



Model AEHP



Model AEHV



REVIEW AMCA BULLETIN 410 PRIOR TO INSTALLATION

This manual has been prepared to guide the users of direct-fired gas air make-up units in the proper installation, operation and maintenance procedures to ensure maximum equipment life with trouble-free operation. For safe installation, startup and operational life of this equipment, it is important that all involved with the equipment be well-versed in proper direct-fired air make-up unit safety practices and read this manual. It is the user's responsibility to make sure that all requirements of good safety practices and any applicable safety codes are strictly adhered to. Because of the wide variety of equipment covered in this manual, the instructions given here are general in nature. Additional product and engineering information is available at www.aerovent.com.

SAFETY NOTICE

Refer to the *Safety* section(s) in this manual prior to installing or servicing the air make-up unit. The most current version of this installation and maintenance manual can be found on our website at www.aerovent.com/resources/im-manuals.

TABLE OF CONTENTS

Safety & Hazard Warnings	2	Unit Installation (Electrical Connections).....	7
Receiving, Inspection & Unpacking.....	3	Rigging Tips & Guidelines	8
Unit Storage	3	Rigging Weights.....	9
Handling	3	Installation Guidelines & Drawings.....	10-13
General Installation.....	4	Check, Test & Start-up Procedure.....	14
Rooftop/Curb Mounted	5	Commissioning.....	14
Pad Mounted.....	5	Maintenance	14-16
Indoor/Suspended.....	5	Troubleshooting Guidelines	17-19
Ductwork	5	Start-up Checklist and Report.....	20
Unit Installation (Gas Connections).....	6	Field Start-Up Sheet.....	21-26
Piping	6	Maintenance Log	27
Sound Control	6		

SAFETY & HAZARD WARNINGS

For general safety practices for air moving equipment, see AMCA Bulletin 410. Aerovent offers many safety accessories. These safety devices include (but are not limited to) airflow switch, flame safety relay and high limit thermostat. The use and suitability of safety devices is the responsibility of the purchaser.

The use and storage of gasoline or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous. If you smell gas:

- Open windows
- Do not touch electrical switches
- Extinguish any open flame
- Immediately call your gas supplier


Facility-related safety conditions include fans' accessibility and location. How easily can non-service personnel access the unit? Is the fan in a hazardous duty environment? Was the unit ordered for this duty? Other concerns must also be addressed. All fans should be powered through switches, which are easily accessible to service personnel from the fan. Fan power must have the ability to be "locked out" by service personnel trained in lockout/tagout procedures per OSHA requirements (29CFR1910.147). When performing lockout, be aware of factors, such as building pressure and additional fans in the system that can influence unwanted fan rotation (wind milling). If you have any doubt about your ability to perform a task, seek a person qualified to do that task. Before any work is done on a fan, ensure that the fan is isolated from the electrical supply using a 'lockout/tagout system.'


Note: A stationary, non-rotating fan does not mean that the fan is isolated from the electrical supply. A non-rotating fan could be subject to controls or other circuit protection devices that may start the fan without notice.


The following safety precautions should be followed, where applicable:

- Do not attempt to slow a rotating impeller even when it is isolated from the electrical supply. Fan impellers have a high inertia and injury could result from an attempt to stop it. It is recommended that the impeller is isolated by closing off the inlet or outlet to prevent wind-driven rotation. If an impeller is chocked to prevent rotation, ensure that the chocks are removed prior to start up.
- Wear appropriate personal protective equipment. This may include protective clothing, eye protection, ear protection, respiratory equipment, hand and foot protection when installing or servicing the fan.
- Always use caution when entering a fan's air path. High velocity airflow can cause you to lose your balance.
- Motor, bearings and drives can be hot, and similarly if the fan is subject to processes that are hot, the fan housing could be hot.
- Fans are often used to move hazardous materials that could be dangerous. Always wear protective clothing and take precautions not to inhale dust/gases. If hazardous chemical vapors are present, respiratory equipment may be required.
- Sharp edges – wear protective gloves when handling, installing or servicing a fan.
- Fans can operate at high decibel sound levels. Wear proper ear protection to protect from excessive noise levels.
- Access Doors – Do not open access doors when fan is in operation. The effects of suction and air pressure could result in injury.
- When working around pulleys and belts, keep hands away from pinch points. This pertains to when the fan is under or off power.

Throughout this manual, there are a number of HAZARD WARNINGS that must be read and adhered to in order to prevent possible personal injury and/or damage to equipment. Two signal words "WARNING" and "CAUTION" are used to indicate the severity of a hazard and are preceded by the safety alert symbol. It is the responsibility of all personnel involved in installation, operation and maintenance to fully understand the warning and caution procedures by which hazards are to be avoided.

 **DANGER:** Indicates the most serious hazard and is used when serious injury or death WILL result from misuse or failure to follow specific instructions.

 **WARNING:** Used when serious injury or death MAY result from misuse or failure to follow specific instructions.

 **CAUTION:** Used when minor or moderate injury or product / equipment damage MAY result from misuse or failure to follow specific instructions.

NOTICE: Indicates information considered important, but not hazard-related.



RECEIVING, INSPECTION & UNPACKING

When the equipment is received all items should be carefully checked against the bill of lading to be sure all equipment and loose-shipped items have been received. Before accepting delivery, carefully inspect each piece of equipment for visible shipping damage. The unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. If any damage is noticed, the carrier should make the proper notation on the delivery receipt acknowledging the damage. Make notations of all damage on all copies of the bill of lading and have all copies countersigned by the delivering carrier. The carrier should also fill out a Carrier Inspection Report. The factory Traffic Department should then be contacted. File claim for damage with the carrier. Physical damage to the unit after acceptance is not the responsibility of Twin City Fan Companies, Ltd.

Unpack each air make-up unit and verify for conformance with description of product ordered and all required parts and proper quantities of each item have been received. Refer to drawings for part descriptions. Report shortages or missing items to your local representative to arrange for replacement parts. Due to availability of carriers and truck space, it is not possible to guarantee that all items will be shipped together. Verification of shipments must be limited to only those items on the bill of lading.

Further inspect the unit as follows:

1. Unlatch and open unit access doors. Inspect for internal damage.
2. Remove and inspect all loose-shipped items, including remote mount control panel. Make certain all items are undamaged.

The unit nameplate must be checked to make sure the voltage agrees with the power supply available.

UNIT STORAGE

If air make-up unit installation is to be delayed, store the unit in an environmentally stable and protected area. The unit should be reasonably protected from any accidental impacts. Cover the air make-up unit to prevent any foreign material or moisture from entering the inlet or discharge.

HANDLING

Handling of all air moving equipment should be conducted by trained personnel and be consistent with safe handling practices. Verify the lift capacity and operating condition of handling equipment. When using hoisting equipment, only qualified and trained personnel should operate the equipment.



CAUTION

1. Maintain handling equipment to avoid serious personal injury and do not stand under the load.
2. If supplied, only use the provided lifting lugs to lift the equipment.
3. Ensure that the lifting equipment is rated for the capacity to be lifted.

GENERAL INSTALLATION

The following recommendations are not intended to replace or void any requirements of federal, state or local codes having jurisdiction. All local authorities having jurisdiction should be consulted before installation is made. The heater should be installed and piped in accordance with the requirements of the National Fuel Gas Code, NFPA 54, and all wiring must be in accordance with the National Electrical Code, NFPA 70 current edition.

If questions or complications should arise regarding the application or installation of the Aerovent Air Handling System, which cannot be solved by using these instructions, Maintenance Guidelines or the Troubleshooting Guide, please feel free to contact us at (763) 551-7500.

It is the responsibility of the installing contractor to see that the unit is installed within the manufacturer's design parameters, as stated on the rating plate and that the start-up procedure specified by the manufacturer is followed. Failure to comply may void the warranty and/or the component manufacturer's warranty.

This equipment is to be installed by an experienced installation company and fully trained personnel.

The mechanical and electrical installation of the air make-up unit consists of making final connections between the unit and building services.



DANGER

1. Gas-fired appliances are not designed for use in atmospheres containing flammable vapors or dust, or atmospheres containing chlorinated or halogenated hydrocarbons.
2. Hazard Intensity Levels: Failure to comply will result in severe personal injury or death.



WARNING

Failure to follow proper lifting and installation instructions could result in property damage, serious injury or death. Lifting should only be done by a qualified rigging company. Use ALL lifting points. Test lift to ensure proper balance and rigging. Never lift in high winds. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.



CAUTION

1. Failure to comply could result in minor personal injury or property damage.
2. Sheet metal parts, screws, clips and similar items inherently have sharp edges and it is necessary that the installer and service personnel exercise caution.

NOTICE

This heating unit is listed for use in Aircraft Hangers when installed, as applicable, in accordance with ANSINFA 409 "Standard on Aircraft Hangers," NFPA 54 "National Fuel Gas Code" and NFPA 90A Installation of Air Conditioning and Ventilating System."

Before installing this equipment as a recirculating, suspended or elevated heater for aircraft hanger use, refer to ANSI / NFPA 409 "Aircraft Hangers," Chapter 9-1 for clearance and specific installation instructions.

NOTICE

This heating unit is listed for use in Parking Structures and Repair Garages when installed, as applicable, in accordance with NFPA 88A "Standard for Parking Structures." NFPA 54 "National Fuel Gas Code" and NFPA 90A "Installation of Air Conditioning and Ventilating System."

Before installing this equipment as a suspended or recirculating heater in a parking structure or repair garage, refer to NFPA 88A, Chapter 4-2 and NFPA 88B, Chapter 3-2 for clearance and specific installation instructions.

Prior to installing the unit in the final location, review the following:

1. Follow site preparation instructions for mounting recommendations.
2. Check the rating plate of the unit before lifting to ensure that the model number shown matches that shown on the plans.
Although the units may look similar, their function, capacities, options and accessories may vary widely.
3. Check the unit dimensions for proper fit.
4. Move the unit to its installation location.
5. Fully assemble the unit with all included components.
6. Inspect the blower impellers, shaft and motor for any shipping blocks that must be removed before operation.
7. Those heaters to be installed outdoors must have the Inlet Rain Hood option or other means of weather protection, whether provided by AMU manufacturer or others.

ROOFTOP/CURB MOUNTED

For a unit that discharges downward through a curb, locate the required opening for connecting ductwork. Cut through roof deck for connection of duct to blower discharge. Allow adequate, at least one inch, clearance on all sides between ductwork and decking material. Position the curb on the roof in relation to the roof penetration, as shown on the blueprint. Secure the curb to the structural members. The curb may now be flashed into the roof. Rooftop, down discharge units are provided with a skirt that is larger than the curb on all sides. This allows for roofing up to the top of the curb, if so desired.

The unit may now be lifted up onto the curb.

Note: Units that discharge down through the curb with discharge dampers must have the roof opening cut large enough to allow access to the damper motor and linkage from below the roof. The damper should be mounted and motor wired with pigtail provided before the unit is set on the curb.

Note: We recommend the connection of a short length of ductwork to the unit before setting on the curb to extend through the roof if minimum (1") clearance is being used around the duct.

PAD MOUNTED

For a unit designed to mount on a pad or other support and discharge horizontally, vibration isolators are recommended. A channel iron support adequate to carry the weight of the unit must be secured to the bottom of the unit, one at each end, extending at least 3" past the sides of the unit. On AEH models, refer to your submittal or record drawing for size, quantity and location of isolators. Anchor the vibration isolators to the pad. The unit may now be set down onto the isolators and bolted to them.

INDOOR/SUSPENDED

For a unit designed to be suspended within the building, hanger rods and channel iron adequate to support the weight of the unit will be required. On AEH models, refer to your submittal or record drawing for size, quantity and location of channel iron and isolators. Attach the hanger rods to the building structure so they hang down to the channel extensions under the unit. Make sure the rod location does not interfere with the removal of unit access panels. Provide one suspension type vibration isolator in each hanger rod. The minimum combined ratings of the vibration isolators and suspension materials should equal the total weight of the fully assembled unit. Move the unit to its installation location. Fully assemble the unit with all included components (motorized discharge dampers, etc.). Raise the unit so that one hanger rod drops through holes in the channel extensions. Attach two nuts to hanger rods and level unit, jamb the two nuts together to prevent loosening.

The unit is now ready for piping, wiring and connection to any required ductwork.

DUCTWORK

Ductwork must be sized and installed in accordance with applicable codes and standards. On units mounted outdoors, it is recommended that all discharge and return air ducts be insulated to prevent condensation during the "Off" cycle in cold weather. A fresh air intake hood with bird screen and/or filters can be supplied by Aerovent with the heater. Our intake hood or one of a similar design is recommended.

On units mounted indoors through the roof intake ductwork, a suitable weather resistant intake hood must be installed. Sheet metal standards should be adhered to to ensure uniform air delivery to the heater inlet. This aids in preventing moisture entrainment. When using a through-the-wall intake duct, a properly sized intake louver should be used, having adequate moisture baffling characteristics for the design air volume.

In lieu of an intake louver, a wall mounted intake hood with mesh screen may be used. This can be supplied by Aerovent. It is recommended that all intake ductwork that is exposed to the heated space be insulated.

The requirements for discharge ductwork are usually considerably less than with a conventional system, as the pressurization principle lends itself to effective air distribution. Generally, a "splash plate" or other method of distributing the air is all that is necessary.

UNIT INSTALLATION (GAS CONNECTIONS)



WARNING

1. All field gas supply lines should be pressure/leak tested prior to operation. Never use an open flame. Use a soap solution or equivalent for testing.
2. Gas pressure to the unit controls must never exceed the pressure shown on the unit rating plate. The unit and its individual shutoff valve(s) must be disconnected from the gas supply during any test pressure more than 0.5 psig (3.5 kPa).
3. For test pressure less than 0.5 psig (3.5 kPa), the unit gas control must be isolated from the supply gas piping by closing the unit manual shutoff valve(s).
4. For an indoor unit, where required by Code, use a dedicated line for venting gas to the outside of the building.

PIPING

A male pipe connection has been provided on the outside of the unit for connection of the gas service pipe. This is the only gas connection required. Be sure the gas supply pipe is large enough to ensure the proper gas volume and line pressure at the inlet of the unit, per the unit nomenclature. Gas pipe must be sized and installed in accordance with applicable codes and standards. After connection of the gas pipe, check for leaks and bleed the line.

NOTE: NFPA 54 National Fuel Gas Code requires that an approved manual gas valve be installed within six feet of the unit. We recommend use of a gas valve with a pressure tap on the inlet to measure gas supply pressure.

NOTE: An inlet gas pressure measurement must be taken to ensure proper inlet gas pressure. Inlet pressure should be neither too low nor too high. Check your submittal or unit nameplate for the minimum and maximum pressure requirements for your unit. If the supply gas pressure exceeds the maximum inlet supply pressure as stated on the unit rating plate, an auxiliary high pressure regulator must be installed in the incoming gas line by the contractor. The gas supply pressure must meet or exceed the minimum inlet gas supply pressure, as stated on the unit rating plate, while the burner is under full fire. (See Start-Up Procedure to operate unit on high fire.)

This heater and its gas shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of 1/2 PSI (3.5 kPa). In addition, pressure testing of the gas supply piping system at pressures at or below 1/2 PSI (3.5 kPa) requires isolation from the heater by closing its individual manual shut-off valve.

SOUND CONTROL

Flexible connectors should be employed on all ductwork connections. Unit vibration isolators are recommended for suspended units and can be supplied by Aerovent as optional equipment.

DO NOT OPERATE UNIT FOR MORE THAN SIXTY (60) SECONDS WITHOUT ALL ACCESS DOORS CLOSED, WITH THE EXCEPTION OF THE MASTER ELECTRICAL PANEL OR GAS MANIFOLD ENCLOSURE DOORS.

Energize the system and check for unusual noises or vibrations, etc. Check the fan for proper rotation. THIS MUST BE A VISUAL CHECK as fans will move air even if they are running backwards, but the system will not perform properly. Check the amp draw to all motors to ensure it does not exceed the maximum current rating of the motor.

If not factory installed, a low temperature limit switch should be interlocked with this heater to prevent prolonged discharge of cold air in the event of burner lockout or shutdown.

Recirculation of room air may be hazardous in the presence of:

- Flammable liquids, solids and gases
- Explosive dusts or powders
- Substances that become toxic when exposed to heat

In order to reduce the chance of interior condensation, recirculation is not recommended in non-insulated buildings where outdoor temperatures fall below 32°F (0°C).



CAUTION

1. Purging of air from gas supply lines should be performed as described in ANSI Z223.1-latest edition "National Fuel Gas Code" or in Canada in Can/CGA-B149 codes.
2. Do not operate unit with a gas input rate greater than that shown on the unit rating plate.



UNIT INSTALLATION (ELECTRICAL CONNECTIONS)



WARNING

1. Electric shock hazard. Could cause severe injury or death. Failure to bond the frame of this equipment to the building electrical ground by use of the grounding terminal provided or other acceptable means may result in electrical shock. Disconnect electric power before servicing equipment. Service to be performed only by qualified personnel. Make sure power is turned off and locked in the OFF position.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the unit. Any wiring that is different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 221°F (105°C).
4. Spark testing or shorting of control wires by any means will render the control transformer inoperative. DO NOT allow this to happen as it IS NOT covered under the warranty.



CAUTION

1. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.
2. Since a failure of the unit may affect the proper operation of other fuel burning equipment in the building, the unit shall be electrically interlocked to open balancing air inlet dampers or other such devices.

WIRING (REFER TO UNIT MECHANICAL DRAWING FOR LOCATION OF ELECTRICAL ROUGH-IN)

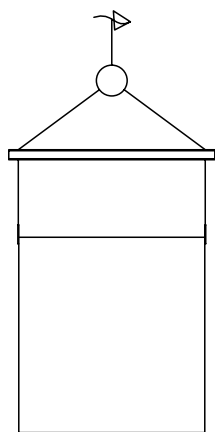
1. Installation of wiring must conform with local building codes, or in the absence of local codes, with the National Electric Code ANSI/NFPA 70 - Latest Edition. Unit must be electrically grounded in conformance to this code. In Canada, wiring must comply with CSA C22.1, Part 1, Electrical Code.
2. Refer to wiring diagram for numbers of wires needed for main power connection and remote control wiring. Field wiring is shown with dashed lines.
3. Make sure all multi-voltage components (motors, transformers, etc.) are wired in accordance with the power supply voltage.
4. The power supply to the unit must be protected with a lockable fused or circuit breaker disconnect switch. If a disconnect switch is not supplied with the unit, the field-supplied disconnect must have adequate ampacity and must be installed in accordance with Article 430 of the National Electric Code, ANSI/NFPA 70. If not factory installed, please refer to the unit rating plate for voltage and ampacity requirements.
5. Refer to the unit rating plate for required incoming voltage and phase. Check for concurrence with voltage and phase shown on the wiring diagram.
6. We recommend that the wires for the control circuit be routed through the conduit provided with the main electrical service to the equipment. This procedure is provided for in Chapter 3, Article 300-3(a) of the NFPA 70 1984 National Electrical Code. It reads as follows: "Conductors of 600 volts or less shall be permitted to occupy the same equipment wiring enclosure, cable or raceway, without regard to whether the individual circuits are alternating current or direct current, where all conductors are insulated for the maximum voltage of any conductor within the enclosure, cable or raceway."
7. Open cover on disconnect box, connect line voltage wiring to terminal block provided. Then feed the control wiring through the conduit to the master panel. Connect color coded and/or numbered control wires to terminal strip per the wiring diagram.

NOTE: Wires for Maxitrol Series 14 and Series 44 temperature controls must be run in shielded cable. For best results, run control wiring in separate conduit if the run is over 100 feet. For longer runs, see Maxitrol Installation Instructions.

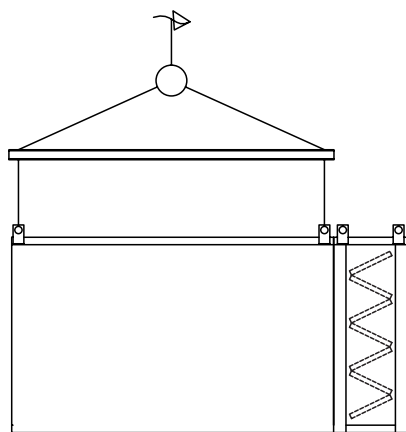
INSTALLATION TECHNICIAN

– PLEASE READ BEFORE INSTALLING –

RIGGING TIPS & GUIDELINES

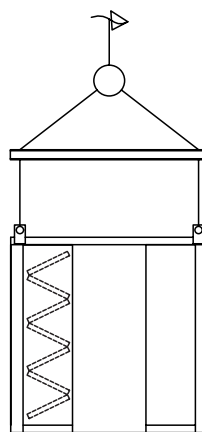


END VIEW
BASE UNIT

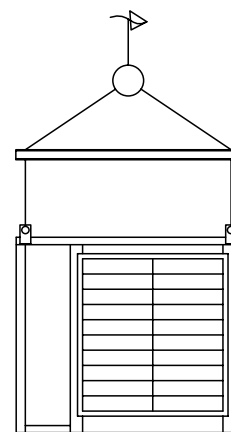


SIDE VIEW
BASE UNIT

OA FILTER
SECTION



OA/RA FILTERED
MIXBOX



OA LOUVERED
INLET PLENUM

NOTES:

1. OA filter section, OA inlet hood and service platforms should be final assembled to "base unit" before lifting into place.
2. OA/RA filtered mixbox, OA louvered inlet plenum, discharge heads and roof curbs are rigged separate from the "base unit" and assembled to the unit once in place.
3. Two-piece "base unit" models should be rigged separately and assembled in place.
4. Always use spreader bars (as shown above).

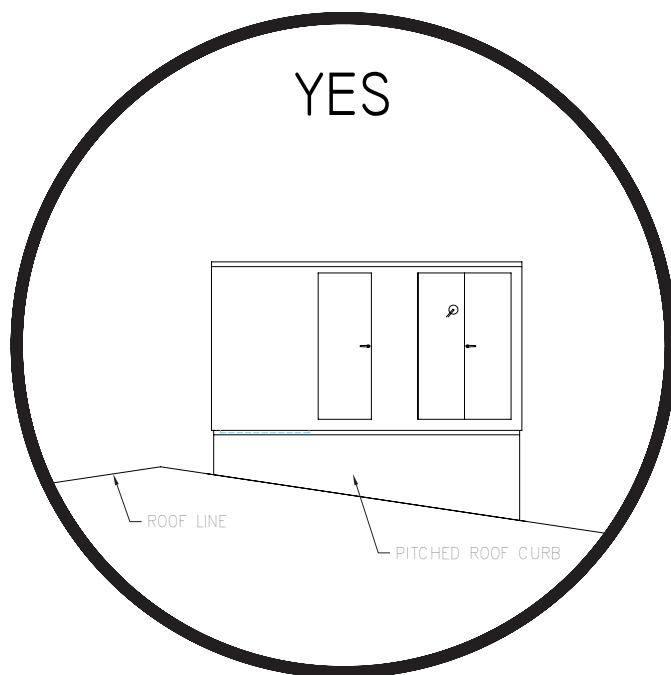
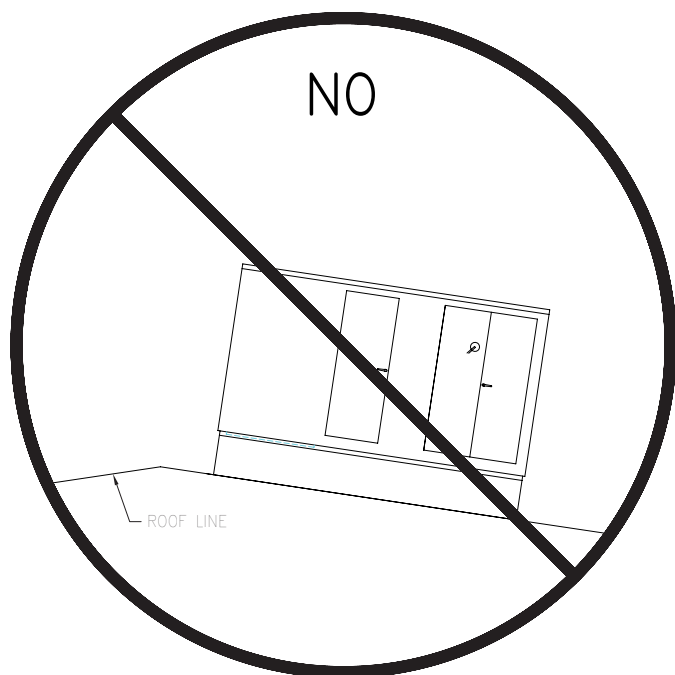
APPROXIMATE RIGGING WEIGHTS (LBS.)**- PLEASE READ BEFORE INSTALLING -****MODEL AEHP**

Model	BASE UNIT				OA FILTER SECTION		OA/RA FILTERED MIXBOX		UPRIGHT PLENUM BASE		OA INLET HOOD	OA FILTERED INLET HOOD	OA LOU-VERED INLET PLENUM	UPRIGHT SERVICE PLATFORM
	SINGLE WALL	w/20 GA. D.W.	SINGLE WALL	w/20 GA. D.W.	SINGLE WALL	w/20 GA. D.W.	SINGLE WALL	w/20 GA. D.W.	SINGLE WALL	w/20 GA. D.W.				
P270	2,500	2,850	450	550	625	825	500	650	375	500	375	500	950	375
P300 - P365	2,750	3,200	525	650	825	1,100	700	900	450	625	450	625	1,300	375
P402	4,125	4,650	625	750	1,000	1,325	850	1,100	500	650	500	650	1,600	375
P445 - P490	4,500	5,150	750	900	1,250	1,675	1,150	1,500	625	800	625	800	2,050	500
P542	6,125	6,925	900	1,050	1,500	1,975	1,400	1,800	750	1,050	750	1,050	2,550	525
P600	6,550	7,425	1,000	1,175	1,750	2,300	1,600	2,050	850	1,125	850	1,125	3,000	550
*TWO-PIECE UNITS	Fan	Burner	Fan	Burner										
*P660	4,400	3,600	5,000	4,100	1,125	1,300	2,050	2,700	2,000	2,575	900	1,200	3,500	600
*P730	4,900	4,100	5,550	4,650	1,300	1,500	2,400	3,150	2,250	2,900	1,000	1,400	4,000	650
*P807	7,600	5,900	8,450	6,500	1,500	1,725	2,600	3,425	2,500	3,225	1,200	1,600	4,550	700
*P890	7,900	6,100	8,850	6,800	1,600	1,825	2,900	3,825	2,800	3,625	1,250	1,750	5,700	725

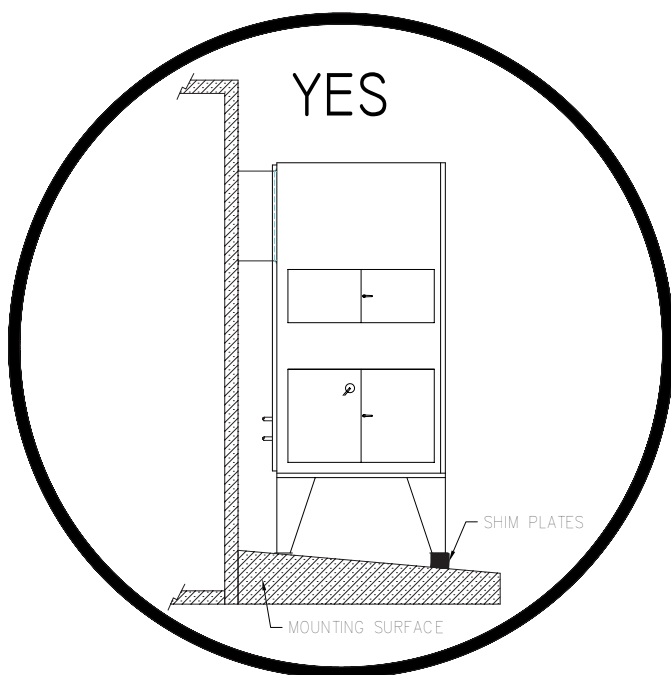
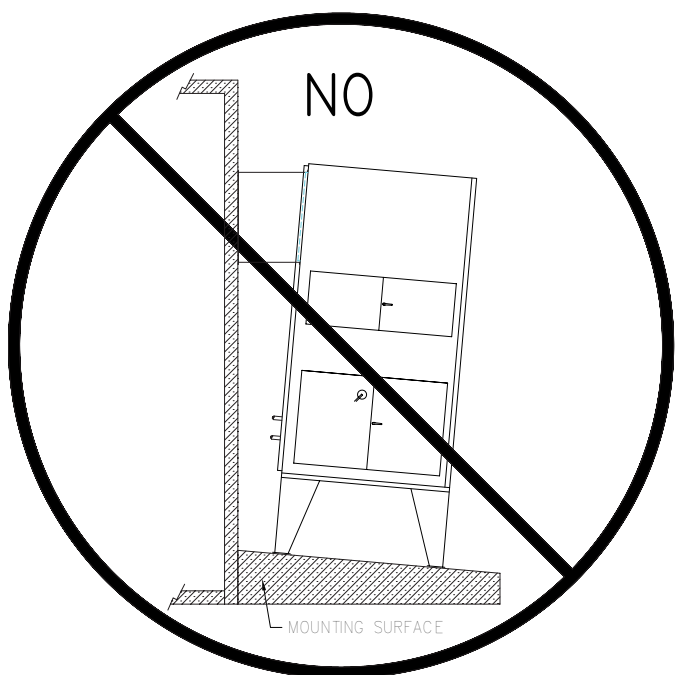
MODEL AEHV

Model	BASE UNIT		OA FILTER SECTION	OA/RA FILTERED MIXBOX	UPRIGHT PLENUM BASE	OA INLET HOOD	OA FILTERED INLET HOOD	OA LOU-VERED INLET PLENUM	UPRIGHT SERVICE PLATFORM
	w/20 GA. D.W.		w/20 GA. D.W.	w/20 GA. D.W.	w/20 GA. D.W.				
V270	3,150		625	925	725	375	500	950	375
V300 - V365	3,525		725	1,225	1,000	450	625	1,300	375
V402	5,125		825	1,475	1,225	500	650	1,600	375
V445 - V490	5,675		1,000	1,850	1,650	625	800	2,050	500
V542	7,625		1,175	2,175	2,000	750	1,050	2,550	525
V600	8,175		1,300	2,550	2,275	850	1,125	3,000	550
*TWO-PIECE UNITS	Fan	Burner							
*V660	5,500	4,525	1,450	2,975	2,850	900	1,200	3,500	600
*V730	6,125	5,125	1,650	3,475	3,200	1,000	1,400	4,000	650
*V807	9,300	7,150	1,900	3,775	3,550	1,200	1,600	4,550	700
*V890	9,750	7,500	2,025	4,225	4,000	1,250	1,750	5,700	725

HORIZONTAL UNIT INSTALLATION GUIDELINES



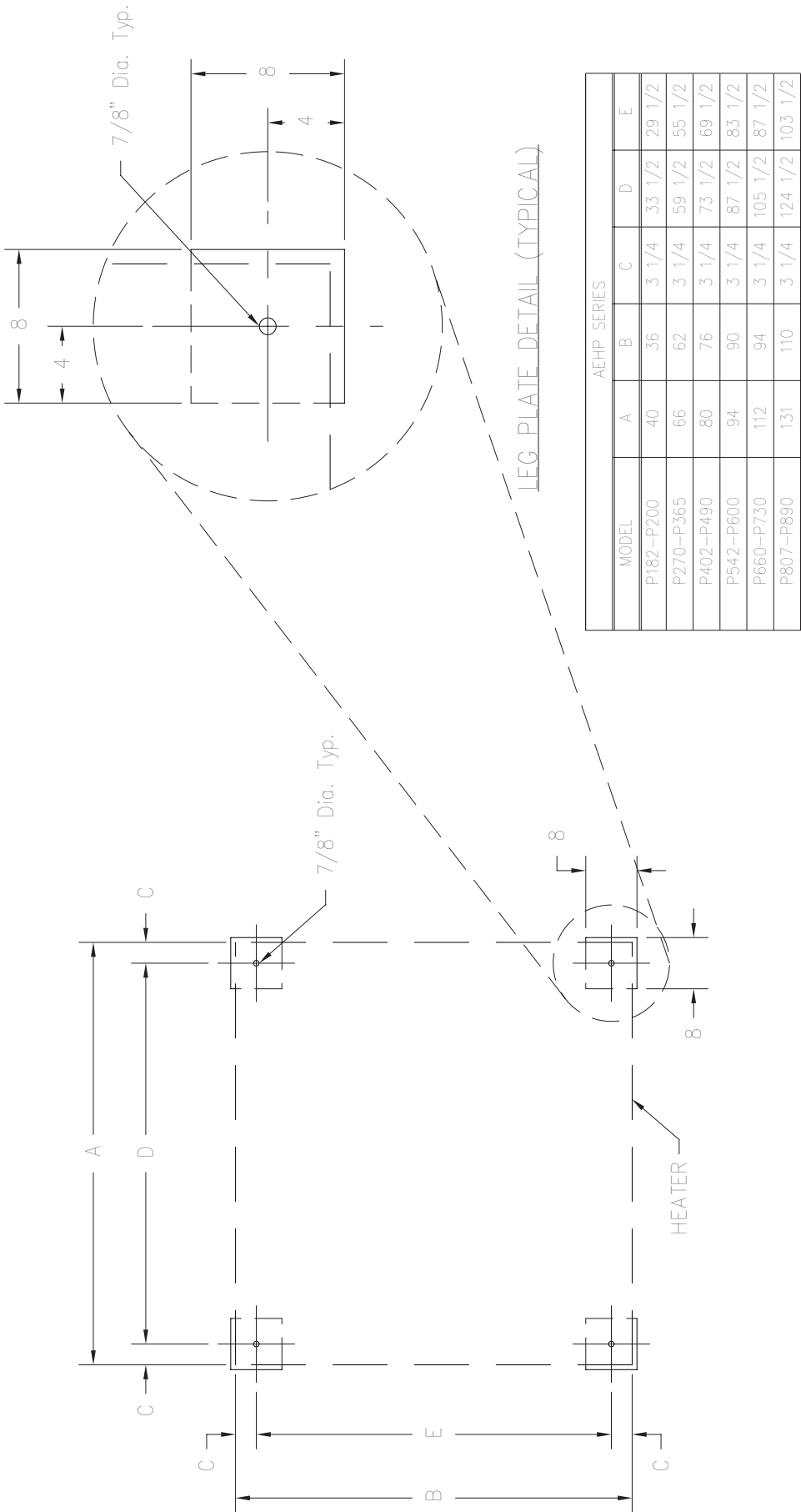
UPRIGHT UNIT INSTALLATION GUIDELINES



NOTE:

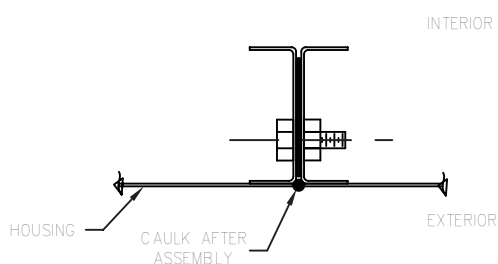
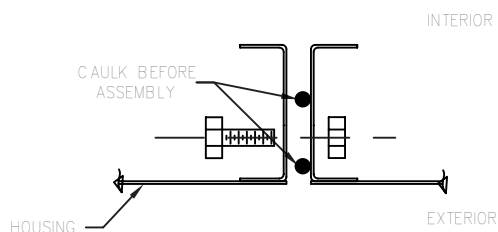
When installing upright equipment on warped, unlevel or raised surfaces, be sure to square/level the unit in both the X and Y axis to ensure proper unit operation and longevity of components.

UNIT LEG PAD LOCATIONS

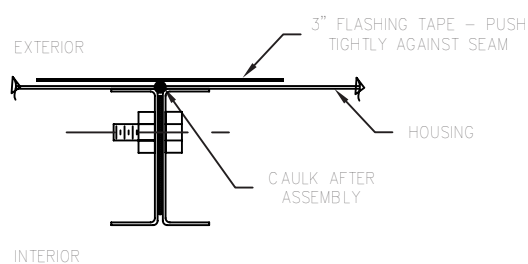
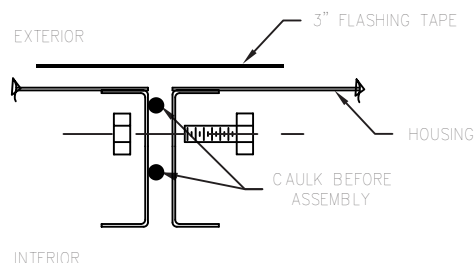


CAULKING INTERNAL FIELD JOINTS

– ALL FIELD JOINTS MUST BE PROPERLY CAULKED AND SEALED FOR THE HEATER TO OPERATE CORRECTLY. –



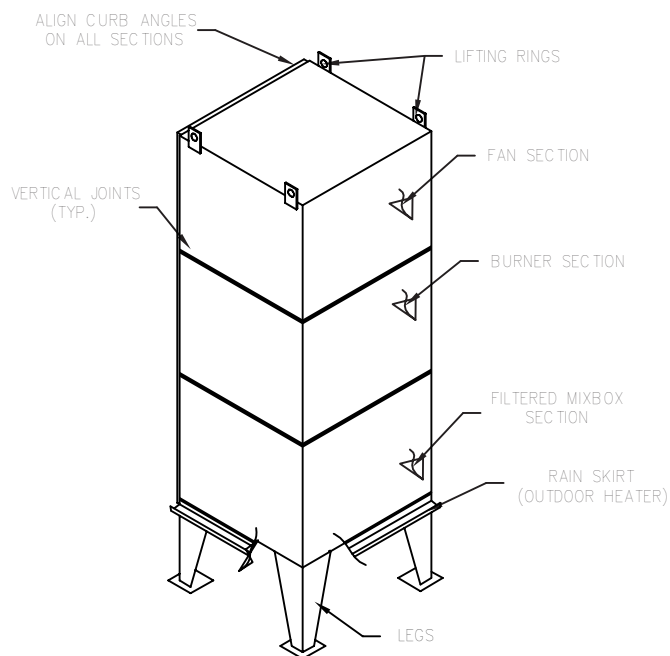
**SIDE SEAMS
CAULK JOINT**



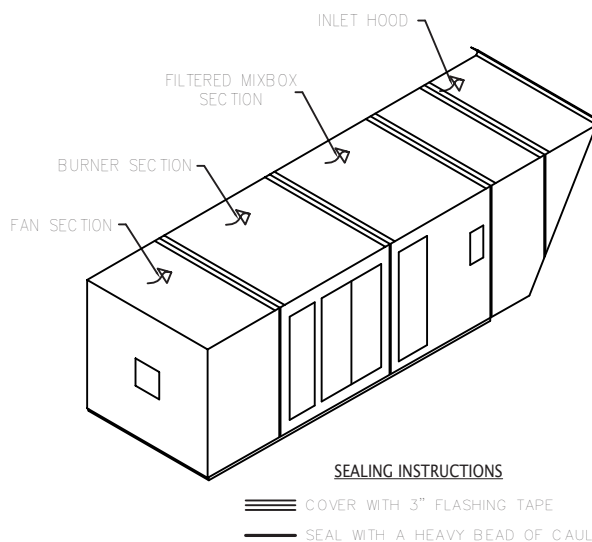
**ROOF SEAMS
CAULK & TAPE JOINT**

FLASHING TAPE INSTALLATION INSTRUCTIONS:

1. Wipe surface clean and dry.
2. Peel backing off flashing tape.
3. Apply flashing tape firmly over field joint.



UPRIGHT MODEL



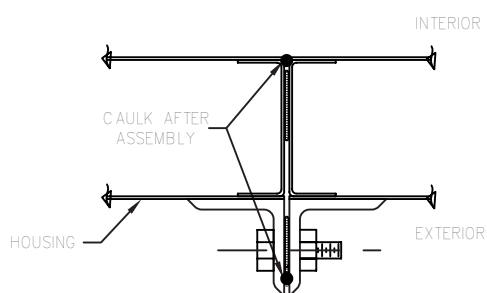
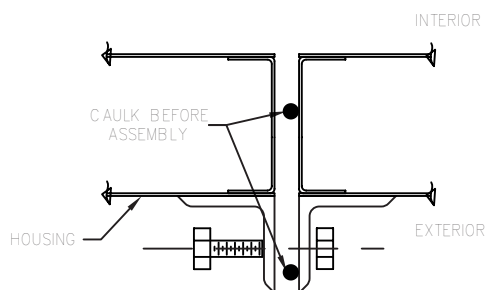
HORIZONTAL MODEL

NOTE:

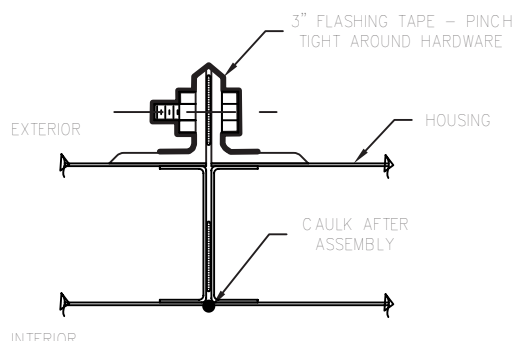
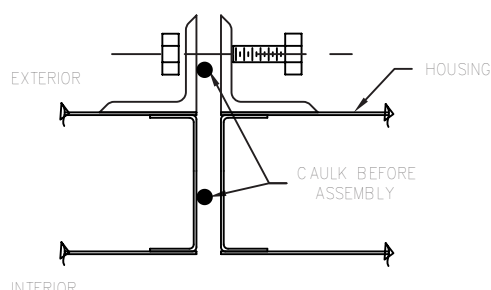
1. All horizontal, vertical and roof joints must be heavily caulked **prior to** and **after** assembly.

CAULKING EXTERNAL FIELD JOINTS

– ALL FIELD JOINTS MUST BE PROPERLY CAULKED AND SEALED FOR THE HEATER TO OPERATE CORRECTLY. –



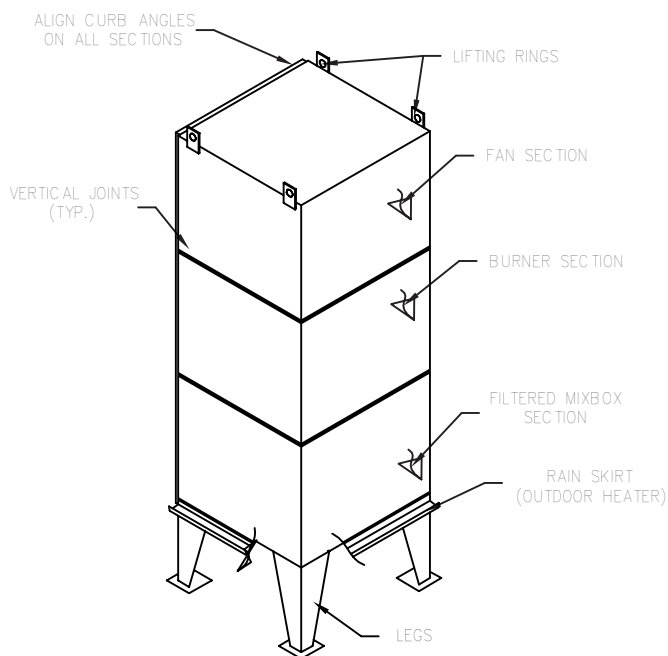
**SIDE SEAMS
CAULK JOINT**



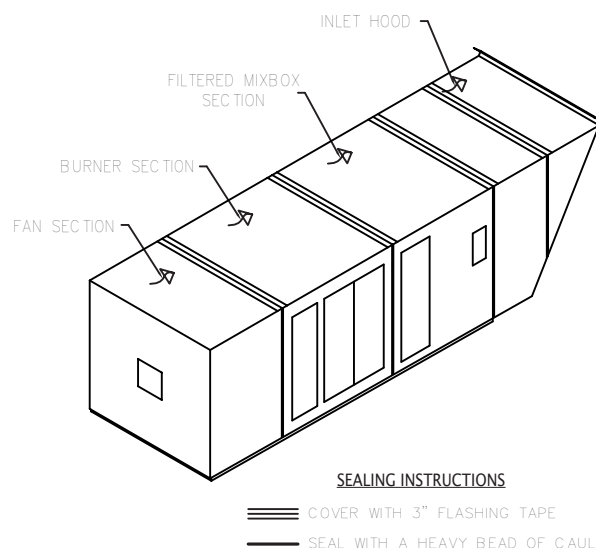
**ROOF SEAMS
CAULK & TAPE JOINT**

FLASHING TAPE INSTALLATION INSTRUCTIONS:

1. Wipe surface clean and dry.
2. Peel backing off flashing tape.
3. Apply flashing tape firmly over field joint.



UPRIGHT MODEL



HORIZONTAL MODEL

NOTE:

1. All horizontal, vertical and roof joints must be heavily caulked **prior to** and **after** assembly.

CHECK, TEST & START-UP PROCEDURE

Each unit is supplied with this Installation and Service Manual, which includes a Field Start-Up Form, starting on page 22. The Field Start-Up Form must be followed and properly filled out by the installer, with one copy kept with the unit.

Before continuing with the start-up and checkout procedure, it is important to familiarize yourself with the controls and features of the unit. Review the following:

- Documents shipped with the unit to determine which options/controls are included.
- Photographs, locations and descriptions throughout this manual for unit features, options, accessories and controls.

To properly perform the start-up, the following instruments are required:

- Ohm Meter
- Gas Pressure Gauge (range dependent on inlet pressure to unit)
- Slack Tube Manometer or 0-30" w.c. Pressure Gauge
- Inclined Manometer (0-5" w.c.)
- Handheld Tachometer (contact, reflective or strobe type)



WARNING

1. If equipped with the factory installed disconnect switch option, when the switch is in the "OFF" position, supply power remains energized at the supply power terminal strip and the top of the disconnect switch. When providing service on or near these terminals, building supply power to the unit should be de-energized.
2. Proper air velocity over the burner is critical. If the velocity is not within the unit specifications, the unit will not operate efficiently, may have nuisance shutdowns and may produce excessive carbon monoxide (CO) or other gases.



CAUTION

1. Do not operate unit with a gas input rate greater than that shown on the unit's rating plate.
2. Purging of air from gas supply lines should be performed as described in ANSI Z223.1-latest edition "National Fuel Gas Code" or in Canada in Can/CGA-B149 codes.

NOTICE

Start-up and adjustment procedures should be performed by a qualified service technician.

PRE-START-UP INSPECTION

Although this unit has been assembled and tested at the factory, the following pre-operational procedures must be performed to assure the unit is ready for operation.

1. Before proceeding, turn off all power to the unit. Turn all manual hand gas valves to the closed position.
 - Remove all shipping straps, braces and tie downs.
 - Perform a visual inspection of the unit to make sure no damage has occurred during shipment or installation.
 - Check burner and fan impeller to ensure it is secure.
 - Check all electrical connections for tightness.
 - Check to ensure there are no obstructions to the inlet air supply or the discharge air supply.
 - Check gas piping for leaks using a soap/water solution.
2. After these preliminary checks have been made, the unit can be prepared for start-up.

COMMISSIONING

After all the initial start-up procedures have been performed, the unit is ready for commissioning. Check the unit operation in all modes against the job specific sequence of operation included in your unity submittals.



MAINTENANCE (REFER TO SAFETY SECTION)



WARNING

1. Electric shock hazard. Could cause severe injury or death. Failure to bond the frame of this equipment to the building electrical ground by use of the grounding terminal provided or other acceptable means may result in electrical shock. Disconnect electric power before servicing equipment. Service to be performed only by qualified personnel. Make sure power is turned off and locked in the OFF position.
2. If equipped with the factory installed disconnect switch option, when the switch is in the "OFF" position, supply power remains energized at the supply power terminal strip and the top of the disconnect switch. When providing service on or near these terminals, building supply power to the unit should be de-energized.
3. Opening access doors on this equipment may expose user to MOVING PARTS. Your Lock-Out-Tag-Out procedures should be followed when servicing this equipment.

All heating equipment should be serviced before each heating season to ensure proper operation. The following items may be required to have a more frequent service schedule based on the environment in which the unit is installed and how long the equipment is operated.

MOTOR ASSEMBLY

Check the motor sheave set screws and the motor slide base

bolts for tightness upon initial start-up and before each heating season. The motor bearings are pre-lubricated at the factory for initial operation but should be relubricated (when provided with grease fittings) at six (6) month intervals. The recommended lubricants are Shell Oil Company's "Dolium R", Chevron Oil's "SRI No. 2" or Texaco's "Premium RB" lubricant. When lubricating, consider the following:

1. Clean the grease fitting and then apply the grease with a proper grease gun. Keep grease clean.
2. Use two full strokes for each bearing. Do not over lubricate.
3. Do not mix petroleum grease with silicone.
4. Lubricate motors at standstill.

BLOWER

After initial start-up, check the tightness of the fan sheave, fan hub set screws, fan bearing collar set screws and fan bearing mounting bolts. Also check when retensioning the v-belts, when relubricating the fan bearings and before each heating season.

AEH Series Model Heaters: All AEH Series fan bearings should be lubricated after the first one hundred (100) hours of operation and relubricated on a monthly basis thereafter. Aerovent recommends the use of the following (or equivalent) grease:

MOBIL SHC460 – Clean the grease fitting and then apply the grease with a proper grease gun. Inject enough grease until a small amount shows between the seal and the bearing race. Examine the blower impeller at six (6) month intervals for accumulation of dust and dirt on the fan blades. Any build-up must be cleaned off to maintain performance. If the accumulation is heavy, more frequent cleaning may be required.

BELTS

Due to belt stretching, adjust belt tension after the first one hundred (100) hours of operation. Check belts every three (3) months thereafter for proper tension. Do not over tighten. Adjustment should result in a belt deflection of 3/4" to 1" for each foot of span when applying medium thumb pressure inward at the center of the span.

FILTERS

Inspect monthly until an appropriate schedule can be established, based on need. Replace or clean as necessary.

COILS

Inspect and clean the coil fins on the entering air side annually. If these inspections indicate that more frequent cleaning is required, establish a cleaning schedule accordingly. Fins should be cleaned by brushing and/or back-washing with high pressure air or water. In extreme cases the coils may have to be removed and cleaned with high pressure steam or washed with a mild alkali solution followed by a water rinse.



CAUTION

When using a drill bit to clean the burner gas ports, do not distort or enlarge the ports. Use a pin vise not a power drill.

NOTICE

Service and maintenance procedures should be performed by a qualified service agency.

MAINTENANCE (CONT.)

TRAPS AND STRAINERS

Periodic inspections of traps, inspections of check and air valves, and the replacement of worn parts are important. Strainers should be cleaned regularly.

BURNERS

Prior to each heating season, a check should be made of the burner and components. Clean the igniter and flame rod and examine porcelain for cracks. Wipe the sight glass clean on the UV scanner and inspect the sight tube for spider webs, removing as necessary.



WARNING

If this unit was not provided with an integral freeze protection system, a low temperature limit control should be installed (if freeze protection is needed in the event of burner shutdown).

Periodic maintenance will ensure continued trouble-free operation of your burner system. We recommend a yearly inspection, in advance of the heating season.

1. Completely shut the system down, disconnecting or locking out the power supply so there can be no accidental start-up during the inspection.
2. Inspect the burner carefully, including upstream and downstream sides of mixing plates, as well as burner body face. Any accumulation of scale or foreign material on either side of the mixing plates should be removed with a wire brush. Check visually that no holes in the mixing plates are blocked. If any mixing plates are loose or missing fasteners, tighten/replace as necessary. Always use zinc-plated or stainless fasteners.
3. Check burner orifices for carbon build-up and clean if necessary. Use a pin vise with a #31 drill bit for cleaning Midco natural gas burner orifices, a #45 drill bit for cleaning Midco propane (LPG) gas burner orifices, a #47 (5/64") drill bit for Maxon NP-I burner orifices and a #50 (1/16") drill bit for Maxon NP-II burner orifices.

DO NOT ENLARGE BURNER ORIFICES - THIS MAY AFFECT PERFORMANCE

4. Put the system back into operation and view the burner from the downstream side while cycling the burner through its full firing range. A good flame will be blue, with minimal yellow "fingers". The flame length in forced "high fire" should be 12-18" long. The pilot only flame should be about the size of a baseball when properly adjusted.

GAS TRAIN

An annual inspection of the gas control assembly should be made. Internal and external piping should be checked for leaks. Relief vents on gas controls should be checked for clogging.

AIR PRESSURE SWITCHES

An annual check of the tube for the airflow switch, and the entering and leaving side of building pressure switches, should be made to ensure against blockage.

DAMPER AND MOTOR

Check linkage connection and/or set screws for tightness. Lubricate the damper bushings as required.

PAINTING

After unit installation, touch up any scratches caused by handling. Periodic touch-up painting should be done thereafter as needed.

GASKETS

Inspect door gasket seals annually. Replace those showing damage or deterioration.

**WARNING**

When servicing or repairing this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting the factory. Refer to the rating plate on the unit for complete unit model number, serial number and company address. Any substitution of parts or controls not approved by the factory will be at owner's risk.

**CAUTION**

Do not reuse any mechanical or electrical component that has been wet. Such components must be replaced.

NOTICE

To check most of the Possible Remedies in the troubleshooting guide listed, refer to the applicable sections of the manual.

TROUBLESHOOTING GUIDELINES

CHECK LIGHT	SYMPTOM	POSSIBLE CAUSE
POWER ON	POWER ON is Unlit	1. Disconnect switch is turned off (open). Turn it to ON (closed) position.
		2. Fuse(s) blown on disconnect switch. Check for cause of excessive current. Replace blown fuse(s).
		3. Control fuse on transformer is blown. Check voltage on line and load side of fuse. If there is NO voltage on load side, but there is on the line side, replace the fuse.
FAN ON	FAN ON light is Unlit and no alarm lights are lit.	1. Remote panel switch turned off or is defective. Check for voltage at timer coil. If there is NO voltage, check the selector switch.
		2. Damper motor auxiliary switch misadjusted or defective. Check terminals at the damper motor. If there IS voltage and the motor is operating, but the auxiliary switch is not closing, adjust end switch setpoint. If end switch adjustment will not close, then replace the damper motor.
		3. Voltage through end switch, but fan is not moving, check control relay 17. Replace if necessary.
		4. One (1) to three (3) of the overload heater(s) are tripped. Check for voltage at the overload relay. If there is NO voltage, reset overloads and check motor running amps.
		5. If on INITIAL START UP of a newly installed system, the overload heaters keep tripping, causing the fan to stop, check motor running amperage against motor name plate full load amperage i.e. low service voltage, excessive voltage drop or the fan is handling too much air due to less static pressure than design.
	Fan does not run, FAN ON light lit.	6. Defective contactor (MI). Check for voltage at the contactor (coil). If there IS voltage and the contactor does not pull in, the coil is defective. If the motor contactor pulls in, but does not run the motor, the contacts or overload heaters may be defective.
		7. Check voltage on motor leads at starter. If voltage is present and motor does not run, check motor wiring and connections on motor for open circuit. Check for possible open circuit in motor windings.
HIGH TEMP	High Temperature Switch light is Unlit	1. Remote panel switch not turned to "WINTER" or "BURNER ON" position.
		2. High temperature limit switch is set too low. FACTORY SET: AEH Series @ 150° F. If there is NO voltage present at switch, adjust high limit switch.
		3. Unit discharging high temperature air. Check burner gas pressure and temperature control operation.
		4. Defective high limit switch. Replace switch.
AIRFLOW	Airflow switch light is Unlit. NOTE: All possible causes will supply NO voltage (120) out of the normally open terminal on airflow switch.	1. Fan is running backwards. Reverse any two (2) motor leads at the contactor. (3-phase units only.)
		2. Tubing to air flow switch is plugged by dirt or insects.
		3. Dirt or snow obstructing the air filters.
		4. Loose or worn fan belts.
		5. Access door(s) open.
		6. Discharge damper is frozen / binding. If frozen, this prevents the damper motor from completing full stroke. Belimo - manual release - move manually.
		7. Defective damper motor. Check terminals at the discharge damper motor. If there IS voltage and the motor is not operating, replace the damper motor. Make sure damper blades are moving with damper actuator.
		8. Airflow switch set too light. Adjust switch. 0.35" w.c. nominal @ high fire.
		9. Defective airflow switch. Replace.

TROUBLESHOOTING GUIDELINES (CONT.)

CHECK LIGHT	SYMPTOM	POSSIBLE CAUSE
LOW GAS PRESSURE SWITCH	Low Gas Pressure Switch light is Unlit.	1. Low gas pressure or gas supply is turned off.
	<i>NOTE: New PSI SW has Auto Reset of Low Gas</i>	2. Low gas pressure switch is set too high. Check terminals at switch. If there is NO voltage, adjust low gas pressure switch or increase gas pressure. Investigate pressure drop through supply piping. SWITCH IS FACTORY SET @ 3" w.c.
HIGH GAS	High Gas Pressure Switch light is Unlit.	1. High gas pressure at burner.
	<i>NOTE: This is a manual reset switch.</i>	2. High gas pressure switch is set too low. If there is NO voltage at switch, adjust high gas pressure switch or set correct burner pressure according to tag. SWITCH IS FACTORY SET @ 5" w.c. above total gas pressure.
		3. Defective high gas pressure switch.
PILOT	PILOT light remains Unlit. If pilot lamp turns on for a short time then goes out, see burner lockout alarm light section.	1. If this unit has a mild weather switch, the outdoor air temperature maybe above setpoint. This is FACTORY SET @ 65° F.
		2. Flame relay contact screws are loose. Remove the flame relay cover and check the contact base terminal screws for tightness.
POWER TO VALVES	Power to Valves light is Unlit.	1. If pilot light is on and power to valves is unlit, check wiring and terminals on flame safeguard. If wiring is <i>not damaged</i> , replace flame safeguard.
BURNER ON	Burner On light is Unlit	1. Block valve auxiliary switch misadjusted. Check the normally open switch terminal at the actuator. If there is NO voltage, look through the actuator observation window. If the valve is open, adjust the actuator auxiliary N.O. switch to be closed
		2. Defective actuator. Check for voltage between terminals at the coil of the actuator. If there IS voltage, and the valve is not open, replace the actuator.
		3. If there is voltage through the end switch, check CR15.
LOW TEMP	On	1. Unit discharging low temperature air. Burner has dropped out due to burner related malfunction (see burner alarm) or operation in summer mode with low outdoor temp. 40° F or less.
		2. Low temperature switch setting maybe too high. FACTORY SET @ 40° F, Time @ 5 min.
		3. Check sensor connections on timer. Remove sensor from timer, use OHM meter to check continuity through sensor.
		4. If low temp light <i>lights</i> , after the 5 min. as set on the timer, regardless of discharge temp, check sensor. If OK, replace timer.
		5. If low temp light <i>lights</i> , immediately in summer or winter mode, replace defective low limit timer.



TROUBLESHOOTING GUIDELINES (CONT.)

CHECK LIGHT	SYMPTOM	POSSIBLE CAUSE
BURNER LOCKOUT	Burner Lockout light is Lit	1. If on INITIAL START UP of a newly installed system, the gas line may have air trapped in it. Remove the test plug upstream of the safety shut off valve and bleed the gas line to remove the air. It may require resetting the flame safeguard several times.
		2. If pilot does light as proven by the flame light on the flame safeguard, but does not stay lit, adjust needle valve on pilot gas line. Close valve fully and open ½ turn and retry. If pilot will not stay lit, open to 1 turn open.
		3. Push burner reset button on flame safeguard or the burner reset button on the remote panel. If burner continues to lock out, check for spark during ignition process.
		4. No ignition spark. Crack access door (or view pilot through view-port) and look at the pilot side of the burner. You should be able to see the igniter sparking. (Spark is present only when the pilot light is lit, this is only 10 sec.)
		5. Spark plug fouled. If the spark is not visible, remove the spark plug and clean it with a wire brush. Check the gap between ground electrode, it should be approximately 3/32".
		6. Ignition wire broken or grounded against unit.
		7. Defective ignition transformer or spark plug. Disconnect the ignition wire from the spark plug and thread it back through the hole on the control side of the unit. Hold the wire by the insulated cover and place the spark plug electrode approx. 1/16" from a bare surface of the unit. Start the ignitions sequence; it should spark. (REMEMBER TO RESET THE FLAME RELAY BEFORE DOING THIS.) If no spark is observed, replace the ignition transformer.
		8. Low pilot flame. Increase pilot gas pressure by adjusting pilot regulator.
		9. Ultra-violet flame detector sight glass is obstructed. Check lens or sight tube for moisture, dirt or insects. Clean or dry lens with a soft cloth.
DIRTY FILTER	Dirty Filter Light is Lit	1. If the dirty filter light is <i>lit</i> , the filters are dirty to the point where the airflow is reduced. Change or clean filters.



START-UP CHECKLIST AND REPORT

Become familiar with the equipment by looking at the fan assembly drawing for special instructions and accessories.

NOTICE

1. This Start-Up Check List and Report must be used in conjunction with the Installation and Service Manual originally shipped with the unit, in addition to any other accompanying component supplier literature.
2. The use of this Start-Up Check List and Report is specifically intended for a qualified installation and service agency. All installation and service of the unit(s) to which this applies must be performed by a qualified installation and service agency.
3. After completion of start-up, make a copy of this completed form for your files as necessary and leave the original copy with the owner for future reference.

PROJECT INFORMATION

Project Name: _____

Address: _____

City, State, Zip: _____

EQUIPMENT INFORMATION

Model #: _____

Serial #: _____

START-UP CONTRACTOR INFORMATION

Company Name: _____

Contact Name (print): _____

Contractor Address: _____

Telephone #: _____

OWNER OPERATION AND MAINTENANCE REVIEW

Owner/Owner's Rep Name: _____

Title: _____

CUSTOMER'S AUTHORIZED SIGNATURE:

I acknowledge that I have been instructed on the operation and maintenance of this equipment.

Signature: _____ Date: _____

Telephone #: _____

THIS MANUAL IS THE PROPERTY OF THE OWNER. PLEASE LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.



FIELD START-UP SHEET

Customer: _____

Sales Representative: _____

Model Number: _____

Serial Number: _____



DIRECT GAS-FIRED EQUIPMENT

INITIAL INSPECTION

I. Installer Responsibilities

1. Remote Panel (all interconnecting wires run from remote to unit): ☐ Yes ☐ N/A
 DFM Cat 5 Cable run in a separate conduit: ☐
 Temperature control interconnect wires to remote ran in: ☐ Shielded Cable ☐ Separate Conduit
 Remote Panel Location: _____ feet from unit (approx.) ☐ Inside Wall ☐ Outside Wall

PLEASE NOTE: If the Remote to Main Panel Interconnect Wiring is over 200' Long, Please Consult Factory!!

2. Indoor Return Air Unit: Building Pressure Switch Tubing for "Low-Tap" is run outdoors ☐ Yes
3. Outdoor Return Air Unit: Building Pressure Switch Tubing for "High-Tap" is run indoors ☐ Yes
4. Gas supply connected with proper gas pressure regulator, drip leg, etc.: ☐ Yes ☐ No
5. Model AEHP: Mix tube wiring installed ☐ Smoke Detector wiring installed ☐
 Discharge Damper wiring installed ☐
6. Electrical supply connected with proper voltage/ampereage, as stated on nameplate: ☐ Yes ☐ No
7. Multi-section units: joints caulked at mating frames, all bolts and nuts installed and tightened, seam tape applied: ☐ Yes ☐ No
8. Upright Units: Legs attached and bolted, shimmed properly so unit does not "rock". ☐ Yes ☐ No
9. Duct connections made and sealed properly ☐ Yes Return air screen installed at building wall ☐ Yes
10. Discharge head installed secure, with diffuser blades tightened and in the open position ☐ Yes
11. All "shipped loose" items installed properly (filters, vibration isolators, smoke detectors, dampers, louvers, service lights, supply fan belts, service platform, roof curb, humidistat, CO detector, etc):
☐ Yes ☐ No Comments: _____
12. All paint scratches have been properly touched-up. ☐ Yes
13. Check all electrical connections on all components for tightness including motor connections. ☐ Yes
 Comments: _____



II. Miscellaneous Items

1. Visible Physical Damage: ☐ No ☐ Yes

Explain: _____

2. Type of Installation: ☐ Outdoor ☐ Indoor ☐ Roof Curb ☐ Platform ☐ Post
☐ Suspended ☐ Upright

3. Hardware Tight and Secure: ☐ Yes ☐ No

4. Damper Linkage Secure: ☐ Yes ☐ N/A

Comments: _____

III. Fan & Motor Sheaves

1. Fan and Motor Sheaves Secured Tightly to Shafts: ☐

2. V-Belts Aligned Properly: ☐

3. Fan Bearing Set Screws Tight: ☐

4. Motor Manufacturer: _____

5. Fan Hub Set Screws Tight: ☐

6. Fan Sheave Size: _____

7. V-Belts Tensioned Properly: ☐

8. Fan Bearing Mounting Bolts Tight: ☐

- HP: _____ FLA: _____ Frame Size: _____

9. Motor Wiring Connections Tight: ☐

Comments: _____

IV. Burner Inspection

1. Spark Igniter Secured Properly: ☐

2. Ignition Wire Attached at Igniter and Transformer: ☐

3. Pilot Line Fittings Tight: ☐

4. Flame Rod Secured Properly: ☐

5. Unions Tight and Secure: ☐

6. UV Scanner Secured Properly: ☐

Comments: _____

V. Gas Manifold & Vent Piping

1. Manifold Assembly Components Tight and Securely Mounted: ☐

2. All Fittings and Components Tight and Securely Mounted: ☐

3. Vent Screens Installed (if required): ☐

4. Vent Piping Run to Outdoors: ☐

Comments: _____

VI. Electric Service

1. Electrical Service Provided to Unit: _____ Volts _____ Phase _____ Hertz _____ Amps

2. Unit Nameplate Electrical Requirements: _____ Volts _____ Phase _____ Hertz _____ Amps

3. Main Fusing Size (if applicable): _____ Volts _____ Amps

4. Overload Relay Setting (if applicable): _____ Amps

5. Terminal Strip Wires Tight and Secure at: Main Panel: ☐ Yes Remote Panel: ☐ Yes ☐ N/A

6. Componentry and Relays Mounted Securely in Place: ☐ Yes

7. Light Bulbs Installed in Sockets for Control Enclosure Lighting: ☐ Yes

8. Unit has been Grounded by Installer at the Main Unit Panel: ☐ Yes

Comments: _____

VII. Filters

1. Filters Installed Properly: ☐ 2. Type: ☐ Aluminum ☐ Pleated 30% ☐ Pad & Frame
 Comments: _____ Other Type: _____

VIII. Gas Service (see maximum and minimum gas pressure requirements on unit rating plate)

1. Natural Gas ☐ LP Gas ☐ Service Pressure: _____" w.c. - or- _____oz. - or- _____psig
 2. Manual Gas Shut-Off Cock in Line-of-Sight: ☐ Yes ☐ No
 3. Handle Present on Manual Shut-off Cock: ☐ Yes ☐ No

VERIFICATION OF OPERATION

NOTE: Refer to the Sequence of Operation & Wiring Diagram in the Owner's Manual for specific data on this unit.
 See Factory Start-up & Test Sheet in the Unit Owner's Manual to note the unit settings prior to shipment.

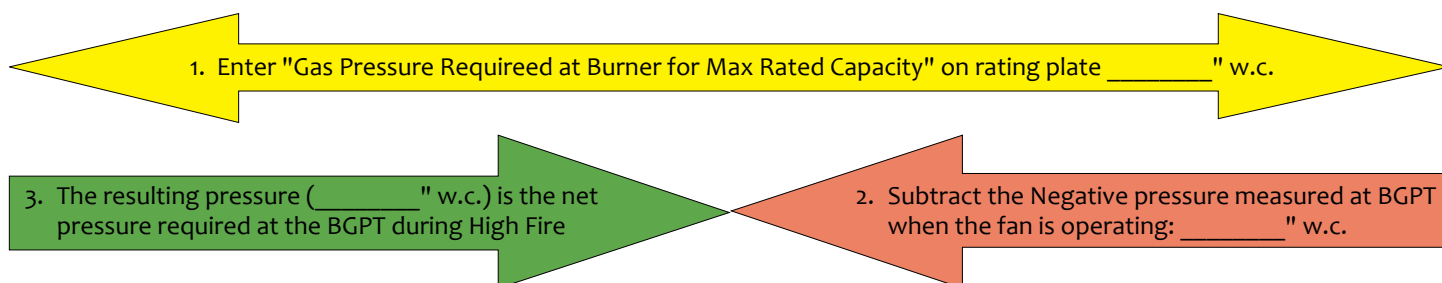
I. Fan Operation

1. The Inlet Damper is fully open when fan comes on: ☐ Yes ☐ NA
 Discharge Damper operates properly: ☐ Yes ☐ NA
 2. The low temperature limit switch is field set at _____°F. (Factory set at 40°F)
 3. The low limit bypass timer completes its cycle in _____ minutes _____ seconds (normal: 5 minutes)
 4. Fan Rotation is in the same direction as the rotation arrow (on fan): ☐ Yes Fan RPM _____
 5. Discharge External Static Pressure Rating Plate _____" w.c. Actual _____" w.c.
 6. Approximate Outdoor Air Temperature _____°F

Check the following:

Unit Off		Unit On/Off Running (Burner Off)		Verify the motor running amps does not exceed the motor nameplate FLA!
A-B	_____ Volts	A-B	_____ Volts _____ Amps	
B-C	_____ Volts	B-C	_____ Volts _____ Amps	
A-C	_____ Volts	A-C	_____ Volts _____ Amps	

II. Burner Operation



Forcing High Fire

- Δ – Maxitrol 14 System – Disconnect wire 29
 Δ – DFM System – Jumper wires 29 and 30
 Δ – Maxitrol 44 System – Disconnect wire 24 and 29
 Δ – Signal Conditioner – Full mA or VDC signal
Example: 4.6" w.c. on rating plate – 1.2" w.c. burner suction (measured with just fan running = 3.4" w.c. net measured at the BGPT.)

4. The Profile Pressure Drop: _____ " w.c. (measured using high and low pressure ports)
5. The Burner Suction Static Pressure: _____ " w.c. (measured at the manifold pressure tap with unit fan on and gas off)
6. The Burner High Fire Pressure: _____ " w.c. (measured as above, but with fan and gas on and unit in forced high fire)
7. The Service Pressure with burner *in high fire* is: _____ " w.c. - or- _____ oz. - or- _____ psig
8. The High Temperature Limit Switch is field set to: _____ ° F (maximum setting is 150°F)
9. The Low Gas Pressure Limit Switch is field set to: _____ " w.c. (factory set at 3" w.c.)
10. The High Gas Pressure Limit Switch is field set to: _____ " w.c. (factory set at 1.5" w.c. above the high fire pressure)
11. The Pilot Flame should be the approximate size of a baseball: ☐ Yes (adjust as needed)
12. Set the burner low-fire gas pressure so there is a continuous "ribbon" of flame approximately 1" wide across face of burner.
13. Flame Relay. If a Honeywell model, it should read **1.25 to 5.0 Vdc** at terminals marked (+ -) on the flame relay face, if Fireye, it should read **4.0 to 10.0 Vdc** at terminals marked (+ -) on the flame relay face.
14. Mild Weather Stat (optional) trips the burner when outside air temp is higher than the stat set point: ☐ Yes
_____ ° F Set (factory setting is 65°F)

III. Space Temperature Control Systems (Maxitrol 44 and DFM Series)

1. Modulating Regulator Valve ("MR Valve"): Voltage at Low Fire _____ VDC Voltage at High Fire _____ VDC
2. The Minimum Discharge Temperature is field set at _____ ° F (factory set is 55°F)
3. The Maximum Discharge Temperature is field set at _____ ° F (factory set is 95°F, Maximum setting is 120°F)
4. Burner responds to demand for heat from Room Temperature Selector in remote panel: ☐ Yes
5. Check calibration of the minimum/maximum discharge temperature control. Adjust if necessary.
6. Operation of Occupied/Unoccupied Switch (if applicable) or time clock verified: ☐ Yes
7. Is there evidence of temperature hunting? ☐ Yes** ☐ No

IV. Discharge Temperature Control Systems (Maxitrol 14 Series)

1. Modulating Regulator Valve ("MR Valve") Voltage at Low Fire: _____ Vdc
Voltage at High Fire: _____ Vdc
2. Check calibration of the Discharge Air Temperature Selector. Adjust if necessary.
3. Is there evidence of temperature hunting? ☐ Yes** ☐ No

**** Refer to the Maxitrol Troubleshooting Guide in the Owner's Manual for further instructions**

Comments: _____

V. Space Temperature Control Systems (BMS or Internal DDC)

1. Input signal from BMS: ☐ 0-10 ☐ 4-20mA

VI. Damper Control Options

Manual Pot Control:

1. With the manual pot set to zero (0%), the outdoor air damper is closed and the return air damper is open. ☐ Yes
2. With the manual pot set to 100%, the outdoor air damper is open and the return air damper is closed. ☐ Yes
3. The manual pot was left set at _____ %, and the owner was instructed on its operation by me. ☐ Yes



Building Pressure Control:

1. The differential setting on the building pressure switch is field set at _____ " w.c. (typical is .01" – .03" w.c.)
2. By opening a building door or turning on an exhaust fan in the building, the unit pressure switch calls for more outside air (OA), causing the OA damper to open and the return air (RA) damper to close. When the building door is closed, or the exhaust fan turned off, the OA and RA dampers react opposite. ☐ Yes

Comments: _____

VII. Variable Frequency Drive Operation

1. Does VFD respond to BPS? ☐ Pressure Transmitter ☐ Manual Pot
2. Does the burner profile stay within airflow parameters when the fan ramps up and ramps down? ☐ Yes ☐ No

VIII. Miscellaneous Operational Checks

1. With the unit fan and burner operating, all of the circuit check lights are illuminated (except the burner lock-out pilot light and the low temperature switch pilot light): ☐ Yes
2. If furnished, the time clock has been programmed per owner instructions and training provided by me. ☐ Yes
3. If provided, the following temperature control stats have been set by me and instructions provided to the owner:
 _____ Cycle Stat _____ Cool-Down Stat _____ Mild Weather Stat _____ Freeze Stat
4. The electrical drawing and sequence of operation is taped to the enclosure door: ☐ Yes
5. The owner's manual was reviewed by me with the owner and placed back inside the unit enclosure: ☐ Yes
6. The owner was instructed on the operation of the following controls and options (check those that apply):

<input type="checkbox"/> Keyed Switches on Remote Panel	<input type="checkbox"/> Maxitrol 44 Space Temperature Selector
<input type="checkbox"/> Remote Reset for Flame Relay	<input type="checkbox"/> Maxitrol 14 Discharge Temperature Selector
<input type="checkbox"/> Burner Alarm Horn	<input type="checkbox"/> 3-Phase Power Monitor
<input type="checkbox"/> Natural Gas/Propane Changeover Switch	<input type="checkbox"/> Smoke Detector
<input type="checkbox"/> CO Detector	<input type="checkbox"/> Magnehelic Gauge
<input type="checkbox"/> Photohelic Gauge	<input type="checkbox"/> 120V GFI Outlet
<input type="checkbox"/> Dirty Filter Light/Alarm	<input type="checkbox"/> Evaporative Cooler
<input type="checkbox"/> Fan Bearing Grease Type and Lube Cycle	<input type="checkbox"/> Filter Maintenance
<input type="checkbox"/> Exhaust Cycle Operation	<input type="checkbox"/> Internal Bypass Operation
<input type="checkbox"/> Discharge Head Deflection Blade Adjustment	<input type="checkbox"/> Coil Maintenance
<input type="checkbox"/> Burner Maintenance	<input type="checkbox"/> Spray/Bake Control Operation

Comments:

**THE ABOVE START-UP WAS PERFORMED BY:**

Company Name: _____ Date: _____

Phone Number: _____ Fax Number: _____

Service Tech. Name: _____

MAKE A COPY FOR YOUR FILES AS NECESSARY

The Owner Representative that I met with and discussed the unit controls and operation was:Name: _____ Title: _____
(please print) (please print)**CUSTOMER'S AUTHORIZED SIGNATURE**

I acknowledge that I have been instructed on the operation of this unit:

Signature: _____ Date: _____ Ph. No.: _____

**After completion, return this start-up sheet to:**5959 Trenton Lane N
Minneapolis, MN 55442
Phone: 763-551-7500 | Fax: 763-551-7501
customerservice@aerovent.com



MAINTENANCE LOG

Model Number _____

Serial Number _____

Date	Completed Maintenance	Performed By	Comments



WWW.AEROVENT.COM

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