Installation & Owner's Manual

MRCOOL®

COMFORT MADE SIMPLE

PRODIRECT™ SERIES
Air Handler HAH140*C

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice. Please visit www.mrcool.com/documentation to ensure you have the latest version of this manual.

Version Date: 7-22-22

Thank you for choosing MRCOOL. Please read this manual carefully before installation and keep it for future reference.

Copyright © 2021 MRCOOL, LLC



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION

WARNING

These instructions are intended as an aid for qualified, licensed service personnel for proper installation, adjustment, and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only When the complete system is listed with AHRI.

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small HP
AHRI Standard 210/240
Certification applies only When the complete system is listed with AHRI.

ETL LISTED C US Intertek

DO NOT DESTROY THIS MANUAL
Please read carefully and keep in a safe place for future reference by a serviceman.

INSTALLATION AND OWNER'S MANUAL

INDOOR SPLIT-SYSTEM UNIT MODELS: UP TO 18 SEER 1.5 TO 5 TONS

Table of Contents

1. SAFETY 2
2. GENERAL 4
3. UNIT DIMENSIONS 5
4. VERTICAL UPFLOW 6
5. VERTICAL DOWNFLOW 6
6. HORIZONTAL 7
7. ELECTRICAL WIRING 9
8. POWER WIRING 9
9. CONTROL WIRING 9
10. GROUNDING 9
11. ELECTRICAL DATA 10
12. REFRIGERANT CONNECTIONS 10
13. TXV EXPANSION VALVE INFORMATION 11
14. CONDENSATE DRAIN TUBING 12
15. AIR FILTER (not factory-installed) 13
16. FILTER INSTALLATION DIMENSIONS 14
17. WIRING DIAGRAMS 15
18. ELECTRIC WIRING GAUGE 19
19. ELECTRIC HEAT KIT INSTALLATION (Optional) 20
20. TROUBLESHOOTING 21

This document is customer property and needs to remain with this unit. These instructions do not cover all of the different variations between systems, nor does it provide for every possible contingency that can arise during installation. All phases of this installation must comply with **NATIONAL, STATE, AND LOCAL CODES**. This manual could change without expressed written notice. Please visit the documentation section of the MRCOOL website, www.mrcool.com/documentation for the latest versions.

1 SAFETY



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



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

⚠ WARNING

Disconnect all power to unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

⚠ WARNING

If removal of the blower assembly is required, all disconnect switches supplying power to the equipment must be de-energized and locked (if not in sight of unit), so the field power wires can be safely removed from the blower assembly. Failure to do so can cause electrical shock, resulting in personal injury or death.

⚠ WARNING

Because of possible damage to equipment or personal injury, installation, service, and maintenance should only be performed by trained, qualified service personnel. Consumer service is recommended only for filter cleaning/replacement. Never operate the unit with the access panels removed.

⚠ WARNING

These instructions are intended as an aid to qualified, licensed service personnel for proper installation, adjustment, and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

⚠ WARNING

The unit must be properly and permanently grounded. Failure to do so could result in electrical shock causing personal injury or death.

⚠ WARNING

PROPOSITION 65: This appliance contains fiberglass insulation.

All manufacturer products meet current federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards.

California's Proposition 65 requires warnings for products sold in California that contain or produce any of the over 900 listed chemicals known to the State of California to cause cancer or birth defects. These include, fiberglass insulation, lead contained in brass, and combustion products from natural gas.

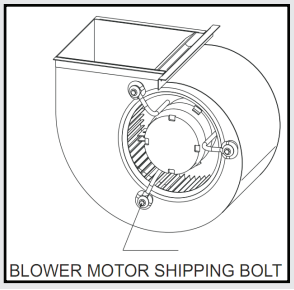
All "new equipment" shipped for sale in California will have labels stating that the product contains and/or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our product facilitates manufacturing and shipping. We cannot always know "when, or if" products will be sold in the California market.

You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air-conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.

- **Glass Wool (Fiberglass) Insulation**
- **Carbon Monoxide (CO)**
- **Formaldehyde**
- **Benzene**

More details are available at the websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

⚠ WARNING



Make sure the blower motor support is tight, which is secured by 3-motor mount bolts. Then check to see if the wheel is secured to motor shaft before operating unit.

⚠ WARNING

The first 3 ft (914.4 mm) of the supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must also have a solid sheet metal bottom directly under the unit with no openings, registers or flexible air ducts located in it.

If flexible supply air ducts are used, they can only be located in the vertical walls of the rectangular plenum and must be a minimum of 6 in (152.4 mm) from the solid bottom. The metal plenum of the duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct that is exposed to the supply air opening from the downflow unit. Exposing combustible (non-metal) material to the supply opening of a downflow unit can cause a fire, resulting in property damage, personal injury, or death.

Exception warning to downflow:
Installations on a concrete floor slab, with supply air plenum and ductwork completely encased, must use at least 2 in (50.8 mm) of concrete (See NFPA 90A).

2 GENERAL

The unit can be positioned for bottom return air in the upflow position, left and right return in the horizontal position, or top return in downflow position.

This Air Handler provides the flexibility for installation in any upflow, downflow, or horizontal application. The direct drive motors provide a selection of air volumes to match any application. The 3-Speed motor can be adjusted to provide air flow to meet desired applications.

Top and side power control wiring, and accessible screw terminals for control wiring, all combine to make the installation easy, and minimize installation cost. Please contact your local distributor (Refer to Fig.1).

The appliance is only intended to supply conditioned air to one room.

3 UNIT DIMENSIONS

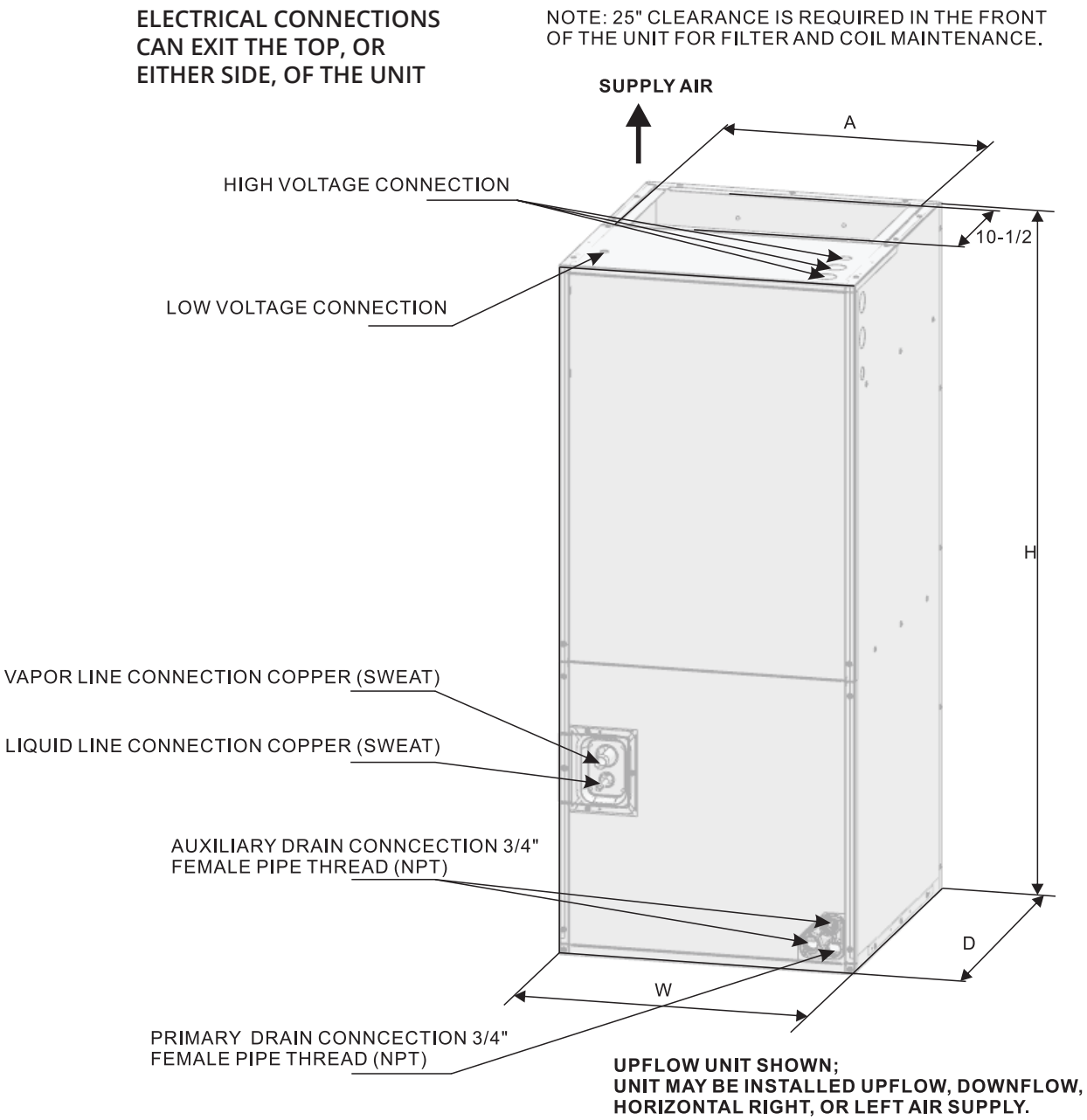


Fig. 1 Dimensions

DIMENSIONAL DATA

MODEL SIZE	Dimensions inch [mm]				
	UNIT HEIGHT (H) in [mm]	UNIT WIDTH (W) in [mm]	UNIT DEPTH (D) in [mm]	SUPPLY DUCT (A) in [mm]	LIQUID LINE/ VAPOR LINE in
18K	45.75 [1162]	19.69 [500]	22.05 [560]	17.87 [454]	3/8” / 3/4”
24K	45.75 [1162]	19.69 [500]	22.05 [560]	17.87 [454]	3/8” / 3/4”
30K	45.75 [1162]	19.69 [500]	22.05 [560]	17.87 [454]	3/8” / 3/4”
36K	45.75 [1162]	19.69 [500]	22.05 [560]	17.87 [454]	3/8” / 3/4”
42K	45.75 [1162]	19.69 [500]	22.05 [560]	17.87 [454]	3/8” / 3/4”
48K	53.15 [1350]	22.05 [560]	24.53 [623]	19.53 [496]	3/8” / 7/8”
60K	53.15 [1350]	22.05 [560]	24.53 [623]	19.53 [496]	3/8” / 7/8”

Table 1

4 VERTICAL UPFLOW

1.) Vertical Upflow configuration is the factory set on all models **(Refer to Fig 1).**
2.) If a side return air opening is required, field fabricate a return air plenum with an opening large enough to supply the unit and strong enough to support the unit's weight.
3.) If return air is to be ducted, install duct flush with floor. Use fireproof resilient gaskets with a thickness of 1/8 in. to 1/4 in. (3.18 mm to 6.35 mm) , between the ducts, unit, and floor. Set the unit on the floor over the opening.

IMPORTANT NOTE:
Torque applied to drain connections should not exceed 15 ft-lbs (20.34 Nm) (Refer to Figs. 1 & 2).

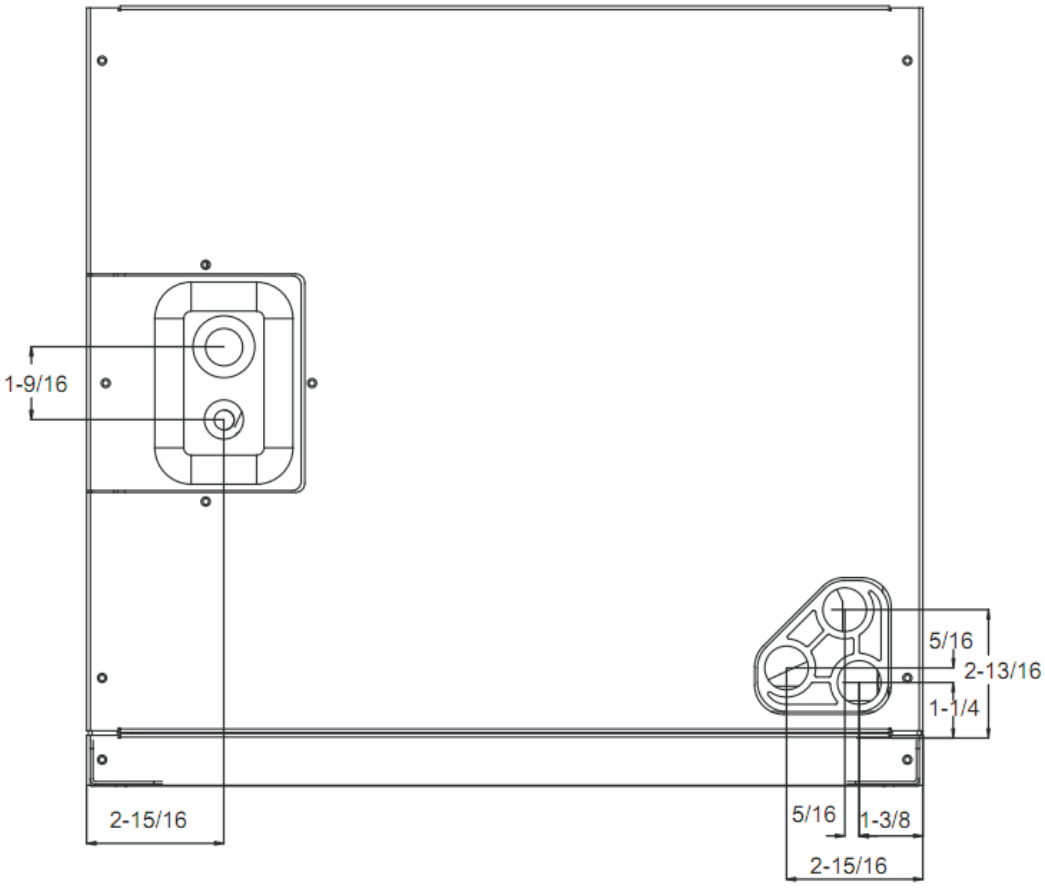


Fig. 2 Dimensions For Front Connect Coil

5 VERTICAL DOWNFLOW

Conversion to Vertical Downflow: A vertical upflow unit may be converted to vertical downflow. Remove the door and indoor coil and reinstall 180 degrees from its original position **(Refer to Fig. 3)**.

IMPORTANT: To comply with certification agencies and the National Electric Code for horizontal right application, the circuit breaker(s) on field-installed electric heater kits must be re-installed, per the procedure below, so that the breaker switch "on" position and marking is up and, "off" position and marking is down. To rotate the circuit breakers please follow the steps below.

To rotate breaker(s): Rotate one breaker set (circuit) at a time, starting with the one on the right. Loosen both lugs on the load side of the breaker (make sure that wires are identified and are reinstalled into proper breaker). Wires are bundled with wire ties, one bundle going to the right lug and one bundle going to the left lug. Use the steps on the following page to complete this process.

1.) Using a screwdriver, lift the blue plastic tab with a hole away from the breaker. Continue doing this until breaker releases from its position.

2.) With breaker held in hand, rotate breaker so that the ”on” position is up, and ”off” position is down (with unit in planned vertical mounting position). Insert right wire bundle into top right breaker lug, ensuring all strands of all the wires are inserted fully into lug, and no wire insulation is in the lug.

3.) Tighten lug as tight as possible, while holding circuit breaker. Check wires and make sure each wire is secure and none are loose. Repeat for left wire bundle in left top circuit breaker lug.

4.) Replace breaker by inserting the breaker mounting tab, opposite of the white pull tab in opening, hook mounting tab over edge in opening.

5.) Using a screwdriver, pull the blue tab with a hole away from the breaker, while setting that side of the breaker into the opening. When breaker is in place, release tab, which will lock circuit breaker into location in opening.

6.) Repeat above operation for remaining breaker(s) (if more than one is provided).

7.) Replace single point wiring jumper bar, if it is used, on line side of breaker and tighten securely.

8.) Double check wires and lugs to make sure all are secure and tight. Check to make sure unit wiring to circuit breaker load lugs match that shown on the unit wiring diagram.

CAUTION

When using the unit with the electrical heater, the switch on the front of the panel is only used for the electrical heater.

6 HORIZONTAL

Horizontal right is the default factory configuration for the units.

Conversion to Horizontal: A vertical upflow unit may be converted to horizontal left by removing indoor coil assembly and reinstalling coil in the unit as described in the steps below:

1.) Rotate unit into the downflow position, with the coil compartment on top and the blower compartment on bottom **(Refer to Fig. 3)**.

2.) Reinstall the indoor coil 180° from the original position. Ensure the retaining channel is fully engaged with the coil rail **(Refer to Fig. 3)**.

NOTE: Secondary drain pan kits are recommended when the unit is configured for the horizontal position over a finished ceiling and/or living space.

CAUTION

Horizontal units must be configured for right-hand air supply or left-hand air supply. The horizontal drain pan must be located under indoor coil. Failure to use the drain pan can result in property damage.

Conversion in Horizontal Direction: Horizontal right-hand supply can be changed to horizontal left-hand supply by removing the indoor coil, rotating it 180 degrees from the original position, and then reinstalling it.

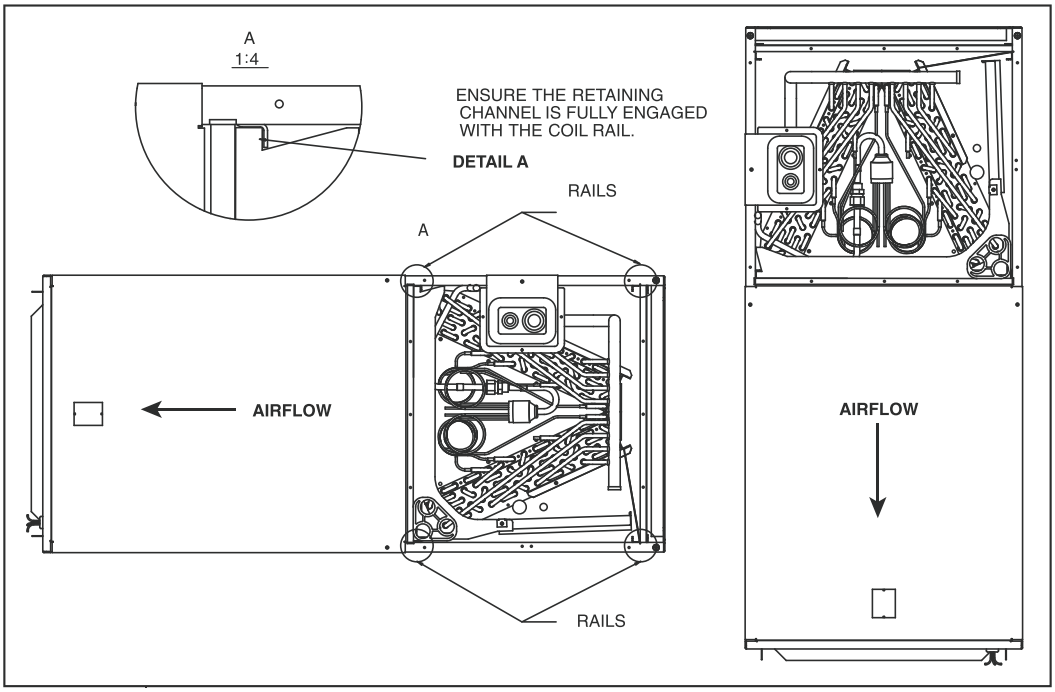


Fig. 3 Vertical Downflow & Horizontal Left Applications
(shown with lower front service panel removed)

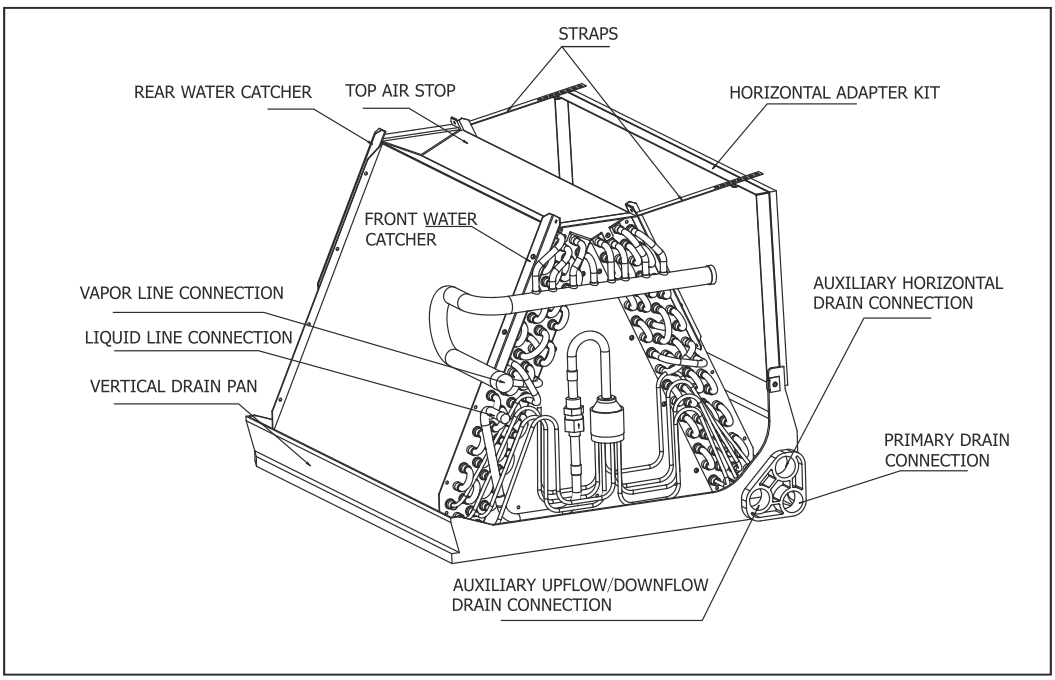


Fig. 4 Indoor Coil & Drain Pan Set-up

		14SEER AHU						
Market Model		HAH14018	HAH14024	HAH14030	HAH14036	HAH14042	HAH14048	HAH14060
Indoor external static pressure	InWC	0.10	0.10	0.15	0.15	0.15	0.20	0.20
Indoor air flow	CFM (hi/mi/lo)	723/610/500	938/804/738	1204/1060/919	1376/1235/1161	1562/1385/1208	1695/1574/1434	1695/1574/1434
Indoor external static pressure	InWC	0.18	0.18	0.23	0.23	0.23	0.28	0.28
Indoor air flow	CFM (hi/mi/lo)	1364/1229/849	1595/1366/1256	2046/1955/1562	2340/2100/1974	2480/2430/2074	2882/2676/2437	2882/2676/2437

Table 2

7 ELECTRICAL WIRING

Field wiring must comply with the National Electric Code and any applicable local ordinance.

⚠ WARNING

Disconnect all power to unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

8 POWER WIRING

It is important that proper electrical power is available for connection to the unit model being installed. Please refer to the unit nameplate, wiring diagram, and electrical data in the installation instructions.

- If required, install a branch circuit disconnect of adequate size, located within sight of, and readily accessible to the unit.

IMPORTANT: After the Electric Heat Kit is installed, units may be equipped with one, two, or three 30/60 amp. circuit breakers. These breaker(s) protect the internal wiring in the event of a short circuit and also serve as a disconnect. Circuit breakers installed within the unit do not provide overcurrent protection of the supply wiring and therefore may be sized larger than the branch circuit protection.

- Supply circuit power wiring must be 167°F (75°C) minimum copper conductors only. Refer to the Electrical Data In this section for ampacity, wire size, and circuit protector requirement. Supply circuit protective devices may be either fuses or "HACR" type circuit breakers.
- Power wiring may be connected to either the right side, left side, or top. Concentric knockouts are provided for connection of power wiring to unit.
- Power wiring is connected to the power terminal block in unit electric cabinet.

9 CONTROL WIRING

IMPORTANT: Class 2 low voltage control wiring should not be run in conduit with main power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used.

- **Low voltage control wiring should be 18 AWG and color-coded. For lengths longer than 100 ft., 16 AWG. wire should be used.**
- **See wiring diagrams attached to indoor and outdoor sections to be connected.**
- **Make sure, after installation, separation of control wiring and power wiring has been maintained.**

10 GROUNDING

⚠ WARNING

The unit must be properly and permanently grounded. Failure to do so can result In electrical shock causing personal injury or death.

- Grounding may be accomplished by grounding metal conduit when installed in accordance with electrical codes to the unit cabinet.
- Grounding may also be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.
- Ground lug(s) are located close to the wire entrance on the left side of the unit (upflow). Lug(s) may be moved to marked locations near the wire entrance on right side of the unit (upflow) If this alternate location is more convenient.
- Use of multiple supply circuits require grounding of each circuit to lug(s) provided in unit.

11 ELECTRICAL DATA

MODEL	VOLTAGE	HERTZ	HP	RPM (low/med/high)	SPEEDS	CIRCUIT AMPS	MAXIMUM CIRCUIT PROTECTOR
18K	208/230	60	1/7	340/390/440	3	0.73	5(A)
24K	208/230	60	1/6	490/530/570	3	0.80	5(A)
30K	208/230	60	1/4	530/600/670	3	1.21	5(A)
36K	208/230	60	2/7	690/730/805	3	1.53	5(A)
42K	208/230	60	3/8	610/723/839	3	1.95	5(A)
48K	208/230	60	2/5	820/870/920	3	1.92	5(A)
60K	208/230	60	2/5	820/870/920	3	2.55	15(A)

Table 3 (Applicable to 13-14 SEER)

The air distribution system has the greatest effect on airflow. The duct system is totally controlled by the contractor. For this reason, the contractor should use only industry-recognized procedures.

Heat pump systems require a specified airflow. Each ton of cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally. Duct design and construction should be carefully done. System performance can be lowered dramatically through bad planning or workmanship.

Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver treated air along the perimeter of the space. If they are too small for their intended airflow, they become noisy. If they are not located properly, they can create drafts. Return air grilles must be properly sized to carry air back to the blower. If they are too small, they also cause noise.

The installers should balance the air distribution system to ensure proper, quiet airflow to all rooms in the home. This ensures a comfortable living space. An air velocity meter or airflow hood can give a reading of system CFM.

12 REFRIGERANT CONNECTIONS

Keep the coil connections sealed until refrigerant connections are made. See the Installation Instructions for the outdoor unit for details on line sizing, tubing installation, and charging information.

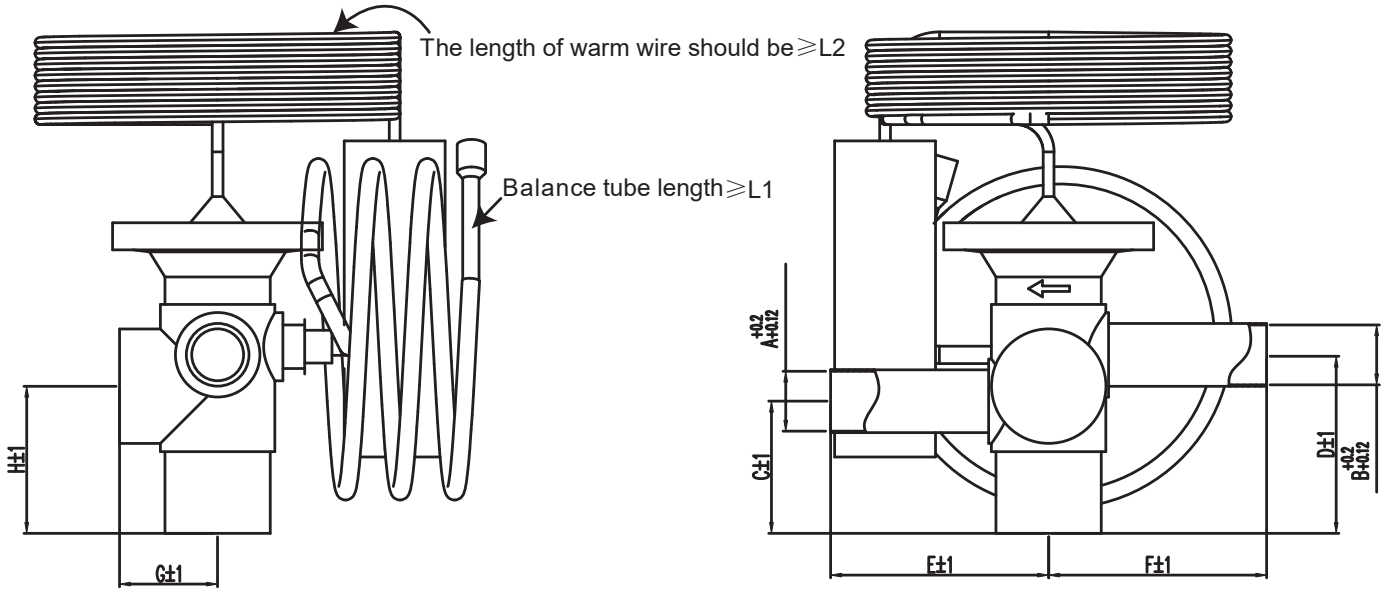
Coil is shipped with “No charge”. Evacuate the system before charging with refrigerant.

Install refrigerant tubing so that it does not block service access to the front of the unit.

Nitrogen should flow through the refrigerant lines while brazing.

Use a brazing shield to protect the cabinet’s paint, and a wet rag to protect the rubber grommet from being damaged by torch flames. After the refrigerant connections are made, seal the gap around the connections with a pressure sensitive gasket.

13 TXV EXPANSION VALVE INFORMATION



Thermal Expansion Valve Specifications

18K/24K/30K/36K Capacity Units
Emerson NCE3ZAA ODF

No.	BOM	A	B	C	D	E	F	G	H	L1	L2
1	801600400099	0.50 in (12.7 mm)	0.375 in (9.52 mm)	0.94 in (24 mm)	1.28 in (32.5 mm)	1.65 in (42 mm)	1.65 in (42 mm)	0.71 in (18 mm)	1.06 in (27 mm)	31.50 in (800 mm)	31.50 in (800 mm)

Units: inch (millimeter)

42K/48K/60K Capacity Units
Emerson NCE5ZAA ODF

No.	BOM	A	B	C	D	E	F	G	H	L1	L2
1	801600400101	0.50 in (12.7 mm)	0.375 in (9.52 mm)	0.94 in (24 mm)	1.28 in (32.5 mm)	1.65 in (42 mm)	1.65 in (42 mm)	0.71 in (18 mm)	1.06 in (27 mm)	31.50 in (800 mm)	31.50 in (800 mm)

Units: inch (millimeter)

A: Outlet inner diameter
B: Inlet diameter
C: Length from outlet center to bottom of valve body
D: Length from inlet center to bottom of valve body
E: Length from outlet center to valve body center
F: Length from inlet center to valve body center
G: Length between the center of the adjustable screw and the back of the valve body
H: Length between the center of valve body and bottom of valve body
L1: Balance tube length
L2: Warm wire length

14 CONDENSATE DRAIN TUBING

Consult Local Codes for Specific Requirements

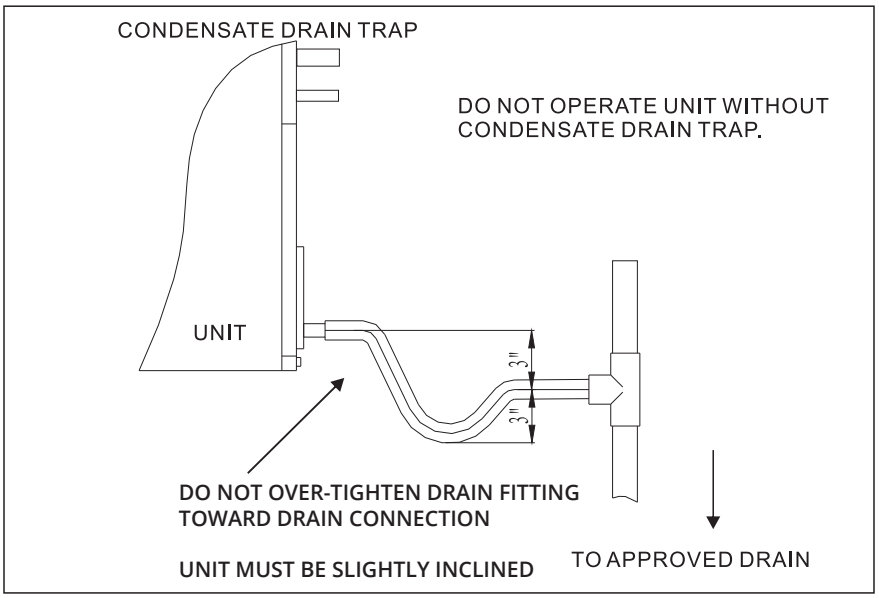


Fig. 5 Condensate Drain Trap

IMPORTANT:

- **When making drain fitting connections to the drain pan, use a thin layer of Teflon paste, silicone, or Teflon tape and on the connections before they are installed. Hand-tighten the fittings.**
- **When making drain fitting connections to the drain pan, do not over-tighten them. If the fittings are over-tightened it can cause the pipe connections to split on the drain pan.**
- **Install drain lines so they do not block service access to front of the unit. A minimum clearance of 2 ft (609.6 mm) is required for filter, coil or blower removal, and service access.**
- **Make sure unit is level or pitched slightly toward the primary drain connection so that water will drain completely from the pan (Refer to Fig. 5)**
- **Use a drain line that is properly sized to match the size of condensate drain pan.**
- **All drain lines must be pitched downward and away from the unit with a minimum of 1/8 in. per foot of line to ensure proper drainage.**
- ⊘ ***DO NOT*** **connect condensate drain line to a closed or open sewer pipe. Run condensate to an open drain or run line to a safe outdoor area.**
- **The drain line should be insulated where necessary to prevent sweating and damage from condensate forming on the outside surface of the line.**
- **Make provisions for disconnecting and cleaning of the primary drain line should it become necessary. Install a 3 in (76.2 mm) trap in the primary drain line as close to the unit as possible. Make sure that the top of the trap is below the connection to the drain pan to allow complete drainage of pan (Refer to Fig. 5).**
- **An auxiliary drain line should be run to a place where it will be noticeable if it begins to drain. The homeowner should be warned that a problem exists if water should begin running from the auxiliary drain line.**
- **Plug the unused drain connection with the plugs provided in the parts bag, using a thin layer of teflon paste, silicone, or teflon tape to form a water tight seal.**
- **Test condensate drain pan and drain line after installation is complete. Pour water into the drain pan. Ensure the amount poured is enough to fill drain trap and line. Check to make sure drain pan is draining completely, no leaks are found in the drain line fittings, and water is draining from the termination of the primary drain line.**

15 AIR FILTER (NOT FACTORY-INSTALLED)

• An external filter, or other means of filtration, is required. Units should be sized for a maximum of 300 feet/min. air velocity, or what is recommended for the filter type installed.

Filter application and placement are critical to airflow, which may affect the heating and cooling performance of the system. Reduced airflow can shorten the life of the system's major components, such as the motor, limits, elements, heat relays, evaporator coil, and/or compressor. Consequently, we recommend that the return air duct system have only one filter location. For systems with a return air filter grill or multiple filter grills, they can have a filter installed at each of the return air openings.

If adding high efficiency filters or electronic air filtration systems, it is very important that the airflow is not reduced by these. If airflow is reduced, the overall performance and efficiency of the unit will also be reduced. It is strongly recommended that a professional installation technician is contacted to ensure these filtration systems are installed correctly.

IMPORTANT:
⊘ *DO NOT* USE MORE THAN ONE FILTER IN THE RETURN AIR DUCT SYSTEM.
⊘ *DO NOT* INSTALL A FILTER FOR THE SUPPLY AIR DUCT SYSTEM.
THESE WILL REDUCE AIRFLOW AND AFFECT THE PERFORMANCE OF THE UNIT!

⚠ WARNING

⊘ *DO NOT* operate the system without filters. A portion of the dust in the air may temporarily lodge in the duct runs and at the supply registers. Any circulated dust particles could be heated and charred by contact with the air handler elements. This residue could soil ceilings, walls, drapes, carpets, and other articles in the house. Soot damage may occur with filters in place, when certain types of candles, oil lamps, or standing pilots are burned.

16 FILTER INSTALLATION DIMENSIONS

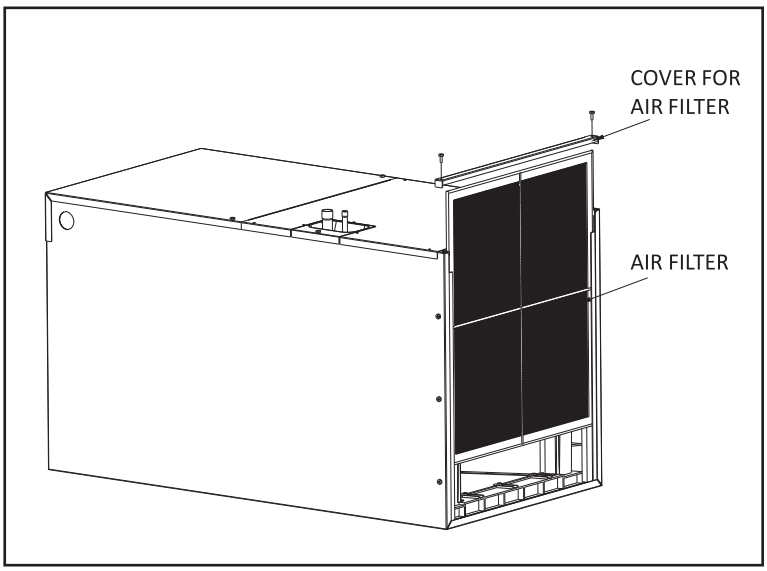


Fig. 6 External Filter Base

Air Filter Dimensional Data

MODEL	FILTER SIZE IN[mm]
18/24/30/36/42	18×20[457×508]
48/60	20×22[508×559]

Table 4

AIR FILTER REMOVAL

1.) Remove the two bolts marked A and B. Then remove the cover for air filter **(Refer to Fig. 6)**.
2.) Hold the edge of the air filter and extract it.
3.) Clean the air filter by using a vacuum cleaner or pure water **(Refer to Fig. 7)**. **NOTE: If the air filter has a heavy amount of dust accumulation, use a soft brush and mild detergent to clean it. Then, allow it to dry out in a cool place.**

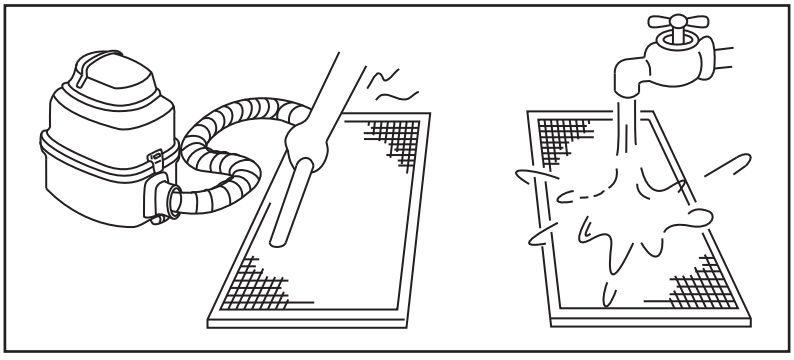
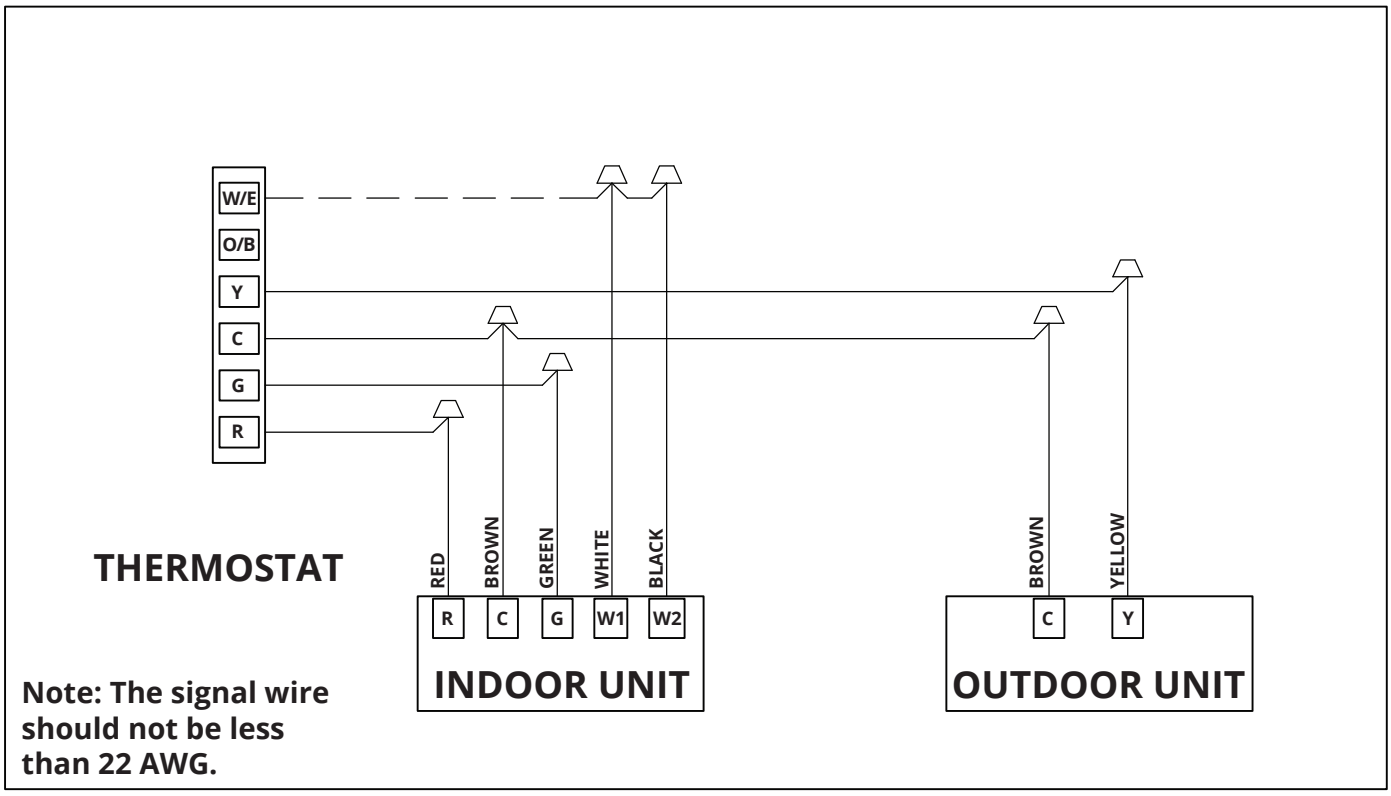


Fig. 7

17 WIRING DIAGRAMS

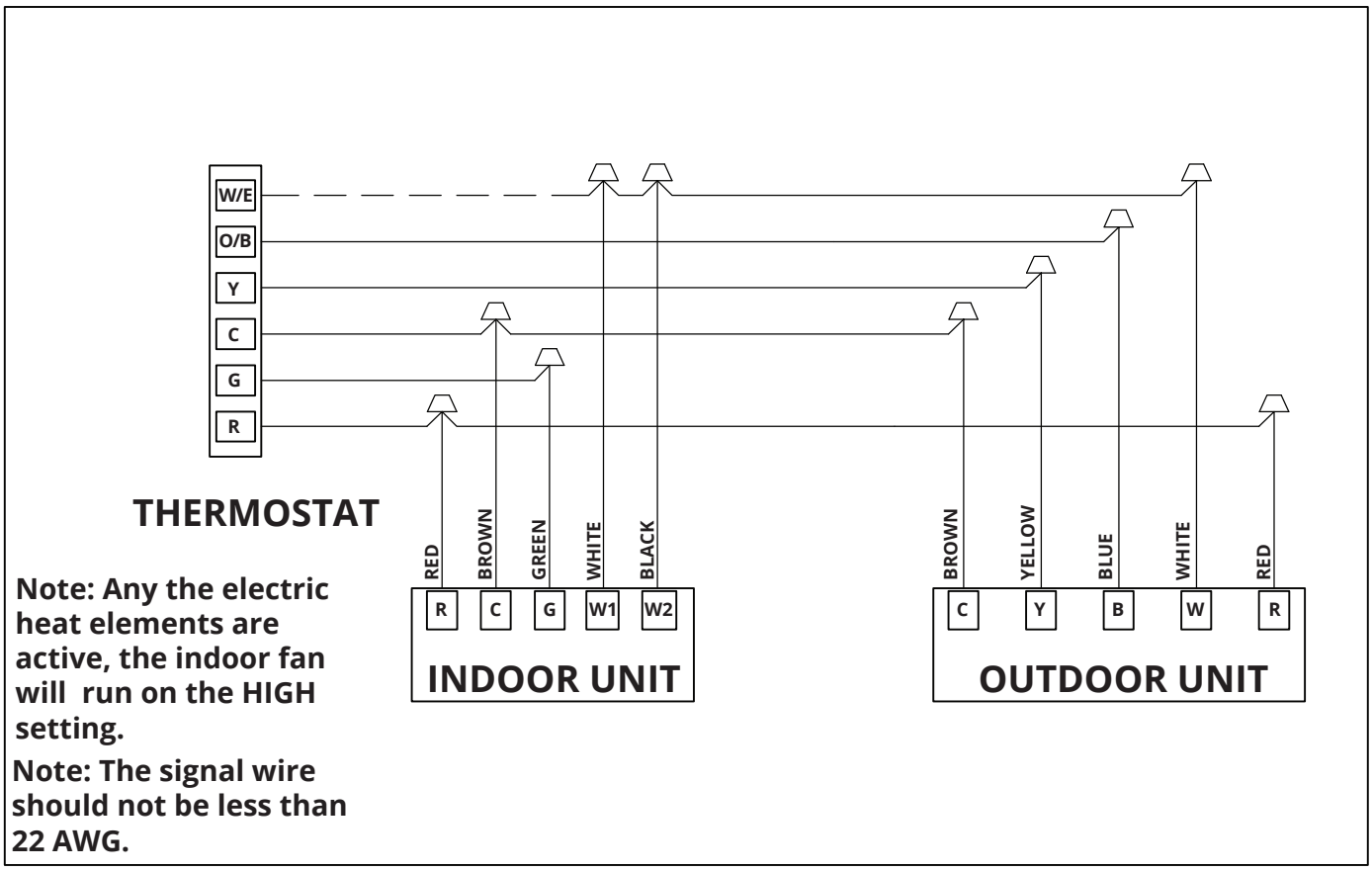
Thermostat Wiring - 6 Conductor | 18 Gauge | Low Voltage

Control Wiring for A/C Systems only



Note: The signal wire should not be less than 22 AWG.

Control Wiring for Heat Pump Systems



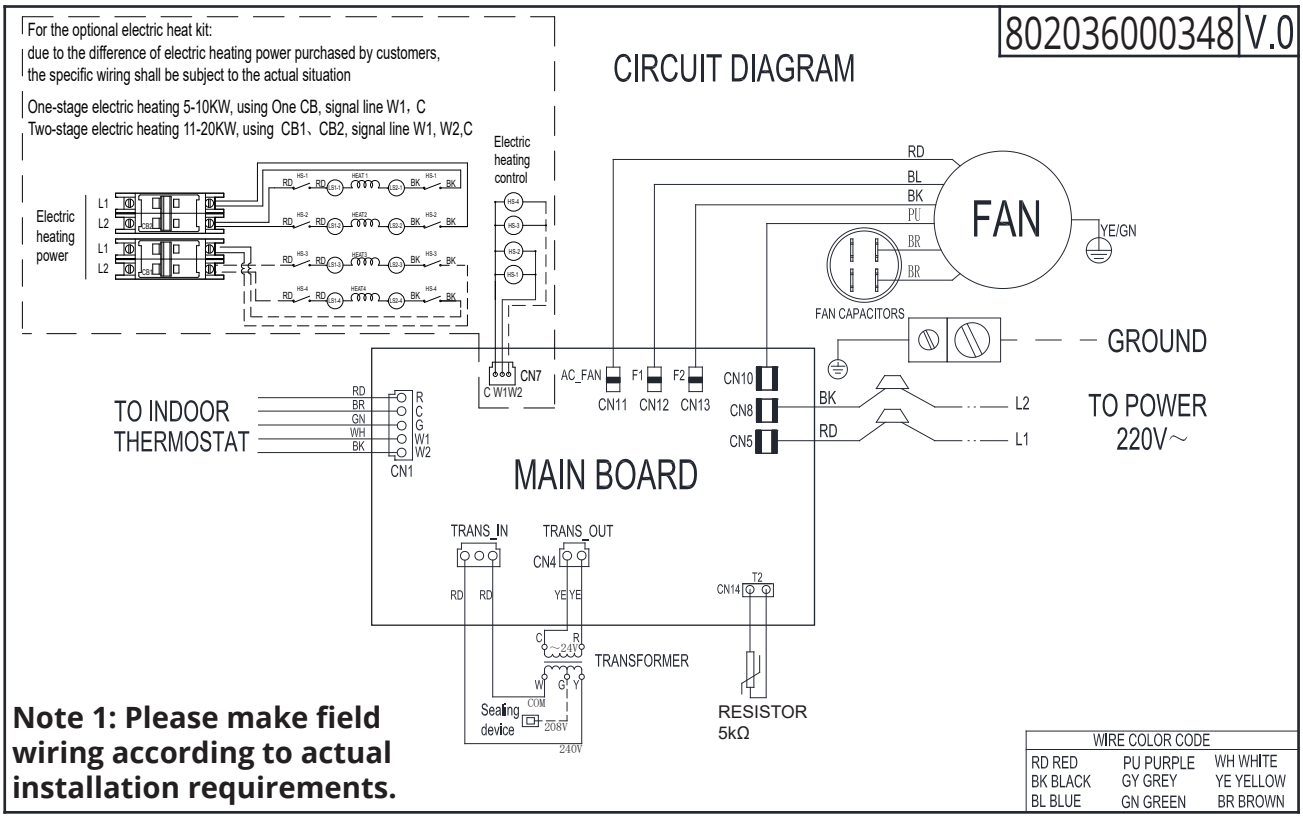
Note: Any the electric heat elements are active, the indoor fan will run on the HIGH setting.

Note: The signal wire should not be less than 22 AWG.

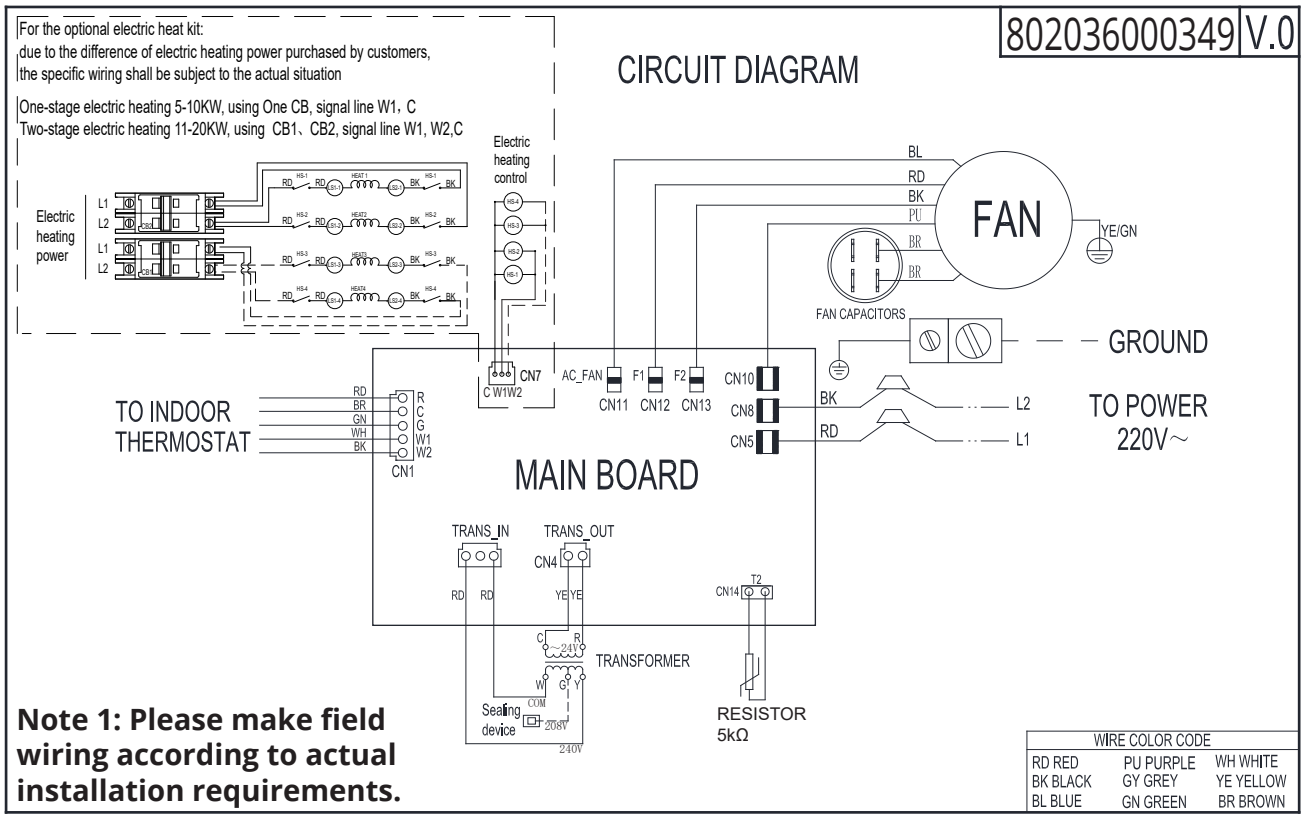
High Voltage Wiring

1.) To avoid the electrical shock, please connect the air conditioner with the ground lug. The main power plug in the air conditioner has been joined with the ground wiring, please do not change it freely.
2.) Use a dedicated circuit.
3.) ***DO NOT*** **pull the power wiring hard.**
4.) When connecting the air conditioner with the ground, observe the local codes.
5.) If necessary, use the power fuse, circuit breaker, or the corresponding scale ampere.

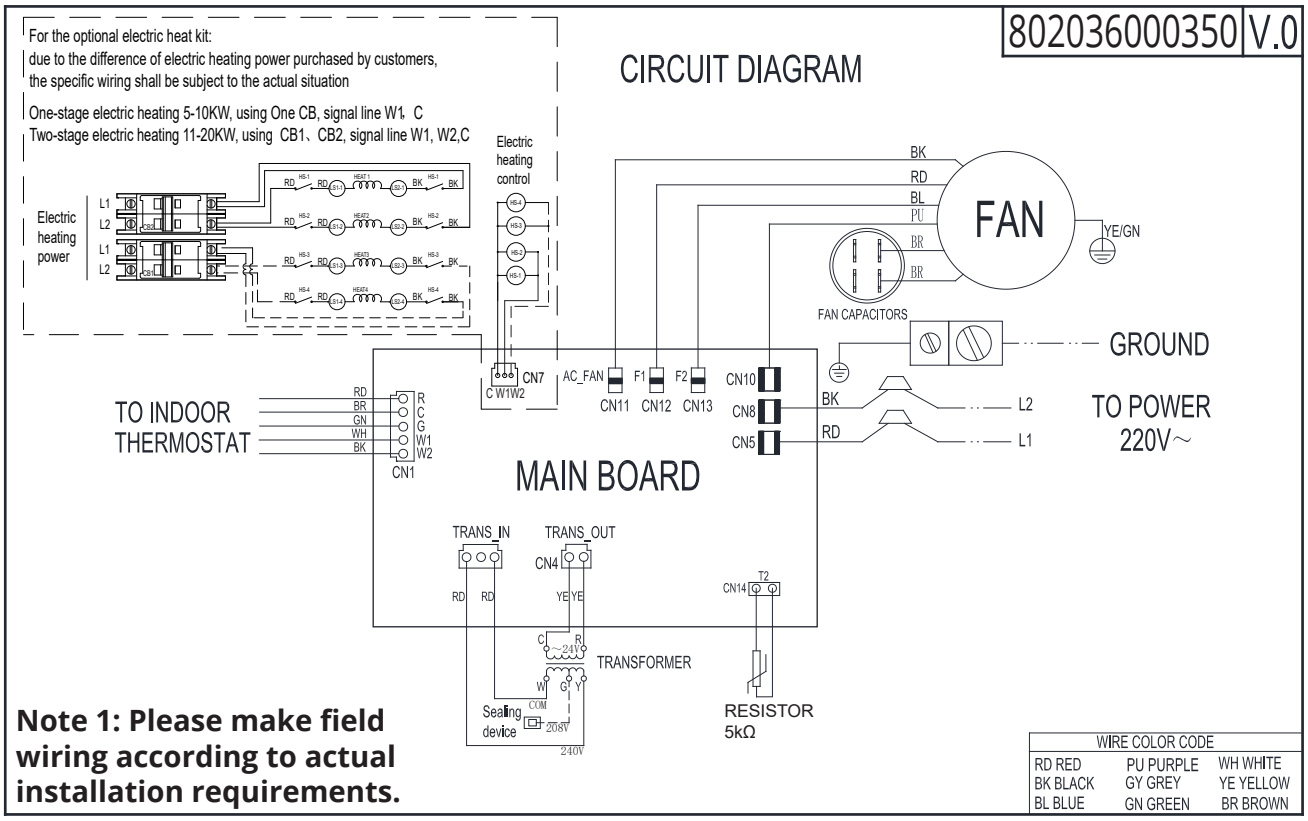
Applicable to 18k, 24k, 30k, 36k, 42k of 13-14 SEER



Applicable to 48K of 13-14 SEER

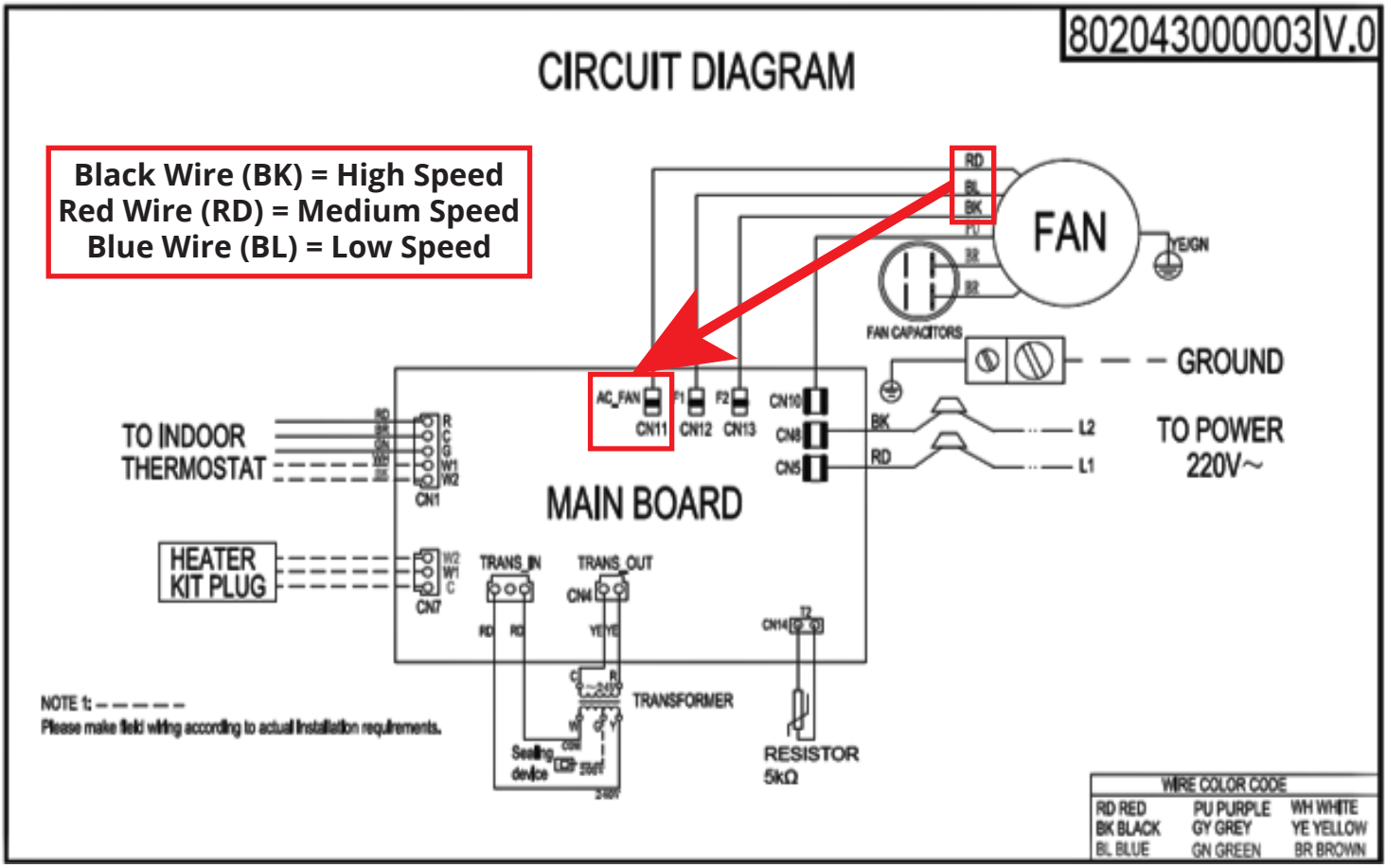


Applicable to 60K of 13-14 SEER



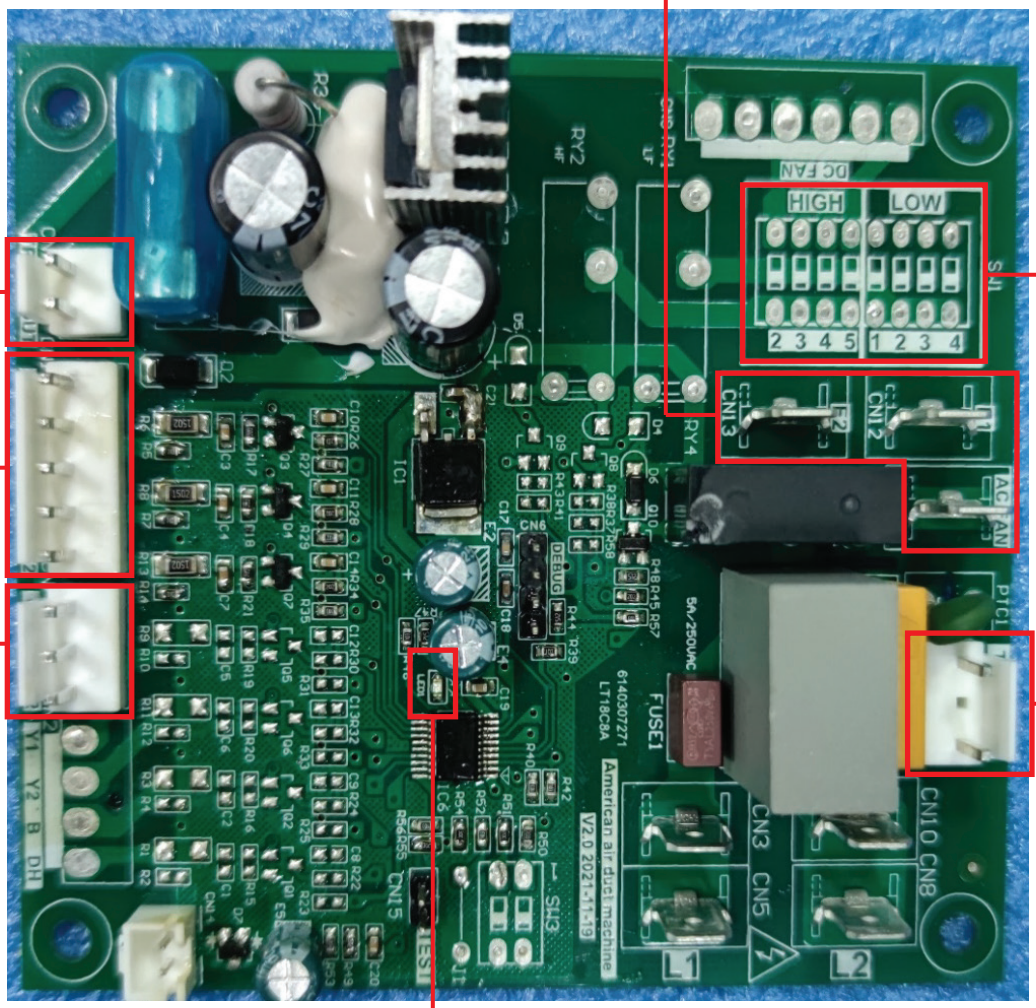
Instructions to Adjust Blower Volume Speed

To adjust blower speed, use the diagram below to wire according to the desired speed:
CN11 is the air volume output port. The air volume is adjusted by connecting one of the wires, each represents a different motor speed, to the port CN11. Regardless of the speed selected, only one wire should be connected to terminal CN11. Terminals CN12 & CN13 should be used as parking terminals for the two unused wires to be connected to. **NOTE: The circuit board used in the 18K, 24K, 30K, 36K,& 42K capacity units is shown below as an example, but the same applies for the circuit boards used in the 48K and 60K units.**



Air Handler Main Board Diagram

Fan Motor Terminals
• AC Fan Port: Used to Adjust Fan Speed/Output
• CN12 (F1) & CN13 (F2) Ports are Reserved



Transformer Output Terminal/24V

Thermostat Terminal

Electric Heat Kit Connection Terminal

Reserved fan gear DIP Switches for 18 SEER

Transformer Input Terminal

LED Display Lamp

18 ELECTRIC WIRING GAUGE

NOTE: The cross-section areas of wires or lines should not be less than the corresponding line measurements listed in the tables below; Additionally, if the power wires from the unit are quite long, please select wiring that has a larger cross-sectional area in order to help guarantee a normal supply of power over the distance of the wiring.

Table 5

Model (cooling only type)			18K	24K	30K	36K	42K	48K	60K
Line Gauge	Indoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	16	16	16	16	16	16	16
	Outdoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	14	14	12	12	10	10	10

Table 6

Model (cooling & heating type)			18K	24K	30K	36K	42K	48K	60K
Line Gauge	Indoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	16	16	16	16	16	16	16
	Outdoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	14	14	12	12	10	10	10

19 ELECTRIC HEAT KIT INSTALLATION (OPTIONAL)

CAUTION

1.) Ensure that all power supply is disconnected prior to installing the heat kit.
2.) A means of strain relief and conductor protection must be provided at the supply wire entrance into cabinet.
3.) Only use copper conductors.
4.) Installation must follow National Electric Code (NEC) and other applicable codes.
5.) If this appliance is installed in an enclosed area such as a garage or utility room with any carbon monoxide producing appliance, ensure the area is properly ventilated to the outside.
6.) A filter dryer is recommended for installation based on nominals tonnage. One should be included and zip-tied to the condenser.
7.) Use 0.96 as approximate SCFM correction factor for wet coil.

Installation Instructions:

1.) Refer to the Table below for the appropriate, optional heat kit.
2.) Check for any physical damage; do not install a damaged heat kit.
3.) Remove the upper side panel from air handler.
4.) Remove the air duct sealing plate from the air handler **(See Fig. 8)**.
5.) Knock out the hole on the front panel.
6.) Install the heating bracket by sliding it into the air duct hole that you removed the plate from in the previous steps. Align the 4 prongs at the end of the heat kit with the 4 corresponding holes on the opposite side of the air duct hole. Install screws to secure the heat kit to the air handler **(See Fig. 9)**.
7.) Install the electrical board bracket and screw it into place. Then, position, install, and fasten the electrical board on the bracket which also screws into place **(See Fig. 10)**.

NOTE: When installing the electrical boards, make sure the indoor unit power cable does not snag or come in contact with any of the sharp edges of the sheet metal.

8.) Insert the heat kit wiring connector into the correct terminal on the air handler main board **(See Fig. 11)**.
9.) Reinstall the upper side panel to the air handler and check operation.

NOTE: For more detailed information and illustrations on how to properly install the electric heat kit, please refer to the instruction manual provided with the heat kit.

Heat Kit Compatibility Chart

Kit #.	Description	Unit Capacity Compatibility
PHK05H	5kW heat strip	18K/24K/30K/36K/42K/48K/60K
PHK07H	7.5kW heat strip	18K/24K/30K/36K/42K/48K/60K
PHK10H	10kW heat strip	24K/30K/36K/42K/48K/60K
PHK15H	15kW heat strip	36K/42K/48K/60K
PHK20H	20kW heat strip	48K/60K

IMPORTANT

You must use a compatible heat kit listed in the above chart. Using an incorrect size, could cause the unit to overheat and/or cause equipment damage.

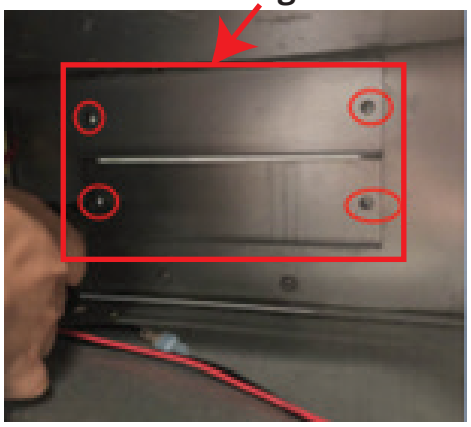


Fig. 8

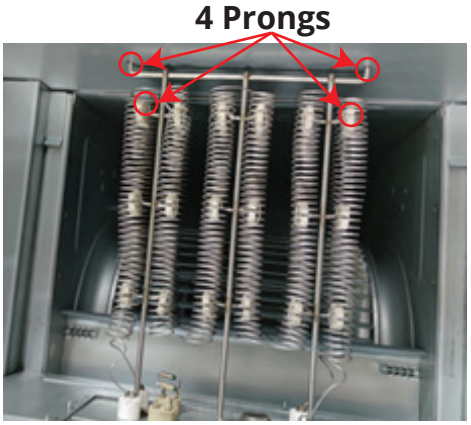
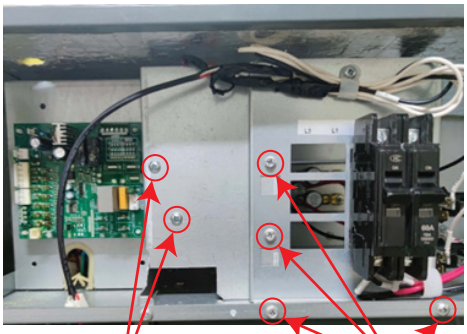
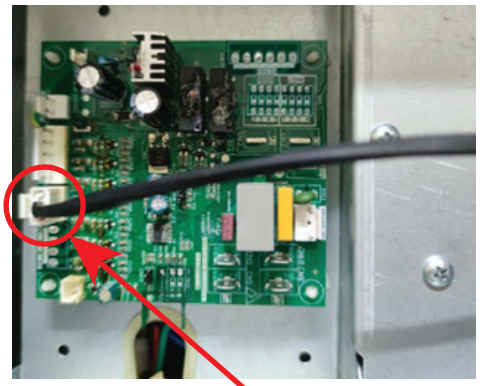


Fig. 9


Fig. 10

Electrical Board Bracket Mounting Screws

Electrical Board Mounting Screws

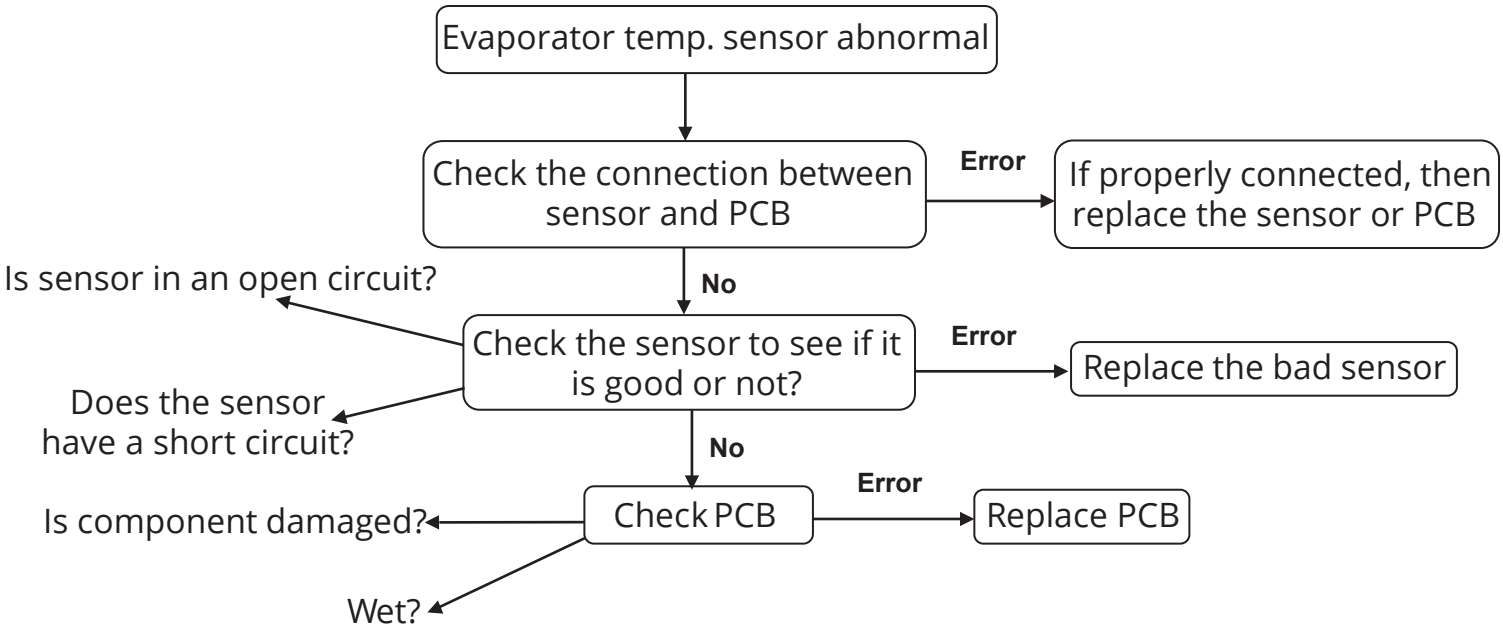

Fig. 11

Plug electric heat kit connector into terminal on main board

20 TROUBLESHOOTING INDOOR UNIT

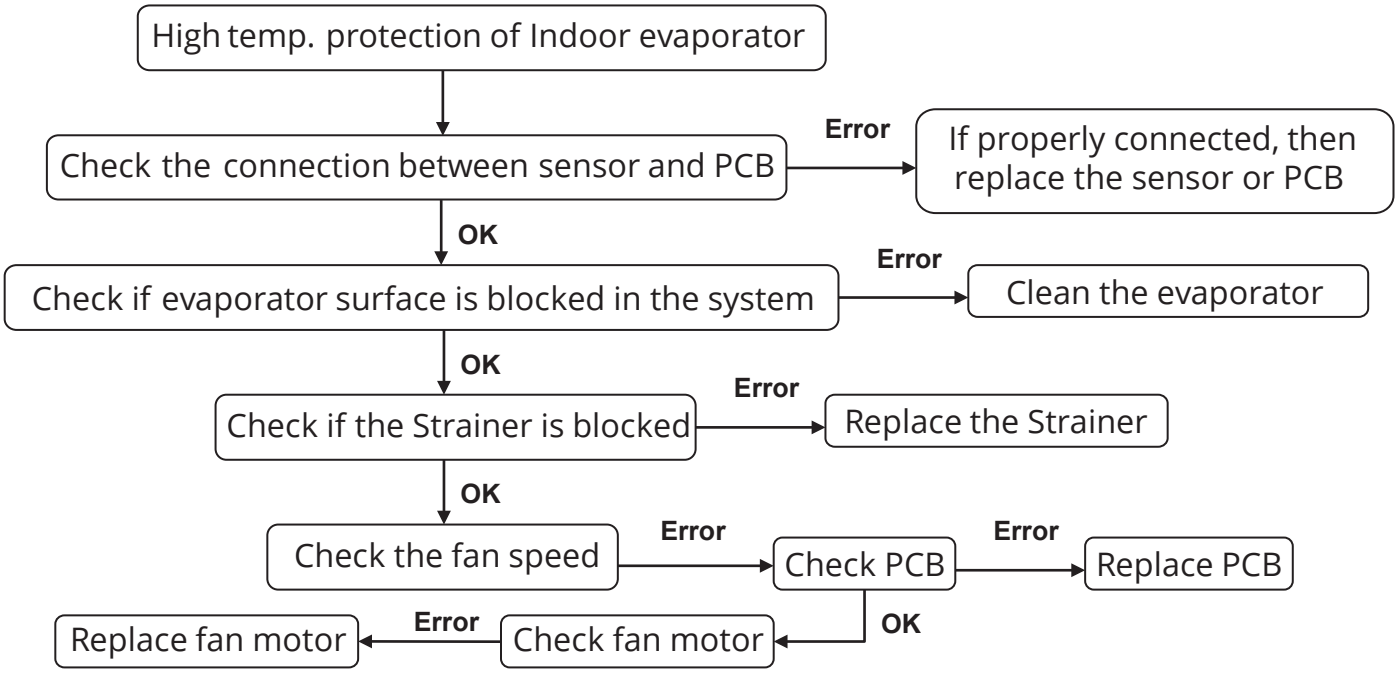
Display mode	Status description
Green light always on	No system alarm and error, normal standby
Red light always on	Evaporator temperature sensor (T2) failure
Green light always on & yellow light flashing	Evaporator high and low temperature protection
Green light flashing	System is in normal operating status

T2 Evaporator temperature sensor failure

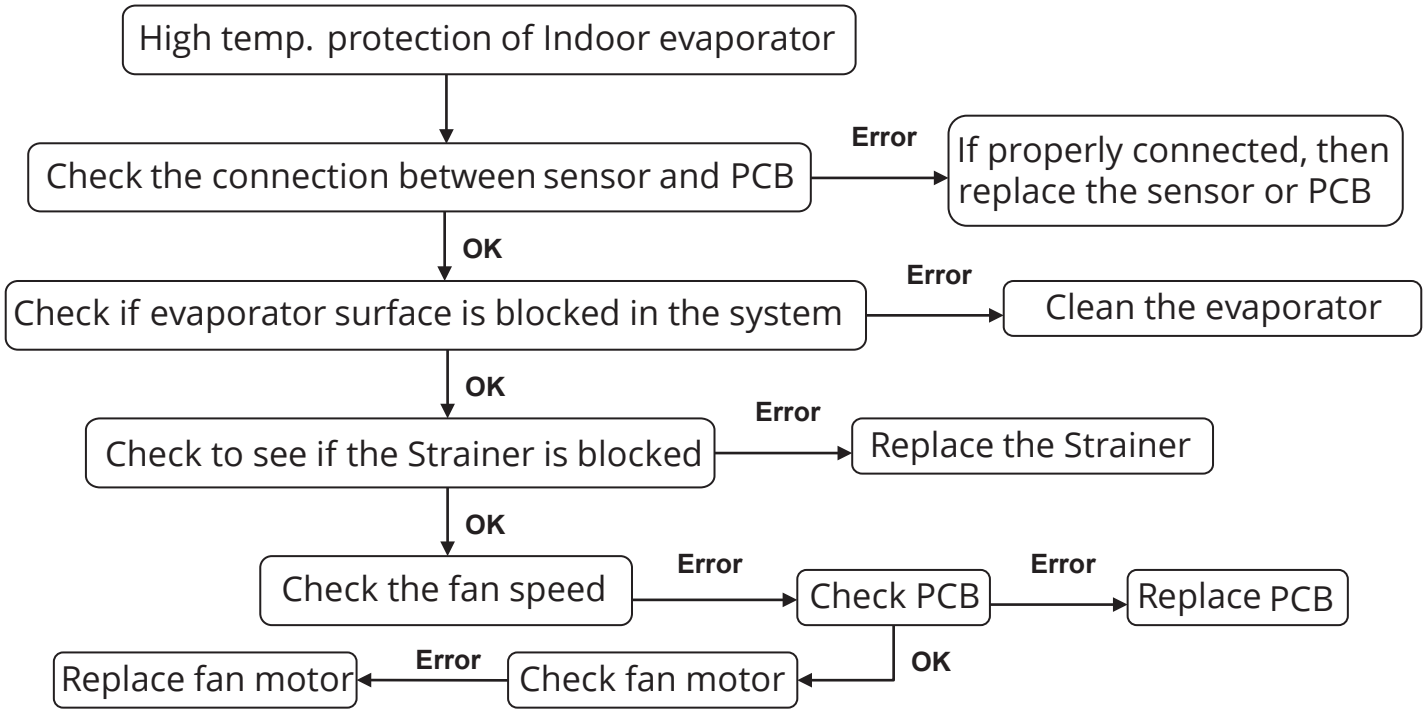


Temperature °Fahrenheit (°Celsius)	Resistor Value (Kilo-ohms KΩ)
77°F (25°C)	5.0 KΩ
95°F (35°C)	3.5 KΩ

Evaporator high temperature protection (for heating mode)



Evaporator low temperature protection (for cooling mode)





MRCOOL®

COMFORT MADE SIMPLE

PRODIRECT™ Series

The design and specifications of this product and/or manual are subject to change without prior notice.
Visit www.mrcool.com for the latest documentation.