



# AIR HANDLER INSTALLATION INSTRUCTIONS

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## IMPORTANT SAFETY INSTRUCTIONS

### ATTENTION INSTALLATION PERSONNEL

As a professional installer, you have an obligation to know the product better than the customer. This includes all safety precautions and related items. Prior to actual installation, thoroughly familiarize yourself with this instruction manual. Pay special attention to all safety warnings. Often during installation or repair, it is possible to place yourself in a position which is more hazardous than when the unit is in operations.

Remember, it is your responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use. Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this installation manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.





Recognize this symbol as a safety precaution.

### Recognize Safety Symbols, Words and Labels

The following symbols and labels are used throughout this manual to indicate immediate or potential hazards. It is the owner's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of serious personal injury or death, property damage and/or product damage.

## **WARNING**

Hazards or unsafe practices could result in property damage, product damage, severe personal injury or death.

## **CAUTION**

Hazards or unsafe practices may result in property damage, product damage, personal injury or death.

## **WARNING**

**HIGH VOLTAGE!**

Disconnect ALL power before servicing.

Multiple power sources may be present.

Failure to do so may cause property damage, personal injury or death.



## **WARNING**

Installation and repair of this unit should be performed **ONLY** by individuals meeting the requirements of an "Entry Level Technician," at a minimum, as specified by the Air-Conditioning, Heating and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury or death.



## **WARNING**

This product is factory-shipped for use with 208/240/1/60 electrical power supply. **DO NOT** reconfigure this air handler to operate with any other power supply.

## **WARNING**

Do not connect to or use any device that is not design-certified for use with this unit. Serious property damage, personal injury, reduced unit performance and/or hazardous conditions may result from the use of such non-approved devices.

## **WARNING**

To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this unit.



## **WARNING**

To avoid property damage, personal injury or death due to electrical shock, this unit **MUST** have an uninterrupted, unbroken electrical ground. The electrical ground circuit may consist of an appropriately sized electrical wire connecting the ground lug in the unit control box to the building electrical service panel.

Other methods of grounding are permitted if performed in accordance with the National Electric Code (NEC) /American National Standards Institute (ANSI) /National Fire Protection Association (NFPA) 70 and local/state codes. In Canada, electrical grounding is to be in accordance with the Canadian Electric Code (CSA) C22.1.



## **CAUTION**

When installing or servicing this equipment, safety clothing, including hand and eye protection, is strongly recommended. If installing in an area that has special safety requirements (hard hats, etc.), observe these requirements.



## **DANGER**



### CARBON MONOXIDE POISONING HAZARD

Special Warning for Installation of Furnace or Air Handling Units in Enclosed Areas such as Garages, Utility Rooms or Parking Areas.

Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate, direct outside ventilation.

This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emissions can be (re)circulated throughout the structure if the furnace or air handler is operating in any mode.

CO can cause serious illness including permanent brain damage or death.

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## IMPORTANT NOTE TO THE OWNER REGARDING PRODUCT WARRANTY

Your warranty certificate is supplied as a separate document with the unit installed by your contractor. Read the limited warranty certificate carefully to determine what is and is not covered. Keep the warranty certificate in a safe place. If you are unable to locate the warranty certificate, please contact your installing contractor, or contact customer service at 1-866-944-7575 to obtain a copy.

To receive the 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

Full warranty details and instructions for models currently in production are available at [www.whirlpoolhvac.com](http://www.whirlpoolhvac.com). If your model is not currently in production or does not appear on the website, please contact your installing contractor or contact customer service at 1-866-944-7575 to obtain a copy of your warranty certificate.

To register your unit, go to [www.whirlpoolhvac.com](http://www.whirlpoolhvac.com). Click on the manufacturer's Comfort Commitment™ Warranty link located at the bottom center of the home page. Next, click on the Click Here to Register Your Product link located at the top center of the page, and complete the forms in the manner indicated.

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## SHIPPING INSPECTION

Always keep the unit upright; laying the unit on its side or top may cause equipment damage. Shipping damage, and subsequent investigation, is the responsibility of the carrier. Verify the model number, specifications, electrical characteristics and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

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## CODES AND REGULATIONS

This product is designed and manufactured to comply with national codes. Installation in accordance with such codes and/or prevailing local codes/regulations is the responsibility of the installer. The manufacturer assumes no responsibility for equipment installed in violation of any codes or regulations.

The United States Environmental Protection Agency (EPA) has issued various regulations regarding the introduction and disposal of refrigerants. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. Should you have any questions, please contact the local office of the EPA.

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## REPLACEMENT PARTS

When reporting shortages or damages, or ordering repair parts, give the complete product model and serial numbers as stamped on the unit's nameplate. Replacement parts for this product are available through your contractor or local distributor. For the location of your nearest distributor, consult the white business pages, the yellow page section of the local telephone book or contact:

Tradewinds Distributing Company, LLC  
14610 Breakers Drive  
Jacksonville, Florida 32258  
1-866-944-7575

If you are replacing an air handler, the system must be manufacturer-approved and Air-Conditioning, Heating, and Refrigeration Institute (AHRI) matched.

**NOTE:** Installation of unmatched systems is strongly discouraged.

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## PREINSTALLATION INSTRUCTIONS

Carefully read all instructions for the installation prior to installing the product. Make sure each step or procedure is understood and any special considerations are taken into account before starting the installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally. Make sure everything needed to install the product is on hand before starting.

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## LOCATION

**NOTE:** Air handlers are designed for indoor installation only.

Give special consideration to minimizing the length of refrigerant tubing when installing air handlers. Refer to Remote Cooling/Heat Pump Service Manual or TP-107 Long Line Set Application R-410A for guidelines. The unit clearance from a combustible surface may be 0". However, service clearance is to take precedence. In addition, allow a minimum of 24" (61 cm) in front of the unit for service clearance.

Do not install the air handler in a location that violates the instructions provided with the condenser.

If the unit is located in an area with high ambient temperature and/or high humidity, the air handler may be subject to nuisance sweating of the casing. On these installations, a wrap of 2" (5.1 cm) fiberglass insulation with a vapor barrier is recommended.

Consult all appropriate regulatory codes prior to determining the final clearances. When installing this unit in an area that may become wet, elevate the unit with a sturdy, non-porous material. In installations that may lead to physical damage (for example, a garage) it is advised to install a protective barrier to prevent such damage.

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## DUCTWORK

This air handler is designed for a complete supply and return ductwork system.

### CAUTION

**Do not operate this product without all the ductwork attached.**

To ensure correct system performance, the ductwork is to be sized to accommodate 375 to 425 CFM per ton of cooling with the static pressure not to exceed 0.5" W.C. Inadequate ductwork that restricts airflow can result in improper performance and compressor or heater failure. Ductwork is to be constructed in a manner that limits restrictions and maintains suitable air velocity. Ductwork is to be sealed to the unit in a manner that will prevent leakage.

## Return Ductwork

**NOTE:** Do not terminate the return ductwork in an area that can introduce toxic or objectionable fumes/odors into the ductwork. The return ductwork is to be introduced into the air handler bottom (upflow configuration).

## Return Air Filters

Each installation must include a return air filter. This filtering may be performed at the air handler or externally such as a return air filter grille. Air handlers mounted in the downflow orientation, including "B" series, require external filtering. A washable filter is available as an accessory. To ensure optimum performance, frequent filter cleaning is advised. Refer to the following chart for the appropriate filter.

WAHMS	WAHME	Filter Number	Quantity Required
1824	N/A	FIL 18-32	1
3030	1830	FIL 36-42	1
1931			
3636			
3642	3137	FIL 48-61	1
3743	4260		
4860			

## ELECTRIC HEAT

Refer to this manual in combination with the instructions provided with the heat kit for the correct installation procedure.

The air handlers listed in this manual do not have factory-installed electric heat. Electric heat is available as an accessory. If installing this option, the only heat kits that can be used are the HKR series.

**NOTE:** The EHK, ECB, EDB and EDK kits are not approved for use with these air handlers.

The heating mode temperature rise is dependent upon the system airflow, the supply voltage and the heat kit size (kW) selected. Use the Temperature Rise tables to determine the temperature rise °F (°C).

**Temperature Rise Table °F—230/1/60 Supply Voltage**

CFM	Heat Kit Nominal kW—°F							
	3	5	6	8	10	15	20	21
600	18	28	35	41				
800	13	21	26	31	42			
1,000	11	17	21	25	34	50		
1,200	9	14	18	21	28	42	56	62
1,400	8	12	15	18	24	36	48	53
1,600	7	10	13	15	21	31	42	46
1,800	6	9	12	14	19	28	37	41
2,000	5	8	11	12	17	25	34	37

**Temperature Rise Table °F—220/1/60 Supply Voltage**

CFM	Heat Kit Nominal kW—°F							
	3	3	5	6	8	10	15	20
600	17	27	34	39				
800	13	20	25	30	40			
1,000	10	16	20	24	32	48		
1,200	8	13	17	20	27	40	53	59
1,400	7	11	14	17	23	34	46	51
1,600	6	10	13	15	20	30	40	44
1,800	6	9	11	13	18	27	36	39
2,000	5	8	10	12	16	24	32	35

**Temperature Rise Table °F—208/1/60 Supply Voltage**

CFM	Heat Kit Nominal kW—°F							
	3	5	6	8	10	15	20	21
600	16	25	32	37				
800	12	19	24	30	38			
1,000	10	15	19	22	30	46		
1,200	8	13	16	19	25	38	51	56
1,400	7	11	14	16	22	33	43	48
1,600	6	9	12	14	19	28	38	42
1,800	5	8	11	12	17	25	34	37
2,000	5	8	10	11	15	23	30	34

**NOTE:** For installations not indicated in the Temperature Rise tables, the following formula is to be used:

$$TR = (kW \times 3412) \times (\text{Voltage Correction}) \times 1.08 / CFM$$

Where: TR = Temperature Rise

kW = Heater Kit Actual kW

3412 = Btu per kW

Voltage Correction = 96 (230 Supply Volts)

= 92 (220 Supply Volts)

= 87 (208 Supply Volts)

1.08 = Constant

CFM = Measured Airflow

**NOTE:** The Temperature Rise tables can also be used to determine the air handler airflow delivery. When using these tables for this purpose, set the room thermostat to maximum heat and allow the system to reach steady state conditions. Insert 2 thermometers, one in the return air and one in the supply air. The temperature rise is the supply air temperature minus the room air temperature.

Use HKR specification sheets to determine the HKR available for a given air handler.

## HKR Installation

Follow instructions listed in the Installation and Operating Instructions shipped with the heat kit.

# ELECTRICAL SUPPLY WIRE AND MOP



## WARNING

To avoid the risk of fire or equipment damage, use copper conductors.



## WARNING

### HIGH VOLTAGE!

Disconnect ALL power before servicing.

Multiple power sources may be present.

Failure to do so may cause property damage, personal injury or death.



## WARNING

To avoid property damage, personal injury or death due to electrical shock, this unit **MUST** have an **uninterrupted, unbroken electrical ground**. The electrical ground circuit may consist of an appropriately sized electrical wire connecting the ground lug in the unit control box to the building electrical service panel.

Other methods of grounding are permitted if performed in accordance with the National Electric Code (NEC) /American National Standards Institute (ANSI) /National Fire Protection Association (NFPA) 70 and local/state codes. In Canada, electrical grounding is to be in accordance with the Canadian Electric Code (CSA) C22.1.

## Building Electrical Service Inspection

This unit is designed for single-phase electrical supply.

**NOTE:** Do not operate on a 3-phase power supply.

Measure the power supply to the unit. The supply voltage must be in agreement with the unit nameplate power requirements and within the range shown in the following table.

Nominal Input	Minimum Voltage	Maximum Voltage
208/240	187	253

## Wire Sizing

Wire size is important to the operation of your equipment. Use the following check list when selecting the appropriate wire size for your unit.

- Wire size must carry the Minimum Circuit Ampacity (MCA).
- Refer to the NEC (USA) or CSA (Canada) for wire sizing. The unit MCA for the air handler and the optional electric heat kit can be found on the unit Series and Rating Plate.
- Wire size allows for no more than a 2% voltage drop from the building breaker/fuse panel to the unit.
- Refer to the latest edition of the National Electric Code, or in Canada, the Canadian Electric Code when determining the correct wire size. The following table shows the current carrying capabilities for copper conductors rated at 75°C with a 2% voltage drop. Use the following table to determine the voltage drop per foot of various conductors.

## Maximum Allowable Length in Feet to Limit Voltage Drop to 2%\*

Wire Size (AWG)	Minimum Circuit Ampacity (MCA)							
	10	15	20	25	30	35	40	45
14	75	50	37	NR	NR	NR	NR	NR
12	118	79	59	47	NR	NR	NR	NR
10	188	125	95	75	63	54	NR	NR
8	301	201	150	120	100	86	75	68
6	471	314	235	188	157	134	118	110

\*Based on NEC 1996.

## Maximum Overcurrent Protection (MOP)

Every installation must include an NEC (USA) or CEC (Canada) approved overcurrent protection device. Also, check with local or state codes for any special regional requirements.

Protection can be in the form of fusing or HACR-style circuit breakers. The Series and Rating Plate can be used as a guide for selecting the MAXIMUM overcurrent device.

**NOTE:** Fuses or circuit breakers are to be sized larger than the equipment MCA but not to exceed the MOP.

## Electrical Connections—Supply Voltage

**IMPORTANT:** Use copper conductors only.

A knockout is provided on the air handler top panel or side to allow for the entry of the supply voltage conductors. If the knockouts on the cabinet sides are used for electrical conduit, an adapter ring must be used in order to meet UL1995 safety requirements. An NEC or CEC approved strain relief is to be used at this entry point. The wire is to be sized in accordance with the “Electrical Wire and MOP” section of this manual. Some areas require the supply wire to be enclosed in conduit. Consult your local codes.

## Air Handler Only—Nonheat Kit Models

The building supply connects to the stripped black and red wires contained in the air handler electrical compartment cavity. A ground screw is also contained in this area. Attach the supply wires to the air handler conductors as shown in the unit wiring diagram using appropriately sized solderless connectors or other NEC or CEC approved means.

## Air Handler With Noncircuit Breaker Heat Kits

A terminal block is provided with the HKR kit to attach the power supply and air handler connections. Follow the HKR Installation Manual and wiring diagram for complete wiring details.

## Air Handler With Heat Kits Containing a Circuit Breaker

HKR models with a “C” suffix contain a circuit breaker(s). The air handler has a plastic cover on the access panel that will require either one or both sections to be removed to allow the heat kit circuit breaker(s) to be installed. See the HKR Installation Instructions for further details. The air handler wires and supply wires are installed directly onto the HKR circuit breaker(s) as shown in the HKR Installation Manual and wiring diagram.

## Low Voltage Connections

Several combinations of low voltage schemes are available, depending on the presence of a heat kit and whether the heat kit is single-stage or multistaging. The low voltage connections are determined by whether the outdoor unit is a condenser or heat pump. The 24V-control voltage connects the air handler to the room thermostat and condenser. Low voltage wiring is to be copper conductors. A minimum of 18AWG must be used for installations up to 50' (15.2 m) and 16AWG for installations over 50' (15.2 m). Low voltage wiring can be connected through the top of the cabinet or either side. See the "Thermostat Wiring" section of this manual for typical low voltage wiring connections.

## REFRIGERANT LINES

### WARNING

This product is factory-shipped under pressure. Follow these instructions to prevent injury.

### CAUTION

To protect the unit when welding close to the painted surfaces, the use of a quenching cloth is strongly advised to prevent scorching or marring of the equipment finish. Solder with a minimum of 5% silver is recommended.

## Tube Preparation

All cut ends are to be round, burr free and clean. Failure to follow this practice increases the chances for refrigerant leaks. The suction line is spun closed and requires pipe cutters to remove the closed end.

### Post Brazing

Quench all welded joints with water or a wet rag.

### Piping Size

For the correct tubing size, follow the specification for the condenser/heat pump.

### CAUTION

Applying too much heat to any tube can melt the tube. Torch heat required to braze tubes of various sizes must be proportional to the size of the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed.

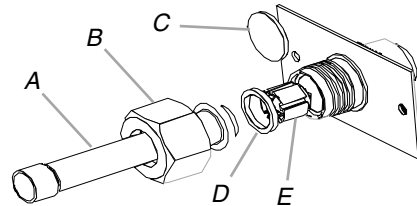
## Special Instructions

This coil comes equipped with a check style flowrator for refrigerant management. For most installations with matching applications, no change to the flowrator piston is required. However, in mix-matched applications, a flowrator piston change may be required. See the piston kit chart or consult your local distributor for details regarding mix-matched piston sizing. If the mix-match application requires a different piston size, change the piston in the flowrator on the indoor coil before installing the coil and follow the procedure shown below.

**IMPORTANT:** Torch heat required to braze tubes of various sizes is proportional to the size of the tube. Tubes of smaller size require less heat to bring the tube to brazing temperature before adding brazing alloy. Applying too much heat to any tube can melt the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed.

**NOTE:** The use of a heat shield when brazing is recommended to avoid burning the serial plate or the finish on the unit. Heat trap or wet rags should be used to protect heat sensitive components such as service valves and TXV valves.

1. Loosen the  $\frac{1}{16}$ " nut one turn only to allow high pressure tracer gas to escape. No gas indicates a possible leak.
2. After the gas has escaped, remove the nut and discard the black or brass cap.
3. Remove the check piston to verify it is correct and then replace the piston. See the piston kit chart in the instructions.
4. Use a tube cutter to remove the spin closure on the suction line.
5. Remove the tailpiece clamped to the exterior and slide the  $\frac{1}{16}$ " nut into place.
6. Braze the tailpiece to the line set liquid tube.



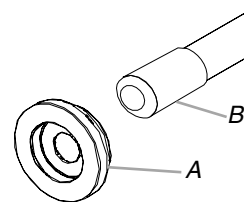
A. Tailpiece  
B.  $\frac{1}{16}$ " nut  
C. Plastic or brass cap  
D. White Teflon® seal  
E. Piston

7. Insert the suction line into the connection.
8. Slide the insulation and the rubber grommet at least 18" (45.7 cm) away from the braze joint.
9. Braze suction line.
10. After the tailpiece has cooled, confirm position of the white Teflon® seal and hand tighten the  $\frac{1}{16}$ " nut.
11. Torque the  $\frac{1}{16}$ " nut to 10 to 25 ft-lbs. or tighten one-sixth turn.

### CAUTION

Excessive torque can cause orifices to stick. Use the proper torque settings when tightening orifices.

12. Replace the suction line, grommet and insulation.



A. Rubber grommet  
B. Suction line with spin closure

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# DOWNFLOW CONVERSION

“D” nomenclature models are factory equipped for dedicated downflow operation and no field conversion is required. Conversion to downflow must be performed in an area that allows access to all sides prior to placing the air handler in its final location. To keep the evaporator coil pan from sweating, the DPI accessory insulation kit is to be used when performing this conversion.

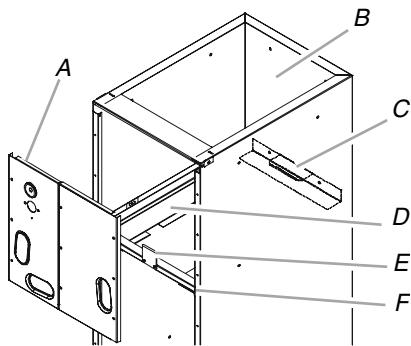
**NOTE:** The DPI kit is not supplied with this product and is to be purchased separately. See the following chart for the correct DPI kit.

WVAHM or WAHMS Model	Insulation Kit
1824	DPI18-30/20
3030/1931/3636	DPI36-42/20
3642/3743/4860/4961	DPI48-61/20

Refer to “Invert Air Handler,” “Evaporator Coil Pan” and “Evaporator Coil” illustrations for the location of the components referenced in the following steps. “Invert Air Handler” illustration shows the new installation location for the removed components.

1. Before inverting the air handler, remove all access panels, the coil rear channel bracket and the filter close-off panel.
2. Remove the evaporator coil and the horizontal drain pan.
3. Discard the horizontal drain pan.
4. Install the plastic plug (provided) into the vacated access panel.
5. Remove the 2 zee coil support brackets and insulation retaining brackets.
6. Remove the tie bracket.
7. Install the DPI Insulation Kit onto the bottom of the drain pan.

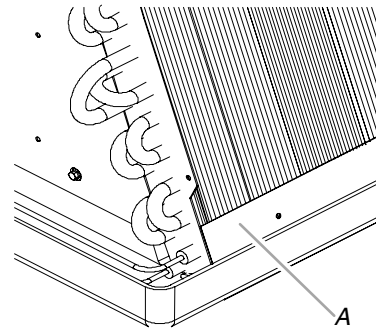
## Invert Air Handler



- A. Access panel
- B. Return air side of unit
- C. Rear channel bracket
- D. Zee coil support bracket
- E. Coil retaining bracket
- F. Tie bracket

8. Install the zee coil supports and the wrapper stiffeners.
9. Install the tie bracket.
10. Install the rear channel bracket.
11. To avoid possible condensate “blow off,” the insulation retainers are to be laid into the evaporator coil pan as shown in the “Evaporator Coil Pan” illustration.

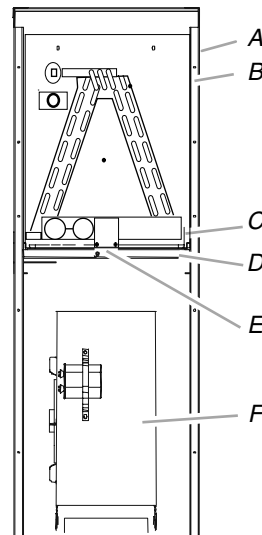
## Evaporator Coil Pan



A. 3" (7.6 cm) flat insulation retainer (both sides)

12. To complete the conversion, slide the evaporator coil into the chassis and attach the 3 access panels. Refer to the “Evaporator Coil” illustration.

## Evaporator Coil



- A. Wrapper
- B. Insulation jacket
- C. Zee coil support
- D. Wrapper stiffener
- E. Drain pan insulation kit
- F. Blower assembly

**NOTE:** When the air handler is converted to the downflow position, the coil may protrude above the cabinet on some models.

## Horizontal Conversion

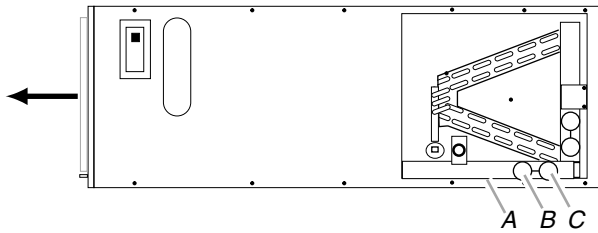
Dedicated downflow models are not suitable for horizontal application and must not be used for this type of installation. The only field modification required for conversion to “Horizontal Right-Hand” is the removal of the plastic knockouts in the horizontal panel drain connections. To keep the horizontal drain pan from sweating in high humidity applications, it is recommended that a DPIH insulation accessory kit be used.

**NOTE:** The DPIH insulation kit is not supplied with this product and should be purchased separately. See the following chart for the correct DPIH kit.

WVAHM or WAHMS Model	Insulation Kit
1824	DPI18-32
3030/1931/3636	DPI36-42
3642/3743/4860/4961	DPI48-61

The following describes converting to “Horizontal Left-Hand.” Conversion to downflow must be performed in an area that allows access to all sides prior to placing the air handler in its final location.

### Horizontal Left-Hand Conversion



A. DPIH kit  
B. Secondary drain  
C. Primary drain

1. Remove the 3 air handler access panels.
2. Remove the “J” shaped bracket that retains the evaporator coil.
3. Remove the flowrator from the lower left side access panel and slide out the evaporator coil and horizontal drain pan.
4. Remove the gasket from the horizontal pan drain connections.
5. Remove the oval shaped plastic plug from the left side access panel.
6. Remove the oval shaped rubber gasket seal from the lower right side access panel.
7. The drain connections for the horizontal pan are sealed with a thin coating of plastic. Carefully knock out this plastic seal with a screwdriver and hammer.  
**NOTE:** The upper drain will become the secondary drain which is mandatory in many municipalities.
8. Install the plastic plug removed in Step 5 to the right side lower access panel and the oval shaped rubber gasket to the lower left access panel.
9. Reinstall the evaporator coil with the horizontal panel on the left side.  
**NOTE:** Push the assembly completely to the rear to ensure the engagement of the upflow pan with the rear channel bracket.
10. Install the “J” bracket removed in Step 2 to support the upflow pan to the tie channel.
11. Attach all panels and the metering device.

## CONDENSATE REMOVAL

The coil drain pan has a primary and an optional secondary drain with 3/4" NPT female connections. The connectors required can be 3/4" NPT male either PVC, CPVC or metal pipe and should be hand tightened to a torque of approximately 37 in.-lbs to prevent damage to the drain pan connection. An insertion depth between 0.355" (9 mm) to 0.485" (12.3 mm) (3 to 5 turns) should be expected at this torque. Use the female (3/4 fpt) threaded fitting that protrudes outside of the enclosure for external connections.

1. Ensure drain pan hole is NOT obstructed.
2. To prevent potential sweating and dripping on to finished space, it may be necessary to insulate the condensate drain line located inside the building. Use Armaflex® or similar material.
3. A secondary condensate drain connection has been provided for areas where the building codes require it. Pitch the drain line 1/4" (6.4 mm) per foot to provide free drainage.
4. Insulate the drain lines located inside the building to prevent sweating.

5. Install a condensate trap to ensure proper drainage.
6. If the secondary drain line is required, run the line separately from the primary drain and end it where it can be easily seen.

**NOTE:** Water coming from this line means the coil primary drain is plugged and needs clearing.

## CAUTION

**If secondary drain is not installed, the secondary access must be plugged.**

The installation must include a “P” style trap that is located as close as is practical to the evaporator coil. See the following illustration for details of a typical condensate line “P” trap.

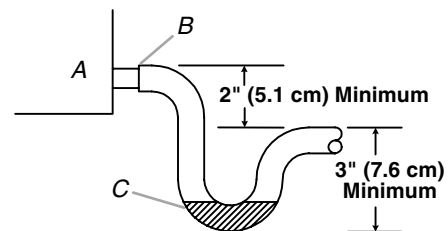
**NOTE:** Trapped lines are required by many local codes. In the absence of any prevailing local codes, please refer to the requirements listed in the Uniform Mechanical Building Code.

A drain trap in a draw-through application prevents air from being drawn back through the drain line during fan operation, thus preventing condensate from draining, and if connected to a sewer line, to prevent sewer gases from being drawn into the airstream during blower operation.

Field experience has shown condensate drain traps with an open vertical Tee between the air handler and the condensate drain trap can improve condensate drainage in some applications, but may cause excessive air discharge out of the open Tee. The manufacturer does not prohibit this type of drain, but the manufacturer also does not recommend it due to the resulting air leakage.

Regardless of the condensate drain design used, it is the installer’s responsibility to ensure the condensate drain system is of sufficient design to ensure proper condensate removal from the coil drain pan.

### Condensate Drain Trap



A. Cased coil  
B. Drain connection  
C. Positive liquid seal required at trap

Use of a condensate removal pump is permitted when necessary. This condensate pump should have provisions for shutting off the control voltage should a blocked drain occur. A trap must be installed between the unit and the condensate pump.

**IMPORTANT:** The evaporator coil is coated with oils that may dissolve Styrofoam and certain types of plastics. Therefore, a removal pump or float switch must not contain any of these materials.

**TIP:** Priming the “P” trap may avoid improper draining at the initial installation and at the beginning of the cooling season. When coils are installed above ceilings, or in other locations where damage from condensate overflow may occur, it is mandatory to install a field-fabricated auxiliary drain pan under the coil cabinet enclosure. Drain lines from the auxiliary pan must be installed and terminated so that the homeowner can see water discharges.



# ACHIEVING 2% LOW LEAKAGE RATE

Ensure that the Neoprene gasket with PSA remains intact on all surfaces that the access panels are secured to. These surfaces are the entire length of the wrapper and areas between the upper tie plate, upper and lower access panels. Check that the upper access panel breaker insert gasket is intact and that the flowrator gasket is installed on the lower access panel. An additional drain hole cover is required.

## WAHMS MOTOR

### Motor Speed Adjustment

The motors in all WAHMS are multispeed PSC motors. The color of the wire coming from the motor to the "COM" terminal on the control board defines in which speed the motor will operate. The black wire represents high speed, the red wire represents low speed and the blue wire (select models only) represents medium speed.

To change speeds, remove the wire attached to the COM terminal on the control board, and swap it with the wire on terminal M1 or M2 with the color that will give the desired speed.

**NOTE:** On some models, not all speed taps are allowable for certain electric heat applications. Refer to the air handler series and ratings plate for minimum speed.

Model	Speed	CFM Delivered Against External Static Pressure				
		0.1"	0.2"	0.3"	0.4"	0.5"
WAHMS1824P4*	High	1,155	1,090	1,025	950	895
	Medium	940	890	860	815	755
	Low	695	665	650	610	550
WAHMS1931P4*	High	1,135	1,085	1,025	965	915
	Medium	860	825	780	750	680
	Low	600	570	545	500	465
WAHMS3030P4*	High	1,385	1,315	1,240	1,155	1,065
	Medium	1,340	1,290	1,230	1,140	1,050
	Low	1,075	1,030	980	910	840
WAHMS3636P4*	High	1,310	1,240	1,155	1,090	1,020
	Medium	1,270	1,210	1,140	1,075	980
	Low	1,045	1,005	955	885	805
WAHMS3642P4*	High	1,700	1,660	1,625	1,545	1,505
	Medium	1,500	1,440	1,400	1,350	1,345
	Low	1,330	1,300	1,250	1,230	1,220
WAHMS3743P4*	High	2,065	2,000	1,925	1,860	1,780
	Medium	1,685	1,635	1,550	1,470	1,410
	Low	1,490	1,425	1,345	1,280	1,205

Model	Speed	CFM Delivered Against External Static Pressure				
		0.1"	0.2"	0.3"	0.4"	0.5"
WAHMS4860P4*	High	2,150	2,120	2,070	2,000	1,940
	Medium	1,940	1,930	1,905	1,860	1,790
	Low	1,610	1,600	1,590	1,575	1,550
WAHMS4961P4*	High	2,150	2,105	2,040	1,970	1,880
	Medium	1,960	1,935	1,895	1,825	1,750
	Low	1,670	1,625	1,585	1,525	1,455

**NOTE:** Assumes dry coil with filter in place; SCFM correction for wet coil = 4% (208V/240V).

## WAHME MOTOR

The WAHME air handler features an energy efficient blower motor. The motor is a constant torque motor with very low power consumption. The motor is energized by 24V AC. Adjust the CFM by changing the 24V AC leads to the desired speed on the terminal block.

The WAHME motor blower speed is programmed to deliver adequate airflow at rated external static pressure and with 60-second off time delay. For details, refer to the specification sheet applicable to your model.

### CFM Delivery

The following table shows the CFM speed tap settings for the WAHME.

Model	Speed Tap	CFM Delivered Against External Static Pressure				
		0.1"	0.2"	0.3"	0.4"	0.5"
WAHME1830P4	1	700	670	650	595	510
	2	820	785	765	745	705
	3	920	900	850	840	815
	4	1,075	1,055	1,015	975	960
	5	1,130	1,115	1,085	1,040	1,000
WAHME3137P4	1	1,060	865	600	515	420
	2	1,105	910	795	745	690
	3	1,165	1,070	1,020	960	915
	4	1,285	1,240	1,195	1,140	1,100
	5	1,435	1,395	1,350	1,315	1,265
WAHME4260P4	1	1,445	1,275	1,175	940	855
	2	1,545	1,405	1,325	1,260	1,145
	3	1,660	1,610	1,555	1,490	1,415
	4	1,905	1,870	1,810	1,750	1,695
	5	2,115	2,070	2,000	1,965	1,915

# THERMOSTATS

**NOTE:** 2<sup>nd</sup> stage heat can be accomplished by using a multistage heating thermostat or the addition of an outdoor thermostat as shown in the System Composite diagrams.

Manufacturer's Part Number CHT18-60 is a single-stage cool and single-stage heat thermostat.

Manufacturer's Part Number HPT18-60 is a single-stage cool, 2-stage heat pump thermostat. The 1<sup>st</sup> stage is heat pump heating and the 2<sup>nd</sup> stage is optional electric heat.

If additional features are desired, such as digital or programmable capabilities, these thermostats are commercially available. Follow the thermostat manufacturer's instruction for installation.

- Return and supply ducts are sealed.
- Unit is elevated when installed in a garage or where flammable vapors may be present.
- Unit is protected from vehicular or other physical damage.
- Return air is not obtained from any areas where there may be objectionable odors, flammable vapors or products of combustion such as carbon monoxide (CO), which may cause serious personal injury or death.

## START-UP PROCEDURE

- Prior to start-up, ensure that all electrical connections are properly sized and tightened.
- All panels must be in place and secured. For airtight application, neoprene gasket must be positioned at prescribed locations to achieve 2% leakage.
- Tubing must be leak free.
- Unit should be elevated, trapped and pitched to allow for drainage.
- Low voltage wiring is connected.
- Auxiliary drain is installed when necessary and pitched to allow for drainage.
- Drain pan and drain tubing has been leak checked.

## REGULAR MAINTENANCE

### **WARNING**

**HIGH VOLTAGE!**

Disconnect **ALL** power before servicing.

Multiple power sources may be present.

Failure to do so may cause property damage, personal injury or death.



The only item to be maintained on a regular basis by the user is the circulating air filter(s). Filter should be cleaned or replaced regularly. A certified service technician must perform all other services.

**NOTE:** Do not use these diagrams for WAHMV models. See installation and operating instructions specifically for WAHMV models.

## WIRING DIAGRAMS

### **WARNING**

**HIGH VOLTAGE!**

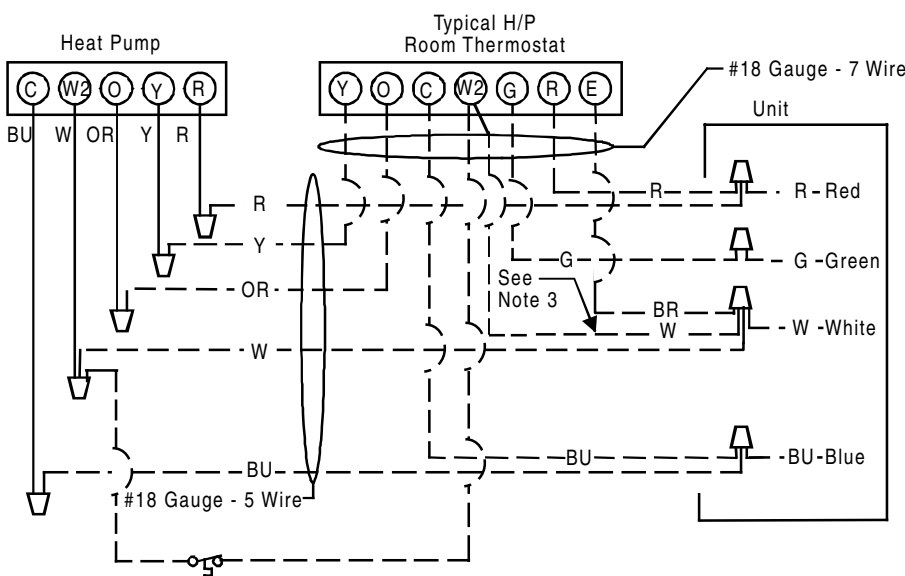
Disconnect **ALL** power before servicing.

Multiple power sources may be present.

Failure to do so may cause property damage, personal injury or death.



### System Composite Diagram—WAHMS 18 to 60—10kW and Below



Color Codes	
R	Red
Y	Yellow
BU	Blue
BR	Brown
OR	Orange
W	White
G	Green

#### NOTES:

1. Outdoor Thermostat 1 should be the first to close and the last to open.
2. Connect the white and brown wires from the air handler if an outdoor thermostat is not used.
3. Remove this wire when using an outdoor thermostat.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

Outdoor Thermostat (Optional) Closed on Temperature Fall  
#18 Gauge - 6 Wire Needed When Outdoor Thermostat Is Used

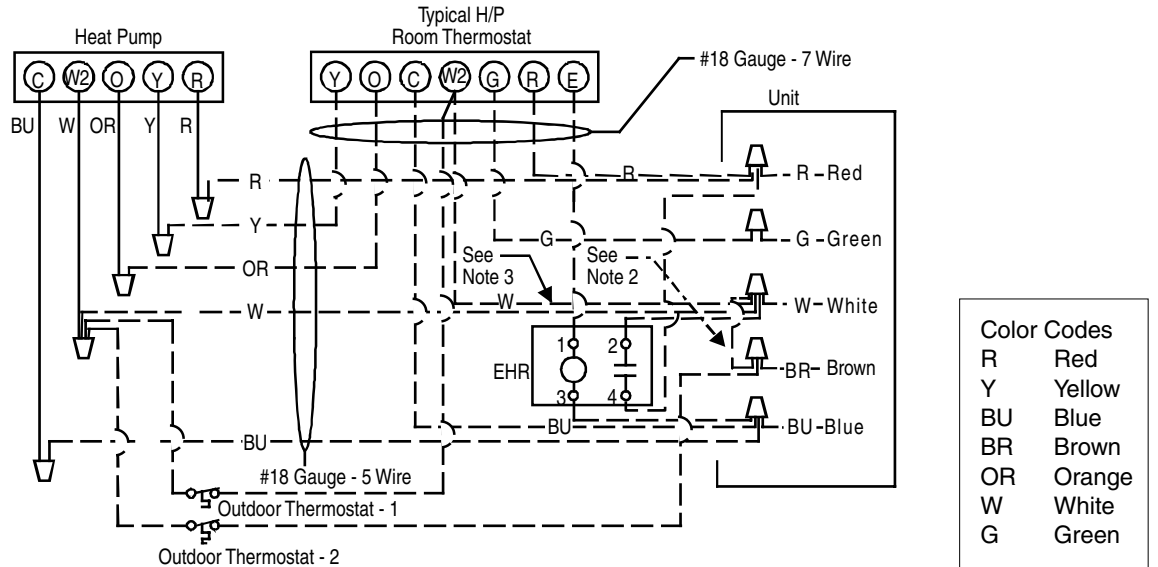
# ⚠ WARNING

**HIGH VOLTAGE!**

**Disconnect ALL power before servicing.  
Multiple power sources may be present.  
Failure to do so may cause property damage, personal injury or death.**



## System Composite Diagram—WAHMS 18 to 60—Above 10kW



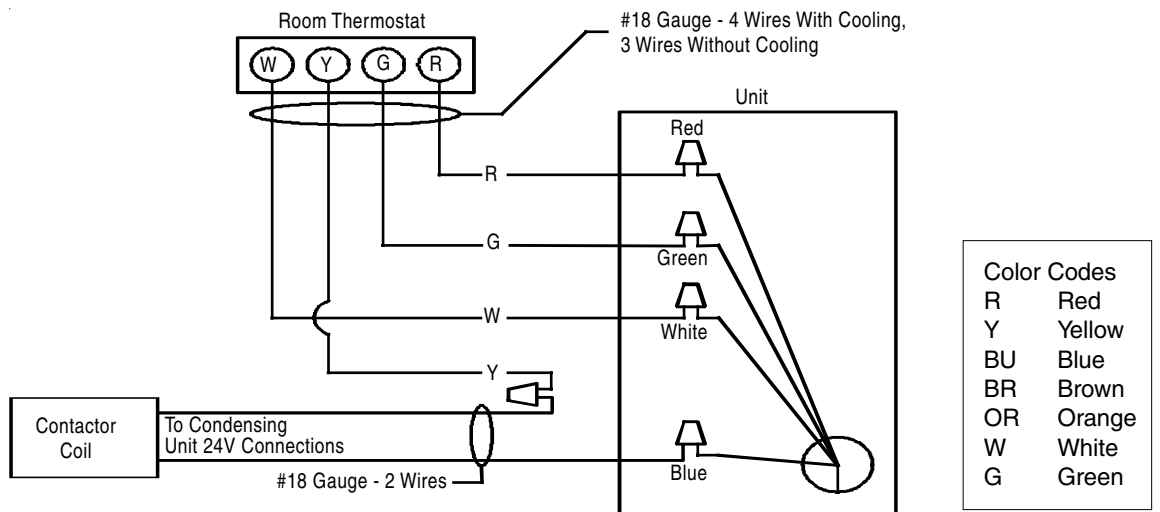
**NOTES:**

- EHR—Emergency heat relay (optional)
- 1. Outdoor Thermostat 1 should be the first to close and the last to open.

- 2. Connect the white and brown wires from the air handler if Outdoor Thermostat 2 is not used.
- 3. Remove this wire when using an outdoor thermostat.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

## Wiring Diagram—Low Voltage for WAHMS Cooling Unit with Optional Heat Kit 10kW and Below



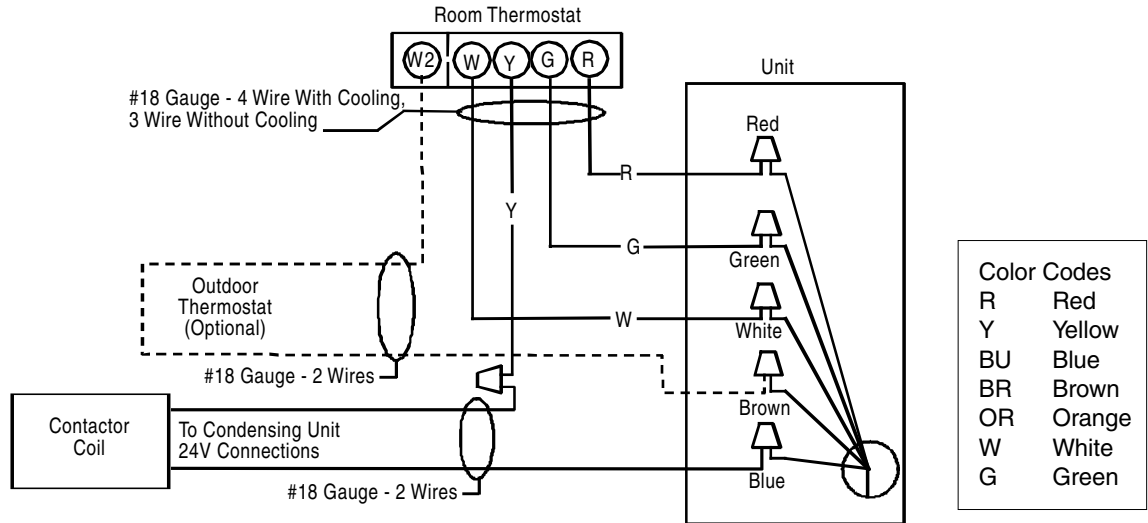
# ⚠ WARNING

**HIGH VOLTAGE!**

**Disconnect ALL power before servicing.  
Multiple power sources may be present.  
Failure to do so may cause property damage, personal injury or death.**



## Wiring Diagram—Low Voltage for WAHMS Cooling Unit with Optional Heat Kit 15kW and Above



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

## WAHME THERMOSTAT CONNECTIONS

The following composite wiring diagrams detail various configurations in which the WAHME air handlers can be used. Examples include single-stage cooling and heat pump with single or 2-stage electric heating. All these configurations can be applied with convenient connections to outdoor thermostat applications.

Each diagram details the connections between room thermostat and WAHME air handlers, and the connections between the WAHME air handlers and the condensing unit (or heat pump) with optional connections to outdoor thermostats.

For each configuration, refer to the explanation of the proper jumper(s) to remove for the corresponding blower speed that will result in the programmed ECM™ motor.

**IMPORTANT:** When matching the WAHME air handlers to a single-speed cooling unit or heat pump, remember to connect the Y from the thermostat to the Y2 on the low voltage terminal board.

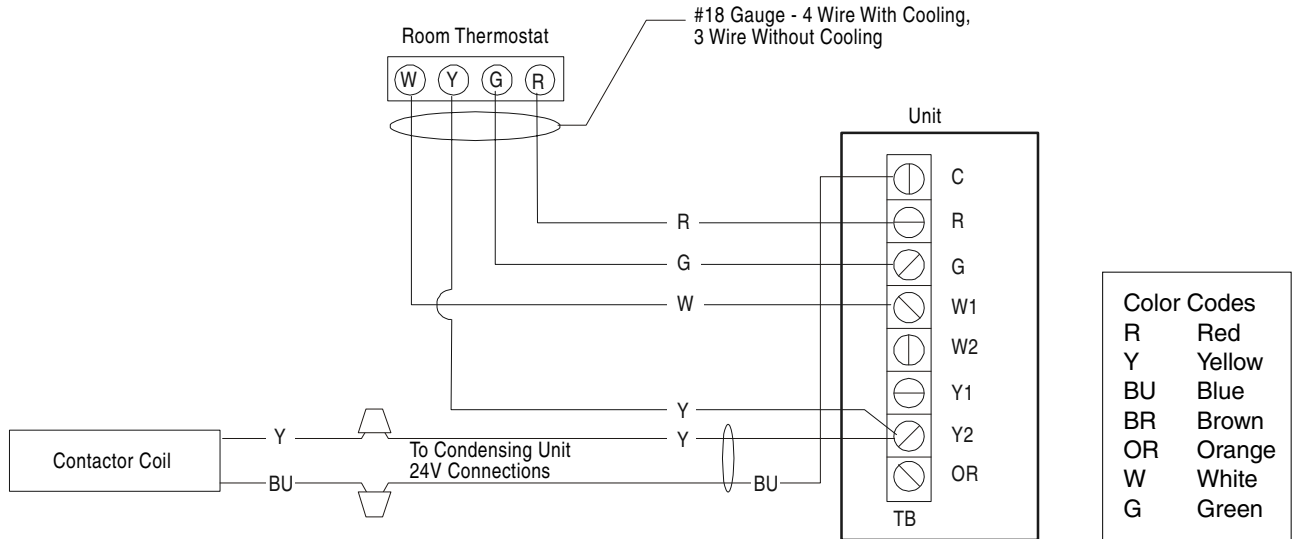
# ⚠ WARNING

**HIGH VOLTAGE!**

**Disconnect ALL power before servicing.  
Multiple power sources may be present.  
Failure to do so may cause property damage, personal injury or death.**



## Thermostat Connection—WAHME Cooling Unit with Optional Heat Kits of 10kW and Below



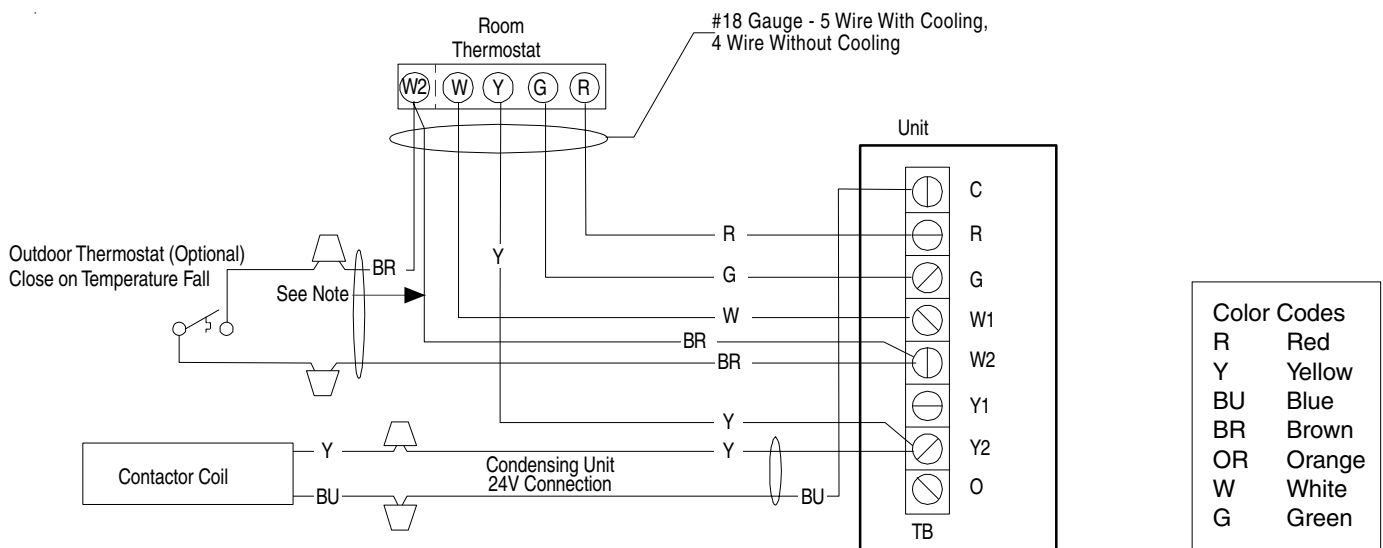
**NOTES:**

- EHR—Emergency heat relay (optional)
- OT—Outdoor thermostat (optional)

1. Outdoor Thermostat 1 (OT-1) should be the first to close and the last to open.
2. Jumper W1 and W2 together if OT-2 is not used.
3. Remove this wire when using an outdoor thermostat.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

## Thermostat Connection—WAHME Cooling Unit with Optional Heat Kits of 15kW and Above—Thermostat with 2-Stage Heat



**NOTE:** Remove this wire when using an outdoor thermostat.

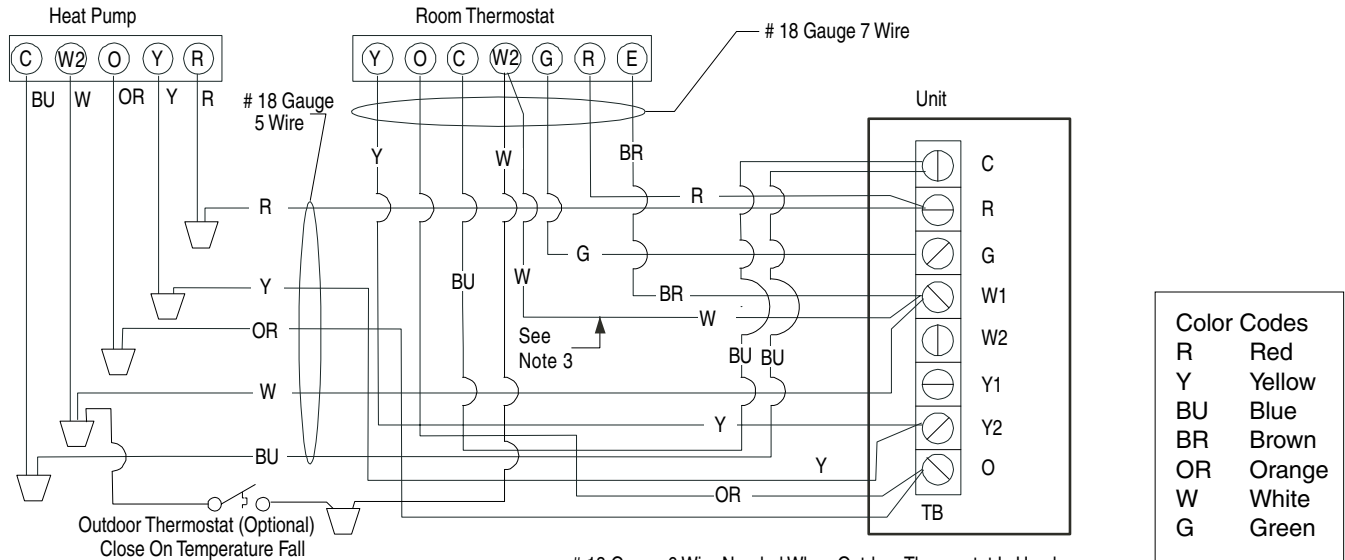
# ⚠ WARNING

**HIGH VOLTAGE!**

Disconnect ALL power before servicing.  
Multiple power sources may be present.  
Failure to do so may cause property damage, personal injury or death.



## Thermostat Connection—WAHME Heat Pump Unit with Optional Heat Kits of 10kW and Below



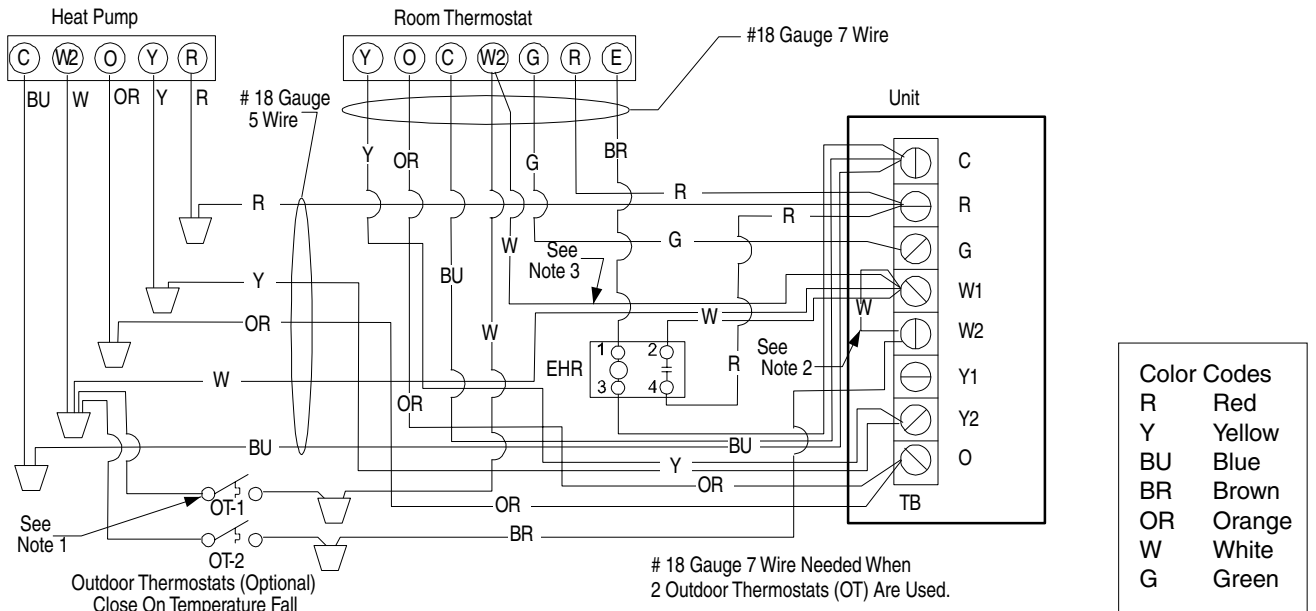
**NOTES:**

- EHR—Emergency heat relay (optional)
- OT—Outdoor thermostat (optional)

1. Outdoor thermostat (OT-1) should be the first to close and the last to open.
2. Jumper W1 and W2 together if OT-2 is not used.
3. Remove this wire when using an outdoor thermostat.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

## Thermostat Connection—WAHME Heat Pump Unit with Optional Heat Kits of 15kW and Above



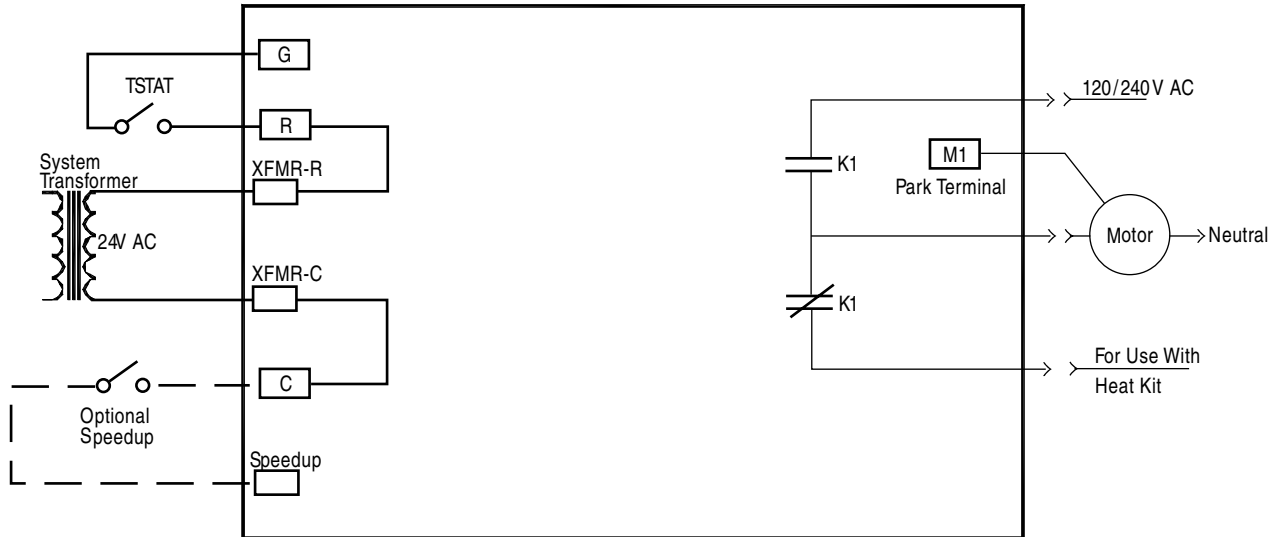
**NOTES:**

- EHR—Emergency heat relay (optional)
- OT—Outdoor thermostat (optional)

1. Outdoor thermostat (OT-1) should be the first to close and the last to open.
2. Jumper W1 and W2 together if OT-2 is not used.
3. Remove this wire when using an outdoor thermostat.

# ELECTRONIC BLOWER TIME DELAY RELAY

**NOTE:** This is not applicable to WAHME models.



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

The electronic blower time delay relay provides power to the blower motor with a delay of 7 seconds after 24V AC is applied to G. After 24V AC is removed from G, the blower motor output is de-energized after a delay of 65 seconds.

Normal Time Delays	60Hz	50Hz
Turn On Delay	7 sec. ± 1%	8.4 sec. ± 1%
Turn Off Delay	65 sec. ± 1%	78 sec. ± 1%

## Field Test Mode

Shorting the Speedup quick connect to C decreases times as follows:

Speedup Times	60Hz	50Hz
Turn On Delay	3 sec. ± 1%	3.6 sec. ± 1%
Turn Off Delay	5 sec. ± 1%	6 sec. ± 1%

**NOTE:** Field test mode is canceled when the Speedup quick connect to C short is removed.

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# ASSISTANCE OR SERVICE

If you need further assistance, you can write to the below address with any questions or concerns:

Tradewinds Distributing Company, LLC  
14610 Breakers Drive  
Jacksonville, FL 32258

Please include a daytime phone number in your correspondence.  
Or call toll free: 1-866-944-7575.