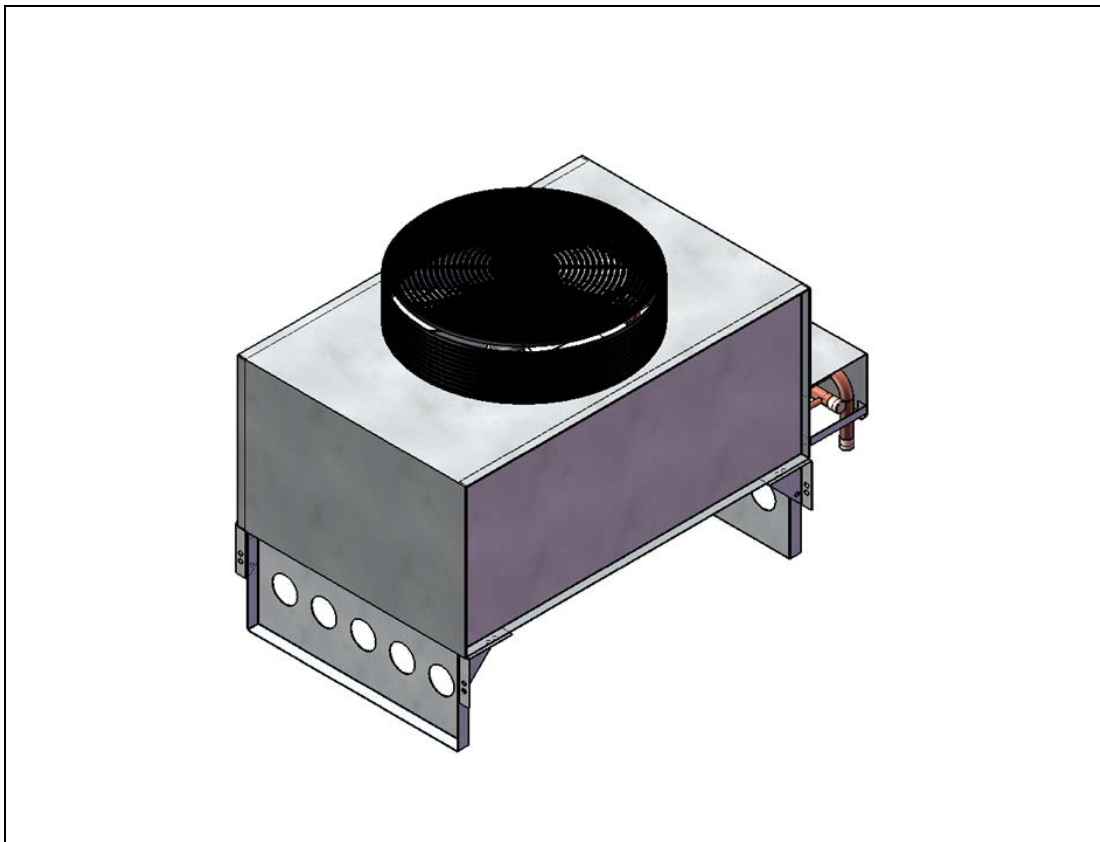




EARTH LINKED
TECHNOLOGIES

EarthLinked®
Auxiliary Cooling Module
Models ACMH-1836C and ACMH-4272C
for R-410A
Installation Manual

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Disclaimer

The EarthLinked® Auxiliary Cooling Module is sold as a system component part and must be properly sized and matched to the system compressor unit to provide the intended performance and safe operation of the system. This component must be installed and serviced by a trained technician who has successfully completed the ETI training class and passed the final examination. Installation and service must be made in accordance with the instructions set forth within 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 EarthLinked® 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 other components in the EarthLinked® system.

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1. Pre-Installation

This EarthLinked® Auxiliary Cooling Module (ACM) is approved for use with EarthLinked® space heating and cooling systems utilizing Series SC, SD, and SCW compressor units operating with R-410A refrigerant.

This Auxiliary Cooling Module is sold as a system component and must be properly matched with the compressor unit to provide the anticipated performance and safe operation of the system. The table below lists the properly matched EarthLinked® Auxiliary Cooling Module models with EarthLinked® compressor unit models.

Application of the Auxiliary Cooling Module (ACM) to EarthLinked® systems will require the use of two (2) field supplied Type ACR copper couplings to match the ACM with the line set vapor tube size. See the table below to determine the required coupling sizes.

COMPRESSOR UNIT SERIES SC, SD, SCW			
Compressor Unit Model	Auxiliary Cooling Module		Vapor Line Set Size, OD, in.
	Model	Connections OD, In.	R-410A
-024	ACMH-1836C	7/8	5/8
-036			3/4
-048	ACMH-4272C	1-1/8	7/8
-060			7/8
-068			1-1/8



WARNING

Before installing this Auxiliary Cooling Module (ACM), be sure that all electrical power to the Earthlinked® system is "OFF". 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.



WARNING

Inhalation of high concentrations of refrigerant gas vapor is harmful and may cause heart irregularities, unconsciousness or death. Vapor reduces oxygen available for breathing and is heavier than air. Decomposition products are hazardous. Liquid contact can cause frostbite. Avoid contact of liquid with eyes and prolonged skin exposure. Liquid and gas are under pressure. Deliberate inhalation of refrigerant gas is extremely dangerous. Asphyxiation can occur without warning due to lack of oxygen. Before working with a refrigerant, read the Materials Safety Data Sheet for that specific refrigerant.

The dimensions and electrical data for the Auxiliary Cooling Module is shown in Figure 1.

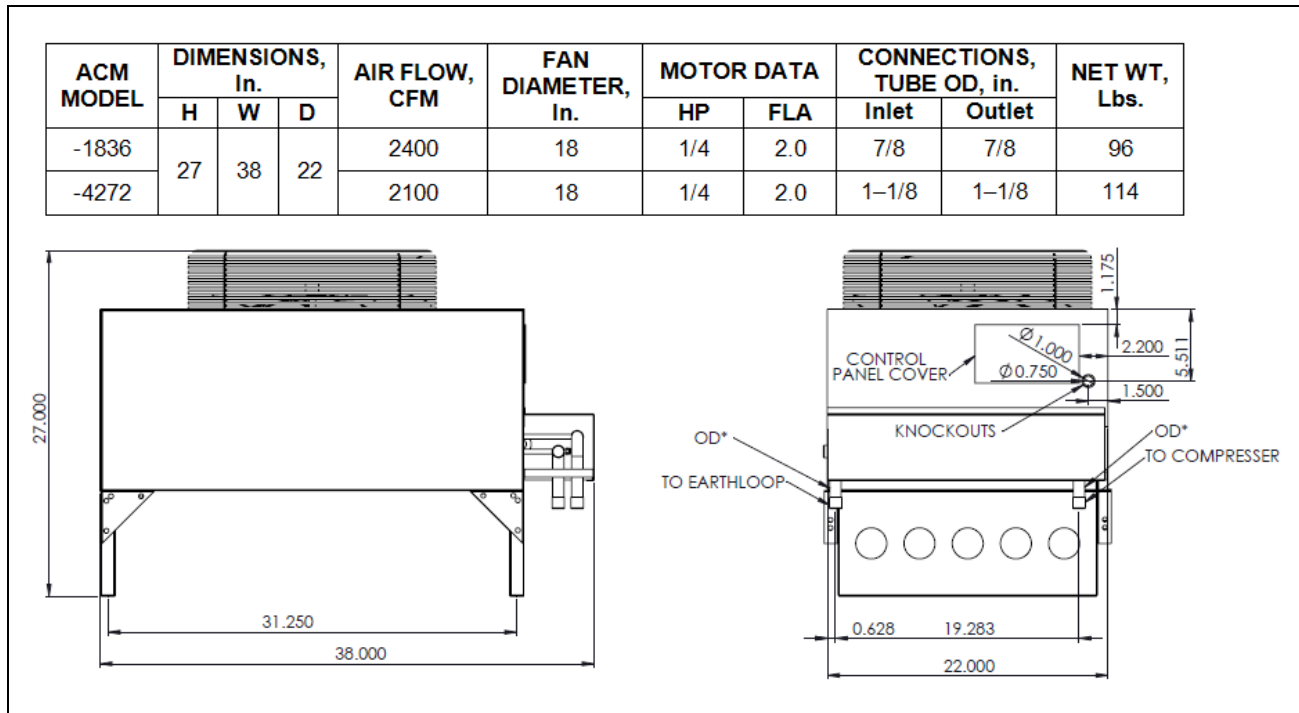


Figure 1. Auxiliary Cooling Module Dimensions and Electrical

2. Installation – Auxiliary Cooling Module Placement

The Auxiliary Cooling Module unit is placed as shown in Figure 2 relative to other components in the EarthLinked® system. **The Auxiliary Cooling Module is located outdoors and will be connected to the refrigerant line set (vapor tube) outside the building.**

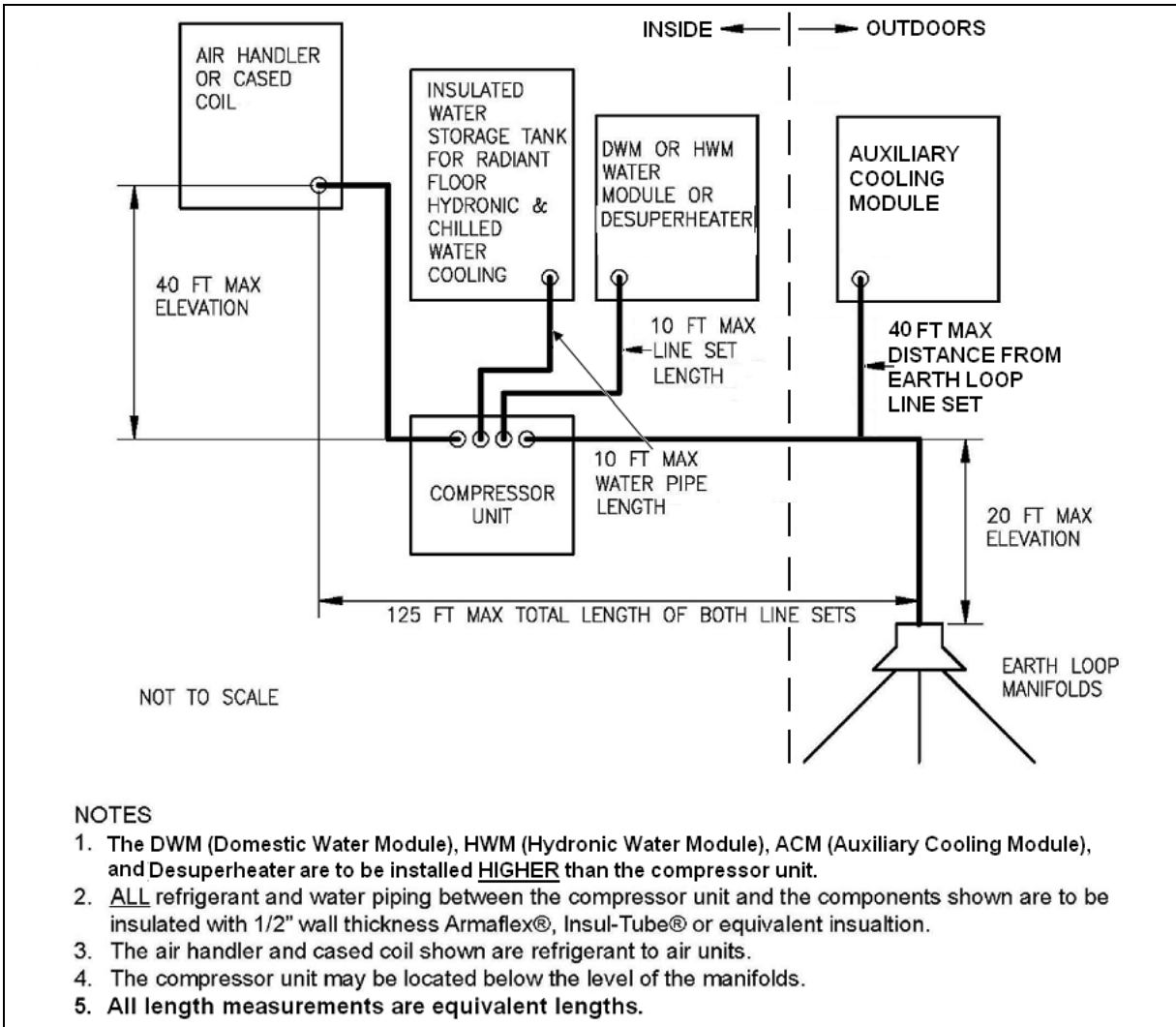


Figure 2. Auxiliary Cooling Module Placement in EarthLinked® System

Location Requirements for the Auxiliary Cooling Module:

1. Within 40 Feet of the earth loop line set. Minimize refrigerant line lengths.
2. Higher than the compressor unit.
3. No more than 20 feet higher than the earth loop manifolds.
4. With proper clearances around the unit:
 - 48 inches minimum on top
 - 22 inches minimum on the three sides
 - 24 inches minimum on the service side
5. Away from windows, patios, decks, etc., where unit operation sounds may disturb the occupants.

6. On a solid, level mounting slab. The mounting slab should extend a minimum of 2 inches beyond the sides of the Auxiliary Cooling Module (40 x 24 inches minimum). To reduce the possibility of noise transmission, the mounting slab should NOT be in contact with or be an integral part of the building foundation.
7. Where conditions or local codes require the Auxiliary Cooling Module to be attached to a mounting pad or frame, tie down bolts should be used to fasten through the holes provided in the Auxiliary Cooling Module legs.
8. Elevate the Auxiliary Cooling Module per local climate and code requirements to provide clearance above estimated snowfall level and ensure adequate water drainage of Auxiliary Cooling Module. Use snow stand in areas where prolonged freezing temperatures are encountered.

Do NOT Locate the Auxiliary Cooling Module:

1. On brick, concrete blocks or unstable surfaces
2. Near clothes dryer exhaust vents
3. Near sleeping area or near windows
4. Under eaves where water, snow or ice can fall directly in the unit
5. Within clearance less than 2 Feet from a second unit
6. Within clearance less than 4 Feet on top of unit
7. Within the minimum distance the Auxiliary Cooling Module can be installed from the property line, where local zoning ordinances apply.

3. Installation – Leg Assembly

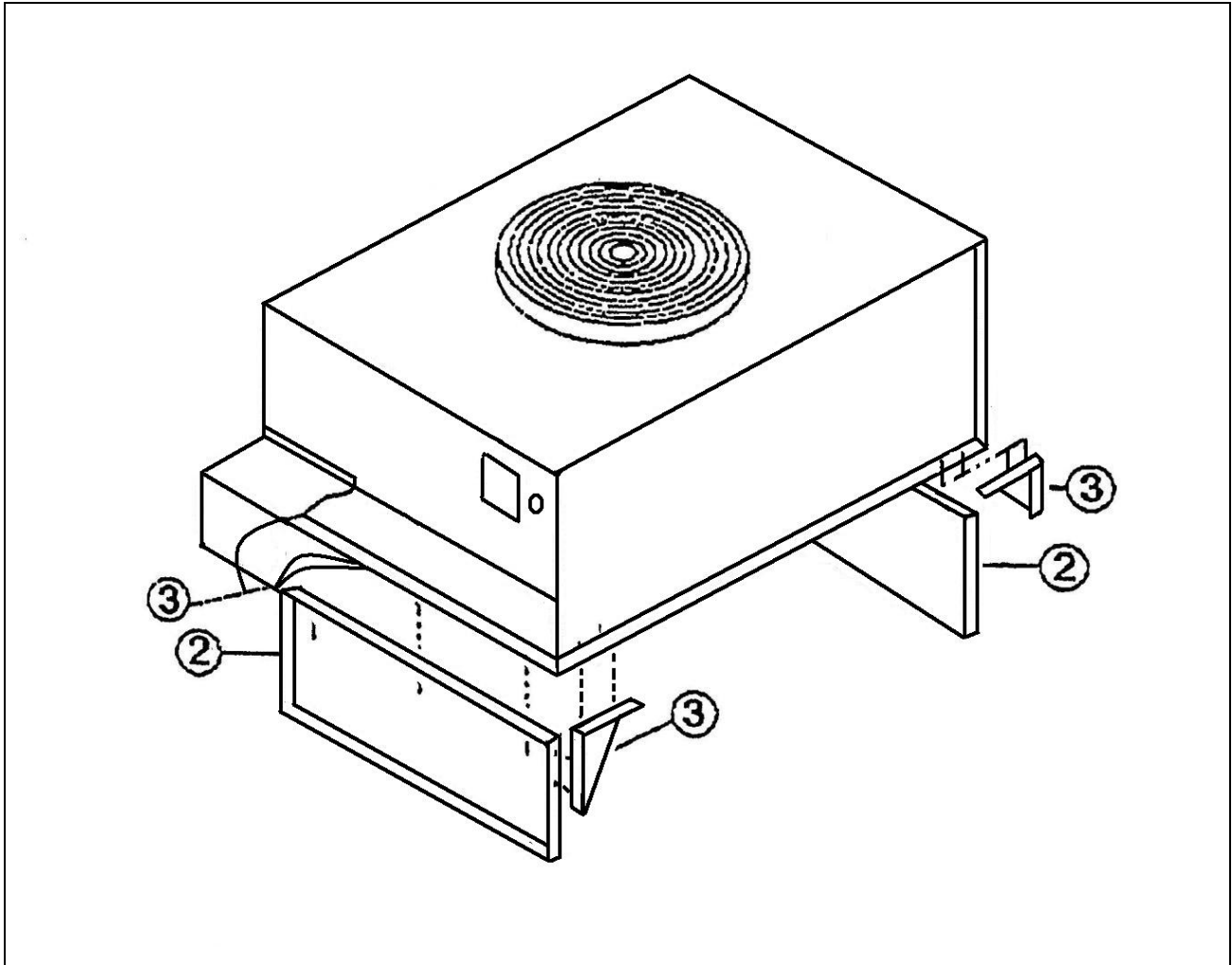


Figure 3. Leg Assembly

1. Assemble the two legs, item 2 as shown in Figure 3, to the ACM, using three each 1/4 – 20x3/4” long bolts per leg. Captive nuts are provided on unit for this assembly.
2. Four gussets, item 3, are provided for leg support as shown in Figure 3.
3. Assemble the gusset in each corner with 1/4 – 20x3/4” long bolts and 1/4” nuts.

4. Installation – Refrigerant Connections

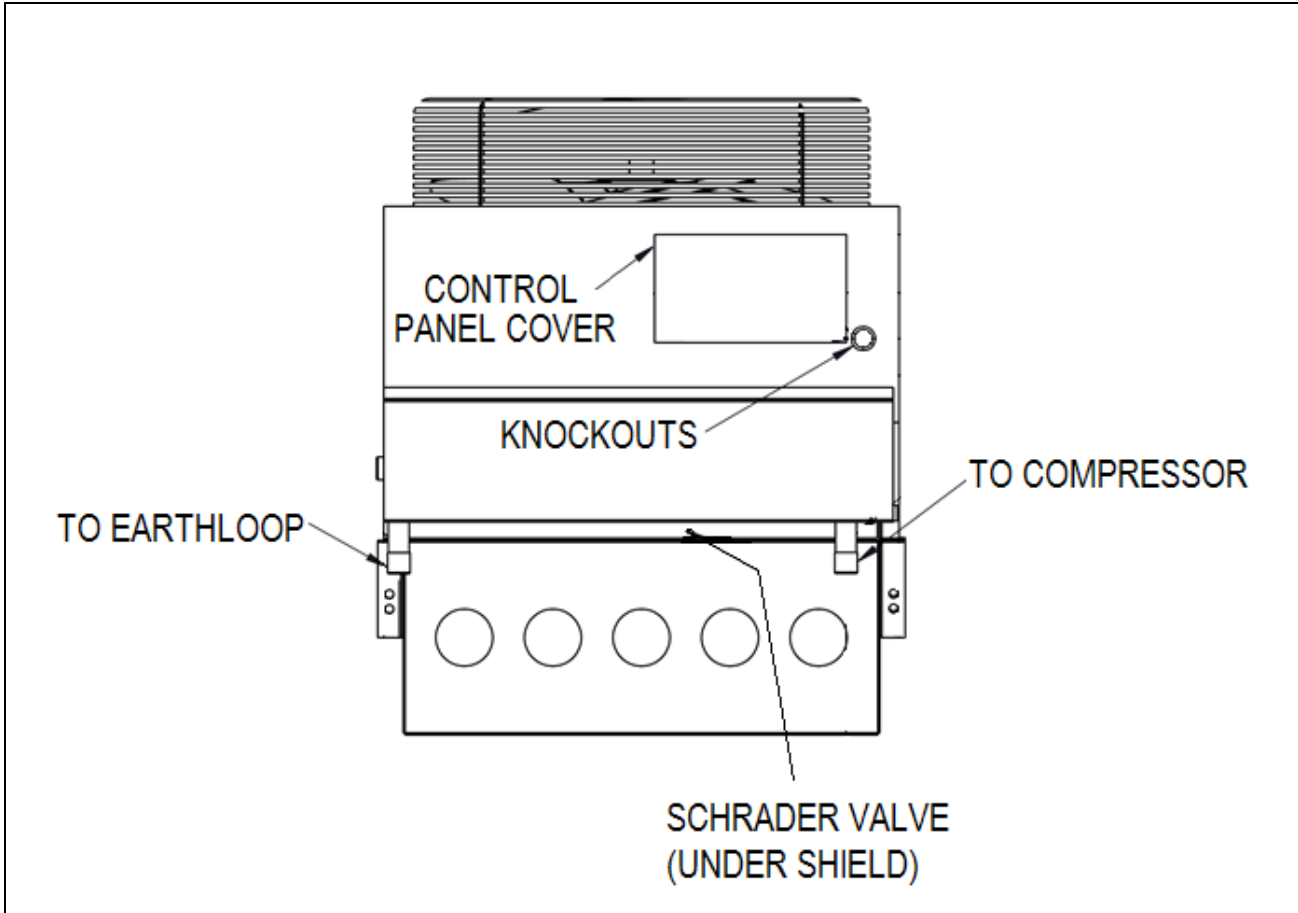


Figure 4. Auxiliary Cooling Module Refrigerant Connections

The Auxiliary Cooling Module has two refrigerant connections on the service side of the unit as shown in Figure 4. The connections are the same size as each other. Each connection is identified with a label saying “To compressor” or “To earth loops”. Check Figure 4 and the table on page 3 to determine coupling sizes to match the line set vapor tube size.



IMPORTANT

The Auxiliary Cooling Module has a factory charge of dry nitrogen at approximately 35psig. Relieve the nitrogen from the system by means of the Schrader valve located on the ACM refrigerant manifold illustrated in Figure 4.

The refrigerant connections have caps brazed on at the factory. They should be un-brazed at the time that tubing is to be connected to the Auxiliary Cooling Module.

After locating the Auxiliary Cooling Module as noted earlier, a trench 3 to 4 Feet deep is to be excavated running from the Auxiliary Cooling Module to the earth loop line set. If the lines to and from the Auxiliary Cooling Module are to be run parallel to and within 10 Feet of the building foundation or basement wall, both lines are to be insulated with ½” wall thickness Armaflex® or InsulTube® tubing insulation, cased within a 4” PVC pipe. The PVC pipe must be a minimum of 3 Feet from the building foundation or wall. This is illustrated for a typical application in Figure 5.

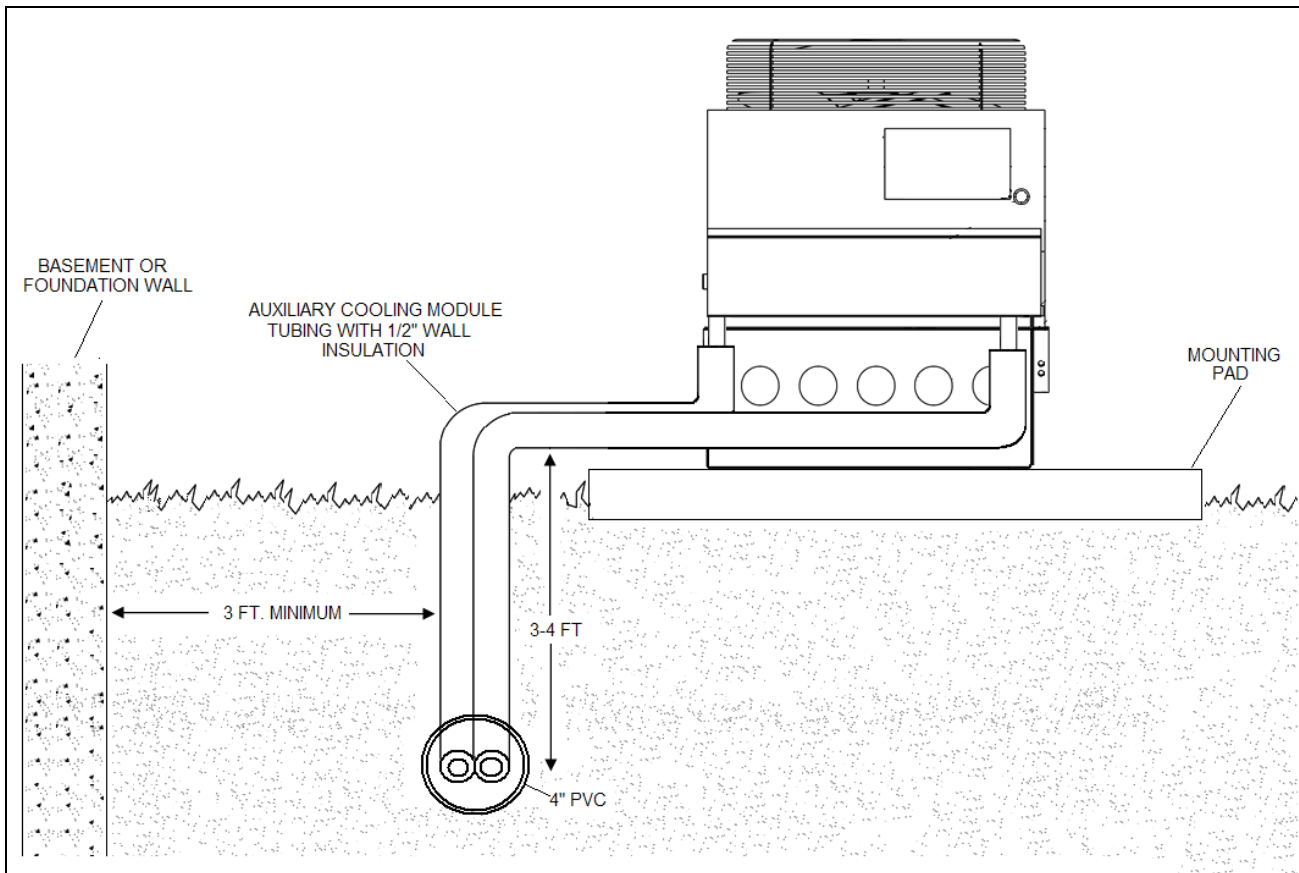


Figure 5. Auxiliary Cooling Module Refrigerant Piping

A top view of typical Auxiliary Cooling Module and line set vapor line connections are illustrated in Figure 6. For new installations of an EarthLinked system with an ACM, an alternate method to the one shown in Figure 6 is to run a single piece vapor line from the compressor unit to the ACM and another single piece vapor line from the ACM to the vapor manifold of the earth loop system.

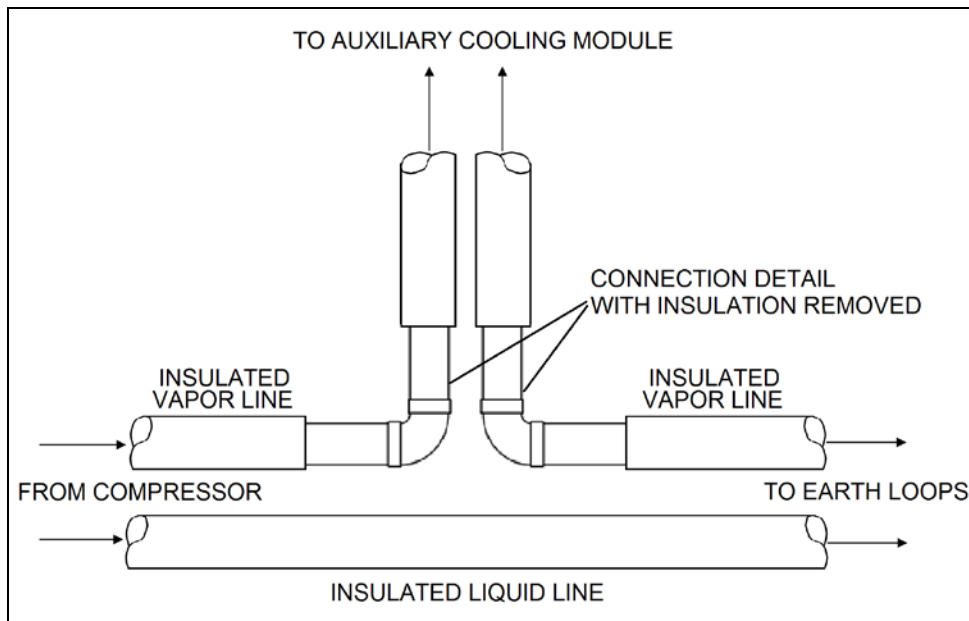


Figure 6. Top View of Line Set Connections

All refrigerant piping joints and connections in the EarthLinked® heating and cooling system, including the Auxiliary Cooling Module, line sets and earth loop system are to be brazed with 15% silver content brazing alloy, utilizing the **NITROGEN BRAZING PROCESS**.



IMPORTANT!

NITROGEN BRAZING PROCESS

PURPOSE:

Utilize the **NITROGEN BRAZING PROCESS** on all brazed refrigerant piping connections. This process eliminates oxidation products from inside joint surfaces.

TECHNIQUE:

“Trickle” nitrogen gas at 1-2 psi pressure through the joint area being brazed to displace the oxygen. When oxygen has been displaced, the flow of nitrogen can be terminated.

CONSEQUENCES:

Failure to displace oxygen with nitrogen at the brazed joint will result in particulate matter being released into the system. The result is discoloration of refrigerant oil, contamination of the system and possible system failure.

5. Installation – Electrical and Start-Up



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.

1. After turning "OFF" power to all EarthLinked® and field supplied system components at the appropriate breakers **remove the front and top panels of the compressor unit cabinet.**
2. Reference Figure 7 for compressor unit electrical box. Remove available hole covers from the front of the electrical box.

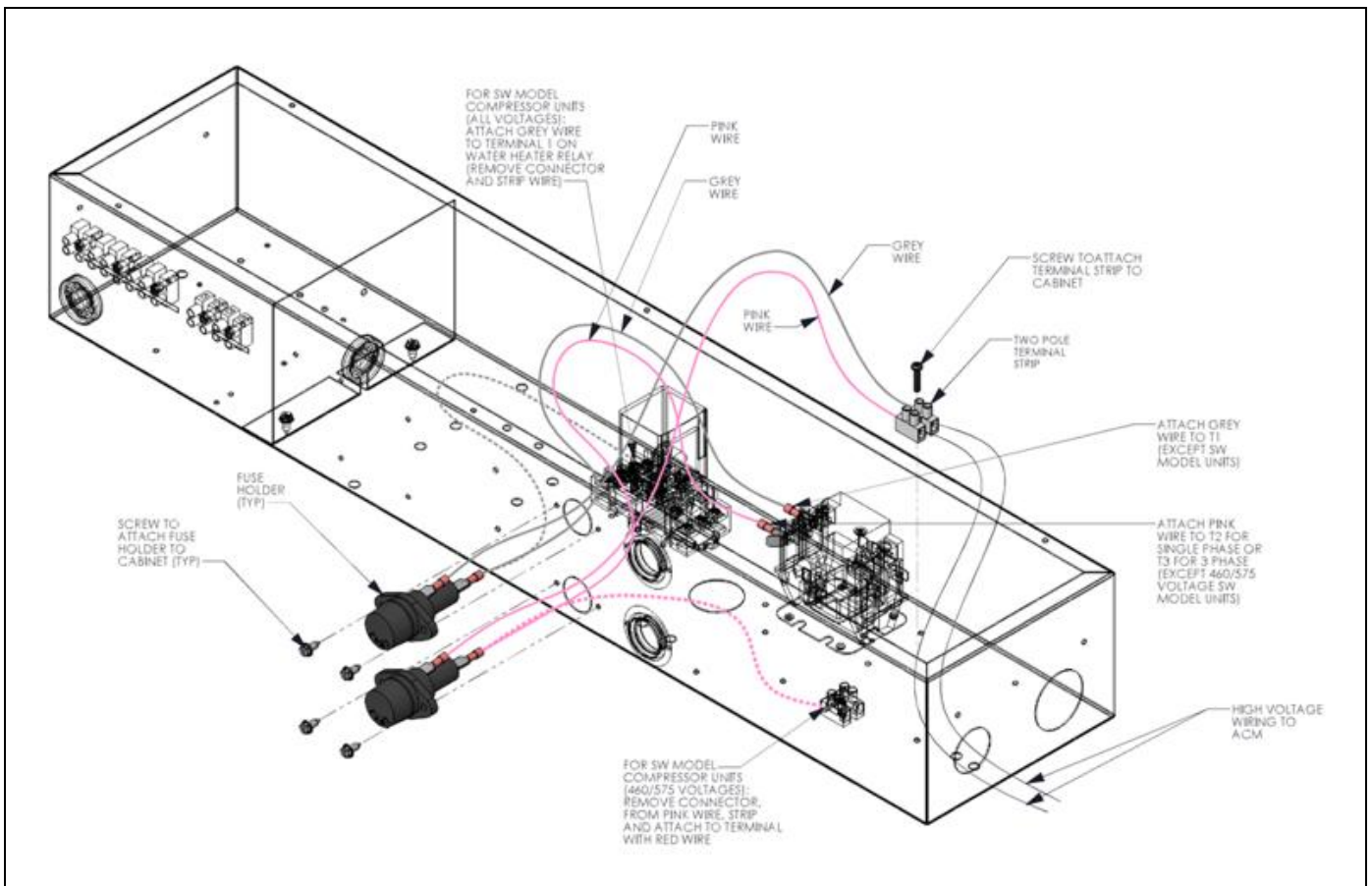


Figure 7. Compressor Unit Electrical Box

3. Install fuse holders into existing fuse holes with screws provided. Install fuses in fuse holders.

4. Install two-pole terminal strip inside electrical box and fasten into existing hole with screw provided.
5. Attach pink wire with piggyback connector onto “T2” (for single phase) or “T3” (for three phase) on the compressor contractor and the other connector to the center terminal of the bottom fuse holder.



IMPORTANT

USE PIGGY BACK TO REATTACH WIRES IF NO TABS ARE AVAILABLE FOR INSTALLING KIT.



CAUTION

DO NOT REMOVE CLIP BY PULLING ON WIRE.

DO NOT ALLOW PIGGY BACK CLIP TO TOUCH OTHER TERMINALS.

6. Attach the gray wire with the piggy back connector onto “L1” on the compressor contactor, and the other connector to the center terminal of the top fuse holder.
7. Attach the pink wire with connector to the collar connection of the bottom fuse holder, and tighten the terminal screw of the terminal block onto the stripped end of the pink wire.
8. Attach the gray wire with connector to the collar of the top fuse holder, and tighten the other terminal screw of the terminal block onto the stripped end of the gray wire.
9. Run high voltage wiring from the two-pole terminal strip in the electrical box out of the grommeted end hole of the electrical box and through the conduit connection of the compressor cabinet, to the Disconnect shown in Figure 8, and from the Disconnect to the Auxiliary Cooling Module, using flexible conduit.
10. After running the power wiring in flexible conduit to the Auxiliary Cooling Module, remove the Auxiliary Cooling Module electric box cover.



WARNING

The Auxiliary Cooling Module cabinet must have an unbroken ground. The ground must be installed in accordance with applicable electrical codes. Failure to follow this warning can result in injury, fire or death.

11. The Auxiliary Cooling Module control box contains a Ranco pressure control that has been factory set to energize the Auxiliary Cooling Module at a predetermined compressor discharge pressure.

DO NOT ATTEMPT TO ADJUST THIS CONTROL!

Figure 8 illustrates the electrical connections that are to be made at the ACM electric box with the two high voltage leads from the compressor unit.

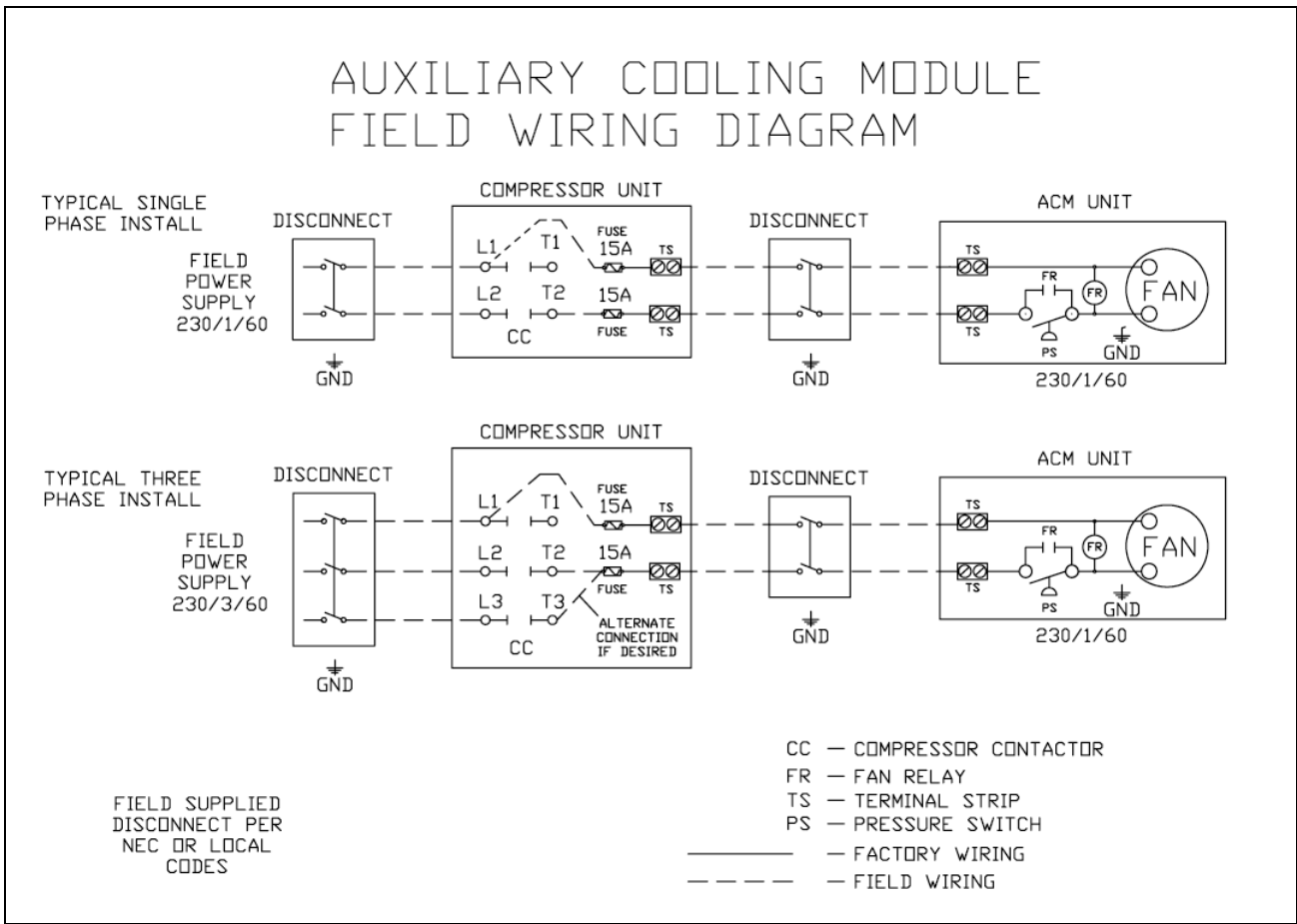


Figure 8. Auxiliary Cooling Module Field Wiring

12. **Check all wiring and electrical connections to ensure proper routing and good contact** before restoring electric power, evacuating and recharging system in accordance with the appropriate EarthLinked® system Installation Manual.