

# Installation Instructions

**NOTE:** Read the entire instruction manual before starting the installation.

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## SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock or other conditions which may cause death, personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory–authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing and work gloves. Use quenching cloths for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and the current editions of the National Electrical Codes (NEC) NFPA 70.


In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1.

Recognize safety information. This is the safety–alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words **DANGER**, **WARNING** and **CAUTION**. These words are used with the safety–alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used

to identify unsafe practices, which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.


**IMPORTANT:** Nitrogen can leak out through the needle pierce hole in the plugs. This does not indicate a leaking coil nor warrant return of the coil.

 **WARNING**

**ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in personal injury or death.


Before installing, modifying or servicing system, always turn off main power to system. There may be more than one disconnect switch. Lock out and tag switch with a suitable warning label.

 **CAUTION**

**PERSONAL INJURY HAZARD**

Failure to follow this caution may result in personal injury.

This coil contains Nitrogen precharge of 15 PSIG. Release of this pressure through the center of the rubber plugs is required before removing the plugs.

 **CAUTION**

**CUT HAZARD**

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing and gloves when handling parts.

## INTRODUCTION

Use this instruction manual to install CAPVU indoor coils on upflow or downflow furnaces. **Do not install coil in horizontal position.** CAPVU are uncased (bare) coils that require a field–fabricated or accessory enclosure.

**Table 1 – CAPVU Uncased Coil Information**

MODEL NUMBER	TONNAGE	MATCHED FURNACE WIDTH (IN.)	UNCASED COIL DIMENSIONS		ACCESSORY CASINGS	COIL CONNECTION TUBE SIZE (IN.)	
			Width	Depth		Liquid	Suction
CAPVU1814ALA	1-1/2	14-3/16	13-1/8	19-7/8	KCAKC2212ECC	3/8	5/8
CAPVU2414ALA	2	14-3/16	13-1/8	19-7/8	KCAKC2212ECC	3/8	5/8
CAPVU2417ALA	2	17-1/2	16-7/16	19-7/8	KCAKC2306ECC	3/8	5/8
CAPVU3014ALA	2-1/2	14-3/16	13-1/8	19-7/8	KCAKC2212ECC	3/8	3/4
CAPVU3017ALA	2-1/2	17-1/2	16-7/16	19-7/8	KCAKC2306ECC	3/8	3/4
CAPVU3614ALA	3	14-3/16	13-1/8	19-7/8	KCAKC2212ECC	3/8	3/4
CAPVU3617ALA	3	17-1/2	16-7/16	19-7/8	KCAKC2306ECC	3/8	3/4
CAPVU3621ALA	3	21	19-15/16	19-7/8	KCAKC2404ECC	3/8	3/4
CAPVU4221ALA	3-1/2	21	19-15/16	19-7/8	KCAKC2404ECC	3/8	7/8
CAPVU4224ALA	3-1/2	24-1/2	23-7/16	19-7/8	KCAKC2504ECC	3/8	7/8
CAPVU4817ALA	4	17-1/2	16-7/16	19-7/8	KCAKC2306ECC	3/8	7/8
CAPVU4821ALA	4	21	19-15/16	19-7/8	KCAKC2404ECC	3/8	7/8
CAPVU4824ALA	4	24-1/2	23-7/16	19-7/8	KCAKC2504ECC	3/8	7/8
CAPVU6021ALA	5	21	19-15/16	19-7/8	KCAKC2404ECC	3/8	7/8
CAPVU6024ALA	5	24-1/2	23-7/16	19-7/8	KCAKC2504ECC	3/8	7/8
CAPVU6121ALA	5	21	19-15/16	19-7/8	KCAKC2404ECC	3/8	7/8

**INSTALLATION**

**INSPECT EQUIPMENT**

File claim with shipper if equipment is damaged or incomplete.

**SELECT INSTALLATION**

See Table 1 for dimensions and accessory part numbers.

**INSTALLATION OF EVAPORATOR COIL**

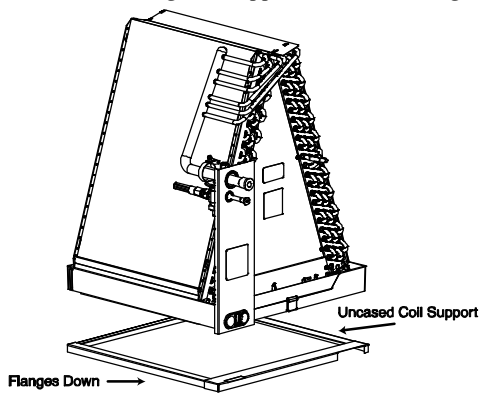
**⚠ CAUTION**

**UNIT OR PROPERTY DAMAGE HAZARD**

Failure to follow this caution may result in product or property damage.

Take precautions to ensure that aluminum tubes do not come in direct contact or allow for condensate runoff with dissimilar metal. Dissimilar metals can cause galvanic corrosion and possible premature failure.

1. For upflow CAPVU coil installation:
  - a. Mount factory coil support (shipped with coil) directly on furnace flanges to support the coil. See Fig. 1.



**Fig. 1 – Uncased Coil Support**

**IMPORTANT:** Uncased coil width and depth dimensions are larger than furnace flange dimensions. See Table 1 for uncased coil dimensions. Fabricate supply plenum according.

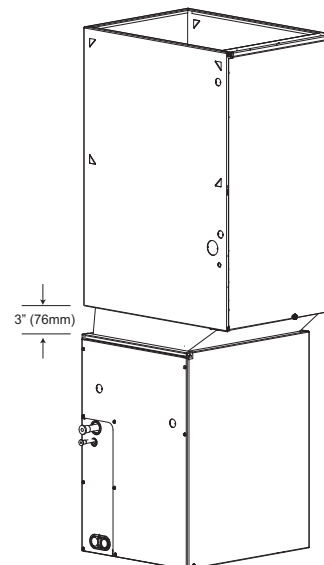
- b. Slide coil into plenum opening.
- c. Cover plenum opening with field supplied front panel.

- d. When installing uncased coil into pre-installed accessory coil casing, use Table 1 to verify correct match.

**NOTE:** On upflow installations where the indoor coil is placed in an unconditioned space, a 6-in wide piece of insulation should be applied and wrapped around the outside of coil casing and supply duct contact point.

2. For downflow CAPVU coil installation in existing or field fabricated coil casing:
  - a. Set uncased coil in supply duct opening.
  - b. Place field fabricated 3 in. adapter on coil casing. Adapter should be tapered to fit coil/furnace combination when one of them is larger than the other.
  - c. Set furnace on adapter.

**IMPORTANT:** Installing “A” coils rotated 90 degrees from the front of the furnace in downflow applications can cause water blow off or coil freeze up. This is due to the concentration of air on one coil slab or lack of air on the opposite coil slab. If the airflow is high due to ductwork or other causes, and there is a chance for water blow off, it is recommended that a 3-in. field-supplied adapter be placed between the coil and the furnace to allow the air to distribute evenly to both coil slabs. (See Fig. 2.)



**Fig. 2 – Downflow Installation with Coil Rotated 90°**

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**NOTE:** In downflow installation with a 4-way multipoise furnace, break off perforated duct flanges on furnace. See furnace installation instructions.

## REFRIGERANT LINE CONNECTIONS

### ⚠ **WARNING**

#### **PERSONAL INJURY HAZARD**

Failure to follow this warning could result in personal injury.  
Wear eye protection.

Coil is factory charged with 15 psi nitrogen. The coil is under pressure and TXV screen is in place behind liquid line plug. **DO NOT** removed liquid line plug first; always remove the suction line plug first to depressurize the coil.

Use accessory tubing package or field-supplied tubing of refrigerant grade, see Product Data information for ordering. Suction tube must be insulated. Do not use damaged, dirty, or contaminated tubing because it may plug refrigerant flow-control device. **ALWAYS** evacuate the coil and field-supplied tubing before opening outdoor unit service valves.

### CONNECT REFRIGERANT LIQUID AND SUCTION LINES

For matched and mismatched systems, use line sizes recommended in outdoor unit Installation Instructions.

### ⚠ **CAUTION**

#### **UNIT OR PROPERTY DAMAGE HAZARD**

Failure to follow this caution may result in property damage.  
Take precautions to ensure aluminum tubes do not come in direct contact or allow for condensate run-off with a dissimilar metal. Dissimilar metals can cause galvanic corrosion and possible premature failure.

The coil can be connected to outdoor units using field-supplied tubing of refrigerant grade. Always evacuate tubing and reclaim refrigerant when making connections or flaring tubing. Leak check connections before insulating entire suction line.

See Table 1 for coil connection tube size.

1. Remove cabinet access door.
2. Remove rubber plugs, suction plug then liquid plug, from coil stubs using a pulling and twisting motion. Hold coil stubs steady to avoid bending or distorting.
3. Remove tubing plate with rubber grommets and slide plate with grommets onto the refrigerant lines (field line-set), away from braze joints.
4. Fit refrigerant lines into coil stubs. Wrap a heat sinking material such as a wet cloth behind braze joints.
5. Wrap TXV and nearby tubing with a heat-sinking material such as a wet cloth.
6. Use 1/2 psig Nitrogen purge in the suction and out the liquid line.
7. Braze using a Sil-Fos or Phos-copper alloy. Do not use soft solder.
8. After brazing, allow joints to cool. Carefully remove TXV bulb insulation and verify that the TXV bulb is securely fastened with hose clamp. Tighten screw a half-turn past hand tight with TXV bulb placed in the indentation with full contact with the vapor line tube. Re-wrap TXV bulb with insulation.

9. Leak check connections before insulating entire suction line.

10. Slide tubing plate with rubber grommets over joints. Position tubing at center of each grommet to ensure an air seal around the tube. Reinstall cabinet door.

### ⚠ **CAUTION**

#### **UNIT DAMAGE HAZARD**

Failure to follow this caution may result in product damage.

To avoid valve damage to the refrigerant control device while brazing, valves must be wrapped with a heat-sinking material such as a wet cloth.

## REFRIGERANT METERING DEVICE

**CAPVU Models** have a factory installed hard shut-off TXV designed only for use with R-410A refrigerant. Use only with outdoor units designed for R-410A.

**NOTE:** ALL TXVS HAVE PRESET SUPERHEAT SETTINGS AND ARE FIELD NON-ADJUSTABLE.

### ⚠ **CAUTION**

#### **UNIT DAMAGE HAZARD**

Failure to follow this caution may result in product damage.

**DO NOT BURY MORE THAN 36-in (914 mm) OF REFRIGERANT TUBING IN GROUND.** If any section of tubing is buried, there must be a 6-in (152 mm) vertical rise to the valve connections on the outdoor unit. If more than the recommended length is buried, refrigerant may migrate to cooler buried section during extended periods of unit shutdown, causing refrigerant slugging and possible compressor damage at start-up.

## CONDENSATE DRAIN LINE CONNECTION

### ⚠ **CAUTION**

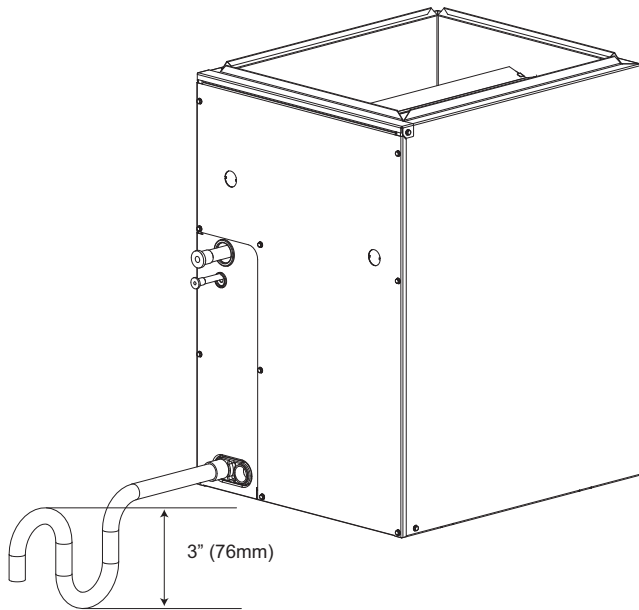
#### **PROPERTY DAMAGE HAZARD**

Failure to follow this caution may result in property damage.

When installing over a finished ceiling and/or living area, install a field-fabricated secondary condensate pan under the entire unit.

The coil is designed to dispose of accumulated water through built-in condensate drain fittings. It is recommended that PVC fittings be used on the condensate pan. Do not over-tighten. Finger tighten plus 1-1/2 turns. Be sure to install plastic plug in unused condensate drain fitting. Two 3/4-in female threaded pipe connections are provided in each coil condensate pan.

A trap is not necessary on the condensate line. Consult local codes for additional restrictions or precautions. If local codes require a trap then the following guidelines are suggested to assure proper drainage. Install a trap in condensate line of coil as close to the coil as possible. Make trap at least 3-in (76 mm) deep and no higher than the bottom of unit condensate drain opening (See Fig. 3). Pitch condensate line 1-in. (25.4 mm) for every 10 ft. of length to an open drain or sump. Make sure that the outlet of each trap is below its connection to condensate pan to prevent condensate from overflowing the drain pan. Prime all traps, test for leaks, and insulate traps and lines if located above a living area.



**Fig. 3 – Condensate Trap**

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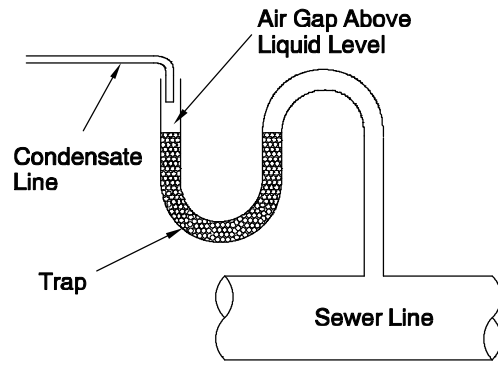
**NOTE:** If unit is located in or above a living space, where damage may result from condensate overflow, a field-supplied, external condensate pan should be installed underneath the entire unit, and a secondary condensate line (with appropriate trap) should be run from the unit into the pan. Any condensate in this external condensate pan should be drained to a noticeable place. As an alternative to using an external condensate pan, some localities may allow the running of a separate 3/4-in (19 mm) condensate line (with appropriate trap) per local code to a place where the condensate will be noticeable. The owner of the structure must be informed that when condensate flows from secondary drain or external condensate pan, the unit requires servicing or water damage will occur. To further protect against water damage, install a float switch to shut the unit off if the water in the secondary pan gets too high.

**NOTE:** To avoid drainage problems, test the primary drain line by slowly pouring water into the pan. Check piping for leaks and proper condensate drainage. Using the secondary drain as explained in the previous note provides further protection against overflow due to a clogged primary drain.

**NOTE:** In applications where return air humidity levels stay at 70% or above for a prolonged period of time, condensation can form on the bottom of pan and drip.


**WASTE LINE CONNECTION**

If the condensate line is to be connected to a waste (sewer) line, an open trap must be installed ahead of the waste line to prevent escape of sewer gases (See Fig. 4 ).

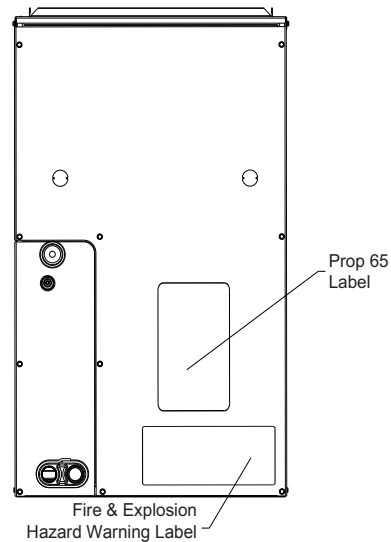


**Fig. 4 – Condensate Drain to Waste Line**

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 <span style="font-size: 24pt; font-weight: bold; margin-left: 10px;">WARNING</span>
<p><b>EXPLOSION HAZARD</b></p> <p>Failure to follow this warning could result in personal injury or death.</p> <p>Provide trap with air gap in drain line when connecting to waste (sewer) line.</p>

**NOTE:** The State of California requires Proposition 65 labels (Prop 65) for products containing materials of concern. Taped to the header plate is the Proposition 65 Label for this product. Apply this label on the outside front of the furnace coil casing.



**Fig. 5 – Label Placement on Casing**

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**NOTE:** Attached to the literature assembly is the Fire and Explosion Hazard warning label for this product. Apply this label on the outside front of the furnace coil casing if one does not exist on the casing. (See Fig. 5)