

TEMPEST™

OWNER'S MANUAL

Power Blowers™

Laminar Air Flow (LAF) - Electric Driven
VS-1.3M Milwaukee Battery Powered Blower



INTRODUCTION

Thank you for choosing Tempest Technology Corporation for your ventilation needs. With this manual we hope to help you operate your Tempest product safely and to its full potential. Maintained according to the specifications set in this manual, it is not uncommon to receive many years of use and operation out of your Tempest equipment.

This manual is produced solely for the use of purchasers and operators of Tempest Technology Corporation equipment. Any reproduction, retransmission, or other use of the contents of this manual without written consent of Tempest Technology Corporation is strictly prohibited.

It is the intent of this manual to provide the owner/operator of Tempest Technology Corporation products with both general and specific information regarding the safe and proper operation and maintenance of the equipment described within.

CONTACT

If after careful review, any questions arise concerning any portion of this manual, please contact Tempest Technology Corporation for assistance:

TEMPEST TECHNOLOGY CORP.
4708 N. BLYTHE AVENUE
FRESNO, CA 93722

Toll Free: 800.346.2143
t: 559.277.7577
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response@tempest.us.com
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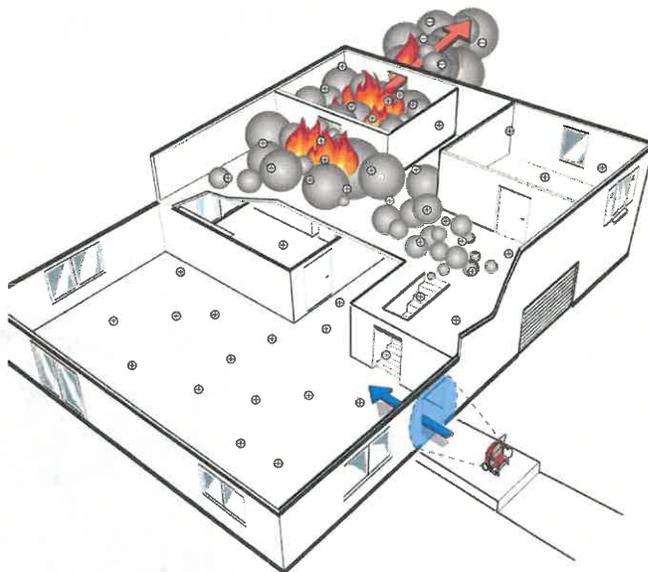
ABOUT TEMPEST

Tempest Technology Corporation is the leading manufacturer of products and accessories for environmental management in firefighting and industrial applications.

Tempest began as a manufacturer of gasoline and electric powered blowers for the fire service. Fire departments use the Tempest Power Blower™ to provide "Positive Pressure Ventilation / Attack" (PPV/PPA) to remove heat, gases and smoke from the interior of a burning structure.

Tempest has expanded into other industries and found new applications for its products. The Tempest Power Blower™ and PPV/PPA are used by industrial applications to control dust, fumes and unhealthy gases like carbon monoxide, greatly improving safety in confined spaces.

Tempest Technology Corporation has earned a reputation as a leader and innovator in the air movement industry and continues in that role today.



SAFETY GUIDE

Failure to follow the operating, maintenance and lubrication requirements set forth in this manual may result in serious personal injury or death and/or damage to equipment or property.

The following WARNING statements indicate potentially hazardous conditions for operators and equipment. Make certain that anyone who works on or around the blower has read and fully understands the safety precautions listed.

1. Carefully read this owner's manual before attempting to operate, service or disassemble any part of your Tempest Power Blower™.
2. DO NOT operate the unit when mentally or physically fatigued or impaired.
3. Stay away from rotating parts; avoid wearing loose jackets, shirts, and ties. Keep hands and feet away from moving parts.
4. Keep all unauthorized personnel at a safe distance from the blower.
5. Keep all guards in place. DO NOT make repairs while the unit is running. DO NOT operate if any guard or grille is not in place.
6. Always wear eye protection. Loose debris can be picked up in the air stream and flown in the air.
7. Hearing protection is required. Fan blade and air noise may exceed safe dB levels.
8. Always ensure proper voltage and amperage is delivered to your Tempest Power Blower™.
9. Only a qualified technician should perform repairs or maintenance on electric components.
10. Never operate your Tempest Power Blower™ with electric components exposed.
11. Never operate your Tempest Power Blower™ with damaged, exposed or frayed wiring.
12. It is the sole responsibility of the owner/operator to develop procedures for proper use of the Tempest Power Blower™ in accordance with generally accepted ventilation techniques as well as the organization's own operating procedures, before placing the unit into service.



GENERAL INFORMATION

BLOWER IDENTIFICATION

Each Tempest Power Blower™ has a part number as well as a serial number. The part number identifies the type of unit (size, drive, etc.) while the serial number relates to information referencing the date of manufacture. This information is useful should it become necessary to contact the factory regarding your Power Blower™.

SERIAL NUMBER LOCATIONS

The serial number is typically located on the left side of the electrical box.

Please write the Serial Number of your Tempest Power Blower™ in the spaces below. This will aid us in identifying which model you have when assisting you.

Model (Part No.) _____

Date _____

Serial No. _____

USA PATENT INFORMATION

US patent numbers for the VS family of battery powered blowers.
11,333,291
10,837,592
D829789
Additional patents pending.

WARRANTY

Warranty information on your unit can be found on the back page of this manual. For further information, please contact Tempest Technology Corp.

TECHNICAL SPECIFICATIONS

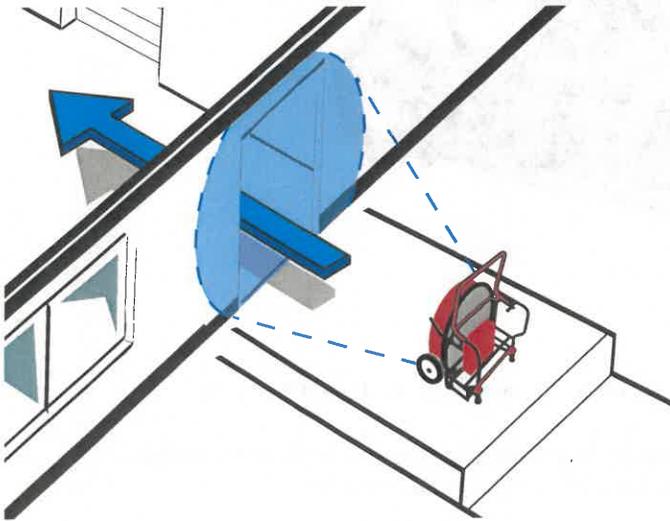
		PRODUCT FAMILY	POWER BLOWER™
		PRODUCT LINE & TYPE	LAMINAR AIR FLOW ELECTRIC (LE) - VS1 BLDC
		MODEL	VS1.3M-18-FOLDING HANDLE BLDC
		PART NO.	910-1870(110 vac)
OUTPUT	AIR VOLUME	[cfm/m³h]	-
	AIR VELOCITY	[mph/kph]	34
	NOISE LEVEL @ 10 ft	[dB(A)]	83.7
FAN BLADE	TYPE		IMPELLER
	MATERIAL		NYLON 6 W/ 30% GLASS-FIBER FILL
	DIAMETER	[in/mm]	18 / 457
	NO. OF BLADES		6 @ 25°
DIMENSIONS	WEIGHT (With Battery)	[lb/kg]	47 / 24
	WEIGHT (With Out Battery)	[lb/kg]	40 / 18.6
	WIDTH	[in/mm]	23.5 / 597
	DEPTH	[in/mm]	14.2 / 362
	HEIGHT	[in/mm]	HANDLE UP 30.75 / 782 HANDLE DOWN 25.25 / 642
MOTOR	MANUFACTURER		Private Label
	MODEL		360-054
	TYPE		18 VDC BRUSHED TOTALLY ENCLOSED, AIR OVER
	VOLTAGE		18 VDC
	POWER OUTPUT	[HP/W]	-
	MAX AMPERAGE		30
	WATTS @ FULL RPM		-
DRIVE	MANUFACTURER		Private Label
	MODEL		2010641
	TYPE		30 AMP BRUSHED
	INPUT OPERATING VOLTS		20 VOLTS DC
	OUTPUT VOLTS		0 TO 20 DC
AC POWER	AC VOLTAGE OPERATION	YES	AVAILABLE IN 110-115V AND 220-230V
	AMP DRAW		7.7 @ 115V / 3.9 @ 230V
	WATTS @ FULL RPM		-
BATTERY SYSTEM	BATTERY MANUFACTURE		MILWAUKEE
	BATTERY CHARGER		MILWAUKEE
	RECHARGE TIME		SEE MANUFACTURE'S SPECIFICATIONS
FRAME	TYPE		ERGONOMIC WELDED ROLL CAGE
	MATERIAL	[in]	0.75 ROUND ALUMINUM TUBE
	COATING		POWDER COAT
	DEFAULT COLOR		ANODIZED ALUMINUM
	FOLDING HANDLE		YES
	TILT RANGE		-12.5° to +25°
	NO. OF TILT POINTS		4
	WHEEL TYPE		6 inch Easy Roll
WHEEL SIZE	[in/mm]	6 / 152	
SHROUD	TYPE		TURBO 2000
	MATERIAL		STEEL W/ ROLLED EDGE
	COATING		POWDER COAT
	DEFAULT COLOR		RED
GRILLE	MATERIAL		SPIRAL WELDED STEEL WIRE
	NO. OF TIE POINTS		8 FRONT, 8 REAR
	STANDARDS		MEETS CE SAFETY STANDARDS
	COATING		POWDER COAT
	DEFAULT COLOR		BLACK

POWER BLOWER™ INFORMATION

The Tempest Power Blower™ is a high powered, portable fan used for Positive Pressure Ventilation and Attack (PPV/PPA), ventilation techniques that quickly and efficiently replace hazardous interior environments with clean, cool air.

PPV and PPA were pioneered in the firefighting industry where firefighters use the Tempest Power Blower™ to ventilate smoke, heat, and harmful gases from buildings. This creates a safer environment for them to work in and makes it easier for them to find victims and extinguish the fire.

PPV and PPA rely on two principles, (1) an air pattern capable of creating an effective door seal, and (2) pressure. To accomplish Positive Pressure Ventilation or Attack, the blower is placed on the outside of the structure. It is positioned so that the air pattern created by the blower completely seals the entrance opening, or at least 2/3 of it. When this seal is achieved, the air pressure is increased equally at all points inside the structure. When an exhaust opening is created, all of the interior air moves in one mass towards it. The result is fast, efficient ventilation of the entire structure.



NOTE: The Tempest Power Blower™ is the most efficient tool for PPV and PPA for two reasons. First, the exclusive Tempest Turbo 2000 aluminum shroud design creates a broad, cone shaped air pattern. Second, the airflex impeller used on all Tempest blowers is designed to create high pressure. These two features working together make the Tempest Power Blower™ a highly effective and efficient ventilation tool.

As with any new technique, Positive Pressure Ventilation requires training and education in order to be implemented properly and safely. Tempest offers access to a complete line of training materials, which cover many applications for this powerful ventilation technique. For more information visit www.tempest.us.com, www.positivepressuretraining.com or contact us at 800.346.2143 or response@tempest.us.com.

OPERATING PROCEDURES

PRE-OPERATION

After receiving and unpacking your blower, be sure to carefully inspect it for any damage that might have occurred during shipping. Should you find any damage: PLEASE NOTIFY TEMPEST TECHNOLOGY CORP. IMMEDIATELY AT 800.346.2143 OR RESPONSE@TEMPEST.US.COM.

OPERATION

SET-UP, STARTING AND STOPPING

Assuming the previous Pre-Operation and safety instructions have been followed, the blower is now ready to run.



WHEN USING A GENERATOR, IT IS IMPERATIVE THAT THE GENERATOR BE RUNNING AT FULL CAPACITY BEFORE PLUGGING IN ANY ELECTRIC BLOWER. ALWAYS VERIFY SUFFICIENT GENERATOR OUTPUT BEFORE USE. IMPROPER VOLTAGE SUPPLY MAY DAMAGE UNIT AND VOID WARRANTY.

CAUTION: DO NOT MOVE THE BLOWER WHILE IT IS IN OPERATION. SEVERE PERSONAL INJURY IS POSSIBLE AS WELL AS DAMAGE TO THE BLOWER.

ALWAYS SHUT-DOWN THE BLOWER PRIOR TO MOVING.

SET-UP

Position the blower in the desired location, making sure it is placed on a flat, hard and debris free surface.

Operating procedures continued on the next page.

OPERATING PROCEDURES CONTINUED



FOR OPERATION ON BATTERY POWER

For best operation and performance of the fan, use batteries that are in good operating condition and fully charged.

Slide the batteries onto the battery mounts.
The blower is now ready for operation.

Ensure that the fan is switched off before disconnecting the batteries.

Removal of batteries when the fan is operating might damage the fan.

Recharge batteries after use as per the manufacturer's instructions. Never leave or store batteries in a fully discharged state.

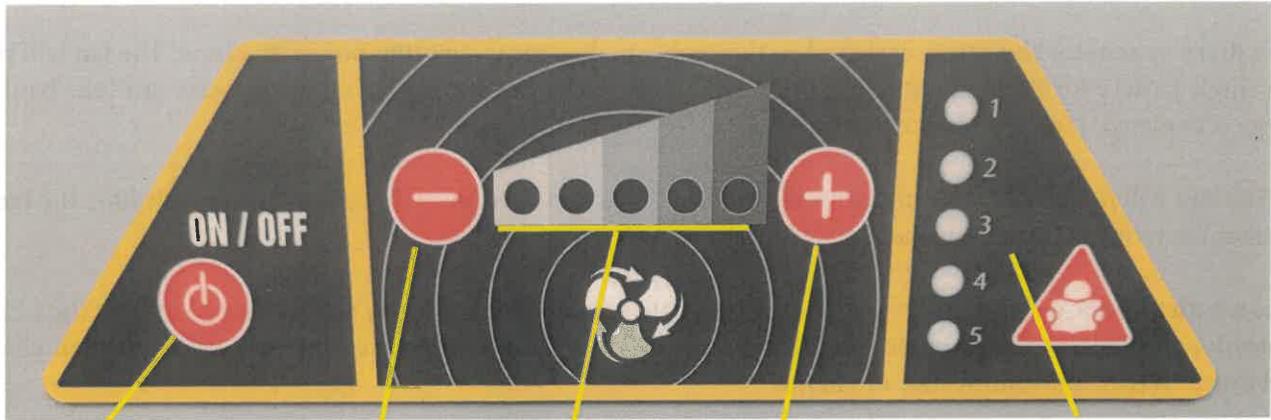
FOR OPERATION ON AC VOLTAGE POWER

Plug the AC power cord plug into an AC power source.
The blower is now ready for operation.

The fan can be operated on AC power with or without the batteries in place. The fan will automatically switch over to AC power when plugged into an AC power source.

Operating procedures continued on the next page.

OPERATING PROCEDURES CONTINUED



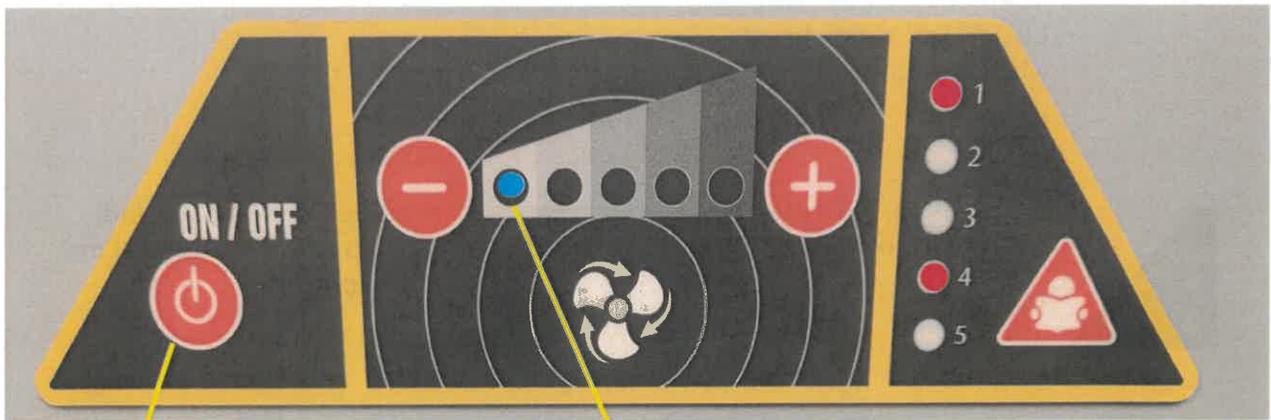
On/Off power button.
For running on both battery
and AC voltage.

Decreases fan
speed.

Indicator lights for
fan speed setting.

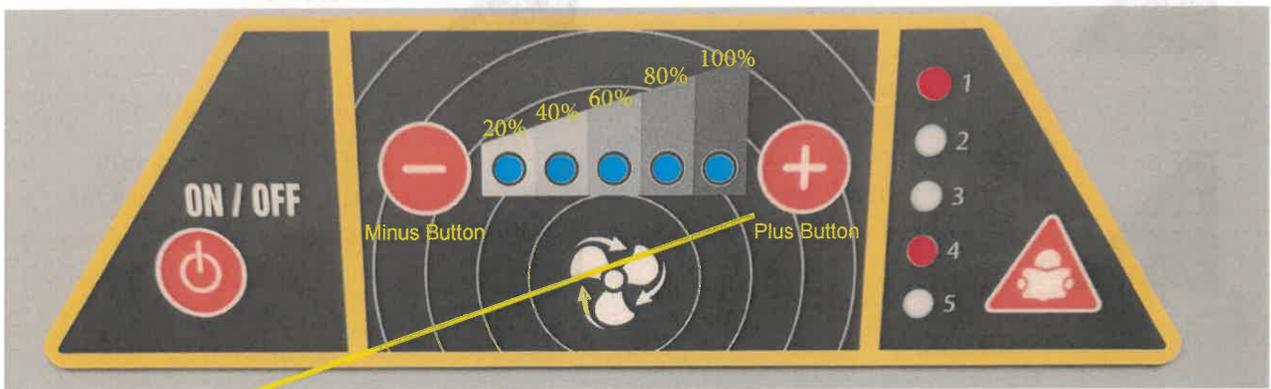
Increases fan speed when
pushed.

Battery system inductor
lights. See next page.



Press and hold the On/Off button to power up the fan. The fan will start running. The LED lights on the front of the control box will turn on.

First indicator light will turn on to show the fan is running at 20%



Each push of the plus button will increase the fan speed by 20%. To turn off the fan, push the On/Off button. The fan will slow down and stop, then the lights on the front of the control box will turn off.

SYSTEM OPERATION AND LEDS WHEN THE FAN IS RUNNING ON BATTERY POWER

The battery system for this fan is designed so that only one battery is supplying power at a time. The fan will run on a single battery for three minutes and then switch to another battery, repeating this process until the batteries charge is depleted. (See LED function chart below)

NOTE; You will notice a change in fan speed and the LEDs on the front of the fan will flash each time the fan switches from one battery to the next.

Once a battery's charge level drops to its minimum state of charge, that battery will be turned off and the LED indicator for that battery will not light up. The fan will continue to operate on the other batteries unit their charge level drops to their minimum state of charge.

LED FUNCTION CHART

LED #4 will always be on when operating on battery power



LED #1 is on, indicating battery #1 is being used



LED #1 is blinking, indicating low charge level for battery #1



LED #2 is on, indicating battery #2 is being used



LED #2 is blinking, indicating low charge level for battery #2.



LED#3 is on, indicating battery #3 is being used



LED #3 is blinking, indicating low charge level for battery #3.

SYSTEM OPERATION AND LEDS WHEN THE FAN IS RUNNING ON AC POWER 110V TO 220V



LED #5 is on, indicating the fan is operating on AC power source.
Note, no battery LEDs will be on while the fan is connected to AC power.

MAINTENANCE PROCEDURES

Although Tempest electric Power Blowers™ are designed to eliminate most maintenance issues, it is imperative that the blowers be inspected before startup on each use. Please review the following list before using this product.

MAINTENANCE SCHEDULE

EVERY USE

- INSPECT BLOWER FOR DAMAGE AND FIX IF ANY
- TIGHTEN/REPLACE ANY LOOSE OR MISSING PARTS

EVERY MONTH OR 10 HOURS

- INSPECT & CLEAN SHROUD & GRILLES

IMPORTANT: Always operate the blower in an area free of debris which may be pulled into the unit's blades. If you suspect the fan's blade may have contacted a hard object, thorough inspection of the blade assembly should be conducted immediately to ensure safety. You may contact Tempest Technology Corp. in order to find out how to properly inspect the blade assembly.

POWER BLOWER™ TROUBLESHOOTING

Various factors can contribute to or be the sole cause of problems for electric power blowers. This section will identify some of these problems and provide solutions to correct them.

BLOWER FAILS TO START

WHEN OPERATING ON THE BATTERY.

- Make sure that the batteries are charged.
- Make sure that the batteries are fully seated into the battery mounts.
- Make sure that the fuses are not burnt out and are in good working order.
- There may be damage to the internal wiring. Have a qualified technician or electronics specialist examine the blower circuitry and wiring and make any necessary repairs.

WHEN OPERATING ON AC POWER

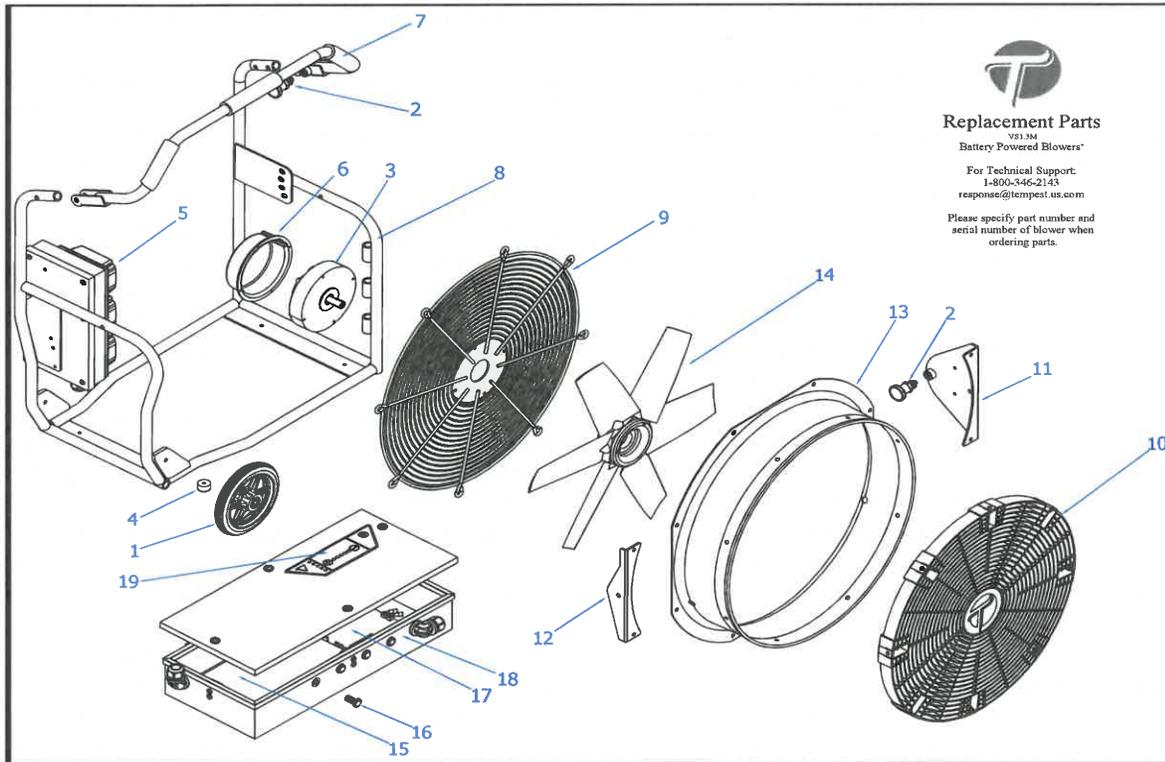
- Make sure the unit is connected to the power source.
- Make sure that the fuses are not burnt out and are in good working order.
- Thoroughly check the power cord. If the cord shows any signs of serious wear, it may need to be replaced before running properly.
- There may be damage to the internal wiring. Have a qualified technician or electronics specialist examine the blower circuitry and wiring and make any necessary repairs.
- If your Tempest Battery Powered blower is not running after pursuing the steps mentioned above, please contact us at 800.346.2143 or response@tempest.us.com.

BLOWER SURGES WHEN RUNNING ON GENERATOR

- Check that the generator meets the proper voltage output to operate the blower.
- If blower is still surging, contact Tempest at 800.346.2143 or response@tempest.us.com.

LOCATION OF 115 VAC FUSE HOLDER

- A 15 amp blade type fuse for the 115 VAC power is located inside the electrical box.



Item #	Part number	Description
1*	240-016	6 INCH WHEEL KIT
2	300-171	METERIC SPRING PLUNGER
3*	2007935	MOTOR ELECTRIC 18 VDC
4	580-009	PAD FOOT EBS 16
5	581-070	BATTERY MOUNT
6	581-309	MOTOR COVER
7*	610-1333HK	REPLACEMENT HANDLE KIT
8*	610-1332K	FRAME VS-1.3H FOLDING HANDLE MODEL
9	610-1427	GRILL REAR
10*	610-1428K	GRILL FRONT A/S
11*	610-1521K	SHROUD MOUNT BRACKET LEFT
12*	610-1522K	SHROUD MOUNT BRACKET RIGHT
13*	705-122	SHROUD, RED
14*	260-089	BLADE ASSEMBLY
15*	581-216	20 VOLT DC POWER SUPPLY
16	581-136	12B-CW-B COOL WHITE LED
17	581-294	BATTERY BOARD M18 VS1-M
18	600-843	DRIVE ASSEMBLY COMPLETE
19	2010035	KEY PAD
NI	581-214	FUSE, 15 AMPS VS1 115v BLADE TYPE
NI	581-285	FUSE HOLDER BLADE TYPE

* denotes item includes hardware for installation

NI Not Illustrated

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 Information and Material Subject to Change Without Notice

Please fill out and mail the warranty card that was supplied in the information packet.

WARRANTY REGISTRATION

Serial No.	Model No.
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(Serial and model numbers are located on the blower's frame near the motor/engine.)

PLEASE PRINT

Your Name _____
Department/Company Name _____
Address _____
City/St/Zip _____
Phone _____
Email _____

PURCHASE INFORMATION

Date of Purchase _____ Name of Dealer _____
Why did you purchase your Tempest product? (Check all that apply)
 Reputation Demonstration Quality Price
 Recommended by _____ Advertising
 Other _____
Is this your first Tempest? Yes No
What is the most important factor in purchasing this product?

In what applications will you use this Tempest product?

PPV INFORMATION (If Applicable)

Are you using any other PPV equipment?
 Yes (which) _____ No
How long have you used PPV? _____
Has your organization ever participated in a formal PPV training program?
 Yes No

ADDITIONAL INFORMATION

I would like information on Tempest PPV/Ventilation Training.
 I would like to receive information on product accessories.
 I would like to join your information network and receive regular Tempest product and ventilation updates.
E-mail _____

SUGGESTIONS AND COMMENTS _____

TEMPEST™

4708 N. Blythe Ave.
Fresno, CA 93722

800.346.2143
www.tempest.us.com

p/n 410-1038

WARRANTY INFORMATION

Except as otherwise set forth below, any claim by Customer with reference to the Goods sold shall be deemed waived by the Customer unless submitted in writing to Tempest within the earlier of (i) five (5) business days following the date Customer discovered, or by reasonable inspection should have discovered, any claimed breach of the foregoing warranty, or (ii) thirty (30) calendar days following the date of shipment. Any cause of action for breach of the foregoing warranty shall be brought within one (1) year from the date the alleged breach was discovered or should have been discovered, whichever occurs first.

Limited Power Blower Warranty

Tempest warrants to the original purchaser that all Tempest gasoline and electric powered blowers (except the engine or motor, drive, and power supply) will be free from original defects in workmanship and material, under normal-use conditions, and Tempest will replace any defective power blower part (except the engine or motor and drive) if returned during the applicable warranty period, for the time frame indicated below:

Firefighting Industry:

Five (5) years from date of shipment

Industrial/Rental Industry:

One (1) year from date of shipment

Blower Engine / Motor & Drive Warranty

The engines manufactured by Honda* and Briggs & Stratton* are covered by a separate manufacturer's warranty for a period of two (2) years. Electric motors manufactured by Magnetek, Marathon, Baldor, Franklin Electric and Multi-Fan are covered by a separate manufacturer's warranty for a period of one (1) year.

Milwaukee Batteries

Milwaukee batteries and chargers are covered by a separate manufacturer's warranty.

Milwaukee Warranty does not cover batteries and chargers that have been damaged due to being mis-handled, mis-used, or abused.

Note: Unauthorized repair or modification of the factory assembly or parts voids the warranty.

All information provided in this operations manual is subject to change without notice. Please refer to our website for the most recent sales terms and conditions.

TEMPEST™

Tempest Technology Corporation

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