

BELT DRIVE SUPPLY FANS



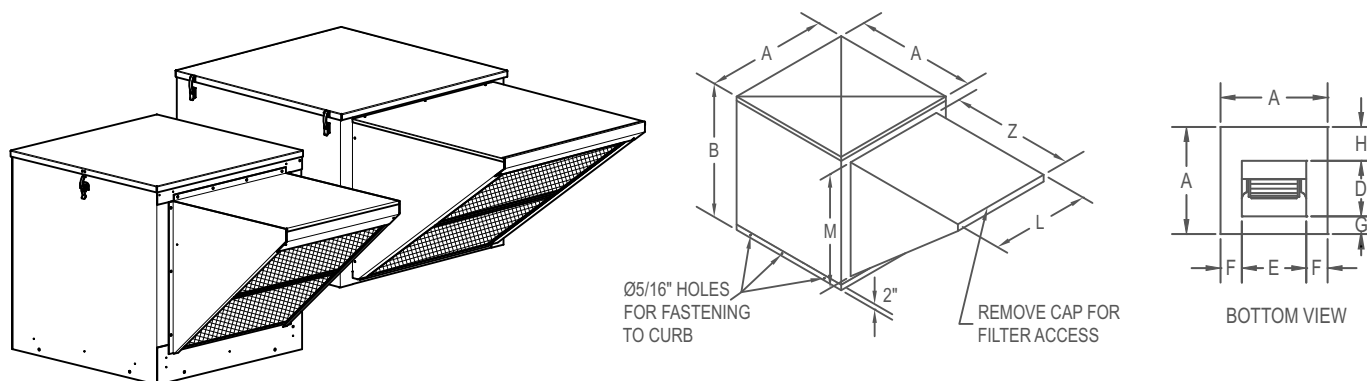
OPERATION INSTRUCTIONS AND PARTS MANUAL

MODELS: SF5, SF5-3PH, SF7, SF7-3PH, SF8, SF8-3PH, SF9, SF9-3PH, SF10, SF10-3PH

GENERAL SAFETY

Rotating parts, (pulleys, shafts and belts) on fans should not be exposed. Where these components are not protected by ductwork, cabinets or covers, appropriate guards should be employed to restrict exposure to rotating parts. Access doors should not be opened with the fan operating to avoid foreign objects being drawn into the system. On initial start-up, a careful inspection should be carried out to ensure no foreign material is present which could become airborne in the system.

Read installation and operation instructions carefully before attempting to install, operate or service NAKS SF Series Blowers. Failure to comply with instructions could result in personal injury and/or property damage. **Retain instructions for future reference.**



MODEL	A	B	D	E	F	G	H	L	M	Z	FILTERS		*INSIDE CABINET	UNIT WEIGHT (LBS) (without motors & drives)
											SIZE	QUANTITY		
SF5 / SF5-3PH SF7 / SF7-3PH	22"	24"	11 7/8"	13 1/4"	4 7/16"	3 1/4"	6 7/8"	16"	18 1/8"	19 7/8"	16" x 25" x 1"	1	21 7/8" x 21 7/8"	TBA
SF8 / SF8-3PH SF9 / SF9-3PH	32"	32"	13 3/4"	15 7/8"	8 1/16"	4 1/4"	14"	25"	24 5/8"	25"	16" x 25" x 1"	2	31 7/8" x 31 7/8"	TBA
SF10 / SF10-3PH	32"	32"	16 1/8"	18 7/8"	6 9/16"	3 7/8"	12 7/8"	25"	24 5/8"	25"	16" x 25" x 1"	2	31 7/8" x 31 7/8"	TBA

*Curb size to be smaller than inside cabinet to allow for flashing and roofing.

**Includes filter section

BEFORE YOU BEGIN

Inspect unit for damage, report any shipping damage to carrier. Check all fasteners, re-tighten as required. Rotate the blower wheel by hand to ensure free rotation. If rubbing occurs, loosen the set screw(s), re-position the wheel to the shaft center, re-tighten set screws.

INSTALLATION

Remove hood and filters from inside the cabinet. Caulk top of curb before setting unit in place. (Curb must be smaller than unit "A" dimension). Secure unit to curb through holes located around the bottom of the unit. Tighten wheel set screw.

MOTOR, PULLEYS & BELTS (See Table next page)

1. Mount the blower pulley on the blower shaft and tighten the set screw securely on the key of the shaft.
2. Mount the motor pulley on the motor shaft. Leave some clearance between the pulley and the motor end bell. Tighten the set screws on the key of the motor shaft.
3. Install the motor on the motor platform using the hardware provided.
4. With the platform in its minimum position, install the V-belt within the pulley grooves. Position the motor on the motor platform to ensure proper pulley alignment (see **Figure 1**) and secure to the motor platform. (A straight edge across the face of the driven pulley should be parallel to the belt once proper alignment has been achieved).

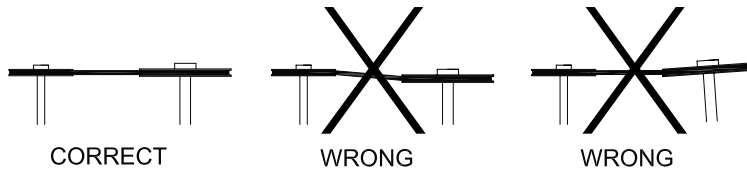
Note: Adjustments in the variable speed pulley require pulley re-alignment.

MOTOR, PULLEYS & BELTS (See Table below)

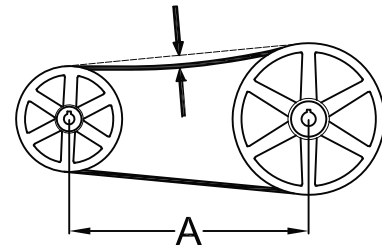
5. Pivot the motor platform to tension the V-belt and lock in place using the 2 bolts on both sides of the blower. (Ideal belt tension is the lowest tension at which the belt will not slip during start up.) As shown in illustration to right, a proper deflection of 1/64 of the belt span is desired for belt tension.

FIGURE 1

BELT ALIGNMENT



DEFLECTION = A / 64



BLOWER MODEL	3 1/4 CAST IRON BLOWER PULLEY - DIAMETER & RPM RANGE							BELT LENGTH BASED ON MOTOR FRAME
	5" 824-1125 RPM	6" 680-929 RPM	7" 580-792 RPM	8" 505-690 RPM	9" 447-611 RPM	10" 401-548 RPM	12" 533-455 RPM	
SF5 / SF5-3PH SF7 / SF7-3PH	4L39	4L41	4L42	4L44	4L46	4L47	--	48 FRAME
SF8 / SF8-3PH SF9 / SF9-3PH	4L42	4L44	4L46	4L47	4L49	4L51	--	
SF10 / SF10-3PH	--	--	--	--	4L55	4L57	4L60	56 FRAME

Motor Pulley Cast Iron	Blower Pulley Cast Iron	RPM Range	SF5 and SF7	SF8 and SF9	SF10	BELT LENGTH BASED ON MOTOR FRAME
IVL44 O.D. 4.15"	HB47T	1630 - 1232	B39	B43	--	48 FRAME (ADD 1" FOR 56 FRAME) MODELS SF10 143, 145T FRAME
	HB57T	1329 - 1005	B41	B44	--	
	HB67T	1121 - 848	B43	B46	--	
	HB77T	969 - 733	B44	B48	B52	
	HB87T	854 - 645	B46	B49	B54	
	HB97T	763 - 577	B48	B51	B56	
	HB107T	690 - 521	B50	B53	B58	
	HB117T	629 - 476	B51	B55	B59	
	HB127T	578 - 437	B53	B55	B61	
	HB137T	535 - 404	B55	B58	B63	
8325 O.D. 3.25"	HB157T	466 - 352	B59	B62	--	143T & 145T FRAME
	HB187T	390 - 295	B65	B68	--	
	HB77T	756 - 568	--	--	B51	
	HB87T	667 - 500	--	--	B53	
	HB97T	596 - 447	--	--	B55	
	HB107T	538 - 404	--	--	B56	
	HB117T	491 - 368	--	--	B58	
8400 O.D. 4.15"	HB127T	452 - 339	--	--	B60	182, 184T FRAME (DEDUCT 2" FOR 56, 143, & 145T)
	HB137T	418 - 314	--	--	B62	
	HB157T	364 - 372	--	--	--	
	HB87T	854 - 645	--	--	--	
	HB97T	763 - 577	--	--	--	
	HB107T	690 - 521	--	--	--	
	HB117T	629 - 476	--	--	--	
8550 O.D. 5.35"	HB127T	578 - 437	--	--	--	182, 184T FRAME (DEDUCT 2" FOR 56, 143, & 145T)
	HB137T	535 - 404	--	--	--	
	HB157T	466 - 352	--	--	--	
	HB187T	390 - 295	--	--	--	
	HB117T	828 - 686	--	--	--	
D8600 O.D. 6"	HB127T	756 - 618	--	--	--	213, 215T FRAME
	HB137T	697 - 575	--	--	--	
	HB157T	616 - 509	--	--	--	
	DOUBLE GROOVE		--	--	--	
	12.4 X 2B	830 - 700	--	--	--	
	13.6 X 2B	759 - 631	--	--	--	

FOR FRACTIONAL HP APPLICATIONS "4L" BELTS MAY BE SUBSTITUTED BY ADDING 2" TO THE SPECIFIED "B" BELTS. Eg. B50 BELT = 4L52



WARNING

EXCESSIVE BELT TENSION IS THE MOST FREQUENT CAUSE OF BEARING WEAR AND RESULTING NOISE. PROPER BELT TENSION IS CRITICAL FOR QUIET EFFICIENT OPERATION.

Ideal belt tension is the lowest value under which belt slip will not occur at peak load conditions.

NFPA 96 TYPICAL INSTALLATION

Typical configuration shall be a SF air supply unit, and a spun aluminum upblast exhaust fan. The spun aluminum upblast exhaust fan should have a base hinge and a grease collector.

INSTALLATION REQUIREMENT

As shown in **Figure 3**:

- The bottom of the exhaust fan must be 18 inches away from the roof surface.
- The outlet of the exhaust fan must be 40 inches away from the roof surface minimum.

AND

- The inlet plane must be 10 feet away from the outlet plane horizontally.

OR

- The inlet plane must be 3 feet away from the outlet plane vertically.

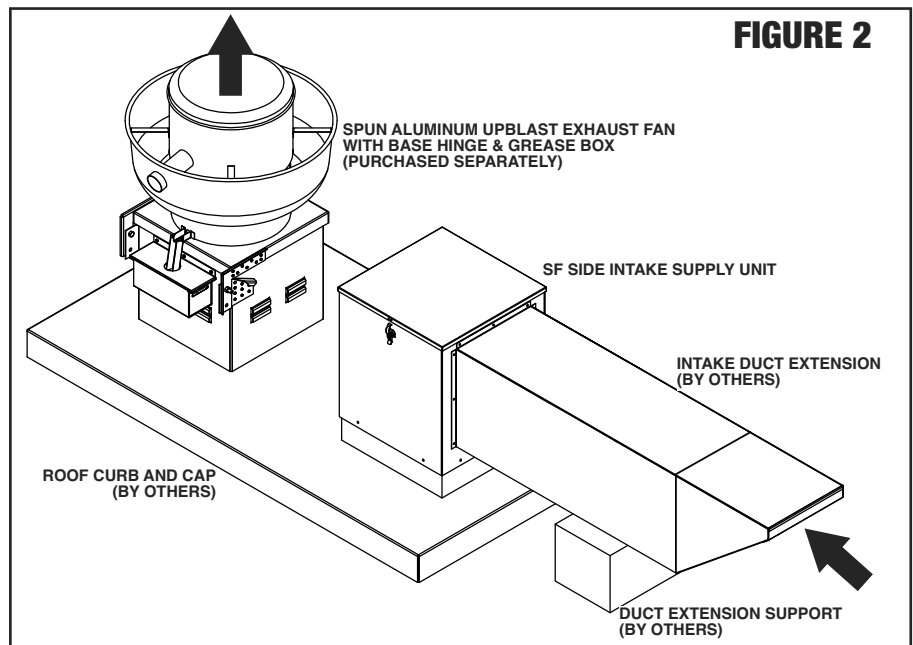


FIGURE 2

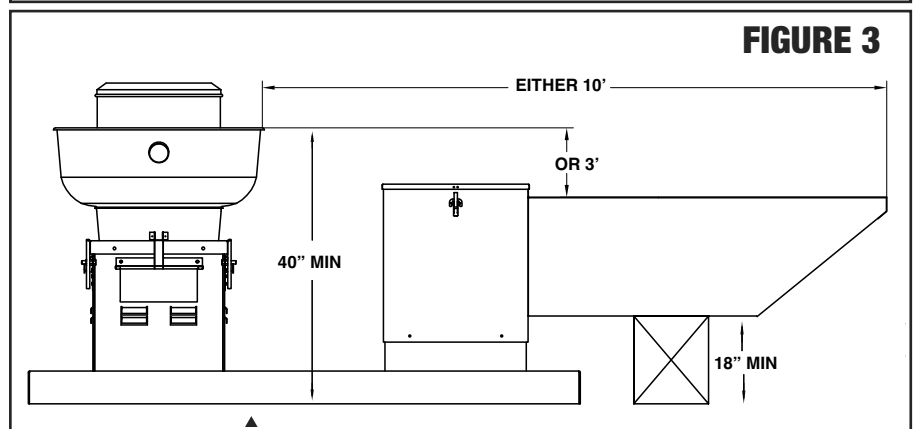


FIGURE 3

HOOD AND FILTER INSTALLATION

(Model SF10)

Attach duct section when required (by others) to the SF inlet flange. Drill 1/8" hole through duct and inlet flange and secure with metal screws provided. Slide the hood (less filters) over the inlet flange and secure with the provided sheet metal screws.

HOOD/DUCT OVERLAP SHOULD NOT EXCEED 1".

Remove hood cap and slide filter(s) into "U" channels located on the inner sides of the hood. Replace cap.

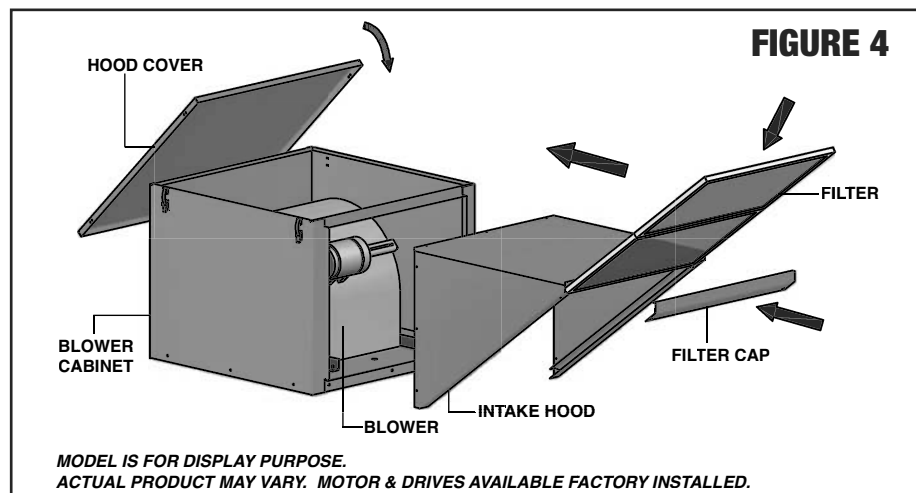


FIGURE 4

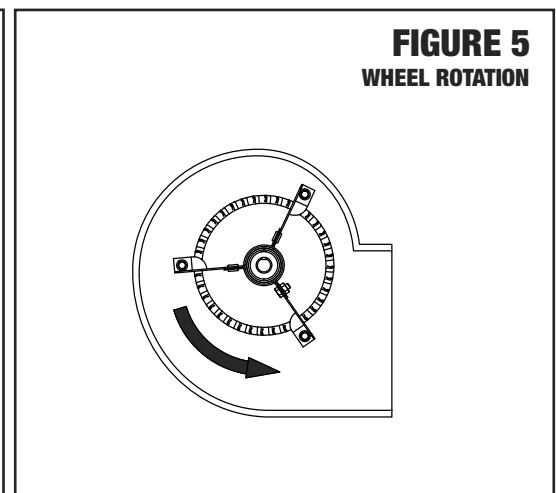


FIGURE 5
WHEEL ROTATION

ELECTRICAL



WARNING

ENSURE POWER SUPPLY IS DISCONNECTED & LOCKED OUT PRIOR TO MAKING ELECTRICAL CONNECTIONS.

Before connecting the motor to the electrical supply, check the electrical characteristics and wiring instructions as indicated on the motor nameplate or inside the conduit box cover to ensure proper voltage and phase. Complete electrical connections as indicated.



WARNING

A GROUND WIRE MUST BE CONNECTED FROM THE MOTOR HOUSING TO A SUITABLE ELECTRICAL GROUND.

OPERATION

1. Complete the electrical connections, energize the unit momentarily and ensure proper wheel rotation. (see **Figure 5**).
2. Apply full power.
3. With all ducts attached, the access doors in place and the air system in full operation, measure the motor current and ensure that it is less than the rated full load motor amperage as indicated on the motor nameplate.

MAINTENANCE



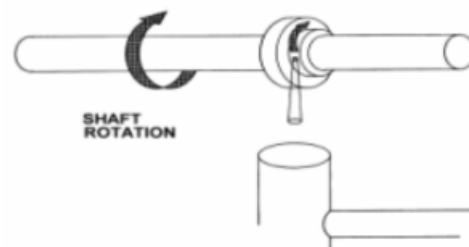
WARNING

ENSURE POWER SUPPLY IS DISCONNECTED & LOCKED OUT PRIOR TO MAKING ELECTRICAL CONNECTIONS.

1. Inspect and tighten all bearing collar and wheel set screws after the first 50 to 100 hours of operation and periodically thereafter.
2. Follow motor manufacturer's instructions for motor lubrication. Remove any excess lubrication.
3. Check the drives.
 - a. Tighten set screws on pulleys, wheel and bearing locking collars.
 - b. Check belt tension and alignment.
 - c. Replace cracked or worn belts.
4. Blower bearings are permanently lubricated and require no further lubrication.
5. Inspect V-belts for wear and proper tension. If it is necessary to replace one belt on a multiple belt drive, replace all the belts with a matched set. Do not use belt dressing.
6. Clean the blower wheel periodically. Material build up on the blades can cause wheel imbalance which may result in wheel or bearing failure.
7. To reinstall replacement ball bearings press the locking collar against the inner ring of the bearing and turn in the direction of the shaft rotation until engaged. Insert a drift pin into the pin hole and tap lightly to set. Tighten set screw on locking collar firmly (see **Figure 7**).
8. Should further service to the blower be necessary, please contact customer service.

BEARING REPLACEMENT

FIGURE 7



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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