

Installer's Guide

Convertible Air Handlers 1-1/2 – 5 Ton

GAM5A0A18M11SA GAM5A0C42M31SA
 GAM5A0A24M21SA GAM5A0C48M41SA
 GAM5A0B30M21SA GAM5A0C60M51SA
 GAM5A0B36M31SA

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

Important: This Document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

Important: These instructions do not cover all variations in systems nor provide for every possible contingency to be met in connection with the installation. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

Note: The manufacturer recommends installing ONLY A.H.R.I. approved, matched indoor and outdoor systems. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance, and the best overall system reliability.

Note: Condensation may occur on the surface of the air handler when installed in an unconditioned space. When units are installed in unconditioned spaces, verify that all electrical and refrigerant line penetrations on the air handler are sealed completely.

Important: The GAM5A0C60M51SA air handler applied in downflow or horizontal configurations should not exceed 2000 CFM. Airflow above 2000 CFM could result in water blow-off. For verification, see airflow table.

Important: The GAM5 air handlers will only use the following internal electric heaters:

BAYEAAC05BK1AA
 BAYEAAC05LG1AA
 BAYEAAC08BK1AA
 BAYEAAC08LG1AA
 BAYEAAC10BK1AA
 BAYEAAC10LG1AA
 BAYEAAC10LG3AA
 BAYEABC15BK1AA
 BAYEABC15LG3AA
 BAYEABC20BK1AA
 BAYEACC25BK1AA

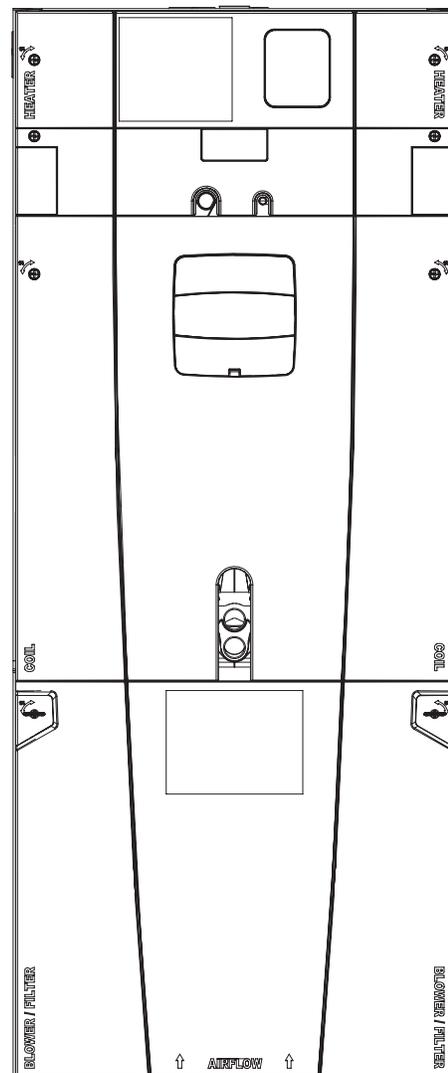


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Note: Representative illustrations only included in this document. Most illustrations display the upflow configuration.

Section 1. Safety Information

WARNING

SAFETY HAZARD! This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

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 when exposed to live electrical components could result in death or serious injury.

CAUTION

HAZARDOUS VAPORS! Do not install an air handler with a non-ducted return in the same closet, alcove, or utility room as a fossil fuel device. Hazardous vapors can be distributed throughout the conditioned space and equipment damage can result.

CAUTION

CORROSION HAZARD! To prevent shortening its service life, the air handler should not be used during the finishing phases of construction. The low return air temperatures can lead to the formation of condensate. Condensate in the presence of chlorides and fluorides from paint, varnish, stains, adhesives, cleaning compounds, and cement creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

CAUTION

SAFETY HAZARD! Sharp Edge Hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.

Important: Due to the unique design of this unit, which allows the electrical wiring to be routed within the insulation, do not screw, cut, or otherwise puncture the unit cabinet in any location other than the ones illustrated in this Installer Guide or in an approved accessory's Installer Guide.

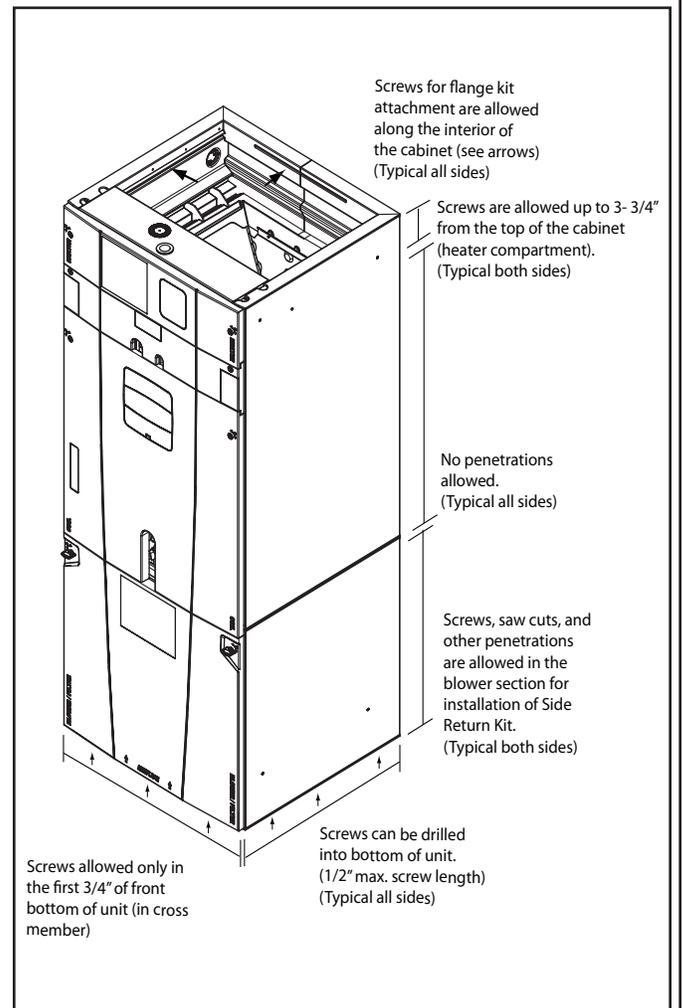
Important: Under no conditions should metal strapping be attached to the unit to be used as support mechanisms for carrying or suspension purposes.

Section 2. Unit Design

2.1 Cabinet Penetration

Important: Due to the unique design of this unit, which allows the electrical wiring to be routed within the insulation, do not screw, cut, or otherwise puncture the unit cabinet in any location other than the ones illustrated.

Important: Under no conditions should metal strapping be attached to the unit to be used as support mechanisms for carrying or suspension purposes.

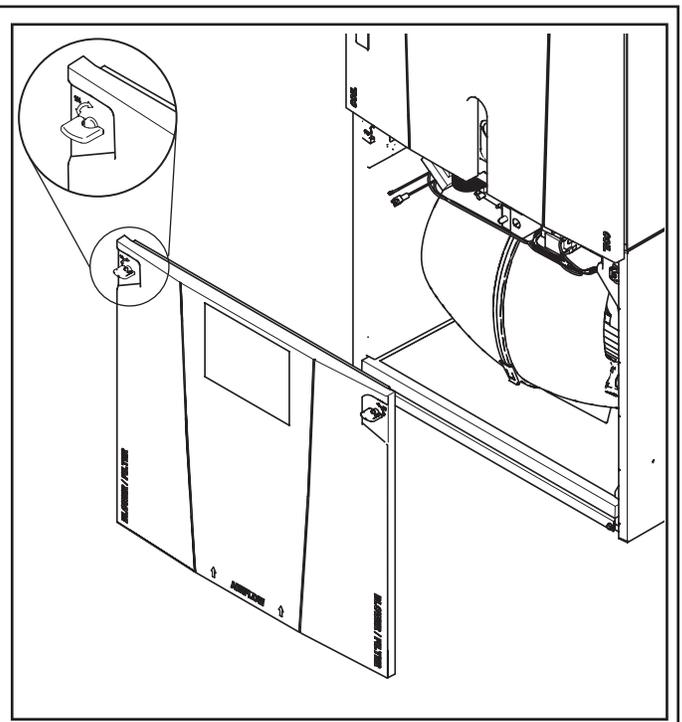


2.2 Panel Removal

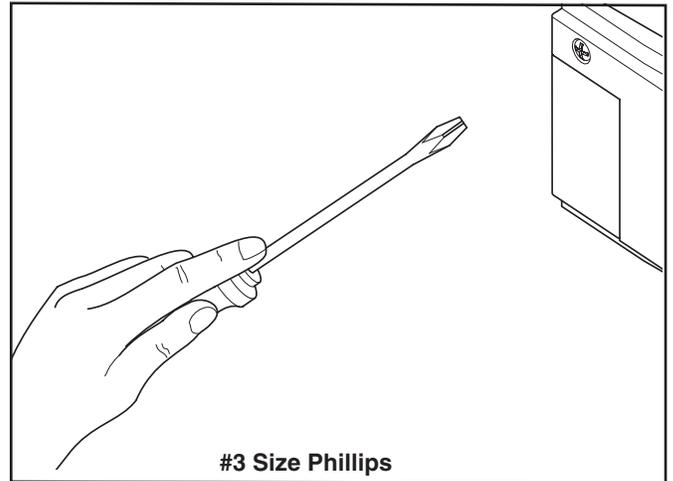
The unit contains four (4) access panels: Blower/Filter, Coil, Line Set, and Heater.

The Blower/Filter panel is removed using 1/4 turn thumb screws.

1. Turn thumb screws on Blower/Filter panel.
2. Pull top of panel out, away from cabinet.
3. Lift panel up out of channel.
4. Set aside.



The Coil, Line Set, and Heater panels are removed using Phillips head screws.



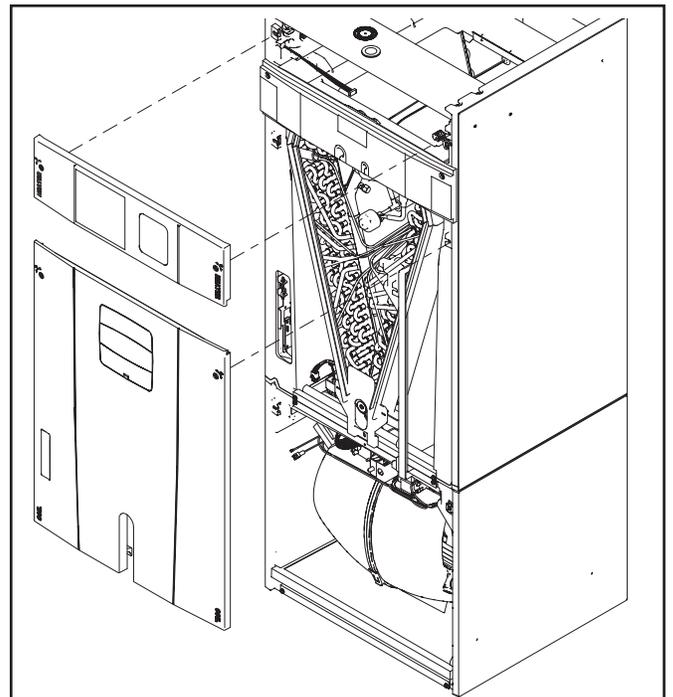
Coil and Heater panels must be removed prior to removing the Line Set panel.

To remove Coil Panel:

1. Turn screws on Coil panel.
2. Pull bottom of panel out, away from cabinet.
3. Pull panel down and out of channel.
4. Set aside.

To remove Heater Panel:

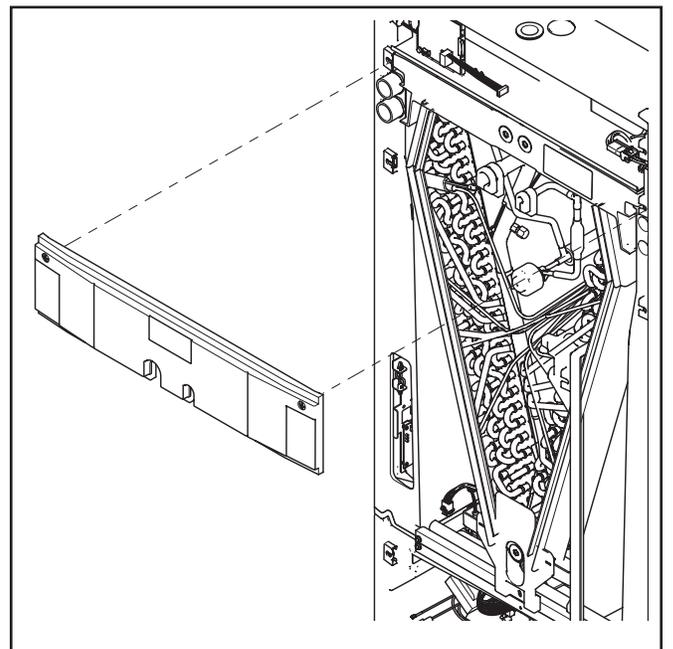
1. Turn screws on Heater panel.
2. Pull panel straight out, away from cabinet.
3. Set aside.



Removal of the Line Set panel is required for all refrigerant line brazing and some condensate line assembly depending on your orientation.

To remove Line Set panel:

1. Remove both Heater and Coil panels.
2. Turn screws on Line Set Panel.
2. Pull panel straight out, away from cabinet.
3. Set aside.



NOTE: After replacing all panels, loosen the Line Set Panel screws approximately 1/4 - 1/2 turn. This will improve the seal between the Heater Panel and Line Set Panel.

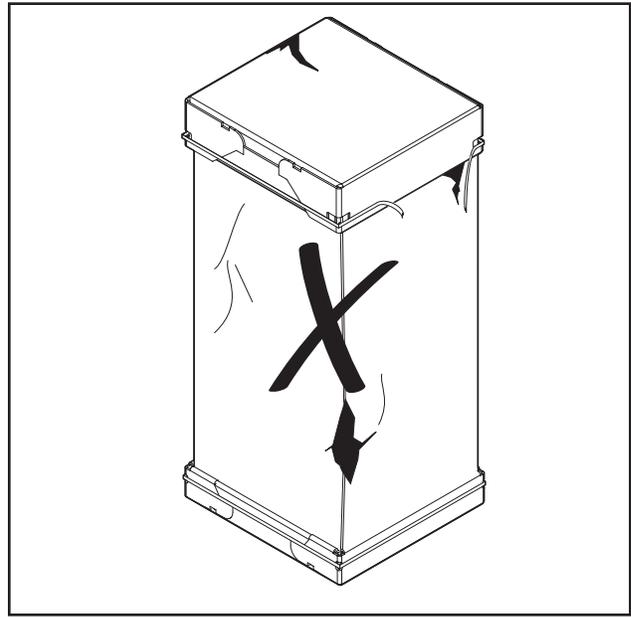
Section 3. Unit Preparation

3.1 Prepare The Unit For Installation

STEP 1 - Check for damage and report promptly to the carrier any damage found to the unit.

Note: If the unit must be transported in a horizontal position, it must be laid on its back (marked "REAR" on carton).

Note: After the unit is removed from the carton, depress the Schrader valve to verify coil is pressurized.



3.2 Unit Accessories

Table 3.1

Accessory Number	Description	Fits Cabinet Size
BAYEAC05BK1A	Electric Heater, 5kW, Breaker, 24V Control, 1 Ph	A to C
BAYEAC05LG1A	Electric Heater, 5kW, Lugs, 24V Control, 1 Ph	A to C
BAYEAC08BK1A	Electric Heater, 8kW, Breaker, 24V Control, 1 Ph	A to C
BAYEAC08LG1A	Electric Heater, 8kW, Lugs, 24V Control, 1 Ph	A to C
BAYEAC10BK1A	Electric Heater, 10kW, Breaker, 24V Control, 1 Ph	A to C
BAYEAC10LG1A	Electric Heater, 10kW, Lugs, 24V Control, 1 Ph	A to C
BAYEAC10LG3A	Electric Heater, 10kW, Lugs, 24V Control, 3 Ph	A to C
BAYEABC15BK1A	Electric Heater, 15kW, Breaker, 24V Control, 1 Ph	B to C
BAYEABC15LG3A	Electric Heater, 15kW, Lugs, 24V Control, 3 Ph	B to C
BAYEABC20BK1A	Electric Heater, 20kW, Breaker, 24V Control, 1 Ph	B to C
BAYEACC25BK1A	Electric Heater, 25kW, Breaker, 24V Control, 1 Ph	C
BAYSUPFLGAA	Supply Duct Flange A	A
BAYSUPFLGBA	Supply Duct Flange B	B
BAYSUPFLGCA	Supply Duct Flange C	C
BAYRETFLGAA	Return Duct Flange A	A
BAYRETFLGB	Return Duct Flange B	B
BAYRETFLGCA	Return Duct Flange C	C
TASB175SB	Plenum Stand with Integrated Sound Baffle A	A
TASB215SB	Plenum Stand with Integrated Sound Baffle B	B
TASB235SB	Plenum Stand with Integrated Sound Baffle C	C
MITISRKIT1620	Side Return Kit with 16" x 20" Filter	A to C
TASSBK175	Sound Baffle Kit 17.5" Cabinet	A
TASSBK215	Sound Baffle Kit 21.5" Cabinet	B
TASSBK235	Sound Baffle Kit 23.5" Cabinet	C
BAYSRKIT100A	Side Return Kit	A to C
BAYICSKIT01A	Internal Condensate Switch Kit	A to C
BAYHHKIT001A	Horizontal Hanger Kit	A to C
BAYUVCLK001A	UV Lights	A to C
BAYLVKIT100A	Low Voltage Conduit Entry Kit	A to C
BAYSPEKT200A	Single Point Power Entry Kit	B to C
BAYWAAA05SC1AA	Hydronic heater, A cabinet, no control, slide-in	A
BAYWABB07SC1AA	Hydronic heater, B cabinet, no control, slide-in	B
BAYWACC08SC1AA	Hydronic heater, C cabinet, no control, slide-in	C
BAYWACC11SC1AA	Hydronic heater, C cabinet, no control, external	C

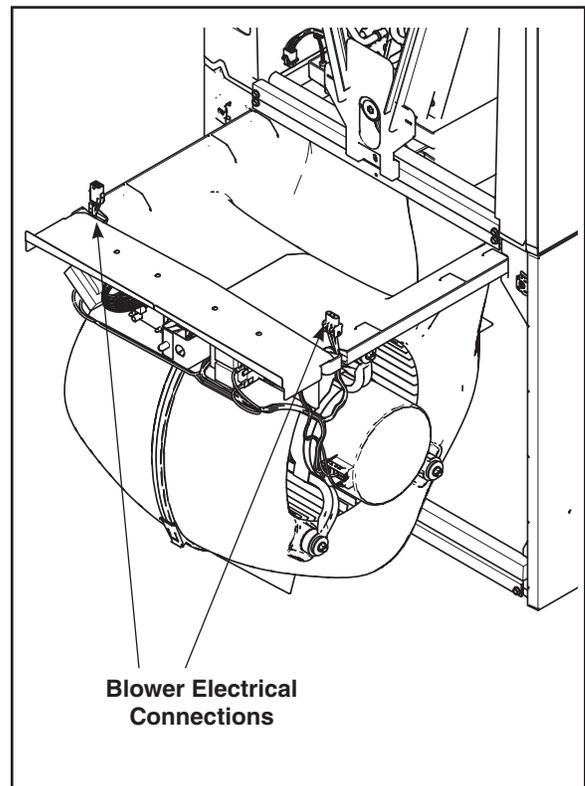
Section 4. Optional Cabinet Disassembly

4.1 Disassemble cabinet for installation in tight areas or as needed.

Note: If the unit must be transported in a horizontal position, it must be laid on its back (marked "REAR" on carton).

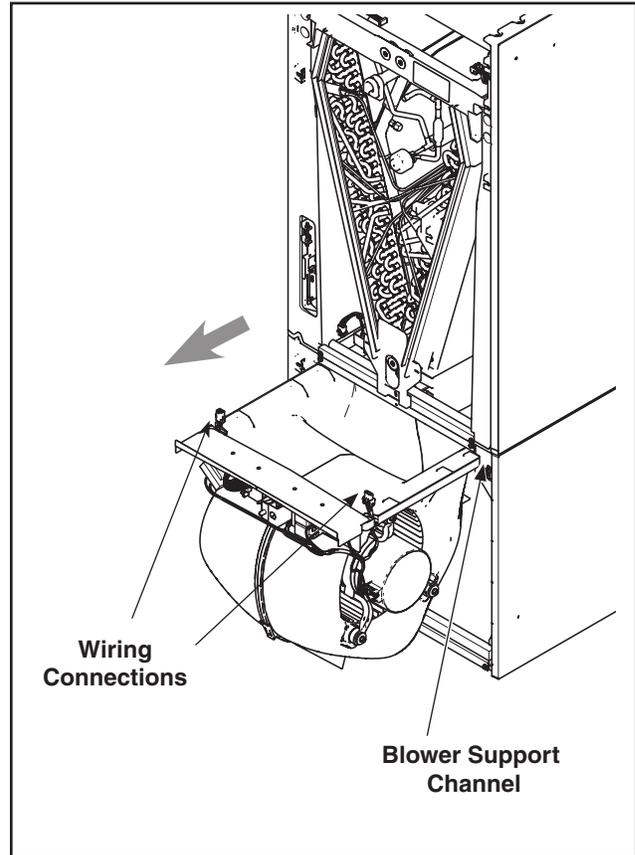
Note: To reassemble cabinet, follow the steps in reverse order. Ensure electrical connections are secure and the plug clips are engaged.

STEP 1 - Remove all four front panels. See Section 2.2.

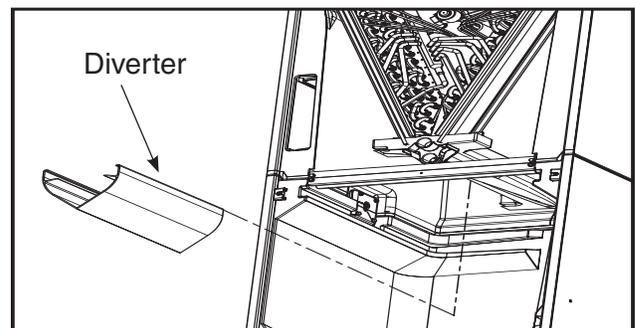


STEP 2 - Disconnect the two wiring connections routed to the blower assembly.

STEP 3 - Slide Blower assembly out of unit using built-in blower support channels and set aside.



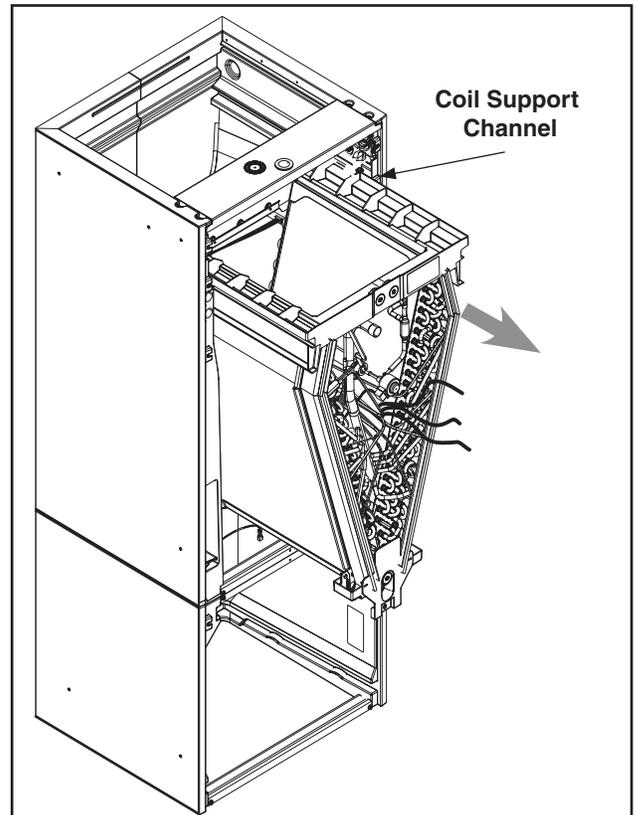
STEP 4 - Remove airflow diverter from the bottom of coil drain pan by gripping the plastic diverter, using your thumbs to spread the top of the diverter slightly outwards, and then pulling down and out through the blower opening as illustrated.



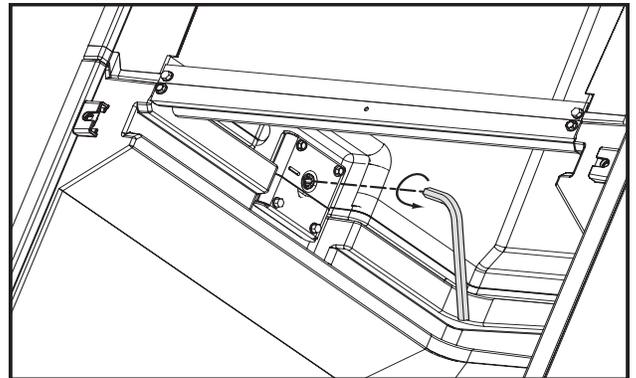
STEP 5 - Disconnect wires to the EEV motor and sensors inside the coil assembly. Cut the wire ties on those wire harnesses.

Note: If cut, wire ties that held the sensor must be replaced after the coil is placed back into the cabinet.

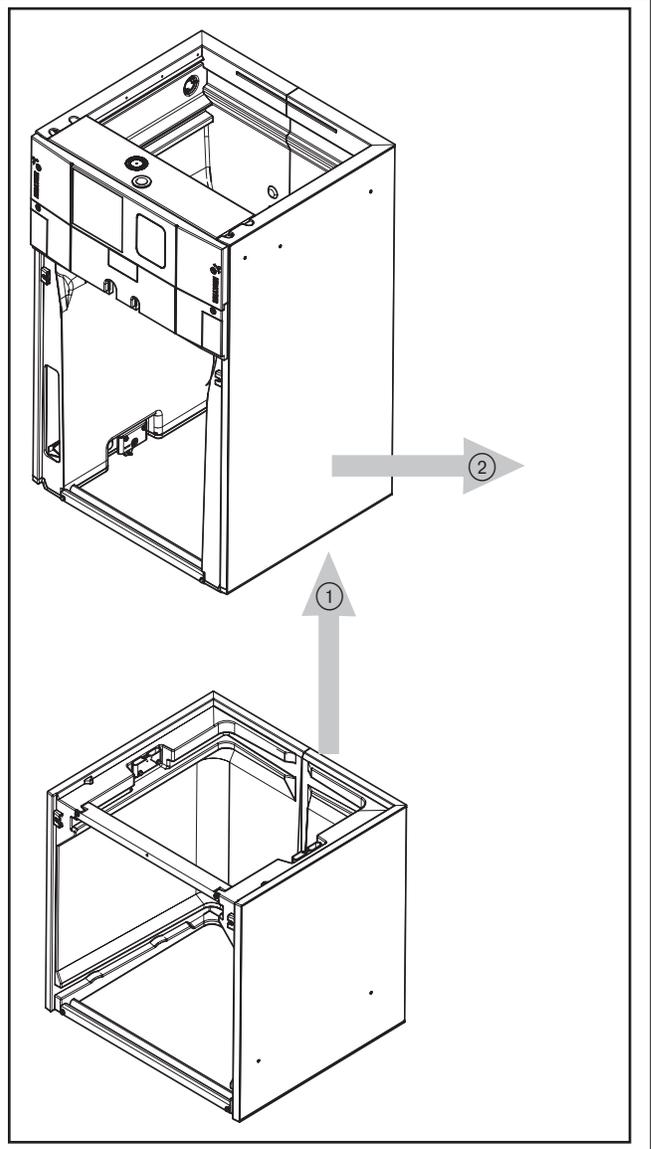
STEP 6 - Slide Coil assembly out of unit using built-in coil support channels and set aside.



STEP 7 - Use a 5/16 Allen wrench on the locking mechanism on each side of the bottom half of the cabinet to loosen the locking mechanism. The locks loosen by turning counter-clockwise approximately 3/4 of a turn.

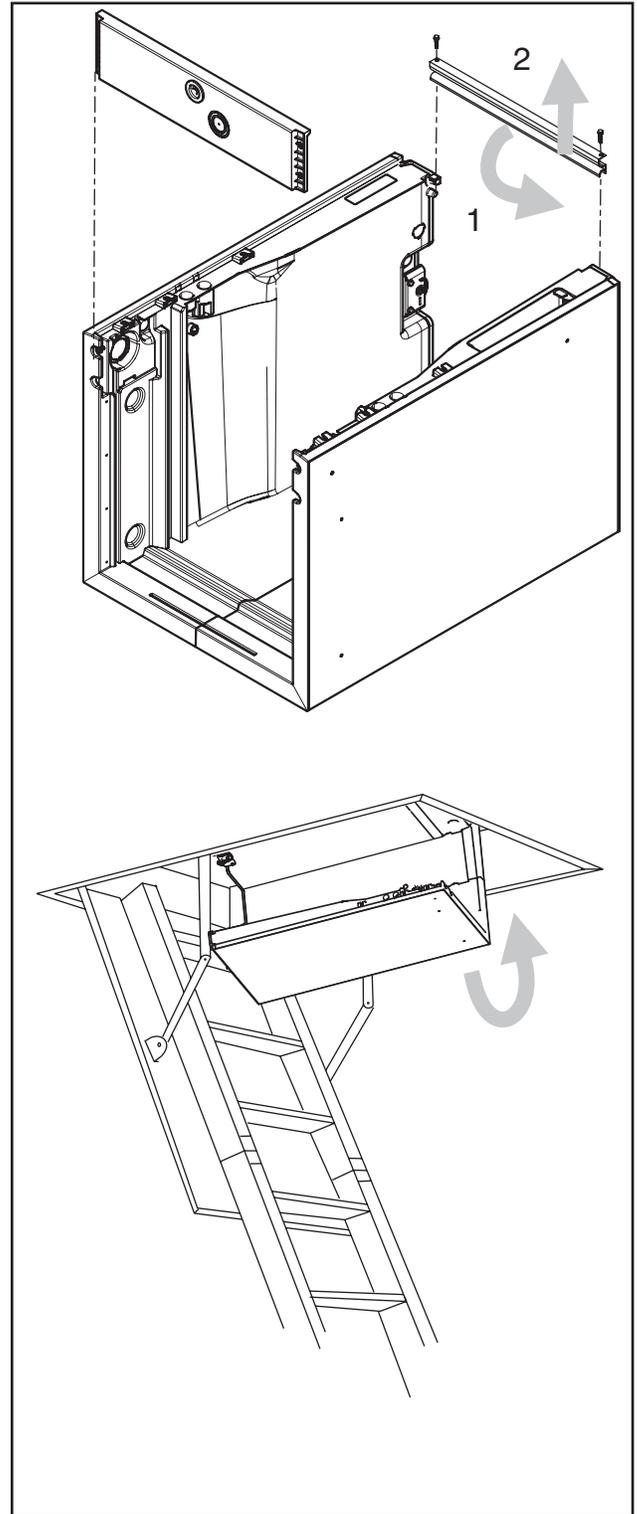


STEP 8 - Lift the Coil section up and away from the Blower section. Set aside.



STEP 9 - For extremely tight spaces where the cabinet needs to be rotated through a small opening, remove the top panel and all cross members. Use a manual driver to avoid stripping screw holes.

Note: *Cross Members are removed by rotating them toward the door opening and then lifting up and out of the unit.*



STEP 10 - Continue preparation by following the proper carrying procedures shown in Section 5.

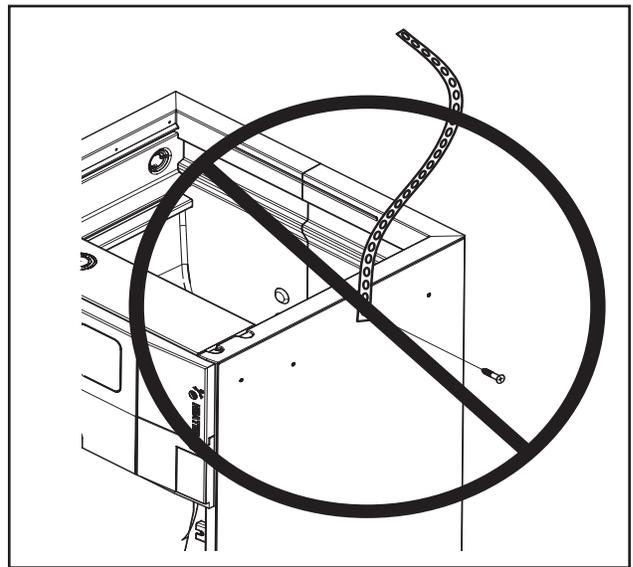
Section 5. Place Unit at Location

5.1 Carry Unit

STEP 1 - Carry the unit to the installation location.

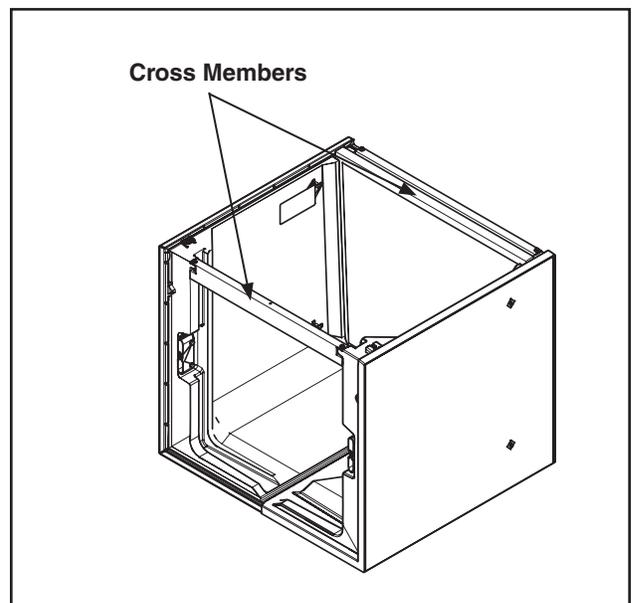
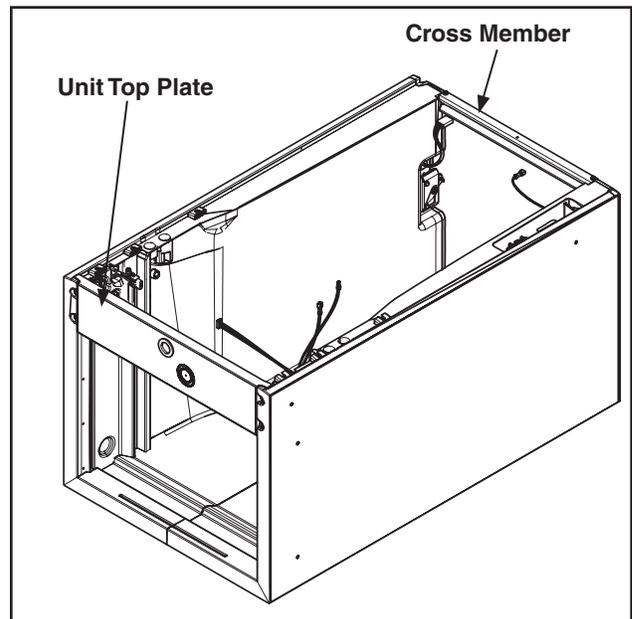
STEP 2 - Reassemble by reversing the steps listed in Section 4 if disassembly was required.

Important: Under no conditions should metal strapping be attached to the unit to be used as support mechanisms for carrying or suspension purposes.



Approved carrying:

1. Hold by the cross members within the cabinet or unit top plate and use as handles for lifting and carrying the coil and blower sections.



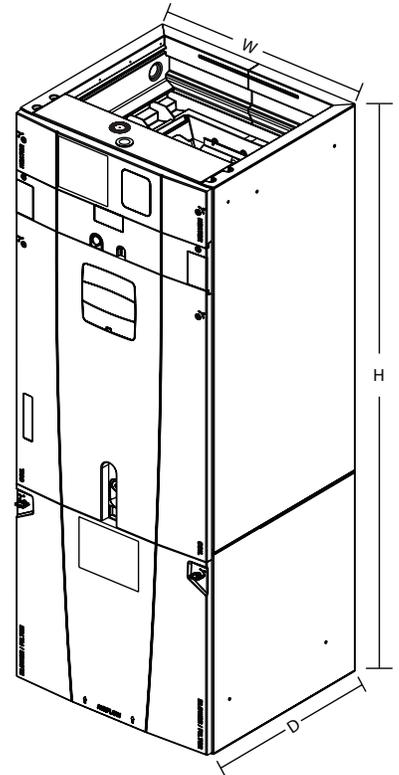
Section 6. Unit Location Considerations

6.1 Unit Dimensions and Weight

Table 7.1

Model Number	H x D x W in.	*Blower Compartment in.	Unit Net Weight lbs.
GAM5A0A18M21SA	50 x 22 x 17 1/2	22	120
GAM5A0A24M21SA	50 x 22 x 17 1/2	22	120
GAM5A0B30M31SA	52 x 22 x 21	22	133
GAM5A0B36M31SA	56 x 22 x 21	22	143
GAM5A0C42M41SA	57 x 22 x 23 1/2	22	158
GAM5A0C48M41SA	62 x 22 x 23 1/2	22	174
GAM5A0C60M51SA	62 x 22 x 23 1/2	22	178

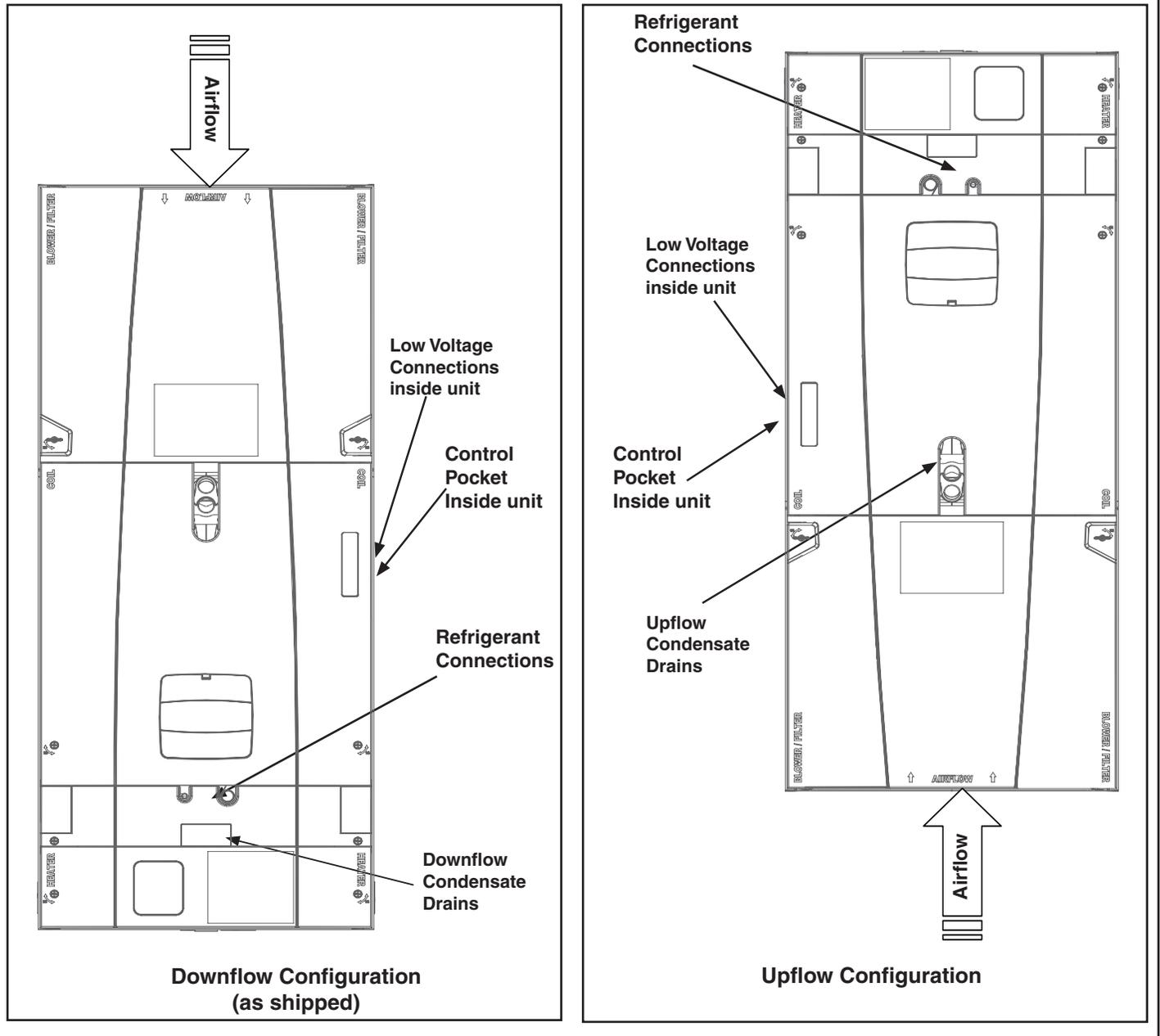
*Subtract from total height to get Coil and Heater compartment height.

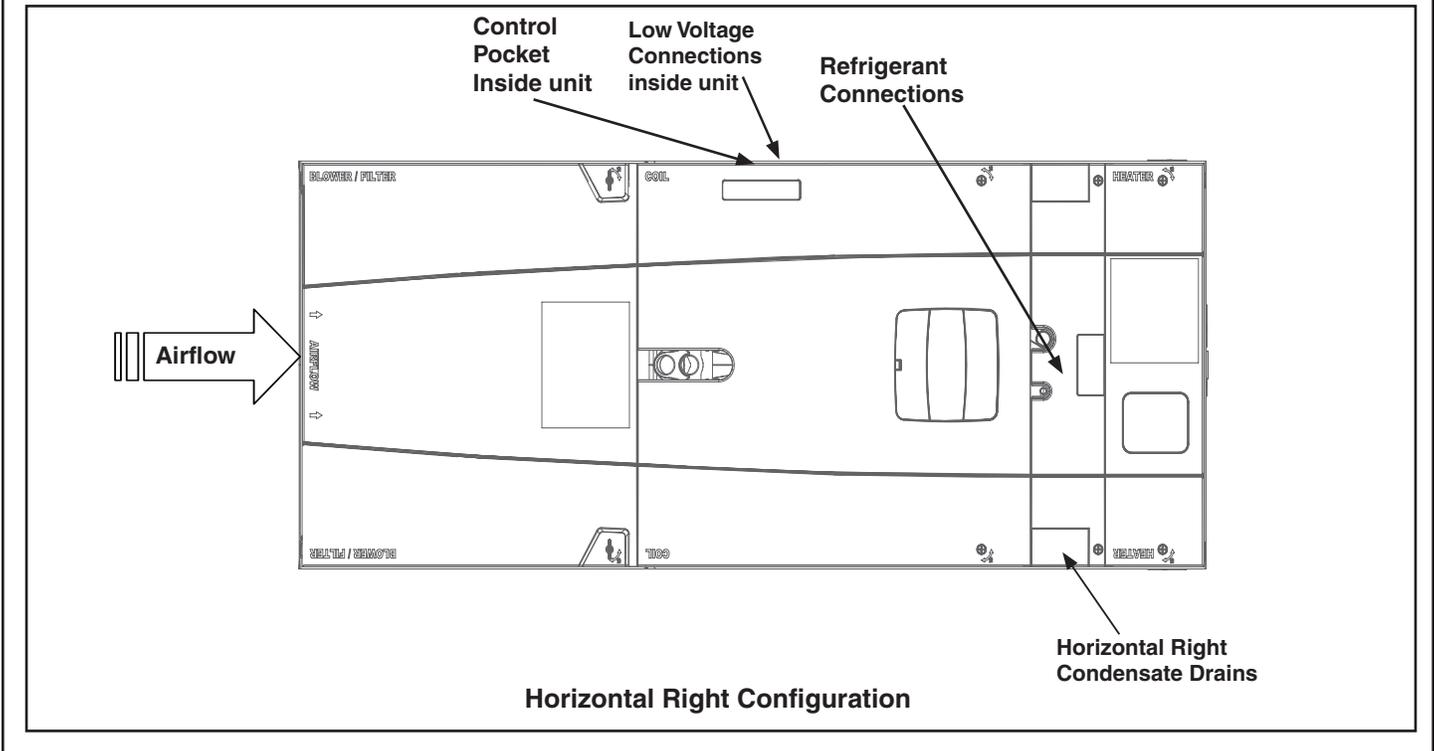
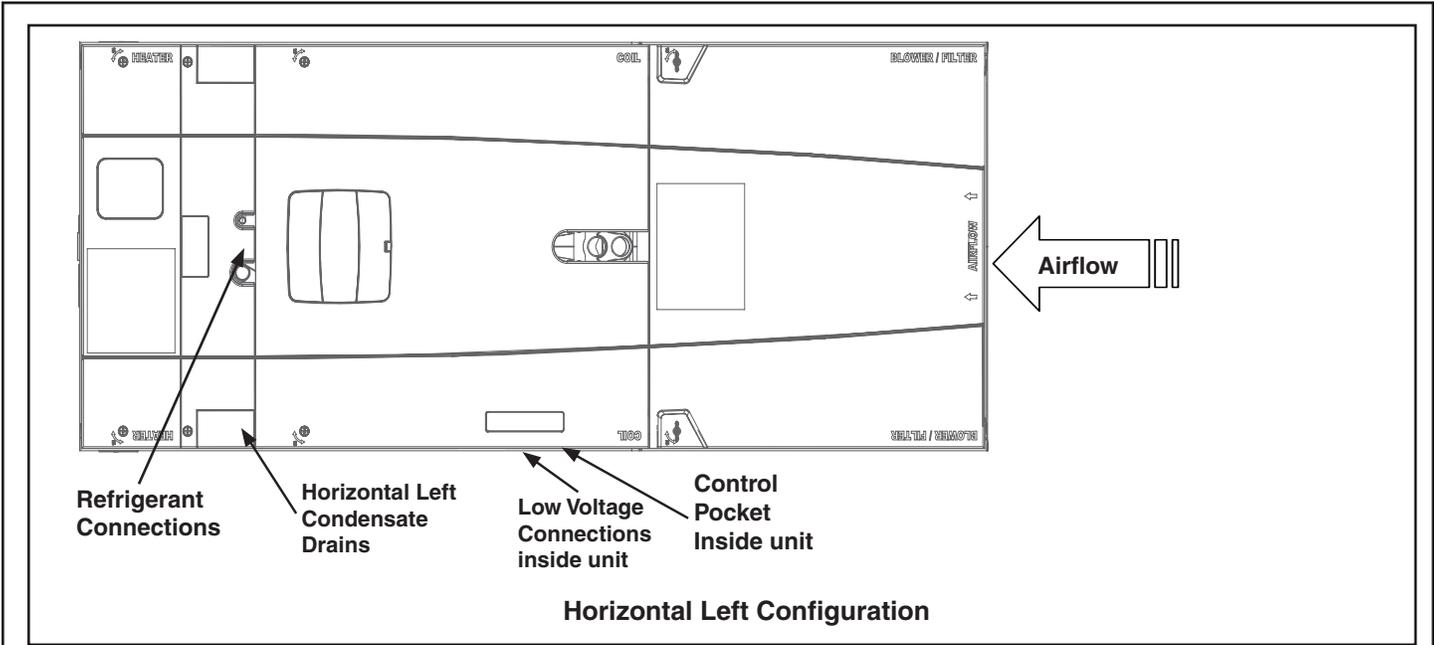


6.2 Four-Way Conversion

To place the unit in the configuration your application requires (upflow, downflow, horizontal right, or horizontal left), simply turn the unit to that orientation.

Note: The air handlers are shipped from the factory suitable for four-way application. They are shipped in the downflow orientation.





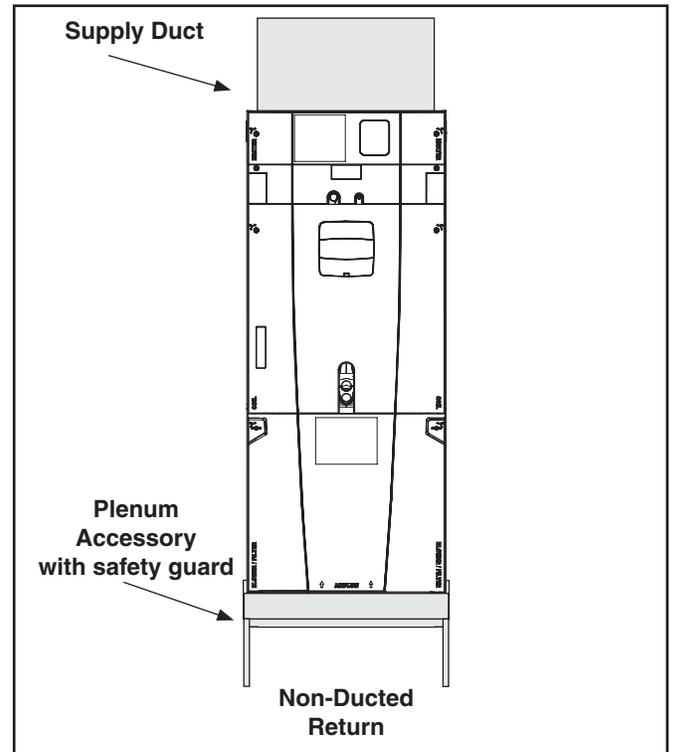
6.3 Non Ducted Applications

CAUTION

HAZARDOUS VAPORS! Do not install an air handler with a non-ducted return in the same closet, alcove, or utility room as a fossil fuel device. Hazardous vapors can be distributed throughout the conditioned space and equipment damage can result.

Non-Ducted Return Installations:

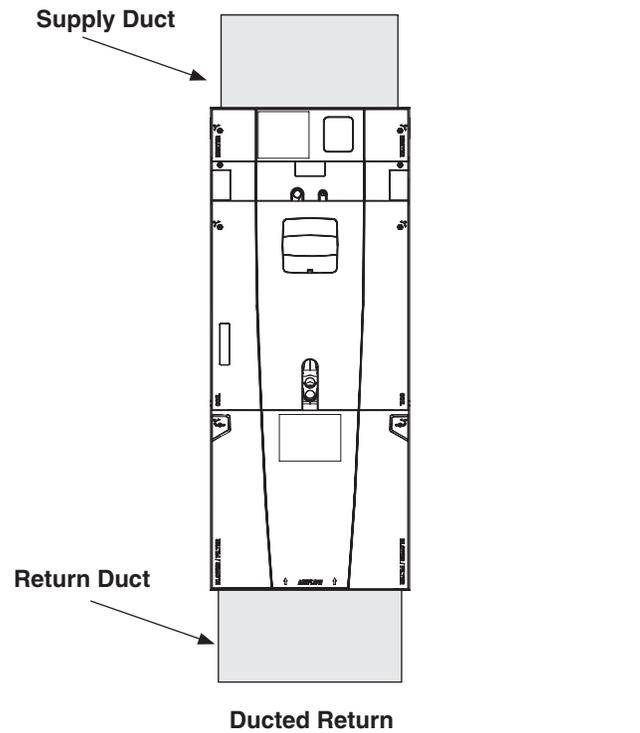
- Installation in a closet, an alcove, or a utility room without a return duct requires the use of a plenum accessory kit as it uses the area space as a return air plenum. Minimum clearances to combustibles materials and service access must be observed (see outline drawing).
- This area may also be used for other purposes, including an electric hot water heater, but in no case shall a fossil fuel device be installed and/or operated in the same closet, alcove, or utility room.
- Review local codes to determine limitations if the unit is installed without a return air duct.



6.4 Ducted Applications

Ducted Return Installations:

- Installation in an attic, garage, or crawl space with ducted supply and return air is appropriate. Minimum clearances to combustibles materials and service access must be observed (see outline drawing).



6.5 Additional Unit Preparation Considerations

For proper installation the following items must be considered prior to moving the unit to its installation site:

- **Important:** *When the air handler is located adjacent to the living area, the system should be carefully designed with returns which minimize noise transmission through the return air grill. Although the air handler is designed with large blowers operating at moderate speeds, any blower moving a high volume of air will produce audible noise which could be objectionable when the unit is located very close to a living area. It is often advisable to route the return ducts under the floor through the attic. Such design permits the installation of air return remote from the living area (i.e. central hall).*
- Pursuant to Florida Building Code 13-610.2.A.2.1, this unit meets the criteria for a factory sealed air handler.
- If a side return is needed for your application, the side return MUST be prepared prior to moving the air handler to its installation location. See the Side Return Kit # BAYSRKIT100A Installer Guide for detailed instructions.
- Study the unit's outline drawing and dimensions prior to selecting the installation site. Note in advance which electrical conduit entry points and condensate drain holes are to be used, so that proper clearance allowances can be made for installation and future maintenance.
- Installation of the air handler must be made prior to, or at the same time as, the installation of the outdoor unit in order to allow access for refrigerant lines.
- Consider the overall space needed when external accessories are used, additional height and width requirements may exist.
- These units are not approved for outdoor installation.
- These units must be installed in the proper air flow direction.
- Any third-party heater accessories, including hydronic coils and duct heaters must be downstream of the unit.
- Note: No atomizing style humidifier is allowed in the return plenum with the use of this unit.
- Excessive bypass air may cause water blow-off, which will adversely affect system operation and air cleaner performance. To verify bypass airflow, follow the Bypass Humidifier Pre-Installation Checkout and Set-Up Procedures available through your local distributor. Ask for publication number 18-CH37D1-* Steam and Flow-through Fan Power Duct-mounted Humidifiers. Follow the humidifier installation instructions. These should only be installed on the supply air side of the system.
- **Note:** *The air handlers have been evaluated in accordance with the Code of Federal Regulations, Chapter XX, Part 3280 or the equivalent. "SUITABLE FOR MOBILE HOME USE."*
- **Important:** *The GAM5A0C60M51SA air handler applied in downflow or horizontal configurations should not exceed 2000 CFM. Airflow above 2000 CFM could result in water blow-off. For verification, see airflow table.*
- **Note:** *This unit is certified to UL 1995. The interior cabinet wall meets the following:*
 - UL94-5VA Flame Class Listed
 - UL723 Steiner Tunnel Listed for 25/50 Flame/Smoke
 - UL746C Listed for Exposure to Ultraviolet Light, Water Exposure and Immersion

Section 7. Setting the Unit - Vertical Installation

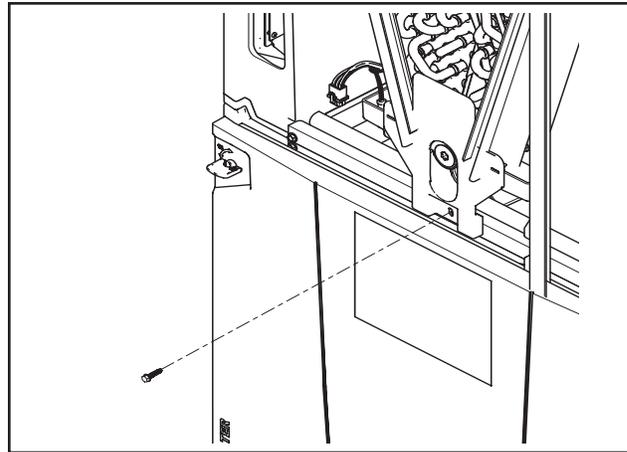
7.1 Secure Coil (Vertical Upflow Applications)

STEP 1 - Remove Coil Panel.

STEP 2 - Remove screw from documentation packet.

STEP 3 - While the air handler is in the upflow position, use the supplied screw to secure the coil seal plate to cross member as shown.

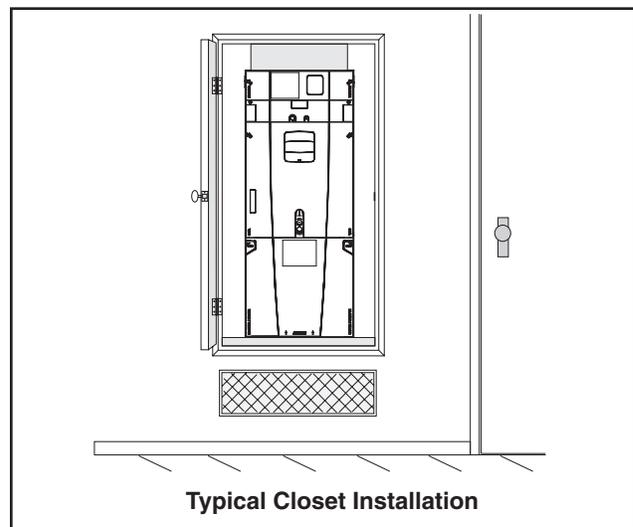
Important: The Coil Seal Plate and screw secure the coil in the center of the air handler. Failure to follow these steps can prevent the Coil Panel from being easily replaced on the unit.



7.2 Considerations

Provide a minimum height of 14 inches for proper unrestricted airflow below the unit. Allow a minimum of 21 inches clearance in front of the air handler to permit maintenance and removal of filter.

- Position unit on suitable foundation. If a manufacturer approved accessory is not used, a frame strong enough to support the total weight of the unit, accessories, and duct work must be provided.
- Isolate unit from the foundation using a suitable isolating material.



7.3 Upflow Installation

TASB Installation

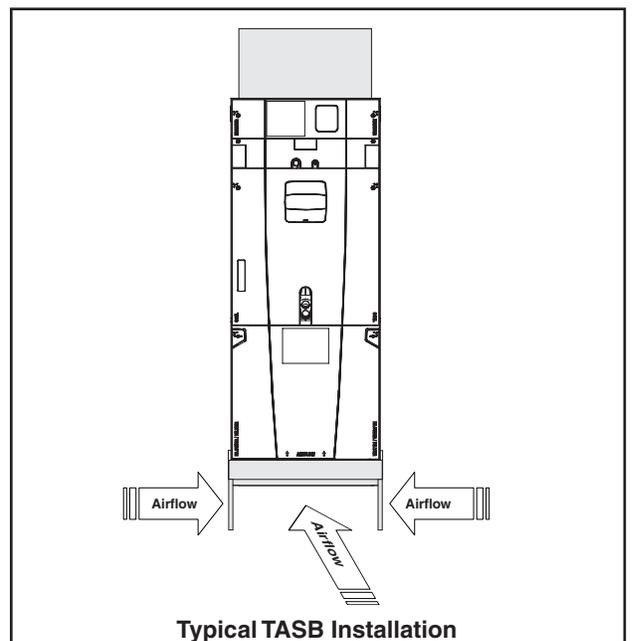
1. Assemble the TASB using the TASB's Installer Guide.

TASB175SB for use with 17.5" cabinets

TASB215SB for use with 21.5" cabinets

TASB235SB for use with 23.5" cabinets

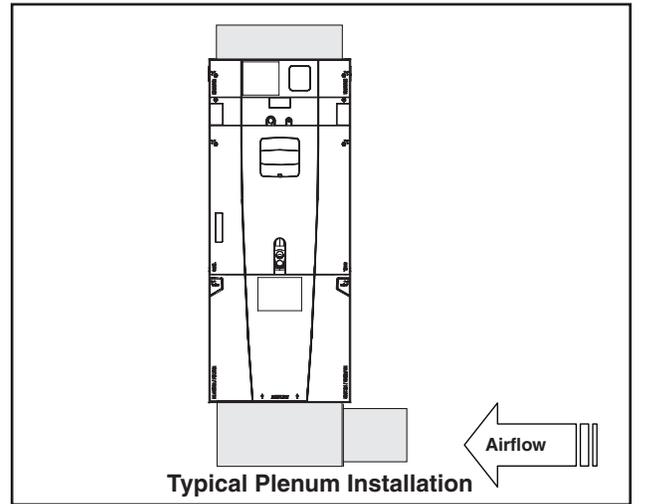
Contact your distributor for more information.



Plenum Installation

1. Assemble the plenum using the plenum's Installer Guide.

On units with sheet metal returns: Return plenum must be flanged. Sheet metal drill point screws must be 1/2" in length or shorter.



7.4 Secure Coil (Downflow Applications)

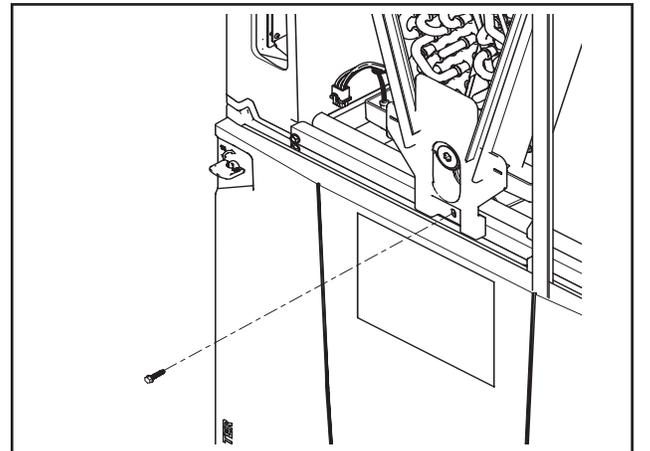
STEP 1 - Remove Coil Panel.

STEP 2 - Remove screw from documentation packet.

STEP 3 - While the air handler is in the upflow position, use the supplied screw to secure the coil seal plate to cross member as shown.

Important: The Coil Seal Plate and screw secure the coil in the center of the air handler. Failure to follow these steps can prevent the Coil Panel from being easily replaced on the unit.

Important: For the 5 ton air handler model GAM5A0C60M51SA, tap 5 should not be used in the downflow or horizontal orientations. Using Tap 5 could result in water blowing off the coil.



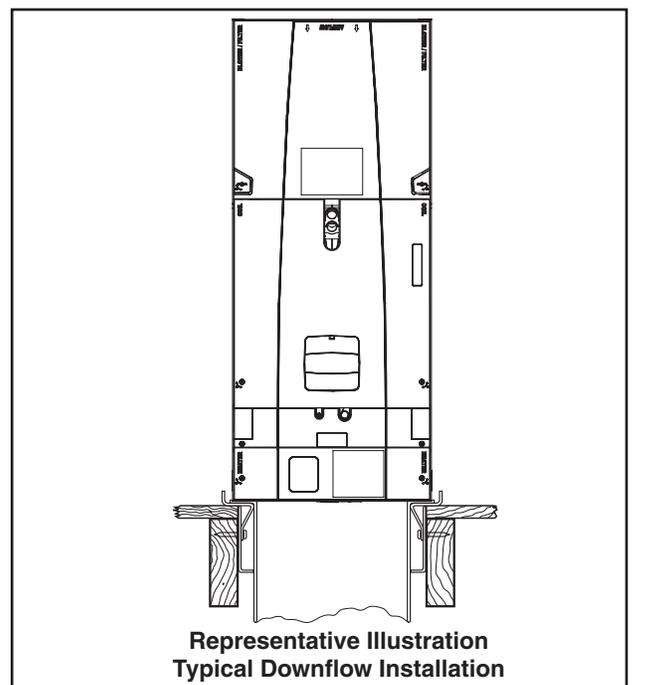
7.5 Downflow Installation

- Downflow installation must comply with national, state, and local codes.
- The air handlers are rated for zero clearance from combustible materials.

STEP 1 - Prepare the location site as appropriate for your application and per national, state, and local code requirements.

STEP 2 - Set the unit in position.

Important: Ensure EEV sensor and motor wiring are taught and wire-tied to the distributor tube to prevent damage during electric heat operation.



Section 8. Setting the Unit - Horizontal Installation

8.1 Secure Coil (Horizontal Applications)

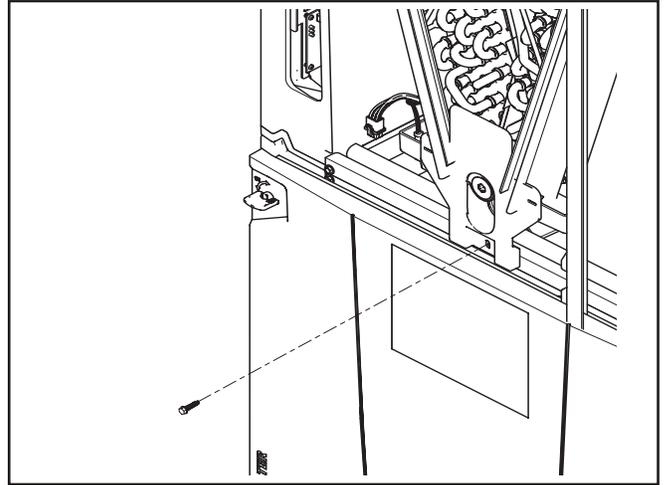
STEP 1 - Remove Coil Panel.

STEP 2 - Remove screw from documentation packet.

STEP 3 - While the air handler is in the upflow position, use the supplied screw to secure the coil seal plate to cross member as shown.

Important: The Coil Seal Plate and screw secure the coil in the center of the air handler. Failure to follow these steps can prevent the Coil Panel from being easily replaced on the unit.

Important: For the 5 ton air handler model GAM5AOC60M51SA, tap 5 should not be used in the downflow or horizontal orientations. Using Tap 5 could result in water blowing off the coil.



8.2 Considerations

Important: Due to the unique design of this unit, which allows the electrical wiring to be routed within the insulation, do not screw, cut, or otherwise puncture the unit cabinet in any location other than the ones illustrated in this Installer Guide or in an approved accessory's Installer Guide.

Important: Make certain that the unit has been installed in a level position to ensure proper draining.

Important: Under no conditions should metal strapping be attached to the unit to be used as support mechanisms for carrying or suspension purposes.

STEP 1 - Support the unit from the bottom (near both ends). The service access must remain unobstructed.

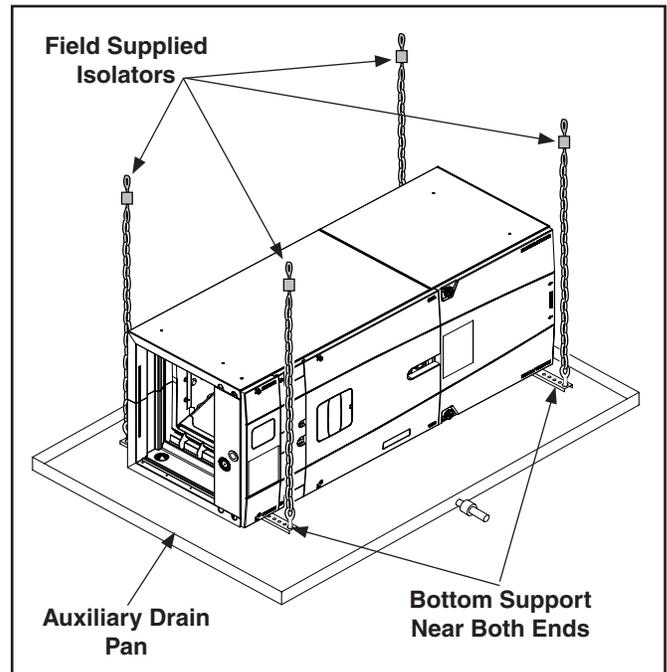
Important: The unit can only be supported from the bottom unless using kit BAYHHKIT001A. Do not drill or screw supports into any area of the cabinet.

Note: Do not allow the unit to be used as strain relief.

- Approved bottom support methods are rails, u-channels (Unistrut®), or other load bearing materials.
- The unit must be isolated carefully to prevent sound transmission. Field supplied vibration isolators are recommended.

STEP 2 - Install an auxiliary drain pan under the horizontal air handler to prevent possible damage to ceilings.

- Isolate the auxiliary drain pan from the unit and from the structure.
- Connect the auxiliary drain pan to a separate drain line and terminate according to local codes.



Note: BAYHHKIT001A Hanging Bracket Kit may be ordered separately.

Important: The BAYHHKIT001A may not be used if the cabinet has been altered per Installer Guide 18-HJ58D1-1.

Section 9. Connecting the Duct work

9.1 Duct Connection Considerations

Important: Due to the unique design of this unit, which allows the electrical wiring to be routed within the insulation, do not screw, cut, or otherwise puncture the unit cabinet in any location other than the ones illustrated in this Installer Guide or in an approved accessory's Installer Guide.

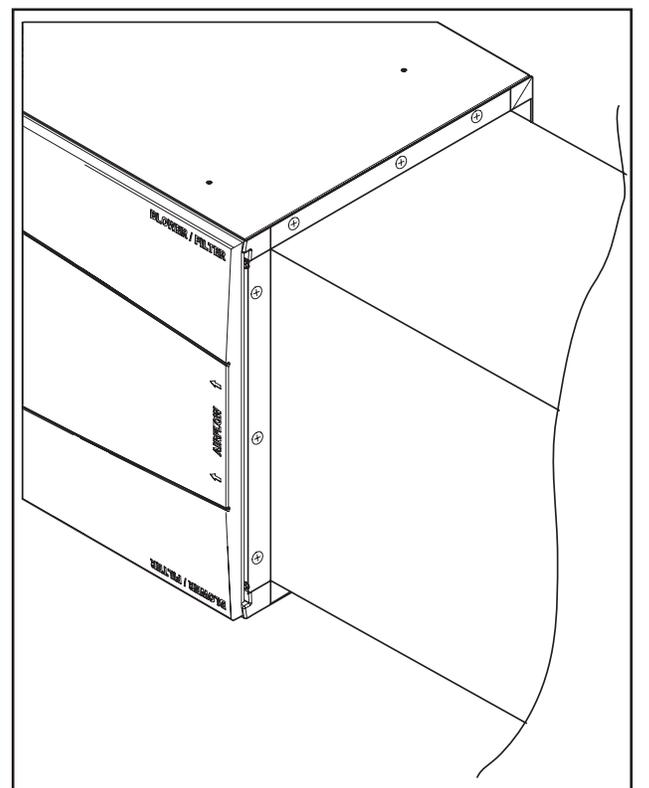
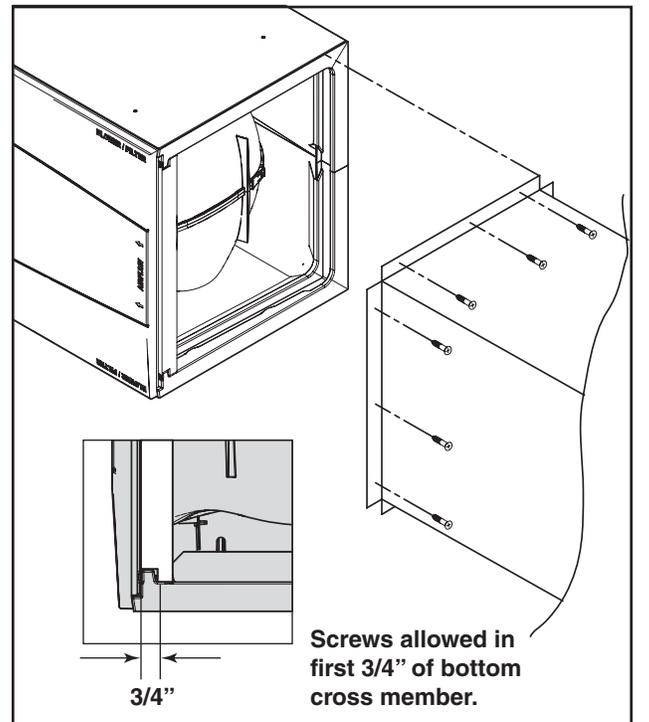
Important: Under no conditions should metal strapping be attached to the unit to be used as support mechanisms for carrying or suspension purposes.

Important: On units with sheet metal returns: Return air plenum must be flanged. Sheet metal drill point screws must be 1/2" in length or shorter.

- The supply and return air ducts must be connected to the unit with non flammable duct connectors.
- See the Outline drawing for sizes of the duct connections.
- After the ducts are secured, seal around the supply and return ducts to prevent air leakage.
- Insulate all duct work that will be outside of conditioned spaces.
- Convertible Duct Flange Kits are available to connect the supply plenum or for mounting on the discharge opening to provide a "flush fit" for 1-1/2" duct board applications.
- If front or rear return is required, the air handler must be elevated - placed on a pedestal or plenum and duct must be connected to this pedestal or plenum.
- If side return is required, the Side Return Kit # BAYSRKIT100A accessory must be used. A remote filter will be required.
- To ensure maximum efficiency and system performance, the existing supply and return duct system static pressures must not exceed the total available static pressure of the air handler. Reference ACCA Manual D, Manual S and Manual RS along with the air handler Product Data and Service Facts for additional information.

Note: Side return is not approved without Side Return Kit # BAYSRKIT100. More than one Side Return Kit may be necessary depending on the application. Refer to the Installation Guide in BAYSRKIT100 for approved duct connections, sizing, number, transitions, and accessory application.

Note: Duct work must be supported as appropriate. See National and local codes for guidelines. Do not depend on the unit to support duct work.



Section 10. Refrigerant Line

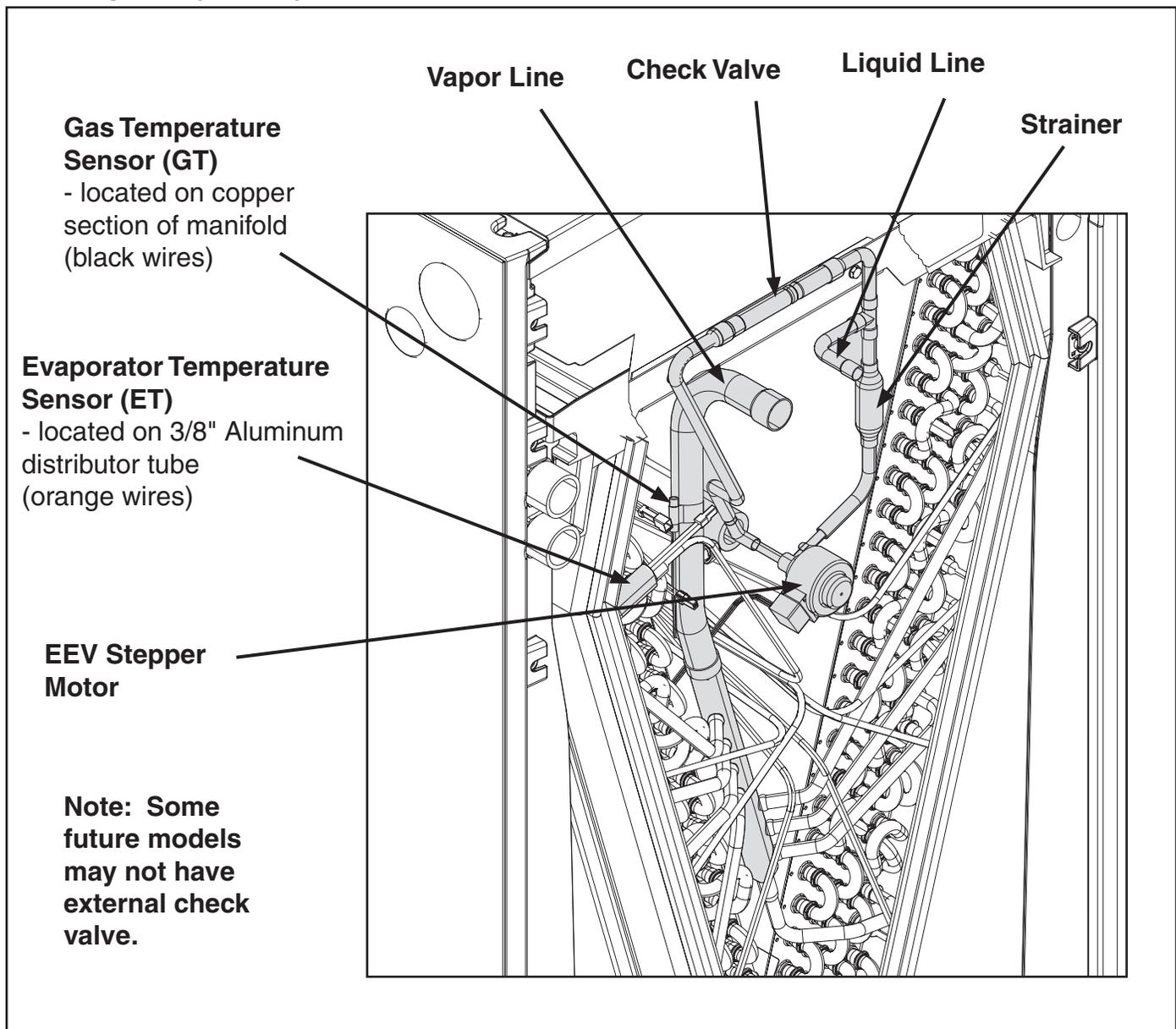
10.1 Refrigerant Line Connection Sizes

Table 10.1

Refrigerant Line Set and Connection Sizes		
Model	Vapor Line Connection	Liquid Line Connection
GAM5A0A18M21SA	3/4	3/8
GAM5A0A24M21SA	3/4	3/8
GAM5A0B30M31SA	3/4	3/8
GAM5A0B36M31SA	7/8	3/8
GAM5A0C42M41SA	7/8	3/8
GAM5A0C48M41SA	7/8	3/8
GAM5A0C60M51SA	7/8	3/8

Note: Refrigerant line sets should match the vapor line connection size in this table when connecting to any single stage outdoor unit.

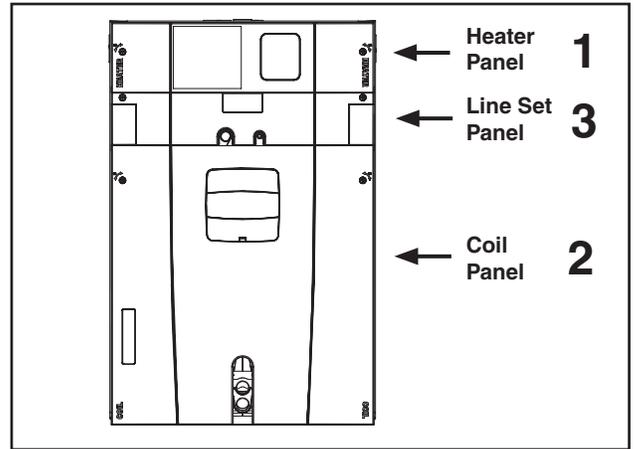
10.2 Refrigerant System Layout



Section 11. Refrigerant Line Brazing

11.1 Braze The Refrigerant Lines

STEP 1 - Remove Heater, Coil, and Line Set panels.
(See Section 2.2 Panel Removal)



Important: Do NOT unseal coil refrigerant connection stubs until ready to make connections.

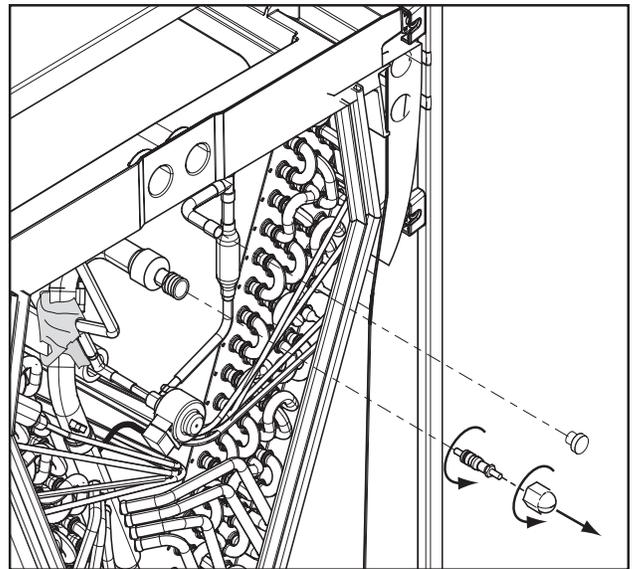
STEP 2 - Remove the plastic cap and Schrader valve core from the gas line.

STEP 3 - Wrap the vapor sensor with a wet rag.

Important: Care must be taken during solder cap removal and brazing to avoid damage to unit components

STEP 4 - Apply low heat to the solder cap to slowly heat the solder. (Do not apply direct heat to the vapor line) Use adjustable pliers to grab the flare fitting and remove the solder cap.

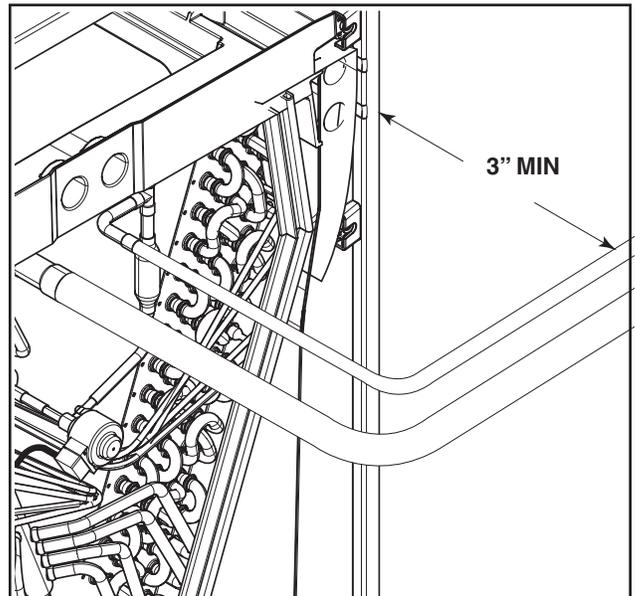
STEP 5 - Remove the sealing plug from the indoor coil liquid connection.



STEP 6 - Connect, but do not braze, field line set to indoor coil.

Allow a minimum of three (3) inches of refrigerant line set before using an elbow coupling.

Important: Service access to the auxiliary heater must remain unobstructed.

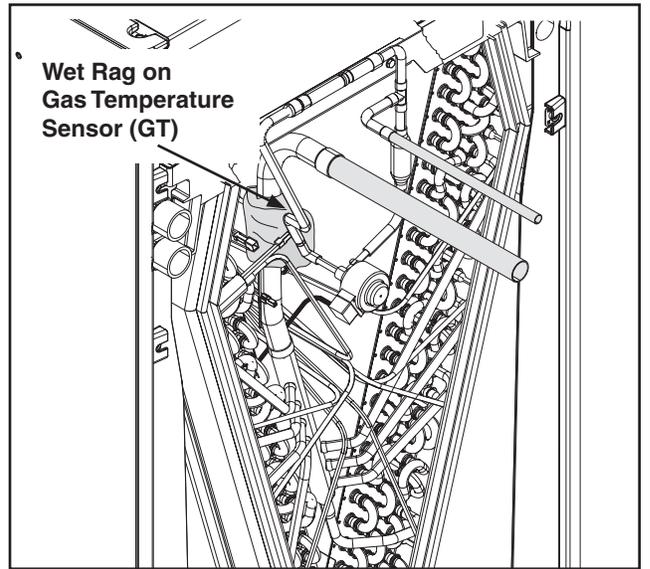


STEP 7 - Braze refrigerant line connections.

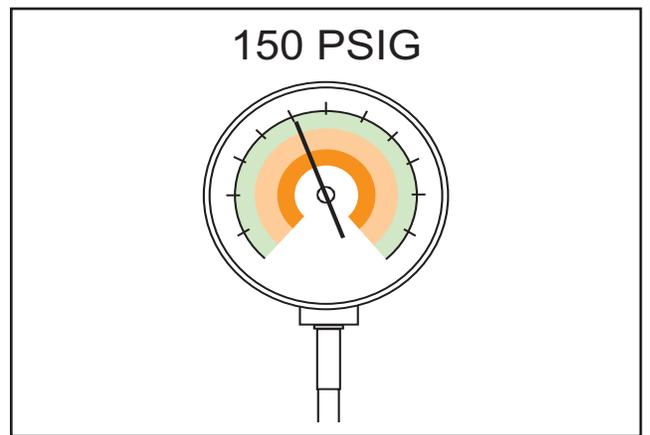
Note: The suction line must be insulated prior to brazing the line set to the air handler stubs.

1. Pull back the insulation before brazing the suction line.
2. Wrap the Gas Temperature Sensor (GT) with a wet rag.
3. Braze the refrigerant line connections.

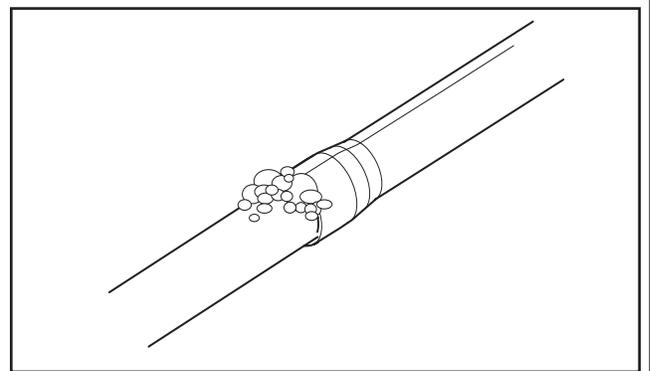
Important: Care must be taken during solder cap removal and brazing to avoid damage to unit components.



STEP 8 - Pressurize the refrigerant lines and evaporator coil to 150 PSIG using dry nitrogen.

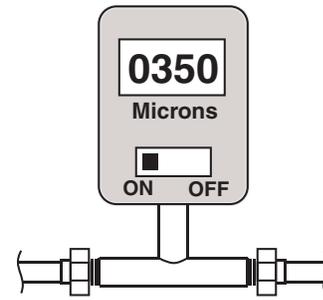


STEP 9 - Check for leaks by using a soapy solution or bubbles at each brazed location.



Important: Do not open the service valves until the refrigerant lines and indoor coil leak check and evacuation are complete.

STEP 10 - Evacuate until the micron gauge reads no higher than 350 microns, then close off the valve to the vacuum pump.



STEP 11 - Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute.

Once evacuation is complete blank off the vacuum pump and micron gauge, and close the valves on the manifold gauge set.

Note: Charge system using Outdoor unit's Installer Guide or Service Facts.

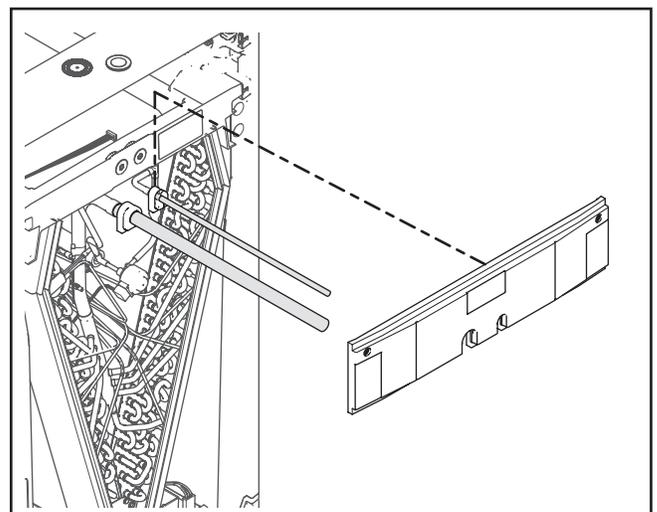
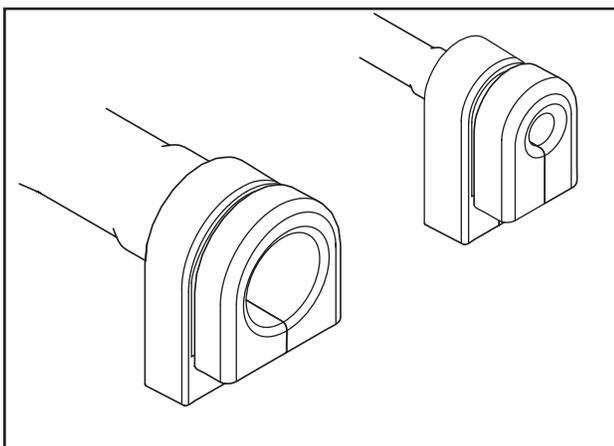
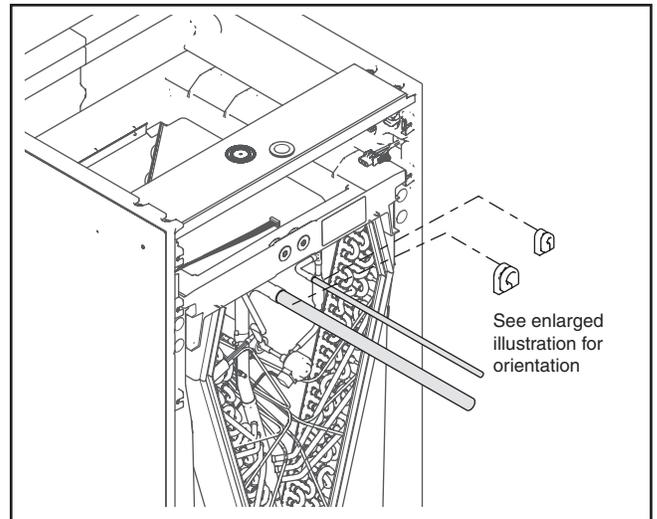


STEP 12 - Replace the Line Set panel.

1. Allow time for tubing to cool.
2. Install grommets to line set piping.

Note: A slight amount of dish soap can be used to aid in the installation of the grommets. Remove any excess from the tubing and grommet after the grommet is installed.

3. Slide the bottom of the Line Set panel down over the refrigerant lines and grommets. The grommets will seal the line openings.
4. Tighten screws on the Line Set panel.



Section 12. Condensate Drain Piping

12.1 Condensate Drain Piping Considerations

- Condensate drain plumbing must comply with national, state, and local codes.
- Route condensate drain lines away from air handler so they do not interfere with access panels.
- Slope the drain lines downward a minimum of 1/4" per foot, support per local codes.
- A 3" minimum distance from the coil panel to the inside of the condensate tubing is recommended for coil panel removal.
- Do not use reducing fittings in the condensate drain lines.
- Do not connect the drain line to a closed drain system.
- Do not use a torch or flame near the plastic drain pan coupling.
- A P-trap is not required for proper drainage due to the positive pressure of the air handler; however, it is recommended to prevent efficiency loss of conditioned air.

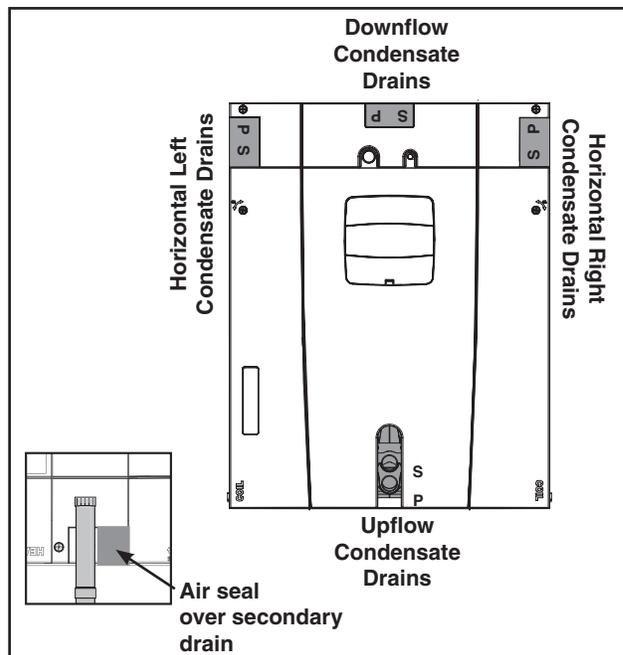
12.2 Connect Condensate Drain Piping

Note: Upflow and horizontal orientations require the Coil panel to be removed in order to make the drain connections. **Note:** Make certain that the unit has been installed in a level position to allow for proper draining.

STEP 1 - Select the drain connections that are oriented for your application.

STEP 2 - Prepare the condensate drain connections.

- From the factory, the unit comes with plugs in both upflow condensate drains and an additional plug in the documentation packet.
- For upflow applications, remove upflow condensate plug(s) and connect condensate piping.
- For all other applications, do not remove upflow condensate plugs. Remove the cover from the needed condensate drain connections and connect condensate piping.
- If the secondary condensate opening is not used, plug the condensate opening with the fitting supplied in the documentation pack. Use scissors to cut the air seal in half and re-install over the unused opening.



Note: A small amount of sealant must be applied around the drain line(s) passing through the panel to prevent air leakage and possible water drips.

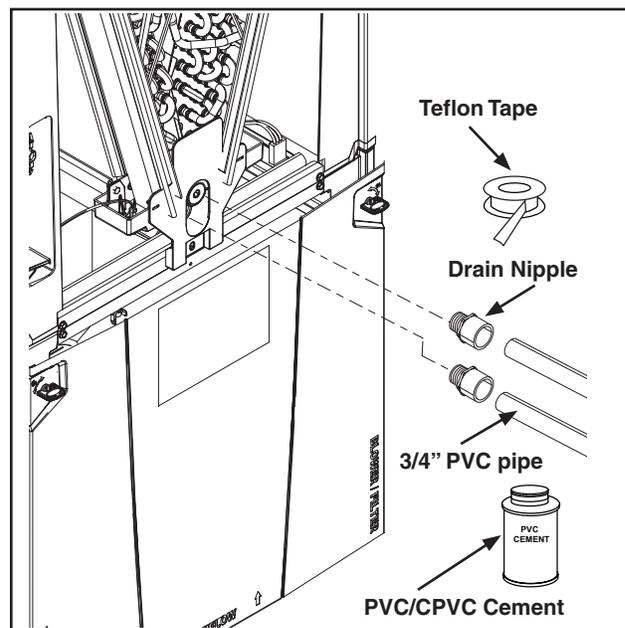
- Dry fit and test clearance for coil panel removal before applying PVC/CPVC cement
- Use Teflon tape on the air handler drain line connections. Do not use pipe joint compound or PVC/CPVC cement on drain nipple.
- Hand tighten the drain pipe.

STEP 3 - For Upflow installations, connect 3/4" PVC pipe to the threaded drain nipple with PVC/CPVC cement. 3" minimum clearance to the condensate piping is needed for coil panel removal. Thread the assembly into the primary drain connection (repeat for the secondary drain connection if used).

Important: For Horizontal and Downflow installations, the following order must be observed:

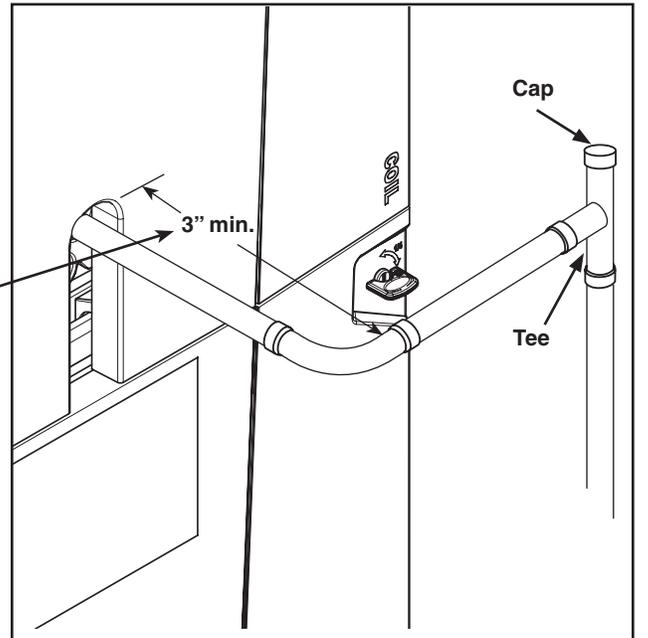
- 1) Remove panel and insert the 3/4" nipples.
- 2) Reinstall the panel.
- 3) Connect the condensate lines to the nipples.

Note: A small amount of sealant must be applied around the drain line(s) passing through the panel to prevent air leakage and possible water drips.



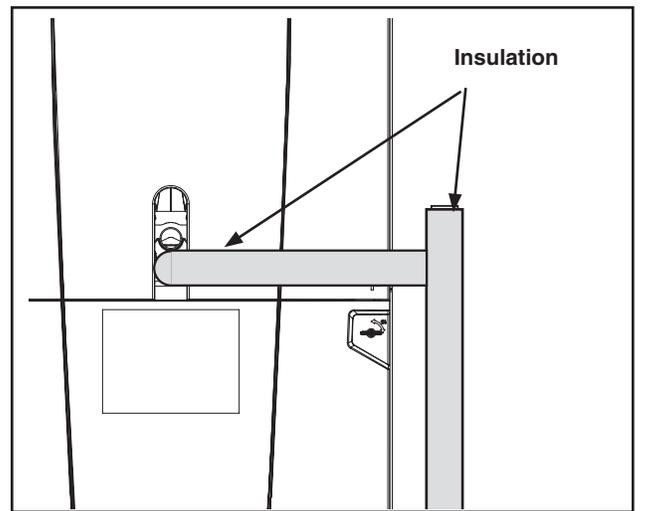
STEP 4 - Install a clean-out tee in the primary drain line for future maintenance. It is recommended that you install a cap on the top of the tee.

3" minimum clearance is recommended from cabinet to inside edge of tubing



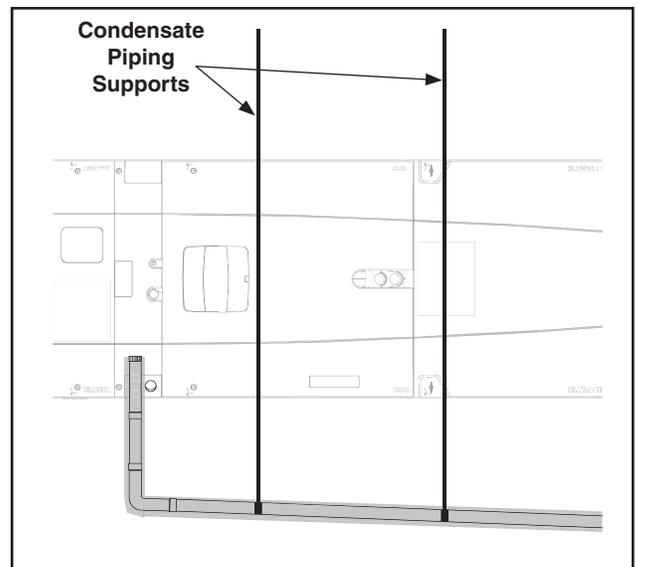
STEP 5 - Insulate the primary drain line to prevent sweating where dew point temperatures may be met. (Optional depending on climate and application needs.)

Provide a means of drainage to prevent winter freeze-up of condensate line. (Optional depending on climate and application needs.)



STEP 6 - Support the condensate piping outside the unit per local codes for proper drainage and to prevent sagging.

Allow 1/4" of downward slope for each foot of pipe.



Section 13. Electrical - Low Voltage

13.1 Low Voltage Maximum Wire Length

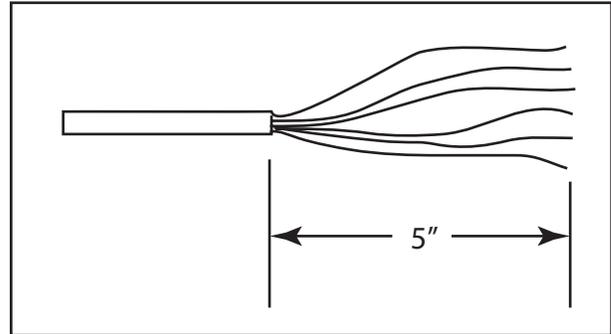
Table 11.1 defines the maximum total length of low voltage wiring from the outdoor unit, to the indoor unit, and to the thermostat.

Table 13.1

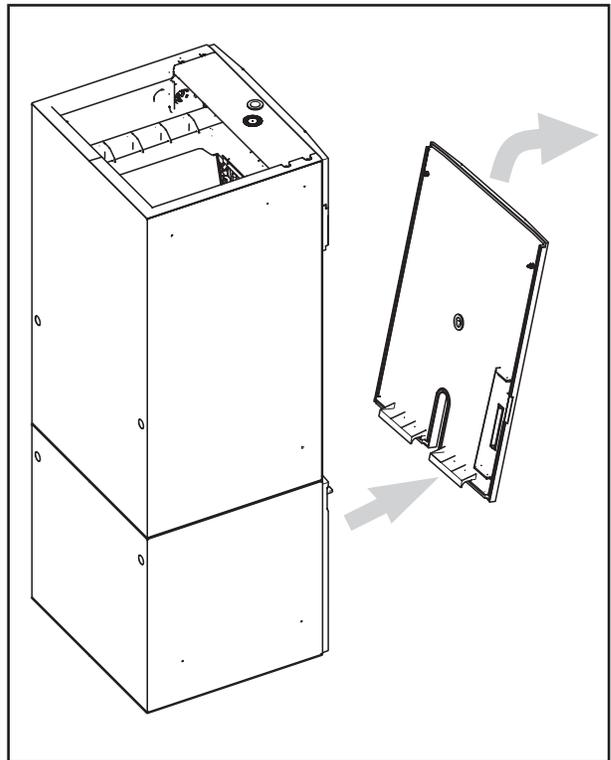
24 VOLTS	
WIRE SIZE	MAX. WIRE LENGTH
18 AWG	150 Ft.
16 AWG	225 Ft.
14 AWG	300 Ft.

13.2 Low Voltage Hook-up Instructions

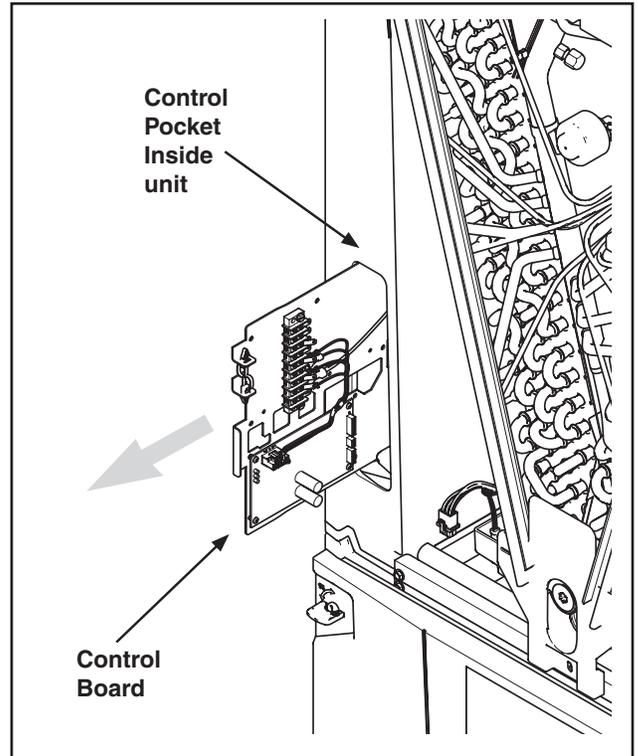
STEP 1 - Route control wiring to unit. Remove the external sheathing of the wiring approximately 5".



STEP 2 - Remove Coil panel by turning the quarter turn Phillips head door fasteners, rotating the door away from the cabinet, and removing.



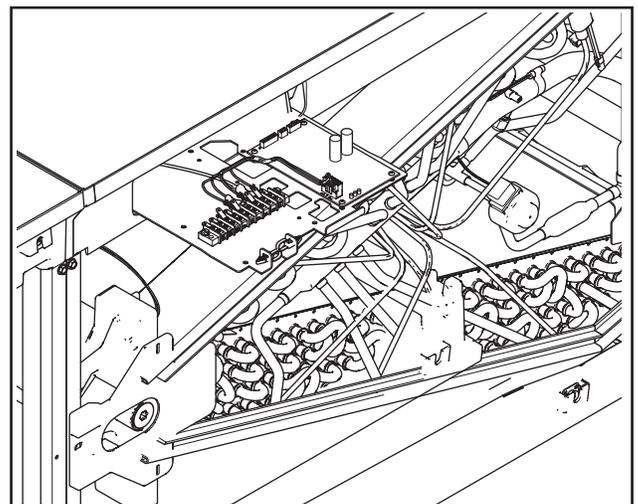
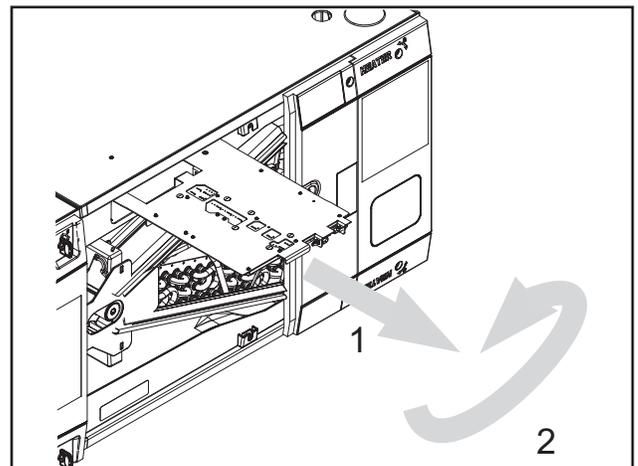
STEP 3 - Remove the control board from the control pocket by sliding the control pocket mounting plate out until the first stop is reached.



For Horizontal Right installations Only

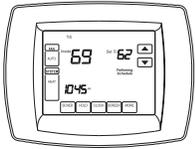
Remove the control board completely from the control pocket. Rotate the control board 180 degrees. Place the control board 2-3 inches back into the control pocket. Attach wiring per appropriate hook-up diagram or perform service.

Important: After wires have been connected or service performed, the control board **MUST** be rotated back to the original orientation before inserting into control pocket in the cabinet.

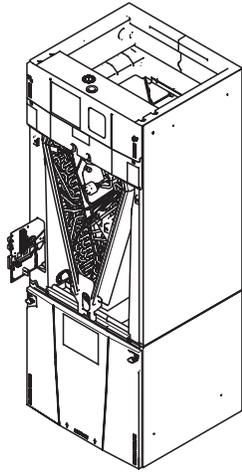


STEP 4 - Make connections per hookup diagrams.

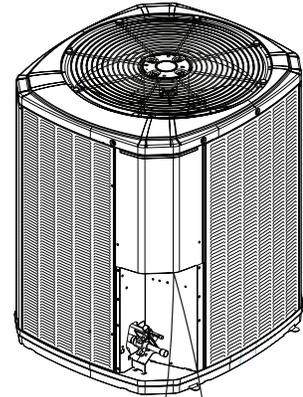
**Air Handler Hook-up Diagram
Cooling**



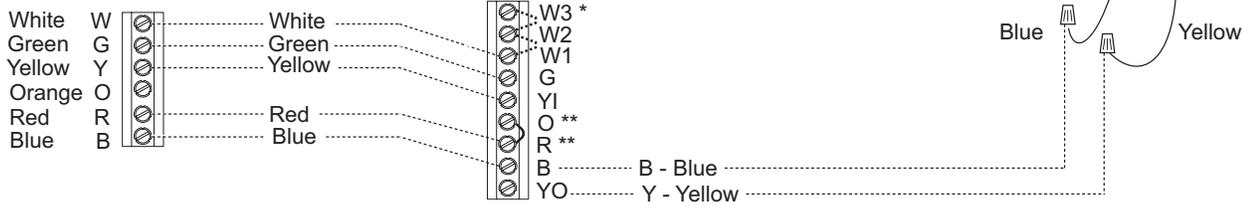
Comfort Control



Air Handler



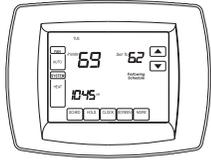
Air Conditioner



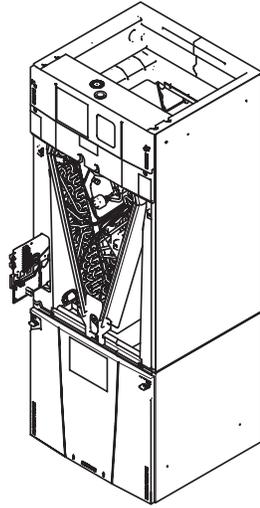
..... Field wiring

- * For multiple stages of electric heat, jumper W1, W2, and W3 together if comfort control has only one stage of heat.
- ** R to O jumper must be in place as shown for cooling only, non-heat pump systems for proper operation.
- Y1 and YO connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to work properly.
- Internally mounted condensate switch is optional and must be ordered separately.
- If 3rd party condensate overflow switches are installed, they should be wired between Y of the thermostat and Y1 of the EEV control.

Air Handler Hook-up Diagram Heat Pump

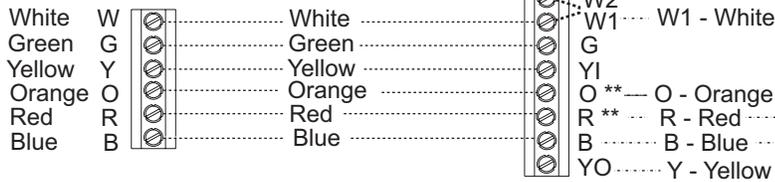
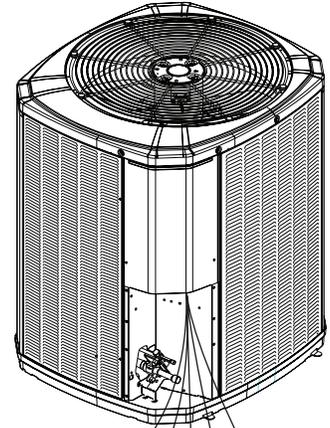


Comfort Control



Air Handler

Heat Pump



----- Field wiring

- ** R to O jumper must be removed for heat pump system.
- * For multiple stages of electric heat, jumper W1, W2, and W3 together if comfort control has only one stage of heat
- YI and YO connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to work properly
- Internally mounted condensate switch is optional and must be ordered separately
- If a 3rd party condensate overflow switch is installed, it should be wired between Y of the thermostat and YI of the EEV control.

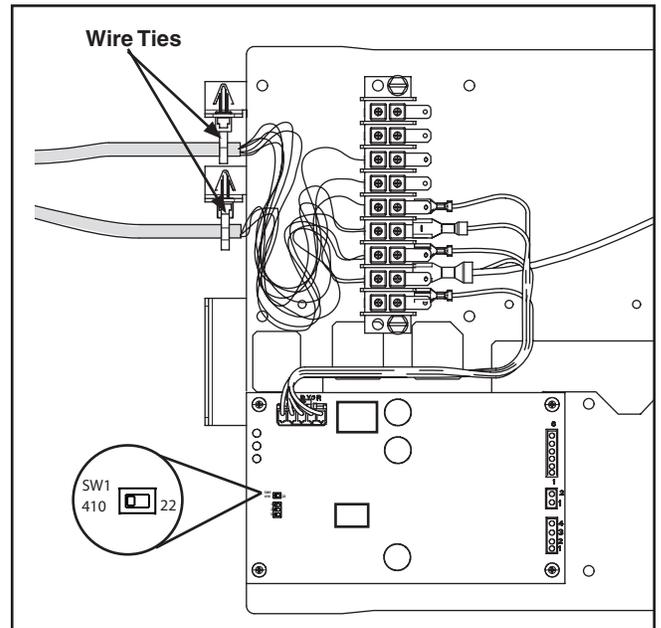
STEP 5 - Secure the sheathed wiring to the control pocket mounting plate using the factory supplied zip ties attached to the tabs to as shown.

STEP 6 - Refrigerant Switch

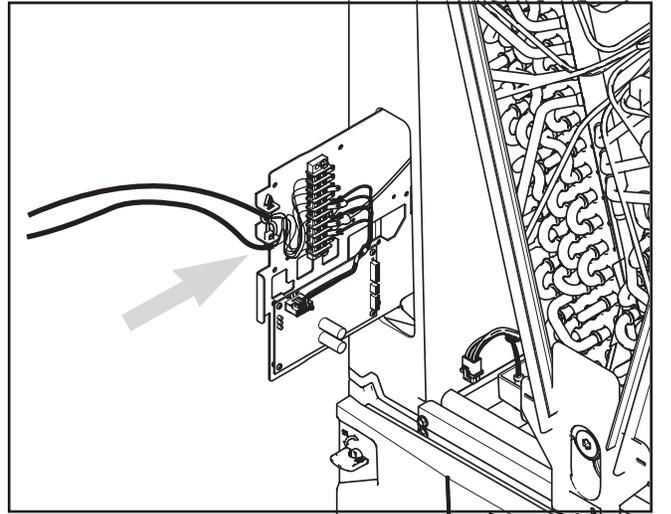
Set the system refrigerant to either R-410A or R-22 using the Refrigerant Switch located on the Expansion Valve Control board (EVC) in the Control Pocket.

Factory default is R-410A.

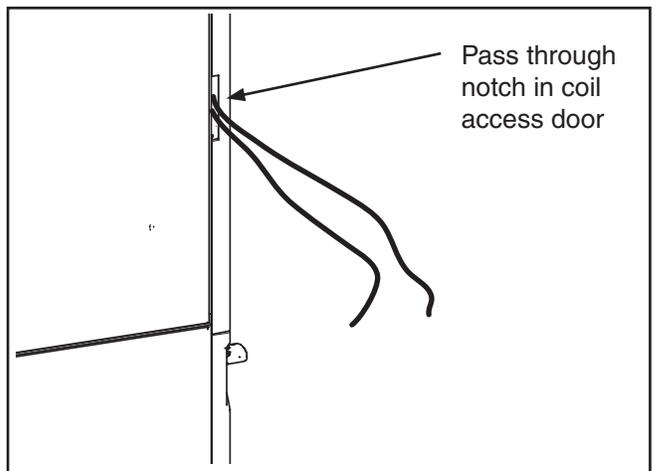
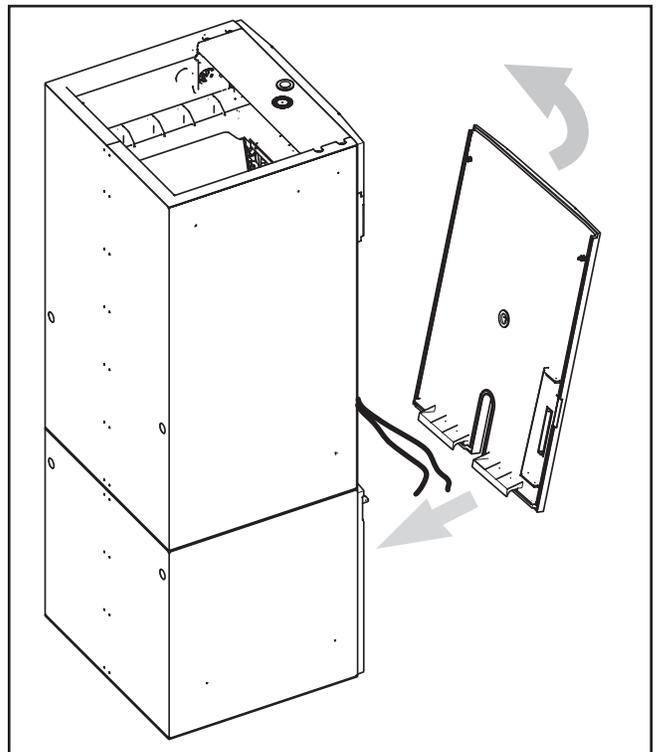
Note: The power must be shut off and then re-applied in order for the EVC to recognize the change.



STEP 7 - Slide control plate assembly into the control pocket until fully seated. The control plate should be flush with the outer edge of the unit.



STEP 8 - Replace Coil panel making sure that the wires are located within the wire pass-through provided in the panel.



Section 14. Electrical - High Voltage

14.1 High Voltage Power Supply

The high voltage power supply must match the equipment nameplate.

Power wiring, including ground wiring, must comply with national, state, and local codes.

Field wiring diagrams for supplementary electric heaters are shipped with the heater.

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 when exposed to live electrical components could result in death or serious injury.

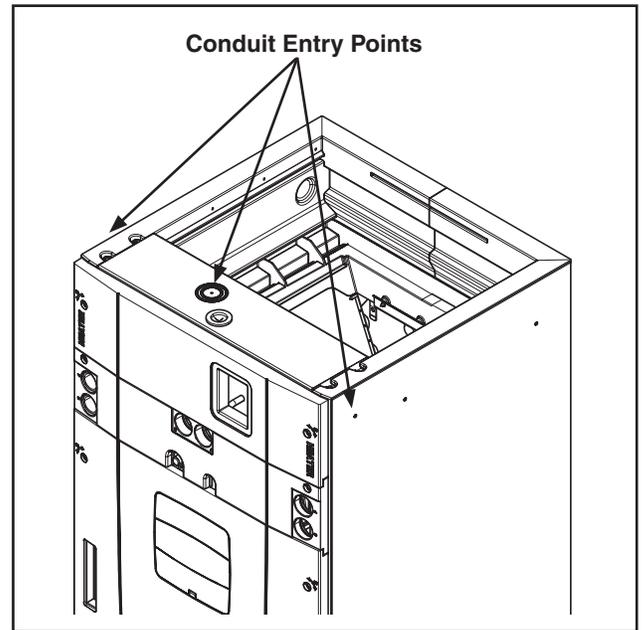
14.2 Make Electrical Connections

STEP 1 - Route High Voltage wiring to unit.

STEP 2 - Select a conduit entry point. Drill a hole for the desired conduit size on units without a plug. A locating target is identified on these units.

Note: Some models may have a pre-molded conduit connection with plug. If a connection hole is already present, remove the plug from the entry point and use as is.

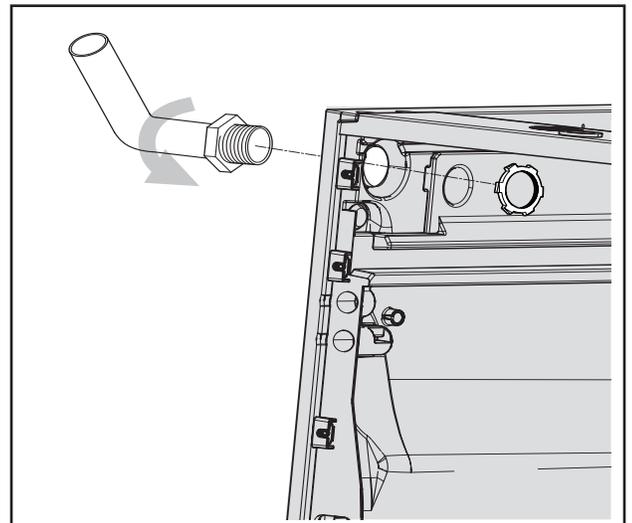
1. Select the entry point you will use to bring in your high voltage wiring.
2. Remove plug from the entry point.



STEP 3 - Route conduit (if used) to the entry point and connect.

1. Use one hand to secure the conduit nut from inside of the heater compartment.
2. Connect a field supplied 3/4" or 1-1/2" conduit to conduit nut.

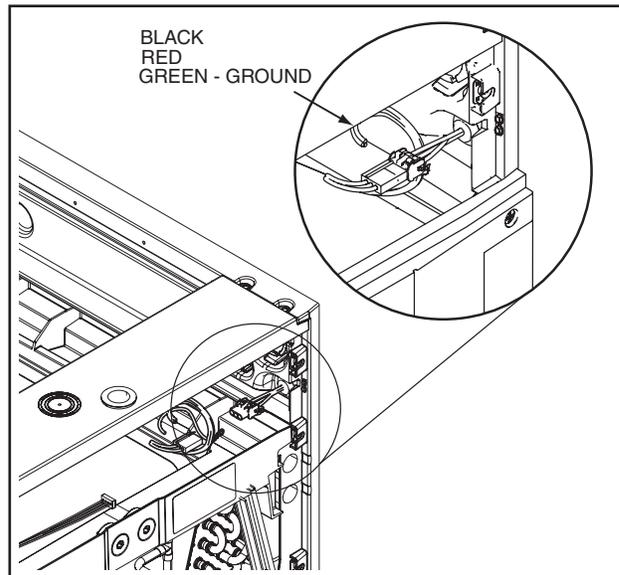
Note: Reducing bushings may be required for your application.



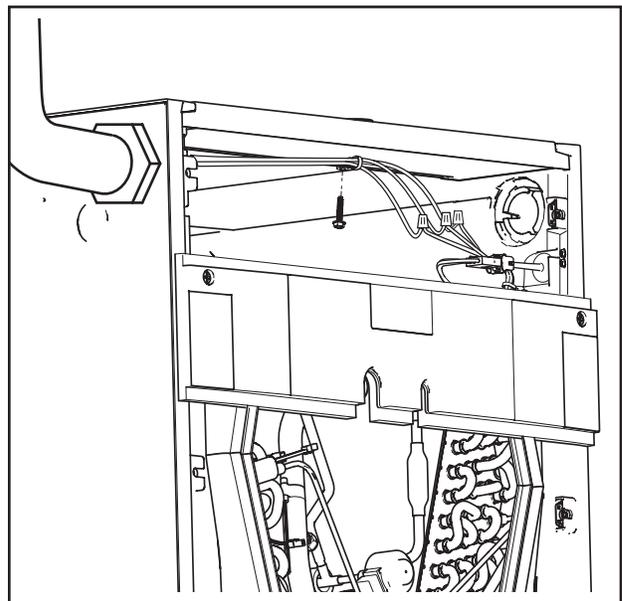
STEP 4 - If an electric heater IS NOT being installed, remove the pigtail harness from the documentation pack and connect it to the plug on the inside of the Heater Compartment in the cabinet.

If an electric heater IS being installed, see the Installer's Guide shipped with the electric heater.

Connect L1, L2, and ground wiring to pigtail harness in Heater Compartment using wire nuts. The incoming ground wiring will mate up with the green wire shown in the illustration.



STEP 5 - If the L1, L2, and ground wires enter the case from the left side, use a field supplied 1/2"-5/8" maximum length screw and wire tie to hold the wires to the top center of the Heater Compartment.

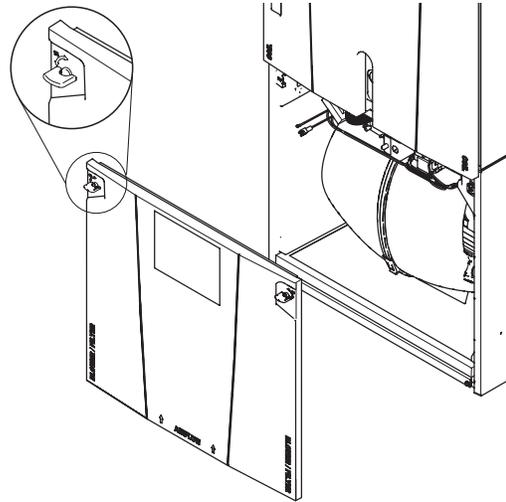


Section 15. Time Delay Switch Adjustment

15.1 Remove the blower door panel.

The Blower/Filter panel is removed using 1/4 turn thumb screws.

1. Turn thumb screws on Blower/Filter panel.
2. Pull top of panel out, away from cabinet.
3. Lift panel up out of channel.
4. Set aside.



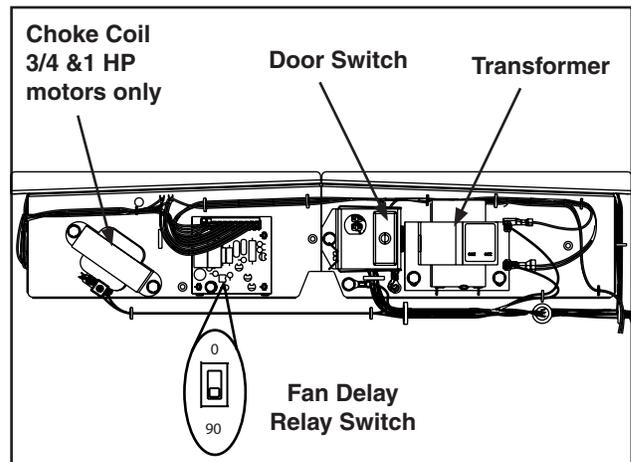
15.2 Time Delay Relay (TDR) Switch

STEP 1 - Set the fan off delay setting using the Fan Delay Relay Switch (TDR) located on the blower control mounting plate located on the front of the blower.

Factory default delay is 90 seconds.

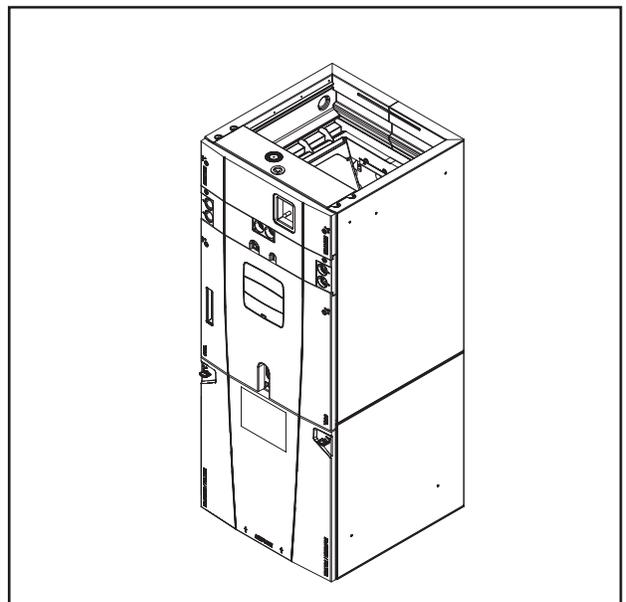
Heating and cooling speeds are the same, factory set at Speed Tap #4.

A "G" only signal from the comfort control will run the blower at a lower speed, factory set at Speed Tap #1. See the Sequence of Operation for additional information.

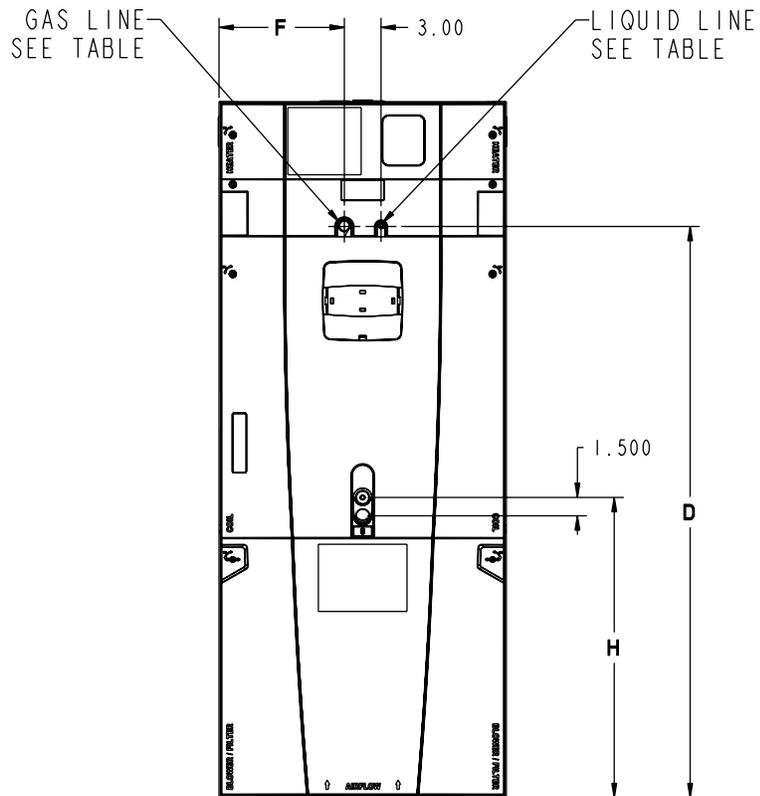
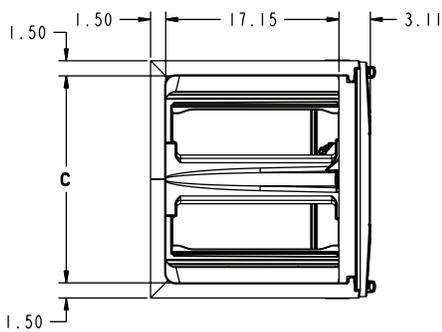
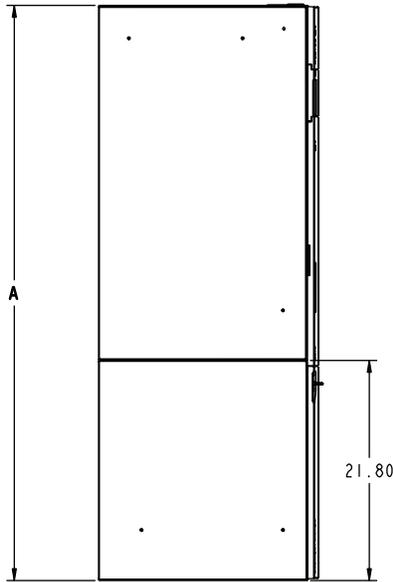
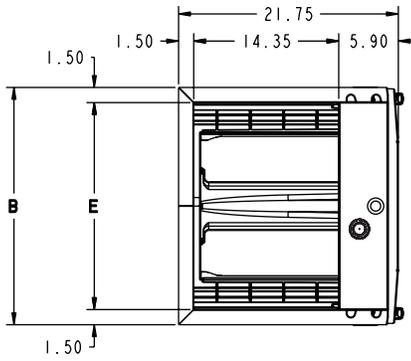


STEP 2 - Reinstall all panels before starting the air handler.

NOTE: After replacing all panels, loosen the Line Set Panel screws approximately 1/4 - 1/2 turn. This will improve the seal between the Heater Panel and Line Set Panel.



Section 16. Unit Outline Drawing



	TO COMBUSTIBLE MATERIAL (REQUIRED)	SERVICE CLEARANCE (RECOMMENDED)
SIDES	0"	2"
FRONT	0"	21"
BACK	0"	0"
INLET DUCT	0"	
OUTLET DUCT	0"	

MODEL NO.	A	B	C	D	E	F	H	FLOW CONTROL	GAS LINE BRAZE	LIQ. LINE BRAZE
GAM5A0A18	49.9	17.5	14.5	39.6	14.5	7.3	24.4	EEV	3/4	3/8
GAM5A0A24	49.9	17.5	14.5	39.6	14.5	7.3	24.4	EEV	3/4	3/8
GAM5A0B30	51.5	21.3	18.4	41.2	18.4	9.2	24.8	EEV	3/4	3/8
GAM5A0B36	55.7	21.3	18.4	45.5	18.4	9.2	24.8	EEV	7/8	3/8
GAM5A0C42	56.9	23.5	20.5	46.7	20.5	10.3	24.5	EEV	7/8	3/8
GAM5A0C48	61.7	23.5	20.5	51.5	20.5	10.3	24.9	EEV	7/8	3/8
GAM5A0C60	61.7	23.5	20.5	51.5	20.5	10.3	24.9	EEV	7/8	3/8

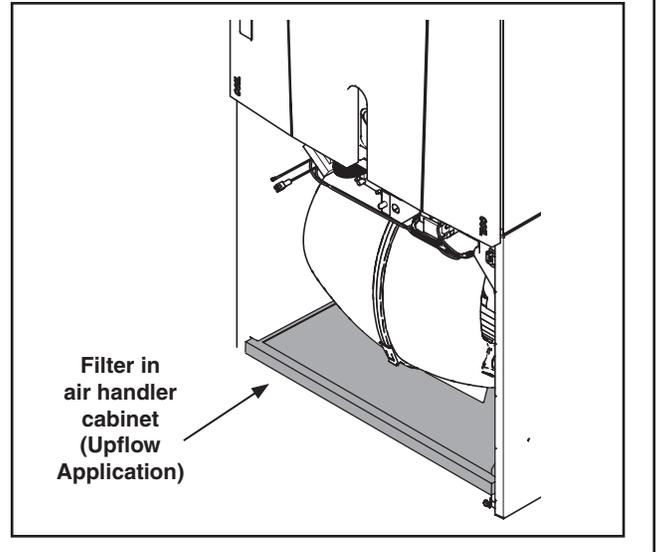
Section 17. Filters

17.1 Filter Considerations

- A filter must be installed within the system.
- A filter channel is provided in the unit, at the bottom of the Blower/Filter compartment.
- For customer ease of filter maintenance, it is recommended that a properly sized remote filter grill(s) be installed for units that are difficult to access. Airflow should not exceed the maximum rated velocity of the filter being used.

Table 16.1 Filter Sizes

Cabinet Size*	A	B	C
Filter Size	16 x 20	20 x 20	22 x 20
* Cabinet size is indicated by the 7th digit in model number.			



Section 18. Start Up

18.1 System Charge Adjustments

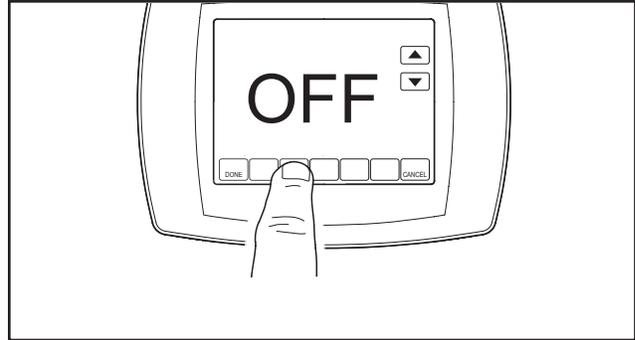
The following combinations should be charged to 8 degrees sub-cooling to maintain ratings.	
Indoor Unit Model No.	Outdoor Unit Model No.
GAM5A0A18M11SA	4A6B4018E1 4A6H5018E1
GAM5A0A24M21SA	4A6B4024E1 4A6H5024E1
GAM5A0B30M21SA	4A6B4030E1 4A6H5030E1
GAM5A0B36M31SA	4A6B4036E1 4A6H5036E1
GAM5A0C42M31SA	4A6B4042E1 4A6H5042E1
GAM5A0C48M41SA	4A6B4048E1 4A6H5048E1 4A6B4049E1 4A6H5049E1
GAM5A0C60M51SA	4A6B4060E1 4A6H5060E1 4A6B4061E1 4A6H5061E1
All other non-rated matches must be charged per the nameplate charging instructions.	

The following combinations should be charged to 8 degrees sub-cooling to maintain ratings.	
Indoor Unit Model No.	Outdoor Unit Model No.
GAM5A0A18M11SA	4TWB4018E1 4TWR5018E1
GAM5A0A24M21SA	4TWB4024E1 4TWR5024E1
GAM5A0B30M21SA	4TWB4030E1 4TWR5030E1
GAM5A0B36M31SA	4TWB4036E1 4TWR5036E1
GAM5A0C42M31SA	4TWB4042E1 4TWR5042E1
GAM5A0C48M41SA	4TWB4048E1 4TWR5048E1 4TWB4049E1 4TWR5049E1 4TWX5049E1
GAM5A0C60M51SA	4TWB4060E1 4TWR5060E1 4TWB4061E1 4TWR5061E1 4TWX5061E1
All other non-rated matches must be charged per the nameplate charging instructions.	

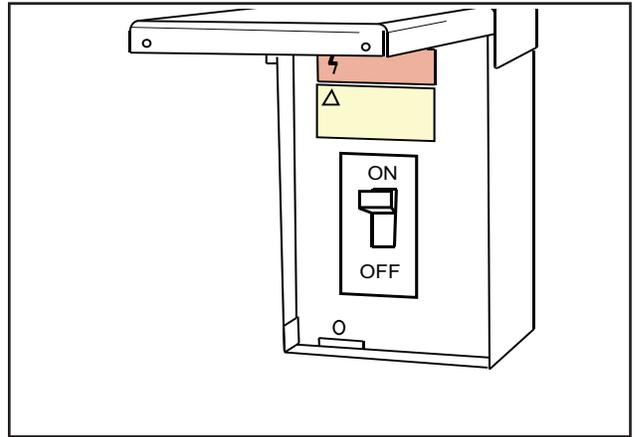
18.2 System Start Up

STEP 1 - Make sure all panels are securely in place and that all wiring has been properly dressed and secured.

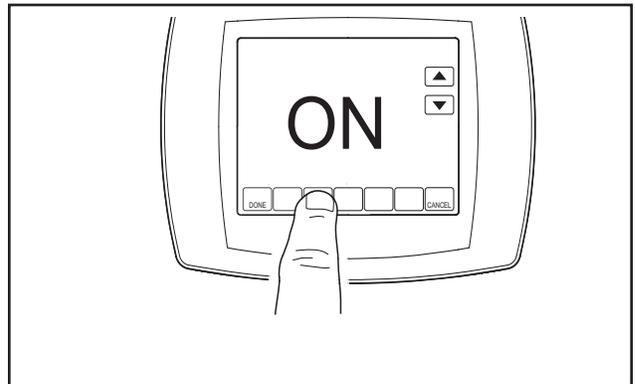
STEP 2 - Set the system thermostat to OFF.



STEP 3 - Turn on electrical power disconnect(s) to apply power to the indoor and outdoor units.



STEP 4 - Set the system thermostat to ON.



Section 19. Sequence of Operation

19.1 Sequence of Operation

GAM5 Sequence of Operation:

Abbreviations

- TDR = Time Delay Relay
- EVC = Expansion Valve Control
- EEV = Electronic Expansion Valve
- YI = Y signal into the EVC from the comfort control
- YO = Y signal out of the EVC from the comfort control
- OEM = Original Equipment Manufacturer

See unit, electric heat, and field wiring diagrams for additional information.

Continuous Fan

IMPORTANT: If the indoor air exceeds 60% relative humidity or simply feels uncomfortably humid, it is recommended that the indoor fan only be used in the AUTO mode.

1. R-G contacts close on comfort control sending 24VAC to the G terminal on the fan TDR
2. Low speed contacts close in the TDR and send 24VAC on terminal labeled "LOW".
3. Blower motor will now run on low speed. Speed is field selectable.

Heat Pump OD (cooling)

1. R-Y contacts close on the comfort control sending 24VAC to Y terminal on TDR and the YI (Y In) terminal on the EVC.
2. R-G contacts also close on the comfort control sending 24VAC to the G terminal on the TDR. (The combination of 24VAC on terminals Y and G on the TDR will close the high speed contacts of the TDR)
3. R-O contacts on the comfort control close sending 24VAC to the O terminal on the EVC. This signals the EVC that the unit is in cooling mode. The EVC will control the EEV to maintain the correct superheat.
4. Normally closed contacts on the EVC will pass 24VAC to the YO terminal providing power to the outdoor unit control circuit
5. The blower motor will now run on high speed. Speed is field selectable.

Heat Pump OD (heating)

1. R-Y contacts close on the comfort control sending 24VAC to Y terminal on TDR and the YI (Y In) terminal on the EVC
2. R-G contacts also close on the comfort control sending 24VAC to the G terminal on the TDR. (The combination of 24VAC on terminals Y and G on the TDR will close the high speed contacts of the TDR) The blower motor will now run on high speed.

3. The combination of 24VAC on the Y terminal and zero volts on the O terminal signals the EVC that the unit is in heat-pump heating mode.
4. Normally closed contacts on the EVC will pass 24VAC to the YO terminal providing power to the outdoor unit control circuit
5. The blower motor will now run on high speed

Cooling OD

1. R-Y contacts close on the comfort control sending 24VAC to Y terminal on TDR and the YI (Y In) terminal on the EVC
2. R-G contacts also close on the comfort control sending 24VAC to the G terminal on the TDR. (The combination of 24VAC on terminals Y and G on the TDR will close the high speed contacts of the TDR)
3. R-O jumper on the TDR sends 24VAC to the O terminal on the EVC. This signals the EVC that the unit is in cooling mode. The EVC will control the EEV to maintain the correct superheat.
4. Normally closed contacts on the EVC will pass 24VAC to the YO terminal providing power to the outdoor unit control circuit
5. The blower motor will now run on high speed

Electric Heating

1. R-W contacts close on the comfort control sending 24VAC to the W terminal on the TDR. 24VAC is also sent to EHC to energize the heat relay.
2. R-G contacts close on the comfort control sending 24VAC to the G terminal on the TDR. (The combination of 24VAC on terminals W and G on the TDR will close the high speed contacts of the TDR)
3. WJ contacts on the TDR close providing an interlock circuit to allow the electric heat relays to operate.

The comfort control must be setup to control R-G contacts with a call for electric heat. This closes the interlock circuit and allows the heat relay circuit to be energized.

Optional Condensate Switch

1. An optional OEM condensate switch can be installed within the unit. This switch is only available through the National Distribution Center or Global Parts.
2. Switch contacts are normally open and close when water level rises. The closed switch will interrupt current flow to the YO terminal and de-energize the OD unit.
3. Switch is only operational during cooling mode. Condensate overflow is not operational during heating or defrost modes.

Standard aftermarket condensate switches cannot be used within the unit but can be installed exterior of the unit. The 3rd party condensate overflow switch must be wired between Y of the thermostat and YI of the EEV control.

Freeze Protection

1. The EVC control has the ability to sense when the coil is beginning to ice. When this event occurs, the contacts to the YO circuit will open and de-energize the OD unit.
2. The indoor blower motor will continue to run to aid in defrosting the coil. After the coil has sufficiently defrosted, the YO contacts will close and cooling operation will begin again.

Fan Off Delay

1. The TDR has a dip switch that can enable a 90 second fan off delay anytime a fan call is made from the comfort control. The factory default is ON. To disable the delay, turn power off to the unit, turn the dip switch to the off position and turn power back on to the unit.

Section 20. Checkout Procedures

20.1 Operational And Checkout Procedures

Final phases of this installation are the unit Operational and Checkout Procedures. To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts of the Outdoor Unit.

CHECKOUT PROCEDURE

After installation has been completed, it is recommended that the entire system be checked against the following list:

- | | |
|---|---|
| 1. Be sure unit suspension (if used) is secure and that there are no tools or loose debris in or around or on top of the unit. [] | 6. Check drain lines and be sure all joints are tight. [] |
| 2. Properly insulate suction lines and fittings. [] | 7. Be sure the return air filter is installed. [] |
| 3. Properly secure and isolate all refrigerant lines. [] | 8. Be sure that the correct airflow setting is used. (Indoor Blower Motor). [] |
| 4. Verify that all electrical connections are tight. [] | 9. Operate complete system in each mode to verify proper performance. Verify operation of supplementary electric heater. [] |
| 5. Check all duct outlets; they must be open and unrestricted. [] | |



6200 Troup Highway
Tyler, TX 75707
www.trane.com
www.americanstandardair.com

The manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specifications without notice.

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