



**Freflow V1**

# **Powered Air Purifying Respirator Owner's Manual**



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Read all instructions and warnings before use. Users must understand this booklet prior to use. Keep these User Instructions for future reference. If you have questions regarding these products, just feel free to let Tecmen know.

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## WARNING



### USE FOR

This product is part of system that helps purify certain airborne contaminants, including dust, pollutants, fine particles as well as other contaminants, welding dust and metal dust. Gas filter option suits users with specific working conditions. Supplying clean air to the user's facial.

### Before using respirator - Check the following items.

#### 1. Blower Assembly

Make sure the spark screen, pre-filter and particle filter (gas filter if any) are properly installed and securely latched.

#### 2. Breathing Tube

Make sure tube is not damaged and connected locked to the blower unit and headtop.

#### 3. Battery

Make sure the battery is fully charged before each use (**the battery need to be charged before first use.**)

Check connection to blower unit is secure.

#### 4. Airflow rate test / Alarm sound check

It's necessary to do both airflow rate test and alarm sound check before use. Testing method refers to "SELF CHECK BEFORE EACH TIME USE" on page 9.

### DO NOT USE FOR

- Oxygen deficient atmospheres.
- Contaminant generated in workplace and concentrations that are unknown or immediately dangerous to life or health (IDLH).
- Oxygen concentration of the air in workplace is 19.5% or lower.
- Without complete assembling of the whole product, never use, which may cause danger for human life.
- Do not use in sealed place, in place with danger as fire, explosion.
- Do not use the product with its power turned off since carbon dioxide concentration may increase and oxygen level inside the face guard may decrease.
- Do not use if the product does not supply enough air. (MIN - 165 lpm)
- Do not use at workplace with strong wind. (as negative pressure generated inside the headtop, outside-air comes into the headtop)
- In the power-off state little or no respiratory protection is to be expected, and that this is considered to be an abnormal situation.

### NOTICE





If bleeping alarmed, immediately get away from the contaminated area and check the device. The hose may get blocked; Battery low power; Filter is dirty and need get changed with new one.

Please EXIT that contaminated place in any cases below :

- IF some problem is shown in any part of the product, for example, the air supply is stopped or its amount is decreased.
- IF it gets hard to breathe, feeling dizzy or headache, feeling the smell or taste of the contaminants and its stimulus occurred.
- Never use in place with too high level of contamination.
- Make sure the connecting hosepipe smooth and is not entangled or is in the way of other items in the area.
- Don't remove the respirator until you are in a safe area.

- Operating temperature range between -5°C and 55°C.
- The TECMEN PAPR system is not intrinsically safe. Keep away from flammable, or explosive atmosphere.
- At very high work rates the pressure in the device may become negative at peak inhalation flow.
- Do not confuse the European standard EN12941 with other standards.

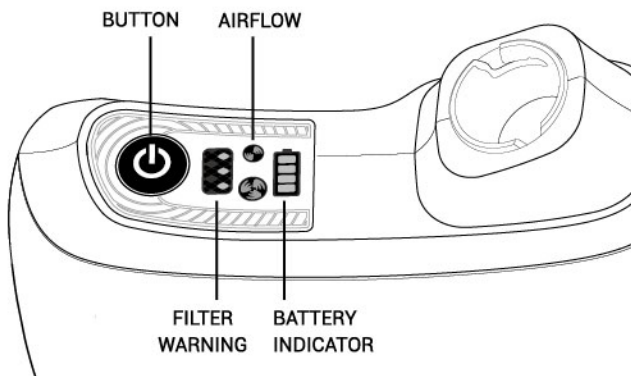
## MARKINGS ON THE EQUIPMENT


 Read the instruction before use.	 Recycle
 Shall be disposed of as electronic waste.	 Expiry date year / month

## DESCRIPTION & SPECIFICATION


A complete Tecmen PAPR includes a blower, filtration unit, breathing tube assembly, battery, shoulder strap and belt.


The blower assembly draws surrounding air through its filter and supplies purified air to the facial via a breathing tube. There are two levels airflow rate choice: Low speed—170+lpn; High speed—210+lpn. Switch the airflow by short press button. Warning lights allow you to check the filter status. More warning lights turn on, more dirty it means. When warning lights flash, please replace the filter.




-  **Only Button controlling both Power On / Off and Airflow switch**

  - 1. Power On/Off**  
On—Press and hold for 3 seconds.  
Off—Press and hold for few seconds until beeping sounds finish.
  - 2. Airflow switch**  
Press the button to switch between 170+lpn and 210+lpn

 Indicator light refers to the airflow state. Two different levels: Low Speed—170+lpn, High Speed—210+lpn

 Display screen indicates the battery capacity.

 Warning lights help to check the filter status. More light spots turn on, more dirty it means. When warning lights flash, pls. replace the filter.

## RESPIRATOR SPECIFICATIONS

Airflow Rate	Manufacturer's minimum design flow rate: 165+lpm (5.8+cfm)	
	Low speed: 170+lpm (6+cfm)	
	High speed: 210+lpm (7.4+cfm)	
Fast-charging Standard Battery	Battery type: rechargeable Li-ion battery	
	Battery duration: 9 h - low speed (170+lpm); 5-6 h - high speed (210+lpm)	
	Battery charge time: 1 hour	
	Battery life: ≥ 500 charges	
Filter	Filter efficiency: 99.97%	
	Alarms: Visible, audible and vibrate	
	Limited storage life	<p>Unopened filter: 5 years after production, details pls refer to the 'Do not use after ***' on the label of filter.</p> <p>Installed filter: should be well-kept under instruction given condition. For an installed filter which not use yet, it's suggest to store no more than one year.</p>
Temperature	Operating temperature: -5°C to 55°C (23°F to 131°F)	
	Storage temperature: -10°C to 55°C (14°F to 131°F)	
Relative Humidity (R.H.)	Operating R.H.: < 90%	
	Storage R.H.: < 85%	
Weight	1020g (Blower unit + fast-charging standard battery)	
Respirator Approval	EN12941 (Classifications please refer to the label on headtop) AS/NZS1716: 2012 - Freflow V1, Particle filter with class P3 inside	

## ASSEMBLING & SPARE PARTS

The power must be turned off when replacing the filters. Install the spark screen, pre-filter, and particle filter (gas filter if any) in filter cover.

Before installed, always make sure filter material is intact and dry with no tears or other damages. Install the filter cover assembly to the blower unit by engaging tabs on filter cover into bracket on blower unit and rotate assembly to close. Push filter cover assembly down until latch clicks into position securing filter cover assembly. Inspect both sides of cover to see that the filter cover is properly installed. To replace filter, push latch into release filter cover and replace filter as fig.1 shown.

**When to replace the filter :** If the filter gets blocked by contaminants, all the three points of warning lights will flash, accompanied with vibrate and bleeping sound. Please immediately exit contaminated environment and check the status.

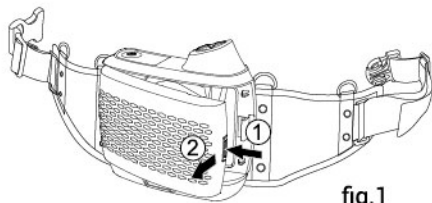


fig.1

## PARTICULATE FILTER



### WARNING



- Never use the respirator without the spark screen, pre-filter, and the HE particle filter (HEPA) installed.
- Always replace filter when damaged or blocked. Do not try to wash, clean or reuse dirty ones.
- Stored at a temperature between -10°C to 55°C (14°F to 131°F), in a clean environment without direct light.
- Remember not to confuse the markings on a filter relating to any standard other than EN 12941 with the classification of this device when used with this filter.
- Please install the particle filter according to fig.2a.
- The time limit for the storage of new filters kept in their original packaging is 5 years.

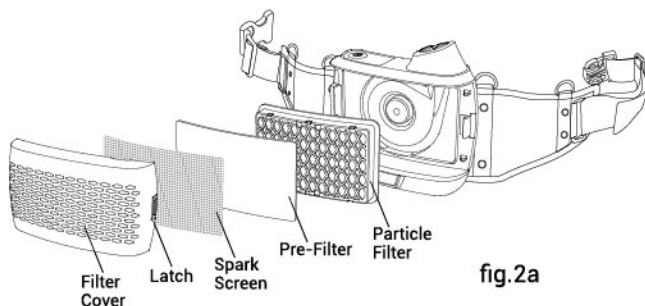


fig.2a

## GAS FILTER



### WARNING



- This gas filter must be always used together with FreFlow particle filter. The gas filter give additional protection against certain gaseous environment (See the table below).
- The particle filter and gas filter cannot be cleaned. Stop using it immediately when smelling peculiar smell and replace it until you are in a safe area.
- Stored at a temperature between -10°C to 55°C (14°F to 131°F), in a clean environment without direct light.
- Please install the particle filter and gas filter according to fig.2b.

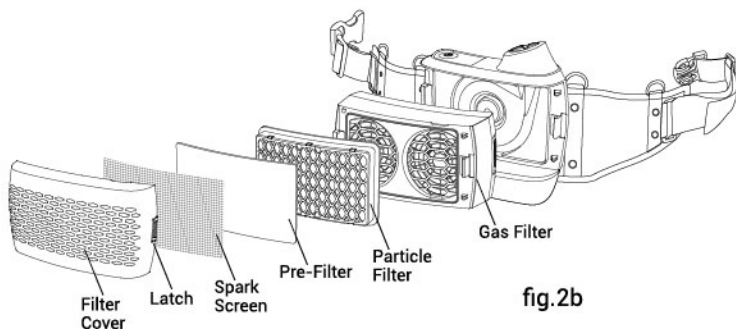


fig.2b

Marking	Part No.	Color Code	Protection Against
P (R SL)	V1P3 TM3 00	White	Particulates (R=replaceable, SL=test against sodium chloride and paraffin oil)
A1B1E1K1	V1GF TM3 00	Brown / Grey / Yellow / Green	Organic gases / Inorganic gases / Sulfur dioxide, acidic gases / Ammonia and organic ammonia derivatives

## BATTERY






### WARNING



- The battery should be charged in a place that is electrically safe.
- The charging time of different types of battery is different. Actual charging time depends on the remaining battery capacity.
- Please check out the voltage of the charger (AC 110V~220V).
- Please separate the battery from the body before charging.
- Upon using-condition, the battery's life may be slightly different.

Battery is divided into fast-charging standard battery and fast-charging extended battery. When these two types of battery are used with different filter components, the battery duration is different. Please choose the appropriate battery according to actual situation. It is recommended to choose fast-charging extended battery to match the gas filter.

Description	Part No.	Picture	Description	Part No.	Picture
Fast-charging standard battery	V1FBA TM3 00		Fast-charging battery charger	V1FBC TM3 00	
Fast-charging extended battery	V1FEB TM3 00				

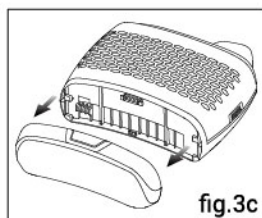
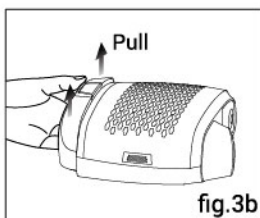
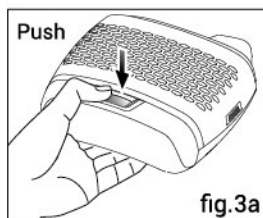
### Battery performance for different combinations of filter assembly

Battery type	Battery charge time	Filter type	Airflow rate	Battery duration
Fast-charging standard battery	1 h	Particle filter	170+lpm	9 h
			210+lpm	5 - 6 h
		Particle filter + Gas filter	170+lpm	Not recommended
			210+lpm	
Fast-charging extended battery	2 h	Particle filter	170+lpm	15 h
			210+lpm	9 h
		Particle filter + Gas filter	170+lpm	11 h
			210+lpm	7.5 h



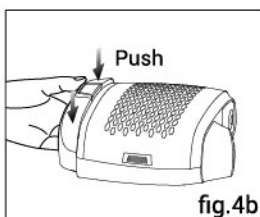
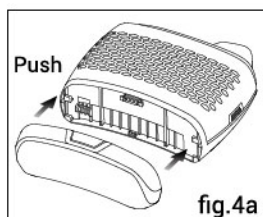
### Disassembling the battery

Push the button, take the battery out as fig.3a / 3b / 3c shown direction. Separate it from the body.



### Assembling the battery

Fitting the battery to the blower body, push until hearing "click" sound (See fig.4a / 4b).



### Battery-charging

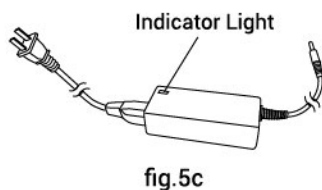
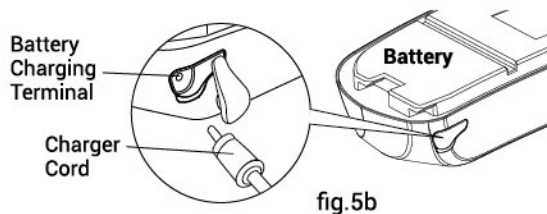
This indicator shows the battery capacity.

When four sections show up, the battery is fully charged.

When just one section left (See fig.5a), bleeping sounds on, accompanied by vibration to remind users to stop work and get battery charged. The frequency is bleeping sounds occur every 30 seconds and vibration occurs every 2 minutes. After the warnings occur around 15 minutes, the battery indicator gets flashing, which shows there should be at most 15 minutes left before the blower off (Airflow low speed 170+1pm).

Remove battery pack from blower assembly. Connect charger cord to battery terminal (See fig.5b).

When the indicator light on charger turns from red to green (See fig.5c), never stop it immediately and please keep charging for another 0.5h.



### Notice of battery use

- Do not put PAPR unit with power-on in the package. It's better to remove the battery from the body when put in the package.
- Do not keep PAPR inside the car in hot summer season.
- Do not throw or give the high impact to PAPR unit.
- Do not put PAPR unit on the electric heat generating equipment.
- Do not use any other battery charger.
- Battery storage temperature: -10°C to 45°C (14°F to 113°F), R.H.< 85%
- Recommended battery charging temperature: 0°C to 40°C (32°F to 104°F)

## BREATHING TUBE



### WARNING



- Always inspect the PAPR end of the breathing tube to confirm the rubber O-ring is in place, see fig.7a. Replace if missing or damaged.
- Be sure tube is properly installed and non-filtered air cannot enter the facial.

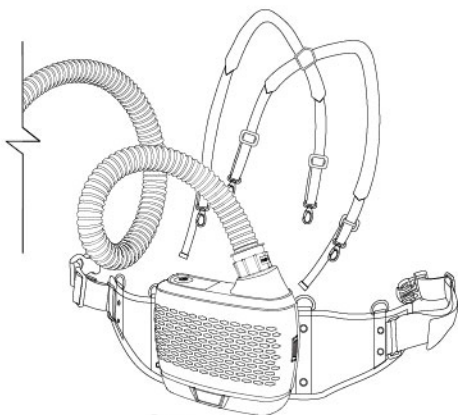
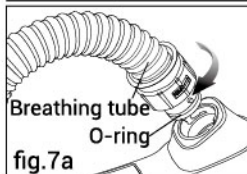
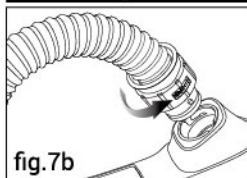


fig.6

#### Assembling from blower



#### Disassembling from blower



### Assembling

Insert the two prongs on the breathing tube into blower unit and headtop receptacle (See fig.6), twist 1/4 turn to the anti -"OPEN" direction to lock into place (See fig.7a).

### Disassembling

Twist 1/4 to the "OPEN" direction and then take the prongs out from the end (See fig.7b) .



## SHOULDER STRAP & BELT CUSHION

Connect hooks to belt (See fig.8a).

Connect with the blower by screw locking (See fig.8b).

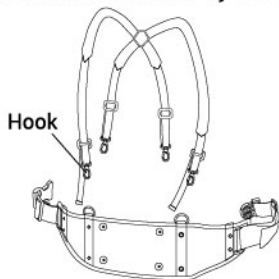


fig.8a

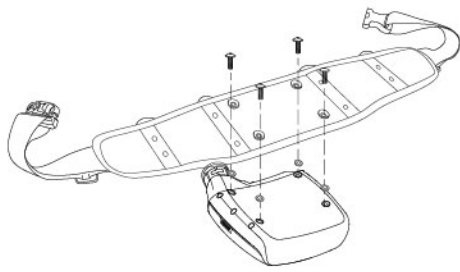


fig.8b

## AIR FLOW CONTROL

Two indicator lights on display (See fig.9a). Low Speed-170+lpm; High Speed-210+lpm. When turn on the PAPR, default setting is low speed airflow; Switch the airflow by short press the button (See fig.9b).

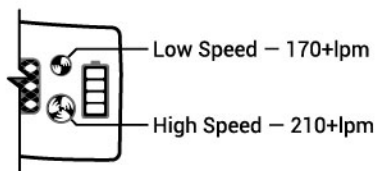


fig.9a



fig.9b

## ENTER AND EXIT CONTAMINATED AREA

**Always exit the contaminated area immediately if any of the following conditions occur :**

- IF some problem is shown in any part of the product, for example, the air supply is stopped or its amount is decreased;
- IF it gets hard to breathe, feeling dizzy or headache, feeling the smell or taste of the contaminants and its stimulus occurred;
- NEVER use in place with too high level of contamination. If you suspect the levels reach a level which this respirator may no longer provide enough protection.

### Respirator removal



#### WARNING



- Never remove the respirator in areas where the air is contaminated.
- Always take off the PAPR after you step out of the workplace.

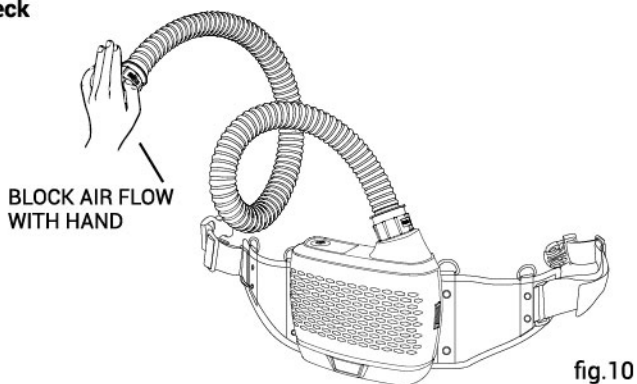
### Steps

- Take off headtop and disconnect tube from headtop.
- Turn off the blower by long press button.
- Release belt. Remove straps from shoulders and remove blower off of your lower back.

## SELF CHECK BEFORE EACH TIME USE

**ALL THE TESTS MUST ALWAYS BE DONE IN A SAFE ENVIRONMENT.**

### Alarm sound check



After turning on the product, check the alarm sound warning function by blocking the air outlet as fig.10 shown in the picture above. The warning signal on the panel should flash with a sound and blower vibrate (approximately 15 to 30 seconds after the outlet is blocked). The product is working correctly if the warning functions follow the process above. (Please make sure the filter is equipped and the battery is fully charged before doing this test.)

### Airflow rate test

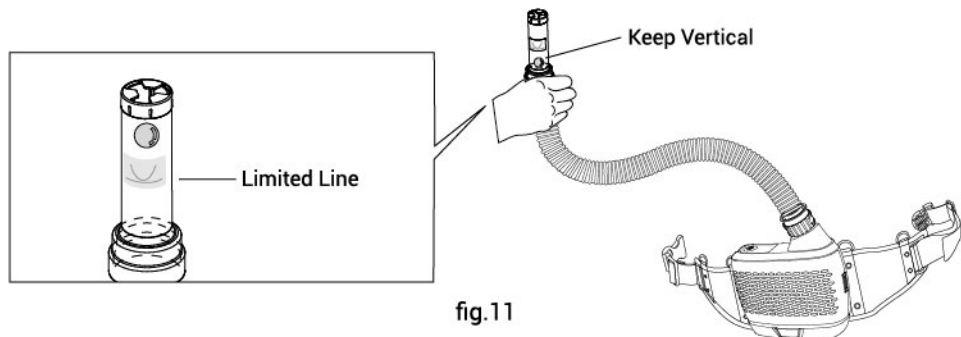
**Take airflow test always before using this product.**

Make sure all the components are fully assembled before testing.

Connect the end of hose to the bottom of airflow indicator and then start the button. Keep the airflow indicator vertical (See fig.11).

If the ball inside the pipe floating above the limited line in low speed mode, it proves normal function.

If the ball cannot float up to limited line, please refer to Trouble-shooting Guide on page 11.



## MAINTENANCE

The respirator components must be cleaned, inspected and prepared for next use after each use. Use soft cloth dipped in mild soap water for wiping. Be careful for the water NOT to get inside the body.

### CLEANING

1. Blower unit and battery pack: Clean the outer surfaces of the PAPR and battery pack with a soft cloth dampened in a solution of water and mild, pH neutral detergent. Be careful for the water NOT to get inside the body. Do not use solvents or abrasive cleaners. Ensure the electrical contacts of the motor/blower and battery pack are dry before assembling well.
2. Breathing tube: Wiping the exterior is insufficient. Clean the outer hose and connection on the breathing tube with the soft cloth dipped in water and detergent solution. Optional breathing tube covers can also be used to facilitate cleaning. Ensure the breathing tube is completely dry before using or storing. They cannot be immersed in liquids for cleaning and must be replaced if wet.
3. Filter: Open the filter cover and inspect all the filters and spark screen. The particle filter, gas filter and pre-filter cannot be cleaned. The spark screen can be cleaned using a clean, soft cloth dipped in a solution of water and a mild pH neutral detergent. Completely dry the spark screen with a clean cloth. Replace the pre-filter and particle filter if excessively dirty, wet or damaged. Do not attempt to remove contamination using a compressed air line as this will automatically invalidate the warranty. If the spark screen cannot be cleaned or is damaged, replace with a new spark screen.

## STORAGE

The TECMEN PAPR system is not intrinsically safe. Keep away from flammable, or explosive atmosphere. Storage should be in a clean, dry, cool place with filter.

### Blower storage

Stored at a temperature between -10°C to 55°C (14°F to 131°F), in a clean environment without direct light.

### Battery storage

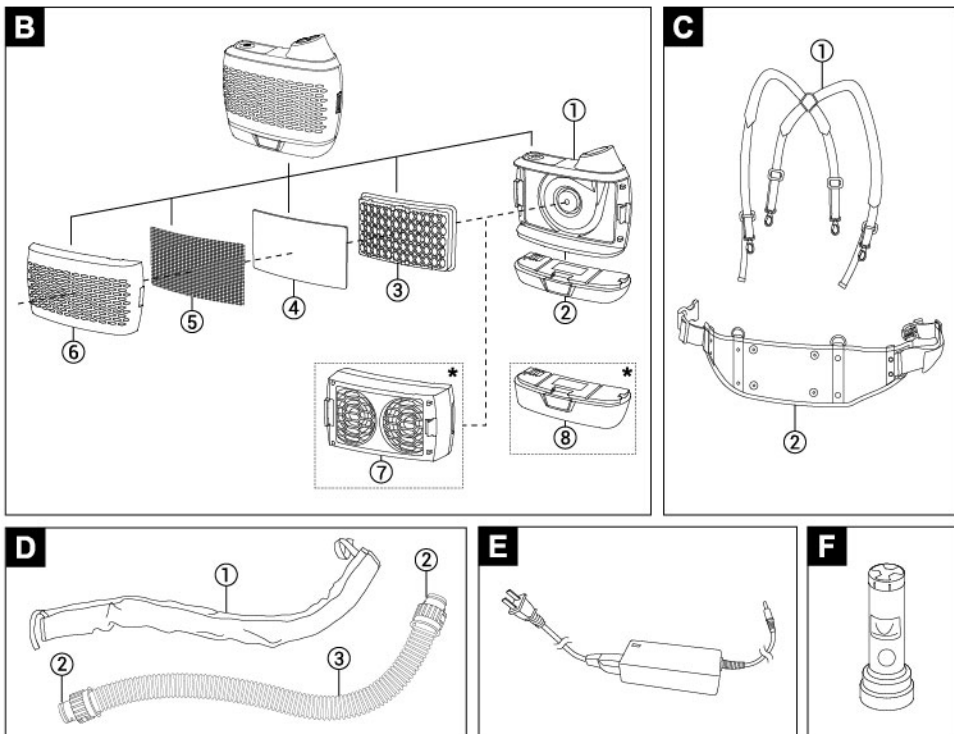
To help maximize battery service life:

- Disconnect the charger after a full charge has been received.
- Battery should be removed from blower if long time storage.
- Store the battery at -10°C to 45°C (14°F to 113°F), R.H. <85%, to get maximize battery service life.

## TROUBLE-SHOOTING GUIDE

Problems	Causes	Trouble-shooting
No airflow from blower	Blower not ON	Long press ON button.
	Battery no power	Charge the battery.
	Battery not installed properly	Check and reassemble the battery.
	Tube blocked/air leakage	Check and clear the obstruction.
Airflow test failed	The hose may get blocked/air leakage	Check the tube status.
	Dirty filter needs replacement	Replace new filter.
Battery time is too short even fully charged	Battery faulty	Replace new battery.
	Incorrect charging	Fully charge battery.
	Blocked filter	Replace filter.
	Damaged charger	Replace a new charger.
Increased sound level	Filter is getting clogged	Replace filter and pre-filter as required.
Warning indicator ON, blower vibrate and alarm sound bleeping	Tube gets blocked/air leakage	Check if tube/anywhere gets blocked before use.
	Filter assembled without removing the package	Check if the package is removed.
Feeling smell of incoming air	Damaged filter	Check the filter status and replace new one if needed.
	Hose with leakage problem	Check how the tube assemble as well as status.
	Filter component not complete	Check and equip both filters.

## PART LIST



**The part with \* means it is not included in the product, which need to be purchased seperately.**

## PART LIST

ITEM	PART NO.	DESCRIPTION
<b>B. Blower Unit</b>		
B-1	V1BM TM3 00	Body
B-2	V1FBA TM3 00	Fast-charging standard battery
B-3	V1P3 TM3 00	Particle filter (P3 filter)
B-4	V1PF TM3 00	Pre-filter
B-5	V1SS TM3 00	Spark screen
B-6	V1FC TM3 03	Filter cover
B-7*	V1GF TM3 00	Gas filter
B-8*	V1FEB TM3 00	Fast-charging extended battery
<b>C. Wears</b>		
C-1	V1SH TM3 00	Shoulder strap
C-2	V1BE TM3 00	Belt cushion (Including screws & washers)
<b>D. Hose</b>		
D-1	V1HC TM3 00	Hose cover
D-2	V1OR TM3 00	O-ring
D-3	V1HO TM3 00	Hose (Including O-ring)
<b>E. Battery Charger</b>		
E	V1FBC TM3 00	Fast-charging battery charger
<b>F. Airflow Indicator</b>		
F	V1AI TM3 00	Airflow indicator

**The part with \* means it is not included in the product, which need to be purchased seperately.**



## WARRANTY

Tecmen's only obligation shall be repair, replace or refund the purchase price of such parts or products material and fabrication defects free of charge within the warranty period.

This warranty does not cover to cause by improper handling abuse or application other than recommended in the user instruction.

If you come across any problem during warranty period, contact your distributor, send the defective parts together with the completed defect problem if necessary.

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Thank you very much for choosing a TECMEN® product!

For future reference, please complete the owner's record below :

**Serial Number :**

**Purchase Date :**

