LENNOX®

PRODUCT LITERATURE

CE

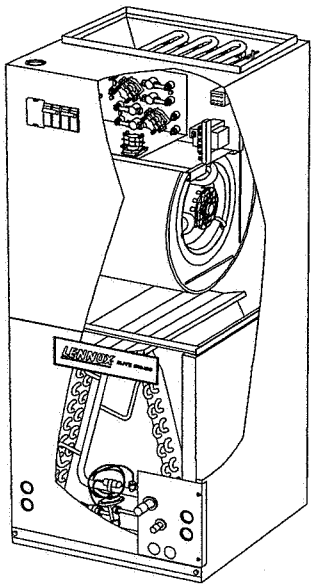
INSTALLATION INSTRUCTIONS

Elite10™ CB29M & Elite12™ CB30M Series Units

MULTI-POSITION BLOWER COIL UNITS
503,372M
9/98
Supersedes 3/96

Technical Publications

Litho U.S.A.



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RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

⚠IMPORTANT

International legislation bans the intentional venting of refrigerant (CFCs and HCFCs). Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

CB29M & CB30M Series Units

The Lennox Elite 10™ CB29M and Elite 12™ CB30M series blower coil units are designed for installation with optional field-installed electric heat and a matched remote outdoor unit. These units are for indoor installation only. The CB29M and CB30M units are designed for multi-positional installations and are shipped (completely assembled) from the factory for upflow and horizontal right-hand discharge.

General

These instructions are intended as a general guide an do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

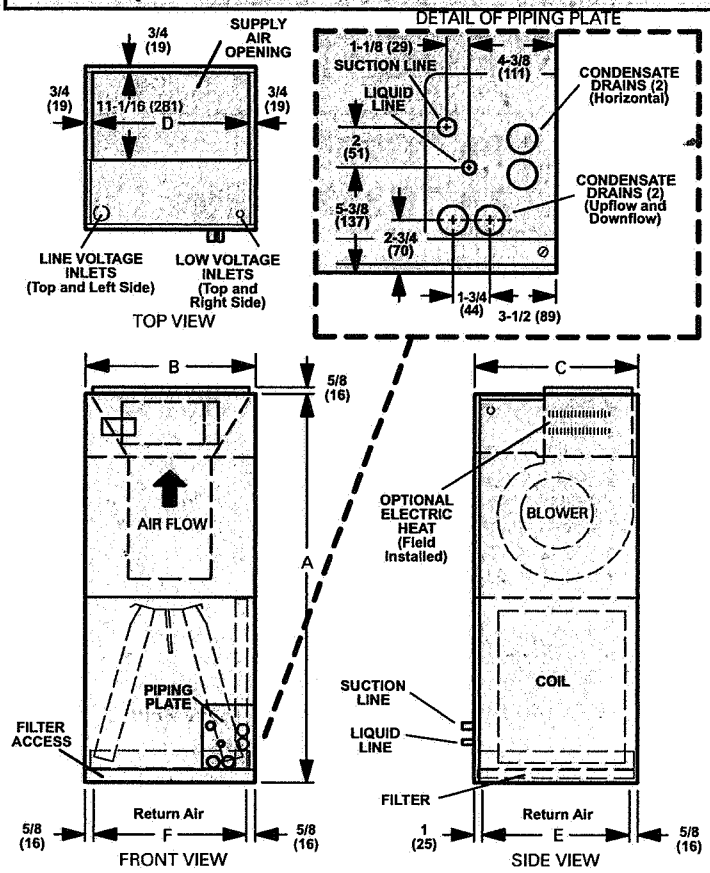
Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.

Shipping and Packing List

CB29M and CB30M Series
Package 1 of 1 contains:

1 - Assembled blower coil unit
2 - Drip shields (for downflow application only - not provided on -21/26 units)
1 - Heat shield
1 - Liquid line street elbow
1 - Suction line street elbow
2 - Reducer washers (2 inch to 1 inch T.S.)
2 - Reducer washers (2 inch to 3/4 inch T.S.)
1 - 5 inch PVC threaded 3/4 inch pipe section

CB29M Up-Flow and Down-Flow Unit Dimensions - inches (mm)

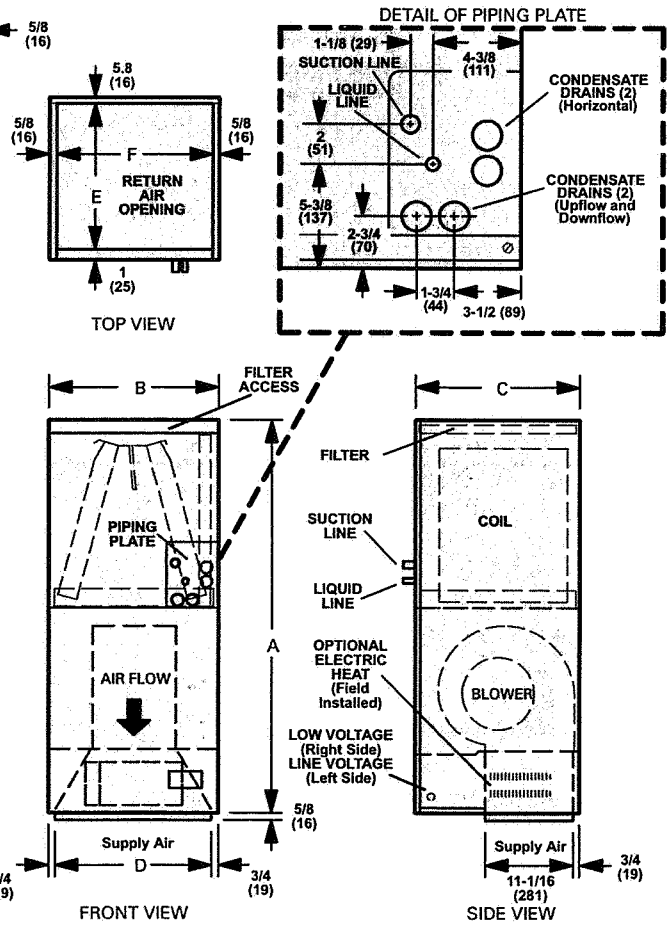


CB29M
UPFLOW POSITION

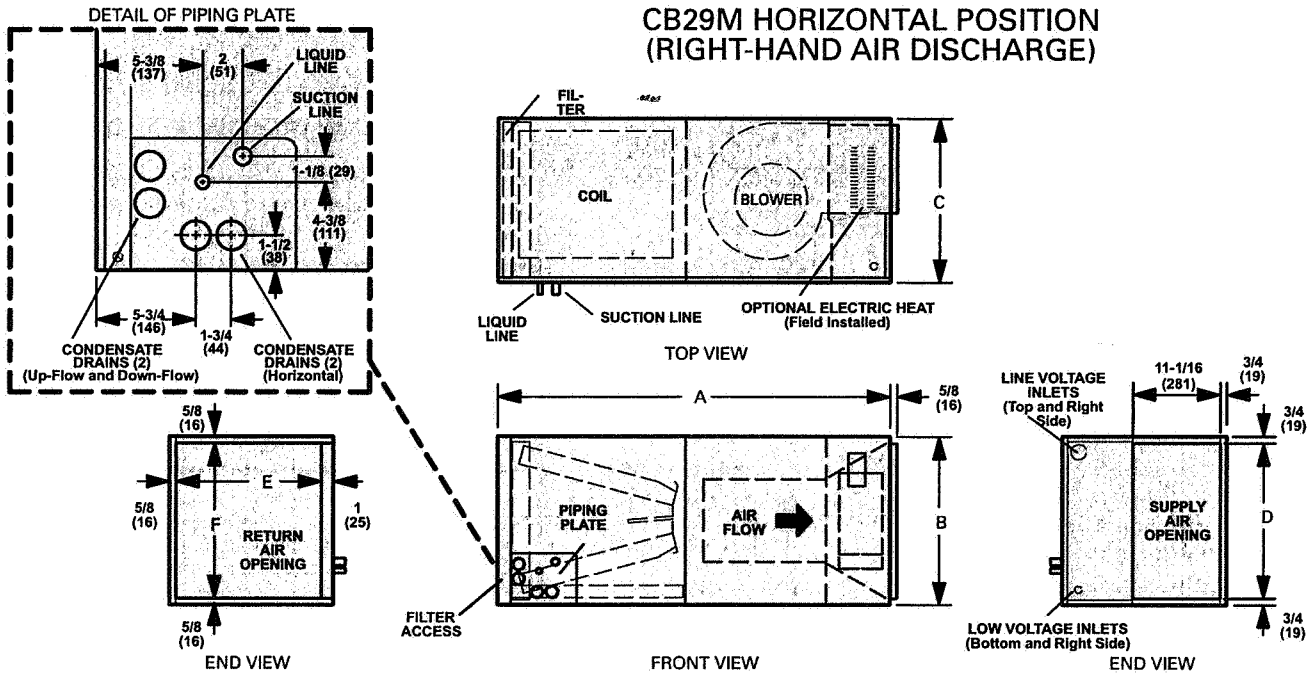
Model No.	CB29M-21/26 CB29M-31		CB29M-41 CB29M-46		CB29M-51 CB29M-65	
	inch	mm	inch	mm	inch	mm
A	45-1/4	1149	49-1/4	1251	52-1/2	1334
B	16-1/4	413	21-1/4	540	21-1/4	540
C	20-5/8	524	20-5/8	524	22-5/8	575
D	14-3/4	375	19-3/4	502	19-3/4	502
E	19	483	19	483	21	533
F	15	351	20	508	20	508

CB29M
DOWNFLOW POSITION

Model No.	CB29M-21/26 CB29M-31		CB29M-41 CB29M-46		CB29M-51 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

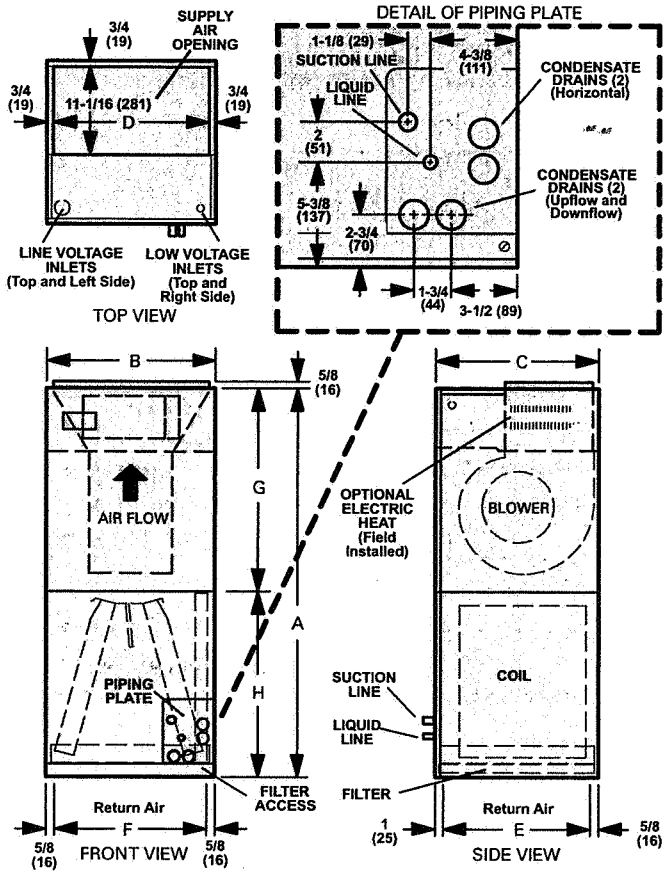


CB29M Horizontal Left - and Right-Hand Unit Dimensions - inches (mm)



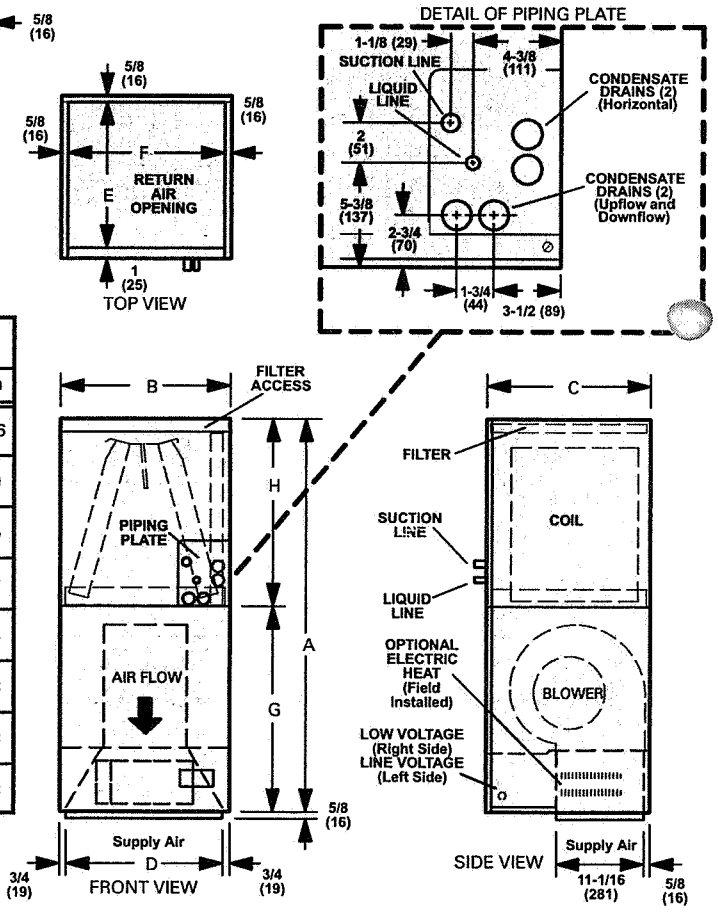
Model No.	A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CB29M-21/26 CB29M-31	45-1/4	1149	16-1/4	413	20-5/8	524	14-3/4	375	19	483	15	351
CB29M-41 CB29M-46	49-1/4	1251	21-1/4	540	20-5/8	524	19-3/4	502	19	483	20	508
CB29M-51 CB29M-65	52-1/2	1334	21-1/4	540	22-5/8	575	19-3/4	502	21	533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

CB30M UP-Flow and Down-Flow Unit Dimensions - inches (mm)



CB30M UPFLOW POSITION

Model No.	CB30M-21/26		CB30M-31		CB30M-41		CB30M-46		CB30M-51 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	
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

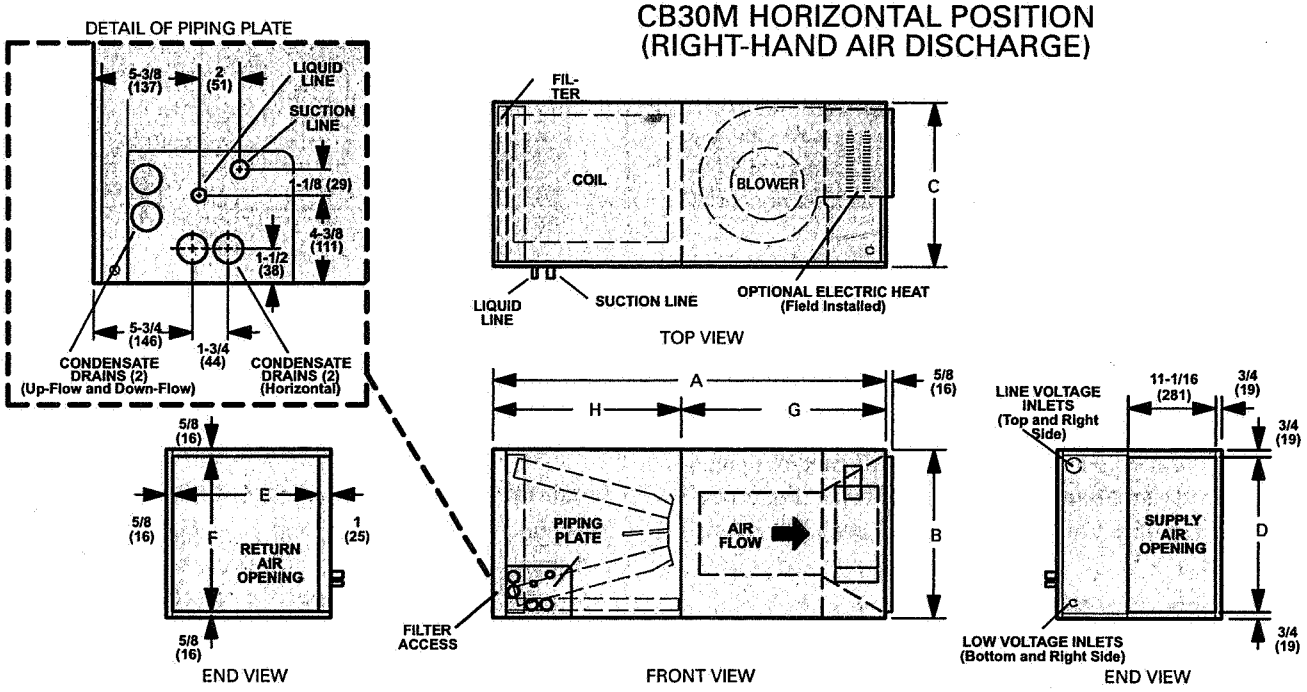


CB30M DOWNFLOW POSITION

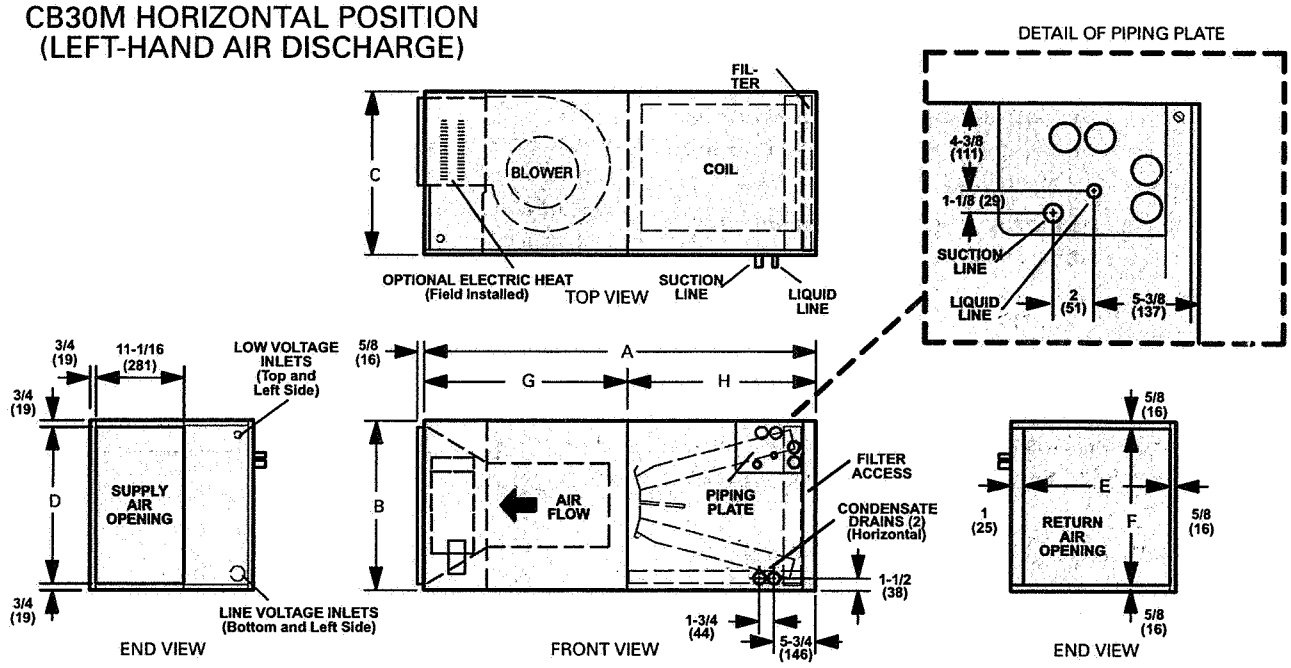
Model No.	CB30M-21/26		CB30M-31		CB30M-41		CB30M-46		CB30M-51 CB30M-65	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
A	45-1/4	1149	49-1/4	1251	51	1295	52-1/2	1334	58-1/2	1486
B	16-1/4	413	21-1/4	540	21-1/4	540	21-1/4	540	21-1/4	540
C	20-5/8	524	20-5/8	524	22-5/8	575	22-5/8	575	24-5/8	625
D	14-3/4	375	19-3/4	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)

CB30M HORIZONTAL POSITION (RIGHT-HAND AIR DISCHARGE)



CB30M HORIZONTAL POSITION (LEFT-HAND AIR DISCHARGE)



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

Requirements

Installation of Lennox blower coil units with or without optional electric heat must conform with standards in the National Fire Protection Association (NFPA) "Standard for Installation of Air Conditioning and Ventilation Systems NFPA No. 90A," and "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems NFPA No. 90B," manufacturer's installation instructions and local municipal building codes.

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

Installation

CB29M and CB30M units come from the factory for upflow and horizontal right-hand discharge installation. For downflow or horizontal left-hand discharge, some field modification is required.

Disassembling CB30M Blower Coil Unit

The CB30M blower coil unit consists of two sections which are shipped assembled from the factory. Moving the unit to some installation sites may require disassembling the unit.

1 - To disassemble, remove access panels and both blower and coil assemblies. This will lighten the cabinet for lifting.

2 - 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.

3 - To reassemble, align cabinet sections together and reinstall screws. Replace blower and coil assemblies and access panels.

Upflow Application

1 - Remove access panels and corrugated padding between the blower and coil assembly before operation. Discard drip shields, shipped inside corner post packaging. The shields are used for downflow applications only.

2 - For best efficiency and air flow, the horizontal drain pan should be removed from units in upflow configurations.

3 - After removing horizontal drain pan, place unit in desired location. Set unit so that it is level. Connect return and supply air plenums as required using sheet metal screws. See figure 1.

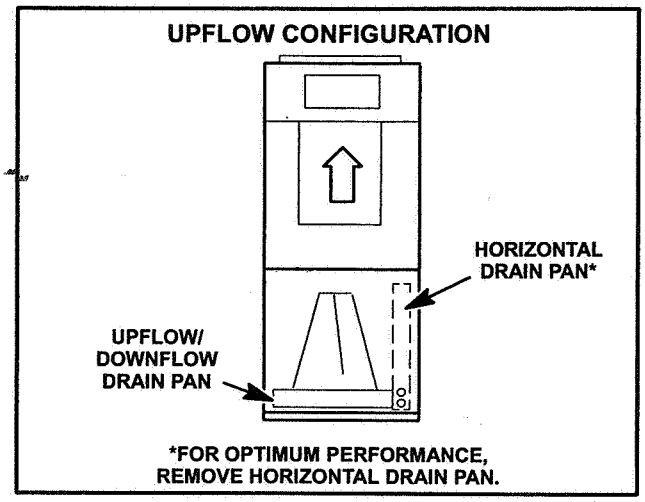


FIGURE 1

Horizontal Right-Hand Discharge Application

1 - Remove access panels and corrugated padding between the blower and coil assembly before operation. Discard drip shields, shipped inside corner post packaging. The shields are used for downflow applications only.

2 - No further adjustment is necessary. Set unit so that it is sloped 1/4 inch towards the drain pan end of the unit. See figure 2.

NOTE - For horizontal applications, a secondary drain pan is recommended. Refer to local codes.

*NOTE - For horizontal applications in **high humidity areas**, remove the downflow rail closest to the drain pan. To remove rail, remove screw from rail at back of unit and at cabinet support rail. Remove downflow rail then replace screws. Also, seal around the exiting drain pipe, liquid and suction lines to prevent infiltration of humid air.*

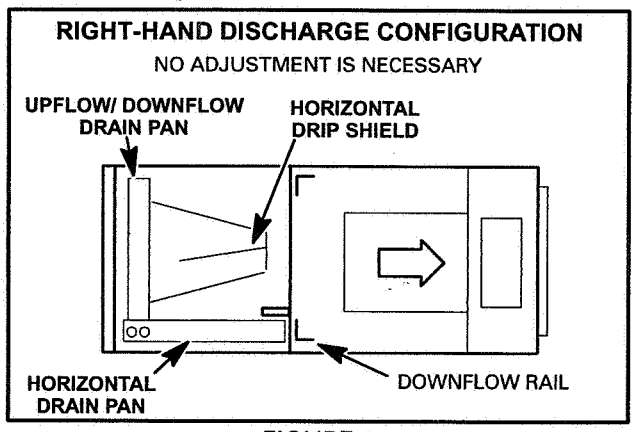


FIGURE 2

3 - If hanging the unit, it must be supported along the entire length of the cabinet. If using chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) so that the full length of the cabinet is supported. Use securing screws no longer than 1/2 inch to avoid damage to coil or filter. See figure 3. Connect return and supply air plenums as required using sheet metal screws.

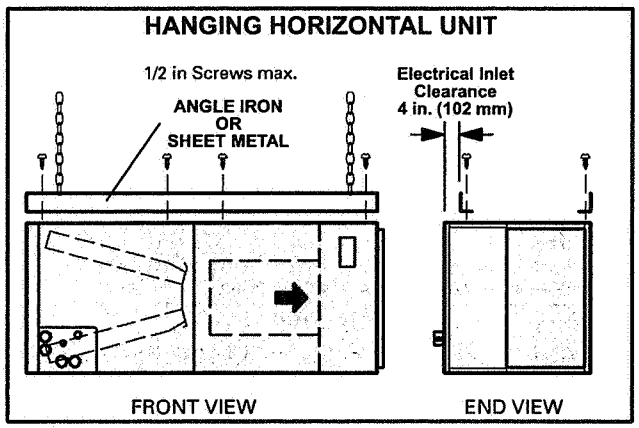


FIGURE 3

⚠ CAUTION

Danger in equipment damage and personal injury. Take care when removing coil assembly from unit installed in right or left-hand applications. Coil may tip into drain pan once clear of cabinet. Support coil when removing.

Horizontal Left-Hand Discharge Application

NOTE - For horizontal applications, a secondary drain pan is recommended. Refer to local codes.

1 - Remove access panels and corrugated padding between the blower and coil assembly before operation. Discard drip shields, shipped inside corner post packaging. The shields are used for downflow applications only.

2 - Pull coil assembly from unit. Pull off the horizontal drain pan.

3 - Remove drain plugs from back drain holes on horizontal drain pan and re-install them on front holes.

4 - Rotate drain pan 180° front to back and install it on the opposite side of coil.

5 - Remove screws from top cap. Remove horizontal drip shield screw located in the center of the back coil end seal. See figure 4.

6 - Rotate horizontal drip shield 180° front to back.

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.

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.** See figures 4 and 5.

NOTE - Use extreme care when re-installing screws into coil end plate engaging holes. Coil damage could result by misalignment.

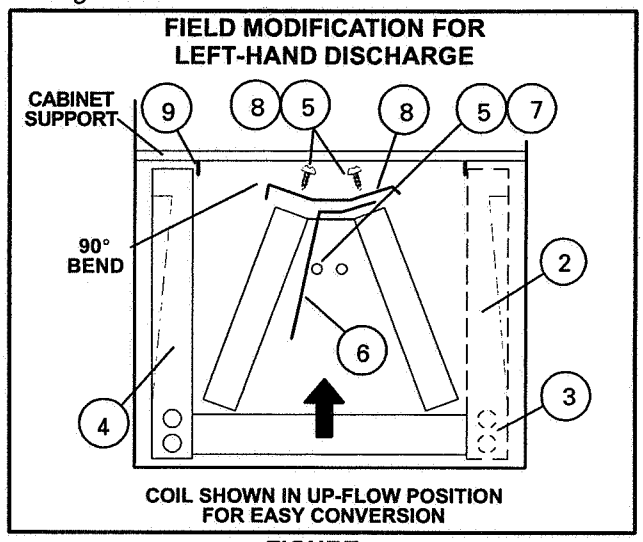


FIGURE 4

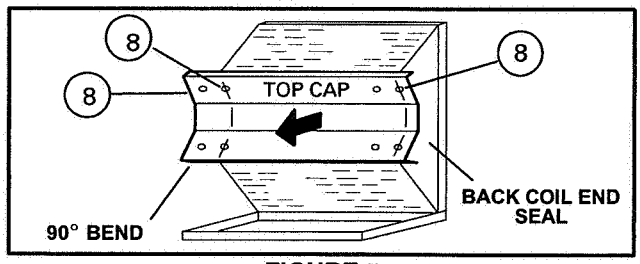


FIGURE 5

9 - From the upflow position, flip cabinet 90° to the left and set into place. Replace coil assembly. Secure coil in place by bending down tab on cabinet support rail. See figures 4 and 6.

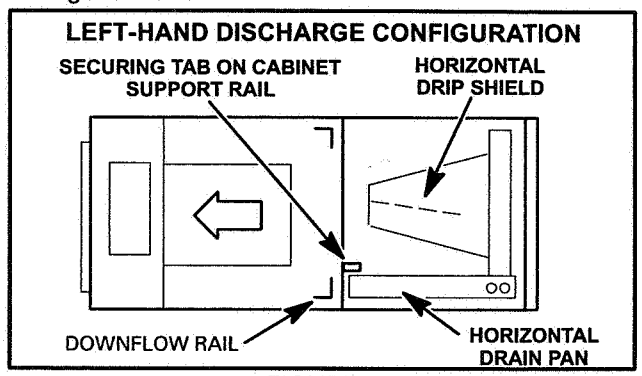


FIGURE 6

*NOTE - For horizontal applications in **high humidity areas**, remove the downflow rail closest to the drain pan. To remove rail, remove screw from rail at back of unit and at cabinet support rail. Remove downflow rail then replace*

screws. Also, seal around the exiting drain pipe, liquid and suction lines to prevent infiltration of humid air.

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

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

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

13 - If hanging the unit, it must be supported along the entire length of the cabinet. If using chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) so that the full length of the cabinet is supported. Use securing screws no longer than 1/2 inch to avoid damage to coil or filter. See figure 3. Connect return and supply air plenums as required using sheet metal screws.

Downflow Application

NOTE - CB29M and CB30M-21/26 units do not require and are not provided with downflow drip shields.

1 - Remove access panels and corrugated padding between blower and coil assembly before operating. Remove drip shields from inside corner post packaging.

2 - Remove coil assembly from unit.

3 - For best efficiency and air flow, the horizontal drain pan should be removed from units in downflow configurations. See figure 7.

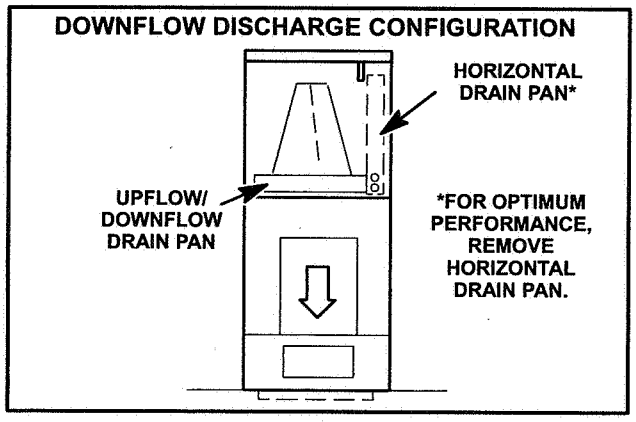
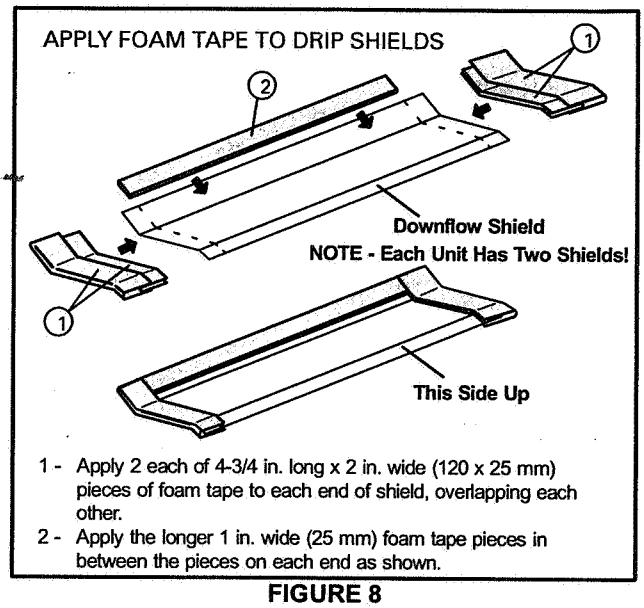


FIGURE 7

4 - Rotate cabinet 180° from upright. It may be necessary to first remove the blower assembly to lighten the cabinet for lifting.

5 - Apply foam tape to drip shields as shown in figure 8.



1 - Apply 2 each of 4-3/4 in. long x 2 in. wide (120 x 25 mm) pieces of foam tape to each end of shield, overlapping each other.

2 - Apply the longer 1 in. wide (25 mm) foam tape pieces in between the pieces on each end as shown.

FIGURE 8

6 - Install downflow drip shield firmly in place on inside of coil slab from under drain pan. See figure 9.

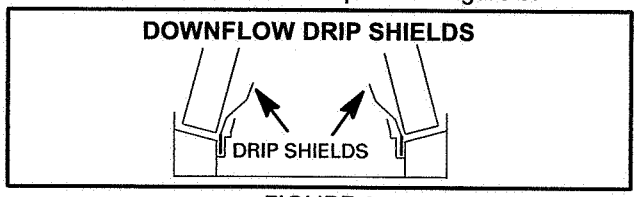


FIGURE 9

7 - Replace coil assembly and blower if removed. Replace coil access panel. If horizontal drain pan is not removed, depress tab in cabinet support rail to hold horizontal drain pan in place. See figure 7.

8 - Set unit so that it is level. Connect return and supply air plenums as required using sheet metal screws.

⚠ WARNING

If electric heat section with circuit breakers (ECB29) are applied to downflow CB29M or CB30M unit, the circuit breakers must be rotated 180° to the UP position. See ECB29 installation instructions for more details.

NOTE - For downflow application, metal or class I supply and return air plenums must be used.

For downflow installation on combustible flooring, an additive base must be used. See figure 10.

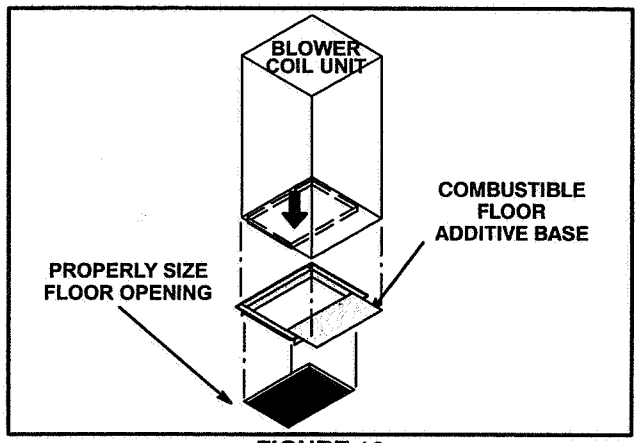


FIGURE 10

Cut an opening appropriately sized for combustible base. Base dimensions are shown in figure 11. After opening has been cut, set the additive base into opening. Connect outlet air plenum to the additive base. Set the unit on the additive base so flanges of the unit drop into the base opening and seal against the insulation strips. The unit is now locked in place. Install return air plenum and secure with sheet metal screws.

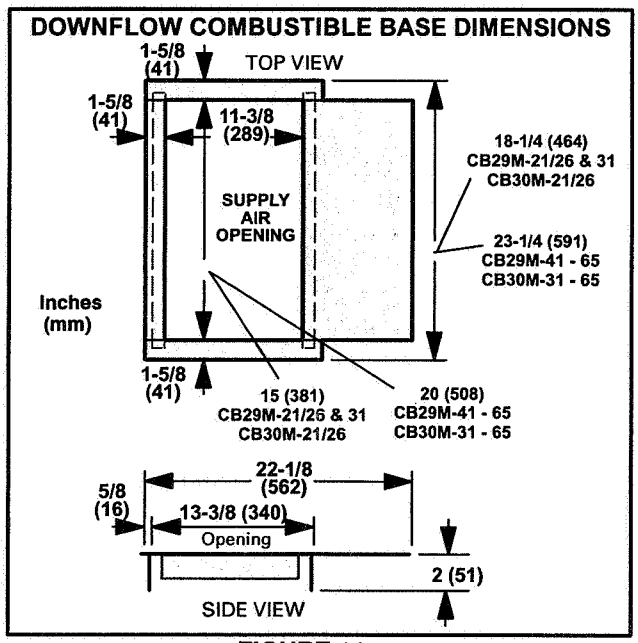


FIGURE 11

Refrigeration

All CB29M/CB30M coils are equipped with a factory-installed, internally mounted expansion valve. Use Lennox L15 (sweat) series line sets as shown in table 1 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.

TABLE 1
REFRIGERANT LINE KITS

CB29M CB30M UNIT	LIQUID LINE	VAPOR/ SUCTION LINE	L10 LINE SETS	L15 LINE SETS
-21/26	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)
-31-41	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)
-46-51	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

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.

1 - Use a wet rag to protect TXV bulb (or remove it) when brazing suction line.

2 - Be aware of filter access panel when connecting lines. Filter must be accessible.

3 - Place heat shield against piping plate and around the suction line connection. Heat shield must be in place to guard against damage to the paint.

4 - With heat shield in place, sweat in suction line elbow, provided, and line set. After procedure is completed, remove heat shield.

5 - Place heat shield against piping plate and around the liquid line connection. Sweat in liquid line elbow, provided, and line set.

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

Condensate Drain

A 5 inch section of PVC pipe is provided with the unit. Cut the pipe in half and use to route the auxiliary and main drains. 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 12 for typical condensate trap configuration.

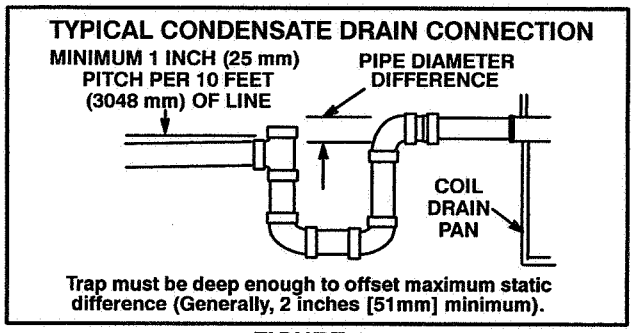


FIGURE 12

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 downflow units, the auxiliary drain MUST be connected and routed to a drain.** See figure 13 for auxiliary and main drain locations.

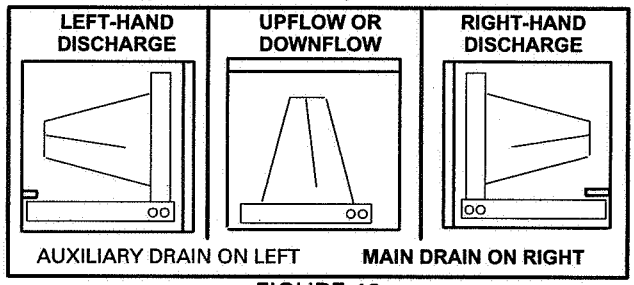


FIGURE 13

The following practices are recommended to ensure condensate removal:

1 - Drain piping should not be smaller than the drain connections at drain pan.

2 - A trap must be installed in the main drain line.

3 - 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.

4 - Horizontal runs must be sloped 1 inch per 10 feet of drain line to offset friction.

5 - An open vent in drain line will sometimes be required due to line length, friction and static pressure.

6 - Drains should be constructed in a manner to facilitate future cleaning or interfere with filter access. See figure 12.

7 - Auxiliary drain should run to an area where homeowner will notice it draining. Refer to local codes.

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.

Filters may be duct mounted or installed in cabinet. A filter is installed from the factory. 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. When dry, they should be sprayed with filter handicoater prior to reinstallation. Filter handicoater is RP Products coating no. 418 and is available as Lennox part no. P-8-5069. Some units are equipped with standard throw-away type filters which should be replaced when dirty.

To remove filter, loosen the thumbscrews holding the filter panel in place. Slide filter out of the guides on either side of cabinet, insert new filter and replace panel. See table 2 for replacement filter sizes.

TABLE 2
FILTER DIMENSIONS

UNIT MODEL NO.	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	
CB30M-51,-65	20 x 24 (508 x 610)

Sealing the Unit From Air

Sealing unit from warm air is very important. If air is allowed to penetrate the unit, problems with water blow-off may occur. This is especially important when the unit is installed in an unconditioned area. Make sure the liquid and suction lines area is sealed with either the provided Armaflex material or with Permagum. Permagum may also be used to seal around the main and auxiliary drains and around open areas of electrical inlets.

Blower Speed and Adjustments

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. See figure 14. Refer to unit wiring diagram in figure 15. Refer to the tables 3 through 20 for blower performance data.

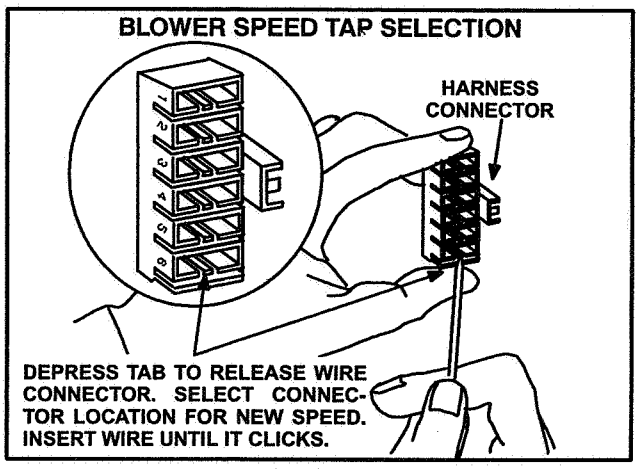


FIGURE 14

TABLE 3
CB29M-21/26 BLOWER 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 4
CB29M-31 BLOWER 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 5
CB29M-41 BLOWER 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 6
CB29M-41 BLOWER 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 7
CB29M-46 BLOWER 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 8
CB29M-51 BLOWER 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 9
CB29M-51 BLOWER 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 10
CB29M-65 BLOWER 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 11
CB29M-65 BLOWER 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 12
CB30M-21/26 BLOWER PERFORMANCE (208/230v)

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

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

TABLE 13
CB30M-31 BLOWER PERFORMANCE (208/230v)

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

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

TABLE 14
CB30M-41 BLOWER PERFORMANCE (208/230v)

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

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 BLOWER PERFORMANCE (460v)

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

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

TABLE 16
CB30M-46 BLOWER PERFORMANCE (208/230v)

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

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

TABLE 17
CB30M-51 BLOWER PERFORMANCE (208/230v)

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

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 BLOWER PERFORMANCE (460v - 1 ph)

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

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

TABLE 19
CB30M-65 BLOWER PERFORMANCE (208/230v)

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

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 BLOWER PERFORMANCE (460v - 1 ph)

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

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

Electrical

⚠ WARNING

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 holes for conduit. Reducer washers are provided, in bag assembly, for sizing the hole to allow for smaller conduit. Use provided caps to seal holes not used. Refer to figure 15 for unit schematic wiring diagram. Refer to figures 16, 17 and 18 for typical field wiring.

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

TYPICAL WIRING DIAGRAM

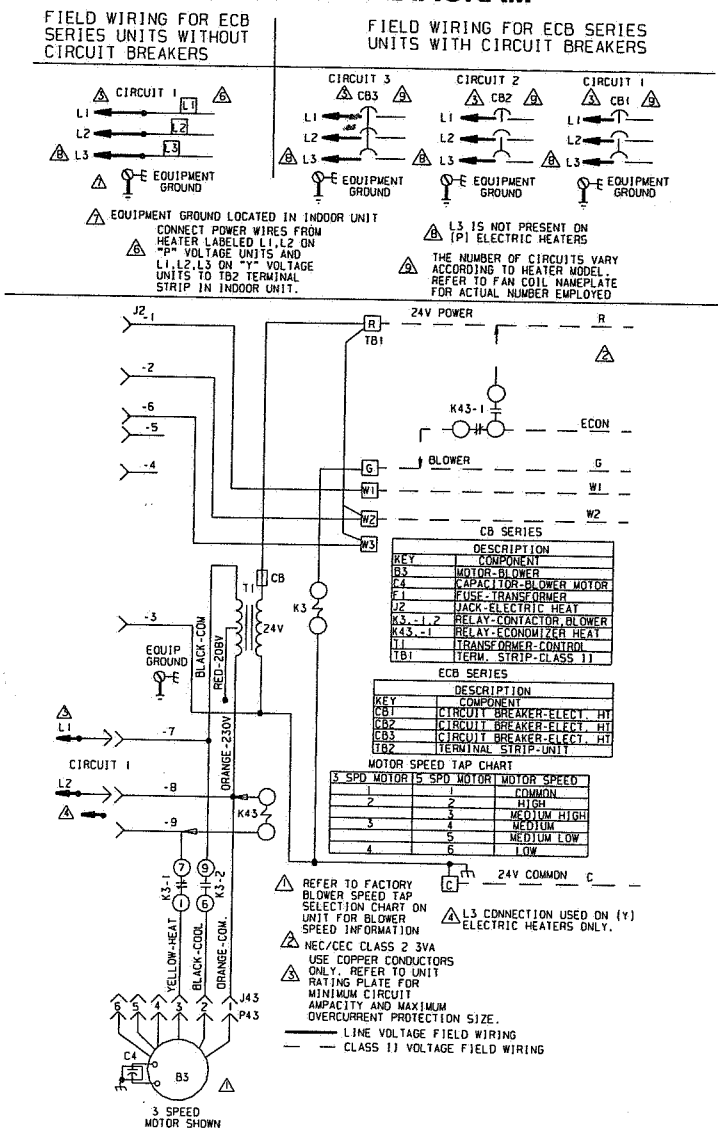


FIGURE 15

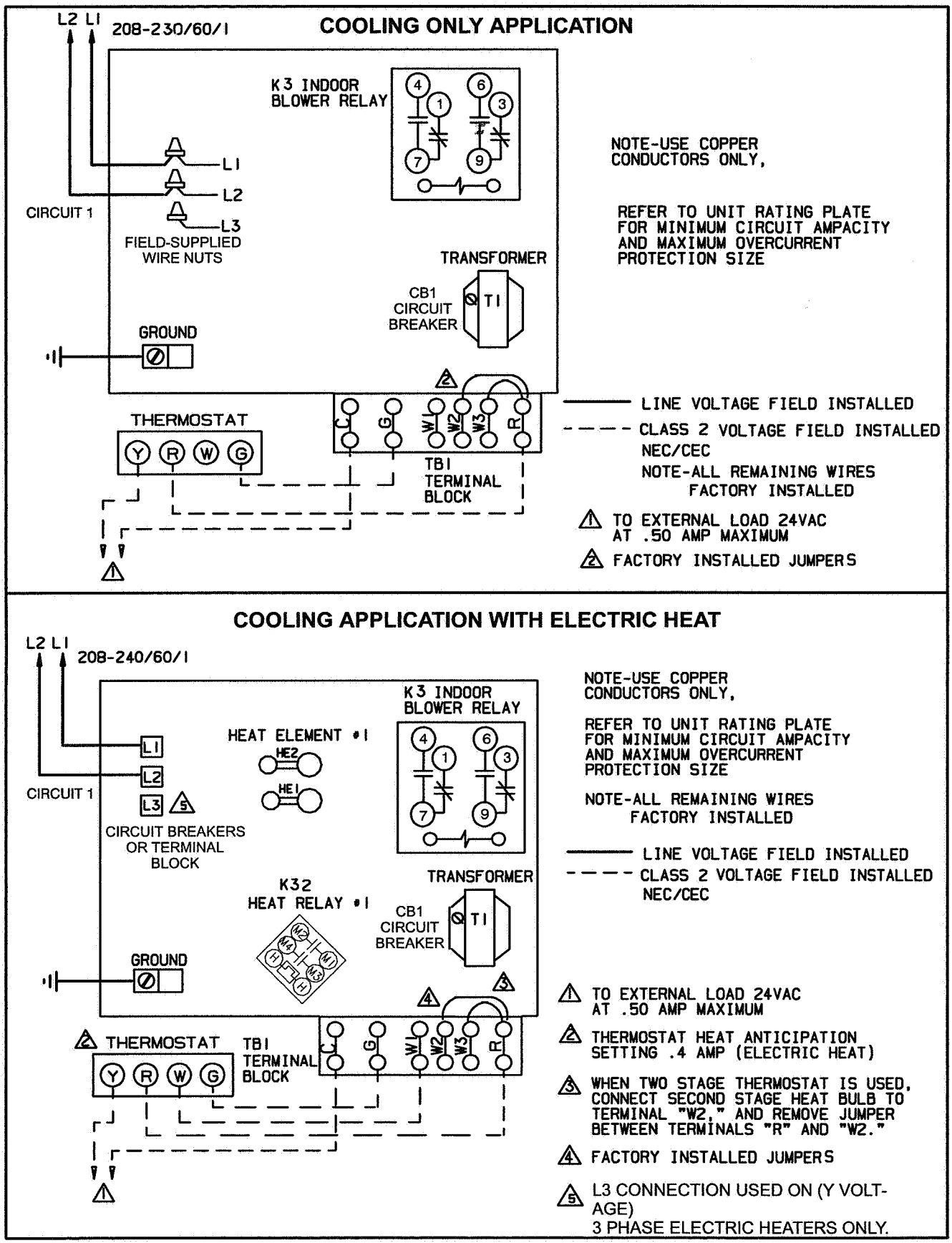
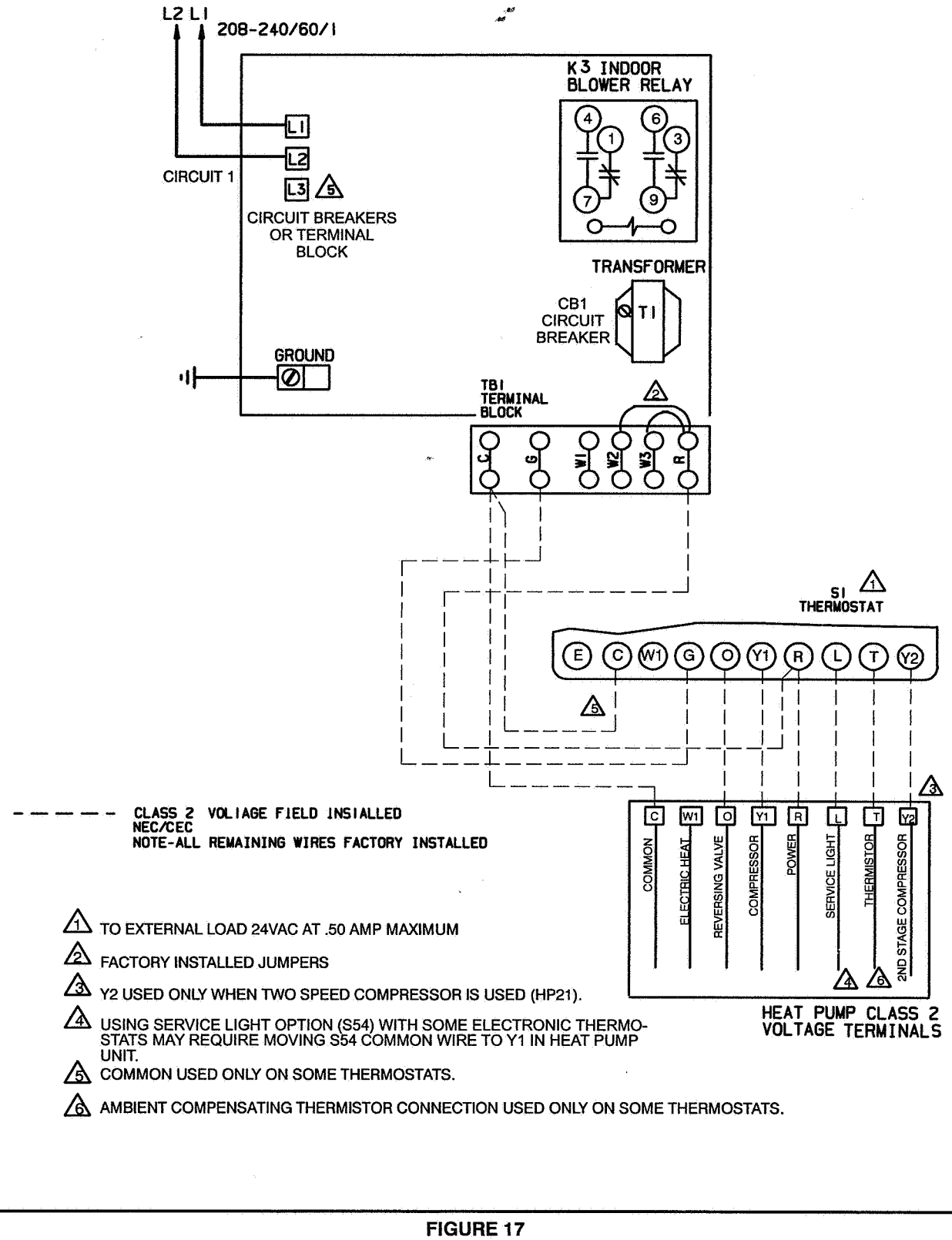

COOLING ONLY APPLICATION
L2 L1
208-230/60/1
K3 INDOOR BLOWER RELAY
L1
L2
L3
CIRCUIT 1
FIELD-SUPPLIED WIRE NUTS
TRANSFORMER
CB1 CIRCUIT BREAKER
T1
GROUND
THERMOSTAT
Y R W G
C G W1 W2 W3 R
TB1 TERMINAL BLOCK
NOTE-USE COPPER CONDUCTORS ONLY,
REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE
LINE VOLTAGE FIELD INSTALLED
CLASS 2 VOLTAGE FIELD INSTALLED NEC/CEC
NOTE-ALL REMAINING WIRES FACTORY INSTALLED
1 TO EXTERNAL LOAD 24VAC AT .50 AMP MAXIMUM
2 FACTORY INSTALLED JUMPERS
COOLING APPLICATION WITH ELECTRIC HEAT
L2 L1
208-240/60/1
K3 INDOOR BLOWER RELAY
HEAT ELEMENT #1
HE2
HE1
L1
L2
L3
5
CIRCUIT 1
CIRCUIT BREAKERS OR TERMINAL BLOCK
K32 HEAT RELAY #1
TRANSFORMER
CB1 CIRCUIT BREAKER
T1
GROUND
2 THERMOSTAT
Y R W G
TB1 TERMINAL BLOCK
C G W1 W2 W3 R
4
3
NOTE-USE COPPER CONDUCTORS ONLY,
REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE
NOTE-ALL REMAINING WIRES FACTORY INSTALLED
LINE VOLTAGE FIELD INSTALLED
CLASS 2 VOLTAGE FIELD INSTALLED NEC/CEC
1 TO EXTERNAL LOAD 24VAC AT .50 AMP MAXIMUM
2 THERMOSTAT HEAT ANTICIPATION SETTING .4 AMP (ELECTRIC HEAT)
3 WHEN TWO STAGE THERMOSTAT IS USED, CONNECT SECOND STAGE HEAT BULB TO TERMINAL "W2," AND REMOVE JUMPER BETWEEN TERMINALS "R" AND "W2."
4 FACTORY INSTALLED JUMPERS
5 L3 CONNECTION USED ON (Y VOLTAGE) 3 PHASE ELECTRIC HEATERS ONLY.

FIGURE 16

HEAT PUMP ONLY APPLICATION



1. TO EXTERNAL LOAD 24VAC AT .50 AMP MAXIMUM
2. FACTORY INSTALLED JUMPERS
3. Y2 USED ONLY WHEN TWO SPEED COMPRESSOR IS USED (HP21).
4. USING SERVICE LIGHT OPTION (S54) WITH SOME ELECTRONIC THERMOSTATS MAY REQUIRE MOVING S54 COMMON WIRE TO Y1 IN HEAT PUMP UNIT.
5. COMMON USED ONLY ON SOME THERMOSTATS.
6. AMBIENT COMPENSATING THERMISTOR CONNECTION USED ONLY ON SOME THERMOSTATS.

FIGURE 17

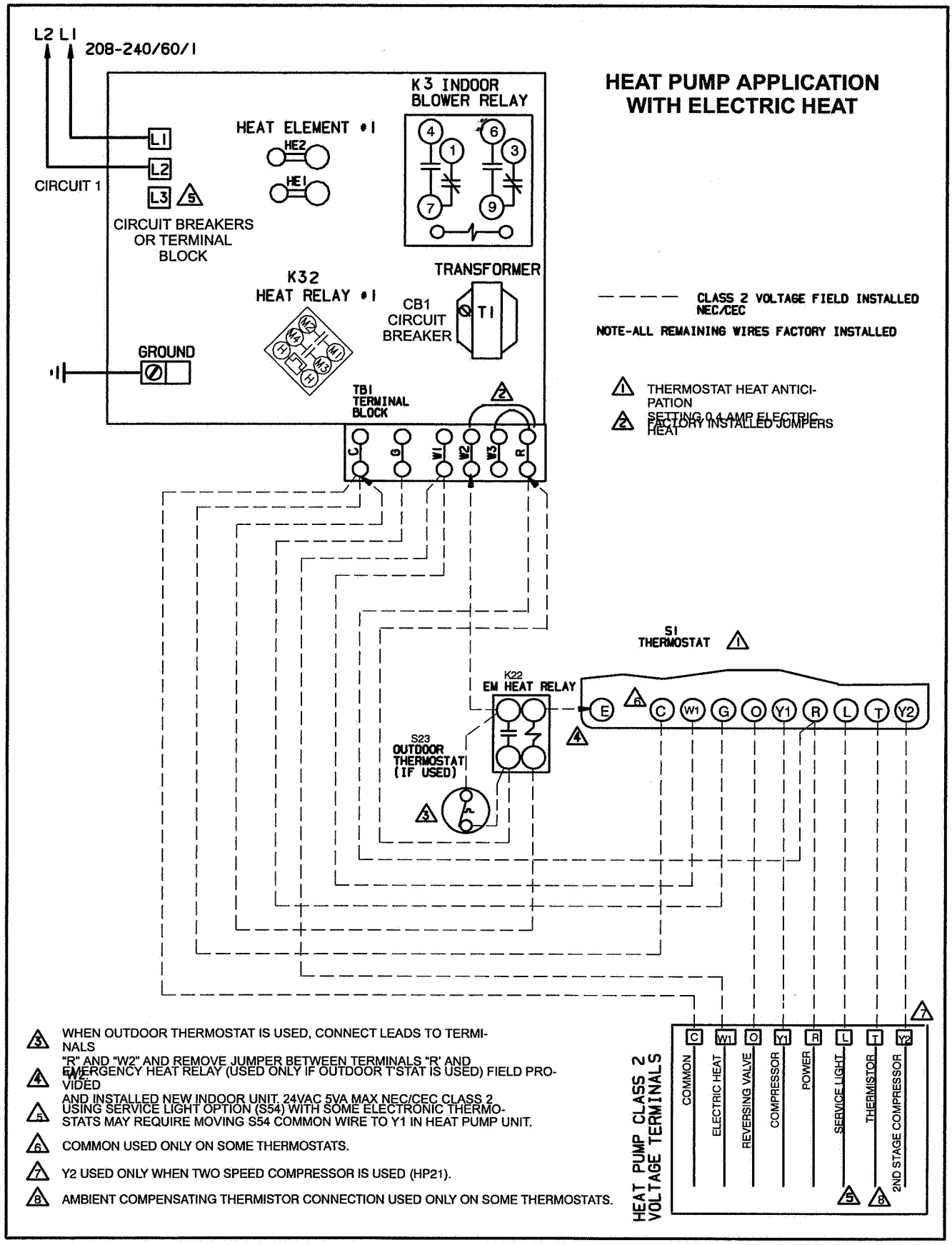

HEAT PUMP APPLICATION WITH ELECTRIC HEAT
L2 L1
208-240/60/1
CIRCUIT 1
L1
L2
L3
CIRCUIT BREAKERS OR TERMINAL BLOCK
HEAT ELEMENT #1
HE2
HE1
K3 INDOOR BLOWER RELAY
TRANSFORMER
T1
CB1 CIRCUIT BREAKER
K32 HEAT RELAY #1
GROUND
TB1 TERMINAL BLOCK
C
G
W1
W2
W3
R
CLASS 2 VOLTAGE FIELD INSTALLED NEC/CEC
NOTE-ALL REMAINING WIRES FACTORY INSTALLED
THERMOSTAT HEAT ANTICIPATION SETTING 0.4 AMP ELECTRIC HEAT
FACTORY INSTALLED JUMPERS
S1 THERMOSTAT
K22 EM HEAT RELAY
S23 OUTDOOR THERMOSTAT (IF USED)
E
C
W1
G
O
Y1
R
L
T
Y2
HEAT PUMP CLASS 2 VOLTAGE TERMINALS
COMMON
ELECTRIC HEAT
REVERSING VALVE
COMPRESSOR
POWER
SERVICE LIGHT
THERMISTOR
2ND STAGE COMPRESSOR
WHEN OUTDOOR THERMOSTAT IS USED, CONNECT LEADS TO TERMINALS "R" AND "W2" AND REMOVE JUMPER BETWEEN TERMINALS "R" AND "W2".
EMERGENCY HEAT RELAY (USED ONLY IF OUTDOOR T'STAT IS USED) FIELD PROVIDED AND INSTALLED NEW INDOOR UNIT, 24VAC 5VA MAX NEC/CEC CLASS 2
USING SERVICE LIGHT OPTION (S54) WITH SOME ELECTRONIC THERMOSTATS MAY REQUIRE MOVING S54 COMMON WIRE TO Y1 IN HEAT PUMP UNIT.
COMMON USED ONLY ON SOME THERMOSTATS.
Y2 USED ONLY WHEN TWO SPEED COMPRESSOR IS USED (HP21).
AMBIENT COMPENSATING THERMISTOR CONNECTION USED ONLY ON SOME THERMOSTATS.

FIGURE 18