INSTALLATION INSTRUCTIONS

IMPORTANT

ATTENTION INSTALLERS:

It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the unit or failure to follow safety warnings could result in serious injury, death, or property damage.

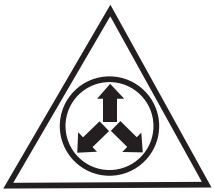
These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/ service personnel for this type of equipment. Please read all instructions carefully before starting the installation. Return these instructions to the customer's package for future reference.

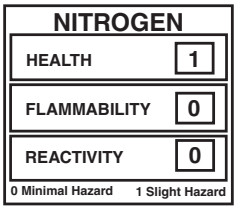
DO NOT DESTROY. PLEASE READ CAREFULLY & KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

IMPORTANT SAFETY INFORMATION

Please read all instructions before servicing this equipment. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

⚠ WARNING:





C75 coils are pressurized with nitrogen at the factory. Avoid direct face exposure or contact with valve when gas is escaping. Always ensure adequate ventilation is present during the depressurization process. Any uncertainties should be addressed before proceeding.

PROPOSITION 65 WARNING:

WARNING: This product contains chemicals known to the state of California to cause cancer.

WARNING: This product contains chemicals known to the state of California to cause birth defects or other reproductive harm.

⚠ WARNING:

Improper installation, service, adjustment, or maintenance may cause explosion, fire, electrical shock or other hazardous conditions which may result in personal injury or property damage. Unless otherwise noted in these instructions, only factory authorized kits or accessories may be used with this product.

This unit uses refrigerant R-454B. DO NOT use any other refrigerant in this unit. Ensure that any outdoor section is suitable for use with R-454B. DO NOT mix refrigerants.

This equipment/listing is not approved for use with UV applications and installations of the equipment should be performed in accordance with the national standards as they apply.

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700ºC and only electric switching devices which are sealed components, or intrinsically safe for use in flammable environments may be used. In addition to electric duct heaters, all other electrical accessory equipment within the ductwork of the unit should be inspected as well. Zoning systems, electro-static air filtration units and heating units should have particular attention applied to them.

These C75 units have an included R454B leak detection sensor, when wiring the units the sensor will energize an external signal wire if a leakage is detected. This signal or 'alarm' output, should be utilized to disable any duct accessories that are potential ignition sources, as well as to force open any zoning systems that are installed. Refer to these instructions and the wiring diagram for additional details.

⚠ WARNING:

This unit must be installed in accordance with the instructions outlined in this manual. If maintenance, service, or repairs make it necessary for evacuation and charging, opening of sealed components, or opening of ventilated enclosures, then it should only be attempted by qualified trained personnel thoroughly familiar with this equipment and have the appropriate training for working with A2L refrigerants. Under no circumstances should the owner attempt to install and/or service this equipment. Failure to comply with this warning could result in property damage, personal injury, or death.

⚠ WARNING:

The information listed in this manual must be followed during the installation, service, and operation of this unit. Unqualified individuals should not attempt to interpret these instructions or install this equipment. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.

- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes for special installation requirements.
- Familiarize yourself with the controls that shut off the electrical power to the unit. If the unit needs to be shut down for an extended period of time, turn off electrical power at the circuit breaker. For your safety always turn off the electrical power before performing service or maintenance on the unit.
- Installation of equipment may require brazing operations. Installer must comply with safety codes and wear appropriate safety equipment (safety glasses, work gloves, fire extinguisher, etc.) when performing brazing.

- Read the Installation Instructions supplied with the furnace or air handler. Always observe all safety requirements outlined in this manual and on the furnace or air handler markings before installing the coil.
- Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.
- Use caution when handling this equipment or removing components. Personal injury can occur from sharp metal edges present in all sheet metal constructed equipment.
- 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.

⚠ WARNING:

This appliance is not intended for use 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 use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Refrigerant Safety Group A2L

⚠ WARNING:

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
Do not pierce or burn.
Be aware that refrigerants may not contain an odor.

Note: These units are factory charged with Nitrogen, prior to installation - new units may be stored without consideration of flammability hazards. Refer to the DECOMMISSIONING section for details on the storage of units after their useful life has been expended.

GENERAL REQUIREMENTS

- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes and the National Electrical Code (NFPA 70) for special installation requirements.
- This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of UL 60335-2-40, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of UL 60335-2-40, CSA 22.2 No 60335-2 40.
- This system contains R-454B, a mildly-flammable refrigerant. Because of this, there are requirements, including a minimum size, for the room in which the indoor portion of this system shall be installed within. Read these instructions for additional details.
- This unit is designed for indoor installations only and should be positioned as shown in the COIL INSTALLATION section of this document.
- When choosing an installation location, the contractor/ installer must ensure that the equipment nameplate and markings continues to be visible and legible after its installation is completed. Markings and signs that are illegible shall be corrected.
- These indoor units are designed, and factory configured to be installed on a fully ducted system and come with a factory-installed Leak Detection Sensor. Some application configurations may require the use of a second sensor to be added to the system. Some application configurations may require the installer to move the provided sensor to a new location with the duct. Fully read these instructions to determine if one of these cases is applicable to your application.
- Flexible ducts may not be connected directly to these indoor units. A metal duct transition must be used to connect the flex duct. Transition ducts should be designed to comply with the requirements of these instructions, when guidance is provided.
- Only auxiliary devices approved by Nortek Global HVAC or that are declared suitable with R-454B shall be installed within the connecting ductwork.
- Nortek A2L Indoor Coils must be installed within a cased cabinet. Do not utilize these coils for open return or open supply applications.
- When refrigerant tubing and electrical wiring penetrates a structure's envelope, the openings should be made to be suitably water-tight after their installation.
- Prior to beginning work on this system, take steps to minimize the risk of refrigerant being ignited. These steps should include the following:
  - o Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
  - o All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
  - o The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
  - o If any hot work is to be conducted on the refrigerating

equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

- o No person carrying out work in relation to a refrigerating 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, repairing, removing 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 make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- o Ensure 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.
- o 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.
- o The following checks shall be applied to installations 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
  - marking 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.

- 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. This shall be reported to the owner of the equipment so all parties are advised.
  - o Initial safety checks shall include:
    - that 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 bonding
- Sealed components and intrinsically safe components shall be replaced instead of trying to repair them. All replacement relays and contactors should be sealed components or have been rated as intrinsically safe for use in FLAMMABLE environments. Motors must have been evaluated for their safe use in A2L refrigeration systems.
- Leak detection sensors shall only be replaced with sensors specified by Nortek Global HVAC

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.

- All electrical wiring must be completed in accordance with local, state and national codes and regulations and with the National Electric Code (ANSI/NFPA 70) or in Canada the Canadian Electric Code Part 1 CSA C.22.1.
- Fully annealed, refrigerant grade copper tubing should be used when installing the system. Refrigerant suction line tubing should be fully insulated.
- 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.
- Installation of equipment may require brazing operations. Installer must comply with safety codes and wear appropriate safety equipment (safety glasses, work gloves, fire extinguisher, etc.) when performing brazing operations.
- Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.
- Perform an operational and safety check of the equipment after completing the installation and before leaving the job
- Once fully assembled and operational, this equipment will contain liquid and gaseous refrigerant under high pressure. DO NOT USE ANY PORTION OF THE EQUIPMENT CHARGE FOR PURGING OR LEAK TESTING. Installation or servicing should only be performed by qualified, trained personnel thoroughly familiar with this type equipment.

Detecting Leaks 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 a naked flame) shall not be used.
- The following leak detection methods are deemed acceptable for all refrigerant systems
  - o 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.) Ensure 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.
  - o 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.
  - o NOTE Examples of leak detection fluids are:
    - bubble method,
    - fluorescent method agents.

- If a leak is suspected, all naked 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 of refrigerant shall be according to the "Removing Refrigerant and Evacuation" section of this document.

Removing Refrigerant 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:
  - Safely remove refrigerant following local and national regulations
  - Evacuate the system
  - Purge the circuit with inert gas
  - Evacuate the system
  - Continuously flush or purge with inert gas when using flame to open circuit
  - Open the circuit

  The refrigerant charge shall be recovered into the correct recovery cylinders. DO NOT Vent the refrigerant to the atmosphere. 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. Compressed air or oxygen shall not be used for purging refrigerant systems.

Refrigerant 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. It is optional but recommended to pull down to a vacuum and then repeat this process until no refrigerant is within the system.

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.

PRE-INSTALLATION INSPECTION FOR A2L SYSTEMS

Prior to the installation of any A2L refrigeration system on to a structure, the contractor or installer is required to evaluate the site for the safe usage of the equipment and to ensure the installation goes smoothly. The following checks shall be applied to installations using A2L FLAMMABLE REFRIGERANTS:

First, determine the charge per square-foot of the installation.

- An evaluation to estimate the refrigerant charge that will be contained within the new equipment. Refer to the appropriate Nortek QRD documentation for the equipment match, calculation instructions are located there and can be adjusted by the required length of the equipment lineset.
- Determine the square footage of the conditioned space that the unit will be used for. With the above charge information & the conditioned space square footage, the charts in this document can be used to ensure that first qualification for the safe installation can be made.

Second, inspect the space where the indoor coil, blower and ducted heating unit will be located.

- Validate that any fossil-fuel equipment in the vicinity of the planned install location has flashback arrestors installed. This equipment could be water heaters, boilers or other similar equipment that serves the home and is not connected to the duct system.
- Measure the floor area around where these C75 units will be installed. Verify that this space is either connected to the conditioned air space, or not.
- If the equipment space is not fluidly-connected to the air conditioned space, that is: if the air around the equipment cannot be both supplied and returned to the duct system, then additional actions may need to be performed during the installation process. This may require additional equipment to be installed and should be purchased. If the equipment is planned for a small closet or quasi-equipment room area, louvered doors or other venting may be adequate to provide the necessary air exchange, but the contractor is responsible for that determination.

Alternately, this equipment space may need to be ventilated to the outdoors, or the air condition space by some positive means. It is critical that the equipment space is constructed so that should any refrigerant leak into the space it will not stagnate so as to create a fire or explosion hazard.

Third, inspect the duct system. Validate that any accessory equipment, installed in the duct system is safe for use with A2L equipment.

- Note any Zoning Equipment that may be installed. These accessories will need to be forced to open in the event that the Leak detection sensor actually makes a detection of a leak. -OR- The calculation of floor space to charge amount needs to be computed and evaluated based on the smallest zone floor area only.
- Note any other electrically operated equipment that is installed in the duct system. Electric heaters, Electrostatic Air Filters, etc.. In the event of a leak detection by the sensor, this equipment may need to be disabled. In some cases, this equipment may even need to be replaced with similar equipment that is rated for the safe use with A2L refrigerants. An inspection of that equipment, its instructions and usage rating is necessary.
- Visually inspect and validate that all registers and returns are free flowing, not fully blocked off by furniture and cabinetry.

Fourth, inspect the refrigerant piping system. A full visual inspection of the pipe routing should be performed.

- Ensure that piping is not embedded in walls or enclosed in unventilated piping-chases. If a pipe chase exists, then it may need to be ventilated. If the piping is embedded in the wall, it may be appropriate to abandon that pipe set and route it differently instead of attempting to ventilate the wall cavity.
- No portion of the piping should be hidden from inspection. The inspection should note any and all joint locations or repairs in the existing or planned piping route.
- Nortek does not recommend the repeated reuse of old piping sets. It is the contractor/installers responsibility to ensure that the piping applied to the A2L system is safe for use.

- The contractor/installer should determine if any section of the current/proposed pipe routing will require to be protected from likely things that may damage it inadvertently. Especially in home work-shops or garage areas.
- If refrigerating piping or piping components are installed in a position where they are likely to be exposed to any substance which may corrode the tubing or components, the piping should be shielded, or otherwise protected from the possible exposure hazard. The direct burial of copper tubes in the earth, is not allowed. Refrigerant tubing insulation is not considered to be an acceptable means of protection.

Fifth, read and understand these instructions and the other installed equipment instructions fully and completely before the time of installation.

Nortek highly recommends that the local code be inspected or the authority asked if they have other requirements for the installation of A2L refrigerant equipment on residences.

Nortek highly recommends that the contractor/installer is to have taken a training course from a reputable source on the differences and requirements of A2L refrigerant system installations prior to working on, or with, an A2L refrigerant system.

This summary of actions may not represent all actions that are necessary in your application. It is the contractor/installer's responsibility to ensure that the equipment is applied to the application in a safe and efficient manner. These notes are included only to highlight some of the required actions to be performed on each job and do not presume to note all possible tasks for all possible installations.

COIL INSTALLATION

⚠ WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury or property damage. Improper servicing could result in dangerous operation, serious injury, death or property damage.

- **Before servicing, disconnect all electrical power to the equipment.**
- **When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.**
- **Verify proper operation after servicing.**

⚠ CAUTION:

The coil must be level to ensure proper condensate drainage. An unlevel installation may result in structural damage, premature equipment failure, or possible personal injury.

General Information

C75 Series indoor cased coils are designed for upflow, downflow, or horizontal applications and are equipped with braze type refrigerant connections for easy installation.

- Check the coils and confirm that it's suitable for application with the intended outdoor unit.
- Optional cooling/heating equipment must be properly sized and installed in accordance with the furnace manufacturer's specifications and approved recommendations.
- C75 Series coils are listed for use with R454B refrigerant only. R-454B is classified as an A2L refrigerant.
- The included LDS (Leak Detection System) is calibrated to detect R-454B refrigerant only. No other refrigerants will be detected properly.
- Heating only furnace air circulators may have to be replaced with multi-speed heating / cooling blowers to upgrade the air delivery (CFM) when an add-on coil is installed.
- Verify that the air delivery of the furnace/air handler is adequate to handle the static pressure drop of the coil, filter, and duct work.
- If precise forming of refrigerant lines is required, a copper tubing bender is recommended. Avoid sharp bends and contact of the refrigerant lines with metal surfaces.
- Refrigerant lines should be wrapped with pressure sensitive neoprene or other suitable material where they pass against sharply edged sheet metal.
- Horizontal installations of C75BA units require a horizontal drain pan kit to be installed. Refer to the Horizontal Instructions section for details.
- All C75 coils have a factory installed leak detection sensor (LDS) on the front delta plate of the coil as shown in figure 1. This location of the LDS is valid for upflow and downflow applications only. For all horizontal applications the LDS must be relocated as described further below.
- The sensor is designed to detect a refrigerant leak within the atmosphere around the sensor. Sensor is powered by the secondary side of the transformer, see Wiring Diagram for details. Figure 11 (page 19).

Before You Install this Unit

√ The cooling load of the area to be conditioned must be calculated and a system of the proper capacity selected. It is recommended that the area to be conditioned be completely insulated and vapor sealed.

√ Check the electrical supply and verify the power supply is adequate for unit operation. The system must be wired and provided with circuit protection in accordance with local building codes. If there is any question concerning the power supply, contact the local power company.

√ Check that the marked maximum operating pressure on the indoor coil or air handler and the maximum operating pressure on the outdoor unit are suitable for each other.

√ Check that the indoor coil or air handler and the outdoor unit are both suitable for the same refrigerant.

√ The indoor section (air handler, furnace, etc) should be installed before routing the refrigerant tubing. Refer to the indoor unit's installation instructions for installation details.

√ All units are securely packed at the time of shipment and upon arrival should be carefully inspected for damage prior to installing the equipment at the job site. Claims for damage (apparent or concealed) should be filed immediately with the carrier.

√ Please consult your dealer for maintenance information and availability of maintenance contracts. Please read all instructions before installing the unit.

GENERAL INFORMATION FOR LEAK DETECTION SYSTEM APPLICATIONS

These Nortek indoor coils have been designed to accommodate a multitude of duct configurations and arrangements. When utilized in the Nortek factory assembled case and installed as recommended by these instructions, no additional sensors should be required.

Several safety devices are included in every factory assembly to ensure the safe operation of the system and to allow the sensor to quickly detect leakages. These components must be installed. If repair or service operations require them to be temporarily removed, they must be reinstalled prior to returning the system to operational status.

Safety Equipment List:
1) Drainpan Deflector Brackets
2) Coil Hold-down Brackets

The coil drainpan must be held tightly to its bottom support with the hold-down brackets, a visual inspection should be made to ensure the brackets are installed properly and a good air seal exists. If installing a horizontal drainpan kit onto a unit, the Installer must verify that a good air seal has been made to the units insulation or sheetmetal. (Note: Nortek Indoor coils can be factory ordered with the horizontal pan pre-installed. Refer to your distributor for additional information on these units.)

The Drainpan deflector brackets must be attached to the inner side of the coil on both of the headers -or- attached directly to the drain pan. (Model/application dependent) The installer should visually inspect that both brackets are installed and have not been damaged or loosened during shipping. Simply tilting the cabinet up to view the brackets from the underside opening is sufficient. If the small air space between the coil fin-pack and the coil header is blocked off by the brackets, they are properly installed. Refer to Figure 19 for details.

Open Return Applications in Downflow

If these units are being utilized as replacements for an existing application which has the indoor coil mounted above the furnace or air-handler in a downflow configuration – then they must be located in a coil case and have a duct attached to the return opening. Nortek indoor A2L coils must be installed inside of a coil casing. They may not be used in an open return configuration.
To accommodate these types of applications, the installer may choose to apply one of two possible fixes. Adding a new return duct or adding a filter rack to the top of the coil case.

New Return Duct Requirements:

The new, top mounted return duct may have any desired height immediately above the coil casing. If however, it is desired to be less than 8 feet in total height, then a 90-degree elbow should be located above the coil case. Rectangular or circular sheet-metal ducting must be used for the vertical portion of the duct and the elbow. Flexible duct may be attached after the elbow. An air filter may be included in the vertical portion of the duct, when sized per the guidance below.
All Nortek indoor coils units require that an air filter be installed somewhere in the supply air source.

Filter Rack Requirements:

When constructing or selecting a purchased filter rack to mount directly above the indoor coil casing and eliminate the need for other ducting this filter assembly must include a safety switch to detect that the air filter is present and should disable the operation of the Outdoor unit's compressor if it is removed from the rack. (Interrupt the 'Y/Y2' signal path at the OD unit with a relay.) Refer to Figure 11 and subsequent Figures for wiring details on where to locate the compressor disabling relay in the outdoor unit wiring.

Requirements for filter and rack sizing:

Filters and the supporting racks should be sized for 300 fpm face velocity at the units maximum allowable airflow setting. Refer to the blower table of Indoor units Installation Instructions or Technical Literature for these values. If the duct static cannot be determined or measured, then the filter should be sized by the zero-static airflow at the highest speed setting. The filters used must have at least a MERV 1 rating, at a minimum. Cloth or Mesh filters are not allowed for use. After construction/installation, the Installer is required to test the operation of the safety switch during the commissioning tests for proper operation.

Horizontal Applications

All Nortek indoor coils units may be used in Horizontal applications. Additional sensors will not be required for these applications. The factory installed sensor can be relocated per the instructions noted below for these applications. Flexible supply ducts cannot be attached directly to the coil casing, a metal transition duct is required. If the supply outlet ducting is rectangular metal, no transition is required. All downward facing elbows or horizontal branches located in supply duct must be at least 5 feet away from the coil case connection/ outlet. A vertical branch may be located immediately after the coil case connection or any distance thereafter.

The factory installed sensor on the coil's delta-plate is required to be moved into this duct. The same locational and access requirements noted below for transitions apply.

When moving the sensor, it must be securely fastened to the duct, do not over-tighten the screws in the plastic mounting holes. If the sensor is damaged or cracked during installation – a replacement must be ordered. Nortek kit, PN# 1049246 provides an additional sensor and pigtail harness, alternately the units RPL replacement part may be ordered.
Once the sensor has been relocated, the units wiring harness should be rerouted to it and wired appropriately. The electrical connections for the sensor must be provided with strain-relief and adequately protected from movement in the air stream. If a wire nut connection is made in the duct then it must be secured with electrical tape or located in an appropriate enclosure.

All Nortek Sensors are powered by and operate on the Class II, 24 VAC secondary side of the indoor air unit's transformer. They are rated for use on Transformers of up to 60 VA and should be protected by a 3 amp fuse. Each sensor requires 3 VA of power to operate.

Twinning Applications

When twinned applications are encountered, these products are applicable for use. Both of the twinned units should be protected by an A2L sensor and the sensors should be wired together in a series/parallel arrangement. Refer to the wiring diagram for multiple sensors in Figure 11 and the subsequent Figures. The installer must verify that both of the twinned

system blowers are energized in the event of detection by one of the sensors. If one of the twinned systems is an A1 refrigerant system, the alarm output signal from the sensor can be used to energize its blower with the relay kit. DO NOT mix signals from different transformer secondaries. ALWAYS run both a signal and common wire to return the power to the correct secondary system. DO inspect that any dampers in the system are energized to open in the event the sensor detects a leak.

Non-Standard Duct Construction

If the existing ducting around the unit to be replaced does not appear correct, is not constructed in accordance with ACCA Manual D, or standard ASHRAE manual requirements, a careful inspection should be made. Any portion of a connecting duct that does not have a 1 meter/second (197 fpm) velocity is unsafe for use with A2L systems. If any location near the unit(s) may appear to trap and hold a leaked refrigerant mass – Nortek recommends that the duct should be replaced, removed and/or otherwise brought up to current standards. If that is out of scope, then each section of the duct with less than 1 m/s minimum velocity should have a secondary duct sensor added to it and wired appropriately. See Figure 11 and the subsequent Figures. Multiple sensors can be daisy-chained in the manner shown.

Replacement Coils and Field constructed coil case applications

Field constructed coil cases may be used only if they meet all requirements noted in this manual, are made of sound construction, manufactured from appropriate materials, and are sealed and insulated properly

The use of Replacement Coils must also meet the requirements that are noted in that replacement's instructions.

Upflow Installations

1. Disconnect all electrical power to the furnace.
2. Install the coil case on the furnace air discharge opening and level it as needed to ensure proper condensate drainage. If needed, make a plate to adapt the coil to the air discharge opening. See Figure 10 (page 16) for coil dimensions.
3. Install the duct transition from the coil outlet to the existing duct work. Insulating the transition is recommended.
4. Seal any small holes or gaps in the duct or transition with duct seal.
5. Connect the refrigerant lines as outlined in the Refrigerant Line Connection section.

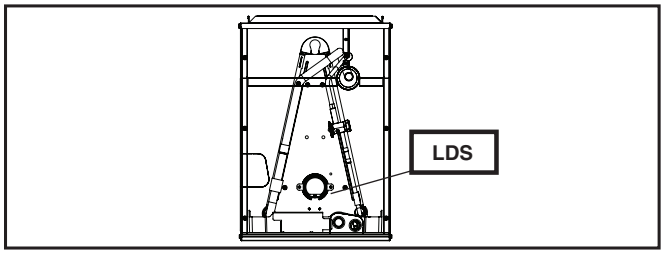


Figure 1. A2L Sensor location for C7 coils in vertical configuration.

6 Make the electrical safety connections as outlined in the Electrical Section.
7. Replace the access doors and Seal the enclosure as required to minimize air leakage.

Horizontal Installations

C75BA coils can be installed horizontally, but it is required that the furnace and coil cabinets be securely mounted together before setting in place. A horizontal drain pan kit must also be installed under the coil. Refer to Table 4 for available part numbers.

Note: C75BA units in A-sized cabinets cannot be converted to a horizontal right configuration. For these applications, order the C75BH unit.

IMPORTANT NOTE TO INSTALLER

All horizontal installations must have a transition outlet duct as specified below. Additionally, the LDS must be relocated into the transition duct as detailed below for safe operation of the equipment.

Transition Duct Requirements

If the supply outlet ducting is rectangular metal, no transition is required. For round metal duct or flexible duct connections to the unit a transition duct is required. This transition duct must have a minimum length of 16 inches from the attachment to the coil box. This transition duct may have up to two openings in it, one in-line with the supply air direction and one vertically upwards. They shall be sized as stated below.

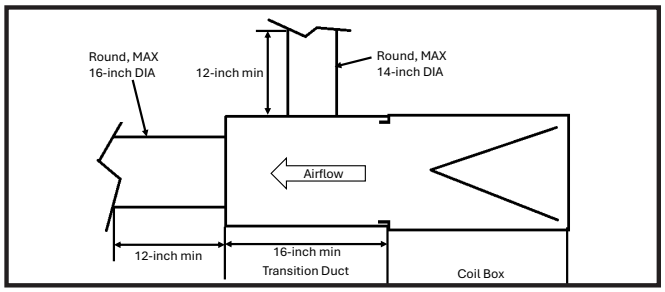


Figure 2. Horizontal Transition Duct Requirements

1. First opening: Round, MAX 16-inch diameter.
2. Second opening: Round, MAX 14-inch diameter.

Round supply ducts connected to the transition duct must have a minimum uninterrupted length of 12 inches before bends.

LDS Relocation Requirements

For all horizontal installations, with the blower located in the same manner as a vertical upflow (air inlet directed into the center of the "A" first) the field installer MUST relocate the provided sensor in the downstream duct such that it is on the bottom horizontal surface of the duct, 8 inches from the cabinet outlet. See figure 3 for reference.

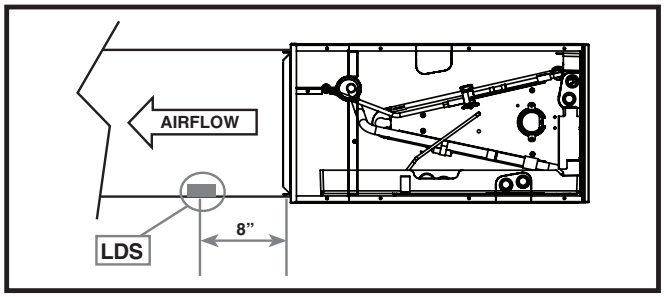


Figure 3. Require Sensor location for Horizontal C7 Coils with blower located in the right.

Horizontal Left Installations

1. Disconnect all electrical power to the furnace.
2. Remove the coil access door.
3. Remove the plug and knockout from one of the threaded holes in the horizontal drain pan.

⚠ CAUTION:

The knockout must be removed and discarded to ensure proper condensate drainage. Improper drainage may result in structural damage, premature equipment failure, or possible personal injury.

4. Install plug (from horizontal drain pan) in the open drain hole in the drain pan at the bottom of the unit. This will block bypass air from entering the system.
5. Remove the drain line knockout from the coil access door. This will allow access to the horizontal drain.
6. Install drain pan extension (if supplied with unit).
   NOTE: The holes in the drain pan extension should be pressed over the nibs molded into the drain pan. Which pair of holes to use will depend on whether the unit is installed horizontal left or horizontal right. Verify proper positioning for clearance thru the top of the coil cabinet before affixing. The drain pan extension can be installed and removed after the ductwork has been attached to the cased coil.
7. Connect the refrigerant lines as outlined in the Refrigerant Lines Connection section.
8. Remove the sensor from the coil delta plate and re-install in the supply duct as outlined in the instructions above.
9. Connect the electrical safety wiring as outlined in the Electrical Section.
10. Seal the enclosure as required to minimize air leakage.
11. Reinstall the coil access door.
12. Restore electrical power to the furnace.

Horizontal Right Installations

1. Disconnect all electrical power to the furnace.
2. Remove the coil access door.
3. Remove the plug and knockout from one of the threaded holes in the horizontal drain pan.

⚠ CAUTION:

The knockout must be removed and discarded to ensure proper condensate drainage. Failure to do so may result in structural damage, premature equipment failure, or possible personal injury.

4. Place the horizontal drain pan on the opposite side of the coil. **NOTE:** If unit has 2 sets of knockouts, remove the other set of knockouts in the coil spacing plates and insert support rod.
5. Install plug (from horizontal drain pan) in the open drain hole in the drain pan at the bottom of the unit. This will block bypass air from entering the system.
6. Slide the coil and the horizontal drain pan assembly back into the unit.
7. Remove the drain line knockout from the coil access door. This will allow access to the horizontal drain.
8. Install drain pan extension (if supplied with unit).

   NOTE: The holes in the drain pan extension should be pressed over the nibs molded into the drain pan. Which pair of holes to use will depend on whether the unit is installed horizontal left or horizontal right. Verify proper positioning for clearance thru the top of the coil cabinet before affixing. The drain pan extension can be installed and removed after the ductwork has been attached to the cased coil.
9. Connect the refrigerant lines as outlined in the Refrigerant Lines Connection section.
10. Remove the sensor from the coil delta plate and re-install in the supply duct as outlined in the instructions above.
11. Connect the electrical safety wiring as outlined in the Electrical Section.
12. Seal the enclosure as required to minimize air leakage.
13. Reinstall the coil access door.
14. Restore electrical power to the furnace.

Downflow Installations

C75 coils may be installed in downflow applications. It is required that the furnace and coil cabinets are securely mounted together before setting in place. Fossil fuel applications require the coil to be placed in the supply air stream only. For all downflow applications with an A-width coil, drain pan extension brackets must be installed on the inner edge of the drain pan to allow for proper condensate drainage. These brackets are sold separately as a kit #1049100.

When these Nortek coils are installed above false or drop ceiling areas, which are used as a return or supply plenum, and are the only HVAC unit utilizing that plenum, then no additional sensors are necessary or required to be added as long as the installation of these units is made in accordance with the instructions of this manual.
If more than one HVAC unit utilizes the open plenum – refer to the local codes to determine if additional sensors or actions are necessary.

REFRIGERANT LINE CONNECTIONS

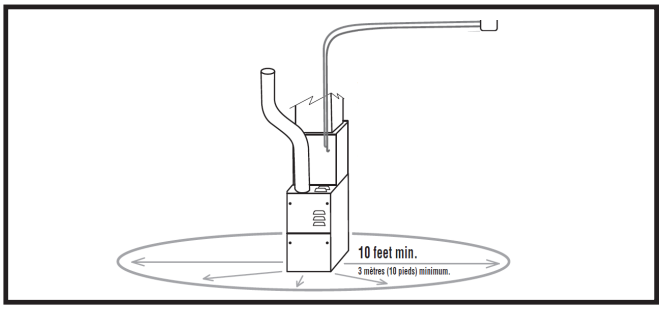


Figure 4. Requirements for external tube joints.

IMPORTANT NOTE TO INSTALLER

C75 Coils are not factory charged with refrigerant. It will be necessary to evacuate the indoor coil and lineset prior to charging. Refer to the outdoor unit installation manual for detailed charging instructions.

IMPORTANT NOTE TO INSTALLER

All **tubing joints**, external to the cabinet and within the same space as the furnace combustion inlet - **need to be located 10 feet distant.**

Nortek Global HVAC recommends that when possible linesets should be made of one continuous piece without joints. However, if joints are necessary it is recommended that all joints be located in the outdoors. If joints must be indoors they must be located at least 10 feet away from any combustion air inlet.

System Depressurization

1. Remove the cabinet doors to access the cap.
2. Remove the cap (Figure 5) from the end of the liquid line.
3. Verify pressurization by depressing the Schrader valve on the end of the liquid line. Listen for any escaping gas. If there is no pressure, test the coil for leakage.
   - If leakage is found, clearly mark the location of the leak and return the coil to the distributor for processing.

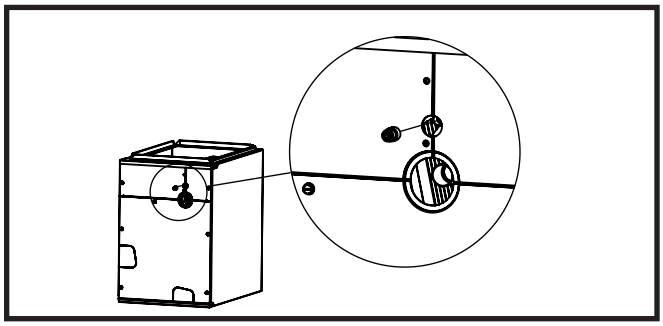


Figure 5. Suction & Liquid Line Locations

   - If no leaks are found, the coil may be installed.
4. Depress the valve to relieve all pressure from the coil.
5. Remove and discard the valve core and valve core holder on the liquid line.
6. Remove the rubber plug from the suction line.

Orifice Removal & Installation (Orifice Models Only)

NOTE: Before proceeding, perform steps 1 - 4 in the System Depressurization section and confirm that the restrictor orifice size meets the requirements outlined in the outdoor unit installation manual. Factory supplied orifice sizes are listed in Table 2 or Table 3, (page 17). If the orifice must be replaced, follow steps 1 - 5.

⚠ CAUTION:

To prevent damage to the unit or internal components, it is recommended that two wrenches be used when loosening or tightening nuts. Do not over tighten!

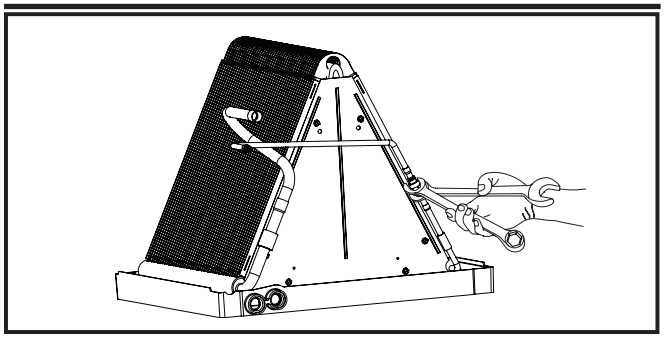


Figure 6. Loosening of Nut & Distributor Body

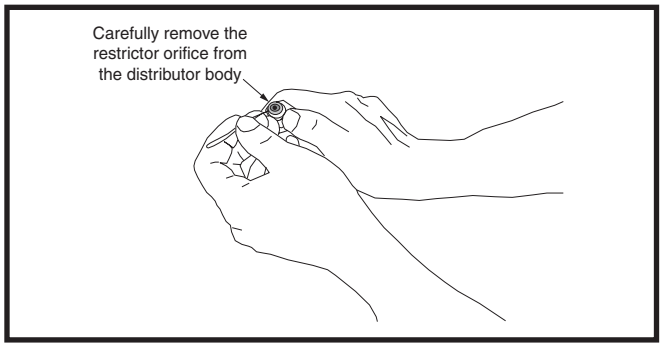


Figure 7. Removal of Orifice

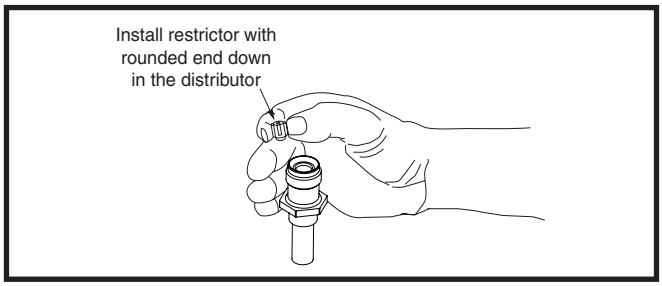


Figure 8. Restrictor Insertion into Distributor Body

⚠ CAUTION:

To prevent damage to the unit or internal components, it is recommended that two wrenches be used when loosening or tightening nuts. Do not over tighten!

1. Using two wrenches, loosen the nut and distributor body as shown in Figure 6. Turn the assembly nut counter-clockwise until the orifice body halves are separated.
2. Insert a light-gauge wire hook between the distributor body and the restrictor orifice while being careful not to scratch either part. Carefully remove the restrictor orifice from the distributor body. See Figure 7.
3. Check the actual size of the new orifice. The size is stamped on its side. Do not use pin gauges to measure the orifice diameter.
4. Insert the new orifice into the distributor body, rounded end down. See Figure 8.

⚠ CAUTION:

To prevent damage to the unit or internal components, it is recommended that two wrenches be used when loosening or tightening nuts. Do not over tighten!

5. Realign the assembly nut on the distributor body and hand tighten both components. Mark a line on both bodies and then tighten an additional 1/4 turn using two wrenches. The movement of the two lines will show how much the nut is tightened. If a torque wrench is used, tighten to 10-12 ft. lbs. or 14-16 Nm.

Connecting the Linesets - Cased Coils

1. Remove all three door panels/pieces
2. Remove the lineset grommets from the doors, making note of their orientation and fit.
3. Follow the instructions above for System Depressurization
4. Route and cut both lineset tubes to proper length in accordance with the outdoor unit specifications. Verify the ends are round, clean, and free of any burrs. Review these instructions for lineset routing requirements.
5. Place the grommets on the suction and liquid lines of the lineset, slide them up the lineset away from the brazing area. Ensure that the grommets will not move while brazing the lineset and are sufficiently away from the torch flame. NOTE: DO NOT install the grommet in the door cutout at this point.
6. Fit the suction and liquid lineset tubes into the coil connections.

⚠ CAUTION:

It is recommended that a wet rag be wrapped around the suction line before applying heat. Failure to keep components cool during brazing - may result in structural damage, premature equipment failure, or possible personal injury.

7. Add a brazing shield over the coil face to protect it from the flame of the torch.
8. Add wet rags to protect the body of the TXV or restrictor assembly. Add wet rags to protect the TXV bulb or remove the TXV bulb and reinstall after brazing operations are completed.

IMPORTANT NOTE:

To prevent internal oxidation and scaling from occurring, braze all connections with dry nitrogen flowing through the joints.

9. Remove the brazing shield and wet rags that were previously applied to the unit. Reinstall the TXV bulb if previously removed.
10. BEFORE the outdoor unit's base valves are opened, it is required that you pressure test with an inert gas, leak check, and evacuate the indoor section and all line connections (using proper methods) before finalizing the full system refrigerant charge.

    After the completion of all other actions in these instructions, install the doors in accordance with the following instructions:

11. Re-install the doors after connecting the lineset.
12. Once the tubes are sufficiently cooled, slide both grommets down the lineset and install in the door cutout. Verify the grommets are evenly aligned around the tube and securely positioned in the door cutout.

Condensate Drain

IMPORTANT NOTE TO INSTALLER

Failure to install a trap may result in condensation overflowing the drain pan, resulting in substantial water damage to surrounding area.

⚠ CAUTION:

The coil must be level to ensure proper condensate drainage. Improper condensate disposal may result in structural damage, premature equipment failure, or possible personal injury.

- Methods for disposing of condensate vary according to local codes. Refer to local codes or authority having jurisdiction for restrictions and proper condensate disposal requirements.
- All condensate pans have primary and secondary drain connections to meet FHA requirements. If the application is located in or above a living space where damage may result from condensate overflow, a separate 3/4 inch drain must be provided from the secondary drain connection and a secondary drain pan must be installed under the entire unit. Run secondary drain lines to a place where they are noticeable if used.
- The coil condensate pan is designed with 3/4" NPSC drain connections. Use a PVC or similar material fitting to attach the drain line to the pan. **NOTE:** The fitting should be hand tightened only. Overtightening may crack the drain pan and cause condensate to leak.
- The drain pan MUST be drained with field supplied tubing or PVC pipe and adequately trapped
- Prime the trap with water. Insulate the drain if it is located in an unconditioned space, and test the condensate line for leaks. Consult local codes for additional restrictions or precautions.
- Route the lines to a suitable drain, avoiding sharp bends and pinching of the lines. The drain should maintain a minimum horizontal slope in the direction of discharge of no less than 1" vertical for every 10 ft of horizontal run.
- During system checkout, inspect the drain line and connections to verify proper condensate drainage.

Air Filter

Air filters are not supplied as an integral part of this coil. There must be an air filter installed upstream of the coil and inspected frequently. When the filter becomes clogged with dust or lint, it should be replaced (disposable type) or cleaned (washable type). It is recommended that filters be inspected and replaced at least twice during the year. Generally it is best to replace or clean the filters at the start of each heating and cooling season.

ELECTRICAL CONNECTIONS

⚠ WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury or property damage.

If the indoor unit that this cased coil is being installed on has a switching device such as a contactor or relay, those devices must be rated for at least 100,000 cycles and have a breaking current per contact of 48 A or less during normal operation.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- Before servicing, disconnect all electrical power to the equipment.
- When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
- Verify proper operation after servicing.

Electrical connections must be in compliance with all applicable local codes and ordinances, and the current revision of the National Electric Code (ANSI/NFPA 70).

For Canadian installations, the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA C22.1 and/or local code).

For cased coil units there is an opening at the top of the cabinet to route the sensor cable out of the coil cabinet. Along with the cable, a strain relief bushing has been provided to be installed in the opening. After connecting the provided cable to the leak detection sensor, the cable must be routed such that it creates a J-loop near the sensor to allow for draining any condensate that may accumulate on the cable.

Pre-Electrical Checklist

- Verify that the transformer in the blower unit is 60 VA or smaller, and Class II, 24 VAC Nominal. Ensure that it is appropriately sized for the installation requirements and verify that it has a fuse or circuit breaker on the secondary side. The protection should be sized at a maximum of 3 Amps.
- Wiring diagram for the leak detector sensor can be found in the Figure 11.

The sensor cable MUST be connected to the furnace or modular air handler that this coil is being installed with in order for it to be energized and protect the system against refrigerant leaks. Please follow the wiring diagram in Figure 11 or the copy of the wiring diagram supplied with the coil. You may also need to refer to the furnace or modular air handler's wiring diagram or installation instructions if necessary.

- The wiring diagram is shown with the sensor in the alarm state (Relays are in normally open state):
- Ensure that if an A2L sensor is not connected, the system will not operate.
- When a leak is detected, the double relay output sensor will switch both of the internal relays that are inside of the sensor. This will turn off the outdoor unit's compressor, turn on the indoor unit's blower, and output an alarm signal. The sensor must be wired into the indoor unit such that the indoor blower will energize the cooling speed set for the unit. Refer to minimum airflow requirements section for additional details..
- The blower will remain on for 5 minutes after the leakage is no longer detected. It is possible the blower will cycle on and off a few times if a small amount of leakage is present.
- Refrigerant sensors for refrigerant leak detection shall only be replaced with sensors specified by Nortek Global HVAC.
- When the sensor reaches the end of its life, it will transition into fail-safe state and this state is irreversible. When triggered by end-of-life diagnostics, a simple power cycle will not recover the sensor, it will need to be replaced.
- The leak detection sensor is equipped with two LEDs, a red and a green one, offers a visual representation of the state the leak detector is currently operating in. Refer to Table 1 for LED indications.
- All soft-faults of the sensor can be reset with a power cycle

LEAK DETECTION SENSOR STATUS	LED	LED STATE
Power up Warm up	Green	On, steady
Normal Operation	Green	Heartbeat
Power Up Fail	Amber	On, steady
Near End Of Life	Green & Red	Blinking
End of Life Replace Sensor	Red	Blinking
Internal Diagnostic Fail *	Red	Blinking
DTLV Alarm	Red	On, steady
WARNING Out of Operating Range	Green & Amber	Heartbeat

* A power cycle on the sensor will be able to reset an internal sensor fault

LED PATTERN	ON-TIME	OFF-TIME
ON	100%	0%
Blinking	50%	50%
Heartbeat	20%	80%

When Blinking or for the Heartbeat, the LED's flash at approximately once per second.

Table 1. Leak Detection Sensor LED Identification

⚠ WARNING:

Leak detection system installed. Unit must be powered except for service.

COMPLETING THE INSTALLATION

1. Verify that the drain pan is correctly located within the cabinet, all connections are tight, and all air gaps are sealed with duct seal.
2. The refrigerant joints between the lineset and indoor unit, and any other field-made refrigerant joints inside the home or building 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 300 psig. No leak shall be detected.
3. Evacuate the system of moisture and non-condensables to prevent low efficiency operation or damage to the unit. The suggested range of evacuation is 350 - 500 microns.
4. Charge the system with refrigerant. Please refer to the outdoor unit installation manual for additional charging instructions. In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING 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.

⚠ CAUTION:

The outdoor unit shall be isolated during pressure testing. If at any time the outdoor unit does need to be pressure tested then the pressure must never exceed 450 psig or the compressor may be damaged and the warranty voided.

5. When pressure testing the indoor unit and lineset the test pressure should not exceed the factory test pressure of 500 psig.
6. Install the coil access door (if removed).
7. Properly dispose of all removed parts.
8. Apply power to the unit.

MAINTENANCE & SERVICE

⚠ WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- **Before servicing, disconnect all electrical power to the equipment.**
- **When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.**
- **Verify proper operation after servicing.**

⚠ CAUTION:

Do not operate the system without a suitable filter in the return air duct system. Always replace the filter with the same size and type.

To ensure optimum performance and to minimize possible equipment failure, the following maintenance tasks should be performed periodically on this equipment:

1. The air filter installed with the system should be checked and cleaned or replaced twice per year.
2. Check the coil, drain pan, and condensate drain line for cleanliness at the start of each heating and cooling season. Clean as needed.

REFRIGERANT RECOVERY

WARNING:

Recovering refrigerant involves breaking into the refrigerant circuit. It should only be attempted by qualified trained personnel thoroughly familiar with the equipment. Under no circumstances should the owner attempt to do this work. Failure to comply with this warning could result in property damage, person injury or death.

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. 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 that is at hand 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, ensure 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

WARNING:

Decommissioning the system involves breaking into the refrigerant circuit. It should only be attempted by qualified trained personnel thoroughly familiar with this equipment. Under no circumstances should the owner attempt to do this work. Failure to comply with this warning could result in property damage, personal injury,or death.

- It is recommended good practice that all refrigerants are recovered when possible.
- Before decommissioning the system:
  - Become familiar with the equipment and its operation.
  - Take a sample of oil and refrigerant in case analysis is required prior to re-use of recovered refrigerant.
  - Ensure that electrical power is available for use in the decommissioning operations
  - Ensure that mechanical handling equipment is available, if required, for handling refrigerant cylinders
  - Ensure that all personal protective equipment (PPE) is available and being used correctly.
  - Ensure that the recovery process is supervised at all times by a competent person.
  - Ensure that the recovery equipment to be used and refrigerant cylinders conform to the appropriate standards.
  - Position the recovery cylinder on the scales before recovery of refrigerant begins.
- Procedure For Decommissioning System
  1. Isolate the system electrically.
  2. Pump down the refrigerant system, if possible.
  3. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  4. Start the recovery machine and operate it in accordance with its instructions. Refer to the Refrigerant Recovery section of this document for additional information.
  5. Do NOT overfill cylinders (no more than 80% volume liquid charge).
  6. Do NOT exceed the maximum working pressure of the cylinder, even temporarily.
  7. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  8. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.
  9. Label the system stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are still labels on the equipment stating that the system contains flammable refrigerant to properly identify it

A2L SYSTEM APPLICATION CHECKS

In general, A2L HVAC systems are certified safe for use when installed in accordance with these instructions and the safety regulations for its proper use. It is important for installers and contractors to understand how this safety is achieved, as they are an integral part of ensuring that a safe environment is produced for the homeowner.

The safety of an A2L HVAC system installation is primarily achieved by ensuring that any leaked refrigerant is dispersed in the environment and diluted to the point that it no longer constitutes a hazard. If allowed to properly disperse, then the leaked refrigerant will not be a fire hazard nor an exposure hazard to people in the home or their pets. By inspecting the home's layout and air distribution system, an accurate account of the conditioned space and equipment space can be determined in a simple fashion.

A leakage of any A2L refrigerant should never be allowed to happen in a confined area. This section will expand on how to determine if a Nortek A2L system is safe to use on your application.
The information presented here, is only applicable to the following systems setups:

- Nortek Global HVAC matched indoor coil and outdoor system
- Using R-454B refrigerant
- Residential and Low-Rise applications
- Ducted systems
- With Indoor Airflow rates of 300 – 500 scfm / ton of cooling

This section of the document shall cover the items below and should be performed as part of the pre-installation process

- Conditioned Space Requirements
- Equipment Space Requirements
- Minimum Airflow Requirements

Conditioned Space Requirements

Because this system contains an A2L refrigerant, the amount of refrigerant that can be used is limited by applicable safety standards and depends on the size of the conditioned space and what mitigation methods are being applied.

Determine the total conditioned space area. Inspect each room within the zone and look specifically for the location of supply and return registers in that room. Any room which has both a supply and return within it can be used in your calculations, assuming that the registers have a sufficient air volume to handle the cooling load in the room. However, most homes in North America do not have individual return registers in each room. Typically, they utilize a common return path for all connected spaces in a zone. In this case, it is important to determine which spaces are actually connected to the return path of the air distribution system. Rooms which contain only a supply register, do not have a transfer register or a return register, and are separated by a door which may be closed – should not be counted in the dilution area of the connected space. The floor area of these isolated rooms must not be counted when utilizing the charts below. Spaces separated by arched openings or door like passageways that do not contain an actual door may be counted in the dilution area if the duct registers have sufficient airflow to maintain the cooling load in that space. These charts are only to be used to account for the sum of conditioned area where the

air is well mixed and freely connected by the supply and return air distribution system.

While the above statements may sound restrictive, in practice – it will be found that R-454B systems can normally be accommodated easily in North American homes. It is only the minority that should require any substantial remediation. A review of the charts below will demonstrate that 100 sq ft of space will accommodate up to 6.78 lbm of R-454B refrigerant safely. Most homes have a relatively open floor plan, and many have 500 square feet of floor space, well connected to the supply and return ducts. Regardless, the contractor/installer must survey each application and make the determination based upon it's requirements and these instructions. Validate that the freely connected space meets the requirements of Figure 9.

NOTE: These graphs are for R-454B only with a room height of 7.2 ft (2.2 m). This 7.2 ft (2.2 m) height is based on an 8 ft (2.4 m) ceiling in a space and accounts for the inclusion of furniture and other normal objects which may be present. These calculations can not be adjusted to account for higher ceiling heights per UL 60335 standard requirements.

It should be noted that based on the graph the minimum required floor area to adequately dilute 20 pounds of R-454B refrigerant is approximately 300 square feet. (9.1 kg and 27.9 m^2).

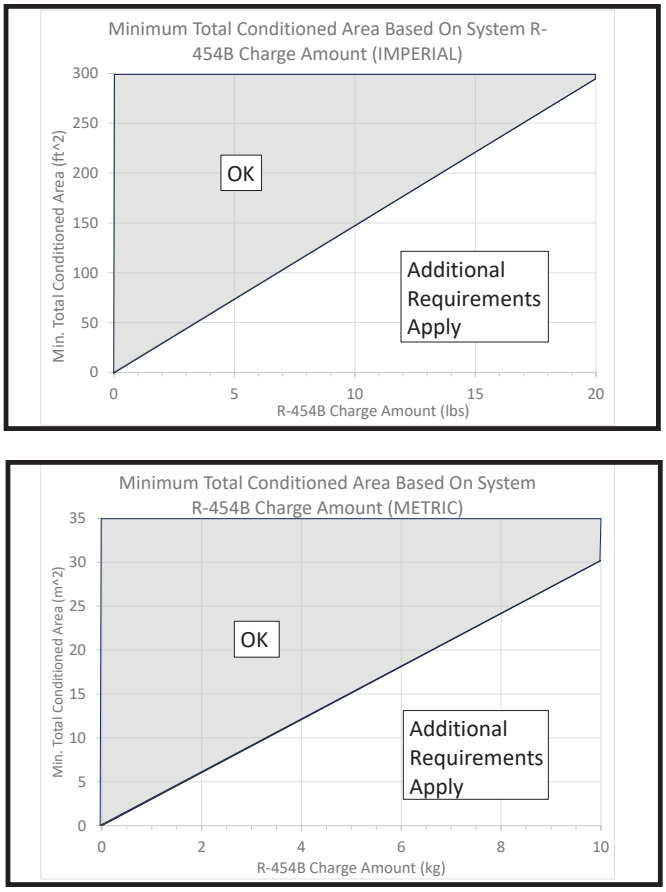


Figure 9. Minimum Total Conditioned Area Based On R-454B System Charge Amount

Equipment Space Requirements

If the space where the indoor unit and this coil is installed is an unventilated space that is not connected to the conditioned space then additional inspections need to be made.

Inspect any other equipment that is installed near the HVAC system and ducting. For this evaluation, assume that any piping joint could be a potential refrigerant leak source in the future. Gas fired appliances like water heaters, driers etc. should be equipped with flame arrestors if they pull their combustion air from the space around them. Inspect all other household equipment in the same space. Ensure that they are safely configured for use around A2L equipment and piping. Electrical equipment that has contactors and relays which may cause electrical arcs should be looked at – sealed components are safe for use. Other qualifications may be equally acceptable.

Nortek recommends that the portion of the lineset, located inside the structure to be joint-free, manufactured from one continuous length of piping. Nortek has redesigned these C75 coils so that the lineset connection is inside the coil's casing where these joints can be protected by the factory installed refrigerant detector. Our detector will only detect leaks inside of the casing and duct system. If liquid refrigerant driers or other accessories are located indoors Nortek recommends that they be relocated to the outdoors in order to minimize the number of brazed connections inside.

Minimum Airflow Requirements

All A2L refrigerant systems have a minimum airflow requirement. Nortek systems, when wired according to our wiring diagrams, will energize the blower on the set cooling speed. This airflow will exceed the minimum airflow requirements. The G signal for a fan only call may not be sufficient and is not intended to be used with the Nortek sensor.

Safety Determination Criteria

If both the equipment space inspection and conditioned space inspection are found to meet the requirements for the estimated equipment charge, then assuming that any other defect identified by the inspection is corrected during the install – the installation of A2L equipment for the application will be safe.

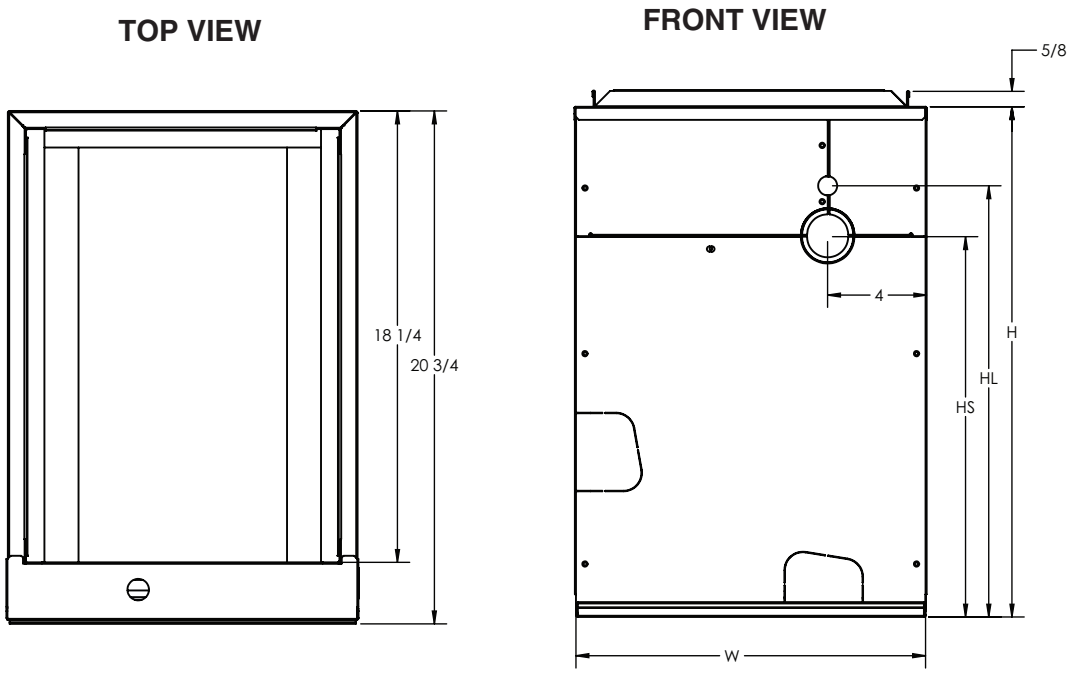


Figure 10. C75 Cased Coil Dimensions

	UPFLOW & DOWNFLOW UNITS								
	A-CABINETS		B-CABINETS			C-CABINETS			D-CABINETS
C75BAM	018C-A	02430C-A	018C-B	02430C-B	03642C-B	030C-C	03642C-C	04860C-C	04860C-D
NOMINAL CAPACITY, MIN BTUH	18,000	24,000	18,000	24,000	36,000	30,000	36,000	48,000	48000
NOMINAL CAPACITY, MAX BTUH		30,000		30,000	42,000		42,000	60,000	60000
INSTALLED ORIFICE SIZE (IN.)	0.045	0.050	0.045	0.050	0.063	0.058	0.063	0.075	0.075
W - WIDTH (IN.)	14.25	14.25	17.5	17.5	17.5	21	21	21	24.5
H - HEIGHT (IN.)	20.75	20.75	20.75	20.75	26.75	26.75	26.75	30.25	30.25
HL - HEIGHT OF LIQUID LINE (IN.)	17.5	17.5	17.5	17.5	23.5	23.5	23.5	27	27
HS - HEIGHT OF SUCTION LINE (IN.)	15.5	15.5	15.5	15.5	21.5	21.5	21.5	25	25
CONNECTION - LIQUID LINE	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
CONNECTION - SUCTION LINE	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8
HORIZONTAL DRAIN PAN KIT (4)	920265	920265	920265	920265	920266	920266	920266	920267	920267

TABLE 2. C75BA CASED COIL SPECIFICATIONS (ORIFICE ONLY)

	HORIZONTAL UNITS								
	A-CABINETS		B-CABINETS			C-CABINETS			D-CABINETS
C75BHM	018C-A	02430C-A	018C-B	02430C-B	03642C-B	030C-C	03642C-C	04860C-C	04860C-D
NOMINAL CAPACITY, MIN BTUH	18,000	24,000	18,000	24,000	36,000	30,000	36,000	48,000	48000
NOMINAL CAPACITY, MAX BTUH		30,000		30,000	42,000		42,000	60,000	60000
INSTALLED ORIFICE SIZE (IN.)	0.045	0.050	0.045	0.050	0.063	0.058	0.063	0.075	0.075
W - WIDTH (IN.)	14.25	14.25	17.5	17.5	17.5	21	21	21	24.5
H - HEIGHT (IN.)	26.75	26.75	26.75	26.75	26.75	26.75	26.75	30.25	30.25
HL - HEIGHT OF LIQUID LINE (IN.)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	27	27
HS - HEIGHT OF SUCTION LINE (IN.)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	25	25
CONNECTION - LIQUID LINE	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
CONNECTION - SUCTION LINE	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8

TABLE 3. C75BHM CASED COIL SPECIFICATIONS (ORIFICE ONLY)

NOTES:

1. Rated for 10,000 ft maximum elevation.
2. Individual restrictors are available by part number - PN 664*** (where *** represents the size). Example 664103 is a restrictor 0.103 in diameter.
3. Refer to sales specification sheets for Listed/Certified combinations of equipment and required accessories.
4. Refer to the current AHRI Directory for certified ratings of splits systems.
5. Not required for "H" horizontal ready coils.
6. The downflow kit that include the additional drain pan condensate baffle for A-cabinets is available as PN 1049100.
7. A2L sensor kit is available as PN 1049246.

	UPFLOW & DOWNFLOW UNITS (3)								
	A-CABINETS		B-CABINETS			C-CABINETS			D-CABINETS
C75BAM	X24C-A	X30C-A	X24C-B	X30C-B	X36C-B	X30C-C	X3642C-C	X4860C-C	X4860C-D
NOMINAL CAPACITY, MIN BTUH	24,000	30,000	24,000	30,000	36,000	30,000	36,000	48,000	48,000
NOMINAL CAPACITY, MAX BTUH							42,000	60,000	60,000
METERING DEVICE	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV
W - WIDTH (IN.)	14.25	14.25	17.5	17.5	17.5	21	21	21	24.5
H - HEIGHT (IN.)	20.75	20.75	20.75	20.75	26.75	26.75	26.75	30.25	30.25
HL - HEIGHT OF LIQUID LINE (IN.)	17.5	17.5	17.5	17.5	23.5	23.5	23.5	27	27
HS - HEIGHT OF SUCTION LINE (IN.)	15.5	15.5	15.5	15.5	21.5	21.5	21.5	25	25
CONNECTION - LIQUID LINE	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
CONNECTION - SUCTION LINE	3/4	3/4	3/4	3/4	7/8	3/4	7/8	7/8	7/8
HORIZONTAL DRAIN PAN KIT	920265	920265	920265	920265	920266	920265	920266	920267	920267

Table 4. C75BAM Cased Coil Specifications (TXV Only)

	HORIZONTAL UNITS (3)								
	A-CABINETS		B-CABINETS			C-CABINETS			D-CABINETS
C75BHM	X24C-A	X30C-A	X24C-B	X30C-B	X36C-B	X30C-C	X3642C-C	X4860C-C	X4860C-D
NOMINAL CAPACITY, MIN BTUH	24,000	30,000	24,000	30,000	36,000	30,000	36,000	48,000	48,000
NOMINAL CAPACITY, MAX BTUH							42,000	60,000	60,000
METERING DEVICE	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV
W - WIDTH (IN.)	14.25	14.25	17.5	17.5	17.5	21	21	21	24.5
H - HEIGHT (IN.)	26.75	26.75	26.75	26.75	26.75	26.75	26.75	30.25	30.25
HL - HEIGHT OF LIQUID LINE (IN.)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	27	27
HS - HEIGHT OF SUCTION LINE (IN.)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	25	25
CONNECTION - LIQUID LINE	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
CONNECTION - SUCTION LINE	3/4	3/4	3/4	3/4	7/8	3/4	7/8	7/8	7/8

Table 5. C75BHM Cased Coil Specifications (TXV Only)

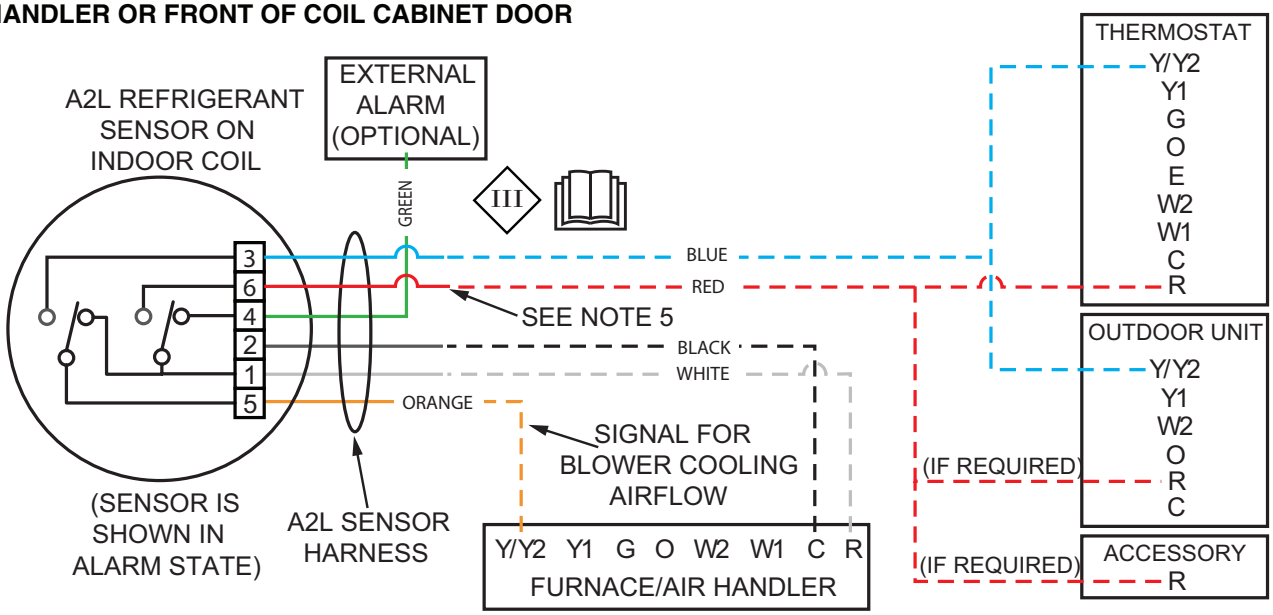
NOTES:

1. Rated for 10,000 ft maximum elevation.
2. Refer to sales specification sheets for Listed/Certified combinations of equipment and required accessories.
3. X in the model description designates factory installed TXV for R-454B refrigerant.
4. Refer to the current AHRI Directory for certified ratings of split systems.
5. The downflow kit that include the additional drain pan condensate baffle for A-cabinets is available as PN 1049100.
6. A2L sensor kit is available as PN 1049246.

WIRING DIAGRAM

A2L SENSOR FIELD WIRING DIAGRAM

NOTE TO INSTALLER! APPLY THIS LABEL NEXT TO EXISTING WIRING DIAGRAM IN FURNACE / AIR HANDLER OR FRONT OF COIL CABINET DOOR



NOTES:

1. **Disconnect all power before servicing.**
2. **The transformer may have a dual voltage primary tap. Match the tap position with the supply voltage used.**
3. **Connect 24VAC/40VA Class 2 circuit to A2L Refrigerant Sensor and thermostat.**
4. **If the internal wiring is replaced, use only 105°C copper wire of the same gauge.**
5. **All 24VAC power for external devices (i.e. "R") is to be powered from A2L Refrigerant Sensor 'Pin6' output.**
6. **All other low voltage wiring not shown in this diagram to be per standard thermostat wiring. See installation instructions for example wiring.**

LEGEND:

FIELD WIRING	- - - -
LOW VOLTAGE	———
HIGH VOLTAGE	▬▬▬

1. **Coupez l'alimentation avant de faire l'entretien.**
2. **Le transformateur peut avoir un robinet principal à double tension. Agencez la position du robinet au type de tension de l'installation.**
3. **Branchez un circuit 24 V c.a. / 40 VA Classe 2 au capteur de frigorigène A2L et au thermostat.**
4. **Si le câblage interne est remplacé, utilisez seulement un fil de cuivre 105 °C du même calibre.**
5. **Toute alimentation 24 V c.a. pour les appareils externes (soit « R ») doit être acheminée depuis la sortie « tige 6 » du capteur de frigorigène A2L.**
6. **Tous les autres fils basse tension non illustrés dans ce schéma doivent être conformes au câblage standard du thermostat. Voir les installations d'instruction pour des exemples de câblage.**

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Figure 11. A2L Sensor Field Wiring Diagram

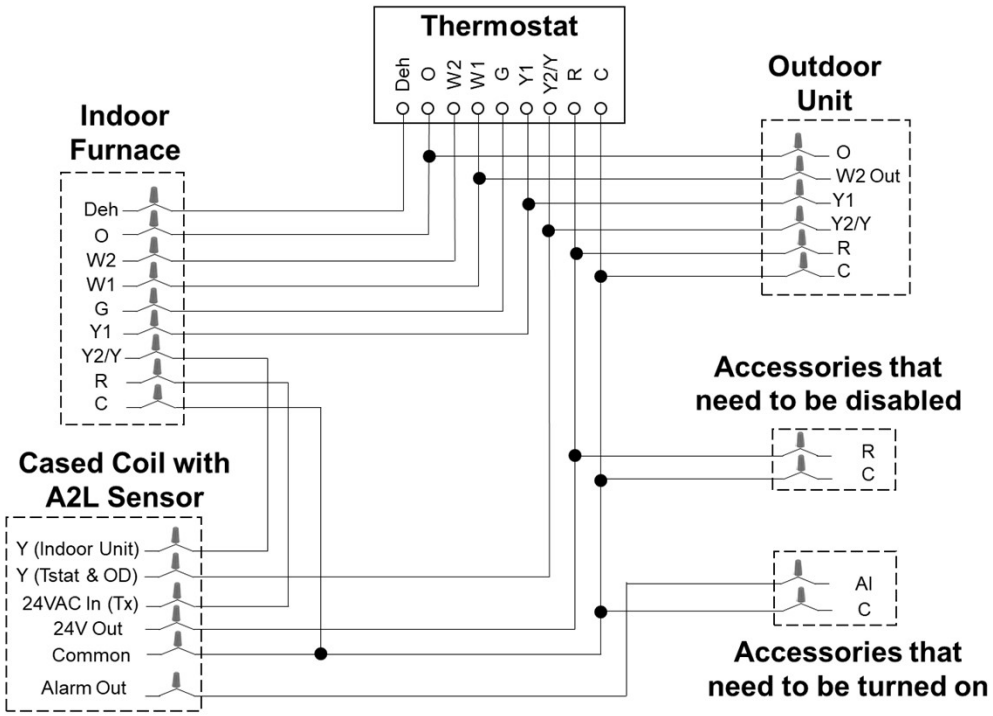


Figure 12. Typical two-stage furnace with two-stage heat pump.

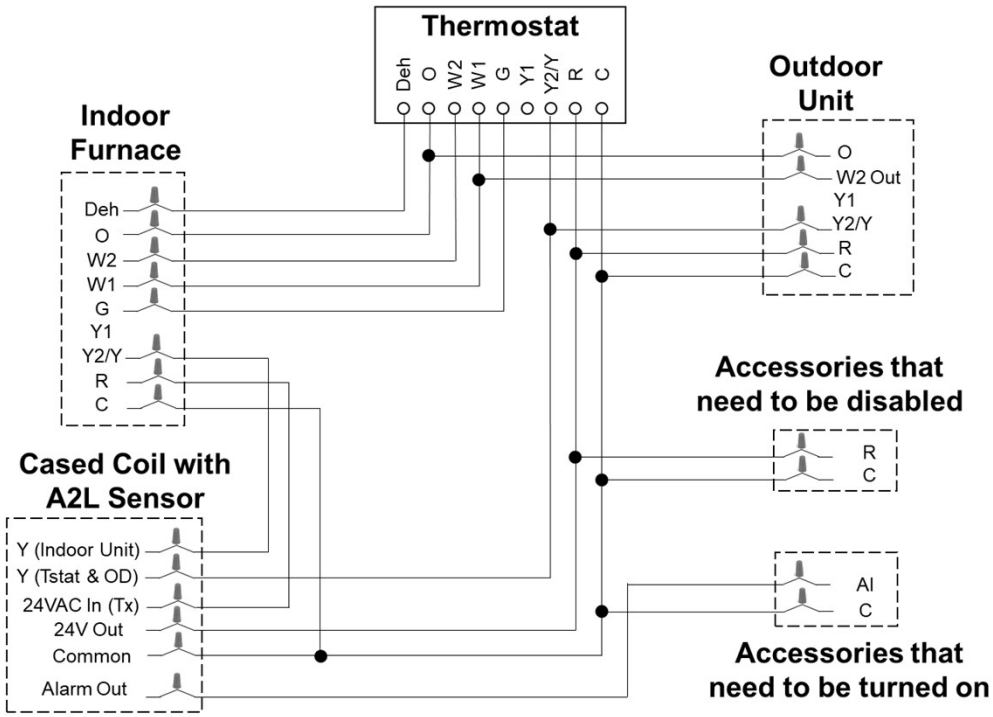


Figure 13. Typical two-stage furnace with single-stage heat pump.

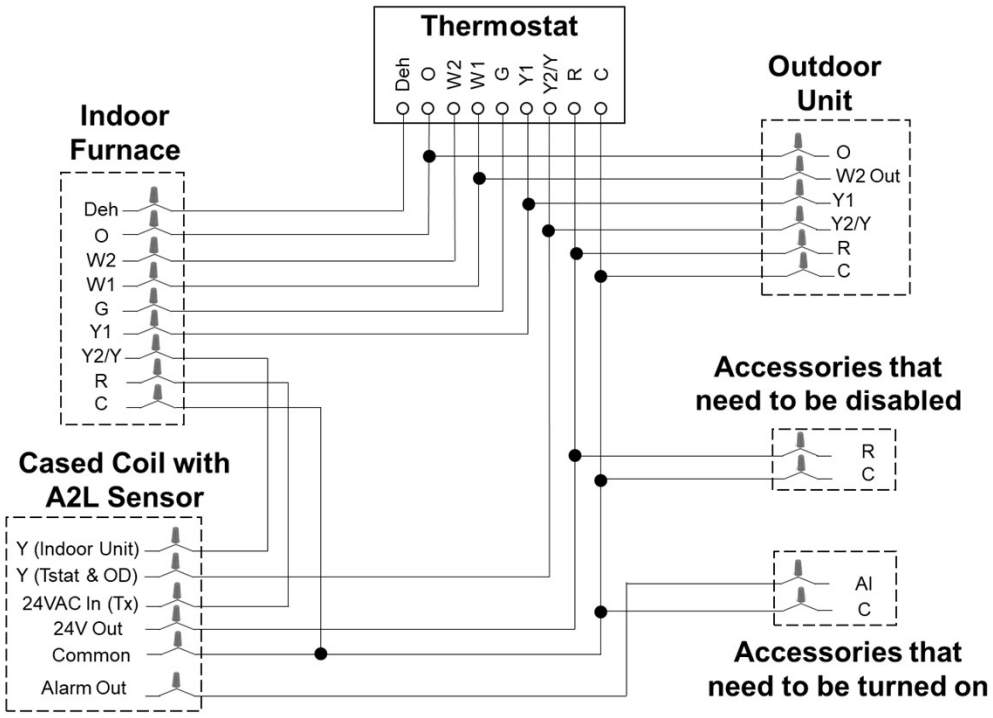


Figure 14. Typical single-stage furnace with single-stage heat pump.

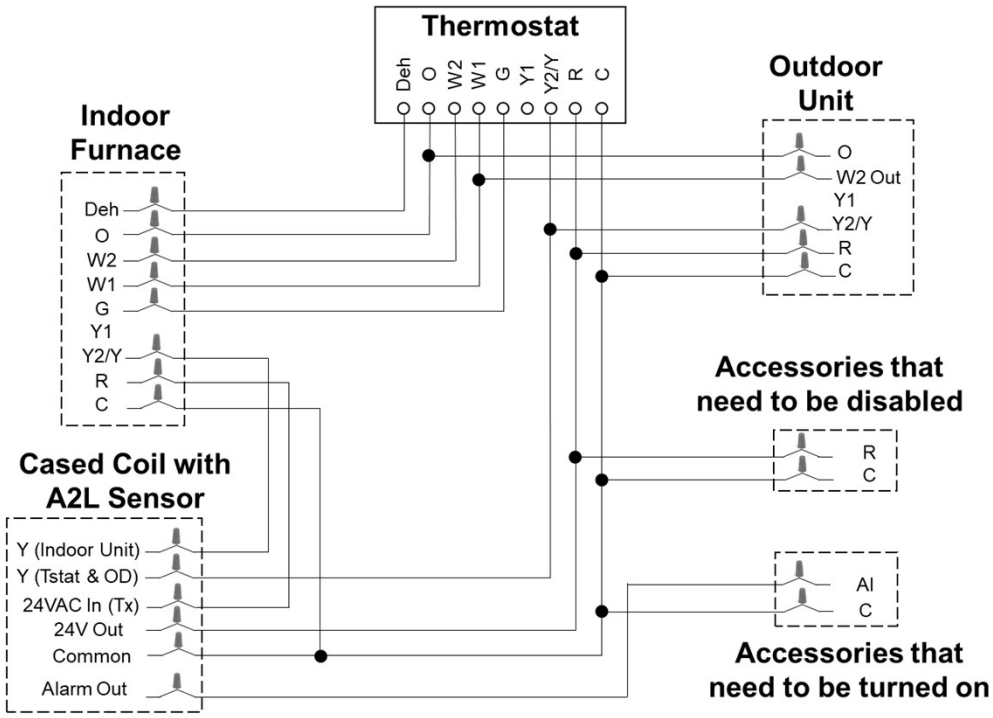


Figure 15. Typical single-stage furnace with two-stage air conditioner.

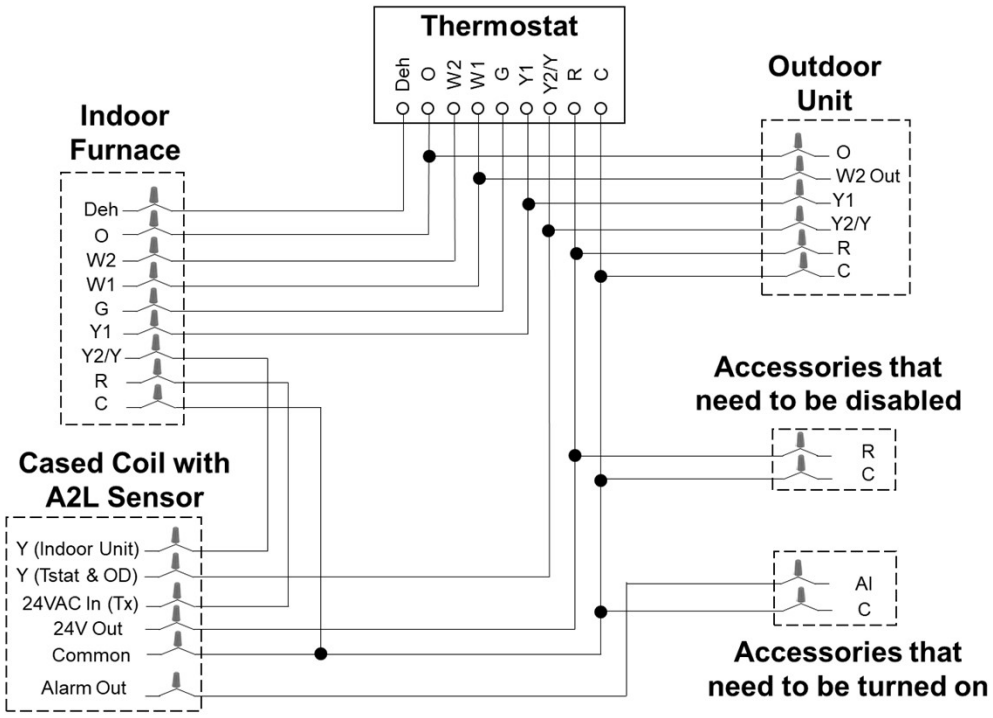


Figure 16. Typical single-stage furnace with single-stage air conditioner.

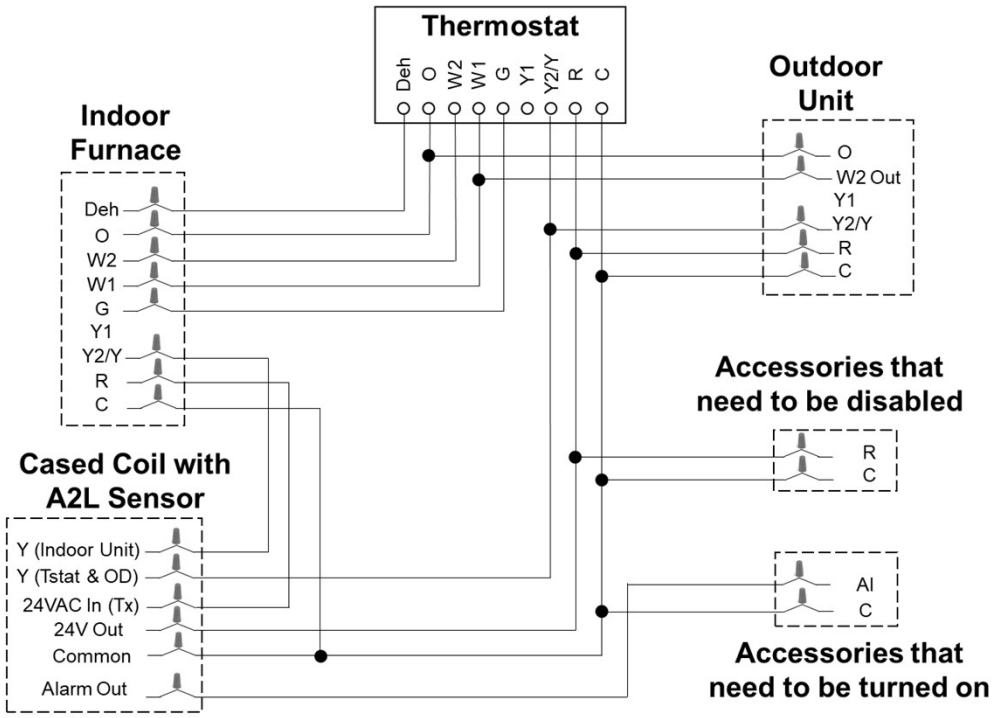


Figure 17. Typical two-stage furnace with single-stage air conditioner.

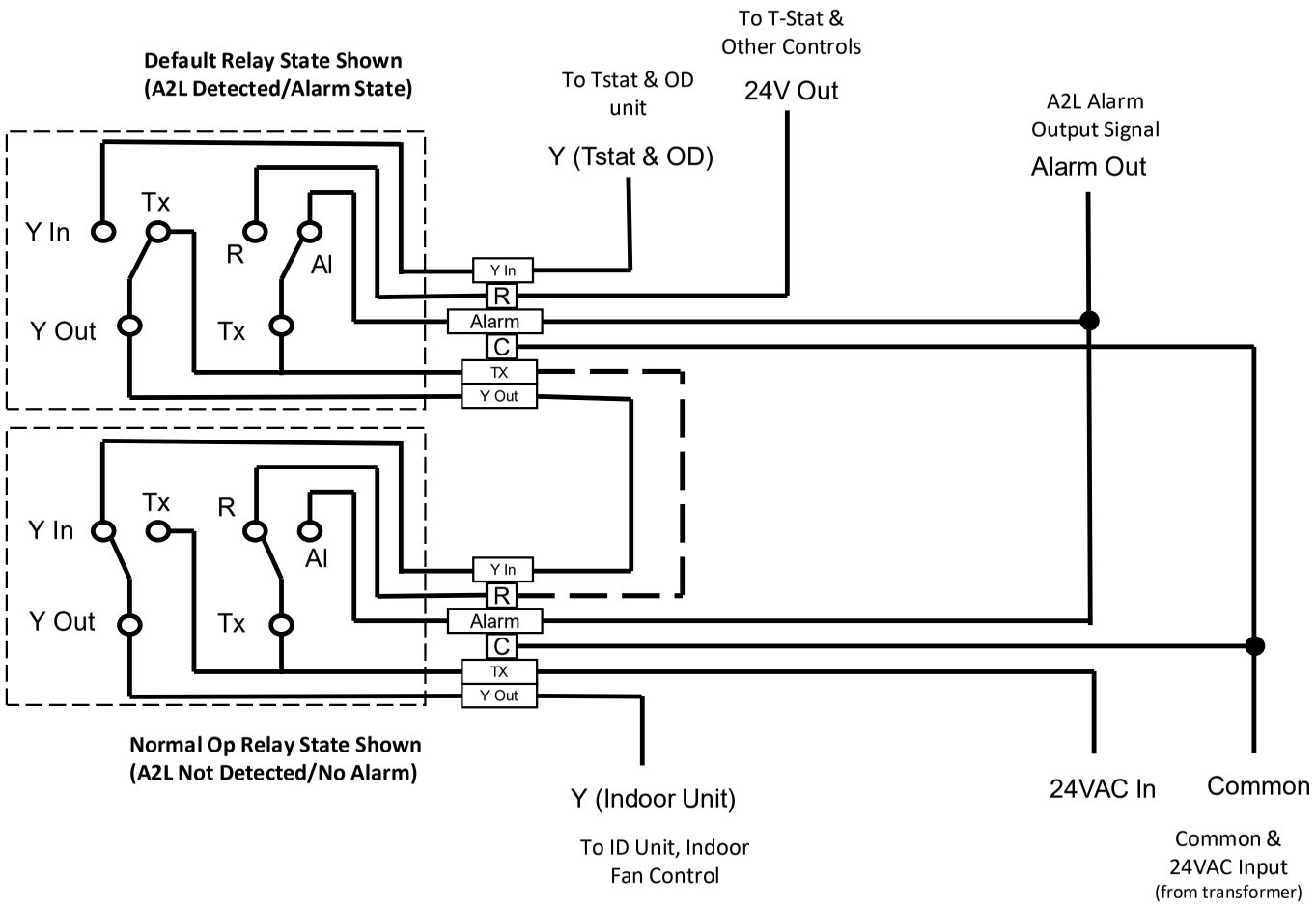
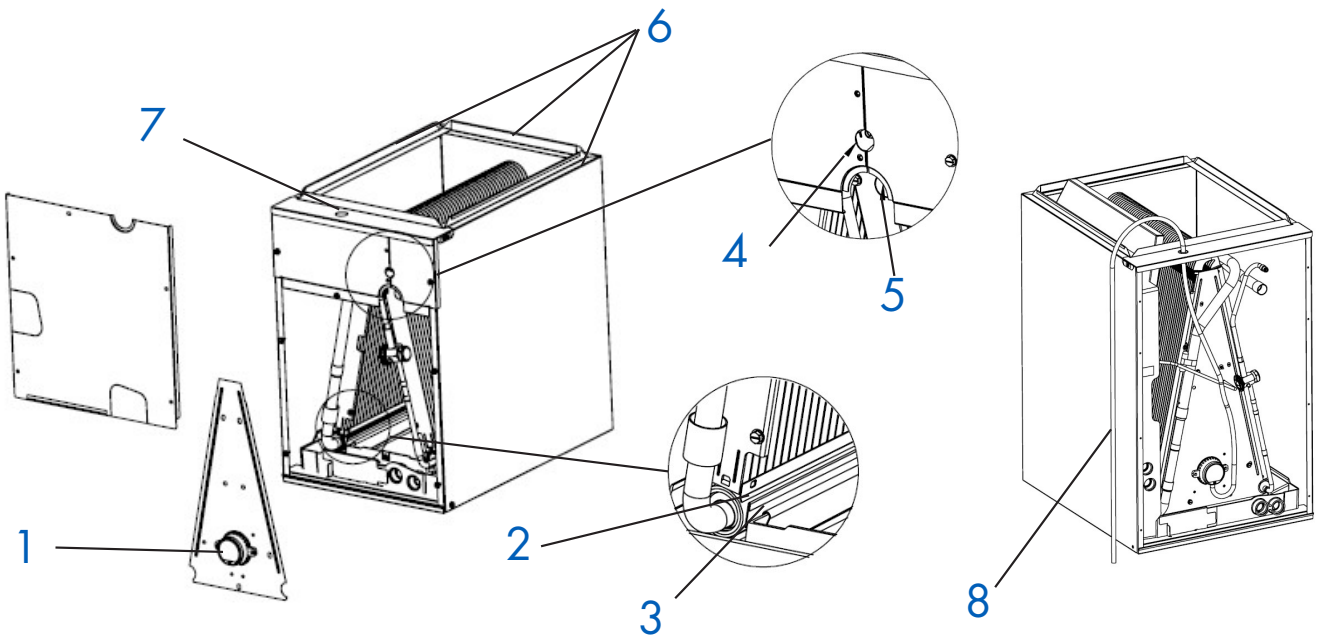


Figure 18. Series Sensor Wiring for systems with 2 or more sensors

With the switch to A2L refrigerants, NGH has made the following changes to our C75 coil to accommodate R-454B and adhere to new safety standards



1. Refrigerant Detection System (RDS Sensor)

Detects and mitigates any potential leaks in the indoor coil space

2. Deflector Baffle

Helps ensure leaks anywhere in the system are detected by the RDS Sensor

3. Drain Pan Extension

Helps manage condensation (aftermarket accessory kit, recommended for downflow application)

4. Braze Connection

Braze connection for the line set and indoor coil tubing is now inside the sheet metal box so that if a leak occurs at those joints it will be detected by the RDS

5. Split-door

This panel has been split into two separate pieces allowing for easy brazing access

6. Cabinet Deflector Baffle

Ensures leaks anywhere in the system are detected by the RDS Sensor

7. Exit for Harness

Added hole in the sheet metal box where the RDS Sensor harness will exit the coil box

8. RDS Sensor Harness

Connects Indoor coil RDS Sensor with a furnace or modular air handler

Figure 19. C75 R-454B Design Changes

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