



Air Conditioner Product Manual

Vertical Wall-Mount Air Conditioners with Gas Heat & Front Control Box Panel

Installation & Operation Manual

11 EER Vertical Wall-Mount
Air Conditioners w/Gas Heat

MODELS:

HAA1024A-1030A-1036A-
1042A-1048A-1060A



IMPORTANT

This manual may include information for options and features which may not be included on the unit being installed. Refer to the unit data label or Model Identification to determine which features and options this unit is equipped with.

INSTALLER: Affix the instructions on the inside of the building adjacent to the thermostat.
END USER: Retain this manual for future reference.

Manufactured By:

A Division of the AIRXCEL® Commercial Group

P.O. Box 400 • Cordele, Georgia 31010 • 156 Seedling Drive • Cordele, Georgia 31015
(229) 273-3636 • Fax (229) 273-5154

E-mail: eubanksales@airxcel.com • Internet: www.EubankWallmount.com

The most current version of this manual can be found at www.EubankWallmount.com.

How To Use This Manual

This manual is intended to be a guide to Eubank HAA family of vertical air conditioners with gas heat. It contains installation, troubleshooting, maintenance, warranty, and application information. The information contained in this manual is to be used by the installer as a guide only. This manual does not supersede or circumvent any applicable national or local codes.

If you are installing the HAA unit, first read Chapter 1 and scan the entire manual before beginning the installation as described in Chapter 2. Chapter 1 contains general, descriptive information and provides an overview which can speed up the installation process and simplify troubleshooting.

If a malfunction occurs, follow this troubleshooting sequence:


1. Make sure you understand how the HAA unit works (Chapters 1 & 3).
2. Identify and correct installation errors (Chapter 2).
3. Refer to the troubleshooting information in Chapter 4.

If you are still unable to correct the problem, contact the Factory at 1-800-841-7854 for additional assistance.

Please read the following “Important Safety Precautions” before beginning any work.

Important Safety Precautions

1. USE CARE when LIFTING or TRANSPORTING equipment.
2. TRANSPORT the UNIT UPRIGHT. Laying it down on its side may cause oil to leave the compressor and breakage or damage to other components.
3. TURN ELECTRICAL POWER OFF AT THE breaker or fuse box BEFORE installing or working on the equipment. LINE VOLTAGES ARE HAZARDOUS or LETHAL.
4. OBSERVE and COMPLY with ALL applicable PLUMBING, ELECTRICAL, and BUILDING CODES and ordinances.
5. SERVICE may be performed ONLY by QUALIFIED and EXPERIENCED PERSONS.
 - * Wear safety goggles when servicing the refrigeration circuit
 - * Beware of hot surfaces on refrigerant circuit components
 - * Beware of sharp edges on sheet metal components
 - * Use care when recovering or adding refrigerant
6. Use COMMON SENSE - BE SAFETY-CONSCIOUS

This is the safety alert symbol . When you see this symbol on the HAA unit and in the instruction manuals be alert to the potential for personal injury. Understand the signal word DANGER, WARNING, CAUTION and IMPORTANT. These words are used to identify levels of the seriousness of the hazard.



Failure to comply will result in death or severe personal injury and/or property damage.



Failure to comply could result in death or severe personal injury and/or property damage.



Failure to comply could result in minor personal injury and/or property damage.



Used to point out helpful suggestions that will result in improved installation, reliability or operation.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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WARNING - SAFETY REQUIREMENTS

- If the information in these instructions are not followed exactly, a fire, carbon monoxide poisoning or explosion may result causing property damage, personal injury or loss of life.
- Read all instructions carefully prior to beginning the installation. Do not begin installation if you do not understand any of the instructions.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction.
- Follow all safety codes.



AVERTISSEMENT - EXIGENCES POUR LA SÉCURITÉ

- Si les informations contenues dans ces instructions ne sont pas suivies exactement, il peut en résulter un empoisonnement au monoxyde de carbone ou une explosion, causant dommages, blessure ou mort.
- Lisez soigneusement toutes les instructions avant de commencer l'installation. Ne la commencez pas si vous n'avez pas assimilé toutes ces instructions.
- Une mauvaise exécution d'installation, réglage, altération, intervention ou entretien peut causer dégâts matériels et dommages corporels ou même mort.
- Installation et interventions doivent être effectuées par un installateur ou une agence de dépannage qualifiés, ou par le fournisseur de gaz en conformité avec toutes les normes et exigences des autorités ayant juridiction en la matière.
- Respectez toutes les normes de sécurité.

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Chapter 1 Description and Specifications

1.1 General Description

The Eubank® HAA line of air conditioners with gas heat are high efficiency vertical wall mounted units that provide cooling and economical gas heating. In addition, various ventilation packages are factory installed for a variety of applications. Nominal cooling capacities are 24,000 BTUH, 30,000 BTUH, 36,000 BTUH, 42,000 BTUH, 48,000 BTUH and 60,000 BTUH with EER's of 11.00. Models HAA1024, HAA1030A & HAA1036A are factory set up for natural gas with nominal heating capacities of 45,000 BTUH, 67,5000 BTUH and 90,000 BTUH. Models HAA1042A, HAA1048A and HAA1060A are factory set up for natural gas with nominal heating capacities are 75,000 BTUH, 100,000 BTUH and 125,000 BTUH. The units are easily field convertible to propane.

Eubank HAA air conditioners with gas heat are designed for easy installation. All units have built-in side mounting flanges and are shipped with a bottom support bracket. All units are factory wired and charged. Service ports have been provided for field service, if required. All internal wiring is complete.

A wide selection of fresh air ventilation packages, all factory installed and tested to insure optimum performance, are available to meet various installation requirements. For school classrooms, models are available to comply with the ASHRAE 62-1999 standard, “Ventilation for Acceptable Indoor Air”. The exclusive GreenWheel® energy recovery unit (ERV), provides fresh air while removing both sensible and latent heat form the incoming air stream.

All Eubank air conditioners with gas heat furnaces are tested in accordance with UL standard 1995 and listed by ETL. Performance and Efficiency Ratings are in accordance with the Air Conditioning and Refrigeration Institute (ARI) standard 390.

1.2 Model Identification

Example	H	A	A	1	0	3	6	A	A	0	9	0	C	G	+	+	+	1	D	A	+	A	1	1	+	+	+	+	+	+
Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	Unit Designation/Family		H = Eubank Wall Mount w/Gas Heat																											
2	Energy Efficiency Ratio (EER)		A = 11																											
3	Refrigerant Type		A = R-410a																											
4	Compressor Type/Quantity		1 = Single																											
5	Unit Capacity/Nominal Cooling (BTUH)		024 = 24,000 042 = 42,000																											
6			030 = 30,000 048 = 48,000																											
7			036 = 36,000 060 = 60,000																											
8	System Type		A = Air Conditioner																											
9	Power Supply (Volts-Phase-Hz)		A = 208/230-1-60 C = 208/230-3-60 D = 460-3-60																											
10	Heat Designation @ Rated Voltage		045 = 45,000 BTUH 090 = 90,000 BTUH																											
11	KW = Kilowatt		067 = 67,500 BTUH 100 = 100,000 BTUH																											
12			075 = 75,000 BTUH 125 = 125,000 BTUH																											
13	Ventilation Configuration		C = Economizer D = Motorized Damper w/Pressure Relief E = Motorized Damper w/Pressure Relief & Independent Motorized Damper Control F = No Free Cooling, 100% Emergency Ventilation Only w/Independent Control H = GreenWheel N = Barometric Damper w/15% OSA Y = Manual Damper w/No Pressure Relief																											
14	Dehumidification		G = Hot Gas Reheat H = Hot Gas Reheat w/Humidity Control J = Hot Gas Reheat w/Return Air Limit K = Hot Gas Reheat w/Humidity Control & Return Air Limit M = Modulating Hot Gas Reheat N = Modulating Hot Gas Reheat w/Humidity Control + = None																											
15	Controls		A = Power Fail Alarm w/Additional Lockouts C = 24V EMS Relay Kit D = 24V EMS Relay Kit w/Factory Installed T-Stat E = Factory Installed T-Stat + = None																											
16	Operating Condition		A = Evaporator Freeze Sensor (EFS) C = EFS w/Hot Gas Bypass M = Extreme Duty w/Hard Start & EFS N = Hard Start P = Hard Start w/Low Ambient & CCH Q = Hard Start w/Low Ambient & Fan Cycle Control (FCC) R = Crank Case Heater (CCH) T = Hard Start w/EFS U = Hard Start w/Hot Gas Bypass V = Hard Start w/Low Ambient & CCH & EFS W = Low Ambient w/CCH X = Hot Gas Bypass Y = Low Ambient w/CCH & FCC Z = Low Ambient w/CCH & EFS 1 = Low Ambient w/FCC 2 = Low Ambient w/FCC & EFS 3 = CCH w/Hot Gas Bypass + = None																											
17	Indoor Air Quality Features		D = Dry Bulb Sensor E = Dry Bulb Sensor w/Dirty Filter G = Dirty Filter Sensor + = None																											
18	Air Flow		1 = Top Supply/Bottom Return																											
19	Compressor Location		D = Left Hand E = Right Hand																											
20	Filter Option		A = 2" Pleated (MERV 8, AC/HP-C) C = 2" Charcoal D = MERV 11 High Filtration Package E = MERV 13 High Filtration Package F = Filter Access Through Return Air Grille W = Aluminum Washable + = None																											
21	Corrosion Protection		A = Condenser Coil Only C = Evaporator Coil Only D = Both Coils Condenser & Evaporator E = All Coils Cond/Evap/Reheat F = Coat All K = Coastal Package + = None \$ = Special																											
22	Engineering Revision Level		A1																											
23	Revision Level		A1																											
24	Cabinet Color		1 = Beige (Standard Eubank) 2 = Gray 3 = Carlsbad Canyon 4 = White 5 = Stainless Steel Exterior 6 = Dark Bronze 7 = .050 Aluminum Stucco 8 = Mesa Tan 9 = Pebble Gray A = Stainless Steel - Unit \$ = Custom Color (Powder Coat)																											
25	Sound Attenuation		2 = Compressor Blanket + = None																											
26	Security Option		A = Lockable Access Plate/Tamper Proof + = None																											
27	Fastener/Drain Pan Option		A = Stainless Steel Fasteners C = Stainless Steel Drain Pan D = Stainless Steel Fasteners & Drain Pan + = None																											
28	Unused		+ = None \$ = Special																											
29	Unused		+ = None \$ = Special																											
30	Special Variation		+ = None \$ = Special Configuration Not Covered by Model Nomenclature																											

Note: Not all options are available with all configurations. Contact your Eubank sales representative for configuration details and feature compatibility.

1.3 Serial Number Date Code

20 = 2020	01 = January	05 = May	09 = September
21 = 2021	02 = February	06 = June	10 = October
22 = 2022	03 = March	07 = July	11 = November
23 = 2023	04 = April	08 = August	12 = December

1.4 Cooling Mode

Eubank HAA air conditioners with gas heat use R410A refrigerant in a conventional vapor-compression refrigeration cycle to transfer heat from air in an enclosed space to the outside. A double blower assembly blows indoor air across the evaporator. Cold liquid refrigerant passing through the evaporator is boiled into gas by heat removed from the air. The warmed refrigerant gas enters the compressor where its

temperature and pressure are increased. The hot refrigerant gas condenses to liquid as heat is transferred to outdoor air drawn across the condenser by the condenser fan. Liquid refrigerant is metered into the evaporator through capillary tubes to repeat the cycle.

1.5 Sequence of Operation - Heating Mode

1. On a call for heat, two stage thermostat contact(s) close, providing 24 VAC to “4” terminal on the ignition control.
2. Draft inducer is energized at high speed (B-W leads) at line voltage.
3. Air Pressure Switch (APS) closes, initiating 30 second prepurge.
4. At end of 30 second prepurge period, Spark & Gas Valve are energized for up to 5 second ignition trial. Gas valve will open in either low or high fire position, depending upon the heat requirements and contact closure in the thermostat.
5. Burners ignite and carryover.
6. Flame is detected by flame sensor and control operates in steady state heating position.
7. The two stage thermostat powers the low fire contact continuously on a call for heat and will close the high fire contact if necessary to meet heat requirements. Unit continues in operation in either low or high fire until the thermostat set point is reached.
8. Low fire contact in thermostat opens, interrupting power to “4” terminal on control and closing the gas valve.
9. The Draft inducer continues to run for a 60 second post purge period.
10. The control system is capable of three retrials if the above sequence is interrupted at any point.

If the above sequence does not occur then:

11. If ignition is not achieved within 5 seconds, the gas valve is shut off, the inducer keeps running for an inter purge period of 60 seconds and additional trials follow the specified sequence. If all 3 trials for ignition have occurred without proper ignition and flame detection, the control is locked out.
12. Control may be brought out of lock out by a. turning the thermostat to OFF for a minimum of 5 seconds and then ON, or b. turning the disconnect to OFF for a minimum of 5 seconds and then ON. Control will automatically also attempt another ignition sequence one hour after a lockout occurrence.
13. If flame is lost once it has been established, the control will shut off the gas supply within .8 seconds and enter the interpurge period. Control will initiate up to 3 additional trials per normal sequence of operation. (To restart, refer to item 12).
14. If flame sensor indicates presence of a flame during the purge period when no flame is present, the inducer will remain energized, but the gas valve will not be energized until the cause of the false flame is removed.
15. If the air pressure switch (APS) is closed when the inducer is energized or does not close after the inducer is energized, the control will wait one minute for the air switch to open or close and then lock out. (To restart, refer to item 12).
16. If the control detects power to the gas valve when it should be off or no power when it should be on, the control will go into lockout with all outputs off. (To restart, refer to item 12).

The gas heat and air conditioner has a LED indicator that shows operating status and simplifies service by flashing fault codes.

On-Steady	Control Operation Normal
1 Flash	Open Air pressure switch, limit switch or flame rollout switch
2 Flashes	Pressure switch stuck closed
3 Flashes	Ignition/flame sensor failure
4 Flashes	Repeated flame loss
5 Flashes	Internal control fault
6 Flashes	Repeated pressure switch losses

LED Flash Code Key

1.6 Ventilation Options

- Manual damper capable of up to 15% of rated airflow of outside air; field adjustable, no pressure relief. (Standard - Ventilation Configuration N)
- Manual damper capable of 0 to 450 cfm (maximum of 40% of rated airflow) of outside air; field adjustable, no pressure relief. (Optional - Ventilation Configuration Y)
- Manual damper capable of 0 to 450 cfm (maximum of 40% of rated airflow) of outside air; field adjustable, includes pressure relief. (Optional - Ventilation Configuration Z)
- Motorized, two position damper (open and closed) capable of 0 to 450 cfm (maximum of 40% of rated airflow) of outside air; includes pressure relief. A 24-volt actuated motor controls the damper from an external input such as: a time clock, CO2 sensor, energy management system or manual switch. (Optional - Ventilation Configuration B)
- GreenWheel® Operation (Ventilation Option "H")

The GreenWheel® is a total energy (both sensible and latent) wheel that reduces both construction and operating cost while ventilating the classroom to ASHRAE 62-1999 requirements. The use of the GreenWheel ERV reduces the energy load of the outside air. Exhausting stale, inside air keeps indoor pollutants and harmful gases to a minimum. The GreenWheel ERV has been tested and certified according to ARI Standard 1060.

How It Works

During the summer, cool dry air from the classroom is exhausted through the GreenWheel® ERV to the outside. As the air passes through the rotating wheel, the desiccant becomes cooler and drier. Simultaneously, hot humid air is being pulled across the rotating wheel. The cool, dry desiccant absorbs moisture and heat from the incoming air. The cooler, drier air is mixed with the return air from the classroom and distributed throughout the room.

In the winter, warm moist air is exhausted through the GreenWheel® ERV to the outside. As the air passes through the rotating wheel, the desiccant becomes warmer and absorbs moisture. Simultaneously, cold dry air is being pulled across the rotating wheel. The cold, dry air absorbs heat and moisture from the desiccant. The warmed air is mixed with the return air from the classroom and distributed throughout the room.

Quality Components

The GreenWheel® module consists of a desiccant wheel, two blowers and the drive motor and belt. The two blowers simultaneously pull fresh air from outside and exhaust air from the classroom through the rotating wheel. The air streams are separated by an insulated partition so that the incoming fresh air is not mixed with the exhaust air. Two variable speed blowers ensure that up to 450 CFM of outside air can be brought into the room and the indoor air is properly exhausted. Variable speed blowers permit that the desired quantity of outside air is delivered into the room. Optional independent exhaust air blower control allows positive pressurization of the classroom, i.e., more outside air can be introduced through the GreenWheel ERV than is exhausted.

1.7 Economizer Operation – Cooling Cycle (*Eubank HAA unit with Economizer only*)

The economizer is a regulated damper system with controls. The damper regulates the circulation of outside air into the enclosure (when the outdoor air conditions are suitable) to reduce the need for mechanical cooling, save energy, and extend compressor life.

Depending upon the options selected, the damper responds to either enthalpy or dry bulb temperature of the outdoor air. On a call for cooling from a space thermostat, it operates as follows:

When the enthalpy of the outdoor air is below the set point, the outdoor air damper is proportioned open (and return air damper is proportioned closed) to maintain between 50°F and 56°F at the mixed/discharge air sensor.

When the enthalpy of the outdoor air is above the set point, the outdoor air damper closes to its minimum position. A call for cooling from the space thermostat brings on mechanical cooling.

An optional built-in adjustable minimum position potentiometer, p/n 70012, controls the amount of outdoor air admitted to meet minimum ventilation requirements.

Chapter 2 Electronic Control Board

2.1 Introduction



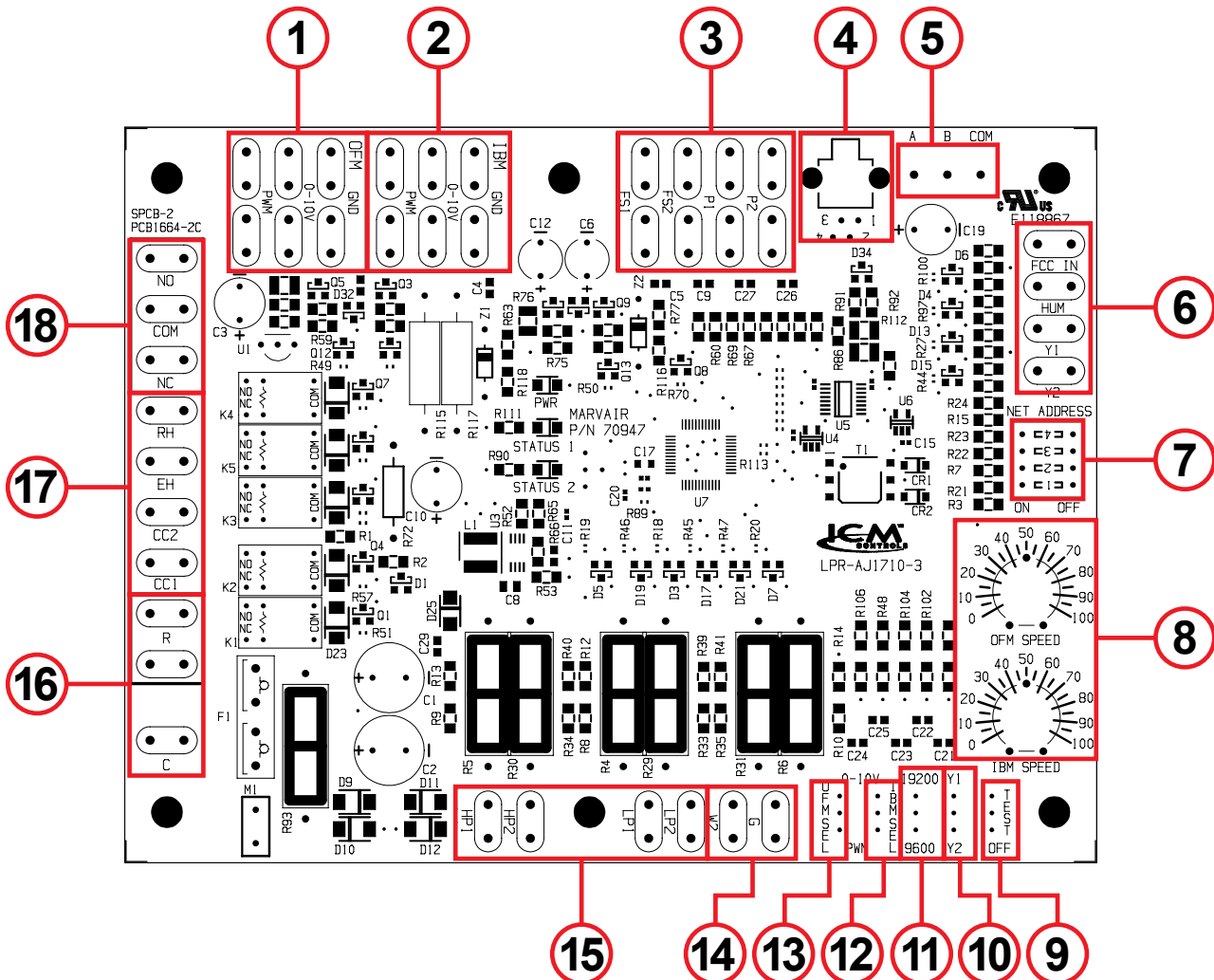
WARNING

Failure to observe the instructions contained in this document may result in personal injury and/or property damage and may void the warranty. Read this manual before installing, replacing or using this product.

The MGA3090 is equipped with Eubank’s proprietary Printed Circuit Board (PCB), which sets the standard for the industry in flexibility, reliability and performance. This UL certified component is engineered to optimize Heating, Cooling and Dehumidification operation while communicating valuable information to the end user. Special features include 2-Stage operation with varying speed control to optimize latent and sensible capacity, built in remote communication (MODBUS) for monitoring and/or control, optimized head pressure control and the ability to function autonomously without the need for an off the shelf thermostat. The Eubank PCB comes equipped with LEDs to monitor lockouts for independent circuits, which drastically reduces troubleshooting time and system downtime. Lockout contacts are also provided along with the alarms being transferred via MODBUS.

This chapter provides the necessary information for installing and operating the Eubank PCB.

The diagram below identifies the inputs, outputs and connections for the Eubank PCB.



Item	Description
1	Outdoor Motor Control Signal Output
2	Indoor Motor Control Signal Output
3	P 1/2- Pressure for Circuit 1 and Circuit 2 (Respectively) FS1 – Freeze Stat for Circuit 1 FS2 – Indoor Temperature Input
4	Modbus Communication
5	3 Wire [A, B, COM] and Parallel RJ-11 Port
6	Fan Cycle Control Input (only Applicable for EC Outdoor Motors) Hum – Humidity Control Input (Connect to R Node) Y 1/2 - Cooling Request for Stage 1 and Stage 2 Cooling Operation
7	Modbus Network Address. Set All 4 to OFF for Local Control
8	Potentiometers for Indoor and Outdoor Speed
9	Energize or De-Energize Test Mode
10	Set Speed of Indoor Motor for Y1 and Y2 Operation
11	Set Baud Rate. 19.2k Between Top and Mid. 9.6k Between Mid and Bottom
12	Set Indoor Motor Control Signal Type
13	Set Outdoor Motor Control Signal Type
14	Thermostat Inputs: W2 – Heat Request G – Indoor Fan Request ON – Connect Respective Terminal to R Node. Off – Open Circuit
15	Pressure Switch Inputs for Respective Circuit HP – High Pressure Switch LP – Low Pressure Switch Switch to Be Closed for Cooling Operation. Switch to Be Connected to “R” Node
16	24 VAC Power Input to PCB.
17	Digital Outputs (24 VAC): The PCB Makes and Breaks R. RH – Reheat EH – Electric Heat CC 1/2– Compressor (Respectively)
18	Alarm Contacts

2.2 Installation and Replacement

The PCB is factory installed. To install a replacement PCB, use the six mounting holes along with the appropriate screw size to firmly secure the board to the control box. After this is achieved, follow the wiring diagram and pin configuration for the respective system for appropriate operation. Ensure that the terminals used do not make any unwanted electrical connection (via strands etc.) with any other terminals. Please allow a 1” creepage distance between the board and all other adjacent electrical components.

2.3 Operation

LED Status Indicators

Color	Type	Status	Description
Green	Power	Constant On	24 VAC power has been applied
Red	Status 1 and Status 2	Constant On	Normal Operation
		1 Blink	High pressure switch has opened twice
		2 Blinks	Low pressure switch has opened twice
		3 Blinks	Freeze stat (optional) - Indoor coil temperature is below 35°F (1°C)
		Continuous Flash of Both LEDs	Insufficient voltage to the board. Less than 20 Volts

Power

The Eubank PCB requires 24 VAC to operate. When the board is sufficiently powered, the “PWR” status light on the PCB illuminates “Green.” If there is insufficient power to the board, the “STATUS 1” and “STATUS 2” flashes continuously. Insufficient power to the board will result in no outputs being energized.

Setting the Speed for the Y1 and Y2 Operation for Indoor Motor

Put Bridge Jumper between the “Y1 pin and center pin” shown in the figure below. Use the potentiometer marked “IBM SPEED” to set the required speed for first stage cooling (Y1 request). Note that the type of control signal required by the motor must be set and the appropriate signal terminations must be used. This jumper will be factory installed. In replacing the PCB, verify the necessary signal and configure the board accordingly. Only 2 of the 3 pins should be used for the necessary configurations. **DO NOT CONNECT ALL 3 PINS.**

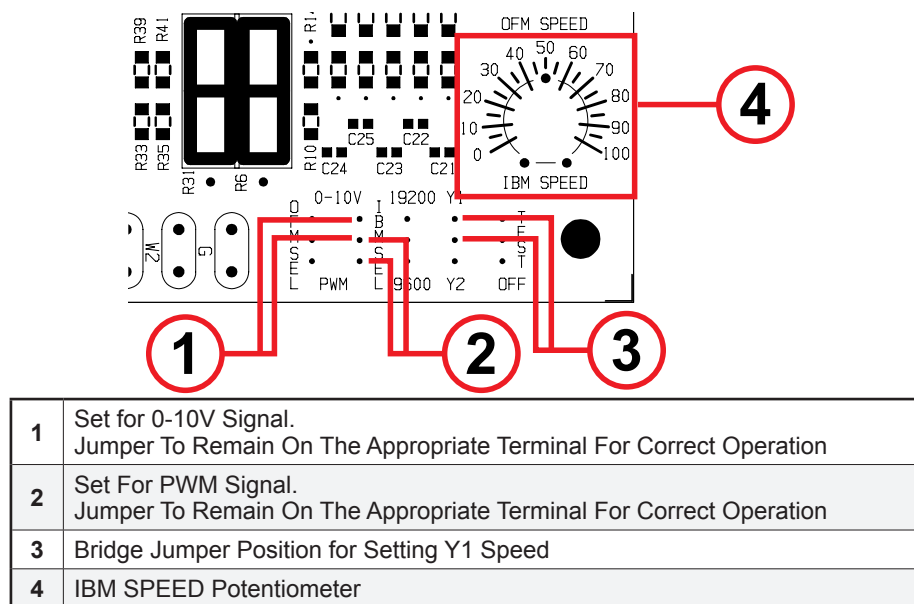


Figure 1a. Setting the Speed for the Y1 and Y2 Operation for Indoor Motor

To set second stage cooling (Y2 request) speed, put Bridge Jumper on the “Y2 pin and center pin” shown in the figure below. Use the potentiometer marked “IBM SPEED” to set the required speed.

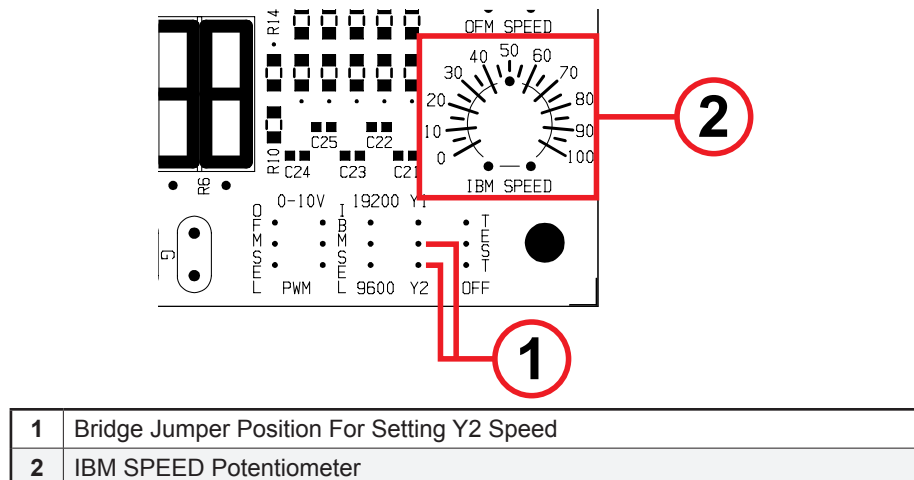


Figure 1b. Second Stage Cooling Speed

Output Termination for Indoor Motor Control Signal

Note: Follow data (wiring and signal control signal type) of the appropriate motor to setup the PCB

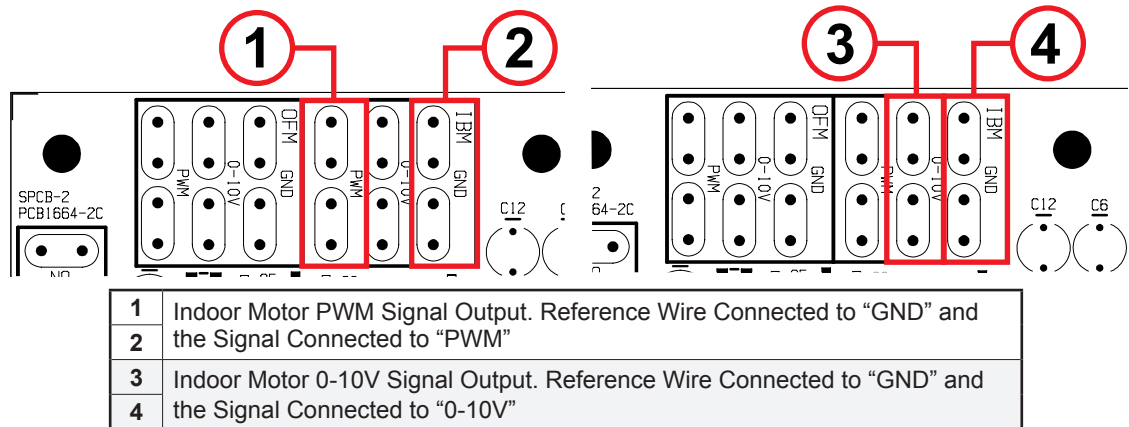


Figure 2. Output Termination for Indoor Motor Control Signal

Setting the Speed for Outdoor Motor

The Outdoor Motor runs at constant speed dictated by the potentiometer. See figure below.

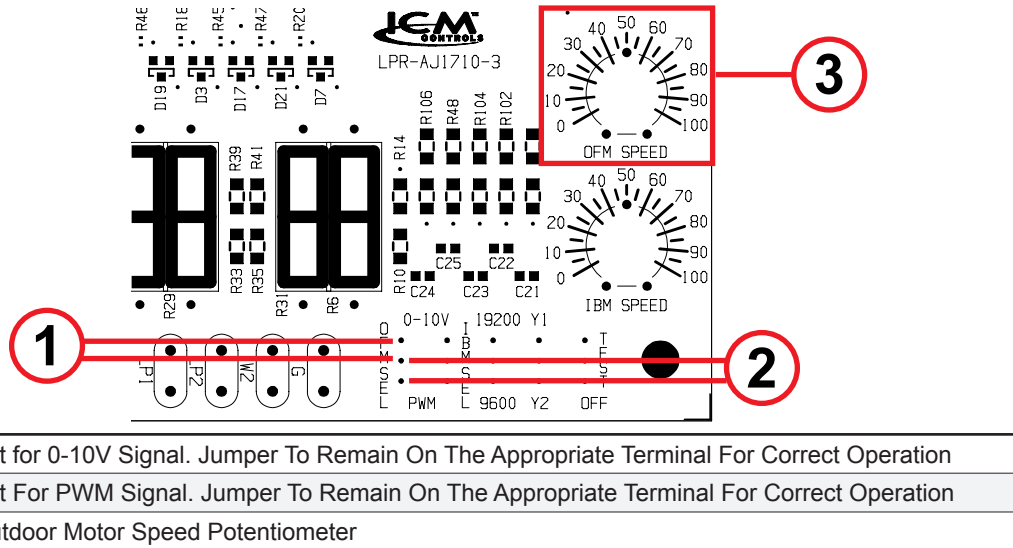
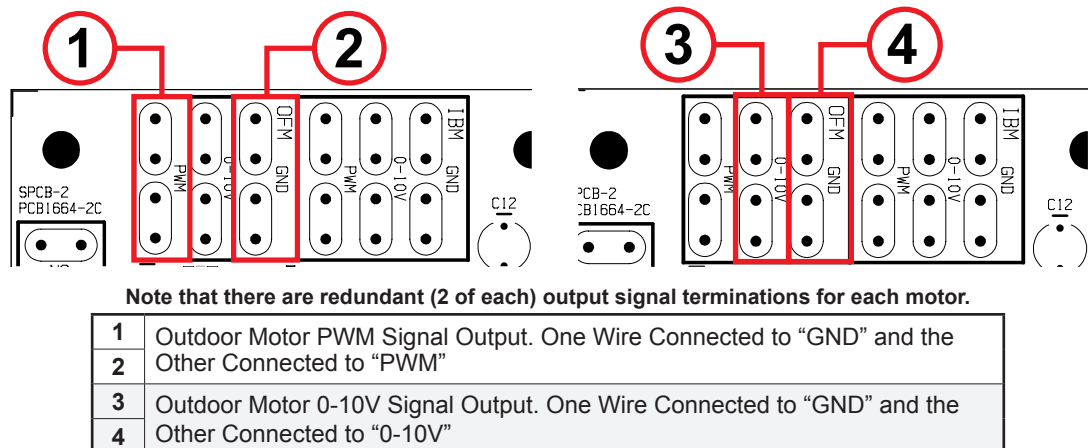


Figure 3. Outdoor Motor Speed Setting

Output Termination for Outdoor Motor Control Signal

Note: Follow data (wiring and signal control signal type) of the appropriate motor to setup the PCB.



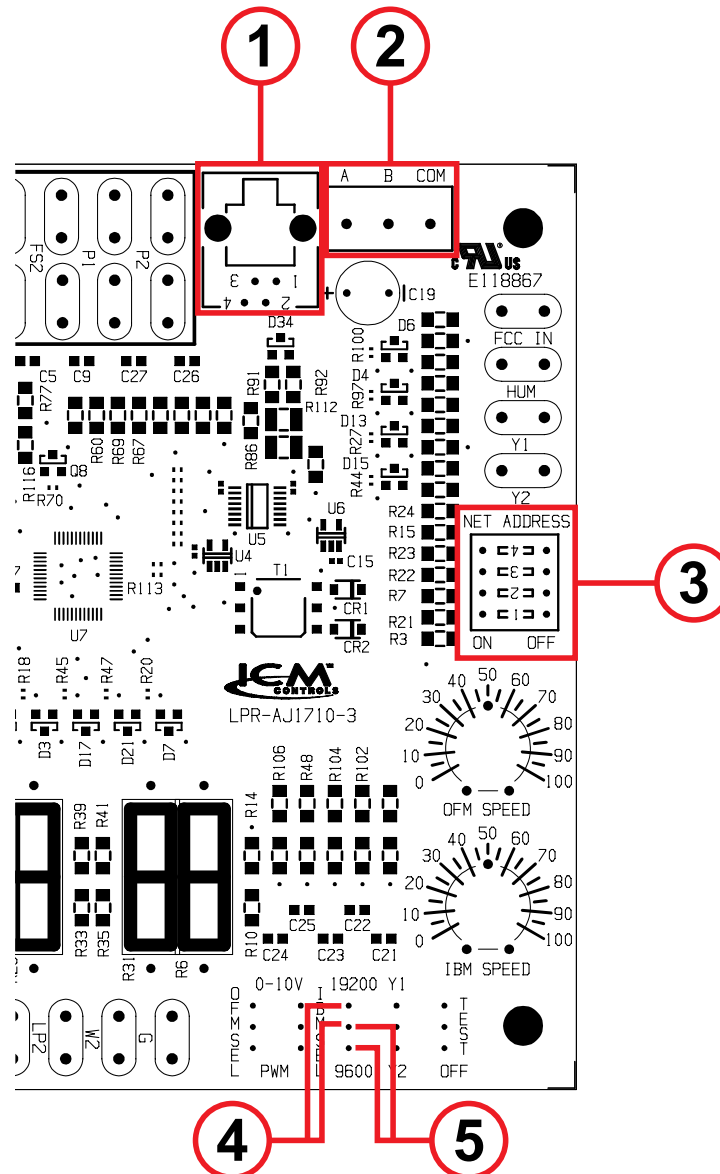
Note that there are redundant (2 of each) output signal terminations for each motor.

1	Outdoor Motor PWM Signal Output. One Wire Connected to “GND” and the Other Connected to “PWM”
2	Outdoor Motor 0-10V Signal Output. One Wire Connected to “GND” and the Other Connected to “0-10V”

Figure 4. Output Termination for Outdoor Motor Control Signal

Communication

The Eubank PCB comes equipped with MODBUS communication standard. There are 2 adjacent MODBUS communication ports connected in parallel. That is, both ports transmit the same information. The difference between the ports is the physical connection. One port is for RS-485 (3 wire shielded cable is recommended) and the other port is RJ-11. The board allows you to set the Baud Rate at 9600 bits per second or 19200 bits per second. The board also allows 15 different MODBUS addresses based on the position of the “NET ADDRESS” DIP switches. The Net Addresses are written in Binary (see table below) with switch 4 being the least significant bit. **THE NUMBERS ON THE DIP SWITCHES DO NOT CORRELATE TO MODBUS ADDRESSES.** The figure below shows the positions of the various components necessary to set up communication on the on the PCB.



Note: No Parity; Serial Data Bit = 8; Stop Bit = 1

1	RJ-11 Termination
2	RS-485 Termination
3	MODBUS Network Address DIP switches. See Addressing Table
4	Baud Rate - 19200 BPS: Between Upper and Middle Pin
5	Baud Rate - 9600 BPS: Between Lower and Middle Pin

Figure 5. Communications SetUp

Address	DIP Switch 1	DIP Switch 2	DIP Switch 3	DIP Switch 4
0 [Local Control]	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON
10	ON	OFF	ON	OFF
11	ON	OFF	ON	ON
12	ON	ON	OFF	OFF
13	ON	ON	OFF	ON
14	ON	ON	ON	OFF
15	ON	ON	ON	ON

Table 1. MODBUS Network Address DIP Switch Positions

2.4 Sequence of Operation

IMPORTANT

All equipment should go through the recommended commissioning/start up sequence to ensure safety and system reliability. This document is only valid if the system is used as intended.

This section defines the manner and method of control of the HVAC system. It will cover the following operations and protections.

1.0 Blower Operation

2.0 Cooling Operation

2.1 Mechanical Cooling

2.1.1 Partial Capacity - 50-60%

2.1.2 Partial Capacity - 50%

2.1.3 Full Capacity

3.0 Heating

3.1 Electric Heat

4.0 Dehumidification

4.1 Independent Reheat Output

5.0 Refrigeration Protection

5.1 High Pressure Lockout

5.2 Low Pressure Lockout

5.3 Low Voltage

5.4 Anti-short Cycle

6.0 Additional Features

6.1 MODBUS communication

6.2 Modulating Head Pressure Control

6.3 Freeze Stat Operation

6.4 Onboard Thermostat

Equipment, devices and necessary system components are specified in the respective section.

Note:

1. All inputs on the Controller go through a 5 seconds Time-On Delay to prevent nuisance request. Compressor Outputs go through 5 seconds staggered Time On delay to prevent nuisance tripping of breaker due to the inrush associated with these large inductive loads.
2. Normal Operating Mode describes a mode in which there are no active faults which would interrupt the operation of the system.
3. A control voltage being “High” describes the event in which 24VAC is supplied to that input. Conversely, a “Low” control signal describes an event in which less than 5VAC is supplied to the

1.0 – Blower Operation

A request for Fan Only (independent G-signal via Digital input or MODBUS), results in the indoor motor turning “ON” and operating at the “Y2” motor speed (Only Applicable for EC motors). See Installation/ Operation manual to see how to set the speeds for the various operations. As long as there is a request for Fan (G-input High or a request for Indoor Fan Only via MODBUS), the indoor motor will continue to operate at the Y2 speed setpoint.

When there is a request for Indoor Fan (G-input High) along with a request for cooling, heating or dehumidification, the G-Input becomes lowest priority. This means that in any combination involving the G-input, the speed associated to Fan Only will never take precedence.

The priority list from Highest to Lowest goes as follows:

1. Stage 2 Cooling Request (Y2-Input)
2. Stage 1 Cooling Request (Y1-Input)
3. Electric Heat Request (W2-Input)
4. Dehumidification Request (Hum-Input)
5. Indoor Fan Request (G-Input)

Note – The priority list above also describes the operation that takes precedence in the event that there is a request for all operations or a combination of operations. The controller will NOT energize the compressor outputs and the heater output simultaneously.

The speed at which the Indoor Fan Operates during Stage 1 (Y1) and Stage 2 (Y2) Cooling Request can be set directly at the board using the jumper associated to the “Y1” and “Y2” pin. All other requests run at 80% of Y2 speed except for the lone G-input which runs at the Y2 speed settings. All requests are interlocked with the Indoor Fan and will run the Fan at the respective speed associated with the operation. This means that a lone call for Stage 1 (Y1) Cooling will automatically run the Indoor Fan at Stage 1 (Y1) Cooling Speed even without a request for Indoor Fan. This holds true for all request.

2.0 – Cooling Operation

2.1– Mechanical Cooling

This section will describe the sequence of operation which takes place during Direct Expansion (DX) cooling from a control standpoint.

2.1.1 Y1 Cooling (Partial Capacity 50-60%)

In normal operating mode, a request for “Stage 1 Cooling (Y-input)” via MODBUS, Digital Input or Onboard Thermostat, energizes Compressor 1 Relay Output (CC1) on the PCB. The controller provides a continuous control signal associated to the Indoor Fan Motor, that is proportional to the “Y1” speed setting on the board or via MODBUS. It also outputs a request dependent (based on FCC IN) control signal for the Outdoor Fan Motor. In Stage 1 Cooling operation, the compressor

and the indoor fan remains on continuously but the outdoor fan cycles based on head pressure. The Fan Cycle Control Switch (Low Ambient Control Switch) closes at 400 PSIG to set the “FCC IN” input High which in turn outputs a speed proportional to the “OFM Speed” setting on the board or by MODBUS. This brings on the outdoor fan which runs until the switch reopens (at 290 PSIG). These outputs function as described until the Cooling setpoint is satisfied.

2.1.2 Y2 Cooling (Partial Capacity 50%)

If the space temperature continues to increase pass the defined differential, Stage 2 Cooling (Y2-input) is energized. Under normal operation, this energizes the Compressor 2 Output (CC2). The Indoor Fan motor, will operate at “Y2” speed instead of “Y1” speed since Y2 has higher priority. These outputs remain energized until the cooling setpoint is satisfied. Once the setpoint is satisfied, the Compressor and the Outdoor fan outputs are de-energized. The Indoor motor continues to run for 90 seconds after the operation.

2.1.3 Y1 and Y2 Cooling (Full Capacity)

In the event that both Y1 and Y2 inputs are triggered, both CC1 and CC2 outputs are energized under normal conditions. The Indoor Fan motor, will operate at “Y2 speed” since Y2 has higher priority. Outputs described in the partial cooling operation above continue to function as described until the cooling setpoint is satisfied. Once the setpoint is satisfied, the Compressor and the Outdoor fan outputs are de-energized. The Indoor motor continues to run for 90 seconds after the operation.

Note: With staged compressors, a CC2 output without a CC1 output will neither result in partial capacity nor full capacity. Only CC1 output can achieve partial capacity. Both CC1 and CC2 outputs are required to achieve full capacity.

Request	Active Input	Active Output
Stage 1 Cooling (1 Fixed Compressor)	Y1	CC1 (Partial Capacity)
Stage 1 Cooling (2 Fixed Compressors)	Y1 or Y2	CC1 or CC2 Respectively (Partial Capacity)
Stage 1 Cooling (1 Staged Compressor)	Y1	CC1 (Partial Capacity)
Stage 2 Cooling (2 Fixed Compressors)	Y1 + Y2	CC1 + CC2 (Full Capacity)
Stage 2 Cooling (2 Staged Compressors)	Y1 + Y2	CC1 + CC2 (Full Capacity)
Stage 2 Cooling (2 Staged Compressors)	Y2	CC1 But the compressors will not run without CC1 being active. No Cooling.

3.0– Heating

3.1– Electric Heat

When there is a request for “Heating (W2-Input High)” via MODBUS, Digital Input or On-board Thermostat, the HVAC unit will run the Indoor Motor for 10 seconds prior to energizing the Heater Output. Once the Heater output is energized, the Heater comes on at full capacity (no staging). The Heater will remain on until the Heating setpoint is satisfied and the request is dropped. Once the heating setpoint is satisfied, the Indoor Fan will continue to run for 90 seconds while all other associated outputs are de-energized. Indoor Fan will default at 80% of Y2 speed.

4.0– Dehumidification

4.1– Independent Reheat Output

A request for “Dehumidification (Hum – Input High)” via MODBUS or Digital input will result in the control board energizing the Compressor 1 (CC1), Compressor 2 (CC2) and the Reheat (RH) relay outputs on the board. It also produces a continuous control signal for the Indoor Fan Motor that is proportional to the 80% (default) of the Y2 speed. The Outdoor Fan Motor is request dependent (based on “FCC IN” Input) and outputs a signal proportional to board or MODBUS setting when the “FCC IN” input is High. The board continues to produce these outputs until the Dehumidification request is dropped. Once this request is dropped, the Indoor Fan Motor continues to run for 90 seconds.

5.0 – Refrigeration Protection

5.1– High Pressure Lockout

This condition describes the abnormal rise in Head Pressure pass the system acceptable limit of 660 PSI (+/-20PSI). The fault will only be active when the High-Pressure Switch (Normally Closed) opens during a request for Cooling. The first time this fault condition occurs, the system cuts the compressor off WITHOUT locking out. Once the pressure normalizes (drops below 450 PSI), the system will resume operation if the cooling call still exist. If this fault occurs a second time on the same Cooling request, the system locks out. Lockouts can be monitored using the Status 1 and Status 2 LEDs. These LEDs correspond to a particular circuit and has a flash sequence associated to the various faults. The faults can also be monitored via MODBUS by reading the respective value based on the MODBUS map that is provided. After this lockout condition is reached, the cooling call must be cycled (on/off of respective cooling request) or the system must be power cycled to clear the fault. For a 2-compressor system, each lockout is isolated to the respective circuit and will not interfere with the operation of the other circuit providing that the circuits operate independently. The system will continue to lockout until the problem is rectified.

5.2– Low Pressure Lockout

This condition describes the abnormal fall in Suction Pressure below 40PSIG (+/- 5PSIG). This fault will only be active when the Low-Pressure Switch (Normally Closed) opens up during a request for Cooling. The Low-Pressure Switch is bypassed on the initial call for cooling for 3 minutes to allow low ambient start-up of the system. Once these 3 minutes have elapsed, if the switch is still open, the system cuts the compressor off. Once the pressure normalizes, the system will restart the cooling operation. In the event that the fault occurs a second time on the same call for cooling, the system locks out. To clear the fault, the Cooling request must be cycled or the system must be power cycled. Status LEDs with associated flash codes or designated MODBUS values can be monitored to verify this fault. The system will continue to lockout unit the problem is rectified.

5.3– Low Voltage

In the event that the board is experiencing low voltage (less than 20 Volts), both Status 1 and Status 2 LEDs flashes continuously (see LED Status Indicators). The board will not energize any outputs until this problem is rectified. This fault can be monitored at the board level via LEDs or via MODBUS.

5.4– Anti-Short Cycle

This is a built-in protection mechanism that increases the reliability of the compressor by protecting it from excessive short cycling. When the compressor goes off, due to any fault, emergency or if the cooling setpoint is satisfied, a built-in 3-minute timer locks the compressor for that respective circuit out. This can be monitored via MODBUS by referencing the appropriate register. However, it can only be monitored at the board level by waiting for the 3 minutes to elapse.

6.0 – Additional Features

5.1 – MODBUS Communication

To control the board via MODBUS, the board ID must be non-zero. “Zero” a MODBUS ID represents local control which allows the board to be controlled at the board level by Digital thermostatic inputs. If the MODBUS ID is non-zero, the board ignores all inputs from the board and inputs used are based on the MODBUS registers associated to the various Digital Inputs and Registers. Read Only registers and Coils can still be monitored but all read/write values MUST be configured at the MODBUS register/coil level and NOT at the board level.

The sequence of operation is the same as described above for the various operation, but Indoor Motor speeds for various operation, Outdoor Motor Speed, Heating Setpoint and Cooling Setpoint (if

applicable) has to be configured via MODBUS. See MODBUS register tables at the end of this section.

5.2 – Modulating Head Pressure Control

A 10K Nominal NTC Thermistor is connected to the “P1” and “P2” inputs for circuit 1 and circuit 2 respectively. When this sensor is connected, the “FCC IN” is ignored and the thermistor value is used as the process variable when controlling the head pressure. The controller modulates the Outdoor Fan Motor to maintain a 90°F temperature setpoint. The controller will always use the greater value of P1 and P2 input as the reference point. In the event that the Thermistor is disconnected, the controller reverts to the “FCC IN” input to control the Head Pressure of the system.

5.3– Freeze Stat

A 10K Nominal NTC Thermistor is connected to the “FS1” input on the PCB. If the Thermistor is not connected, freeze protection will not be provided. If the Thermistor is connected, the control will provide the freeze protection by turning the compressor Off at a temperature of 35°F (+/- 2°F) on the Indoor Coil. The compressor will remain Off until the temperature measured is greater than 45°F and the anti-short cycle time has elapsed.

5.4– Onboard Thermostat

The Onboard Thermostat requires a 10K NTC thermistor to be connected to the “FS2” input. It also requires that the MODBUS functionality is enabled via MODBUS. The Heating Setpoint, Cooling Setpoint and Calibration of the sensor has to be configured via MODBUS. Once configuration is complete, the unit has the capability to function autonomously to maintain the space temperature.

**Discrete Registers:
Read with Function Code 02, Write to RW or WO registers with Function Code 05**

ID	Description	Size	Data Format	R/W
1	Current Status of the Y1 Compressor Call	1 Bit	0 = no call, 1 = call	RW
2	Current Status of the Y2 Compressor Call	1 Bit	0 = no call, 1 = call	RW
3	Current Status of the Humidity Call	1 Bit	0 = no call, 1 = call	RW
4	Current Status of the G Fan Call	1 Bit	0 = no call, 1 = call	RW
5	Current Status of the W2 Electric Heating Call	1 Bit	0 = no call, 1 = call	RW
6	Current Status of the FCC Call	1 Bit	0 = no call, 1 = call	RO
7	High Pressure Switch 1 Status	1 Bit	0 = Open, 1 = Closed	RO
8	High Pressure Switch 2 Status	1 Bit	0 = Open, 1 = Closed	RO
9	Low Pressure Switch 1 Status	1 Bit	0 = Open, 1 = Closed	RO
10	Low Pressure Switch 2 Status	1 Bit	0 = Open, 1 = Closed	RO
11	OFM Mode Selection	1 Bit	0 = PWM, 1 = 0-10V	RO
12	IFM Mode Selection	1 Bit	0 = PWM, 1 = 0-10V	RO
13	Test Mode Status	1 Bit	0 = Normal Mode 1 = Test Mode	RO
14	Status of Compressor 1 Relay Output	1 Bit	0 = Off, 1 = Energized	RO
15	Status of Compressor 2 Relay Output	1 Bit	0 = Off, 1 = Energized	RO
16	Status of RH RelayOutput	1 Bit	0 = Off, 1 = Energized	RO
17	Status of W2 RelayOutput	1 Bit	0 = Off, 1 = Energized	RO
18	Enables or Disables the internal Thermostat Functionality	1 Bit	0 = Off, 1 = Energized	RW
19	Enables or disables reading the thermostat inputs in Modbus mode	1 Bit	0 = Modbus only 1 = Read thermostat Inputs Default is 0	RW

Table 2a. MODBUS Discrete Registers

**Registers:
Read with Function Code 04, Write to RW or WO registers with Function Code 06**

ID	Description	Size	Data Format	R/W
1	Heat Setpoint	16 Bit	45°-100° F	RW
2	Cool Setpoint	16 Bit	45°-100° F	RW
3	Temperature Calibration	16 Bit	0-20, 10 is default. Less than 10 is a negative offset, 11-20 is a positive offset	RW
4	W2 Speed Multiplier	16 Bit	0-100, 80 is default. Represents a percentage of the Y2 fan speed	RW
5	Dehumidification Speed Multiplier	16 Bit	0-100, 80 is default. Represents a percentage of the Y2 fan speed	RW
6	OFM Set Speed	16 Bit	0 - 1023	RW
7	IFM Y1 Set Speed	16 Bit	0 - 1023	RW
8	IFM Y2 Set Speed	16 Bit	0 - 1023	RW
9	Modbus Timeout Setting	16 Bit	1 - 60, default 25; represents minutes of allowed MODBUS inactivity before switching to onboard T-Stat mode	RW
10	Current OFM Speed	16 Bit	0 - 1023	RO
11	Current IFM Speed	16 Bit	0 - 1023	RO
12	Anti Short Cycle Compressor 1	16 Bit	0 - 360, 0.5 sec. per step	RO
13	Anti Short Cycle Compressor 2	16 Bit	0 - 360, 0.5 sec. per step	RO
14	Voltage Reading	16 Bit	0 - 1023 1023 = Greater than 20V 965 = 18V cutoff	RO
15	P1 Temperature Reading	16 Bit	0°-160° F	RO
16	P2 Temperature Reading	16 Bit	0°-160° F	RO
17	Freeze Sensor 1 Temperature Reading	16 Bit	0°-160° F	RO
18	Freeze Sensor 2 Temperature Reading	16 Bit	0°-160° F	RO
19	Alarm Status	16 Bit	0 = No Fault 1 = Future Use 2 = HPS1 Fault 3 = Future Use 4 = HPS2 Fault 5 = Future Use 6 = Future Use 7 = LPS1 Fault 8 = LPS2 Fault 9 = Future Use 10 = Future Use 11 = Future Use 12 = Future Use 13 = Freeze Fault 1 14 = Freeze Fault 2 15 = Y1 Locked Out 16 = Y2 Locked Out 17 = Low Voltage	RO

Table 2b. MODBUS Registers

Chapter 3 Safe Installation Requirements

WARNING - SAFETY REQUIREMENTS

Improper adjustment, alteration, service, maintenance or installation could cause serious injury, death and/or property damage.

Installation or repairs made by unqualified persons could result in hazards to you and others. Installation **MUST** conform with local codes or, in the absence of local codes, with codes of all governmental authorities have jurisdiction.

The information contained in this manual is intended for use by a qualified service agency that is experienced in such work, is familiar with all precautions and safety procedures required in such work, and is equipped with the proper tools and test instruments.

AVERTISSEMENT DANGER D'INCENDIE, EXPLOSION OU ASPHYXIE

Une mauvaise exécution d'installation, réglage, altération, intervention ou entretien peut causer dégâts matériels et dommages corporels ou même mort.

Une installation ou des réparations faites par des personnes non qualifiées peuvent entraîner des dangers pour vous et les autres. L'installation **DOIT** être faite en conformité avec les normes locales, ou en leur absence avec les normes des autorités nationales ayant juridiction en la matière.

Les informations contenues dans ce manuel sont prévues pour être utilisées par une agence de dépannage qualifiée, ayant de l'expérience dans ce type de travaux, familière avec les précautions et procédures de sécurité que cela implique, et équipée des outils et instruments de test adéquats.

WARNING - CARBON-MONOXIDE POISONING HAZARD

Failure to follow instructions could result in severe personal injury or death due to carbon-monoxide poisoning, if combustion products infiltrate into the building.

Check that all openings in the outside wall around the vent (and air intake) pipe(s) are sealed to prevent infiltration of combustion products into the building.

Check that furnace vent (and air intake) terminal(s) are not obstructed in any way during all seasons.

AVERTISSEMENT - RISQUE D'INTOXICATION AU MONOXYDE DE CARBONE

Si ces directives ne sont pas suivies, cela peut entraîner des blessures graves ou une intoxication au monoxyde de carbone pouvant causer la mort, si des produits de combustion s'infiltrent dans le bâtiment.

Vérifier que toutes les ouvertures pratiquées dans le mur extérieur autour du ou des tuyaux d'évent (at de la prise d'air) sont scellées de manière à empêcher l'infiltration de produits de combustion dans le bâtiment.

Veiller à ce que la ou les sorties de l'évent de l'appareil de chauffage (et la prise d'air) ne soient, en aucune façon, obstruées, quelle que soit la saison.

NOTE: This furnace is design-certified by the CSA International (formerly AGA and CGA) for installation in the United States and Canada. Refer to the appropriate codes, along with this manual, for proper installation.

- Use only the Type of gas approved for this furnace (see Rating Plate on unit). Overfiring will result in failure of heat exchanger and cause dangerous operation. (Furnaces can be converted to LP gas with approved kit.)
- Install this furnace only in a location and position as specified in the Installation Requirements section of these instructions.
- Provide adequate combustion and ventilation air to the furnace as specified in Venting the Furnace section of these instructions. Vent this furnace only as specified in Venting the Furnace.

- Eubank HAA air conditioners with gas heat is only to be installed on the exterior of a building.
- Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in Gas Supply and Piping, Final Check check of these instructions.
- Always install furnace to operate within the furnace's intended temperature rise range with a duct system which has an external static pressure within the allowable range, as specified in Porting and Ductwork section of these instructions and on the data plate.
- Supply ducts and the return air shall be handled by a duct(s) sealed to the furnace casing as specified in Porting and Ductwork.
- Seal around supply and return air ducts.
- Install correct filter type and size.

3.1 Safety Rules

Your unit is built to provide many years of safe and dependable service providing it is properly installed and maintained. However, abuse and/or improper use can shorten the life of the unit and create hazards for you, the owner.

- A. The U.S. Consumer Product Safety Commission encourages installation of carbon monoxide alarms. There can be various sources of carbon monoxide in a building or dwelling. The sources could be gas-fired clothes dryers, gas cooking stoves, water heaters, furnaces, gas-fired fireplaces, wood fireplaces, and several other items.

Carbon monoxide can cause serious bodily injury and/or death. Carbon monoxide or “CO” is a colorless and odorless gas produced when fuel is not burned completely or when the flame does not receive sufficient oxygen.

Therefore, to help alert people of potentially dangerous carbon monoxide levels, you should have a commercially available carbon monoxide alarm that is listed by a nationally recognized testing agency in accordance with Underwriters Laboratories, Inc. Standard for Single and Multiple Station Carbon Monoxide Alarms, ANSI/UL 2034 or the CSA 6.19-01 Residential Carbon Alarming Devices installed and maintained in the building or dwelling concurrently with the gas-fired furnace installation (see Note below). The alarm should be installed as recommended by the alarm manufacturer’s installation instructions.

- B. There can be numerous sources of fire or smoke in a building or dwelling. Fire or smoke can cause serious bodily injury, death and/or property damage. Therefore, in order to alert people of potentially dangerous fire or smoke, you should have fire extinguisher and smoke alarms listed by Underwriters Laboratories installed and maintained in the building or dwelling (see note below).

NOTE: Airxcel Commercial Group does not test any alarms and makes no representations regarding any brand or type of alarms.

- C. To ensure safe and efficient operation of your unit, you should do the following:

1. **Thoroughly read this manual and labels on the unit.** This will help you understand how your unit operates and the hazards involved with gas and electricity.
2. **Do not use this unit if any part has been under water.** Immediately call a quality service agency to inspect the unit and to replace any part of the control system and any gas control which has been under water.
3. **Never obstruct the vent grilles, or any ducts that provide air to the unit.** Air must be provided for proper combustion and ventilation of flue gases.



WARNING: FROZEN AND BURST WATER PIPE HAZARD

Failure to protect against the risk of freezing could result in property damage and/or personal injury. Do not leave the structure unattended for long periods during freezing weather without turning off water supply and draining water pipes or otherwise protecting against the risk of frozen pipes and resultant damage.



AVERTISSEMENT: DANGER DE GEL ET D'ÉCLATEMENT DES CONDUITES D'EAU

Le manque de protection contre le risque de gel peut entraîner des dégâts matériels et/ou des blessures corporelles.

Ne laissez pas la structure sans surveillance durant de longues périodes à la saison où il peut geler sans avoir auparavant coupé toutes les alimentations en eau et vidangé les conduites d'eau, ou bien protégez les conduites contre le gel et les dommages qui peuvent en résulter..

Your furnace is designed solely to provide a safe and comfortable living environment. The furnace is NOT designed to ensure that water pipes will not freeze. It is equipped with several safety devices that are designed to turn the furnace off and prevent it from restarting in the event of various potentially unsafe conditions.

If your furnace remains off for an extended time, the pipes in the structure could freeze and burst, resulting in serious water damage.

If the structure will be unattended during cold weather, you should take these precautions:

1. Turn off the water supply to the structure and drain the water lines if possible and add an antifreeze for potable water to drain traps and toilet tanks. Open faucets in appropriate areas. OR
2. Have someone check the structure frequently during cold weather to make sure it is warm enough to prevent pipes from freezing. Instruct them on a service agency to call to provide service if required.
3. Install a reliable remote sensing device that will notify somebody of freezing conditions within the structure.

D. Important Safety Precautions



WARNING

TURN ELECTRICAL POWER OFF AT THE breaker or fuse box BEFORE installing or working on the equipment. LINE VOLTAGES ARE HAZARDOUS or LETHAL.



AVERTISSEMENT

COUPEZ L'ALIMENTATION ÉLECTRIQUE, au niveau du disjoncteur ou du fusible en amont, AVANT l'installation de cet équipement ou une intervention dessus. LES TENSIONS D'ALIMENTATION SECTEUR SONT DANGEREUSES OU MORTELLES.

1. USE CARE when LIFTING or TRANSPORTING equipment.
2. TRANSPORT the UNIT UPRIGHT. Laying it down on its side may cause oil to leave the compressor or other problems, resulting in DAMAGE upon START-UP.
3. OBSERVE and COMPLY with ALL applicable PLUMBING, ELECTRICAL, and BUILDING CODES & ordinances.
4. SERVICE may be performed ONLY by QUALIFIED and EXPERIENCED PERSONS.
 - Wear safety goggles when servicing the refrigeration circuit
 - Beware of hot surfaces on refrigerant circuit components.
 - Beware of sharp edges on sheet metal components
 - Use care when reclaiming or adding refrigerant.
5. Use COMMON SENSE - BE SAFETY CONSCIOUS.

Chapter 4 Installation

 **WARNING**
CARBON MONOXIDE POISONING HAZARD

Failure to properly vent this furnace or other appliances could result in death, personal injury and/or property damage.

If this furnace is replacing a previously common-vented furnace, it may be necessary to resize the existing vent system to prevent oversizing problems for the other remaining appliance(s). See *Venting the Furnace* section of this instruction.

 **AVERTISSEMENT**
DANGER D'EMPOISONNEMENT AU MONOXYDE DE CARBONE

Un défaut de ventilation pour cette chaudière ou d'autres appareils peut causer la mort, des dommages corporels et/ou des dégâts matériels.

Si cette chaudière remplace une chaudière précédente à ventilation partagée, il pourra être nécessaire de redimensionner le système de ventilation existant pour éviter des problèmes de surdimensionnement au niveau du ou des autres appareils. Reportez-vous à la section *Ventilation de la chaudière* dans ce manuel d'instructions.

4.1 Location and Clearances

Choose the location or evaluate the existing location based upon the minimum clearance and furnace dimensions.

MODEL	Min. Clearance From the Front	Min. Clearance Around Both Sides	Min. Clearance Above the Unit	Min. Clearance Below the Unit	Min. Clearance Around the Flue Vent or Pipe
HAA1024/1030/1036	36"	19"	2"	0"	18"
HAA1042/1048/1060	36"	19"	2"	0"	18"

Table 3. Minimum Clearances from Unprotected Combustible Material and For Service

 **WARNING**
CARBON MONOXIDE POISONING HAZARD

Failure to follow safety warnings could result in serious injury, death, or property damage.

Do NOT operate furnace in a corrosive atmosphere containing chlorine, fluorine or any other damaging chemicals which could harm the furnace and vent system, and permit spillage of combustion products into an occupied space.

Refer to *Venting the Furnace* section, contaminated combustion air for combustion air evaluation and remedy.

 **AVERTISSEMENT**
DANGER D'EMPOISONNEMENT AU MONOXYDE DE CARBONE

La non-observation des AVERTISSEMENTS de sécurité peut causer des blessures graves ou mortelles ou des dégâts matériels.

NE faites PAS fonctionner la chaudière dans une atmosphère corrosive contenant chlore, fluor ou tout produit chimique détériorant qui pourrait attaquer la chaudière et le système de ventilation, et permettre le déversement de produits de combustion dans un lieu habité.

Reportez-vous à la section *Ventilation de la chaudière*, air de combustion contaminé, pour une évaluation de l'air de combustion et les remèdes s'il y a lieu.

4.2 Installation Requirements

1. Install furnace level.
2. Install the vent pipes as short as practical. (See Venting the Furnace section).
3. Maintain clearance for fire safety and servicing. See Table 1 for minimum clearances.
4. Furnace must be located or physically protected from possible damage by a vehicle.
5. When the unit is installed on a new building, make sure that:
 - a. The air temperature rise is within the rated rise range on the furnace rating plate, and the firing rate has been set to the rating plate value.
 - b. The filters used to clean the circulating air during the construction process must be either changed or thoroughly cleaned prior to occupancy.
 - c. The furnace, ductwork and filters are cleaned as necessary to remove drywall duct and construction debris from all HVAC system components after construction is completed.
 - d. Verify proper furnace operating conditions including ignition, gas input rate, and venting according to these installation instructions.
6. The wall mounted air conditioner with gas heat furnace is designed to be installed on the EXTERIOR wall of a building. Do NOT install this unit in an interior space.
7. The unit is not certified or suitable for use in drying or process applications. Use in such applications voids any warranty and Airxcel Commercial Group disclaims any responsibility for the duct furnace and/or application.
8. The unit is not designed for use in hazardous atmospheres containing flammable vapors or combustible dust, in atmospheres containing chlorinated or halogenated hydrocarbons, or in applications with airborne substances containing silicone.
9. The presence of chlorine vapors in the combustion air supply to gas fired heaters presents a substantial corrosion hazard.
10. The use and storage of gasoline or other flammable vapors and liquids in the vicinity of the unit is hazardous.
11. Install the unit so that the least amount of noise will be transmitted to the living spaces.
12. Condensate is produced during the cooling cycle. This condensate must be disposed of to a suitable location.
13. In the cooling mode, condenser air is drawn in through the sides of the unit and discharged through the coil in the front of the unit. Both the intake and exhaust air must not be impeded or restricted by shrubbery or any other obstructions.
14. The power supply must have the appropriate voltage, phase and ampacity for the model selected. Refer to the data plate on the unit for ampacity requirements. Voltage must be maintained above minimum levels and below maximum levels shown below.

Electrical Rating Designations*	A	C	D
Nominal Voltage	208/230	208/230	460
Phase	1	3	3
Minimum Voltage	197	197	414
Maximum Voltage	253	253	506

*Letters refer to model number code designations. Refer to Model Identification on page 5.

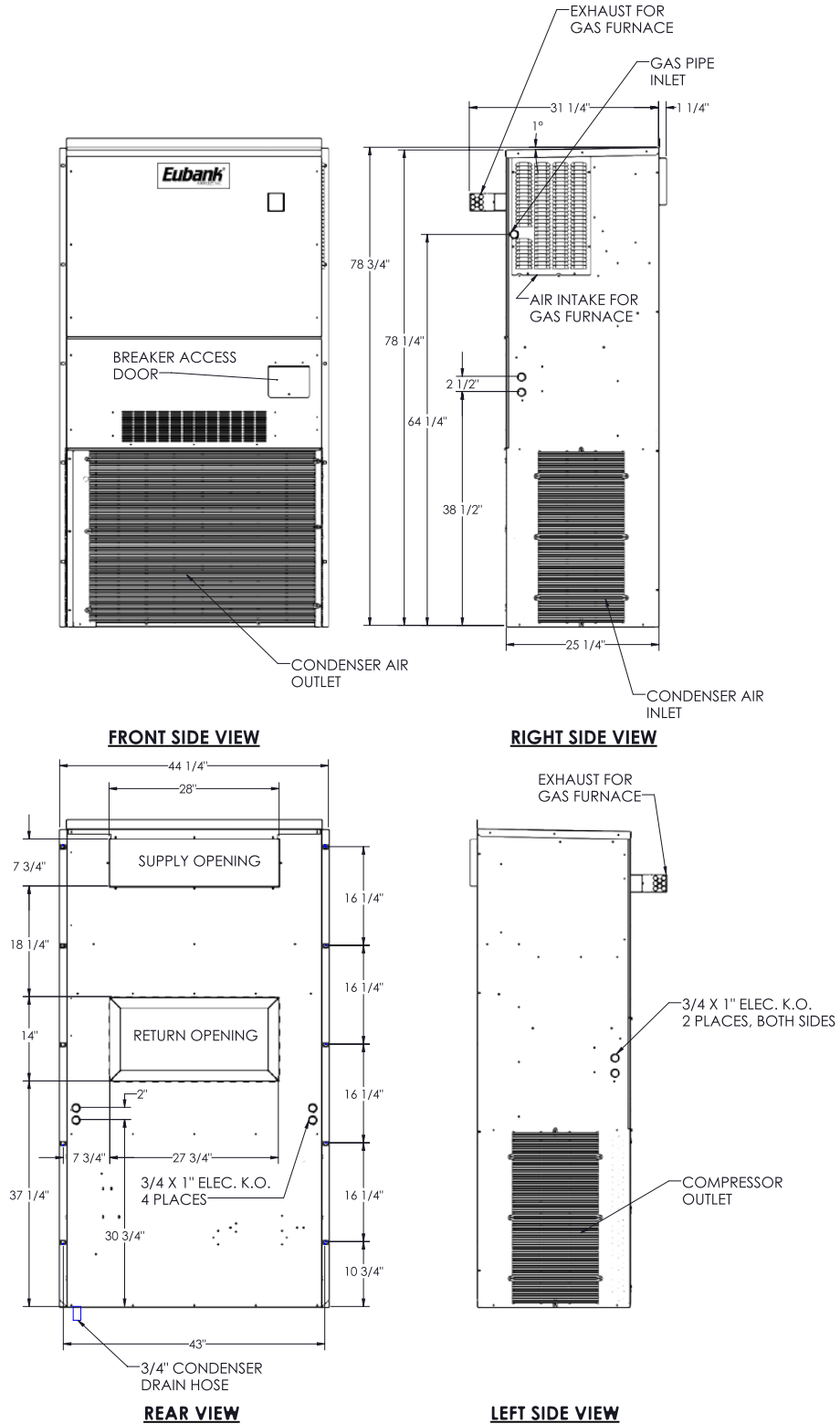
Table 4. Electrical Rating Designations

15. Eubank HAA air conditioners with gas heat may be used for heating and cooling in buildings under construction provided that ALL installation procedures described in this manual are followed including, but not limited to:

- a. The unit must be properly vented,
- b. The unit must be controlled by a thermostat,
- c. The return air duct must be sealed to the unit,
- d. The air filters must be in place,
- e. The input rate and the temperature rise must be within the range shown on the data plate on the unit,
- f. The unit must be installed on the exterior of the building for providing outdoor air for combustion, and
- g. Return air temperature between 55°F (13°C) and 80°F (27°C)

Upon the completion of the construction process, the unit, duct work and components must be cleaned and the proper operation of the furnace verified including ignition, input rate, temperature rise and venting as described in this manual.

4.3 Dimensional Data



Shipping Weight

BASIC MODEL	HAA1024A	HAA1030A	HAA1036A
SHIP WEIGHT - LBS	335	415	415
SHIP WEIGHT - KG	152	189	189

Filter Size (inches)

BASIC MODEL	HAA1024A	HAA1030A	HAA1036A
FILTER SIZE - IN		30 x 16 x 2	
FILTER SIZE - MM		762 x 406 x 51	
FILTER PART #		80138	

Figure 6a. HAA1024A/HAA1030A/HAA1036A Dimensional Data

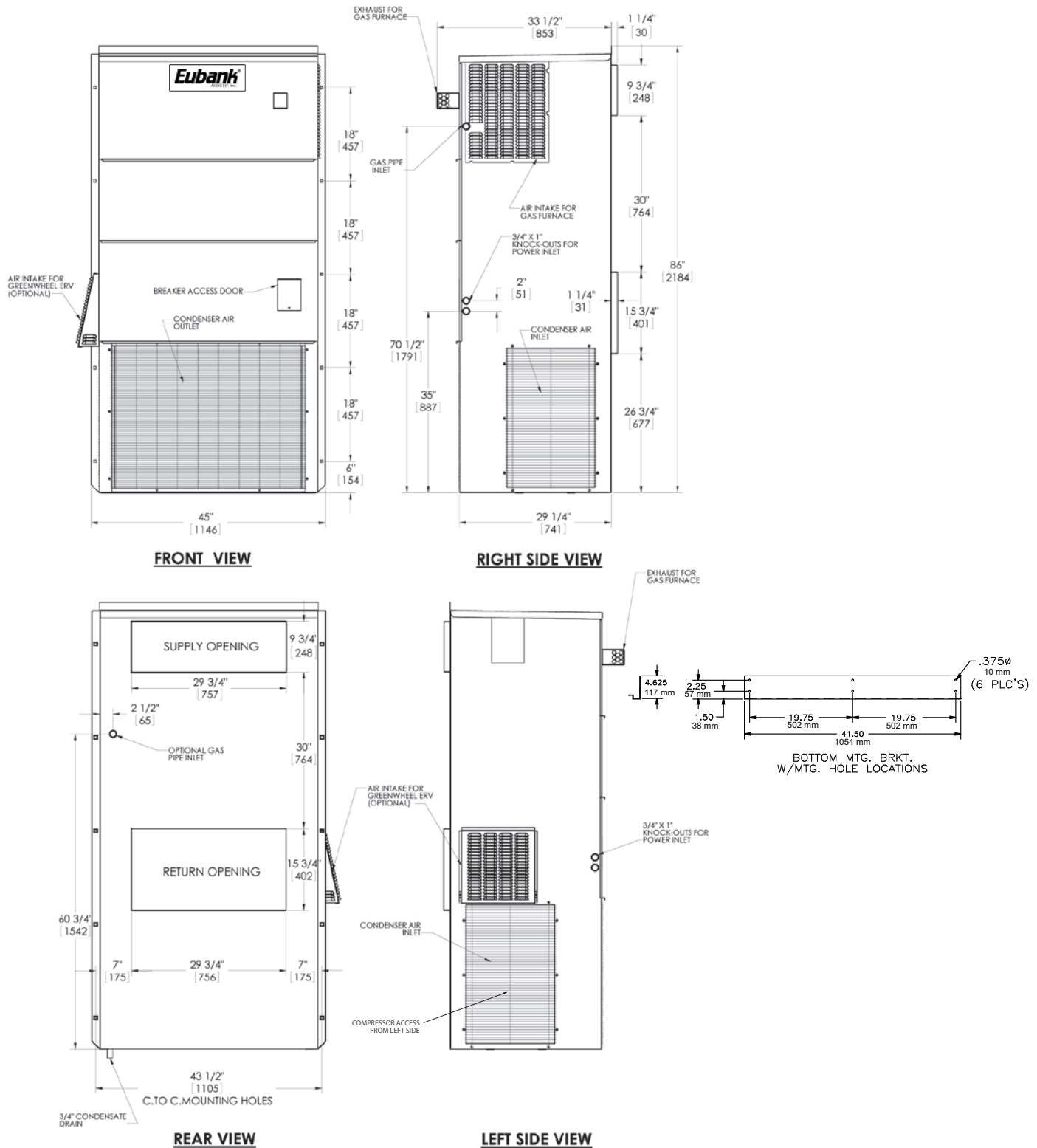
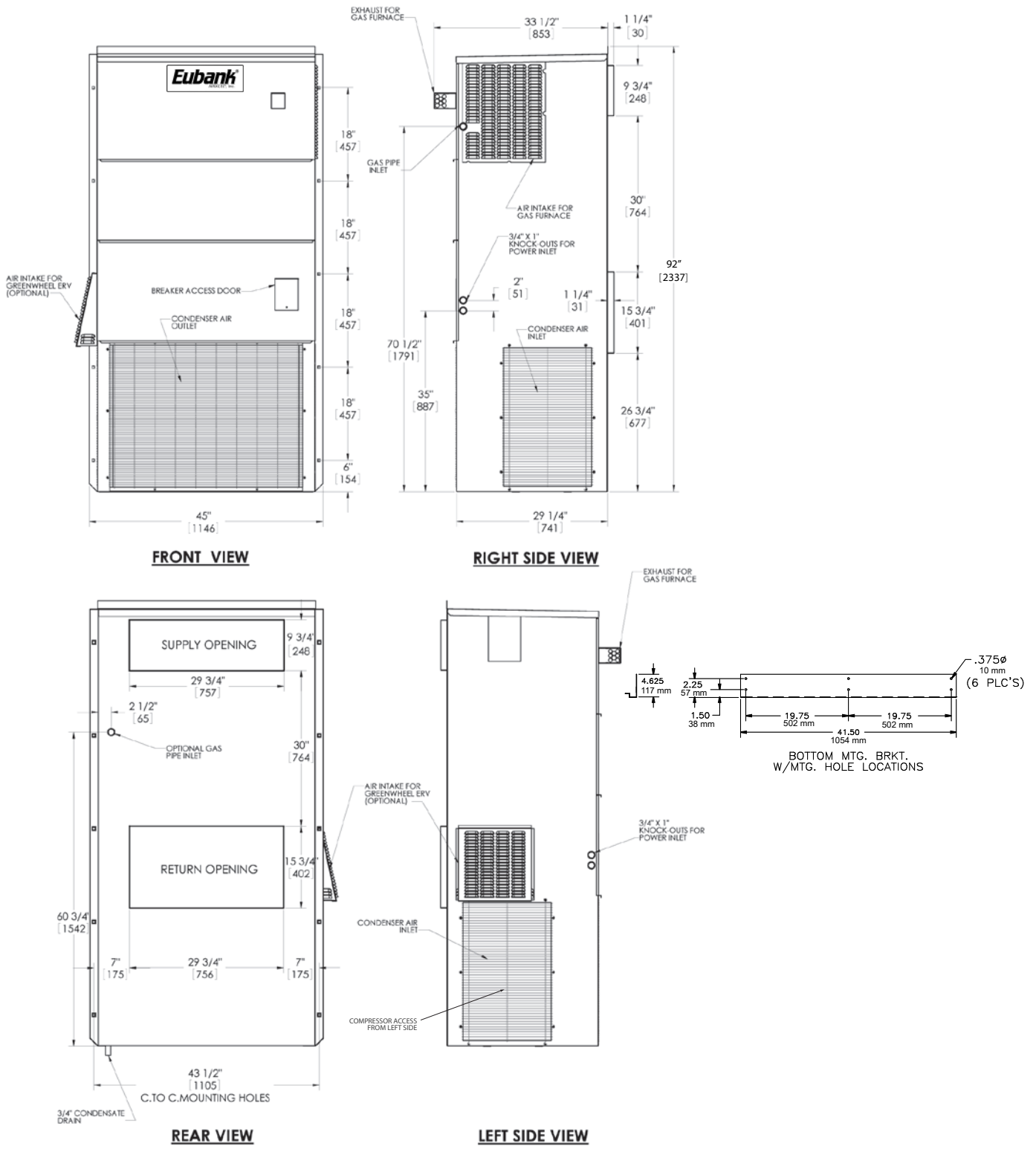


Figure 6b. HAA1042A/HAA1048A Dimensional Data



Shipping Weight

BASIC MODEL	HAA1042A	HAA1048A	HAA1060A
SHIP WEIGHT - LBS	555	580	595
SHIP WEIGHT - KG	252	264	270

Filter Size (inches)

BASIC MODEL	HAA1042A	HAA1048A	HAA1060A
FILTER SIZE - IN	18 x 24 x 1		
FILTER SIZE - MM	457 x 610 x 25		
FILTER PART # (2 FILTERS/UNIT)	81199		

Figure 6c. HAA1060A Dimensional Data

4.4 Equipment Inspection

Concealed Damage

Inspect all cartons and packages upon receipt for damage in transit. Remove cartons and check for concealed damage. Important: Keep the unit upright at all times. Remove access panels and examine component parts. (Note: The top (optional) and bottom brackets are stored in the condenser air compartment. Remove them before replacing the side screen). Inspect refrigerant circuit for fractures or breaks. The presence of refrigerant oil usually indicates a rupture. If damage is apparent, immediately file a claim with the freight carrier.

Units that have been turned on their sides or tops may have concealed damage to compressor motor mounts, to the oil system or to other components. If the unit is not upright, immediately file a claim for concealed damages and follow these steps:



1. Set unit upright and allow to stand for 24 hours with primary power turned on.
2. Attempt to start the compressor after 24 hours.
3. If the compressor will not start, makes excessive noise, or will not operate, return the unit to the freight carrier.

General

1. Inspect unit for completeness. Check for missing parts (e.g. hardware). Refer to the installation kit information in section 5.6, Installation Kits.
2. Remove access panels and check for loose wires. Tighten screw connections.
3. Complete and mail the warranty registration card.

4.5 Clearances

The sides and front of the unit must be kept free of any obstructions or anything that impedes or restricts the movement of intake or exhaust air. Follow local codes.

 WARNING CARBON MONOXIDE, FIRE OR EXPLOSION HAZARD
Failure to have the minimum clearances could result in severe personal injury or death.
 AVERTISSEMENT DANGER DE MONOXYDE DE CARBONE, D'INCENDIE OU D'EXPLOSION
Ne pas respecter les écartements minimum peut entraîner des blessures graves voire mortelles.

MODEL	Min. Clearance From the Front	Min. Clearance Around Both Sides	Min. Clearance Above the Unit	Min. Clearance Below the Unit	Min. Clearance Around the Flue Vent or Pipe
HAA1024/1030/1036	36"	19"	2"	0"	18"
HAA1042/1048/1060	36"	19"	2"	0"	18"

Table 5. Minimum Clearances from Unprotected Combustible Material and For Service

After the unit has been installed, make sure that the unit is level.

4.6 Installation Materials

Installation Kits

Eubank HAA air conditioners with gas heat have built-in mounting flanges that function as side brackets. All models require and are shipped with a bottom mounting bracket. There is also an air intake hood packed inside each unit and a vent hood.

Standard Kit Components

1. One 12 Ga. “L”-shaped bottom bracket

The package may include other factory-supplied items (optional) listed below and on the following page:

Part # Description

Thermostats

- | | |
|-------|--|
| 50121 | Digital thermostat. 1 stage heat, 1 stage cool. Non-programmable. Fan switch: Auto & On. Manual changeover system switch: Cool-Off-Heat. Low temperature protection. °F or °C. |
| 50123 | Digital thermostat. 1 stageheat, 1 stagecool. 7 dayprogrammable. Fanswitch:Auto& On.Auto-change over. Keypad lockout. Non-volatile program memory. Title 24 compliant - no batteries needed. |
| 50124 | Digital thermostat. 1 stage heat, 1 stage cool. 7 day programmable. Fan switch: Auto & On. Manual changeover system switch. LCD display. Title 24 compliant - no batteriesneeded. |
| 50100 | Seven day programming. Two occupied and two unoccupied periods per day. Individual heat and cool setpoints. Manual or automatic changeover. System switch: Off, Cool, Heat, Emergency Heat. Fan Switch: Auto & On. Keypad lockout available. Ventilation terminals. No batteries required. Display indicates when Auxiliary Heat or Emergency Heat are activated. Requires a 50101 sub-base if used on a heat pump or a 50109 if used on an air conditioner. |
| 70076 | Internal Thermostat - Factory Installed 1 Stage Heat, 1 Stage Cool withAuto Changeover, Eliminates need for External Wall Mount T’Stat and Sub-Base. |
| 50092 | Thermostat Guard. For use with the 50107, 50122, 50121, 50123 and 50124. |

Supply Grilles

- | | |
|-------|--|
| 80675 | 28 x 8” Adjustable, Aluminum, Double Deflection Supply Grille for HAA1024/1030/1036 |
| 80676 | 30 x 10” Adjustable, Aluminum, Double Deflection Supply Grille for HAA1042/1048/1060 |

Return Grilles

- | | |
|-------|---|
| 80678 | 28 x 14” Aluminum Return Grille for HAA1024/1030/1036 |
| 80679 | 30 x 16” Aluminum Return Grille for HAA1042/1048/1060 |

Additional Items Needed:

Additional hardware and miscellaneous supplies (not furnished) are needed for installation. For example, the list below contains approximate quantities of items typically needed for mounting a unit on a wood frame wall structure with standard full length mounting bracket or flanges. Concrete or fiberglass structures have different requirements.

- (10) **3/8” mounting bolts** or lag screws for side brackets and anchors, if required for side brackets.
- (20) **3/8” washers**
- (10) **3/8” hex nuts**
- (6) **3/8” x 2-1/2” lag screws** for bottom bracket
- **Silicone Sealer** to seal around cracks and openings
- **7-conductor low voltage multi-colored wire cable** (i.e. thermostat wire)
- Appropriate electrical supplies such as conduit, electrical boxes, fittings, wire connectors, etc.
- **High voltage wire**, sized to handle the MCA (minimum circuit ampacity) listed on the data plate.
- **Over-Current Protection Device** sized in accordance with the MFS (maximum fuse size) listed on the unit data plate.

Duct materials usually are also needed in addition to the mounting hardware. To save time, design the duct work before mounting the unit.

4.7 Porting and Duct Work

WARNING

FIRE AND CARBON MONOXIDE POISONING HAZARD

Failure to properly install the duct work could result in death, bodily injury and/or property damage. In each installation, the duct system must be properly engineered and installed to insure sufficient air flow to prevent overheating. All units must have at least one inch clearance on all four sides of the supply outlet duct flange on the unit. The minimum one inch clearance must extend on all sides of the supply duct for the first three feet from the unit.

AVERTISSEMENT

DANGER D'INCENDIE ET D'EMPOISONNEMENT AU MONOXYDE DE CARBONE

Une installation incorrecte de la tuyauterie peut entraîner mort, blessure corporelle et/ou dégâts matériels. Sur chaque installation le système de conduites doit être bien calculé et installé, afin d'assurer un flux d'air suffisant évitant la surchauffe. Toutes les unités doivent avoir au moins 2,5 cm de dégagement sur les quatre côtés de la bride de sortie de conduite d'amenée sur l'unité. Ce minimum de 2,5 cm doit s'étendre de tous les côtés de la conduite d'arrivée sur ses premiers 90 cm en partant de l'unité.

4.8 General Information

NOTE: The following instructions are for general guidance only. Due to the wide variety of installation possibilities, specific instructions will not be given. When in doubt, follow standard and accepted installation practices, or contact Airxcel Commercial Group for additional assistance.

4.9 Wall Openings

Measure the dimensions of the supply and return openings on the unit.

Cut the supply opening in the exterior wall for the supply and return. **IMPORTANT: All units must have at least one inch clearance on all four sides of the supply outlet duct flange on the unit. The one inch clearance must extend on all sides of the supply duct for the first three feet from the unit.** The duct must be constructed of galvanized steel with a minimum thickness of .019”.

4.10 Minimum Airflow Requirements

The duct system must be engineered to assure sufficient air flow through the air conditioner with gas heat, even under adverse conditions such as dirty filters, etc. Proper engineering will insure longevity and maximum performance from the unit.

4.11 Ducting

Extensions should be cut flush with the inside wall for applications without duct work.

Applications using duct work should be designed and installed in accordance with *all* applicable safety codes and standards. Airxcel Commercial Group strongly recommends referring to the current edition of the National Fire Protection Association Standards 90A and 90B *before* designing and installing ductwork. The ductsystem must be engineered to insure sufficient air flow through the unit to prevent over-heating. This includes proper supply duct sizing, sufficient quantity of supply registers, adequate return and filter area. Ductwork must be of correct material and must be properly insulated. Ductwork must be constructed of galvanized steel with a minimum thickness of

.019". Ductwork must be firmly attached, secured and sealed to prevent air leakage. Do not use duct liner on inside of supply duct within four feet of the unit.

Galvanized metal duct extensions should be used to simplify connections to duct work and grilles. Use fabric boots to prevent the transmission of vibration through the duct system. The fabric must be U.L. rated (UL-181) to a minimum of 197°F.

Note: Follow local codes and standards when designing duct runs to deliver the required airflow. Minimize noise and excessive pressure drops caused by duct aspect ratio changes, bends, dampers and outlet grilles in duct runs.

4.12 Hanging the Unit on the Wall

1. Remove and discard the 4 x 4 shipping boards attached to the base of the unit.
2. All HAA models have built-in mounting flanges. See Figure 2.
3. Refer to Figure 2. Attach the bottom support bracket to the wall using appropriate 3/8" diameter hardware.

For example, on wooden structures, use 3/8 x 2-1/2 inch all-thread lag screws. The screws must penetrate the center of the wall stud. Drill a pilot hole in the stud to prevent it from splitting.

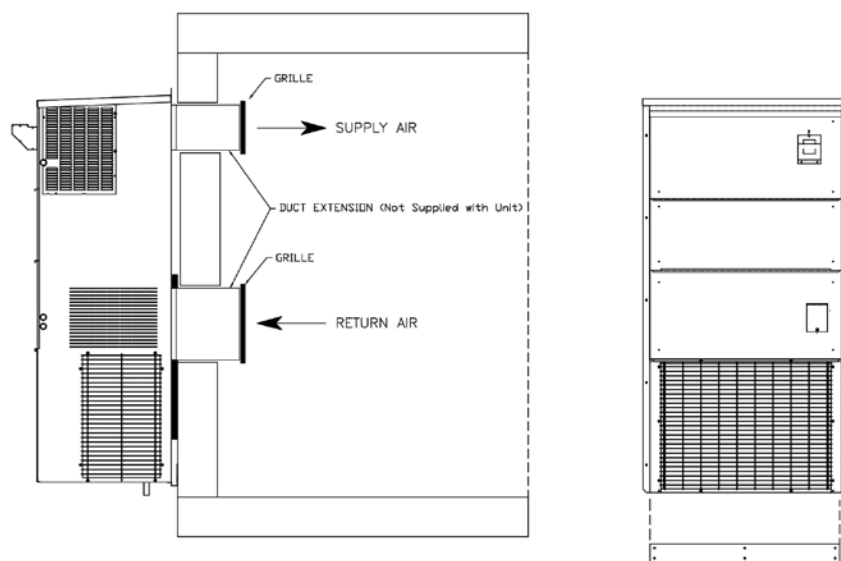




Figure 7. Mounting Unit on a Wall

4. For wiring into the back of unit, locate the lower of the two knock-outs on the wall side of the unit. Drill a one inch hole in the building wall to match this opening. Allow sufficient clearance to run 3/4" conduit through the hole and to the unit.
5. Apply a bead of silicone sealer on the wall side of the mounting brackets. Circle the mounting holes with the silicone bead.
6. Using an appropriate and safe lifting device, set the unit on the bottom support bracket mounted on the wall. You must stabilize the unit on the bracket with the lifting device or by some other means - the bracket alone is not sufficient.
7. Make sure that the duct flanges are properly aligned with the wall opening. Adjust as necessary.
8. Note the holes in each side bracket. Using the holes for guides, drill holes through the wall with a 3/8 inch drill bit. Insert the 3/8" bolts or lag screws through the brackets. Tighten the bolts to secure the unit.
9. Apply a bead of silicone where the top flange and side brackets contact to the structure wall.
10. Fasten the top flange to the wall using #10 x 1/2 inch sheet metal screws.
11. On the inside of the structure, wall sleeves must be installed in the supply and return air openings. The sleeves should be trimmed to fit flush with the inside wall.
12. Check the fit of each sleeve to its mating flange for possible air leaks. Apply silicone sealer to close any gaps. Install the air return and supply grilles.

4.13 Gas Supply and Piping

 WARNING CARBON MONOXIDE, FIRE AND EXPLOSION HAZARD
<p>Failure to follow safety warnings exactly could result in serious injury, death and/or property damage.</p> <p>Models designated for Natural Gas are to be used with Natural Gas ONLY, unless properly converted to use with LP gas.</p>

 AVERTISSEMENT DANGER DE MONOXYDE DE CARBONE, D'INCENDIE OU D'EXPLOSION
<p>Ne pas respecter exactement les AVERTISSEMENTS de sécurité peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.</p> <p>Les modèles conçus pour du gaz naturel ne doivent fonctionner qu'avec ce gaz UNIQUEMENT, sauf s'ils ont été convertis dans les règles pour utiliser du gaz propane (LP).</p>

4.14 Gas Supply Requirements

- Use only the type of gas approved for this furnace. See rating plate for approved gas type.
- Gas input must not exceed the rated input shown on the rating plate. Overfiring will result in failure of heat exchanger and cause dangerous operation.
- Do not allow minimum supply pressure to vary downward. Doing so will decrease input to furnace. Refer to Table 4 for gas supply pressure. Refer to Section 6.2 Gas Manifold Pressure Adjustments.

Gas Type	Supply Pressure		
	Recommended	Max.	Min.
Natural	7"	14"	4.5"
Propane	11"	14"	11"

Table 6. Gas Pressures

4.15 Gas Piping Requirements

NOTE: The gas supply line must be installed by a qualified service technician in accordance with all building codes.

NOTE: In the state of Massachusetts.

- a. Gas supply connections **MUST** be performed by a licensed plumber or gas fitter.
 - b. When flexible connectors are used, the maximum length shall not exceed 36” (915 mm).
 - c. When lever handle type manual equipment shutoff valves are used, they shall be T-handle valves.
1. Install gas piping in accordance with local codes, or in the absence of local codes, the applicable national codes.
 2. It is recommended that a manual equipment shutoff valve be installed in the gas supply line outside the furnace. Locate valve as close to the furnace as possible where it is readily accessible.

 **WARNING**
FIRE HAZARD

Failure to follow safety warnings exactly could result in serious injury, death and/or property damage.

Use wrench to hold furnace gas control valve when turning elbows and gas line to prevent damage to the gas control valve and furnace.

 **AVERTISSEMENT**
DANGER D'INCENDIE

Ne pas respecter exactement les AVERTISSEMENTS de sécurité peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.

Utilisez une clé pour maintenir la vanne de contrôle de gaz de la chaudière quand vous tournez coudes ou conduite de gaz, afin d'éviter d'endommager la vanne et la chaudière.

3. Use black iron or steel pipe and fittings or other pipe approved by local code.
4. Use pipe thread compound which is resistant to natural and LP gases.
5. Use ground joint unions and install a drip leg no less than 3” long to trap dirt and moisture before it can enter gas control valve inside furnace.
6. Provide a 1/8” NPT plugged tapping for test gauge connection immediately up stream of gas supply connection to furnace.
7. Use two pipe wrenches when making connections to prevent furnace gas control valve from turning.

NOTE: If local codes allow the use of a flexible gas appliance connector, always use a new listed connector. Do not use a connector which has previously serviced another gas appliance.

8. Flexible corrugated metal gas connector may **NOT** be used inside the furnace or be secured or supported by the furnace or ductwork.
9. Properly size gas pipe to handle combined appliance load or run gas pipe directly from gas meter or LP gas regulator.
10. Install correct pipe size for run length and furnace rating.
11. Measure pipe length from gas meter or LP second stage regulator to determine gas pipe size.

 **WARNING**
FIRE OR EXPLOSION HAZARD

Failure to properly install metal gas connector could result in death, bodily injury and/or property damage. A flexible corrugated metal gas connector must be properly installed, shall not extend through the side of the furnace, and shall not be used inside the furnace.

Black iron pipe shall be installed at the furnace gas control valve and extend a minimum of 2" outside furnace.

 **AVERTISSEMENT**
DANGER D'INCENDIE OU D'EXPLOSION

Ne pas installer correctement le connecteur métallique du gaz peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.

Un connecteur métallique de gaz flexible ondulé doit être correctement installé, ne doit pas dépasser du côté de la chaudière, et ne doit pas être utilisé à l'intérieur de la chaudière.

Un tuyau en fer noir doit être installé sur la vanne de contrôle du gaz de chaudière et dépasser d'au moins 5 cm hors de la chaudière.

Additional LP Piping Requirements

- Have a licensed LP gas dealer make all connections at storage tank and check all connections from tank to furnace.
- If copper tubing is used, it MUST comply with limitation set in local codes, or in the absence of local codes, the gas codes of the country having jurisdiction.
- Two-stage regulation of LP gas is recommended.

 **WARNING**
FIRE OR EXPLOSION HAZARD

A natural gas or LP gas leak ignited by an open flame or spark could result in death, personal injury and/or property damage.

Natural gas is lighter than air and will rise. Liquidified petroleum (LP) gas is heavier than air and will settle and remain in low areas and open depressions.

Thoroughly ventilate area and dissipate gas. DO NOT use a match or open flame to test for leaks, or attempt to start up furnace before thoroughly ventilating area. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage or loss of life.

 **AVERTISSEMENT**
DANGER D'INCENDIE OU D'EXPLOSION

Une fuite de gaz naturel ou propane allumée par une flamme nue ou une étincelle peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.

Le gaz naturel est plus léger que l'air et va monter. Le gaz propane (pétrole liquéfié) est plus lourd que l'air et va descendre et s'accumuler dans les zones basses et les dépressions ouvertes.

Ventilez complètement la zone. N'utilisez PAS d'allumette ou de flamme nue pour chercher des fuites, et n'essayez pas de démarrer la chaudière avant d'avoir bien ventilé la zone.

Utilisez une solution savonneuse disponible dans le commerce faites spécialement pour vérifier l'absence de fuite à tous les raccordements. Une fuite peut causer incendie ou explosion, avec dégâts matériels et blessures mortelles.

Final Check of Gas Piping

- Test all pipes for leaks.
- If orifices were changed, make sure they are checked for leaks.
- During pressure testing of gas supply piping system:
 - a. If test pressure does not exceed 1/2” psi, isolate the furnace from the gas supply piping system by closing the equipment shutoff valve.
 - b. If test pressure exceed 1/2” psi, the furnace and its manual equipment shutoff valve must be disconnected from the gas supply piping system.
- To check for leaks apply soap suds or a liquid detergent to each joint. Bubbles forming indicate a leak.
- Do not use an open flame to test for gas leaks. Fire or explosion could occur.
- Correct even the smallest leak at once.

4.16 Electrical Connections

WARNING: ELECTRICAL SHOCK HAZARD

Failure to follow safety warnings exactly could result in serious injury, death, and/or property damage.

Turn off electrical power at fuse box or service panel **BEFORE** making any electrical connections and ensure a proper ground connection is made before connecting line voltage.

AVERTISSEMENT: DANGER D'ÉLECTROCUTION

Ne pas respecter exactement les **AVERTISSEMENTS** de sécurité peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.

Coupez l'alimentation électrique en amont au boîtier de fusibles ou au panneau de distribution secteur AVANT d'effectuer des raccordements électriques, et assurez-vous qu'une bonne liaison de terre est réalisée avant de brancher la tension d'alimentation secteur.

Eubank HAA air conditioners with gas furnace **MUST** be wired and grounded in accordance with electrical codes, or in the absence of local codes, with the current editions of the National Electrical Code (NEC), ANSI/NRPA 70-2002 in the US. In Canada, follow the Canadian Electrical Code (CEC), C22.1 CSA.

The air conditioner may incorporate an internal crankcase heater for compressor protection. **The crankcase heater must be energized for at least 24 hours prior to starting the compressor.**

High Voltage Wiring

The power supply should have the proper voltage, phase, and ampacity for the selected model.

1. Refer to electrical data stamped on the unit rating plate for field wiring requirements. The electrical data lists heater sizes, fuse sizes, and wire sizes for all models. Also shown are the number for field power circuits required for the various modes with the electric heaters.

Each unit is marked with a “Minimum Circuit Ampacity”. This means that the field wiring used must be sized to carry that amount of current. Use “Copper Conductions Only”. Refer to the National Electrical Code for complete current carrying capacity data on the various insulation grades of wiring materials.

Note: Power supply service must be within allowable range (+10% - 5%) of rated voltage stamped on the unit rating plate. To operate nominal 230/208V unit at 208V, change the transformer line tap from 240V to 208V following the instruction on wiring label in unit.

2. Connect the wires to the input side of the internal breaker (L1 & L2 for single-phase units; L1, L2, & L3 for three phase models).

⚠ CAUTION

This system contains components that require phasing for correct rotation. Failure to observe rotation and correct on start-up will cause damage not covered by the warranty.

⚠ ATTENTION

Ce système contient des composants qui nécessitent un phasage pour une rotation correcte. Il faut observer le sens de rotation et le corriger tout de suite s'il y a lieu au démarrage, sous peine de dommages qui ne seraient pas couverts par la garantie.

Scroll compressors, like several other types of compressors, will only compress in one rotational direction. The direction of rotation is not an issue with single-phase compressors since they will always start and run in the proper direction. However, three phase compressors will rotate in either direction depending upon phasing of power. Since there is a 50-50 chance of connecting power in such a way as to cause rotation in the reverse direction, it is imperative to confirm that the compressor is rotating in the proper direction at the initial field start-up of the system. Verification of proper rotation is made by observing

that the suction pressure drops and the discharge pressure rises when the compressor is energized. An alternate method of verification for self contained system with small critical refrigerant charges, where the installation of gauges may be objectionable, can be made by monitoring the temperature of the refrigerant lines at the compressor. The temperature should rise on the discharge line while the suction line temperature decreases. Reverse rotation also results in a substantially reduced current draw when compared to tabulated values.

There is no negative impact on durability caused by operating three phase compressors in the reversed direction for a short duration of time, usually defined as less than one hour. However, after several minutes of operation the compressor's internal protector will trip. The compressor will then cycle on the protector until the phasing is corrected. Reverse operation for longer than one hour may have a negative impact on the bearings.

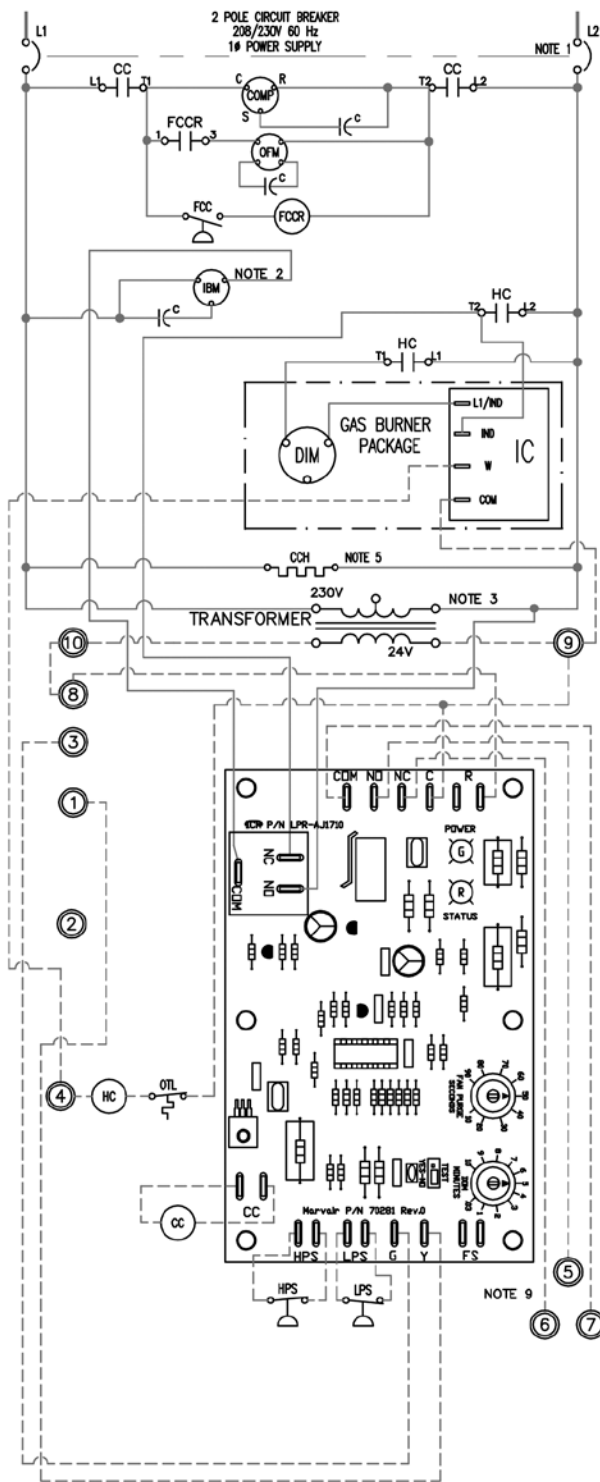
3. Install the ground wire on the ground lug.

Low Voltage Wiring

1. Pull the low voltage wiring from the air conditioner to the thermostat / sub-base assembly.
2. Mount the sub-base on a level plane. Connect the thermostat wire to the unit terminal board and the thermostat.
3. If applicable, attach the thermostat assembly to the sub-base. Check the stage two heat anticipator setting. For units with electric heat and thermostats with an adjustable heat anticipator, energize the electric heat and measure the current on the lead attached to the W2 terminal. Adjust/set the heat anticipator per the instructions provided with the thermostat.

Terminals 8 & 10 on the Eubank® HAA unit with economizer can be connected to a normally closed smoke alarm or fire stat to cause equipment shutdown when the circuit is opened. (Remove factory jumper).

THE INTERNAL TRANSFORMER IS NOT DESIGNED TO POWER OTHER EXTERNAL DEVICES.



ELECTRICAL LEGEND:

C	CAPACITOR	LPS	LOW PRESSURE SWITCH
CC	COMPRESSOR CONTACTOR	OFM	OUTDOOR FAN MOTOR
CCH	CRANKCASE HEATER	OTL	ONE TIME LIMIT
COMP	COMPRESSOR	PCB	PRINTED CIRCUIT BOARD
DIM	DRAFT INDUCER MOTOR	XFMR	TRANSFORMER
DL	DUAL LIMIT		
EH	ELECTRIC STRIP HEAT		
FCC	FAN CYCLE CONTROL		
FCCR	FAN CYCLE CONTROL RELAY		
HPS	HIGH PRESSURE SWITCH		
HC	HEAT CONTRACTOR		
IBM	INDOOR BLOWER MOTOR		
IC	IGNITION CONTROL		

VOLTAGE LEGEND

—————	LINE VOLTAGE FACTORY
—————	LINE VOLTAGE FIELD
-----	LOW VOLTAGE FACTORY
-----	LOW VOLTAGE FIELD
-----	ALT. VOLTAGE (FIELD SPEC.)

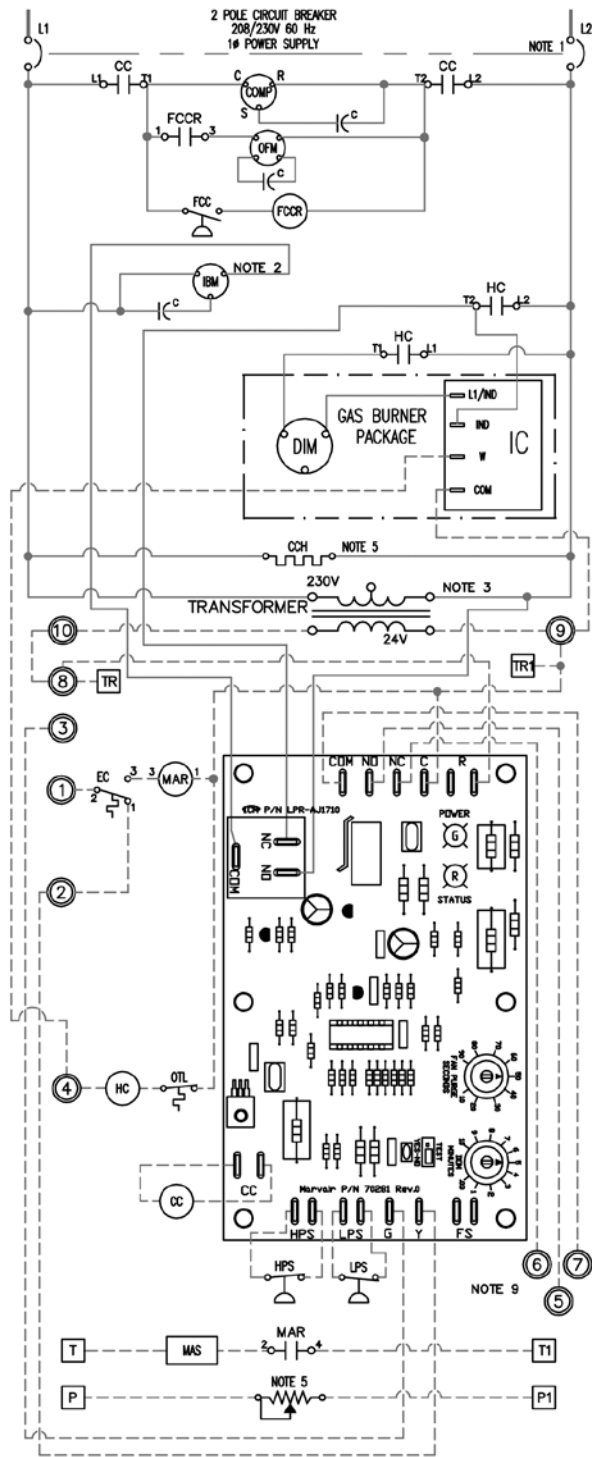
COLOR CODE

BK	BLACK	O	ORANGE
BL	BLUE	R	RED
BR	BROWN	Y	YELLOW
G	GREEN	WHT	WHITE
GY	GRAY		
BK/RED	BLACK WITH RED STRIPE		

GENERAL NOTES:

1. 208/230 VOLT 60 Hz 1φ POWER SUPPLY. SEE DATA PLATE FOR AMPACITY & FUSE SIZE. OPTIONAL CKT BKR SHOWN.
2. SPEED TAP - SEE MOTOR NAMEPLATE FOR WIRE COLOR.
3. TRANSFORMER IS FACTORY WIRED FOR 230 VOLT OPERATION. FOR LOWER VOLTAGES, INTERCHANGE ORANGE AND RED LEADS. INSULATE UNUSED LEADS.
4. ALTERNATE DEVICE IS NOT ADJUSTABLE AND HAS ORANGE LEADS.
5. CRANKCASE HEATER MAY NOT BE REQUIRED ON ALL COMPRESSORS.
6. PTCR IS NOT REQUIRED ON ALL COMPRESSORS.
7. COMPRESSOR TIME DELAY AND FAN PURGE DELAY ARE LOCATED ON THE PCB (PRINTED CIRCUIT BOARD) AND ARE ADJUSTABLE.
8. THE (STATUS LED) WILL BLINK ONE TIME AFTER THE HPS (HIGH PRESSURE SWITCH) HAS OPENED TWICE AND THE UNIT WILL LOCKOUT.
THE (STATUS LED) WILL BLINK TWICE AFTER THE LPS (LOW PRESSURE SWITCH) HAS OPENED TWICE AND THE UNIT WILL LOCKOUT.
9. THE LOCKOUT CIRCUIT CONTACTS ARE N.O. BETWEEN TERMINALS 5 AND 7 OF THE LOW VOLTAGE TERMINAL BOARD AND N.C. BETWEEN TERMINALS 7 AND 6 OF THE LOW VOLTAGE TERMINAL BOARD.

Figure 8a. Typical Electrical Schematic - HAA without Economizer



ELECTRICAL LEGEND:

C	CAPACITOR	IC	IGNITION CONTROL
CC	COMPRESSOR CONTACTOR	LPS	LOW PRESSURE SWITCH
CCH	CRANKCASE HEATER	MAR	MIXED AIR RELAY
COMP	COMPRESSOR	MAS	MIXED AIR SENSOR
DIM	DRAFT INDUCER MOTOR	OFM	OUTDOOR FAN MOTOR
DL	DUAL LIMIT	OTL	ONE TIME LIMIT
EC	ENTHALPY CONTROLLER	PCB	PRINTED CIRCUIT BOARD
EH	ELECTRIC STRIP HEAT	XFMR	TRANSFORMER
EP-A	ECON. PACKAGE ACTUATOR		
FCC	FAN CYCLE CONTROL		
FCCR	FAN CYCLE CONTROL RELAY		
HPS	HIGH PRESSURE SWITCH		
HC	HEAT CONTRACTOR		
IBM	INDOOR BLOWER MOTOR		

VOLTAGE LEGEND

—————	LINE VOLTAGE FACTORY
—————	LINE VOLTAGE FIELD
- - - - -	LOW VOLTAGE FACTORY
- - - - -	LOW VOLTAGE FIELD
- - - - -	ALT. VOLTAGE (FIELD SPEC.)

COLOR CODE

BK	BLACK	O	ORANGE
BL	BLUE	R	RED
BR	BROWN	Y	YELLOW
G	GREEN	WHT	WHITE
GY	GRAY		
BK/RED	BLACK WITH RED STRIPE		

GENERAL NOTES:

- 208/230 VOLT 60 Hz 1φ POWER SUPPLY. SEE DATA PLATE FOR AMPACITY & FUSE SIZE. OPTIONAL CKT BKR SHOWN.
- SPEED TAP - SEE MOTOR NAMEPLATE FOR WIRE COLOR.
- TRANSFORMER IS FACTORY WIRED FOR 230 VOLT OPERATION. FOR LOWER VOLTAGES, INTERCHANGE ORANGE AND RED LEADS. INSULATE UNUSED LEADS.
- ALTERNATE DEVICE IS NOT ADJUSTABLE AND HAS ORANGE LEADS.
- CRANKCASE HEATER MAY NOT BE REQUIRED ON ALL COMPRESSORS.
- OPTIONAL FIELD INSTALLED 270 OHM MINIMUM POSITION POTENTIOMETER.
- COMPRESSOR TIME DELAY AND FAN PURGE DELAY ARE LOCATED ON THE PCB (PRINTED CIRCUIT BOARD) AND ARE ADJUSTABLE.
- THE (STATUS LED) WILL BLINK ONE TIME AFTER THE HPS (HIGH PRESSURE SWITCH) HAS OPENED TWICE AND THE UNIT WILL LOCKOUT.
THE (STATUS LED) WILL BLINK TWICE AFTER THE LPS (LOW PRESSURE SWITCH) HAS OPENED TWICE AND THE UNIT WILL LOCKOUT.
- THE LOCKOUT CIRCUIT CONTACTS ARE N.O. BETWEEN TERMINALS 5 AND 7 OF THE LOW VOLTAGE TERMINAL BOARD AND N.C. BETWEEN TERMINALS 7 AND 6 OF THE LOW VOLTAGE TERMINAL BOARD.

Figure 8b. Typical Electrical Schematic - HAA with Economizer

4.17 Venting of the Furnace

The wall mounted air conditioner with gas heat furnace is a Category I furnace, i.e., a central furnace which operates with a non-positive vent static pressure and with a flue loss not less than 17%. The furnace is fan assisted, i.e., an appliance equipped with an integral means to either draw or force products of combustion through the combustion changer and/or the heat exchanger. The installation of the furnace vent must be in accordance with the National Fuel Gas Code (NFGC), ANSI Z223.1-2000/NFPA 54-2002, and /or Section 7 and Appendix C of the CSAB149.1-00, National Standard of Canada, Natural Gas & Propane Installation Code; the local building codes; furnace and vent manufacturer's instructions. The air conditioner with gas heat shall not be connected to a chimney flue serving a separate appliance designed to burn solid fuel. Do not connect any other vents or flues from any other appliances to the flue of the unit. Multistory venting is prohibited. Single wall metal vents shall not be used. Vents must be installed vertically. Use only the vent supplied with the unit. Vent connectors shall not be connected into any portion of mechanical draft systems operating under positive pressure.

WARNING

CARBON MONOXIDE POISONING, FIRE, AND EXPLOSION HAZARD

Failure to properly vent this furnace could result in death, personal injury and/or property damage. Read and follow all the instructions in this section.

AVERTISSEMENT

DANGER DE MONOXYDE DE CARBONE, D'INCENDIE OU D'EXPLOSION

Une mauvaise ventilation de cette chaudière peut entraîner blessures graves ou mortelles et/ou dégâts matériels. Lisez et respectez toutes les instructions dans cette section.

4.18 Installation of the Vent Hood.

1. The vent hood assembly is shipped inside the compressor/lower compartment. Remove the side screen to access the vent hood assembly.
2. Attach the vent hood for the wall mounted air conditioner with gas heat furnace as shown below. Maintain 18" clearance between the vent hood and any thing that would restrict or impede air flow from the hood.



Figure 9. Vent Hood Installation

3. The intake of the combustion air is thru louvers located on the side of the wall mounted air conditioner with gas heat furnace. Maintain 19" clearance between the louvers and anything that would restrict or impede air flow into the louvers.

Chapter 5 Checks and Adjustments

The unit must be operating in the heating mode while doing the following check and adjustments. Refer to the Start up instructions for starting the unit.

WARNING

ELECTRICAL SHOCK, FIRE, EXPLOSION OR CARBON MONOXIDE POISONING HAZARD

Failure to follow safety warnings exactly could result in serious injury, death and/or property damage.

If any sparks, odors or unusual noises occur, IMMEDIATELY shut OFF gas and power to the unit. Check for wiring errors, gas leaks or obstructions to the blower.

AVERTISSEMENT

DANGER D'ÉLECTROCUTION, INCENDIE, EXPLOSION OU EMPOISONNEMENT AU MONOXYDE DE CARBONE

Ne pas respecter exactement les AVERTISSEMENTS de sécurité peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels.

En cas de constatation d'étincelles, odeurs ou bruits anormaux, COUPEZ IMMÉDIATEMENT le gaz et l'alimentation secteur de l'unité. Vérifiez s'il y a des erreurs de câblage, des fuites de gaz ou des obstructions au soufflage.

5.1 Gas Supply Pressure

Gas supply pressure should be within the minimum and maximum values listed on the data plate on the air conditioner with gas heat furnace. Pressures are typically set by the gas supplier.

5.2 Manifold Gas Pressure Adjustment

WARNING

FIRE, EXPLOSION OR CARBON MONOXIDE POISONING HAZARD

Failure to turn the gas OFF at the shut off valve before connecting manometer could result in death and/or personal injury.

Turn the gas valve to OFF before connecting the manometer.

AVERTISSEMENT

DANGER D'INCENDIE, EXPLOSION OU EMPOISONNEMENT AU MONOXYDE DE CARBONE

Ne pas couper l'arrivée de gaz au robinet de coupure avant de brancher le manomètre peut causer des blessures graves ou mortelles.

Fermez le robinet de gaz (position OFF) avant de brancher le manomètre.

1. With gas valve OFF, connect the manometer to manifold pressure tap on outlet (1/8" NPT) of the gas control valve. Use a manometer with a 0" to 12" water column range.

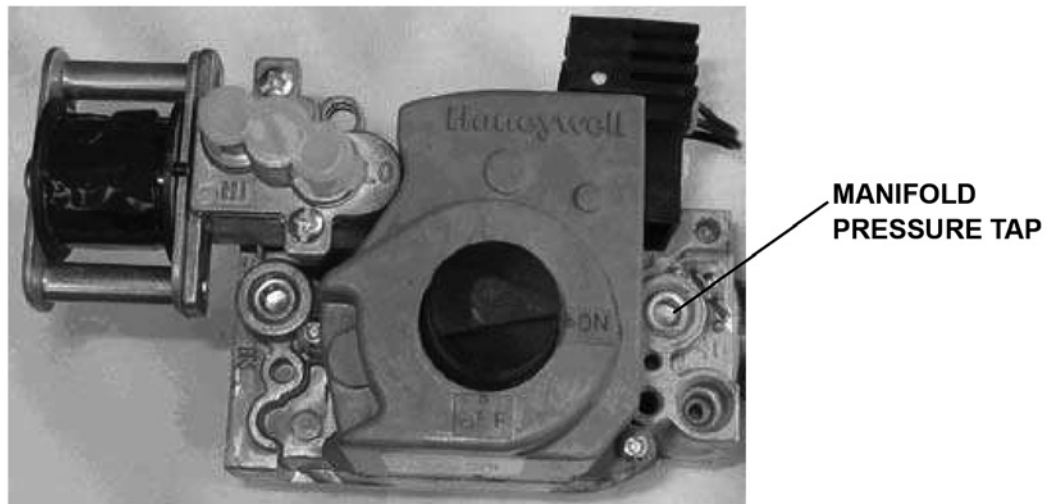


Figure 10. Gas Valve Manifold Pressure Tap

2. Turn gas ON. Operate furnace by using a jumper wire on the “10” and “4” thermostat connections on the low voltage board. The board is located in the electrical compartment in the unit.
3. Regulator pressure may be adjusted by removing the plastic cap on top of gas valve, as shown below. Turn the “HI” adjustment screw counterclockwise to decrease the manifold pressure and clockwise to increase the manifold pressure. Set the manifold pressure to 3.5” w.c. for Natural Gas and 10.0” w.c. for LP gas. Only adjust the setting marked “HI”. A 3/32” Allen Key is required for adjustment.

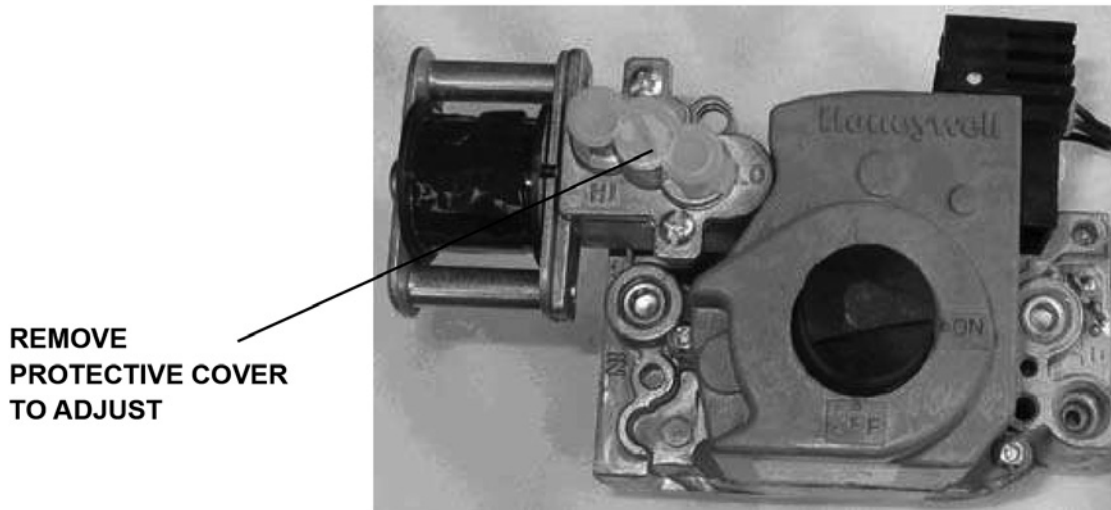


Figure 11. Gas Valve Protective Cover

4. When the manifold pressure is properly set, replace the adjustment screw cover on the gas control valve.
5. Remove manometer and replace the 1/8” NPT tapping.



**WARNING
FIRE, EXPLOSION HAZARD**

Failure to replace the 1/8” NPT tapping will result in accumulation of gas and an explosion.



**AVERTISSEMENT
DANGER D’INCENDIE OU EXPLOSION**

Ne pas remplacer le taraudage 1/8” NPT peut entraîner une accumulation de gaz suivie d’une explosion.

6. Remove jumper wire.
7. Check for gas leaks at the plug and repair as required.

5.3 Natural Gas Input Rating Check

The gas meter can be used to measure the input to the furnace.

Check with the gas supplier for the actual BTU content of the gas.

1. Turn off the gas supply to any other appliance, other than the unit, and start the furnace. Use jumper wire “10” to “4” as described in 2 above.
2. With a watch or stop watch, time how many seconds it takes the smallest dial on the gas meter to make one complete revolution. Note: if the meter has 2 cubic foot dials, divide seconds by two. See example below. The example is based upon a natural gas BTU content of 1,000 BTU’s per cubic foot.

Natural Gas BTU Content	No. of Seconds per Hour	Time per Cubic Foot in Seconds	BTU per Hour
1,000	3,600	50	72,000
$(1,000 \times 3,600) / 48 = 72,000 \text{ BTUH}$			

Table 7. Natural Gas Input Rating

3. Remove jumper wire from “10” to “4”.
4. Relight any appliances turned off in step one and that all are operating properly.

5.4 Orifice Sizing

Ensure that the furnace has the correct main burner orifices for the altitude of the site. Refer to the following table for the correct orifice for both natural and propane gas.

HMG 22,500 BTUH/Burner (Used with HAA1024-1036 Heat Exchangers)					HMG 25,000 BTUH/Burner (Used with HAA1042-1060 Heat Exchangers)				
Altitude	Orifice- Natural		Orifice- Propane		Altitude	Orifice- Natural		Orifice- Propane	
	Drill Size	Dia.	Drill Size	Dia.		Drill Size	Dia.	Drill Size	Dia.
0-1999 ft	#43	0.089	#54	0.055	0-1999 ft	2.30	0.0906	1.5	0.0591
2000-2999 ft	2.2	0.0866	1.35	0.531	2000-2999 ft	#43	0.0890	#54	0.0550
3000-3999 ft	2.15	0.0846	#55	0.052	3000-3999 ft	2.20	0.0866	1.35	0.0531
4000-4999 ft	2.1	0.0827	1.3	0.0511	4000-4999 ft	2.15	0.0846	#55	0.0520
5000-5999 ft	#45	0.082	1.25	0.0492	5000-5999 ft	2.10	0.0827	1.30	0.0511
6000-6999 ft	2.05	0.087	1.2	0.0472	6000-6999 ft	#45	0.0820	1.25	0.0492

Burner Input	Number of Orifices	Burner Input	Number of Orifices
40,500	2	81,000	4
45,000	2	90,000	4
60,750	3	100,000	4
67,500	3	112,500	5
75,000	3	125,000	5

Orifice Size (mm)	Orifice Diameter	Orifice Size (mm)	Orifice Diameter
2.10	0.0826	2.45	0.0964
2.15	0.0846	2.50	0.0984
2.20	0.0866	2.60	0.1024
2.25	0.0885	2.70	0.1063
2.30	0.0905	2.75	0.1082
2.35	0.0925	2.80	0.1102
2.40	0.0945	2.90	0.1142

Table 8. Altitude/Orifice Sizing

5.5 LP Gas Conversion

The following instructions are for the field conversion of a Eubank gas heat with air conditioning from using Natural Gas to LP (propane) gas. This kit includes parts required to convert a burner assembly beginning with model number HMG075-125 only. Refer to the name plate attached to the right side of the burner assembly to verify the first three letters of the Model number. These instructions are specific to this burner assembly only.

The kit contains the following items required to make the conversion:

Item	Qty.	Description
1	1	Gas valve regulator conversion kit – Honeywell P/N 396021
2	5	Gas orifices – Drill size 1.5mm for propane gas
3	1	Label to attach to the manifold indicating that the unit has been converted to use LP Gas.

WARNING

FIRE, CARBON MONOXIDE OR EXPLOSION HAZARD

Failure to properly install the LP gas conversion kit could result in death, serious injury or property damage.

The unit is shipped from the factory for operation on natural gas. When used on LP gas, the gas orifice spud and the gas valve spring must be replaced and the gas valve regulator must be adjusted. This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. The qualified service agency performing this work assumes the responsibility for the proper conversion of the appliance with this kit.

AVERTISSEMENT

DANGER D'INCENDIE, MONOXYDE DE CARBONE OU EXPLOSION

Ne pas installer correctement le kit de conversion au gaz propane (LP) peut entraîner des blessures graves ou mortelles ou des dégâts matériels.

L'unité est livrée de l'usine pour fonctionner au gaz naturel. Quand elle est utilisée avec du gaz propane, il faut remplacer tête d'injecteur et ressort de vanne, et le réglage du régulateur de vanne de gaz doit être modifié. Ce kit de conversion ne doit être installé que par une agence de dépannage qualifiée en suivant les instructions du constructeur et toutes les normes et exigences applicables édictées par les autorités ayant juridiction dans ce domaine. Si les informations contenues dans ces instructions ne sont pas suivies exactement, il peut en résulter un empoisonnement au monoxyde de carbone ou une explosion, causant dommages, blessure ou mort. C'est l'agence de dépannage qualifiée qui effectue le travail qui assume la responsabilité de la conversion correcte de l'appareil avec ce kit.

LP Gas Conversion Installation Procedures

1. First, shut off all gas supply to the unit using the manual shut off valve. The gas must be shut off BEFORE disconnecting the electrical power or proceeding with any other step in the LP gas conversion.
2. Disconnect or shut off all electrical power to the unit and then turn the thermostat to the OFF position.
3. Disconnect wire to the gas valve. If wire colors are not evident or do not match the wiring diagram, label each wire.

4. Loosen the gas pipe union and remove the gas supply pipe from the gas valve.
5. Remove the screws holding the manifold pipe assembly to the burner assembly.
6. Remove manifold.
7. Loosen and remove the Natural Gas Orifices and remove from the manifold.
8. Install LP gas orifices provided with the kit.
9. Open the Gas Valve Regulator conversion kit and follow the instructions provided for conversion of the gas valve regulator. Be sure to apply the label indicating that the valve has been converted from Natural Gas to LP gas.
10. Secure the manifold burner assembly to the burner assembly with the four screws. Be sure the orifices are aligned with the opening on each burner.
11. Reconnect the gas supply pipe, using pipe joint compound resistant to LP gas on the pipe threads, to the gas valve. Tighten the union fitting.
12. Reconnect wires to the gas valve following the wiring diagram provided on the unit.
13. Turn on the gas supply at the manual shut off valve.
14. Carefully leak check union fitting and connection at gas valve using soap suds or a liquid detergent to each joint. Bubbles indicate a leak. Correct even the smallest leak immediately. Do NOT use a flame to check for leaks.
15. Turn Gas Valve to OFF.
16. With gas valve OFF, connect the manometer to manifold pressure tap on outlet (1/8" NPT) of the gas control valve. Use a manometer with a 0" to 12" water column range.

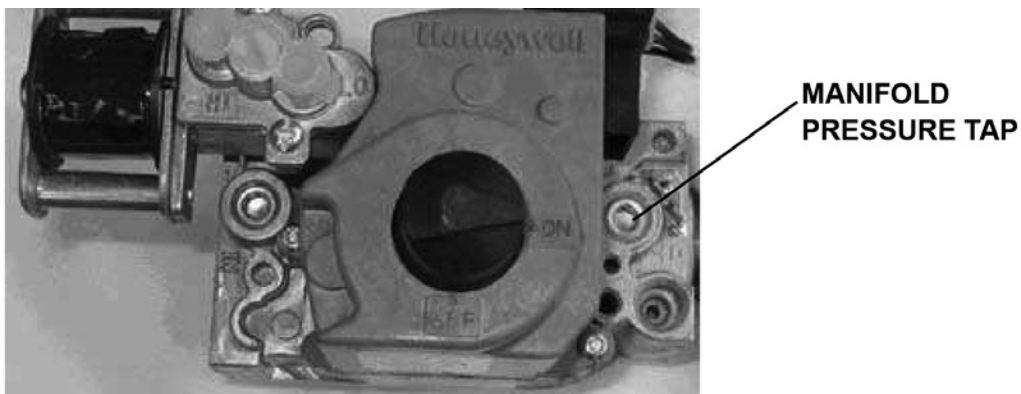


Figure 12. Gas Valve Manifold Pressure Tap

17. Turn gas ON. Operate furnace by using a jumper wire on the "10" and "4" thermostat connections on the low voltage board. The board is located in the electrical compartment in the unit.
18. Regulator pressure may be adjusted by removing the plastic cap on top of gas valve, as shown below. Turn the "HI" adjustment screw counterclockwise to decrease the manifold pressure and clockwise to increase the manifold pressure. Set the manifold pressure to 10.0" w.c. for LP gas. Only adjust the setting marked "HI". A 3/32" Allen Key is required for adjustment.
19. When the manifold pressure is properly set, replace the adjustment screw cover on the gas control valve.
20. Remove manometer and replace the 1/8" NPT tapping.

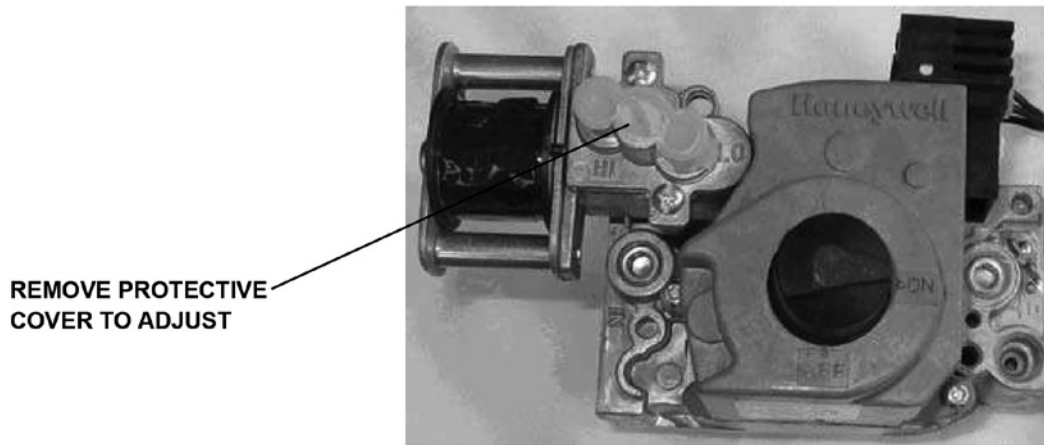


Figure 13. Gas Valve Protective Dust Cover

**⚠ WARNING
FIRE, EXPLOSION HAZARD**

Failure to replace the 1/8" NPT tapping will result in accumulation of gas and an explosion.

**⚠ AVERTISSEMENT
DANGER D'INCENDIE OU EXPLOSION**

Ne pas remplacer le taraudage 1/8" NPT peut entraîner une accumulation de gaz suivie d'une explosion.

- 21. Remove jumper wire.
- 22. Check for gas leaks at the plug and repair as required.

5.6 High Altitude Installations

**⚠ WARNING
FIRE, EXPLOSION, CARBON MONOXIDE POISONING HAZARD**

Failure to follow these instructions exactly could result in death, personal injury and/or property damage. This high altitude conversion must be done by a qualified service agency in accordance with the following instructions or in the absence of local codes, the applicable national code.

**⚠ AVERTISSEMENT
DANGER D'INCENDIE, EXPLOSION OU MONOXYDE DE CARBONE**

Ne pas respecter exactement des instructions peut causer des dommages corporels graves ou mortels et/ou des dégâts matériels. Cette conversion pour altitude importante doit être réalisée par une agence de dépannage qualifiée en suivant les instructions qui suivent et les normes locales, ou les normes nationales en leur absence.

All Eubank HAA units are shipped from the factory for operation at sea level up to 2,000 feet (610 m). For installations from 2,000 (610 m) to 7,000 feet (2,134 m), see the following chart for proper sizing of the orifice.

When the air conditioner with gas heat is installed above 7,000 ft. (2,134 m), please contact Airxcel Commercial Group.

HMG 22,500 BTUH/Burner (Used with HAA1024-1036 Heat Exchangers)					HMG 25,000 BTUH/Burner (Used with HAA1042-1060 Heat Exchangers)				
Altitude	Orifice- Natural		Orifice- Propane		Altitude	Orifice- Natural		Orifice- Propane	
	Drill Size	Dia.	Drill Size	Dia.		Drill Size	Dia.	Drill Size	Dia.
0-1999 ft	#43	0.089	#54	0.055	0-1999 ft	2.30	0.0906	1.5	0.0591
2000-2999 ft	2.2	0.0866	1.35	0.531	2000-2999 ft	#43	0.0890	#54	0.0550
3000-3999 ft	2.15	0.0846	#55	0.052	3000-3999 ft	2.20	0.0866	1.35	0.0531
4000-4999 ft	2.1	0.0827	1.3	0.0511	4000-4999 ft	2.15	0.0846	#55	0.0520
5000-5999 ft	#45	0.082	1.25	0.0492	5000-5999 ft	2.10	0.0827	1.30	0.0511
6000-6999 ft	2.05	0.087	1.2	0.0472	6000-6999 ft	#45	0.0820	1.25	0.0492

Burner Input	Number of Orifices	Burner Input	Number of Orifices
40,500	2	81,000	4
45,000	2	90,000	4
60,750	3	100,000	4
67,500	3	112,500	5
75,000	3	125,000	5

Orifice Size (mm)	Orifice Diameter	Orifice Size (mm)	Orifice Diameter
2.10	0.0826	2.45	0.0964
2.15	0.0846	2.50	0.0984
2.20	0.0866	2.60	0.1024
2.25	0.0885	2.70	0.1063
2.30	0.0905	2.75	0.1082
2.35	0.0925	2.80	0.1102
2.40	0.0945	2.90	0.1142

Table 9. Altitude/Orifice Sizing

NOTE: Data for LP gas is based upon a 0.60 specific gravity. For fuels with different specific gravity, consult the National Fuel Gas Code ANSI Z223.1/NFPA 54-2002 or the National Standard of Canada, Natural & Propane Gas Installation Code CSA B149.1-00.

High Altitude Air Pressure Switch

The factory installed pressure switch is factory set for installations from sea level up to 6,000 ft (1,829 m). Consult the factory for installations above 6,000 ft.

5.7 Changing Orifices

1. Turn OFF gas at the shut off valve.
2. Turn off all power to the unit at the fuse box or service panel.
3. Remove the burner compartment door, exposing the burner.
4. Disconnect the gas line from gas valve so that manifold can be removed.
5. Disconnect wiring at the gas valve. Be sure to note or mark the location of all electrical connections.
6. Remove the 4 screws holding the manifold and gas valve to the manifold supports. Keep screws.
7. Carefully remove the manifold assembly.
8. Remove the orifices from the manifold and replace them with the proper sized orifices.
9. Tighten orifices so that they are seated and gas tight.
10. Reassemble all parts in the reverse order as removed. Be sure to engage the main burner orifices in the proper openings in the burners.

11. After reassembly, turn on the gas and check for leaks using a soapy solution. Correct all leaks immediately.
12. Turn power back on to the unit.
13. Turn gas ON at the shut off valve.

5.8 Main Burner Flame Check

Allow the furnace to run for at least 10 minutes. Then inspect the main burner flame.

Look at the flames on the burners. They should be predominately blue in color and robust in appearance. The flame should be in the middle of the heat exchanger tubes. Check to see that all the burners are lit and that the flame does not impinge on the sides of the heat exchanger. Observe the flame. There should be little or no change to the shape or size of the flame. Changes in the shape and size of the flame may indicate a leak in the heat exchanger. See Figure 10.

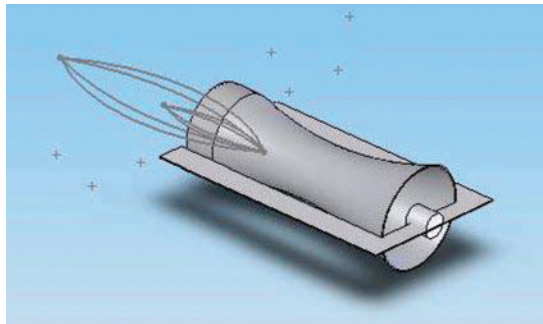


Figure 14. Burner Flame

Distorted flame or yellow tips of the natural gas flame or long yellow tips on LP gas flames may be caused by one or more of the following:

1. Lint or dirt inside the burner or burner ports,
2. Lint or dirt at the air inlet between the burner and the manifold pipe, or
3. An obstruction over the burner plate.

If any of these are visible, turn the unit off and use a vacuum or a soft brush to clean the affected areas.

5.9 Temperature Rise Range

When the unit is in the heating mode, the inlet air and outlet air temperatures should be measured to ensure that the temperature rise (the difference between the outlet air temperature and the inlet air temperature) is within an acceptable range as shown below. The temperatures must be measured at the discharge of the supply and the intake of the return air with no more than a .35 IWG static pressure.

Heating Input (Btu/Hr)	Temperature Rise at 0.35" H2O External Static Pressure (°F)					
	Gas/Electric Model Number					
	HAA1024A	HAA1030A	HAA1036A	HAA1042A	HAA1048A	HAA1060A
45,000	25 to 55	25 to 55	25 to 55			
67,500	40 to 70	40 to 70	40 to 70			
90,000	50 to 80	50 to 80	50 to 80			
75,000				25 to 55	25 to 55	25 to 55
100,000				40 to 70	40 to 70	40 to 70
125,000				50 to 80	50 to 80	50 to 80

Table 10. Temperature Rise Range

Chapter 6 Start-Up

Before lighting the unit, smell around the unit for gas. Be sure to smell next to the floor because LP gas is heavier than air and will settle on the floor.

The gas valve on your unit is equipped with an ON/OFF knob. Use only your hand to turn the knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire or explosion.

The air conditioner with gas heat is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown on units with electronic temperature control, shut main disconnect OFF and then back ON to reset ignition control. On units with an electro-mechanical thermostat, move the thermostat switch to OFF and return the thermostat switch to HEAT. On initial start-up of the unit in the heating mode, a burn-off of excess paint and oils remaining from the manufacturing process may cause some smoking and smell for 5-10 minutes.

6.1 Cooling Cycle

1. Set the fan switch to "Auto" and the system switch to "Off".
2. Move the cooling temperature on the wall thermostat to a point higher than the room temperature. Move the heating temperature to a temperature that is lower than the room temperature.
3. Set the thermostats system switch to "Cool" or "Auto" position. Nothing should operate at this time.
4. Set the time delay in the control box to three minutes. Note that time delay is an option on some units and may not be on your air conditioner.
5. Remove the cover plate from the thermostat. Slowly lower the thermostat cooling temperature. Once the indoor fan turns on, allow approximately three minutes for the compressor and outdoor fan to start.

For units equipped with the low ambient control, note that the outdoor fan may not come on immediately, because it is cycled by refrigerant pressures. Some units have a time delay module which prevents the compressor from restarting immediately after interruption of power. See Cooling Mode section of the Installation Instructions for details on the operation of the low ambient control and the time delay.

6.2 Heating Cycle

1. Turn off electrical power to the unit.
2. Set thermostat to its lowest setting.
3. Remove heat section access panel.
4. Turn knob on the gas control valve to ON. Do not force. Never light the burner with a match or torch.

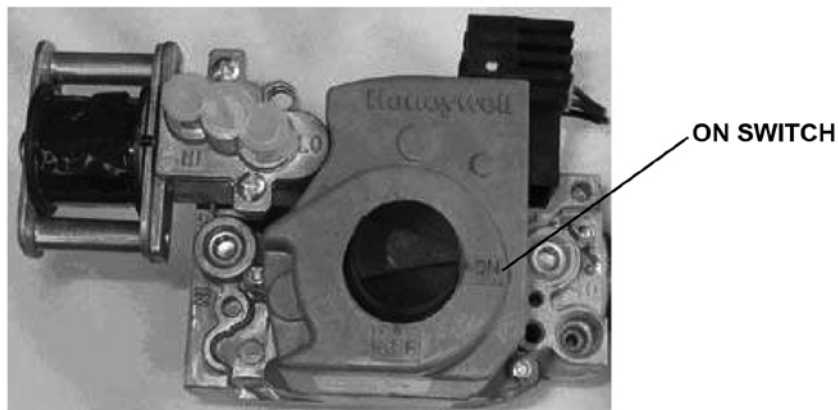


Figure 15. Gas Control Valve On Switch

5. Replace heat section access panel.
6. Turn on electrical power to the unit.
7. Set room thermostat to desired temperature.
8. On a call for heating, the air switch closes, initiating a 30 second pre-purge.
9. At end of pre-purge period, the Spark and Gas valve is energized for up to a 5 second ignition trial. Gas valve will open.
10. Burners ignite and carryover.
11. Flame is detected by the flame sensor and control operates in a steady state condition.
12. Unit continues to heat until the room temperature set point is met.

If ignition is not achieved within 5 seconds, the gas valve is shut off, the inducer keeps running for an interpurge period of 60 seconds and additional ignition trials follow the specified sequence. If after three trials for ignition have occurred without proper ignition and flame detection, the control is locked out.

Control may be brought out of lockout by cycling the thermostat or turning the main power off for at least 5 seconds. Control will also attempt another ignition sequence after a one hour after a lock out occurrence.

13. If flame is lost once it has been established, the control will shut off the gas supply within 0.8 seconds and enter the interpurge period. Control will initiate up to 3 additional trials per normal operation sequence.
14. If flame sensor indicates presence of flame during purge period, when no flame should be present, the inducer will remain energized but the gas valve will not be energized until the cause of the “false flame” is removed.
15. If the air pressure switch is closed when the inducer is energized or does not close after the inducer is energized, the control will wait one minute for the air switch to open or close and then lock out.
16. If the control detects power to the gas valve when it should be off, or if no power when it should be on, the control will go into lock out with all outputs off.

LED Flash Code	
On- Steady	Control operation normal
1 Flash	Open pressure switch, limit switch or flame rollout switch
2 Flashes	Pressure switch stuck closed
3 Flashes	Ignition/flame sensor failure
4 flashes	Repeated flame losses
5 flashes	Internal control fault
6 flashes	Repeated pressure switch losses

Chapter 7 Maintenance

 **WARNING**
ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- Before servicing, disconnect all electrical power to the unit.
- When servicing controls, label all wires prior to disconnecting. Reconnect all wires correctly.
- Verify proper operation after servicing.

 **AVERTISSEMENT**
DANGER D'ÉLECTROCUTION, DANGER D'INCENDIE OU D'EXPLOSION

Ne pas suivre les AVERTISSEMENTS de sécurité à la lettre peut entraîner un fonctionnement dangereux, des blessures graves ou mortelles ou des dégâts matériels.

Une intervention inappropriée peut entraîner un fonctionnement dangereux, des blessures graves ou mortelles ou des dégâts matériels.

- Avant d'intervenir, débranchez toute alimentation électrique vers l'unité.
- Quand vous intervenez sur des commandes, étiquetez les fils avant de les débrancher, afin de les rebrancher tous correctement.
- Vérifiez le bon fonctionnement après une intervention.

7.1 Maintenance – Burner and Vent Outlet.

Airxcel Commercial Group strongly recommends that the unit be serviced a minimum of twice a year – once prior to the heating season and once prior to the cooling season. At this time the filters, evaporator coil, condenser coil, the cabinet, and condensate drains, the burner flame, the burner and the combustion air inlet and outlet should be serviced and inspected as described below. Also at this time, the unit should be operated in the cooling and heating cycles as described in Chapter 2, Start-Up. In addition to this seasonal check-out, the unit should be maintained as follows:

7.2 Air Filter

Replace the air filter whenever it is visibly dirty. Note: Filters must be U.L.C approved or equivalent for use in Canada.

7.3 Indoor Coil

If the coil becomes clogged or dirty, it may be cleaned by careful vacuuming or with a commercial evaporator cleaning spray. DO NOT use a solvent containing bleach, acetone, or flammable substances. Turn power OFF before cleaning. Be careful not to wet any of the electrical components. Be sure the unit has dried before restarting.

7.4 Outdoor Coil

Periodically inspect the outdoor coil and the cabinet air reliefs for dirt or obstructions. Remove foreign objects such as leaves, paper, etc.

If the coil is dirty, it may be washed off with a commercial solvent intended for this purpose. TURN OFF POWER BEFORE CLEANING! Be sure that all electrical components are thoroughly dry before restoring power.

7.5 Cabinet

The cabinet may be cleaned with a sponge and warm, soapy water or a mild detergent. Do not use bleach, abrasive chemicals or harmful solvents.

 **WARNING**
CARBON MONOXIDE POISONING

A crack or hole in the heat exchanger could result in carbon monoxide gas which can cause death or serious injury. Carbon monoxide is colorless and odorless. Signs that there is a hole or crack in the heat exchanger include:

- Headaches, Nausea or Dizziness.
- Excessive humidity or heavily frosted windows or a clammy feeling in the structure.

 **AVERTISSEMENT**
EMPOISONNEMENT AU MONOXYDE DE CARBONE

Une fissure ou un trou dans l'échangeur thermique peut laisser échapper du gaz avec monoxyde de carbone qui peut causer des troubles sévères ou mortels. Le monoxyde de carbone est sans couleur et sans odeur. Les signes pouvant indiquer un problème d'étanchéité sur l'échangeur thermique sont :

1. Maux de tête, nausées ou vertiges.
2. Humidité excessive ou fenêtres très givrées, ou viscosité sur la structure.

7.6 Drains

Regularly check the primary and secondary condensate drains. The secondary drain has a stand pipe. An obstruction will force water to dump into the middle of the unit and drain out the sides of the air conditioner, causing discoloration of the side panels. If discoloration is noted, service the drains.

If a commercial drain solvent is used, flush out the drain pan and system with plenty of fresh water to prevent corrosion.

7.7 Lubrication

Oiling of the condenser fan motor or the evaporator blower motor is not recommended.

7.8 Burner Flame

Inspect the burner flame periodically during the heating season to ensure proper burner operation.

Light the burners and allow the unit to operate for a few minutes to establish normal burning conditions. Look at the flames on the burners. They should be predominately blue in color and robust in appearance. The flame should be in the middle of the heat exchanger tubes. Check to see that all the burners are lit and that the flame does not impinge on the sides of the heat exchanger. Observe the flame. There should be little or no change to in the shape or size of the flame. Changes in the shape and size of the flame may indicate a leak in the heat exchanger. See Figure 3.

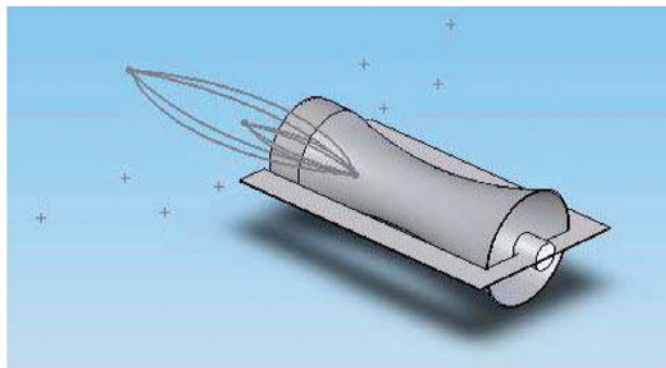


Figure 16. Burner Flame

Distorted flame or yellow tips of the natural gas flame or long yellow tips on LP gas flames may be caused by one or more of the following:

1. Lint or dirt inside the burner or burner ports,
2. Lint or dirt at the air inlet between the burner and the manifold pipe, or any obstruction over the burner plate.

If any of these are visible, turn the unit off and use a vacuum or a soft brush to clean the affected areas.

7.9 Burner

Inspect the burners at least once a year, prior to each heating season, for rust, water damage or dust accumulation. The burner should be replaced if rust or water damage is present. Dust should be removed if present.

7.10 Combustion Air Inlet and Outlet

Visually inspect both the combustion air inlet and gas outlet at least once a year, prior to the heating season, to make sure that there is no build up of soot, debris or dirt. If required, clean to maintain adequate air flow.

Service reminder!

Always call a qualified service technician if the unit is not working properly. Before calling, check the following to be sure service is required:

1. Be sure the electrical disconnect is ON.
2. Check room thermostat for proper setting.
3. Replace any blown fuses or reset circuit breakers.
4. Gas valve must be ON.
5. Air filters should not be plugged, limiting air flow.
6. Make sure all service panels are in place.

7.11 Venting of the Furnace

The Eubank HAA wall mounted air conditioner with gas heat furnace is a Category I furnace, i.e., a central furnace which operates with a non-positive vent static pressure and with a flue loss not less than 17%. The furnace is fan assisted. The installation of the furnace vent must be in accordance with the National Fuel Gas Code (NFGC), ANSI Z223.1-2000/NFPA54-2002, and /or Section 7 and Appendix C of the CSA B149.1-00, National Standard of Canada, Natural Gas & Propane Installation Code; the local building codes; furnace and vent manufacturer's instructions.



WARNING : CARBON MONOXIDE POISONING, FIRE, AND EXPLOSION HAZARD

Failure to properly vent this furnace could result in death, personal injury and/or property damage. Read and follow all the instructions in this section.



**AVERTISSEMENT
DANGER D'EMPOISONNEMENT AU MONOXYDE DE CARBONE,
D'INCENDIE OU D'EXPLOSION**

Une mauvaise ventilation de cette chaudière peut entraîner blessures graves ou mortelles et/ou dégâts matériels. Lisez et respectez toutes les instructions dans cette section.

7.12 Clearances

Maintain 18" clearance between the vent hood and anything that would restrict or impede air flow from the hood. The intake of the combustion air is thru louvers located on the side of the wall mounted air conditioner with gas heat furnace. Maintain 19" clearance between the louvers and anything that would restrict or impede air flow into the louvers.

Chapter 8 Parts List

MAJOR PURCHASED PARTS		HAA1042	HAA1048
Compressor, Scroll	A	10052	10202
	C	10093	10203
	D	10094	10204
Capacitor, Scroll Compressor		50322	50294
		55 / 370	60 / 440
Refrigerant R410A (Oz)	60 Hz	123	128
Sound Blanket, Compressor		20017	20038
Crankcase Heater, Compressor		n/a	70044
Evaporator Coil		60348	60348
		3EY1403D	3EY1403D
		18 x 37	18 x 37
TXV		20366	20366
		n/a	.070 x 70 (4)
(.378/.382 by Four .127/.131)		n/a	80042
(.378/.382 by Three .114/.118)		n/a	n/a
(.378/.382 by Two .127/.131)		n/a	n/a
Strainer Assembly (Alternate)		n/a	20297
Distributor - Indoor		20662	n/a
Condenser Coil		60350	60345
		3CY13003D-	3CY13003D-
		28 x36	28 x 36
Filter Drier		70389	70389
Indoor Motor (HP/RPM)		40099	40099
		1/2 1075	1/2 1075
Blower, L.H.		30090	30090
Blower, R.H.		30092	30092
Blower Wheel / Housing		10-8 DD	10-8 DD
Outdoor Motor (HP/RPM)		40190	40190
		1/2 ECM	1/2 ECM
Fan Blade (Clockwise Rotation)		30236	30236
		T2404-20	T2404-20
High Pressure Control (660 Open, 450 Close)		70656	70656
Low Pressure Control (40 Open, 60 Close)		70342	70342
Filter (2" Thick)		81257 (2)	81257 (2)
		18 x 24	18 x 24
Motor, Economizer (EPA)		40101	40101
Enthalpy Control, H205A (EC)		70230	70230
Mixed Air Relay (MAR)		50164	50164
Mixed Air Sensor (MAS)		70229	70229
GreenWheel Blower, Flanged, 400 CFM		50780	50780
Energy Recovery Wheel		01226	01226
Motor, GreenWheel Drive		40007	40007
Fan Speed Controller (230 Volt)		70049	70049
Belting, 3/16" Round Urethane		P/80390	P/80390
Contactora, Compressor, 30 Amp	ACA	50020	n/a
Contactora, Compressor, 40 Amp	ACA	n/a	50030
Contactora, Compressor, 30 Amp	ACC/ACD	50040	50040
Circuit Breaker, 2 Pole, 50 Amp	ACA	70547	n/a
Circuit Breaker, 2 Pole, 60 Amp	ACA	n/a	70533
Circuit Breaker, 3 Pole, 40 Amp	ACC	70545	70545
Circuit Breaker, 3 Pole, 15 Amp	ACD	70888	70888
Fan Blower Control (BTR)		50419	50419
Lockout Relay (LOR)		50214	50214
Clip for Low Vibration		01257	01257

MAJOR PURCHASED PARTS		HAA1042	HAA1048
Relay, Outdoor Fan Motor (OFR)		50205	50205
Relay, B Damper		50420	50420
Low Voltage Transformer (50 VA)		50199	50199
Transformer (460 to 230 Volts)		50147	50147
		1.5 KVA	1.5 KVA
Transformer (460 to 230 Volts), GreenWheel		P/50007	P/50007
		2.0 KVA	2.0 KVA
Duct Furnace Heat Module: 45,000 Btu/Hr		n/a	n/a
Duct Furnace Heat Module: 67,500 Btu/Hr		n/a	n/a
Duct Furnace Heat Module: 90,000 Btu/Hr		n/a	n/a
Duct Furnace Heat Module: 75,000 Btu/Hr			50413
Duct Furnace Heat Module: 100,000 Btu/Hr			50414
Duct Furnace Heat Module: 125,000 Btu/Hr			50415
Direct Spark Ignition Control, 24 VAC, 250 ma		50418	
Gas Valve, 2 Stage (3.5/1.2" WC High/Low)		20354	
Induced Draft Blower (230 v)		n/a	n/a
Induced Draft Blower (460 v)		n/a	n/a
Induced Draft Blower, 3000 RPM, 0.9 A, 230 v		30064	
Induced Draft Blower (460 v)			
Pressure Switch, Low (0.36" WC PR)		70377	
Pressure Switch, High (1.1" WC PF)		70373	
Flame Rollout Switch, L270			
Spark Igniter			
Flame Sensor			
In-Shot Burner (2.5 x 4.5)			
Limit Control, High (45,000 Btu/Hr)		n/a	n/a
Limit Control, High (67,500 Btu/Hr)		n/a	n/a
Limit Control, High (90,000 Btu/Hr)		n/a	n/a
Limit Control, High (75,000 Btu/Hr)		70372	
Limit Control, High (100,000 Btu/Hr)		70372	
Limit Control, High (125,000 Btu/Hr)		70372	
Limit Switch, High (45,000 Btu/Hr)		n/a	n/a
Limit Switch, High (67,500 Btu/Hr)		n/a	n/a
Limit Switch, High (90,000 Btu/Hr)		n/a	n/a
Limit Switch, High (75,000 Btu/Hr)			
Limit Switch, High (100,000 Btu/Hr)			
Limit Switch, High (125,000 Btu/Hr)			
Suppression Ignition Cable			
Nox Screen			
Gas Orifice, Natural Gas (Standard)		n/a	n/a
Gas Orifice, Propane (Standard)		n/a	n/a
Gas Orifice, Natural Gas (2.30 mm Standard)			20355
Gas Orifice, Propane (1.50 mm Standard)			20356
Relay, Heat/Blower, 460 Volt Only		50190	50190
Relay, Condenser Fan, 460 Volt Only		50190	50190

Chapter 9 Warranty

9.1 Airxcel Commercial Group Limited Product Warranty

Marvair Inc., warrants its products to be free from defects in materials and workmanship under normal use to the original purchaser for the period of time in the table below. If any part of your product fails within 12 months from start-up, or 18 months from shipment from the factory, whichever comes first, Marvair, Inc. will furnish without charge, EXW Cordele, Georgia, the required replacement part. The owner must provide proof of the date of the original start-up. The contractor's invoice, the certificate of occupancy, or similar documents are examples of acceptable proof of the date of the original start-up.

Marvair, ICE, Eubank Products
90 Days ¹ w/Flat Rate Labor ² (See Marvair, ICE, Eubank Flat Rate Labor Guidelines)
1 Year Parts ^{2,3}
5 Years Compressor ²

¹If any part of your Marvair, Inc. unit fails within 90 days of the commencement of the warranty, Marvair, Inc. will furnish without charge, EX Works, Cordele, Georgia, the required replacement part and pay for the labor to replace the part in accordance with the Marvair, Inc. Flat Rate Labor Guidelines.

²All OTR (over the road) applications that are moved from one location to another: Factory Warranty applies only up to the point of initial start-up and test at all OEM manufacturing locations or subsequent facility. Once it goes into OTR service, the warranty expires immediately for compressor and sealed system components. This OTR exemption does not apply to relocatable classrooms, construction or office trailers.

³All warranty replacement parts shall be shipped Ground only. Expedited shipping is available upon request for additional cost.

The responsibility of the equipment owner includes:

1. To operate the equipment in accordance with the manufacturer's instructions.
2. To provide easy accessibility for servicing.
3. To check and reset any circuit breaker(s) and/or disconnect(s) prior to calling for service.
4. To keep the unit clean and free of dirt and containment and replace filters as required.
5. To keep the outdoor coil clean and free of leaves, paper, or other debris.
6. To pay the charges incurred when any of the above have not been done.
7. To pay for repair or replacement of any material or part other than those within the Marvair unit or controller.

Marvair, Inc., will not be responsible for labor after 90 days, transportation costs, delays or failures to complete repairs caused by events beyond our control (labor hours incurred due to required site-specific training, time waiting to gain access, or extended drive time for remote sites). This warranty does not cover:

1. Any transportation, related service labor, diagnosis calls, filter, driers, refrigerant, or any other material charges.
2. Damages caused by shipping, accident, abuse, negligence, misuse, fire, flood, or Acts of God.
3. Damages caused by operating or staging the unit in a corrosive environment.
4. Damages caused by improper application of the product.
5. Damages caused by failing to perform proper routine maintenance.
6. Expenses incurred for erecting, disconnecting or dismantling the product or installing the replacement part(s).
7. Products not installed or operated according to the included instructions, local codes, and good trade practices.
8. Products moved from the original installation site.
9. Products lost or stolen
10. Consequential damages or incidental expenses including losses to persons, property or business.
11. Modifications to original unit after it leaves the factory, such as breaking into any part of the sealed systems unless authorized in advance in writing by Marvair, Inc..
12. Damages as a result of operating as a construction site cooler / dehumidifier.

When labor (first 90 days only) is required, it must be performed during normal working hours (8:00 AM - 5:00 PM) Monday - Friday and must be performed by Marvair, Inc., personnel or a designated Service Representative.

The owner of the product may ship the allegedly defective or malfunctioning product or part to Marvair, Inc., at such owner's expense, and Marvair, Inc., will diagnose the defect and, if the defect is covered under this warranty, Marvair, Inc., will honor its warranty and furnish the required replacement part. All costs for shipment and risk of loss during shipment of the product to Marvair, Inc., and back to the owner shall be the responsibility and liability of the owner. Upon written request by an owner, Marvair, Inc., may arrange for remote diagnosis of the allegedly defective or malfunctioning product or part but all costs for transportation, lodging and related expenses with regard to such diagnostic services shall be the responsibility and liability of the owner.

An owner requesting performance under this Warranty shall provide reasonable access to the allegedly defective or malfunctioning product or part to Marvair, Inc., and its authorized agents and employees.

THIS WARRANTY CONSTITUTES THE EXCLUSIVE REMEDY OF ANY PURCHASER OF A MARVAIR HEAT PUMP OR AIR CONDITIONER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE, TO THE FULLEST EXTENT PERMITTED BY LAW. IN NO EVENT SHALL ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE EXCEED THE TERMS OF THE APPLICABLE WARRANTY STATED ABOVE AND MARVAIR SHALL HAVE NO OTHER OBLIGATION OR LIABILITY. IN NO EVENT SHALL MARVAIR BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR MONETARY DAMAGES.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE-TO-STATE. Some states do not allow limitations or exclusions, so the above limitations and exclusions may not apply to you.