



HIGH FLOW JET SERIES PPV Fan

OPERATIONS MANUAL

• WARNING	2
• SAFETY INSTRUCTIONS	2
• WARRANTY STATEMENT	3
• UNPACKING	3
• CHARGING PROCEDURE	3
• BATTERY MAINTENANCE	4
• OPERATING PROCEDURE	6
• LED STATUS GUIDE	7
• PRODUCT SPECIFICATIONS	9
• SERVICE AND CONTACTS	12

Thank you for choosing BlowHard as your ventilation solution! BlowHard fans are engineered to deliver firefighters maximum ventilation performance in a compact package easily stored and deployed. BlowHard fans are rugged and durable, providing years of service to you and your community.

BlowHard is here to serve you. It is our goal that you receive the best service from your BlowHard products. If you ever have any questions or problems with your BlowHard product, please contact us. We will work to help you to ensure the long and happy life of your BlowHard products.

WARNING

The following information is important to the proper and safe use of your BlowHard High Flow Jet Series Positive Pressure Ventilation (PPV) Fan. Be sure to READ and UNDERSTAND the Operating Manual in its entirety BEFORE operating the fan. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE PROPERTY DAMAGE or PERSONAL INJURY.

SAFETY INSTRUCTIONS

It is the responsibility of the user to obtain and provide proper PPV/PPA training. Be sure to use Adequate Personal Protective Equipment (PPE) i.e. gloves and eye protection while handling this and other electrical equipment.

This electrical equipment utilizes 110/220V-AC which can cause serious electrical shock if not properly operated or maintained.

Use Rated and Approved Outdoor Electrical Extension Cord only with this equipment. If the plug is not rated as waterproof, do not submerge under water. Do not come in contact with wet electrical connections without proper personal protective equipment.

The operating fan is a high speed rotating mechanical device that can cause serious injury if body parts come into contact with rotating surfaces or material thrown into moving parts. Although safety grills are installed, they do not block all objects from coming in contact with the rotating surfaces. Do not attempt to push body parts or foreign objects through the grill slots. Do not allow any object, material, or fluid into the intake or outlet of the fan, or to come into contact with the fan blade.

Pinch Hazards. The fan is made to fold in and out for storage and operation. Care must be taken when setting up the equipment for operation, and for storing the unit. Pinch points are at the hinged sections of the fan. Do not put body parts in the space between opposing parts that are coming together upon closure or opening of the fan. Support shroud when releasing the brake. Not doing so could result in the shroud falling to a horizontal position quickly and can collide with the base or ground with significant force that could cause damage or physical harm.

Toe Hazards. This equipment may be stowed in elevated compartments and shelves. Safety handles and shoulder strap are provided for lifting and transporting the equipment. Appropriate footwear and gloves should be worn when handling equipment.

Practice Common Sense.

WARRANTY STATEMENT

Please go to www.blowhardfans.com/register and fill out the Warranty Registration form and submit it to activate your warranty. The High Flow Jet Series PPV fans come with a 2-year warranty covering all parts from the date of purchase under normal operating conditions.

Any intentional misuse or abuse to the unit, accidental damages and anything outside “normal wear and tear” to the unit will not be covered under this general warranty policy.

UNPACKING PROCEDURES

Unpack and remove the fan from the cardboard boxes.

If possible, keep the box and molded package braces. If the fan needs to be returned for any reason, these items will help prevent damage during transit.

Visually check to ensure nothing is loose or broken during shipping. Lay the fan flat on the ground. Locate the yellow brake lever and compress to lift the shroud part of the fan upright and all the way over 180 degrees. Take note of the power console and AC cord/plug. Turn the unit on to verify it is functioning. If anything appears to be damaged, notify us immediately.

CHARGING PROCEDURES

Keep the unit plugged into the truck or wall socket when not in use. This will ensure the fan is always charged. Remember, there is no charge memory as in NiCad batteries, so simply plug it in after each use regardless of existing battery capacity.

STEP 1: Make sure the Power Knob is turned to the left and clicked OFF. If the red “BH” LED is on, the fan is not switched completely off and the fan will not be charging.

STEP 2: Plug in the AC Power cord to an approved 120V-AC extension cord. The green battery LED will start Blinking Slow GREEN during pre-charge, and then switch to either Fast GREEN during fast charge, or Slow GREEN during trickle charge, or two green blinks followed by a longer pause indicating automatic battery maintenance is occurring. When the battery is fully charged and maintenance complete, the green battery LED will be solid green.

Charge Time: Expected charge times are 0% - 90% capacity during fast charge (fast blink) completed in 1 - 2 hours, depending on fan. Slow charge (Slow blink) can take 1 hour longer to complete 90% - 100% capacity. Battery maintenance can take a long time, depending upon if cell balancing needs to occur. The battery LED will blink green twice followed by a pause, repeated. Leave the fan plugged in as often as possible to take advantage of the automated cell maintenance. Operating the fan at any point during this process will not damage the fan or battery.

BATTERY MAINTENANCE

The following are good maintenance practice:

- The battery has an integrated charging system. The integrated charging system will fully charge and manage the battery when the fan is plugged in and the power switch is **off**.
- To charge your fan, simply plug it in and turn the power switch counterclockwise to the **off** position. Be sure the red “BH” LED is off and the green battery LED is flashing or solid green.
- Charging is best completed in a cool environment. The optimum temperature range is 50F-85F or 10C-30C. Charging in extreme temperatures is limited and will extend charge time or prevent charging altogether. Charging in extreme temperatures may reduce battery life.
- Fast Charge – A quick charge will charge your battery to about 90% of full capacity. The green battery light will blink quickly.
- Trickle (Slow) Charge –Trickle charge takes place from 90% to 100% capacity. The green battery light will blink slowly. Best practice is to complete a full charge during maintenance.
- Battery Maintenance – Once the charging process is complete, the battery management system will automatically perform maintenance on the battery while the fan remains plugged in. This includes balancing all cells for optimized performance.
- Charge Battery after each and every use even for a short period. The early recharging and constant charging will not damage the battery as BlowHard’s advanced battery management system (BMS) will control what charging each cell will get as needed.
- Always keep the battery in charged condition through constant charging or regular maintenance. This will ensure the readiness operation of the fan and the full capacity of each operation. If possible, leave fan plugged into shore-lined truck.

The battery maintenance process once charging is complete may take several hours, depending on the condition and characteristic of each individual battery cell. It can also restart during extended periods of nonuse.

Battery Life:

- If you have problems with your battery please contact BlowHard at 541-967-0063 or at support@blowhardfans.com.
- The typical estimated life of the Li-Ion battery supplied with the High Flow Jet series PPV fans is up to 500 full discharge cycles.
- When your battery reaches its life cycle the run time of the fan will begin to decrease and the battery pack will need to be replaced.
- Periodically check your run time. After Full Charge your fan should be capable of running on battery for approximately 40 - 50 minutes on high. As battery begins to reach the end of its life cycle, full charge runtime will drop to about 80% of the original time.

- Replace batteries with BlowHard battery pack only. Please contact factory with your fan serial number for assistance.

*****BlowHards want to Blow Hard!*****

For general maintenance, discharge and recharge every 1 to 2 months. Working this process into a maintenance schedule can be helpful. Turn it on and let it blow. When it stops blowing, plug it in and let it fully charge. Cycling the battery occasionally will optimize cell performance and allow a system check to be completed.

A happy BlowHard Blows Hard, a dead BlowHard sucks!

OPERATING PROCEDURES

STEP 1 - BATTERY OPERATION:

- The green battery LED should be solid green indicating a fully charged battery. Turn the Power Knob to the right until it clicks ON. The red “BH” LED should turn on.
- Your fan is variable speed. As the knob is turned clockwise the fan will turn on at low speed and increase to high speed. Increasing or decreasing speed will directly impact both performance and battery run time. Reducing power to low will extend run time to hours.
- NOTE: If the red “X” LED is solid red, the battery is BAD and must be replaced. The fan can still be used in AC Mode if no damage has been done to the BMS. If the BMS is BAD then the fan will not work at all. See TROUBLESHOOTING and call for service.

STEP 2 - AC OPERATION: Plug in the AC cord.

- Charging: While the Power Knob is in OFF position: The BMS will automatically charge the battery with available power from the AC power supply. See LED status chart for sequence definitions.
- Fan Operation: Turn the Power Knob clockwise to start the Fan. When the knob is turned on charging will stop and redirect the AC power to run the fan. The red “BH” LED will turn on when the knob is in the on position. Your fan is variable speed. As the knob is turned clockwise the fan will turn on at low speed and increase to high speed. There is a “dead-band” between the initial knob click and slow speed operation. With the knob in the dead-band you can check LED power status without turning on the fan.
- AC/Battery power switching: When operating your fan, your control system will sense and automatically switch to AC power. If AC power is removed or lost, your control system will automatically switch power back to battery if sufficient battery power is available. The green battery LED will light up when running on battery.

Variable Speed Control:

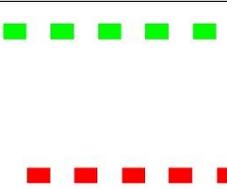
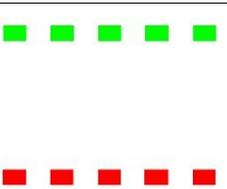
- Your fan is variable speed. As the knob is turned clockwise the fan will turn on at low speed and increase to high speed. There is a “dead-band” between the initial knob click and slow speed operation. With the knob in the dead-band you can check LED power status without turning on the fan.
- The fan can be started at maximum speed for PPV Operation by directly turning the Power Knob fully clockwise. The Electronic Speed Controller (ESC) will ramp-up the fan to maximum speed without causing any power surge.
- To set the fan at speed other than maximum, the fan can be started at maximum speed, and then dialed down, or start at minimum speed and quickly dialed up. The ESC will control and prevent any power surge.
- The minimum speed is factory preset to provide light ventilation, is useful for rehab situations, and will significantly extend the battery usage for hours.

LED Status Guide

Knob is in the "ON" Position:

Plugged in?	Status	LED Control Board	Blink Sequence
Yes (PS voltage>10V)	Battery Installed, Normal operation		
	No Battery, Normal operation		
Yes (PS voltage<10v)	Battery Installed, Normal operation		Red "BH" blink
	No Battery, Normal operation		Red "BH" blink
No	Battery engaged, Battery > 33V, No Over-Discharge, Normal operation		
	Battery < 33V or Over-Discharged or Hot/Cold Delay *		
	No Battery. No operation unplugged.		

Knob is in the "OFF" position:

Plugged in?	Status	LED Control Board	Blink Sequence
Yes	Fast Charge		
	Slow Charge or Hot/Cold Delay **		
	Top Balance		
	Charged		
	Battery Recovery Attempt (Over-Discharge Occurred)		
	Hot/Cold Delay ***		
	Battery Damaged		
	No Battery		

Hot/Cold Delay definition:

- * Temperature > 65°C or Temperature < -20°C
- ** 0 °C < Temperature < 5 °C or 45 °C < Temperature < 55 °C
- *** Temperature > 55°C or Temperature < 0 °C

Ingress Rating

The High Flow Jet series fans are expected to have an ingress rating of IP-67 (No ingress of dust, complete protection against contact. Water projected in powerful jets against the enclosure from any direction or submersion of the base for 30 minutes shall have no harmful effects.) Ensure electrical extension cords are not operating in standing water.

PRODUCT SPECIFICATIONS

The High Flow Jet Series fans are highly portable fully integrated AC/DC Electric High Speed PPV/Ventilation/Industrial Fan Systems.

LI-ION BATTERY TECHNOLOGY

The Li-Ion batteries used for the High Flow Jet Series fans have exceptional energy density, or high power in small cells. The lifecycle expectancy is up to 500 cycles. While these batteries have exceptionally low self-discharge rates, be sure to follow the recommended battery maintenance plan to avoid prematurely damaging the battery. Batteries charged and used in the appropriate BlowHard fans are safe from over charging or over discharging.

Disposing and Recycling

Lithium-Ion batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow regulations applicable to your area before disposing of any battery. Contact your local battery recycling organization for more information (<https://www.call2recycle.org/> is one source for USA and Canada).

Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles.

Place only discharged batteries in a battery collection container. Use electrical tape or other approved covering over the battery connection points to prevent short circuits. Call or email BlowHard for assistance if needed (+1 541 967 0063 / support@blowhardfans.com).

AC POWER

BlowHard fans will operate on standard 110 - 240VAC outlet powering the automatic AC-DC Switching Power Supply with integrated safety features.

Expected Maximum Power Consumption

Quickee: 7A on 110VAC; 4A on 220VAC
 Commando: 13A on 110VAC; 8A on 220 VAC

BATTERY MANAGEMENT SYSTEM (BMS)

BlowHard's advanced BMS automatically protects batteries from over charging and over discharging. Onboard the BMS is an integrated charging circuit which eliminates the need for external battery charger. This will automatically charge the battery when the fan is plugged in and in the OFF position.

Another BMS feature is the Automatic Power Switch. This switches over to AC power operation to conserve battery power when AC is available. Automatically switches over to battery operation when AC power is interrupted.

BlowHard's BMS also features automatic battery maintenance when charging is completed and while the fan remains plugged in.

FAST CHARGING INTEGRATED CIRCUIT

- No external charger to buy
- Recharges to 90% in 1.5 – 2 Hours
- Maximum Power, Quick Charging, No Memory
- BMS manages Trickle Charge, Capacity Control, and Maintenance

ELECTRONIC SPEED CONTROLLER (ESC)

The Integrated ESC maintains constant high speed of the Brushless DC (BLDC) motor to provide consistent air flow and pressure. The Software is programmable and upgradeable motor control and protection proprietary firmware.

NEODYMIUM MAGNET BLDC MOTOR

BlowHard fan motors are uniquely engineered to work with the components of the fan deliver the most effective power and performance possible every time you turn it on.

ADVANCED PROPELLER DESIGN

High Flow Jet Series fans are equipped with a unique blade engineered to increase thrust, reduce turbulence, and deliver exceptionally high pressure airflow while reducing noise.

HIGH CAPACITY

BlowHard has always been known for high performance when it comes to PPV. At higher CFM such as 11,400 CFM and 16,300 CFM, the fans obviously raise the bar. But when you combine this with the expanded Jetstream, performance increases substantially. Of course, you know this...you bought one!

CONTROL PANEL

The High Flow Jet series fans come with a sophisticated control panel. This has the variable speed control now expected from a BlowHard fan. It also has a battery capacity indicator and several new LED lights providing real-time status information.

RUN TIME PERFORMANCE

Quickee High Flow Jet fans have a 40 - 45 Minute Battery Run Time on PPV (high) Speed, and will run for 4 hours on low.

Commando High Flow Jet fans have a 45 - 50 Minute Battery Run Time on PPV (high) Speed, and will run for 8 hours on low.

As always, BlowHard fans will have unlimited run time at any speed when operating on 110-240VAC Auto-Switching Power Supply.

LIGHT WEIGHT AND COMPACT IN SIZE

Total system weight including Integrated Battery and Charging Circuit:

Quickee: 46 lbs / 21 kg

Commando: 62 lbs / 28 kg

ASSESSORIES

The center of the fan grill is a metallic hub to which attachments may be connected including the popular multipurpose Misting Ring and Insta-Click Ducting. See your distributor for details.

VALUE ADDED

Modern Design for Portable Power Equipment. Advanced Battery, Electronics, Motor, and Propeller Technologies.

Highest Performance/Volume and Performance/Weight ratios on the market.

Ergo-Fold design to reduce fatigue and injury. Allows two fans to occupy same space as 1 traditional fan would. Fits in small tool compartments.

Ultra-Portable for easy storage and transport at running pace, up and down stairs, in narrow hall ways.

IP-67 rating for ingress protection of dust and water.

No Gasoline – Emission-free.

Brushless motor do does not produce sparks and is highly efficient at high speed. Compact and streamlined behind the propeller.

High capacity batteries: Over 4X capacity and 8X battery run time over comparable size fans with standard swappable batteries. This saves manpower, truck space for up to 8 batteries, battery costs associated with 8 swappable batteries, and confusion as to which batteries have been charged. Or you can just run around like a bunch of monkeys. K.I.S.S!

Li-Ion battery technology providing superb power, long life-expectancy, quick recharge rate, exceptionally low self-discharge rate.

No power surge. Works with AC outlets from buildings or generators on trucks. Unlimited AC operation hours. Common 110/240VAC outlet.

VALUE ADDED (continued)

No external battery charger to buy or maintain. This saves space on the truck and limits confusion about which batteries are charged.

Set-up anywhere - power base provides stabilizing counter weight while protecting battery, power supply, and integrated electronics.

Low Charge Time: Near full runtimes in 1.5 – 2 hours.

Integrated Self-monitoring Battery: Automatically performs battery maintenance after charging is complete, if needed. Fan must be plugged in for auto-maintenance to occur.

AC-DC POWER: Automatic Power Switching. Use common household 110-240VAC outlets.

FASTER RESPONSE TIME: Significant reduction in time taken to deploy PPV. Advantage Operational Response Factor.

DISCLAIMER

Do not attempt to repair, replace, or modify motor, propeller, any battery components, any electrical components or any electronic circuit board without the written consent of an authorized BlowHard representative. Doing so otherwise will void the warranty, and possibly result in property damage and personal injury or death.

SERVICE INFORMATION

For Technical Support, Service Arrangement and Warranty Issues, please contact the following:

Blowhard
1906 Rye Street SE
Albany, Oregon 97322-7069

541-967-0063

support@blowhardfans.com

Please prepare to provide the following information.

Your Name
Fan Serial Number
Name of Distributor/Reseller
Date of Purchase
Your contact information
Company/Department information

BlowHard Fans guarantees you the best Technical Support, Upgrades, Warranty Service, and Out-of-Warranty repair.

All BlowHard fans are manufactured in Albany, Oregon by trained BlowHard Fan professionals.