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Dallas, Texas, USA

THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

⚠ WARNING

The State of California has determined that this product may contain or produce a chemical or chemicals, in very low doses, which may cause serious illness or death. It may also cause cancer, birth defects, or reproductive harm.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

⚠ 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.

INSTALLATION INSTRUCTIONS

Elite® Series CBX32M Units

AIR HANDLER
506150-01
8/2012
Supersedes 7/2012

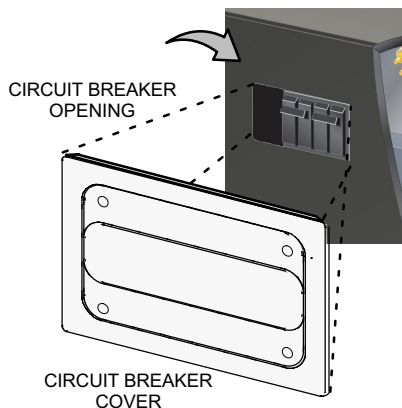
TP Technical
Publications
Litho U.S.A.

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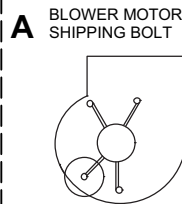
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IMPORTANT INFORMATION TO INSTALLER

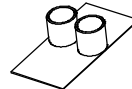
IT IS HIGHLY RECOMMENDED IF THE AIR HANDLER IS INSTALLED IN A UNCONDITIONED SPACE THAT A CIRCUIT BREAKER COVER (ORDERED SEPARATELY) IS USED. ORDER LENNOX CATALOG # 82W01.



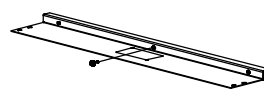
CHECK FOR AND REMOVE THE FOLLOWING ITEMS BEFORE OPERATING UNIT.



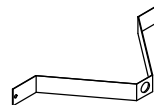
B BLOWER HOUSING SUPPORT PAD



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

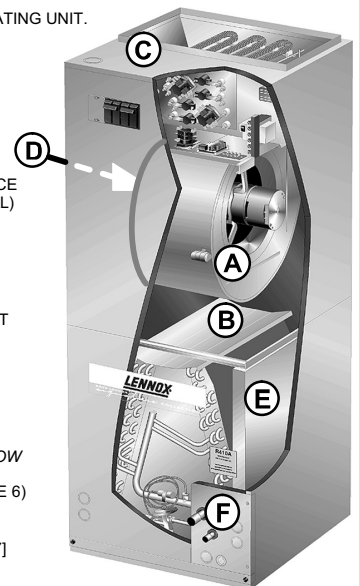


D BLOWER MOTOR SHIPPING BRACKET



E HORIZONTAL DRAIN PAN (SEE UPFLOW APPLICATIONS ON PAGE 4 AND DOWNFLOW APPLICATIONS ON PAGE 6)

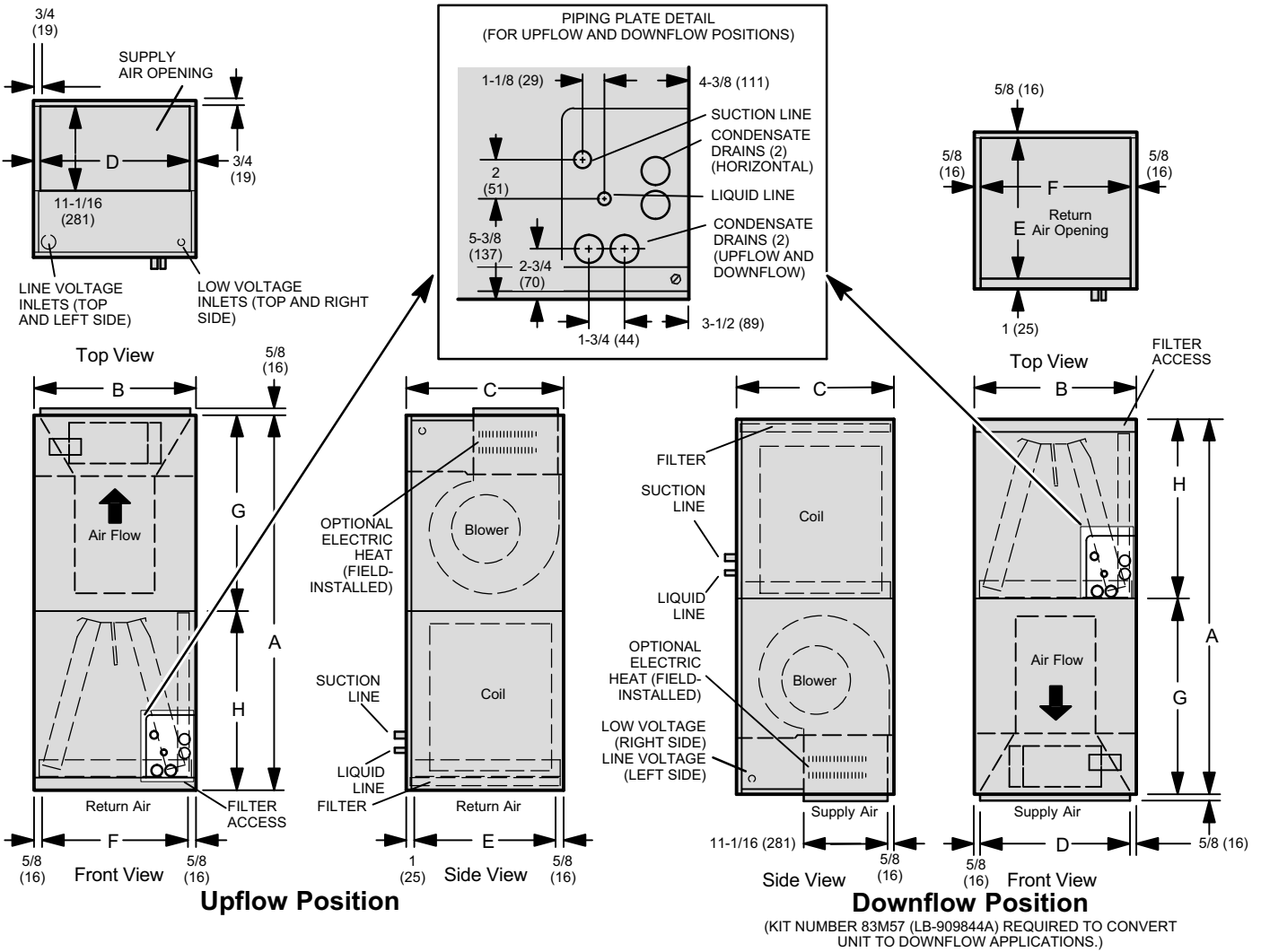
F REFRIGERANT LINE PLUGS [SEE BRAZING CONNECTIONS ON PAGE 7]



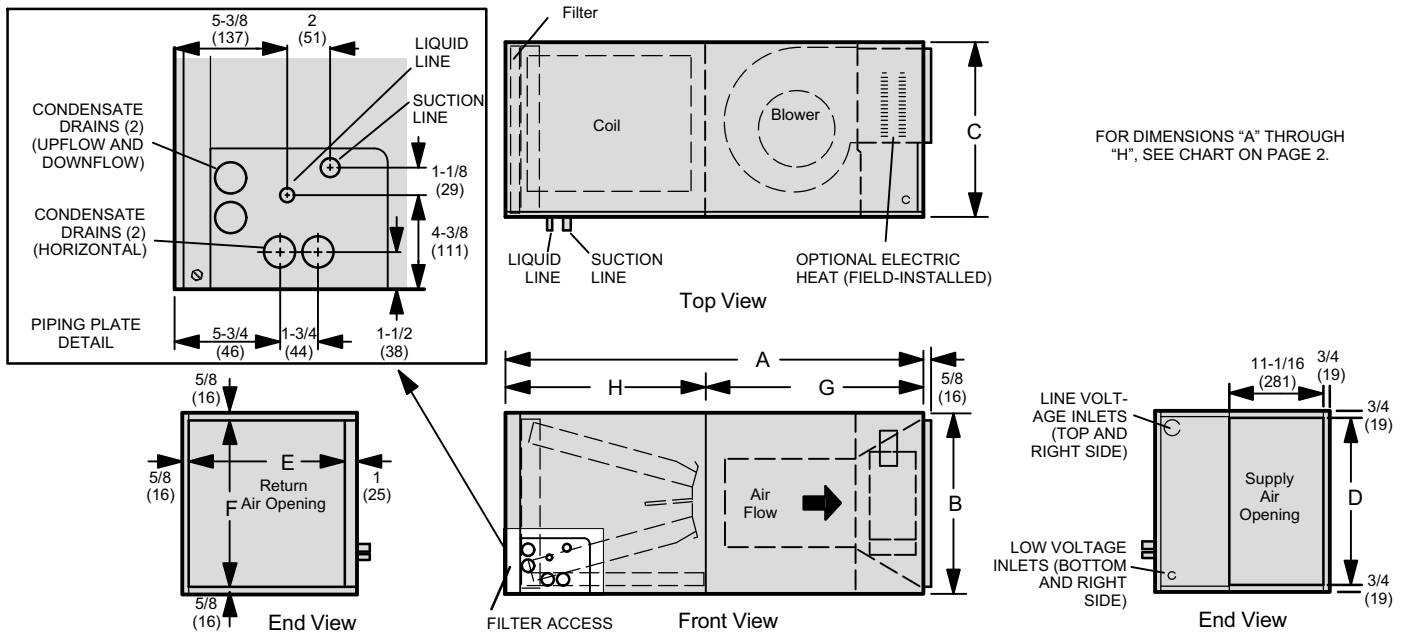
CBX32M Upflow and Downflow Unit Dimensions - Inches (mm)

CBX32M Model Dimensions (for Upflow, Downflow, LH and RH Horizontal Applications)

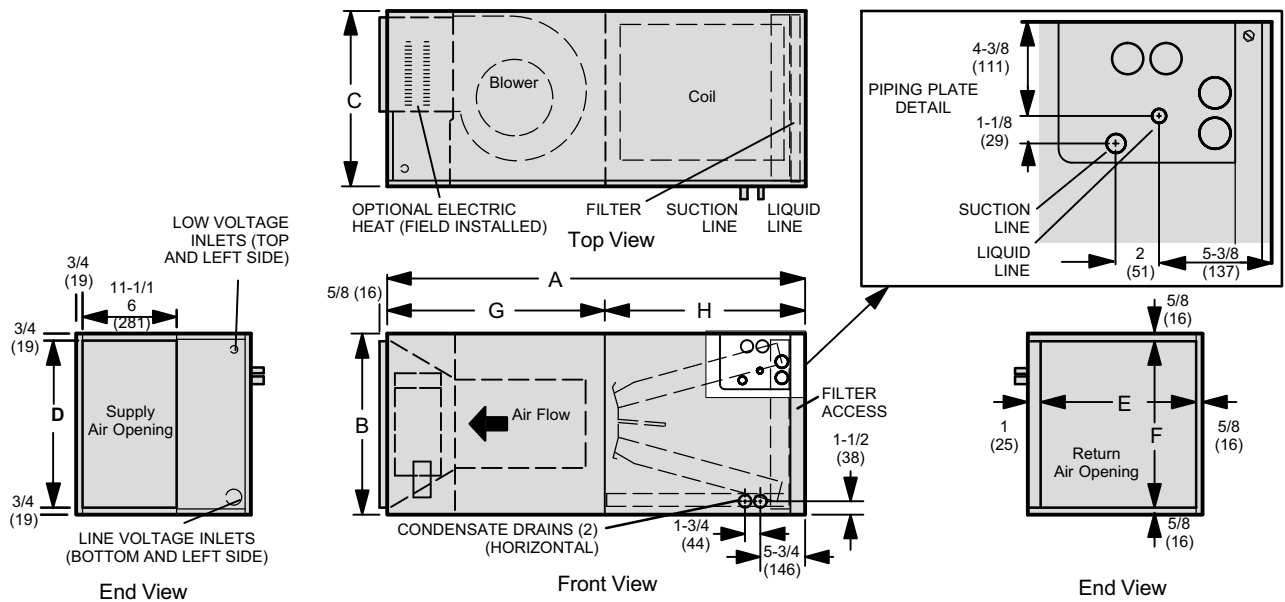
Dimension	-018/-024		-030		-036		-042		-048/-060	
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
A	45-1/4	1149	49-1/4	1251	51	1295	52-1/2	1333	58-1/2	1486
B	16-1/4	413	21-1/4	540	21-1/4	540	21-1/4	540	21-1/4	540
C	20-5/8	524	20-5/8	524	22-5/8	575	22-5/8	575	24-5/8	625
D	14-3/4	375	19-3/4	502	19-3/4	502	19-3/4	502	19-3/4	502
E	19	483	19	483	21	533	21	533	23	584
F	15	381	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



CBX32M Horizontal Left- and Right-Hand Unit Dimensions - Inches (mm)



Horizontal Position (Right-Hand Air Discharge)



General

The Lennox Elite® Series CBX32M air handler units are designed for installation with a matched remote outdoor unit that is charged with HFC-410A refrigerant and optional field-installed electric heat. The air handler 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
 - 1 — Pipe nipple (Sch 80, 3/4" I. D. x 5")
 - 1 — Warranty card
 - 1 — Homeowner's manual

⚠ 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.

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), shall 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

CBX32M units are factory-configured for upflow or horizontal right-hand discharge installation. For downflow or horizontal left-hand discharge, some field modification is required.

⚠ 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.

⚠ 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.

⚠ IMPORTANT

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

DISASSEMBLE AND REASSEMBLE AIR HANDLER UNIT

The CBX32M air handler unit consists of two sections which are shipped assembled from the factory. If necessary, the unit may be disassembled to facilitate setting the unit. Follow the steps below:

To disassemble:

1. Remove access panels.
2. Remove both blower and coil assemblies. This will lighten the cabinet for lifting.
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:

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

UPFLOW APPLICATION

Use the following procedures to configure the unit for upflow operations:

1. Remove access panels. Remove corrugated padding from the space between the blower and coil assemblies.
2. The horizontal drain pan must be removed when the coil blower is installed in the upflow position. Removing horizontal drain pan will allow proper airflow and increase efficiency.
3. Place unit in desired location. Make sure that unit is level. Connect return and supply air plenums as required using sheet metal screws as illustrated in figure 1.
4. Install units which have no return air plenum on a mounting stand that is at least 14" from the floor for proper air return. Lennox offers an optional upflow unit stand as listed in table 1.

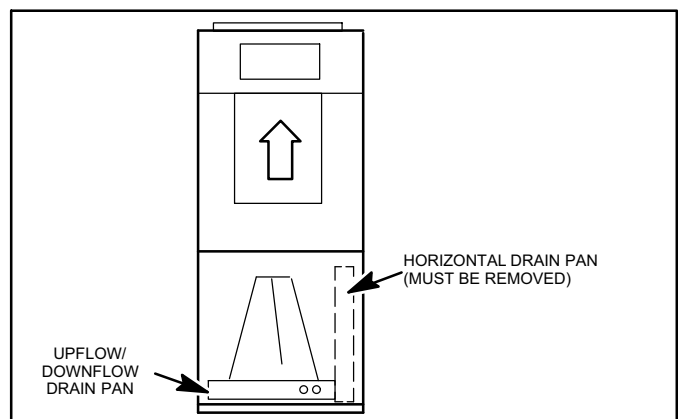


Figure 1. Upflow Configuration

Table 1. Optional Unit Side Stand (Upflow Only)

Model	Kit Number
-018 and -024	45K31
-036, -042, -048 and -060	45K32

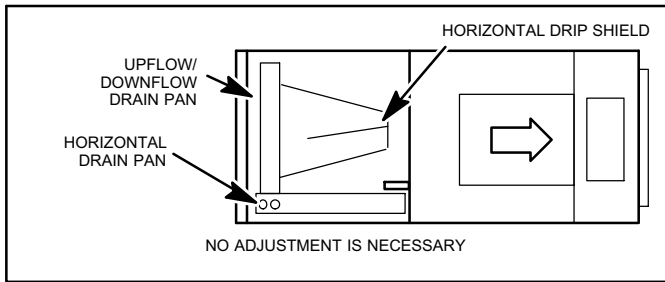


Figure 2. Right-Hand Discharge Configuration

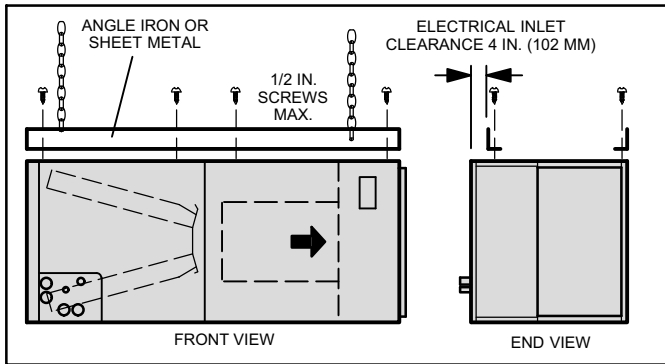


Figure 3. Suspending Horizontal Unit

⚠ 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 RIGHT-HAND DISCHARGE APPLICATION

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

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

1. Remove access panels. Remove corrugated padding from the space between the blower and coil assembly.
2. No further adjustment is necessary. Set unit so that it is sloped 1/4 inch toward the drain pan end of the unit as illustrate in figure 2 on page 5.
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 a strap is used, attach a piece of angle iron or sheet metal to the unit (either above or below) 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. Connect the return and supply air plenums as required using sheet metal screws.

HORIZONTAL LEFT-HAND DISCHARGE APPLICATION

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

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

Remove access panels. Remove corrugated padding from the space between the blower and coil assembly before operation.

1. Remove coil assembly from unit and remove the horizontal drain pan as illustrated in figure 4, detail A on page 6.
2. Remove drain plugs from back drain holes on horizontal drain pan and reinstall them on front holes.

⚠ IMPORTANT

After removal of drain pan plug(s), check drain hole(s) to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

3. Rotate the drain pan 180° front to back and install it on the opposite side of coil.
4. Remove screws from top cap. Remove horizontal drip shield screw located in the center of the back coil end seal as illustrated in figure 4, details B and C on page 6.
5. Rotate horizontal drip shield 180° front to back.
6. Remove plastic plug from left hole on coil front end seal and reinstall plug in back hole. Reinstall horizontal drip shield screw in front coil end seal. Drip shield should drain downward into horizontal drain pan inside coil.
7. 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 on page 6.

NOTE - Be very careful when you reinstall the screws into coil end plate engaging holes. Misaligned screws may damage the coil.

8. From the upflow position, flip cabinet 90° to the left and set into place. Replace blower assembly. Secure coil in place by bending down tab on cabinet support rail as illustrated in figure 5 on page 6.

*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.*

9. Knock out drain seal plate from access door. Secure plate to cabinet front flange with screw provided.
10. Flip access door and replace it on the unit.
11. 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.
12. If the unit is to be suspended, it must be supported along the entire length of the cabinet as illustrated in figure 3 on page 5. 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.

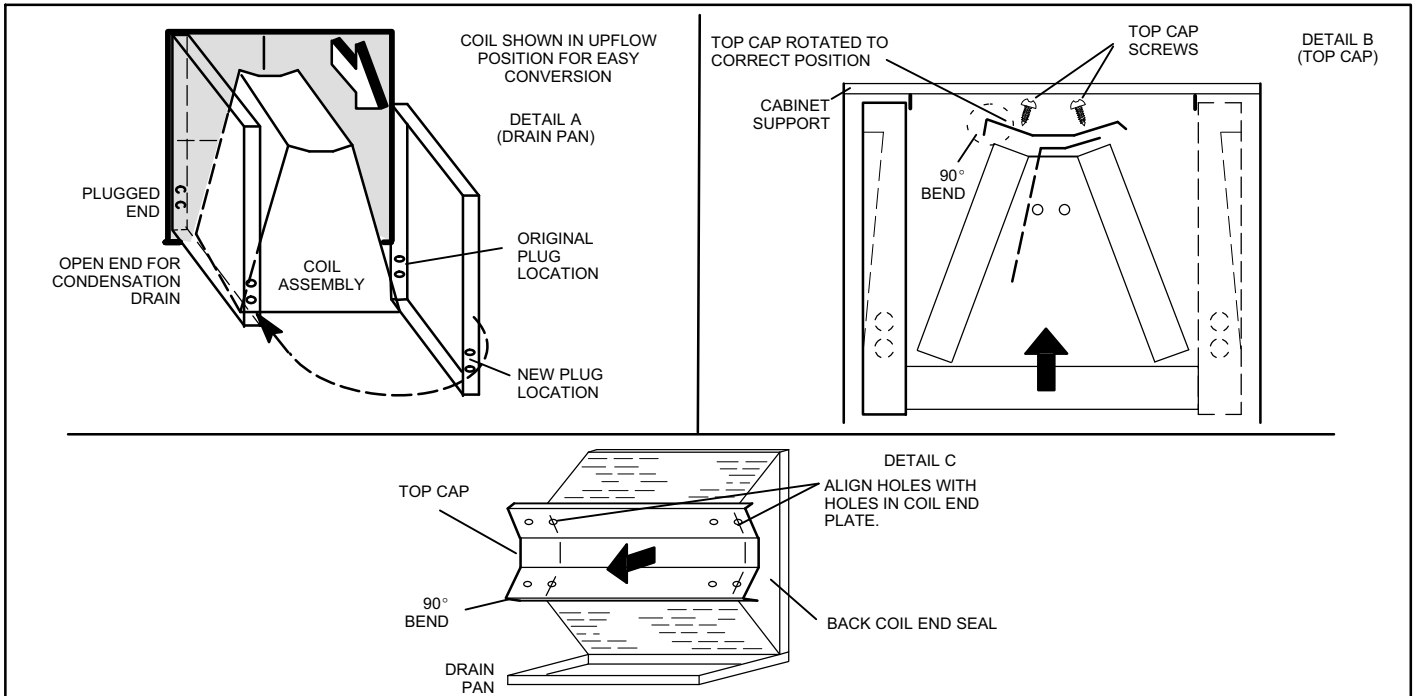


Figure 4. Left-Hand Discharge Modifications

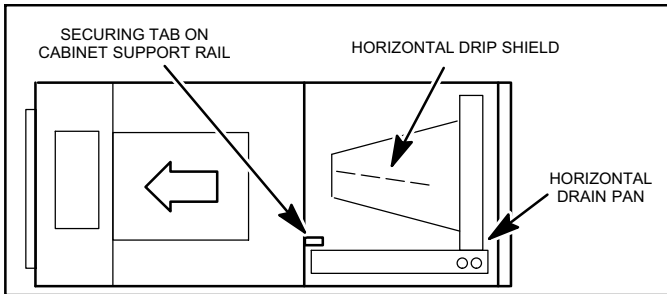


Figure 5. Left-Hand Discharge Configuration

DOWNFLOW APPLICATION

Use the following procedures to configure the unit for downflow operations:

⚠ WARNING

If electric heat section with circuit breakers (ECB29) are applied to downflow CBX32M unit, circuit breakers must be rotated 180° to the UP position. See ECB29 installation instructions for more details.

NOTE - If downflow 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. On combustible flooring, use an additive base as illustrated in figure 6. and use the following procedures:

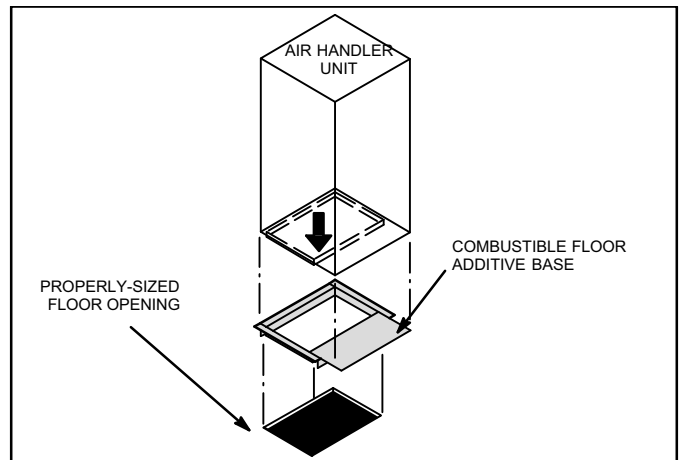


Figure 6. Combustible Flooring Additive Base

1. Cut an appropriately sized opening for combustible base as illustrated figure 7.
2. Set the additive base into opening.
3. Connect supply air plenum to the additive base.
4. 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.
5. Install return air plenum and secure with sheet metal screws.

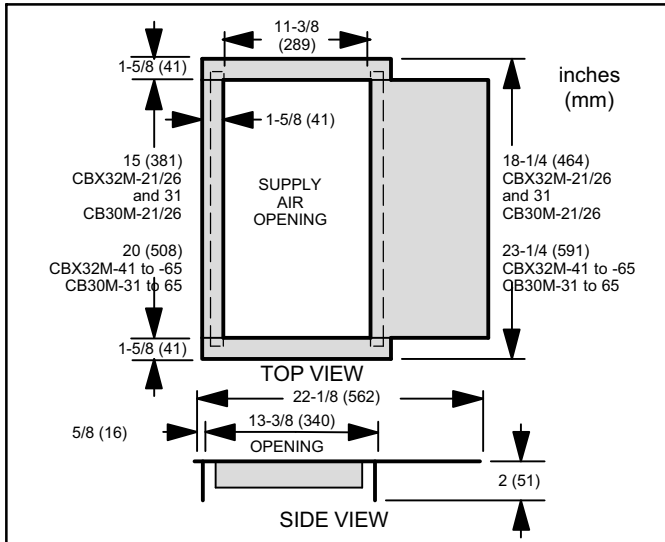


Figure 7. Downflow Combustible Base Dimensions

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.

Brazing Connections

⚠ 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).

⚠ 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.

All coils are equipped with a factory-installed, internally mounted check/expansion valve, which is suitable for use in applications as follows:

- valve suitable for HCFC-22 use (CB30M unit)
- valve suitable for HFC-410A use (CBX32M unit)

The CBX32M/CB30M air handler's coil line sizes are listed in table 2. Use Lennox L15 (sweat) series line sets (refer to the outdoor unit Engineering Handbook for proper size, type and application). For field-fabricated refrigerant lines, see the piping section of the Lennox Unit Information Service Manual.

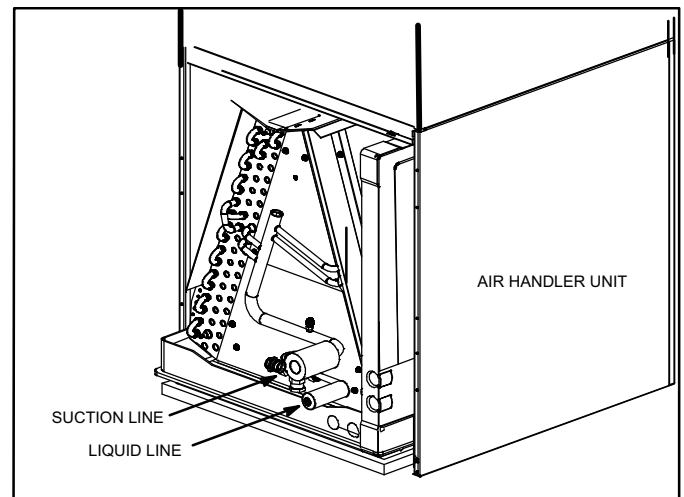


Figure 8. Brazing Connections

NOTE - CBX32M 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.

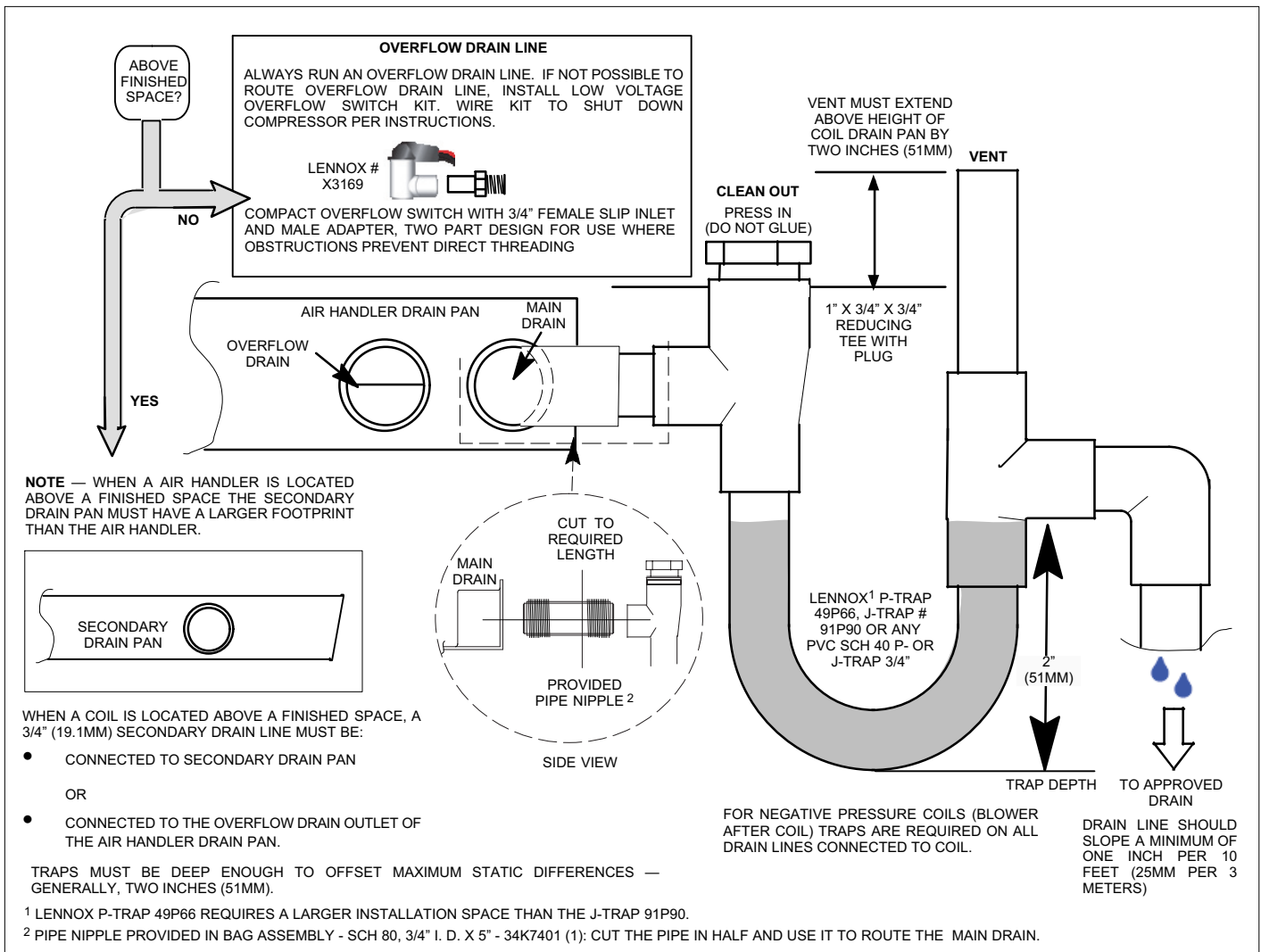


Figure 9. Typical Condensate Drain Connection

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

1. Remove access panel.
2. Remove the refrigerant line caps from the refrigerant lines.
3. Use a wet rag to protect TXV sensing bulb (or remove it) when brazing suction line connections.
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.
5. With the wet rag in place, position a field provided elbow fitting to the air handler's suction line and line set. Start nitrogen flow before brazing.
6. After the procedure is completed then remove the wet rag.
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.
8. Refer to instructions provided with outdoor unit for leak testing, evacuating and charging procedures.

9. Install access panel.

Table 2. Refrigerant Line Sets

CBX32M Units	Liquid Line No.	Vapor/ Suction Line	L10 Line Sets	L15 Line Sets
-018/024	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)
-030, -036	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)
-042, -048	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)
-060	3/8 in (10 mm)	1-1/8 in. (29 mm)	Field Fabricated	Field Fabricated

Installing the Condensate Drain

Before connecting drain line(s), check drain hole(s) to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

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 on page 8 for typical condensate trap configuration.

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 shall be connected and routed to a drain. See figure 10 for 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.

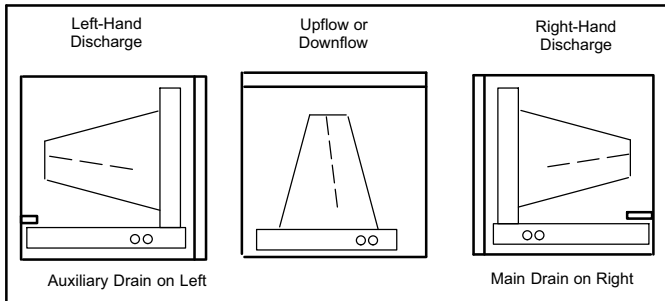


Figure 10. Drain Locations

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.

To replace filter:

1. Loosen the thumbscrews holding the filter panel in place.
2. Slide the filter out of the guides on either side of cabinet.
3. Insert new filter.
4. Replace panel.

See table 3 for replacement filter sizes.

Table 3. Filter Dimension

Unit Model No.	Filter Size Inches (mm)
-018 and -024	15 x 20 x 1 (381 x 508 x 25)
-030	20 x 20 x 1 (508 x 508 x 25)
-036 and -042	20 x 22 x 1 (508 x 559 x 25)
-048 and -060	20 x 24 x 1 (508 x 610 x 25)

Making Electrical Connections

⚠ WARNING

USE COPPER CONDUCTORS ONLY.

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.

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. Refer to figure 15 for unit schematic wiring diagram. Refer to figures 14 through 13 for typical field wiring.

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

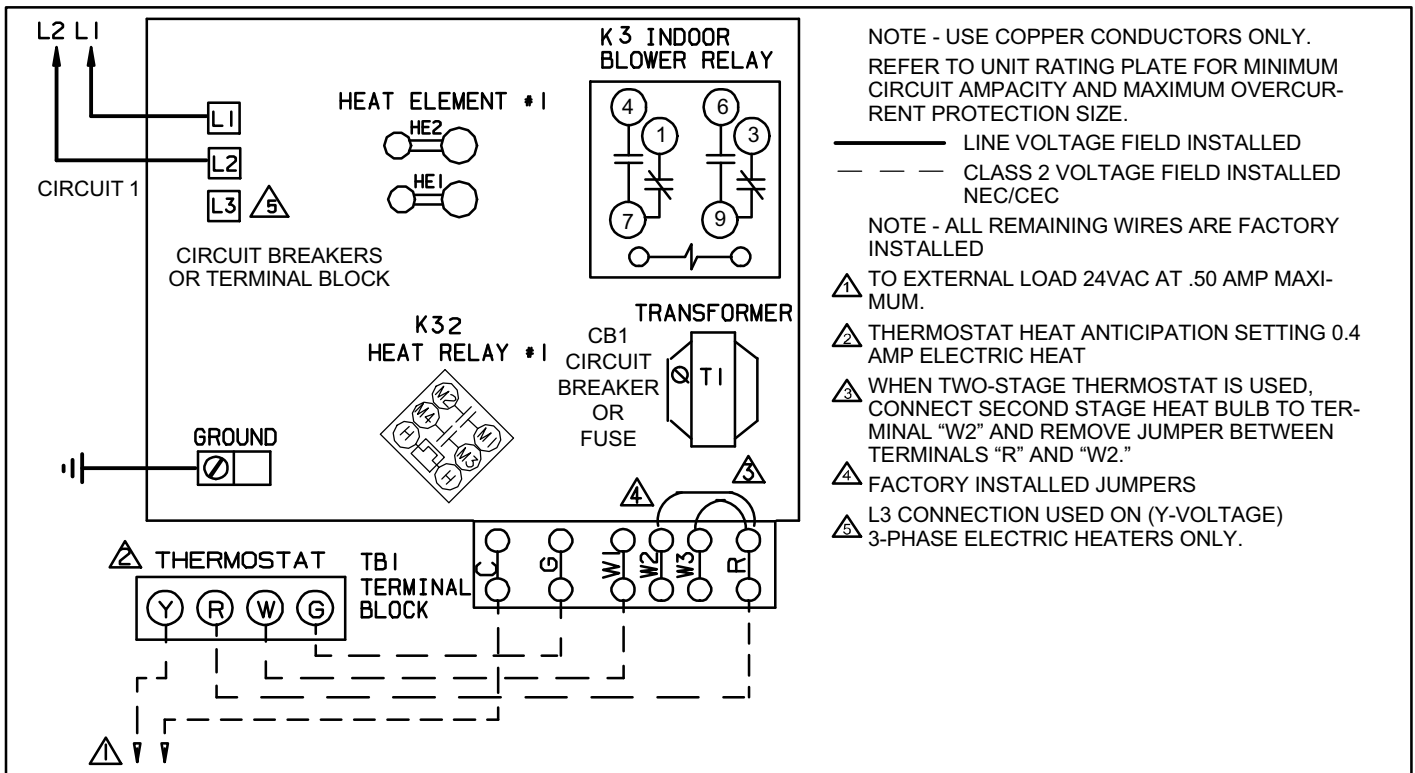


Figure 11. Typical Field Wiring - Cooling Application with Electric Heat

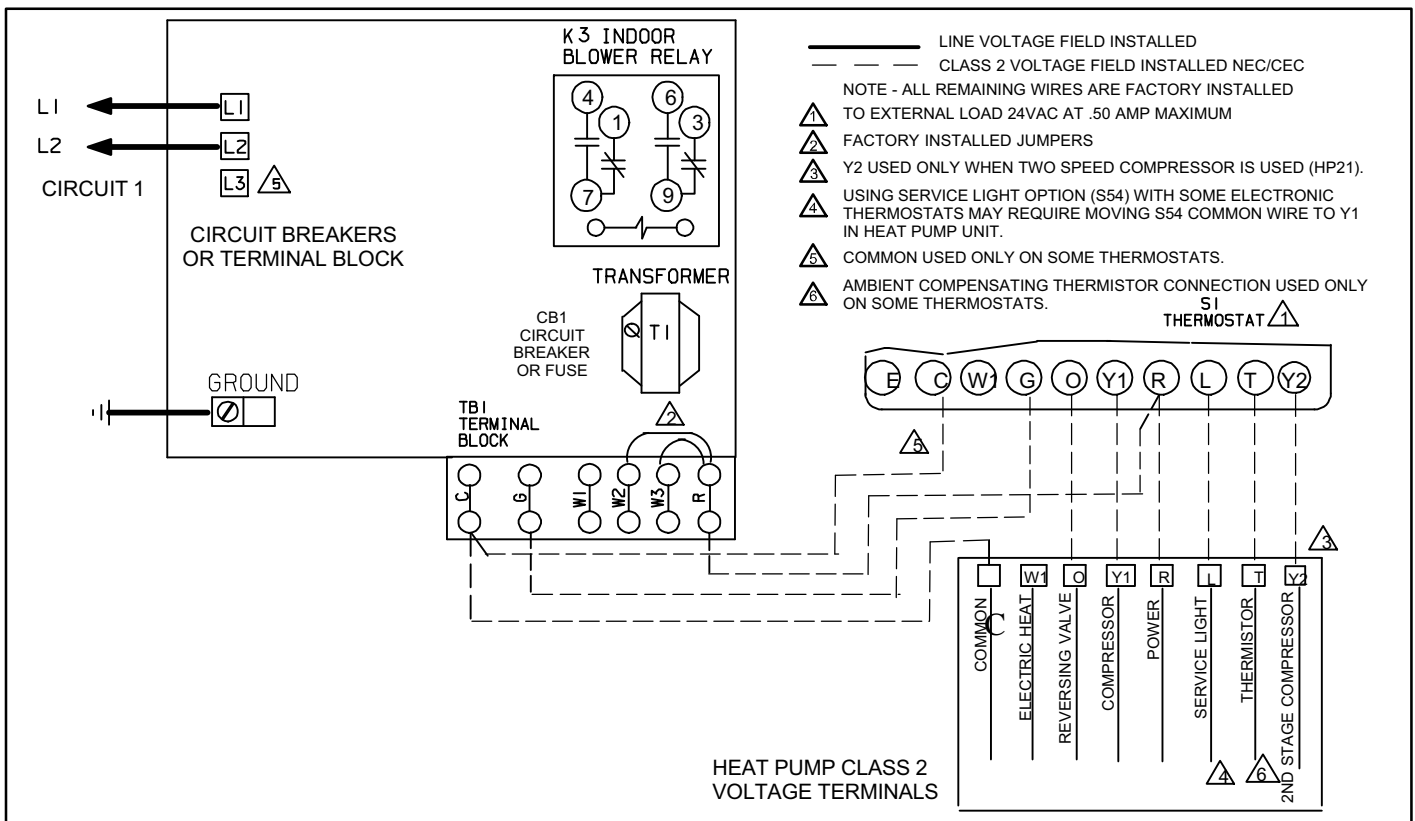


Figure 12. Typical Field Wiring - Heat Pump Only Application

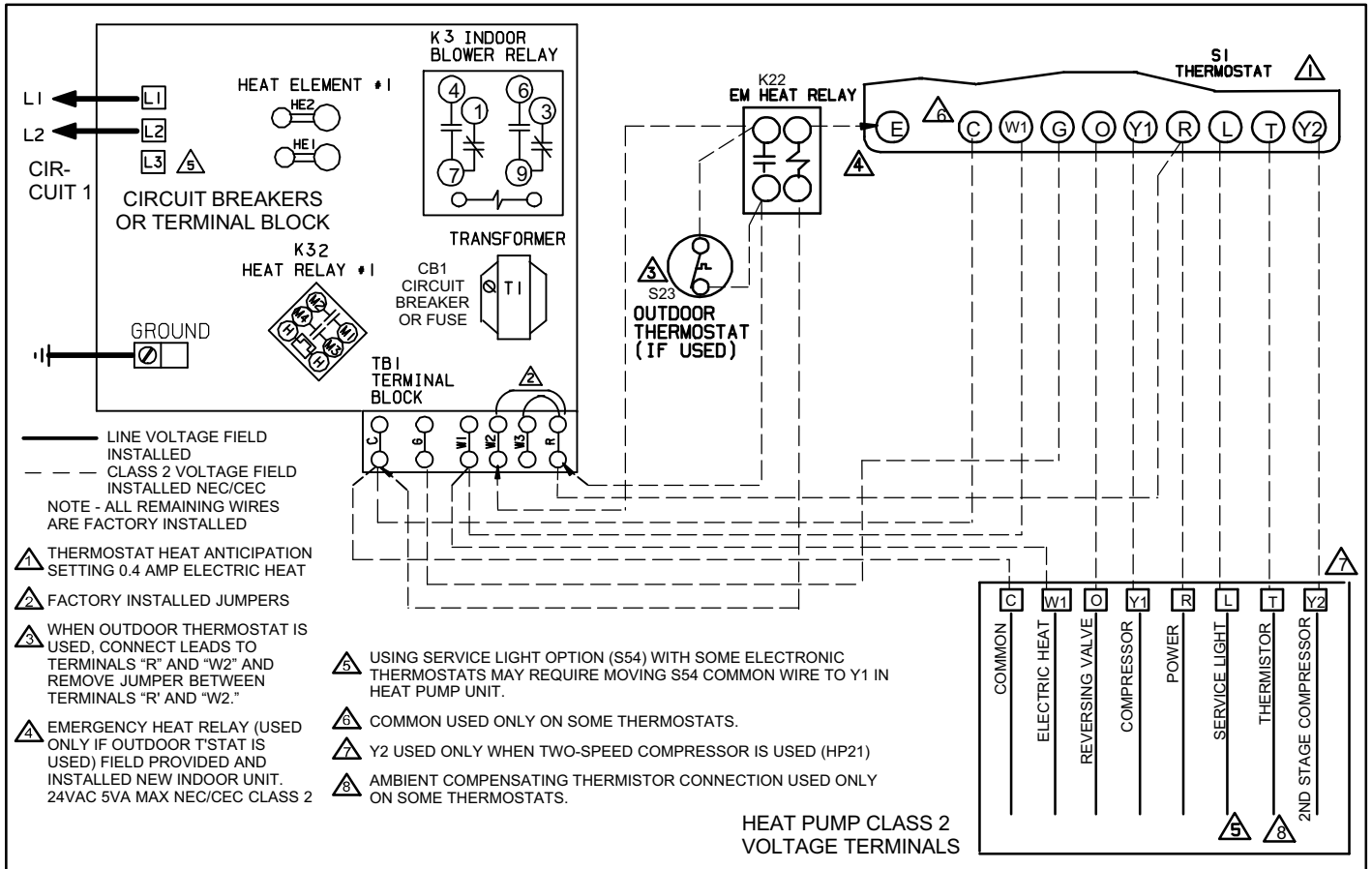


Figure 13. Typical Field Wiring - Heat Pump Application with Electric Heat

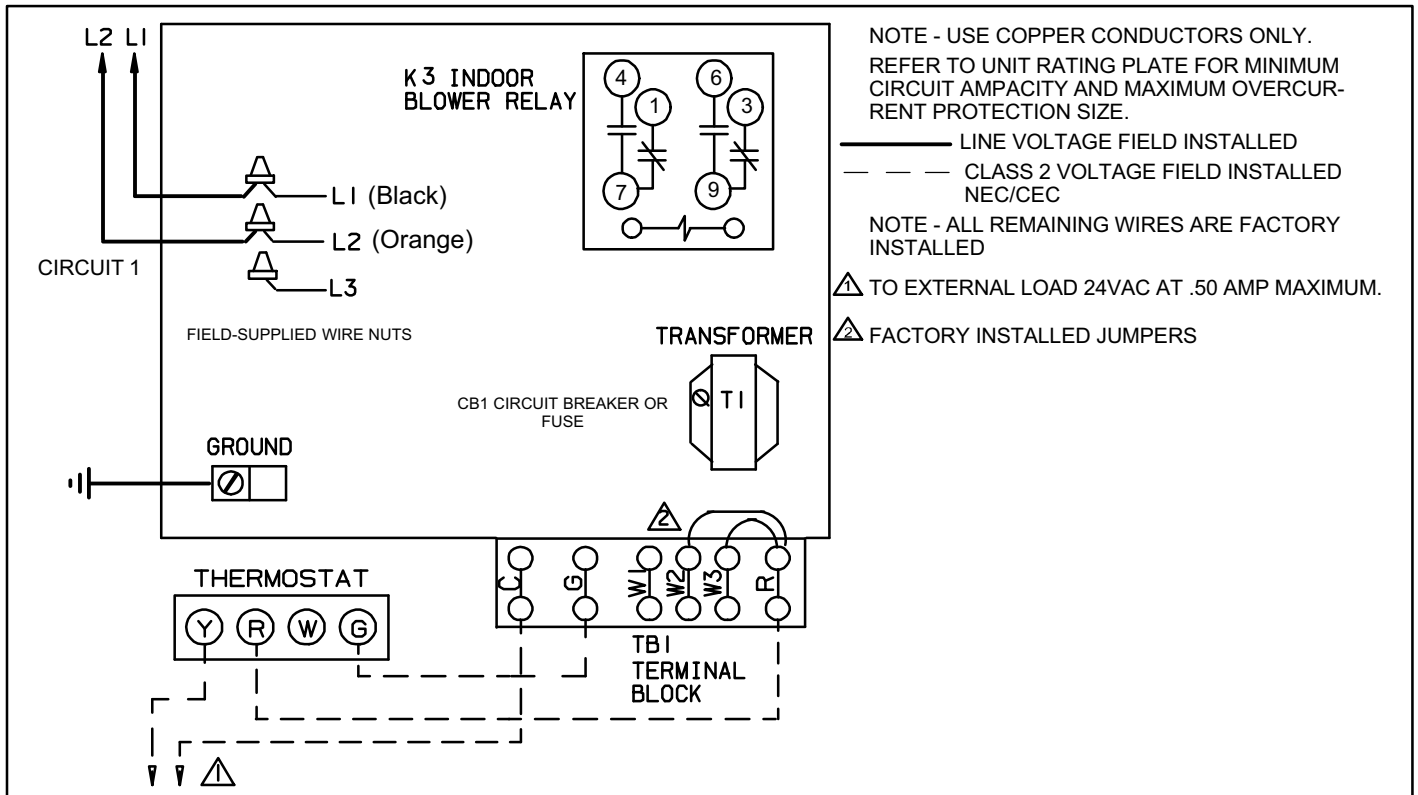
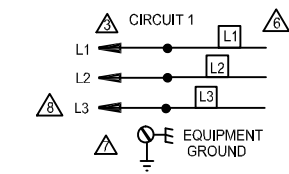


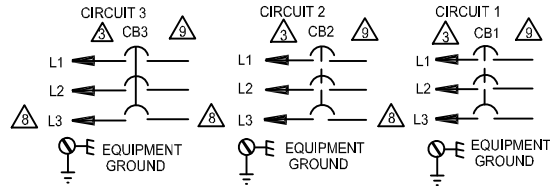
Figure 14. Typical Field Wiring - Cooling Only Application

FIELD WIRING FOR ECB SERIES UNITS WITHOUT CIRCUIT BREAKERS



- ⚠ EQUIPMENT GROUND LOCATED IN INDOOR UNIT
- ⚠ 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.

FIELD WIRING FOR ECB SERIES UNITS WITH CIRCUIT BREAKERS



- ⚠ 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

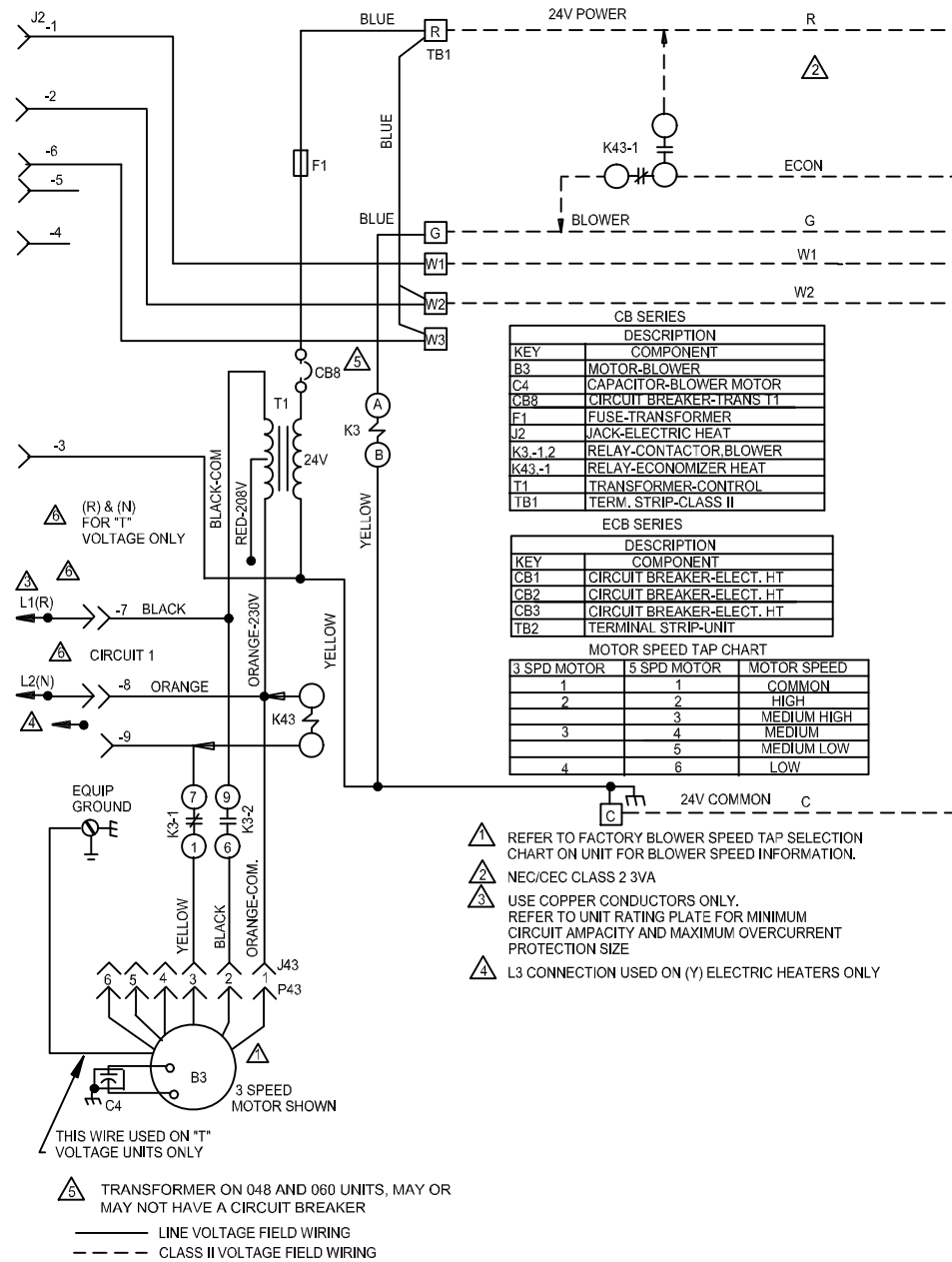


Figure 15. Typical Wiring Diagram - Single Phase

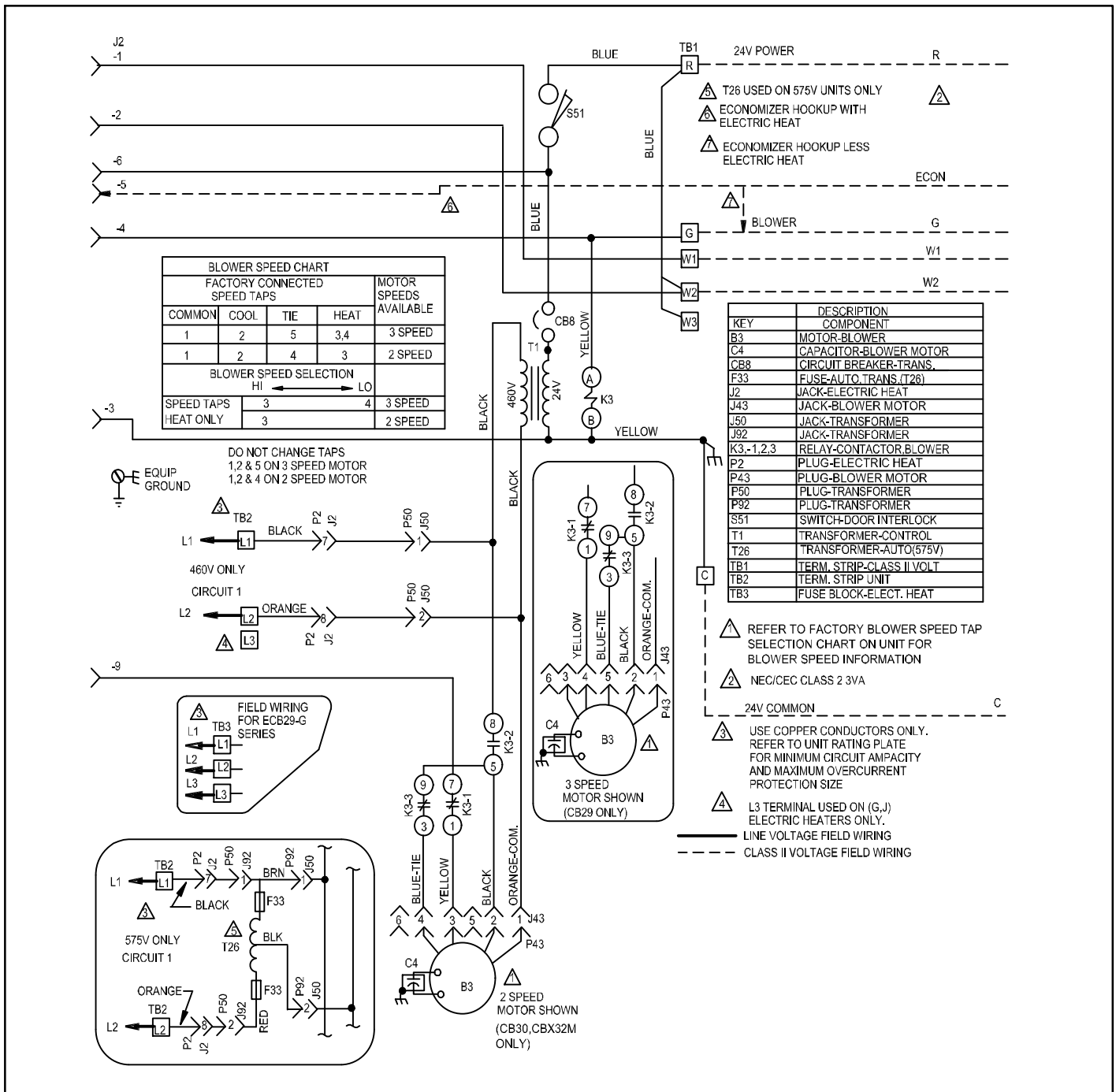


Figure 16. Typical Wiring Diagram - Three Phase

Sealing the Unit

⚠ WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

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 the Blower Speed Adjustments

MINIMUM BLOWER SPEEDS (WITH ELECTRIC HEATERS)

For the minimum allowable speed for the CBX32M 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 17. Refer to unit wiring diagram in figure 15 on page 12. Refer to tables 4 through 11 for air handler performance data.

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

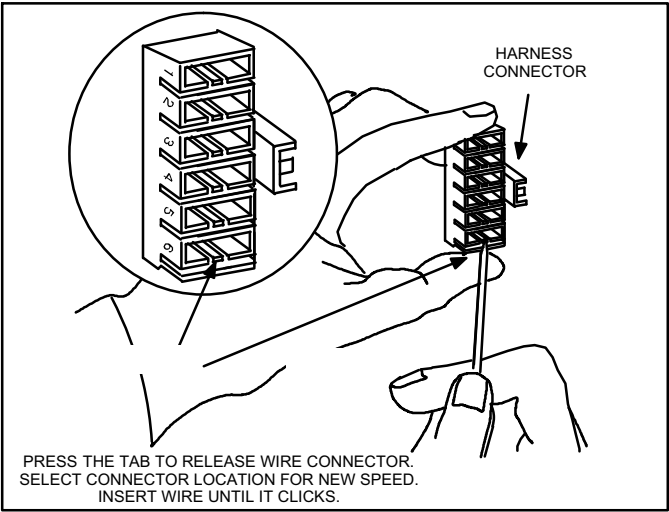


Figure 17. Blower Speed Tap Selection

Table 4. CBX32M-018/024 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

Table 5. CBX32M-030 Air Handler Performance (208/230V)

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

Table 6. CBX32M-036 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

Table 7. CBX32M-036 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

Table 8. CBX32M-042 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

Table 9. CBX32M-048 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

Table 10. CBX32M-048 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 11. CBX32M-060 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 12. CBX32M-60 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.

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.

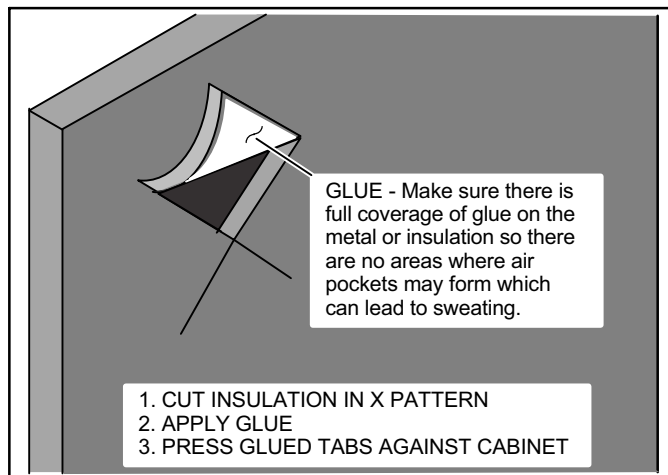


Figure 18. Repairing Insulation

! WARNING

This product and/or the indoor unit it is matched with may contain fiberglass wool.

Disturbing the insulation during installation, maintenance, or repair will expose you to fiberglass wool dust. 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

Homeowner Maintenance

! IMPORTANT

Do not operate system without a filter. A filter is required to protect the coil, blower, and internal parts from excessive dirt and dust. The filter is placed in the return duct by the installer.

- Inspect air filters at least once a month and replace or clean as required. Dirty filters are the most common cause of inadequate heating or cooling performance.
- Replace disposable filters. Cleanable filters can be cleaned by soaking in mild detergent and rinsing with cold water.
- Install new/clean filters with the arrows on the side pointing in the direction of airflow. Do not replace a cleanable (high velocity) filter with a disposable (low velocity) filter unless return air system is properly sized for it.
- If water should start coming from the secondary drain line, a problem exists which should be investigated and corrected. Contact a qualified service technician.

Check-out Procedures

⚠ IMPORTANT

During installation, service or maintenance, make sure that copper tubing does not rub against metal edges or other copper tubing. Care should also be taken to ensure that tubing does not become kinked. Use wire ties to secure tubing to prevent movement.

Do not secure electrical wires to tubing that carries hot refrigerant gas. Heat from the tubing may melt the wiring insulation causing a short circuit.

NOTE - Refer to outdoor unit installation instructions for system start-up instructions and refrigerant charging instructions.

PRE-START-UP CHECKS

- Is the air handler properly and securely installed?
- If horizontally configured, is the unit sloped up to 1/4 inch toward drain lines?
- Will the unit be accessible for servicing?
- Has an auxiliary pan been provided under the unit with separate drain for units installed above a finished ceiling or in any installation where condensate overflow could cause damage?
- Have ALL unused drain pan ports been properly plugged?
- Has the condensate line been properly sized, run, trapped, pitched, and tested?
- Is the duct system correctly sized, run, sealed, and insulated?
- Have all cabinet openings and wiring been sealed?

- Is the indoor coil factory-installed TXV properly sized for the outdoor unit being used?
- Have all unused parts and packaging been disposed of?
- Is the filter clean, in place, and of adequate size?
- Is the wiring neat, correct, and in accordance with the wiring diagram?
- Is the unit properly grounded and protected (fused)?
- Is the thermostat correctly wired and in a good location?
- Are all access panels in place and secure?

CHECK BLOWER OPERATION

- Set thermostat to FAN ON.
- The indoor blower should come on.

CHECK COOLING OPERATION

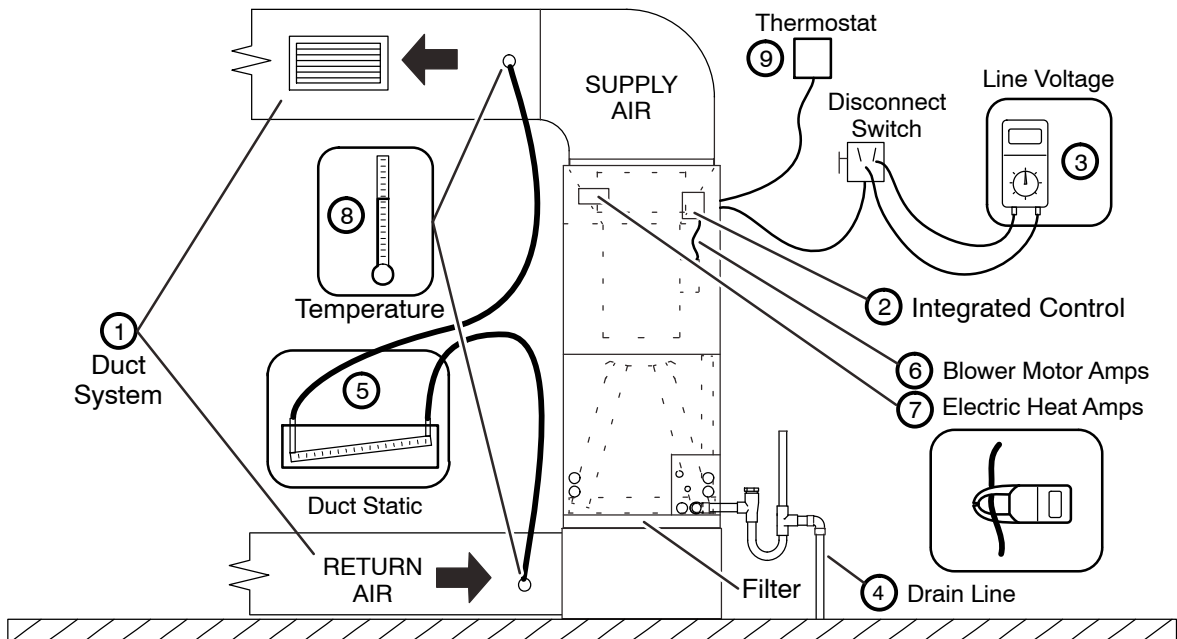
- Set thermostat to force a call for cooling (approximately 5°F lower than the indoor ambient temperature).
- The outdoor unit should come on immediately and the indoor blower should start between **30 - 60** seconds later.
- Check the airflow from a register to confirm that the system is moving cooled air.
- Set the thermostat 5°F higher than the indoor temperature. The indoor blower and outdoor unit should cycle off.

CHECK ELECTRIC HEATER (IF USED)

- Set thermostat to call for auxiliary heat (approximately 5°F above ambient temperature). The indoor blower and auxiliary heat should come on together. Allow a minimum of 3 minutes for all sequencers to cycle on.
- Set the thermostat so that it does not call for heat. Allow up to 5 minutes for all sequencers to cycle off.

Installing Contractor's Name _____
 Installing Contractor's Phone _____
 Job Address _____

Installing Date _____
 Air Handler Model # _____

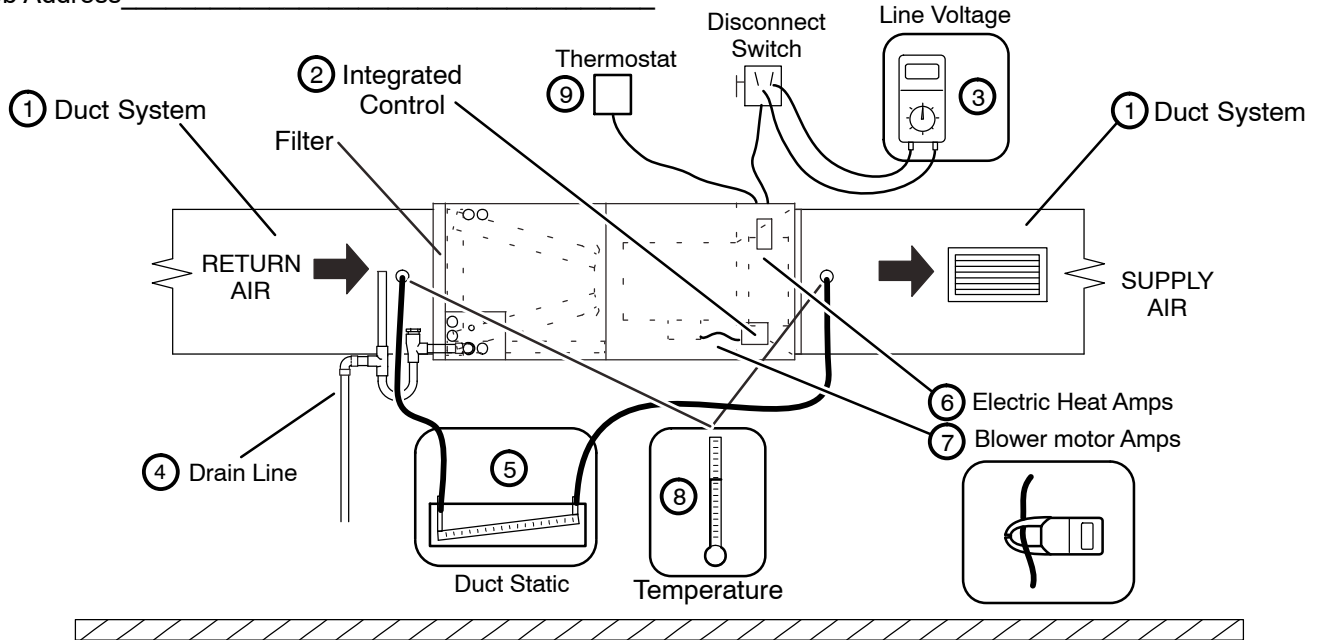


- | | |
|---|---|
| <p>① DUCT SYSTEM</p> <p>SUPPLY AIR DUCT</p> <p><input type="checkbox"/> Sealed</p> <p><input type="checkbox"/> Insulated (if necessary)</p> <p><input type="checkbox"/> Registers Open and Unobstructed</p> <p>RETURN AIR DUCT</p> <p><input type="checkbox"/> Sealed</p> <p><input type="checkbox"/> Filter Installed and Clean</p> <p><input type="checkbox"/> Registers Open and Unobstructed</p> <p>② INTEGRATED CONTROL</p> <p><input type="checkbox"/> Jumpers Configured Correctly (if applicable)</p> <p><input type="checkbox"/> Appropriate Links in Place (if applicable)</p> <p>③ VOLTAGE CHECK</p> <p><input type="checkbox"/> Supply Voltage _____</p> <p><input type="checkbox"/> Low Voltage _____</p> <p><input type="checkbox"/> Electrical Connections Tight</p> <p>④ DRAIN LINE</p> <p><input type="checkbox"/> Leak Free</p>
<p><input type="checkbox"/> Explained Operation of System to Homeowner</p> | <p>⑤ TOTAL EXTERNAL STATIC (dry coil)</p> <p style="text-align: right;">dry coil wet coil</p> <p>Supply External Static _____</p> <p>Return External Static _____</p> <p>Total External Static = _____</p> <p>⑥ ELECTRIC HEAT AMPS _____</p> <p>⑦ INDOOR BLOWER AMPS _____</p> <p>INDOOR BLOWER CFM _____</p> <p>⑧ TEMPERATURE DROP (Cooling Mode)</p> <p>Return Duct Temperature _____</p> <p>Supply Duct Temperature - _____</p> <p>Temperature Drop = _____</p> <p>⑧ TEMPERATURE RISE (Heating Mode)</p> <p>Return Duct Temperature _____</p> <p>Supply Duct Temperature - _____</p> <p>Temperature Rise = _____</p> <p>⑨ THERMOSTAT</p> <p><input type="checkbox"/> Adjusted and Programmed</p> <p><input type="checkbox"/> Operation Explained to Owner</p> |
|---|---|

Technician's Name: _____ Date Start-Up & Performance Check Completed _____

Figure 19. Start-Up and Performance Checklist (Upflow Configuration)

Installing Contractor's Name _____ Installing Date _____
 Installing Contractor's Phone _____ Air Handler Model # _____
 Job Address _____



- | | |
|--|---|
| <p>① DUCT SYSTEM</p> <p>SUPPLY AIR DUCT</p> <p><input type="checkbox"/> Sealed</p> <p><input type="checkbox"/> Insulated (if necessary)</p> <p><input type="checkbox"/> Registers Open and Unobstructed</p> <p>RETURN AIR DUCT</p> <p><input type="checkbox"/> Sealed</p> <p><input type="checkbox"/> Filter Installed and Clean</p> <p><input type="checkbox"/> Registers Open and Unobstructed</p> <p>② INTEGRATED CONTROL</p> <p><input type="checkbox"/> Jumpers Configured Correctly (if applicable)</p> <p><input type="checkbox"/> Appropriate Links in Place (if applicable)</p> <p>③ VOLTAGE CHECK</p> <p><input type="checkbox"/> Supply Voltage _____</p> <p><input type="checkbox"/> Low Voltage _____</p> <p><input type="checkbox"/> Electrical Connections Tight</p> <p>④ DRAIN LINE</p> <p><input type="checkbox"/> Leak Free</p> <p><input type="checkbox"/> Explained Operation of System to Homeowner</p> | <p>⑤ TOTAL EXTERNAL STATIC (dry coil)</p> <p style="text-align: right;">dry coil wet coil</p> <p>Supply External Static _____</p> <p>Return External Static _____</p> <p>Total External Static = _____</p> <p>⑥ ELECTRIC HEAT AMPS _____</p> <p>⑦ INDOOR BLOWER AMPS _____</p> <p>INDOOR BLOWER CFM _____</p> <p>⑧ TEMPERATURE DROP (Cooling Mode)</p> <p>Return Duct Temperature _____</p> <p>Supply Duct Temperature - _____</p> <p>Temperature Drop = _____</p> <p>⑧ TEMPERATURE RISE (Heating Mode)</p> <p>Return Duct Temperature _____</p> <p>Supply Duct Temperature - _____</p> <p>Temperature Rise = _____</p> <p>⑨ THERMOSTAT</p> <p><input type="checkbox"/> Adjusted and Programmed</p> <p><input type="checkbox"/> Operation Explained to Owner</p> |
|--|---|

Technician's Name: _____ Date Start-Up & Performance Check Completed _____

Figure 20. Start-Up and Performance Checklist (Horizontal Configuration)