Библиотека СОК

FB4C(S,Q)L

FAN COIL UNITS
FOR R-410A REFRIGERANT
SIZES 018 TO 060
50 Hz

Installation Instructions

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

TABLE OF CONTENTS

PAGE

SAFETY CONSIDERATIONS 1
INTRODUCTION 1
INSTALLATION 1
Step 1 — Check Equipment 1
Step 2 — Mount Unit 2
Step 3 — Air Ducts 3
Step 4 — Electrical Connections 4
Step 5 — Refrigerant Tubing Connection and Evacuation . . 6
Step 6 — Refrigerant Flow-Control Device 6
Step 7 — Condensate Drains 6
Step 8 — Accessories 7
Step 9 — Sequence of Operation 7
START-UP PROCEDURES 8
CARE AND MAINTENANCE 8
AIRFLOW PERFORMANCE TABLES 9
Marking Chart 10
Dimensional Drawings 11

SAFETY CONSIDERATIONS

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

Follow all local safety codes. Wear safety glasses, protective clothing and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and the current editions of the National Electrical Code (NEC) and NFPA 70.

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

Understand the signal words **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL OPERATION HAZARD

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

Before installing or servicing unit, always turn off all power to unit. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Lock out and tag switch with a suitable warning label.

⚠ CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

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

INTRODUCTION

FB4C models are R-410A Fan Coils designed for installation flexibility. These units are designed to meet the low air leak requirements currently in effect.

A TXV is used on FB4C(S,Q)L. This valve is a bleed-through type and adjustable (if necessary). All FB4C fan coils use a multi-tap ECM motor for efficiency. These units have been designed for upflow, downflow (kit required), and horizontal orientations.

These units require a field supplied air filter, and are designed specifically for R-410A refrigerant 50 Hz air conditioners. These units are available for systems of 18,000 through 60,000 BTUh nominal cooling capacity.See Product Data literature for all available accessory kits.

INSTALLATION

Step 1 — Check Equipment

Unpack unit and move to final location. Remove carton taking care not to damage unit. Inspect equipment for damage prior to installation. File claim with shipping company if shipment is damaged or incomplete.

Locate unit rating plate which contains proper installation information. Check rating plate to be sure unit matches job specifications.

Step 2 — Mount Unit

Unit can stand or lie on floor, or hang from ceiling or wall. Allow space for wiring, piping, and servicing unit.

IMPORTANT: When unit is installed over a finished ceiling and/or living area, building codes may require a field-supplied secondary condensate pan to be installed under the entire unit. Some localities may allow as an alternative, the running of a separate, secondary condensate line. Consult local codes for additional restrictions or precautions.

NOTE: Nuisance sweating may occur if the unit is installed in a high humidity environment with low airflow.

A. Upflow Installation

If return air is to be ducted through a floor, set unit on floor over opening and use 1/8 to 1/4-in (3 to 6 mm) thick fireproof resilient gasket between duct, unit, and floor.

Side return is a field option on slope coil models. Cut opening per dimensions. (See Fig. 1.) A field-supplied bottom closure is required.

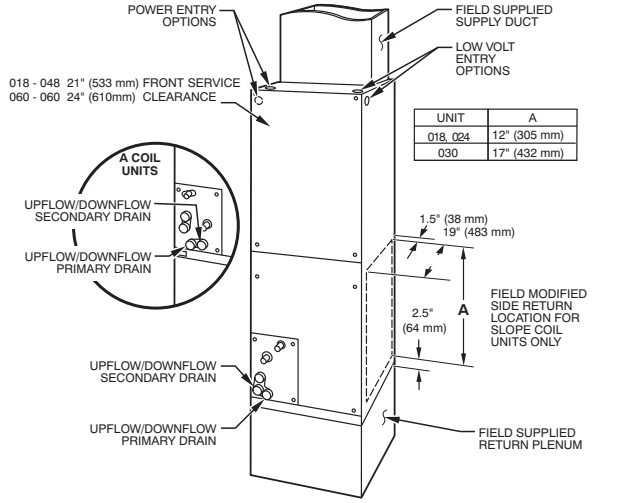


Fig. 1 - Slope Coil Unit in Upflow Application

B. Downflow Installation

In this application, field conversion of the evaporator is required using accessory downflow kit along with an accessory base kit. Use fireproof resilient gasket, 1/8 to 1/4-in (3 to 6 mm) thick, between duct, unit, and floor.

⚠ CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

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

The conversion of the fan coil to downflow requires special procedures for the condensate drains on both A-coil and slope units. The vertical drains have an overflow hole between the primary and secondary drain holes. This hole is plugged for all applications except downflow, but must be used for downflow. During the conversion process, remove the plastic cap covering the vertical drains only and discard. Remove the plug from the overflow hole and discard. At completion of the downflow installation, caulk around the vertical pan fitting to door joint to retain the low air leak performance of the unit.

NOTE: To convert units for downflow applications, refer to Installation Instructions supplied with kit for proper installation. For slope fan coils, use kit Part No. KFADC0201SLP. For A-coils, use kit Part No. KFADC0401ACL. Use fireproof resilient gasket, 1/8 to 1/4-in (3 to 6 mm) thick, between duct, unit, and floor.

NOTE: Gasket kit number KFAHD0101SLP is also required for all downflow applications to maintain low air leak/low sweat performance.

C. Horizontal Installation

Units must not be installed with access panels facing up or down. All other units are factory built for horizontal left installation. (See Fig. 2 and 3.) When suspending unit from ceiling, dimples in casing indicate suitable location of screws for mounting metal support straps. (See Fig. 2.)

⚠ CAUTION

PROPERTY DAMAGE HAZARD

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

For optimum condensate drainage performance in horizontal installations, unit should be leveled along its length and width.

For horizontal applications having high return static and humid return air, the Water Management Kit, KFAHC0125AAA, may need to be used to assist in water management.

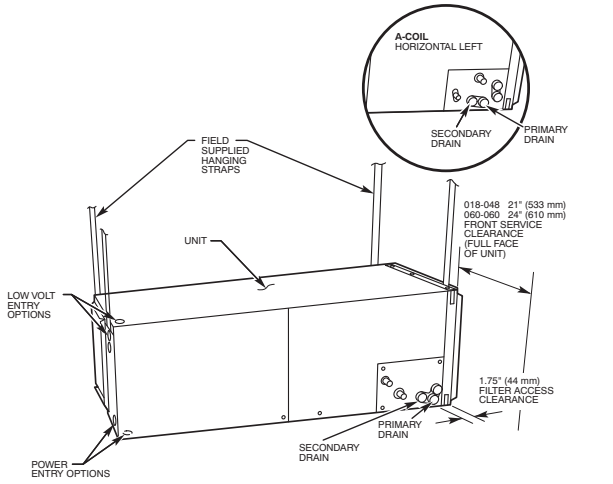


Fig. 2 - Slope Coil Unit in Horizontal Left Application

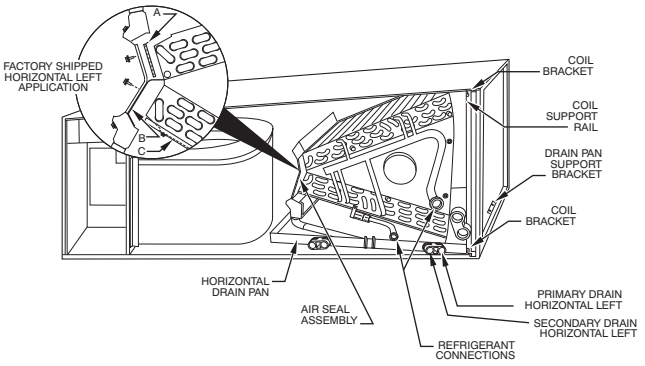


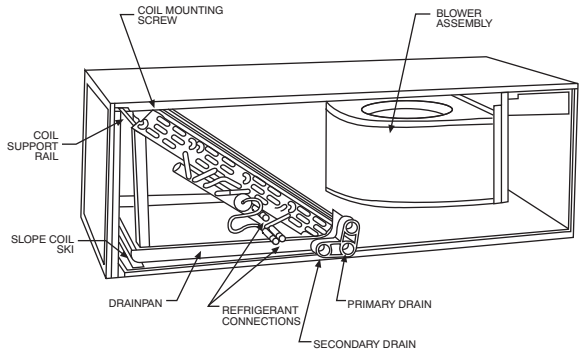
Fig. 3 - A-Coil in Horizontal Left Application

NOTE: Gasket kit number KFAHD0101SLP is required for horizontal slope coil conversion to maintain low air leak/low sweat performance.

1. Remove blower and coil access panel and fitting panel. (See Fig. 4.)

2. Remove coil mounting screw securing coil assembly to right side casing flange.
3. Remove coil assembly.
4. Lay fan coil unit on its right side and reinstall coil assembly with condensate pan down. (See Fig. 4.)
5. Attach coil to casing flange using coil mounting screw previously removed.
6. Make sure the pan cap in the fitting door is properly seated on the fitting door to retain the low air leak rating of the unit.
7. Add gaskets from kit KFAHD per kit instructions.
8. Align holes with tubing connections and condensate pan connections, and reinstall access panels and fitting panel.

Make sure liquid and suction tube grommets are in place to prevent air leaks and cabinet sweating. Install after brazing.

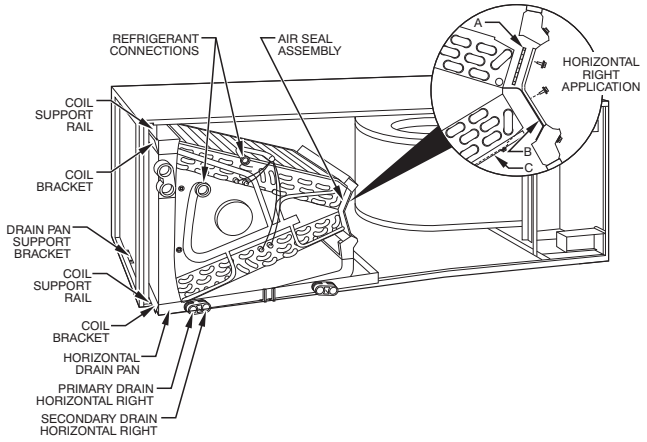


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Fig. 4 - Conversion for Horizontal Right Applications

Horizontal Right Conversion of Units With A-Coils

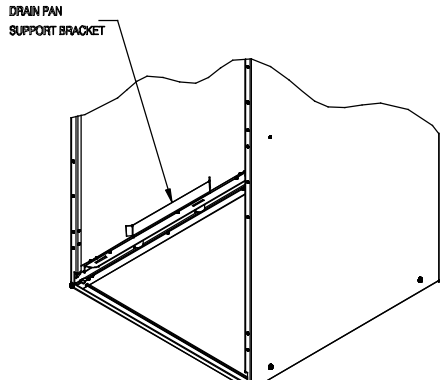
1. Remove blower and coil access panels. (See Fig. 5.)



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Fig. 5 - Conversion for Horizontal Right Applications Using A-Coil

2. Remove metal clip securing fitting panel to condensate pan. Remove fitting panel.
3. Remove 2 snap-in clips securing A-coil in unit.
4. Slide coil and pan assembly out of unit.
5. Remove horizontal drain pan support bracket from coil support rail on left side of unit and reinstall on coil support rail on right side of unit. (See Fig. 6.)



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Fig. 6 - Drain Pan Support Bracket

6. Convert air-seal assembly for horizontal right.
   a. Remove air-seal assembly from coil by removing 4 screws. (See Fig. 5.)
   b. Remove air splitter (B) from coil seal assembly by removing 3 screws. (See Fig. 3-factory shipped inset.)
   c. Remove filter plate (A) and install air splitter (B) in place of filter plate.
   d. Install filter plate (A) as shown in horizontal right application.
   e. Remove condensate troughs (C) and install on opposite tube sheets.
   f. Install hose onto plastic spout.
7. Install horizontal pan on right side of coil assembly.
8. Slide coil assembly into casing. Be sure coil bracket on each corner of vertical pan engages coil support rails.
9. Reinstall 2 snap-in clips to correctly position and secure coil assembly in unit. Be sure clip with large offsets is used on right side of unit to secure horizontal pan.
10. Remove two oval fitting caps from the left side of the coil door and fitting panel.
11. Remove insulation knockouts on right side of coil access panel.
12. Remove 2 oval coil access panel plugs and reinstall into holes on left side of coil access panel and fitting panel.
13. Install condensate pan fitting caps (from item 10) in the right side of the coil door making sure that the cap snaps and seats cleanly on the back side of the coil door. Make sure no insulation interferes with seating of the cap.
14. Reinstall access fitting panels, aligning holes with tubing connections and condensate pan connections. Be sure to reinstall metal clip between fitting panel and vertical condensate pan.

Make sure liquid and suction tube grommets are in place to prevent air leaks and cabinet sweating.

Step 3 — Air Ducts

Connect supply-air duct over the outside of 3/4-in (19 mm) flanges provided on supply-air opening. Secure duct to flange, using proper fasteners for type of duct used, and seal duct-to-unit joint. If return-air flanges are required, install factory-authorized accessory kit.

Use flexible connectors between ductwork and unit to prevent transmission of vibration. When electric heater is installed, use heat-resistant material for flexible connector between ductwork and unit at discharge connection. Ductwork passing through unconditioned space must be insulated and covered with vapor barrier.

Ductwork Acoustical Treatment

Metal duct systems that do not have a 90° elbow and 10-ft (3m) of main duct to first branch takeoff may require internal acoustical insulation lining. As an alternative, fibrous ductwork may be used if constructed and installed in accordance with the latest edition of SMACNA construction standard on fibrous glass ducts. Both acoustical lining and fibrous ductwork shall comply with National Fire Protection Association as tested by UL Standard 181 for Class 1 air ducts.

Step 4 — Electrical Connections

FB4C units from the factory protect the low voltage circuit with a 3 amp automotive type fuse in-line on the wire harness and Does Not contain a circuit board. Motor speeds and time delay function are built into the motor (see section D for clarification).

When a factory-approved accessory control package has been installed, check all factory wiring per unit wiring diagram and inspect factory wiring connections to be sure none were loosened in transit or installation. If a different control package is required, see unit rating plate.

⚠ CAUTION

PROPERTY DAMAGE HAZARD

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

If a disconnect switch is to be mounted on unit, select a location where drill or fastener will not contact electrical or refrigerant components.

Before proceeding with electrical connections, make certain that supply voltage, frequency, phase, and ampacity are as specified on the unit rating plate. See unit wiring label for proper field high- and low-voltage wiring. Make all electrical connections in accordance with the NEC and any local codes or ordinances that may apply. Use copper wire only.

The unit must have a separate branch electric circuit with a field-supplied disconnect switch located within sight from, and readily accessible from, the unit.

On units with a factory-installed disconnect with pull-out removed, service and maintenance can be safely performed on only the load side of the control package.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

Field wires on the line side of the disconnect found in the fan coil unit remain live, even when the pull-out is removed. Service and maintenance to incoming wiring cannot be performed until the main disconnect switch (remote to the unit) is turned off.

A. Line Voltage Connections

For units without electric heater:

1. Connect 230v or 240v power leads from field disconnect to yellow and black stripped leads.
2. Connect ground wire to unit ground lug.

NOTE: Units installed without electric heat should have a field-supplied sheet metal block-off plate covering the heater opening. This will reduce air leakage and formation of exterior condensation.

B. 24-v Control System

Connection To Unit

Wire low voltage in accordance with wiring label on the blower. (See Fig. 7 through 12.) Use no. 18 AWG color-coded, insulated (35°C minimum) wire to make the low-voltage connections between the thermostat, the unit, and the outdoor equipment. If the thermostat is located more than 100-ft (30 m) from the unit (as measured along the low-voltage wire), use no. 16 AWG color-coded, insulated (35°C minimum) wire. All wiring must be NEC Class 1 and must be separated from incoming power leads.

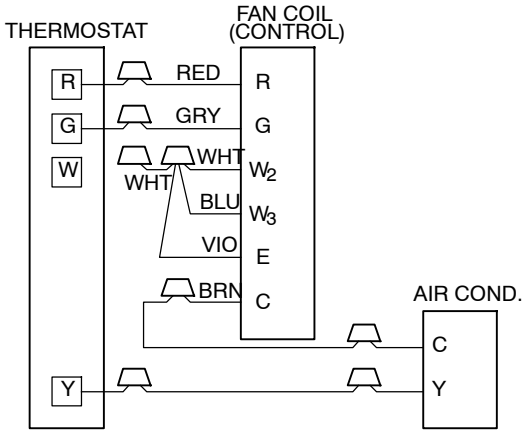


Fig. 7 - Wiring Layout Air Conditioning Unit (Cooling Only)

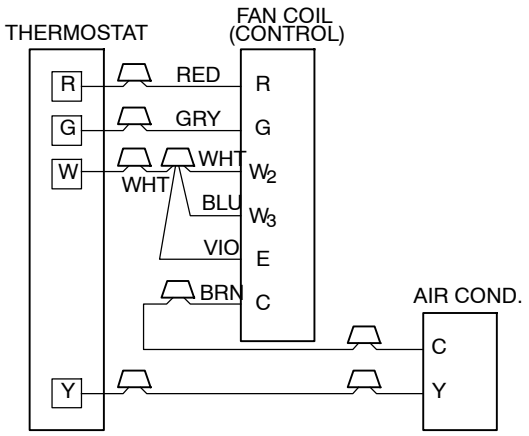


Fig. 8 - Wiring Layout Air Conditioning Unit (Cooling and 1-Stage Heat)

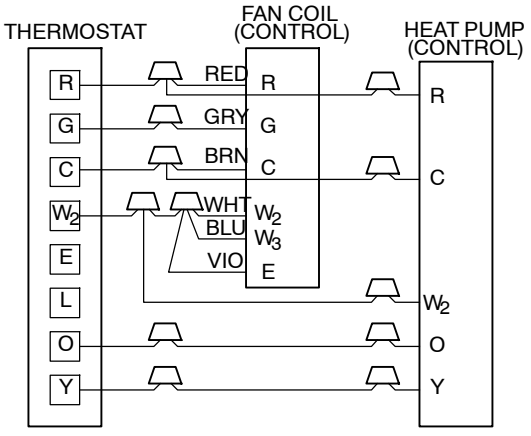


Fig. 9 - Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat with No Outdoor Thermostat)

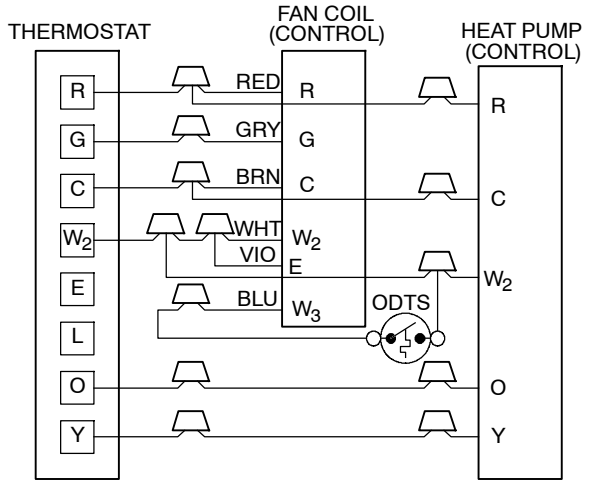


Fig. 10 - Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat with 1 Outdoor Thermostat)

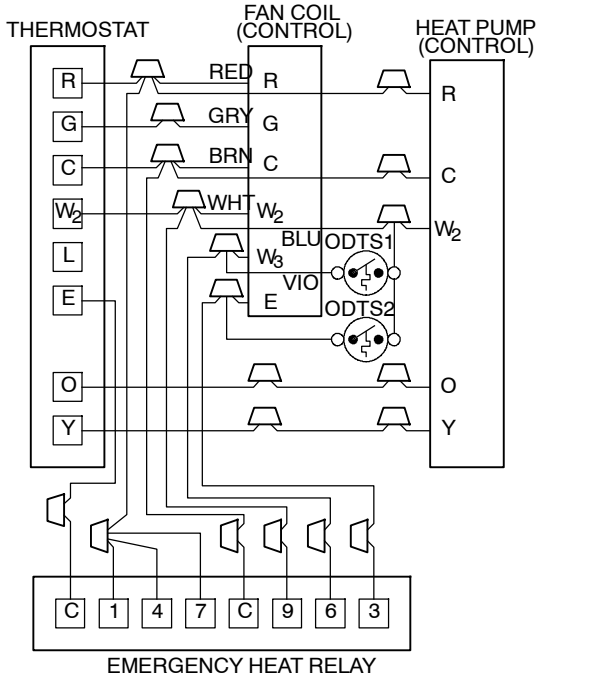


Fig. 11 - Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat with 2 Outdoor Thermostats)

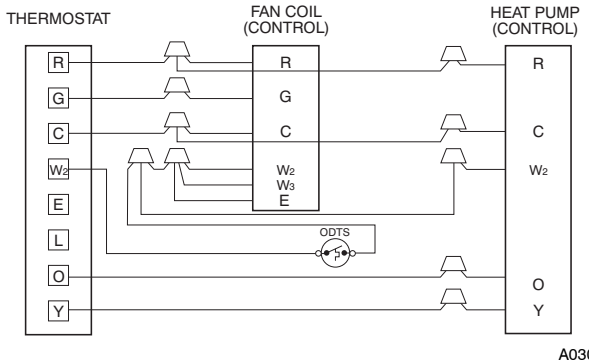


Fig. 12 - Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat for Manufactured Housing)

Refer to outdoor unit wiring instructions for any additional wiring procedure recommendations.

Transformer Information

Transformer is factory-wired for 230v or 240v operation. For 208v applications, disconnect the black wire from the 230v terminal on transformer and connect it to the 208v terminal. (See Fig. 13.)

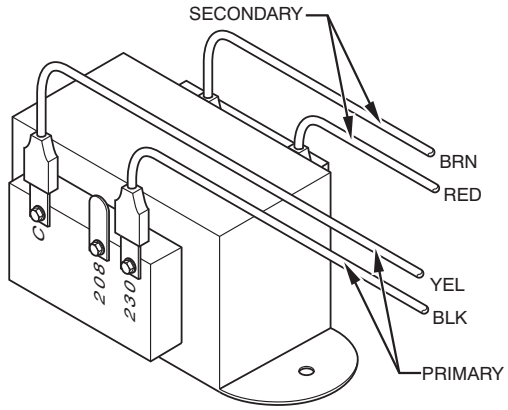


Fig. 13 - Transformer Connections

Heater Staging

The controls are factory circuited for single-stage operation. For 2-stage operation, use outdoor thermostat kit Part No. KHAOT0301FST, and for 3-stage use both kits Part No. KHAOT0201SEC and KHAOT0301FST.

When 2 stages are desired, cut W3 at the W2 wire nut, strip and reconnect per the thermostat kit instruction. (See Fig. 11.) When 3 stages are desired, cut the W2 wire nut off and discard. Strip W2, W3, and E and reconnect per thermostat kit instructions.

NOTE: When 3 stages are used or anytime the E terminal is not tied to W2, the emergency heat relay, part of outdoor kit Part No. KHAOT0201SEC must be used.

C. Ground Connections

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

According to NEC, ANSI/NFPA 70, and local codes, the cabinet must have an uninterrupted or unbroken ground to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes. If conduit connection uses reducing washers, a separate ground wire must be used.

NOTE: Use UL-listed conduit and conduit connector for connecting supply wire(s) to unit to obtain proper grounding. Grounding may also be accomplished by using grounding lugs provided in control box.

D. Minimum CFM and Motor Speed Selection

The fan speed selection is done at the motor connector. Units with or without electric heaters require a minimum CFM. Refer to the unit wiring label to ensure that the fan speed selected is not lower than the minimum fan speed indicated.

Tap 1	Low	90 sec off delay
Tap 2	Medium	90 sec off delay
Tap 3	High	90 sec off delay
Tap 4	Electric heat †	0 sec off delay
Tap 5	Max ‡	0 sec off delay

† electric heat airflow is same CFM as Tap 3, except 0 sec off delay
‡ high static applications, see airflow tables for max airflow

To change motor speeds disconnect the BLUE fan lead from motor connector terminal #2 (factory default position) and move to desired speed-tap; 1, 2, 3, or 5.

Speed-taps 1, 2, and 3 have a 90 second blower off time delay pre-programmed into the motor. Speed-tap 4 is used for electric heat only (with 0 second blower time delay) and the WHITE wire should remain on tap 4. Speed-tap 5 is used for high static applications, but has a 0 second blower time delay pre-programmed into the motor. See Airflow Performance tables for actual CFM. Also, see Fig. 14 for motor speed selection location.

NOTE: In low static applications, lower motor speed tap should be used to reduce possibility of water being blown off coil.

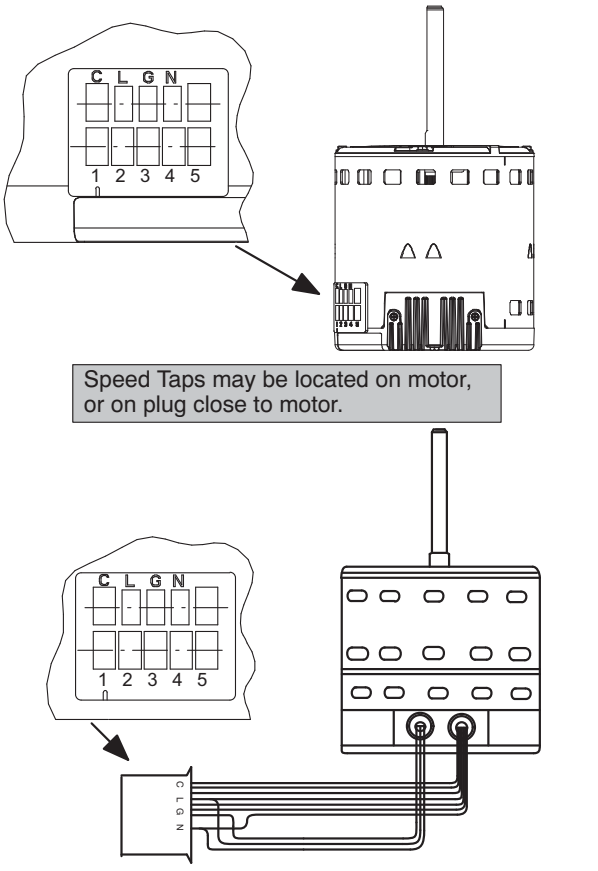


Fig. 14 - Motor Speed Selection for FB4C Only

Step 5 — Refrigerant Tubing Connection and Evacuation

Use accessory tubing package or field-supplied tubing of refrigerant grade. Suction tube must be insulated. Do not use damaged, dirty, or contaminated tubing because it may plug refrigerant flow-control device. ALWAYS evacuate the coil and field-supplied tubing to 500 microns before opening outdoor unit service valves.

⚠ CAUTION

PRODUCT DAMAGE HAZARD

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

A brazing shield MUST be used when tubing sets are being brazed to the unit connections to prevent damage to the unit surface and condensate pan fitting caps.

Units have sweat suction and liquid tube connections. Make suction tube connection first.

1. Cut tubing to correct length.
2. Insert tube into sweat connection on unit until it bottoms.
3. Braze connection using silver bearing or non-silver bearing brazing materials. Do not use solder (materials which melt below 800°F / 427°C). Consult local code requirements.
4. Evacuate coil and tubing system to 500 microns using deep vacuum method.

⚠ CAUTION

PRODUCT DAMAGE HAZARD

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

Wrap a wet cloth around rear of fitting to prevent damage to piston assembly or TXV and factory-made joints.

Step 6 — Refrigerant Flow-Control Device

The FB4C(S,Q)L018-060 size fan coils come equipped with a bleed port style, adjustable R-410A thermal expansion valve (TXV). The valve incorporates a 15% bleed port to ensure equalization during the off cycle and prevent compressor hard starts. The valve is also fully adjustable if this function is needed. The valve comes factory set for the correct superheat setting at the exit of the evaporator coil; however, if adjusting is needed, the subsequent steps must be followed:

1. Completely remove the brass cap from the bottom of the body of the TXV.
2. Turn the square pin to appropriately adjust for superheat.
   - — Turning **clockwise** will compress the internal spring, causing an **increased pressure** setting and **reduced refrigerant flow**, or a higher superheat setting.
   - — Turning **counter-clockwise** will depress the internal spring, causing a **decreased pressure** setting and **increased refrigerant flow**, or a lower superheat setting.
3. Replace the brass cap to the bottom of the body of the TXV.

Always use outdoor units designed to match indoor fan coil applications.

⚠ CAUTION

PRODUCT OPERATION HAZARD

Failure to follow this caution may result in improper product operation.

If using a TXV in conjunction with a single-phase reciprocating compressor, a compressor start capacitor and relay may be required. Consult outdoor unit pre-sale literature for start assist kit part number, if needed.

Step 7 — Condensate Drains

To connect drains, the cap openings must be removed. Use a knife to start the opening near the tab and using pliers, pull the tab to remove the disk. Clean the edge of the opening if necessary and install the condensate line. Finally caulk around the lines where they exit the fitting to retain the low leak rating of the unit.

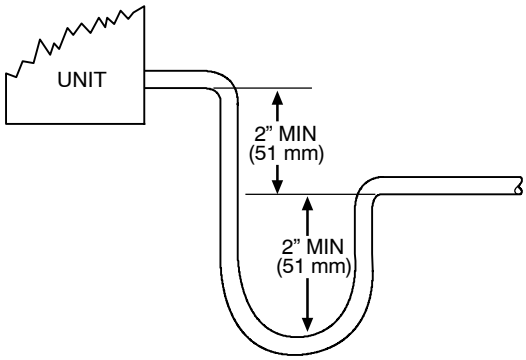
⚠ CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

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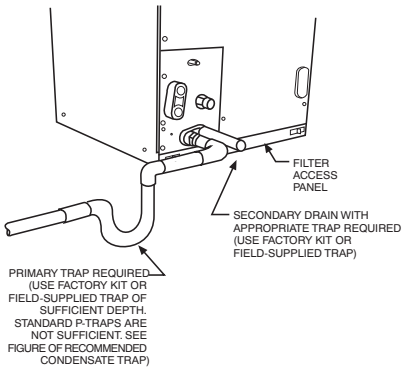
The conversion of the fan coil to downflow requires special procedures for the condensate drains on both A-coil and slope units. The vertical drains have an overflow hole between the primary and secondary drain holes. This hole is plugged for all applications except downflow, but must be used for downflow. During the conversion process, remove the plastic cap covering the vertical drains only and discard. Remove the plug from the overflow hole and discard. At completion of the downflow installation, caulk around the vertical pan fitting to door joint to retain the low air leak performance of the unit.

Units are equipped with primary and secondary 3/4-in. FPT drain connections. For proper condensate line installations see Fig. 1, 2, 3, 4 and 5. To prevent property damage and achieve optimum drainage performance, BOTH primary and secondary drain lines should be installed and include properly-sized condensate traps. (See Fig. 15 and 16.) Factory-approved condensate traps are available. It is recommended that PVC fittings be used on the plastic condensate pan. Finger-tighten plus 1-1/2 turns. Do not over-tighten. Use pipe dope.



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Fig. 15 - Recommended Condensate Trap



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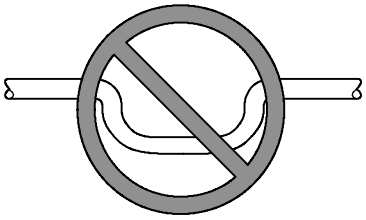
Fig. 16 - Condensate Trap and Unit

⚠ CAUTION

PROPERTY DAMAGE HAZARD

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

Shallow running traps are inadequate and DO NOT allow proper condensate drainage. (See Fig. 17.)



DO NOT USE SHALLOW RUNNING TRAPS!

A03013

Fig. 17 - Insufficient Condensate Trap

NOTE: When connecting condensate drain lines, avoid blocking filter access panel, thus preventing filter removal. After connection, prime both primary and secondary condensate traps.

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

Install traps in the condensate lines as close to the coil as possible. (See Fig. 16.) Make sure that the outlet of each trap is below its connection to the condensate pan to prevent condensate from overflowing the drain pan. Prime all traps, test for leaks, and insulate traps if located above a living area, or in an unconditioned space where sweat could cause damage. Condensate drain lines should be pitched downward at a minimum slope of 1-in (25 mm) for every 10-ft (3 m) of length. Consult local codes for additional restrictions or precautions.

Step 8 — Accessories

Humidifier

Connect humidifier and humidistat to fan coil unit as shown in Fig. 18 and Fig. 19. The cooling lockout relay is optional.

Step 9 — Sequence of Operation

A. Continuous Fan

Thermostat closes R to G. G energizes fan relay on PCB which completes circuit to indoor blower motor. When G is de-energized, there is a 90-sec delay before relay opens.

B. Cooling Mode

Thermostat energizes R to G, R to Y, and R to O (heat pump only). G energizes fan relay on PCB which completes circuit to indoor blower motor. When G is de-energized, there is a 90-sec delay before fan relay opens.

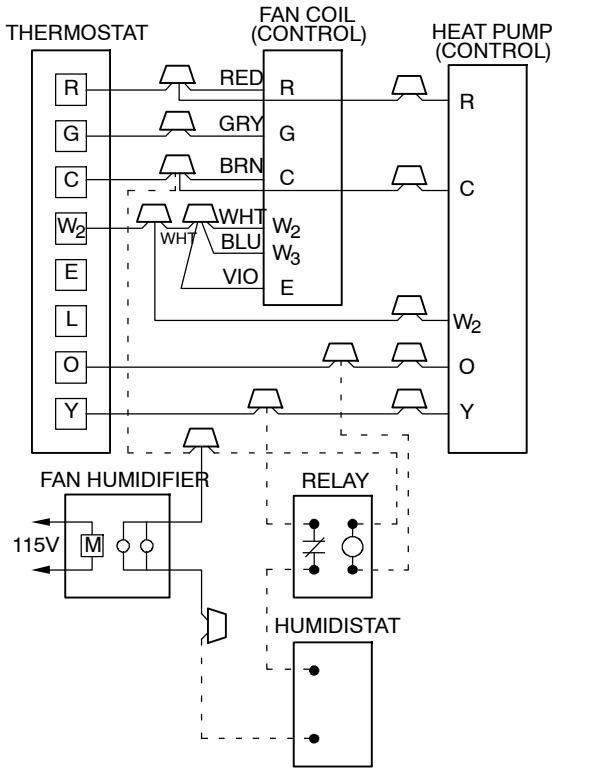


Fig. 18 - Wiring Layout of Humidifier to Heat Pump

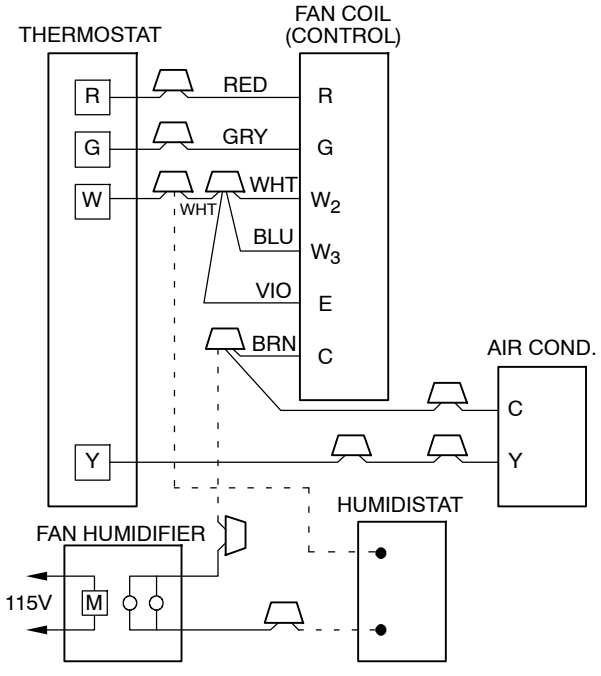


Fig. 19 - Wiring Layout of Humidifier to Fan Coil With Electric Heat

START-UP PROCEDURES

Refer to outdoor unit Installation Instructions for system start-up instructions and refrigerant charging method details.

⚠ CAUTION

UNIT COMPONENT HAZARD

Failure to follow this caution may result in product damage.

Never operate unit without a filter. Damage to blower motor or coil may result. Factory authorized filter kits must be used when locating the filter inside the unit. For those applications where access to an internal filter is impractical, a field-supplied filter must be installed in the return duct system.

CARE AND MAINTENANCE

To continue high performance and minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your local dealer as to the proper frequency of maintenance contract.

The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these, contact your dealer for maintenance. The only consumer service recommended or required is filter replacement or cleaning on a monthly basis.

AIRFLOW PERFORMANCE TABLES

Table 1 – FB4C Airflow Performance (CFM)

MODEL & SIZE	BLOWER SPEED	0.10	0.20	0.30	0.40	0.50	0.60
FB4C 018	Tap 5	767	739	702	669	620	565
	Tap 4	614	569	534	486	436	398
	Tap 3	701	660	616	581	537	499
	Tap 2	614	569	534	486	436	398
	Tap 1	410	350	304	261	228	203
FB4C 024	Tap 5	969	936	892	835	763	676
	Tap 4	826	795	766	743	706	660
	Tap 3	826	795	766	743	706	660
	Tap 2	701	660	616	581	537	499
	Tap 1	617	592	552	507	472	420
FB4C 030	Tap 5	1108	1090	1065	1034	1009	974
	Tap 4	1026	1000	969	938	899	865
	Tap 3	1026	1000	969	938	899	865
	Tap 2	909	873	842	799	762	724
	Tap 1	825	795	757	722	674	634
FB4C 036	Tap 5	1301	1276	1245	1218	1176	1121
	Tap 4	1227	1191	1169	1143	1105	1074
	Tap 3	1227	1191	1169	1143	1105	1074
	Tap 2	1087	1062	1030	1001	966	930
	Tap 1	1026	1000	969	938	899	865
FB4C 037	Tap 5	1301	1276	1245	1218	1176	1121
	Tap 4	1227	1191	1169	1143	1105	1074
	Tap 3	1227	1191	1169	1143	1105	1074
	Tap 2	1087	1062	1030	1001	966	930
	Tap 1	1026	1000	969	938	899	865
FB4C 042	Tap 5	1560	1544	1507	1464	1424	1358
	Tap 4	1419	1397	1358	1320	1279	1239
	Tap 3	1419	1397	1358	1320	1279	1239
	Tap 2	1249	1220	1184	1142	1093	1052
	Tap 1	1242	1205	1158	1110	1069	1026
FB4C 048	Tap 5	1743	1712	1679	1642	1610	1574
	Tap 4	1669	1634	1599	1564	1531	1499
	Tap 3	1669	1634	1599	1564	1531	1499
	Tap 2	1452	1413	1377	1339	1308	1271
	Tap 1	1300	1256	1221	1182	1142	1101
FB4C 060	Tap 5	2030	1995	1961	1927	1888	1842
	Tap 4	1811	1775	1740	1703	1664	1613
	Tap 3	1811	1775	1740	1703	1664	1613
	Tap 2	1665	1632	1593	1556	1507	1453
	Tap 1	1462	1418	1371	1327	1278	1228

NOTES:

1. Airflow based upon dry coil at 230v with factory-approved filter. For FB4C models, airflow at 240 volts is approximately the same as 230 volts because the multi-tap ECM motor is a constant torque motor. The torque doesn't drop off at the speeds the motor operates.
2. To avoid potential for condensate blowing out of drain pan prior to making drain trap:
   Return static pressure must be less than 0.40 in. wc.
   Horizontal applications of 036 - 060 sizes must have supply static greater than 0.20 in. wc.
3. Airflow above 400 cfm/ton on 048-060 size could result in condensate blowing off coil or splashing out of drain pan.

AIRFLOW PERFORMANCE TABLES (cont.)

Table 2 – FB4C Air Delivery Performance Correction Component Pressure Drop (in. wc) at Indicated Airflow (Dry to Wet Coil)

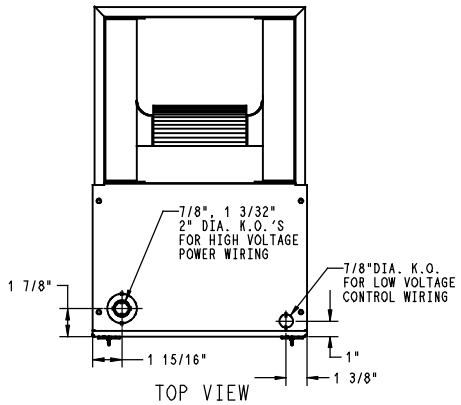
	CFM															
UNIT SIZE	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
018	0.034	0.049	0.063	--	--	--	--	--	--	--	--	--	--	--	--	--
024	0.034	0.049	0.063	0.076	0.089	--	--	--	--	--	--	--	--	--	--	--
030	--	--	--	0.049	0.059	0.070	0.080	--	--	--	--	--	--	--	--	--
036	--	--	--	--	--	0.070	0.080	0.090	0.099	--	--	--	--	--	--	--
037	--	--	--	--	--	0.070	0.080	0.090	0.099	--	--	--	--	--	--	--
042	--	--	--	--	--	--	--	0.049	0.056	0.063	0.070	--	--	--	--	--
048	--	--	--	--	--	--	--	--	--	0.063	0.070	0.076	0.083	0.090	--	--
060	--	--	--	--	--	--	--	--	--	--	--	0.027	0.031	0.035	0.039	0.043

INDOOR CATALOG NUMBER	OUTDOOR PRODUCT NUMBER	Rated Voltage / Phase / Frequency			COOLING CAP (Btu/h)		POWER INPUT (W)		COOLING CURRENT INPUT (A)		COOLING EER (Btu / h / W)		MAX CURRENT INPUT (A)	MAX POWER INPUT (W)	Brand	Address Line 2	Address Line 3
		V	Ph	Hz	T1	T3	T1	T3	T1	T3	T1	T3					
FB4CSL018L00EAAA	38CKM018-X-701--	230	1	50	19160	16150	1462	1842	6.9	8.6	13.10	8.77	9.2	2200	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL024L00EAAA	38CKM024-X-701--	230	1	50	22670	20350	1804	2258	8.1	10.5	12.57	9.01	11.4	2710	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL030L00EAAA	38CKM030-X-701--	230	1	50	30790	26800	2376	3034	11.6	14.6	12.96	8.83	14.8	3540	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL036L00EAAA	38CKM036-X-701--	230	1	50	35750	31900	2784	3582	13.3	16.7	12.84	8.91	18.7	4110	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL037L00EAAA	38CKM036-X-901--	230	1	50	35230	31120	2780	3504	4.9	5.8	12.67	8.88	6.4	4000	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL042L00EAAA	38CKM042-X-901--	230	1	50	41000	36500	3208	4016	5.1	6.4	12.78	9.09	7.0	4600	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL048L00EAAA	38CKM048-X-901--	230	1	50	48410	41490	3808	4671	6.1	7.4	12.71	8.88	8.1	5300	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CSL060L00EAAA	38CKM060-X-901--	230	1	50	58920	51680	4656	5706	7.7	9.2	12.65	9.06	10.1	6500	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL018L00EAAA	38CKM018-XQQ01--	240	1	50	19160	16150	1462	1842	6.9	8.6	13.10	8.77	9.2	2200	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL024L00EAAA	38CKM024-XQQ01--	240	1	50	22670	20350	1804	2258	8.1	10.5	12.57	9.01	11.4	2710	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL030L00EAAA	38CKM030-XQQ01--	240	1	50	30790	26800	2376	3034	11.6	14.6	12.96	8.83	14.8	3540	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL036L00EAAA	38CKM036-XQQ01--	240	1	50	35750	31900	2784	3582	13.3	16.7	12.84	8.91	18.7	4110	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL037L00EAAA	38CKM036-XQR01--	240	1	50	35230	31120	2780	3504	4.9	5.8	12.67	8.88	6.4	4000	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL042L00EAAA	38CKM042-XQR01--	240	1	50	41000	36500	3208	4016	5.1	6.4	12.78	9.09	7.0	4600	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL048L00EAAA	38CKM048-XQR01--	240	1	50	48410	41490	3808	4671	6.1	7.4	12.71	8.88	8.1	5300	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA
FB4CQL060L00EAAA	38CKM060-XQR01--	240	1	50	58920	51680	4656	5706	7.7	9.2	12.65	9.06	10.1	6500	Carrier Corp	7310 W. Morris St.	Indianapolis IN 46231 USA

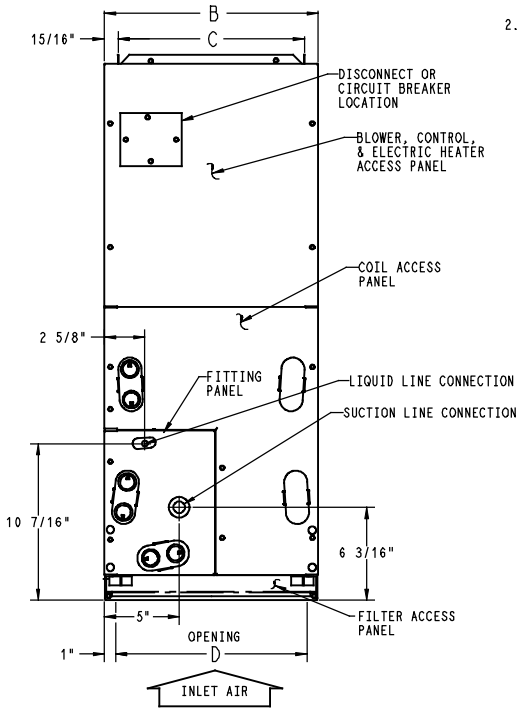
Engineered in USA, assembled in Mexico
Country of Origin: Mexico

UNIT	SERIES	ELECTRICAL CHARACTERSTICS			A	B	C	D	E	F	G	H	J	COIL CONFIGURATION SLOPE	COIL CONFIGURATION "A"	SHIPPING WT (LBS)
FB4CSL018L	A	X			42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112
FB4CSL024L	A	X			42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112
FB4CSL030L	A	X			49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122
FB4CSL036L	A	X			49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CSL037L	A	X			49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CSL042L	A	X			49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CSL048L	A	X			53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	-	-	-	X	175
FB4CSL060L	A	X			59 3/16"	24 11/16"	22 3/4"	22 11/16"	25 1/4"	32 15/16"	32 5/8"	-	-	-	X	201
		208/230-1-50			X=YES O=NO											

Fig. 20 - FB4CSL - English Measurements



TOP VIEW



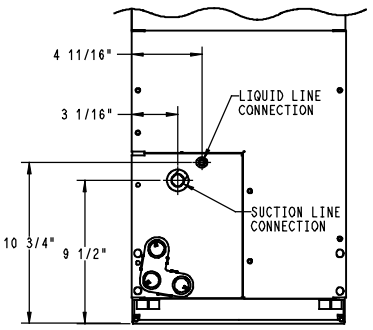
FRONT VIEW
SHOWN WITH "A" COIL DETAILS CONNECTION LOCATIONS FOR UPFLOW OR HORIZ. APPLICATIONS

NOTE:

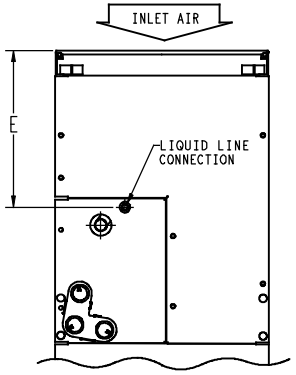
1. SERIES DESIGNATION IS THE 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

UNIT CONNECTION SIZES

SUCTION: 018 THRU 024 - 5/8" I.D. SWEAT
030 - 3/4" I.D. SWEAT
036 THRU 060 - 7/8" I.D. SWEAT
LIQUID: 3/8" I.D. SWEAT
CONDENSATE: 3/4" FPT

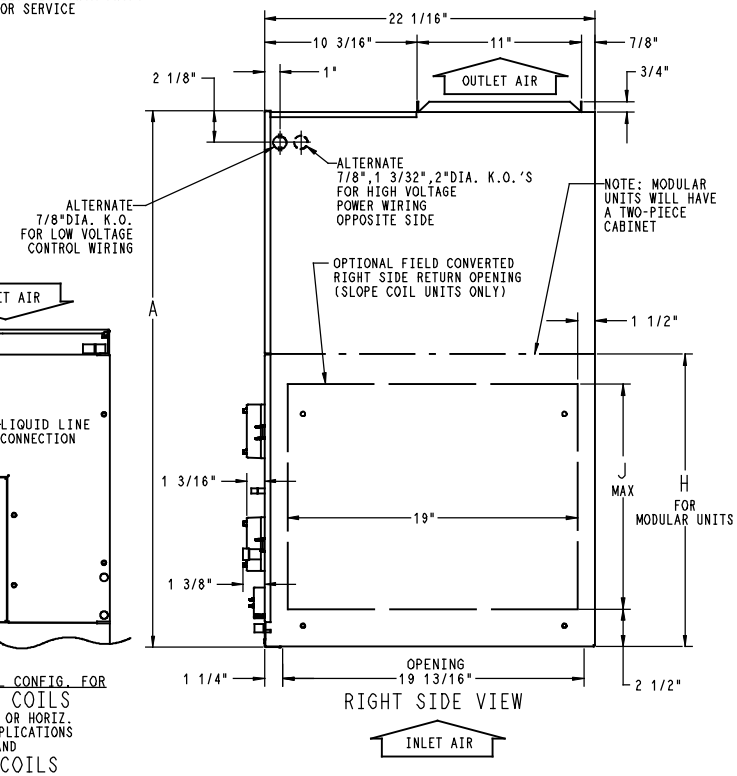


SLOPE COIL DETAILS
CONNECTION LOCATIONS SHOWN FOR UPFLOW OR HORIZ. LEFT APPLICATIONS



ACCESS PANEL CONFIG. FOR SLOPE COILS
DOWNFLOW OR HORIZ. RIGHT APPLICATIONS AND "A" COILS
DOWNFLOW APPLICATIONS

NOTE: ALLOW 21" FROM FRONT FOR SERVICE



RIGHT SIDE VIEW

U.S. EXPORT CLASSIFICATION: Not Subject to Regulation (N.S.R) **MEASUREMENT- ENGLISH**

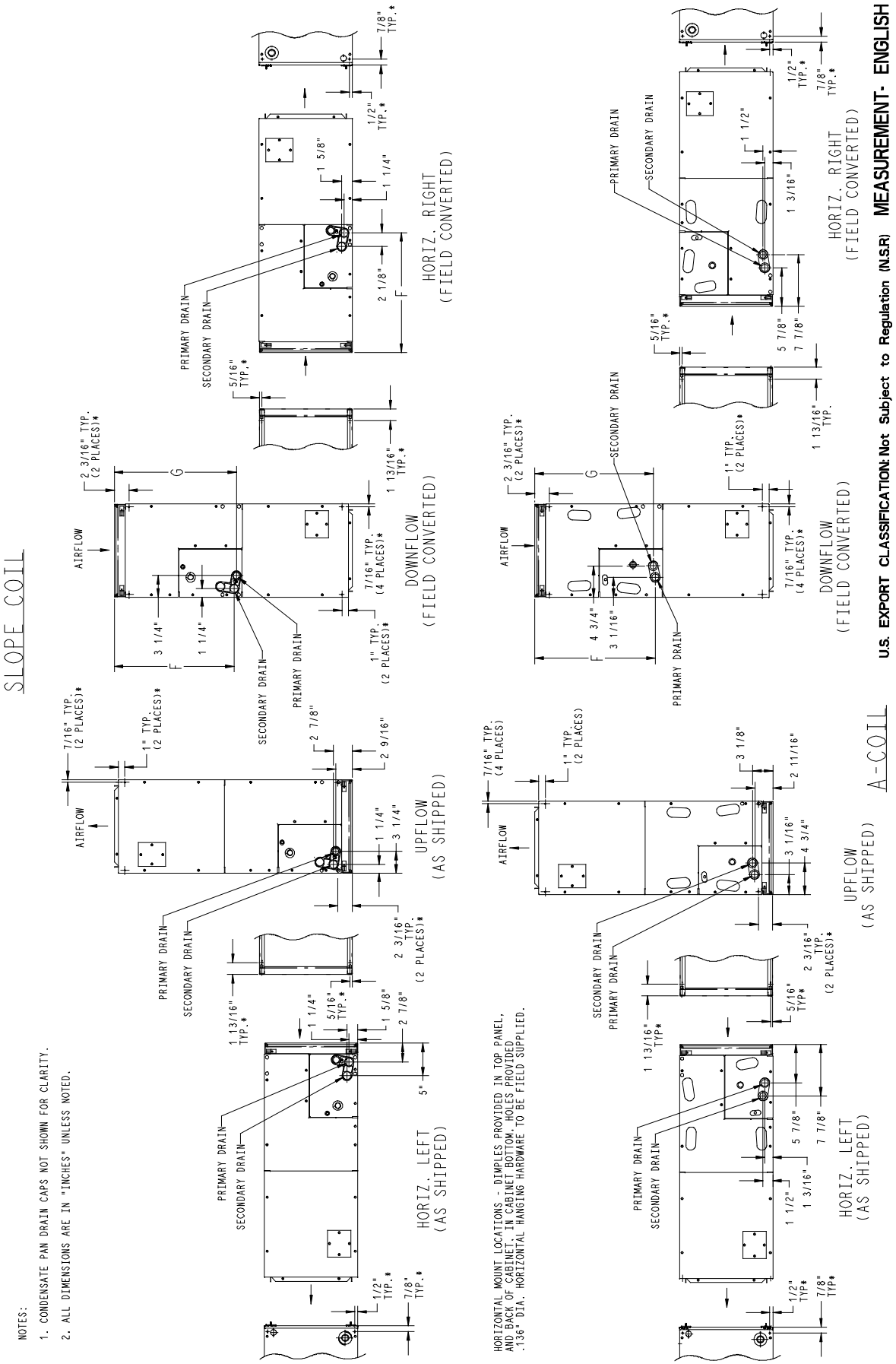
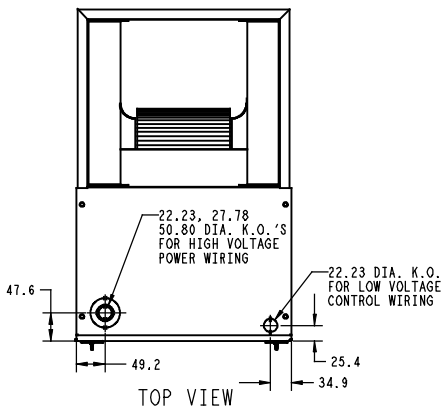
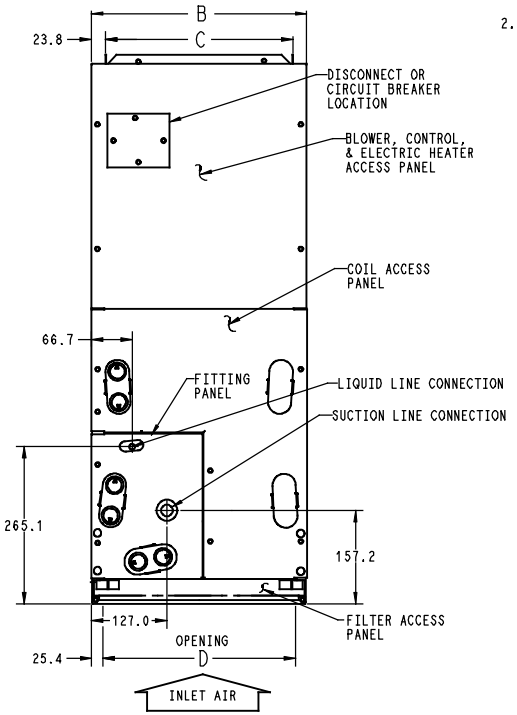


Fig. 21 - FB4CSL - English Measurements

UNIT	SERIES	ELECTRICAL CHARACTERSTICS			A	B	C	D	E	F	G	H	J	COIL CONFIGURATION		SHIPPING WT (Kgs)
														SLOPE	"A"	
FB4CSL018L	A	X			1084.3	363.6	315.9	312.8	265.1	460.4	473.1	-	304.8	X	-	50.8
FB4CSL024L	A	X			1084.3	363.6	315.9	312.8	265.1	460.4	473.1	-	304.8	X	-	50.8
FB4CSL030L	A	X			1260.5	447.7	400.0	396.9	390.5	587.4	600.1	-	431.8	X	-	55.3
FB4CSL036L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CSL037L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CSL042L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CSL048L	A	X			1357.3	536.6	489.0	485.8	495.3	692.2	684.2	-	-	-	X	79.4
FB4CSL060L	A	X			1503.4	627.1	577.8	576.3	641.4	836.6	828.7	-	-	-	X	91.2
		208/230-1-50			X=YES O=NO											



TOP VIEW



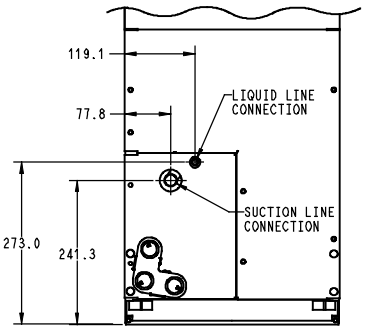
FRONT VIEW
SHOWN WITH "A" COIL DETAILS CONNECTION
LOCATIONS FOR UPFLOW OR HORIZ. APPLICATIONS

NOTE:

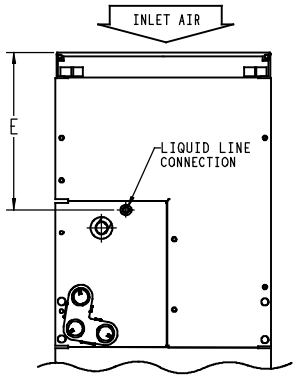
1. SERIES DESIGNATION IS THE 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "MM" UNLESS NOTED.

UNIT CONNECTION SIZES

SUCTION: 018 THRU 024 - 15.88 I.D. SWEAT
030 - 19.05 I.D. SWEAT
036 THRU 060 - 22.23 I.D. SWEAT
LIQUID: 9.53 I.D. SWEAT
CONDENSATE: 19.0 FPT

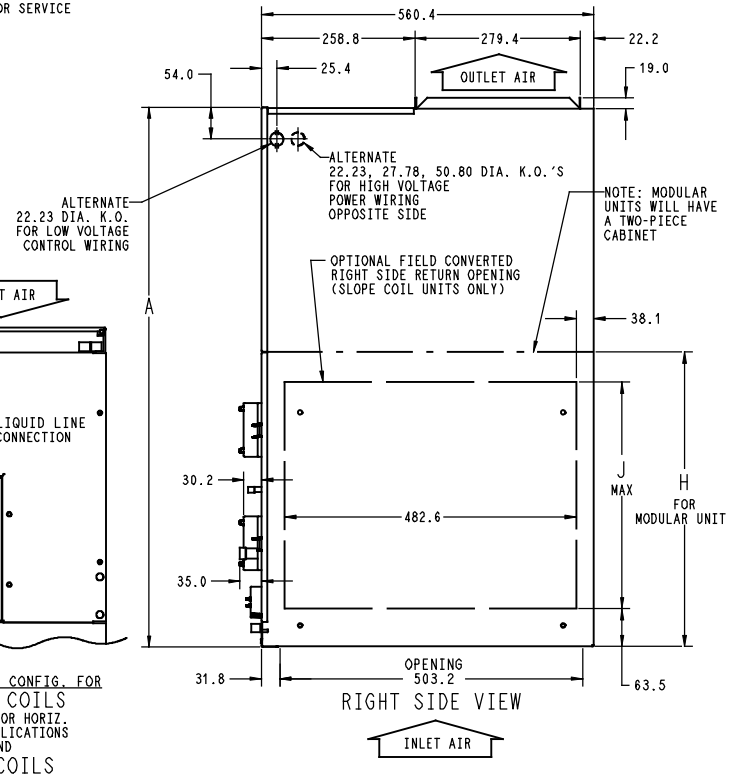


SLOPE COIL DETAILS
CONNECTION LOCATIONS SHOWN
FOR UPFLOW OR HORIZ.
LEFT APPLICATIONS



ACCESS PANEL CONFIG. FOR
SLOPE COILS
DOWNFLOW OR HORIZ.
RIGHT APPLICATIONS
AND
"A" COILS
DOWNFLOW APPLICATIONS

NOTE: ALLOW 533.4 FROM FRONT FOR SERVICE



RIGHT SIDE VIEW

U.S. EXPORT CLASSIFICATION: Not Subject to Regulation (N.S.R)

MEASUREMENT- METRIC "SI"

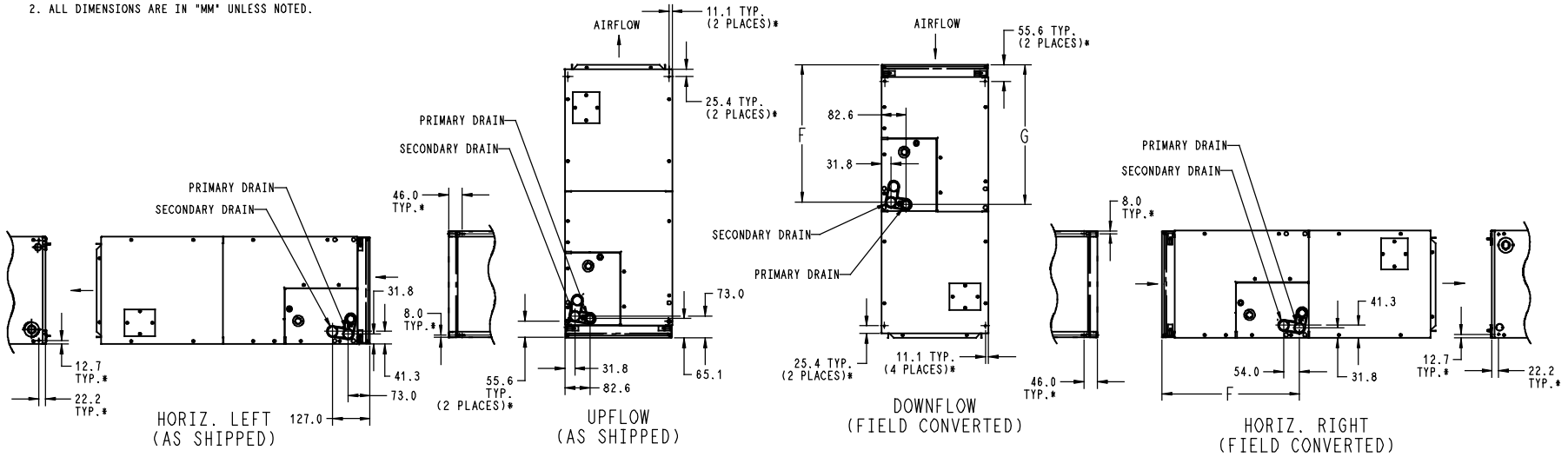
Fig. 22 - FB4CSL - Metric Measurements

Fig. 23 - FB4CSL - Metric Measurements

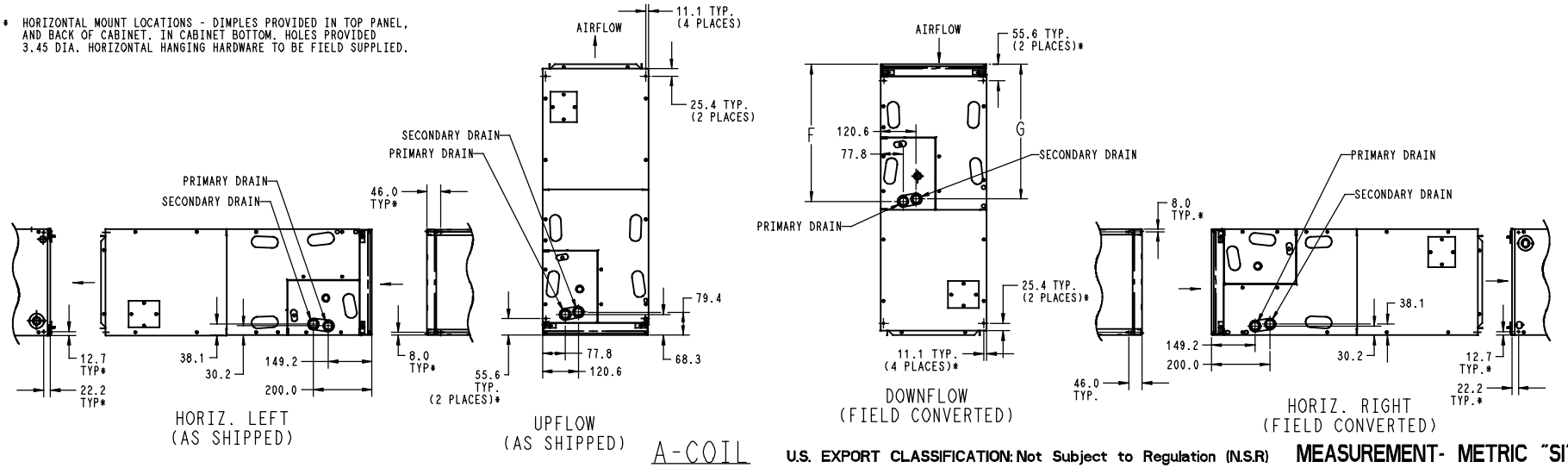
NOTES:

1. CONDENSATE PAN DRAIN CAPS NOT SHOWN FOR CLARITY.
2. ALL DIMENSIONS ARE IN "MM" UNLESS NOTED.

SLOPE COIL



* HORIZONTAL MOUNT LOCATIONS - DIMPLES PROVIDED IN TOP PANEL, AND BACK OF CABINET. IN CABINET BOTTOM. HOLES PROVIDED 3.45 DIA. HORIZONTAL HANGING HARDWARE TO BE FIELD SUPPLIED.

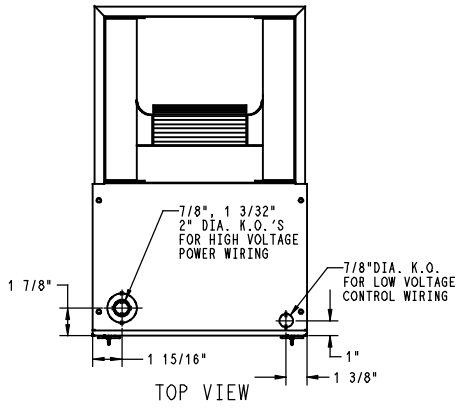


A-COIL

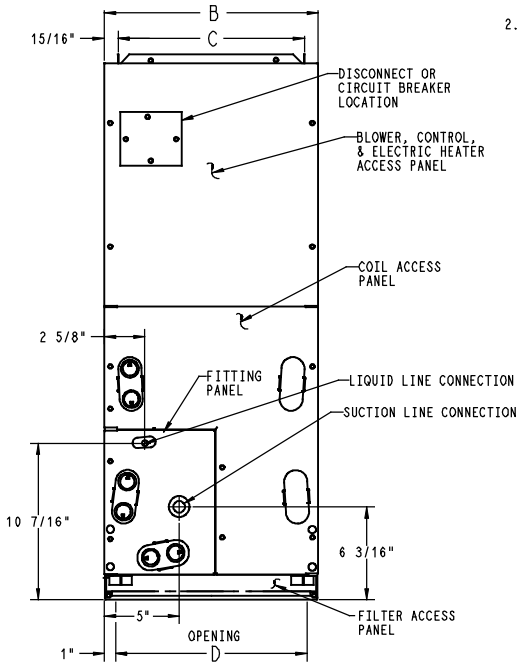
U.S. EXPORT CLASSIFICATION: Not Subject to Regulation (N.S.R) MEASUREMENT- METRIC "SI"

UNIT	SERIES	ELECTRICAL CHARACTERSTICS				A	B	C	D	E	F	G	H	J	COIL CONFIGURATION		SHIPPING WT (LBS)
															SLOPE	"A"	
FB4CQL018L	A	X				42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112
FB4CQL024L	A	X				42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112
FB4CQL030L	A	X				49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122
FB4CQL036L	A	X				49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CQL037L	A	X				49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CQL042L	A	X				49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157
FB4CQL048L	A	X				53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	-	-	-	X	175
FB4CQL060L	A	X				59 3/16"	24 11/16"	22 3/4"	22 11/16"	25 1/4"	32 15/16"	32 5/8"	-	-	-	X	201
		240-1-50															

X=YES
O=NO



TOP VIEW



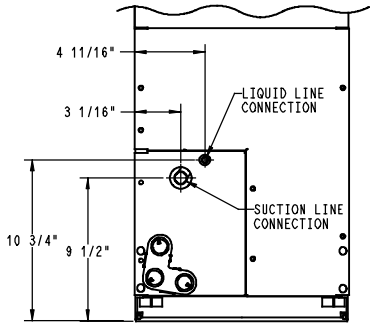
FRONT VIEW
SHOWN WITH "A" COIL DETAILS CONNECTION
LOCATIONS FOR UPFLOW OR HORIZ. APPLICATIONS

NOTE:

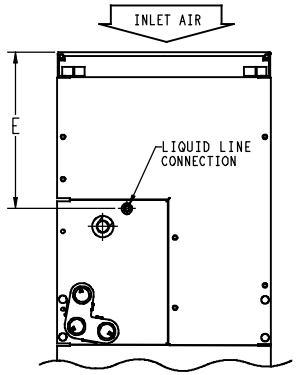
1. SERIES DESIGNATION IS THE 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

UNIT CONNECTION SIZES

SUCTION: 018 THRU 024 - 5/8" I.D. SWEAT
030 - 3/4" I.D. SWEAT
036 THRU 060 - 7/8" I.D. SWEAT
LIQUID: 3/8" I.D. SWEAT
CONDENSATE: 3/4" FPT

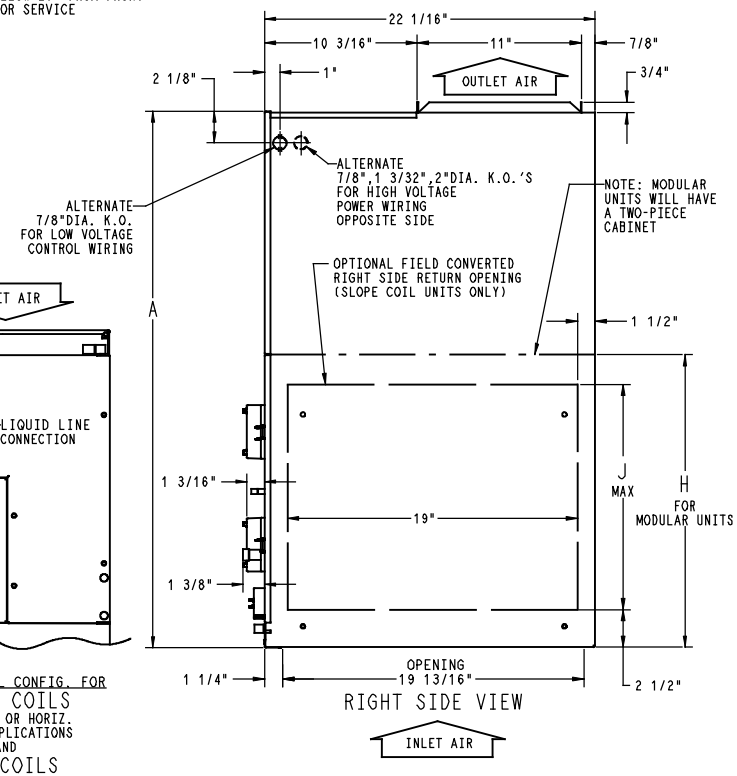


SLOPE COIL DETAILS
CONNECTION LOCATIONS SHOWN
FOR UPFLOW OR HORIZ.
LEFT APPLICATIONS



ACCESS PANEL CONFIG. FOR
SLOPE COILS
DOWNFLOW OR HORIZ.
RIGHT APPLICATIONS
AND
"A" COILS
DOWNFLOW APPLICATIONS

NOTE: ALLOW 21" FROM FRONT FOR SERVICE



RIGHT SIDE VIEW

U.S. EXPORT CLASSIFICATION: Not Subject to Regulation (N.S.R) **MEASUREMENT- ENGLISH**

Fig. 24 - FB4CQL - English Measurements

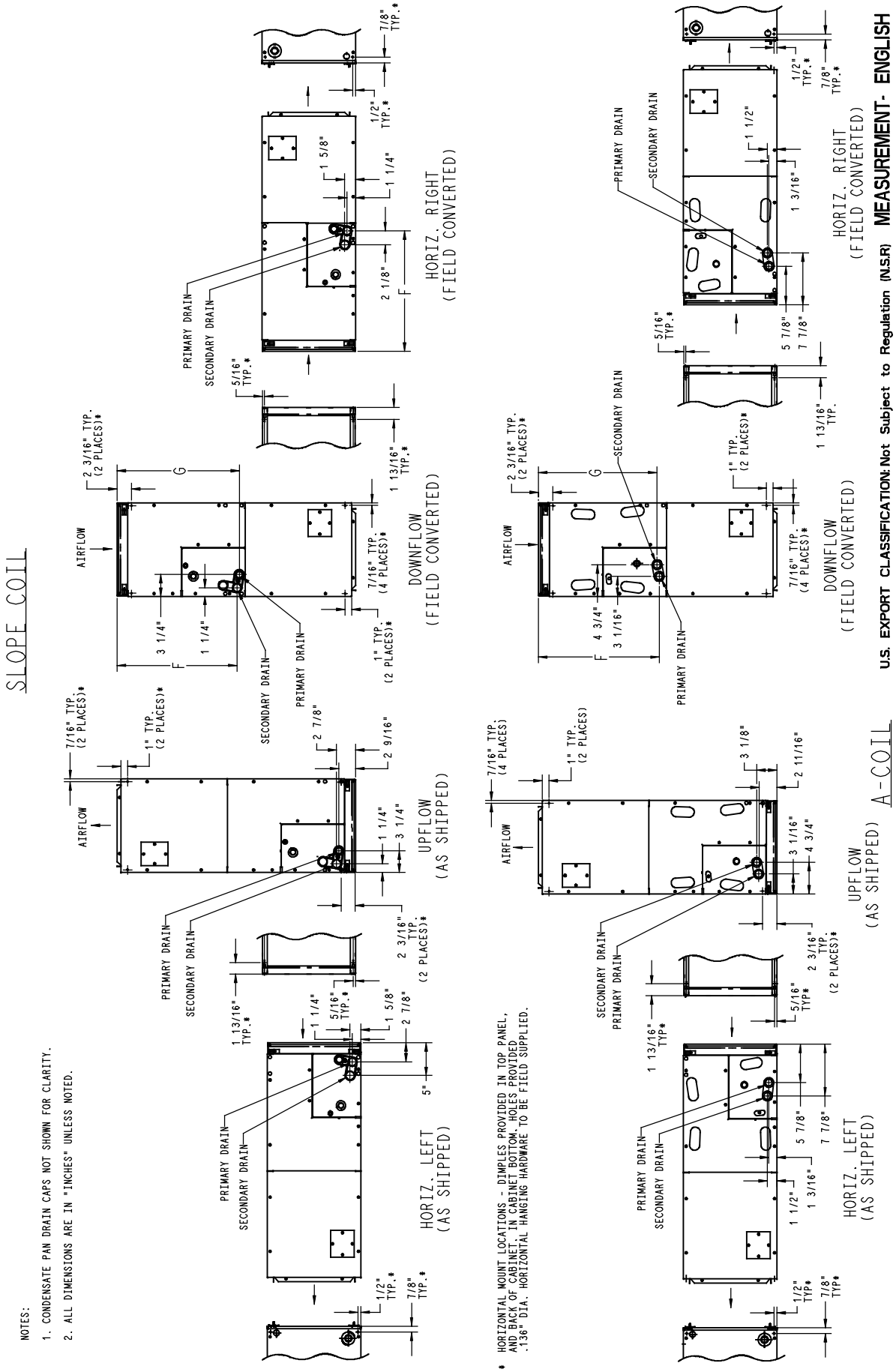
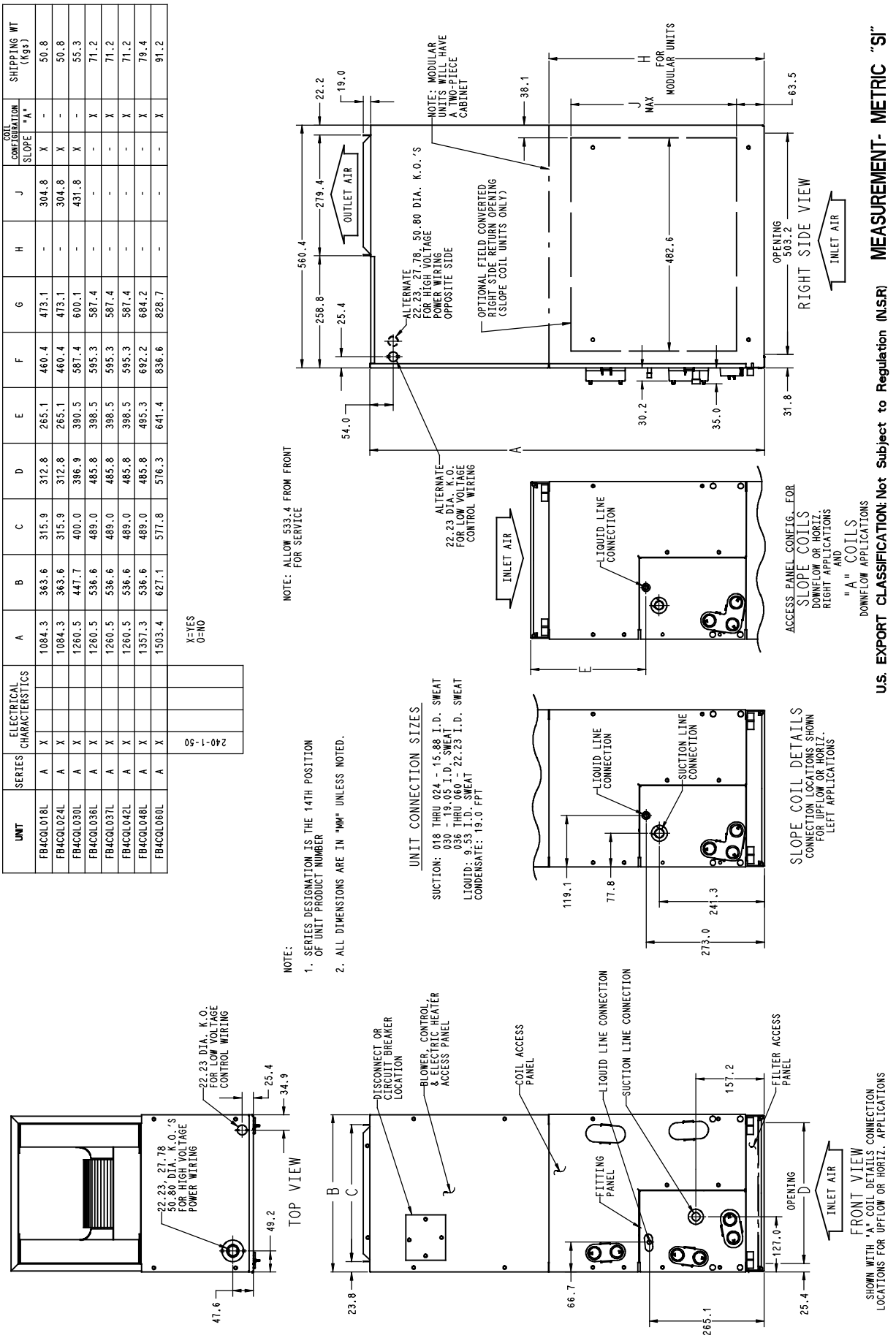


Fig. 25 - FB4CQL - English Measurements



UNIT	SERIES	ELECTRICAL CHARACTERISTICS			A	B	C	D	E	F	G	H	J	COIL CONFIGURATION SLOPE	"A"	SHIPPING WT (Kgs)
FB4CQL018L	A	X			1084.3	363.6	315.9	312.8	265.1	460.4	473.1	-	304.8	X	-	50.8
FB4CQL024L	A	X			1084.3	363.6	315.9	312.8	265.1	460.4	473.1	-	304.8	X	-	50.8
FB4CQL030L	A	X			1260.5	447.7	400.0	396.9	390.5	587.4	600.1	-	431.8	X	-	55.3
FB4CQL036L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CQL037L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CQL042L	A	X			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	71.2
FB4CQL048L	A	X			1357.3	536.6	489.0	485.8	495.3	692.2	684.2	-	-	-	X	79.4
FB4CQL060L	A	X			1503.4	627.1	577.8	576.3	641.4	836.6	828.7	-	-	-	X	91.2
				240-1-50												

X=YES
O=NO

Fig. 26 - FB4CQL - Metric Measurements

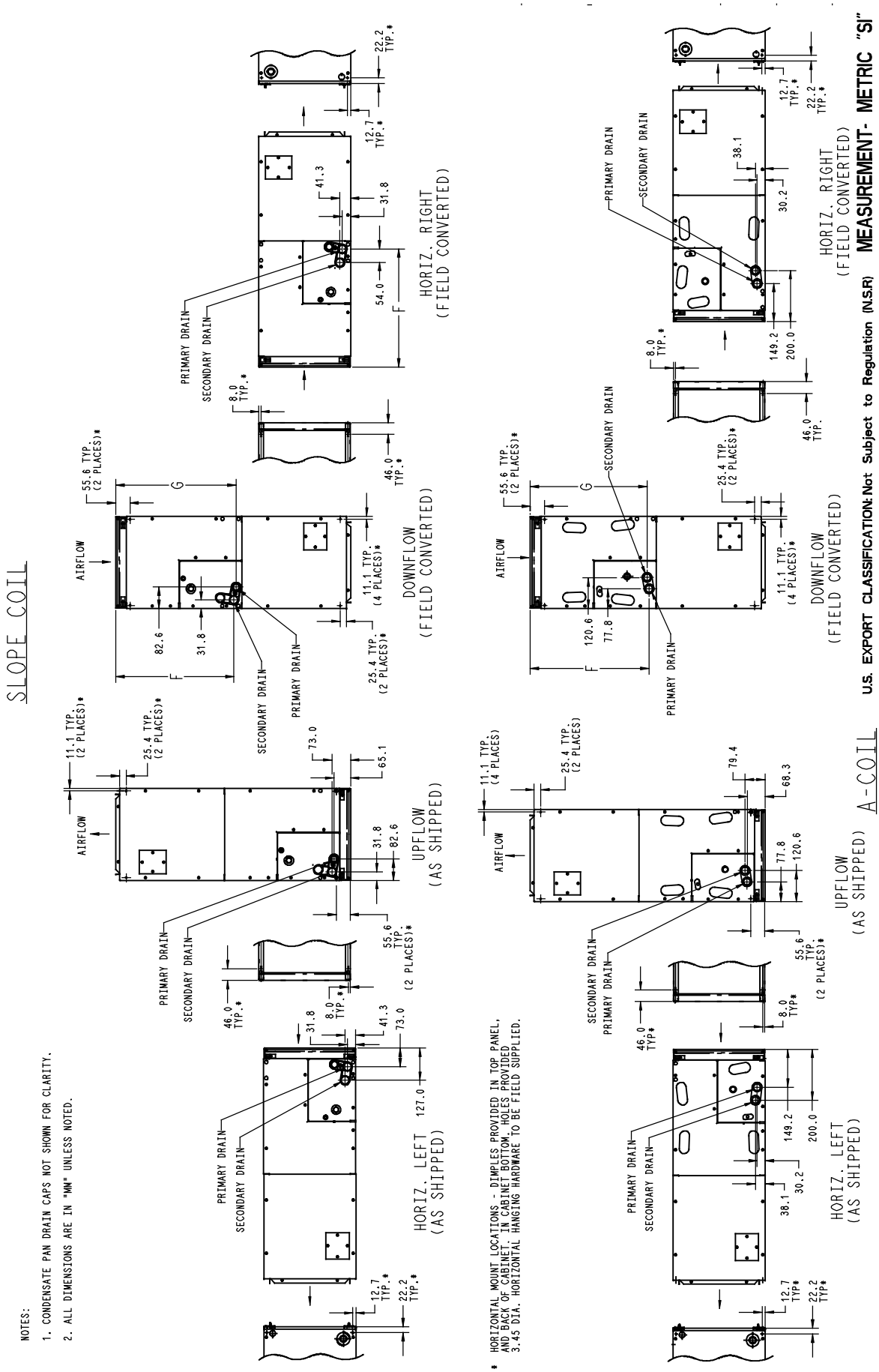


Fig. 27 - FB4CQL - Metric Measurements

R-410A QUICK REFERENCE GUIDE

- Observe all **warnings**, **cautions**, and **bold** text.
- R-410A refrigerant operates at 50-70 percent higher pressures than R-22. Be sure that servicing equipment and replacement components are designed to operate with R-410A refrigerant.
- R-410A refrigerant cylinders are rose colored.
- Recovery cylinder service pressure rating must be 400 psig, DOT 4BA400 or DOT BW400.
- R-410A refrigerant systems should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose when charging into suction line with compressor operating
- Manifold sets should be 700 psig high side and 180 psig low side with 550 psig low-side retard.
- Use hoses with 700 psig service pressure rating.
- Leak detectors should be designed to detect HFC refrigerant.
- R-410A refrigerant, as with other HFCs, is only compatible with POE oils.
- Vacuum pumps will not remove moisture from oil.
- Do not use liquid-line filter driers with rated working pressures less than 600 psig.
- Do not leave R-410A refrigerant suction line filter driers in line longer than 72 hours.
- Do not install a suction-line filter drier in liquid line.
- POE oils absorb moisture rapidly. Do not expose oil to atmosphere.
- POE oils may cause damage to certain plastics and roofing materials.
- Wrap all filter driers and service valves with wet cloth when brazing.
- A factory approved liquid-line filter drier is required on every unit.
- Do NOT use an R-22 TXV.
- If indoor unit is equipped with a R-22 TXV or piston metering device, it must be changed to an R-410A refrigerant TXV.
- Never open system to atmosphere while it is under a vacuum.
- When system must be opened for service, recover refrigerant, evacuate then break vacuum with dry nitrogen and replace filter driers. Evacuate to 500 microns prior to recharging.
- Do not vent R-410A refrigerant into the atmosphere.
- Do not use capillary tube coils.

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