Thru-the-Wall Comfort

Heating & Cooling

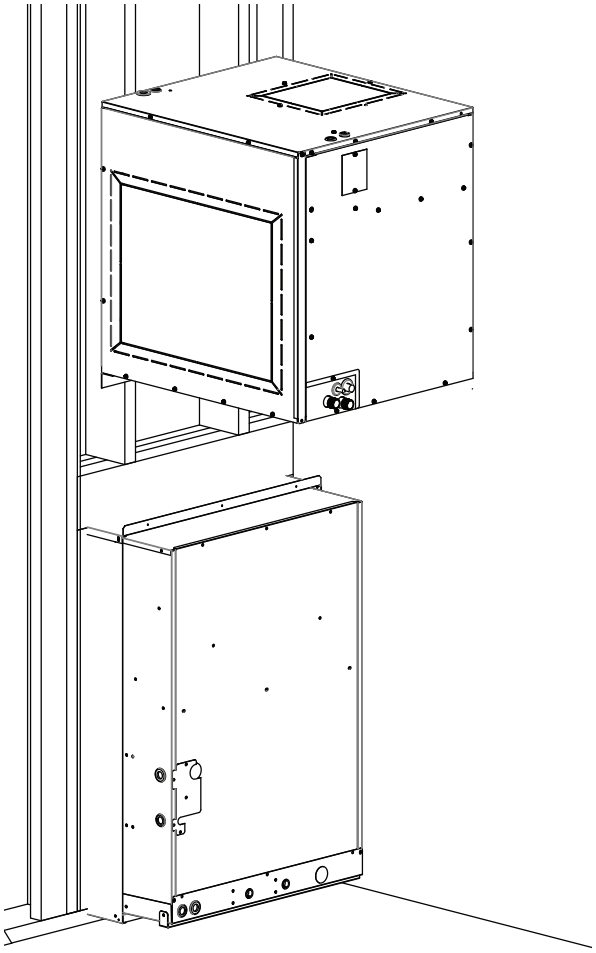
Installation Guide

Multi-Family Style Air Handler

This unit is designed designated to be installed in a CLOSET or UTILITY ROOM and can also be WALL MOUNTED.

Read Installation Manual
Prior To Starting The Installation.

All phases of this installation must comply with National, State and Local codes.



This manual must be left with the homeowner for future reference.

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Go Thru-the-Wall

Table of Contents

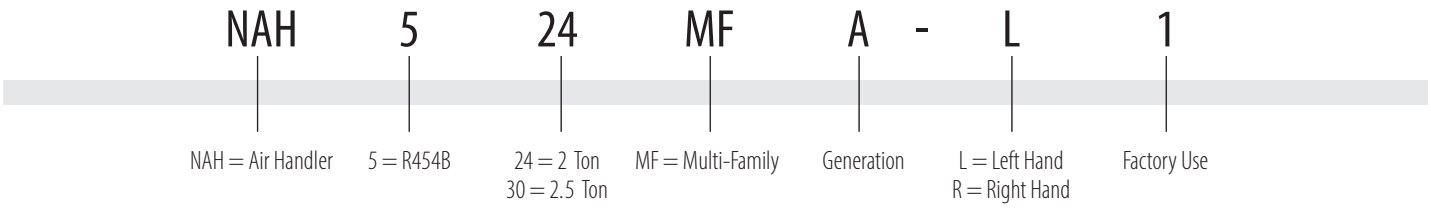
Nomenclature ..... page 4
Product Features ..... page 5
Safety Information ..... page 6
Unit Installation ..... page 8
Unit Dimensions ..... page 10
Clearances ..... page 11
Electric Heater Installation ..... page 12
Unit Data ..... page 14
Electric Heat Kit Data ..... page 14-15
Air Flow Data ..... page 15-17
Wiring Diagrams ..... page 18-20
- No Heat Kit ..... page 18
- 3, 5, 7 & 10kW ..... page 19
- 15kW ..... page 20

Sequence of Operations ..... page 21
Operational Checkout & Maintenance ..... page 22
Decommissioning/Recovery ..... page 23
Replacement Parts Guide ..... page 24
Warranty ..... page 25-26

IMPORTANT NOTE: DO NOT DESTROY OR THROW AWAY THIS MANUAL.
IT SHOULD BE KEPT IN A SAFE PLACE FOR FUTURE REFERENCE.

Multi-Family Style Air Handler Nomenclature

Note: These air handlers can be configured as a Left hand or Right Hand Return.
Example for Left Hand : NAH524MFA-L1, Example for Right Hand : NAH524MFA-R1



High Efficiency Multi-Family Air Handlers 2-2.5 Ton

Section 1. Product Features

The Multi-Family Air-Handler comes under 28 in. height and is designed for installation in a closet or utility room. The air-handler comes with the option of either a left-hand or right-hand return duct connection. It is developed to work in both air-conditioning and heat pump applications. Field installed electric heat kits are available in sizes ranging from 3kW to 15kW.

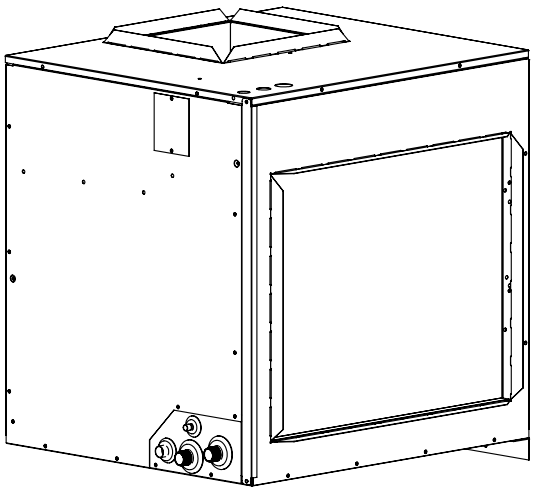
1.1 Standard Features

- Left or Right-hand return options
- The Multi-Family Air-Handler comes with a stainless steel drain pan with primary and secondary drain tube connections
- 208/230 VAC operation
- Slide in/out Blower assembly
- Multi-speed Direct Drive Constant Torque ECM blower
- Factory installed R454B thermal expansion valve with built in check valve for heat pump operation
- Fully Insulated Cabinet
- 1" NPT male threaded primary and secondary drain connection
- R454B refrigerant detection system with active mitigation control

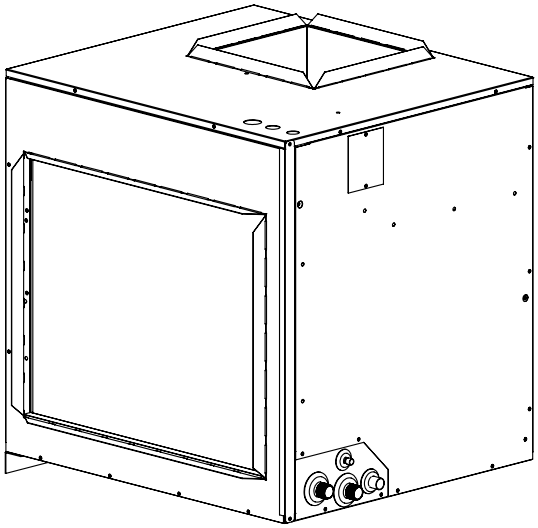
1.2 Optional Accessories

- 3, 5, 7, 10 and 15kW Single-phase heat kits
- Circuit breakers are standard on all single-phase electric heat kit

Fig. 1



Right Handed Return Air Handler



Left Handed Return Air Handler

Section 2. Safety Information

This appliance is not intended for use by those (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instructions concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

This appliance is intended to be installed up to 10,000 ft. (3,000 m) above sea level.

This appliance is only compatible with an outdoor unit that uses **R-454B** refrigerant.

⚠ This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

Pay particular attention to words such as **DANGER, WARNING** or **CAUTION**.

DANGER indicates an imminently hazardous situation, which will result in **serious injury or death**

WARNING indicates a potentially hazardous situation, which could potentially result in **serious injury or death**

CAUTION indicates a potentially hazardous situation, which may result in **minor or moderate injury.** It is also used to alert against practices that are unsafe and can result in property damage.

⚠ WARNING

In case of improper installation, there is a potential that the operation of the product could cause personal injury or property damage. Adjustments, improper installation, alteration, service, or maintenance can also cause injury or property damage. Please refer to this install guide for assistance and additional information, consult with your contractor or service agency. For assistance or additional information consult a qualified installer or service agency.

⚠ AVERTISSEMENT

En cas d'installation incorrecte, il est possible que le fonctionnement du produit puisse causer des blessures corporelles ou des dommages matériels.
Des ajustements, une mauvaise installation, modification, service ou entretien peuvent également causer des blessures ou des dommages matériels. Veuillez consulter ce guide d'installation pour obtenir de l'aide et des renseignements supplémentaires, consulter votre entrepreneur ou votre agence de service. Pour obtenir de l'aide ou des renseignements supplémentaires, consultez un installateur ou un organisme de service qualifié.

⚠ WARNING

All working personnel for maintenance, service, and repair operations must be certified from a national training organization or manufacturer that is accredited to teach the relevant national competency standards. Attempting to install or repair this unit without such background may results in product damage, personal injury or death.

⚠ AVERTISSEMENT

Tout le personnel de travail pour les opérations d'entretien, de service et de réparation doit être certifié par un organisme de formation national ou un fabricant accrédité pour enseigner les normes de compétence nationales pertinentes. Tenter d'installer ou de réparer cette unité sans un tel arrière-plan peut entraîner des dommages au produit, des blessures corporelles ou la mort.

⚠ CAUTION

This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to, building, electrical, and mechanical codes.

⚠ PRUDENCE

Ce produit doit être installé dans le strict respect des instructions d'installation et de tout code local, étatique et national applicable, y compris, mais sans s'y limiter, les codes du bâtiment, de l'électricité et de la mécanique.

⚠ WARNING

FIRE OR ELECTRICAL HAZARD
A fire or electrical hazard may result causing property damage, personal injury or loss of life. Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury. Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual to avoid any fire or electrical hazard. For assistance or additional information consult a qualified installer or service agency.

⚠ AVERTISSEMENT

RISQUE D'INCENDIE OU ÉLECTRIQUE
Un incendie ou un risque électrique pourrait en résulter, causant des dommages matériels, des blessures ou la mort. Avant d'effectuer des opérations d'entretien ou de maintenance sur l'unité, éteignez l'interrupteur principal de l'unité. Un choc électrique pourrait provoquer des blessures. Une installation, un réglage, une modification, un service ou un entretien inappropriés peuvent provoquer des blessures ou des dommages matériels. Reportez-vous à ce manuel pour éviter tout risque d'incendie ou électrique. Pour obtenir de l'aide ou des informations supplémentaires, consultez un installateur qualifié ou une agence de service.

⚠ WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example:open flames, an operating gas appliance or an operating electric heater.

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

⚠ AVERTISSEMENT

Nutilisez pas de moyens pour accélérer le processus de dégivrage ou pour nettoyer, autres que ceux recommandés par le fabricant.

Lappareil doit être stocké dans une pièce sans sources dinflammation fonctionnant en continu (par exemple : flammes nues, un appareil à gaz en fonctionnement ou un radiateur électrique en fonctionnement.

Ne pas percer ou brûler.

Sachez que les réfrigérants peuvent ne pas contenir dodeur.

2.1 Safety Requirements

1. This air handler should be installed in accordance with all local, state, and national building and safety codes, local plumbing or wastewater codes and other applicable codes.
2. Provide clearances for servicing as indicated under section 3.3 on page 11 to allow service access to the filter, electric heater, and blower.
3. Check the rating plate and Table 1 to ensure that the electrical characteristics match.
4. The air-handler should be installed so the electrical components are protected from water.
5. Installing and servicing HVAC equipment can be hazardous due to the electrical components. Only trained and certified personnel should install, repair or service HVAC equipment.
6. When working on HVAC equipment, observe all precautions in the manuals and labels attached to the unit and other safety precautions that may apply.
7. These instructions cover minimum requirements and conform to existing national standard and service codes. In some instances, these instructions exceed certain local codes and ordinances, especially those who have not kept up with changing residential and non-HUD modular home construction practices. These instructions are required as a minimum for a safe installation.

2.2 Inspection

As soon as the unit is received, the installer needs to inspect the unit for possible damages during transit. If damages are evident, the extent of the damage should be noted on the carrier's freight bill. For proper inspection, a separate request for inspection by the carrier's agent should be sent in writing. The unit has foam block inside the blower to keep the fan in place during transit. Make sure to remove the foam block before installing the unit.

2.3 Limitations

The air-handler must be wired and installed according to the national and local safety codes. Voltage limits for these air-handlers are as follows:

Table 1: Unit Voltage Limits

Model	Voltage-Phase-Hz	Voltage Operating Range	
		Min.	Max.
NAH524MF*-L*	208/230-1~-60	197	252
NAH524MF*-R*			
NAH530MF*-L*			
NAH530MF*-R*			

⚠ WARNING

The area where the appliances is installed shall be constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.

If appliances are installed in a room with an area less than the value determined using 'Minimum room area table' that room shall be without continuously operating open flames (i.e. an operating gas appliance) or other potential ignition sources (i.e an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 1292°F (700°C) and electric switching devices.

⚠ AVERTISSEMENT

La zone où les appareils sont installés doit être construite de manière à ce qu'en cas de fuite de réfrigérant, il ne stagne pas de manière à créer un risque d'incendie ou d'explosion.

Si des appareils sont installés dans une pièce dont la surface est inférieure à la valeur déterminée à l'aide de la 'table de surface minimale', cette pièce doit être dépourvue de flammes nues (par exemple un appareil à gaz de fonctionnement) ou d'autres sources d'inflammation potentielles (par exemple, un appareil de chauffage électrique en état de fonctionnement, des surfaces chaudes). Un dispositif produisant des flammes peut être installé dans le même espace si le dispositif est muni d'un pare-flammes efficace.

Les dispositifs auxiliaires qui peuvent être une source d'inflammation potentielle ne doivent pas être installés dans les conduits. Des exemples de telles sources d'inflammation potentielles sont les surfaces chaudes avec une température supérieure à 1292°F (700°C) et les dispositifs de commutation électrique.

2.4 Minimum Room Area Requirement

Ensure the total conditioned room area is greater than the corresponding value in the table. The altitude of installed unit must also be taken into account. To properly determine minimum room area first find the respective "Altitude Adjustment Factor" based on the table below. Then multiply the Altitude Adjustment Factor by the value determined in the minimum room area table below. If OEM unit other than NCP is used, use greatest room area with respective line set length

The Altitude Adjustment Factor is based on the building site ground level altitude (H_{alt}) in meters.

Altitude Adjustment Factor

H_{alt}(m)	0	200	400	600	800	1000	1200	1400	1600
H_{alt}(ft)	0	656	1312	1969	2625	3281	3937	4593	5249
AF	1.00	1.00	1.00	1.00	1.02	1.05	1.07	1.10	1.12
H_{alt}(m)	1600	1800	2000	2200	2400	2600	2800	3000	3200
H_{alt}(ft)	5249	5906	6562	7218	7874	8530	9186	9843	10499
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

Minimum Room Area Tables

Minimum Room Area (m^2)									
		Line Set							
		4.6m	6.1m	7.6m	9.1m	10.7m	12.2m	13.7m	15.2m
Outdoor Unit Series	1000	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1
	3000	9.1	9.4	9.7	10.0	10.3	10.6	10.9	11.2
	4000	8.8	9.1	9.4	9.8	10.1	10.4	10.7	11.0
	5000	10.6	10.9	11.2	11.5	11.8	12.1	12.4	12.7

Minimum Room Area (ft^2)									
		Line Set							
		15'	20'	25'	30'	35'	40'	45'	50'
Outdoor Unit Series	1000	97.0	100.3	103.6	106.8	110.1	113.4	116.7	120.0
	3000	97.9	101.2	104.5	107.8	111.1	114.3	117.6	120.9
	4000	95.1	98.4	101.7	105.0	108.2	111.5	114.8	118.1
	5000	113.9	117.1	120.4	123.7	127.0	130.3	133.6	136.8

2.5 Minimum Ventilation Airflow Volume

Ensure the ventilation airflow volume is greater than the corresponding value in the table. If OEM unit other than NCP is used, use greatest airflow volume with respective line set length."

Minimum Ventilation Airflow Volume Tables

Minimum Ventilation Airflow Volume (m^3/hr)									
		Line Set							
		4.6m	6.1m	7.6m	9.1m	10.7m	12.2m	13.7m	15.2m
Outdoor Unit Series	1000	594.8	614.9	635.0	655.1	675.2	695.3	715.4	735.6
	3000	600.5	620.6	640.7	660.9	681.0	701.1	721.2	741.3
	4000	583.3	603.4	623.5	643.6	663.7	683.8	703.9	724.1
	5000	698.2	718.3	738.4	758.5	778.7	798.8	818.9	839.0

Minimum Ventilation Airflow Volume (CFM)									
		Line Set							
		15'	20'	25'	30'	35'	40'	45'	50'
Outdoor Unit Series	1000	350.1	361.9	373.7	385.6	397.4	409.3	421.1	432.9
	3000	353.5	365.3	377.1	389.0	400.8	412.6	424.5	436.3
	4000	343.3	355.1	367.0	378.8	390.7	402.5	414.3	426.2
	5000	410.9	422.8	434.6	446.5	458.3	470.1	482.0	493.8

Section 3. Unit Installation

After unboxing the air handler and completing the inspection, follow the instruction step by step as follows:

- Use metal snipping tool to cut out the square piece from return and supply air side as shown in Figures 2 & 3
- Use a sheet metal hand brake to bend the supply and return air duct flanges as shown in Figure 4
- The air handler can be mounted to a wall for support using the proper wall mounting kit provided with the unit. Please follow the instructions to securely mount the air handler to the wall.

Fig. 2

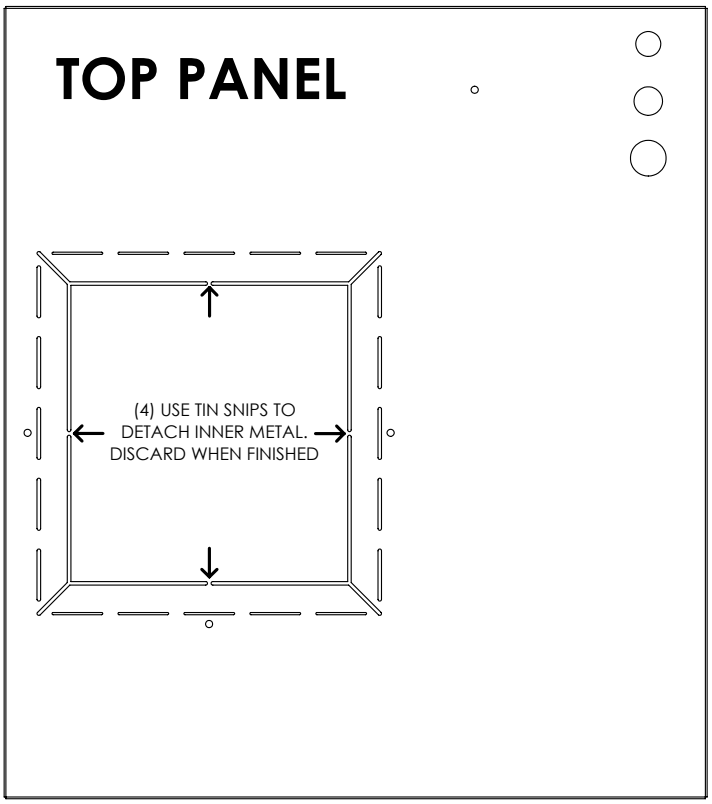


Fig. 3

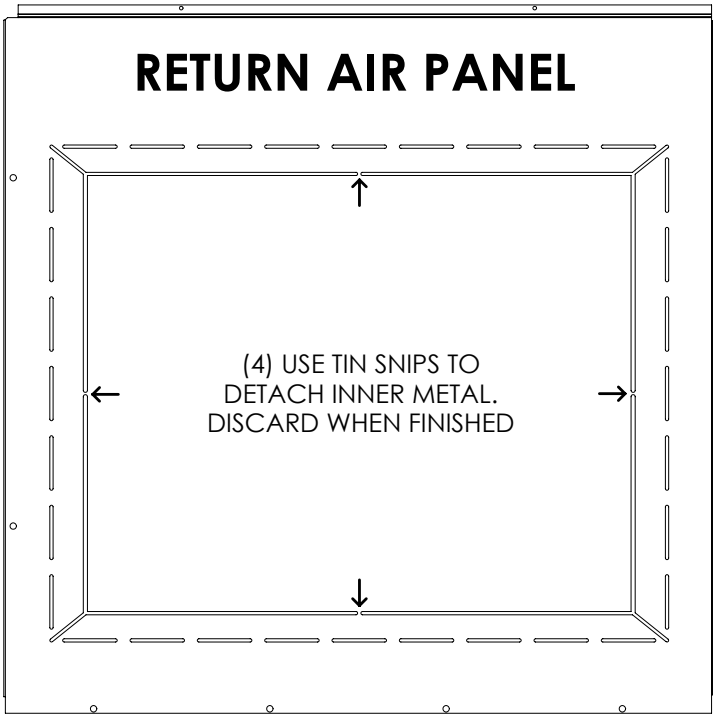
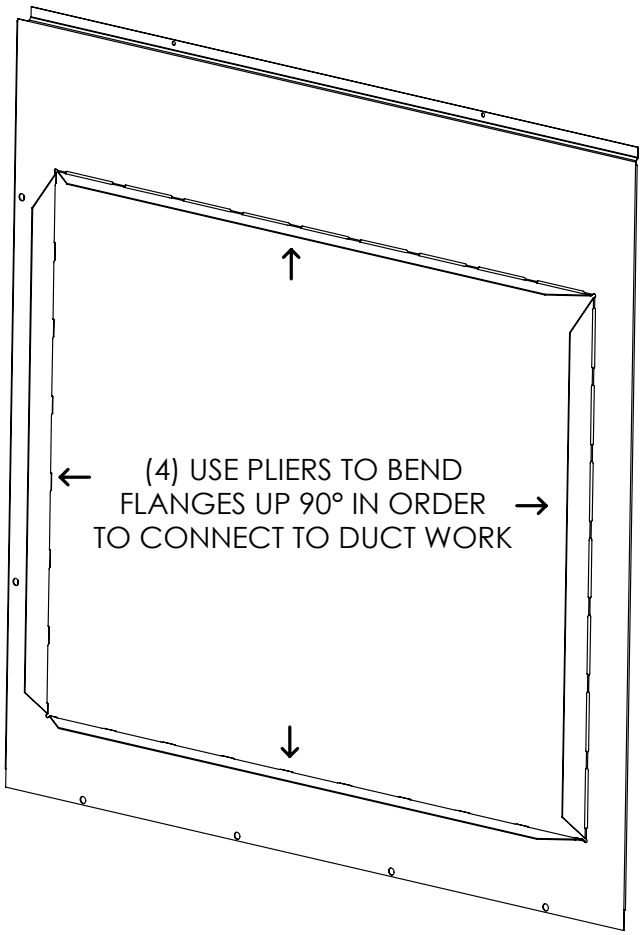


Fig. 4



⚠ CAUTION

The air handler should never be operated without an air filter.

⚠ PRUDENCE

Le système de traitement de l'air ne doit jamais être utilisé sans filtre à air.

⚠ WARNING

Wall mounting screws that are going to be used, must be capable of supporting a 600 lb. load. Failure to follow the instruction can cause a serious injury or property damage.

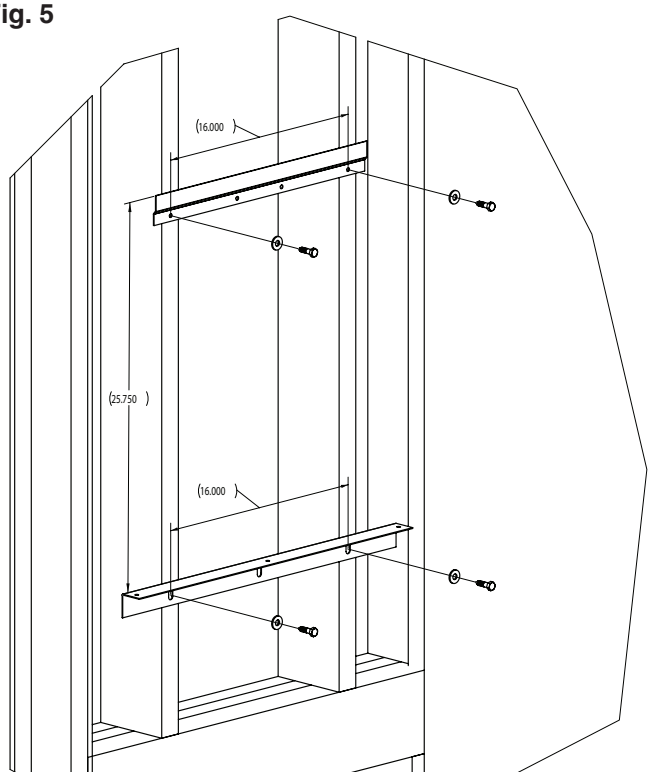
⚠ AVERTISSEMENT

Les vis de montage murales qui vont être utilisées doivent être capables de supporter une charge de 272 kg. Le non-respect de l'instruction peut causer des blessures graves ou des dommages matériels.

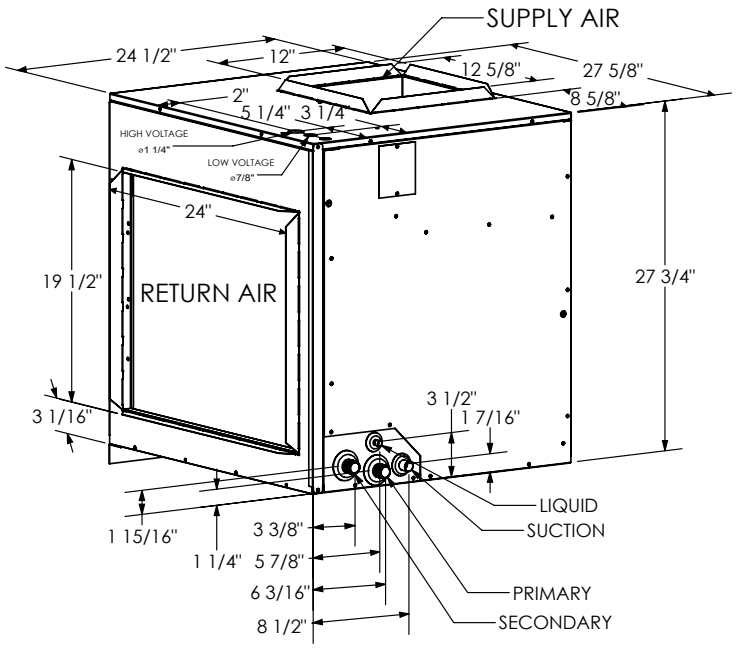
3.1 Wall Mount Installation

The Multi Family Air Handler can be wall mounted with a French cleat style bracket. If the unit is to be installed on a wall, then the included wall mount bracket must be used. Four (4) fasteners capable of supporting a combined load of 600 lbs. are required (not included). Use the field supplied fasteners to securely fasten the bracket to the wall. Installer should follow best construction practices to ensure the bracket is installed properly and capable of supporting a 600 lb. load. **See Figure 5.**

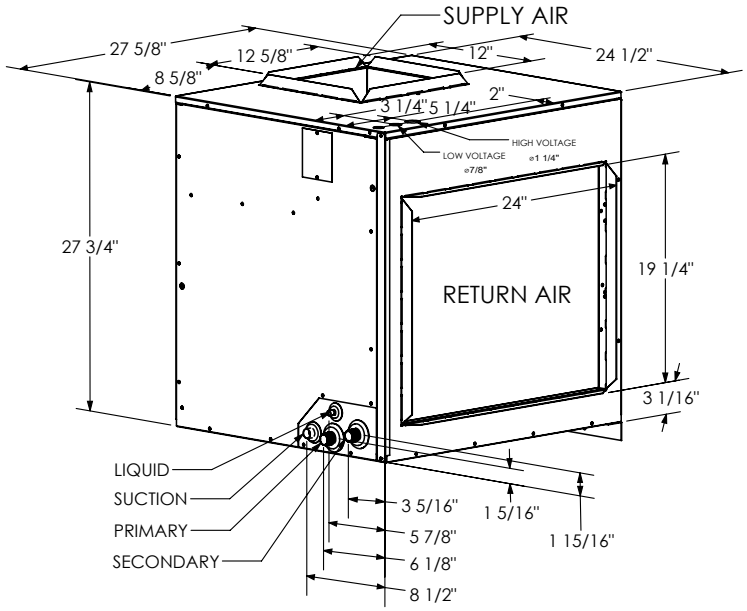
Fig. 5



NAH524MF*-L*
NAH530MF*-L*



NAH524MF*-R*
NAH530MF*-R*



3.2 Dimensions

The overall dimensions are given below in Table 2.

Table 2: Unit Dimensions

Model	Dimensions (in.)			Drain Location (in.)[1]		Wiring Knockouts (in.)	
	Height	Width	Depth	Primary	Secondary	High Voltage	Low Voltage
NAH524MF*-L*	27-3/4	24-1/2	27-5/8	5-7/8	3-3/8	1-1/4	7/8
NAH524MF*-R*							
NAH530MF*-L*							
NAH530MF*-R*							

1. The primary and secondary drain location is measured from the edge of the filter access door

3.3 Clearances

While installing the unit in a service closet, the following clearances must be taken into consideration:

- A minimum clearance of 12" is required for refrigerant and piping connections.
- For servicing and maintenance, leave a minimum of 29" of unobstructed open area in front of the access panel.
- The condensate drain connections are designed and placed to avoid interference between drain tubes and access panel.
- The Multi-Family Air Handler requires 0.00" clearance to combustible surfaces.

3.4 Drain Connections

The drain connection must include a P-trap of at least 3 inches in height and must be pitched away from the air-handler drain pan. The drain tubes should not be smaller than drain connections. For proper condensate drainage follow the instructions below.

- Route the drain line in such a way that it does not interfere with the front access panel or air filter.
- The air handler is provided with a secondary drain connection that should be trapped and piped to a location that will provide a warning that the primary drain is clogged.
- If the recommended secondary drain is not utilized during installation, it should be capped and sealed water tight.

3.5 Refrigerant Line Connections

All pipe-work shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed. Pipe-work shall be kept to a minimum.

Note: Low temperature solder alloys, such as lead or tin alloys, are not acceptable for pipe connections. Alloys used to join refrigerant containing connections shall have a melting point greater than 427°C (800°F).

A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the REFRIGERATING SYSTEM parts. A vacuum valve shall be provided to evacuate the interconnecting pipe or any uncharged REFRIGERATING SYSTEM part.

Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.

All field applied joints shall be at least one of the following:

-Mechanical joints in compliance with ISO 14903 or UL 207 (U.S. only);

-Welded or brazed joints; or

-Joints in enclosures that vent to the unit or to the outside.

Route the refrigerant tubing in such a manner that it will not obstruct the service access panel or filter access. When installing the air handler, connect the liquid and suction refrigerant lines as follows:

- Suction and liquid line connections are made outside the cabinet, both lines are swaged to accept field installed tubing. Only the service access panel must be removed for brazing, cabinet patch plate may be left in place.
- Use a damp rag around the suction and liquid tube grommets to avoid any damage to them or any other internal components.
- Purge dry nitrogen into the refrigerant lines before brazing.
- Proceed with brazing both suction and liquid lines and allow the brazed connections to cool.
- Insulate the suction line from outdoor unit to the Multi-Family Air Handler.

3.5.1 Leak Checking

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 157psig. No leak shall be detected.

Leak checking of refrigerant line braze joints and evaporator unit using dry nitrogen. (See Step 3.5.1a on next page)

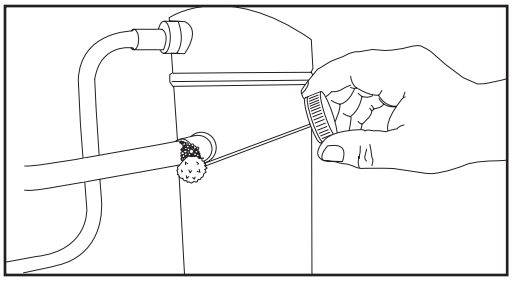
1. Replace service port cap of the vapor line service valve (cap was removed for brazing operations).

2. Connect dry nitrogen source to the service port of the liquid line service valve. Pressurize refrigerant lines and indoor coil to approximately 157 psig.

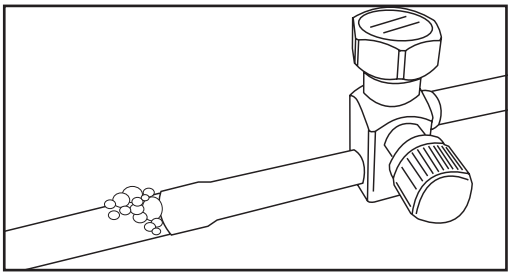
3. Check for leaks using a liquid soap solution. If any leaks are detected,purge the nitrogen, repair the leak(s) and repeat the leak check procedure."

Step 3.5.1a:

Using a liquid soap solution



Apply liquid soap solution to check for leaks



Bubbles forming in the liquid soap solution indicates a leak

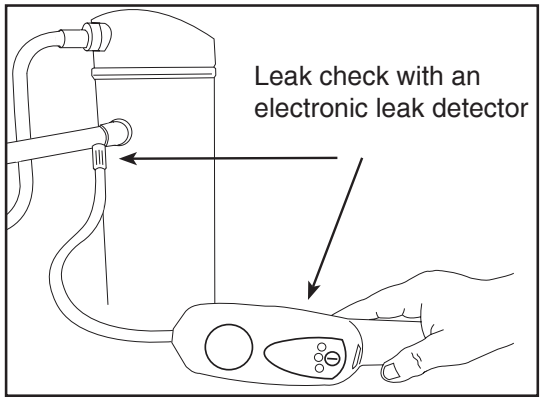
Leak checking of refrigerant line braze joints and evaporator unit using R454B refrigerant. (See Step 3.5.1b)

1. Connect R454B source to the service port of the liquid line service valve. Use of a manifold gauge set will facilitate connecting and disconnecting of the refrigerant source for leak checking. Pressurize refrigerant lines and indoor coil with refrigerant gas.

2. Leak check with an electronic leak detector or liquid soap solution. If any leaks are detected, use a refrigerant recovery system to remove the refrigerant. Repair the leak(s) and repeat the leak check procedure.

Step 3.5.1b:

Using an electronic leak detector



⚠ CAUTION

The temperature required for brazing is high enough that can cause oxidation in copper lines. Dry nitrogen should always be supplied through the tubing while brazing the connection. The flow should be continued until the brazed joints have cooled down. Make sure only low-pressure dry nitrogen is being introduced into the tubing.

⚠ PRUDENCE

La température requise pour le brasage est suffisamment élevée pour provoquer une oxydation dans les lignes de cuivre. L'azote sec doit toujours être fourni par le tube tout en brasant la connexion. L'écoulement doit être poursuivi jusqu'à ce que les joints brasés se soient refroidis. Assurez-vous que seul de l'azote sec à basse pression est introduit dans le tube.

3.6 System Charging & Adjustments

Refer to the outdoor system installation manual for instructions on charging the system and making required adjustments to the TXV. After adjustments, the system superheat and subcooling should match the appropriate factory recommended settings for the outdoor unit.

⚠ CAUTION

Improper Charging and TXV adjustments can cause system failure and can result in damaging equipment or its components.

⚠ PRUDENCE

Une charge incorrecte et des ajustements txv peuvent causer une défaillance du système et peuvent entraîner des dommages à l'équipement ou à ses composants.

Section 4. Electric Heater Installation

If the air handler requires electric heat, install the electric heat kit by following the instructions provided with the electric heat kit.

- After installing the kit, check mark the appropriate option on the air handler data tag to identify the heater kit that was installed.
- In the absence of a heat kit, mark the data tag to indicate that no heat kit was installed.
- When electric heat is present, disconnect the line voltage terminal block high voltage wires from the field wire harness that came with the air handler and connect the terminal block to the branched black Molex connector coming out of electric heat kit circuit breaker (follow the wiring diagram on page 19 - 20 for connection details).
- Use only CPEHK-** electric heat kits as listed on the air handler data tag and in this instruction manual. Use the data from Table 4 through 8 for information on heating airflow, MOP and wiring size requirements.
- When installing the electric heat kit, affix the appropriate electric heat wiring diagram to the air handler wiring diagram label within the dotted region. The air handler wiring diagram label can be found on the front access panel.

⚠ WARNING

LIVE ELECTRICAL COMPONENTS!

During Installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions could result into serious injury or death.

⚠ AVERTISSEMENT

COMPOSANTS ÉLECTRIQUES SOUS EN DIRECT!

Lors de l'installation, des tests, de l'entretien et du dépannage de ce produit, il peut être nécessaire de travailler avec des composants électriques en direct. Le non-respect de toutes les précautions de sécurité électrique pourrait entraîner des blessures graves ou la mort.

Section 5. Line Power Connections

Please follow the instructions below for proper field power wire connections.

- Power wires can be routed through the conduit opening on the top panel of the air handler.
- In the absence of a heat kit, connect the field power wires to the 12 AWG power wires supplied inside the cabinet.
- When an electric heat kit is to be installed, verify the proper wire and breaker size by referring to the specific MCA and MOP rating listed in Tables 4 and 5 on page 14-15.
- All wiring and electrical connections for this unit must be made with copper conductors.

Section 6. Control Connections

The air handler control board is supplied 24V power by an internal low voltage transformer. The transformer is factory wired to 230V incoming supply voltage, if the incoming supply voltage is 208V then wiring to the transformer must be field adjusted. Failure to do so will result in electrical damage to the unit.

The thermostat wires can be routed through the 7/8" diameter opening on the top panel.

For additional air-leakage prevention, seal the wiring entry point at the outside of the unit.

⚠ CAUTION

All wiring for this unit must comply with the local and national electrical codes and requirements. Failure to comply with the electrical requirements can cause serious property damage.

⚠ PRUDENCE

Tout le câblage de cet appareil doit être conforme aux codes et exigences locaux et nationaux en matière d'électricité. Le non-respect des exigences électriques peut causer de graves dommages matériels.

Section 7. Blower Motor Speed Connections

The air handler blower motor control has five speed options. Refer to the outdoor unit instruction to select the correct speed tap to meet the desired airflow requirements for your unit. For auxiliary heat, the desired airflow can be different from cooling airflow based on the heat kit installed. Make sure to select the appropriate speed tap for heating airflow if the desired heating airflow is different than cooling airflow. See Table 6 on page 15 for proper blower speed and desired airflow.

Note: In the case where cooling and heating motor speeds are the same, a terminal splitter and jumper wire will be required. A jumper wire and terminal splitter can be found in the accessories bag

Section 8. Refrigerant Detection System

This unit is manufactured with a refrigerant detection system which includes the following:

-R454B A2L Gas Sensor

-Control Board for A2L Mitigation

Function

The purpose of the refrigerant detection system is to identify refrigerant leaks within the air handler unit. If a leak is detected, the system will stop normal operation and disperse the leak to ensure the safety of those in the affected area. Immediate service of unit is required after fault state.

Mode of Operation

At power-up, the control enters the configuration state, a 5-second window in which the control identifies active sensor ports. If there are no active sensor ports, the control enters the communication fault state. If a sensor is detected, the control enters the sensor warm-up state. Once the detected sensor reports Run mode, the control enters normal operation and constantly monitors the mode and %LFL status of the sensor. See the A2L Board Table on page #14 for all respective outputs for each state.

Once an active sensor port is established, it is required for all future operation, and cannot be substituted by connecting a sensor on the other port. Loss of communication with an active sensor will result in the communication fault state, which can only be cleared by resuming communication with a sensor on that specific port.

A2L Board Table

Current State	Outputs	State-change conditions	Next state
Configuration	**CC:** Off **Alarm:** Off **Fan:** On **Status LED:** Off	• At least 1 sensor port is active • No sensor ports are active	• Sensor Warm-up • Communication Fault
Sensor Warm-up	**CC:** Off **Alarm:** Off **Fan:** Off **Status LED:** Off	• Sensor reports Run mode • Sensor reports Error mode	• Sensor Warm-up • Communication Fault
Normal Operation	**CC:** On **Alarm:** Off **Fan:** Off **Status LED:** Off	• %LFL ≥ Trip point • Loss of sensor communication	• %LFL Fault • Communication Fault
Communication Fault	**CC:** Off **Alarm:** Off **Fan:** On **Status LED:** 2 blinks	• Valid data on required sensor port(s) and lockout timer expired	• Sensor Warm-up
%LFL Fault	**CC:** Off **Alarm:** Off **Fan:** On **Status LED:** 1 blink	• %LFL < Recovery point and lockout timer expired • Reset button actuated*	• Normal operation

Troubleshooting Fault Codes

Status LED	Mode
Off	Normal operation
On	Sensor “warm up”
1-blink	LFL Fault
2-blink	Communication Fault

% LFL Fault:

When a leak is detected by the refrigerant detection system, the mitigation control board sends a signal to the blower motor to turn on and allow the leak refrigerant to disperse. The board also sends the signal to the outdoor unit contactor to turn off the compressor.

The partial unit control of this air handler receives a system response from the refrigerant detection system and NCP declares that it takes about 2 seconds for the appliance to process and then trigger an output signal that will go to the condensing unit to disable the compressor.

At the time of installation the installer has to make sure that the outdoor unit is capable of shutting down the compressor within 13 seconds of the evaporator sending the output signal. (15 seconds minus 2 seconds = 13 seconds)

During installation pay close attention to the Status LED to determine if the A2L board and sensor have been installed accordingly. It is essential that the A2L board and sensor are functioning properly for normal operation of the unit.

The A2L board will enter the ‘Sensor Warm-Up’ state after the 5-second configuration window. During the ‘Sensor Warm-Up’ state the LED status will produce a steady ON light. From this state, the board will enter either the ‘Normal Operation’ state (Status LED will turn OFF) or ‘Communication Fault’ state (Status LED will produce 2 BLINKS). If ‘Communication Fault’ state is entered, ensure all connections are made between components. Verify sensor is properly connected to A2L board. If leak is detected the board will enter a ‘%LFL Fault’ State (Status LED will produce 1 BLINK).

DURING A ‘%LFL FAULT’ STATE, NO OPEN FLAME OR POTENTIAL IGNITION SOURCE WILL BE USED. RECOVER AS MUCH REFRIGERANT AS POSSIBLE. AREA MUST BE CLEAR OF REFRIGERANT BEFORE ATTEMPTING TO REPAIR LEAK.

Follow proper servicing techniques to recover refrigerant, identify leak, repair leak, and charge unit to appropriate amount before resetting system.

Replacement

If 'Communication Fault' state is entered, ensure all connections are made between sensor and A2L board. If all connections are verified and the board has not exited the 'Communication Fault' state, the sensor is indicating end-of-life. Sensor replacement is necessary for normal operation. The sensor shall only be replaced by NCP approved A2L Gas Sensor (NCP P/N: 142-60-031). Contact National Comfort Products for replacement sensor.

Section 9. Unit Data

Table 3: Physical/Electrical Data
(No Heat Kit)

Multi-Family Air Handler											
Model	**Nominal Capacity (Btu/h)**	**Size (tons)**	**Nominal Air Flow[1] (CFM)**		**Motor HP**	**Motor RPM**	**FLA[2]**	**MCA[3]**	**MOP[4]**	**Shipping Weight (lbs.)**	**Filter Size**
NAH524MF*-L*	24,000	2 Ton	560	960	1/2	1050	3.8	5	15	145	24" x 20"
NAH524MF*-R*											
NAH530MF*-L*	30,000	2.5 Ton								150	
NAH530MF*-R*											
Flow Control	Adjustable TXV with internal check valve						**Line Size**		3/8” Liquid 3/4” Suction		

1. Airflow values are based on 0.3 in. wc. of external static pressure.
2. Full Load Ampacity
3. Minimum Circuit Ampacity
4. Maximum Overload Current Protection

Table 4: Electric Heat Data - 208V

Blower Amps.	Heater Model	Heating Capacity (Btuh)	Heating (kW)	Heater Amps.	MCA	MOP
3.8	CPEHK-03	8,900	2.62	12.6	20.5	25
	CPEHK-05	13,100	3.83	18.41	27.8	30
	CPEHK-07	18,400	5.37	25.82	37.0	40
	CPEHK-10	26,000	7.64	36.73	50.7	60
	CPEHK-15	39,200	11.47	36.76	49.1	50
				18.38	24.6	30

Table 5: Electric Heat Data - 230V

Blower Amps.	Heater Model	Heating Capacity (Btuh)	Heating (kW)	Heater Amps.	MCA	MOP
3.6	CPEHK-03	10,900	3.2	13.91	21.9	25
	CPEHK-05	16,000	4.68	20.35	29.9	35
	CPEHK-07	22,400	6.58	28.61	40.3	45
	CPEHK-10	32,000	9.35	40.65	55.3	60
	CPEHK-15	47,800	14.02	40.64	53.8	60
				20.32	26.9	30

Table 6: Airflow Data[1, 2]

Model	Blower Speeds	0 in. wc	0.1 in. wc.	0.2 in. wc	0.3 in. wc.	0.4 in. wc.	0.5 in. wc.
NAH524MF*-L* NAH524MF*-R* NAH530MF*-L* NAH530MF*-R*	Orange (Low)	717	675	624	563	493	414
	Black (Med. Low)	801	719	648	588	539	501
	Blue (Med.)	947	905	862	819	775	731
	Yellow (Med. High)	1050	1006	964	924	886	849
	Red (High)	1090	1042	998	959	924	893

1. This airflow data is conducted with a filter at dry coil conditions. Refer to the installation guide of the matching outdoor unit for appropriate blower speed to obtain factory recommended airflow.

2. Cooling fan delay is 5 seconds on a call for cooling or heating. The duration of the fan delay can be adjusted as needed by selecting the jumpers on the air-handler control board (A = 5 sec., B = 30 sec., C = 60 sec. & D = 90 sec.)

Table 7: Electric Heat Airflow and Temperature Rise (208V)[1]

Model	Blower Speeds	0.1 in. wc.	ΔT	0.2 in. wc	ΔT	0.3 in. wc.	ΔT	0.4 in. wc.	ΔT	0.5 in. wc.	ΔT
CPEHK-03-A	Orange	675	12.2	624	13.2	563	14.6	493	16.7	414	19.9
	Black	719	11.5	648	12.7	588	14.0	539	15.3	501	16.4
	Blue	905	9.1	862	9.6	819	10.1	775	10.6	731	11.3
	Yellow	1006	8.2	964	8.5	924	8.9	886	9.3	849	9.7
	Red	1042	7.9	998	8.3	959	8.6	924	8.9	893	9.2
CPEHK-05-A	Orange	675	18.0	624	19.5	563	21.5	493	24.6	414	29.3
	Black	719	16.9	648	18.7	588	20.6	539	22.5	501	24.2
	Blue	905	13.4	862	14.1	819	14.8	775	15.6	731	16.6
	Yellow	1006	12.1	964	12.6	924	13.1	886	13.7	849	14.3
	Red	1042	11.6	998	12.1	959	12.6	924	13.1	893	13.6
CPEHK-07-A	Orange	675	25.2	624	27.3	563	30.3	493	34.6	414	41.2
	Black	719	23.7	648	26.3	588	29.0	539	31.6	501	34.0
	Blue	905	18.8	862	19.8	819	20.8	775	22.0	731	23.3
	Yellow	1006	16.9	964	17.7	924	18.4	886	19.2	849	20.1
	Red	1042	16.3	998	17.1	959	17.8	924	18.4	893	19.1
CPEHK-10-A	Orange	675	35.7	624	38.6	563	42.8	493	48.8	414	58.2
	Black	719	33.5	648	37.2	588	40.9	539	44.7	501	48.1
	Blue	905	26.6	862	27.9	819	29.4	775	31.1	731	32.9
	Yellow	1006	23.9	964	25.0	924	26.1	886	27.2	849	28.4
	Red	1042	23.1	998	24.1	959	25.1	924	26.1	893	27.0
CPEHK-15-A	Orange	675	53.8	624	58.2	563	64.5	493	73.6	414	n/a
	Black	719	50.5	648	56.0	588	61.7	539	67.3	501	72.4
	Blue	905	40.1	862	42.1	819	44.3	775	46.8	731	49.7
	Yellow	1006	36.1	964	37.6	924	39.3	886	41.0	849	42.8
	Red	1042	34.8	998	36.4	959	37.8	924	39.3	893	40.6

1. The grey highlighted cells are not recommended.

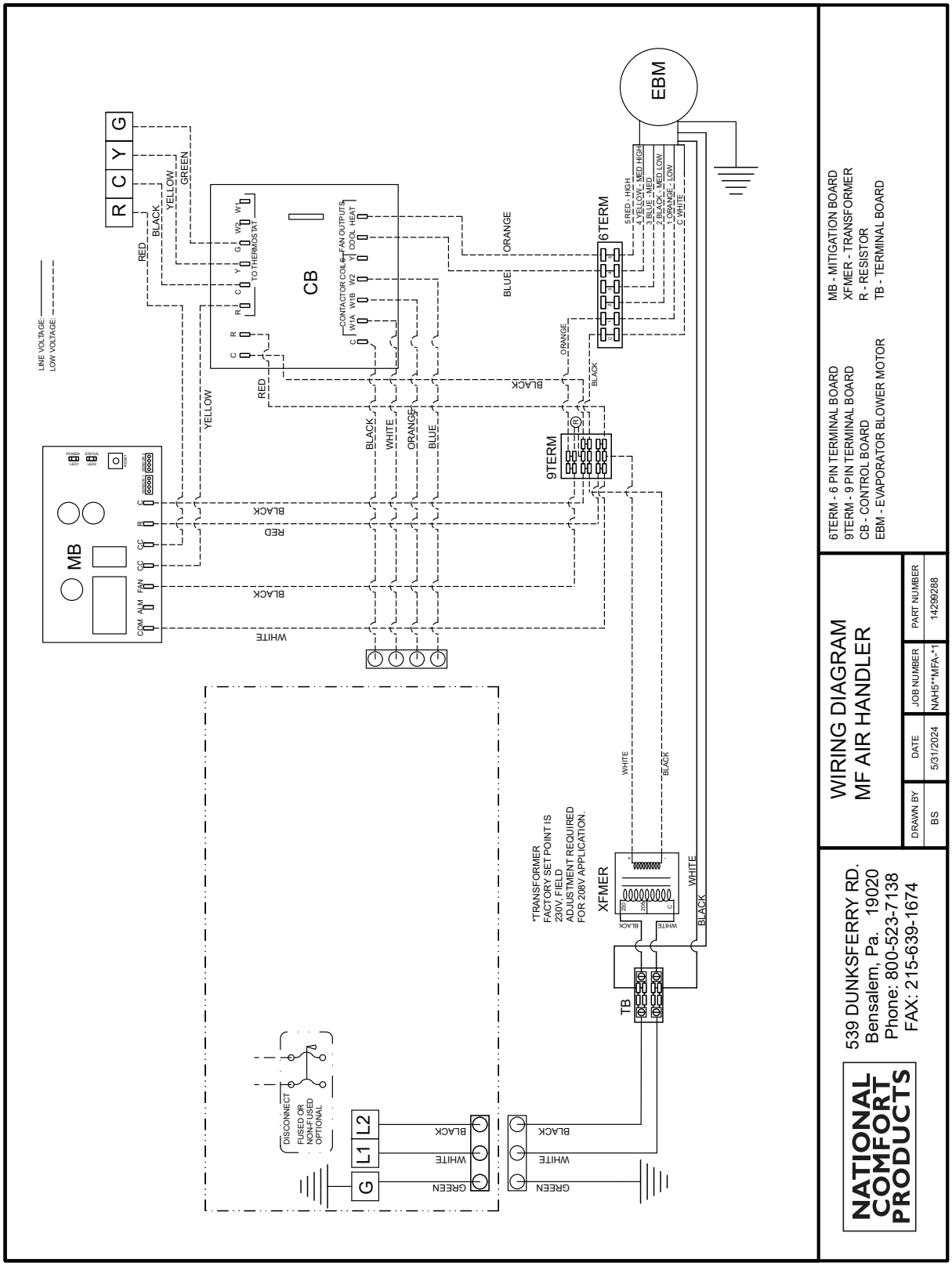
Table 8: Electric Heat Airflow and Temperature Rise (230V)[1]

Model	Blower Speeds	0.1 in. wc.	ΔT	0.2 in. wc	ΔT	0.3 in. wc.	ΔT	0.4 in. wc.	ΔT	0.5 in. wc.	ΔT
CPEHK-03-A	Orange	675	15.0	624	16.2	563	17.9	493	20.5	414	24.4
	Black	719	14.0	648	15.6	588	17.2	539	18.7	501	20.1
	Blue	905	11.2	862	11.7	819	12.3	775	13.0	731	13.8
	Yellow	1006	10.0	964	10.5	924	10.9	886	11.4	849	11.9
	Red	1042	9.7	998	10.1	959	10.5	924	10.9	893	11.3
CPEHK-05-A	Orange	675	21.9	624	23.8	563	26.3	493	30.1	414	35.8
	Black	719	20.6	648	22.9	588	25.2	539	27.5	501	29.6
	Blue	905	16.4	862	17.2	819	18.1	775	19.1	731	20.3
	Yellow	1006	14.7	964	15.4	924	16.0	886	16.7	849	17.5
	Red	1042	14.2	998	14.8	959	15.4	924	16.0	893	16.6
CPEHK-07-A	Orange	675	30.7	624	33.3	563	36.8	493	42.1	414	50.1
	Black	719	28.8	648	32.0	588	35.3	539	38.5	501	41.4
	Blue	905	22.9	862	24.1	819	25.3	775	26.8	731	28.4
	Yellow	1006	20.6	964	21.5	924	22.4	886	23.4	849	24.4
	Red	1042	19.9	998	20.8	959	21.6	924	22.4	893	23.2
CPEHK-10-A	Orange	675	43.9	624	47.5	563	52.6	493	60.1	414	71.6
	Black	719	41.2	648	45.7	588	50.4	539	55.0	501	59.1
	Blue	905	32.7	862	34.4	819	36.2	775	38.2	731	40.5
	Yellow	1006	29.5	964	30.7	924	32.1	886	33.5	849	34.9
	Red	1042	28.4	998	29.7	959	30.9	924	32.1	893	33.2
CPEHK-15-A	Orange	675	65.6	624	71.0	563	n/a	493	n/a	414	n/a
	Black	719	61.6	648	68.3	588	75.3	539	n/a	501	n/a
	Blue	905	48.9	862	51.3	819	54.0	775	57.1	731	60.5
	Yellow	1006	44.0	964	45.9	924	47.9	886	50.0	849	52.1
	Red	1042	42.5	998	44.3	959	46.2	924	47.9	893	49.6

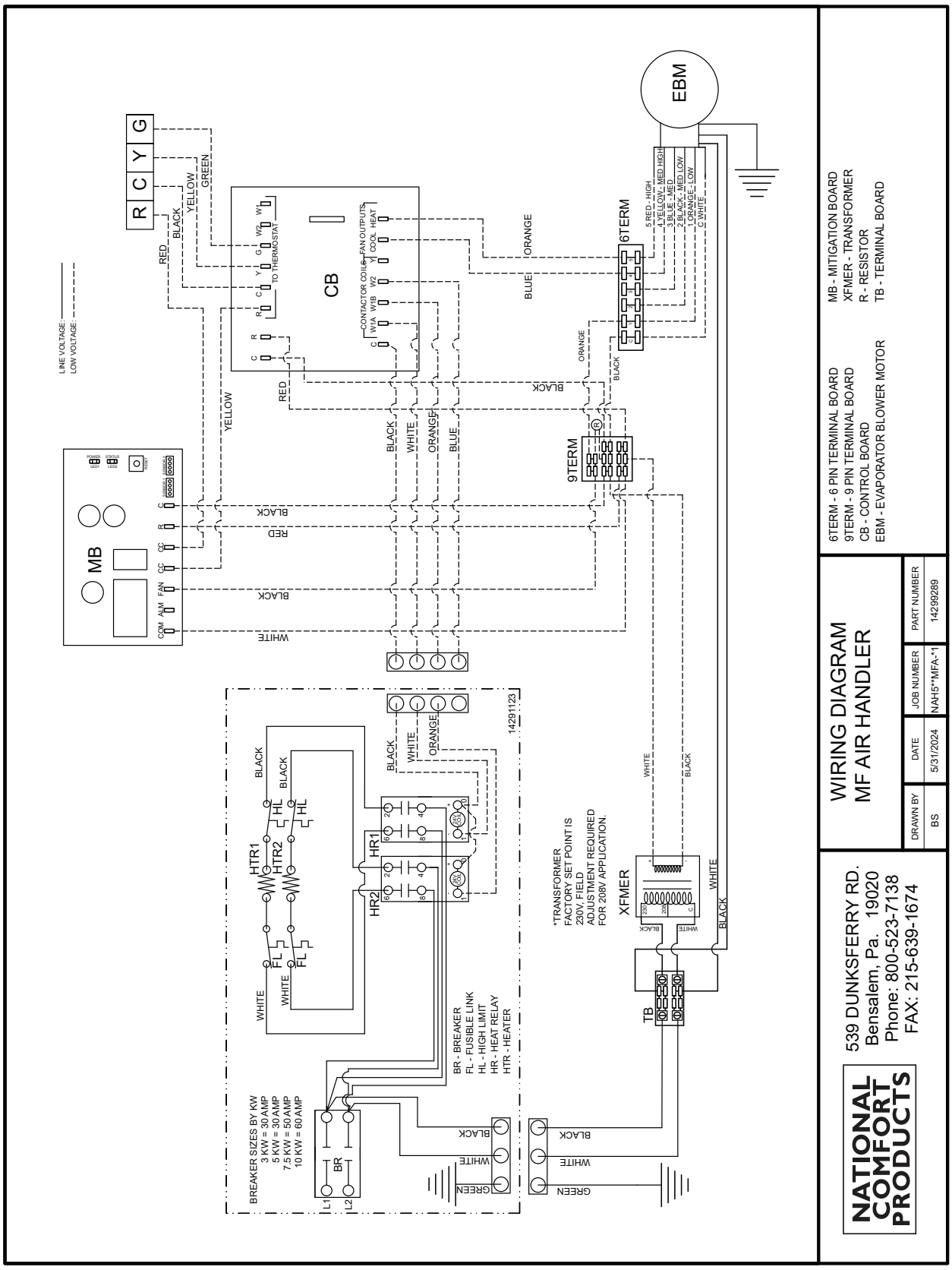
1. The grey highlighted cells are not recommended.

Section 10. Wiring Diagrams

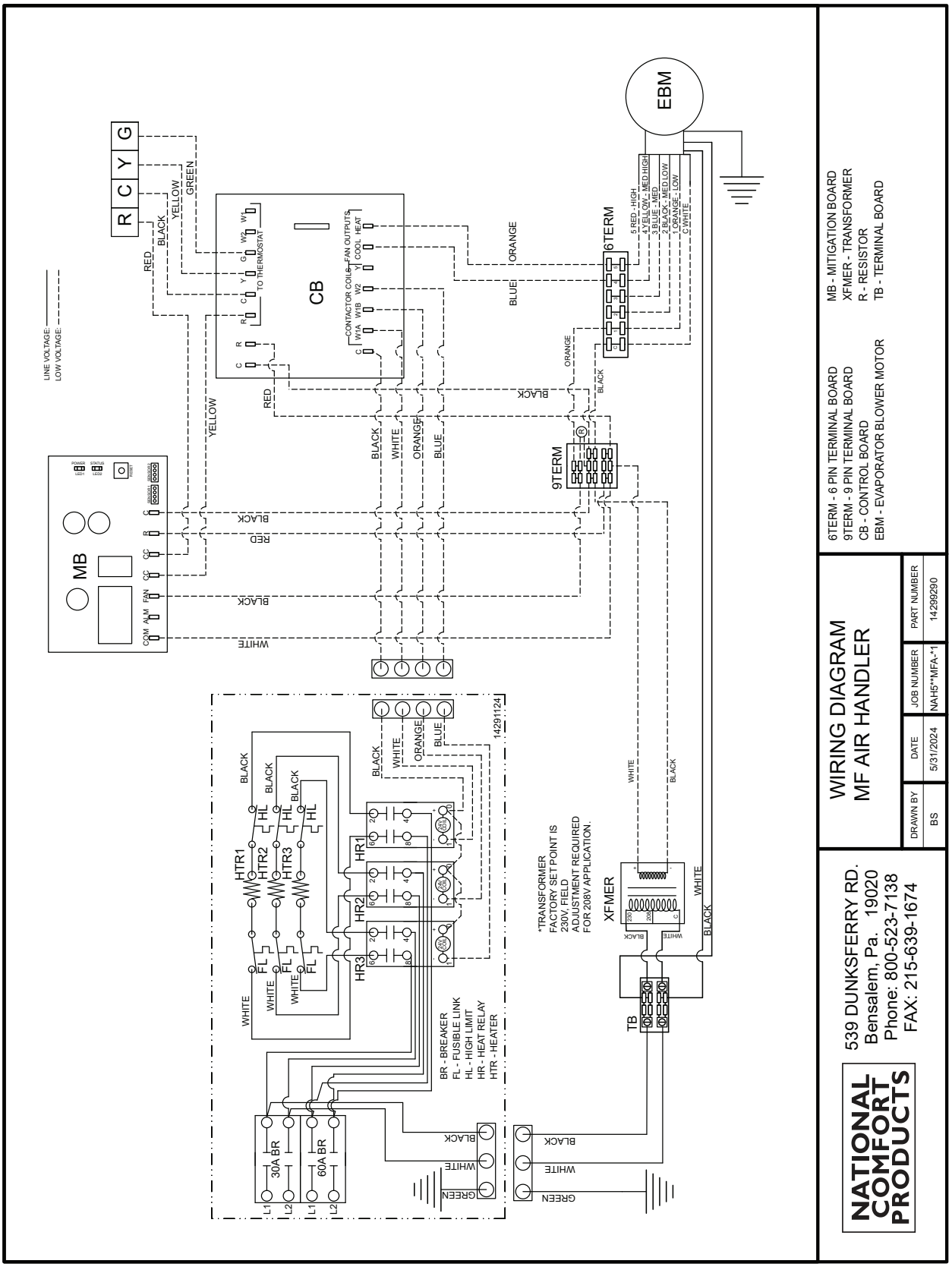
10.1 Air Handler Wiring Diagram
(No Heat Kit)



10.2 Air Handler Wiring Diagram (3, 5, 7 & 10 kW)



10.3 Air Handler Wiring Diagram (15 kW)



Section 11. Sequence Of Operations

11.1 Fan Operation

When the control receives a call from the thermostat to the G terminal only the control will operate the fan in the selected HEAT speed.

11.2 Cooling Operation

When the control receives a call from the thermostat for cooling to the Y terminal only or both the Y and G terminals together the blower will start with the control selected delay in the selected COOL speed.

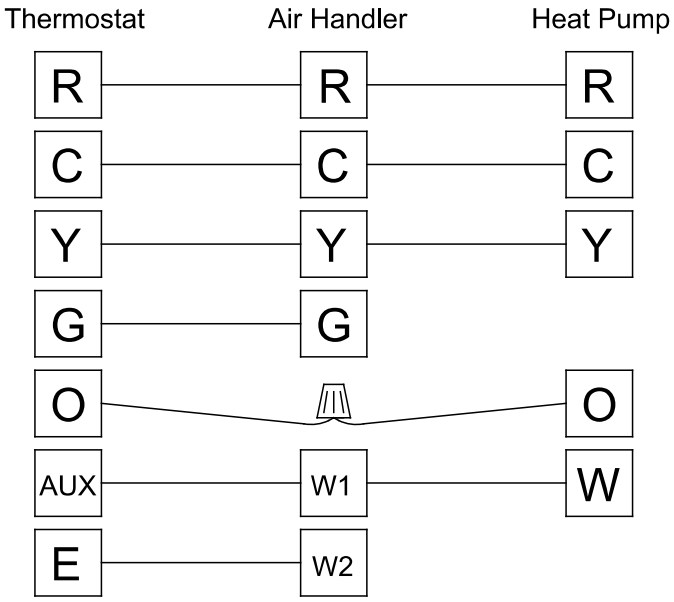
11.3 Heating Operation

- When the control receives a call from the thermostat and/or heat pump AUX to the W1 terminal only the control will energize the W1A output 3 seconds after W1 input and the W1B output 28 seconds after W1 input, energizing the first stage of the electric heat option. The blower will operate in the selected heating speed as soon as any heating output is energized.
- When the control receives a call from the thermostat and/or heat pump AUX to the W1 terminal and a call from the thermostat to the W2 terminal the control will energize the W1A output 3 seconds after W1 input, the W1B output 28 seconds after W1 input and the W2 output 45 seconds after W2 input, energizing both stages of the electric heat option. The blower will operate in the selected heating speed as soon as any heating output is energized.
- When the control receives a call from the thermostat to the W2 terminal only the control will energize the W1A output 3 seconds after W2 input, the W1B output 28 seconds after W2 input and the W2 output 45 seconds after W2 input, energizing both stages of the electric heat option. The blower will operate in the selected heating speed as soon as any heating output is energized.
- When the control receives a call from the thermostat and/or heat pump AUX to the W1 terminal and a call from the thermostat to the Y terminal the control will energize the W1A output 3 seconds after W1 input and the W1B output 28 seconds after W1 input, energizing the first stage of the electric heat option. The blower will operate in the selected cooling speed after a 5 second delay.
- When the control receives a call from the thermostat and/or heat pump AUX to the W1 terminal and a call from the thermostat to both the W2 and Y terminals the control will energize the W1A output 3 seconds after W1 input, the W1B output 28 seconds after W1 input and the W2 output 45 seconds after W2 input, energizing both stages of the electric heat option. The blower will operate in the selected cooling speed after a 5 second delay.
- When the control receives a call from the thermostat to both the W2 and Y terminals the control will energize the W1A output 3 seconds after W2 input, the W1B output 28 seconds after W2 input and the W2 output 45 seconds after W2 input, energizing both stages of the electric heat option. The blower will operate in the selected cooling speed after a 5 second delay. The fault light will illuminate indicating an Emergency Heat operation.

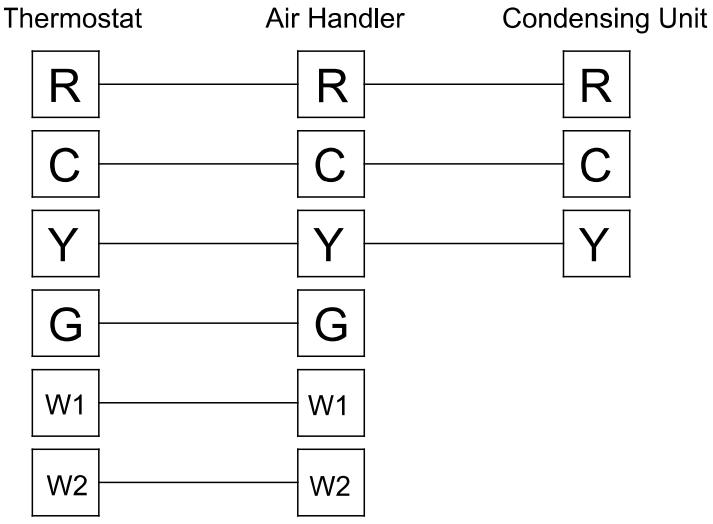
Note: If the control receives a call from the thermostat to the G terminal during or at the same times as any heating option the control will operate as described in the specific heating operation.

Section 12. Controls Wiring Connection

12.1 Heat Pump Systems



12.2 Cooling Systems



Section 13. Operational Checkout and Maintenance

13.1 Operational Checkout

For proper performance, all units must be operated, TXV and charge adjustments must be made in accordance with procedures found in the installation guide of the outdoor unit.

After installation has been completed, it is recommended to check the following to ensure appropriate system operation:

- ☐ The unit is secured to the wall appropriately and there are no tools or loose debris in, around or top of the unit.
- ☐ Properly insulated suction lines are used.
- ☐ Properly secure and isolate all refrigerant lines.
- ☐ All electrical connections are tight and none of the wires are exposed or in contact with any metal parts.
- ☐ Supply and return air ducts are connected properly with no air leakages or with any restriction.
- ☐ All drain connections are secured and tight and the drain pipes don't have any restrictions.
- ☐ On the return air section, air-filter is properly installed.
- ☐ Operate complete system in each mode to verify proper performance.
- ☐ In presence of electric heat kit, verify the operation of supplementary electric heater
- ☐ For Heat pump systems, while running heating mode verify the defrost operation by pressing the push button on the outdoor unit defrost board.
- ☐ Make sure the transformer is set for the appropriate line voltage (208V or 230V).
- ☐ Confirm the fuses or breaker sizes match table 4 & 5 based on the air-handler configuration and electric heater size.

13.2 Maintenance

The system air filter should be inspected on a monthly basis and cleaned or replaced if needed to avoid excessive restriction in the air stream. Once maintenance is completed, reinstall the filter access panel. If the access panel is opened for maintenance, make sure to replace it before placing the unit back in operation. Periodic maintenance should be scheduled and conducted by trained professional service personnel. System maintenance should be conducted at least annually and must include inspection of all electrical and refrigeration components. Inspect wires are not subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. Take into account the effects of aging or continual vibration from sources such as compressors or fans. The heat transfer surfaces should be cleaned.

At all times, NCP maintenance and service guidelines shall be followed. If in doubt, consult NCP's technical department for assistance. The following safety checks must be performed prior to conducting work on the system to minimize the risk of ignition of the refrigerant:

1. Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

2. All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

3. The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

4. If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

5. No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

6. Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

7. The following safety checks must be performed prior to conducting work on the refrigerating equipment

a. The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed.

b. The ventilation machinery and outlets are operating adequately and are not obstructed.

c. Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected or replaced.

d. Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

8. The following safety checks must be performed prior to conducting electrical work on the system to minimize the risk of ignition and electrocution.

a. Capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.

b. No live electrical components and wiring are exposed while charging, recovering or purging the system.

c. Ensure there is continuity of earth bonding.

9. Sealed electrical components shall be replaced.

10. Intrinsically safe components must be replaced.

Section 14. Decommissioning/Recovery

Note: Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced. Refer to the outdoor system installation manual for instructions on recovering refrigerant from the system.

1. Become familiar with the equipment and its operation.

2. Isolate system electrically.

3. Before attempting the procedure, ensure that:

a. Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
b. All personal protective equipment is available and being used correctly;
c. The recovery process is supervised at all times by a competent person;
d. Recovery equipment and cylinders conform to the appropriate standards.

Note: When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

4. Follow outdoor system instructions for proper recovery process

-Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Label shall state the equipment contains FLAMMABLE REFRIGERANT.

5. Do not mix refrigerants in recovery units and especially not in cylinders.

6. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Replacement Parts Guide | NAH Air Handler					
Item	**Description**	**NAH524MF*-L***	**NAH524MF*-R***	**NAH530MF*-L***	**NAH530MF*-R***
1	**Heat Excahnger**	142-08-394	142-08-395	142-08-391	142-08-393
2	**TXV+Distributor**	142-75-169	142-75-169	142-75-170	142-75-170
3	**Blower Motor**	142-70-068	142-70-068	142-70-068	142-70-068
4	**Blower Motor Mount**	142-70-108	142-70-108	142-70-108	142-70-108
5	**Blower Housing and Wheel**	142-14-046	142-14-046	142-14-046	142-14-046
6	**Electric Heat Control Harness**	142-30-060	142-30-060	142-30-060	142-30-060
7	**Terminal block Harness**	142-30-026	142-30-026	142-30-026	142-30-026
8	**Transformer**	142-62-105	142-62-105	142-62-105	142-62-105
9	**Air Handler Control Board**	142-62-098	142-62-098	142-62-098	142-62-098
10	**A2L Gas Sensor**	142-60-031	142-60-031	142-60-031	142-60-031
11	**A2L Gas Sensor Harness**	142-30-071	142-30-071	142-30-071	142-30-071
12	**A2L Mitigation Control Board**	142-62-102	142-62-102	142-62-102	142-62-102
13	**Terminal Board with Resistor**	142-63-064	142-63-064	142-63-064	142-63-064
14	**Power Terminal Block**	142-63-063	142-63-063	142-63-063	142-63-063
15	**Blower Motor speed terminal Board**	142-63-065	142-63-065	142-63-065	142-63-065
16	**A2L Control Box Frame**	142-56-707	142-56-707	142-56-707	142-56-707
17	**A2L Control Box Lid**	142-56-708	142-56-708	142-56-708	142-56-708
18	**A2L Control Box Base**	142-56-709	142-56-709	142-56-709	142-56-709
19	**A2L Control Box Cover**	142-56-710	142-56-710	142-56-710	142-56-710
21	**Air Filter**	142-32-005	142-32-005	142-32-005	142-32-005
22	**Air Filter Cover**	142-56-701	142-56-701	142-56-701	142-56-701
23	**Top Panel Assy.**	152-00-026	152-00-038	152-00-026	152-00-038
24	**Blower Deck**	142-56-691	142-56-691	142-56-691	142-56-691
25	**Conrol Board Breaker Bracket**	142-56-696	142-56-397	142-56-696	142-56-397
26	**Access Panel Assy.**	152-00-146	152-00-147	152-00-146	152-00-147
27	**Base Pan Assy.**	152-00-002	152-00-002	152-00-002	152-00-002
28	**Side Panel Assy.**	152-00-001	152-00-034	152-00-001	152-00-034
29	**Wall mounting Bracket Top**	142-56-704	142-56-704	142-56-704	142-56-704
30	**Wall mounting Support Bracket Bottom**	142-56-705	142-56-705	142-56-705	142-56-705
31	**No Breaker Patch Plate**	142-56-697	142-56-697	142-56-697	142-56-697
32	**Single Breaker Patch Plate**	142-56-698	142-56-698	142-56-698	142-56-698
33	**Dual Breaker Patch Plate**	142-56-699	142-56-699	142-56-699	142-56-699
34	**Drain Pan**	142-56-682	142-56-683	142-56-682	142-56-683
35	**Drain Pan Patch Plate Assy.**	152-00-024	152-00-025	152-00-024	152-00-025
36	**Suction Line**	142-75-957	142-75-958	142-75-957	142-75-958
37	**Liquid Line**	142-75-956	142-75-956	142-75-956	142-75-956
37	**Liquid Line**	142-75-956	142-75-956	142-75-956	142-75-956

A Division of AeriTek

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AIR HANDLER & CASED COIL
LIMITED WARRANTY

1. National Comfort Products warrants to its customers that its product shall be free from defects in material and workmanship under normal use and regular service and maintenance as follows:

ALL PARTS. For all parts, for two years from the date of original installation when installed with a certified NCP matched Condensing Unit or Heat Pump. Otherwise for one year from the date of original installation. Customer must register the product within 60 days of purchase. If customer cannot adequately document date of installation, then, for purposes of determining the warranty period, the date of installation shall be 60 days from the date of purchase.

2. This warranty does not extend to any damages or losses due to misuse, accident, abuse, neglect, normal wear and tear, negligence (other than National Comfort's), unauthorized modification or alteration; use beyond rated capacity; unsuitable power sources or environmental conditions; improper installation, repair, handling, maintenance or application; damage as a result of fire, wind, floods, lightning, or corrosive conditions; or any other cause not the fault of National Comfort. By way of example and without limitation, the following do not constitute a defect in workmanship and materials and are not covered by this warranty: slugging of liquid refrigerant or oil, unstable line voltage, lightning, operating without proper lubrication, and operating without factory provided safeties. Any installation that impairs or impedes air flow negatively impacts performance and causes premature equipment failure that voids this warranty. For example, installation behind a brick façade or the addition of a brick pattern façade, i.e. pigeon holes impedes air flow and shall void this warranty.

3. SOLE WARRANTY

The warranties identified herein constitute National Comfort's sole and exclusive warranties with respect to the goods and are in lieu of and exclude all other warranties, express or implied, arising by operation of law or otherwise, including without limitation, merchantability and fitness for a particular purpose whether or not the purpose or use has been disclosed to National Comfort in specifications, drawings or otherwise, and whether or not National Comfort's goods are specifically designed and/or manufactured by National Comfort for Customer's use or purpose. No employee or representative of National Comfort is authorized to change this warranty in any way or grant any other warranty.

4. LIMITATION OF REMEDY

The sole and exclusive remedy for breach of any warranty hereunder (other than the warranty provided herein) shall be limited to repair, replacement, credit or refund of the purchase price to distribution as set forth herein.

National Comfort is not responsible for any other item including but not limited to local transportation, freight, removal of any compressor or part, any labor associated therewith, service or diagnosis calls, refrigerant, or costs for returning any defective compressor or part.

5. LIMITATION OF WARRANTY

NATIONAL COMFORT MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, ORAL OR WRITTEN, RELATED TO THE GOODS, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED. NATIONAL COMFORT SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOSSES FROM ANY CAUSE WHATSOEVER, INCLUDING, WITHOUT LIMITATION, LOSS OF USE, COMMERCIAL PROFITS, OR CUSTOMER GOODWILL, AND ANY OTHER CLAIMS BASED ON CONTRACT OR TORT, WHETHER OR NOT ARISING FROM NATIONAL COMFORT'S NEGLIGENCE.

National Comfort shall not be liable for damages caused by delay in performance and the remedies of Customer set forth in this agreement are exclusive. In no event, regardless of the form of the claim or cause of action (whether based in contract, infringement, negligence, strict liability, other tort or otherwise) shall National Comfort's liability to Customer and/or its customers exceed the price paid by Customer for the specific goods or portion of the goods provided by National Comfort giving rise to the claim or cause of action, and Customer shall indemnify and hold harmless National Comfort for any damages incurred by National Comfort in excess thereof. Customer agrees that in no event shall National Comfort's liability to Customer and/or its customers extend to include incidental, consequential, or punitive damages.

The term "consequential damages" shall include, but not be limited to, loss of anticipated profits, business interruption, loss of use, revenue, reputation and data, costs incurred, including without limitation, for capital, fuel, power and loss or damage to capital or equipment. Customer agrees that all instructions and warnings supplied by National Comfort will be passed on to those persons who use the Goods. National Comfort's Goods are to be used in their recommended applications and all warning labels adhered to the Goods by National Comfort are to be left intact.

It is expressly understood that any technical advice furnished by National Comfort before or after delivery in regard to the use or application of the Goods is furnished without charge, and National Comfort assumes no obligation or liability for the advice given or results obtained, all advice being given and accepted at Customer's sole risk.

Continued on next page

6. WARRANTY PROCEDURE

For All Warranty Claims. Customer must register the product with National Comfort within 60 days from purchase. Failure to timely register the product may void the warranty. Any claim for warranty shall be made within thirty days of discovery and in any event, within thirty days from removal of the compressor or part from the unit. Failure to make a timely claim shall void the warranty. Prior authorization from National Comfort is required for all warranty claims. Any claim for warranty must be first reported to National Comfort in writing specifying the unit, serial number, date of purchase and date of original installation. Customer shall also request a Return Material Authorization ("RMA") from National Comfort to initiate the warranty claim process. Issuance of an RMA by National Comfort is not an acknowledgment that the defect is covered by this Warranty. Any replacement compressor or part is warranted for the original product warranty, or for one year from the date of shipment of the replacement compressor/part, whichever is later.

A. Parts. In addition to the above-referenced requirements, Customer is required to purchase a replacement part for the original part for which Customer is making a warranty claim. The original part for which warranty is claimed is to be returned to National Comfort at National's discretion, freight prepaid. If National Comfort determines that there is a defect in material or workmanship in the part that is covered by this Warranty, then National Comfort shall credit Customer for the cost of the new replacement part. If National Comfort determines that the defect in material or workmanship is not covered by this Warranty, then no credit shall be issued. A copy of the invoice of the replacement part and completed RMA must accompany the original part for which warranty is claimed. National Comfort reserves the right to request additional documentation. The failure to follow this procedure shall render the warranty void.

7. SHIPPING INSTRUCTIONS

A. Parts. All other returned parts must be securely packaged and clearly marked with its corresponding RMA number provided from NCP.

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2 YEAR WARRANTY ON PARTS