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Dallas, Texas, USA

INSTALLATION INSTRUCTIONS

Elite® Series CB29M and CB30M Units

MULTI-POSITION AIR HANDLER
505,339M
05/08
Supersedes 04/08

TP Technical Publications
Litho U.S.A.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.

⚠ CAUTION

Physical contact with metal edges and corners while applying excessive force or rapid motion can result in personal injury. Be aware of, and use caution when working near these areas during installation or while servicing this equipment.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

⚠ IMPORTANT

This unit must be matched with an indoor coil as specified in Lennox Engineering Handbook. Coils previously charged with HCFC-22 must be flushed.

Table of Contents

CB29M Up-flow/Down-flow Unit Dimensions	2
CB29M Horizontal LH/RH Unit Dimensions	3
CB30M Up-flow/Down-flow Unit Dimensions	4
CB30M Horizontal LH/RH Unit Dimensions	5
General Information	6
Shipping and Packing List	6
Requirements	6
Installing the Unit	6
Brazing Connections	9
Installing the Condensate Drain	10
Inspecting and Replacing Filters	10
Sealing the Unit	10
Adjusting the Blower Speed	11
Making Electrical Connections	17
Repairing or Replacing Cabinet Insulation	22

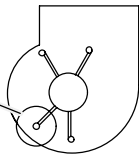
RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

IMPORTANT INFORMATION TO INSTALLER

CHECK FOR AND REMOVE THE FOLLOWING ITEMS BEFORE OPERATING UNIT.

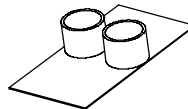
BLOWER MOTOR SHIPPING BOLT

A



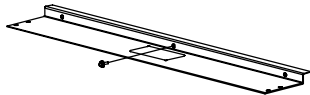
BLOWER HOUSING SUPPORT PAD

B



TOP CAP SHIPPING BRACKET (REPLACE SCREWS IN TOP CAP AFTER REMOVAL)

C



BLOWER MOTOR SHIPPING BRACKET

D

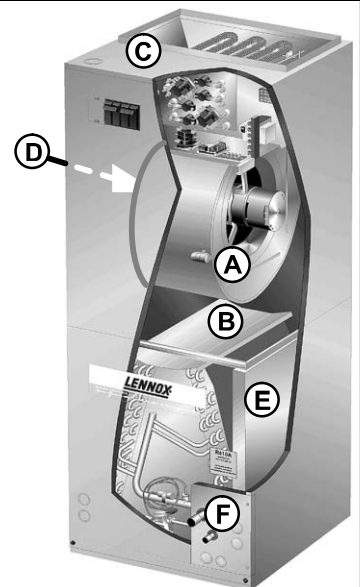


HORIZONTAL DRAIN PAN (SEE UP-FLOW APPLICATIONS ON PAGE 6 AND DOWN-FLOW APPLICATIONS ON PAGE 8)

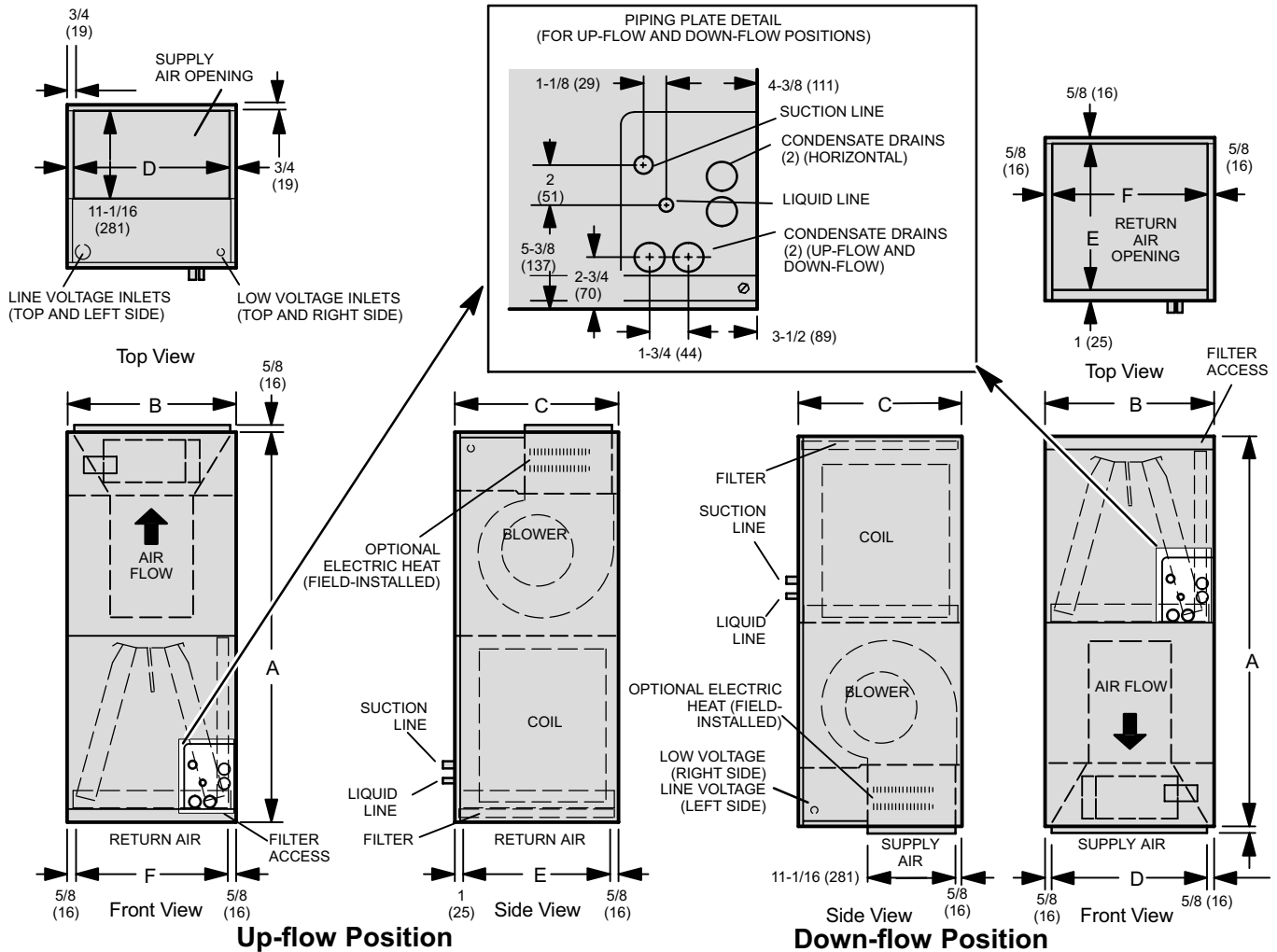
E

REFRIGERANT LINE CAPS [SEE BRAZING CONNECTIONS ON PAGE 9]

F



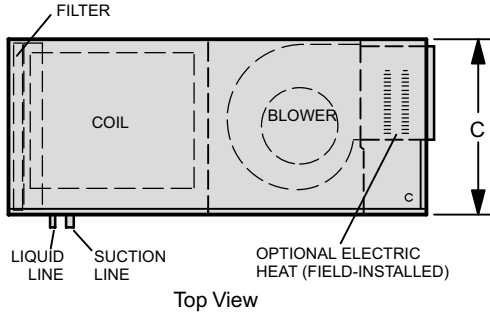
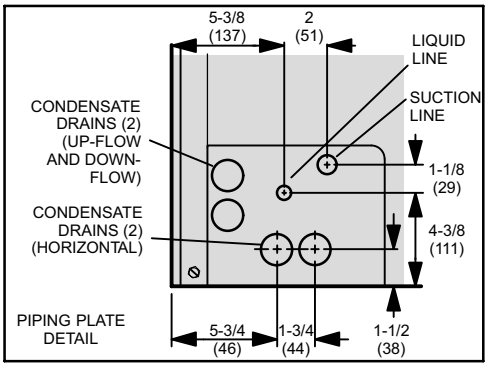
CB29M Up-flow and Down-flow Unit Dimensions - Inches (mm)



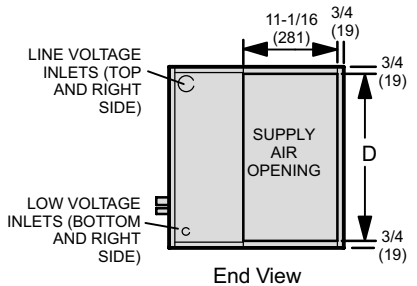
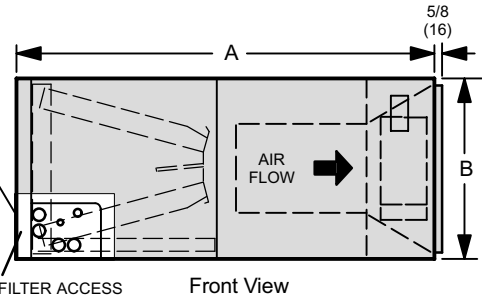
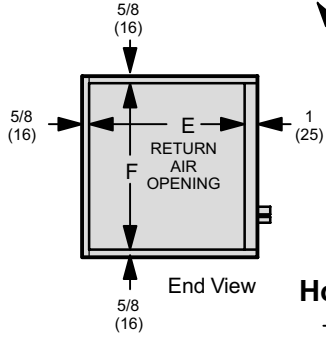
(Kit number 83M57 (LB-909844A) required to convert unit to down-flow applications.)

Model No.	CB29M-21/26 and CB29M-31		CB29M-41 and CB29M-46		CB29M-51 and CB29M-65	
	inch	mm	inch	mm	inch	mm
A	45-1/4	1149	49-1/4	1251	52-1/2	1334
B	16-1/4	413	21-1/4	540	21-1/4	540
C	20-5/8	524	20-5/8	524	22-5/8	575
D	14-3/4	375	19-3/4	502	19-3/4	502
E	19	483	19	483	21	533
F	15	351	20	508	20	508

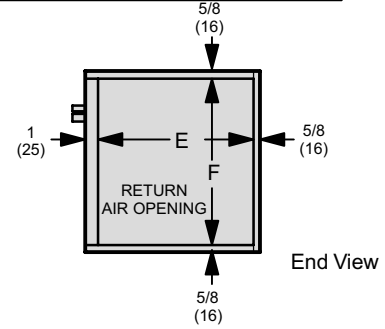
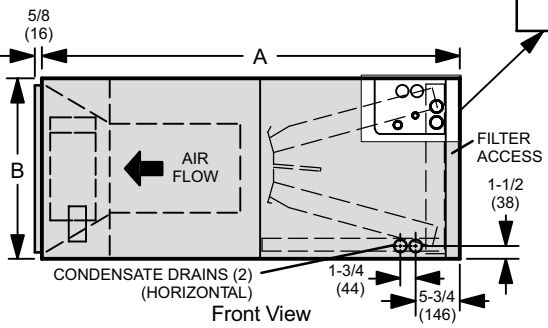
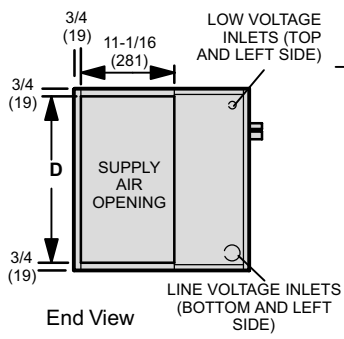
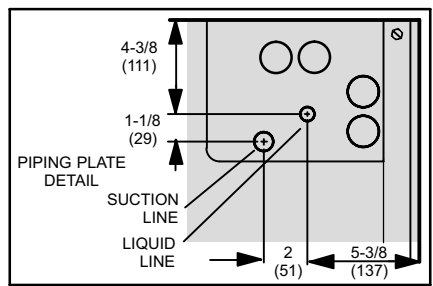
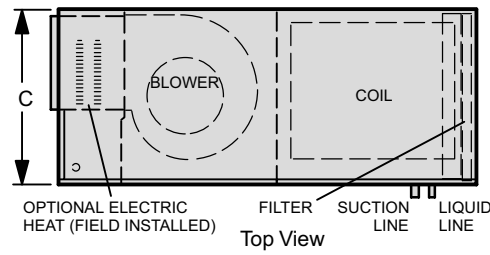
CB29M Horizontal Left- and Right-Hand Unit Dimensions - Inches (mm)



FOR DIMENSIONS "A" THROUGH "F", SEE CHART ON PAGE 2.

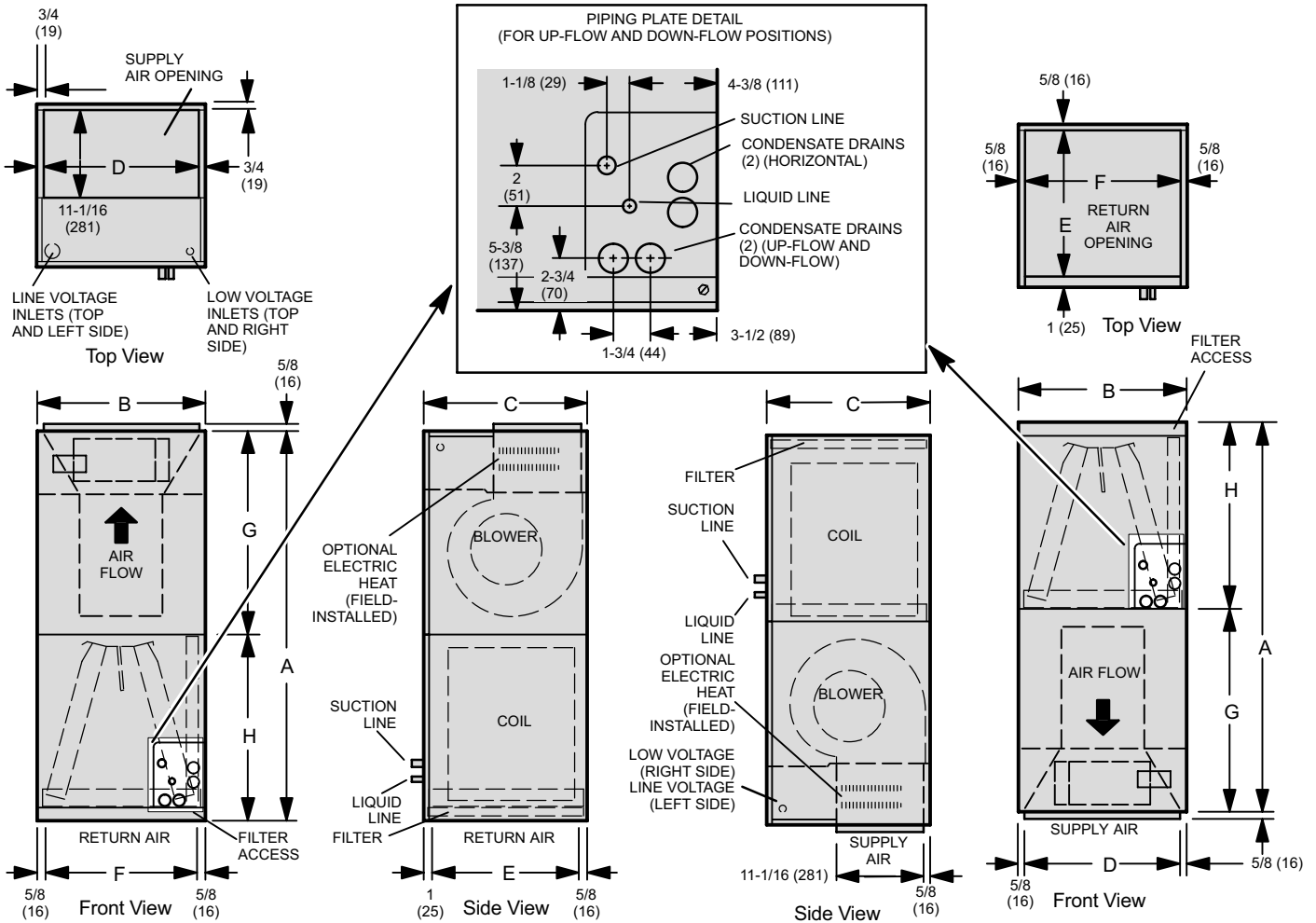


Horizontal Position (Right-Hand Air Discharge)



Horizontal Position (Left-Hand Air Discharge)

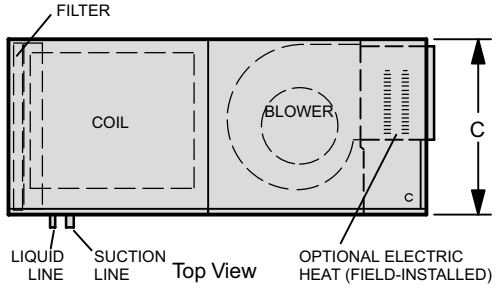
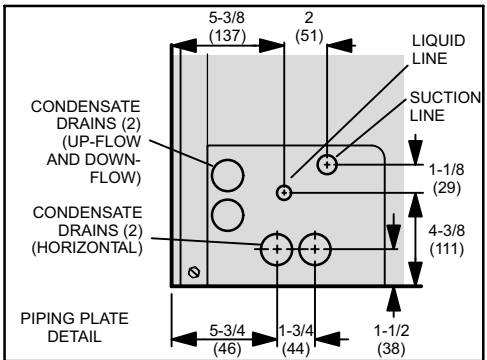
CB30M Up-flow and Down-flow Unit Dimensions - Inches (mm)



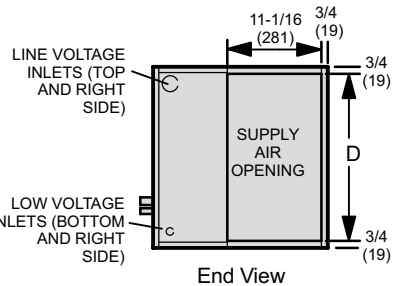
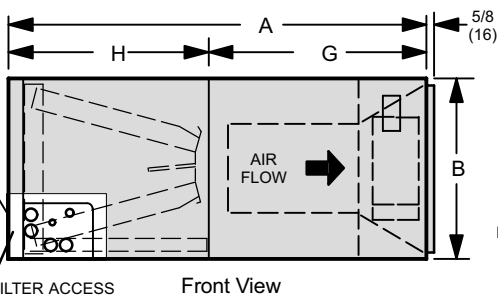
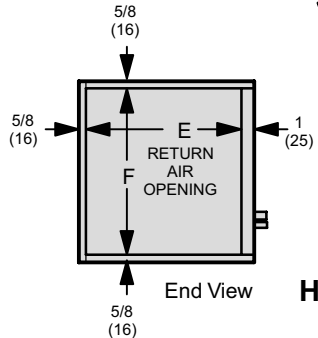
(Kit number 83M57 (LB-909844A) required to convert unit to down-flow applications.)

Model No.	CB30M-21/26		CB30M-31		CB30M-41		CB30M-46		CB30M-51 and CB30M-65	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
A	45-1/4	1149	49-1/4	1251	51	1295	52-1/2	1334	58-1/2	1486
B	16-1/4	413	21-1/4	540	21-1/4	540	21-1/4	540	21-1/4	540
C	20-5/8	524	20-5/8	524	22-5/8	575	22-5/8	575	24-5/8	625
D	14-3/4	375	19-3/4	502	19-3/4	502	19-3/4	502	19-3/4	502
E	19	483	19	483	21	533	21	533	23	584
F	15	351	20	508	20	508	20	508	20	508
G	24-5/8	625	24-5/8	625	26-3/8	670	27-7/8	708	27-7/8	708
H	20-5/8	524	24-5/8	625	24-5/8	625	24-5/8	625	30-5/8	778

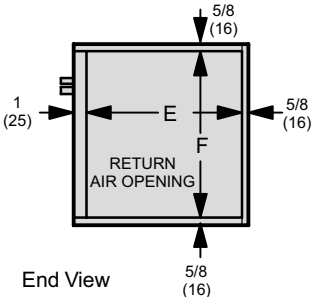
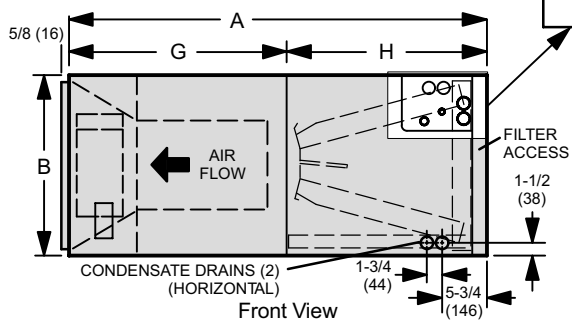
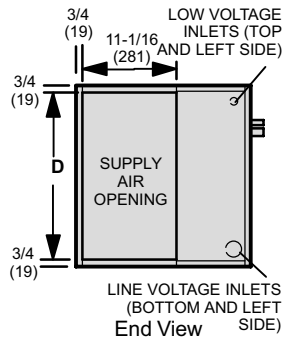
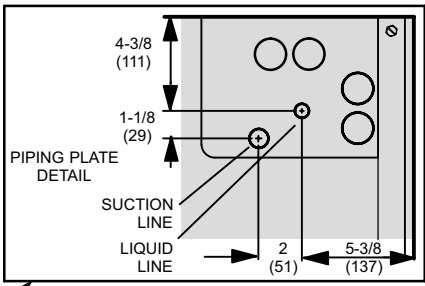
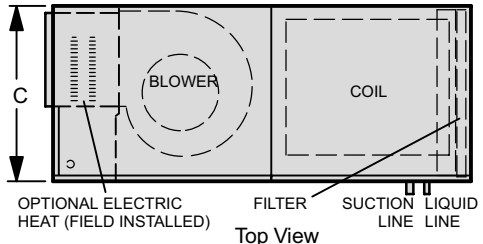
CB30M Horizontal Left- and Right-Hand Unit Dimensions - Inches (mm)



FOR DIMENSIONS A THROUGH H, SEE CHART ON PAGE 4.



Horizontal Position (Right-Hand Air Discharge)



Horizontal Position (Left-Hand Air Discharge)

WARNING

Product contains fiberglass wool.

Disturbing the insulation in this product during installation, maintenance, or repair will expose you to fiberglass wool. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.)

Fiberglass wool may also cause respiratory, skin, and eye irritation.

To reduce exposure to this substance or for further information, consult material safety data sheets available from address shown below, or contact your supervisor.

Lennox Industries Inc.
P.O. Box 799900
Dallas, TX 75379-9900

General Information

The Lennox Elite® Series CB29M and CB30M air handler units are designed for installation with a matched remote outdoor unit and optional field-installed electric heat. The air handler coil units are for indoor installation only.

These instructions are intended as a general guide and do not supersede local or national codes in any way. Consult authorities having jurisdiction before installation. Check equipment for shipping damage; if found, immediately report damage to the last carrier.

Shipping and Packing List

Package 1 of 1 contains the following:

- 1—Assembled air handler unit

Requirements

In addition to conforming to manufacturer's installation instructions and local municipal building codes, installation of Lennox air handler units (with or without optional electric heat), MUST conform with the following National Fire Protection Association (NFPA) standards:

- NFPA No. 90A - Standard for Installation of Air Conditioning and Ventilation Systems
- NFPA No. 90B - Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems

This unit is approved for installation clearance to combustible material as stated on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

Installing the Unit

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.

The CB29M and CB30M units, designed for multi-positional installations, are completely assembled at the factory and shipped ready for up-flow or horizontal right-hand discharge installation. For down-flow or horizontal left-hand discharge, some field modification is required.

IMPORTANT

Kit number 83M57 (LB-109844A) must be installed for down-flow application.

DISASSEMBLE AND REASSEMBLE AIR HANDLER UNITS

The air handler units consists of two factory-assembled sections. It may be necessary to disassemble the sections when positioning the unit for installation.

To disassemble:

- Step 1. Remove access panels.
- Step 2. Remove both blower and coil assemblies. This will lighten the cabinet for lifting.
- Step 3. Remove one screw from the left and right posts inside the unit. Remove one screw from each side on the back of the unit. Unit sections will now separate.

To reassemble:

- Step 1. Align cabinet sections together.
- Step 2. Reinstall screws.
- Step 3. Replace blower and coil assemblies.
- Step 4. Replace access panel.

UP-FLOW APPLICATION

Use the following procedures to configure the unit for up-flow operations:

- Step 1. Remove access panels.
- Step 2. Remove corrugated padding from the space between the blower and coil assemblies.
- Step 3. The horizontal drain pan must be removed when the coil blower is installed in the up-flow position. Removing horizontal drain pain will allow proper airflow and increase efficiency.
- Step 4. Place unit in desired location. Make sure that unit is level. Connect return and supply air plenums as required using sheet metal screws.

Step 5. Install units that have no return air plenum on a mounting stand at least 14" from the floor for proper air return. Lennox offers an optional up-flow unit stand as listed in table 1.

Table 1. Optional Unit Side Stand (Up-Flow Only)

Model	Kit Number
-21, -26, and -31	45K31
-41 through -65.	45K32

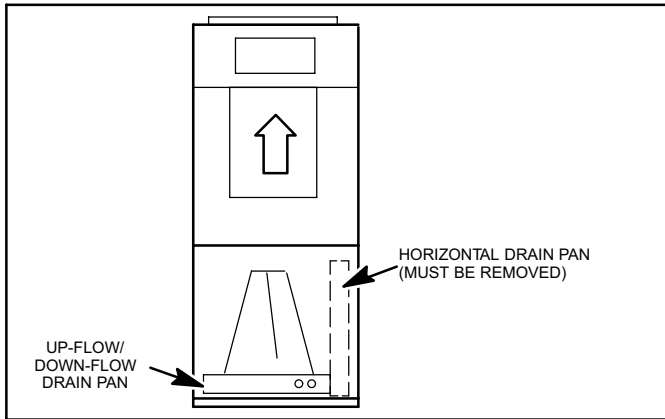


Figure 1. Up-flow Configuration

HORIZONTAL RIGHT-HAND DISCHARGE APPLICATION

Use the following procedures to configure the unit for horizontal right-hand discharge operations:

NOTE - For horizontal applications, an auxiliary drain pan is recommended. Refer to local codes.

- Step 1. Remove access panels. Remove corrugated padding from the space between the blower and coil assembly.
- Step 2. No further adjustment is necessary. Set unit so that it is sloped 1/4 inch toward the drain pan end of the unit.
- Step 3. If the unit is to be suspended, it must be supported along the entire length of the cabinet as illustrated in figure 3. If using a chain or strap, attach a piece of angle iron or sheet metal to the unit (either above or below the unit), so that the full length of the cabinet is supported. Use securing screws which are no longer than 1/2 inch to avoid damaging the coil or filter. Use sheet metal screws to connect the return and supply air plenums.

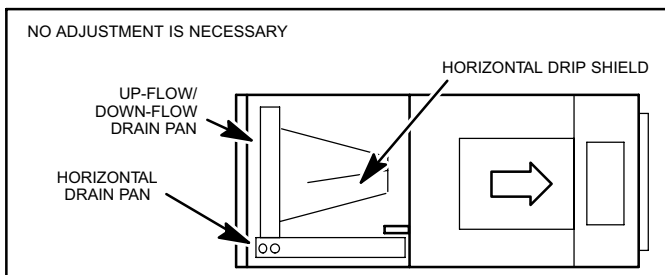


Figure 2. Right-Handed Discharge Configuration

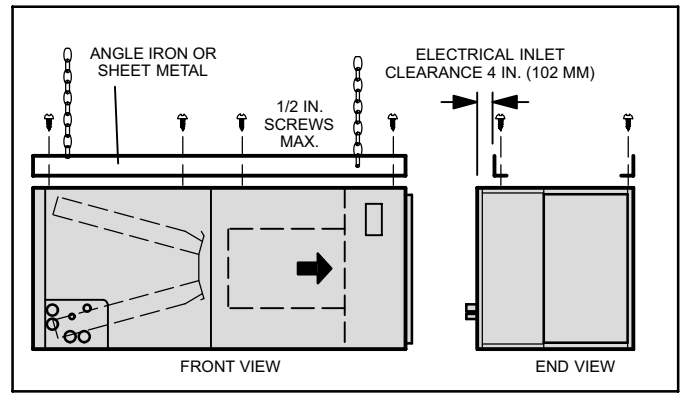


Figure 3. Suspending Horizontal Unit

CAUTION

When removing the coil, there is possible danger of equipment damage and personal injury. Be careful when removing the coil assembly from a unit installed in right- or left-hand applications. The coil may tip into the drain pan once it is clear of the cabinet. Support the coil when removing it.

HORIZONTAL LEFT-HAND DISCHARGE APPLICATION

NOTE - For horizontal applications, an auxiliary drain pan is recommended. Refer to local codes.

Use the following procedures to configure the unit for horizontal left-hand discharge operations:

- Step 1. Remove the access panels and the corrugated padding from the space between the blower and coil assembly before operation.
- Step 2. Remove the coil assembly from unit, and remove the horizontal drain pan as illustrated in figure 4, detail A on page 8.
- Step 3. Remove drain plugs from back drain holes on horizontal drain pan, and re-install them on front holes.
- Step 4. Rotate drain pan 180° front to back and install it on the opposite side of coil.
- Step 5. Remove screws from top cap, and then remove horizontal drip shield screw located in the center of the back coil end seal as illustrated in figure 4, detail B and C on page 8.
- Step 6. Rotate horizontal drip shield 180° front to back.
- Step 7. Remove plastic plug from left hole on coil front end seal and re-install plug in back hole. Re-install horizontal drip shield screw in front coil end seal. Drip shield should drain downward into horizontal drain pan inside coil.
- Step 8. Rotate top cap 180° front to back and align with unused screw holes. Holes must align with front and back coil end plates. Note that top cap has a 45° bend on one side and 90° bend on the other. The 90° bend must be on the same side as the horizontal drain pan as illustrated in figure 4.

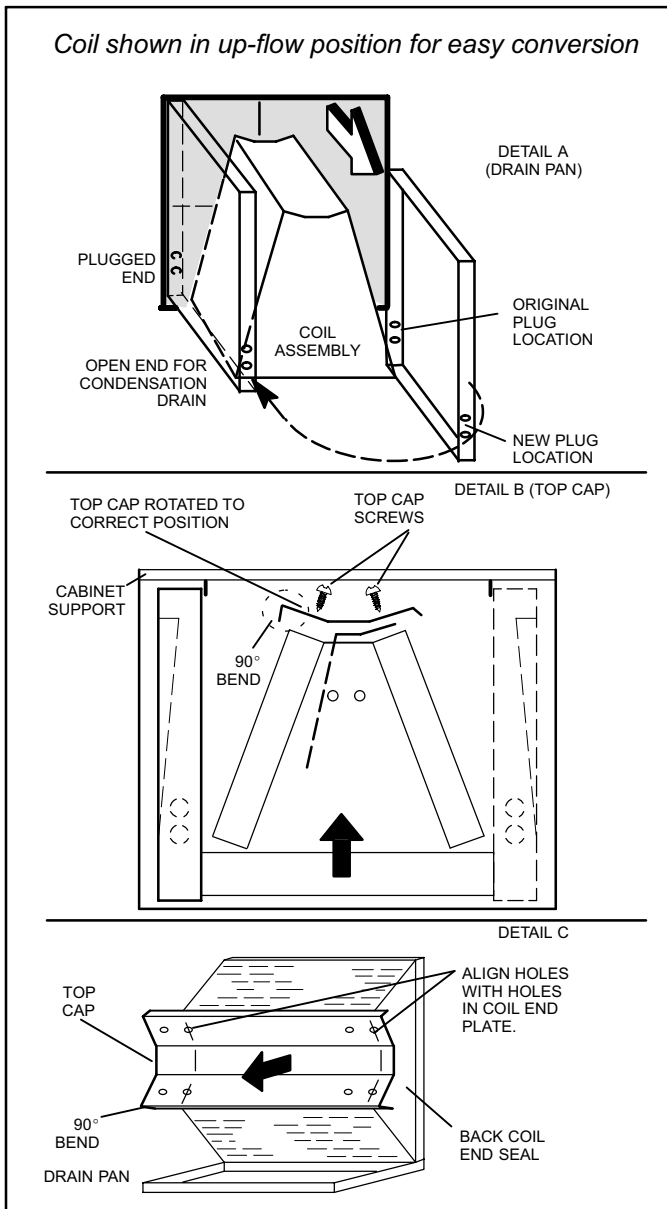


Figure 4. Left-Hand Discharge Modifications

NOTE - Use extreme care when re-installing screws into coil end plate engaging holes. Misaligned screws may damage coil.

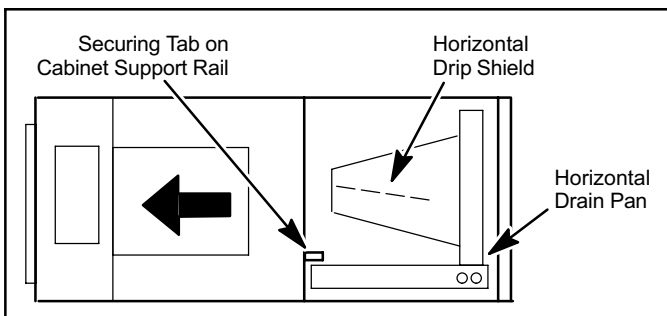


Figure 5. Left-Hand Discharge Configuration

Step 9. From the up-flow position, flip cabinet 90° to the left and set into place. Replace coil assembly and secure coil in place by bending down tab on cabinet support rail as illustrated in figure 5.

*NOTE - For horizontal applications in **high humidity areas**, seal around the exiting drain pipe, liquid line and suction line to prevent infiltration of humid air.*

Step 10. Knock out drain seal plate from access door. Secure plate to cabinet front flange with screw provided.

Step 11. Flip access door and replace it on the unit.

Step 12. Set unit so that it is sloped 1/4 inch toward the drain pan end of the unit. Connect return and supply air plenums as required using sheet metal screws.

Step 13. If the unit is to be suspended, it must be supported along the entire length of the cabinet as illustrated in figure figure 3 on page 7. If using a chain or strap, attach a piece of angle iron or sheet metal to the unit (either above or below the unit), so that the full length of the cabinet is supported. Use securing screws which are no longer than 1/2 inch to avoid damaging the coil or filter. Use sheet metal screws to connect the return and supply air plenums.

DOWN-FLOW APPLICATION

Use the following procedures to configure the unit for down-flow operations:

<p>WARNING</p>
<p>If electric heat section with circuit breakers (ECB29) are applied to down-flow CB29M or CB30M unit, circuit breakers must be rotated 180° to the UP position. See ECB29 installation instructions for more details.</p>

NOTE - If down-flow application is required, separately order kit number 83M57 and install per kit's instructions. Also, use metal or class I supply and return air plenums.

Step 1. Cut an appropriately-sized opening for the base using dimensions listed in figure 7.

NOTE - On combustible flooring in down-flow installations, a down-flow combustible floor base kit must be used as illustrated in figure 6 on page 9.

Step 2. After opening has been cut, set the base into opening. Connect outlet air plenum to the base.

Step 3. Set the unit on the down-flow combustible base so flanges of the unit drop into the base opening and seal against the insulation strips. The unit is now locked in place.

Step 4. Install return air plenum and secure with sheet metal screws.

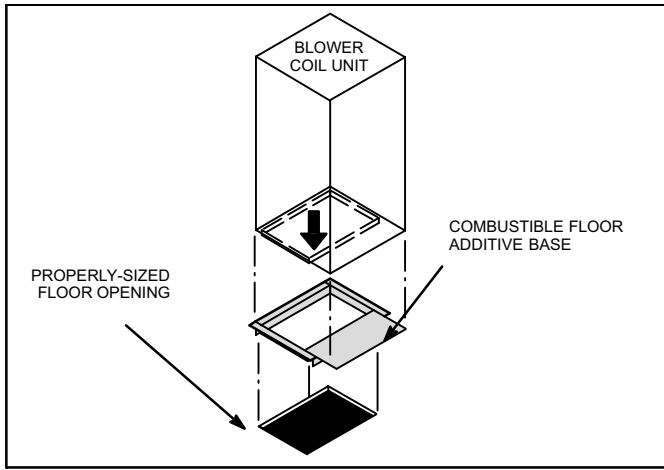


Figure 6. Combustible Flooring Additive Base

If the homeowner reports water dripping from supply air diffusers, check the shields and tape. Make sure the tape is completely attached to the edges of the drip shield, and that the drip shield is wedged firmly in place.

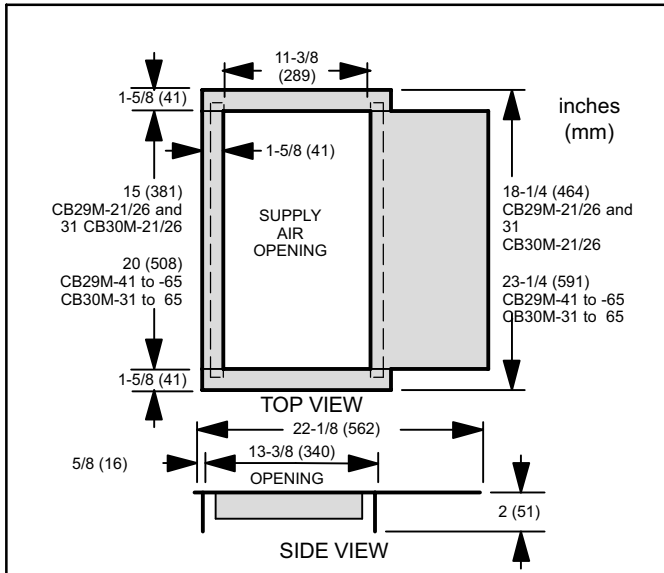


Figure 7. Down-flow Combustible Base Dimensions

Brazing Connections

All CB29M/CB30M coils are equipped with a factory-installed, internally mounted expansion valve. Use Lennox L15 (sweat) series line sets as listed in table 2, or use field-fabricated refrigerant lines. L10 (flare) line sets may be used by cutting off flare nut. Refer to the piping section of the Lennox Unit Information Service Manual for proper size, type and application of field-fabricated lines.

! IMPORTANT

To prevent the build up of high levels of nitrogen when purging, be sure it is done in a well ventilated area. Purge low pressure nitrogen (1 to 2 psig) through the refrigerant piping during brazing. This will help to prevent oxidation and the introduction of moisture into a system.

! WARNING



Danger of explosion!
Can cause equipment damage, injury, or death.
When using a high pressure gas such as dry nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

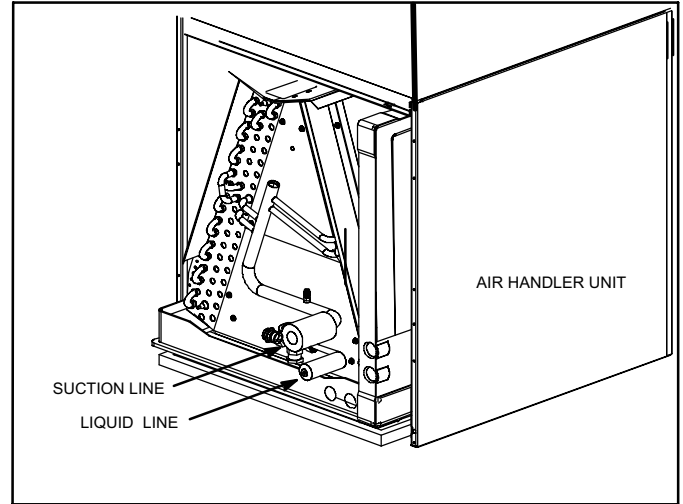


Figure 8. Brazing Connections

NOTE - CB29M/CB30M series evaporators use nitrogen or dry air as a holding charge. If there is no pressure when the rubber plugs are removed, check the coil or line set for leaks before installing. After installation, pull a vacuum on the line set and coil before releasing the unit charge into the system.

NOTE: See outdoor unit instructions on how to flow nitrogen through line sets.

- Step 1. Remove access panel.
- Step 2. Remove the refrigerant line caps from the refrigerant lines.
- Step 3. Use a wet rag to protect TXV sensing bulb (or remove it) when brazing suction line connections.
- Step 4. Place a wet rag against piping plate and around the suction line connection. The wet rag must be in place to guard against damage to the paint.
- Step 5. With the wet rag in place, position field provided elbow fitting to air handler's suction line and line set. Start nitrogen flow before brazing.
- Step 6. After the procedure is completed then remove the wet rag.
- Step 7. Place wet rag against piping plate and around the liquid line connection. Position liquid line elbow to air handler's suction line and to line set. Start nitrogen flow and begin brazing both connections and after procedure is completed then remove both wet rags.

Step 8. Refer to instructions provided with outdoor unit for leak testing, evacuating and charging procedures.

Step 9. Install access panel.

Table 2. Refrigerant Line Sets

Units	Liquid Line No.	Vapor/Suction Line	L10 Line Sets	L15 Line Sets
-21 and -26	3/8 in (8 mm)	5/8 in (16 mm)	L10-26 20 ft. - 50 ft. (6 m - 15 m)	L15-26 20 ft. - 50 ft. (6 m - 15 m)
-31 and -41	3/8 in (10 mm)	3/4 in. (19 mm)	L10-41 20 ft. - 50 ft. (6 m - 15 m)	L15-41 20 ft. - 50 ft. (6 m - 15 m)
-46 and -51	3/8 in (10 mm)	7/8 in. (22 mm)	L10-65 30 ft. - 50 ft. (9 m - 15 m)	L15-65 30 ft. - 50 ft. (9 m - 15 m)
-65	3/8 in (10 mm)	1-1/8 in. (29 mm)	FIELD FABRICATED	FIELD FABRICATED

Installing the Condensate Drain

Connect main condensate drain and route downward to an open drain or sump. Do not connect drain to a closed waste system. Refer to figure 9 for typical condensate trap configuration.

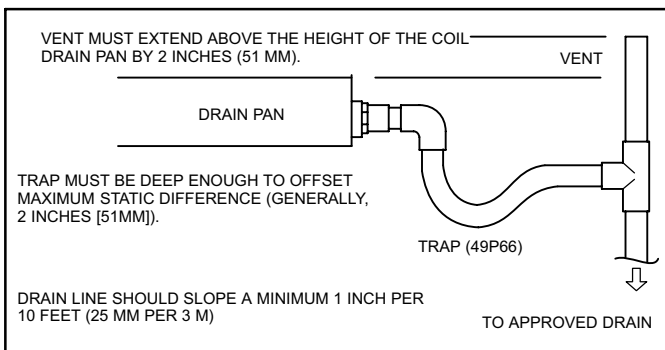


Figure 9. Typical Condensate Drain

It is recommended that the auxiliary drain be connected to a drain line for all units. If auxiliary drain is not connected, it must be plugged with provided cap. **For down-flow units, the auxiliary drain MUST be connected and routed to a drain.** See figure 10 for auxiliary and main drain locations.

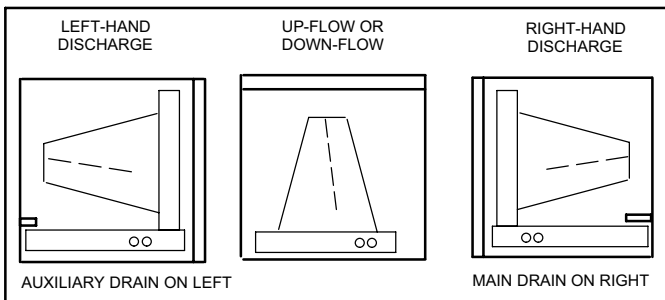


Figure 10. Auxiliary and Main Drain Locations

The following practices are recommended to ensure condensate removal as illustrated in figures 9 and 10:

- Drain piping should not be smaller than the drain connections at drain pan.
- A trap must be installed in the main drain line.
- The trap must be deep enough to offset the difference in static pressure between drain pan and atmosphere. Generally, two inches is satisfactory for medium static applications.
- Horizontal runs must be sloped 1 inch per 10 feet of drain line to offset friction.
- An open vent in drain line will sometimes be required due to line length, friction and static pressure.
- Drain construction and routing should facilitate future cleaning and must not interfere with filter access.
- Auxiliary drain should run to an area where homeowner will notice any drainage. The auxiliary drain line does not require venting or a trap. Refer to local codes.

Inspecting and Replacing Filters

⚠ IMPORTANT
Filter access panel must be in place during unit operation. Excessive warm air entering the unit may result in water blow-off problems.

Each unit includes a factory-installed filter. Note that filter access door fits over access panel. Air leakage will occur if access panel is placed over filter door.

Filters should be inspected monthly and must be cleaned or replaced when dirty to assure proper furnace operation. Reusable filters supplied with some units can be washed with water and mild detergent. Some units are equipped with standard throw-away type filters which should be replaced when dirty.

Step 1. Loosen the thumbscrews holding the filter panel in place.

Step 2. Insert new filter and replace panel.

Table 3. Filter Dimensions

Unit Model Number	Filter Size Inches (mm)
CB29M/CB30M-21/26, CB29M-31	15 x 20 (381 x 508)
CB29M-41, -46, CB30M-31	20 x 20 (508 x 508)
CB29M-51, -65, CB30M-41, -46	20 x 22 (508 x 559)
CB30M-51, -65	20 x 24 (508 x 610)

Sealing the Unit

Seal the unit so that warm air is not allowed into the cabinet. Warm air introduces moisture, which results in water blow-off problems. This is especially important when the unit is installed in an unconditioned area.

Make sure the liquid line and suction line entry points are sealed with either the provided flexible elastomeric thermal insulation, or field provided material (e.g. *Armaflex*, *Permagum* or equivalent). Any of the previously mention materials may be used to seal around the main and auxiliary drains, and around open areas of electrical inlets.

Adjusting Blower Speed

MINIMUM BLOWER SPEEDS (WITH ELECTRIC HEATERS)

For the minimum allowable speed for the CB29M/CB30M series units with electric heat, refer to the ECB29 installation instructions.

AIR VOLUME ADJUSTMENT

Blower speed selection is accomplished by changing the taps at the harness connector at the Blower motor as illustrated in figure 11. Refer to unit wiring diagram in figure 12 on page 18. Refer to tables 4 through 21 on the following pages for Blower performance data.

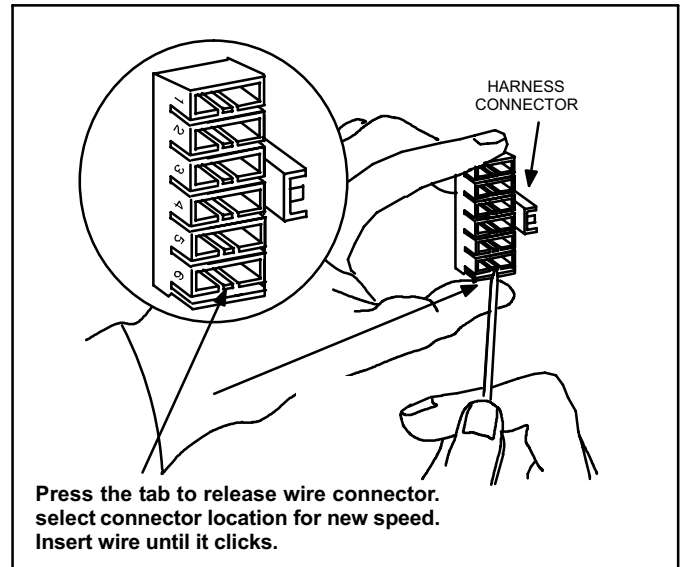


Figure 11. Blower Speed Tap Selection

Table 4. CB29M-21/26 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	700	330	245	895	420	310	1030	485	375
.05	10	690	325	240	875	415	305	1010	475	370
.10	25	680	320	235	865	410	300	990	470	365
.15	35	665	315	230	850	400	290	970	460	355
.20	50	655	310	225	830	390	285	955	450	350
.25	60	640	300	220	810	385	280	925	440	345
.30	75	625	295	220	795	375	270	900	425	335
.40	100	595	280	210	750	355	255	850	400	320
.50	125	555	260	195	700	330	240	800	380	305
.60	150	510	240	185	640	300	225	725	340	290
.70	175	395	185	165	----	----	----	620	295	265
.75	185	----	----	----	----	----	----	570	270	255

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 5. CB29M-31 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1015	480	385	1135	535	410	1230	580	450
.05	10	995	470	375	1120	530	400	1205	570	445
.10	25	980	465	365	1095	515	390	1190	560	440
.15	35	960	455	355	1075	505	380	1165	550	430
.20	50	945	445	345	1050	495	375	1140	540	425
.25	60	925	435	335	1025	485	365	1105	520	415
.30	75	900	425	325	1005	475	355	1080	510	405
.40	100	860	405	305	950	450	335	1025	485	390
.50	125	800	380	285	890	420	315	960	450	370
.60	150	740	350	265	810	385	290	875	415	350
.70	175	670	315	240	735	345	270	790	375	330
.75	185	610	290	225	675	320	255	725	340	315

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 6. CB29M-41 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	935	440	420	1145	540	510	1505	710	655
.05	10	930	440	415	1140	535	500	1485	700	640
.10	25	925	435	410	1130	535	490	1475	695	630
.15	35	915	435	395	1125	530	480	1455	685	615
.20	50	910	430	390	1115	525	475	1435	680	600
.25	60	905	425	380	1110	525	465	1420	670	585
.30	75	900	425	370	1100	520	455	1395	660	570
.40	100	885	415	355	1080	510	430	1350	640	540
.50	125	865	410	335	1060	500	415	1300	615	510
.60	150	845	400	315	1030	485	390	1235	585	480
.70	175	820	390	300	-----	-----	-----	1160	550	455
.75	185	-----	-----	-----	-----	-----	-----	1015	480	425

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 7. CB29M-41 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	955	450	425	1130	535	530	1460	690	665
.05	10	950	450	415	1120	530	520	1445	680	650
.10	25	945	445	410	1115	525	510	1435	675	640
.15	35	940	445	400	1110	525	500	1415	670	630
.20	50	935	440	390	1105	520	490	1400	660	615
.25	60	930	440	385	1100	520	485	1380	650	600
.30	75	920	435	375	1090	515	475	1360	645	585
.40	100	910	430	360	1075	510	455	1325	625	555
.50	125	895	420	345	1060	500	435	1280	605	520
.60	150	880	415	330	1035	490	410	1225	580	480
.70	175	855	405	315	-----	-----	-----	1145	540	430

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 8. CB29M-46 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1295	610	520	1520	720	595	1775	840	730
.05	10	1275	605	510	1505	710	585	1750	825	720
.10	25	1255	590	495	1480	700	570	1720	810	710
.15	35	1230	580	480	1455	685	555	1690	795	700
.20	50	1215	575	470	1430	675	540	1650	780	685
.25	60	1195	565	455	1405	665	525	1620	765	675
.30	75	1170	555	440	1380	650	515	1595	750	660
.40	100	1125	530	415	1320	625	485	1515	715	635
.50	125	1065	500	385	1260	595	460	1420	670	605
.60	150	1005	475	360	1175	555	425	1325	625	575
.70	175	910	430	330	1075	505	395	1210	570	545
.80	200	-----	-----	-----	-----	-----	-----	900	425	480

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 9. CB29M-51 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1590	750	665	1790	845	805	2055	970	1005
.05	10	1570	740	660	1770	835	790	2035	960	995
.10	25	1555	735	655	1750	825	785	2005	945	980
.15	35	1530	720	645	1730	815	775	1980	935	970
.20	50	1510	710	640	1710	805	765	1945	920	955
.25	60	1485	700	635	1685	795	755	1915	905	940
.30	75	1460	690	625	1660	785	745	1885	890	930
.40	100	1415	670	615	1610	760	725	1820	860	900
.50	125	1370	645	600	1550	730	705	1750	825	875
.60	150	1310	620	580	1490	705	685	1670	790	845
.70	175	1240	585	560	1405	665	660	1575	745	820
.75	185	1210	570	550	1360	640	645	1520	720	800

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 10. CB29M-51 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1695	800	680	1900	895	805	2140	1010	965
.05	10	1675	790	670	1880	885	795	2110	995	950
.10	25	1655	780	665	1855	875	780	2080	980	935
.15	35	1640	775	655	1830	865	770	2050	970	920
.20	50	1620	765	650	1805	850	755	2025	955	910
.25	60	1595	750	640	1775	840	740	1995	940	895
.30	75	1570	740	630	1750	825	730	1965	925	885
.40	100	1525	720	610	1700	805	710	1905	900	860
.50	125	1475	695	595	1640	775	685	1845	870	835
.60	150	1420	670	575	1585	750	665	1770	835	805
.70	175	1355	640	555	1515	715	640	1700	800	780
.80	200	1290	610	535	1450	685	620	1625	765	755
.85	210	1255	590	525	1405	665	610	1595	750	745

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 11. CB29M-65 Air Handler Performance (208/230v)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps														
		Low			Medium-Low			Medium			Medium-High			High		
in.w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1570	740	575	1800	850	700	2005	945	825	2135	1005	930	2245	1060	1080
.05	10	1550	730	570	1780	840	690	1980	935	815	2110	995	925	2220	1050	1070
.10	25	1530	725	560	1760	830	680	1950	920	805	2080	985	915	2190	1035	1060
.15	35	1520	715	560	1735	820	670	1930	910	795	2055	970	905	2165	1020	1050
.20	50	1495	705	550	1710	805	660	1910	900	790	2025	955	895	2135	1010	1040
.25	60	1475	695	545	1690	795	655	1880	890	780	1995	940	885	2105	995	1030
.30	75	1460	690	540	1670	785	650	1855	875	770	1965	930	875	2075	980	1020
.40	100	1415	670	530	1615	760	630	1795	850	750	1910	900	855	2005	945	995
.50	125	1370	645	520	1560	735	615	1735	820	730	1850	875	835	1935	910	975
.60	150	1310	620	505	1495	705	595	1670	790	710	1780	840	810	1855	875	950
.70	175	1250	590	490	1425	675	575	1600	755	690	1705	805	785	1780	840	925
.80	200	1175	555	470	1360	640	560	1520	715	665	1620	765	755	1685	795	900
.90	225	1025	485	440	1280	605	545	1420	670	645	1520	715	725	1595	750	875
.95	235	-----	---	-----	1240	585	535	1365	645	630	1460	690	705	1545	730	860

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 12. CB29M-65 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1785	845	750	2050	970	925	2230	1055	1145
.05	10	1775	835	745	2025	955	915	2200	1040	1135
.10	25	1745	825	735	2005	945	905	2170	1025	1120
.15	35	1725	815	725	1980	935	900	2135	1010	1105
.20	50	1700	800	715	1955	920	885	2105	995	1095
.25	60	1680	795	705	1925	910	875	2075	980	1085
.30	75	1655	780	695	1900	895	865	2045	965	1075
.40	100	1600	755	675	1840	870	845	1980	935	1050
.50	125	1545	730	655	1785	845	825	1910	900	1025
.60	150	1490	705	640	1715	810	800	1835	865	1000
.70	175	1425	670	620	1645	775	775	1765	830	975
.80	200	1360	640	600	1565	735	745	1690	795	955
.90	225	1290	610	585	1465	690	710	1600	755	925

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 13. CB30M-21/26 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	700	330	245	895	425	300	1030	485	365
.05	10	695	330	245	890	420	295	1015	480	360
.10	25	690	325	240	875	415	290	1000	470	355
.15	35	680	320	235	860	405	285	980	465	345
.20	50	665	315	230	845	400	280	960	455	340
.25	60	650	310	220	825	390	275	935	440	335
.30	75	635	300	215	800	380	265	910	430	325
.40	100	590	280	205	745	355	250	850	400	310
.50	125	535	255	190	685	320	235	780	370	295
.60	150	470	220	175	605	285	220	705	330	280
.70	175	395	185	165	520	245	200	615	290	265
.75	185	350	165	155	475	225	195	565	265	255

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 14. CB30M-31 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1045	490	315	1175	555	335	1290	610	385
.05	10	1075	505	310	1190	560	330	1295	610	380
.10	25	1085	515	300	1190	560	325	1290	610	375
.15	35	1085	510	295	1175	555	320	1265	600	370
.20	50	1065	505	285	1145	540	310	1230	580	360
.25	60	1030	485	270	1105	520	295	1180	555	350
.30	75	980	460	255	1045	495	280	1115	525	335
.40	100	830	390	220	890	420	250	945	445	305
.50	125	615	290	190	675	320	215	720	340	275
.60	150	335	155	160	405	190	185	440	205	240

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 15. CB30M-41 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	915	430	335	1120	530	390	1525	720	505
.05	10	965	455	330	1150	540	385	1520	720	495
.10	25	1005	475	315	1170	550	380	1510	715	480
.15	35	1035	490	235	1180	560	285	1495	705	470
.20	50	1055	495	230	1190	560	280	1475	695	455
.25	60	1060	500	220	1185	560	275	1450	685	440
.30	75	1050	495	215	1175	555	375	1415	670	430
.40	100	1005	475	290	1135	535	325	1335	630	400
.50	125	915	430	255	1060	500	300	1230	580	375
.60	150	775	365	230	960	455	280	1100	520	345
.70	175	590	280	205	830	390	255	950	450	320
.75	185	485	230	195	750	355	245	870	410	305

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 16. CB30M-41 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps					
		Low			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1120	530	390	1525	720	505
.05	10	1150	540	385	1520	720	495
.10	25	1170	550	380	1510	715	480
.15	35	1180	560	285	1495	705	470
.20	50	1190	560	280	1475	695	455
.25	60	1185	560	275	1450	685	440
.30	75	1175	555	375	1415	670	430
.40	100	1135	535	325	1335	630	400
.50	125	1060	500	300	1230	580	375
.60	150	960	455	280	1100	520	345
.70	175	830	390	255	950	450	320
.75	185	750	355	245	870	410	305

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 17. CB30M-46 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1325	625	370	1600	755	455	1825	860	565
.05	10	1335	630	370	1585	750	455	1790	845	555
.10	25	1335	630	370	1565	740	450	1750	825	540
.15	35	1330	630	365	1540	725	440	1710	805	530
.20	50	1320	620	360	1505	710	435	1660	785	520
.25	60	1300	615	355	1470	695	425	1610	760	505
.30	75	1270	600	350	1425	675	415	1555	735	495
.40	100	1195	565	330	1320	625	390	1430	675	465
.50	125	1090	515	310	1195	565	365	1290	610	440
.60	150	955	450	285	1050	495	335	1135	535	415
.70	175	795	375	260	875	415	310	965	455	385
.75	185	700	330	250	780	370	295	875	415	370

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 18. CB30M-51 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1475	695	430	1785	845	520	1910	900	590
.05	10	1480	700	430	1770	835	515	1895	895	585
.10	25	1475	695	425	1750	825	510	1870	880	580
.15	35	1465	690	420	1720	810	500	1840	865	570
.20	50	1445	680	410	1685	795	490	1800	850	565
.25	60	1415	670	405	1645	775	480	1755	830	550
.30	75	1380	650	395	1600	755	465	1700	805	540
.40	100	1290	610	370	1485	700	440	1580	745	515
.50	125	1170	550	345	1350	635	410	1425	675	485
.60	150	1020	480	320	1190	560	380	1250	590	450
.70	175	840	395	295	1000	470	350	1045	495	415
.75	185	740	350	280	900	425	335	930	440	400

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 19. CB30M-51 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps					
		Low			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1775	835	530	1870	885	610
.05	10	1775	835	530	1875	885	610
.10	25	1765	835	515	1870	880	590
.15	35	1750	825	510	1850	875	585
.20	50	1720	815	500	1825	860	575
.25	60	1685	795	490	1790	845	560
.30	75	1645	775	480	1745	825	545
.40	100	1530	720	450	1625	765	505
.50	125	1380	650	420	1465	690	470
.60	150	1195	565	385	1270	600	425
.70	175	975	460	350	1030	485	385
.80	200	720	340	320	755	355	340

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 20. CB30M-65 Air Handler Performance (208/230V)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps								
		Low			Medium			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1775	835	585	2025	955	670	2115	995	780
.05	10	1775	835	590	2010	950	665	2100	990	770
.10	25	1770	835	580	1995	940	655	2085	985	765
.15	35	1760	830	570	1975	930	645	2060	970	750
.20	50	1745	825	560	1950	920	635	2030	960	740
.25	60	1725	815	550	1915	905	625	2000	945	730
.30	75	1695	800	535	1880	885	610	1960	925	715
.40	100	1630	770	505	1795	845	580	1870	880	685
.50	125	1540	725	475	1690	795	545	1755	830	655
.60	150	1425	675	440	1560	735	515	1620	765	625
.70	175	1295	610	410	1415	670	480	1465	690	590
.80	200	1140	535	375	1250	590	445	1290	610	560
.85	210	1050	495	360	1160	550	425	1195	565	545

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Table 21. CB30M-65 Air Handler Performance (460V - 1 ph)

External Static Pressure		Air Volume and Motor Watts at Specific Blower Taps					
		Low			High		
in. w.g.	Pa	cfm	L/s	Watts	cfm	L/s	Watts
.00	0	1965	930	710	2140	1010	795
.05	10	1950	920	700	2110	995	780
.10	25	1930	910	685	2080	980	765
.15	35	1910	900	675	2045	965	755
.20	50	1880	890	660	2005	945	740
.25	60	1850	875	645	1965	925	725
.30	75	1815	855	630	1920	905	710
.40	100	1735	820	600	1820	860	680
.50	125	1635	770	570	1710	805	650
.60	150	1520	720	540	1585	750	615
.70	175	1390	655	505	1450	685	585
.80	200	1245	590	475	1305	615	550
.85	210	1165	550	460	1225	580	535

NOTE - All air data is measured external to unit with air filter in place. Electric heaters have no appreciable air resistance.

Making Electrical Connections

⚠ CAUTION

USE COPPER CONDUCTORS ONLY.

Wiring must conform to the current National Electric Code ANSI/NFPA No. 70, or Canadian Electric Code Part I, CSA Standard C22.1, and local building codes. Refer to following wiring diagrams. See unit nameplate for minimum circuit ampacity and maximum overcurrent protection size.

Select the proper supply circuit conductors in accordance with Tables 310-16 and 310-17 in the National Electric Code, ANSI/NFPA No. 70 or Tables 1 through 4 in the Canadian Electric Code, Part I, CSA Standard C22.1.

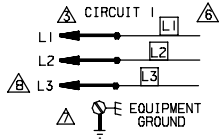
This unit is provided with knockouts for conduit. Reducer washers are provided, in bag assembly to allow use of smaller conduit. Use provided caps to seal holes not used. Refer to figure 12 for unit schematic wiring diagram. Refer to figures 14 and 15 for typical field wiring.

Separate openings have been provided for 24V low voltage and line voltage. Refer to the dimension illustration for specific location.

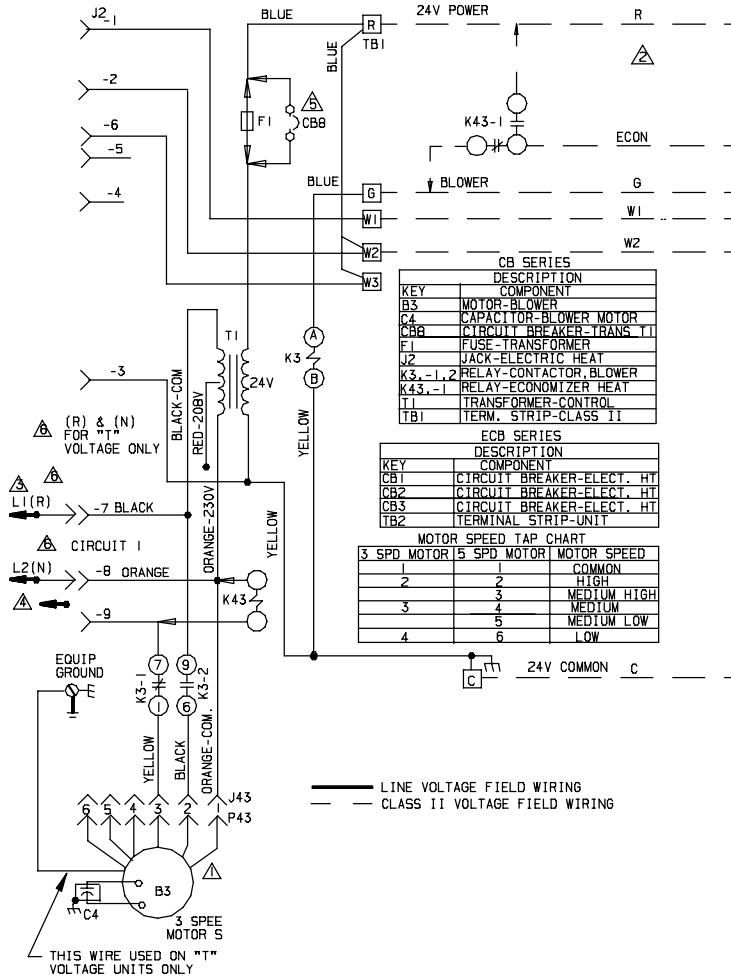
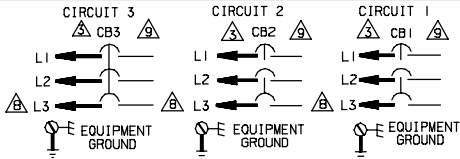
⚠ WARNING

Run 24V Class II wiring only through specified low voltage opening. Run line voltage wiring only through specified high voltage opening. Do not combine voltage in one opening.

FIELD WIRING FOR ECB SERIES UNITS WITHOUT CIRCUIT BREAKERS



FIELD WIRING FOR ECB SERIES UNITS WITH CIRCUIT BREAKERS



KEY	DESCRIPTION
CB SERIES COMPONENT	
B3	MOTOR-BLOWER
C4	CAPACITOR-BLOWER MOTOR
CB8	CIRCUIT BREAKER-TRANS II
F1	FUSE-TRANSFORMER
J2	JACK-ELECTRIC HEAT
K3,-1,2	RELAY-CONTACTOR, BLOWER
K43,-1	RELAY-ECONOMIZER HEAT
T1	TRANSFORMER-CONTROL
TB1	TERM. STRIP-CLASS II

KEY	DESCRIPTION
ECB SERIES COMPONENT	
CB1	CIRCUIT BREAKER-ELECT. HT
CB2	CIRCUIT BREAKER-ELECT. HT
CB3	CIRCUIT BREAKER-ELECT. HT
TB2	TERMINAL STRIP-UNIT

MOTOR SPEED TAP CHART		
3 SPD MOTOR	5 SPD MOTOR	MOTOR SPEED
1	1	COMMON
2	2	HIGH
3	3	MEDIUM HIGH
4	4	MEDIUM
5	5	MEDIUM LOW
6	6	LOW

— LINE VOLTAGE FIELD WIRING
 - - CLASS II VOLTAGE FIELD WIRING

- △ REFER TO FACTORY BLOWER SPEED TAP SELECTION CHART ON UNIT FOR BLOWER SPEED INFORMATION
- △ NEC/CEC CLASS 2 3VA
- △ USE COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVER-CURRENT PROTECTION SIZE
- △ L3 CONNECTION USED ON (Y) ELECTRIC HEATERS ONLY
- △ CB8 USED ON 51 AND 61 UNITS ONLY
- △ CONNECT POWER WIRES FROM HEATER LABELED L1, L2 ON "P" VOLTAGE UNITS AND L1, L2, L3 ON "Y" VOLTAGE UNITS TO TB2 TERMINAL STRIP IN INDOOR UNIT.
- △ EQUIPMENT GROUND LOCATED IN INDOOR UNIT
- △ L3 IS NOT PRESENT ON (P) ELECTRIC HEATERS
- △ THE NUMBER OF CIRCUITS VARY ACCORDING TO HEATER MODEL. REFER TO FAN COIL NAMEPLATE FOR ACTUAL NUMBER EMPLOYED

Figure 12. CB29 and CB30 Typical Wiring Diagram - Single Phase

CB29 and CB30 Typical Wiring Diagram - Three Phase

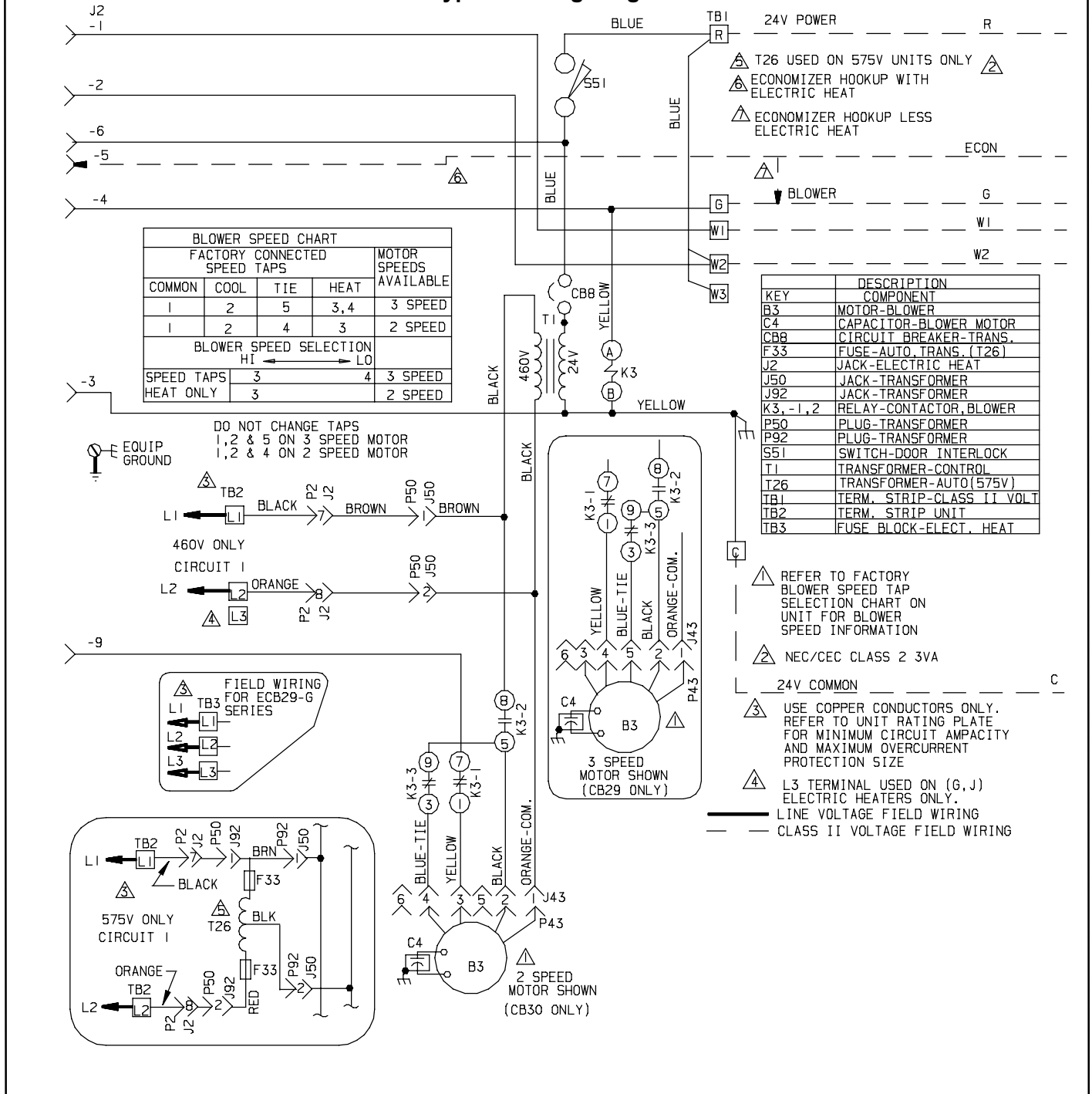


Figure 13

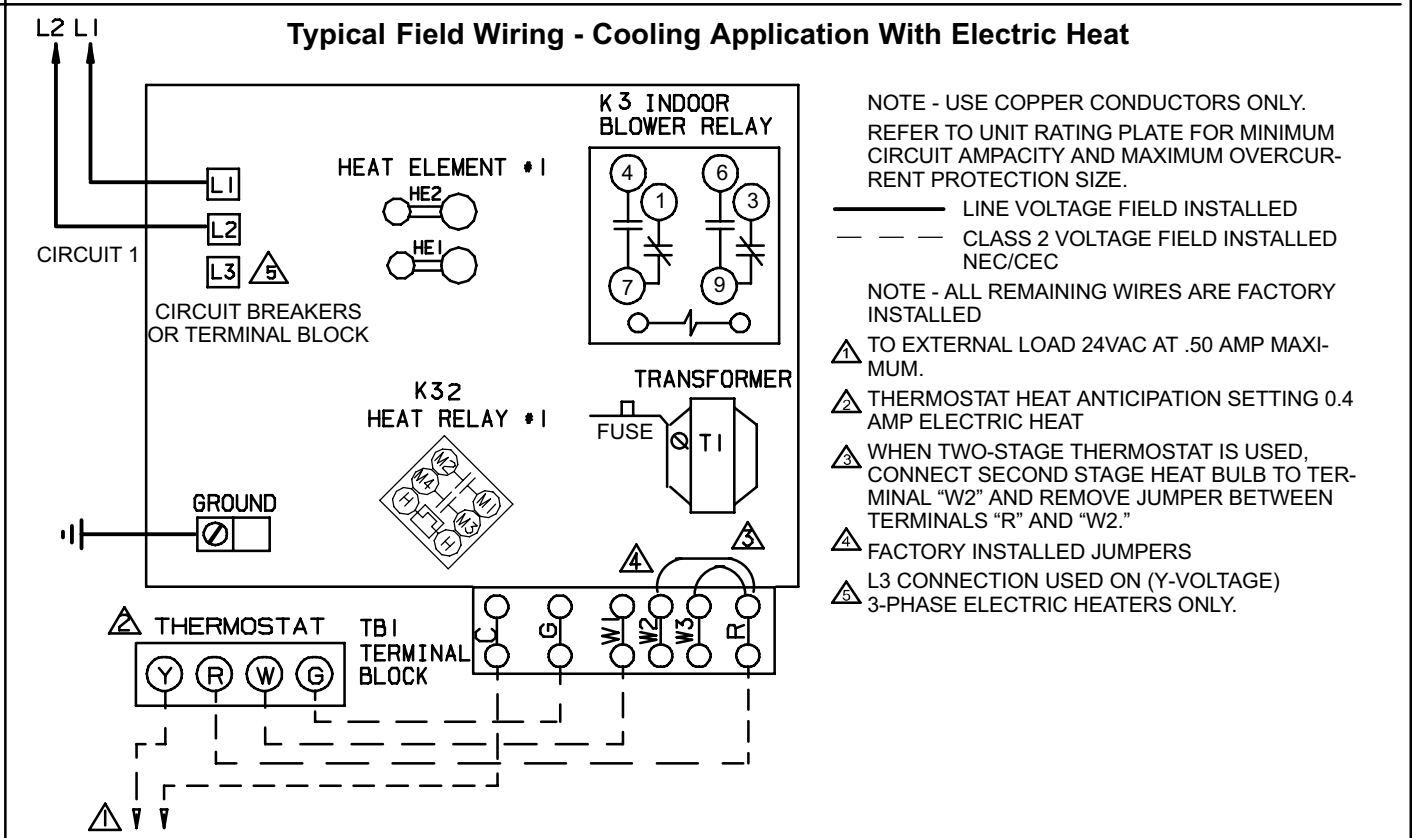
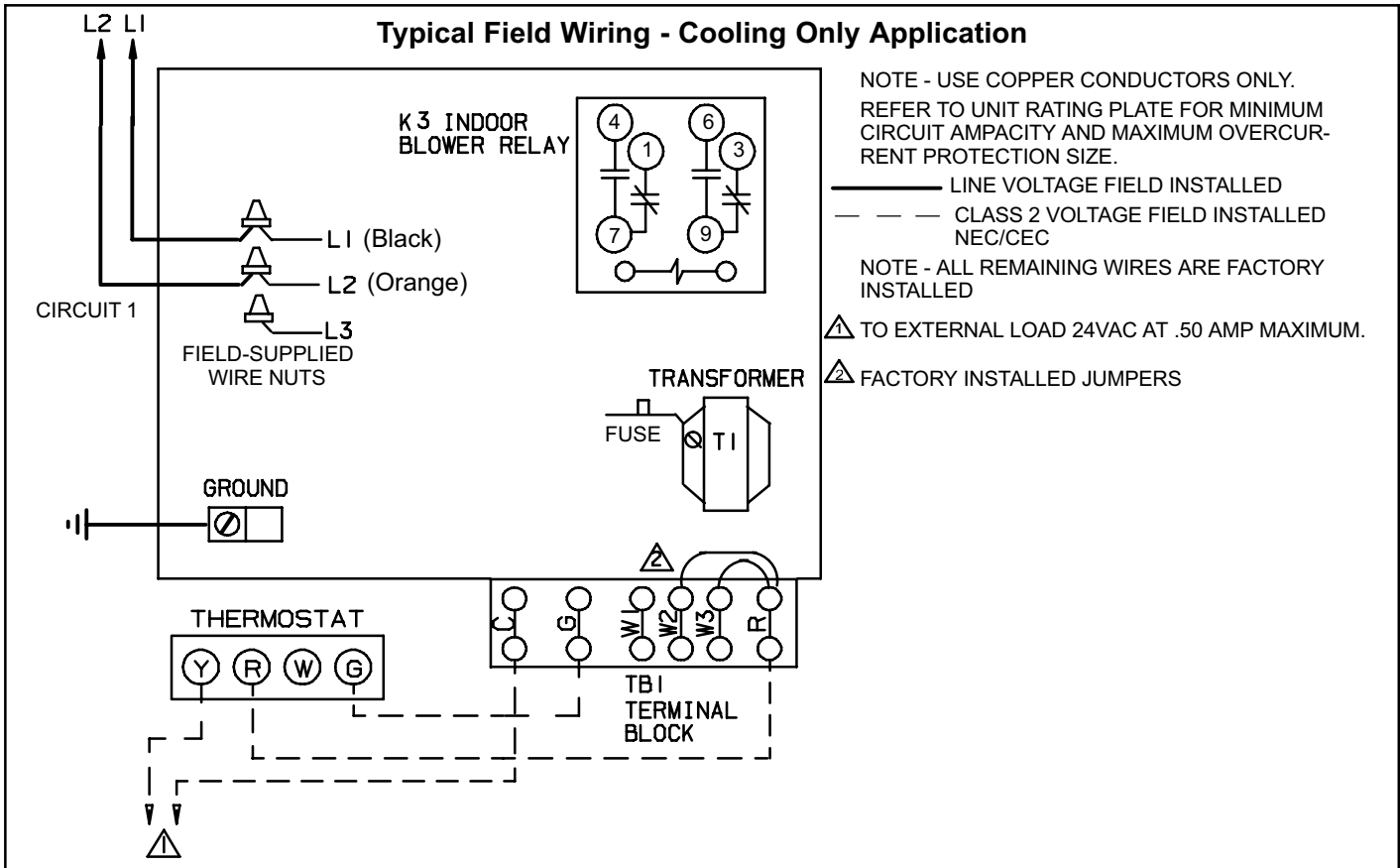
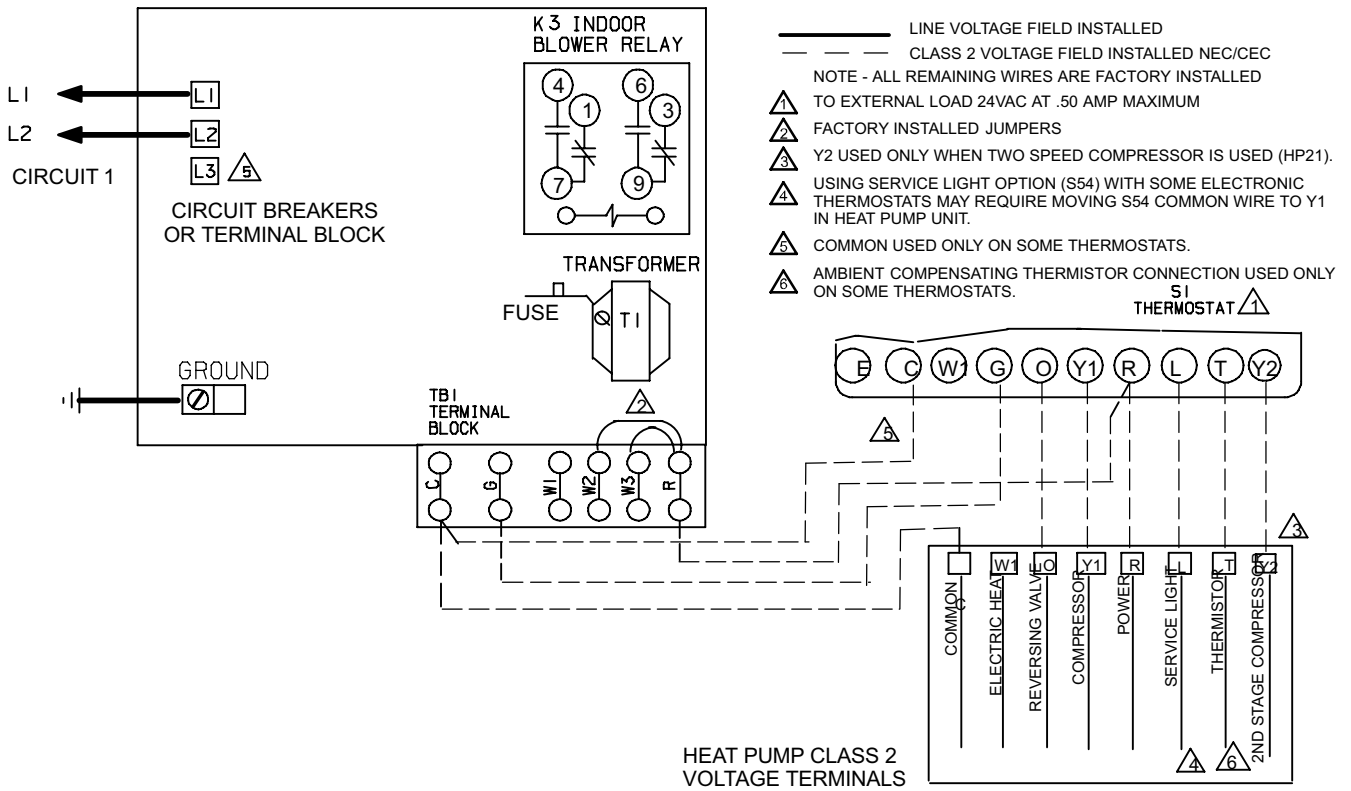


Figure 14

Typical Field Wiring - Heat Pump Only Application



Typical Field Wiring - Heat Pump Application With Electric Heat

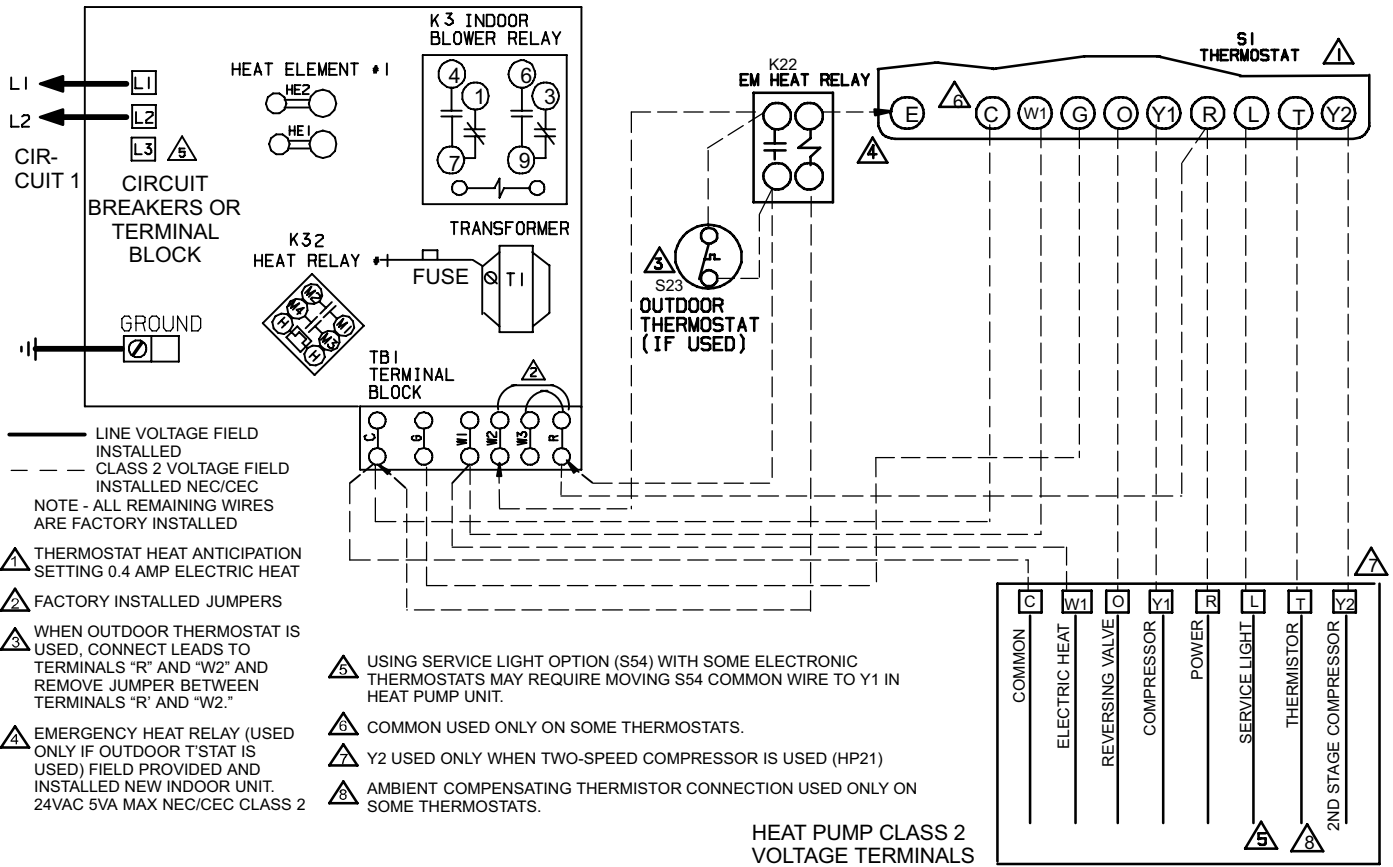


Figure 15

Repairing or Replacing Cabinet Insulation

! IMPORTANT

DAMAGED INSULATION MUST BE REPAIRED OR REPLACED before the unit is put back into operation. Insulation loses its insulating value when wet, damaged, separated or torn.

Matt or foil-faced insulation is installed in indoor equipment to provide a barrier between outside air conditions (surrounding ambient temperature and humidity) and the varying conditions inside the unit. If the insulation barrier is damaged (wet, ripped, torn or separated from the cabinet walls), the surrounding ambient air will affect the inside surface temperature of the cabinet. The temperature/humidity difference between the inside and outside of the cabinet can cause condensation on the inside or outside of the cabinet which leads to sheet metal corrosion and subsequently, component failure.

REPAIRING DAMAGED INSULATION

Areas of condensation on the cabinet surface are an indication that the insulation is in need of repair.

If the insulation in need of repair is otherwise in good condition, the insulation should be cut in an X pattern, peeled open, glued with an appropriate all-purpose glue and placed back against the cabinet surface, being careful to not overly compress the insulation so the insulation can retain its original thickness. If such repair is not possible, replace the insulation. If using foil-faced insulation, any cut, tear, or separations in the insulation surface must be taped with a similar foil-faced tape.

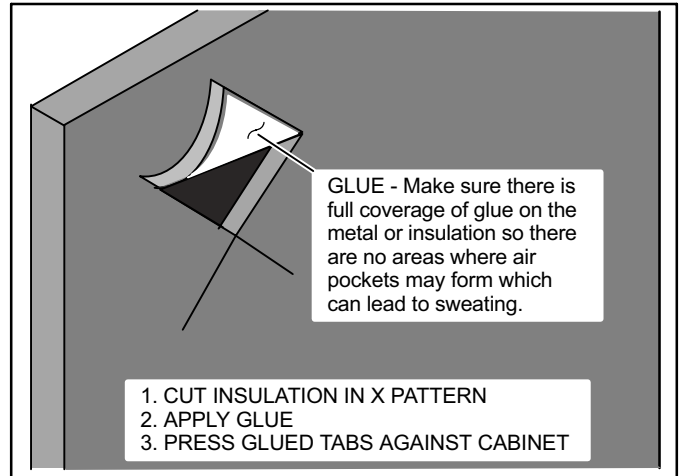


Figure 16. Repairing Insulation

! WARNING

Electric Shock Hazard.

Can cause injury or death.

Foil-faced insulation has conductive characteristics similar to metal. Be sure there are no electrical connections within a 1/2" of the insulation. If the foil-faced insulation comes in contact with electrical voltage, the foil could provide a path for current to pass through to the outer metal cabinet. While the current produced may not be enough to trip existing electrical safety devices (e.g. fuses or circuit breakers), the current can be enough to cause an electric shock hazard that could cause personal injury or death.