

CCS Series Cased Coils

Installation Manual For Classic and Prime Select Systems Models SC, SD, SDH, PS, PSD, and PSDH





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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 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, SDH, PS, PSD, or PSDH Quick-Start Instructions (as appropriate)

Installation

Component Matching

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

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.

CLASSIC SERIES COMPRESSOR UNIT MODEL/CAPACITY	PRIME SELECT SERIES COMPRESSOR UNIT MODEL/CAPACITY	CASED COIL MODEL	TXV-KIT MODEL**
-024 (2.0 Tons)	-024 (2.0 Tons)	CCS-036-CV	TXV-2430CE
-030 (2.5 Tons)	-030 (2.5 Tons)	CCS-036-CV	TXV-2430CE
-036 (3.0 Tons)	-036 (3.0 Tons)	CCS-048-CV	TXV-3672CE
NA	-040 (3.3 Tons)	CCS-048-CV	TXV-3672CE
-042 (3.5 Tons)	NA	CCS-048-CV	TXV-3672CE
-048 (4.0 Tons)	NA	CCS-060-CV	TXV-3672CE
NA	-050 (4.2 Tons)	CCS-060-CV	TXV-3672CE
-054 (4.5 Tons)	NA	CCS-060-CV	TXV-3672CE
-060 (5.0 Tons)	-060 (5.0 Tons)	CCS-060-CV	TXV-3672CE
*TXV Kit is included with air handler for field installation			

Figure 1. Classic and Prime Select Component Matchup

Cased Coil Placement

WARNING! WEAR ADEQUATE PROTECTIVE CLOTHING AND PRACTICE ALL APPLICABLE SAFETEY 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 2.



Figure 2. General Layout of System Components





Figure 3. General Cased Coil 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 CCS Series Cased Coils connecting to the matching compressor units are listed in Figure 4. 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</u> <u>APPROPRIATE COMPRESSOR UNIT STUB-OUT TUBING SIZES FOR REQUIRED FIELD</u> SUPPLIED ADAPTERS!

EARTHLOOP, AIR HANDLER, CASED COIL LINE SETS		HWM/DWM LINE SETS			
COMPRESSOR	LINE SET C	LINE SET O.D., INCHES HWM LINE SET O.D., I		D., INCHES	
UNIT SIZE	LIQUID*	VAPOR*	MODEL	LIQUID*	VAPOR*
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) 3.3 Tons (-040)	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) 4.2 Tons (-050)	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

Figure 4. 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 5, 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 5. Cased Coil and Air Handler Line Set Separation

TXV Kit Introduction

CCS Series cased coils 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 6 illustrates the TXV Kit as shipped with the external parts for field installation identified. In Figure 6 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 <u>field assembled</u> 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 6. 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 7. 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 7. 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 8a.



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 8a. TXV Control installed near Cased Coil (Horizontal Application)

For mounting purposes, the physical dimensions for the TXV Control Box are shown in figure 8b. 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 8c, the Control Box can be mounted from vertical to any angle up to 90 degrees (horizontal).



Figure 8b. TXV Control Box Dimensions



Figure 8c. 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 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 Figure 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:** 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 13. TXV Liquid Line Connections

Airflow

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

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

Cased Coil Model	Airflow, cfm	Coil Pressure Drop, in W.C.
	800	0.15*
CCS-036-CV	1000	0.23*
	1200	0.30
	1200	0.15*
CCS-048-CV	1400	0.23*
	1600	0.31
	1600	0.15*
CCS-060-CV	1800	0.24*
	2000	0.32
*Projected pressure drop based on similar cased coils		

Figure 14. Airflow Vs. Pressure Drop

Appendix A – CCS Series (CE) Supplemental Installation Instructions

- 1. Condensate Drain Preparation
- 2. Coil Installation
- 3. Coil Application CCS Series (CE)
 - Vertical
 - Horizontal

1. Condensate Drain Preparation

An auxiliary drain pan must be provided by the installer and placed under the entire unit with a separate drain line that is properly sloped and terminated in an area visible to the home owner. The auxiliary pans provide extra protection to the area under the unit should the primary and secondary drain plug up and overflow.

The drains from the auxiliary drain pan must be installed according to the local building codes.



Install cased coils with plastic drain pans on a level, flat surface. Incase of coils with metal drain pans, slope the coil 1/4" towards the drain. No such pitch is necessary in the case of plastic drain pans. Condensate drain lines must be installed in accordance with local building codes.

The drain lines must be installed with ½" per foot pitch to provide free drainage. A condensate trap MUST be installed on the primary drain line to ensure proper drainage of the condensate. The trap must be installed in the drain line below the bottom of the drain pan. Fig. 4-1 illustrates the typical drain trap installation.



CAUTION or plastic; use Teflon tape to connect the drain lines to the threads in the drain pan. DO NOT USE SOLVENT BASED PIPE DOPE. THIS WILL RE-DUCE THE LIFE OF THE PAN.

The drain pan has primary (white) and secondary (red) drain connections. If a secondary drain line is required, it should be run separately from the primary and should terminate in a highly visible location. Condensate disposal through the secondary drain line indicates that the primary drain line is plugged and needs cleaning. If a secondary drain line will not be provided plug the secondary drain. Drain plugs are NOT to be reused without plumbers tape or putty. The drain line connectors should be hand tightened to a torque of approximately 35-40 lb (4-5 turns).

2.Coil Installation

The coll is manufactured with dry nitro-WARNING gen pre-charge. Release the pressure through the Schrader valve test port prior to installation. If holding pressure is not present, return coll to distributor for exchange.

Clean coil fins with degreasing agent or mild detergent and rinse fins clean prior to installation.

The refrigerant line sizes should be selected according to the recommendations of the outdoor unit manufacturer.

✓ Care must be taken to ensure all connection joints are burr-free and clean. Failure to do so may increase chances of a leak. It is recommended to use a pipe cutter to remove the spun closed end of the suction line

To reduce air leakage, rubber grommets may be present where the lines pass through the coil case. To avoid damage, remove grom-mets prior to brazing by sliding over the lines. Use a quenching cloth and leave the lines of the predictions. or allow the lines to cool before reinstalling the grommets.

Use of wet rags/quenching cloth is highly recommended to prevent weld-related damages to the casing and Schrader valve (if present).



the drain pan and the outlet of the furnace.

To set up coils for downflow application, install the two 3" wide by 16" long galvanized metal plates on the outside of the coil, against the fins on each side of the coil as shown in Fig. 5A-3. These plates are supplied with the coil.

Do NOT exceed 350 cfm/ton of airflow for downflow applications.



Counter flow configuration

Fig 5A-3. Metal Plate location for a Downflow/Counterflow Application



To position the coll on furnace:

Locate the air outlet of the furnace.

2. Adjust flanges accordingly and position the coil over or under the furnace outlet.

Place ductwork over the casing.

Refer to Furnace/Air Handler manufacturer literature for specific coll installation guidelines and recommendations

Horizontal Installation (CE Only)

Multi-position coils (CE) are shipped from the factory such that they can be installed in both vertical and horizontal applications without changes to the coil. When installing these coils in the horizontal application, the details mentioned in this section must be followed.

Multi-position (CE) coils come equipped with a horizontal drain pan (Plastic/Metal). The plastic drain pan is protected from high temperatures by a metal plate at the apex end of the coil.



Fig 5B-1. Horizontal Left Application



When installing in horizontal applications with airflow directed into the apex of the coil, ensure the presence of the metal plate on the drain pan as shown. Absence of the plate in this configuration may expose the drain pan to high temperatures and increase the chances of property damage due to fire or electric hazard.



Fig 5B-2. Herizontal Right Application

Refer to Furnace/Air Handler manufacturer literature for specific coll installation guidelines and recommendations.

Appendix B – CCS Series (CE) Parts List

Part #	Description
MISC	AIR PREP CABINET
MISC	AIR PREP DOORS
Z01	DRAIN PAN 23-1/2X19.375 *
Z01 DD	DRAIN PAN 23-1/2X19.375
Z01 SS	DRAIN PAN 23-1/2X19.375 *
Z10	DRAIN PAN 13.5 X19.75
Z10 DD	DRAIN PAN 13.5 X19.75
Z10 SS	DRAIN PAN 13.5 X19.75
Z11	DRAIN PAN 14-3/4X19.375
Z11 DD	DRAIN PAN 14-3/4X19.375
Z11 SS	DRAIN PAN 14-3/4X19.375 *
Z12	DRAIN PAN 15-3/4X19.375
Z12 DD	DRAIN PAN 15-3/4X19.375
Z12 SS	DRAIN PAN 15-3/4X19.375 *
Z13	DRAIN PAN 16-3/4X19.375
Z13 DD	DRAIN PAN 16-3/4X19.375
Z13 SS	DRAIN PAN 16-3/4X19.375
Z14	DRAIN PAN 16 X19.375 (4 ROW)"
Z14 DD	DRAIN PAN 16 X19.375(4 ROW)"
Z14 SS	DRAIN PAN 16 X19.375(4 ROW)"
Z15	DRAIN PAN 18-1/2X19.375 N"
Z15 DD	DRAIN PAN 18-1/2X19.375
Z15 SS	DRAIN PAN 18-1/2X19.375
Z16	DRAIN PAN 19-1/2X19.375
Z16 DD	DRAIN PAN 19-1/2X19.375
Z16 SS	DRAIN PAN 19-1/2X19.375
Z17	DRAIN PAN 20-1/4X19.375
Z17 DD	DRAIN PAN 20-1/4X19.375
Z17 SS	DRAIN PAN 20-1/4X19.375
Z18	DRAIN PAN 21-1/4X19.375
Z18 DD	DRAIN PAN 21-1/4X19.375
Z18 SS	DRAIN PAN 21-1/4X19.375 *
Z19	DRAIN PAN 22-3/4X19.375
Z19 DD	DRAIN PAN 22-3/4X19.375
Z19 SS	DRAIN PAN 22-3/4X19.375 *
Z20	DRAIN PAN 23-1/2X21.375
Z20 DD	DRAIN PAN 23-1/2X21.375
Z20 SS	DRAIN PAN 23-1/2X21.375
Z21	DRAIN PAN 24-1/2X19.375
Z21 SS	DRAIN PAN 24-1/2X19.375 *
Z22	DRAIN PAN 25-3/4X19.375
Z22 DD	DRAIN PAN 25-3/4X19.375

Part #	Description
Z22 SS	DRAIN PAN 25-3/4x19.375
Z23	DRAIN PAN 20-1/4X19.375 *
Z23 DD	DRAIN PAN 20-1/4X19.375
Z23 SS	DRAIN PAN 20-1/4X19.375 *
Z24	DRAIN PAN 22.75 X 21.375
Z24 SS	DRAIN PAN 22.75 X 21.375 *
Z25	DRAIN PAN 26-1/2X25-1/2*
Z26	DRAIN PAN 27-1/2X25-1/2*
Z27	DRAIN PAN 25-3/4X22-1/2" *
Z28	DRAIN PAN 29-1/4X25-1/2"
Z29	DRAIN PAN 17.0000X22.0000 BLANK *
Z30 PAN	DRAIN PAN - 13' GLPP (1826)
Z30-ML	DRAIN PAN - 13" GLPP METAL REPLACEMENT LEFT
Z30-MR	DRAIN PAN - 13' GLPP METAL REPLACEMENT RIGHT
Z31 PAN	DRAIN PAN - 16" GLPP (1827)
Z31-ML	DRAIN PAN - 16' GLPP METAL REPLACEMENT LEFT
Z31-MR	DRAIN PAN - 16" GLPP METAL REPLACEMENT RIGHT
Z32 PAN	DRAIN PAN - 19.5" GLPP (8591)
Z32-ML	DRAIN PAN - 19.5." GLPP METAL REPLACEMENT LEFT
Z32-MR	DRAIN PAN - 19.5" GLPP METAL REPLACEMENT RIGHT
Z33 PAN	DRAIN PAN - 23" GLPP (8593)
Z33-ML	DRAIN PAN - 23" GLPP METAL REPLACEMENT LEFT
Z33-MR	DRAIN PAN - 23' GLPP METAL REPLACEMENT RIGHT
Z35 PAN	DRAINPAN CB, CP GLPP (1836)
Z36 PAN	DRAIN PAN FTB 1821 GLPP
Z37	CB, CP FAB METAL DRAIN PAN 21.00 X 23.50 BBL62
Z38	DRAIN PAN 20-1/4X21.375
Z38 DD	DRAIN PAN 20-1/4X21.375
Z39	21.00 X 24.00 SIDEWAYS
Z4	DRAIN PAN MOBILE HOME FAB 4 ROW "
Z40	17 X 19.625 HORZ PAN *
Z41	21 X 19.625 HORZ PAN
Z41P	21 X 19.625 HORZ PAN PLASTIC
Z42	25 X 19.625 HORZ PAN
Z42P	25 X 19.625 HORZ PAN PLASTIC
Z43	28 X 19.625 HORZ PAN
Z43P	28 X 19.625 HORZ PAN PLASTIC
Z44	28 x 21.625 HORZ PAN
Z46 PAN	DRAIN PAN AAW
Z49	DRAIN PAN 23.7500X38.0000 BLANK
Z5	DRAIN PAN MOBILE HOME GLPP (1820)

Part #	Description	
Z50	INTERNAL FULL-DEPTH METAL DRAIN CQ COILS	
Z51	DRAIN PAN 23.7500X51.2500 BLANK	
Z7	DRAIN PAN 13 X19.375 (4 ROW) FAB *	
Z7 DD	DRAIN PAN 13 X19.375(4 ROW) FAB	
Z8 PAN	DRAIN PAN HI VELOCITY SMALL FORM FACTOR N/U	
Z9 PAN	DRAIN PAN HI VELOCITY COLL LARGE FORM *	
ZK	DRAIN PAN 16-3/4X19-3/4""	
DP-H-34.00 DD	DRAIN PAN SLAB HORIZONTAL BHA	
DP-V-MVR42 48	DRAIN PAN MVR 4 ROW FAB	
DP-V-APA16	DRAIN PAN BVR24 24 APA12 13 1/2 x 19	
4200	1.5 - 3.5 TON R-410A TXV KIT N/B (X5-3)	
4202	4-5-6 TON R-410A TXV KIT N/B (X5-5)	
4203	1.5 - 3.5 TON R-410A TXV KIT 20% BLEED PORT (X6-3)	
4204	4-5-6 TON R-410A TXV KIT 20% BLEED PORT (X6-5)	
4044	1.5 - 3.5 TON R22 TXV KIT N/B (X3-3)	
4050	4-5-6 TON R22 TXV KIT N/B (X3-5)	
4190	1.5 - 3.5 TON R22 TXV KIT 20% BLEED PORT (X2-3)	
4195	4-5-6 TON R22 TXV KIT 20% BLEED PORT (X2-5)	
3947	7.5-10 TON R410A TXV N/B (X4-10)	
3946	7.5 TON R22 TXV N/B (X1-7.5)	
3940	10 TON R22 TXV N/B (X1-10)	
4113	TEFLON SEAL O RING (BAG OF 25)	
4444	ELIMINATOR TAIL PIECE	
4451	NUT FOR ELIMINATORS	
TP-001	TAILPIECE SUB-ASSEMBLY (4113, 4451 & 4444)	
1765	90 DEG ELBOW FOR MOBILE HOME COIL	
1773	HOSE FOR MOBILE HOME COILS	
3999	PISTON SIZE 0.055	
4000	PISTON SIZE 0.059	
3987	PISTON SIZE 0.068	
4001	PISTON SIZE 0.074	
3990	PISTON SIZE 0.080	
3991	PISTON SIZE 0.084	
3998	PISTON SIZE 0.092	