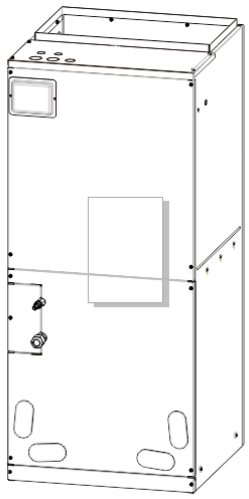
Installation, Operation, and Maintenance

Air Handler

5TDM5B03AC21SA
5TDM5C04AC31SA
5TDM5D06AC41SA
5TDM5D07AC51SA



Note: *Graphics in this document are for representation only. Actual model may differ in appearance.*

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

September 2025 **AHR-SVX008A-EN**

Introduction

Read this manual thoroughly before operating or servicing this unit.

This document is customer property and is to remain with this unit. Return to the service information pack upon completion of work.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/ sleeves, butyl gloves, safety glasses, hard hat/ bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

⚠ WARNING

Cancer and Reproductive Harm!

This product can expose you to chemicals, including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury or property damage.

This unit is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

Do not allow children to play or climb on the unit or to clean or maintain the unit without supervision.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury or property damage.

Connect the air handler to an outdoor unit suitable for use with R-454B refrigerant only.

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ WARNING

Grounding Required!

Failure to follow instructions below could result in death or serious injury, or property damage.

- **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.**

⚠ WARNING

Risk of Fire — Flammable Refrigerant!

Failure to follow instructions below could result in death or serious injury, and equipment damage.

- **To be repaired only by trained service personnel.**
- **Do not puncture refrigerant tubing.**
- **Dispose of properly in accordance with federal or local regulations.**

⚠ WARNING

Live Electrical Components!

Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

When it is necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks.

⚠ WARNING

Refrigerant under High Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury and equipment or property damage.

- **Do not use any items other than those approved by the manufacturer for defrosting or cleaning process.**
- **Store the appliance in a room without continuously operating ignition sources(for example: open flames, an operating gas appliance, or an operating electric heater).**
- **Do not pierce or burn.**
- **Be cautious that refrigerants may be odorless.**

⚠ WARNING

Risk of Fire!

Failure to follow the safety precautions could result in serious injury, death, or property damage.

Only approved auxiliary devices listed in this manual and declared suitable with the refrigerant must be installed in the connecting ductwork. Devices that may be potential ignition sources, such as hot surfaces or electric switching devices, must not be installed unless approved by the manufacturer or declared suitable with the refrigerant used.

⚠ CAUTION

Sharp Edges!

Failure to follow instructions below could result in minor to moderate injury.

The service procedure described in this document involves working around sharp edges. To avoid being cut, technicians MUST put on all necessary Personal Protective Equipment (PPE), including gloves and arm guards.

⚠ CAUTION

Corrosion Hazard!

Failure to follow instructions below could result in personal injury or equipment damage.

To prevent shortening its service life, do not use air handler during the finishing phases of construction or remodeling. The low return air temperatures can lead to the formation of condensate. Condensate in the presence of chlorides and fluorides from paint and other components creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

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Trademark

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Table of Contents

General Information

This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this International Standard.

Unit Description

Table 1. Operating range

	Cooling	Heating
Indoor temperature	64.4°F (18°C) to 89.6 °F (32 °C)	50°F (10°C) to 80.6°F (27°C)

Accessories

Table 2. Indoor unit accessories (optional)

Name	Qty	Usage
Throw-over pipe	1	Connect the unit with the liquid pipe

Note: *The air handlers listed in this manual do not have factory installed electric heat. Electric heat is available as an accessory. Please refer to installation instructions provided with heater kit for the correct installation procedure.*

Table 3. 2 ton electric heater

Heater Model	Supply Voltage	Phase	KW	Heater Amps	Minimum Circuit Ampacity	Maximum Overcur-rent Protec-tion	Minimum Blower Speed (with and without heat pump)	External Static Pressure Test Ranges	Min. Clearance to Combus-tible Surface	Re. Air Handler use (ton)
BAYHT-R1705BR-KA	208 230	1	5	18/20	28/29.9	30/30	900 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5
BAYHT-R1710BR-KA	208 230	1	10	36/40	50/55	60/60	900 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5

Note: Maximum air outlet temperature 114.9° C.

Table 4. 3 ton electric heater

Heater Model	Supply Voltage	Phase	KW	Heater Amps	Minimum Circuit Ampacity	Maximum Overcur-rent Protec-tion	Minimum Blower Speed (with and without heat pump)	External Static Pressure Test Ranges	Min. Clearance to Combus-tible Surface	Re. Air Handler use (ton)
BAYHT-R1705BR-KA	208 230	1	5	18/20	28/31	30/35	930 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5
BAYHT-R1710BR-KA	208 230	1	10	36/40	51/56	60/60	930 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5
BAYHT-R1715BR-KA	208 230	1	15	36+18/40 +20	51+23/56 +26	60+25/60 +30	930 CFM	0–1.0 in. W.C.	60 in.	3 / 4 / 5
BAYHT-R1715BR-KA[a]	208 230	1	15	54/60	74/82	89/90	930 CFM	0~1.0 in. W.C	60 in.	3 / 4 / 5

Note: Maximum air outlet temperature 114.9° C.

Table 4. 3 ton electric heater (continued)

(a) With single point wiring

Table 5. 4–5 ton electric heater

Heater Model	Supply Voltage	Phase	KW	Heater Amps	Minimum Circuit Ampacity	Maximum Overcur-rent Protec-tion	Minimum Blower Speed (with and without heat pump)	External Static Pressure Test Ranges	Min. Clearance to Combus-tible Surface	Re. Air Handler use (ton)
BAYHT-R1705BR-KA	208 230	1	5	18/20	31/33	35/35	1470 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5
BAYHT-R1710BR-KA	208 230	1	10	36/40	53/58	60+60	1470 CFM	0–1.0 in. W.C.	60 in.	2 / 3 / 4 / 5
BAYHT-R1715BR-KA	208 230	1	15	36+18/40 +20	51+23/56 +25	60+25/60 +30	1470 CFM	0–1.0 in. W.C.	60 in.	3 / 4 / 5
BAYHT-R1720BR-KA	208 230	1	20	36+36/40 +40	53+45/58 +50	60+50/60 +60	1470 CFM	0–1.0 in. W.C.	60 in.	4 / 5
BAYHT-R1715BR-KA(a)	208 230	1	15	54/60	76/83	80/90	1470 CFM	0~1.0 in. W.C.	60 in.	3 / 4 / 5
BAYHT-R1720BR-KA(a)	208 230	1	20	72/80	98/108	100/110	1470 CFM	0~1.0 in. W.C.	60 in.	4 / 5

Note: Maximum air outlet temperature 114.9° C.

(a) With single point wiring

The air handlers listed in this manual do not have factory installed electric heat. Electric heat is available as an accessory. Please refer to installation instructions provided with heater kit for the correct installation procedure

⚠ CAUTION

Combustible Hazard!

Failure to follow instructions below could result in minor to moderate injury or property damage.

The supply ducts that are five feet away from electric heater must be at least one foot away from other combustibles or walls.

Storage

Storage of Equipment/Appliances

The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

Storage of Packed (Unsold) Equipment

Storage package protection should be constructed in such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE. The maximum number of pieces of equipment permitted to be stored together is determined by local regulations

Pre-Installation

Check carefully for shipping damage. If any damage is found, report it immediately, and file a claim against the transportation company.

Verify the model number, specifications and accessories are correct and properly sized for the condensing unit prior to installation.

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

Unit Dimensions and Weights

Dimensional Data

Figure 1. Dimensions

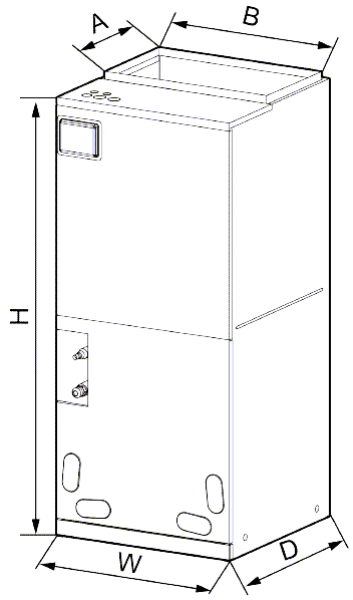


Table 6. Dimensional data

Model	Dimension				
	W	D	H	A	B
5TDM5B03AC21SA	18-1/8 in. (460 mm)	21-1/4 in. (540 mm)	43-1/2 in. (1105 mm)	11-5/8 in. (295 mm)	16-3/4 in. (426 mm)
5TDM5C04AC31SA	21-1/4 in. (540 mm)	21-1/4 in. (540 mm)	48-3/16 in. (1224 mm)	11-5/8 in. (295 mm)	20 in. (508 mm)
5TDM5D06AC41SA	24-13/16 in. (630 mm)	21-1/4 in. (540 mm)	52 in. (1320 mm)	11-5/8 in. (295 mm)	20 in. (508 mm)
5TDM5D07AC51SA					

Weights

Table 7. Weights

Model	Weight
5TDM5B03AC21SA	135.63 lbs.
5TDM5C04AC31SA	163.1 lbs.

Table 7. Weights (continued)

Model	Weight
5TDM5D06AC41SA	199.5 lbs
5TDM5D07AC51SA	199.5 lbs

Installation

Location Considerations

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury, and property damage.
Do NOT install the unit outdoors.

When installing the air handler:

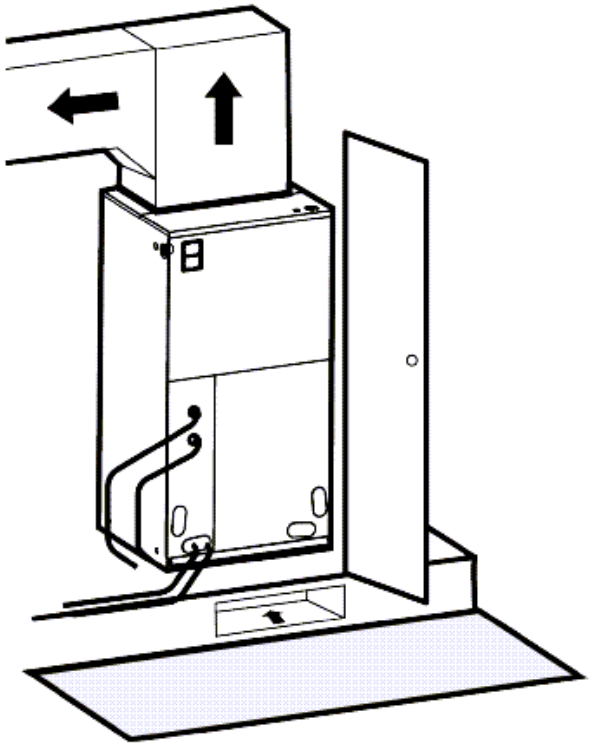
- Minimize the length of the refrigerant tubing as much as possible.
- Do not install the air handler in a location either above or below the condenser.
- Allow a minimum of 24 inches in front of the unit for service clearance.
- When installing in an area directly over a finished ceiling (such as an attic): an emergency drain pan is required directly under the unit. See local and state codes for requirements.
- 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 (such as a garage) it is advised to install a protective barrier to prevent such damage.

This air handler is designed for a complete supply and return ductwork system. Do not operate this product without all ductwork attached. The supply duct must be longer than 5 feet (1.524m).

Vertical installation

The air handler should be contained in a room or space that is not accessible to the general public.

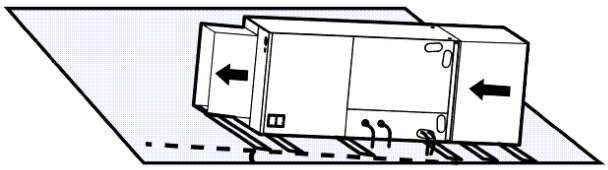
Figure 2. Vertical installation



Horizontal installation

- Confirm there is enough clearance for servicing the unit. Ensure there is enough room to clear the secondary drain pain and to account for the slope of the drain line.
- The air handler should be contained in a room or space that is not accessible to the general public.
- For drainage purposes, the air handler should be installed at a 5° angle.

Figure 3. Horizontal installation



The air handler should be maintained horizontal 5°.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury, or property damage.

Before powering the unit, confirm all gas inside the unit has been released.

Ductwork

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury, and property damage.

Field ductwork must comply with NFPA 90A, NFPA 90B, and local ordinances. Insulate and cover sheet metal ductwork in unconditioned spaces with a vapor barrier. Fibrous ductwork must follow SMACNA standards and meet U/L Standard 181 for Class I Air Ducts. Check local codes for ductwork and insulation requirements.

Follow these guidelines when installing ductwork:

- Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return ductwork, grills, special filters, and accessories are accounted for in total resistance. Refer to the fan performance data in this manual.
- Do not operate the unit without all ductwork completed and attached.
- 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.
- Seal ductwork to the unit in a manner that will prevent leakage.

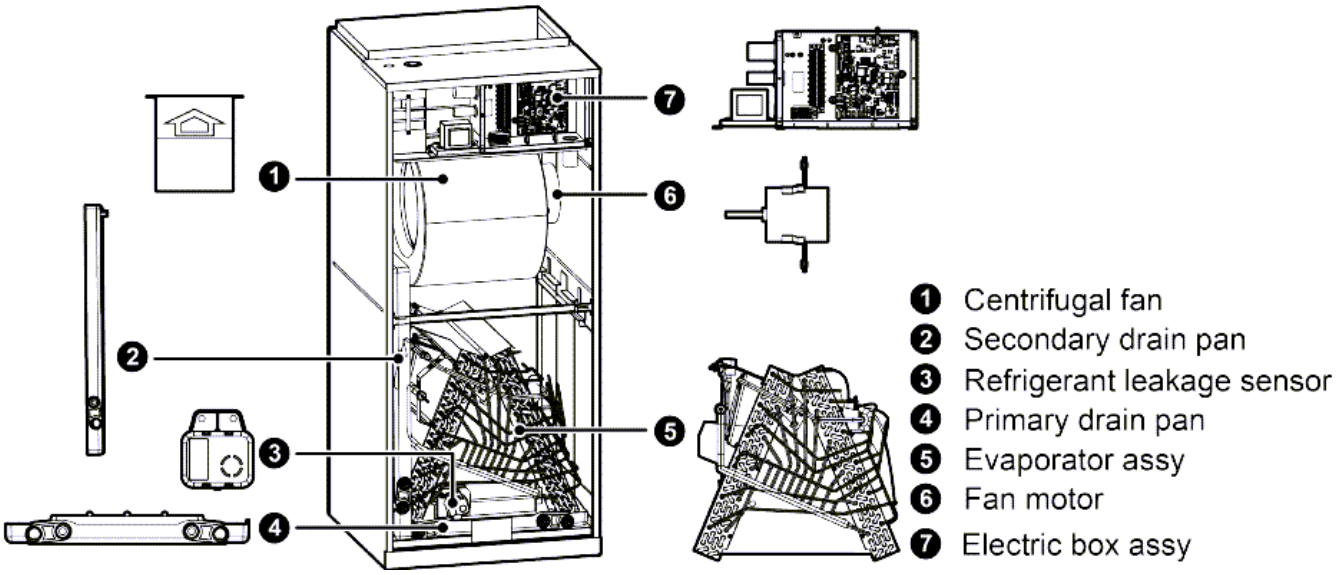
Return Ductwork — Do not terminate the return ductwork in an area that can introduce toxic or objectionable fumes/ odors into the ductwork. The return ductwork is to be introduced into the air handler bottom (up flow configuration).

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 grill.

Installation Orientation

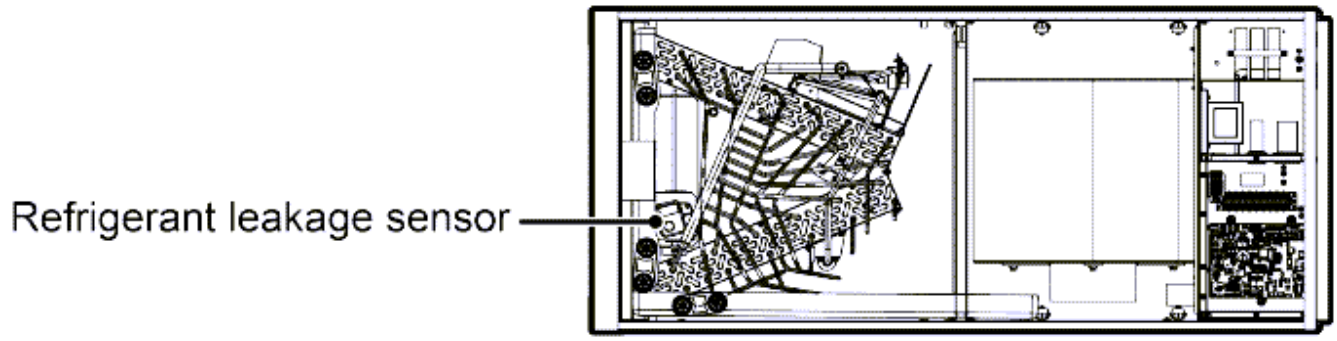
Main Components

Figure 4. Names of main components



Horizontal Installation

Figure 5. Horizontal installation

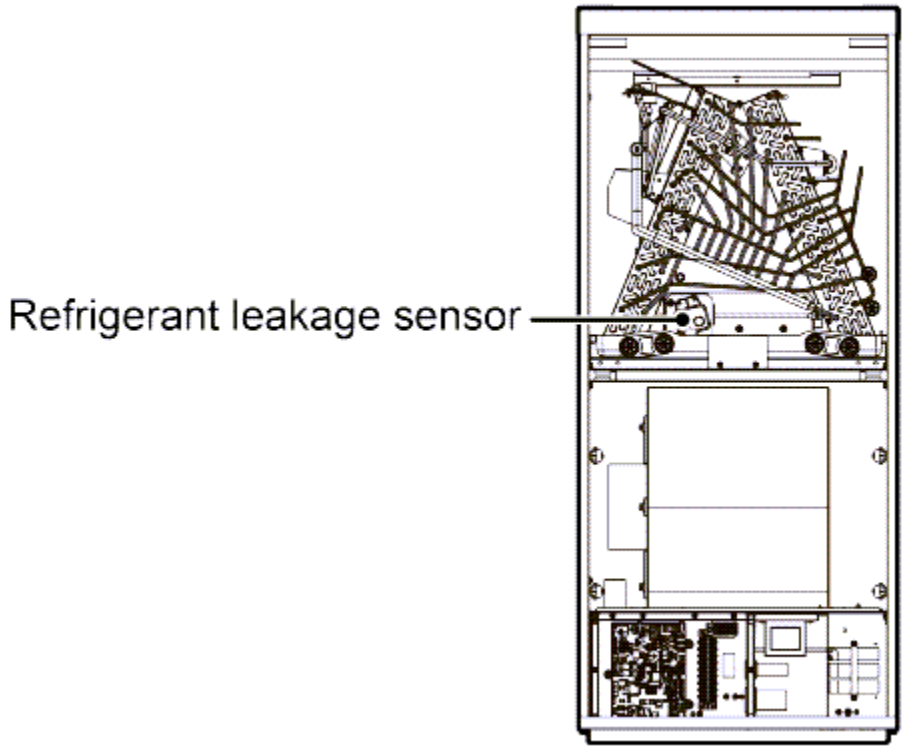


When installing the unit horizontally, the refrigerant sensor must be relocated to the position shown in Figure 5, p. 12. To move the sensor:

1. Remove the screws from the refrigerant sensor.
2. Adjust the internal wiring so it does not touch any sharp edges. The wiring cannot exceed the drip pan nor come in contact with water.
3. Move the sensor to the location shown in Figure 5, p. 12.
4. Secure the sensor with the screws.

Vertical Downflow

Figure 6. Vertical downflow



When installing the unit with a vertical downflow, adjust the internal wiring so it does not touch any sharp edges.

If the refrigerant sensor is damaged, replace the refrigerant sensor:

1. Remove the lower right side panel.
2. Remove the screws from the refrigerant sensor.
3. Replace the refrigerant sensor.

The service life of the refrigerant sensor is 15 years, and the refrigerant detection system refrigerant sensor can only be replaced with a manufacturer-supplied sensor.

⚠ WARNING

Leak Detection System Installed!

Failure to follow instructions below could result in death or serious injury or equipment damage.

The unit is equipped with electrically powered safety measures and must be powered at all times after installation, except during servicing, to detect any leak.

Refrigerant Charge

Table 8. Minimum conditioned space

No.	Refrigerant Charge (lbs)	Minimum Conditioned Space (m^2)	Minimum Conditioned Space (ft^2)
1	6.62	9.2	99.0
2	7.06	9.8	105.5
3	8.16	11.4	122.7
4	8.60	12.0	129.2
5	10.14	14.1	151.8
6	11.25	15.7	169.0
7	13.23	18.4	198.0

Notes:

1. Based on nominal tonnage; dry coil and filter should be installed.
2. Use 0.96 as the approximate SCFM correction factor for wet coil.
3. This manual is only applicable to a single room.

Table 9. Altitude adjustment

Altitude Ft (Meters)	0 (0)	656 (200)	1312 (400)	1969 (600)	2625 (800)	3281 (1000)	3937 (1200)	4593 (1400)	5250 (1600)
AF	1.00	1.00	1.0	1.00	1.02	1.05	1.07	1.10	1.12
Altitude Ft (Meters)	5250 (1600)	5906 (1800)	6562 (2000)	7218 (2200)	7874 (2400)	8531 (2600)	9187 (2800)	9843 (3000)	10499 (3200)
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

Notes:

1. Based on w/nominal tonnage, dry coil, and filter should be installed.
2. Use 0.96 as approximate SCFM correction factor for wet coil.
3. This manual is only applicable to a single room.
4. Correct the minimum room area of the space Amin by multiplying by an altitude adjustment factor (AF) based on for building site ground level altitude (halt) in meters.
5. Wen leakage is detected, the outdoor unit containing the compressor must stop operating. The indoor fan should be set to the highest available rotating speed or not less than the minimum airflow in the table below. After receiving the signal to start the fan, the circulating air volume needs to reach the required value within 15 seconds.

Piping

The connection of the gas pipe and liquid pipe are screw connections.

Table 10. Connection pipe diameter

Model	External diameter	
	Gas pipe	Liquid pipe
5TDM5B03AC21SA	Ø 3/4 in.	Ø 3/8 in.
5TDM5C04AC31SA		
5TDM5D06AC41SA		
5TDM5D07AC51SA		

Figure 7. Piping preparation

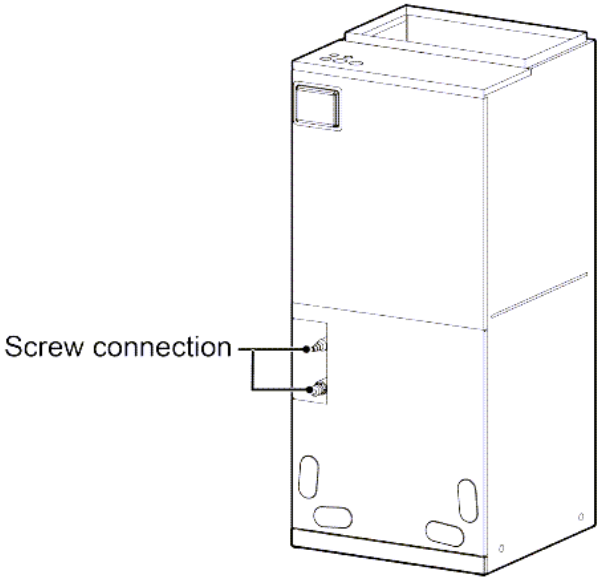
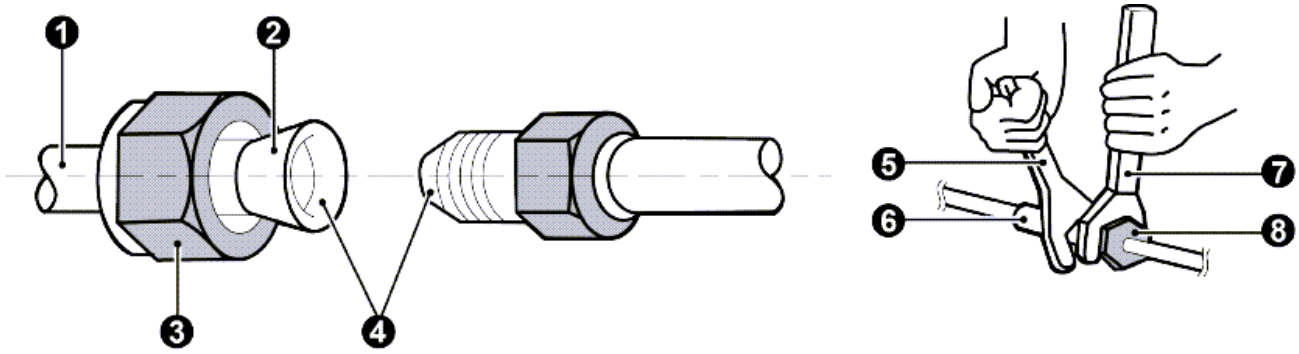


Figure 8. Screw connection



1. Copper piping
2. Refrigerant Oil
3. Flare nut
4. Refrigerant Oil
5. Spanner
6. Piping union
7. Torque wrench
8. Flare nut

Table 11. Tightening torque

Pipe diameter (inch)	Tightening torque	
	lb-ft	(N m)
3/8	36–30	35–40
3/4	52–56	70–75

Electrical Installation

Dip Switch Settings

The Indoor fan speed is set through the eight dip switches on the indoor main control board. The higher the setting, the faster the indoor fan runs.

Dip switch settings must be completed before powering on the unit.

After the unit is shut down or stopped at the temperature point, the indoor unit will delay for a few minutes and then shut down.

The refrigeration setting dries the air and reduces mold in the air duct. Heating reduces heat accumulation in the air duct.

During installation and troubleshooting, check if the thermostat has set the fan delay and shutdown time. If the thermostat has been set, the actual delay and shutdown time of the fan is equal to the thermostat setting time plus the fan delay time of the indoor unit.

Table 12. Dip switch capacity

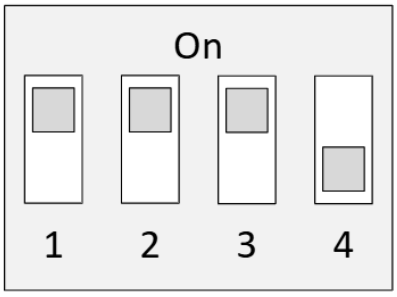
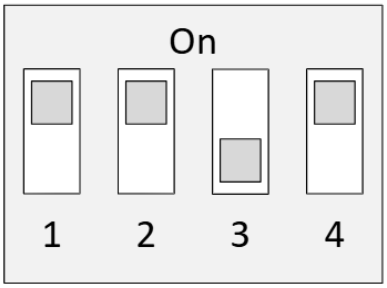
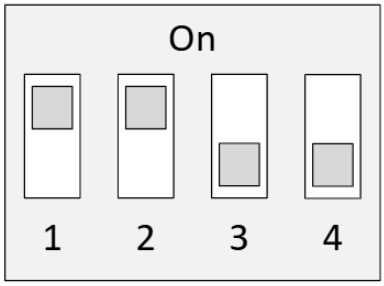
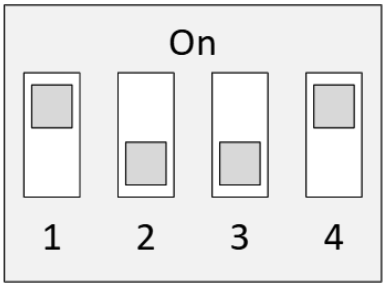
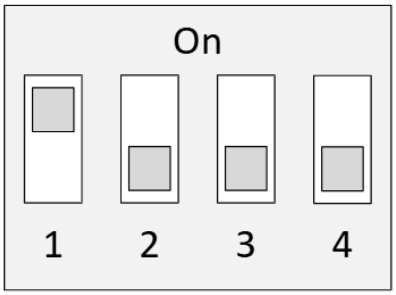
Fan Speed Level	Indoor Unit Dip Switch
1 (low)	
2	
3	

Table 12. Dip switch capacity (continued)

Fan Speed Level	Indoor Unit Dip Switch
4	
5 (high)	

Electrical Requirements

⚠ WARNING

Electrical Hazard!

Failure to follow instructions below could result in death or serious injury, and property damage.

- **The electric circuit must be equipped with a circuit breaker and an air switch with sufficient capacity.**
- **Use a specialized power circuit for the air conditioner. Do not draw power from another power circuit.**
- **Locate the air conditioner at least 4.9 ft away from flammable surfaces.**
- **Confirm external power cords, thermostat wires, and the thermostat do not come into direct contact with hot objects (such as chimney pipes or warm gas pipes). They must also avoid intersecting metal beams, the edge of the ceiling, or touching any metal burrs, or sharp metal edges.**
- **Do not pull, stretch, or bend the wires.**
- **Refer to the circuit diagram on the unit or the electrical box to connect wires correctly.**
- **Tighten all screws.**
- **Firmly connect the wiring to the terminal board.**
- **After completing the electrical installation, secure the power cords and thermostat wires with wire clamps. Do not clamp wires too tightly.**
- **Replace damaged power cords by specialized wires.**

⚠ WARNING

Electrical Shock Hazard!

Failure to follow instructions below could result in death or serious injury.

Always turn off all power to the unit before installing or servicing the unit. There may be more than one disconnect switch. Lock out and tag switch with a suitable warning label.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury.

All phases of the installation must conform to NATIONAL, STATE, AND LOCAL CODES. For additional information, please contact your local distributor.

Table 13. Electrical parameters

Model	Power Supply	Minimum Circuit Ampacity (A)	Minimum Overcurrent Protection (A)	Fuse Capacity (A)
5TDM5B03AC21SA	208/230V – 1Ph – 60 Hz	4.7	15	3.15
5TDM5C04AC31SA		5.3		
5TDM5D06AC41SA		7.1		
5TDM5D07AC51SA		7.7		

- The fuse is located on the main board.
- Install a circuit breaker at every power terminal near the units (indoor unit and thermostat) with at least 1/10th of an inch contact gap. The units must be able to be plugged or unplugged.
- Circuit breaker and power cord specifications listed in the above table are determined based on the maximum power input of the units.
- The circuit breaker specifications are based on a working condition where the working temperature is 104° F (40° C). If working condition changes, adjust the specifications according to national standards.
- Use 5pc of AWG18 power cords to be the communication cords between indoor unit, thermostat, and furnace. The maximum length is 98 ft. Select a proper length according to local conditions. Communication cords must not be twisted together. Ground the remaining wires.
- The wire gauge of communication cord should not be less than AWG18. The manufacturer recommends

using AWG18 power cords as the communication cords.

- Continuous air circulation required for proper functioning. Unit must be powered except for service.
- All wires must go through the insulation tube.

Connection of Power Cords and Communication Wires

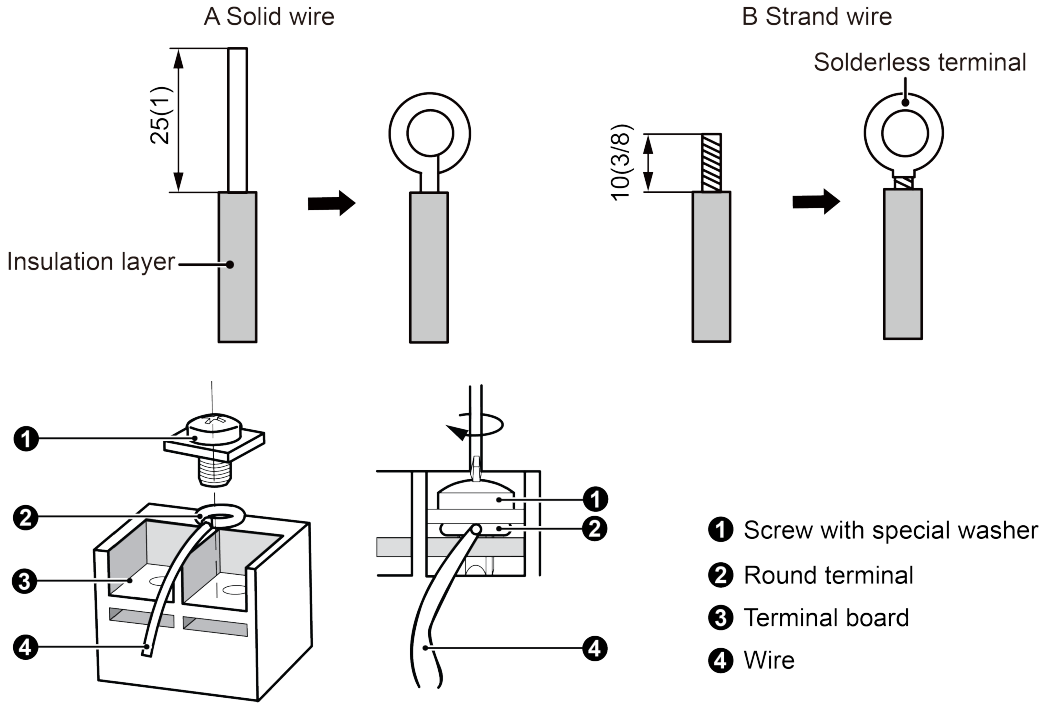
For solid wires (as shown below):

1. Use wire cutters to cut off the wire end and then peel away about 1 inch of the insulation layer.
2. Use a screwdriver to unscrew the terminal screw on the terminal board.
3. Use wire strippers to bend the solid wire into a ring that fits the terminal screw.
4. Form a proper ring and then put it on the terminal board. Use a screwdriver to tighten up the terminal screw.

For strand wires (as shown below):

1. Use wire cutters to cut off the wire end and then peel away about 0.5 inch of the insulation layer.
2. Use a screwdriver to unscrew the terminal screw on the terminal board.
3. Use a round terminal fastener or clamp to fix the round terminal firmly on the peeled wire end.
4. Locate the round terminal conduit. Use a screwdriver to replace it and tighten up the terminal screw.

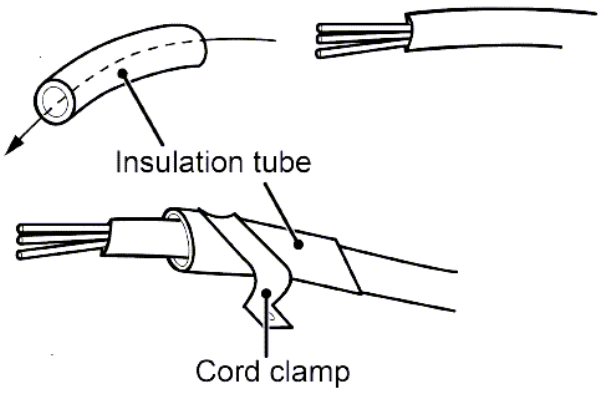
Figure 9. Connect power cords and communication wires



Connect communication wires and power cords:

- Lead the thermostat wires and power cords through the insulation tube .
- Secure the wires with wire clamps.

Figure 10. Insulation tube



⚠ WARNING

Electrical and Fire Hazard!

Failure to follow instructions below could result in death or serious injury, and property damage.

- **Confirm the indoor unit and thermostat are powered on.**
- **Match terminal numbers and wire colors with those indicated in the indoor unit to avoid burning electrical components.**
- **Connect wires firmly to the wiring box to prevent fire hazards.**
- **Confirm the ground wire is connected.**

Wiring Diagrams

Figure 11. Field wiring

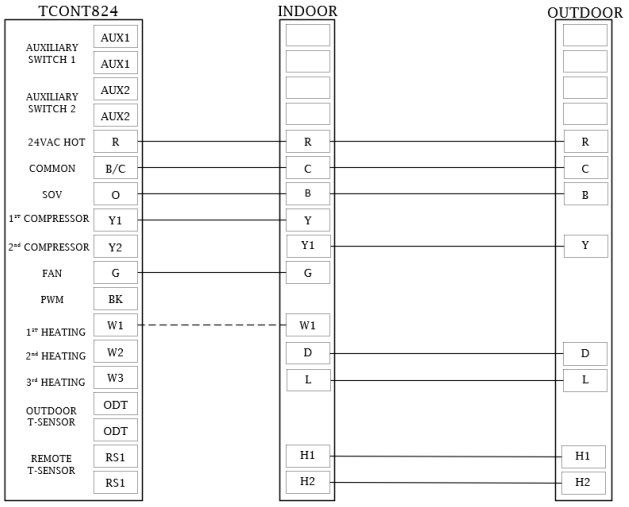
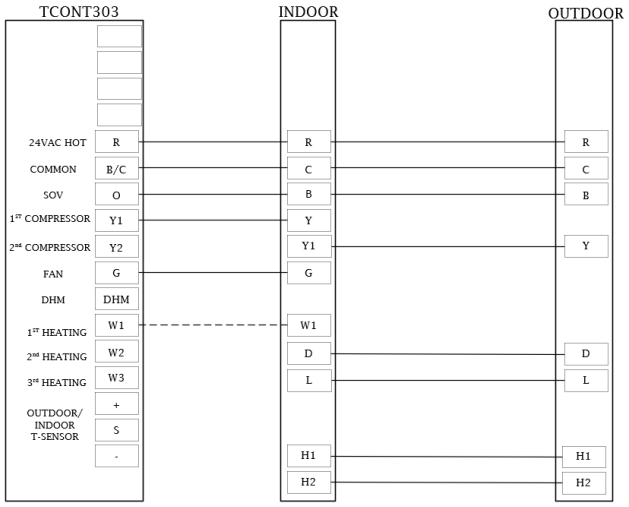
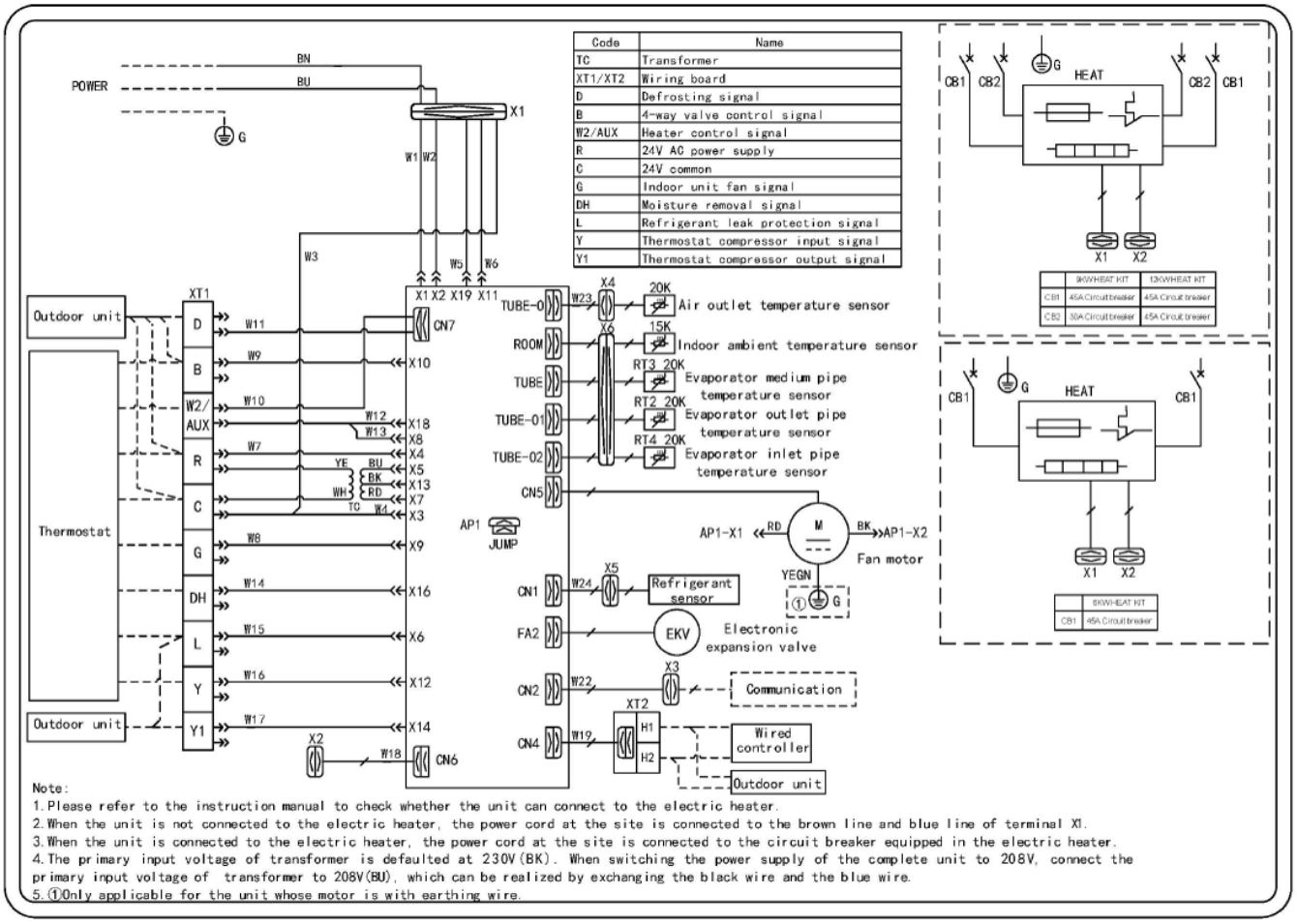


Figure 12. Field wiring



- H1/H2 wiring is for communicating control which is recommended for optimal system performance. The outdoor unit must be configured by dip switch for operation mode. See outdoor installation manual for instructions.
- H1/H2 wiring requires 18 AWG stranded shielded wiring.

Figure 13. Full wiring diagram

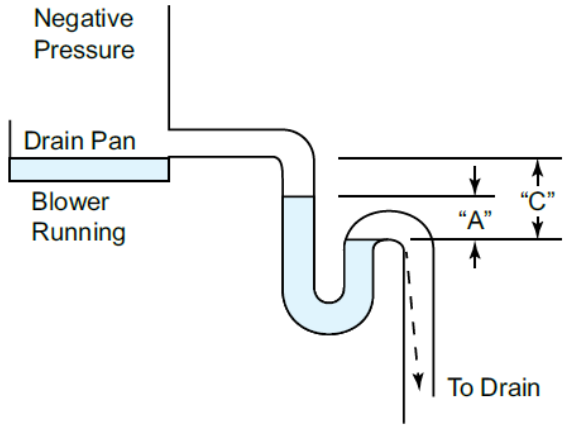


Condensate Drain

The unit is supplied with primary and auxiliary condensate drains that have 3/4" NPT connections. The primary drain must be trapped outside the unit and piped in accordance with applicable building codes.

The figure shows the operation of a properly designed trap under normal operating conditions when the blower is running and the condensate is draining. Note the difference in height of the water column must at least equal the normal negative static pressure existing during operation between the cooling coil and blower. It is advisable to have the difference in water column height somewhat greater than the normal maximum operating static to allow for greater static caused by dirty filters or for the bounce of the water column on start up.

Figure 14. Condensate drain



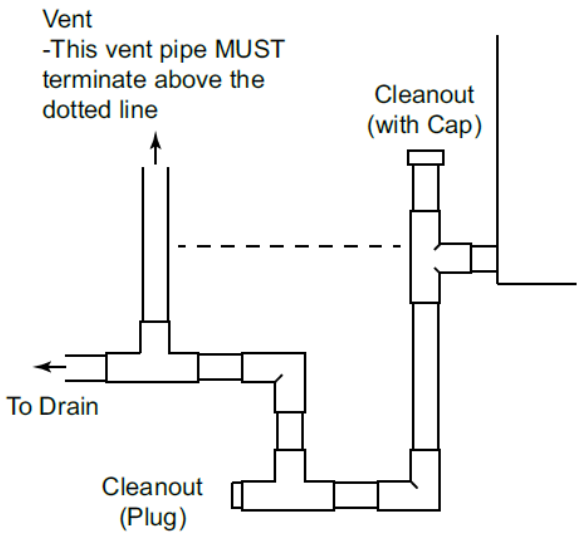
Proper operation of condensate trap under normal operating conditions. “A” height of water column equals negative static pressure existing in system. “C” dimension should at least equal two times the maximum negative static pressure that can occur in system.

Do not reduce the drain line size less than the connection size on the drain pan. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1/4" per foot of line to ensure proper drainage

Important:

- *If cleanout Tee is used, stand pipe must be sealed/capped.*
- *If a vent Tee is used, it must be downstream from the trap.*

Figure 15. Vent



Insulate the primary drain line to prevent sweating where dew point temperatures may be met. (Insulation is optional depending on climate and application needs.)

Performance Data

External static pressure should stay within the minimum and maximum limits shown in the tables below for proper operation of both cooling and heating operation.

Table 14. 5TDM5B03AC21SA

Level	Static pressure:inwg (Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 1 (CFM)	1080	960	900	830	—	—	—	—	—	—	—	—
Speed 2 (CFM)	1220	1120	1060	990	820	—	—	—	—	—	—	—
Speed 3 (CFM)	1380	1250	1120	1070	1020	920	760	—	—	—	—	—
Speed 4 (CFM)	1700	1630	1580	1530	1450	1400	1370	1270	1150	970	790	—
Speed 5 (CFM)	1750	1700	1650	1600	1590	1500	1420	1330	1200	1050	950	850

Note: — Indicates that electric heating is not allowed.

Table 15. 5TDM5C04AC31SA

Level	Static pressure:inwg (Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 1 (CFM)	1220	1120	1020	960	—	—	—	—	—	—	—	—
Speed 2 (CFM)	1380	1260	1200	1100	950	—	—	—	—	—	—	—
Speed 3 (CFM)	1630	1580	1500	1430	1370	1200	1000	970	—	—	—	—
Speed 4 (CFM)	1840	1800	1750	1710	1640	1590	1500	1420	1330	1220	1100	930
Speed 5 (CFM)	1870	1830	1810	1800	1760	1690	1620	1520	1440	1350	1250	1150

Note: — Indicates that electric heating is not allowed.

Table 16. 5TDM5D06AC41SA

Level	Static pressure:inwg (Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 1 (CFM)	1680	1560	1500	1350	—	—	—	—	—	—	—	—
Speed 2 (CFM)	1810	1690	1620	1550	1380	—	—	—	—	—	—	—
Speed 3 (CFM)	1930	1830	1770	1710	1580	1480	1200	—	—	—	—	—
Speed 4 (CFM)	2280	2240	2200	2180	2130	2080	2000	1880	1750	1600	1400	1200

Table 16. 5TDM5D06AC41SA (continued)

Level	Static pressure:inwg (Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 5 (CFM)	2300	2260	2220	2190	2140	2090	2040	1980	1930	1800	1700	1550

Note: — Indicates that electric heating is not allowed.

Table 17. 5TDM5D07AC51SA

Level	Static pressure:inwg (Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 1CFM)	1850	1720	1650	1600	—	—	—	—	—	—	—	—
Speed 2 (CFM)	1920	1800	1730	1650	1480	—	—	—	—	—	—	—
Speed 3 (CFM)	2110	2000	1950	1860	1760	1640	1500	—	—	—	—	—
Speed 4 (CFM)	2300	2260	2230	2200	2150	2115	2050	1990	1920	1790	1650	1470
Speed 5 (CFM)	2320	2280	2250	2230	2190	2140	2080	2040	2000	1950	1920	1890

Note: — Indicates that electric heating is not allowed.

Electric Heater Installation

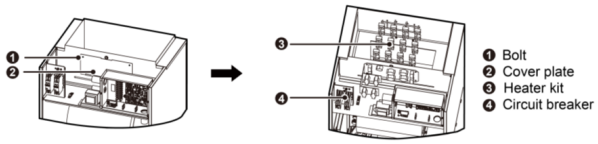
Electric heater installation considerations:

- Confirm that all power supply is disconnected prior to installing the heater kit.
- A means of strain relief and conductor protection must be provided at the supply wire entrance into cabinet.
- Use copper conductors only.
- Installation must follow national electric code and other applicable codes.
- If this appliance is installed in an enclosed area such as a garage or utility room with any carbon monoxide producing appliance, confirm the area is properly ventilated.

To install the electric heater:

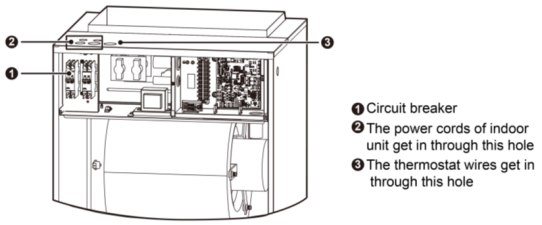
1. Refer to the Table for appropriate heater kit.
2. Check for any physical damage. Do not install a damaged heater kit.
3. Remove the upper access panel from air handler.
4. Remove cover plate from air handler.
5. Slide the heater kit in to the slot and secure element plate with previously removed screws.
6. Before installing the electric heating, unplug the X1 terminal, and insert the plug-in terminals on the electric heating to the X1 and X2 terminals respectively. The power line of the unit is connected through an electrically heated circuit breaker.

Figure 16. Electric heater installation



7. Insert power leads into the circuit breaker lugs or stripped red and black wires (for heater kit without circuit breaker) and tighten.
8. Connect ground wire to ground lug. M6 screws are required for grounding screws when installing electric heating.
9. Knock off appropriate area of the plastic circuit breaker cover on the access panel of the air handler. Knock off the holes according to the actual installation number and positions of circuit breakers. If circuit breaker is not installed, do not knock off the holes; otherwise, electric shock may occur.

Figure 17. Electric heater wiring



10. Replace access panel and check operation.

Diagnostics

Note: *Check the following items and implement corrective measures. If the unit continues to function poorly, please stop the air conditioner immediately and contact an authorized local dealer.*

Table 18. Troubleshooting

Issue	Reason	Solution
The unit operates but stops immediately	Air inlet/outlet of indoor unit is blocked	Remove obstacles.
Abnormal cooling or heating	Air inlet/outlet of indoor unit is blocked	Remove obstacles.
	Inappropriate temperature setting	Adjust setting at thermostat.
	Too much heat source in the room	Reduce heat source.
	Filter screen is blocked by dirt	Clean the filter

Table 19. System Issues

Issue		Reason
Unit does not run or operate	When unit is started immediately after it is just turned off	Overload protection switch makes it run after 3 minutes delay.
	When power is turned on	Standby operating for about 1 minute.
Mist comes from the unit.	Under cooling	Indoor high humidity air is cooled rapidly.
The unit emits noise	Slight cracking sound is heard when just turned on	It is noise when electronic expansion valve initialization.
	There is consecutive sound when cooling	That's sound for gas refrigerant flowing in the unit.
	There is sound when unit starts or stops	That's sound for gas refrigerant stops flowing.
	There is slight and consecutive sound when unit is running or after running	That's sound for operation of drainage system.
The unit blows out dust	When unit runs after a long period of no operation	Dust in indoor unit blows out.
Indoor unit still runs after switch off	After every indoor unit receives a stop, signal, fan keeps running	Indoor fan can be set as “ON” or “AUTO” mode. Under “ON” mode, indoor fan will keep running after switch off the unit.

Table 20. LED indicators - display operating status and error information

LED indicator	Color	Function
Power	Red	Indoor unit main board is powered on, Power Indicator is on.
Running	Green	After detecting the indoor fan turn-on signal, the running indicator light is on, when detecting the indoor fan turning-off signal, the running indicator light is off. When detecting a system failure, the running indicator light flashes.
Refrigerant Leakage	Orange	When detecting the refrigerant leakage protection, refrigerant sensor failure and refrigerant sensor communication failure, the Refrigerant Leakage Indicator light displays the fault type. Otherwise it will always flash.
Communication	Yellow	Flash when receiving the communication data, otherwise it will be steady on to display the fault type.

Table 21. LED indicators - system failures

Issue	LED indicator	Running indicator status	Notes
Indoor unit refrigerant leakage protection	Refrigerant Leakage Indicator	Light out 3S then flash once	Flash means light on 0.5S then light out 0.5S
Refrigerant sensor error		Light out 3S then flash twice	
Refrigerant sensor communication error		Light out	—
Communication error	Communication Indicator	Steady on	Indoor unit and outdoor unit communication error
Indoor Jumper cap failure	Running Indicator	Light out 3S then flash once	Flash means light on 0.5S then light out 0.5S
Indoor fan failure		Light out 3S then flash twice	
Adhesion protection by electric heating		Light out 3S then flash three times.	
Indoor ambient temperature sensor error		Light out 6S then flash once	
Indoor pipe temperature sensor error		Light out 6S then flash twice	
Indoor air outlet temperature sensor error		Light out 6S then flash three times.	
Evaporator inlet pipe temperature sensor error		Light out 6S then flash four times.	
Evaporator outlet pipe temperature sensor error		Light out 6S then flash five times.	

Note: When the indoor unit has indoor unit refrigerant leakage protection, refrigerant sensor error or refrigerant sensor communication error, the buzzer will Air Handlers 28 ring for 2s and stop for 5s, and the fan of the indoor unit will be forced to open, and the Y signal will be disconnected to stop the outdoor unit.

Sensor Tests

After installation, the installer must verify that the refrigerant leak detection system actuates all mitigating actions. The test can be initiated by unplugging the mitigation sensor. Confirm the error code is triggered and actuates the mitigation actions, such as turning on the indoor unit blower, energizing an audible alarm, if so equipped, and turning off compressor of outdoor unit.

Maintenance

Maintenance

Regular inspection and maintenance should be performed by a professional to prolong the unit life span.

Drain Pipe

Regularly check the drainage pipe for clogs to confirm that condensate water can drain.

Seasonal Maintenance

At the beginning of the season:

- Check if the air inlet/outlet of the units are blocked.
- Check if the filter screen is properly installed.
- Check if the unit is correctly installed. Contact your local dealer if repairs are necessary.

At the end of the season:

- Clean and dust the indoor unit.
- If the unit is rusty, coat with paint to prevent rust from spreading.

Obtain replacement parts from the manufacturer.

Servicing

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to minimize ignition risk. For repair to the refrigerating system, complete the following before beginning work:

- **Work procedure** — Use a controlled environment to minimize the risk of flammable gas or vapor being present during servicing.
- **General work area** — Inform all maintenance staff and others working in the local area of the nature of work being carried out. Avoid work in confined spaces.
- **Check for refrigerant** — Use an appropriate refrigerant detector prior to and during work to ensure the technician is aware of potentially toxic or flammable atmospheres. Confirm that the leak detection equipment used is suitable for all applicable refrigerants (non-sparking, adequately sealed, or intrinsically safe).
- **Fire extinguisher** — If any hot work is to be conducted on the refrigerating equipment or any associated parts, confirm appropriate fire extinguishing equipment is. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.
- **No ignition sources** — Do not use any source of ignition that may lead to fire or explosion. Keep all possible ignition sources, including cigarettes, far away from the site of installation, repair, removal and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the confirm there are no flammable hazards or ignition risks in the area around the equipment. “No Smoking” signs shall be displayed.
- **Ventilation** — Confirm that the area is adequately ventilated before beginning work or conducting any hot work. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Refrigerant Equipment

Confirm the following when using flammable refrigerants:

- The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Electrical Devices

Perform initial and ongoing safety checks of electrical components. If an issue exists that could compromise safety, do not connect any electrical supply o the circuit until it is resolved. If the error cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution can be used. Report all issues o the owner of the equipment.

Initial safety checks include:

- Capacitors are discharged; this shall be done in a safe manner to avoid possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering, or purging the system.
- That there is continuity of earth grounding.

Electrical Safety

Do not alter casing on electrical components in such a way that the level of protection is impacted. This includes damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, and incorrect fitting of glands.

Confirm that apparatus is mounted securely.

Confirm that seals or sealing materials have not degraded and are ineffective. Replacement parts shall be in accordance with the manufacturer's specifications.

Important:

- *The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment.*
- *Intrinsically safe components do not have to be isolated prior to working on them.*

Pipe Installation

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

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

Repairs to Sealed Components

Sealed electrical components must be replaced.

Repair to Intrinsically Safe Components

Do not apply any permanent inductive or capacitance loads to the circuit without confirming that it will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. Confirm the testing devices is at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Cabling

Check that cabling is not showing signs of wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. Take into account the effects of ageing or continual vibration from sources such as compressors or fans.

Detection of Flammable Refrigerants

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

The following leak detection methods are acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Confirm that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

Examples of leak detection fluids are:

- Bubble method
- Fluorescent method agents

If a leak is suspected, all open flames shall be removed/ extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system or isolated (by means of shut off valves) in a part of the system remote from the leak.

Removal and Evacuation

When opening the refrigerant circuit to make repair, or for any other purpose, conventional procedures shall be used. Recover the refrigerant charge into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times:

1. Safely remove refrigerant following local and national regulations.
2. Evacuate.
3. Purge the circuit with inert gas (optional for A2L).
4. Evacuate (optional for A2L).
5. Continuously flush or purge with inert gas when using flame to open circuit.
6. Open the circuit.

Do no use compressed air or oxygen for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging is achieved by breaking the vacuum in

the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Charging Procedures

In addition to conventional charging procedures, the follow these requirements:

- Confirm that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Confirm that the refrigeration system is grounded prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Use extreme care to not overfill the refrigeration system.
- Prior to recharging the system, pressure test it with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site

Decommissioning

A technician familiar with the equipment should perform this procedure. Before decommissioning, take an oil and refrigerant sample in case analysis is required prior to reuse of reclaimed refrigerant. It is essential that the unit is powered before beginning decommissioning.

1. Become familiar with the equipment and its operation.
2. Isolate the system electrically.
3. Before attempting the procedure confirm that:

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

4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Confirm that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with manufacturer's instructions.
8. Do not overfill cylinders. (No more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, confirm that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Labeling

Label equipment that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, all refrigerants must be removed safely.

When transferring refrigerant into cylinders, confirm that only appropriate refrigerant recovery cylinders are used. Confirm that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (special cylinders for the recovery of refrigerant).

Cylinders need to have a pressure relief valve and associated shut-off valves in good working order.

A set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order and has been properly maintained. Consult the manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Notice arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, confirm that they have been evacuated to an acceptable level and that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers.

Any quality or other issues encountered in the purchased air conditioner, please contact the local after-sales service department.

Notes

About Trane and American Standard Heating and Air Conditioning

Trane and American Standard create comfortable, energy efficient indoor environments for residential applications. For more information, please visit www.trane.com or www.americanstandardair.com.

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