



EARTHLINKED
TECHNOLOGIES

EarthLinked®
CCN Series Cased Coils
Installation Manual

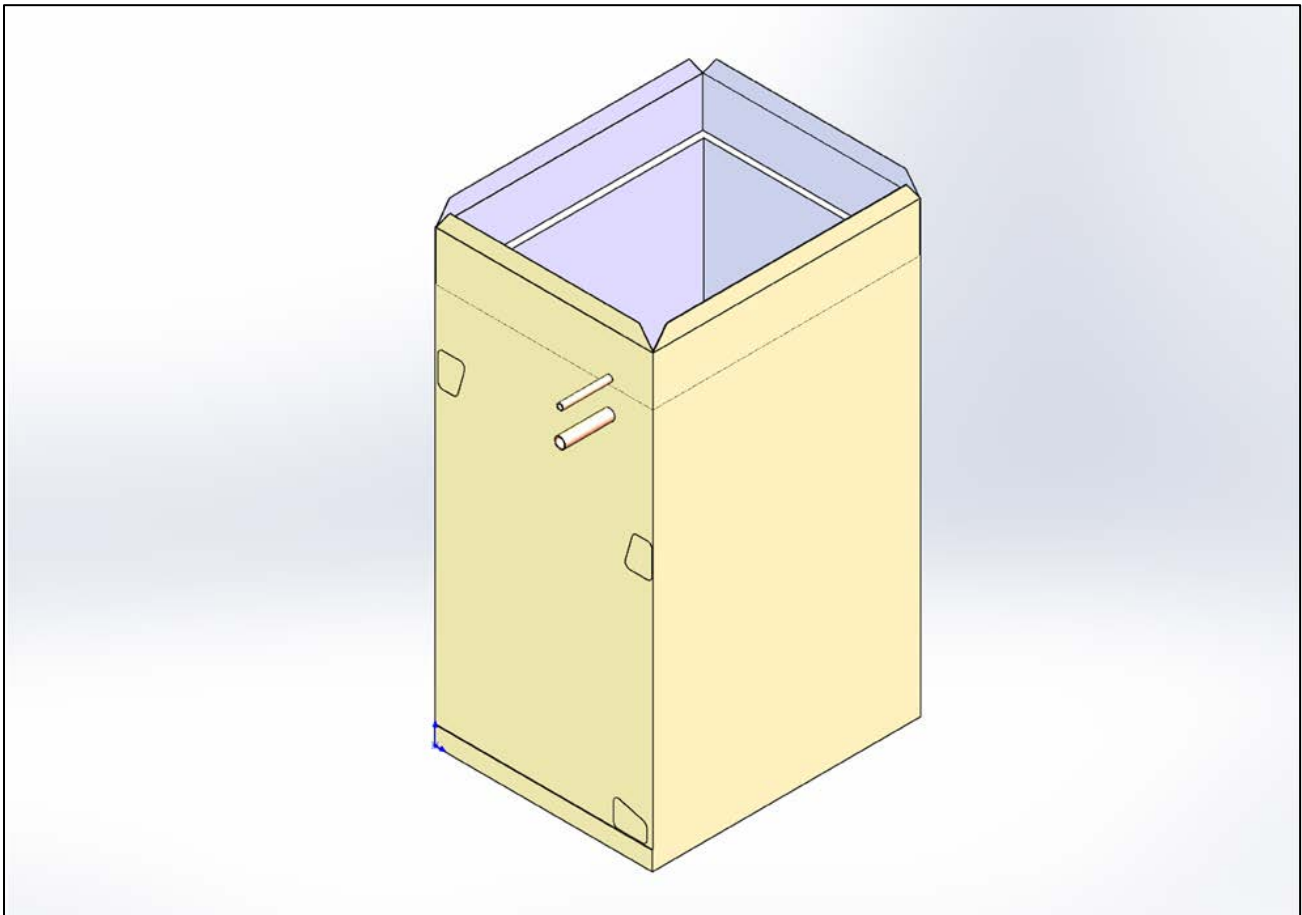


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Model Nomenclature

Heat/Cool and Cool Only Cased Coils

CCN - 0048
Cased Coil Model _____ -0048 (48,000 Btuh or 4.0 Tons)

Heat Only Cased Coils

CCN - 4248
Cased Coil Model _____ - 4248 (42,000 thru 48,000 Btuh or
3.5 thru 4.0 Tons)

Disclaimer

Proper installation and service of EarthLinked® Heating and Cooling System Components is essential to reliable performance. All EarthLinked® components must be installed and serviced by a technician authorized by Earthlinked Technologies. Installation and service must be in accordance with the instructions set forth in this manual. Failure to provide installation and service by an authorized, trained installer in a manner consistent with this manual will void the limited warranty coverage for the system.

Earthlinked Technologies shall not be liable for any defect, unsatisfactory performance, damage or loss, whether direct or consequential, relative to the design, manufacture, construction, application or installation of the field specified components.

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CSI # 23 80 00

Safety

Warning, Caution and **Important** notices appear throughout the manual. Read these items carefully before attempting installation, servicing or troubleshooting the equipment.



IMPORTANT!

Notification of installation, operation or maintenance information which is important, but which is not hazardous.



CAUTION!

Indicates a potentially hazardous situation or an unsafe practice, which if not avoided, may result in injury, or equipment or property damage.



WARNING!

Indicates a hazardous situation, which if not avoided will result in serious injury or death, or equipment or property damage.

Equipment Manuals

The following is a listing of the equipment installation manuals that are provided with each component specified for this EarthLinked® system.



IMPORTANT!

Read and follow all installation instructions in these manuals, appropriate for the EarthLinked® system being installed, **BEFORE** initiating the Start-Up procedure.

Series SC, SD, HC, HW or CC Quick-Start Instructions (as appropriate)

Model TR94, TR97, TE54 Thermostats by manufacturer

Installation

Component Matching

CCN Series Cased Coils are ready for vertical installation as shipped. Field conversion to horizontal requires no additional components. The CCN Series Cased Coils are manufactured for both applications.

Heat/Cool and Cool Only (Model CCN-00XX): These cased coils are equipped with a distributor designed for providing optimum performance in the cooling mode and the heating mode. In addition, this cased coil includes a TXV Kit that is field installed external to the cased coil and is required to make the system operational in the cooling mode when matched with the appropriate model EarthLinked® compressor unit as shown in Figure 1.

COMPRESSOR UNIT MODEL/CAPACITY	CASED COIL MODEL	TXV-KIT MODEL**
-018 (1.5 Tons)	CCN – 0018	TXV-018N
-024 (2.0 Tons)	CCN – 0024	TXV-024N
-030 (2.5 Tons)	CCN – 0030	TXV-030N
-036 (3.0 Tons)	CCN – 0036	TXV-036N
-042 (3.5 Tons)	CCN – 0042	TXV-042N
-048 (4.0 Tons)	CCN – 0048	TXV-048N
-054 (4.5 Tons)	CCN – 0054	TXV-054N
-060 (5.0 Tons)	CCN – 0060	TXV-060N
*TXV Kit is included with air handler for field installation		


Figure 1. Heat/Cool and Cool Only Component Matchup

Heat Only (Model CCN-XXXX): These cased coils are to be matched with the appropriate model EarthLinked® Compressor unit model shown in Figure 2.

COMPRESSOR UNIT MODEL/CAPACITY	CASED COIL MODEL
-018 (1.5 Tons)	CCN – 1824
-024 (2.0 Tons)	CCN – 1824
-030 (2.5 Tons)	CCN – 3036
-036 (3.0 Tons)	CCN – 3036
-042 (3.5 Tons)	CCN – 4248
-048 (4.0 Tons)	CCN – 4248
-054 (4.5 Tons)	CCN – 5460
-060 (5.0 Tons)	CCN – 5460

Figure 2. Heat Only Component Matchup

Cased Coil Placement



WARNING!

WEAR ADEQUATE PROTECTIVE CLOTHING AND PRACTICE ALL APPLICABLE SAFETY PRECAUTIONS WHILE INSTALLING THIS EQUIPMENT. FAILURE TO DO SO MAY RESULT IN EQUIPMENT AND/OR PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

Guidelines for the cased coil (or air handler) placement relative to the compressor unit and other EarthLinked® system components are shown in Figure 3.

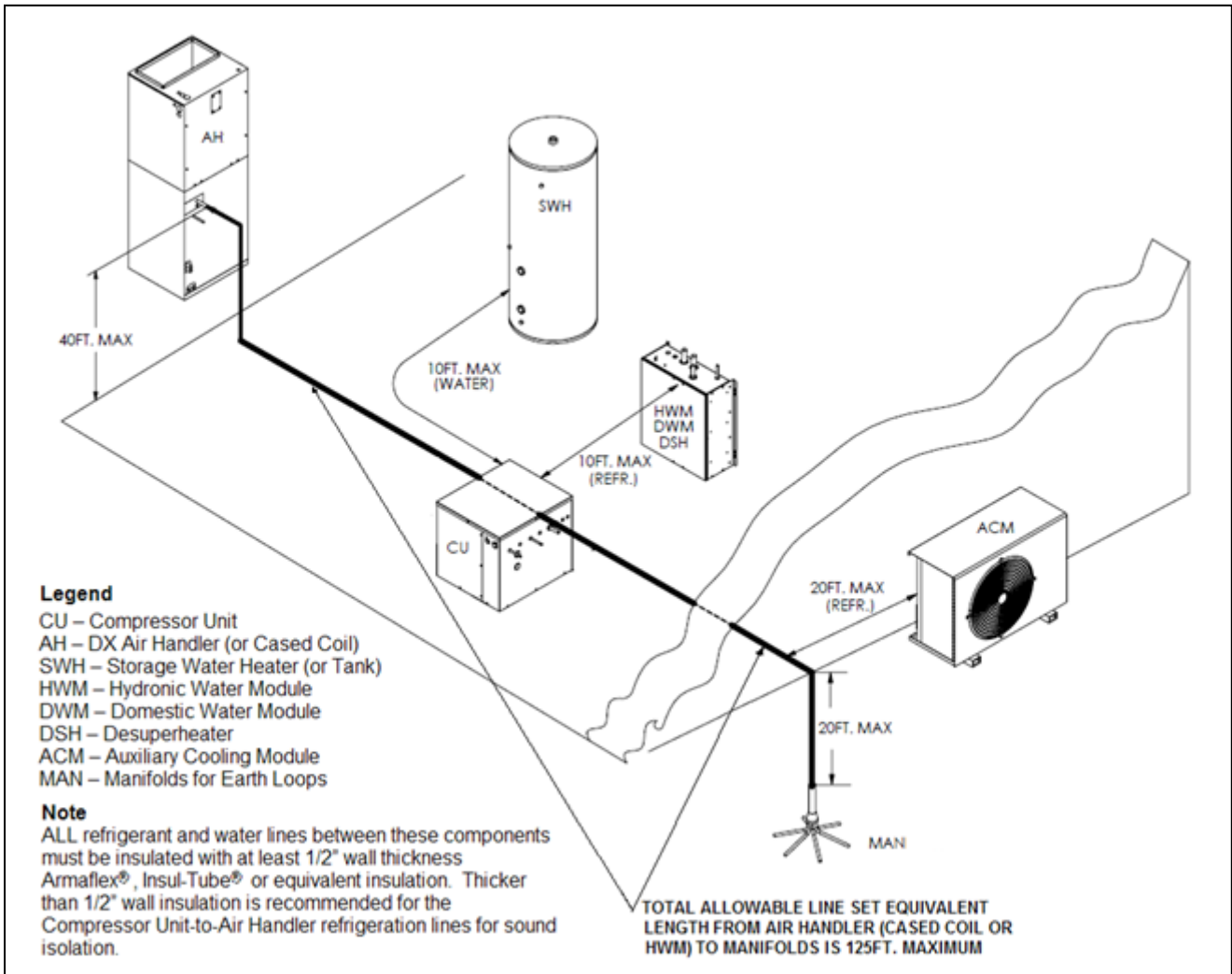
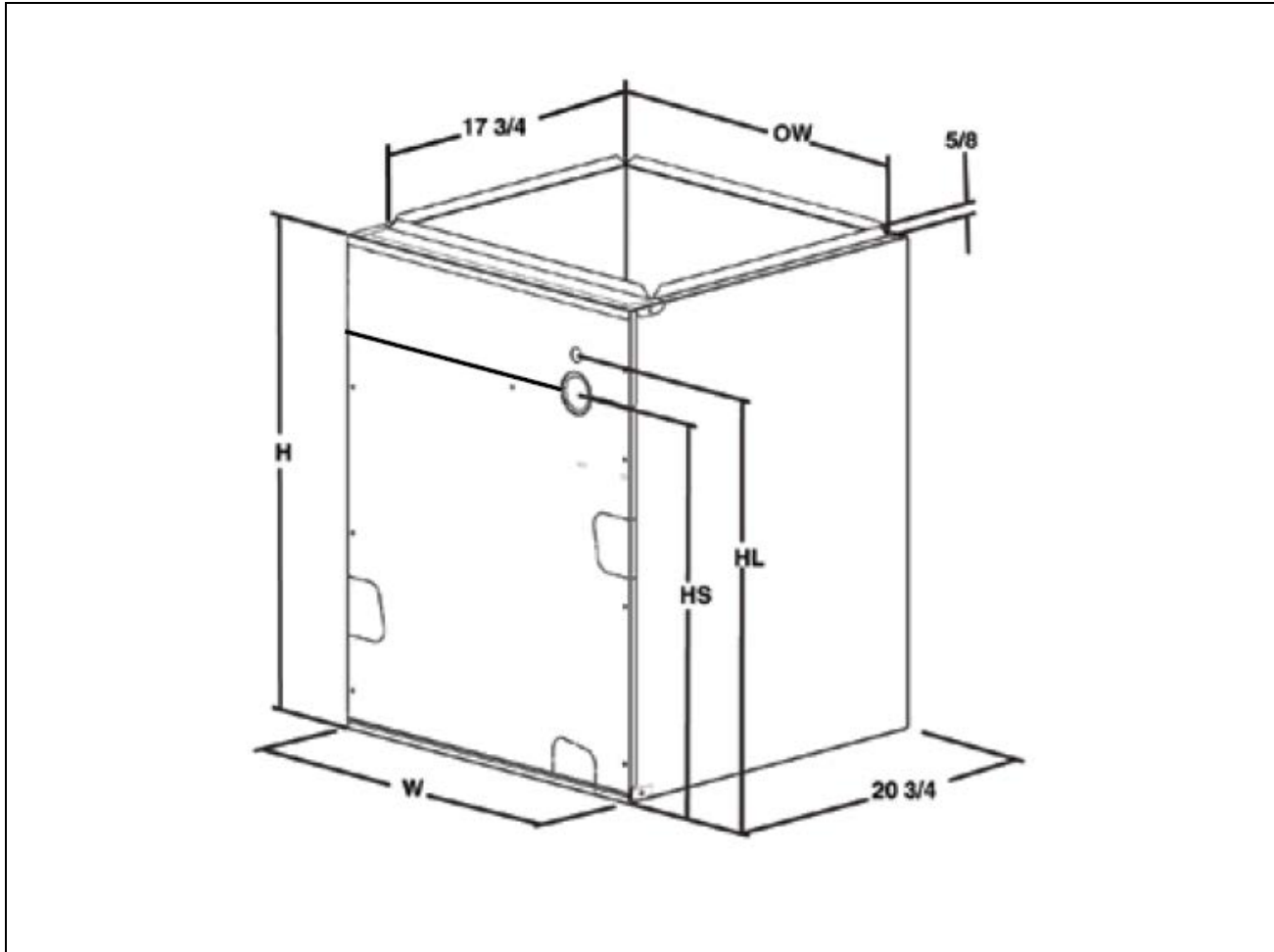


Figure 3. General Layout of System Components

Dimensions for the cased coils are illustrated and listed in Figure 4.



Compressor Unit Model	Heat/Cool, Cool Only Model	Heat Only Model	Overall Width W	Overall Height H	Liq. Line Height/OD HL/OD	Suc. Line Height/OD HS/OD	Opening Width OW
-018	CCN – 0018	CCN-1824	14-1/4"	20-3/4"	17-1/2", 3/8"	15-1/2", 3/4"	12-7/8"
-024	CCN – 0024						
-030	CCN – 0030	CCN-3036	17-1/2"	20-3/4"	17-1/2", 3/8"	15-1/2", 3/4"	16-1/8"
-036	CCN – 0036						
-042	AVN – 0042	CCN-4248	21"	26-3/4"	23-1/2", 3/8"	21-1/2", 3/8"	19-5/8"
-048	AVN – 0048						
-054	AVN – 0054	CCN-5460	21"	30-1/4"	27", 3/8"	25", 7/8"	19-5/8"
-060	AVN – 0060						

Figure 4. General Air Handler Physical Dimensions

Specific instructions for the mechanical installation of the cased coil are provided in Appendix A of this manual.

Refrigeration

Line Set

Line set sizes for CCN Series Cased Coils connecting to the matching compressor units are listed in Figure 5. Line set liquid and vapor lines are to be insulated with Armaflex®, Insul-Lock® or equivalent tubing insulation at least ½” wall thickness. For interior living areas, thicker walled insulation will reduce sound level.

LINE SET ADAPTERS REQUIRED FOR THE AIR HANDLER, CASED COIL, HYDRONIC WATER MODULE AND DOMESTIC WATER MODULE ARE FIELD SUPPLIED. <u>CHECK ALL APPROPRIATE COMPRESSOR UNIT STUB-OUT TUBING SIZES FOR REQUIRED FIELD SUPPLIED ADAPTERS!</u>					
EARTHLOOP, AIR HANDLER, CASED COIL LINE SETS			HWM/DWM LINE SETS		
COMPRESSOR UNIT SIZE	LINE SET O.D., INCHES		HWM MODEL	LINE SET O.D., INCHES	
	LIQUID*	VAPOR*		LIQUID*	VAPOR*
1.5 Tons (-018)	3/8	5/8	-018C/-1836	3/8	1/2
2.0 Tons (-024)	3/8	5/8	-024C/-1836	3/8	1/2
2.5 Tons (-030)	3/8	3/4	-030C/-1836	3/8	1/2
3.0 Tons (-036)	1/2	3/4	-036C/-1836	3/8	1/2
3.5 Tons (-042)	1/2	3/4	-042C/-4248	1/2	5/8
4.0 Tons (-048)	1/2	7/8	-048C/-4248	1/2	5/8
4.5 Tons (-054)	1/2	7/8	-054C/-5472	1/2	3/4
5.0 Tons (-060)	1/2	7/8	-060C/-5472	1/2	3/4

***Liquid and Vapor lines must BOTH be insulated with Armaflex® or equivalent with at least 1/2” wall thickness for the full length of the line set.**

Figure 5. Line Set Sizes

Both liquid and vapor lines running between the compressor unit and the cased coil must be separated by an air space, as illustrated in Figure 6, to ensure system performance. The lines shall not be “bundled” by tying them together or by running both lines together, in contact with one another, within a single conduit, such as PVC pipe.

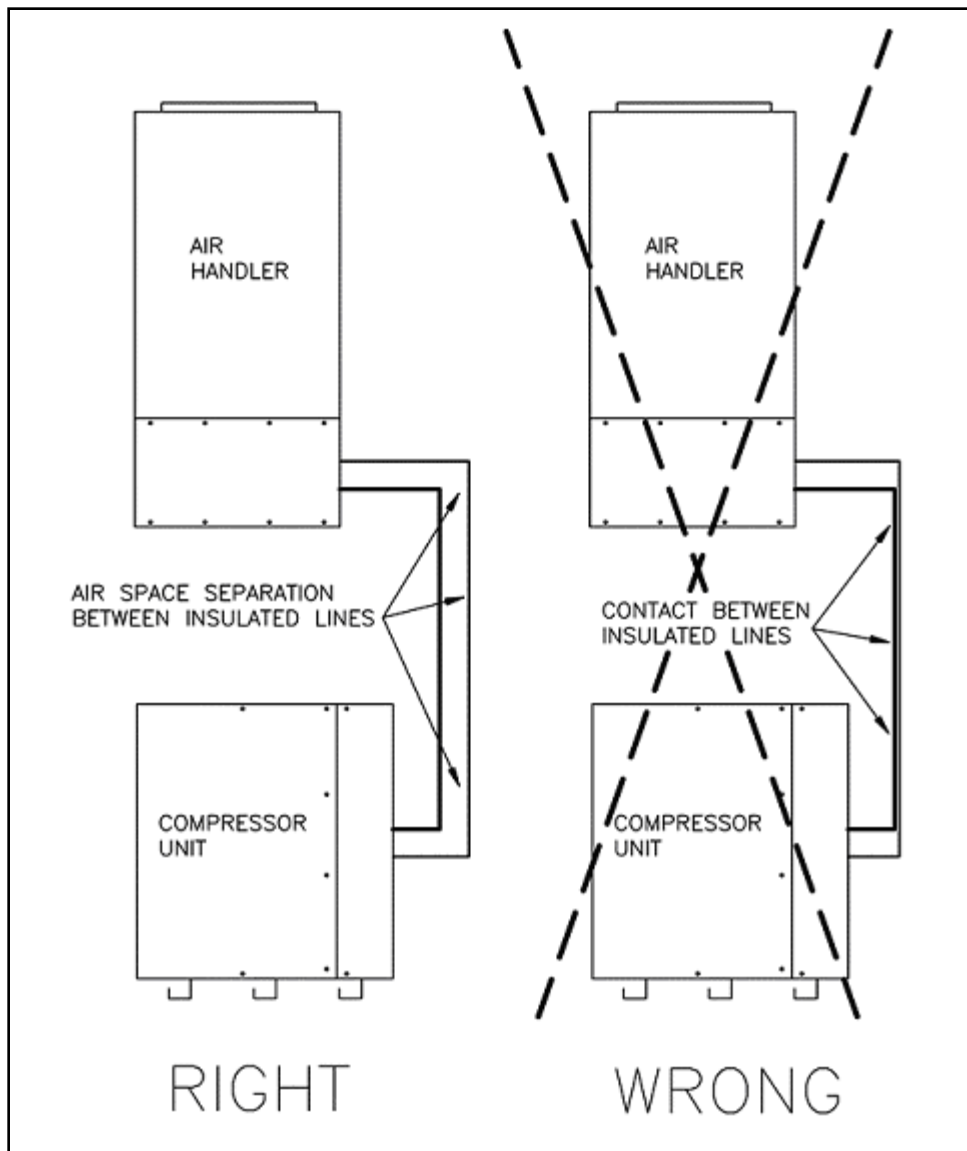


Figure 6. Cased Coiland Air Handler Line Set Separation

TXV Kit

CCN Series cased coils that are intended for **HEAT ONLY** application are ready to install and make refrigeration line set connection to the air handler as shipped.

CCN Series cased coils that are intended for **HEAT/COOL** or **COOL ONLY** applications, **are shipped with the matching TXV Kit that must be field installed to enable operation of the system in the cool mode.**

The following procedure is for the installation of the TXV Kit which must be done prior to making the line set connections to the air handler.

Figure 7 illustrates the TXV Kit as shipped with the external parts for field installation identified. The TXV (thermal expansion valve), CAV (cooling assist valve) and interconnecting tubing are located inside the control box and foam insulated to ensure performance.

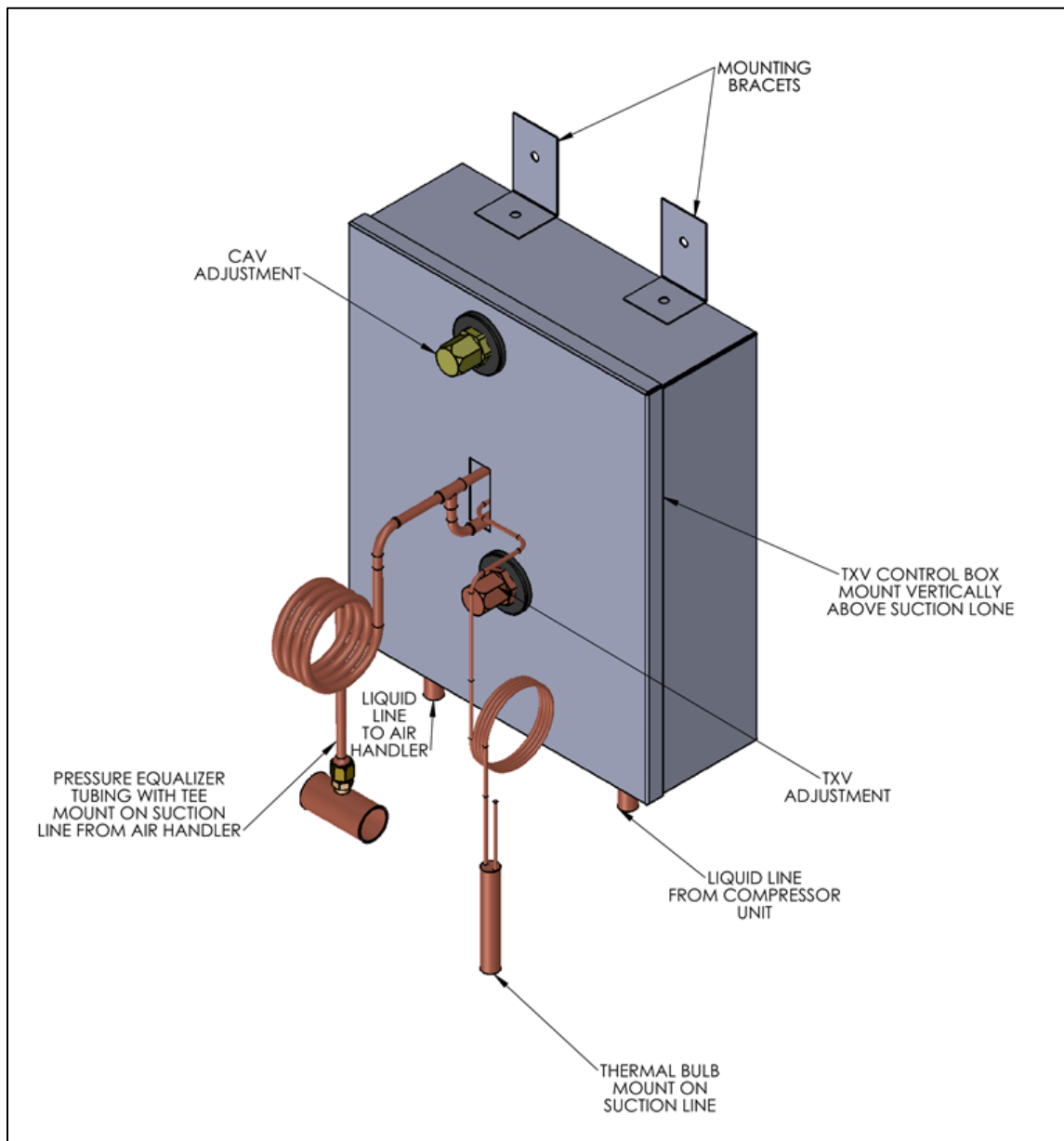


Figure 7. TXV Control

The TXV control box in Figure 8 is positioned external to the cased coil, located on a vertical mounting surface immediately adjacent to the cased coil. The TXV control box is to be mounted in the **vertical position** and **above the cased coil tubing stub outs** as shown in Figure 8, whether the cased coil is installed in the vertical or horizontal position.

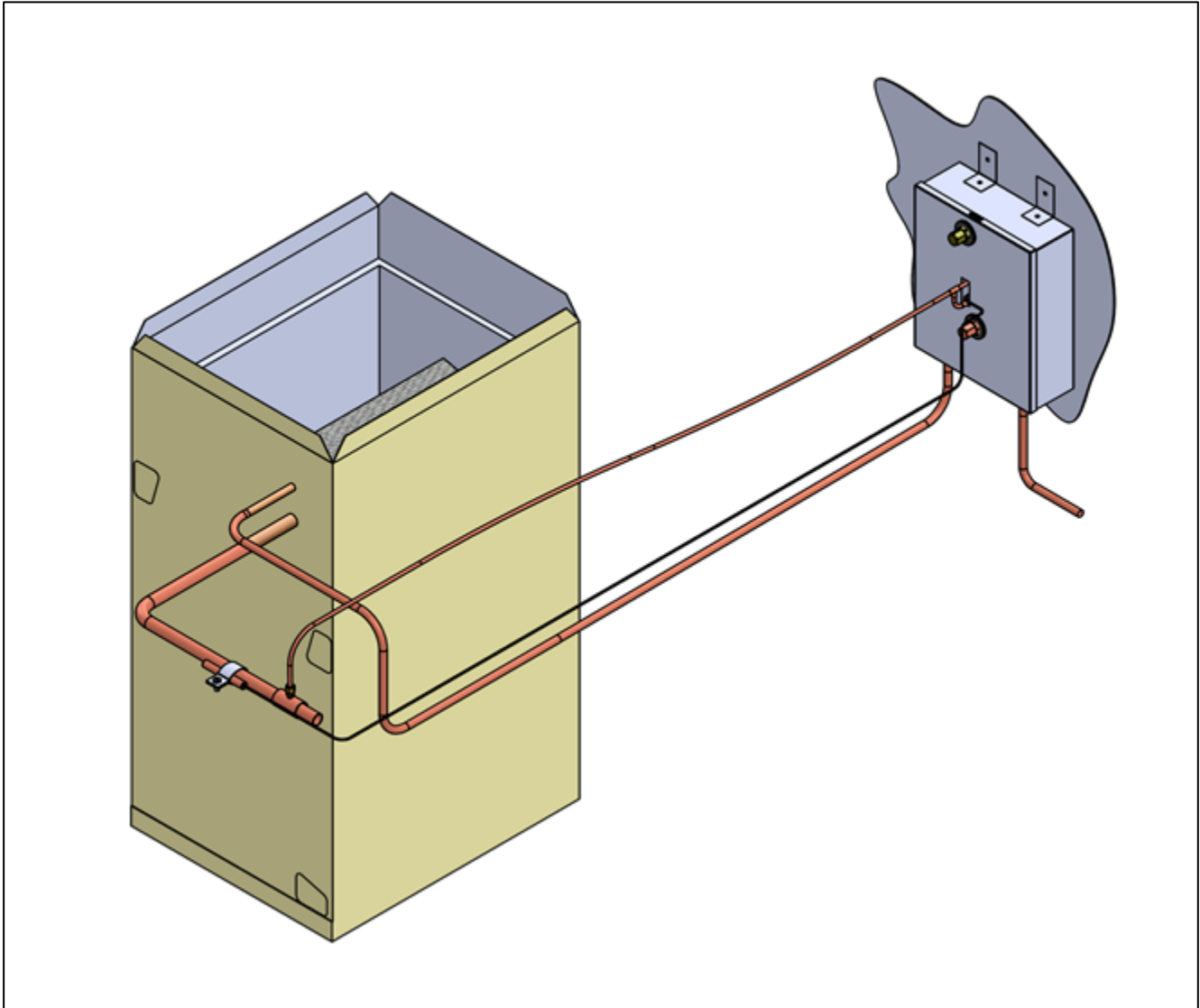


Figure 8. TXV Control Installed near Cased Coil (Vertical Application)

Mount the TXV Kit on a solid flat surface with space at least 14-1/2 inches high by 10-1/2 inches wide upon which to locate the TXV box. Allow another 4 inches of clearance below the TXV Kit to install and braze liquid line fittings. Allow 12 inches clearance in front of the TXV box to access the superheat adjustment.

The steps for installing the TXV Kit are as follows:

Step 1: Relieve the nitrogen holding charge on the air handler using the valve on the liquid line stub out. Locate the TXV Control box within the 3-1/2 feet of the suction line stub out on the cased coil. **Fasten the TXV control box in the vertical position, located above the suction line stub out.**

Step 2: After removing the plug from the suction stub out and cutting the valve off the liquid line, position the **Pressure Equalizer Tee** on the suction tube at least 10 inches downstream from the 90° ell as shown in Figure 9. Remove the core from Schrader valve on the Tee.

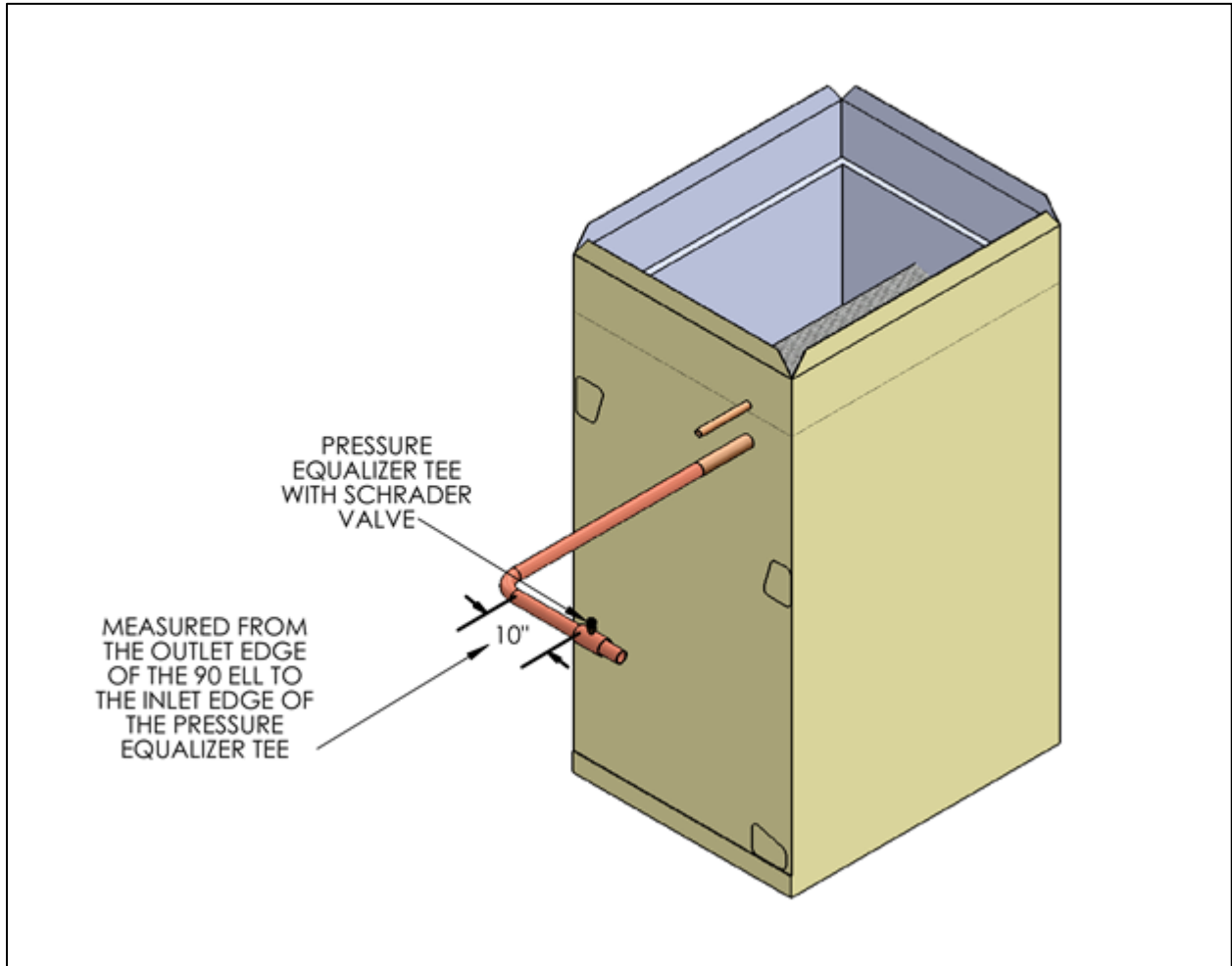


Figure 9. Positioning the Pressure Equalizer Tee

Step 3: The **Thermal Bulb** must be positioned and clamped to the suction tube as shown in the example illustrated in Figure 10. The **Thermal Bulb and suction tube must be horizontal** regardless of the cased coil application (vertical or horizontal).

The Thermal Bulb must be positioned at the 3:00, 4:00, 8:00 or 9:00 positions on the suction tube, as illustrated in Figure 10.

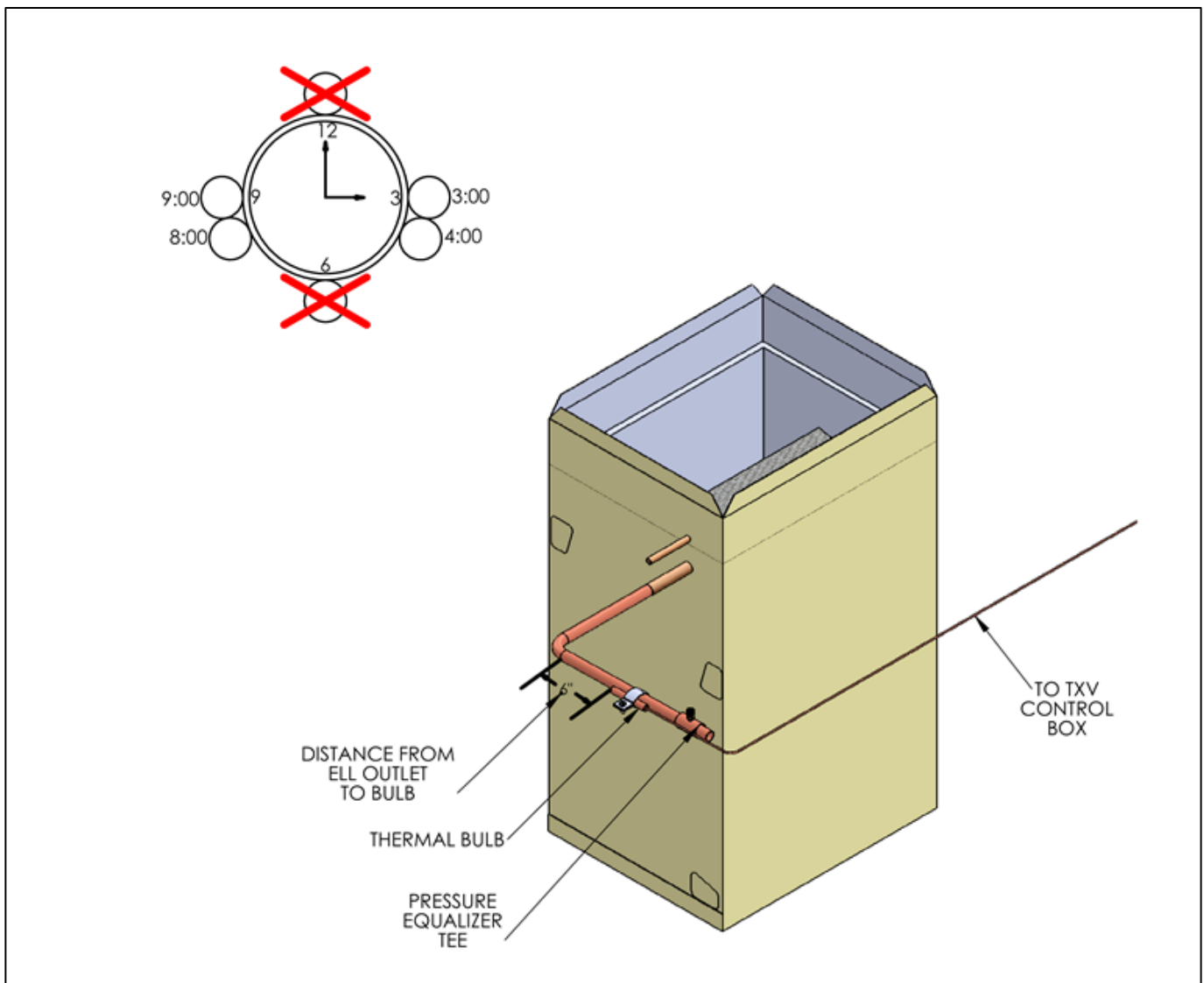


Figure 10. Thermal Bulb Positioning

Step 4: Clamp the thermal bulb firmly against the **clean suction tube** extension and parallel to it, as shown in Figure 11.

Isolate the Thermal Bulb from with a cold wet cloth while Nitrogen brazing the joints on the suction line. After the suction line has cooled, apply the supplied cork tape insulation around the Thermal Bulb to completely isolate it from the surrounding air, as shown in Figure 12.

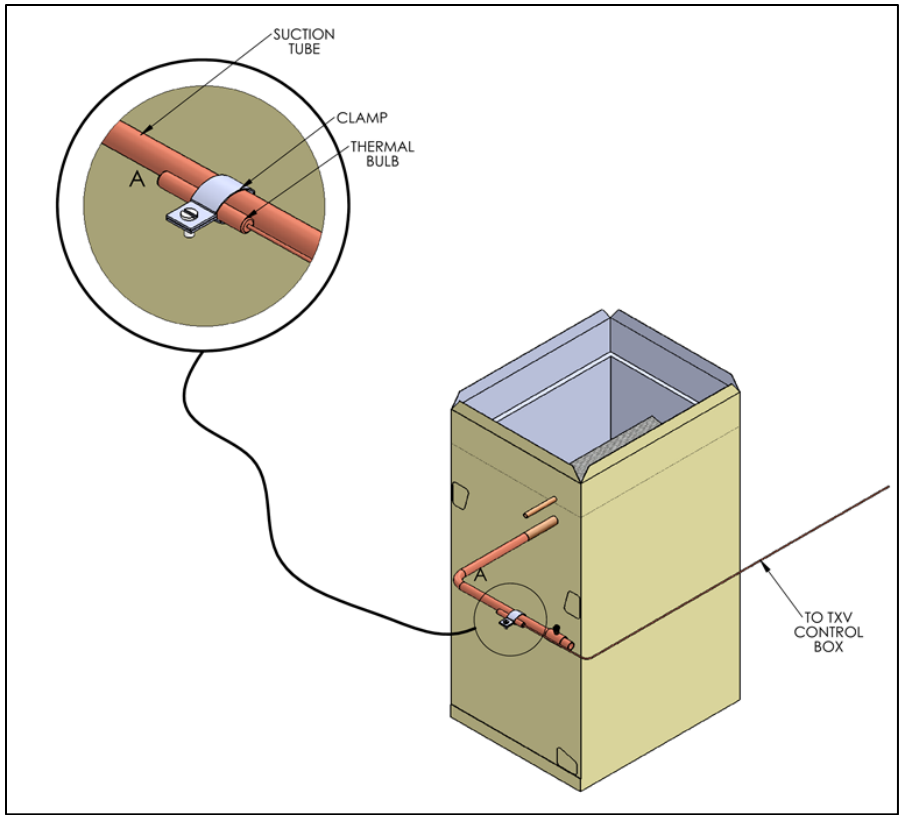


Figure 11. Clamping the Thermal Bulb

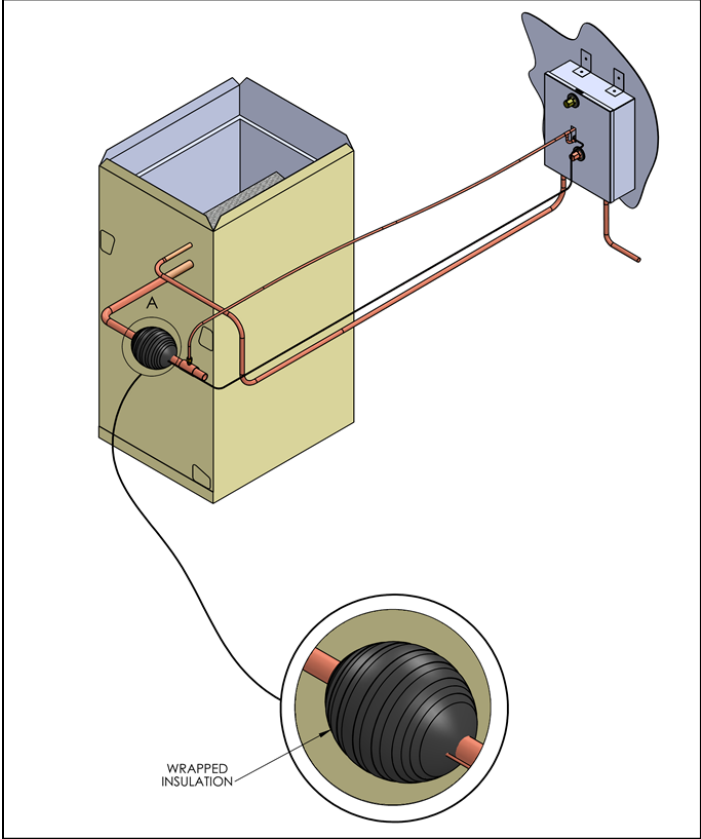


Figure 12. Insulating the Thermal Bulb

Step 5: Measure and cut copper tubing to connect the liquid line from the TXV control box to the liquid line stub out on the cased coil as shown in Figures 7 and 13. Run the other liquid line from the connection on the TXV control box to the compressor unit, also shown in Figure 13. Nitrogen braze the joints.

Step 6: Replace the core in the Schrader valve and connect the pressure equalizer tube to the Schrader valve. Tighten the flare connection firmly. **Wrap the liquid and vapor tubing including the liquid line tubing to the TXV control box, with Armaflex[®], Insul-Tube[®] or equivalent insulation of at least ½" wall thickness, between the cased coil and compressor unit.**

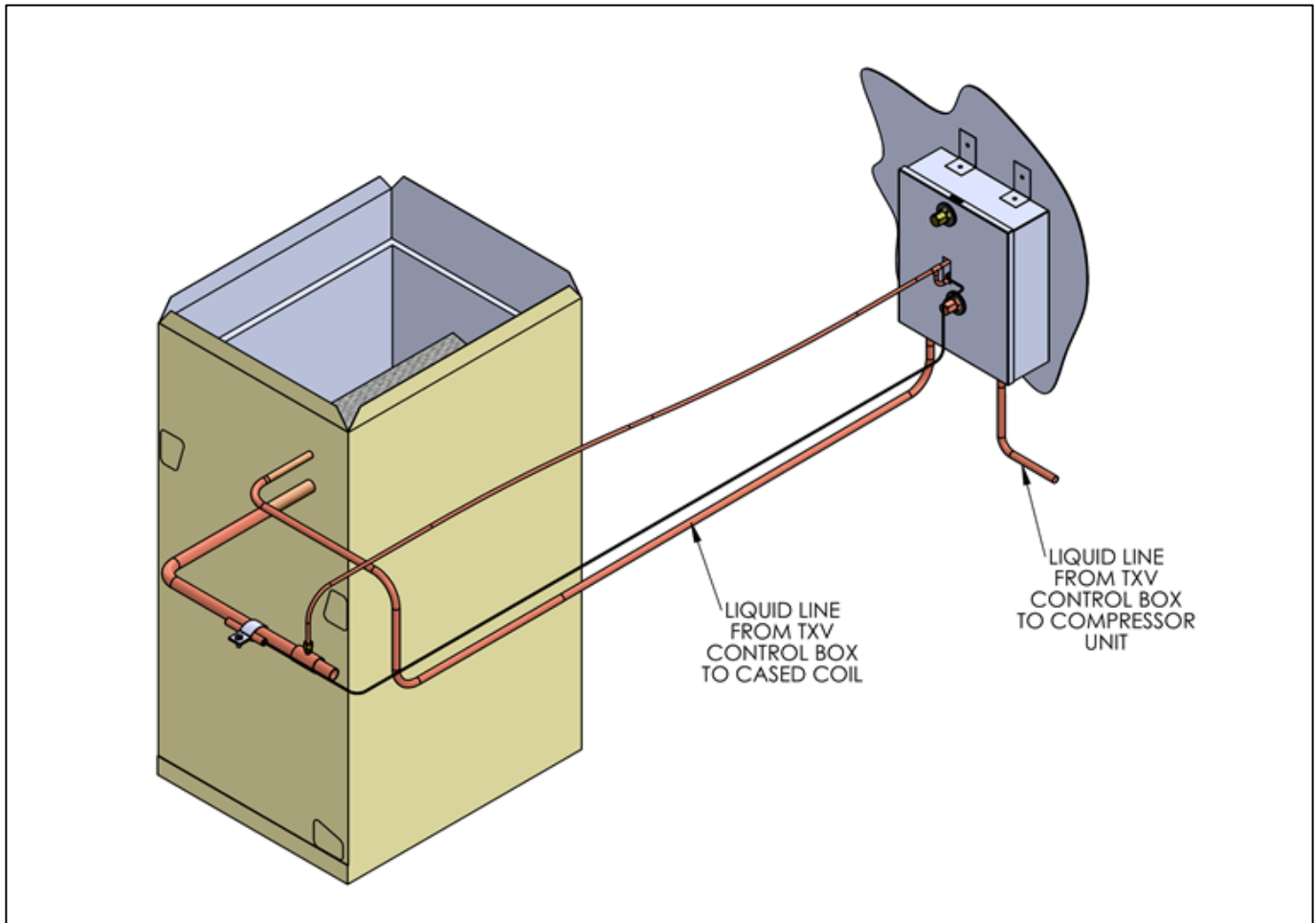


Figure 13. TXV Liquid Line Connections

Airflow

CCN Cased Coils are designed to operate at 400 cfm/Ton, nominal capacity.

For system design purposes, Figure 14 provides the airflows for each CCN cased coil model and the associated coil pressure drops.

Cased Coil Model	Airflow, cfm	Coil Pressure Drop, in W.C.
CCN-0018	400	0.04*
CCN-0024	600	0.06*
CCN-1824	800	0.12
CCN-0030	800	0.15*
CCN-0036	1000	0.22*
CCN-3036	1200	0.30
CCN-0042	1200	0.19*
CCN-0048	1400	0.24*
CCN-4248	1600	0.30
CCN-0054	1600	0.15*
CCN-0060	1800	0.23*
CCN-5460	2000	0.30
*Projected pressure drop based on similar cased coils		

Figure 14. Airflow Vs. Pressure Drop

Service Parts

Service Parts for the CCN Series Cased Coils are illustrated in Figure 15 and listed in Figure 16.

Service parts for these cased coils can be purchased from HVAC distributors handling the following name brands of Nordyne Cased Coil Model Series C6. To find your nearest distributor, call 1-800-422-4328, option 2.

Frigidaire

Nordyne

Gibson

Nutone

Philco

Tappan

Kelvinator

Westinghouse

Maytag

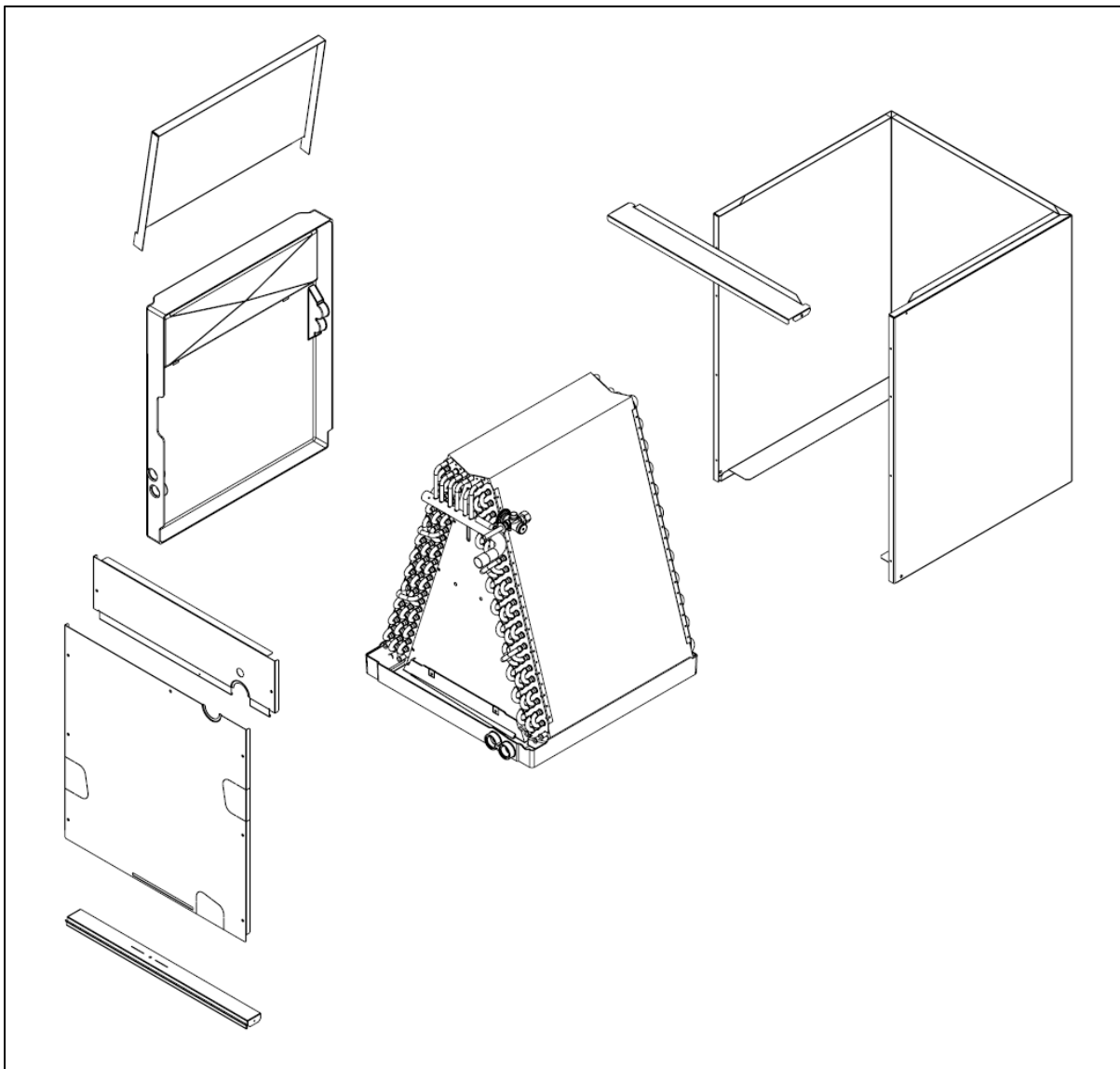


Figure 15. CCN Cased Coil Parts Illustration

DESCRIPTION	CASED COIL MODELS			
	CCN-0018 CCN-0024 CCN-1824	CCN-0030 CCN-0036 CCN-3036	CCN-0042 CCN-0048 CCN-4248	CCN-0054 CCN-0060 CCN-5460
Replacement Coil Assembly	920562	920568	920572	920574
Drain Pan	669669	669670	669671	669671
TXV Assembly	N/A	N/A	N/A	N/A
Distributor Assembly	664406	664407	664407	664408
Tie Bar, Upper	297221	297222	297223	297223
Tie Bar, Lower	297231	297232	297233	297233
Coil Capture Bracket, Front	295502	295502	295502	295502
Coil Capture Bracket, Rear	295512	295512	295512	295512
Door, Upper	297241	297242	297243	297243
Door, Lower	297151	297161	297171	297172
Wrapper	297251	297261	297271	297272
Plate, Coil Spacing	280621	2A1721	298011	297901
Horizontal Drain Pan Kit	920265	920265	920266	920267
Fitting, Liq Lineset, C6	664378	664378	664378	664378
Fitting, Liq Lineset Retain Nut	664387	664387	664387	664387
Bulkhead Nut, TXV	606287	606287	606287	606287
Bulkhead Washer, TXV	612068	612068	612068	612068
Bulkhead Extension, Dogleg	664494	N/A	N/A	N/A

Figure 16. CCN Cased Coil Parts Listing

Appendix A

Cased Coil – Mechanical Installation Information*

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*CCN Series Cased Coils are referred to as “C6” cased coils in this appendix.

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

C6 Series indoor cased coils are designed for upflow, downflow, or horizontal applications when used in conjunction with a horizontal drain pan kit. Accessory kits are not required for factory ready horizontal coils.

Coils are equipped with braze type refrigerant connections for easy installation.

- Check the coils orifice size and confirm that it's suitable for application with the intended outdoor unit. Depending on application, additional installer supplied orifice or TXV may be required.
- Optional cooling/heating equipment must be properly sized and installed in accordance with the furnace manufacturer's specifications and approved recommendations.
- "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 require a horizontal drain pan kit to be installed.
- Close-off plates are available in some air filter kits. Refer to the Replacement Parts List for available part numbers. Install the necessary close-off plates around the refrigerant lines and drain line where required. Reinstall all inner and outer panels of the furnace/air handler that were previously removed when installing the indoor coil.

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, use one of the coil case adapter kits to match the coil to the air discharge opening.
3. Seal the enclosure as required to minimize air leakage.
4. Connect the refrigerant lines as outlined in the Refrigerant Line Connection section.

Horizontal Installations

C6 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.

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 ribs 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. Seal the enclosure as required to minimize air leakage.
9. Reinstall the coil access door.
10. 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. Seal the enclosure as required to minimize air leakage.
11. Reinstall the coil access door.
12. Restore electrical power to the furnace.

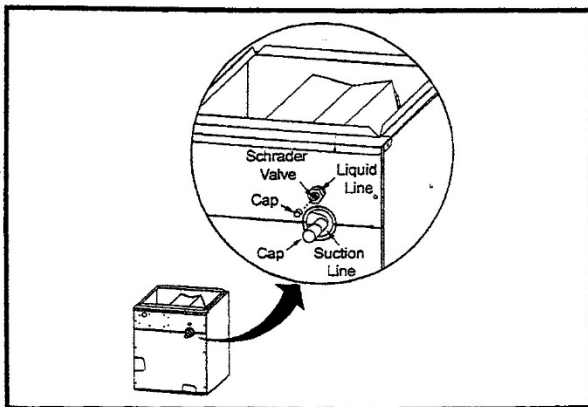


Figure 1. Suction & Liquid Line Locations

Downflow Installations

C6 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.

Condensate Drain

⚠ 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.

IMPORTANT NOTE

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

- 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.