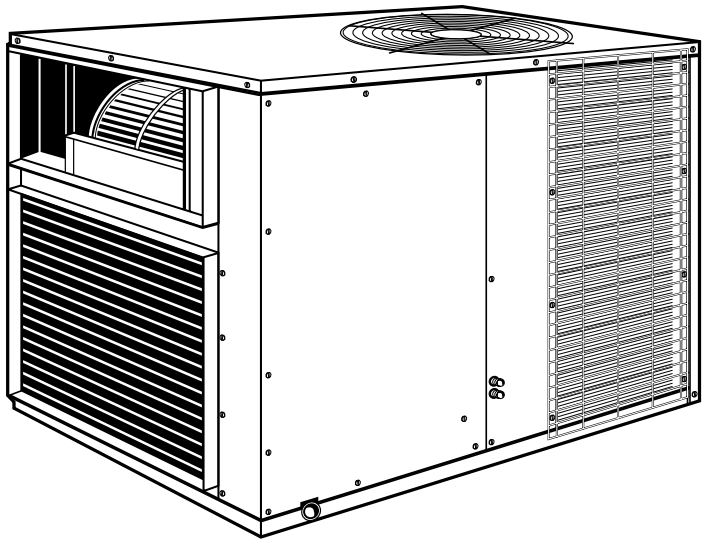
18-BB36D1-4
4WHC3-IG-4

Installer's Guide

Single Packaged Heat Pump
13 SEER, Over/Under
2, 2-1/2, 3, 3-1/2, 4, & 5 Ton, R-410A

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

Important — This Document is customer property. Please return to service information pack and give this Installer's Guide to the homeowner upon completion of work.



2, 2-1/2, 3, 3-1/2 Tons Shown

⚠ WARNING: HAZARDOUS VOLTAGE - DISCONNECT POWER and DISCHARGE CAPACITORS BEFORE SERVICING

Safety Considerations

IMPORTANT: Read this entire manual before beginning installation procedures.

Read this manual carefully before attempting to install, operate, or perform maintenance on this unit. Installation and maintenance should be performed by qualified service technicians only.

Note: "Warnings" and "Cautions" appear at appropriate places in this manual. Your personal safety and the proper operation of this air conditioning product require that you follow them carefully. The manufacturer assumes no liability for installations or servicing performed by unqualified personnel.

⚠ WARNING

SAFETY HAZARD!

This information is for use by individuals having 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

SAFETY HAZARD!

Bodily injury can result from high voltage electrical components, fast moving fans, and combustible gas. For protection from these inherent hazards during installation and service, the electrical supply must be disconnected and the main gas valve must be turned off. If operating checks must be performed with the unit operating, it is the technicians responsibility to recognize these hazards and proceed safely.

⚠ WARNING

SAFETY HAZARD!

Do not operate the unit without the evaporator fan or coil access panels in place. Reinstall the access panels after performing maintenance proceedures on the fan. Operating the unit without the access panels properly installed may result in severe personal injury or death.

⚠ WARNING

SAFETY HAZARD!

To prevent injury or death due to electrical shock or contact with moving parts, lock unit disconnect switch in open position before servicing unit.

⚠ WARNING

THIS PRODUCT CONTAINS FIBERGLASS WOOL INSULATION! Fiberglass dust and ceramic fibers are believed by the State of California to cause cancer through inhalation. Glasswool fibers may also cause respiratory, skin, or eye irritation.

This warning complies with State of California law, Proposition 65.

⚠ CAUTION

CONTAINS REFRIGERANT!

SYSTEM CONTAINS OIL AND REFRIGERANT UNDER HIGH PRESSURE. RECOVER REFRIGERANT TO RELIEVE PRESSURE BEFORE OPENING SYSTEM. Failure to follow proper procedures can result in personal illness or injury or severe equipment damage.

⚠ CAUTION

RECONNECT ALL GROUNDING DEVICES.

All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

⚠ CAUTION

UNIT CONTAINS R-410A REFRIGERANT!

R-410A operating pressure exceeds the limit of R-22. Proper service equipment is required. Failure to use proper service tools may result in equipment damage or personal injury.

SERVICE

Use only R-410A Refrigerant and approved POE compressor oil.

⚠ CAUTION

HOT SURFACE!

Do Not touch top of compressor. May cause minor to severe burning.

IMPORTANT: Reconnect all grounding devices. All parts of this product capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and **properly fastened.**

IMPORTANT: Wear appropriate gloves, arm sleeve protectors, and eye protection when servicing or maintaining this equip**ment.**

Contents

Introduction

Read this manual carefully before attempting to install, operate, or perform maintenance on this unit. Installation and maintenance should be performed by qualified service technicians only.

Packaged units are designed for outdoor mounting with a vertical condenser discharge. They can be located either at ground level or on a roof in accordance with local codes. Each unit contains an operating charge of refrigerant as shipped.

This guide is organized as follows:

- Step 1 - Inspect Shipment
- Step 2 - Determine Unit Clearances
- Step 3 - Review Location and Recommendation Information
- Step 4 - Unit Installation
- Step 5 - Unit Startup
- Sequence of Operation
- Maintenance

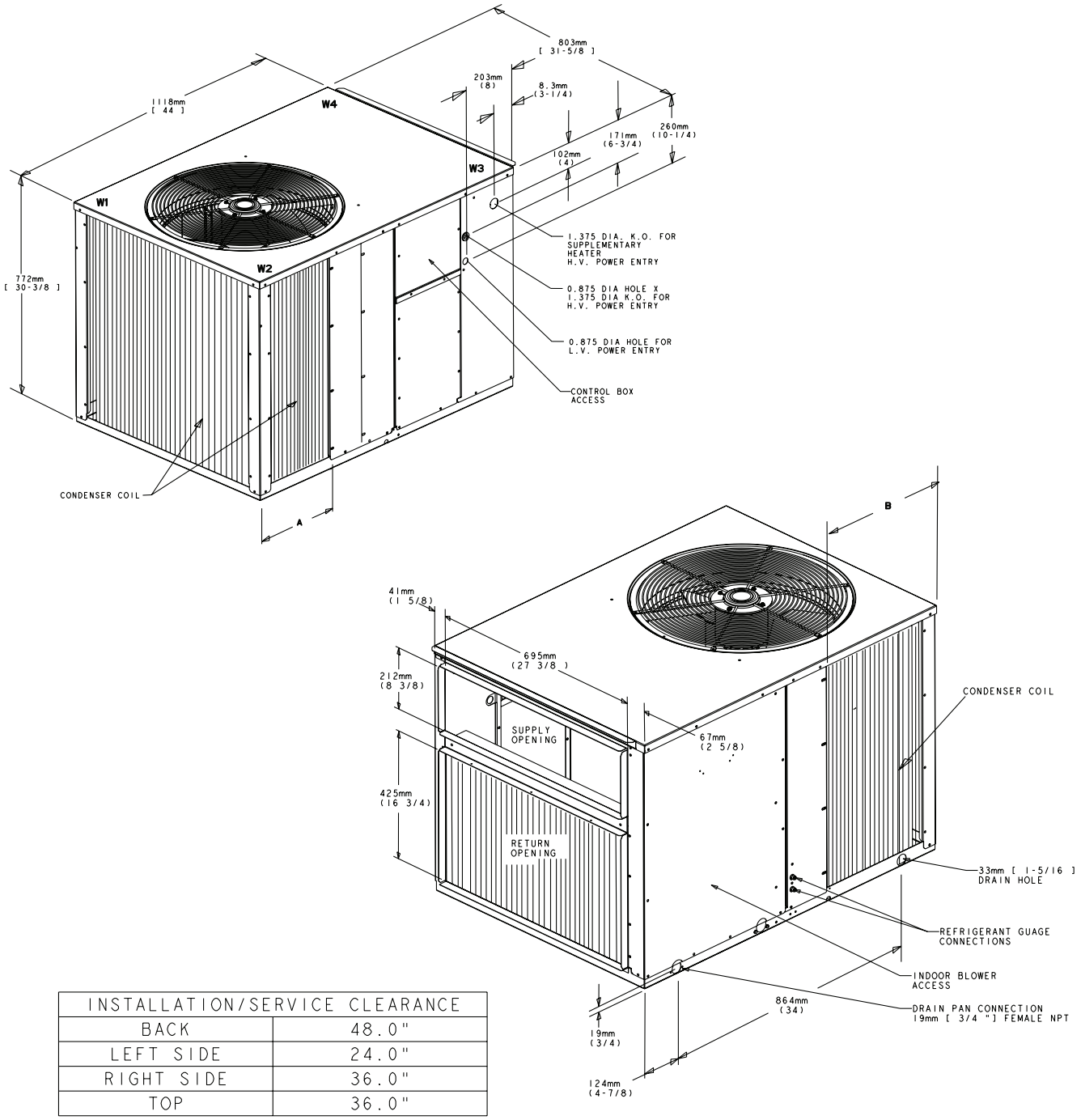
Step 1—Inspect Shipment

1. Check for damage after the unit is unloaded. Report promptly to the carrier any damage found to the unit. Do not drop the unit.
2. Check the unit's nameplate to determine if the unit is correct for the intended application. The power supply must be adequate for both the unit and all accessories.
3. Check to be sure the refrigerant charge has been retained during shipment using the 1/4" flare pressure taps located near the blower panel on the side of the unit.

NOTE: If practical, install any internal accessories to the unit at the shop.

Step 2—Determine Unit Clearances

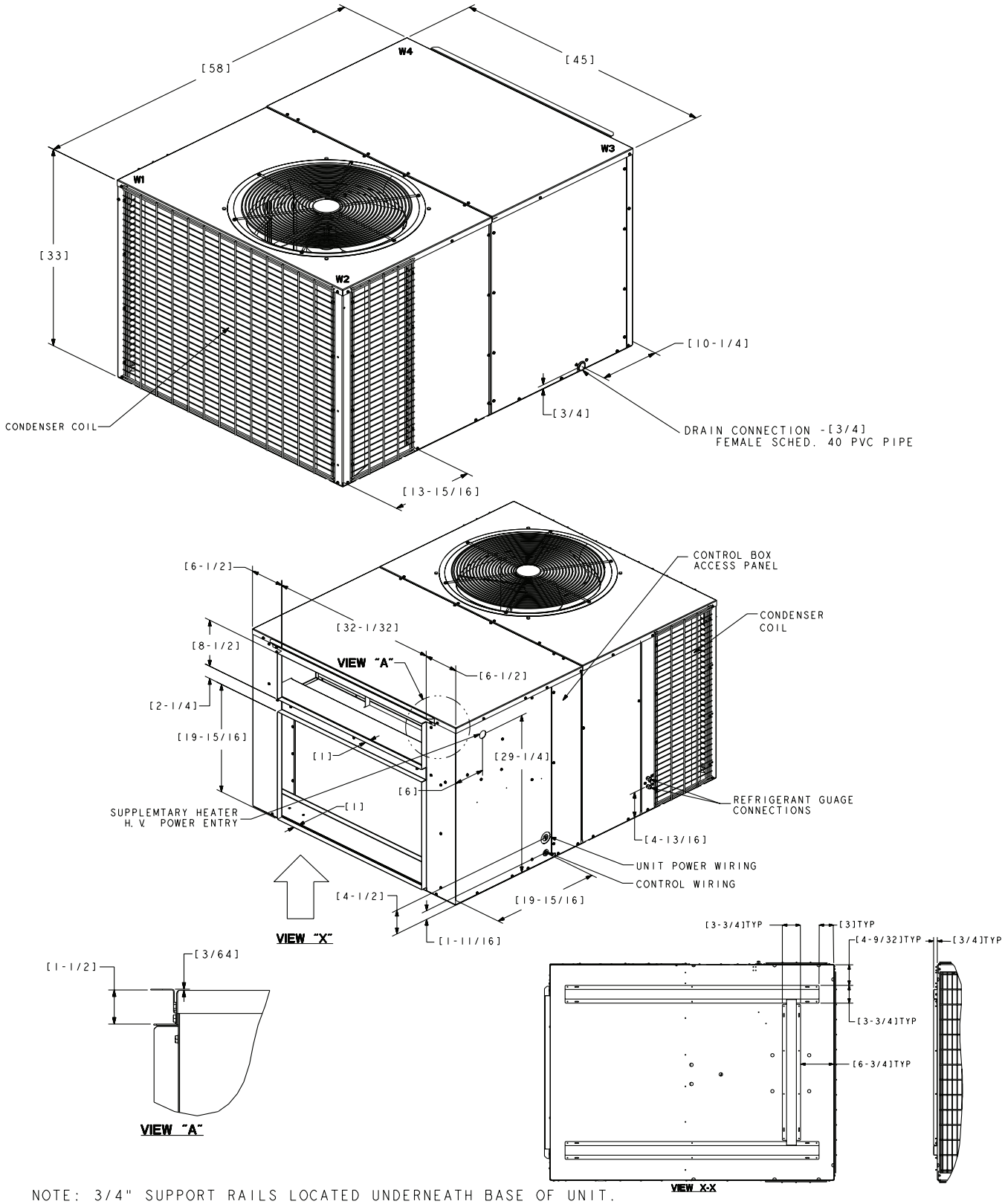
Figures 1 and 2 show the unit critical dimensions.



INSTALLATION/SERVICE CLEARANCE	
BACK	48.0"
LEFT SIDE	24.0"
RIGHT SIDE	36.0"
TOP	36.0"

MODEL	APPROX. CORNER WEIGHT - KG(LBS)				TOTAL WEIGHT	COIL DIMENSION-mm (in)	
	W1	W2	W3	W4	KG(LBS)	A	B
4WHC3024	47 (103)	30 (66)	30 (66)	29 (63)	135 (298)	356 (14)	406 (16)
4WHC3030	47 (103)	30 (66)	30 (66)	29 (63)	135 (298)	356 (14)	406 (16)
4WHC3036	47 (103)	30 (66)	30 (66)	29 (63)	135 (298)	356 (14)	406 (16)
4WHC3042	39 (87)	37 (81)	30 (66)	33 (72)	139 (306)	508 (20)	406 (16)

Figure 1. 4WHC3024 - 4WHC3042



NOTE: 3/4" SUPPORT RAILS LOCATED UNDERNEATH BASE OF UNIT.

MODEL	APPROX. CORNER WEIGHT - KG(LBS)				TOTAL WEIGHT LBS.
	W1	W2	W3	W4	
4WHC3048	62(137)	61(134)	40(88)	41(90)	203(448)
4WHC3060	65(143)	62(137)	44(97)	45(99)	211(465)

INSTALLATION/SERVICE CLEARANCE	
BACK	48.0"
LEFT SIDE	24.0"
RIGHT SIDE	36.0"
TOP	36.0"

Figure 2. 4WHC3048 - 4WHC3060

Step 3—Review Location and Recommendation Information

1. Location of the unit must allow service clearance around it to ensure adequate serviceability, maximum capacity, and peak operating efficiency.
2. These units are designed for outdoor installation. They may be installed directly on a slab, wood flooring, or on Class A, B, or C roof covering material. The discharge air from the condenser fans must be unrestricted for a minimum of 3 feet above the unit.
3. Check the handling facilities to ensure the safety of personnel and the unit(s).
4. The unit must be mounted level for proper drainage of water through the drain holes in the base pan.
5. The unit should not be exposed to direct roof water runoff.
6. Flexible duct connectors must be of a flame retardant material. All duct work outside of the structure must be insulated and weatherproofed in accordance with local codes.
7. Holes through exterior walls or roof must be sealed in accordance with local codes.
8. All fabricated outdoor ducts should be as short as possible.

Clearances

1. The recommended clearances for single-unit installations are illustrated in Figures 1 to 2, pages 4-5.
2. See the unit's nameplate for the absolute minimum clearance between the unit and any combustible surfaces.

Step 4—Unit Installation

Ground Level Installation

To install the unit at ground level:

1. Place the unit on a pad the size of the unit or larger. The unit must be mounted level for proper drainage of water through the holes in the base pan.

   The pad must not come in contact with the structure Be sure the outdoor portion of the supply and return air ducts are as short as possible.

   Unit requires vibration support as indicated in Figure 3 on page 8.
2. Location of the unit must allow service clearance around it. Clearance of the unit must be given careful consideration. See Figures 1 & 2, pages 4-5.

   NOTE: Any reduction of the unit clearances indicated in these illustrations may result in condenser coil starvation or the recirculation of warm condenser air. Actual clearances, which appear to be inadequate should be reviewed with a local engineer.

   IMPORTANT: The air outlet duct must have 1" clearance to combustible material downstream from the unit.
3. Attach the supply and return air ducts to the unit as explained in the following Ductwork Installation section on page 16.
4. Flexible duct connectors must be of a flame retardant material. Insulate any ductwork outside of the structure with at least two (2) inches of insulation and weatherproof. There must be a weatherproof seal where the duct enters the structure.
5. Do not expose the unit to direct roof water runoff.
6. Seal all holes through exterior walls in accordance with local codes.
7. Continue with the remaining installation sections.

Lifting and Rigging

⚠ WARNING

IMPROPER UNIT LIFT!

Test lift unit approximately 24 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.

IMPORTANT: Do not lift the unit without test lifting for balance and rigging. Do not lift the unit in windy conditions or above personnel. Do not lift the unit by attaching clevis, hooks, pins, or bolts to the unit casing, casing hardware, corner lugs, angles, tabs, or flanges. Failure to observe these warnings may result in equipment damage.

1. Before preparing the unit for lifting, check the unit dimension drawings for center of gravity for lifting safety (Figures 1 & 2, page 4-5). Because of placement of internal components, the unit's weight may be unevenly distributed. Approximate unit weights are also provided in the unit drawings.
2. When hoisting the unit, be sure that a proper method of rigging is used. Use slings and spreader bars for protection during lifting. Always test-lift the unit to determine the exact unit balance and stability before hoisting it to the installation location.
3. When the air ducts have been properly installed, the unit is ready to be hoisted to the roof and set in position.

Rooftop Installation -- Flat Roof - No Frame

For roof top applications using field fabricated ducts and sleeper rails rather than a curb or frame, use the following procedure:

1. Locate and secure the sleeper rails to the roof by bolting. Two (2) sleeper rails are required. One on each end to support the edges of the unit. Add flashing as required. Flashing must conform to local building codes.
2. Prepare the hole in the roof in advance of installing the unit.
3. Secure the airflow ducts to the roof.
4. All fabricated outdoor ducts should be as short as possible.
5. Place the unit on the rails.
6. The unit must be mounted level for proper drainage of water through the holes in the base pan.
7. Secure the unit to the rails.
8. Insulate any ductwork outside of the structure with at least two (2) inches of insulation and then weatherproof. There must be a weatherproof seal where the duct enters the structure.
9. The unit should not be exposed to direct roof water runoff.
10. Flexible duct connectors must be of a flame retardant material. All duct work outside of the structure must be insulated and weatherproofed in accordance with local codes.
11. Access and service clearances for the unit must be given careful consideration when locating the duct entrance openings. Figures 1 & 2, on pages 4-5, provide unit dimensions.
12. Continue with the remaining installation sections.

Rooftop Installation -- Frame Mounting

For roof top applications using field fabricated frame and ducts, use the following procedure:

1. Locate and secure the frame to the roof by bolting or welding. See Figure 4 on page 8. Add flashing as required. Flashing must conform to local building codes.
2. Prepare the hole in the roof in advance of installing the unit.
3. Secure the airflow ducts to the roof.
4. All fabricated outdoor ducts should be as short as possible.
5. Place the unit on the frame.
6. The unit must be mounted level for proper drainage of water through the holes in the base pan.
7. Secure the unit to the frame.
8. Insulate any ductwork outside of the structure with at least two (2) inches of insulation and then weatherproof. There must be a weatherproof seal where the duct enters the structure.
9. The unit should not be exposed to direct roof water runoff.
10. Flexible duct connectors must be of a flame retardant material. All duct work outside of the structure must be insulated and weatherproofed in accordance with local codes.
11. Access and service clearances for the unit must be given careful consideration when locating the duct entrance openings. Figures 1 & 2, on pages 4-5, provide unit dimensions.
12. Continue with the remaining installation sections.

Ductwork Installation

Attaching Ductwork to Roof Frame

Follow these guidelines for ductwork construction:

Connections to the unit should be made with three (3) inch canvas connectors to minimize noise and vibration transmission.

Elbows with turning vanes or splitters are recommended to minimize air noise and resistance.

The first elbow in the ductwork leaving the unit should be no closer than two (2) feet from the unit, to minimize noise and resistance.

To prevent leaking, do not attach the ductwork to the bottom of the unit base.

Attaching Ductwork to Unit

All conditioned air ductwork should be insulated to minimize heating and cooling duct losses. Use a minimum of two (2) inches of insulation with a vapor barrier. The outside ductwork must be weatherproofed between the unit and the building.

When attaching ductwork to a the unit, provide a flexible watertight connection to prevent noise transmission from the unit to the ducts. The flexible connection must be indoors and made out of heavy canvas.

NOTE: Do not draw the canvas taut between the solid ducts.

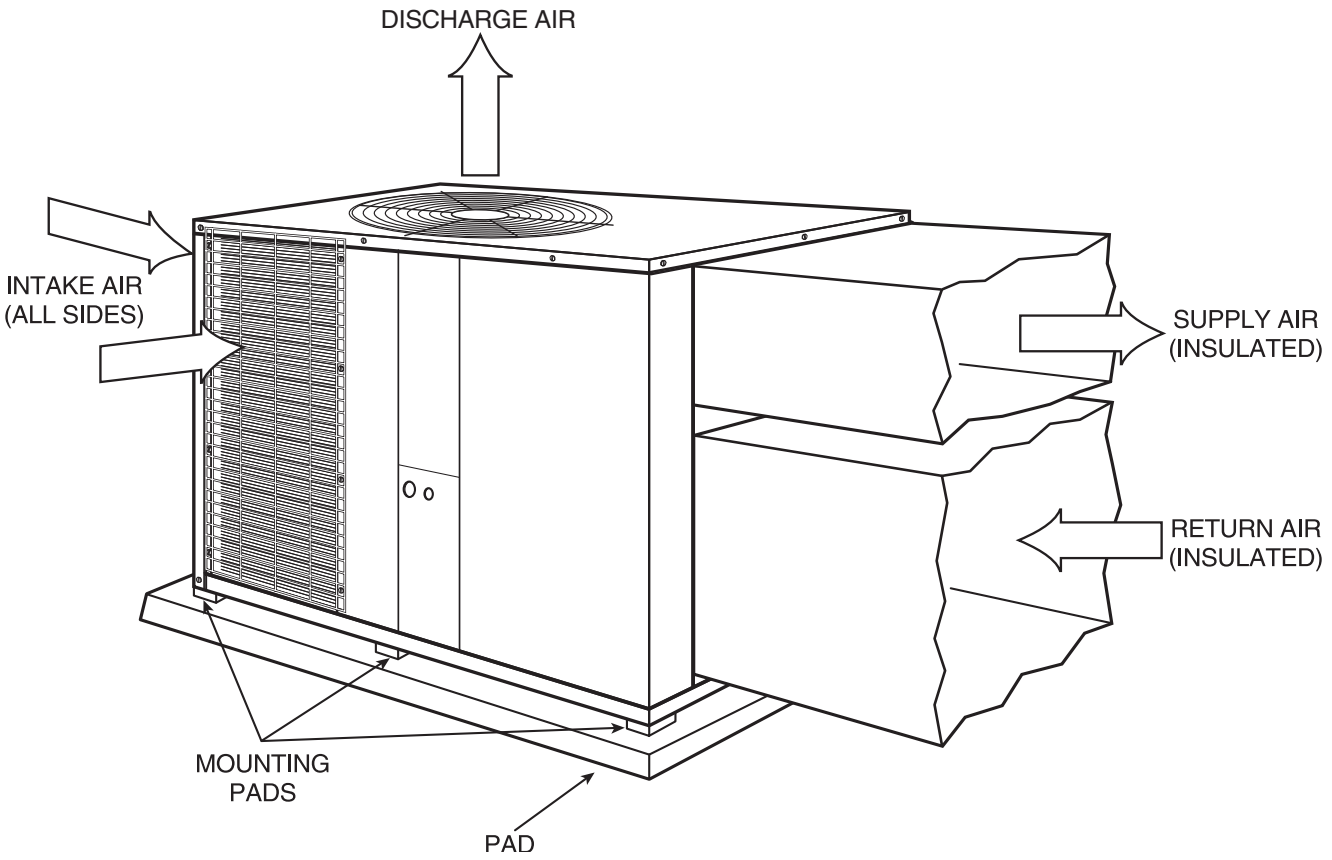


Figure 3. Ground Level Application

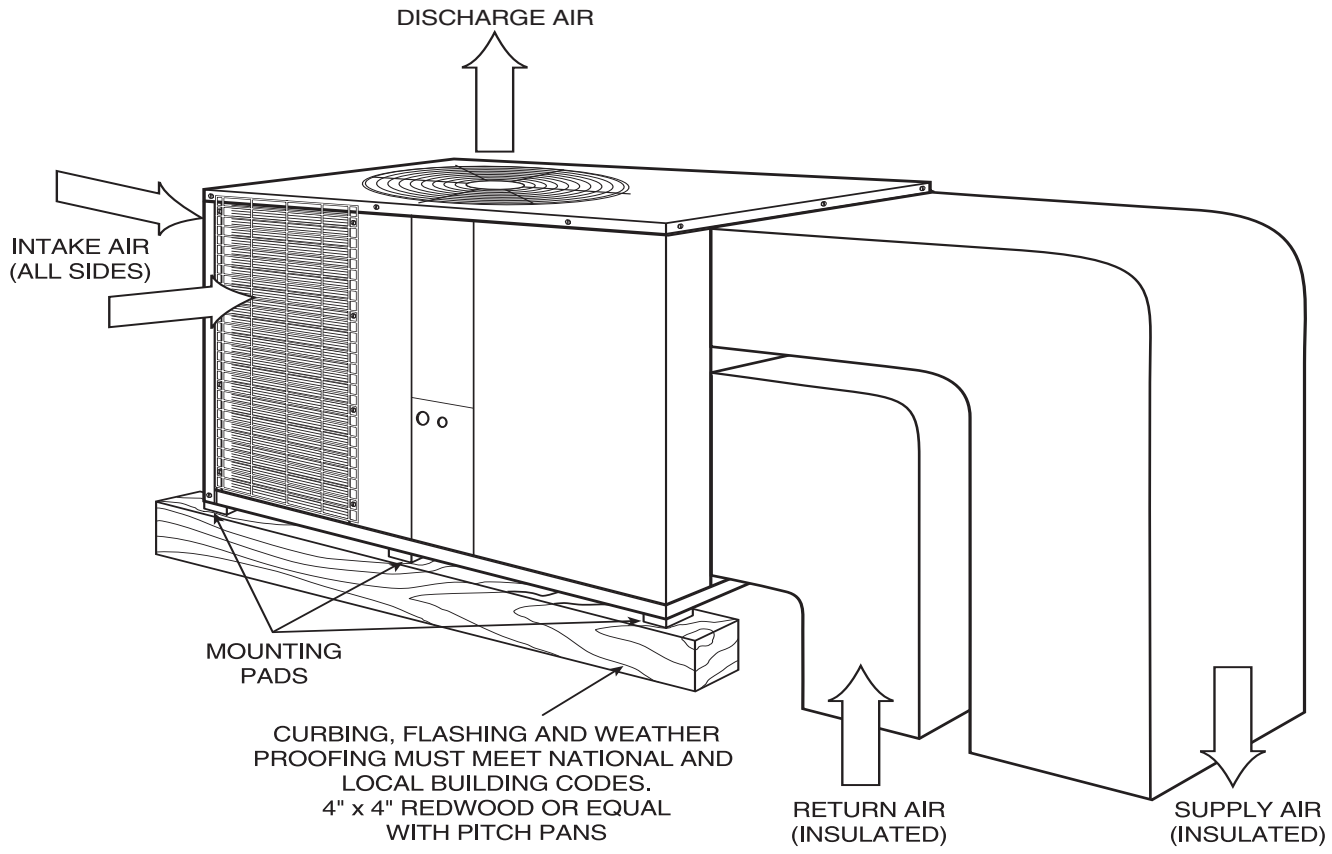


Figure 4. Typical Rooftop Frame Application

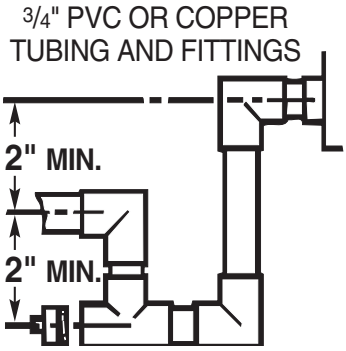
Condensate Drain Piping

A 3/4-inch female NPT condensate drain connection is provided on the evaporator access panel end of the unit. Provide a trap and fill it with water before starting the unit to avoid air from being drawn through. Follow local codes and standard piping practices when running the drain line. Pitch the line downward away from the unit. Avoid long horizontal runs. See Figure 5, below.

NOTE: Do not use reducing fittings in the drain lines.

The condensate drain must be:

- Made of 3/4" pipe size.
- Pitched 1/4" per foot to provide free drainage to conve nient drain system.
- Trapped.
- Must not be connected to a closed drain system unless the trap is properly vented.



QTY.	MATERIALS
1	TEE
3	90˚ ELL
1	PLUG
1	4" NIPPLE
2	2" NIPPLE
1	3/4" NPT TO PVC OR COPPER ADAPTER

FROM DWG. 21C128186 FIG 1, R1

Figure 5. Typical Condensate Drain Piping

Air Filters

These units require filters with adequate filter area be provided in the return air duct. Table 2 below gives filter data. The specific location of the filters depends on the type of installation and the layout of the duct system. Be sure the owner is aware of the location of the filter and the need to change them as required. The Filter Size (Sq. Ft.) are based on 300 F.P.M. face velocity. If permanent filters are used, size per mfg. recommendation with clean resistance of .05" WC.

Table 1. Determine Filter Size

UNIT	NOMINAL CFM	FILTER* (Sq Ft) SIZE	FILTER RESISTANCE
4WHC3024A	800	2.67	0.05
4WHC3030A	1000	3.33	0.05
4WHC3036A	1200	4.00	0.05
4WHC3042A	1400	4.67	0.05
4WHC3048A	1600	5.33	0.05
4WHC3060A	2000	6.67	0.05

*Filters must be installed in the return air system. The above square footages are based on 300 F.P.M. face velocity. If permanent filters are used, size per mfg. Recommendation with clear resistance of 0.05"WC.

Electrical Wiring

⚠ WARNING

SAFETY HAZARD!

To prevent injury or death due to electrical shock or contact with moving parts, lock unit disconnect switch in open position before servicing unit.

Note: This unit is factory wired for 230V. See wiring diagram for 208V conversion.

Electrical Connections

Electrical wiring and grounding must be installed in accordance with local codes or, in the absence of local codes, with the National Electrical Code ANSI/NFPA 70, Latest Revision (N.E.C.).

Electrical Power

It is important that proper electrical power be available for the unit. Voltage variation should remain within the limits stamped on the unit nameplate.

Disconnect Switch

Provide an approved weatherproof disconnect within close proximity and within sight of the unit.

Over Current Protection

The branch circuit feeding the unit must be protected as shown on the unit's rating plate.

Power Wiring

The power supply lines must be run in weather-tight conduit to the disconnect and into the bottom of the unit control box. Provide strain relief for all conduit with suitable connectors.

Provide flexible conduit supports whenever vibration transmission may cause a noise problem within the building structure.

Ensure all connections are made tight.

1. For branch circuit wiring (main power supply to the unit disconnect), wire size for the length of run should be determined using the circuit ampacity found on the unit nameplate and the N.E.C.
2. For more than 3 conductors in a raceway or cable, see the N.E.C. for derating the ampacity of each conductor.
3. Wire size is based on 75 degrees C rated wire insulation.

Grounding: The unit must be electrically grounded in accordance with local codes or the National Electric Code.

Accessories

All electrical accessories must be installed and wired according to the instructions packaged with the accessory.

Control Wiring (Class II)

Low voltage control wiring should not be run in the same conduit with the power wiring unless Class I wire of the proper voltage rating is used. Route the thermostat cable or equivalent single leads of No. 18 AWG colored wire from the thermostat subbase terminals through the rubber grommet on the unit. See Figure 1 for the control entry location. Make connections as shown on the unit wiring diagram and in Figures 5 and 6.

Do not short thermostat wires since this will damage the control transformer.

Recommended wire sizes and lengths for installing the unit thermostat are provided in Table 1: Thermostat Wire Size and Maximum Length. The total resistance of these low voltage wires must not exceed one (1) ohm. Any resistance in excess of one (1) ohm may cause the control to malfunction because of the excessive voltage drop.

IMPORTANT: Upon completion of wiring check all electrical connections, including factory wiring within the unit. Make sure all connections are tight. Replace and secure all electrical box covers and access doors before leaving the unit or turning on the power to the unit.

After all electrical wiring is complete, set the thermostat system switch on the OFF position so that the compressor will not run and then apply power by closing the system main disconnect switch. This will activate the compressor sump heat. Do not change the Thermostat System Switch until power has been applied long enough to evaporate any liquid R-410A in the compressor. It is recommended that the sump heat be energized for a minimum of eight (8) hours prior to starting the unit.

Table 1. Thermostat Wire Size and Maximum Length

WIRE SIZE	MAXIMUM LENGTH (Ft)
18	75
16	125
14	200

Starting the Unit

⚠ WARNING

THIS PRODUCT CONTAINS FIBERGLASS WOOL INSULATION! Fiberglass dust and ceramic fibers are believed by the State of California to cause cancer through inhalation. Glasswool fibers may also cause respiratory, skin, or eye irritation.

This warning complies with State of California law, Proposition 65.

Pre-Start Quick Checklist

- Is the unit properly located and level with the proper clearance? See Figures 1-2, pages 4-5. See Step 2-Re view Location and Clearances on page 4.
- Is the duct work correctly sized, run, taped, insulated, and weatherproofed with proper unit arrangement? See Ductwork Installation section on page 16.
- Is the condensate line properly sized, run, trapped, and pitched? See Condensate Drain Piping section on page 16.
- Is the filter of the correct size and quantity? Is it clean and in place? See Air Filter Installation section on page 17.
- Is the wiring properly sized and run according to the unit wiring diagram? See Electrical Wiring section on page 17.
- Are all the wiring connections, including those in the unit, tight? See Electrical Wiring section on page 17.
- Has the unit been properly grounded and fused with the recommended fuse size? See Electrical Wiring section on page 16.
- Is the thermostat well located, level, and correctly wired? See Electrical Wiring section on page 17.
- Have the air conditioning systems been checked at the ser vice ports for charge and leak tested if necessary?
- Do the condenser fan and indoor blower turn free without rubbing, and are they tight on the shafts?
- Has all work been done in accordance with applicable local and national codes?
- Are all covers and access panels in place to prevent air
- loss and safety hazards?

Starting the Unit In the Cooling Mode

IMPORTANT: Before starting the system in the cooling cycle, turn the thermostat switch to "OFF" and close the unit disconnect switch. This procedure energizes the compressor crankcase heat (if equipped) thereby vaporizing any liquid R-410A in the crankcase. This is a precaution against foaming at start-up which could damage the compressor. Allow the heat to operate for a minimum of eight (8) hours. The 4WHC3048-060F units do not have sump heat as shipped.

NOTE: The crankcase heater is a field installed option on some models.

NOTE: See the section on "Sequence of Operation" for a description of the cooling operating sequence.

- To start the unit in the cooling mode, set the thermostat system switch to COOL. Move the thermostat COOL indicator to a setting below room temperature. The outdoor fan motor, compressor, and evaporator fan motor will operate automatically.

Operating Pressures

After the unit has operated in the cooling mode for a short time, install pressure gauges on the gauge ports of the discharge and suction line valves. Check the suction and discharge pressures and compare them to the normal operating pressures provided in the unit's Service Facts.

Voltage

With the compressor operating, check the line voltage at the unit. The voltage should be within the range shown on the unit nameplate. If low voltage is encountered, check the size and length of the supply line from the main disconnect to the unit. The line may be undersized for the length of the run.

Cooling Shut Down

- Place the system selector switch in the OFF position or reset the thermostat at a setting above the room temperature.
- Do not de-energize the main power disconnect except when the unit is to be serviced. Power is required to keep the compressor crankcase heat (if equipped) energized and boil off refrigerant in the compressor.

Starting the Unit in the Heating Mode

NOTE: See the section on "Sequence of Operation" for a description of the heating operating sequence.

- Check to make sure that all grilles and registers are open and all unit access doors are closed before start-up.
- To start the unit in the heating mode, set the thermo-stat system switch to HEAT. Move the thermostat HEAT indicator to a setting above room temperature and place the fan switch in the AUTO or ON positions. The indoor fan motor will operate automatically.
- The thermostat must provide a "G" signal for fan operation. If using an auto changeover thermostat, see Figures 5 and 6 for the appropriate connections.

Heating Shut-Down

- Place the system selector switch to the OFF position or place the heating selector lever at a setting below the room temperature.

Sequence Of Operation

General

Operation of the unit heating and cooling cycles is automatic for HEAT and COOL modes. (The optional automatic changeover thermostat, when in the AUTO mode, automatically changes to heat or cool with sufficient room temperature change.) The fan ON mode causes continuous evaporator (indoor) fan operation, and the AUTO mode causes fan operation to coincide with heating or cooling run cycles. Continuous fan mode during cooling operation may not be appropriate in humid climates. If the indoor air exceeds 60% relative humidity or simply feels uncomfortably humid, it is recommended that the fan only be used in the AUTO mode.

Cooling Mode

(NOTE: TSH & TSC are contacts internal to the indoor thermostat.)

With the disconnect switch in the ON position, current is supplied to the compressor crankcase heater and control transformer. (The outdoor fan relay (ODF) relay is energized through normally closed contacts on the defrost timer control (DFC) on the 460V and 600V units only.) The cooling cycle is enabled through the low voltage side of the control transformer to the "R" terminal on the indoor thermostat. With the system switch in the AUTO position and TSC-1 contacts closed, power is supplied to the "O" terminal on the indoor thermostat to the switchover valve coil (SOV). This energizes the switch-over valve (SOV) and places it in the cooling position (it is in the heating position when not energized).

When the indoor temperature rises 1-1/2 degrees, TSC-2 contacts close, supplying power to the "Y" terminal on the indoor thermostat, and to the compressor contactor (CC). This starts the outdoor fan motor and compressor. The TSC-2 contacts also provide power to the "G" terminal which provides power to the fan relay (F) starting the indoor fan motor.

Heating Mode

With the disconnect switch in the "ON" position, current is supplied to the compressor crankcase heater and control transformer. (The outdoor fan relay (ODF) is energized through normally closed contacts on the defrost timer control (DFC) on the 460V and 600V units.) Starting at the "R" terminal on the indoor thermostat, current goes through the system switch (which is in "AUTO" position) to the TSH-1 contacts. When closed, these contacts supply power to terminal "Y" on the indoor thermostat as well as to the heating anticipator. The switch-over valve will not energize because of the high resistance of the heating anticipator in the thermostat. Power is provided from "Y" to the compressor contactor (CC) which starts the outdoor fan motor and compressor. The indoor thermostat contact TSH-1 also provides power to "G" terminal on the indoor thermostat energizing the fan relay (F), which starts the indoor fan motor

Supplementary Heat

The supplementary electric heat is brought on when the indoor temperature drops 1-1/2 degrees below the thermostat setting. TSH-2 contacts close providing power to the "W" terminal on the indoor thermostat and to the supplementary heater control circuit. NOTE: The fan relay(F) must have been energized. An outdoor thermostat may have been added to disallow the second stage (if provided) of electric heat above a selected outdoor temperature. If the outdoor temperature falls below the setting on the outdoor thermostat, this additional heater stage will come on. When the outdoor air temperature rises, and the outdoor T-stat setpoint is reached, the system will revert back to first stage electric heating.

When the indoor ambient is satisfied, TSH-2 contacts will open and the unit will revert back to the compressor only heating mode and then off. For emergency heat (use of supplementary electric heat only), an emergency (EMERG) heat switch is provided within the thermostat. When placed in the emergency heat position, it will disable the compressor, bypass the outdoor thermostats, if provided, and engage the supplementary electric heaters and indoor fan.

Demand Defrost Operation

During the heating cycle, the outdoor coil may require a defrost cycle which is determined by the demand defrost control (DFC). This control continuously measures the outdoor coil temperature (CBS) and the outdoor ambient temperature (ODS-B) and calculates the difference or delta-T measurement. When the calculated delta-T is met, the demand defrost control (DFC) opens the circuit to the outdoor fan motor (ODM) and energizes the switch-over valve (SOV), placing the unit in the cooling mode to defrost the outdoor coilOn SCROLL bearing units only, the control will stop the compressor for a minimum of thirty (30) seconds). The outdoor coil temperature sensor (CBS) terminates the defrost cycle, or times off after twelve minutes in defrost, the (DFC) energizes the outdoor fan motor (ODM) and fifteen seconds later de-energizes the (SOV), which returns the unit to the heating mode. Supplementary electric heat, if provided, is brought on to control indoor temperature during the defrost cycle.

ECM Fan Motor Adjustments (4WHC3042, 048, & 060 ONLY)

If the airflow needs to be increased or decreased, see the Airflow Table in the Service Facts. Information on changing the speed of the blower motor is in the Blower Performance Table.

Blower speed changes are made on the ICM Fan Control mounted in the control box. The ICM Fan Control controls the variable speed motor.

There is a bank of 8 dip switches located at the upper left side of the board. The dip switches work in pairs to match the cooling/heat airflow (CFM/TON), Fan off-delay options, and electric heat airflow adjustment. The switches appear as shown in Figure 6.

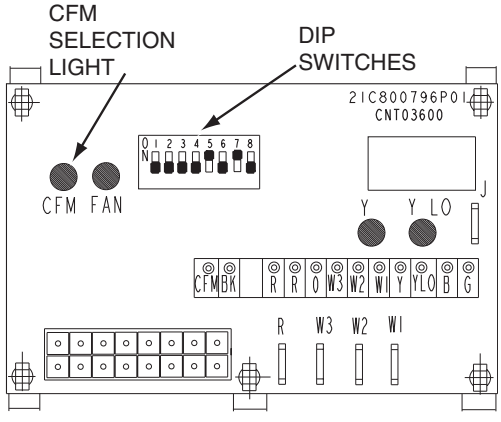
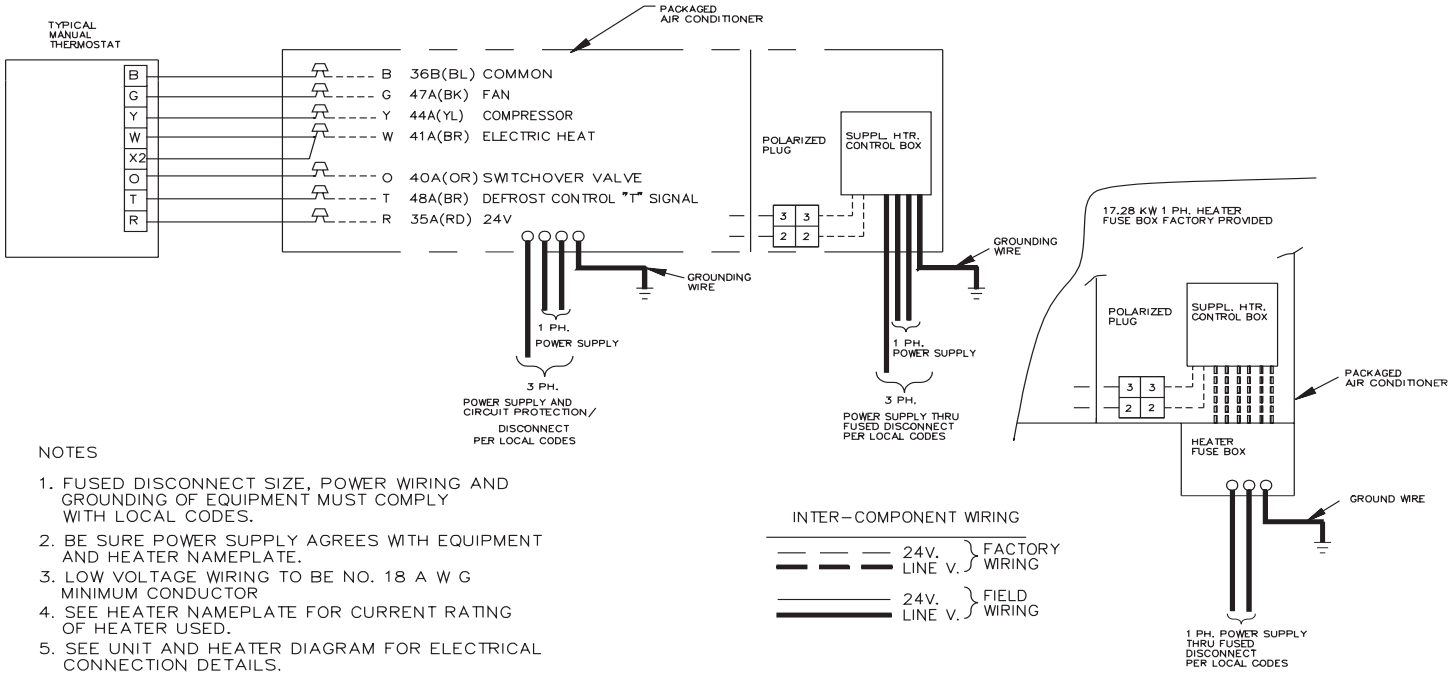


Figure 6. ECM Fan Control



NOTES

1. FUSED DISCONNECT SIZE, POWER WIRING AND GROUNDING OF EQUIPMENT MUST COMPLY WITH LOCAL CODES.
2. BE SURE POWER SUPPLY AGREES WITH EQUIPMENT AND HEATER NAMEPLATE.
3. LOW VOLTAGE WIRING TO BE NO. 18 A W G MINIMUM CONDUCTOR
4. SEE HEATER NAMEPLATE FOR CURRENT RATING OF HEATER USED.
5. SEE UNIT AND HEATER DIAGRAM FOR ELECTRICAL CONNECTION DETAILS.

Dwg. No. D757386

Figure 7. Field Hookup Diagram (With Supplementary Heaters)

Final Installation Checklist

- Does the unit run and operatioe as described in the section on Sequence of Operation, page ?, in response to the room thermostat?
- Are the condenser fan and indoor blower operating correctly with proper rotation and without undue noise?
- Is the compressor operating correctly asnd has the system been checked with a charging chart?
- Has the voltage and running current been checked to determine if it is with in limits?
- Has the thermostat been checked for calibration and the air discharge grills adjusted to balance the system?
- Has the duct work been checked for air leaks and condensation?
- Has the heating air temperature rise been checked?
- Has the unit been checked for tubing and sheet metal rattles? Are there any other unusual noises to be checked?
- Are all covers and panels in place and properly fastened?
- Has the owner been instructed on the proper operation and maintenance of the unit? Be sure to leave this manual with the owner.

Maintenance

Owner Maintenance

Some of the periodic maintenance functions of the packaged unit can be performed by the owner; this includes replacing the disposable or cleaning the permanent air filters, cleaning the unit cabinet, cleaning the condenser coil, and conducting a general unit inspection on a regular basis.

Filters

When the system is in constant operation, inspect the filters at least once each month.

If the unit has disposable-type filters, replace them with new filters of the same type and size. Do not attempt to clean disposable filters.

Permanent-type filters can be cleaned by washing them with a mild detergent and water. Make sure that the filters are thoroughly dry before reinstalling them in the unit (or duct system).

Note: It may be necessary to replace permanent filters annually if washing fails to clean the filter or if the filter shows signs of deterioration. Be sure to use the same type and size as was originally installed.

Condenser Coil

Be sure to keep all vegetation and debris away from the condenser coil area.

Service Maintenance

Cooling Season

To keep the unit operating safely and efficiently, the manufacturer recommends that a qualified service technician check the entire system at least once each season or sooner if needed. The service technician should examine these areas of the packaged unit:

- filters (for cleaning or replacement)
- motors and drive system components (for proper operation)
- safety controls (for mechanical cleaning)
- electrical components and wiring (for possible replacement and connection tightness)
- condensate drain (for proper sealing and cleaning)
- unit duct connections (to see that they are physically sound and sealed to the unit casing)
- the unit (for obvious unit deterioration)

Heating Season

- Complete the following unit inspections and service routines at the beginning of each heating season.
- Visually inspect the unit to ensure that the airflow required for combustion and condenser coil is not obstructed from the unit.
- Inspect the control panel wiring to verify that all electrical connections are tight and that the wire insulation is intact.

⚠ WARNING

Do NOT connect 24 VAC to T1 (ODS-A) terminal. ODS-A thermistor WILL BE BLOWN.

DEFROST CONTROL

The demand defrost control measures heat pump outdoor ambient temperature with a sensor located outside the outdoor coil. A second sensor located on the outdoor coil is used to measure the coil temperature. The difference between the ambient and the colder coil temperature is the difference or delta-T measurement. This delta-T measurement is representative of the operating state and relative capacity of the heat pump system. By measuring the change in delta-T, we can determine the need for defrost. The coil sensor also serves to sense outdoor coil temperature for termination of the defrost cycle.

FAULT DETECTION
A fault condition is indicated by the flashing light on the defrost control inside the heat pump control box.

In normal operation, the defrost control light will flash once each second. If the light is flashing more than once per second or not-at-all, refer to the service manual for that unit.

PIN IDENTIFICATION (See Figure)

1. TEST_COMMON (Shorting any of the other pins to this pin causes the function of the other pin to be executed. Leaving this pin open results in the normal mode of operation.)

2. TST = Test (Shorting TEST_COMMON to this pin speeds up all defrost board timings.)

3. FRC_DFT = Forced Defrost (Short TEST_COMMON to this pin for two (2) seconds to initiate a forced defrost. Remove the short after defrost initiates.)

DEFROST CONTROL CHECKOUT
Normal operation requires:
a. LED on board flashing 1 time/second.

b. 24V AC between R & B

c. 24V AC between Y & B with unit operating

d. Defrost initiation when FRC_DFT pin is shorted to TEST_COMMON pin.
If a defrost control problem is suspected, proceed to DEMAND DEFROST CONTROL CHECKOUT in this Service Facts.

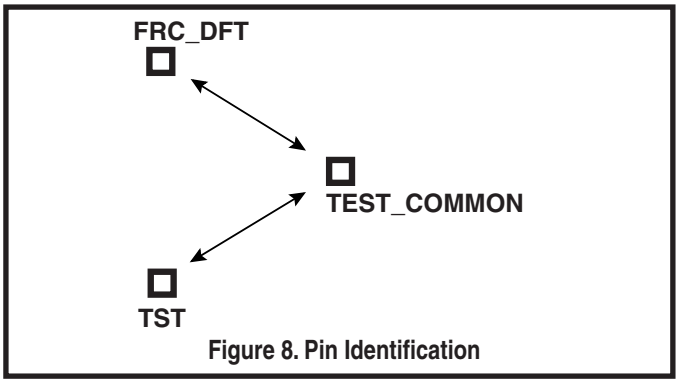


Figure 8. Pin Identification

PROCEDURE FOR TESTING SENSORS

Measure the temperature the subject sensor is exposed to. If the sensor is mounted on a tube, place the lead on an Annie A-8 (or equiv.) temperature tester on the same tube near the sensor and insulate the bulb.

Unplug the sensor and measure the resistance with a good quality ohmmeter (Simpson 260 or equiv.). Read the value as quickly as possible to prevent the meter current from changing the resistance reading.

Using the chart on the right, locate (as close as possible) the actual sensor temperature. The measured resistance should be relatively close to the resistance value shown in the chart.

Example:

Sensor temp. = 19°F.

Measured Resistance = 46K ohms

This sensor is good since the measured value is relatively close to the chart value.

FLASH RATE INDICATIONS:

1 — Flash/Second	=	Normal operation.
2 — Flashes/Second	=	Fault A (Low DT) i.e.: Inoperative compressor, loss of charge, open ambient sensor, shorted coil sensor.
3 — Flashes/Second	=	Fault B (20 defrosts terminated on time)
		Fault C (High DT) i.e.: SOV stuck in heating, shorted ambient sensor, open coil sensor, closed TXV,OD motor failure, OD fan on in defrost, undercharged unit.
4 — Flashes/Second	=	Fault A & C or A & B

For additional information consult Pub. No. 34-1005-03 Heat Pump Defrost Controls.

TEMP (°F)	RESISTANCE
86	7.85K
81	8.85K
75	10.24K
70	11.59K
65	13.14K
59	15.32K
55	16.93K
50	19.41K
45	22.20K
41	24.76K
36	28.45K
32	31.84K
25	37.50K
19	46.44K
14	53.94K
10	57.64K
5	67.06K
0	78.05K

SYMPTOMS	CHECKS	YES/NO	ACTIONS
1. LED off.	1. 24V R-B & Y-B at board, with unit running?	N	Repair low voltage wiring.
		Y	Complete Check #2.
	2.Short FRC_DFT pin to TEST_COMMON pin. Is defrost cycle initiated?	N	Replace defrost control.
		Y	LED is bad but control will still function.
2. LED flashing very rapidly (greater than 4 times/sec) or appears to be on continuously.	TEST_COMMON pin shorted to TST pin?	Y	Remove short.
		N	Replace defrost control.
3. Control does not initiate a normal defrost.	OD Temp. below 49°F. OD Coil temp. below 35°F.? "Delta" T increasing?	N	Check refrigerant circuits for balanced distribution of refrigerant if OD coil is frosting and delta T is not increasing
	1. LED flashing?	N	Refer to SYMPTOM #1.
		Y	Complete Check #2.
	2. Check for 24V Y-B at board with unit running.	N	Repair low voltage wiring.
		Y	Complete Check #3.
	3. Check sensors for correct mounting (connection) and resistance.		Remount or replace sensor if necessary.
	4. Short FRC_DFT pin to TEST_COMMON pin. Is defrost cycle initiated?	N	Replace defrost control.
		Y	Y-B signal or control may be intermittent
4. Control does not initiate a forced defrost.	24V R-B & Y-B at board with unit running?	N	Repair low voltage wiring.
		Y	Replace defrost control.
5. Defrost initiates manually but terminates in less than 10 seconds.			Replace defrost control.
6. Defrost initiates manually but terminates on time.	1. Coil sensor circuit open or reading at a very high resistance?	Y	Replace coil sensor.
	2. Does OD fan cycle off in defrost?	N	Replace defrost control.
	3. Windy weather preventing normal termination?		
7. Defrost initiates on approximately 15/25 minute intervals.	Be sure OD coil is clean.	N	Complete Check #2.
	1. Coil sensor open or reading a very high resistance?	Y	Replace coil sensor.
	2. Ambient sensor reading less than normal?	N	Complete Check #3.
		Y	Replace ambient sensor.
	3. OD fan off in defrost?	N	Replace defrost control.

8. Defrost initiates on approximately 30/45 minute intervals.	1.TEST_COMMON pin shorted to TST pin?	Y	Remove short.
	2. Do both sensors check OK?	N	Replace defective sensor (Clear coil and reset Emergency heat light).
		Y	Complete SYMPTOM #3.
	3. Verify correct system charge.		Adjust as needed.
	4. Verify a "forced defrost" terminates less than 15 minutes.	N	Replace defrost control.
	5. OD fan motor off in defrost.		See SYMPTOM #9.
	6. Verify proper SOV operation.		Replace if necessary.
9. OD fan runs during defrost.			Replace defrost control.
10. No SOV delay on defrost termination.	Has J1 been cut?	Y	The soft-switch time is defeated when J1 is cut.
		N	Replace defrost control.
11. ODS-A burned out.	1. B to T greater than 10 volts?	Y	Check low voltage wiring for miswire.
		N	Check for short in low voltage wiring.
12. On SCROLL bearing units, compressor does not operate.	1. 24V R-B at board & 24V Y-B at board?	N	Repair low voltage wiring.
	2. Check protective devices in YO circuit . 24V YO-B present after 30 seconds.	N	Y-B signal or control may be intermittent
13. On SCROLL bearing units, no 30 second off delay at defrost initiation.	Check voltage between control terminals 2 and 7,force a defrost cycle. Is 24V present for 30 seconds and 0V thereafter?	N	Replace defrost control.

Base Limited Warranty

Packaged Heat Pump
4WHC3 (Parts Only) Models Less Than 20 Tons

Subject to the terms and conditions of this limited warranty, Trane U.S., Inc. ("Company') extends a limited warranty against manufacturing defects for the product(s) identified in **Table 1, 1A, 1B** attached hereto ("Products') that are installed in a residential application (personal, family or household purposes) under normal use and maintenance in the United States and Canada.

This limited warranty applies to Products manufactured on or after August 1, 2011.

In order to maximize the available benefits under this limited warranty, the Purchaser (as defined below) should read it in its entirety. All repairs of Product parts covered under this limited warranty must be made with authorized service parts and by a licensed HVAC service provider. Additionally, commercial applications are treated differently under this limited warranty as stated in **Table 1, 1A, 1B** attached hereto. For purposes of this limited warranty, "commercial applications" shall mean any application other than for personal, family, or household use.

TERM: The limited warranty period for Products is as stated in **Table 1, 1A, 1B** attached hereto. If the Purchaser properly registers the Products, the limited warranty period shall be extended as stated in **Table 1, 1A, 1B** attached hereto. Regardless of registration, the Commencement Date for a limited warranty period shall be the date that the original installation is complete and all Product start-up procedures have been properly completed and verified by an installer's invoice. If the installation and start-up date cannot be verified by the installer's invoice, the Commencement Date shall be sixty (60) days after the factory manufacture date which is verified by the Product serial number. Where a Product is installed in a newly constructed home, the Commencement Date is the date the Purchaser purchased the residence from the builder. Proof of Product purchase, installation, and/or closing date of the residence may be required to confirm the Commencement Date.

The installation of Product replacement parts under this limited warranty shall not extend the original warranty period. The warranty period for any Product part replaced under this limited warranty is the applicable warranty period remaining under the original Product warranty.

WHO IS COVERED: This limited warranty is provided only to the original owner and his or her spouse ("Purchaser') of the residence where the Products are originally installed. This warranty is not transferable except according to terms stated on the applicable website identified below under Registration Requirements. Company has the right to request any and all proof of Product purchase or installation and/or closing date of the residence.

WHAT COMPANY WILL DO: Company may request proof of Product purchase and/or installation in order to provide Product parts under this limited warranty. As Company's only responsibility and Purchaser's only remedy under this limited warranty, Company will furnish a replacement part to the licensed HVAC service provider, without charge for the part only, to replace any Product part that fails due to a manufacturing defect under normal use and maintenance. The Purchaser must pay for any and all shipping and handling charges and other costs of warranty service for the replacement part. If a Product part is not available, Company will, at its option, provide a free suitable substitute part or provide a credit in the amount of the then factory selling price for a new suitable substitute part to be used by the Purchaser towards the retail purchase price of a new Company product. Any new Product purchase shall be at Purchaser's sole cost and expense including, but not limited to, all shipping, removal, and installation costs and expenses.

REGISTRATION REQUIREMENTS: All Products must be properly registered online by the Purchaser within sixty (60) days after the Commencement Date to receive the registered limited warranty terms. To register online, go to:

http://www.trane.com/Residential/Trane/Owners/Warranty-Information or
http://www.americanstandardair.com/sevicesupport/pages/warranty.aspx
and click "Begin Online Registration." If a Purchaser does not register within this stated time period, the base limited warranty terms shall apply.

ELIGIBILITY REQUIREMENTS: The following items are required in order for the Products to be covered under this limited warranty:

- The Products must be in the same location where they were originally installed.
- The Products must be properly installed, operated, and maintained by a licensed HVAC service provider in accordance with the Product specifications or installation, operation, and maintenance instructions provided by Company with each Product. Failure to conform to such specifications and/or instructions shall void this limited warranty. Company may request written documentation showing the proper preventative maintenance.
- All Product parts replaced by Company under this limited warranty must be given to the servicing provider for return to Company.
- Air handlers, air conditioners, heat pumps, cased or uncased coils and stand-alone furnaces must be part of an Air Conditioning, Heating, and Refrigeration Institute rated and matched system or a specification in a Company provided bulletin or otherwise approved in writing by a Company authorized representative.

EXCLUSIONS: The following are not covered by this limited warranty:

- Labor costs including, but not limited to, costs for diagnostic calls or the removal and reinstallation of Products and/or Product parts.
- Shipping and freight expenses required to ship Product replacement parts.
- Failures, defects, or damage (including, but not limited to, any loss of data or property) caused by (1) any third party product, service, or system connected or used in conjunction with the Products; (2) any use that is not designed or intended for the Products; (3) modification, alteration, abuse, misuse, negligence, or accident; (4) improper storage, installation, maintenance, or operation including, but not limited to, operation of electrical equipment at voltages other than the range specified on the Product nameplate; (5) any use in violation of written instructions or specifications provided by Company; (6) any acts of God including, but not limited to, fire, water, storms, lightning, or earthquakes; or any theft or riots; or (7) a corrosive atmosphere or contact with corrosive materials such as, but not limited to, chlorine, fluorine, salt (provided that indoor and outdoor coils will only be covered if a Sea Coast Kit is installed), sulfur, recycled waste water, urine, fertilizers, rust, or other damaging substances or chemicals.
- Products purchased direct including, but not limited to, Internet or auction purchases and purchases made on an uninstalled basis.
- 3 phase models, cabinets or cabinet pieces that do not affect product performance, air filters, refrigerant, refrigerant line sets, belts, wiring, fuses, surge protection devices, non-factory installed driers, and Product accessories.
- Increased utility usage costs.

REFRIGERANT POLICY: Beginning on January 1, 2010, R-22 refrigerant will no longer be used as a manufacturer-installed refrigerant as required by federal regulation. Any and all expenses or costs associated with replacing Product parts that are not R-410A compatible will not be covered by the terms and conditions of this limited warranty. In addition, all Products containing R-410A refrigerant include a liquid line filter drier which must be replaced when a compressor replacement is necessary. A suction line filter drier must be added for compressors defined as burnouts. Failure to comply with such filter drier requirements or the use of contaminated or alternate refrigerant or any non-approved refrigerant system additives including, but not limited to, dyes, will void this limited warranty.

ADDITIONAL TERMS:

THIS LIMITED WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE APPLICABLE PRODUCT WARRANTY. COMPANY DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OBLIGATION OR LIABILITY IN CONNECTION WITH THE PRODUCTS.

NOTWITHSTANDING ANYTHING IN THIS LIMITED WARRANTY TO THE CONTRARY, COMPANY SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL AND/OR PUNITIVE DAMAGES, WHETHER BASED ON CONTRACT, WARRANTY, TORT (INCLUDING, BUT NOT LIMITED TO, STRICT LIABILITY OR NEGLIGENCE), PATENT INFRINGEMENT, OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. COMPANY'S MAXIMUM LIABILITY HEREUNDER IS LIMITED TO THE ORIGINAL PURCHASE PRICE OF THE PRODUCTS.

No action arising out of any claimed breach of this limited warranty may be brought by a Purchaser more than one (1) year after the cause of action has arisen.

This limited warranty gives you specific legal rights, and you may also have other rights as otherwise permitted by law. If this Product is considered a consumer product, please be advised that some local laws do not allow limitations on incidental or consequential damages, how long a warranty lasts based on registration, or how long an implied warranty lasts, so that the above limitations may not fully apply. Refer to your local laws for your specific rights under this limited warranty.

Residential Systems
6200 Troup Highway, Tyler, TX 75707
Attn: Customer Relations

Or visit our website at **www.trane.com** or **www.americanstandardair.com**

GW-658-4911

TABLE 1: Warranty Time Periods for Outdoor Units, Air Handlers, Packaged Air Conditioners and Heat Pumps, Furnaces and Cased and Uncased Coils

COVERAGE TERMS FOR RESIDENTIAL APPLICATIONS: Pursuant to the Trane U.S., Inc. ("Company") limited warranty terms and conditions, the following Products are covered for the base time periods as stated below ("Base Limited Warranty Period'). If registered, the Base Limited Warranty Periods for certain Products will be extended as stated below ("Registered Limited Warranty Period").

SINGLE PHASE R410 OUTDOOR UNITS:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts: five (5) years.
Registered Limited Warranty Period:
TRANE: 4TTM3. ASD**: 4A7M3: Compressor, Outdoor Coil, Parts – ten (10) years.
TRANE: 4TTB3, 4TTB4, 4TWB4, 4TWB3. ASD: 4A7B4, 4A6B4, 4A7B3, 4A6B3:
Compressor, Outdoor Coil, Parts – ten (10) years.
TRANE: 4TTR5, 4TTR3, 4TWR5, 4TWR3. ASD: 4A7A5, 4A7A3, 4A6H5, 4A6H3:
Compressor, Outdoor Coil, Parts – ten (10) years.
TRANE: 4TTZ0, 4TTX6, 4TTX5, 4TWZ0, 4TWX6, 4TWX5. ASD: 4A7Z0, 4A7A6, 4A6Z0, 4A6H6:
compressor – twelve (12) years, Outdoor Coil, Parts –ten (10) years.

SINGLE PHASE R22 OUTDOOR UNITS:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts - one (1) year.
Registered Limited Warranty Period:
TRANE: 2TTB3, 2TWB3. ASD: 2A7B3, 2A6B3: Compressor, Outdoor Coil, Parts– five (5) years.

3- PHASE OUTDOOR UNITS (models up to 5 Ton):
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts - one (1) year.
Registered Limited Warranty Period:
TRANE: 4TTA, 4TWA. ASD: 4A7C, 4A6C: Compressor, Outdoor Coil, Parts - five (5) years.

AIR HANDLERS:
Base Limited Warranty Period: Indoor Coil and Parts – five (5) years.
Registered Limited Warranty Period:
TRANE and ASD: GAM5, *AM4, *AM7, *AM8, GAT2, GAF2: Indoor Coil and Parts – ten (10) years.

Base Limited Warranty Period: Indoor Coil and Parts – one (1) year.
Registered Limited Warranty Period:
TRANE and ASD: 2/4TEE, 2/4TFE, 2/4TEC, Indoor Coil and Parts – five (5) years.

PACKAGED AIR CONDITIONERS and PACKAGED HEAT PUMPS:
TRANE and ASD: 4WCZ6:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts – five (5) years.
Registered Limited Warranty Period: Compressor – twelve (12) years, Outdoor Coil, Parts – ten (10) years.

TRANE and ASD: 4DCZ6, 4YCZ6:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts – five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period: Compressor – twelve (12) years, Outdoor Coil, Parts – ten (10) years.

TRANE and ASD: 4DCY4, 4YCY4, 4YCX3:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts – five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period:
Compressor, Outdoor Coil, and Parts – ten (10) years.

TRANE and ASD: 4TCY4, 4TCX3, 4WCY4, 4WCX3:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts – five (5) years.
Registered Limited Warranty Period:
Compressor, Outdoor Coil, and Parts – ten (10) years.

TRANE and ASD: 4YCC3:
Base Limited Warranty Period: Compressor, Outdoor Coil, Parts – five (5) years, Heat Exchanger – ten (10) years.
Registered Limited Warranty Period:
Compressor, Outdoor Coil, Parts – ten (10) years.

TRANE and ASD: 4TCC3, 4WCC3:
Base Limited Warranty Period: Compressor, Outdoor Coil, and Parts – five (5) years .
Registered Limited Warranty Period: Compressor, Outdoor Coil, Parts – ten (10) years.

TRANE and ASD: 4WHC3:
Base Limited Warranty Period: Compressor, Outdoor Coil, and Parts – five (5) years.

FURNACES:
TRANE and ASD: *UE1/*DE1:
Base Limited Warranty Period: Parts – five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period: Parts – ten (10) years, Heat Exchanger: twenty (20) years.

TRANE and ASD: *UD1/*DD1; *UD2/*DD2; *UD1-H/ *DD1-H:
Base Limited Warranty Period: Parts: five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period:
Parts – ten (10) years, Heat exchanger– twenty (20) years,

TRANE and ASD:*UD2-V/*DD2-V; *UD2-C-V/*DD2-C-V:
Base Limited Warranty Period: Parts: five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period:
Parts – ten (10) years, Heat exchanger– Lifetime

TRANE and ASD: *UC1/*DC1:
Base Limited Warranty Period: Parts – five (5) years, Heat Exchanger – twenty (20) years.
Registered Limited Warranty Period:
Parts – ten (10) years, Heat Exchanger - Lifetime.

TRANE and ASD: *UH1/*DH1;*UX1/*DX1; *UH2/*DH2; *UHM/*DHM:
Base Limited Warranty Period: Parts – five (5) years, Heat Exchanger – twenty (20) Years.
Registered Limited Warranty Period:
Parts– ten (10) years, Heat Exchanger– Lifetime.
*Note: First digit may be a "T" or an "A"
Note Regarding Heat Exchanger: If a heat exchanger fails because of a manufacturing defect within the sixth through twentieth year of the applicable warranty period, Company will, at its sole option, provide either a replacement heat exchanger without charge, or allow a credit in the amount of the then factory selling price of an equivalent heat exchanger toward the retail purchase price of a new heating unit.

CASED AND UNCASED COILS:
Base Limited Warranty Period: Coil, Parts –five (5) years.
Registered Limited Warranty Period:
TRANE and ASD: 2/4 TXC, 2/4 TXA, 4CXC, 4TXF-CC/CZ: Coil, Parts– ten (10) years.

SPECIFIC TERMS FOR COMMERCIAL APPLICATIONS (Models listed in Tables 1, 1A, 1B)
Base Limited Warranty Period: Coil, Parts- one (1) year.
Base Limited Warranty Period: Compressor- five (5) years.
Base Limited Warranty Period for Packaged Unit Heat Exchanger: five (5) years.
Base Limited Warranty Period For All Heat Exchangers on All Other Furnace: twenty (20) years.
**ASD – American Standard Models

Table 1A: Warranty Time Periods for Controls, Zoning Products, Humidifiers, Energy Recovery Ventilators, Air Cleaners and Oil Furnaces (Variable and Non-Variable Speed)

COVERAGE TERMS FOR RESIDENTIAL APPLICATIONS: Pursuant to the Trane U.S., Inc. ("Company") limited warranty terms and conditions, the following Products are covered for the base time periods as stated below ("Base Limited Warranty period"). If registered, the Base Limited Warranty Periods for certain products will be extended as stated below ("Registered Limited Warranty Period").

CONTROLS: *CONT200,*CONT401,*CONT402, *CONT600 &*CONT602
Base Limited Warranty Period: one (1) year
Registered Limited Warranty Period: five (5) years

CONTROLS: *ZEMT500 *CONT800,*CONT802,*CONT803,*CONT900. *ZONE950
Base Limited Warranty Period: five (5) years
Registered Limited Warranty Period: ten (10) years

ZONING PRODUCTS: *ZONE950, *ZONE940, *ZONE930, ZZONEPNLAC52Z, ZZONEEXPAC52Z, ZZSENSAL0400, BAYSEN01ATEMPA, BAY24VRP, ZDAMPRD, ZDAMPSM, ZDAMPBM, ZDAMPRR
Base Limited Warranty Period: five (5) years
Registered Limited Warranty Period: ten (10) years

HUMIDIFIERS: *HUMD200, *HUMD300 & *HUMD500
Base Limited Warranty Period: five (5) years
Registered Limited Warranty Period: ten (10) years

ENERGY RECOVERY VENTILATOR (ERV): *ERVR100, *ERVR200 & *ERVR300
Base Limited Warranty Period: five (5) years
Registered Limited Warranty Period: ten (10) years

AIR CLEANERS: TFD & AFD
Base Limited Warranty Period: five (5) years
Registered Limited Warranty Period: ten (10) years

VARIABLE SPEED OIL FURNACE: *HV-V, *LF-V, *LR-V,*DF-V
Base Limited Warranty Period: Parts- five (5) years, Heat Exchanger - twenty (20) years
Registered Limited Warranty Period: Parts - ten (10) years, Heat Exchanger - Lifetime

NON-VARIABLE SPEED OIL FURNACE: *HV, *LF, *LR,*DF
Base Limited Warranty Period: Parts- five (5) years, Heat Exchanger - twenty (20) years
Registered Limited Warranty Period: Parts - ten (10) years, Heat Exchanger - Lifetime

SPECIFIC TERMS FOR COMMERCIAL APPLCIATIONS:
Base Limited Warranty Period Applies for all controls, zoning products, humidifiers and ERV's
All Oil Furnaces: Parts - one (1) year, Heat Exchanger - twenty (20) years.

*(First letter may be A or T)

Table 1B: Warranty Time Periods for Installed Accessories in Air Handlers and Packaged Units

COVERAGE TERMS FOR RESIDENTIAL APPLICATIONS: Pursuant to the Trane U.S., Inc. ("Company") limited warranty terms and conditions, the following Products are covered for the time periods as stated below.

Electric Heaters for Multi-Position Air Handlers
HEATERS, Installed in GAT2, 4 & 5 Series Air Handlers: BAYEA
Limited Warranty Period: ten (10) years

HEATER, Installed in 7 & 8 Series Air Handlers: BAYEV
Limited Warranty Period: ten (10) years

HEATER, Installed in GAF2 Air Handlers: BAYEC
Limited Warranty Period: five (5) years

Optional Accessories for Multi-Position Air Handlers
UVC LIGHTS, Installed in GAT2, GAF2, 4, 5, 7 & 8 Series Air Handlers: BAYUVC
Limited Warranty Period: Ballast - ten (10) years, Bulbs - one (1) year

COMPRESSOR CONTROL MODULE, Installed in 8 Series Air Handlers: BAY24CCVK
Limited Warranty Period: ten (10) years

Hydronic Heaters for Multi-Position Air Handlers
HOT WATER COIL, Installed in 5 Series Air Handlers: BAYWAAA05, BAYWABB07 or BAYWACC08
Limited Warranty Period: ten (10) years

HOT WATER COIL, Installed in 7 Series Air Handlers: BAYWV & BAYWA
Limited Warranty Period: ten (10) years

HOT WATER COIL, Installed in 8 Series Air Handlers: BAYWV
Limited Warranty Period: ten (10) years

Electric Heaters for Spit Systems and Convertible Air Handlers
HEATERS, Installed in 4TEE & 4TEC Air Handlers: BAYHTR14
Limited Warranty Period: ten (10) years

Electric Heaters for Packaged Units
HEATERS, Installed in 4TC*3 & 4, 4WC*3, 4 & 6 Packaged Units: BAYHTRV
Limited Warranty Period: ten (10) years

HEATERS, Installed in 4WHC Packaged Units: BAYHTRC
Limited Warranty Period: ten (10) years

Optional Accessories for Packaged Units
UVC LIGHTS, Installed in 4TC*3 & 4, 4WC*3, 4 & 6, 4YC*3, 4 & 6, 4DC*4 & 6 Packaged Units: BAYUV
Limited Warranty Period: Ballast - ten (10) years, Bulbs - one (1) year

ECONOMIZERS, Installed in 4TC*3 & 4, 4WC*3, 4 & 6, 4YC*3, 4 & 6, 4DC*4 & 6 Packaged Units: BAYECON
Limited Warranty Period: ten (10) years

MOTORIZED DAMPER, Installed in 4TC*3 & 4, 4WC*3, 4 & 6, 4YC*3, 4 & 6, 4DC*4 & 6 Packaged Units: BAYDMPR
Limited Warranty Period: ten (10) years

*(First letter may be A or T)

Important Product Information

Registering your products helps provide you with one of the strongest manufacturer limited warranties available. To register, go to the manufacturer's website or contact your dealer. You will need the serial number, model number, and installation date for each product being registered. Your dealer may have included these on your invoice or can provide a list for you to use. Please take a few moments to record the following information to ensure your product registration process is quick and easy:

Packaged Unit Serial Number_____
Packaged Unit Model Number_____
Date of Installation_____
Dealer_____

Service Information
Call your installing dealer if the unit is inoperative. Before you call, always check the following to be sure service is required:

a. Be sure the main switch that supplies power to the unit is in the ON position.
b. Replace any burned-out fuses or reset circuit breakers.
c. Be sure the thermostat is properly set.

Service Phone_____

Trane
6200 Troup Highway
Tyler,TX 75703

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