filter	Anti-static material
Material of 2nd Filter	Imported TORAY
Filter fineness	0.3-3µm
Main filtering method	Out-filtering type for the 1st stage filter Inner filtering type for the 2nd stage filters
Dimension	932mm*582mm*1350mm
Weight (kg)	98

## 8 Main Parts List

When needs the parts list as below, please send us the NO., Name and quantity to the supplier.

No.	Name	Specification	Note
1	Carbon Brush Motor	3*1.2Kw	3 units
2	Cartridge filter	Ø150*300mm	3units
3	Anti-static filter cartridge	Ø 300*350mm	1 unit
4	Pressure gauge	0-680mbar	1unit
5	Waterproof switch	16ASR-13	3units
6	4 inch wheel	PP material	2 units
7	8 inch wheels	PU material	2units
8	Collection bag		1 set