United Metal Products®

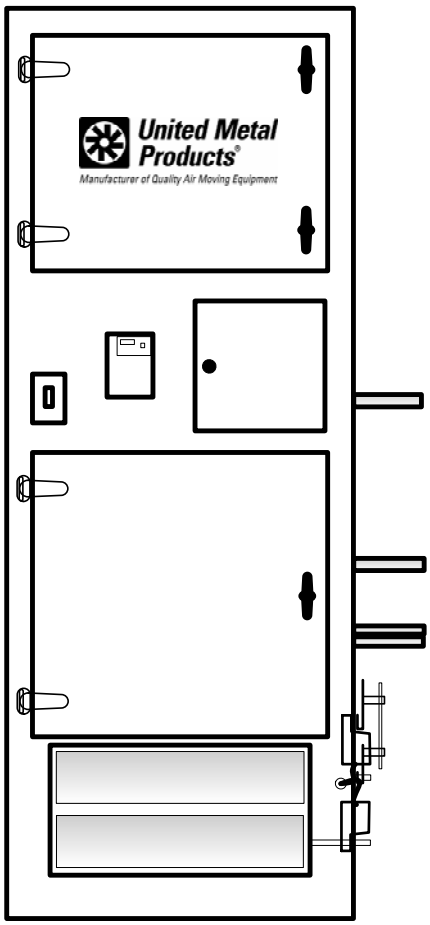
Manufacturer of Quality Air Moving Equipment

VERTICAL AIR HANDLING UNIT

NOTE! READ AND SAVE THIS MANUAL — IMPORTANT SAFETY INSTRUCTIONS

USE AND CARE INFORMATION FOR VERTICAL AIR HANDLING UNITS

The following information includes sections on installation, start-up and regular maintenance.



SAFETY

Caution: DISCONNECT ALL ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING TO INSTALL, OPEN, OR SERVICE YOUR UNIT. IF THE UNIT IS THERMOSTATICALLY CONTROLLED, THE THERMOSTAT IS NOT TO BE USED AS A DISCONNECT AS IT MAY RESET AND START THE UNIT UNEXPECTEDLY.

For future reference, record Model and Serial Numbers of your unit here:
(Numbers are located on the outside of the unit.)

Model No._____ Serial No._____

United Metal Products® *1920 E Encanto Drive Tempe, AZ 85281 T 480.968.9550 F 480.968.9555 www.unitedmetal.com*

RECEIVING, SETTING IN PLACE AND START-UP PROCEDURE

RECEIVING

Inspect the complete unit for shipping damage. If damage is present, you have the right to either accept or reject the shipment. If the receiving contractor or the receiving agent for the contractor elects to receive the equipment in a damage condition, it then becomes the contractor's responsibility to note the extent of the damage on the delivering freight bill of lading in the presence of the delivering agent (driver) of the delivering freight carrier in accordance with the ICC regulations. It also then becomes the responsibility of the receiving contractor to work with the delivering carrier to have the equipment repaired to the satisfaction of United Metal Products, Inc., so the warranty may remain valid. United Metal Products must also be notified of shipping damage immediately. Be sure to read warranty for further information. United Metal Products will in no way be responsible for any unauthorized back charges due to events or circumstances out of their control which may cause shipping delays.

INSPECTION OF EQUIPMENT—VISUAL

The equipment type and arrangement should be verified as ordered at once when it arrives at the jobsite. When a discrepancy is found, the local United Metal Products Sales Representative must be notified immediately so that corrective action may be investigated. Also verify that electrical components are in conformance with specifications. Unauthorized alterations and unauthorized back charges will not be recognized by United Metal Products, Inc.

LONG-TERM STORAGE

If equipment is not set in its permanent position and is stored on the ground or other un-level area, proper provisions must be taken for supporting and protecting the equipment. Indoor units that are stored outside must be covered and protected from any ingress of moisture.
There is a time limit of one year from date of shipment that any unit may be kept in long-term storage. During this time, rotate the wheel by hand every two weeks to redistribute grease on internal bearing parts. At the end of the one year period, the unit must be in operation.
NOTE: Failure to perform the long-term storage requirements past 60 days from shipment and properly log these required procedures will void the warranty.

RIGGING INSTRUCTIONS

1. Avoid unnecessary jarring or rough handling.
2. Support the assembled unit and lift from below.
3. Care must be taken to keep the unit in the upright position during rigging.
4. Only use trained professional riggers when moving equipment.
5. Before installation it is important to be certain the mounting surface will bear the operating weight of the unit.
6. For proper unit operation, it is also important that it be operated in a completely level position.

RIGGING

Proper handling of the equipment is mandatory during unloading and setting it into position.

It is mandatory that an experienced and reliable rigger be selected to handle unloading and final placement of the equipment. The rigger must be advised that the unit contains delicate components and that it be handled in an upright position. Care must be exercised to avoid twisting the structure.

NOTE: It is the responsibility of the installing contractor to mount the unit in accordance with local codes.

INSTALLATION AND START-UP SAFETY

SAFETY

Caution: DISCONNECT ALL ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING TO INSTALL, OPEN, OR SERVICE YOUR UNIT. IF THE UNIT IS THERMOSTATICALLY CONTROLLED, THE THERMOSTAT IS NOT TO BE USED AS A DISCONNECT AS IT MAY RESET AND START THE UNIT UNEXPECTEDLY.

Read and complete the checklist on the following page as part of this start-up procedure.

- Electrical wiring must be installed a safe distance away from any sharp or moving parts (blower wheels, pulleys, sheaves, belts, etc.).
- All guards and/or interlocks, mechanical or electrical, provided by manufacturer must always remain in place to provide needed protection against moving parts.
- Guards must be installed when fan or discharge is within personnel or within seven (7) feet of working level or when deemed advisable for safety.
- All safety devices, panels, and doors of the unit must be installed and remounted as previously mounted before start-up, servicing, or cleaning. **NOTE:** A key is needed for fan cabinet access.
- Remove shipping blocks
- Check fan rotation and inlet cone alignment.
- Install filters
- Check doors seal tight.
- Start up fan and set VFD to turn fan at design fan speed (see unit nameplate inside supply fan access door).
- Check for leaks.

IMPORTANT! There may be other start-up and safety information included with other components not addressed in this manual.

Please read and follow all start-up and maintenance information carefully.

See Separate Start-Up & Safety Information Regarding:

- Actuators
- Coils
- Fans
- Filters

Vertical AHU Recommended Control Requirements

The sequence of operations (by others) will suit individual site requirements. The unit controller (by others) must be capable of the following basic functions:

1). Operate dampers – when fitted, the dampers must be set to ensure the airway is "open" before starting the fan

2). When stopping the "cooling" mode the unit controller (by others) must close off the cooling coil control valve and continue to run the fan for a minimum of 5 minutes before signaling the VFD to stop the fan.

3). The VFD must be programmed with a ramp-up time of 30 seconds and a ramp-down time of 60 seconds.

Important: Shut down from cooling mode:

When operating in cooling mode, care must be taken to ensure that condensation formed on the cooling coil can migrate down the coil face and into the drain tray. Under normal operating conditions the velocity of the air passing over the coil will hold condensate droplets within the coil bundle as they migrate towards the drain tray. When the airflow is suddenly stopped, there is a possibility for the condensate droplets to fall vertically down onto the heating coil, filter and bottom of the AHU. To avoid this situation the control logic steps #2 and #3 above should be followed.

Site conditions will be the determining factor for how much condensate is produced and therefore the length of time the unit controller should run the fan at full speed before signaling the VFD to stop the fan as well as the VFD ramp-down period required. The objective is to dry out the coil and slowly reduce the air velocity over the coil face so that the condensate droplets will migrate to the drain tray. The unit controller and VFD should allow these two time periods to be adjusted on site to achieve this objective.

VERTICAL AIR HANDLING UNIT PRE-START CHECKLIST

(Responsibility of Installing Contractor)

NOTE: Please complete & return fax to United Metal Products within 30 days of start-up for warranty validation. Fax: 480-968-9555

INSTALLER _____ COMPANY _____ DATE _____

MODEL NUMBER _____ SERIAL NUMBER _____ TAG NUMBER _____

Before connecting modules together check all internal components for damage

Y N NA FAN MODULE

1. ☐ ☐ ☐ Check fan wheel is secured to the motor shaft.
2. ☐ ☐ ☐ Remove shipping blocks under motor base.
3. ☐ ☐ ☐ Adjust the vibration mount heights to achieve uniform clearance between the fan wheel and inlet cone. When spun, the fan should not touch the inlet cone.
4. ☐ ☐ ☐ Check that motor mounting bolts are tight.
5. ☐ ☐ ☐ Check that electrical connections and covers are tight.
6. ☐ ☐ ☐ Set the fan speed with the VFD when supplied. The operating fan speed is listed on the unit name plate Located inside the supply fan module access door.

DAMPER MODULE

7. ☐ ☐ ☐ Check dampers freely rotate.
8. ☐ ☐ ☐ Where damper actuators are supplied, check that they are secure and set minimum and maximum rotation settings.

Y N NA FILTER MODULE

9. ☐ ☐ ☐ Check filters are installed correctly (airflow).

COIL MODULE

10. ☐ ☐ ☐ Tighten all coil and drain connections and check for leaks.

OPERATION

11. ☐ ☐ ☐ Amp draw
12. ☐ ☐ ☐ Fan noise
13. ☐ ☐ ☐ Fan rotation
14. ☐ ☐ ☐ Air capacity
15. ☐ ☐ ☐ Vibration
16. ☐ ☐ ☐ All safety devices installed and secure
17. ☐ ☐ ☐ Thermal overloads set properly

COMMISSIONING RECORD

SUPPLY FAN AMPS VOLTS

LI _____ L2 _____ L3 _____ LI-L2 _____ LI -L3 _____ L3 -L2 _____ .

☐ Final Overload Setting: _____.

☐ Motor Nameplate Information: Model #_____ Volts _____ Amps _____ HP _____.

☐ Fan Speed set at final commissioning: _____ RPM

☐ Verify all Amp and Volt readings meet nameplate data.

Installer's Acceptance Signature X _____ Date_____

NOTES: _____

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WIRING INSTRUCTIONS

When wiring the unit from the factory installed electrical box or VFD, ALL grounding, wiring and materials must be installed in accordance with all current N.E.C. and local codes, and must be performed by a qualified licensed technician. Consult the chart below for proper wire, circuit breaker and fusible switch. CAUTION: Improper wiring, installation or maintenance of equipment may cause electric shock, fire or injury to persons.

SAFETY

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Caution: Do not exceed the maximum amperage output as stamped on the motor specification plate or motor can overload. Only qualified persons with proper electrical equipment and knowledge should adjust VFD.

Caution: Disconnect all the electrical power to the unit and insure that the fan is not rotating before inspecting it, adjusting the vibration isolators or servicing the motor.

Even while routinely inspecting or servicing the inside, the unit can be accidentally started. Keep children and pets away from the unit and electrical supply when you are working on it.

Do not attempt to perform any part of the installation described in this booklet unless you are FULLY QUALIFIED to do so. All electrical work must meet local codes and must be performed by qualified personnel only.

Full load currents, wire sizes, and switch sizes are based on 1990 NEC. Fuse sizes and circuit breaker trip amperes are appropriate selections, suitable for most installations. Thermal unit selections are not based on NEC currents (see NEC 430-6), but are selected from average full load currents. Thermal units can be more accurately selected using table furnished with starter and full load current marked on motor nameplate.

THREE PHASE MOTOR DATA

MOTOR H.P.

FOR 60 Hz. 1800 RPM. STANDARD SQUIRREL CAGE MOTORS (non Design-E)		200	150	125	100	75	60	50	40	30	25	20	15	10	7½	5	3	2	1½	1	¾	½	
MINIMUM COPPER WIRE SIZE–(75) THW, THWN–THWN, XHHW–SIZE FULL LOAD CURRENT (NEC)—AMPS		552	414	359	285	221	177	150	120	92	78.2	62.1	48.3	32.2	25.3	17.5	11.0	7.8	6.9	4.8	3.7	2.5	
CIRCUIT BREAKER	THERMAL-MAGNETIC BREAKER–CAT. NO. (Breaker only)	600	600	500	400	300	300	200	175	125	110	100	90	60	50	35	20	15	15	15	15	15	MOTOR S'YS TEM VOLTS
	INDUSTRIAL BREAKER–CAT. NO. (Breaker only)	(MAL 3600)	(MAL 3600)	(MAL 3400)	(LAL 3400)	(LAL 3400)	(LAL 3400)	(LAL 3400)	(KAL 34075)	(KAL 34065)	(KAL 34060)	(FAL 34090)	(FAL 34090)	(FAL 34090)	(FAL 34090)	(FAL 34080)	(FAL 34080)	(FAL 34075)	(FAL 34075)	(FAL 34075)	(FAL 34075)	(FAL 34075)	
FUSIBLE SWITCH	HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO.	—	H326	H325	H325	H325	H325	H324N	H324N	H324N	H323N	H323N	H322N	H322N	H322N	H321N	H321N	H321N	H321N	H321N	H321N	H321N	
	WITH DUAL ELEMENT TIME DELAY FUSE–AMPS	—	600	500	400	300	250	200	175	125	100	90	60	50	40	25	17.5	11.0	7.8	6.9	4.8	3.7	2.5	
MAGNETIC STARTER	NEMA 1 ENCL.–CLASS 8536 TYPE	SJG-2	SHG-2	SHG-2	SGG-1	SGG-1	SGG-1	SFG-1	SEG-1	SFG-1	SEG-1	SEG-1	SEG-1	SDG-1	SCG-3	SBG-2	SBG-2	SAG-12	SAG-12	SAG-12	SAG-12	SAG-12	
	WITH THREE MELTING ALLOY THERMAL UNITS—NO.	—	B4.15	B3.37	B2.65	D280	D220	D160	CC143	CC103	CC143	CC94.0	CC74.6	B56	B45	B28.0	B15.5	B11.5	B10.2	B9.10	B6.25	B4.85	B3.30	(208) VOLTS
	FULL LOAD CURRENT (NEC)—AMPS	480	360	312	248	192	154	130	104	80	68	54	42	28	22	15.2	9.6	6.8	6.0	4.2	3.2	2.2	
MINIMUM COPPER WIRE SIZE–(75) THW, THWN–THWN, XHHW–SIZE		2-350	2-4/0	2-3/0	4/0	3/0	2/0	1/0	1	3	4	6	8	10	10	14	14	14	14	14	14	14	
CIRCUIT BREAKER	THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS	800	600	450	350	250	225	200	150	110	100	90	80	60	45	30	20	15	15	15	15	15	MOTOR S'YS TEM VOLTS
	INDUSTRIAL BREAKER–CAT. NO. (Breaker only)	(MAL 3800)	(MAL 3800)	(LAL 3800)	(LAL 3800)	(LAL 3800)	(KAL 36250)	(KAL 36200)	(KAL 36150)	(KAL 36100)	(FAL 36100)	(FAL 36090)	(FAL 36080)	(FAL 36070)	(FAL 36060)	(FAL 36050)	(FAL 36045)	(FAL 36035)	(FAL 36025)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	
FUSIBLE SWITCH	HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO.	H326	H326	H325	H325	H324N	H324N	H324N	H324N	H323N	H323N	H323N	H322N	H322N	H321N	H321N	H321N	H321N	H321N	H321N	H321N	H321N	
	WITH DUAL ELEMENT TIME DELAY FUSE–AMPS	600	500	400	300	200	200	200	150	100	80	80	60	40	30	25	15	10	10	8	5.6	4	230 (240) VOLTS
MAGNETIC STARTER	NEMA 1 ENCL.–CLASS 8536 TYPE	SHG-2	SHG-2	SGG-1	SGG-1	SFG-1	SEG-1	SEG-1	SEG-1	SEG-1	SEG-1	SDG-1	SDG-1	SCG-3	SCG-3	SBG-2	SBG-2	SBG-2	SAG-12	SAG-12	SAG-12	SAG-12	
	WITH THREE MELTING ALLOY THERMAL UNITS—NO.	B4.85	B4.30	B3.00	DD320	DD240	DD185	CC156	CC112	CC103	CC81.5	CC64.3	CC46.8	CC156	CC112	B45	B36	B25	B17.5	B12.8	B9.10	B6.25	B4.15	
	FULL LOAD CURRENT (NEC)—AMPS	240	180	156	124	96	77	65	52	40	34	27	21	14	11	7.6	4.8	3.4	3.0	2.1	1.6	1.1	
MINIMUM COPPER WIRE SIZE–(75) THW, THWN–THWN, XHHW–SIZE		350	250	225	200	125	110	100	90	80	70	60	40	25	20	15	15	15	15	15	15	15	
CIRCUIT BREAKER	THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS	350	250	225	200	125	110	100	90	80	70	60	40	25	20	15	15	15	15	15	15	15	MOTOR S'YS TEM VOLTS
	INDUSTRIAL BREAKER–CAT. NO. (Breaker only)	(LAL 3625)	(LAL 3625)	(LAL 3625)	(KAL 36200)	(KAL 36150)	(KAL 36110)	(FAL 36100)	(FAL 36090)	(FAL 36080)	(FAL 36070)	(FAL 36060)	(FAL 36045)	(FAL 36035)	(FAL 36030)	(FAL 36025)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	
FUSIBLE SWITCH	HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO.	H365	H365	H364	H364	H363	H363	H363	H362	H362	H362	H362	H361	H361	H361	H361	H361	H361	H361	H361	H361	H361	
	WITH DUAL ELEMENT TIME DELAY FUSE–AMPS	350	250	200	175	150	100	80	60	50	40	30	25	20	15	10	8	6.25	5.6	4	3.2	2	460 (480) VOLTS
MAGNETIC STARTER	NEMA 1 ENCL.–CLASS 8536 TYPE	SGG-1	SGG-1	SGG-1	SFG-1	SFG-1	SFG-1	SEG-1	SEG-1	SEG-1	SDG-1	SDG-1	SDG-1	SCG-3	SCG-3	SBG-2	SBG-2	SAG-12	SAG-12	SAG-12	SAG-12	SAG-12	
	WITH THREE MELTING ALLOY THERMAL UNITS—NO.	DD300	DD240	DD185	CC196	CC156	CC112	CC103	CC81.5	CC59.4	B62	B45	B32	B25	B17.5	B11.5	B6.90	B4.85	B4.15	B3.00	B2.40	B1.45	
	FULL LOAD CURRENT (NEC)—AMPS	192	144	125	99	77	62	52	41	32	27	22	17	11	9.0	6.1	3.9	2.7	2.4	1.7	1.3	0.9	
MINIMUM COPPER WIRE SIZE–(75) THW, THWN–THWN, XHHW–SIZE		250	3/0	2/0	1	3	4	6	8	8	10	10	12	14	14	14	14	14	14	14	14	14	
CIRCUIT BREAKER	THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS	250	200	200	150	110	100	90	80	60	60	45	35	20	15	15	15	15	15	15	15	15	MOTOR S'YS TEM VOLTS
	INDUSTRIAL BREAKER–CAT. NO. (Breaker only)	(LAL 3625)	(KAL 36200)	(KAL 36150)	(KAL 36110)	(FAL 36100)	(FAL 36090)	(FAL 36080)	(FAL 36070)	(FAL 36060)	(FAL 36045)	(FAL 36035)	(FAL 36025)	(FAL 36020)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	(FAL 36015)	
FUSIBLE SWITCH	HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO.	H365	H364	H364	H364	H363	H363	H363	H362	H362	H362	H362	H361	H361	H361	H361	H361	H361	H361	H361	H361	H361	
	WITH DUAL ELEMENT TIME DELAY FUSE–AMPS	300	200	175	150	100	90	80	60	50	40	30	20	15	10	8	6.25	5	4	3.2	2.5	1.8	575 (600) VOLTS
MAGNETIC STARTER	NEMA 1 ENCL.–CLASS 8536 TYPE	SGG-1	SGG-1	SFG-1	SFG-1	SFG-1	SFG-1	SEG-1	SEG-1	SEG-1	SDG-1	SDG-1	SCG-3	SCG-3	SCG-3	SBG-2	SBG-2	SAG-12	SAG-12	SAG-12	SAG-12	SAG-12	
	WITH THREE MELTING ALLOY THERMAL UNITS—NO.	DD250	DD160	DD150	CC156	CC112	CC87.7	CC81.5	CC64.3	CC46.8	B45	B36	B25	B17.5	B12.8	B9.10	B6.90	B4.85	B3.70	B3.30	B2.40	B1.88	B1.30	

TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
EXCESSIVE MECHANICAL NOISE AND/OR VIBRATION	1. Defective motor bearing. 2. Fan wheel loose on shaft. 3. Fan wheel out of balance. 4. Fan wheel rubbing on inlet cone. 5. Worn vibration isolators. 6. Fan rotating at a natural frequency that is not absorbed by the vibration isolators.	1. Replace. 2. Tighten set screw. 3. Re-balance or replace fan wheel. 4. Re-align fan wheel and cone. 5. Replace vibration isolators. 6. Use VFD to increase or decrease fan RPM to skip over that natural frequency.
FAN DOES NOT ROTATE	1. Blown fuse or open circuit breaker. 2. Electricity turned off. 3. Defective motor. 4. VFD not set up correctly. 5. Defective VFD.	1. Replace fuse or reset circuit breaker 2. Contact local power company. 3. Replace. 4. Read VFD handbook. 5. Replace.
INSUFFICIENT AIRFLOW	1. Duct static pressure too high. 2. Fan RPM too low. 3. Clogged filters.	1. Check duct system for closed dampers and other blockages. 2. Increase the fan speed with VFD. Do not exceed the maximum safe fan RPM – see nameplate. 3. Replace.
HIGH PITCHED NOISE HEARD WHEN RUNNING	1. VFD.	1. Set VFD to skip over that natural frequency.
DAMPER BLADES DO NOT TURN	1. Damper blades are jammed. 2. Defective actuator.	1. Free up damper blades and/or linkages 2. Replace
COIL PAN DOES NOT DRAIN	1. Blocked drain. 2. Incorrectly sizes trap.	1. Unblock drain. 2. Re-size trap.
AIR LEAKAGE	1. Doors not sealing. 2. Module joins are not sealing.	1. Check and adjust door latches. 2. Check seams. Tighten bolts and/or seal with caulking.

REGULAR MAINTENANCE

- Change filters
- Re-grease motor bearings as required.
- Check fan and inlet cone alignment.
- Check dampers operate smoothly.

LIMITED WARRANTY

UNITED METAL PRODUCTS, INCORPORATED extends this limited warranty to the original buyer and warrants that products manufactured by United Metal Products shall be free from original defects in workmanship and materials for one year from start-up or 18 months from date of shipment (whichever is sooner), provided same have been properly stored, installed, serviced, maintained and operated with bleed-off system properly installed. This warranty shall not apply to products which have been altered or repaired without United Metal Product's express authorization, or altered or repaired in any way so as, in United Metal Product's judgment, to affect its performance or reliability, nor which have been improperly installed or subjected to misuse, negligence, or accident, or incorrectly used in combination with other substances. Warranties on purchased parts, such as electric motors, pumps and pads, are limited to the terms of warranty extended by our supplier (usually one year duration).

LIMITATION OF REMEDY AND DAMAGES: All claims under this warranty must be made in writing and delivered to United Metal Products, Inc., 1920 East Encanto Drive, Tempe, Arizona 85281, within 15 days after the date of shipment by United Metal Products of the product claimed defective, and Buyer shall be barred from any remedy if Buyer fails to make such claim within such period.

Within 30 days after receipt of a timely claim, United Metal Products shall have the option either to inspect the product while in Buyer's possession or to request Buyer to return the product to United Metal Products at Buyer's expense for inspection by United Metal Products. United Metal Products 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 Buyer FOB. point of shipment; provided, however, if circumstances are such as in United Metal Products judgment to prohibit repair or replacement to remedy the warranted defects, the Buyer's sole and exclusive remedy shall be a refund to the Buyer of any part of the invoice price, paid to United Metal Products, for the defective product or part.

United Metal Products 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 part to or from United Metal Products plant, or the installation of the repaired or replaced product or part.

Implied warranties, when applicable, shall commence upon the same date as the express warranty provided above, and shall, except for warranties of title, extend only for the duration of the express warranty. Some States do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. The only remedy provided to you under an applicable implied warranty and the express warranty shall be the remedy provided under the express warranty, subject to the terms and conditions contained therein, United Metal Products shall not be liable for incidental and consequential losses and damages under the express warranty, any applicable implied warranty, or claims for negligence, except to the extent that this limitation is found to be unenforceable under applicable state law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to state.

No employee, agent, dealer, or other person is authorized to give any warranties on behalf of United Metal Products or to assume for United Metal Products any other liability in connection with any of its products except in writing and signed by an officer of United Metal Products. Liability shall in no case exceed the unit price of the defect product or part.

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 United Metal Products' sole option.

WARNING

Our products are designed and manufactured to provide performance, but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failure, and this possibility should be recognized by the User. If these products are used in a life support ventilation system where failure could result in loss or injury, the use 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.

NOTE

If any assistance from the factory is needed to check, test, or start-up any UMP equipment, a prevalent rate per day, per person plus travel, lodging, food, etc., will be paid by the buyer/contractor.

CAUTION

Guards must be installed when fan is within reach of personnel or within seven (7) feet of working level or when deemed advisable for safety.

DISCLAIMER

United Metal Products, Inc. had made a diligent effort to illustrate and describe the products in this literature accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions or dimension.

All information in this literature is subject to change without notice.