Installer’s Guide

Uncased Vertical Aluminum Upflow Coils

5AXAA001AS3HAA	5AXAA005AS3HAA	5AXAC009AS3HAA
5AXAB002AS3HAA	5AXAB006AS3HAA	5AXAB010AS3HAA
5AXAA003AS3HAA	5AXAB007AS3HAA	5AXAC011AS3HAA
5AXAB004AS3HAA	5AXAB008AS3HAA	5AXAD012AS3HAA

⚠ 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.

January 2026

COR-SVN002C-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 and/or property damage.

Only qualified personnel with adequate electrical and mechanical experience must repair the unit. The manufacturer or seller is not responsible for any interpretation or resulting liability.

⚠ 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

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

Risk of Fire!

Failure to follow instructions below could cause a fire which could result in death, serious injury, and equipment damage.

Confirm the following requirements apply to the room where the air handler is installed.

- **All combustion appliances located in the same room that have continuous pilot lights must be equipped with an effective flame arrest.**
- **All indoor field-made joints of the field piping must be checked for refrigerant leaks after charging using an electronic leak detector calibrated for R-454B with sensitivity of 5 grams per year or better.**
- **The room must be constructed to avoid stagnation or fire hazard in the event of a refrigerant leak.**

⚠ WARNING

Recover Refrigerant!

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

System contains refrigerant under high pressure. Recover refrigerant per standard procedures and guidelines before proceeding with additional steps.

⚠ CAUTION

Hazardous Vapors!

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

To prevent shortening its service life, the air handler should not be used during the finishing phases or 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, varnish, stains, adhesives, cleaning compounds, and cement creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

⚠ CAUTION

Sharp Edges!

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

Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing.

⚠ CAUTION

Heat Sensitivity!

Failure to follow instructions could result in moderate injury and equipment damage.

Do not install coils with OIL or DRUM type furnaces as the upflow/downflow drain pan cannot withstand high temperatures from those units.

Copyright

Trademark

All trademarks referenced in this document are the trademarks of their respective owners.

Revision History

- Model number updated on front cover.

Table of Contents

General

Important: *Installation of this unit shall be made in accordance with the National Electric Code, NFPA No. 90A and 90B, and any other local codes or utilities requirements.*

Important: *Cased coils do not require repositioning of the refrigerant leak detection sensor for upflow or downflow installations. Horizontal applications require sensor repositioning. See conversion instructions section for details.*

Notes:

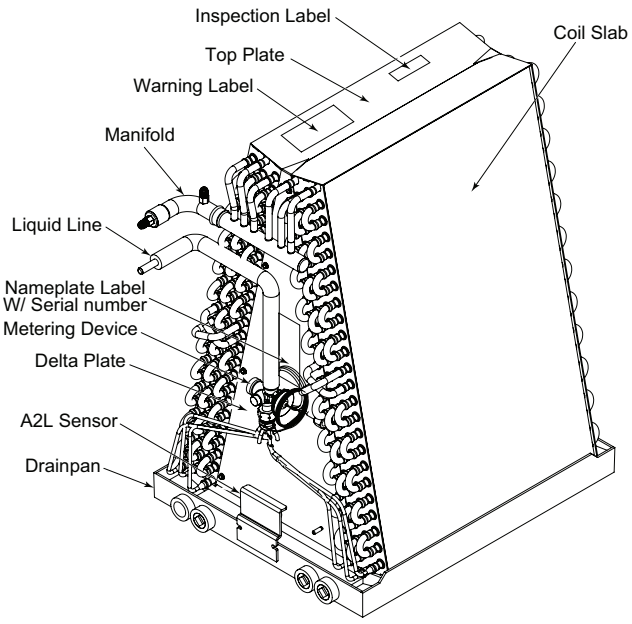
- *This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of Standard UL 60335-2-40/CSA 22.2 NO. 60335-2-40, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard.*
- *There is no declared maximum altitude for operating the appliance.*
- *Charging of the refrigerating system shall be according to the instructions provided by the manufacturer of the outdoor unit.*
- *Both the drain pans and the refrigerant detection sensor installed on this unit are designed to be heat resistant to temperatures produced by all Trane residential and American Standard gas fired furnaces.*
- *If a coil is part of the total system installation, use the Installer's Guide packaged with the furnaces, outdoor sections, and thermostat for physically installing those components.*

These coils are designed for use in combination with a heat pump or cooling outdoor section using R-454B refrigerant. They may be combined with a gas or electric furnace for a complete system that will provide maximum comfort and energy efficiency during the entire year.

The *5AXA equipment has been evaluated in accordance with the Code of Federal Regulations, Chapter XX, Part 3280 or the equivalent. "Suitable for Mobile Home use" The height of the Furnace, Coil and discharge duct work must be 7 feet. or less.

Inspect the coil for shipping damaged. Notify the transportation company immediately if the coil is damaged.

Figure 1. Coil



Application Information

- **Furnace and coil:** the coil MUST be installed downstream (in the outlet air) of the furnace.
- **Indoor unit airflow:** Indoor unit must provide the required airflow for the heat pump or cooling combinations approved for these coils.

These coils fit the 14½, 17½, 21, and 24½ inch width furnaces in vertical upflow and downflow applications.

Coils are equipped with a high temperature composite drain pan and do not require a heat shield when installed with Trane, American Standard, RunTru or Ameristar gas or electric furnaces. Do NOT install with OIL or DRUM type furnaces.

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

Important: *Review the installation requirements. Check the table on the outline drawings and note all dimensions for your coil before beginning the installation.*

Inspection

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

Recommendations

⚠ CAUTION

Coil Damage!

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

Confirm coil is pressurized with 8–12 psi dry air and factory-checked for leaks. Carefully release the pressure by removing the rubber plug on the liquid line. If no pressure is released, check for leaks.

- If this coil is a part of the total system installation, then use the Installer's Guide packaged with the furnaces, heat pump outdoor sections, and control center for physically installing those components.
- Review the dimensional data and dimensions properly noted and checked against selected installation site. By noting in advance proper clearance allowances for installation and possible future service of the coil.

Information on Servicing

All replacement parts shall be in accordance with the manufacturer's specifications.

Prior to Beginning Work

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to confirm that the risk of ignition is minimized. For repair to the refrigerating system, the following shall be completed prior to conducting work on the system:

- Work shall be undertaken under a controlled procedure to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to confirm the technician is aware of potentially toxic or flammable atmospheres.
- Confirm that the leak detection equipment being used is suitable for use with all applicable refrigerants (for example nonsparking, adequately sealed, or intrinsically safe).
- If any hot work is to be conducted on the refrigerant equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.
- No person carrying out work in relation to a refrigerant system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently 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 area around the equipment is to be surveyed to confirm that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
- Confirm that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- The following checks shall be applied to installations using flammable refrigerants:
  - Markings on the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - Refrigerating 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.

Repairs to Electrical Components

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.

Initial safety checks shall confirm that:

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

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of Flammable Refrigerants

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

The following leak detection methods are deemed 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.

The bubble method is an example of leak detection fluids.

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 breaking into the refrigerant circuit to make repairs, or for any other purpose, conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

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

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, this process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be 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 in an appropriate position according to the instructions.
- 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, it shall be pressure tested with the appropriate purging gas. 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.

See installation instructions below for further details.

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 (such as special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, 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. The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note 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 to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

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.

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerant, confirm that there are labels on the equipment stating the equipment contains flammable refrigerant.

Downflow Installation

Downflow Installation

⚠ CAUTION

Safety Hazard!

Failure to follow instructions below could result in equipment damage.

Condensate water blow-off could occur in downflow installations in high humidity applications. Follow all instructions to ensure proper operation.

To set up coils for downflow application, install the two 3-inch wide by 16-inch long galvanized metal plates on the outside of the coil, against the fins on each side of the coil as shown in Figure 2, p. 11. These plates are supplied with the coil.

Do NOT exceed 350 cfm/ton of airflow for downflow applications three ton or greater.

⚠ CAUTION

Heat Sensitivity!

Failure to follow instructions could result in moderate injury and equipment damage.

Do not install coils with OIL or DRUM type furnaces as the upflow/downflow drain pan cannot withstand high temperatures from those units.

Figure 2. Downflow configuration

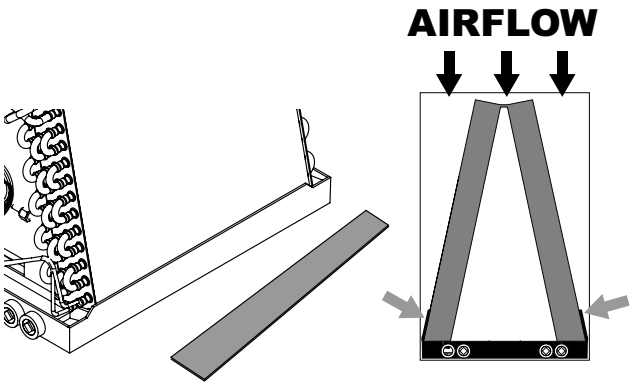
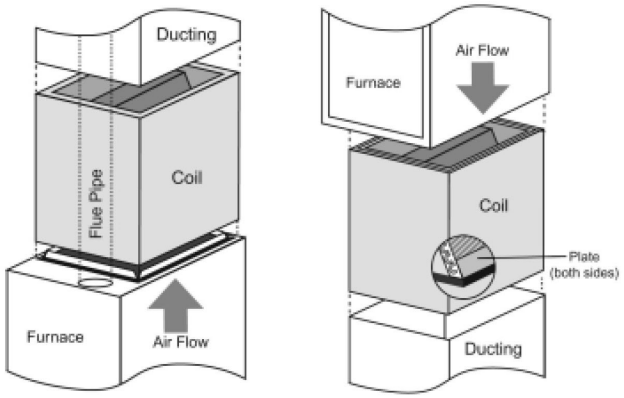


Figure 3. Upflow and downflow applications



Note: *Cabinet is field provided.*

Installing/Brazing Refrigerant Lines

⚠ WARNING

Risk of Fire!

Failure to follow instructions below could cause a fire which could result in death, serious injury, and equipment damage.

Confirm the following requirements apply to the room where the air handler is installed.

- **All combustion appliances located in the same room that have continuous pilot lights must be equipped with an effective flame arrest.**
- **All indoor field-made joints of the field piping must be checked for refrigerant leaks after charging using an electronic leak detector calibrated for R-454B with sensitivity of 5 grams per year or better.**
- **The room must be constructed to avoid stagnation or fire hazard in the event of a refrigerant leak.**

⚠ CAUTION

Caution!

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

- **For brazing, confirm all joints are brazed, not soldered.**
- **For mechanical connections, confirm a negative leak test.**
- **Inspect lines and use proper service tools.**

Consider the following when installing refrigerant lines:

- Determine the most practical way to run the lines.
- Consider types of bends to be made and space limitations.

- Route the tubing making all required bends and properly secure the tubing before making final connections.

Note: *Refrigerant lines must be isolated from the structure and the holes must be sealed weather tight after installation.*

Important: *Do not unseal refrigerant tubing until ready to fit refrigerant lines.*

There is only a holding charge of dry air in the indoor coil, therefore no loss of operating refrigerant charge occurs when the sealing plugs are removed.

Notes:

- *TXV bulb MUST be protected (wrapped with wet rag) or removed, while brazing the tubing. Overheating of the sensing bulb will affect the functional characteristics and performance of the comfort coil.*
- *Install/braze refrigerant lines PRIOR to connection/ installation of refrigerant detection system.*

1. Slide the uncased coil into the field provided coil casing. Slide the red discs (one for the liquid and suction line each) over the field piping and away from the brazing area.
2. Clear all A2L sensor wires well away from the braze connections both inside and outside the coil plenum/ box.
3. Remove both rubber plugs from the indoor coil.
4. Field supplied tubing should be cut square, round and free of burrs at the connecting end. Clean the tubing to prevent contaminants from entering the system.
5. Run the refrigerant tubing into the stub tube sockets of the indoor unit coil.
6. Flow a small amount of nitrogen through the tubing while brazing.
7. Use good brazing technique to make leakproof joints.
8. Minimize the use of sharp 90 degree bends.
9. Insulate the suction line and its fittings.
10. Do NOT allow un-insulated lines to come into contact with each other.

Note: *When replacing the TXV bulb, reinstall the bulb in the proper orientation. Some models will use a spring steel clip to attach the TXV bulb, and some models will use a hose clamp. When supplied with a hose clamp, the clamp should be snug but not tight (clamp screw torque 20 +/- 5 in-lbs).*

11. Rewrap the TXV bulb, spring clip or hose clamp, and suction line with insulation after the bulb is reinstalled. Insulation is provided in the documentation pack for spring clip models.

Note: *The TXV setting on this unit may run high superheat by design (15-25°F) when measured at the outdoor unit.*

12. For optimal performance, the TXV bulb may be relocated outside the coil cabinet after the field line brazing is complete.
- Remove the bulb insulation and bulb clip/hose clamp.
- Assemble the TXV bulb to the field provided suction line outside the unit.

TXV Bulb

TXV Bulb Horizontal Mounting

⚠ CAUTION

Heat Sensitivity!

Failure to follow instructions below could result in moderate injury or equipment damage.
TXV sensing bulb is sensitive to heat. Do not assemble to suction/vapor line until after field brazing is complete and line is cool to touch.

The orientation and location of the TXV bulb impacts system performance.

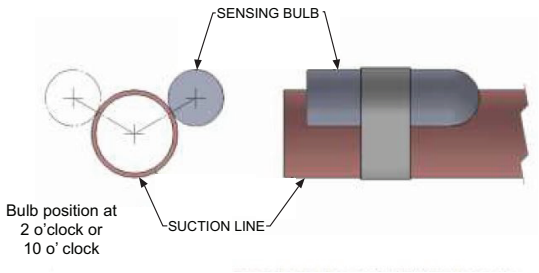
The TXV bulb should be installed parallel to the ground (on a horizontal plane). The bulb position must be at 2 o'clock or 10 o'clock. Figure 4, p. 13 shows the recommended position for the TXV bulb installation in the horizontal plane.

The TXV sensing bulb should be mounted on the suction line approximately 6 inches away from outlet tubes of the circuit using the metal clamp provided. It should not be placed near any bends. To obtain a good temperature reading and correct superheat control, the TXV sensing bulb must conform to ALL the following criteria:

- The sensing bulb MUST be in direct and continuous contact with the suction line.
- The sensing bulb MUST be mounted at the 2 o'clock or 10 o'clock position as shown in Figure 4, p. 13.
- The sensing bulb MUST be insulated from surrounding air.

A properly mounted sensing bulb will prevent false readings caused by liquid refrigerant that may have formed inside the suction/vapor line. Insulation will protect the sensing bulb from false readings due to contact with warm air.

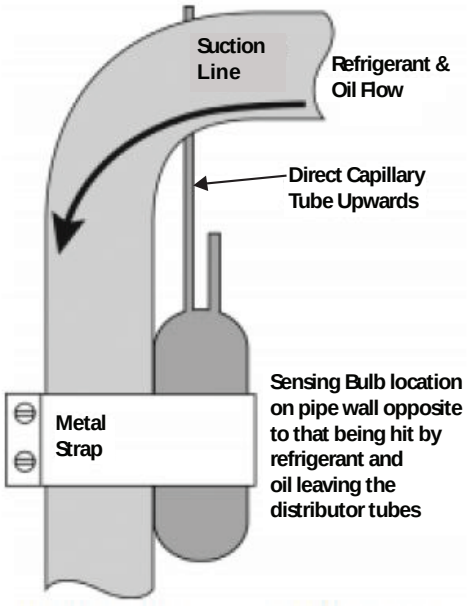
Figure 4. Bulb position



TXV Bulb Vertical Mounting

The TXV sensing bulb should be mounted in a horizontal plane in relation to the suction/vapor line. However, some installation configurations may require that the sensing bulb be mounted vertically. In this instance, place the bulb opposite the piping wall being hit by refrigerant and oil leaving the distributor tubes, and with capillary tubes directed upwards as shown in Figure 5, p. 13.

Figure 5. Vertical mounting



Important: *If the TXV bulb is mounted vertically, the capillary MUST be directed upward. The bulb must be mounted on the wall opposite to that being directly hit by the refrigerant and oil leaving the distributor tubes.*

TXV Adjustment

Notes:

- *When adjusting the TXV, the valve stem or adjusting screw should not be adjusted more than a ¼ turn at a time. To adjust superheat, turn the valve stem clockwise to increase and counterclockwise to decrease.*
- *Refer to OD nameplate for subcooling. Superheat Range should be 12°F to 15°F measured at the OD unit.*
- *The TXV should NOT be adjusted at light load/ ambient conditions of 60°F or below.*

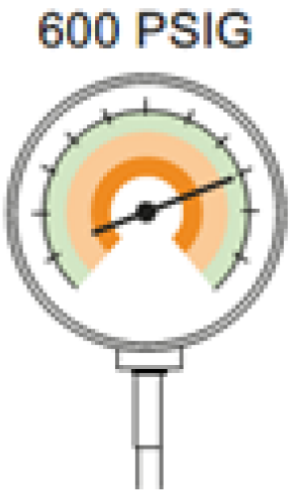
Table 1. Adjustable TXV factory settings

Trane Model# (R-454B)	Refrigerant Control (R-454B)
5AXAA001AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAB002AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAA003AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAB004AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAA005AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAB006AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAB007AS3HAA	3T ADJUSTABLE TXV, NON BLEED
5AXAB008AS3HAA	5T ADJUSTABLE TXV, NON BLEED
5AXAB010AS3HAA	5T ADJUSTABLE TXV, NON BLEED
5AXAC009AS3HAA	5T ADJUSTABLE TXV, NON BLEED
5AXAC011AS3HAA	5T ADJUSTABLE TXV, NON BLEED
5AXAD012AS3HAA	5T ADJUSTABLE TXV, NON BLEED

Pressure Test

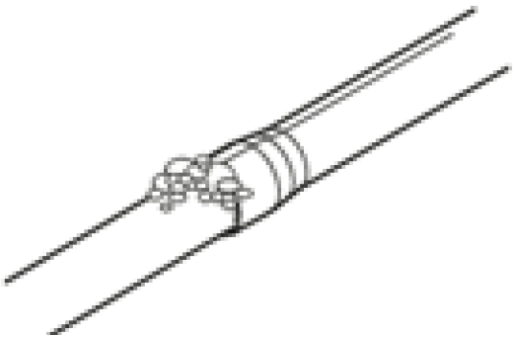
1. Using dry nitrogen, pressurize the field piping and indoor coil to the lower of the maximum operating pressures listed on the name plates of the indoor and outdoor units (likely 600 psi).

Figure 6. Pressure test



2. The test pressure after removal of the pressure source shall be maintained for at least one hour with no decrease of pressure indicated by the test gauge, with the test gauge resolution not exceeding 30 psi.

Figure 7. Check for leaks



3. Check for leaks by using a soapy solution at each field-made joint.

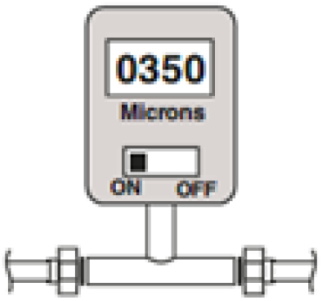
Note: *Remove nitrogen pressure and repair any leaks before continuing.*

Vacuum Test

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

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

Figure 8. Micron gauge



2. Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one minute and 1500 microns in ten minutes.
3. Once evacuation is complete, blank off the vacuum pump and micron gauge, and close the valve on the manifold gauge set.

All procedures for charging the system with refrigerant shall be according to the instructions provided by the manufacturer of the outdoor unit.

Important: *Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.*

After charging the system, all indoor field-made joints of the field piping shall be checked for refrigerant leaks using an electronic leak detector calibrated for R-454B having a sensitivity of five grams per year or better.

Condensate Draining Piping

Condensate drain connections are located in the drain pan at the bottom of the coil/enclosure assembly. The threaded fitting protrudes outside of the enclosure for external connection. A field-fabricated trap is not required for proper drainage due to the positive pressure of the furnace. However, it is recommended to prevent efficiency loss of conditioned air.

1. The drain hole in the drain pan must be cleared of all insulation.
2. Insulate the primary drain line to prevent sweating where dew point temperatures may be met. (Optional depending on climate and application needs.)
3. Connect the secondary drain line to a separate drain line (no trap is needed in this line).

Cleaning the Coil

The manufacturer’s recommendation for coil cleaning is to initially use only water to wash away debris that may have collected on and in the coil fin surface. Removing an evaporator coil is the best way to effectively clean a coil that is heavily contaminated. This is accomplished by removing the coil from the cabinet, sealing the liquid and vapor line and using a strong water stream such as from a

garden hose, being careful to prevent fin damage. Use chemical cleaners, only when necessary.

Note: *Refer to Evaporator Coil Cleaning and Condensate Drain Maintenance Guidelines UN-SVG001*-EN for important information on cleaning coils with chemical treatments.*

Maximum and Minimum Airflow Settings

Note: *Water blow-off could occur in certain installation positions if the airflow setting exceeds the maximum values listed.*

Table 2. Maximum airflow setting, CFM

Coil	Downflow
5AXAA001AS3HAA	700
5AXAB002AS3HAA	700
5AXAA003AS3HAA	875
5AXAB004AS3HAA	875
5AXAA005AS3HAA	1050
5AXAB006AS3HAA	1050
5AXAB007AS3HAA	1050
5AXAB008AS3HAA	1400
5AXAC009AS3HAA	1400
5AXAB010AS3HAA	1600
5AXAC011AS3HAA	1750
5AXAD012AS3HAA	1750

When a refrigerant leak of the indoor coil is detected, the refrigerant leak detection system turns on the blower of the furnace to dilute leaked refrigerant.

The installer must verify that the indoor airflow setting is sufficient to dilute leaked refrigerant. The nominal airflow settings for first-stage cooling, first-stage heat pump, and first-stage furnace heat should not be less than shown in the minimum airflow table below.

Note: *The airflow setting should be verified by comparison to the airflow at the lowest listed external static pressure for the setting. Refer to the airflow table provided by the manufacturer of the furnace.*

Table 3. Minimum airflow setting

Total System Charge (lb)	Minimum Airflow Setting (CFM)
less than 4	no minimum
4	108
5	135
6	162
7	189
8	216
9	244
10	271
11	298
12	325
13	352
14	379
15	406
16	433
17	460
18	487
19	514
20	541

Note: *The system refrigerant charge is the total system charge which is marked on the system according to the instructions provided by the manufacturer of the outdoor unit.*

Note: *Confirm continuous fan operation meets minimum airflow required to dissipate refrigerant leak during mitigation call. Refer to minimum airflow table. If minimum airflow is not met, consider adjusting or disabling continuous fan setting on thermostat.*

Pressure Drop Table

Table 4. Pressure drop characteristics for 5AXA cooling and heat pump coils

Dry coil static pressure drop (inches of water column) @ various CFM									
MODEL	**600**	**800**	**1000**	**1200**	**1400**	**1600**	**1800**	**2000**	**2200**
5AXAA001AS3HAA 5AXAB002AS3HAA	0.24	0.3	0.54						
5AXAA003AS3HAA 5AXAB004AS3HAA		0.22	0.3	0.44					
5AXAA005AS3HAA 5AXAB006AS3HAA			0.26	0.4	0.46				

Table 4. Pressure drop characteristics for 5AXA cooling and heat pump coils (continued)

Dry coil static pressure drop (inches of water column) @ various CFM									
MODEL	600	800	1000	1200	1400	1600	1800	2000	2200
5AXAB007AS3HAA			0.23	0.29	0.4				
5AXAB008AS3HAA 5AXAC009AS3HAA					0.3	0.35	0.45		
5AXAB010AS3HAA 5AXAC011AS3HAA 5AXAD012AS3HAA					0.29	0.29	0.3	0.37	0.34

Refrigerant Leak Detection System

For all tables contained in this section of the manual, the refrigerant charge is the total system charge which is marked on the system according to the instructions provided by the manufacturer of the outdoor unit.

⚠ WARNING

Fire Hazard!

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

In systems using flammable refrigerants, observe all safety instructions and markings on the air handler. Ensure all safety devices are in place and functional. Do not puncture refrigerant tubing. Repair with trained professionals only and dispose properly in accordance with federal and local regulations.

⚠ 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.

For the safety of the building occupants, the unit is equipped with a refrigerant leak detection system. The system is comprised of a refrigerant sensor and a mitigation control board. The system automatically detects leaks in the indoor coil and initiates actions to mitigate the risk of ignition of the leaked refrigerant, including:

- Turning on the blower of the indoor unit to dilute leaked refrigerant.
- Fully opening any zoning dampers, when applicable.
- Turning off the compressor of the outdoor unit.
- De-energizing potential sources of ignition connected to the system.
- Energizing an audible alarm, if so equipped.

⚠ WARNING

Risk of Fire!

Failure to follow instructions below could cause a fire which could result in death, serious injury, and equipment damage.

Confirm the following requirements apply to the room where the air handler is installed.

- **All combustion appliances located in the same room that have continuous pilot lights must be equipped with an effective flame arrest.**
- **All indoor field-made joints of the field piping must be checked for refrigerant leaks after charging using an electronic leak detector calibrated for R-454B with sensitivity of 5 grams per year or better.**
- **The room must be constructed to avoid stagnation or fire hazard in the event of a refrigerant leak.**

Refrigerant sensors for refrigerant leak detection systems shall only be replaced as specified by the manufacturer.

Minimum Conditioned Space

The installer must verify that the total space conditioned by the system is large enough to safely dilute any leaked refrigerant in the event of a refrigerant leak of the indoor coil. The minimum space conditioned by the appliance shall be according to the table below. The conditioned space includes any parts of the space connected via an air duct system. The altitude of installation is the altitude above sea level of the site where the equipment is installed.

Table 5. Minimum conditioned space

	Altitude (ft)								
10,000	**sea level-2,000**	**2,001-4,000**	**4,001-6,000**	**6,001-8,000**	**8,001-10,000**	**10,001-12,000**	**12,001-14,000**	**14,001-15,000**	**above 15,000**
Charge (lb)	**Minimum Conditioned Space (ft^2)**								
4	63	66	70	74	79	85	91	94	98
5	79	83	88	93	99	106	113	118	122
6	95	100	105	112	119	127	136	141	147
7	110	116	123	130	138	148	159	165	171
8	126	133	140	149	158	169	181	188	196
9	142	149	158	167	178	190	204	212	220
10	158	166	175	186	198	211	227	235	245
11	173	183	193	205	218	232	249	259	269
12	189	199	211	223	237	254	272	282	294
13	205	216	228	242	257	275	295	306	318
14	221	232	246	260	277	296	318	330	343
15	236	249	263	279	297	317	340	353	367
16	252	266	281	298	317	338	363	377	392
17	268	282	298	316	336	359	386	400	416
18	284	299	316	335	356	380	408	424	440
19	299	315	333	353	376	402	431	447	465
20	315	332	351	372 4	396	423	454	471	489

Note: *The mitigation requirements for evaporator coils using A2L refrigerants are calculated at sea level. For altitudes above 2625 ft, the minimum conditioned area must be adjusted by the corresponding altitude adjustment factor (AF) shown in the reference table.*

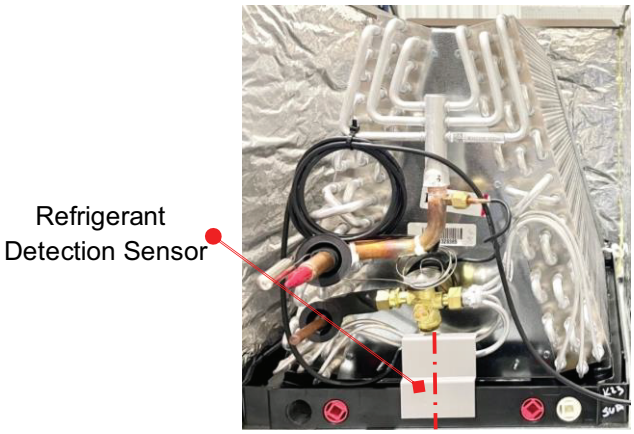
Wiring

The MCB must be wired to the furnace, thermostat, and outdoor unit for the refrigerant detection system to function as intended.

For 24 VAC systems, use the wiring harness supplied with this guide.

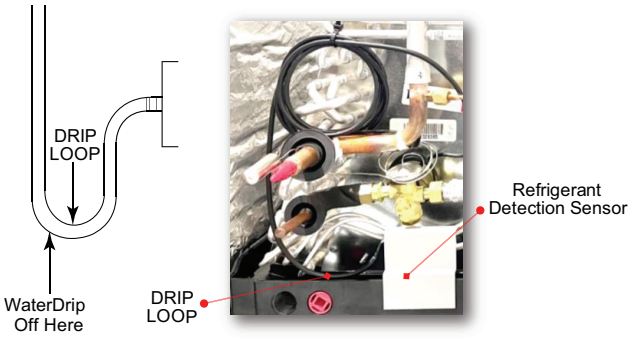
1. Attach sensor bracket, confirming it is in the vertical position, on the drain pan as shown in Figure 9, p. 18.

Figure 9. Refrigerant detection sensor



2. Run the sensor cable through an opening in the casing. Use the grommet supplied in the kit for hole (0.875 inch) in the sheet metal to confirm the cable is not damaged when exiting the coil casing. The installing contractor must confirm there is a drip loop (shown in Figure 10, p. 18) in the harness so condensation does not run into the sensor connection.

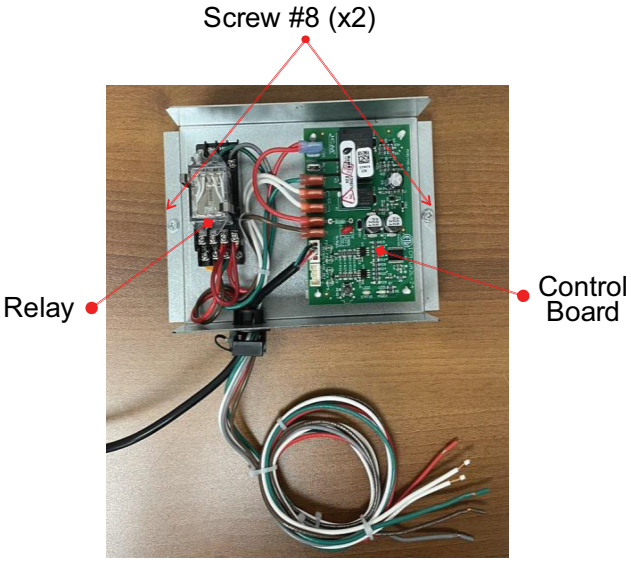
Figure 10. Drip loop



3. Mount the mitigation board enclosure to a nearby flat, vertical surface by using field-supplied screws. See Figure 9 below for more details. The enclosure must be mounted perpendicularly flush to a wall or permanent structure near the coil within three feet of the furnace.

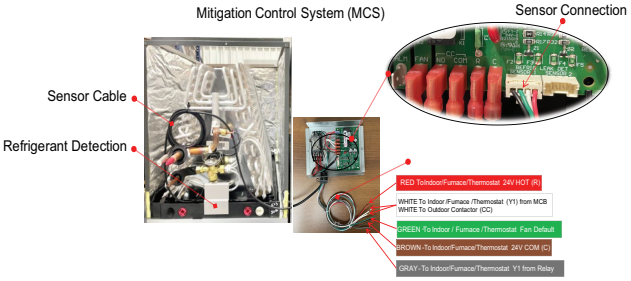
Note: *Do NOT mount the enclosure to the outside of the furnace or evaporator coil casing as damage could occur to the equipment. Keep the enclosure clear of the furnace flue pipes.*

Figure 11. Mitigation board



4. Connect the sensor cable to the control board in the enclosure. Check that the 24VAC harness is connected properly to the furnace, thermostat, and outdoor units. See field wiring diagrams in this guide for further information.

Figure 12. Mitigation control system (MCS)

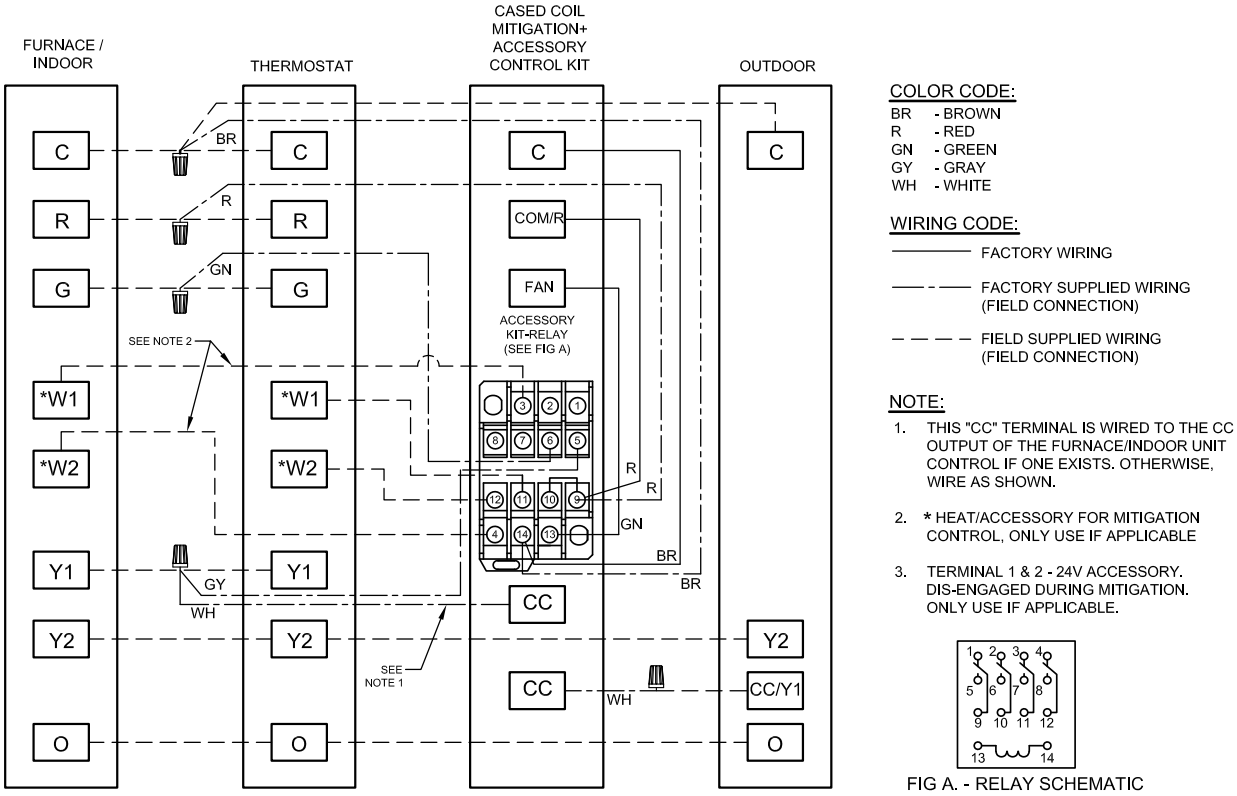


5. Close the casing holding the evaporator coil. Slide the discs so they reside just outside of the coil cabinet. These markings will alert any technician servicing the installation in the future that the system is charged with an A2L refrigerant.
6. Apply warning labels included in the kit to the coil casing, confirming they are visible from the front of the coil. See Figure 13, p. 19.

Figure 13. A2L warning labels

Field Wiring Diagrams

Figure 14. Heating thermostat plus AC/HP



Note: *Confirm continuous fan operation meets minimum airflow required to dissipate refrigerant leak during mitigation call. Refer to minimum airflow table. If minimum airflow is not met, consider adjusting or disabling continuous fan setting on thermostat.*

Figure 15. Air cleaner plus furnace

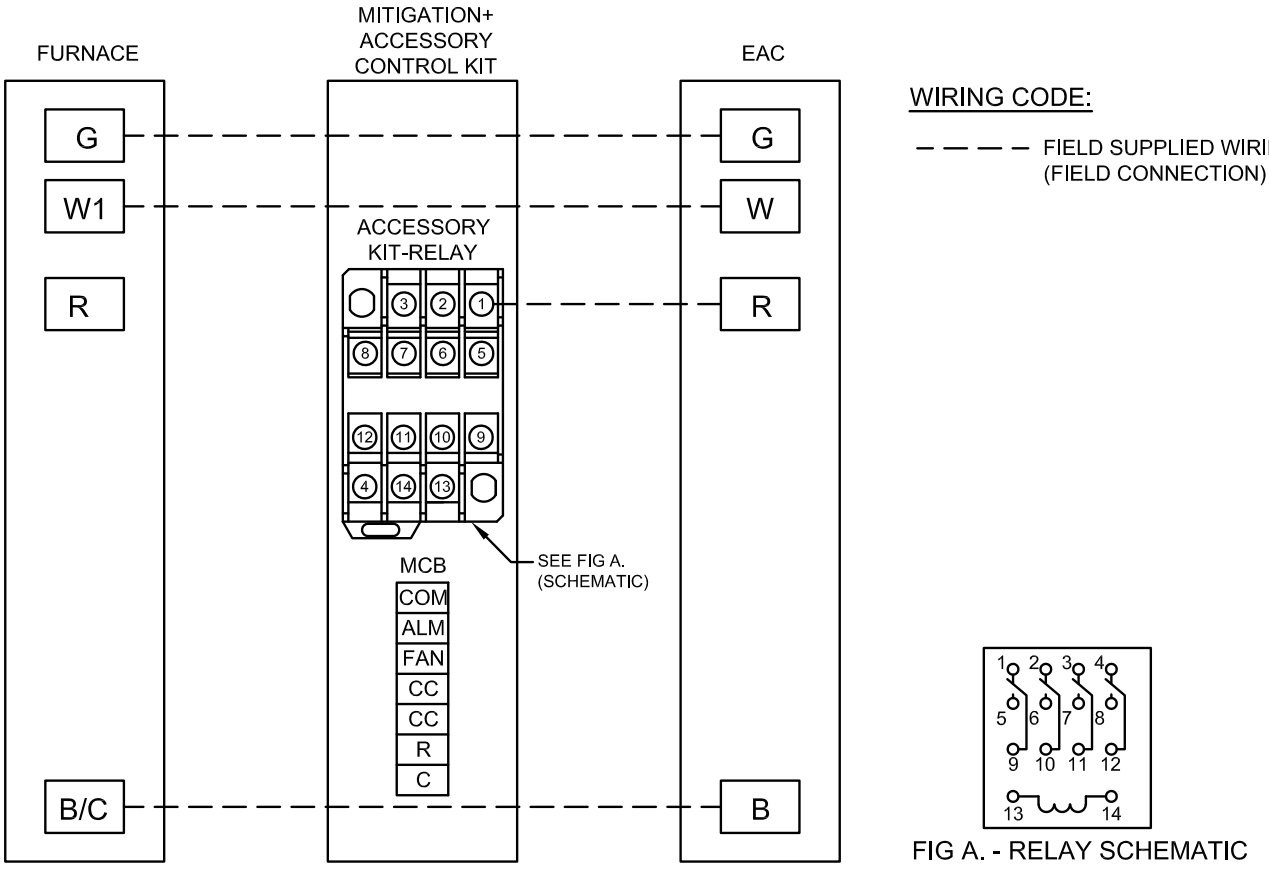
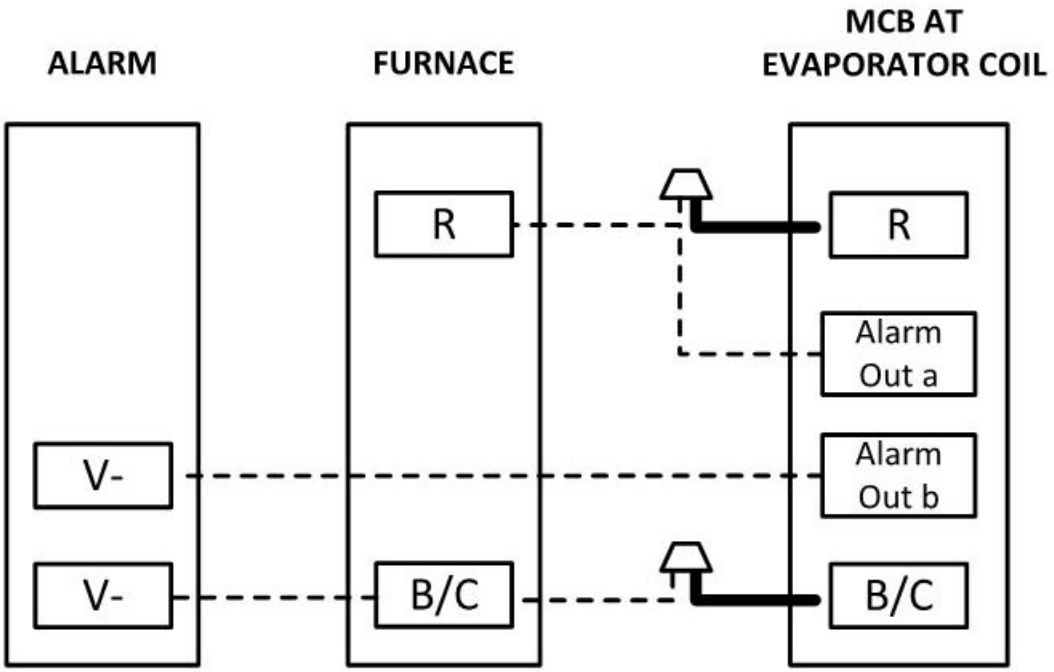
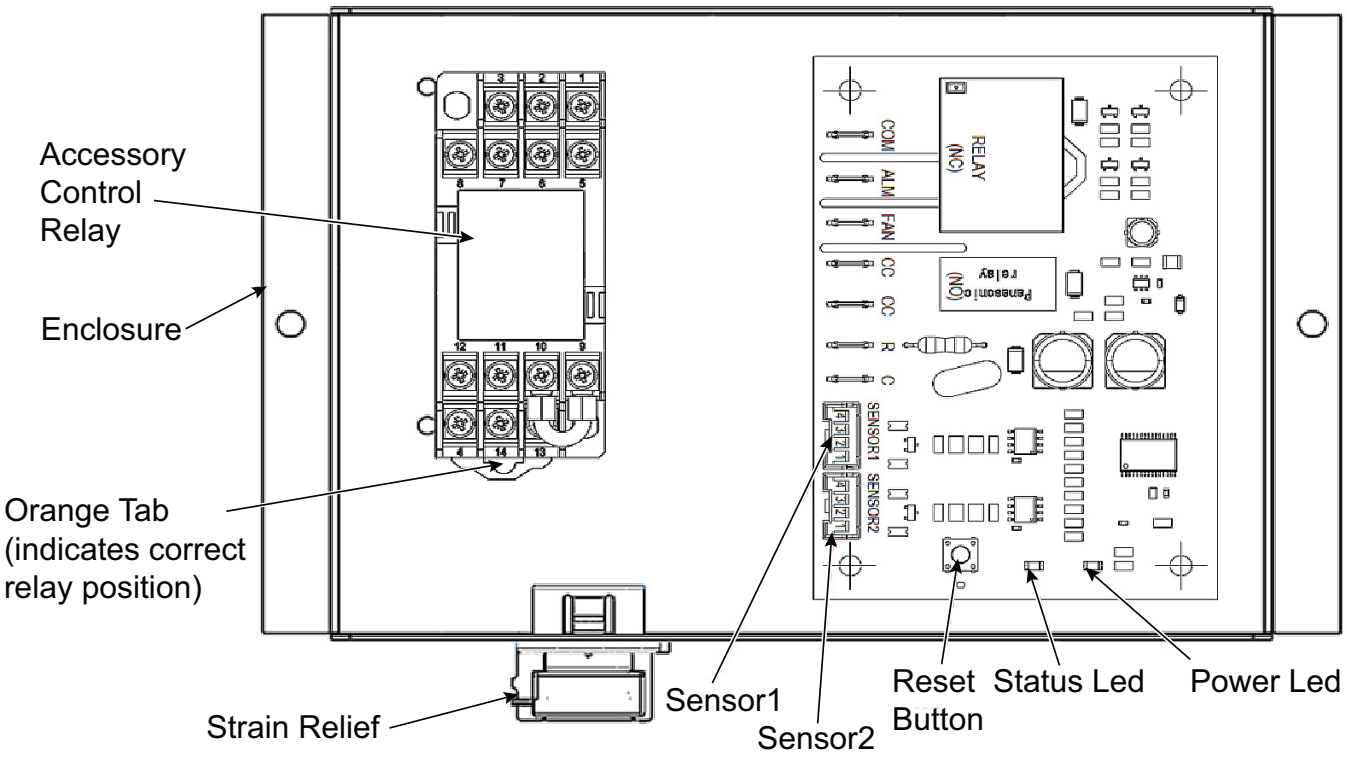


Figure 16. Audible alarm



Refrigerant Detection System - Verification and Troubleshooting

Figure 17. Refrigerant detection system



Important: *Running the system test is mandatory for all installations. The HVAC system must not complete commissioning until the installation steps outlined in this manual have been successfully completed.*

Important: *Never connect sensor to the mitigation control board while board is powered. Confirm the system is powered off prior to working on this mitigation system.*

Note: *Use only the SENSOR1 port. The SENSOR2 port should only be used in applications with two indoor units in which the sensor will also connect to the mitigation control board.*

If the sensor is not connected prior to powering up the mitigation system, it will enter leak mitigation mode. Once the system enters leak mitigation mode, it will stay in mitigation state for at least five minutes, even if the control board loses power or the power is cycled. It is strongly advised to connect the sensor prior to powering up. Perform the A2L Mitigation Control refrigerant leakage test for all modes of operation one by one:

- Cooling (for ACs and heat pumps)
- Heating (for heat pumps)
- Electric heating
- Fan

A2L Mitigation and Accessory Control Kit

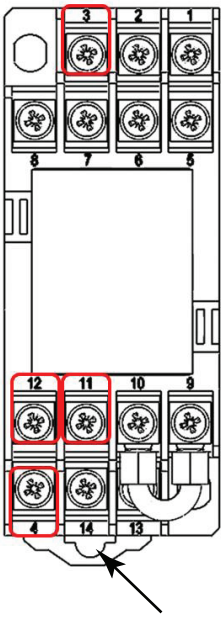
This coil is equipped with an A2L mitigation and accessory control kit.

1. Set the thermostat to one of the above operation modes, and confirm that the system is powered and running properly in that mode. The test sequence will need to be performed again in each operation mode.
2. Open the enclosure by removing the two screws and the metal cover to access the mitigation control board and accessory control relay.
3. Once the system is powered, the control will communicate with the A2L sensor to request data on the concentration of airborne refrigerant within the coil cabinet.
4. Wait 10 seconds, and verify that the STATUS LED shows Warm-Up mode (solid ON).
5. Wait 20 – 30 seconds and verify that the STATUS LED shows Run mode (solid OFF).

6. Locate the sensor cable connected to the “SENSOR1” port on the mitigation control board. Remove the sensor cable by squeezing the tab on the connector and pulling away from the board to disconnect the sensor.
7. Once the sensor is disconnected, wait 15 seconds. The mitigation control board no longer detects the sensor. Verify that the STATUS LED blinks fault code for communiation fault (two blinks), the mitigation sequence begins:
    a. The HVAC system operation that was chosen the control will provide a system response which will deactivate the compressor and the additional equipment/accessory that is connected to the terminals 3, 4 and 11, 12 of the relay such as but not limited to electric heat or gas heat or air cleaner at the same time, then it will energize the indoor blower. See the relay and wiring diagram for details.
    b. The indoor blower will begin to operate and remain running for at least five minutes from initial fault detection. The STATUS LED (two blink) fault code will continue for the entire five minutes.
    c. Once confirmed, the test is considered successful. It is recommended to wait the full five minutes to allow the test sequence to expire.

Note: *Loss of communication between the control and the sensor will also result in the mitigation state for at least five minutes. The control will not recover until communication is restored.*

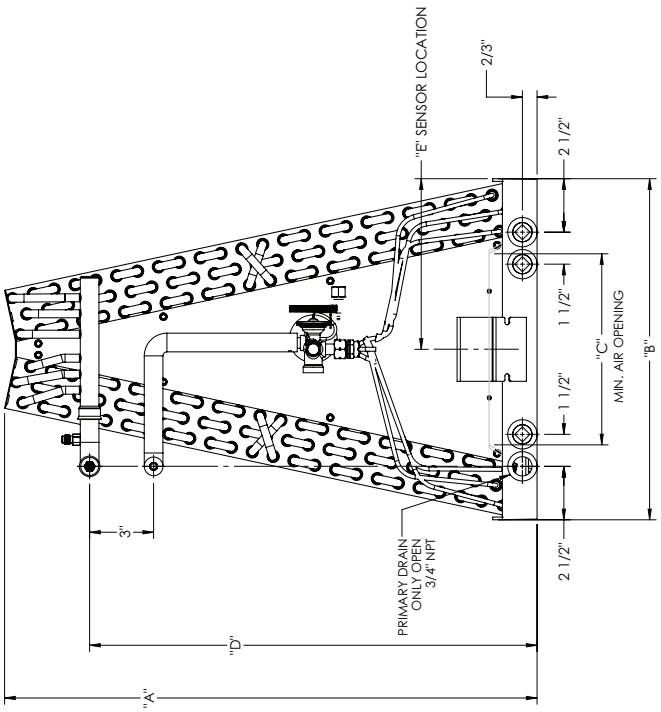
Figure 18. LED status

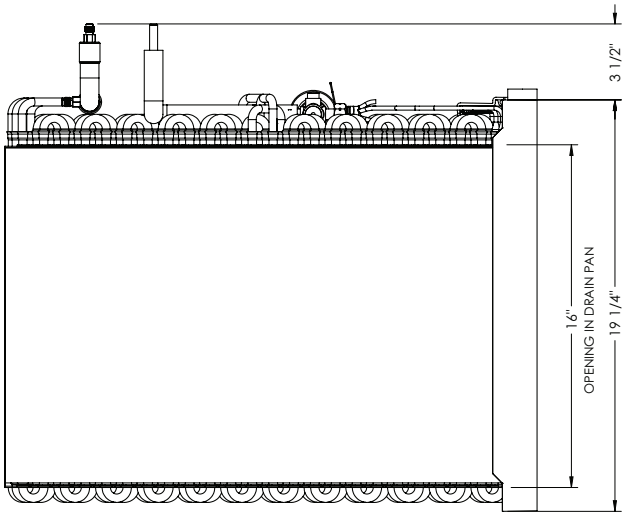


Orange tab, indicating correct position of relay and wiring. Within the enclosure, the orange tab will face the strain relief outlet.

Dimensional Data

Figure 19. Dimensional data





TRANE MODEL (R454B)	COIL SIZE	SHIPPING WEIGHT (LBS)	REFRIGERANT CONTROL	COIL HEIGHT "A"	OVERALL WIDTH "B"	OPENING WIDTH "C"	GAS CONN. HEIGHT "D"	SENSOR LOCATION "E"	GAS CONNECTION	LIQUID CONNECTION	DRAINPAN
5AXAA001AS3HAA	12X16X2R	11	TXV (NON BLEED)	13"	13"	5-3/4"	9"	6-1/2"	3/4"	3/8"	High Temp. Composite
5AXAB002AS3HAA	12X16X2R	11	TXV (NON BLEED)	13"	16"	8-3/4"	9"	8"	3/4"	3/8"	
5AXAA003AS3HAA	14X16X3R	18	TXV (NON BLEED)	15"	13"	5-3/4"	11"	6-1/2"	3/4"	3/8"	
5AXAB004AS3HAA	14X16X3R	18	TXV (NON BLEED)	15"	16"	8-3/4"	11"	8"	3/4"	3/8"	
5AXAA005AS3HAA	16X16X3R	22	TXV (NON BLEED)	17"	13"	5-3/4"	13"	6-1/2"	3/4"	3/8"	
5AXAB006AS3HAA	16X16X3R	22	TXV (NON BLEED)	17"	16"	8-3/4"	13"	8"	3/4"	3/8"	
5AXAB007AS3HAA	20X16X3R	27	TXV (NON BLEED)	21"	16"	8-3/4"	17"	8"	3/4"	3/8"	
5AXAB008AS3HAA	24X16X3R	32	TXV (NON BLEED)	25"	16"	8-3/4"	21"	8"	7/8"	3/8"	
5AXAB010AS3HAA	26X16X3R	35	TXV (NON BLEED)	27"	16"	8-3/4"	23"	8"	7/8"	3/8"	
5AXAC009AS3HAA	24X16X3R	32	TXV (NON BLEED)	25"	19-1/2"	10	21"	9-3/4"	7/8"	3/8"	
5AXAC011AS3HAA	26X16X3R	35	TXV (NON BLEED)	27"	19-1/2"	10	23"	9-3/4"	7/8"	3/8"	
5AXAD012AS3HAA	26X16X3R	35	TXV (NON BLEED)	27"	23"	13-1/2"	23"	11-1/2"	7/8"	3/8"	

Troubleshooting

Figure 20. Troubleshooting indoor TXV/cooling mode

Note: *Before starting, confirm the blow wheel, indoor, and outdoor coils are clean.*

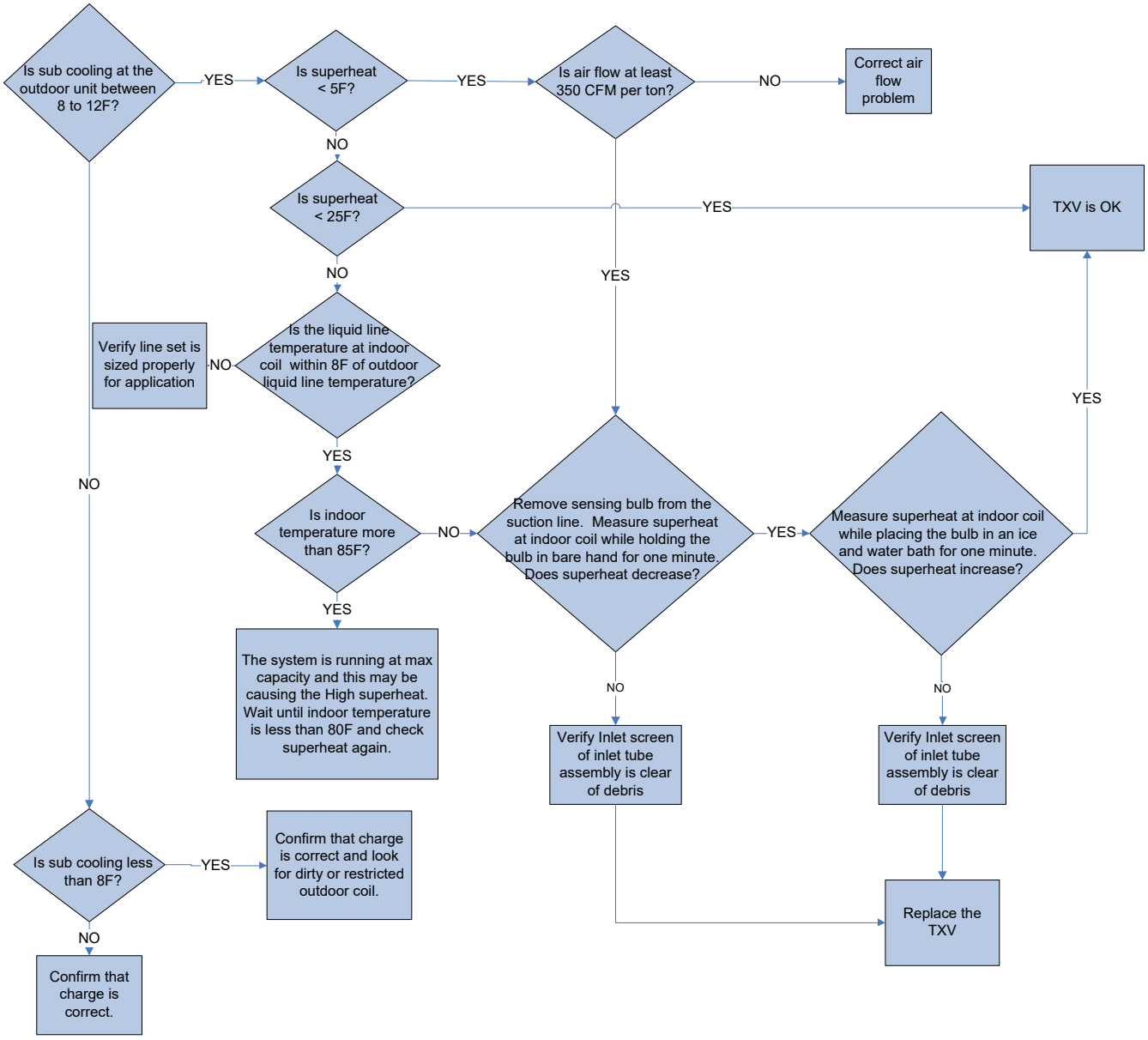
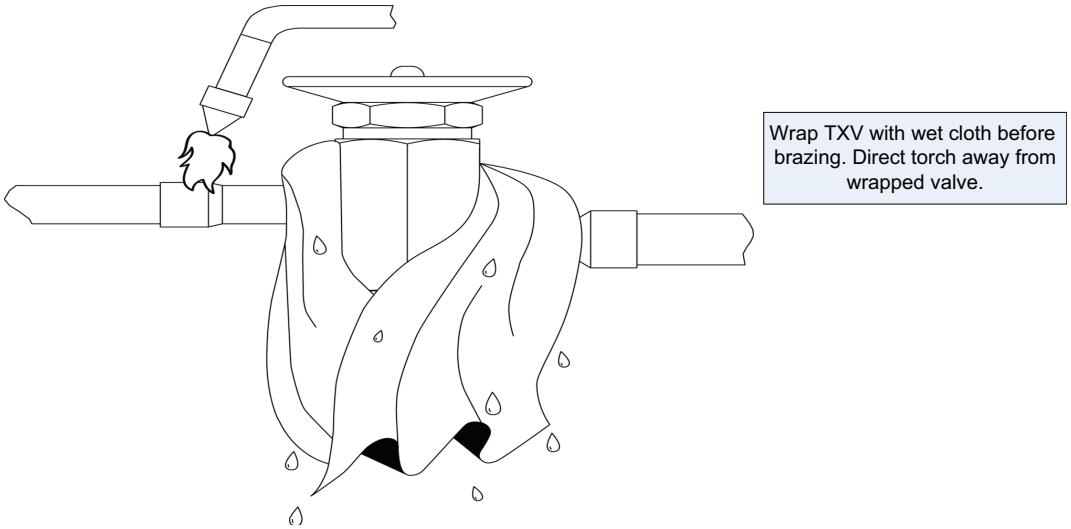


Figure 21. Brazing the TXV



Checkout Procedures

Confirm that all checkout procedures specified in this document have been fulfilled.

- ☐ All wiring connections are tight and properly secured.
- ☐ Voltage and running current are within limits.
- ☐ All refrigerant lines (internal and external to equipment) are isolated, secure, and not in direct contact with each other or structure.
- ☐ All braze connections have been checked for leaks. A vacuum of 350 microns provides confirmation that the refrigeration system is leak free and dry. Additional refrigerant weight is recorded on a label by the unit nameplate.
- ☐ If unit is installed in any orientation other than upflow, refrigerant sensor is properly relocated.
- ☐ Final unit inspection to confirm factory tubing has not shifted during shipment. Adjust tubing if necessary so tubes do not rub against each other or any component when unit runs.
- ☐ Ductwork is sealed and insulated.
- ☐ All drain lines are clear with joints properly sealed. Pour water into drain pan to confirm proper drainage. Provide enough water to confirm drain trap is primed.
- ☐ Supply registers and return grilles are open, unobstructed, and air filter is installed.
- ☐ Indoor blower and outdoor fan are operating smoothly and without obstruction.
- ☐ Indoor blower motor set on correct speed setting to deliver required CFM.
- ☐ Blower and fan set screws are tight.
- ☐ Cover panels are in place and properly tightened.
- ☐ System functions safely and properly in all modes.
- ☐ Refrigerant leak detection system mitigation actions are verified.
- ☐ All refrigerant safety procedures have been verified.
- ☐ Owner has been instructed on use of system and given manual.

About Trane and American Standard Heating and Air Conditioning

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COR-SVN002C-EN 30 Jan 2026
Supersedes COR-SVN002B-EN (November 2025)