

# SPUN ALUMINUM UPBLAST EXHAUST FANS

## OPERATION INSTRUCTIONS AND PARTS MANUAL

READ AND SAVE THESE INSTRUCTIONS

The purpose of this manual is to aid in the proper installation and operation of the blowers. These instructions are intended to supplement good general practices and are not intended to cover detailed instruction procedures.

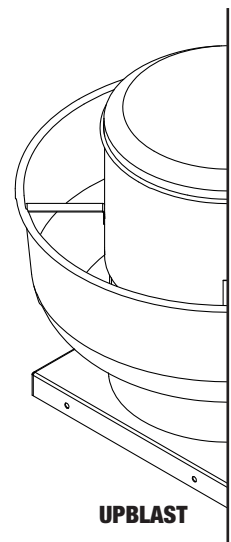
**IT IS THE RESPONSIBILITY OF THE PURCHASER TO ASSURE THAT THE INSTALLATION AND MAINTENANCE OF THIS EQUIPMENT IS HANDLED BY QUALIFIED PERSONNEL.**

Inspect all shipments carefully for damage. **THE RECEIVER MUST NOTE ANY DAMAGE ON THE CARRIER'S BILL OF LADING AND FILE A CLAIM IMMEDIATELY WITH THE FREIGHT COMPANY.**

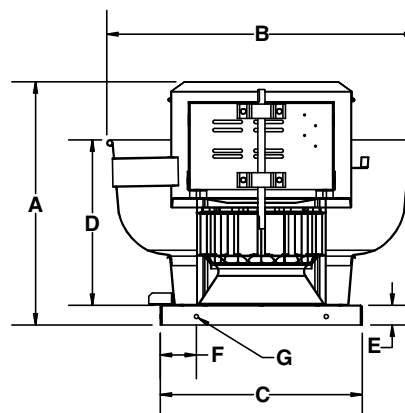
**DO NOT LIFT THE UNIT BY THE HOOD OR MOTOR. PLEASE LIFT THE UNIT BY HORIZONTAL SUPPORTS.**

## GENERAL SAFETY

1. All electrical work must be done in accordance with all applicable electrical codes by a qualified electrician.
2. Prior to wiring ensure the power supply is locked in the OFF position and that the motor nameplate voltage matches the supply voltage.
3. Do not install or operate this fan in an environment where combustible materials, gases or fumes are present.
4. **Caution:** the fan contains rotating parts and electrical service. Appropriate safety precautions should be taken during installation, operation and maintenance. When servicing the fan motor may be hot, allow time for cooling down.
5. Before starting the unit, ensure the wheel rotates freely.
6. Check and tighten where necessary all nuts, bolts & set screws prior to fan start up (as some may have loosened during shipment).
7. **Please follow all applicable national, state/provincial and local codes, all of them will supersede this manual.**
8. **Failure to follow the safety instructions in this manual may cause serious injury or death due to electrical shock or high speed rotating parts.**



## DIMENSION & COMPONENT



Motor plate detail varies on different sizes.

MODEL	DIMENSIONS (INCHES)							NET WEIGHT (LBS)
	A	B	C	D	E	F	G	
10DC	17.63	25	19	13	1.5	3.5	0.38	35
20DC, EC20	18.53	25	19	13	1.5	3.5	0.38	37
28DC, EC28	23.13 / 26.13	32.13	21	17.13	1.5	3.75	0.44	58/67
28BC / 28B3C	27.13 / 31.13	37.5	24.75	21.13	2	4	0.44	100/108
36BC / 36B3C, EC36	27.75 / 31.75	37.5	24.75	21.13	2	4	0.44	108/116
48BC & 52BC / 48BC3 & 52B3C, EC48	36.25	43.75	33.13	25.5	2.5	4	0.44	178
72BC & 72B3C	37	43.75	33.13	25.5	2.5	4	0.44	183

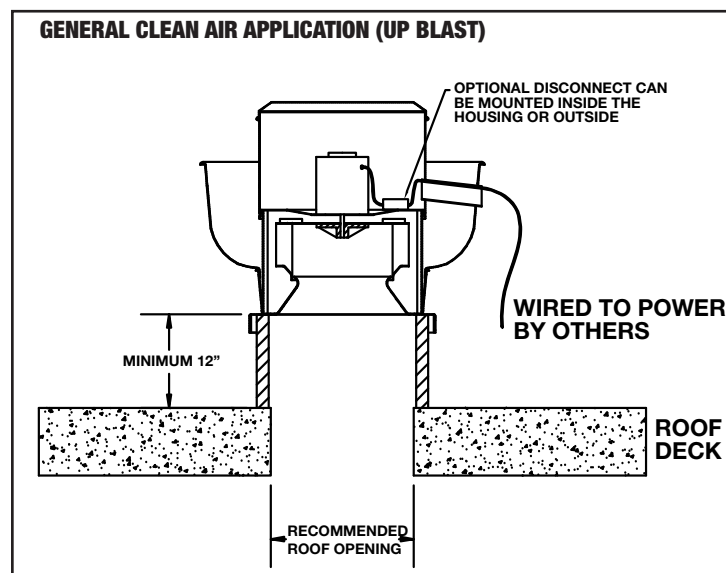
Note: Belt drive units are weighted without motor & drives.

## INSTALLATION

1. Install roof curb, caulk and flash to ensure the water tightness.
2. Rotate the blower wheel by hand. Wheel should not be rubbing against the housing inlet. If rubbing occurs, loosen the set screws on the wheel hub and shift the wheel to obtain clearance. Then re-tighten all set screws.
3. Complete all subsequent duct connections.
4. Secure the fan to the curb cap. Do not lift the unit by the hood or motor. Lift the unit by horizontal supports on direct drive or by motor mounting plate for belt drive unit.
5. Use at least 8 proper fasteners to connect the blower base to the roof curb.
6. Verify if the power supply is compatible with the equipment.
7. Make sure the power line is shut down before wiring the motor to power line.
8. Remove top cap, connect power line to the motor/disconnect switch as indicated.
9. For all up blast units, the electrical supply enters the motor compartment through the vent tube.
10. Ensure all fasteners and set screws are tightened.
11. Place the top cap back on the hood.
12. Caulk and flash the fan base including the fan base corners and roof curb to ensure good water tightness.

## STANDARD WIRING INSTRUCTIONS

1. A qualified electrician in accordance with all local and National Electrical Codes should do all wiring.
2. Ensure power supply is disconnected and locked out prior to making electrical connections.
3. Wire the motor according to the wiring diagram on motor label or on the sticker inside the motor wrap. All motors should be wired to the same rotation as indicated on the sticker on the top plate.
4. Leave enough slack in the wiring to allow for motor movement when adjusting the belt tension.
5. Excess wire must be restrained in order to prevent it from entering the pulley, shaft or wheel rotating area.
6. Disconnect switches are recommended and should be located near the fan in order to, swiftly cut off power in case of an emergency and maintain complete control of the power source.



## VARIABLE SPEED CONTROL – SINGLE PHASE

Some single phase direct drive motor's running RPM can be adjustable with a variable speed control (please contact factory for more information). The speed control knob starts at off position, then high to low adjust range. At high speed, the speed control would allow the motor running at its maximum RPM. Dial the knob to the low side would let the speed control regulate the voltage on the motor to reduce the RPM.

A minimum speed adjustment is needed to limit the motor RPM range. Follow this procedure to set the minimum speed.

1. Motor must be in servicing status to allow the minimum speed setting. Motor would not slow down unless proper load is applied. Motor RPM would be changed under different system (static pressure).
2. Turn the main control knob to the lowest speed position.
3. Locate and adjust the minimum speed setting, it can be found on the control box itself.
4. Motor RPM range would be from full RPM to the RPM just set.

**The lowest minimum voltage that may be applied to the motors is 65VAC. Running at lower voltage can cause premature failure to the motor.**

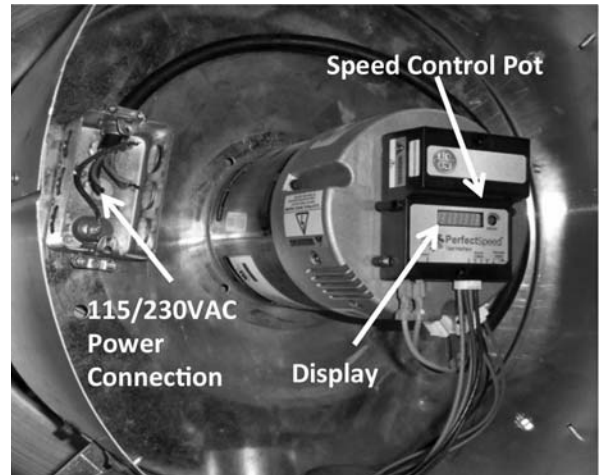
## VARIABLE FREQUENCY DRIVE – THREE PHASE

For 3 phase motors, a variable frequency drive (VFD) is required to adjust motor speed.

## EC (ELECTRONICALLY COMMUTED) MOTOR SPEED CONTROL

EC motors are equipped with a control module that allows for accurate manual adjustment of motor speed. Motor speed range is from 300 to 1800rpm or maximum rpm for that model.

The control module features a 4 digit LED display that indicates % demand of full speed and motor speed in rpm. The display also indicates an error code message for minor diagnostics if required.



**MESSAGE DISPLAYED...**

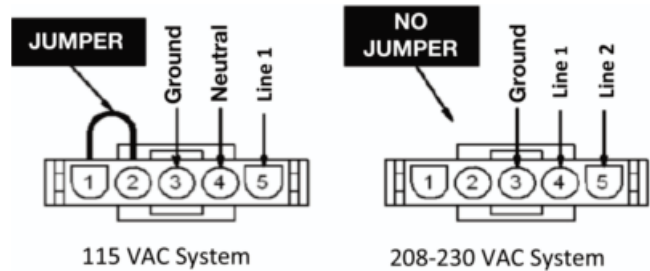
- Spd-** followed by the instantaneous speed in rpm
- dE-** followed by S + demand in %
- E1-** No communications
- E2-** Under Voltage

Motor speed can be changed by adjusting the speed control pot located on the control module. A small screwdriver can be used to make the speed adjustment.

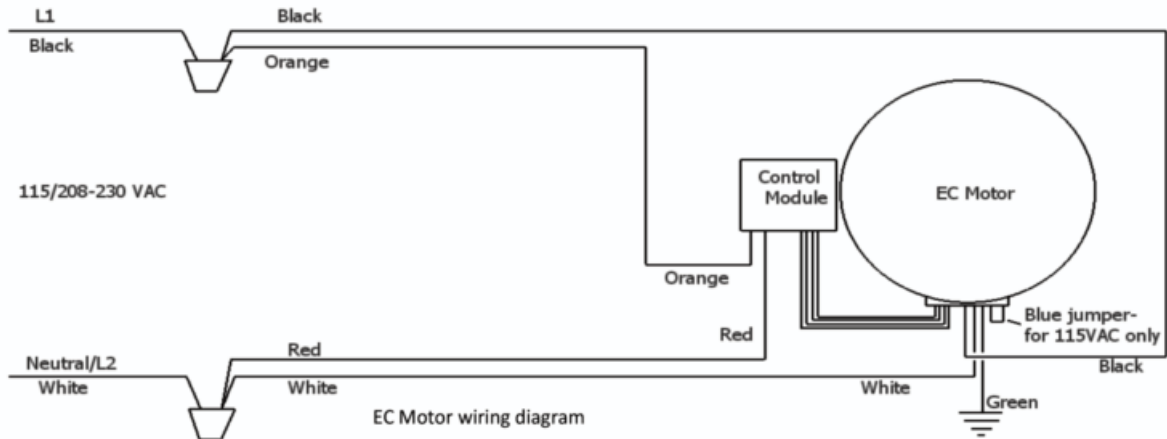
### AC Supply - 115/208-230VAC

Power is connected to the motor and control module through the junction box and wiring harness provided.

**Note:** For 115VAC operation the blue jumper provided (taped to wire harness) must be inserted into motor power connector. See diagram.



**Caution: Operating the motor at 208-230VAC with the jumper will cause significant damage to the motor.**



**Note:** EC motors have a soft start feature. When the power is turned on the control module gathers information from the motor then begins the start up process. After a few seconds the motor will start to turn and reach full set speed in 10-15 seconds.

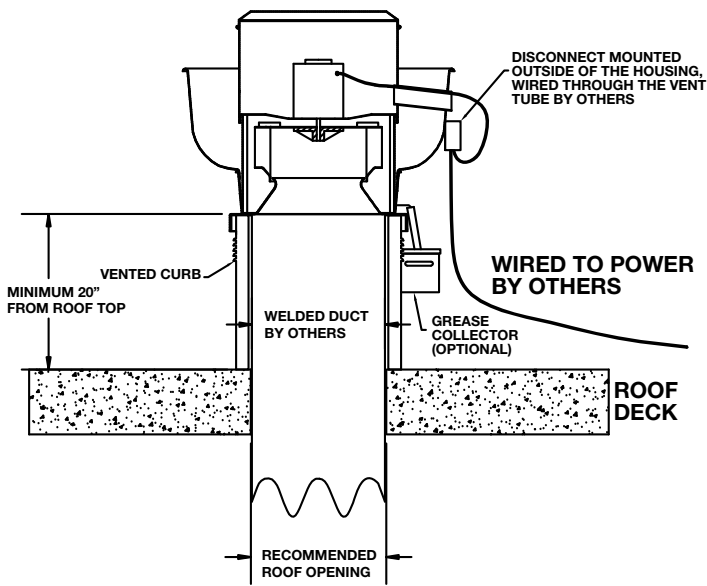
**Remote Speed Control Option** (Please contact factory for further information.)

## UL762 RESTAURANT EXHAUST APPLICATION

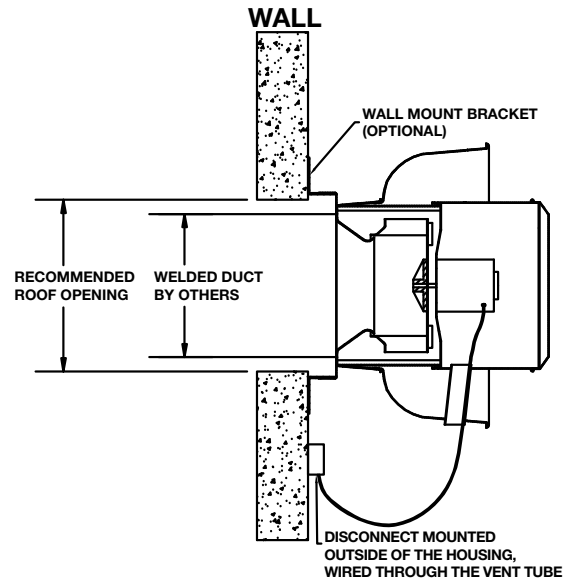
All up-blast models are UL/cUL listed, and meet UL762 for Commercial Kitchen application:

- The National Fire Protection Association (NFPA) publication NFPA 96 is the primary source for this application. Also consult local authorities for all other applicable codes and guidelines before installation.
- Exhaust fans used in kitchen ventilation applications must have external wiring. (Wiring must not be installed in the airstream).
- Installation must include a means for inspecting, cleaning and servicing the exhaust fan.
- No dampers can be used in the system.

## UP-BLAST UL762 RESTAURANT EXHAUST INSTALLATION



## UP-BLAST WALL MOUNTED UL762 RESTAURANT EXHAUST INSTALLATION



## PRE-START INSPECTION

1. Lock out all power sources.
2. Inspect all fasteners and set screws and tighten as required.
3. Inspect belt alignment and tension where applicable.
4. Confirm power source voltage and motor voltage are the same and that the motor is wired correctly.
5. Rotate the wheel to ensure that neither the fan blade nor the belts come into contact with the housing.
6. Inspect the fan and the ductwork to ensure they are free of debris.
7. Check to ensure that all guards and accessories are securely mounted.

## START UP

Turn the fan on and inspect for the following:

1. Direction of rotation.
2. Improper motor amperage.
3. Excessive vibration.
4. Unusual noise.
5. Improper belt tension or alignment (only applicable on belt-drive unit).

If a problem is discovered shut off the fan and refer to the section on troubleshooting to discover the cause of the problem. The fan should be inspected after 30 minutes, 8 hours & 24 hours of operation to ensure all fasteners are tight and belts are properly tensioned and aligned.

## MAINTENANCE

Disconnect and secure to the OFF position all electrical power to the fan prior to inspection or servicing. Failure to comply with this safety precaution could result in serious injury or death.

1. Ventilator should be checked at least once a year. For critical or severe applications a routine check every two to three months is suggested.
2. When moving or installing a belt, don't force the belt over the sheave. Loosen the motor mount so that the belt can be easily slipped over the sheave.
3. The belt, on belt driven units, should be removed and carefully checked for cracks, ply separation or irregular wear. A small irregularity in the contact surface of the belt will result in noisy operation. If any of these defects are apparent the belt should be replaced. At the same time check the sheaves for chips, dents or rough surfaces that could damage the belt.
4. The correct belt tension is important. Too tight a belt will result in excess bearing pressure, which can cause premature bearing failure and may cause the motor to overload. Too loose a belt will result in slippage, which will burn out belts. Proper belt deflection should be 1/64" (half way between sheave centers) for each inch of belt span when a force of approximately 5 lbs. is applied.
5. The belt alignment should be checked to be sure that the belt is running perpendicular to the rotating shafts. Motor and drive shafts must be parallel.
6. A periodic inspection of all fasteners should be carried out to ensure they have not loosened due to vibration. Particular attention should be paid to fasteners attaching the wheel to the shaft and those attaching the shaft to the bearing.

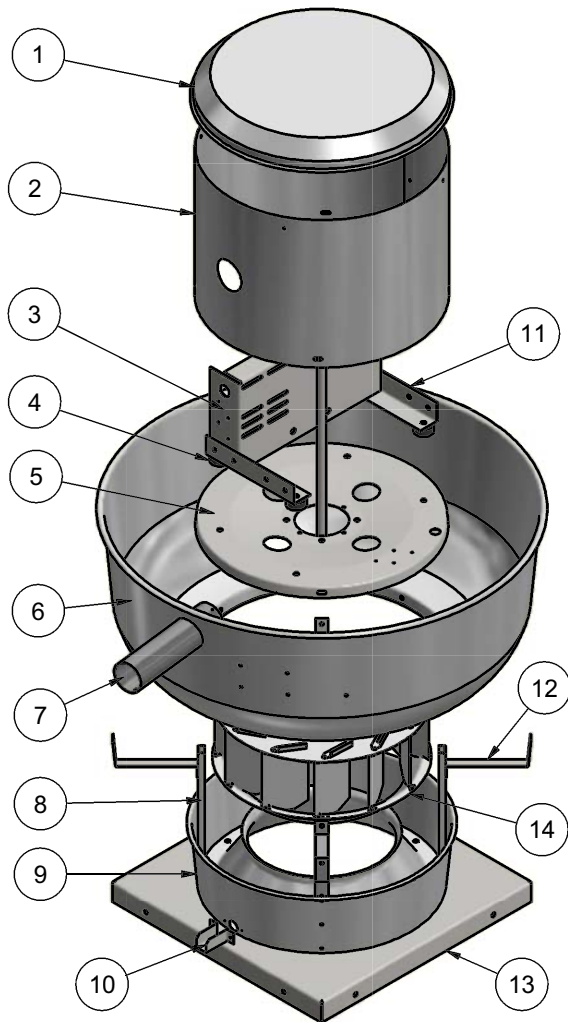
**FAN TROUBLESHOOTING**



**WARNING**  
MAKE SURE THE UNIT IS NOT CAPABLE OF OPERATION  
DURING REPARATION.

PROBLEM	POSSIBLE ISSUE	SOLUTION
<b>Excessive noise/vibration</b>	Wheel rubbing inlet	Adjust wheel, loosen set screw(s) and move the wheel, acquiring clearance between inlet and wheel, then re-tighten set screw(s)
	Wheel unbalance	Check wheels for debris or dirt build up and clean when necessary
	Object in rotation area or housing	Remove object
	Motor compartment loose	Re-tighten the fasteners
<b>Fan does not operate</b>	Malfunction of electrical supply	Check supply voltage, fuse and switch
	Malfunction of motor	Check wiring and overload protector
<b>Motor overload/overheat</b>	Wrong wheel rotation	Re-wire the motor to change direction of rotation
<b>Reduced airflow</b>	Damper Malfunction	Check opening side of back draft damper, check operation status of controlled damper
	Wrong wheel rotation	Re-wire the motor to change direction of rotation
	Improper Duct System	Check obstruction of duct in the duct or dirty filter

**SPUN ALUMINUM UPBLAST EXHAUST FAN - EXPLODED VIEW**



ITEM #	DESCRIPTION	QTY
1	TOP CAP	1
2	MOTOR WRAP	1
3	MOTOR SUPPORT PLATE	1
4	VIBRATION ELIMINATOR	4
5	TOP PLATE	1
6	UPBLAST APRON	1
7	VENT	1
8	VERTICAL BRACKET	4
9	INLET BAFFLE	4
10	DRAIN	4
11	MOTOR SUPPORT RAIL	2
12	HORIZONTAL BRACKET	4
13	BASE	1
14	BLOWER WHEEL	1

**NOTE:** General models are shown above.  
Actual unit might vary according to size.

## **TERMS AND CONDITIONS OF SALE**

**THESE TERMS AND CONDITIONS OF SALE (“TERMS”) CONTAIN VERY IMPORTANT INFORMATION REGARDING YOUR PURCHASE, AS WELL AS CONDITIONS, LIMITATIONS, AND EXCLUSIONS THAT APPLY TO YOU AND YOUR PURCHASE. PLEASE READ THEM CAREFULLY. YOUR PURCHASE IS EXPRESSLY LIMITED TO AND MADE CONDITIONAL UPON THE EXCLUSIVITY OF THESE TERMS. ANY PROPOSAL FOR DIFFERENT TERMS OR ANY ATTEMPT TO VARY, IN ANY DEGREE, ANY OF THESE TERMS IS EXPRESSLY REJECTED.**

- 1. Acceptance.** These Terms govern any purchase made from North American Kitchen Solutions Incorporated (“NAKS”). These Terms, the Manual in which they are contained, installation and maintenance instructions, the applicable invoice, and any documents incorporated or referred to herein or therein, including any future paper or electronic releases issued by NAKS, constitute the “Order.” The Order is the entire contract between you, the buyer, and NAKS, the seller, for products purchased from NAKS. These Terms apply to the Order unless expressly modified or waived by an officer of NAKS. An Order may only be cancelled by you upon payment of reasonable cancellation charges for expenses incurred or commitments made by NAKS. Captions in these Terms are for convenience only.
- 2. Pricing.** The price for NAKS’ goods, material, equipment, or items (“Products”) is complete, and no deductions, credits, or offsets may be made without NAKS’s express written consent. Prices are subject to change and surcharges in the event of cost increases in materials and transportation. All complete component accessory material manufactured by others and furnished with Products such as motors, drives, vibration equipment, controls, or other completely assembled component structures, are subject to adjustment to the price at time of shipment regardless of the date of original order entry.
- 3. Sales and Similar Taxes.** NAKS’ prices do not include sales, use, excise, or similar taxes. Present or future sales, use, excise, or other similar tax applicable to the sale of Products shall be paid you, unless an acceptable tax exemption certificate is provided to NAKS.
- 4. Payment.** NAKS reserves the right to require full or partial payment in advance of any order if, in NAKS judgment, the financial condition of buyer does not justify continuation of manufacture or shipment. NAKS may require full or partial payment in advance. Pro-rata payments are due as shipments are made. Each shipment or delivery shall constitute a separate sale, and the default of any shipment or delivery shall constitute a separate sale, and the default of any shipment or delivery shall not vitiate the contract as to other shipments or deliveries.
- 5. Delivery.** Shipping and delivery dates are estimates only. No delay in delivery will subject NAKS to any costs, damages or fees for late delivery. Delivery of Products is made F.O.B. point of shipment, unless otherwise stated. NAKS shall not be liable for delay due to causes beyond its reasonable control (i.e., force majeure events). In the event of such a delay, the date of delivery shall be extended for a period equal to the time lost by reason of the delay.
- 6. Changes.** NAKS may make changes, including improvements and additions, in the technical requirements, specifications, designs, materials, packaging, and place of delivery, method of transportation, quantities, or delivery schedules of the Products by notifying you.
- 7. Safety.** The Products may be designed to serve multiple applications. NAKS offers a range of safety equipment, including guards and other devices, as may be required to meet customer specifications. Without exception, NAKS recommends that all orders include applicable safety devices. Use of Products ordered without applicable safety devices are your sole responsibility. You warrant that you have determined and acquired any and all safety devices required for the Products. Weather covers and guards for motor and V-belt drives, couplings, shafts and bearings, along with inlet and outlet screens, are optional accessories noted in the price list.
- 8. Title.** Title and right of possession of Products remains with NAKS until all payments (including deferred payments whether evidenced by notes or otherwise) shall have been received to the satisfaction of NAKS and you agree to do all acts necessary to perfect and maintain such title and right in NAKS and not to subject any Products to any liens or encumbrances until such payment is made in full.
- 9. Governing Law.** This Order shall be governed by and construed according to the laws of the State of Ohio (excluding the conflict of law provisions thereof). At NAKS’ discretion, any action relating directly or indirectly to the Order shall be brought exclusively in the Common Pleas Court of Cuyahoga County, Ohio or the United States District Court for the Northern District of Ohio, Eastern Division, and you irrevocably waive any objection to the jurisdiction of, or venue in, either of these courts and agree that the acceptance of the Order constitutes doing business in the State of Ohio.

10. **Arbitration.** At NAKS' discretion, any dispute arising under or in connection with any Order may be submitted to binding arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The dispute shall be resolved by one neutral arbitrator who shall have no affiliation with either you as the buyer or with NAKS and shall be selected by the American Arbitration Association office, and held in, Cleveland, Ohio.

**WARNING.** NAKS' Products are designed and manufactured to provide reliable performance but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failures and this possibility should be recognized by the buyer and all end users. If Products are used in life support ventilation systems where failure could result in loss or injury, the buyer and all end users should provide adequate back-up ventilation, supplementary natural ventilation or failure alarm system, or acknowledge willingness to accept the risk of such loss or injury. **DO NOT USE IN HAZARDOUS ENVIRONMENTS** where fan's electrical system could provide ignition to combustible or flammable materials unless unit is specifically built for hazardous environments. Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA).

**CAUTION.** Guards must be installed when fan is within reach of personnel or within eight (8) feet (2.5 m) of working level or when deemed advisable for safety.

**DISCLAIMER.** NAKS has made a diligent effort to illustrate and describe the Products accurately in all materials; however, such illustrations and descriptions are for the sole purpose of identification and do not express or imply any warranty.

## LIMITED WARRANTY

**WARRANTY AND DISCLAIMER.** This limited warranty extends to you the original purchaser only with proof of purchase. NAKS warrants that Products shall be free from original defects in workmanship and materials for two years from date of shipment (except for the warranty periods noted for products listed below), provided the Products have been properly handled, stored, installed, serviced, maintained and operated. This warranty shall not apply to Products which have been altered or repaired without NAKS' express authorization, or altered or repaired in any way so as, in NAKS' judgment, to affect performance or reliability, nor which have been improperly installed or subjected to misuse, negligence, or accident, or incorrectly used in combination with other substances. You assume all risks and liability for results of use of all Products.

Evaporative cooling pads are warranted to be free of defects in materials and workmanship for a period of two years from date of shipment provided same have been properly handled, stored, installed, serviced, maintained and operated; and further, not subjected to excessive heat, corrosive agents or chemicals, or mechanical abuse that may cause tearing, crushing or undue deterioration, nor used on a system or in a manner other than that for which it was designed as explained in the Order.

**LIMITATION OF REMEDY AND DAMAGES.** All claims under this warranty must be made in writing and delivered by U.S. Mail to:

North American Kitchen Solutions  
172 Reaser Court  
Elyria, OH 44035  
Attn: WARRANTY CLAIMS DEPARTMENT

All Product claims must be made within 15 days after discovery of the defect and prior to the expiration of two years from the date of shipment. Claims made beyond that period are barred. Within 30 days after receipt of a timely claim, NAKS shall have the option either to inspect the Product at its location or request its return to NAKS at your expense. NAKS shall replace, or at its option repair, free of charge, any Product it determines to be defective, and it shall ship the repaired or replacement product to you F.O.B. point of shipment; provided, however, if in NAKS' judgment circumstances are such to prohibit repair or replacement to remedy the warranted defects, your sole and exclusive remedy shall be a refund of any part of the invoice price, paid to NAKS, for the defective Product or part.

NAKS is not responsible for the cost of removal of the defective Product or part, damages due to removal, or any expenses incurred in shipping the Product, or the installation of the repaired or replaced Product or part.

The warranties set forth above do not apply to any components, accessories, parts or attachments manufactured by other manufacturers; such being subject to the manufacturer's warranty, if any. To the extent not prohibited by the manufacturer's warranty, NAKS shall pass to you such manufacturer's warranty.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY EXPRESSLY DISCLAIMED AND WAIVED. THIS WARRANTY CONSTITUTES NAKS SOLE AND EXCLUSIVE WARRANTY FOR DEFECTIVE GOODS AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY FOR DEFECTIVE PRODUCTS.

No employee, agent, dealer, or other person is authorized to give any warranties on behalf of NAKS or to assume for it any other liability in connection with any of its products except in writing and signed by an officer of NAKS.

**LIMITATION OF LIABILITY.** NAKS' cumulative liability to you and any other persons for all claims in any way relating to or arising out of the Products, including, but not limited to, any cause of action sounding in contract, tort, or strict liability, shall not exceed the total amount of the purchase price paid for those Products which are the subject of any such claim. This limitation of liability is intended to apply without regard to whether other provisions of this agreement have been breached or have proven ineffective even if NAKS has been advised of the possibility of such claims or demand. In no event shall NAKS be liable to you or any other person for any loss of profits or any incidental, special, exemplary, or consequential damages for any claims or demands brought by you or such other persons. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THIS LIMITATION MAY NOT APPLY TO YOU.

NAKS' maximum liability to you and to any end user is as set forth above. NAKS makes no warranty to anyone for any products not manufactured by it and shall have no liability for any use or installation of any products (whether manufactured by NAKS or other manufacturers) not specifically authorized by this sale. You acknowledge various warnings by NAKS regarding the Products and its installation and use. If NAKS incurs any claims, lawsuits, settlements, or expenses (including attorney fees) for any loss, injury, death or property damage including, but not limited to, claims arising out of your or any end user's installation or use of the Products, you agree to indemnify and hold NAKS harmless.

**REPLACEMENT PARTS.** If replacement parts are ordered, purchaser warrants that the original components in which these replacement parts will be placed are in satisfactory working condition, and when said replacement parts are installed, the resultant installation will operate in a safe manner, at speeds and temperatures for which the original product was purchased.

**TECHNICAL ADVICE AND RECOMMENDATIONS, DISCLAIMER.** Notwithstanding any past practice or dealings or any custom of the trade, sales shall not include the furnishing of technical advice or assistance or system design. Any such assistance shall be at NAKS' sole option and may be subject to additional charge(s).

NAKS assumes no obligation or liability on account of any recommendations, opinions or advice as to the choice, installation or use of Products. Any such recommendations, opinions or advice are given and shall be accepted at your and the end-user's risk and shall not constitute any warranty or guarantee of such Products or their performance.

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