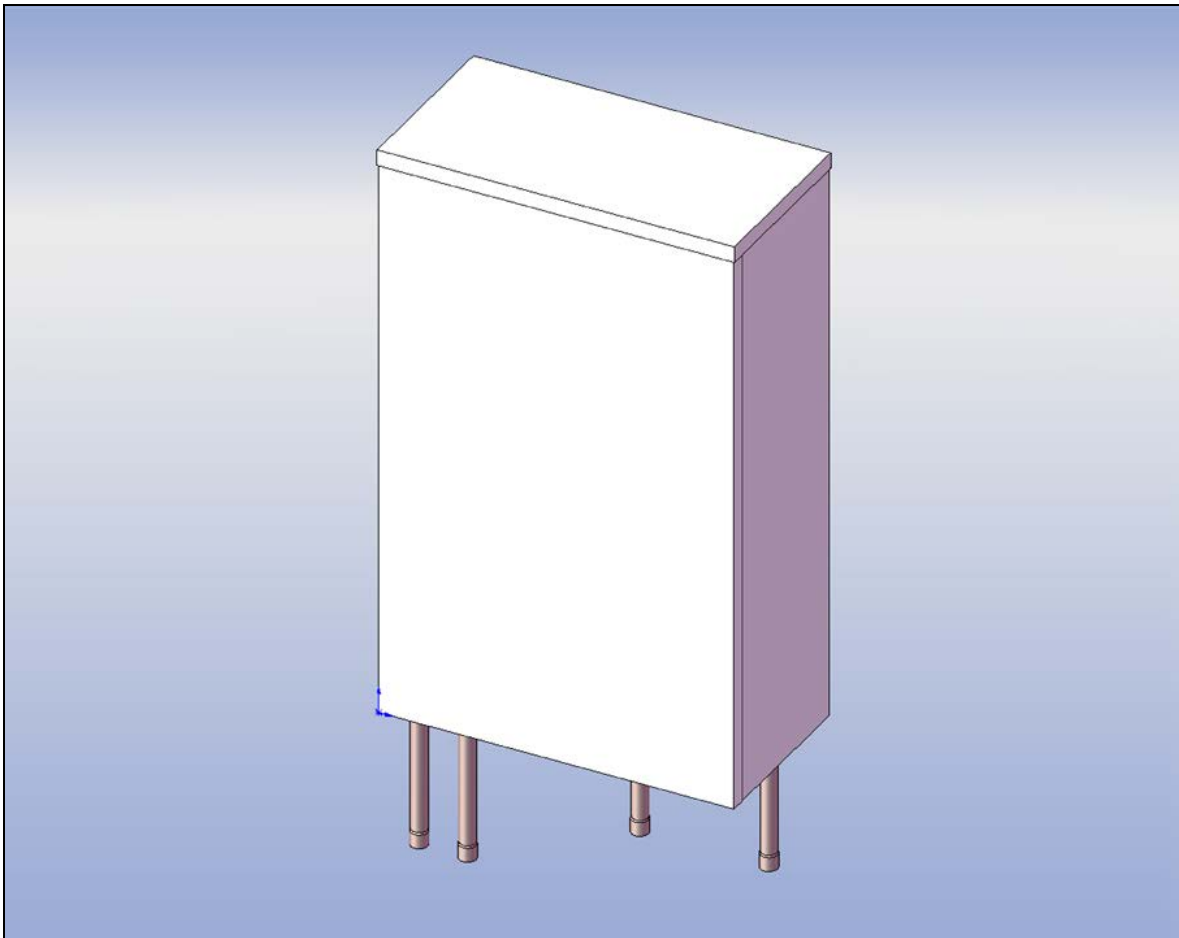




**EARTHLINKED**  
TECHNOLOGIES

**EarthLinked<sup>®</sup>**  
**Model DSH-1872 Desuperheater Kit**  
*for*  
**SC and CC Compressor Units**

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### **Disclaimer**

Proper installation and servicing of this EarthLinked® Kit is essential to the Heating and Cooling Systems reliable performance. All EarthLinked® systems and kits must be installed and serviced by an authorized, trained technician who has successfully completed the training class and passed the final examination. 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, trained installer in a manner consistent with this manual will nullify 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

## Desuperheater Kit Information

### For SC Compressor Units:

The field installed ETI Desuperheater Kit Model DSH-1872 equips the SC Series Compressor Unit **with supplemental water heating capability during (1) heating and cooling mode operation or (2) cooling mode operation for the ETI Heating and Cooling System.**



#### IMPORTANT

**The desuperheater does not replace the storage water heater specified for the application.**

Use of the desuperheater to heat water during the heating season will increase the heating load on the space heating equipment by 2,000 BTUH for each adult and teenager occupant.

### For CC Compressor Units:

The field installed ETI Desuperheater Kit Model DSH-1872 equips the CC Series Compressor Unit **with supplemental water heating capability during cooling mode operation.**



#### IMPORTANT

**The desuperheater does not replace the storage water heater specified for the application.**

### For SC and CC Compressor Units:



#### CAUTION

**The desuperheater and all associated water piping must be freeze protected for the field specific application. The ambient temperature surrounding the desuperheater and associated water piping must be at least 40°F. Failure to provide freeze protection may result in equipment and property damage.**

Typical water piping installed with an existing or new standard storage water heater is illustrated in Figure 1.

Water piping for the desuperheater installed with an ETI Model GSTE Storage Water Heater is illustrated in Figure 2. The GSTE Series Storage Water Heater is available in 60, 80 and 119 gallon capacities with water piping connections built into the top of the storage water heater specifically for use with the desuperheater. All GSTE Series models are equipped with a 4.5 kW electric heater and provide the following hot water recovery rates in gallons per hour, for a range of water temperature increases, in degrees Fahrenheit.

$\Delta T$	30	40	50	60	70	80	90
GPH	62	46	37	31	26	23	21

\* $\Delta T$  in °F; GPH in U.S. Gallons per hour.

Field wiring for the DSH-1872 Kit applied to the SC Compressor Unit is illustrated in Figure 3a for water heating during (1) heating and cooling system operation and (2) cooling system operation only.

Field wiring DSH-1872 Kit applied to the CC Compressor Unit is illustrated in Figure 3b for water heating during cooling system operation.

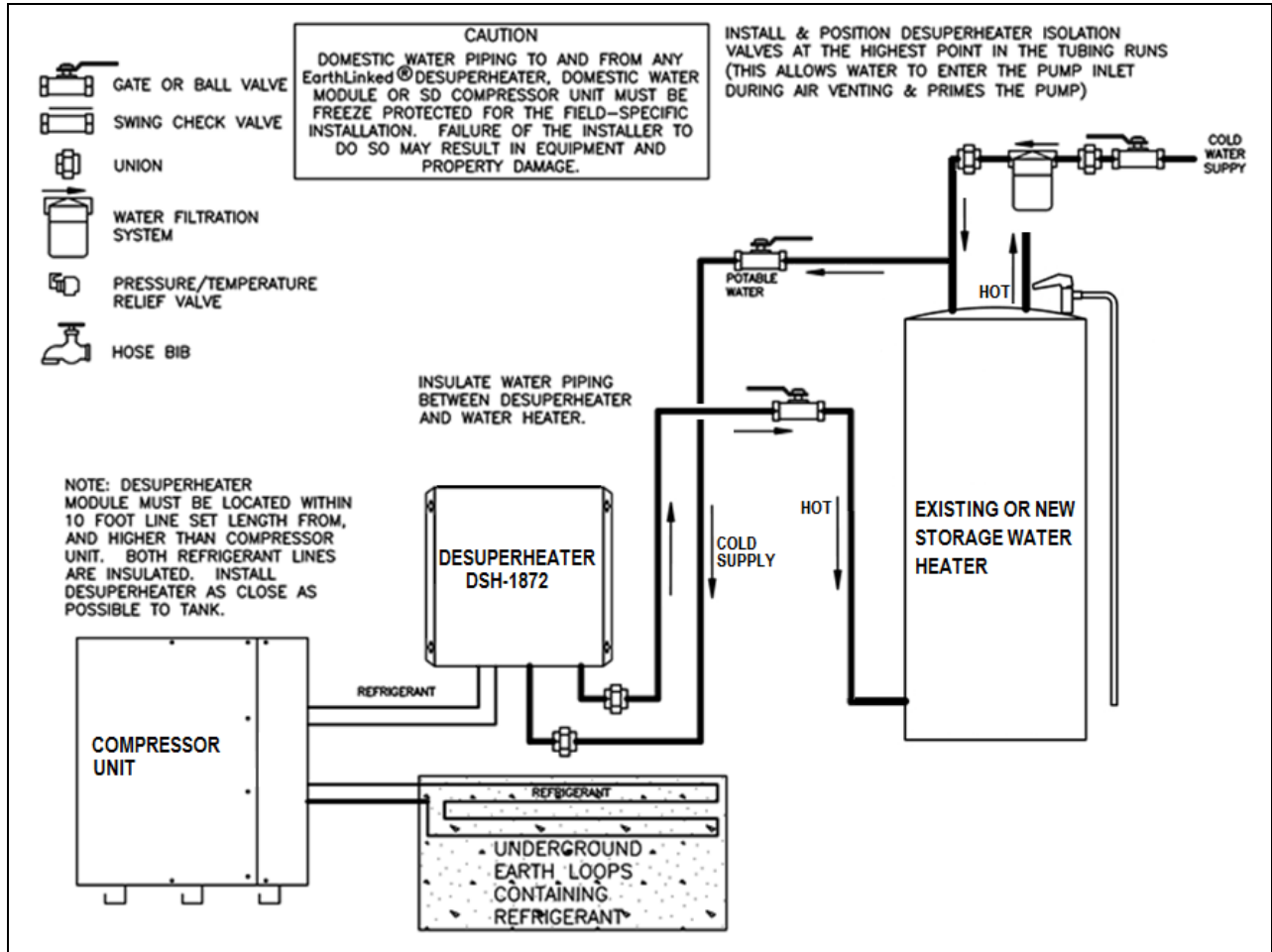
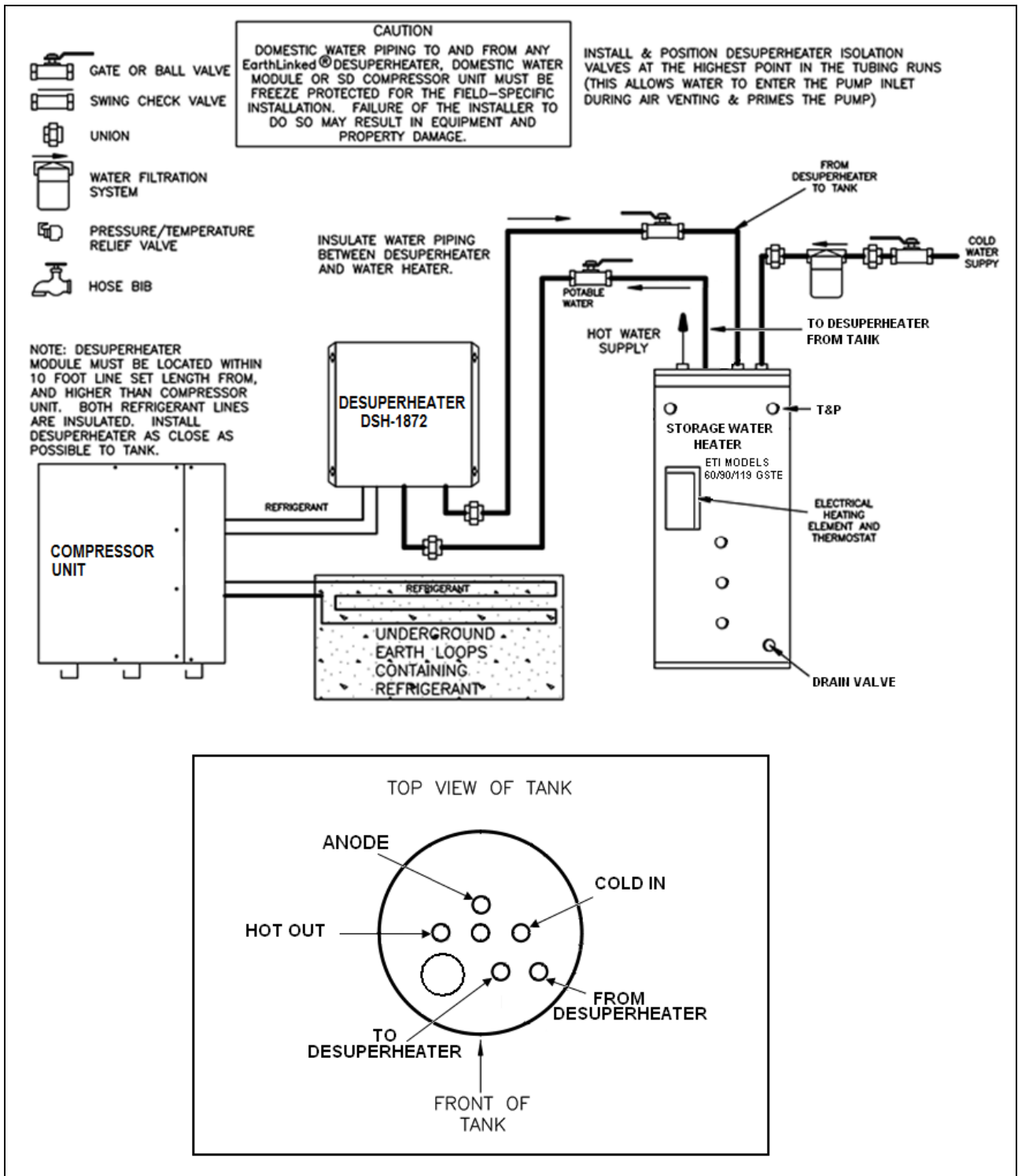
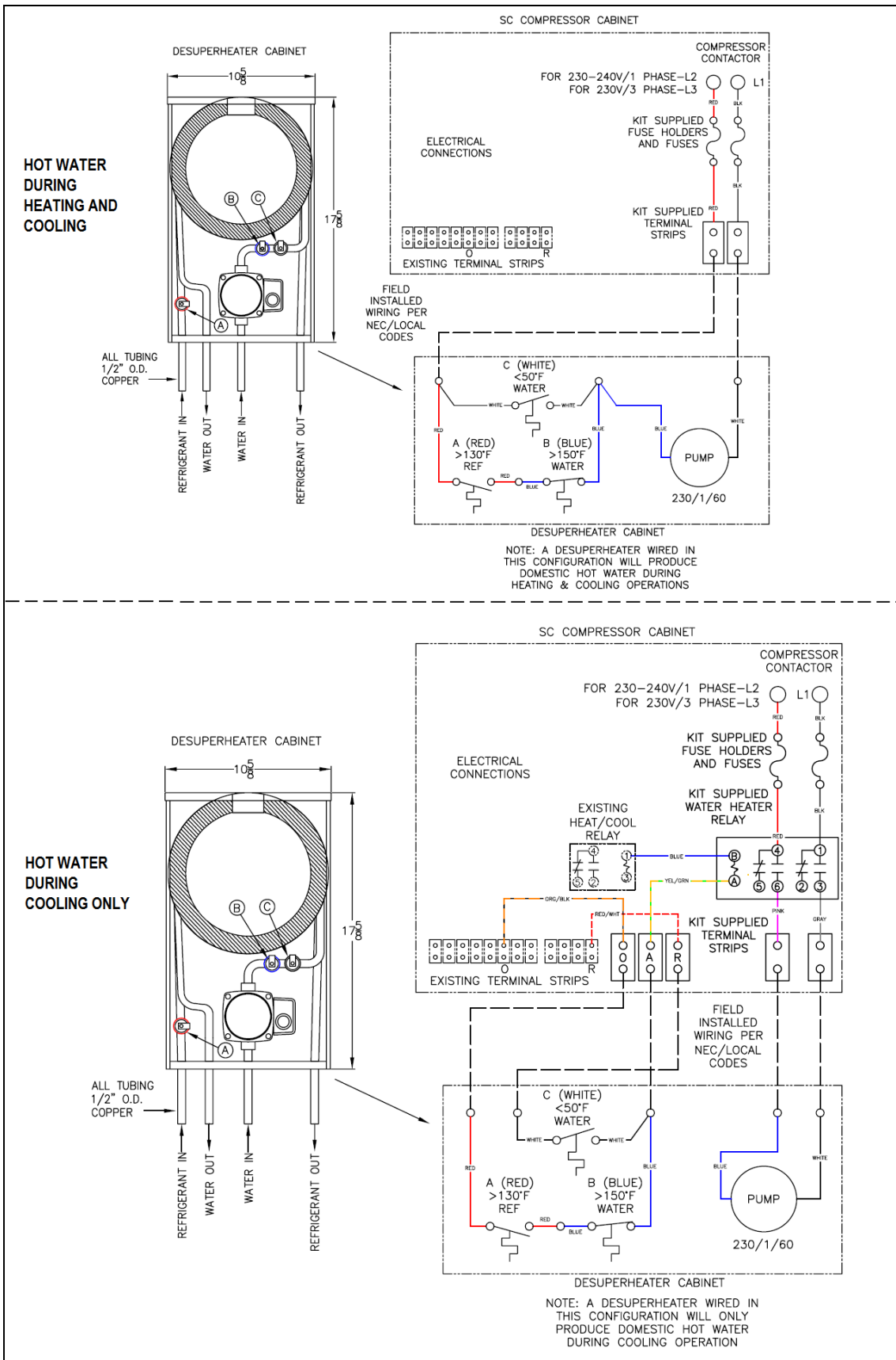


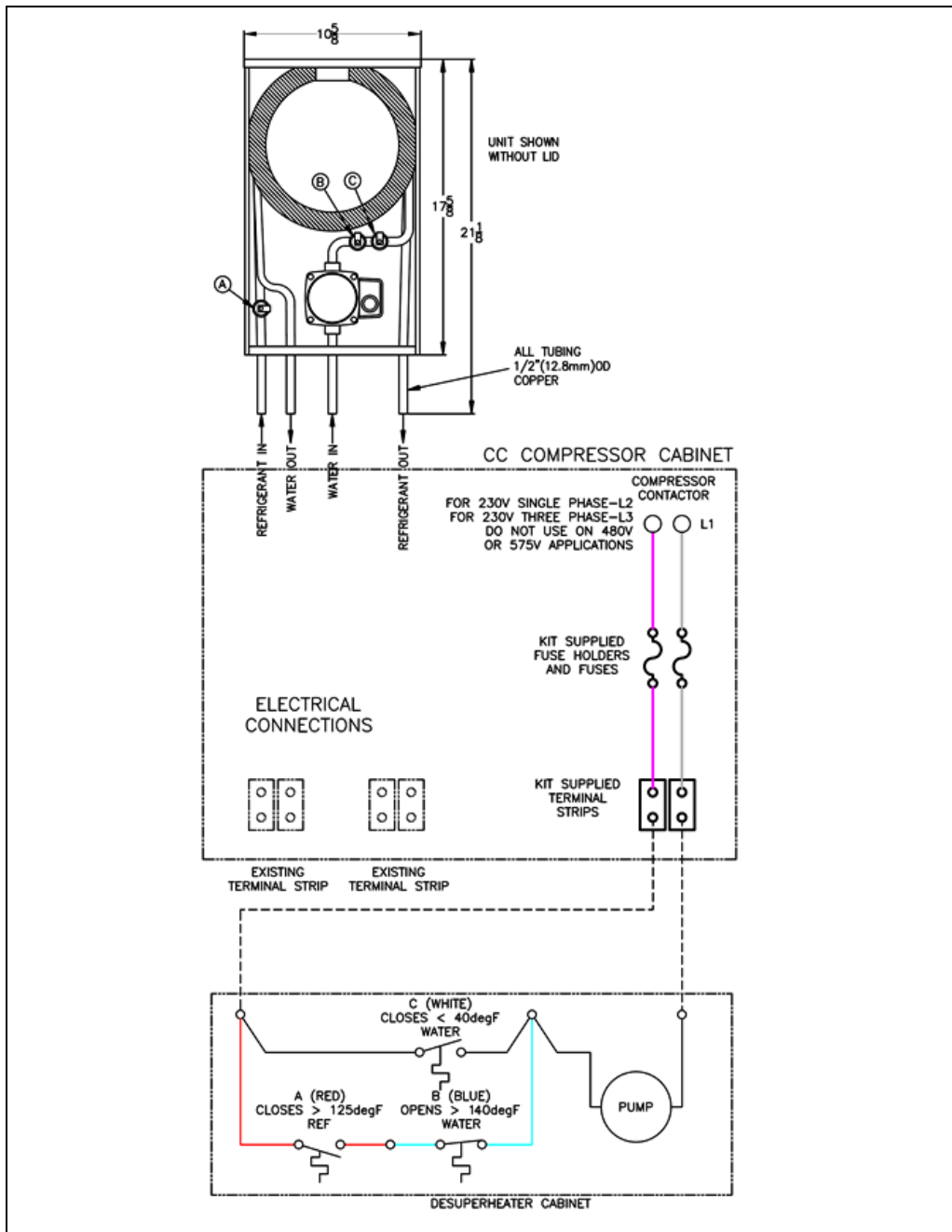
Figure 1. Desuperheater Installed with Existing or New Standard Storage Water Heater



**Figure 2. Desuperheater installed with GSTE Storage Water Heater.**



**Figure 3a. SC Field Wiring for Desuperheater Kit**



**Figure 3b. CC Compressor Unit Field Wiring**

## **Mounting/Location**

The Desuperheater is mounted vertically on a solid surface indoors in a space with ambient temperatures of 40°F or above. The Desuperheater is to be located within 10 feet of the compressor unit and as close as possible to the storage water heater (not to exceed 25 feet), with interconnecting water lines insulated.

## **Controls**

As illustrated in Figures 3a and 3b, the Desuperheater contains a water high limit control. It is factory set to 140°F. It also contains a refrigerant gas low limit, which is factory set to 125°F. The freeze protection control is designed to operate the circulating pump when water temperatures of 40°F or less are detected, in order to provide water circulation independent of compressor operation.

## **Heat Exchanger**

The Model DSH-1872 Desuperheater contains a corrosion resistant all-copper double wall heat exchanger of counterflow twin tube design. The heat exchanger is continuously vented along its entire length and meets IAPMO safety requirements and exceeds applicable UL requirements.

## **Circulator Pump**

The Desuperheater contains a Taco 006 series low wattage wet rotor in-line single stage circulator. The water cooled pump is rated at 60 watts, 230 volts and 0.40 amperes. It is designed for 125 psig working pressure and up to 220°F fluid temperature. The pump housing is bronze and the bearings are ceramic.



## Desuperheater Mechanical Installation

Before initiating mechanical or electrical installation of the Desuperheater, read, understand and execute the following:



### WARNING

**PRIOR TO INSTALLING THE DESUPERHEATER KIT, ENSURE THAT THERE IS NO REFRIGERANT OR NITROGEN HOLDING CHARGE IN THE COMPRESSOR UNIT.**

**FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE, SERIOUS BODILY INJURY OR DEATH.**



### WARNING

**BEFORE REMOVING ANY ACCESS PANELS AND INITIATING ANY PHASE OF THIS INSTALLATION MAKE SURE THAT POWER IS TURNED "OFF" TO ALL EARHLINKED® 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.**

When brazing copper tubing, always utilize the nitrogen brazing process as described here:



### WARNING

#### **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, **turn off the nitrogen**, and relieve the pressure at the joint to atmospheric prior to brazing.

#### **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.

Two refrigerant lines must be run from inside the compressor unit cabinet to the Desuperheater. The available holes (marked “plugged”) in the cabinet for the SC compressor units are shown in Figure 4.

For the CC compressor unit, shown in Figure 5, two additional holes of at least 1” diameter are to be field drilled in the plumbed panel of the cabinet to accommodate the interconnecting refrigerant tubing.



**IMPORTANT!**

**Exercise care when drilling holes in CC Series cabinet to avoid damaging copper tubing and other components.**



**IMPORTANT!**

The DSH-1872 Desuperheater Kit contains enough soft copper tubing and copper fittings to extend the desuperheater connection to the outside of the compressor cabinet. **All copper tubing, fittings and insulation required for refrigerant lines from the compressor unit to the desuperheater are to be field supplied.**

Compressor Size	Comp. Unit Vapor Line, OD	Desuperheater Connection, OD	Desuperheater Line Set, OD
ALL	1/2"	1/2"	1/2"

See **Kit Contents** in **Desuperheater Electrical Installation** section.

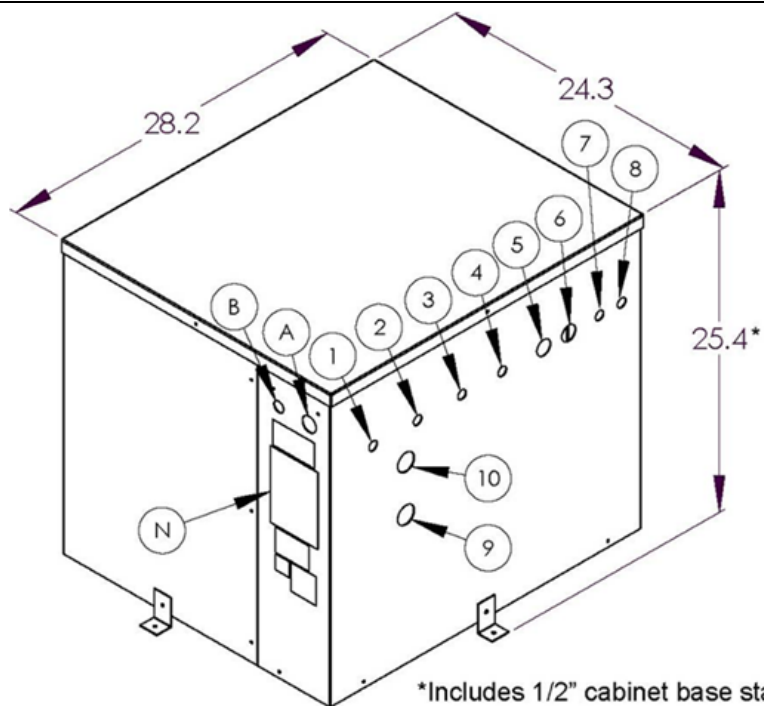
Desuperheater piping and connections to the compressor units are illustrated as follows:

SC: Figures 6 & 7

CC: Figures 8 & 9

Water piping for all compressor unit sizes is 1/2” OD copper with insulation on both water lines and the storage water heater located as close as practical to the Desuperheater, within 25 feet maximum.

Figures 1 and 2 illustrate typical water piping, fittings and connections for the Desuperheater and storage water heater.



\*Includes 1/2" cabinet base standoffs  
SC Compressor Unit shown

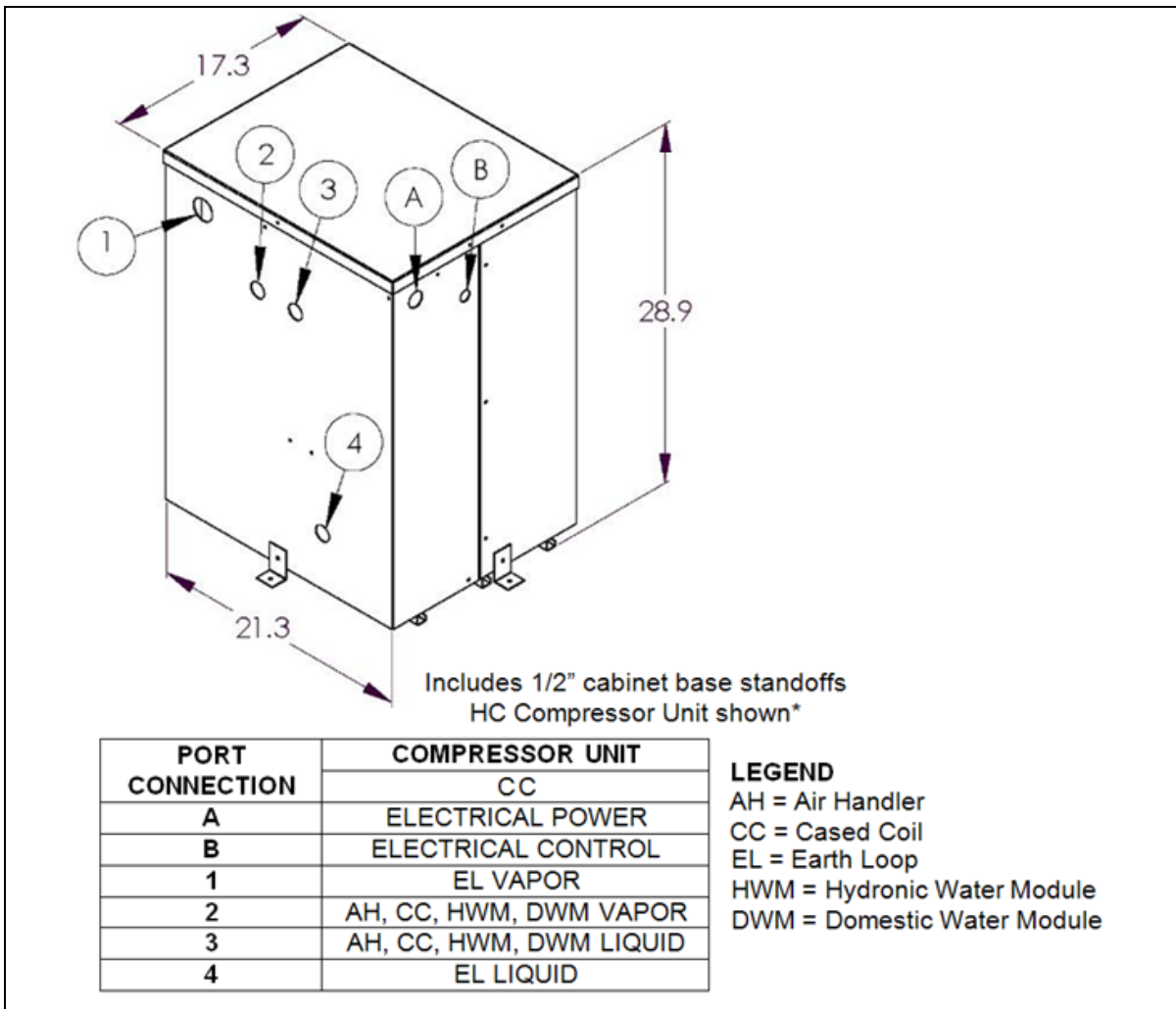
PORT CONNECTION	COMPRESSOR UNIT
	SC
A	←ELECTRICAL POWER→
B <sup>1</sup>	←ELECTRICAL CONTROL→
1	AH, CC, HWM LIQUID
2	PLUGGED
3	
4	PLUGGED
5	
6	AH, CC, HWM VAPOR
7	PLUGGED
8	PLUGGED
9	PLUGGED
10	PLUGGED

<sup>1</sup>Two additional electrical control ports on opposite side of cabinet.

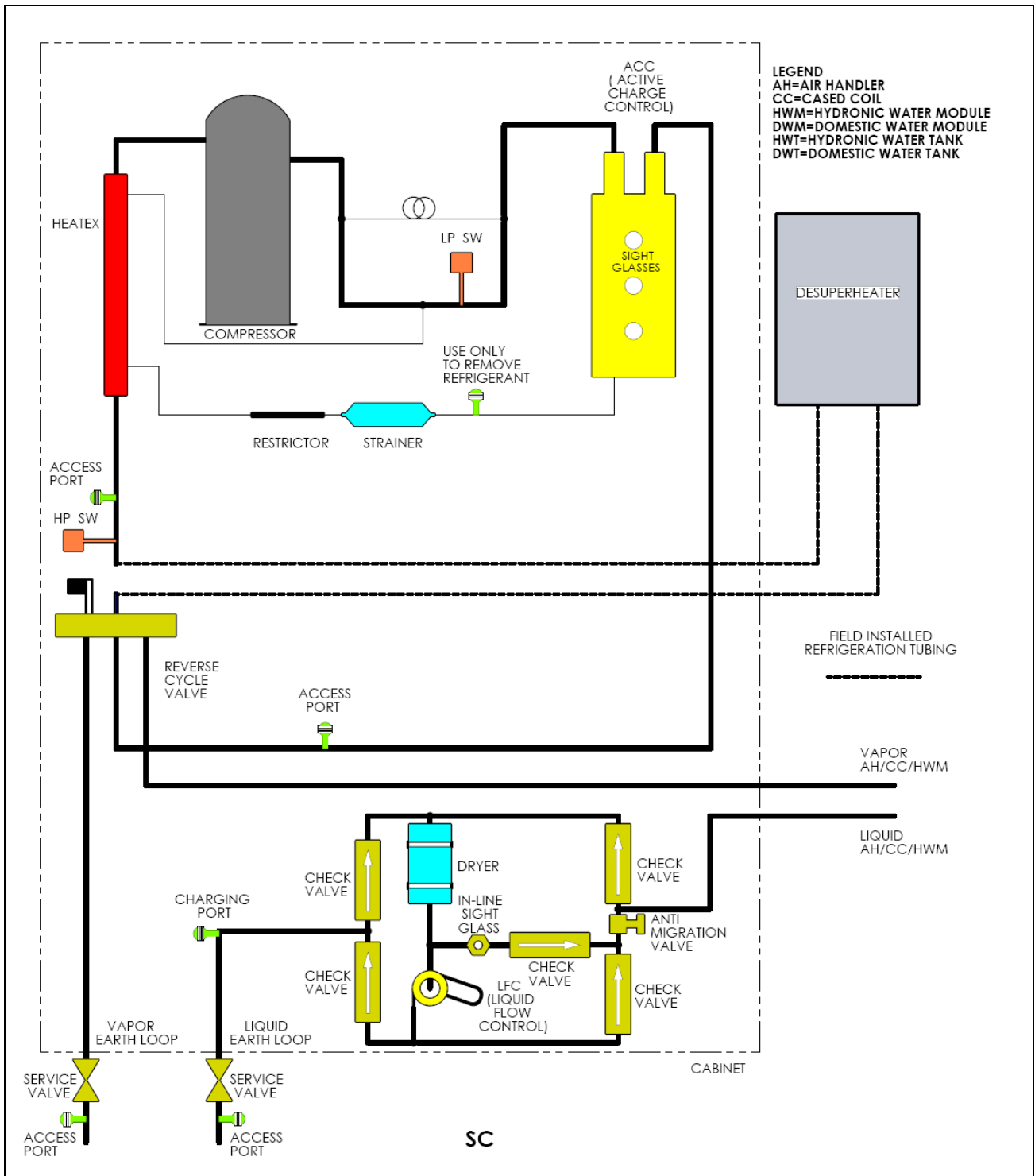
**LEGEND**

AH = Air Handler  
CC = Cased Coil  
HWM = Hydronic Water Module

**Figure 4. SC Cabinet Dimensions and Connections**

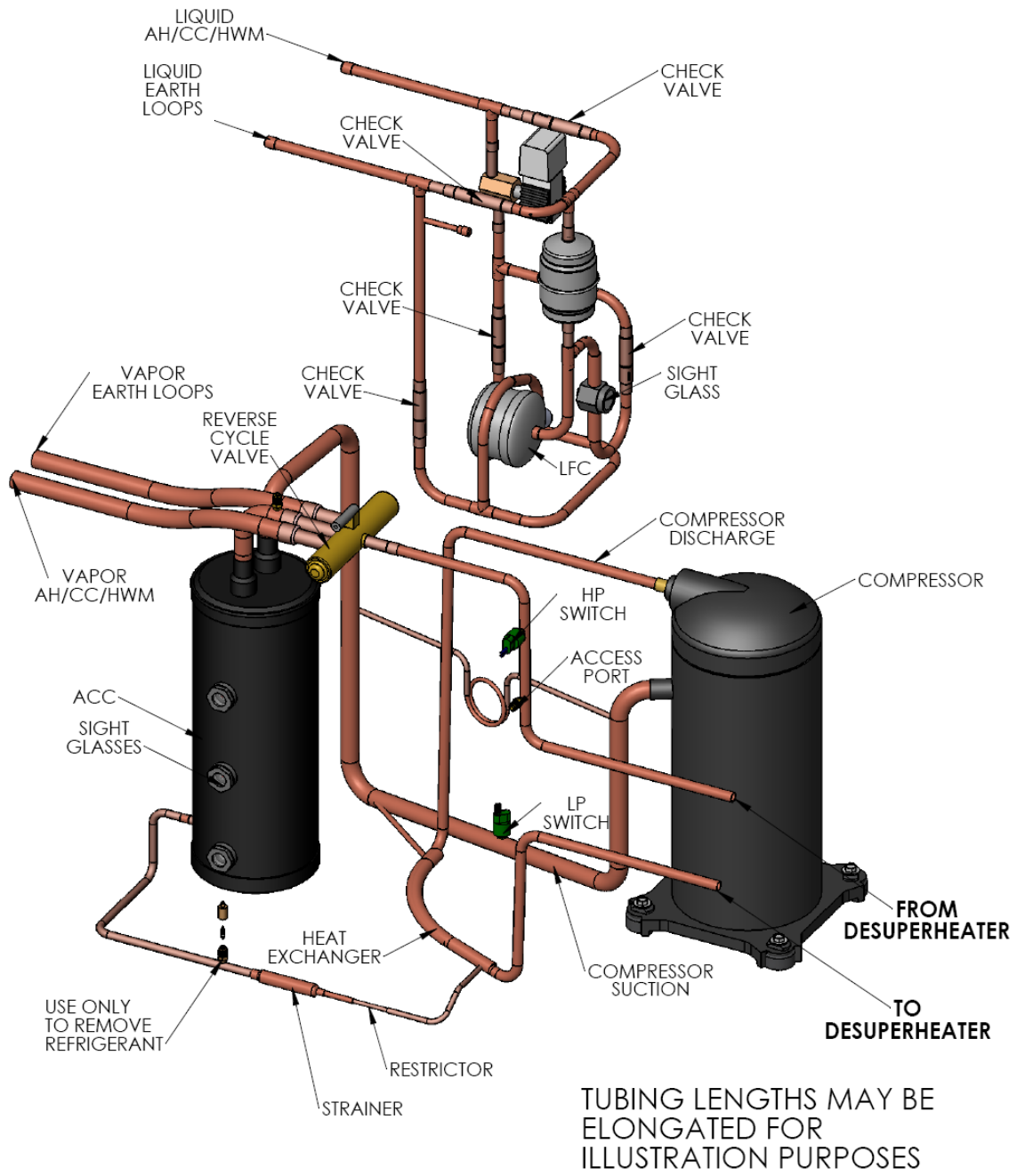


**Figure 5. CC Cabinet Dimensions and Connections**

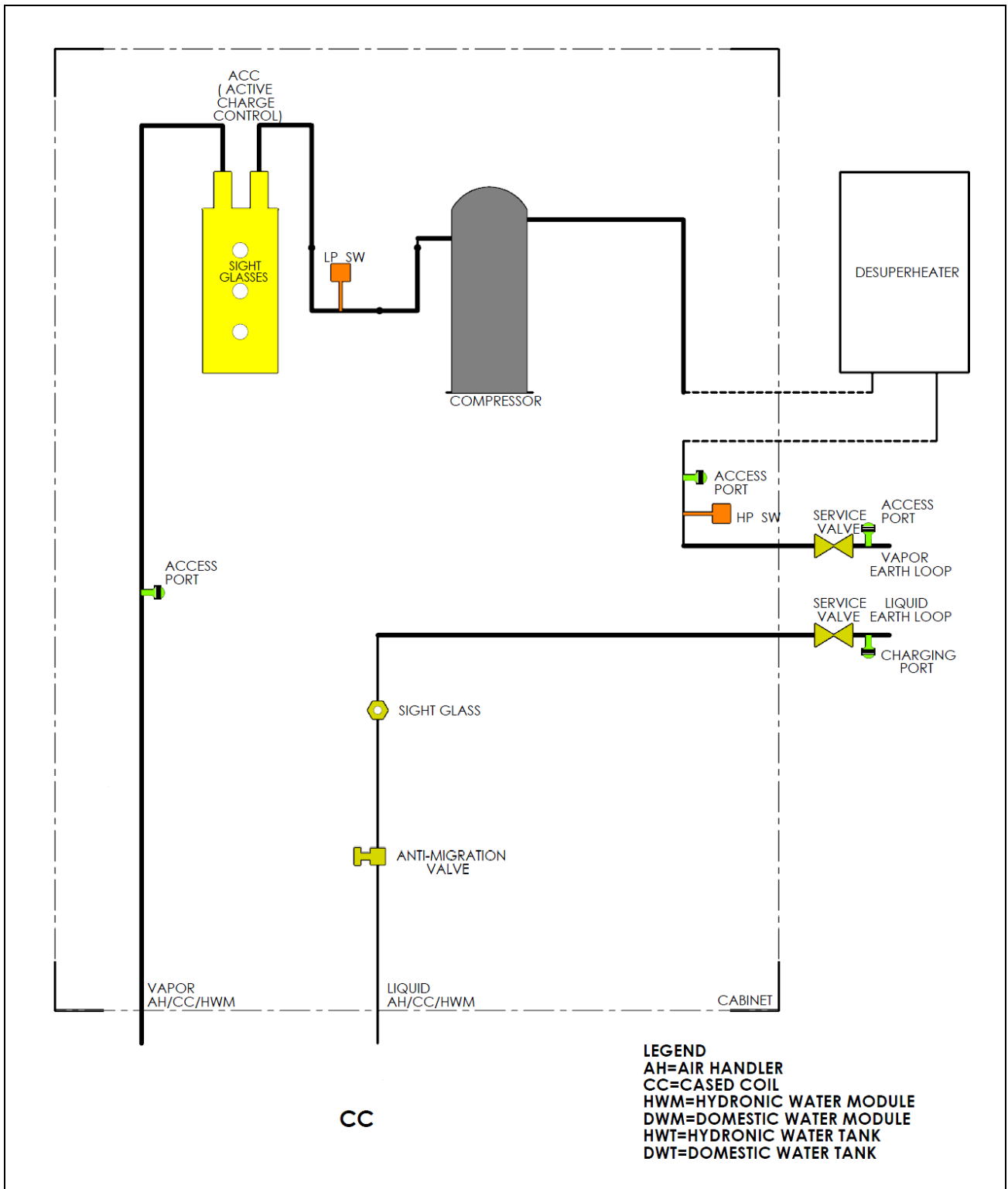


**Figure 6. SC Internal Flow Schematic with Desuperheater**

# MODEL SC COMPRESSOR UNIT PIPING



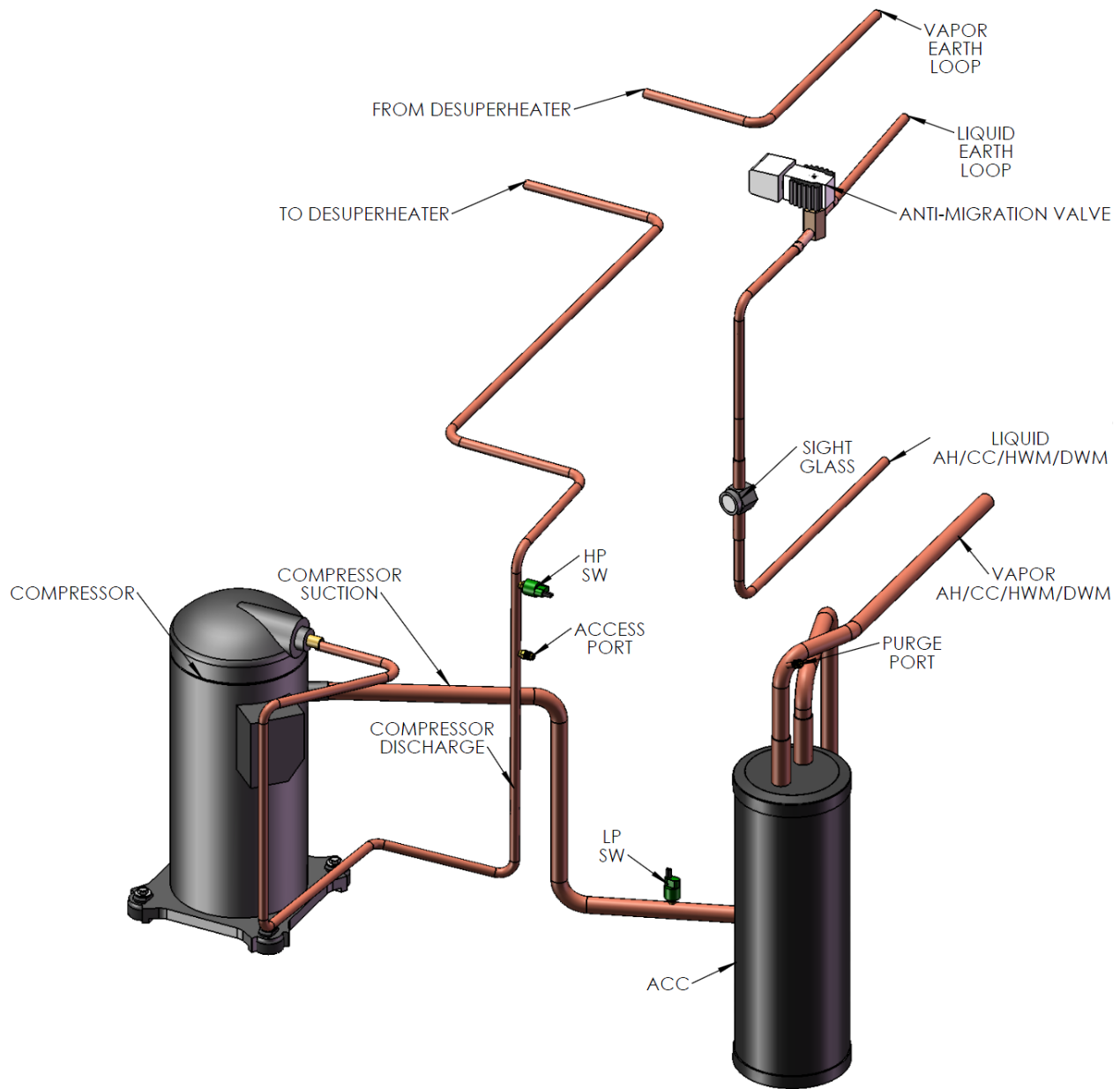
**Figure 7. SC Piping with Desuperheater**



**Figure 8. CC Internal Flow Schematic with Desuperheater**

# MODEL CC COMPRESSOR UNIT PIPING

3-24-13



**Figure 9. CC Piping with Desuperheater**



# DESUPERHEATER ELECTRICAL INSTALLATION

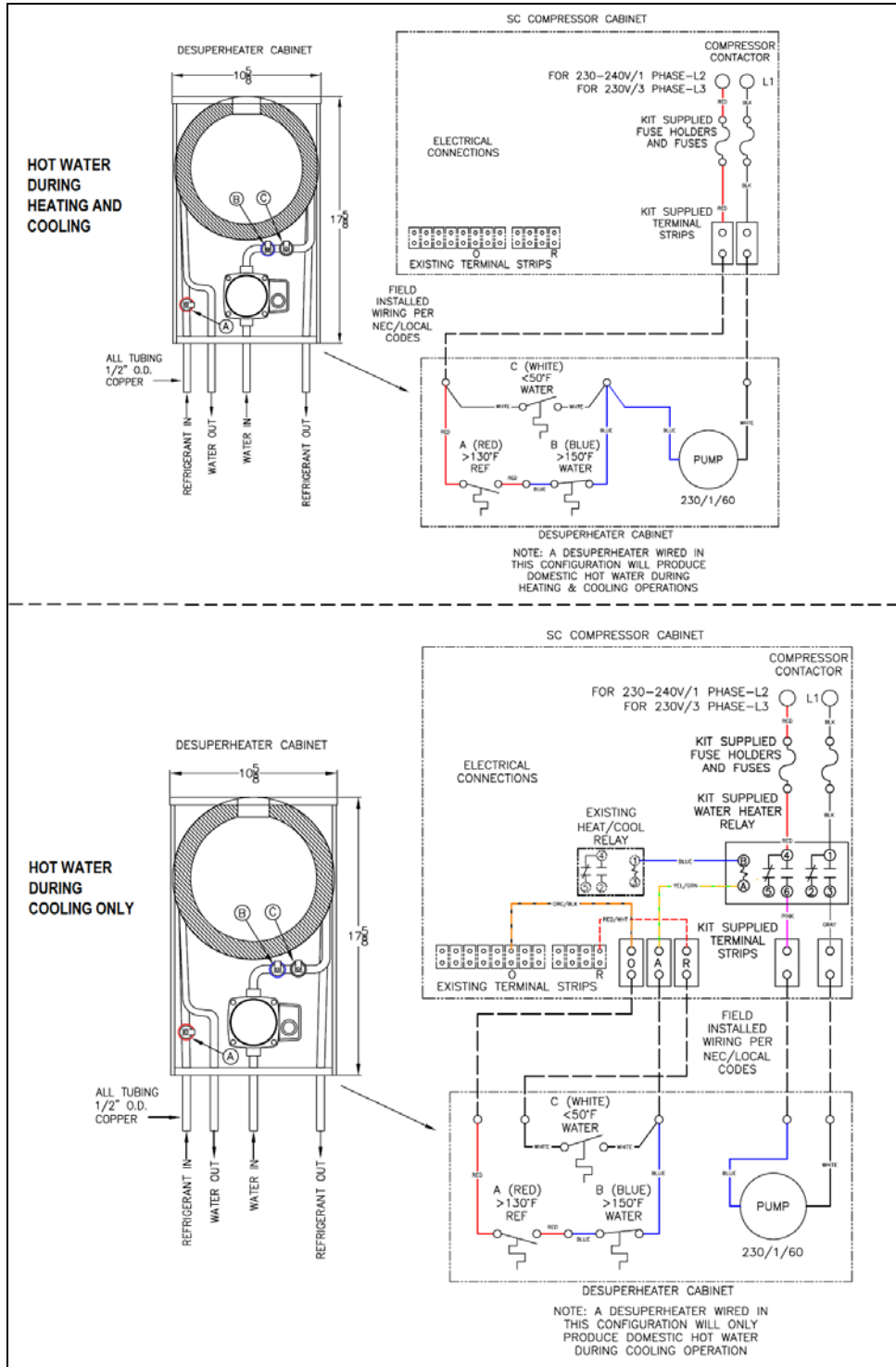
## Kit Contents

In addition to 4 Ft. of 1/2" Type ACR soft copper tubing and two 1/2" 90° copper ells, the DSH-1872 kit contains the following items for electrical installation. Figure 10 lists the kit items and which are utilized in the installation on SC and CC compressor units.

Kit Components	Used with	
	SC Compressor	CC Compressor
Fuse Holder (2)	Yes	Yes
Fuses (2)	Yes	Yes
Screws (8)	Yes- 8	Yes- 5
2 Block Term. Strip	Yes	Yes
Pink Wire	Yes	Yes
Gray Wire	Yes	Yes
3 Block Term. Strip	Yes	No
DPDT Relay	Yes	No
Red Wire	Yes	No
Black Wire	Yes	No
Blue Wire	Yes	No
Yellow/Green Wire	Yes	No
Yellow/Blue Wire	Yes	No
Red/White Wire	Yes	No

**Figure 10. DSH-1872 Kit Electrical Components**

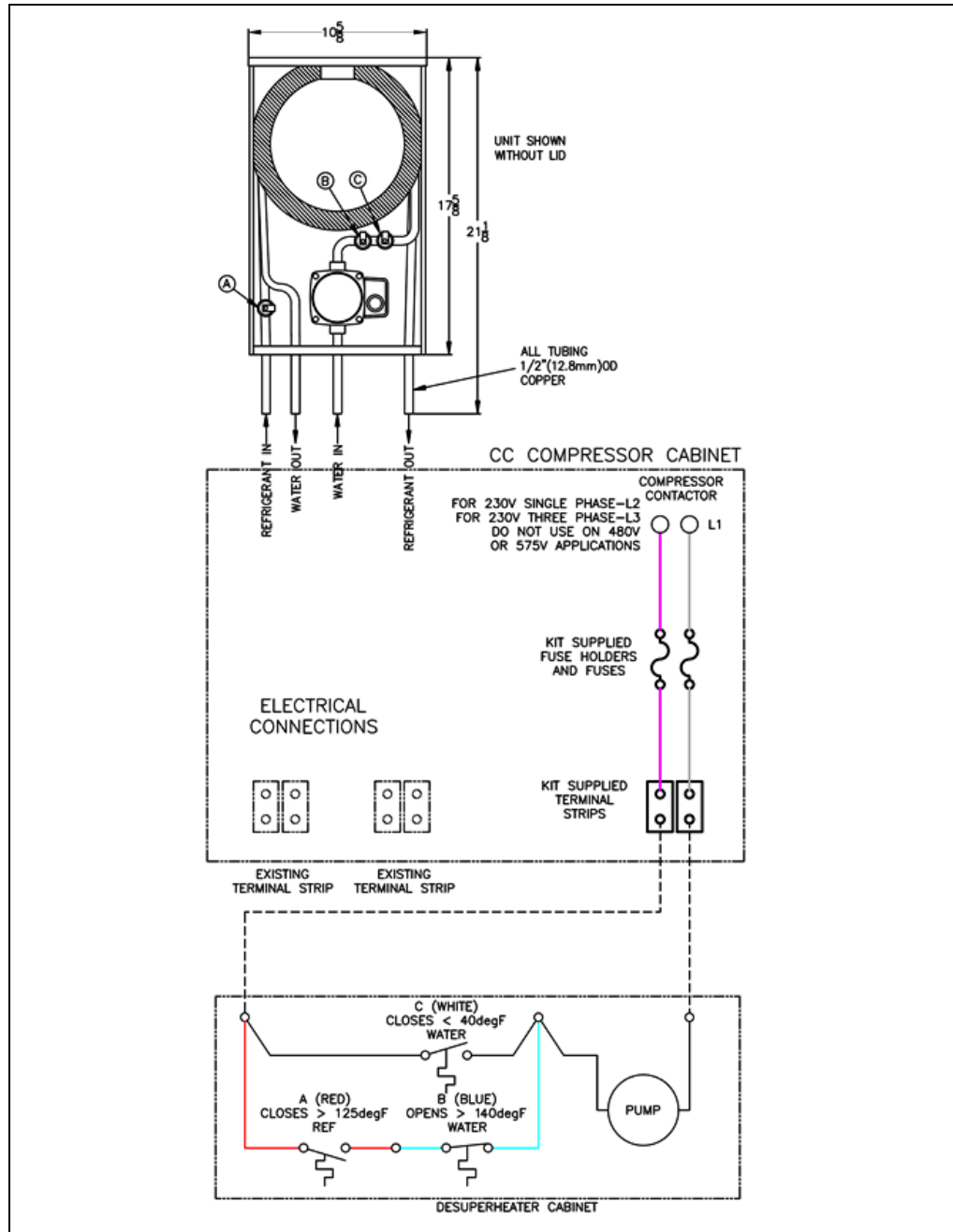
# SC Compressor Unit



**Figure 11. SC Compressor Unit Field Wiring**

1. Turn "OFF" all electrical power to the EarthLinked® system.
2. Install fuse holders, fuses, three pole terminal strip, two pole terminal strip and water heater relay in electrical box with fasteners, as shown in Figure 11.
3. Connect wires as shown in Figure 11.
4. Install fuses.
5. Check all wiring for proper routing and ensure good connections at all terminals.

## CC Compressor Unit



1. Turn "OFF" all electrical power to the EarthLinked® system.
2. Drill holes in electrical box as necessary to install fuse holders and terminal strips as shown in Figure 12.
3. Connect wires as shown in Figure 12.
4. Field wire DSH to terminal strips.
5. Install fuses.
6. Check all wiring for proper routing and ensure good connections at all terminals, prior to restoring electric power to the system components.
7. Test system for functionality.

## SYSTEM START-UP

1. Braze and check all field-made refrigerant joints for leaks and repair as necessary. See the ***EarthLinked® Heating and Cooling System Installation, Operation and Maintenance Manual***, or the appropriate ***SC Quik-Start Manual*** or ***CC Quik-Start Manual*** for the proper procedure.
2. Evacuate and charge the refrigerant system in accordance with the appropriate ***EarthLinked® Heating and Cooling System Installation, Operation and Maintenance Manual***, or the appropriate ***SC Quik-Start Manual*** or ***CC Quik-Start Manual***.
3. Fill the water system and ensure that all air has been eliminated from the desuperheater, to prevent pump cavitation and bearing damage.
4. Check and repair all field-made water system joints to ensure there are no leaks.
5. Start system and check for functionality.