



# *Operations Manual*

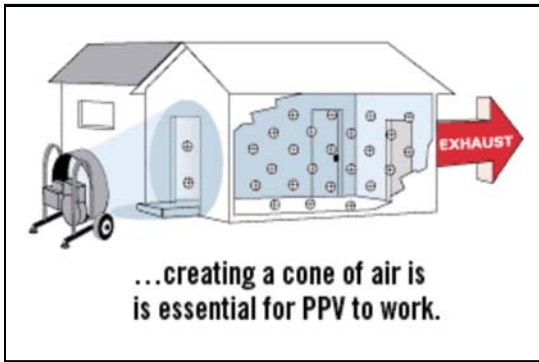
**CONFINED SPACE  
FAN - GASOLINE  
GBS-16**



Gasoline GBS-16

# Introduction

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. These 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 construction contractors 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.

*Photo provided by Batt. Chief Rick Howard*



## About This Manual

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

Phone: 559.277.7577

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E-MAIL: [response@tempest.us.com](mailto:response@tempest.us.com)

WEB PAGE: [www.tempest.us.com](http://www.tempest.us.com)

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# Safety Guide

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

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 Operation and Maintenance Manual before attempting to operate, service or disassemble any part of your TEMPEST CONFINED SPACE FAN.
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 the fan.
4. Keep all unauthorized personnel at a safe distance from the fan.
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. Motor and air noise may exceed safe dB levels.
8. Gasoline is extremely flammable and is explosive under certain conditions. To prevent fire hazards, do not place flammable objects close to the engine.
9. Do not overfill the fuel tank. After refueling, make sure the tank cap is closed properly and secured. If any fuel is spilled, make sure the area is dry before starting the engine.
10. Never operate gasoline-powered fans in an enclosed or confined area. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death.
11. The muffler becomes very hot during operation and remains hot for some time after stopping the engine. Be careful not to touch the muffler while it is hot. To avoid severe burns or fire hazards, let the engine cool before transporting or storing the unit.
12. It is the sole responsibility of the owner/operator to develop and practice the proper use of the TEMPEST CONFINED SPACE FAN in accordance with generally accepted ventilation procedures as well as the department's own operating procedures before placing the unit into service.

## Fan Identification

Each TEMPEST CONFINED SPACE FAN has a model number as well as a serial number. The model number signifies information such as blade diameter, engine type and horsepower. 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 fan.

### SERIAL NUMBER LOCATIONS

#### GBS GASOLINE CONFINED SPACE FANS:

The serial number is located on the shroud just below the GBS Carburetor Cover.

Please write the Serial Number of your TEMPEST CONFINED SPACE FAN in the spaces below. This will aid us in identifying which model you have when assisting you.

<u>Model</u>	_____
<u>Date</u>	_____
<u>Serial No.</u>	_____

## Warranty

Warranty information on your unit can be found on the back page of this manual or by contacting TEMPEST TECHNOLOGY CORP.<sup>TM</sup>

# Confined Space Fan Data

**TYPE:**

Confined Space Fan

**DRIVE:**

Direct-Drive Gasoline - HONDA® GX120 or GX160

**GAS ENGINES:**

TYPE: Single Cylinder, 4 Stroke, Gasoline

COOLING: Air-Cooled

LUBRICATION: Forced Splash/Splash Type Oil Reservoir

STARTING: Recoil with Auto Rewind

**BLADE:**

16" Diameter Assembly Made Up of 6, Air Flex Fiberglass Reinforced Polyamide Blades

**BUSHING:**

Keyed Shaft and Set or Cap Screws

**SHROUD:**

Integral Component of Frame

**FRAME:**

Rugged, Lightweight, Steel Tubing with Powder-Coat Finish

**GRILLE:**

Continuous Circular Wound External-Weld Steel Wire with 4 Tie Points for Additional Safety - Steel is Zinc-Plated with a Clear Chromate Finish

## Confined Space Fan Data Continued

### CONFINED SPACE FAN GASOLINE GBS-16

Model	Part #	Blade Size	Dimensions (WxDxH)	Weight	CFM
GB-16-S-3.5	911-1014	16"	19.75" x 15.50" x 20.50"	** lbs.	9,372
GB-16-S-4.8	911-1020	16"	21.00" x 17.00" x 21.00"	** lbs.	9,372

Engine: Honda GX120 or GX160



# Operating Procedures

The information and instructions in this section should be routinely reviewed and followed before the actual operation of TEMPEST CONFINED SPACE FANS.

## Pre-Operation

### VISUAL INSPECTION

After receiving and unpacking your fan, 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**

### ENGINE OIL

Be sure to use only high quality detergent oil. Detergent oils keep the engine cleaner and retards the formation of gum and varnish deposits.

### RECOMMENDED OILS

**HONDA engines:** SF or SG SAE 10W-30 oil.

ENGINE	CAPACITY
HONDA GX120	18.90 fl. oz. / 0.59 Quarts / 0.56 Liters
HONDA GX160	19.52 fl. oz. / 0.61 Quarts / 0.58 Liters

### FILLING THE CRANKCASE

Place blower on a level surface and make sure that the engine is level. Remove the oil fill plug or dipstick. POUR OIL SLOWLY into the crankcase. Replace oil fill plug or dipstick and tighten securely. Refer to the engine manufacturers Owners Manual for additional information regarding specific oil requirements.

**CAUTION: DO NOT OVERFILL THE ENGINE. EXCESS OIL VAPOR CAN BE EJECTED FROM THE ENGINE BREATHER WHILE RUNNING IN A TILTED POSITION.**

# Operating Procedures Continued

## FUEL

Always use clean, fresh, lead-free gasoline with an octane rating of 86 or higher. DO NOT USE leaded gasolines. Refer to the engine manufacturers Owners Manual for acceptable substitute gasolines.

**CAUTION:** PRECAUTIONS MUST BE FOLLOWED WHENEVER REFUELING GASOLINE ENGINES. PLEASE FOLLOW THE LISTED GUIDELINES.

- DO NOT FILL THE FUEL TANK INDOORS.
- DO NOT FILL THE FUEL TANK WHILE THE ENGINE IS RUNNING OR HOT.
- DO NOT SMOKE DURING REFUELING.
- DO NOT FILL THE FUEL TANK COMPLETELY. FILL THE TANK TO THE DESIGNATED LEVEL. OVERFILLING WILL CLOG THE CHARCOAL FILTER LOCATED IN THE FUEL CAP, INHIBITING THE FLOW OF FUEL.
- WIPE ANY SPILLAGE FROM ENGINE AND COMPONENTS BEFORE STARTING THE ENGINE.

MODEL	CAPACITY
911-1014	67.6 fl. oz. / 2.1 Quarts / 2.0 Liters
911-1020	67.6 fl. oz. / 2.1 Quarts / 2.0 Liters

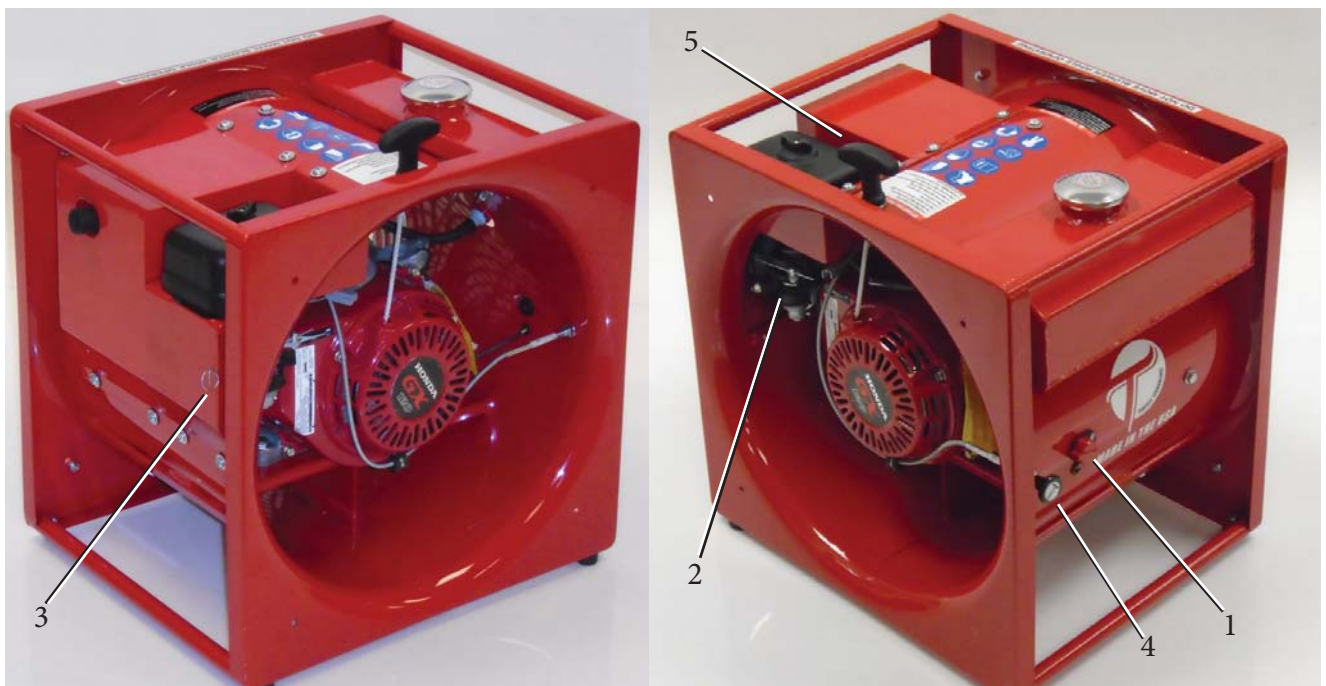


Figure 1

## Operation

### SET-UP, STARTING AND STOPPING

Assuming the previous Pre-Operation instructions have been followed the fan is now ready to run. Please review the engine manufacturers Owners Manual regarding starting and stopping as well as the instructions in this section before actually starting the fan.

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

**ALWAYS SHUT-DOWN THE FAN PRIOR TO MOVING.**

### SET-UP

Position the fan in the desired location, making sure it is secure and the immediate surrounding area is free of debris.

### STARTING See figure 1 on page 9

1. Set the stop switch/ignition switch to the “ON” position.
2. Set the fuel valve/fuel shutoff switch in the “ON” position.
3. Set (if equipped) the choke lever to the “CLOSED” or “STARTING” position.
4. Set the throttle lever to the 1/2 open position.
5. Grasp the starter handle, take up the slack, and pull the rope briskly. **Let the rope return slowly.** Repeat as necessary until the engine starts. Do not over pull the rope.
6. If equipped with a choke, move the choke lever to the ½ position until the engine runs smoothly and then to the open or off position.
7. Move the throttle to the desired speed.

### STOPPING

1. Move the throttle to the “IDLE” position.
2. Move throttle lever to the “OFF” position unless equipped with a stop switch. If a stop switch is provided, turn the switch to the “OFF” position.

# Maintenance Procedures

Proper maintenance is necessary to ensure that your Confined Space Fan operates as efficiently and trouble-free as possible. By following the instructions in this section you will be providing the maintenance needed to achieve this goal.

**CAUTION:** THE ENGINE MAY START SIMPLY BY ROTATING THE BLADES. ALWAYS REMOVE THE SPARK PLUG WIRE PRIOR TO WORKING ON THE BLADE SIDE OF THE MOTOR.

## OIL CHANGE

Check the engine oil level before each use. The oil should be changed after the first three (3) operating hours and every 50 hours thereafter. Oil changes should be performed more frequently if the fan is being operated in dusty or dirty conditions. Changing the oil is easier when the engine is still warm (not hot) from a recent running.

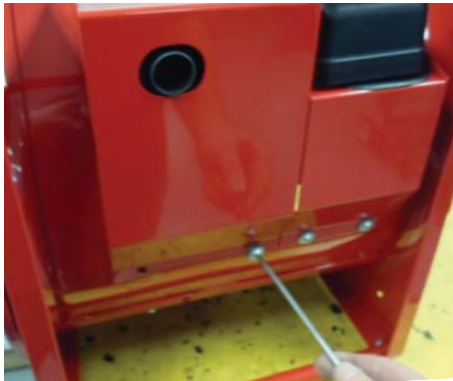


figure 2.0

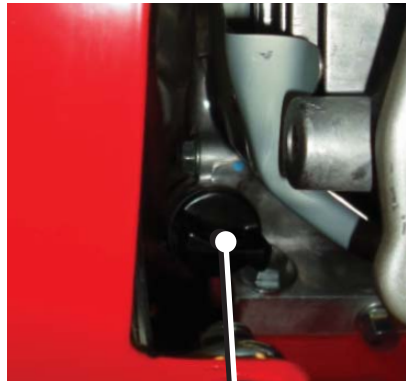


figure 2.1 OIL FILLER CAP



figure 2.2

## PROCEDURES - REMOVE DIRTY OIL

1. Position the fan on a level surface and ensure the unit is right side up.
2. Loosen and remove the four hex socket bolts securing the GBS muffler cover (fig. 2.0).
3. Locate the oil fill plug and remove it (fig. 2.1).
4. Using a hand-pump or similar tool, extract the used dirty oil and collect it into an appropriate container for disposal (fig. 2.2).

figure 2.3

## PROCEDURES - ADD CLEAN OIL

1. Place a clean funnel in the oil fill neck (fig. 2.3).
2. Add the correct new oil type and amount (based on engine model - reference the Operating Procedures section for that information), pouring it slowly into the funnel.



## Maintenance Procedures Continued

3. Replace the oil filler cap and tighten until secure. Finish by replacing the GBS muffler cover with its previously removed bolts (fig. 2.1 & 2.0).

### AIR CLEANER

A dirty air cleaner will restrict airflow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. More frequent service may be necessary when the blower is operated in extremely dusty conditions.

**CAUTION: DO NOT RUN THE ENGINE WITH THE AIR CLEANER REMOVED. RAPID ENGINE WEAR WILL RESULT FROM CONTAMINANTS, SUCH AS DUST AND DIRT BEING DRAWN THROUGH THE CARBURETOR AND INTO THE ENGINE.**

### CLEANING AIR FILTER ELEMENTS

#### **Foam Element:**

1. Wash the element in a solution of household detergent and warm water, then rinse thoroughly. Allow the element to dry completely.

#### **Paper Element:**

1. To remove excess dirt, tap the element lightly several times on a hard surface or blow compressed air through the filter from the inside out.
2. Do not try to brush the dirt off. Brushing will force dirt into the filter fibers.
3. Replace the element if it becomes excessively dirty. You can order/purchase paper elements through Tempest or your local hardware/home improvement store.

### COOLING SYSTEM

Frequently remove dirt and debris from the cooling fins, air intake screen, levers and linkage. This will ensure adequate cooling and correct engine speed. Refer to the engine manufacturer's Owners Manual for additional cooling system information.

# Maintenance Procedures Continued

## SPARK PLUG

A correctly firing spark plug is essential for the power blower to operate properly. Check the engine spark plug yearly or every 100 hours by following the listed procedures.

1. Clean the area around the spark plug.
2. Remove and inspect the spark plug.
3. Replace the spark plug if the electrodes are pitted, burned, or the porcelain is cracked. Check the electrode gap with a wire feeler gauge and set to the engine manufacturer's specifications.
4. Make sure the spark plug washer is in good condition, and start threading the spark plug by hand to prevent cross threading.
5. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

## CARBURETOR

All carburetors comply with federal & state regulations and are preset by the engine manufacturer. Engine performance may differ at various altitudes and climates. If you feel that the carburetor on your blower needs adjusting contact Tempest or your local engine dealer.

## EMISSION CONTROL SYSTEM

State regulations require that all manufacturers of gas powered engines furnish written instructions describing the Operation and Maintenance of the emission control systems. These instructions vary depending on engine type. Please refer to your engine Operation and Maintenance Owners Manual under the heading "Emission Control Systems" for specific information and instructions.

## BLADE REMOVAL AND INSTALLATION

The procedures on the following pages cover removal and installation for TEMPEST CONFINED SPACE FAN.

**CAUTION: THE ENGINE MAY START SIMPLY BY ROTATING THE BLADES. ALWAYS REMOVE THE SPARK PLUG WIRE PRIOR TO WORKING ON THE BLADE SIDE OF THE MOTOR.**

# Maintenance Procedures Continued

## BLADE REMOVAL AND INSTALLATION

The following procedures cover removal and installation for 16" Tempest fans.

### BLADE REMOVAL PROCEDURES

1. Remove the four bolts holding the front grille in place and remove the grille.
2. Remove the three bolts that secure the blade assembly to the hub. Ensuring the blade assembly stays intact, remove the assembly and set aside.
3. Remove the two bolts that secure the bushing to the hub.
4. Put the two bolts in the threaded part of the bushing and turn evenly until bushing separates from hub.

### BLADE INSTALLATION PROCEDURES



Figure 3.0



Figure 3.1

1. Make sure that the shaft and keyway are clean and smooth before installing the blade.
2. Apply thread locking agent to the cap screws and then insert them through the clearance holes in the bushing and place loosely into the hub of the blade. Do not press the bushing in.
3. Turn cap screws just enough to engage the threads in the tapped holes in the hub. The bushing should be loose in the hub. If previously removed, reinsert the key into the keyway (Figure 3.0) Tighten two bolts drawing the bushing and hub together.
4. Slide the blade onto the bushing/hub assembly, apply thread locking agent to the three screws and insert them through the blade and turn evenly but do not tighten. Make sure blade is in line with hub then tighten screws (Figure 3.1). Locate the blade and bushing so that the blade tips do not hit the rear grille eyelets. On some models the blade and bushing may be in beyond or out away from the end of the shaft up to ¼" but no further. This is necessary for proper blade clearance.

## Maintenance Procedures Continued

5. Tighten the cap screws progressively with a wrench. Tighten each cap screw partial turns successively until both are tight. Final tightening should be done with torque wrench with the torque set at 7.5 ft.-lbs. for each screw. Over tightening will cause the cap screws to break or crack the blade. (Figure 3.1 on page 16)
6. Carefully turn the blade and check for clearance between the blade and shroud. Confirm that the blade is free to rotate without hitting other parts.
7. Reinstall the front grille and test the blower.
8. If you have any trouble removing or installing the blade on your fan, contact the factory for assistance at 559.277.7577.

### MAINTENANCE SCHEDULE

- ✓ **EVERY USE**
  - CHECK ENGINE OIL
  - INSPECT FAN FOR DAMAGE AND FIX IF ANY
- ✓ **NEW FAN - FIRST THREE HOURS**
  - CHANGE ENGINE OIL
- ✓ **EVERY MONTH OR 10 HOURS**
  - CLEAN OR REPLACE AIR FILTER
- ✓ **EVERY MONTH OR 25 HOURS**
  - INSPECT & CLEAN ENGINE HOUSING
  - TIGHTEN/REPLACE ANY LOOSE OR MISSING PARTS
- ✓ **EVERY MONTH OR 50 HOURS**
  - CHANGE ENGINE OIL
- ✓ **EVERY YEAR OR 100 HOURS**
  - INSPECT & CLEAN SPARK PLUG



# Blower Troubleshooting

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

## FAN FAILS TO START

- Check for fuel in the tank; make sure the fuel shut off valve is open.
- Check the fuel line to determine if the carburetor is getting fuel.
- Check to see if the fuel tank has been overfilled. Too much fuel in the tank, or tilting the unit too far can clog the charcoal filter located in the fuel cap, inhibiting fuel flow.
- Check the oil level, Honda® engines are equipped with automatic oil alert systems. The engine will not start if oil is low.
- Check the spark plug for a spark:

1. Remove the spark plug wire, clean any dirt from around the spark plug base and remove the plug.
2. Install the spark plug into the plug cap.
3. Ground the plug to the engine and pull the starter to see if a spark jumps the gap. **DO NOT HOLD THE SPARK PLUG IN YOUR HANDS;** hold the spark plug cap or wire.
4. If a spark is present, replace the spark plug and wire then try starting the engine.
5. If the fan still does not start contact Tempest or your local engine dealer.

## POOR FAN PERFORMANCE

- Check the air filter for cleanliness, clean if dirty.
- Make sure the blade is tight.
- If the fuel is more than two months old, replace the fuel with fresh fuel.











# GBS-16 Gasoline Confined Space Fan Parts List



Item #	Part number	Description
1	100-003	BOLT 5/16-18 X 1 3/4 HEX G5 Z
2	100-044	BOLT 1/4-20 X 1/2 WING Z
3	100-088	BOLT 1/4-20X1/2BUT SHCS
4	100-099	BOLT 10-32 X 5/8 SHCS
5	120-004	WASHER #14 X 5/8 STEEL/NEO
6	120-008	WASHER 5/16 X 7/8 HEAVY F/W
7	120-031	WASHER #10 ALU. BACK UP
8	130-001	NUT 5/16-18 NYLOCK
9	130-002	NUT 10-32 NYLOCK
10	200-013	FUEL LINE 95001-45008-60M HONDA (ORDER 19 INCHES)
11	220-113	GBS CARBURATOR COVER RED
12	220-112	GBS MUFFLER COVER RED
NI	350-025	ENGINE HONDA 118 cm3 GX120
14	500-014	DUCT HOSE ADAPTER 16 SQ
15	580-009	PAD FOOT EBS 16 ZB-1013-MI
16*	600-024	GRILL WITH HARDWARE EBS16
17	600-480K	GBS FRAME WELDMENT 16" (Includes Decals)
18*	600-481K	GBS 16 FUEL TANK
19*	600-482K	GRILL INNER GBS 16 WITH HARDWARE
20*	705-291	GBS16 IMPELLER KIT

\* Denotes item includes necessary hardware for installation  
 NI, Not illustrated



*"Committed to Firefighter Safety"*

## 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) 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) 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 Warranty

The engines manufactured by Honda\* are covered by a separate manufacturer's warranty.

**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.

## Mission Statement

**Making Hazardous Environments Safer**

## Our Core Values

(The 3P's of Tempest)

**P**romote new and pioneering ideas and concepts

**P**roduce only the best, professional grade quality products

**P**rovide excellence in every customer interaction

[www.tempest.us.com](http://www.tempest.us.com)

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