

# BOOSTERFAN

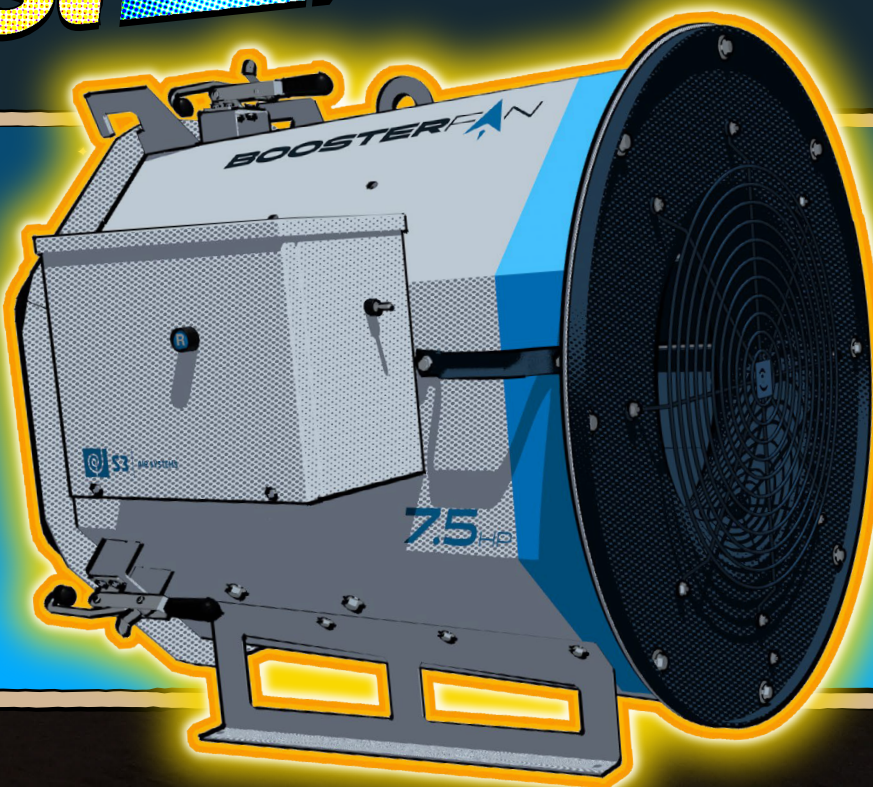
## OPERATOR'S MANUAL

# Aeration Boost 2X+

PAIR YOUR EXISTING  
INLINE FAN WITH AN  
S3 AIR SYSTEMS  
BOOSTERFAN™ AND:

**DOUBLE THE  
AIR PRESSURE!**

**SUPERCHARGE  
THE CFM!**



$$3 \text{ HP} + 3 \text{ HP} = 6^+$$

$$7.5 \text{ HP} + 7.5 \text{ HP} = 14^+$$

$$5 \text{ HP} + 5 \text{ HP} = 10^+$$

$$10 \text{ HP} + 10 \text{ HP} = 20^+$$

- + DOUBLE THE AIR PRESSURE
- + SUPERCHARGED CFM OUTPUT
- + FAST, MOBILE AERATION BOOST!

- + BOOST WHERE AND WHEN NEEDED
- + LIGHTWEIGHT, CONVENIENT DESIGN
- + CLAMPS ONTO EXISTING INLINE FAN



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P.O. Box 1207  
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s3airsystems.com

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**S3AIRSYSTEMS.COM**

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# 1 Sign-Off Form

S3 AIR SYSTEMS follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) American National Standards Institute, Canadian Standards Association, International Organization for Standardization, Occupational Safety and Health Administration (OSHA) and/or others. Anyone operating and/or maintaining the Aeration Fan must read and clearly confirm that they understand ALL Safety, Operating and Maintenance Information presented in this manual.

S3 AIR SYSTEMS recommends all personnel that intend to use the Aeration Fan, read the operators manual and will follow the safety precautions and instructions and will operate and maintain this equipment safely. S3 AIR SYSTEMS recommends that all users “sign off” below which confirms their agreement concerning safety.

Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your operation safety training and periodic reviews.

DATE	EMPLOYEE NAME	SIGNATURE

Model Number
Serial Number
Line Voltage
Dealer Purchased from
Bin Diameter
Date of Purchase

Department at 1-866-665-6677 for immediate attention.



## 2 Introduction

Congratulations on your purchase of a S3 AIR SYSTEMS Booster Fan. Our fans represent the top of the line in Aeration Equipment. This fan has been engineered to provide optimum performance for your aeration needs.

This manual should be read in its entirety as your first source of information about the machine. If all the instructions are followed in this manual, you will mitigate the potential of any premature and unexpected failures.

Keep this manual handy for frequent reference. Contact your local supplier dealer if you need assistance. The following information is necessary for prompt and accurate assistance:

Please read all instructions and warnings thoroughly.

If, after studying this manual, you are unable to install or service your aeration fan, please contact the supplier from which you purchased the unit. Be prepared to provide the information listed on the Serial Plate as well as the details of application, i.e. bin diameter and type, grain depth and type, etc.

If further assistance is required, your dealer will refer you to the S3 AIR SYSTEMS Customer Service

## 3 General Information

S3 AIR SYSTEMS Aeration Fans sold by S3 AIR SYSTEMS are 100% CSA certified fans and components designed primarily for use in grain aeration or grain drying systems. All units are driven by electrical motors which are rated for continuous duty. Both fan housing and frame are fabricated of steel while the rotor is aluminum. The rotor has a unique blade design and is mounted directly to the motor shaft. A concentric circle screen guard covers the air inlet to comply with safety requirements and minimize exposure to any related safety risks.

S3 AIR SYSTEMS reserves the right to modify design of the S3 AIR SYSTEMS Aeration Fan product offering in whole or in part without notice.



## 4 Safety

In order to operate this equipment safely, a complete understanding of the potential hazards present and the meaning of the warning decals is needed. Safety should be your first priority.

### 4.1 Safety Alert Symbols



This Safety Alert Symbol identifies important safety messages as posted on the product and referred to in this manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

- Accidents Disable and Kill
- Accidents Cost Time and Money
- Accidents Can be Avoided

The Key Safety Signal Words below are used in the manual and on the safety decals, along with the Safety Alert Symbol. The appropriate signal word for each message has been selected using the identified definition as a guideline.



DANGER indicates an imminent hazard that, if not avoided, will result in death or serious injury.



WARNING indicates a potential hazard that, if not avoided, could result in death or serious injury.



CAUTION indicates a potential hazard that, if not avoided, may result in minor or moderate injury.



NOTICE is used to address practices not related to personal injury.

### 4.2 General Safety

You are responsible for the SAFE operation and maintenance of your S3 AIR SYSTEMS Aeration Fan. You must ensure that you and anyone else who is going to operate, maintain, adjust, disconnect, or work around the Aeration Fan understands all procedures and related SAFETY information contained in this manual.

Remember, you are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program.

- It is the equipment owner and the operator's responsibility to read and understand ALL safety instructions, safety decals, and manuals and follow them before operating, or maintaining the Aeration Fan.
- Equipment owners must give instruction and review the information initially and annually with all personnel before allowing them to operate this product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Do not modify your S3 AIR SYSTEMS Aeration Fan in any way. Unauthorized modification may impair the function and/or safety and

could affect the life of the equipment. Any unauthorized modification to the equipment voids the warranty.

- Disconnect power before servicing.
- Keep hands and other objects away from inlet while the machine is operating. The rotating impeller will cause serious injury if contacted while it is rotating.
- Prior to operating this equipment, be sure to read and understand the operator's manual. If there is any portion you do not understand, or any phase of the machine's operation you do not understand, be sure to contact your dealer or S3 AIR SYSTEMS.
- Have a first-aid kit available for use should the need arise and know how to use it.
- Provide a fire extinguisher for use in case of a fire.
- Store the fan in a highly visible place.
- Wear protective gear. This list includes but is not limited to:
  - Protective shoes with slip resistant soles
  - Protective goggles
  - Work gloves
  - Hearing protection
  - Respirator or filter mask
- Make sure all persons are clear of the equipment when in operation. Failure to follow any of the above warnings may cause serious bodily injury or death.
- Use the Aeration Fan for its intended purposes only.
- Do not allow children, animals, or bystanders within the work area.
- Never operate the Aeration Fan with safety shields/guards removed.
- Never conduct maintenance on the equipment when parts are moving. Be aware of the moving parts.



## 4.3 Electrical Safety

- The electrical installation must be performed by a certified electrician, in accordance with the appropriate federal and local electrical codes.
- The motor must be connected to protective ground/earth at the terminal provided.
- The control system must include short circuit protection and overload current protection.
- It is recommended to provide ground / earth leakage protection, such as residual current device (RCD) or residual current circuit breaker (RCCB) to provide automatic disconnection from the power in the event of a fault.

### NOTICE

Any violation of electrical wiring codes could jeopardize the manufacturer's warranty.

## 4.4 Operational Safety

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### **WARNING**

Before operating, maintaining, adjusting or disconnecting the Booster Fan, turn the machine to off, wait for all the moving parts to stop, and unplug the electrical cord. If your Booster fan does not connect via a plug, turn off primary power supply and Lockout- Tag Out the equipment.

## 4.5 Emergency Shutdown Procedure:

In case of emergency, immediately shut off both the Booster Fan and Primary Aeration Fan power sources. To minimize the potential of injury, it is recommended that you:

- Read and understand the Operator's Manual and all Safety Signs before operating.
- Do not operate if any of the guards or shields are removed or damaged.
- Do not wear loose fitting clothing that may catch in moving parts.
- Be sure there are no tools or other foreign objects laying on or in the machine or blocking the inlet.
- Do not allow children, spectators, or bystanders within the work area.
- Do not start the machine until you are sure everyone is clear.
- Be sure the machine is mounted properly to the bin.
- Be sure the electrical cords are not damaged in any way.
- Accumulation of dirt or foreign material in the rotor may cause imbalance or excessive vibration. Inspect daily, thoroughly clean when necessary.
- Keep hands, feet and clothing away from moving parts, especially the air intake area of the fan.
- Do not clean, adjust or lubricate your equipment while it is running.

- Never sit or stand on this machine while it is in operation.
- Stay clear of fan discharge area.

## 4.6 Storage

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- Store the fan on a firm, level surface.
- Store away from areas of human activity.
- Do not permit children to play on or around the fan.

## 4.7 Preventing Bin Damage

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- Ensure there is enough venting on the bin roof to minimize condensation.
- Only use the fan in a positive aeration system. Do not use the fan on a bin in a suction / negative pressure aeration system.
- Be sure all roof vents are open and unobstructed before fan is started.
- Do not operate fan when conditions may cause roof vent or intake ports to freeze.

## 4.8 Maintenance Safety

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### **WARNING**

Before operating, maintaining, or disconnecting the fan, turn fan off, disconnect power, and wait for all moving parts to stop, then Lockout- tag out equipment.

### **WARNING**

Failure to follow all the safety instructions below in Maintenance Safety Section can result in serious injury, death and/or property damage.

Prior to initiating any maintenance, it is critical that the following pre-maintenance protocol is followed:

- Fan can “free wheel” under any air movement even with power off and disconnected.
- Ensure the rotor is locked from freewheeling prior to servicing the fan.
- Use only tools, jacks and hoists of sufficient capacity for the job.
- Make sure all the guards and shields are in place and properly secured when the maintenance work is completed.
- Keep body, hair and clothing away from all moving and/or rotating parts.
- Do not allow children, spectators, or bystanders within the work area.
- Use only genuine S3 AIR SYSTEMS replacement parts or equivalent. Replacement parts must meet ASABE standards. Use of unauthorized parts will void warranty. If in doubt, contact your S3 AIR SYSTEMS dealer.
- Remove rotor locking device and replace all guards before re-starting the fan.

- Replacements for damaged or missing safety decals are available from your authorized dealer or S3 AIR SYSTEMS.
- The complete decal sheet can be found on the following page. The numbers beside each decal coincide with the descriptions in the Decal Locations section.

## 4.12 Decal Locations

The types of decals and location on the equipment are shown on the following page. A good safety practice requires that you familiarize yourself with the various safety decals, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

Note: If Safety Decals have been damaged, removed, become illegible or parts are replaced without decals; new decals must be applied.

## 4.9 Safety Decals

S3 AIR SYSTEMS reserves the right to update safety decals on new fans without notice to owners of older fans. Safety decals may not be exactly as shown.

## 4.10 Decal Maintenance

- Keep the safety decals clean and legible at all times.
- Replace any safety decals and signs that are missing or have become illegible.

## 4.11 Decal Replacement

- Ensure the new equipment components installed during any repair include the current safety decals specified by the component manufacturer to be affixed to the replaced components.



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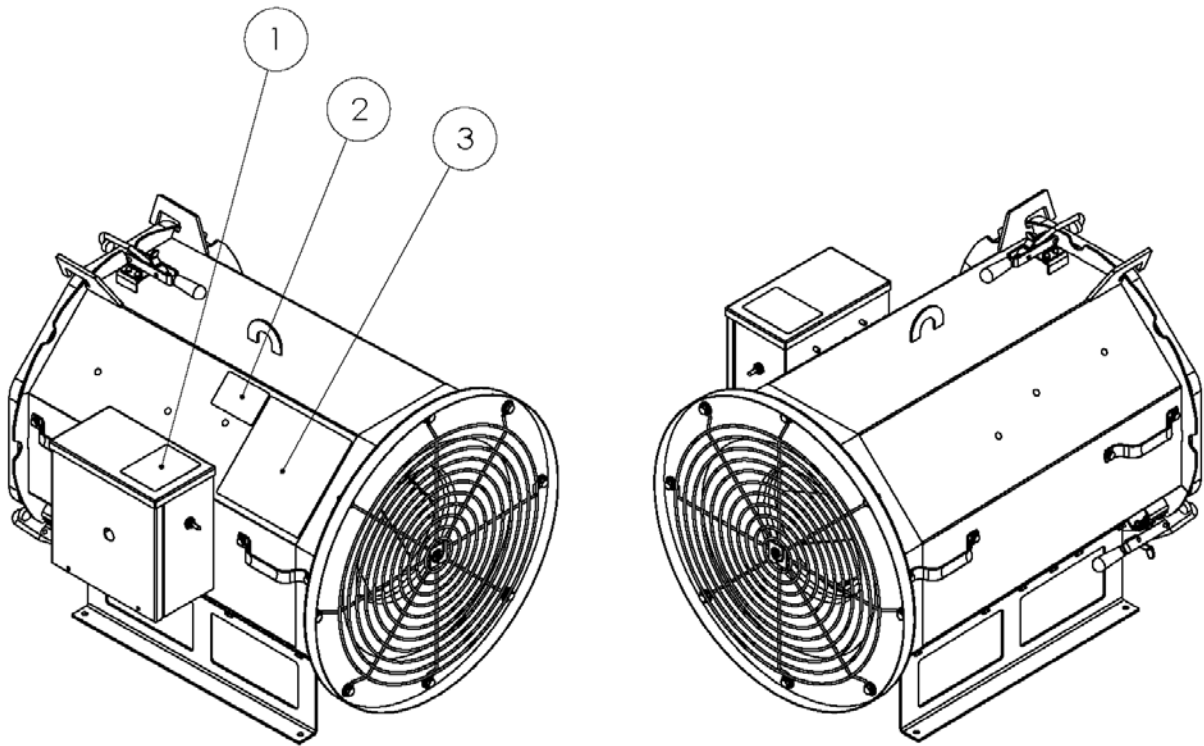


3



2





## 5 General Information

### 5.1 Electrical

The unit utilizes electricity as the source of energy. When the power is connected properly, and protective covers are in place, the unit poses no direct hazard.



WHEN INSTALLING OR SERVICING THE ELECTRICAL COMPONENTS, ALWAYS SHUT THE POWER OFF AT THE FAN. DISCONNECT AND LOCKOUT-TAG OUT THE FAN IN THE OFF POSITION SO NO POWER CAN BE DELIVERED TO THE FAN WHILE YOU ARE SERVICING THE UNIT.



ONLY A CERTIFIED ELECTRICIAN SHOULD, IF REQUIRED, PERFORM ELECTRICAL CHECKS WITH THE POWER ON, BY USING THE APPROPRIATE EQUIPMENT SUCH AS A VOLTMETER AND BE CAREFUL NOT TO CONTACT LIVE PARTS.

### 5.2 Fan Blade

The unit has a fan blade rotating at high speed while it is in operation. When guarded with the screen guard it poses no direct hazard.



MAKE SURE THE SCREEN GUARD IS SECURELY ATTACHED AND FASTENED IN PLACE. **ATTACHING THE BOOSTER FAN TO THE PRIMARY AERATION FAN WILL NOT REQUIRE THE REMOVAL OF THE PRIMARY FAN'S SCREEN GUARD.**



WHEN SERVICING THE FAN BLADE, MAKE SURE THE ELECTRICAL POWER IS SHUT OFF AT THE FAN DISCONNECT, AND LOCK-OUT AND TAG-OUT THE FAN DISCONNECT IN THE OFF POSITION.

## 6 List of Features

### 6.1 General Features

#### 6.1.1 Inline Booster Fan

The Inline Booster Fan has been designed for applications that require greater airflows at higher static pressures than any standalone aeration fan. The Inline Booster Fan utilizes a centrifugal rotor, inlet and octagonal shaped housing specifically designed for smooth, efficient operation. The fan incorporates the following features.

- 100% CSA Certified fan and components.
- Heavy gauge steel housing with platform feet
- Inlet Bell for high efficiency
- Air straighteners to efficiently align the air stream
- Baffles to increase efficiency
- Aluminum fan rotor for lightweight efficiency design, corrosion resistance and lower start-up power demand
- Powder coated body and zinc plated screen for long life
- Internal motor that is 100% CSA Certified and thermally protected
- Rain-tight control enclosure

#### 6.1.2 Motor Features

The electric motors used in S3 AIR SYSTEMS Booster Fans comply with required CSA standards and incorporate the following features.

- Internal thermal protection
- Sealed capacitor motor starter built for trouble free operation
- Energy efficient operation
- Cool operation
- Unequalled dependability
- Quick start-up
- Sealed bearings for long life

All S3 AIR SYSTEMS Booster Fan's electric motors are available in single-phase configuration and offer the following specifications:

- 3HP, 5HP and 7.5HP
- 230V
- 60 Hz
- Integral connection leads or a standard plug in version is available as an option
- Base mounted to frame using 4 bolts

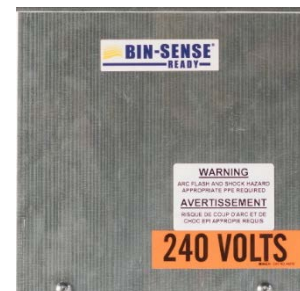
All S3 AIR SYSTEMS Booster fans are certified by the Canadian Standards Association.

#### 6.1.3 BIN-SENSE® Ready

BIN-SENSE® is an electronic sensor device by IntraGrain Technologies Inc. in Regina, Saskatchewan. It monitors the conditions inside the grain bin and live updates can be monitored & controlled wirelessly as well as managed through predefined optimal settings, which starts/stops the fan accordingly.

Bin-Sense ready fans are equipped with easy to install switch/circuitry for Bin-Sense. This results in a huge advantage while installing the Bin-Sense unit on fans in terms of ease of installation and time saved.

All Booster fans are Bin-Sense ready.



## 7 Packing List

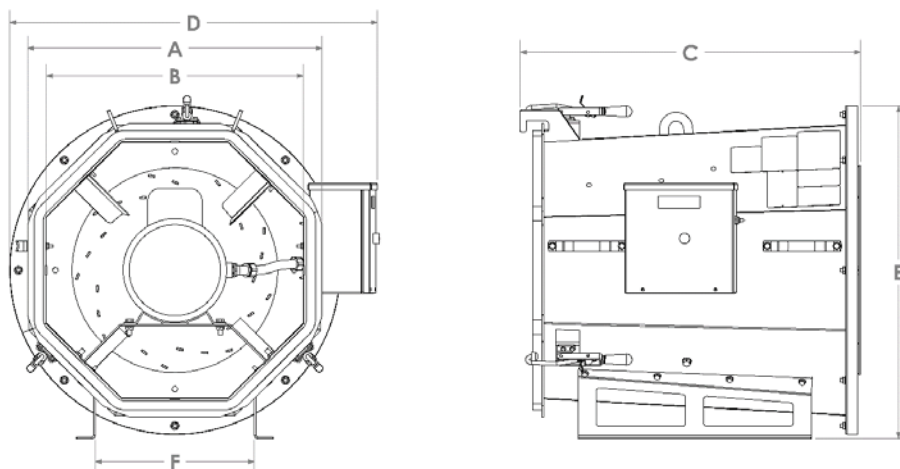
This shipment should contain the following items. Check carefully when unpacking and before installing. In case of any shortage or damage while in shipment, file a claim with the carrier.

### 7.1 Inline Booster Fans

Component	Description	Quantity
Inline Aeration Fan	Inline Fan Assembly	1
Manual	Installation, Operation & Maintenance	1
Motor Service Bulletin	Motor Service Centres	1
Warranty	Motor Warranty	1

### 7.2 Inline Booster Fan Specifications and Data

The mounting outlet on S3 AIR SYSTEMS Inline Booster Fans has a circular 8-notch flange with the dimensions shown in the following images:



Fan Dimension	3 HP	5 HP	7.5 HP
A (Outlet Outer Width)	19 3/8	24 3/8	24 3/8
B (Outlet Inner Width)	17 3/4	21 1/4	21 1/4
C (Length)	28 1/8	28 3/16	28 3/16
D (Width)	24 15/16	30 13/32	31 1/2
E (Height)	23 1/8	27 11/16	27 11/16
F (Foot Separation)	13	13 5/32	13 5/32



## 8 Performance

Development and testing of S3 Air Systems Booster fan is done on a lab test stand in accordance with AMCA standards, and all results are reported at standard air <sup>(1)</sup> conditions. Performance under actual operating conditions may differ from these results depending on variables such as temperature, barometric pressure, humidity, and elevation above sea level. The data below shows static pressure <sup>(2)</sup> over a full range of air flow rates <sup>(4)</sup> (CFM).

BOOSTER Aeration Fan Performance, (Combined Primary and Booster Fan):

Static Pressure (inches)	Airflow (CFM) @ 3450 RPM		
	3 HP	5 HP	7 1/2 HP
4	3200	5050	6700
6	2500	4550	6100
8	1850	4325	5850
10	1150	4050	4700
12		3400	4200
14		3025	3650
16		2650	3150
18			2400
20			1575

Notes:

1. Standard Air is the condition of air with a density of 0.0750lb./ft<sup>3</sup> at 20 degrees C, (68 degrees F), 50% humidity, and barometric pressure of 29.92 inches Hg.
2. Static Pressure is the increase in pressure created inside an aerated enclosure over outside air pressure.
3. Static Efficiency is the ratio of output power to input power expended in creating static pressure.
4. Air Flow Rates is the rate of air movement measured in cubic feet per minute (CFM).

## 9 Installation Instructions

### 9.1 Mechanical Check

#### **CAUTION**

MAKE SURE FAN IS NOT PLUGGED IN and or that its power supply is Lockout and Tagged Out at its power source.

Before the Booster fan is attached to the primary aeration fan it should be checked to ensure that there is no interference between its rotating and static components. To check this, manually rotate the fan rotor by reaching into the fan outlet. Ensure that the fan rotor turns freely and does not rub on the bell inlet. Contact between these two parts will result in severe damage to the fan. If there is interference, the bell inlet will need to be loosened from its mounting bolts and repositioned until the rotor turns freely without interference from the bell inlet. If this is not possible, contact the dealership or S3 Air Systems. Check all the fasteners on the fan to make sure they are tight. If any are loose, check for proper clearance and retighten.

#### **NOTICE**

Clearance of high efficiency fans are very small. If the fan is dropped or impacted, misalignment of rotor could occur; this check should be repeated periodically. This is especially true with Booster fans that are designed to be more mobile than the primary aeration fans they are attached to. Always check the power source is disconnected.

### 9.2 Booster Fan Positioning and Installation

For proper operation of the Booster fan both the booster and primary aeration fan must have the same rating. That is a 5HP primary fan should use a 5HP Booster fan, etc. The Booster fan is provided with a thick self-adhesive seal that should be

installed either on the exhaust face of the booster fan or the inlet face of the primary aeration fan. The proper positioning of this seal will ensure that air losses between the two fans is minimal.

The Booster fan should be mounted directly to the inlet of the primary aeration fan using the two provide latch hooks on the top of the Booster fans exhaust flange. Once the Booster fan is supported on the primary aeration fan's inlet flange, center the two fans relative to each other (both vertically and horizontally) and use the Booster fan's provide three toggle clamps to firmly secure the booster fan to the inlet of the primary aeration fan.

No transition between the primary aeration fan and the Booster fan is required.

#### **CAUTION**

A Booster fan although lighter than a primary aeration fan is still heavy. A fan that is not securely suspended can cause serious injury or death if it falls on someone. Whether chain, cable, straps, or any other system is used for suspension of the fan, ensure that it is designed to carry the load of the fan during operation. Keep in mind that the fan will have some vibration, as this can weaken supports or loosen fasteners over time. Be sure that the hopper bin has a suitable, strong lug that can support the weight of the suspended fan.

The lifting point on the fan is illustrated. Therefore, if the primary fan is suspended from the bin: use the Booster fan's mounting hook located on the top panel of the housing positioned on the Booster fan's centre of gravity to connect a support guide wire between the Booster fan and the bin.

This support is required for suspended primary aeration fans to ensure the primary fan does not experience the cantilevered load of the Booster fan and potentially damage any other components.

## 9.3 Electrical Installation

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### 9.3.1 General Instructions

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#### **CAUTION**

This is only a guide. Electrical rotating equipment can result in property damage, serious injury or death when improperly installed. The electrical installation must be performed by a certified electrician, in accordance with the appropriate national and local electrical codes.

#### **NOTICE**

Any violation of electrical wiring codes could jeopardize the manufacturer's warranty.

### 9.3.2 Electrical Service Installation

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#### **NOTICE**

Check the type of electrical service and make sure the fan to be wired is manufactured to operate on the electrical service to match the fan motor's phase and voltage.

### 9.3.3 Motor Safety

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1. The machine must be grounded in accordance with the National Electrical Code and local code.
2. Permanently guard machine against accidental contact of body parts, clothing and moving parts.
3. Do not apply power to the motor until the motor is securely mounted by its mounting holes. This motor must only be connected to the proper line voltage, line frequency and load size.
4. Disconnect all power services and stop the motor before servicing.

5. For single phase motors, discharge the start and/or run capacitors before servicing.
6. Do not by-pass or render inoperative any safety device.
7. Mounting bolts should be high tensile steel. Be sure to use a suitable locking device on each bolt (spring washer or thread lock compound).

### 9.3.4 Motor Enclosure

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ODP, open drip proof motors are intended for use in clean, dry locations with adequate supply of cooling air. These motors should not be used in the presence of flammable or combustible materials. Open motors can emit flame and/or molten metal in the event of insulation failure.

TEFC, totally enclosed motors are intended for use where moisture, dirt and/or corrosive materials are present in indoor and outdoor locations. Explosion proof motors are intended for use in hazardous areas as specified by the NEC.

### 9.3.5 Electrical Connection at the Fan

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#### **NOTICE**

If connected to a circuit protected by fuses use time delay fuses marked D. Connect the machine in accordance with furnished connection diagram. The wiring, fusing and grounding must be in accordance to the National Electrical Code and any local codes.

#### **NOTICE**

Ensure that the motor is connected properly and that the motor spins the correct direction. The rotor should turn in a counter clockwise direction for all Booster fans when looking at the inlet of the fan.

## NOTICE

It is recommended that the motor current be checked after it has been operating for a short time and compared against the motor nameplate current.

### 9.3.6 Wiring

Connect the motor as shown in the motor's schematic in the motor manufacturer's specific Motor Installation / Maintenance Manual diagram. The wiring, fusing and grounding must comply with the National Electrical Code and local codes. When the motor is connected to the load for proper direction of rotation and started, it should start quickly and run smoothly. If not, stop the motor immediately and determine the cause. Possible causes are: low voltage at the motor, motor connections are not correct or the load is too heavy. Check the motor current after a few minutes of operation and compare the measured current with the nameplate rating.

### 9.3.7 Installation of Accessories

For proper installation of accessories, refer to the installation instructions provided with each accessory.

## 10 Operating Instructions

### 10.1 Before Starting the Booster Fan

When the Booster fan is to be started for the first time, or after the fan has been idle for months, the following checks should be made prior to starting the fan.

1. Review the fan's operation manual.
2. With the power OFF, and Lockout / Tagged Out, rotate the fan blade to make sure it revolves easily and does not rub on the orifice.
3. Check all fasteners to make sure they are tight. If any are loose, check for proper clearance and retighten fasteners. Make sure the screen guard is fastened securely.
4. Be sure that the fan is properly mounted to the primary fan.
5. With the power OFF, and Lockout / Tagged Out, check all electrical connections to make sure they are tight. Inspect the current carrying wires to make sure they are not grounded or damaged. Make sure the control enclosure cover is secured in place.
6. Inspect the motor according to the motor manufacturer's Installation Maintenance Instructions. Instructions for maintenance can be found in the lubrication section.

### 10.2 Starting the Fan



The unit will need to be checked for proper rotation. Provide power to the Booster fan controls and start the fan momentarily. Make sure that the blade rotation is counter clockwise direction to the Booster fan when looking through the inlet into the rotor. If the rotor is rotating the wrong direction, have your electrician correct the problem prior to starting the primary fan. Failure to do so may result

in damage to both the primary aeration fan and Booster fan.

### NOTICE

It is recommended that you start your primary aeration fan before starting your Booster fan. In doing so you may notice the Booster fan's rotor will begin to rotate. This preliminary rotation will actually reduce the start-up power of your Booster fan.

The Booster fan is equipped with magnetic starters. To turn the Booster fan on, flip and hold the switch in the 'ON' position for a short period of time. Release the switch. The Booster fan should start and run. To turn the Booster fan off, flip the switch to the 'OFF' position.

All Bin Sense Ready fans have magnetic starters, which can be operated as follows:

- 1: Manually as described earlier.
- 2: Remotely (If Bin Sense device is installed).
- 3: With Bin Sense, predefine the settings which will starts/stops the fan automatically. Live updates can be monitored and settings can be modified wirelessly as well.

### NOTICE

The fan should start to speed up to operating speed within 10 – 15 seconds after the switch is turned on. However, if the fan begins to slow or does not reach the operating speed within 10 - 15 seconds after turning on the switch, shut off the switch there is likely a problem which needs to be fixed. Review the Troubleshooting Section or talk to a qualified electrician to inspect the fan.

### NOTICE

Do not continue short multiple starts as overheating of the motor could result in its damage.



## CAUTION

After turning the both the primary and Booster fan off, let both fans spin freely until they stop. If you are going to service the fan, ensure that the fan rotor has stopped moving. When shutting any aeration fan off for the season, shut off the power at the fan disconnect rather than at the controls to provide additional protection from unauthorized personnel operating the fan. Refer to the Maintenance Section for Off Season operation recommendations.

## 11 Maintenance

### 11.1 Inspection

The frame, housing and intake screen should be checked for structural damage and integrity. Ensure the motor is unplugged / disconnected and remove the intake screen to ensure there is no foreign material or obstruction inside the fan. Be sure the rotor turns freely by hand and that there is approximately  $\frac{1}{8}$ " clearance between the intake and the rotor.

### 11.2 Fan Operation in off season

During the off season, operate the Booster fan for approximately 30 minutes every three weeks. The operation of the fan keeps the lubricant more evenly distributed within the motor's bearing cavity and dries out any condensation that could be in the motor.

During the off season, make sure the control enclosure cover is secured to the control enclosure. Before operating, the switch should be inspected. If the switch appears pitted or the wires have been degraded, replace faulty parts. Complete a full component check.

## 11.3 Fan Motor Maintenance

### CAUTION

Motor eye bolts, lifting lugs or lifting openings, if provided, are intended only for lifting the motor and motor mounted standard accessories not exceeding, in total 30% of the motor weight. These lifting provisions should never be used when lifting or handling the motor and drive equipment. Eye bolt lifting capacity rating is based on a lifting alignment coincident with eye bolt center line. Eye bolt capacity reduces as deviation from this alignment is increased. Be sure eye bolts are tight and prevented from turning before lifting.

### CAUTION

Do not touch electrical connections before you first ensure that power has been disconnected. Electrical shock can cause serious or fatal injury.

### CAUTION

Be sure the system is properly grounded before applying power. Electrical shock can cause serious or fatal injury.

### CAUTION

Surface temperatures of motor enclosures may reach temperatures which can cause discomfort or injury to personnel accidentally coming into contact with hot surfaces. Protection should be provided by the user to protect against accidental contact with hot surfaces. Failure to observe this precaution could result in bodily injury.

### 11.4 Drain Plugs

One or more condensation drain plugs are provided on each endplate for various motor mounting configurations. For wash-down and totally enclosed, fan cooled or non-ventilated motors, the plugs in the lowest portion of the ends shields should be removed for operation (unless the motor has special stainless steel drains). All

drains are located in the lowest portion of the ends shields.

## 11.5 Motor Lubrication

The life of a motor is very dependent on the life of the bearings. Before lubricating the bearings, inspect the bearings to make sure they are in good condition. If not the bearings will need to be replaced. Consult S3 AIR SYSTEMS for service.

## 11.6 Lubrication Information

Refer to motor nameplate for recommended lubricant. If none is shown, the recommended lubricant for anti-friction bearings (-15°F to 120°) is POLYREX EM. For Min Start Temp -100°F use AEROSHELL #7. For roller bearings use ExxonMobil SHC-220.

Motor shafts are mounted on ball bearings. The bearings have been lubricated at the factory. Motors that do not have re-grease capability are factory lubricated for the normal life of the bearings.

(For motors with re-grease capability)

New motors that have been stored for a year or more should be re-lubricated. Lubrication is also recommended at Table 1 intervals.

## 11.7 Lubrication Instructions

Cleanliness is important in lubrication. Any grease used to lubricate anti friction bearings should be fresh and free from contamination. Properly clean the grease inlet area of the motor to prevent grease contamination.

## 11.8 Lubrication Procedure

Bearings should be lubricated while stationary and the motor is warm.

1. Locate the grease inlet, clean the area, and replace the pipe plug with a grease fitting.
2. Locate and remove the grease drain plug, if provided.
3. Add the recommended volume of the recommended grease.
4. Replace the grease inlet plug and run the motor for 15 minutes.
5. Replace the grease drain plug.

## 11.9 Lubrication Intervals

Recommended re-lubrication intervals are shown in Table 1. It is important to realize that the recommended intervals of are based on average use.

Inline Booster Fan

Motor	3 HP	5 HP	7.5 HP
Frame Size	145TZ	184TZ	184TZ
Bearing	DE6205 ODE6203	DE6206 ODE6205	DE6206 ODE6205
Normal Grease Interval (Hours)	5500	5500	3600
Severe Use Grease Interval (Hours)	2750	2750	1800
Amount of Grease (cubic inches)	0.3	0.3	0.6

Table 1

## NOTICE

Different grease types are generally incompatible and should not be mixed. Mixing different types can cause lubricant and bearing failure. Thoroughly clean bearing and cavity before changing grease type.

Some motor designs use different bearings on each motor end. This is normally indicated on the motor nameplate. In this case, the larger bearing is installed on the motor's drive endplate. For best re-lubrication results, only use the appropriate amount of grease for each bearing size (not the same for both).

## NOTICE

Do not over lubricate the bearings as the lubricant will work its way into the motor and can cause premature motor failure.

### 11.10 Fan Rotor Cleanliness

Once a year, or if vibration develops, clean the fan rotor surfaces so the unit runs smoothly. To do this, Lockout-Tagged Out all power sources, remove the screen. With the fan rotor accessible, clean it with a suitable cleaner and wipe it with a cloth. If necessary, scrape it gently with a suitable tool.

## NOTICE

Do not strike the rotor to dislodge debris, as this may cause it to go out of balance and vibrate unnecessarily which may result in damage to the Booster fan.

## 12 Troubleshooting

When servicing any aeration fan, switch the power OFF at the fan disconnect switch and Lock Out and Tagged Out this switch. Activate power only when a check is being made. The following items will help you pinpoint a possible malfunction of the fan unit and explain the corrective action to take.



BE CAREFUL WHEN WORKING WITH ELECTRICITY.  
USE A VOLTMETER TO MAKE THE NECESSARY  
CHECK.

### 12.1 Troubleshooting Scenarios

#### 12.1.1 Turn on toggle switch & nothing happens.

- 1 Make sure the power is available to the fan unit.
- 2 Check the motor thermostat to determine if the thermostat is open or closed. (If the thermostat is open, take the motor to your local Authorized Service Centre. Make sure the motor has time to cool, if hot.)
- 3 Check the toggle switch. (If switch is defective, replace it.)
  - The toggle switch circuit should be checked in the OFF, and ON positions.

#### 12.1.2 The fan hums when turned on.

- 1 Check to make sure that all leads of your power source have voltage present. If fan unit is not receiving power on all leads, check for a blown fuse, broken wire, or loose connections.
- 2 If power is available at all the motor leads and the motor still hums, then the motor should be taken to an Authorized Service Centre for repair or replacement.

- 3 The power can be hooked directly to the motor leads, if the motor hums, replace or repair the motor.

#### 12.1.3 The fan starts and operates for a while and then shuts off.

- 1 Check the supply voltage. Voltage should be within 10% of rated voltage. For example, a motor rated at 230 Volts should operate in a voltage range of 207 to 253 Volts.
- 2 Check the supply wires required for the fan unit.
- 3 Check the load on the main circuit to make sure other items on the main circuit are not overloading the fan circuit.
- 4 Check the amperage of the fan, if the unit is pulling above nameplate amperage, take the motor to an Authorized Service Centre.

#### 12.1.4 The fan only comes up to ½ speed.

- 1 Take the motor to an Authorized Service Centre for repair or replacement.

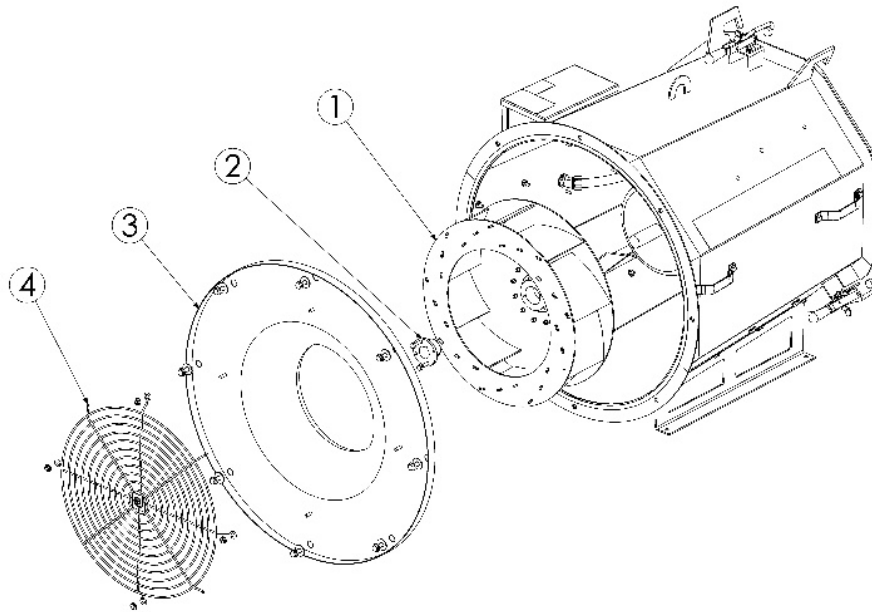
## 13 Parts List

This manual contains a part list for your Booster fan. Since it contains numerous Booster fan sizes, please be sure to locate your model number, so that the proper information is used.

### 13.1 When Ordering Parts

Always give your dealer the Model and Serial Number of your machine to assist in ordering and obtaining the correct parts. Use the exploded view and tubular listing to exactly identify the required part.

All S3 Air Systems Inline Booster Fans are supplied completely assembled with all components as listed below.

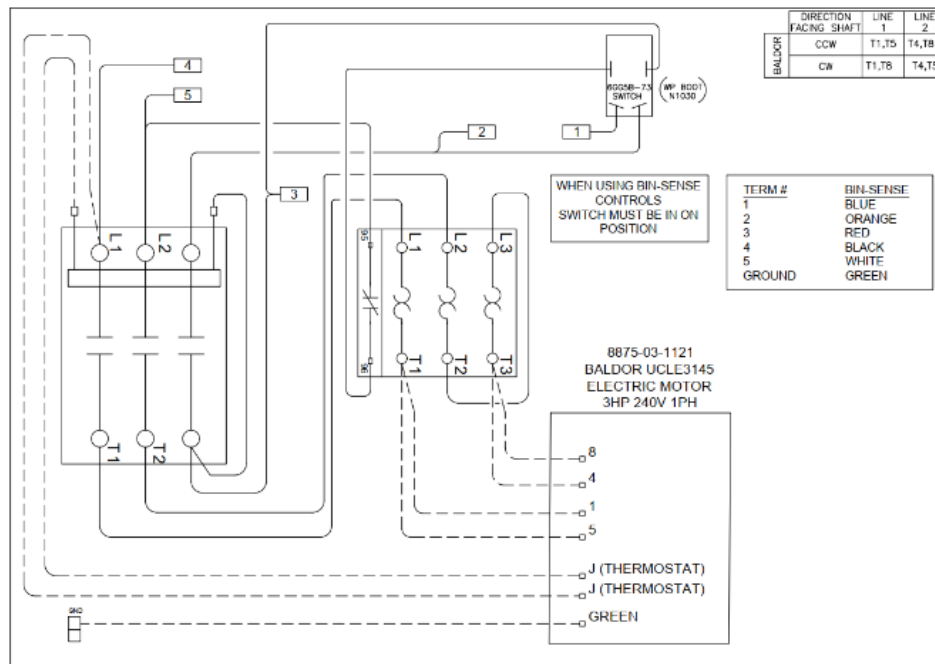
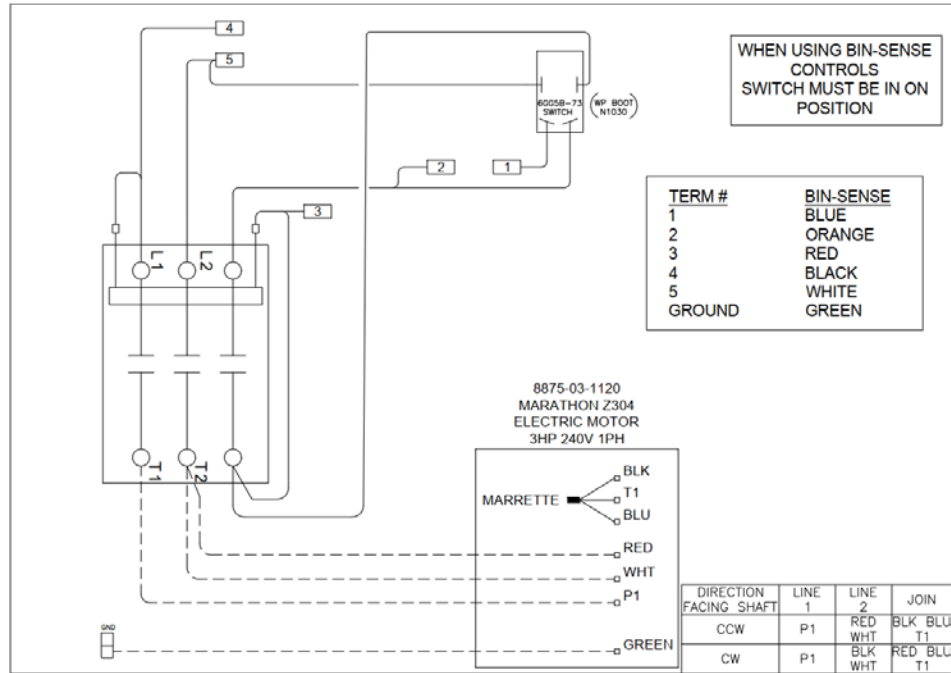


Ref. #	Part #			Description
	3 HP	5 HP	7.5 HP	
1	43-109961	43-114162	43-113539	Fan Rotor
2	7000-02-0875	7000-02-1125	7000-02-1125	Split Taper Bushing
3	43-114069-1	43-114070-1	43-114071-1	Bell/Cone Inlet
4	0080-01-0025	0080-01-0025	0080-01-0025	Inlet Screen



## 14 Wiring Diagrams

### 14.1 3HP Inline Booster Fan (230V, 1PH)









## WARRANTY REGISTRATION & INSPECTION FORM

### Warranty Registration

This form must be filled out by the Dealer and signed by both the Dealer and the End User at the time of delivery.

S3 Serial #: \_\_\_\_\_

Date of Sale: \_\_\_\_\_

Dealer Name: \_\_\_\_\_

End User Name: \_\_\_\_\_

Address: City, Prov./State, Postal/Zip Code: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Address: City, Prov./State, Postal/Zip Code: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact Phone Number: \_\_\_\_\_

Contact Phone Number: \_\_\_\_\_

Dealer Email Address: \_\_\_\_\_  
\_\_\_\_\_

End User Email Address: \_\_\_\_\_  
\_\_\_\_\_

### Dealer Inspection

\_\_\_\_ Shields Installed and Secured

\_\_\_\_ Safety Decals in good condition

\_\_\_\_ Operator's Manual Supplied

I have reviewed the safety decals with the End User and have confirmed that they and any operators will review the Operator's Manual. I have also reviewed the applicable Warranty Policy with the End User.

Date: \_\_\_\_\_

Dealer Signature: \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and I have reviewed the safety decals and confirm that I and any operators will review the Operator's Manual. I have also reviewed the applicable Warranty Policy.

Date: \_\_\_\_\_

End User Signature: \_\_\_\_\_





## Warranty & Limitations

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### 1.0 WARRANTY

- 1.1 S3 AIR SYSTEMS Warranty Policy for all Aeration Products purchased from S3 AIR SYSTEMS is, all product shall be free from defects in workmanship and materials for a period of two (2) years from date of sale from S3 AIR SYSTEMS' dealer to the end user. To initiate the two (2) Year Warranty, the dealer must complete the Warranty Registration & Inspection Form on date of sale, and submit to S3 Air Systems.
- 1.2 The Warranty described herein is provided by S3 AIR SYSTEMS to the original purchaser of the Product. The Warranty is non-transferable.
- 1.3 S3 AIR SYSTEMS, at its option, will repair or replace any part covered by the Warranty in Section 1.1 during the Warranty Period on the following conditions:
  - (a) Customer shall notify S3 AIR SYSTEMS of the defect within thirty (30) days of failure;
  - (b) Customer shall provide the respective Product's Serial Number.
  - (c) S3 AIR SYSTEMS, in its sole discretion, may contract out any repairs to the Customer or repair agent of its choice.
- 1.4 Eligible warranty repairs or replacement shall be free of charge to the original purchaser for materials, labor and shipping in the Warranty Period.
- 1.5 S3 AIR SYSTEMS shall be responsible for the repair or replacement of:
  - (a) Defective parts or subassemblies incorporated in the Product that are warranted under original manufacturing warranties from OEM or third party suppliers;

### 2.0 NOT COVERED BY WARRANTY

- 2.1 S3 AIR SYSTEMS shall not be responsible for the repair or replacement of:
  - (a) Products that have been altered or modified in any manner not approved or authorized by S3 AIR SYSTEMS; or
  - (b) Damage caused by normal wear and tear, lack of reasonable proper maintenance, misuse, excessive use, or damage caused by accident, vandalism or Act of God.

### 3.0 PURCHASER RESPONSIBILITIES

- 3.1 In order to establish eligibility for the Warranty set out herein, the Customer shall;
  - (a) Notify S3 AIR SYSTEMS of the defect within thirty (30) days of date of failure and
  - (b) Provide S3 AIR SYSTEMS with the Product's Serial Number.
  - (c) Submit Warranty Registration & Inspection Form to S3 Air Systems at date of sale from dealer to end user.
- 3.2 Where Customer is authorized by S3 AIR SYSTEMS to make the repairs, the Customer's account shall be credited for the cost of the repairs, provided:
  - (a) Customer provides S3 AIR SYSTEMS a detailed scope of work, labor hours required to complete the work, hourly rate and material costs ("Work");
  - (b) S3 AIR SYSTEMS approves the Work based on the details provided in para. (a);
  - (c) The warranty repairs and services are completed in a good and workmanlike manner according to prevailing industry standards;
  - (d) The repairs are made in accordance with labor rates and price lists approved by S3 AIR SYSTEMS, or as prescribed by local provincial or State laws;
  - (e) Customer obtains the prior approval of S3 AIR SYSTEMS if field diagnostic inspection is required. Travel and expenses must be pre-approved.

### 4.0 S3 AIR SYSTEMS RESPONSIBILITIES

- 4.1 S3 AIR SYSTEMS shall reply to the Customer's warranty notice in paragraph 3.1(a) within two (2) days of notification.
- 4.2 Upon receipt of the Products Serial Number set out in para. 3.1(b), S3 AIR SYSTEMS will evaluate the warranty claim and will provide a replacement under the Warranty upon completion of its evaluation.
- 4.3 S3 AIR SYSTEMS will require the return of the Product to S3 AIR SYSTEMS, the Customer or as S3 AIR SYSTEMS may choose by issuing an RMA, or may elect to credit Customer's account for the Customer's cost of the Product.
- 4.4 S3 AIR SYSTEMS will credit all shipping costs on all approved warranty repairs provided Customer complies with the shipping and related instructions in the RMA.

### 5.0 WARRANTY & LIABILITY LIMITATIONS

- 5.1 The Warranty provisions herein constitute the full extent of the warranties supplied by S3 AIR SYSTEMS for the Product.
- 5.2 S3 AIR SYSTEMS reserves the absolute and unconditional right to deny or reverse its approval of any Warranty claim in the case of fraud, abuse or error.
- 5.3 WITHOUT LIMITING THE GENERALITY OF THE FOREGOING AND TO THE EXTENT PERMITTED BY LAW, S3 AIR SYSTEMS HEREBY EXPRESSLY DISCLAIMS AND EXCLUDES ALL WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE
- 5.4 Where the exclusion of implied or statutory warranties or conditions is prohibited by law, any such warranties or conditions shall be limited in duration to the warranty period set out herein..
- 5.5 **SUBJECT TO ANY STATUTORY EXCEPTIONS OR LIABILITY IMPOSED BY LAW, S3 AIR SYSTEMS's LIABILITY FOR ANY CAUSE WHATSOEVER (INCLUDING NEGLIGENCE) IS HERBY LIMITED TO ACTUAL DAMAGES IN SUCH AN AMOUNT AS NOT TO EXCEED THE PURCHASE PRICE OF THE PRODUCT GIVING RISE TO THE WARRANTY CLAIM.**
- 5.6 **IN NO EVENT SHALL S3 AIR SYSTEMS BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF, INCLUDING DAMAGES FOR LOSS OF USE OF THE PRODUCT, OR LOSS OF BUSINESS OR PROFITS AS A RESULT.**

### 6.0 GENERAL

- 6.1 This Warranty shall be governed by and subject to the *Terms & Conditions of Sale* of the Product, including without limitation "Limited Warranty" and "Governing Law" provisions thereof.
- 6.2 For greater clarity, and subject to any local laws or statutes to the contrary, the provisions of this Warranty shall be governed by the laws of the Province of Saskatchewan, and shall be subject to the exclusive jurisdiction of the courts therein.







Let's Get Started.



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