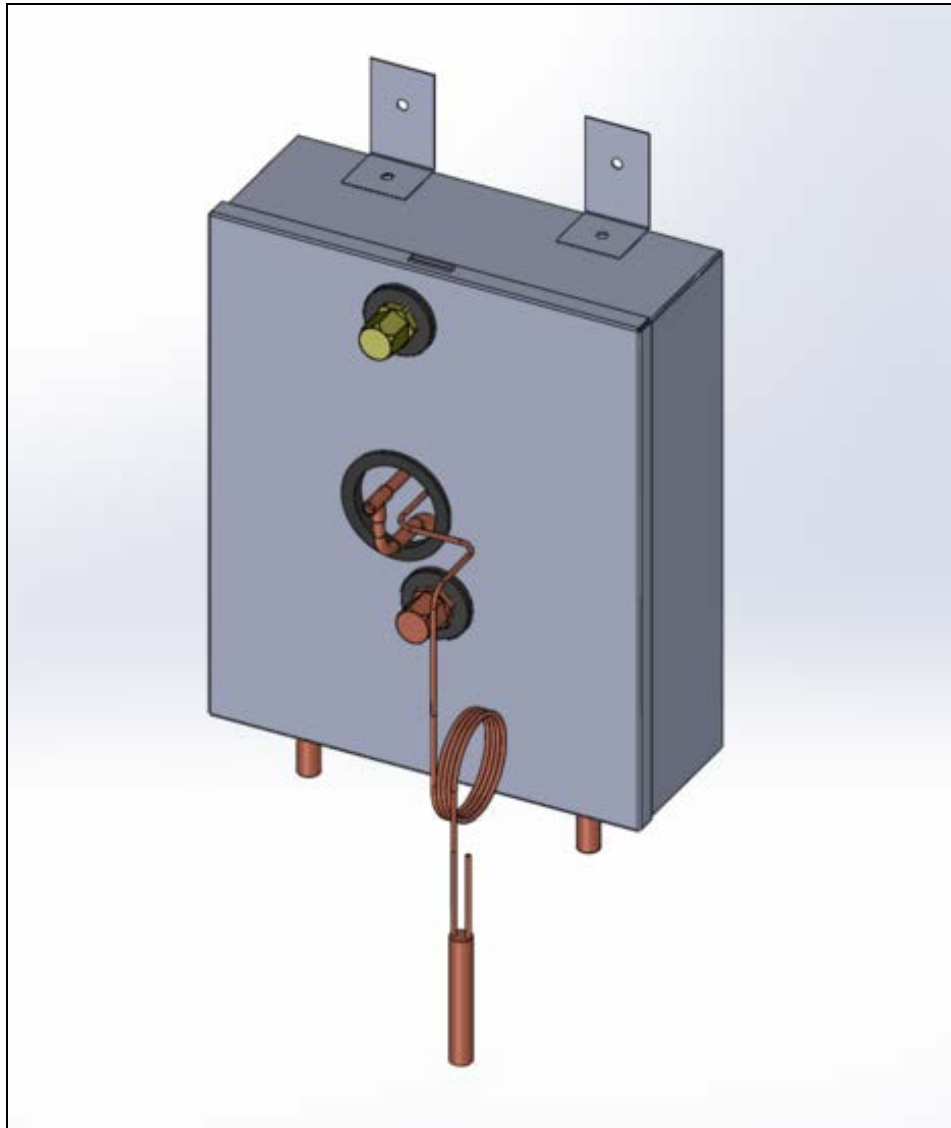


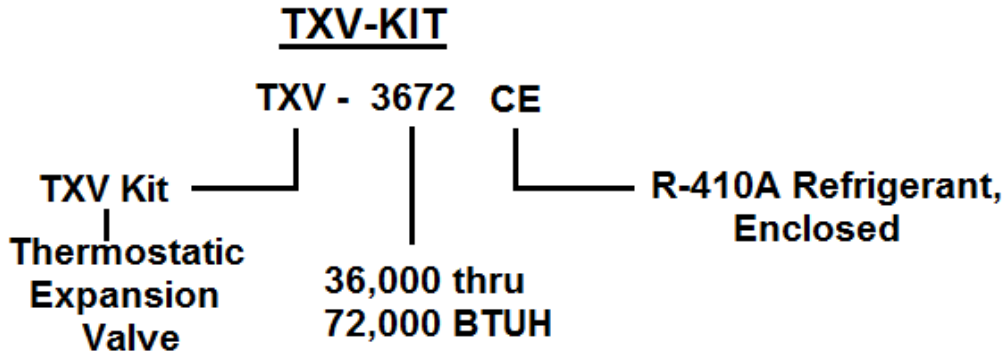


EARTH LINKED
TECHNOLOGIES

EarthLinked[®] TXV Kit
Installation Manual
for
Classic and Prime Systems



Model Nomenclature



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 made in accordance with the instructions set forth in this manual. Failure to provide installation and service by an authorized installer 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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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.

Classic Series Models SC, SD, and SDH Quick-Start Instructions

Prime Series Models PS, PSD, and PSDH Quick-Start Instructions

Classic Series Air Handler Installation Manual (AVS-ACL-IM)

Prime Select Series Air Handler Installation Manual (AVS-APS-IM)

Classic and Prime Select Series Cased Coil Installation Manual (CCS-ACLPS-IM)

Component Matching

Upon receipt of the TXV Kit carefully check the model number against the bill of lading.

The TXV Kit must be matched with the appropriately sized compressor unit. See Figure 1 below for correctly matched components.

COMPONENT MATCHING TABLE	
COMPRESSOR UNIT NOMINAL CAPACITY, BTUH	TXV KIT MODEL
-024 (24,000)	TXV-2430CE
-030 (30,000)	TXV-2430CE
-036 (36,000)	TXV-3672CE
-040 (40,000)	TXV-3672CE
-042 (42,000)	TXV-3672CE
-048 (48,000)	TXV-3672CE
-050 (50,000)	TXV-3672CE
-054 (54,000)	TXV-3672CE
-060 (60,000)	TXV-3672CE

Figure 1. Component Matching Table



WARNING

BEFORE REMOVING ANY ACCESS PANELS AND INITIATING ANY PHASE OF THIS INSTALLATION MAKE SURE THAT POWER IS TURNED "OFF" TO ALL EARTHLINKED® AND FIELD SUPPLIED SYSTEM COMPONENTS. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE, SERIOUS INJURY OR DEATH.



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.

Air Handler and Cased Coil Placement

Guidelines for the air handler and cased coil placement relative to the compressor unit and other EarthLinked® system components are shown in Figure 2.

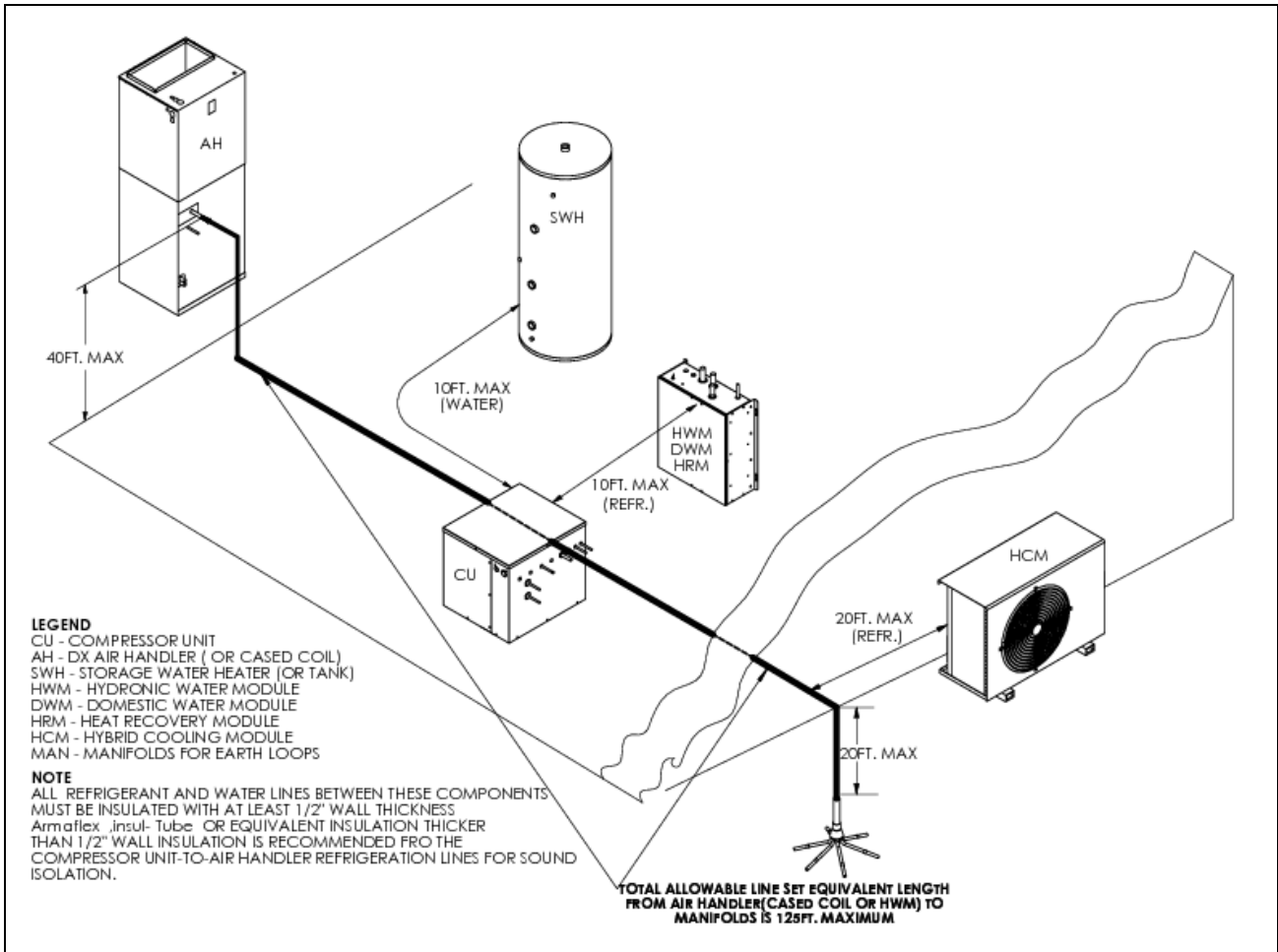


Figure 2. General Layout of System Components

TXV Kit Installation – ETI Air Handlers

Air handlers that are intended for **HEAT/COOL** 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 3 illustrates the TXV Kit as shipped with the external parts for field installation identified. In Figure 3, the pressure equalizer tubing and suction line Tee are shown connected to the control box for illustration purposes. These parts are shipped with the TXV control box and are field assembled to the control box and to the suction line. The TXV (thermal expansion valve), CAV (cooling assist valve) and interconnecting tubing are located inside the control box to ensure performance.

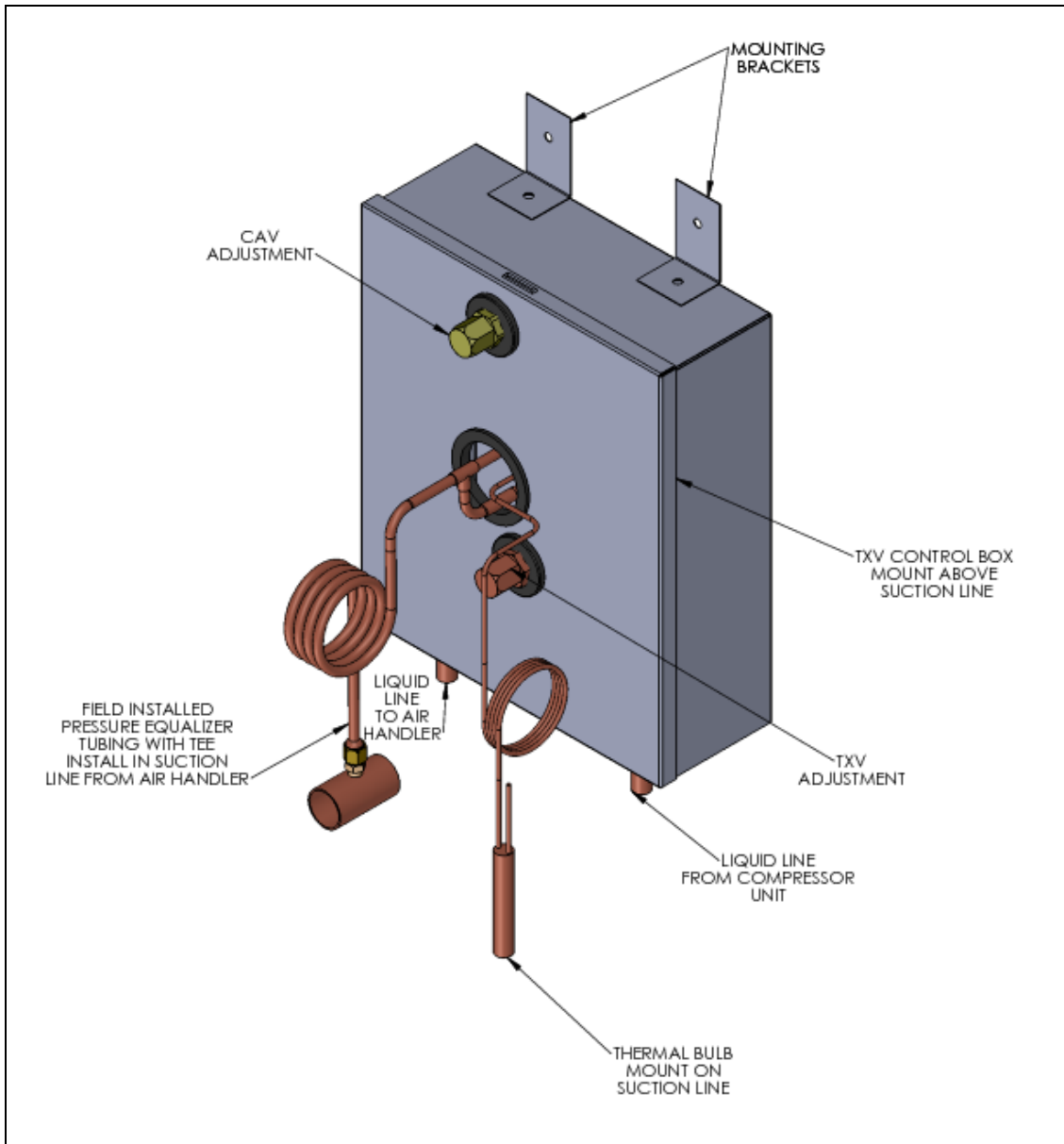


Figure 3. TXV Control

The TXV control box is field positioned external to the vertical (upflow or downflow) air handler and fastened to (1) the air handler as shown in Figure 4a, or (2) on a solid mounting surface immediately adjacent to the air handler as shown in Figure 4b. Locate the TXV control box to allow a service access of at least 12 inches in front of the box to adjust the TXV control.



Important!

The TXV control box must be located no more than 3-1/2 feet from the suction tube stub out on the air handler. The TXV control box must be mounted above the air handler tubing stub outs as shown.

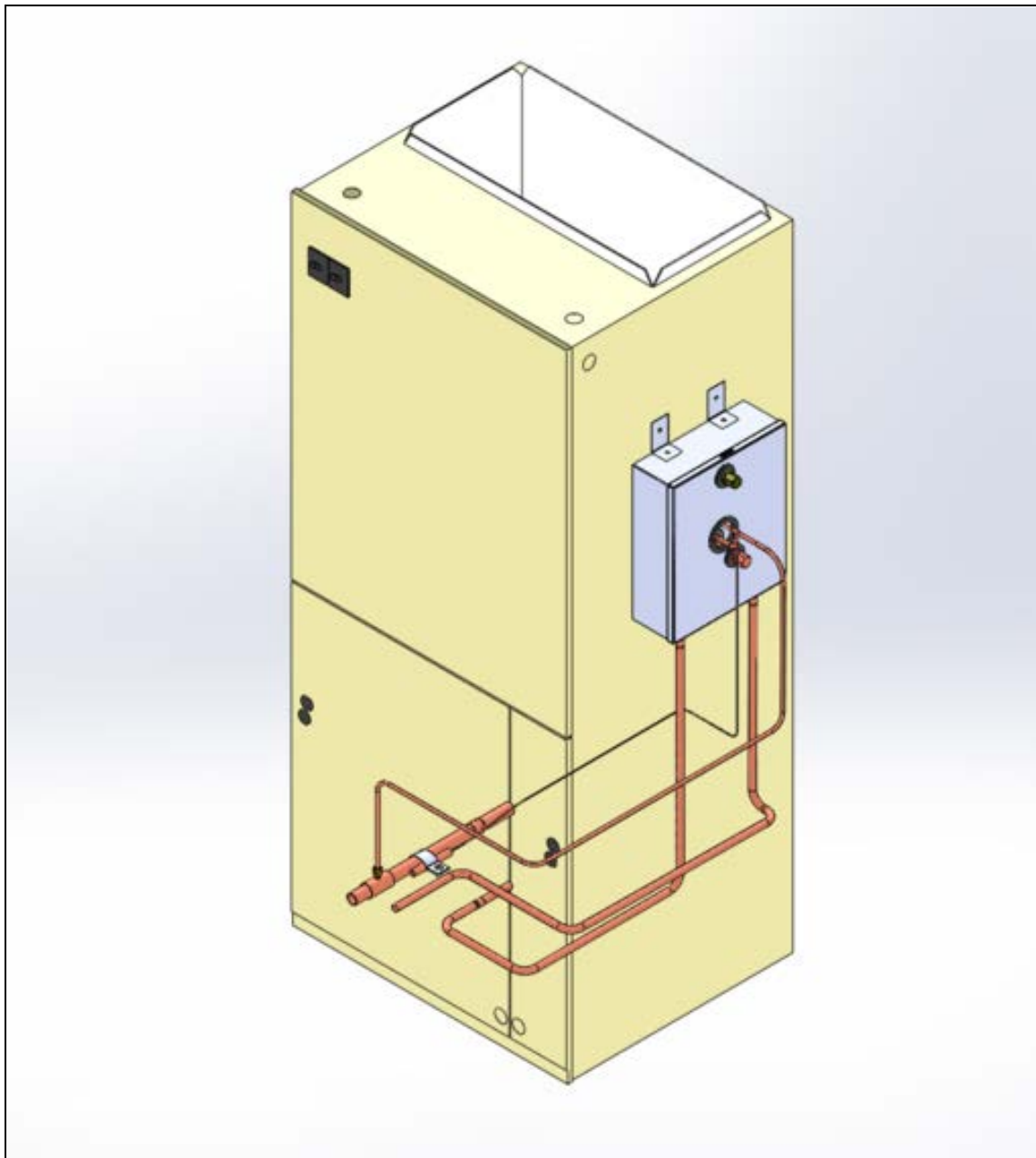


Figure 4a. TXV Control Installed on Vertical (upflow/downflow) Air Handler

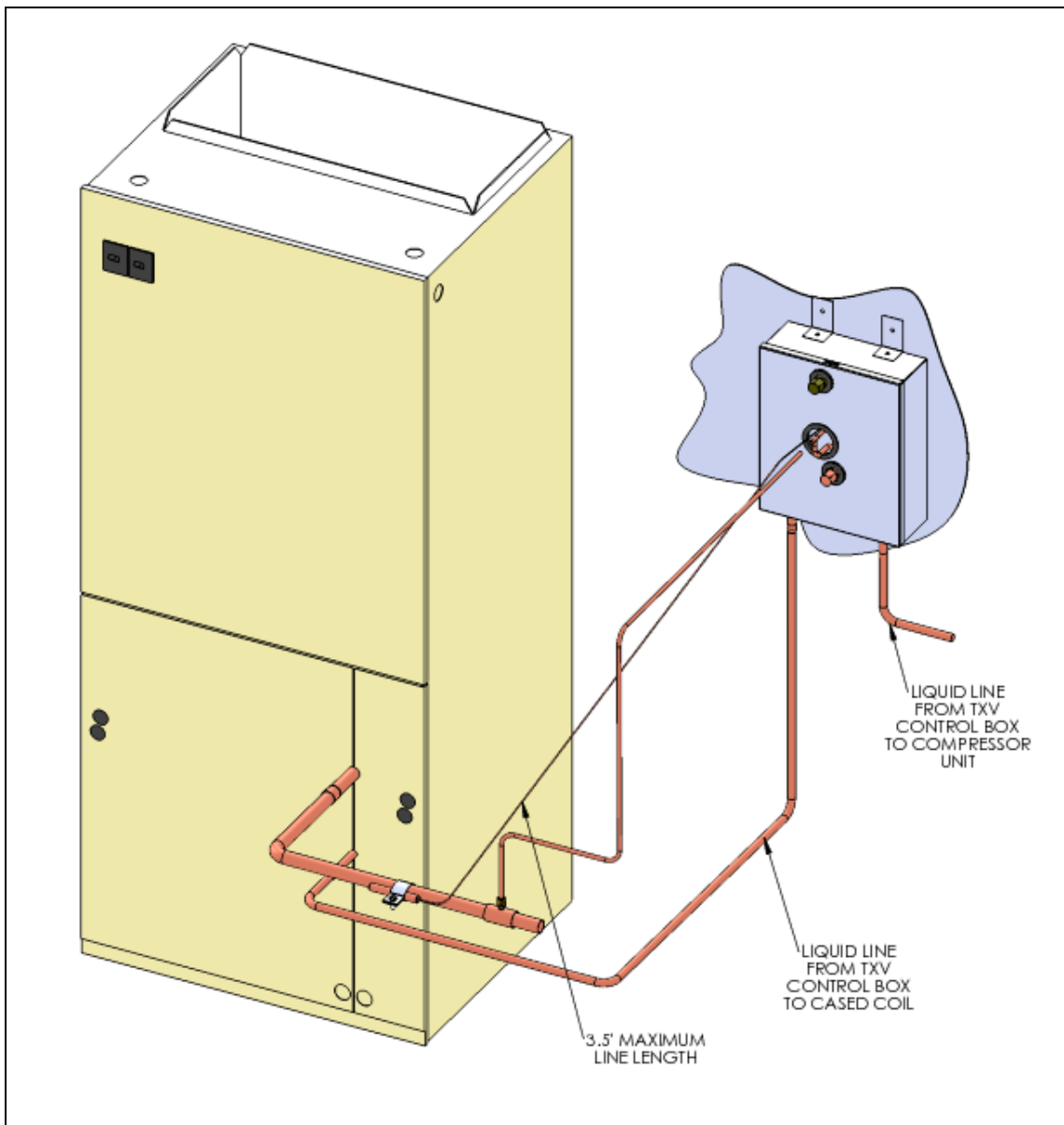


Figure 4b. TXV Control installed next to Vertical (upflow/downflow) Air Handler

For horizontal air handler applications (left or right air flow), the TXV control box is field positioned external to the air handler and can be fastened to (1) a cabinet side surface or (2) on a solid mounting surface immediately adjacent to the air handler as shown typically in Figures 4c and 4d.



Important!

The TXV control box must be located no more than 3-1/2 feet from the suction tube stub out on the air handler. The TXV control box must be mounted above the air handler tubing stub outs as shown.

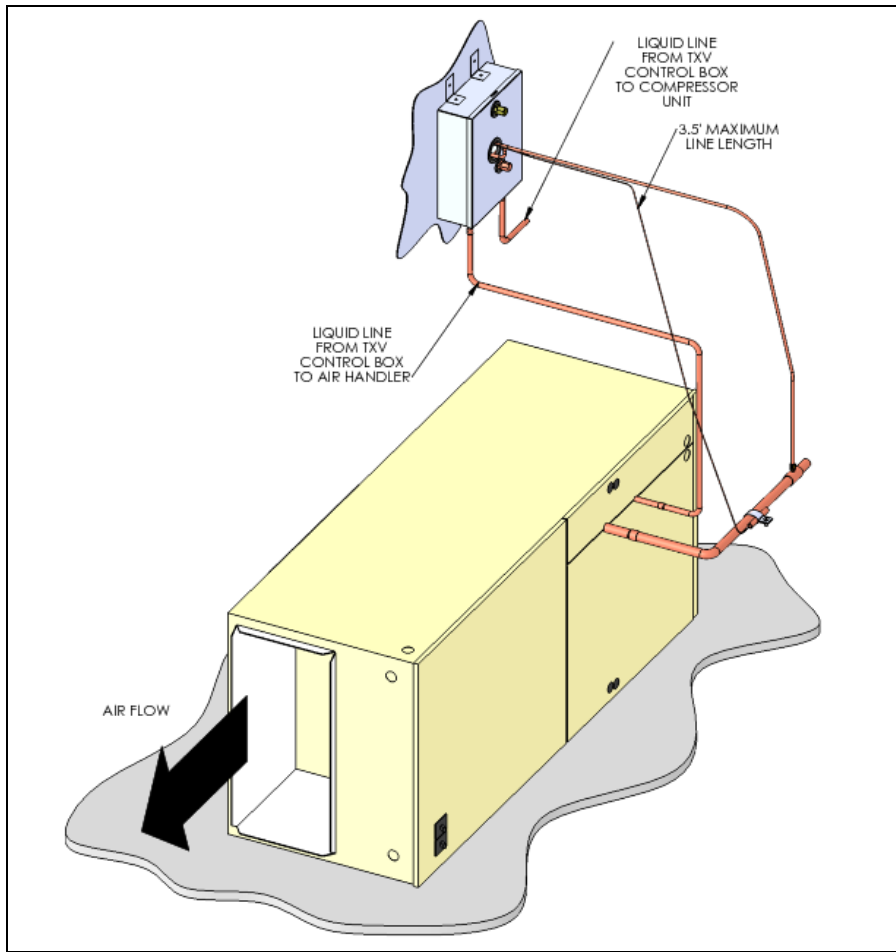


Figure 4c. TXV Control Installed next to Horizontal Left Flow Air Handler

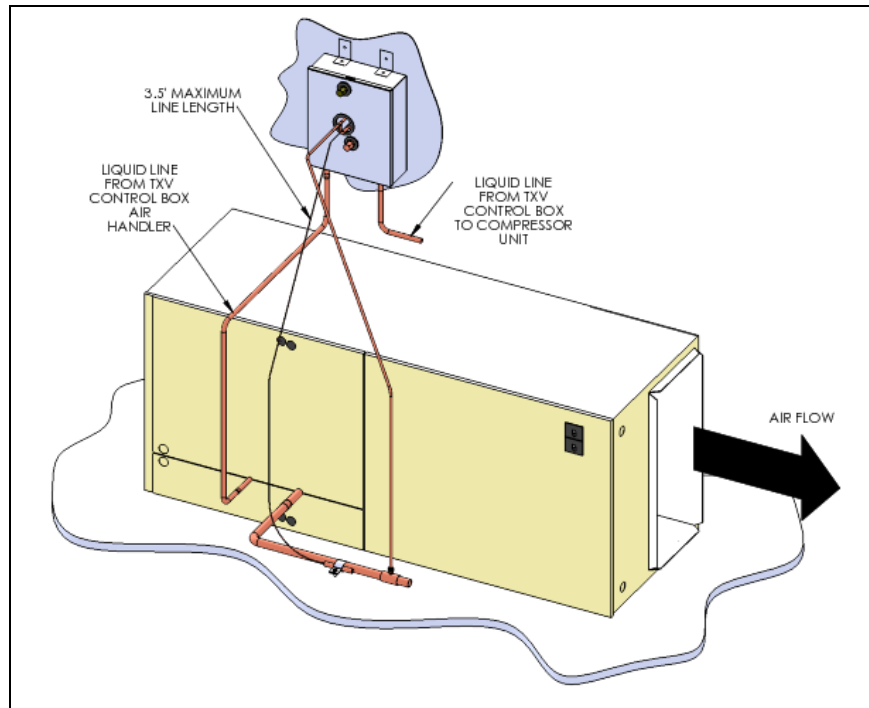


Figure 4d. TXV Control Installed next to Horizontal Right Flow Air Handler

For mounting purposes, the physical dimensions for the TXV Control Box are shown in figure 4e. The preferred mounting position for the TXV Control Box is vertical with the liquid line tube connections on the bottom. However, as shown in Figure 4f, the Control Box can be mounted from vertical to any angle up to 90 degrees (horizontal).

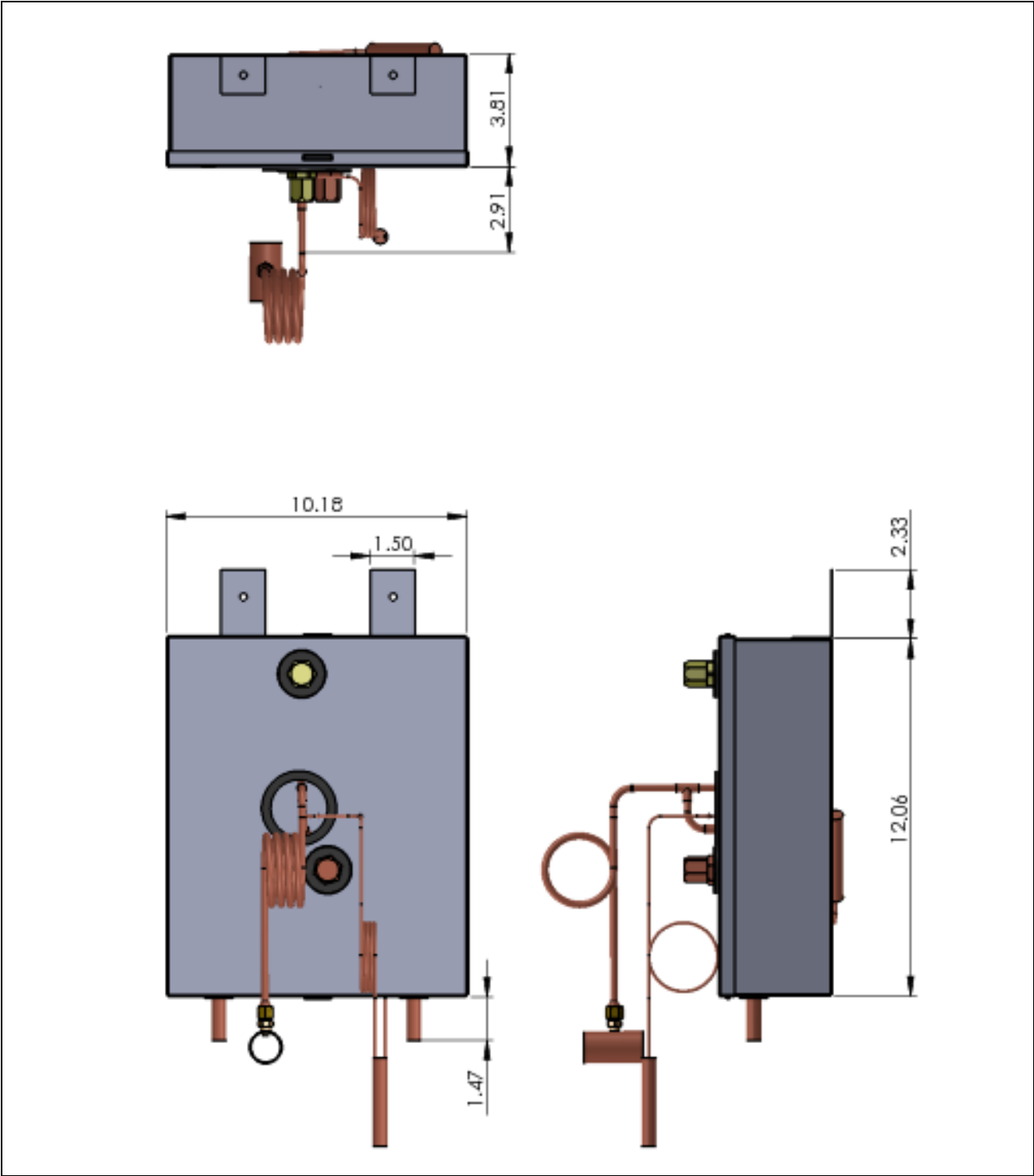


Figure 4e. TXV Control Box Dimensions

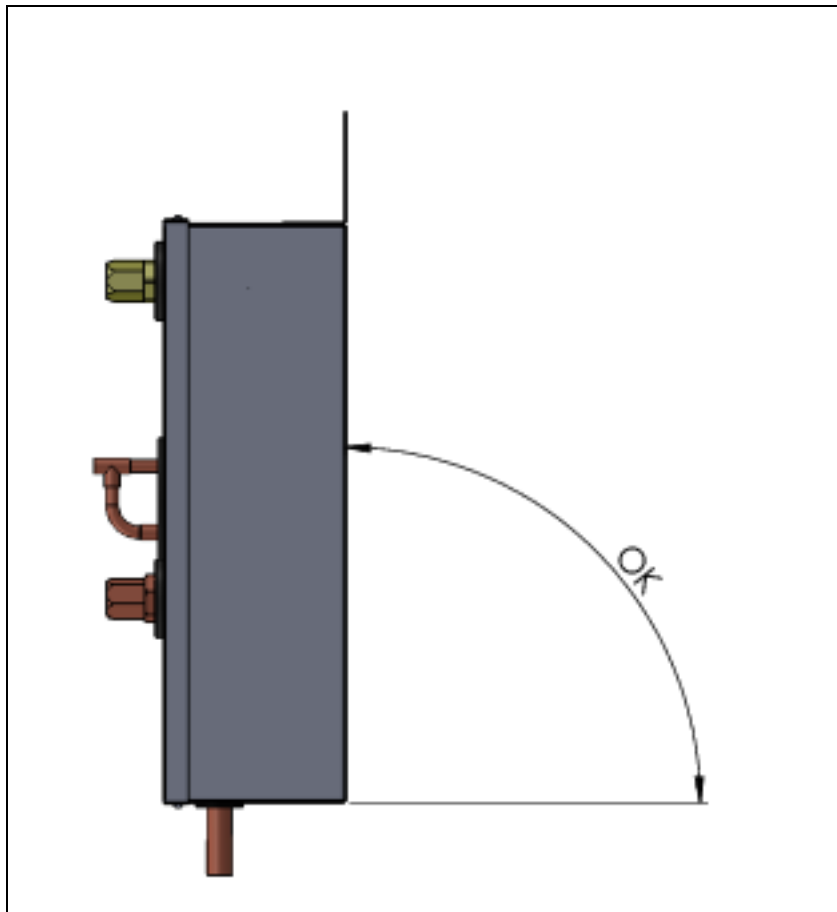


Figure 4f. TXV Control Box mounting Positions

The following steps and positioning requirements apply to installing the TXV Control to the air handler for vertical and horizontal applications. The vertical installation provides an illustrated example.

Step 1: Relieve the nitrogen holding charge on the air handler. Locate the TXV Control box within the 3-1/2 feet of the suction line stub out on the air handler. If the TXV control box is to be fastened to the air handler, be sure not to drill into the air handler internal components. **Fasten the TXV control box above the suction line stub out.**

Step 2: Position the Pressure Equalizer Tee on the suction tube at least 10 inches downstream from the 90°ell, as shown in Figure 5. Remove the core from Schrader valve on the Tee.

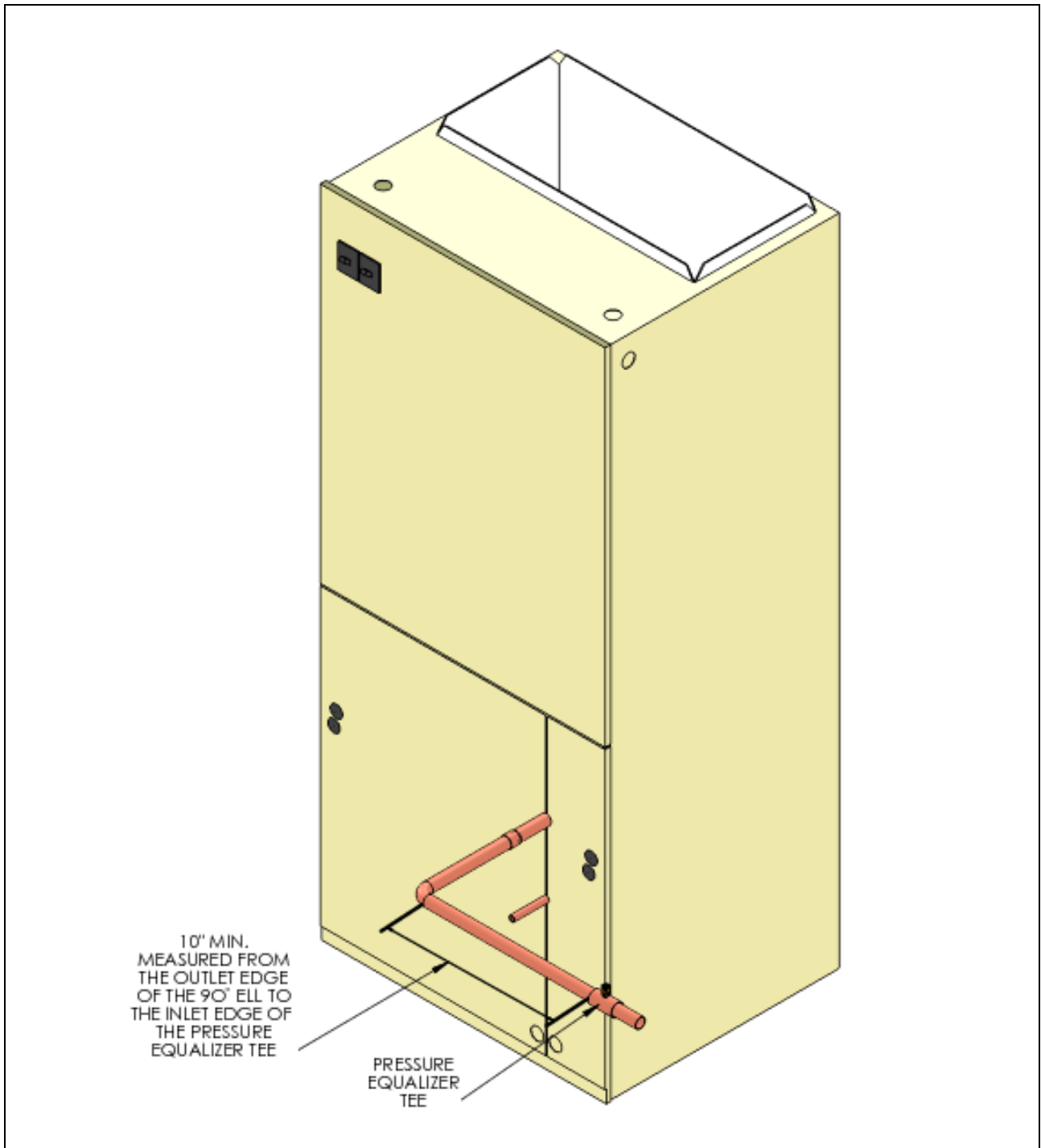


Figure 5. Positioning the Pressure Equalizer Tee

Step 3: The **Thermal Bulb** must be positioned and clamped to the suction tube 6 inches downstream from the 90° elbow as shown in the example illustrated in Figure 6. The **Thermal Bulb and suction tube must be horizontal** regardless of the air handler 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 6.

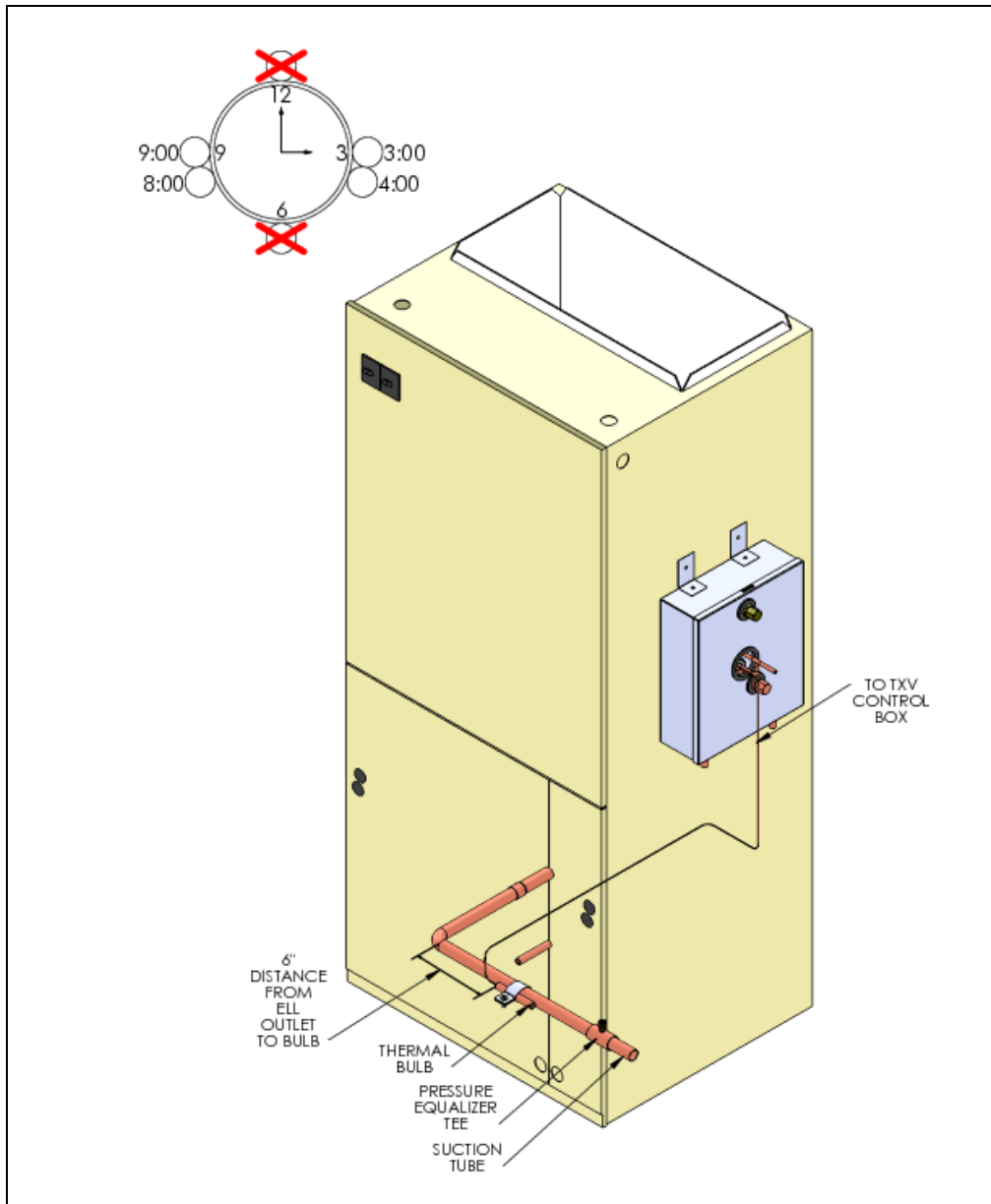


Figure 6. Thermal Bulb Positioning

Step 4: Clamp the thermal bulb firmly against the **clean suction tube** and parallel to it, as shown in Figure 7.

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 8.

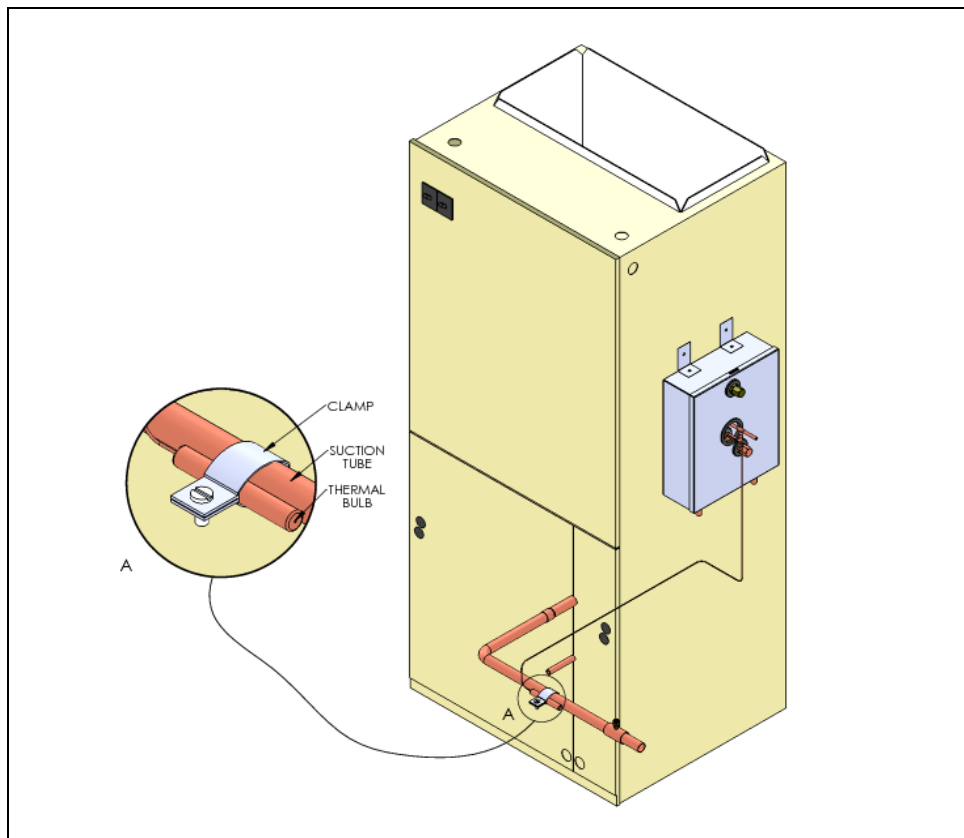


Figure 7. Clamping the Thermal Bulb

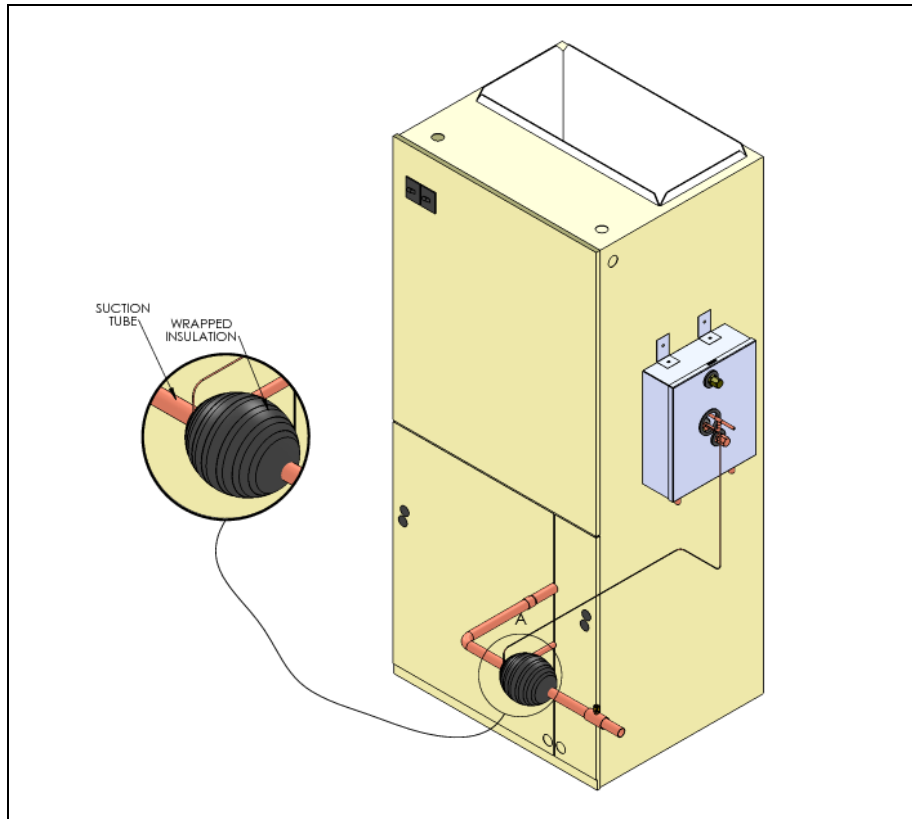


Figure 8. Insulating the Thermal Bulb

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 air handler as shown in Figures 3 and 9. Run the other liquid line from the connection on the TXV control box to the compressor unit, also shown in Figures 3 and 9. Nitrogen braze the joints.

Step 6: Connect the pressure equalizer tube to the Schrader valve. Do not install the core. 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 air handler and compressor unit.**

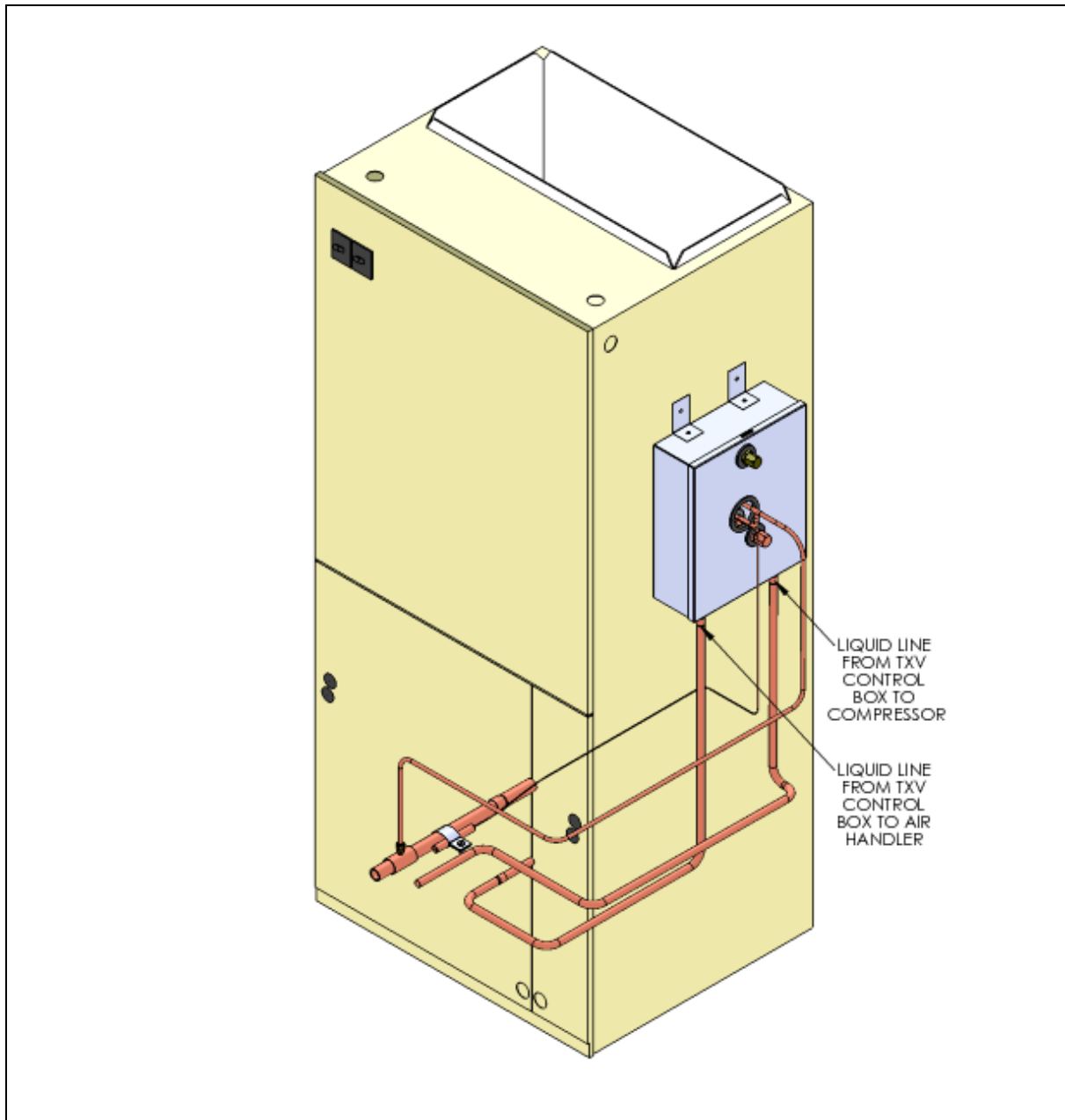


Figure 9. TXV Liquid Line Connections

TXV Kit Installation – ETI Cased Coils

Cased Coils that are intended for **HEAT/COOL** 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 cased coil.

Figure 10 illustrates the TXV Kit as shipped with the external parts for field installation identified. In Figure 10, the pressure equalizer tubing and suction line Tee are shown connected to the control box for illustration purposes. These parts are shipped with the TXV control box and are field assembled to the control box and to the suction line. The TXV (thermal expansion valve), CAV (cooling assist valve) and interconnecting tubing are located inside the control box to ensure performance.

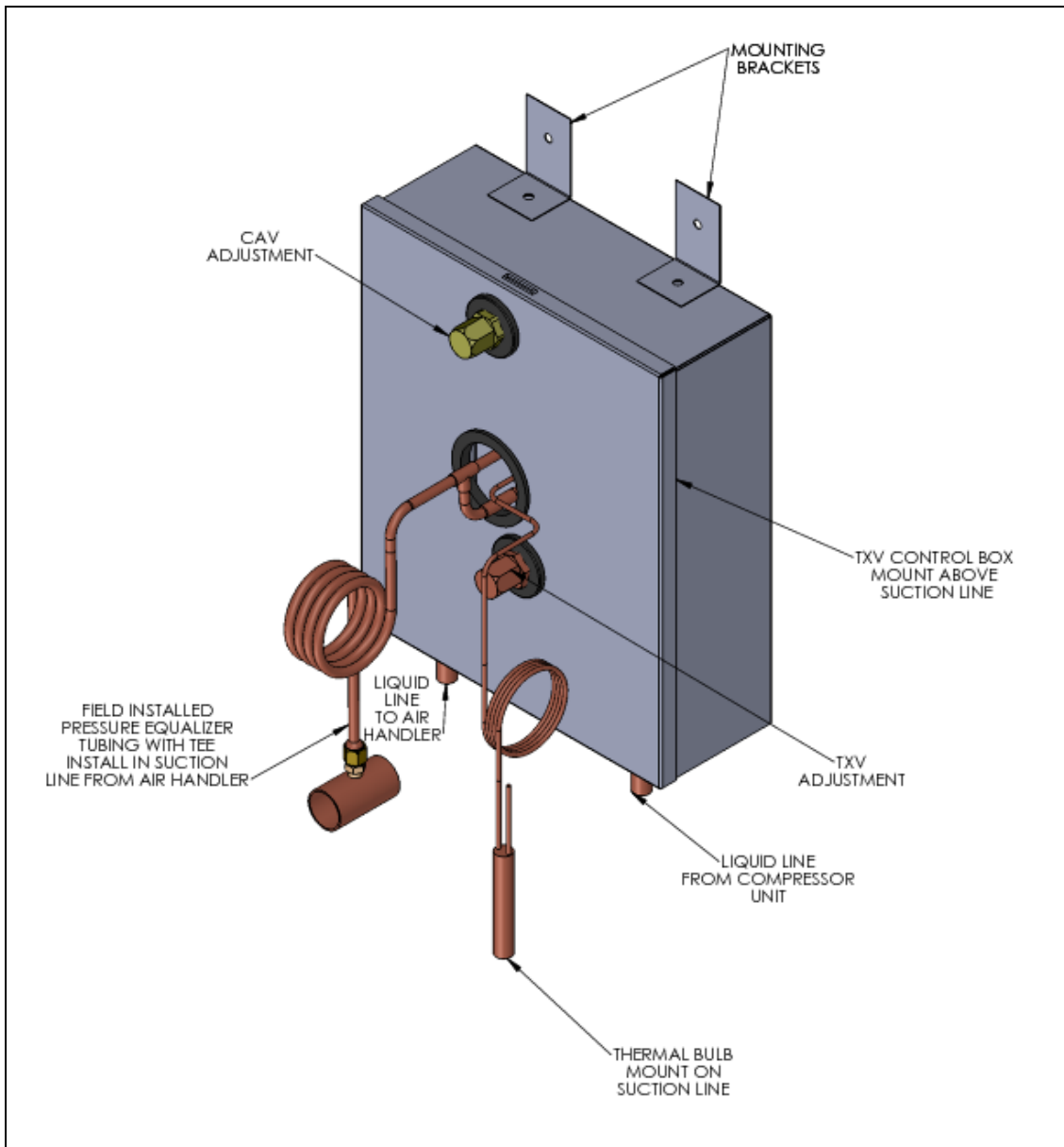



Figure 10. TXV Control

The TXV control box is field positioned external to the vertical (upflow or downflow) cased coil and fastened to a solid mounting surface immediately adjacent to the cased coil as shown typically in Figure 11a. Locate the TXV control box to allow a service access of at least 12 inches in front of the box to adjust the TXV control.

 **Important!**
The TXV control box must be located no more than 3-1/2 feet from the suction tube stub out on the air handler. The TXV control box must be mounted above the cased coil tubing stub outs as shown.

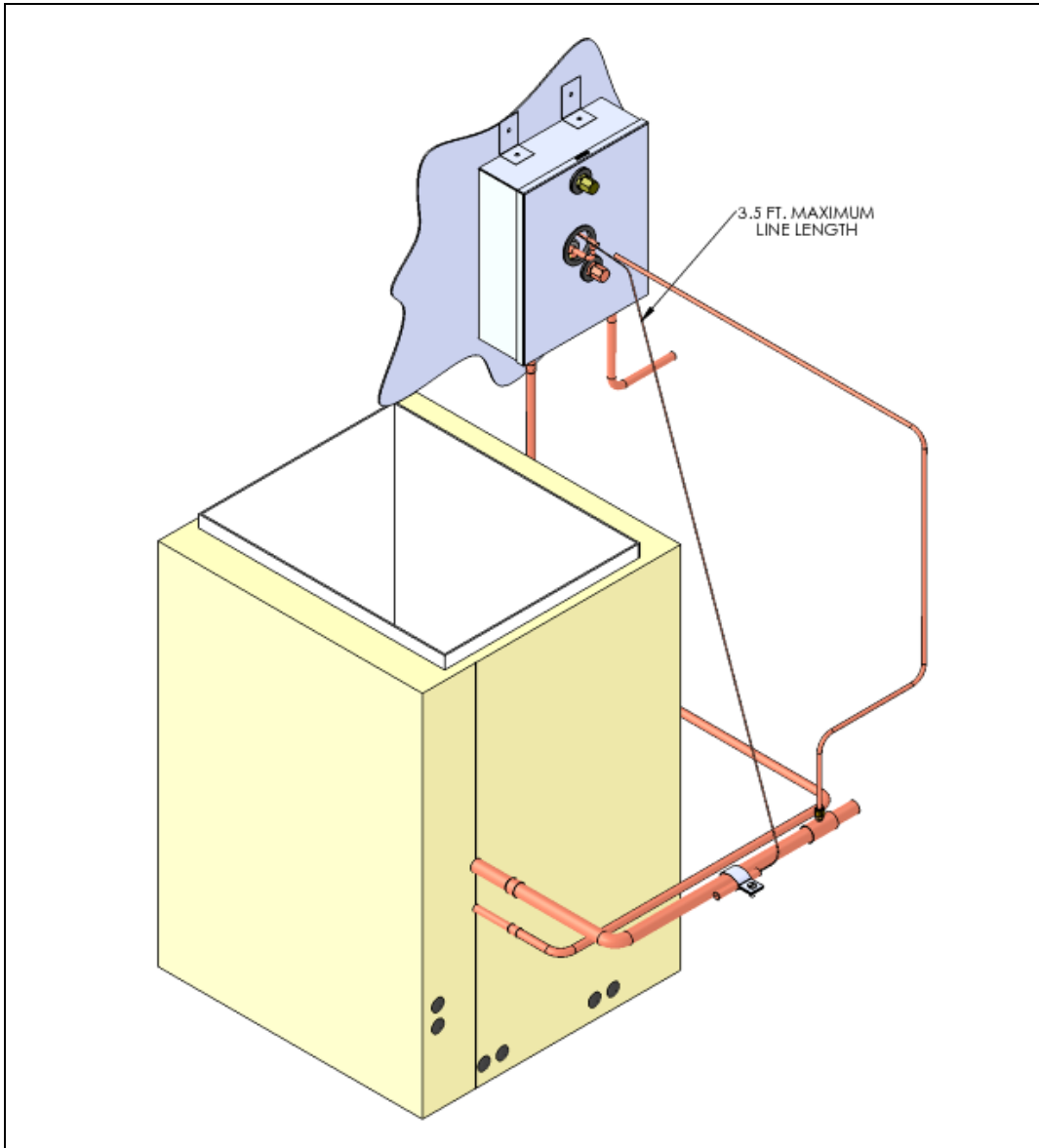



Figure 11a. TXV Control installed near Cased Coil (Vertical Application)

For horizontal cased coil applications (left or right air flow), the TXV control box is field positioned external to the cased coil and can be fastened to a solid mounting surface immediately adjacent to the cased coil as shown typically in Figure 11b.

 **Important!**
The TXV control box must be located no more than 3-1/2 feet from the suction tube stub out on the cased coil. The TXV control box must be mounted above the cased coil tubing stub outs as shown.

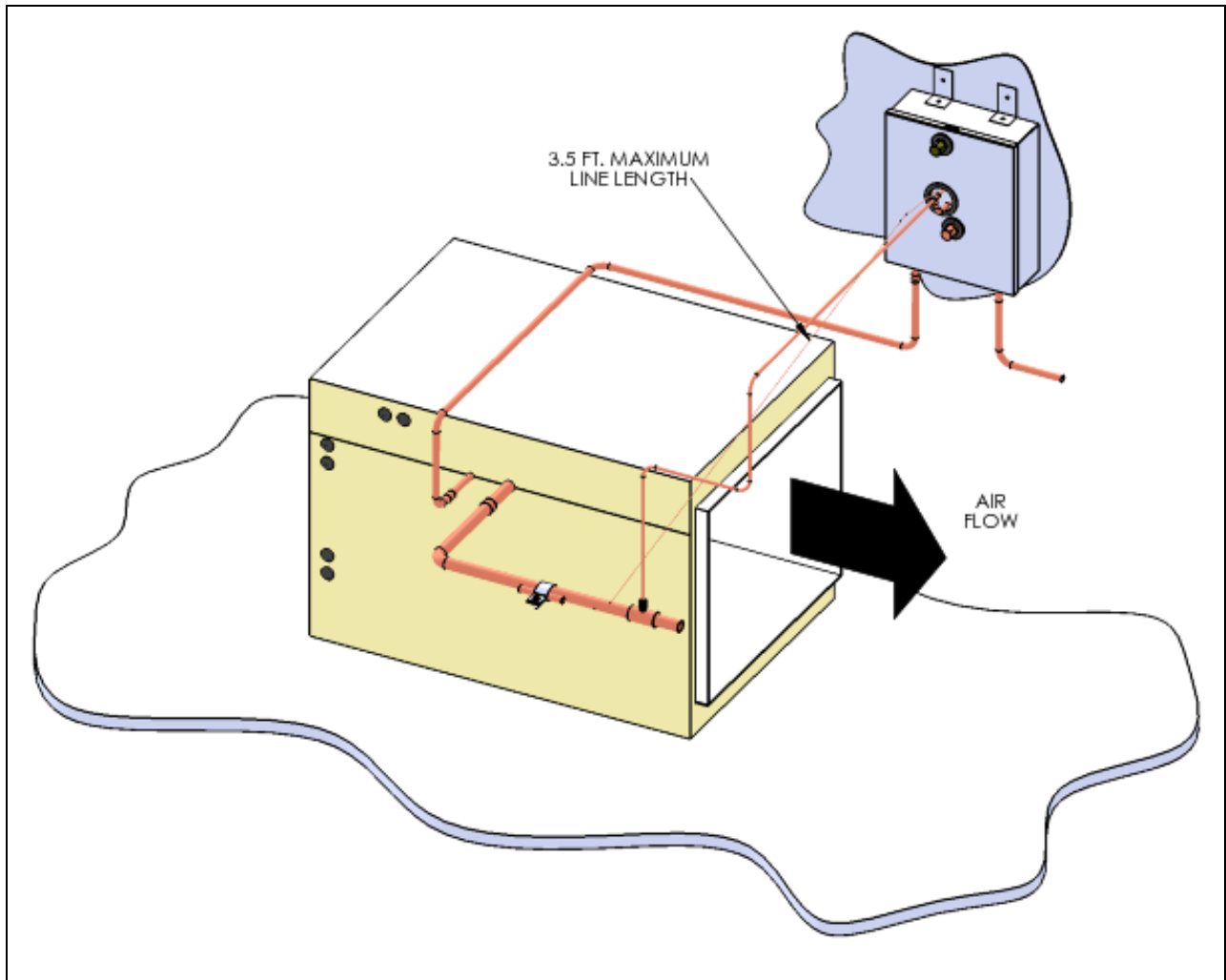


Figure 11b. TXV Control installed near Cased Coil (Horizontal Application)

For mounting purposes, the physical dimensions for the TXV Control Box are shown in figure 11c. The preferred mounting position for the TXV Control Box is vertical with the liquid line tube connections on the bottom. However, as shown in Figure 11d, the Control Box can be mounted from vertical to any angle up to 90 degrees (horizontal).

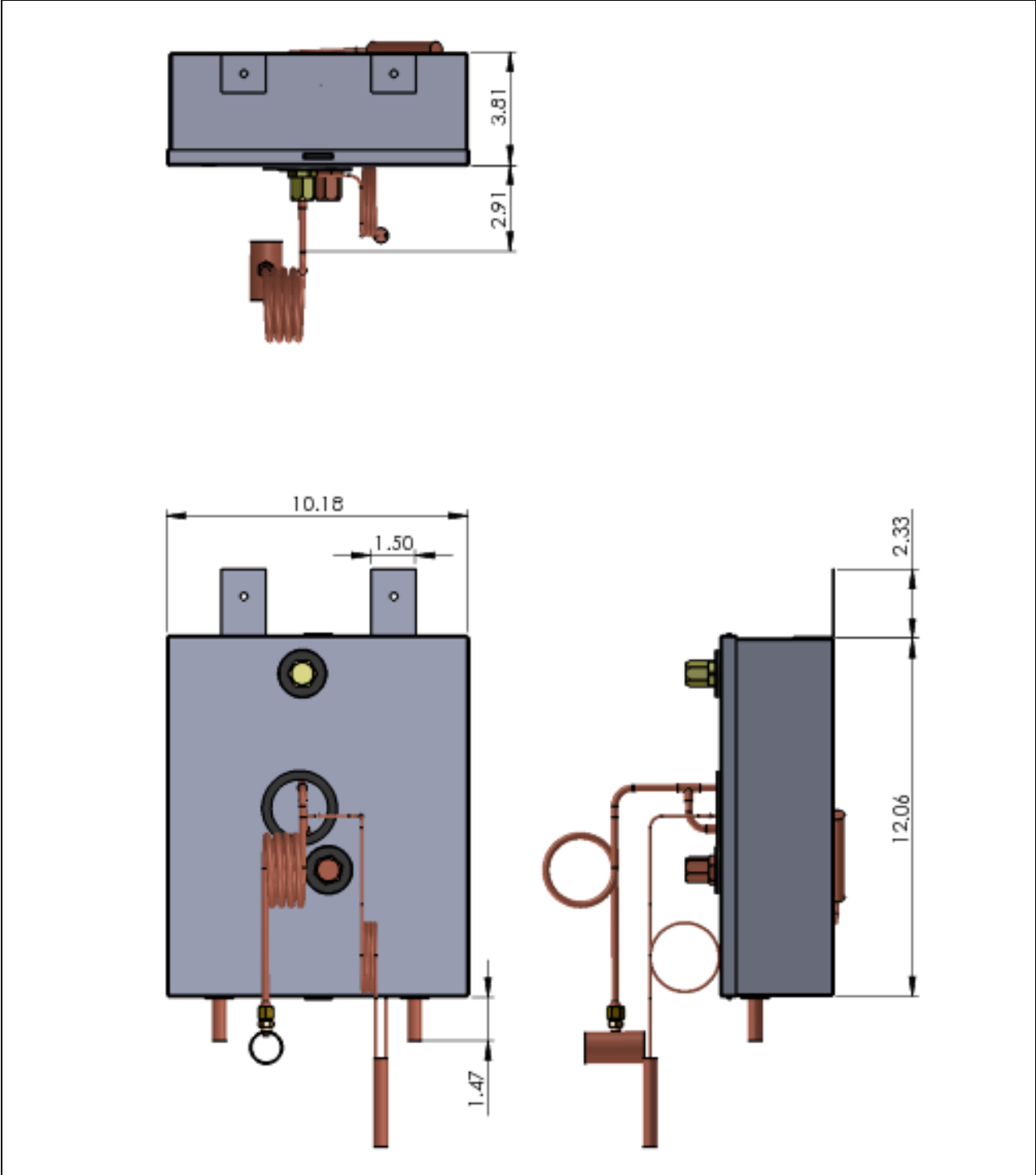


Figure 11c. TXV Control Box Dimensions

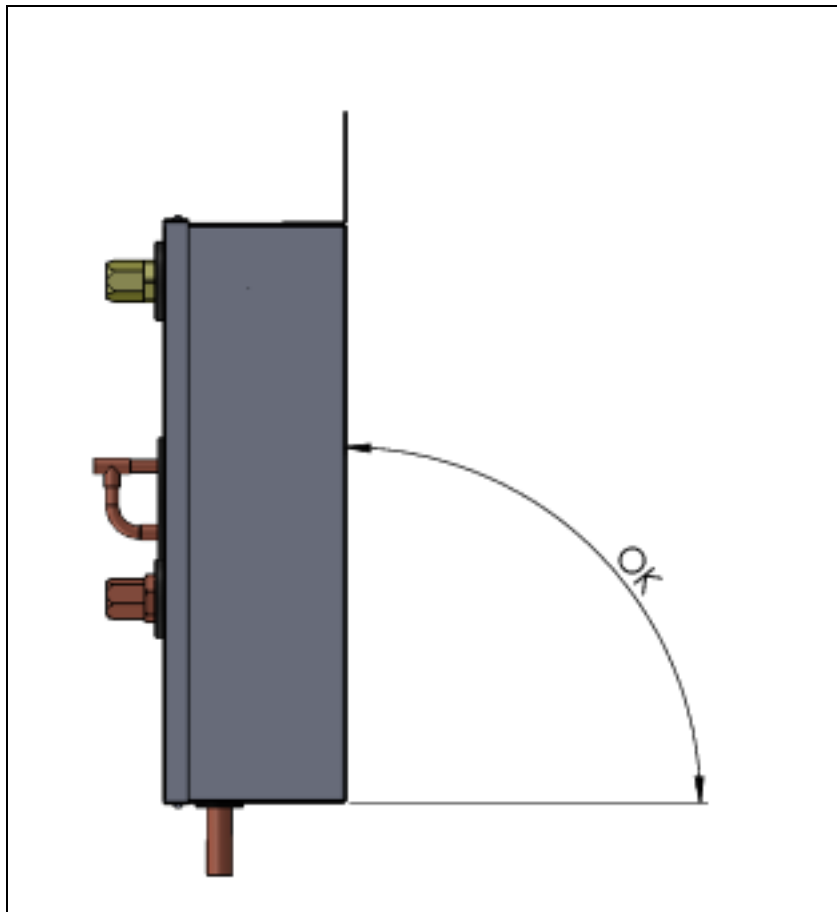


Figure 11d. TXV Control Box Mounting Positions

The following steps and positioning requirements apply to installing the TXV Control to the cased coil for vertical and horizontal applications. The vertical installation provides an illustrated example.

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 above the suction line stub out.**

Step 2: Position the Pressure Equalizer Tee on the suction tube at least 10 inches downstream from the 90° ell as shown in Figure 12. Remove the core from Schrader valve on the Tee.

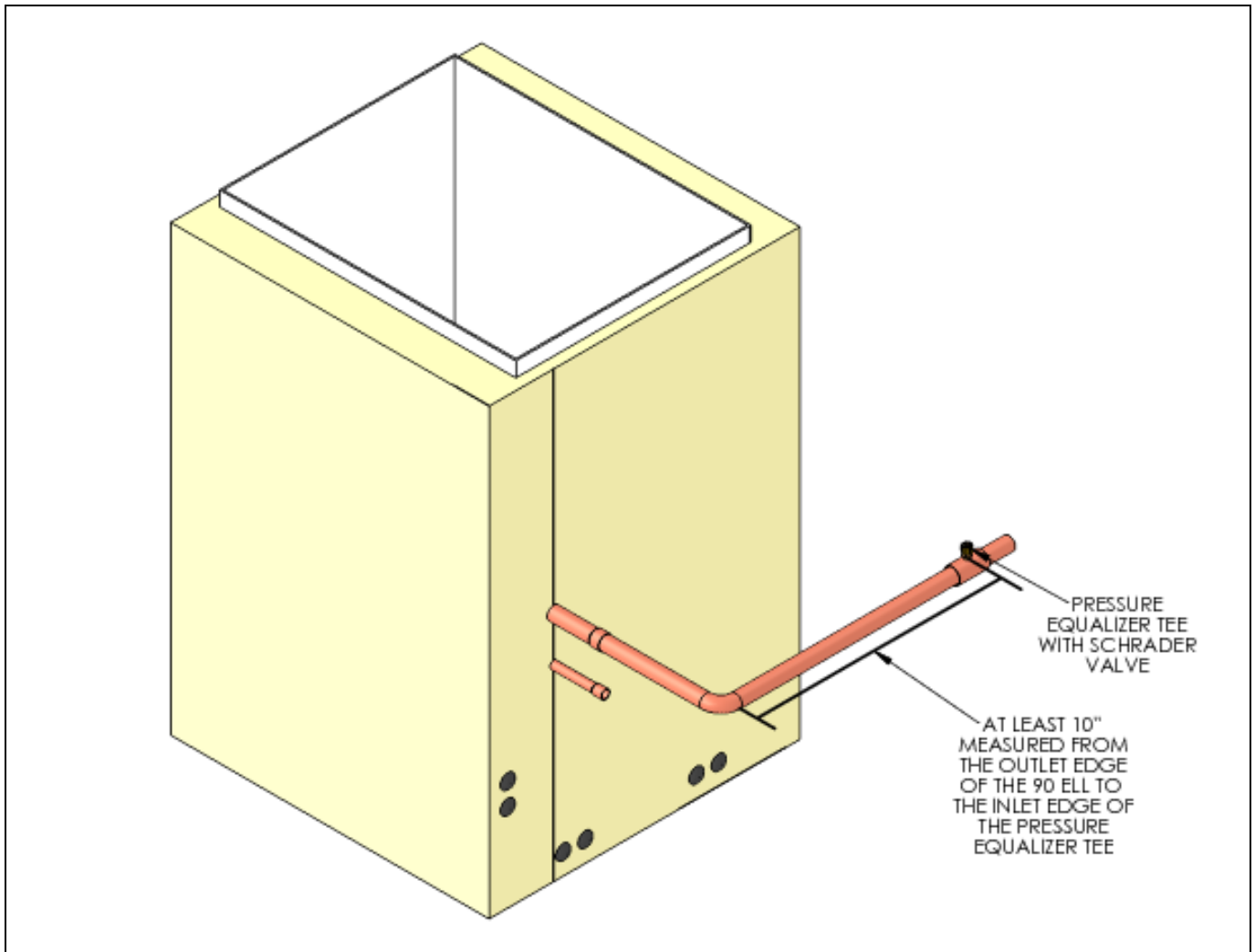


Figure 12. Positioning the Pressure Equalizer Tee

Step 3: The **Thermal Bulb must be positioned and** clamped to the suction tube as shown in the example illustrated in Figure 13. 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 13.

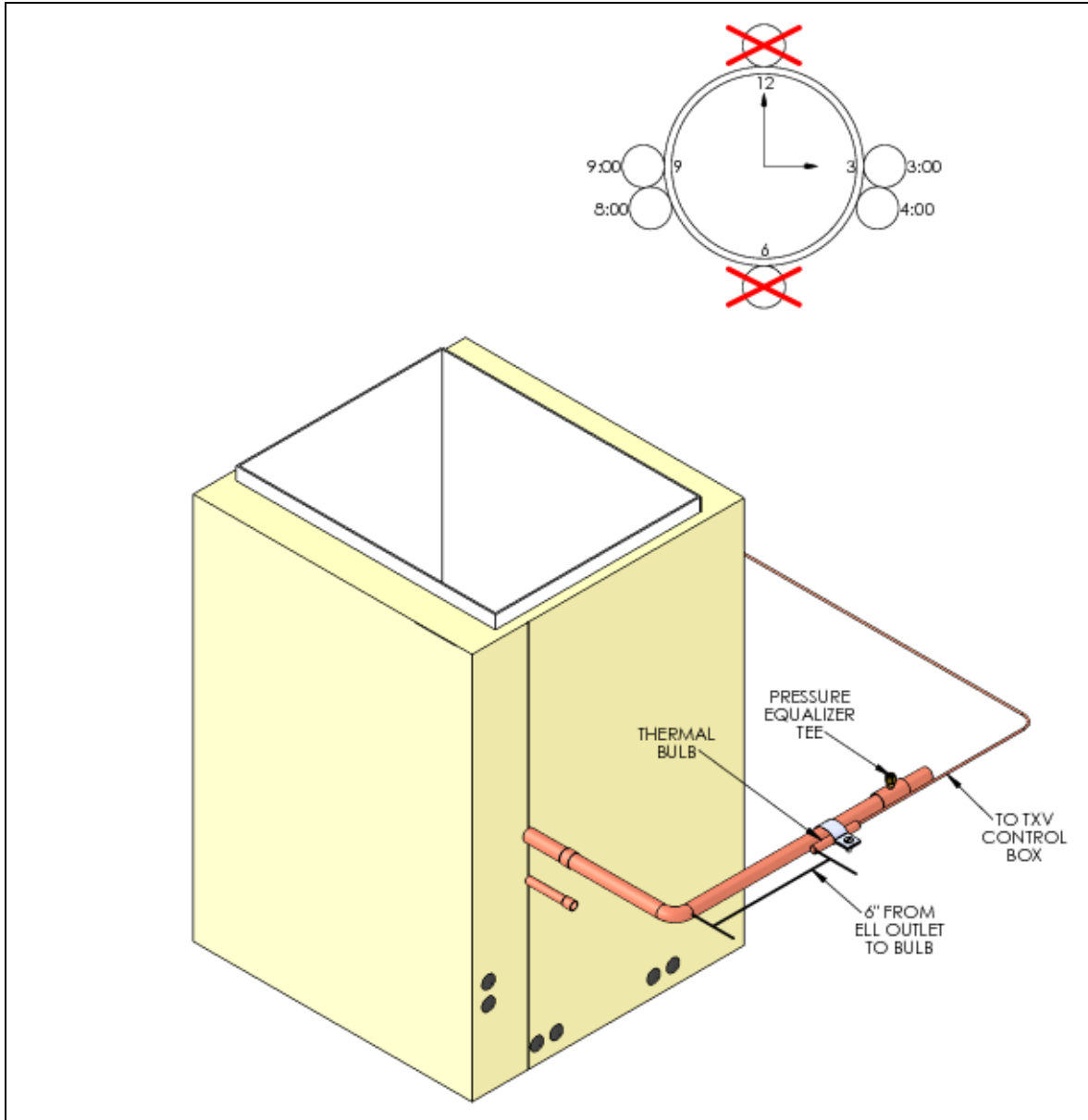


Figure 13. Thermal Bulb Positioning

Step 4: Clamp the thermal bulb firmly against the **clean suction tube** extension and parallel to it, as shown in Figure 14.

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 15.

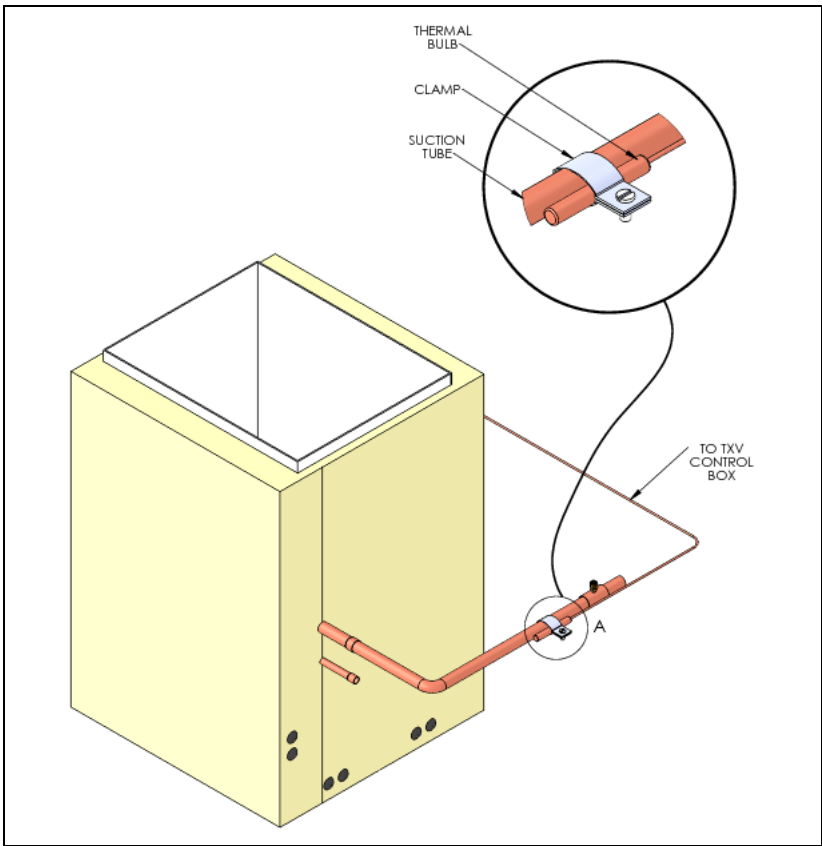


Figure 14. Clamping the Thermal Bulb

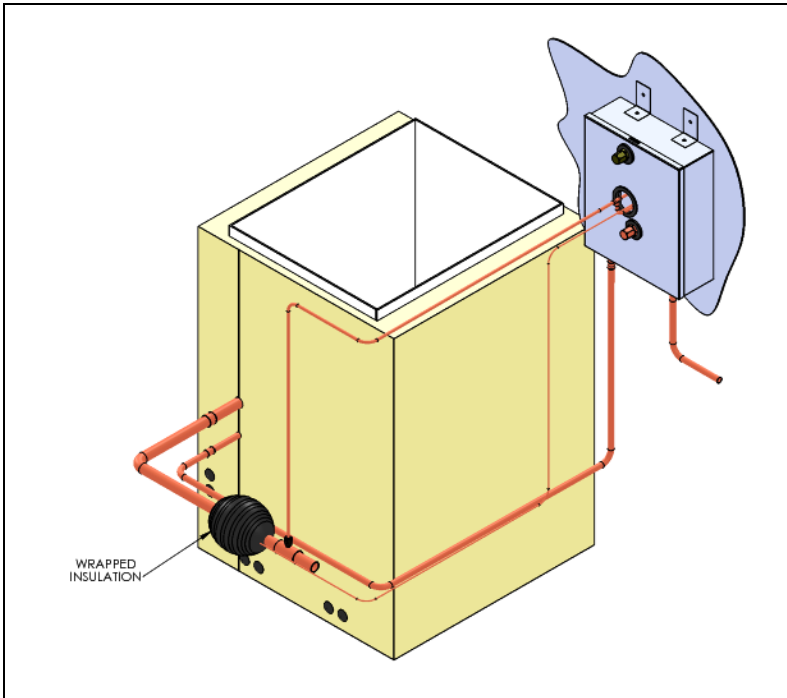


Figure 15. Insulating the Thermal Bulb

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 10 and 16. Run the other liquid line from the connection on the TXV control box to the compressor unit, also shown in Figure 16. Nitrogen braze the joints.

Step 6: Connect the pressure equalizer tube to the Schrader valve. Do not install the core. 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.**

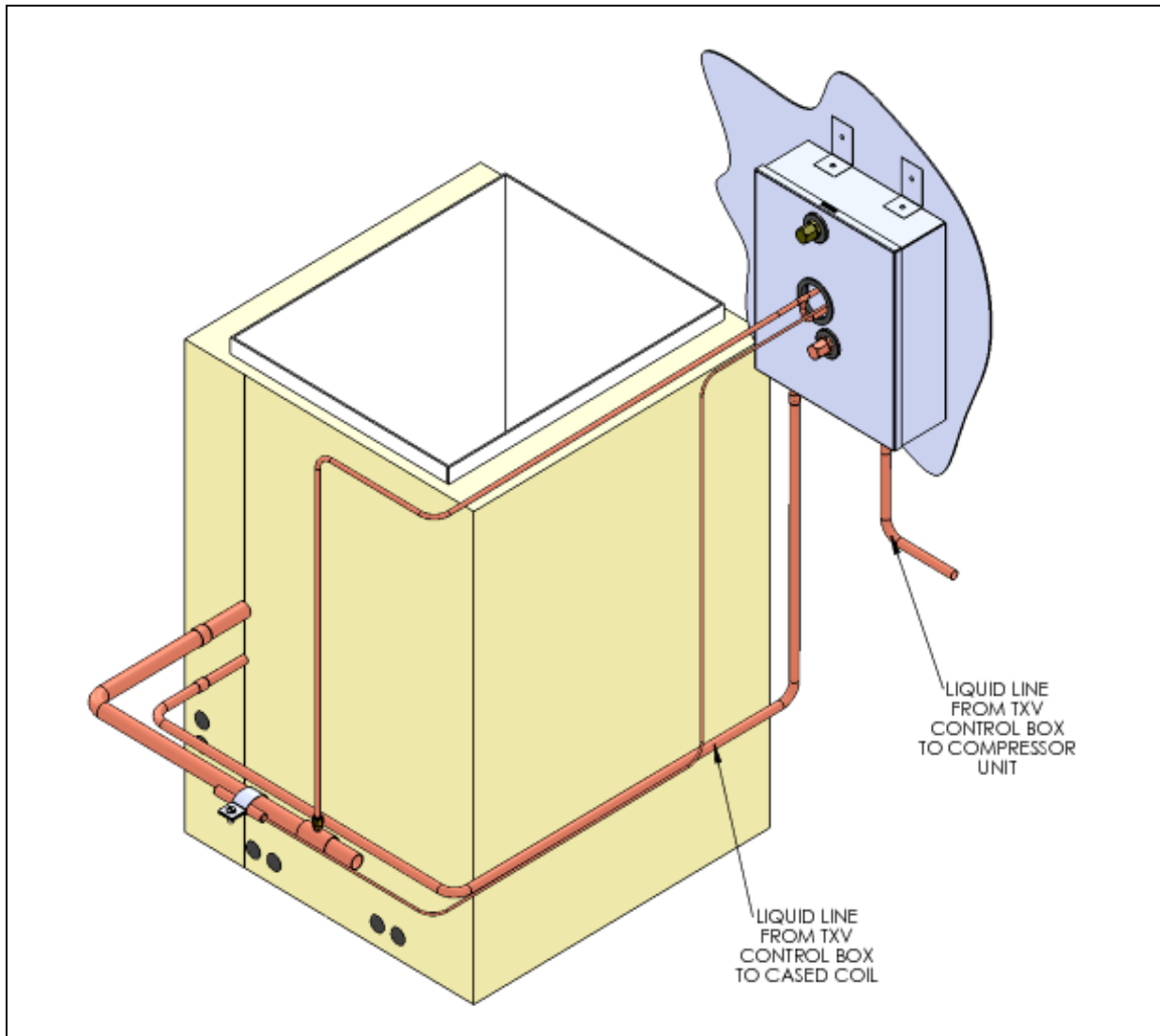


Figure 16. TXV Liquid Line Connections

TXV Kit Installation: Non-ETI Brand Air Handler or Cased Coil

Before ANY air handler or cased coil brand other than EarthLinked® can be utilized with an EarthLinked® heating and cooling system; the coil must meet the following requirements:



Important!

A TXV Kit installed on a NON-ETI brand air handler or cased coil must be pre-approved by ETI Technical Support and installed in accordance with the foregoing instructions for AVS and CCS Series products, and the instructions that follow.

For an air handler or cased coil to qualify for conversion and use with an EarthLinked® system, the ACR copper feeder tubes must be at least 0.144 inches OD, and 0.1875 inches OD (3/16") is preferable.

If the ACR copper feeder tubes are smaller OD, the coil should not be considered for use with the EarthLinked® system.

Any air handler or cased coil used in an EarthLinked® system should deliver 400 cfm per nominal ton of capacity. Lower air flow will negatively impact system performance.



Important!

A TXV Kit installed on a Non-ETI brand air handler or cased coil must be pre-approved by ETI and installed in accordance with the foregoing instructions for ETI Classic and Prime Series products.

Other brands of air handlers and cased coils can be utilized successfully with the EarthLinked® system if they meet the above criteria, and are converted in the field, in accordance with the following procedure:

Thermostatic Expansion Valve (TXV)

If the air handler or cased coil is equipped with a TXV, **the TXV must be removed** so the liquid refrigerant flows unrestricted and directly to the distributor. The distributor is modified as described below.

Orifice Metering Device

If the air handler or cased coil has an orifice metering device in the distributor, **the orifice metering device must be removed.** The distributor is modified as described below.

Distributor Modification

With the TXV (or the orifice) removed, the remaining shoulder in the distributor must be removed to reduce pressure drop. The shoulder is drilled out.

For system capacities of 1.5 to 3.0 Tons, drill the distributor out using a 5/16" drill bit.

For system capacities of 3.5 to 6.0 Tons, drill the distributor out using a 3/8" drill bit.

Do not allow drilled cuttings or debris to fall into the distributor or the feeder tubes.

Distributor and Feeder Tubes Orientation

After modifying the distributor as described above, the distributor and feeder tubes are to be carefully oriented so that **the distributor is vertically upward or downward** for the final orientation (vertical or horizontal) of the air handler or cased coil. This is illustrated in Figure 17. When orienting the distributor and the feeder tubes, make changes carefully to avoid kinking the feeder tubes. The feeder tubes should have smooth, large radius bends to avoid refrigerant flow restrictions.

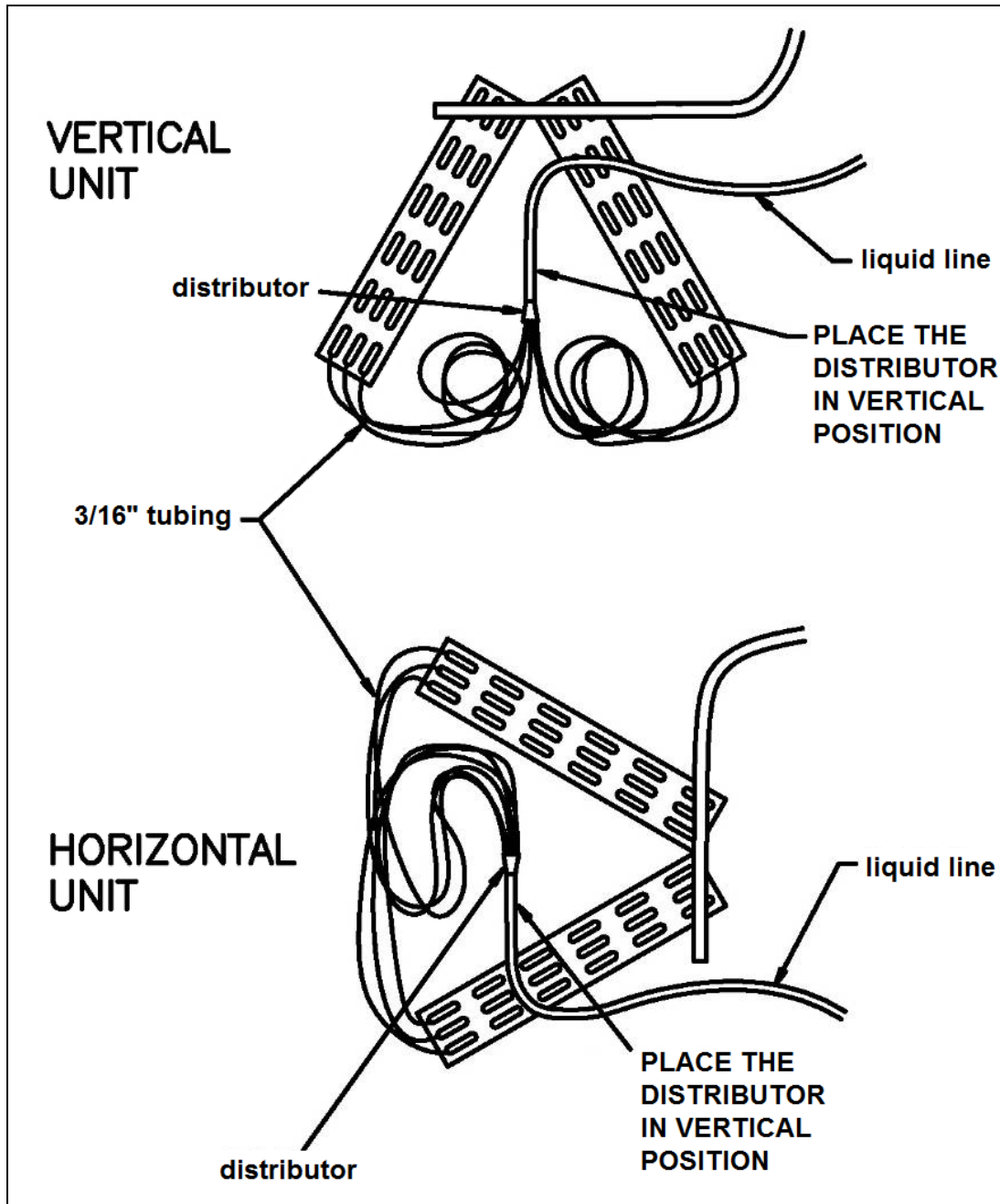


Figure 17. Typical Air Handler/Cased Coil After Conversion