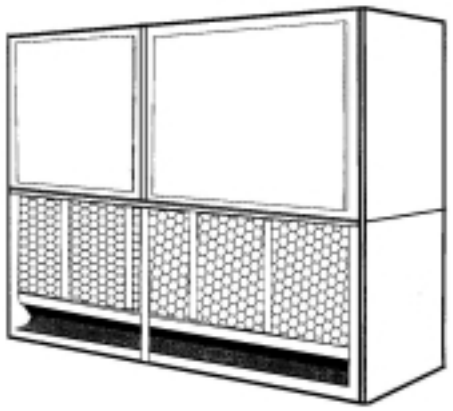
INSTALLATION MANUAL

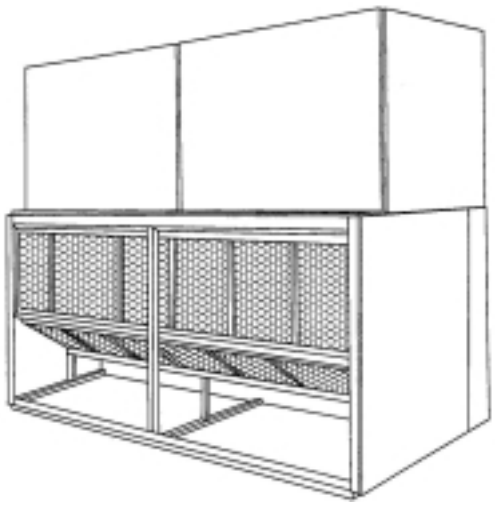
SPLIT-SYSTEM
(AIR COOLED)
EVAPORATOR BLOWER

MODELS: LB300
LB360
LB480
LB600

CONTENTS

See the following page for a complete Table of Contents.





NOTES, CAUTIONS AND WARNINGS

Installer should pay particular attention to the words: *NOTE*, *CAUTION*, and *WARNING*. Notes are intended to clarify or make the installation easier. Cautions are given to prevent equipment damage. Warnings are given to alert installer that personal injury and/or equipment damage may result if installation procedure is not handled properly.

CAUTION: READ ALL SAFETY GUIDES BEFORE YOU BEGIN TO INSTALL YOUR UNIT.

SAVE THIS MANUAL

035-18496-000-C-1102

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GENERAL

The LA and LB evaporator units are designed for use with the HA/HB Series condensing units.Units are designed to match up with LA/LB series Evaporator Blowers to meet ASHRAE 90.1 standards.

Each unit consists of a coil section and a blower section that are factory assembled and shipped as shown in figures 3 and 4. These sections may be rearranged in the field for other air discharge patterns. See figures 7, 8 and 9.

The LA and LB evaporator units have 24 volt normally closed solenoid valves to match the 24-volt control circuits of the Simplicity™ control board in the HA300 as well as the HB360, HB480 and HB600 condensing units.

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REPLACEMENT PARTS

Refer to parts manual for complete listing of replacement parts on this equipment. The above forms and all other forms referenced on this instruction may be ordered from;

Standard Register
2101 W. Tecumseh Road
Norman, OK 73069
Telephone : (877) 318-9675
Toll Free Fax: (877) 379-7920

INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's freight bill. A separate request for inspection by the carrier's agent should be made in writing.

LIMITATIONS

This unit must be installed in accordance with all national and local safety codes. If no local codes apply, installation must conform to the appropriate national code. The unit is designed to meet National Safety Code Standards. If components are to be added to a unit to meet local codes, they are to be installed at the dealer's and/or the customer's expense. See Table 1 for unit application data.

INDOOR PRODUCT NOMENCLATURE

L A 300 C 00 A 6 A AA 1

Model #	Model Number Description	Options	
L	**Product Category**	L = Air Handling Unit	
A	**Product Identifier**	A = R-22 Standard Efficiency 2-Pipe B = R-22 Standard Efficiency 4-Pipe	
300	**Nominal Cooling Capacity MBH**	300 = 25 Ton 360 = 30 Ton 480 = 40 Ton 600 = 50 Ton	
C	**Heat Type**	C = Cooling Only	
00	**Nominal Heating Capacity**	00 = No Heat Installed	
A	**Airflow Options**	A = None	
6	**Voltage**	5 = 575-3-60	6 = 208/230-460-3-60
A	**Installation Options**	A = None	
AA	**Additional Options**	AA = None	
1	**Product Generation**	1 = First Generation	2 = Second Generation

NOTE: LB600 Indoor Unit matches with both HB480 and HB600 Outdoor Condensing Units for maximum efficiency.

TABLE 1: UNIT APPLICATION DATA

Model	Power Supply Voltage	Voltage Variation		Supply Air Range CFM		Entering Air Temperature Degrees °F			
						Cooling DB/WB		Heating DB*	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
LA300	208/230-3-60	187	253	8,000	12,000	65/57	95/72	40	77
	460-3-60	414	506	8,000	12,000	65/57	95/72	40	77
	575-3-60	540	630	8,000	12,000	65/57	95/72	40	77
LB360	208/230-3-60	187	253	10,000	14,000	65/57	95/72	40	77
	460-3-60	414	506	10,000	14,000	65/57	95/72	40	77
	575-3-60	540	630	10,000	14,000	65/57	95/72	40	77
LB480	208/230-3-60	187	253	12,800	19,200	65/57	95/72	40	77
	460-3-60	414	506	12,800	19,200	65/57	95/72	40	77
	575-3-60	540	630	12,800	19,200	65/57	95/72	40	77
LB600	208/230-3-60	187	253	16,000	24,000	65/57	95/72	40	77
	460-3-60	414	506	16,000	24,000	65/57	95/72	40	77
	575-3-60	540	630	16,000	24,000	65/57	95/72	40	77

*. Heating Min/Max temperatures apply to steam and hot water coils. NOTE: Do not apply steam to hot water coils.

TABLE 2: PHYSICAL DATA

DESCRIPTION			MODEL			
			LA300	LB360	LB480	LB600
EVAPORATOR COIL	Rows Deep X Rows High		4 x 40	4 x 40	4 x 50	4 x 62
	Finned Length, Inches		93	93	96	96
	Face Area, Feet^2		25.8	25.8	33.3	41.3
	Tube (copper) OD, Inches		3/8	3/8	3/8	3/8
	Fins (Aluminum) per 1 inch		16	16	16	16
	Piping Connections, Inches	Liquid, Inches	7/8	7/8	7/8	7/8
		Suction, Inches	2 1/8	1 1/8	1 3/8	2 1/8
CENTRIFUGAL BLOWERS (2 PER UNIT)	Diameter X Width, Inches (Forward Curved)		18 x 18			20 x 18
FILTERS (THROWAWAY)	Size and Quantity Per Model, Inches	16 x 20 x 2	-		6	-
		20 x 20 x 2	-		3	-
		20 x 22 x 2	-		-	-
		16 x 25 x 2	-		-	6
		20 x 25 x 2	10		6	3
		25 x 25 x 2	-		-	6
	Total Face Area / feet^2		34.7		42.6	53.1
OPERATING CHARGE (LBS R-22)	System 1		49.65	30.08	37.83	46.59
	System 2		-	30.08	37.83	46.59
DRAINABLE HOT WATER COIL ACCESSORY	Tube (copper) OD, Inches		1/2		1/2	1/2
	Rows Deep		2		2	2
	Fins (Aluminum) per 1 inch		12		12	8
	Face Area, Feet^2		21.2		27.2	27.2
	Connections (Supply & Return), Inches		1 3/8 OD (Copper)		1 5/8 OD (Copper)	
NON-FREEZE, STEAM DISTRIBUTING COIL ACCESSORY	Tube (copper) OD, inches		1 (Outside) 5/8 (Inside)		N/A	
	Rows Deep		1			
	Fins (Aluminum) per 1 inch		8			
	Face Area, feet^2		18.2			
	Connection, (Brass) Inches (NPTE)	Inlet	2			
		Outlet	1-1/2			
COMPONENT WEIGHT	Basic Unit (Less Motor & Drive)		980	980	1260	1474
	Shipping Weight (lbs)		1180	1180	1510	-
	Operating Weight (lbs)		1125	1146	1426	1640
	Accessories	Hot Water Coil	150	150	190	190
		Steam Coil	160	160	-	-
	Blower Motor (1750 RPM)		117 (5hp)	117 (5hp)	-	-
			120 (7.5hp)	120 (7.5hp)	120 (7.5hp)	141 (10hp)
			-	141 (10hp)	141 (10hp)	217 (15hp)

BLOWER MOTOR MOUNTING LOCATIONS

Units are shipped from the factory less motor and drives. The blower motor and drive packages are ordered and shipped separately for field mounting. However, the units are shipped with the motor mounting assembly installed as shown in 1 for the LA300, LB360, LB480 and 2 for the LB600.

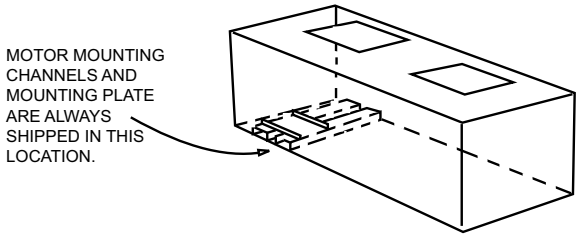


FIGURE 1 - LA300 AN LB360/LB480 FACTORY MOTOR MOUNTING POSITION

NOTE: The 5HP motors are not inherently protected.

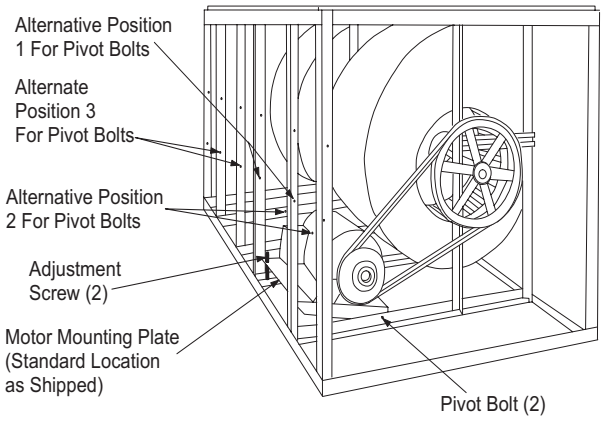


FIGURE 2 - LB600 FACTORY MOTOR MOUNTING POSITION

The motors used with the evaporator blower are 3-phase and can drive the blower wheels from either end of the blower section. Reversing the direction of rotation can be accomplished by changing the connection of the power supply wiring at the motor terminal box.

NOTE: The 7.5-15 HP blower motors have solid bases and are not inherently protected. For proper operation, these motors require overload heater elements. Please see curent product price pages for overloads.

LA300/LB360/LB480 MOTOR MOUNTING

The LA300, LB360 and LB480 ship from the factory with a motor mounting adapter plate for use with the 7.5 and 10 HP motors. If a 5 HP motor is used, the adapter is not necessary and should be removed and discarded.

LB600 MOTOR MOUNTING

The motor mounting plate will accommodate a 10 or 15 HP motor. One set of boltholes is provided on each end of the motor mounting plate for either motor. The motor mounting plate can be raised or lowered to any position on the adjustment screws to adjust the belt tension for the various pulley settings to cover the complete range of blower speeds.

The physical size of the 15 HP motor reduces the adjustment range of the motor mounting plate. To maximize this amount of adjustment, one set of boltholes is provided near the adjustment screws on each end of the motor mounting plate (refer to 4).

For some motor/blower wheel arrangements, however, the motor cannot be mounted in these bolt holes because the motor terminal box would interfere with one of the blower section panels. To make these motor/blower wheel arrangements possible, a second set of boltholes is provided near the pivot bolts on each end of the motor mounting plate.

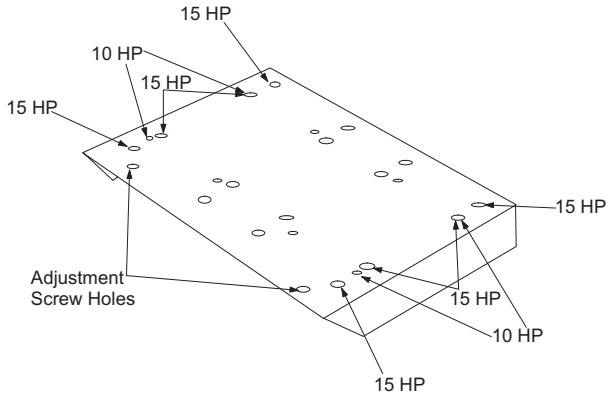


FIGURE 3 - LB600 MOTOR MOUNT PLATE

The 15 HP drive package requires two different lengths of belts to vary the blower wheel RPM over the complete range of rated conditions. When the motor is mounted near the adjustment screws, the two lengths of belt are interchangeable except for the higher and lower limits of blower wheel RPM. When the motor is mounted near the pivot bolts, the shorter length of belt is recommended for the higher blower wheel Rpm's and the longer length of belt is recommended for the lower blower wheel Rpm's. See Page 7 for the recommended blower motor locations.

MOTOR MOUNT ARRANGEMENTS

The motor mounting arrangement can be changed to allow motor access based on the airflow arrangement required. The recommended motor location for each blower arrangement is as follows.

LA300/LB360/LB480 MOTOR ARRANGEMENTS

The LA300, LB360 and LB480 units are shipped with the motor mount in location A as shown in 4. If this is the desired position, the motor mounting assembly is already in the correct position and the motor and drive package can be installed without modifications.

ADDITIONAL MOTOR ARRANGMENTS FOR LA300/ LB360/LB480

Move the entire motor amounting assembly (both the mounting plate and the channels) so that the mounting plate will be in the correct location.

1. Rotate the motor mounting plate 180 degrees on the mounting channels. (For locations B, and D only! Do not rotate the plate for location C or E.)

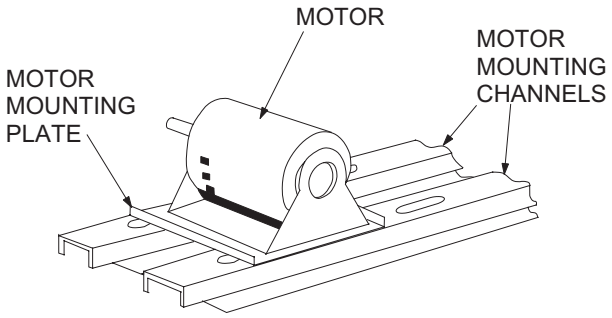


FIGURE 4 - LA300/LB360/LB480 MOTOR LOCATION A

2. Install the motor and drive package.

NOTE: The blower section must be lifted off the evaporator section to gain access to the mounting channel fasteners. Since these sections have to be repositioned for the arrangements 2 through 10 and 12 of 6, the motor mounting assembly should be relocated before the two sections are rejoined.

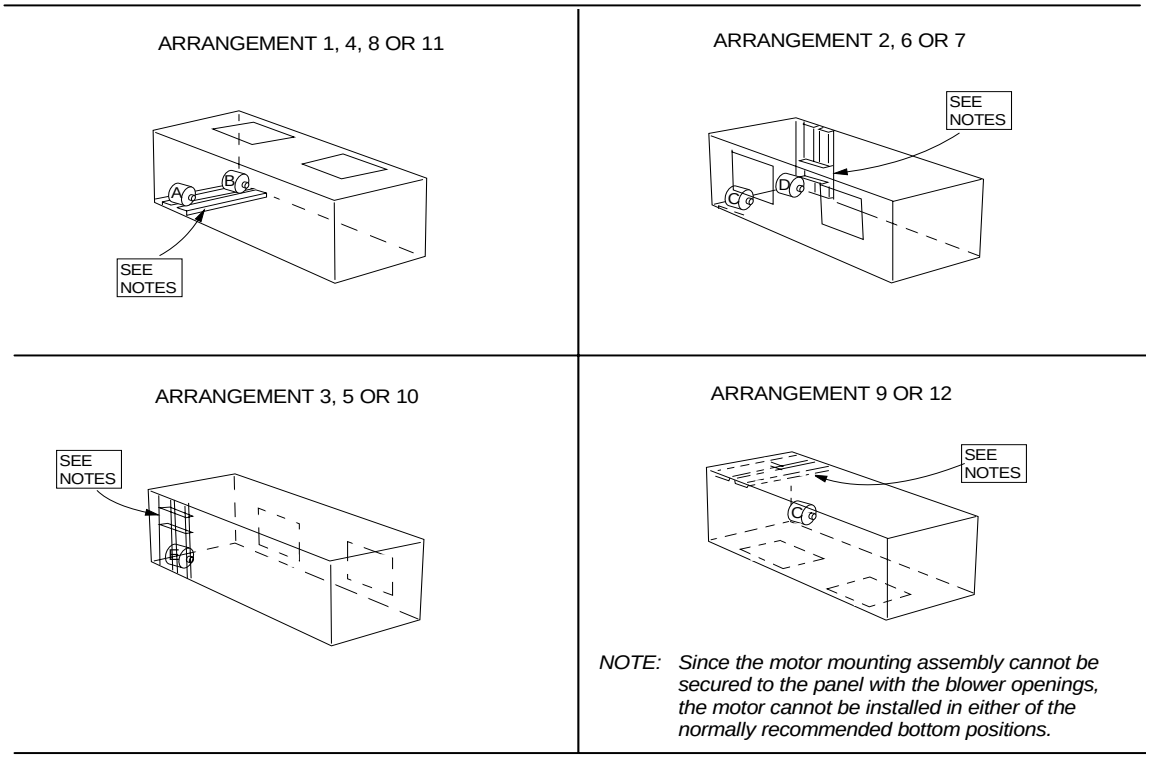


FIGURE 5 - LA300/LB360/LB480 MOTOR ARRANGEMENTS

LB600 MOTOR ARRANGEMENTS

The LB600 unit is shipped with the motor mount in the standard location as shown in 2.

If this is the desired position, the motor mounting assembly is already in the correct position and the motor and drive package can be installed without modifications.

RE-LOCATING THE LB600 MOTOR MOUNTING PLATE

The motor mounting plate can be re-located in three alternate positions:

ALTERNATE POSITION ONE

For locating motor mounting plate in alternate position one, see 3 and re-locate as follows:

1. Remove pivot bolts from the mounting plate.
2. Remove the mounting plate from the adjustment screws.
3. Rotate mounting plate 180.
4. With pivot bolts removed in Step 1 fasten the mounting plate to alternate position No. one.
5. Fasten mounting plate to the adjustment screws.

ALTERNATE POSITION TWO

The motor mounting plate, the pivot bolts and the adjustment screws can be moved into a position similar to the one shown as standard in 3 but under the other blower scroll. The framework under each blower scroll has the same bolthole arrangement.

ALTERNATE POSITION THREE

The motor mounting plate, the pivot bolts and the adjustment screws can be moved into a position similar to the one detailed in alternate position one but behind the other blower scroll. The framework behind each blower scroll has the same bolthole arrangement.

AIR DISCHARGE CONVERSION

LA360/LB360/LB480 AIR DISCHARGE

The LA300 LB360 and LB480 units are shipped for upflow operation, but may be converted for any of the illustrated air discharge patterns shown in 7 and 8. Convert as follows:

1. Remove the panels from the blower section.
2. Remove the Phillips machine screws located inside casing corner angles that hold the coil and blower sections together.
3. Rotate the blower section for the desired air discharge pattern.

NOTE: Before proceeding to step 4, see the section on the blower motor mounting locations and mount the blower motor in the desired position.

4. If accessory heating coils are used, mount heating coil between cooling coil and blower sections. Screw fastening locations are the same for all sections and heating accessories. If heating coils are not used, fasten coil section to blower section with machine screws removed in step 2.
5. Before replacing panels, see duct connections and drain connections.
6. Replace panels.

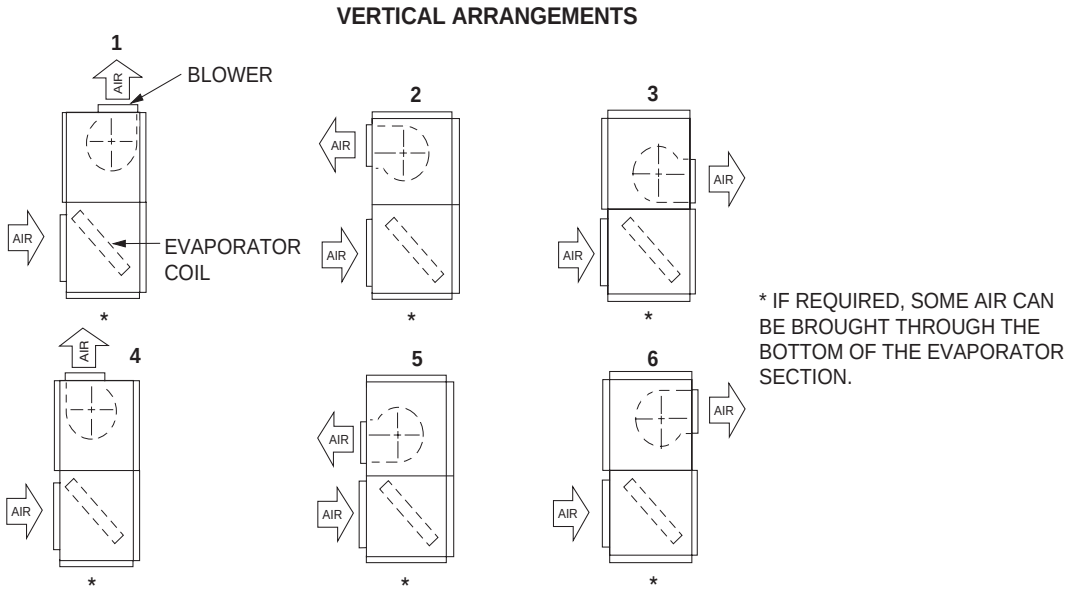


FIGURE 6 - VERTICAL AIRFLOW ARRANGEMENTS

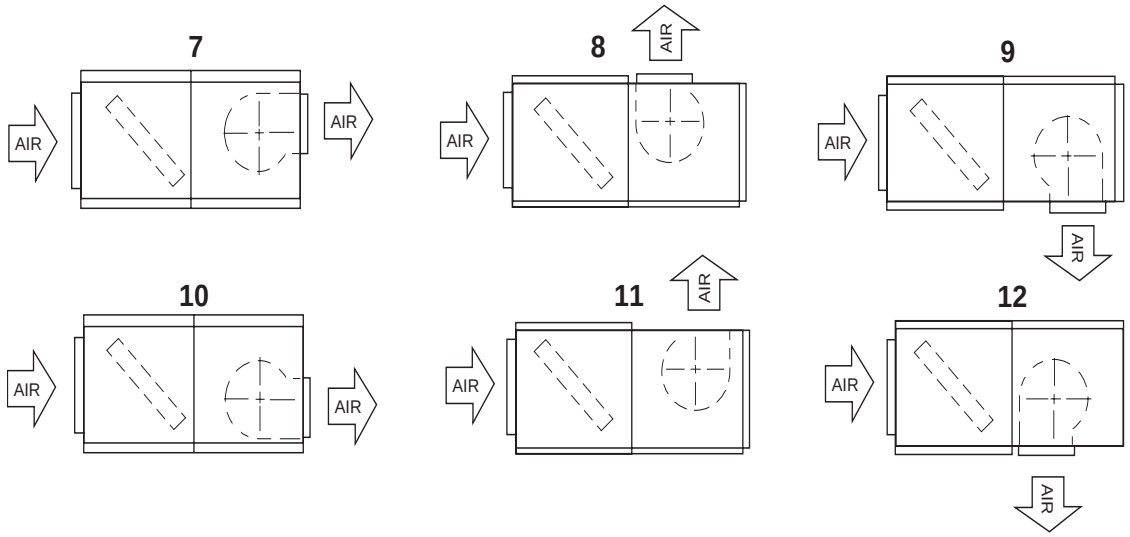


FIGURE 7 - HORIZONTAL AIRFLOW ARRANGEMENTS

LB600 AIR DISCHARGE

The LB600 blower and coil section are shipped separately and must be joined in the field. The blower section can be mounted either above the coil for a vertical positioning or beside the coil for horizontal positioning. Both vertical and horizontal positions can be arranged for upward, downward, or horizontal air discharge.

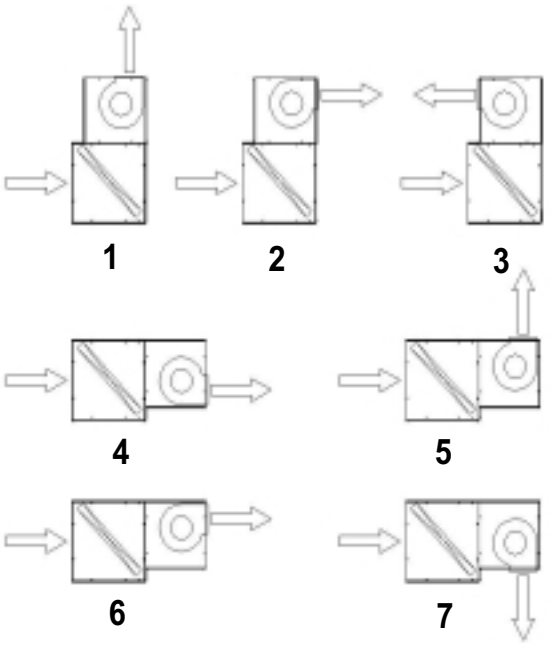


FIGURE 8 - LB600 AIRFLOW ARRANGEMENTS

The coil section and the blower section may be assembled together as shown in 8. All arrangements may be by rearranging the panels as shown.

When arranged vertically (8, arrangements 1 through 3), the LB600 can be set directly on any floor or platform that is capable of supporting its weight.

When arranged horizontally (8, arrangements 4 through 7), the evaporator coil section can be set directly on the floor, but a 9" support is required under the blower section to stabilize the unit. The support should extend the full width of the blower section and be located under the edge away from the evaporator coil section. If the unit does not have to be secured to the platform, the 9" support will not have to be bolted to either the blower section or the floor.

The evaporator blower arrangement 7 shown in 8 is not recommended for bottom support due to interference with the ductwork connection.

NOTE: Ductwork should never be used to support the blower section. Refer to duct connection for more information

UNIT INSTALLATION

LOCATION

The evaporator blowers are not designed for outdoor installation. They must be located inside the building structure, either inside or outside the conditioned space where they are protected from rain and other such moisture.

The unit should be located as close to the condensing unit as practical and positioned to minimize bends in the refrigerant piping.

Units being installed vertically or horizontally can be set directly on a floor or platform, or supported by metal or wooden beams.

Units being installed horizontally (LA300, LB360 & LB480 only) can be suspended from above as shown in figure 12. Refer to form 035-18501-000 for more information on the installation of the suspension accessory and for the individual load on each hanger rod.

RIGGING

Care must be taken when moving the unit. Do not remove any packaging until the unit is near the place of installation. SPREADER BARS SHOULD BE USED BETWEEN THE SLINGS TO PREVENT CRUSHING THE UNIT FRAME OR PANELS. When preparing to move the unit, always determine the center of gravity of the unit in order to equally distribute the weight. Rig the unit by attaching chain or cable slings around the bottom skid. A lift truck may be used to raise a unit to a suspended location. Refer to Table 2 for the total unit operating weight.

CLEARANCES

A 25-inch clearance is required on the end with the piping connections and the supply air blower motor to properly service and maintain the unit and to replace the filters.

Some clearance will also be required for the duct and power wire connections. A clearance equal to the unit width is required on one end of the unit if the blower shaft or evaporator coil is to be replaced without moving the unit.

TABLE 3: UNIT MOUNTING DIMENSIONS

LA/LB UNIT	DIMENSIONS, INCHES		
	AX	BX	CX
300	69-1/4	49-1/16	26-5/8
360	69-1/4	49-1/16	26-5/8
480	84	50-9/16	34

MOUNTING

The evaporator blower may be suspended from the joists with isolation type hangers or hooks. Suspension accessory 1HH0403, which includes three suspension channels and hardware, may be ordered separately. The channels extend across the evaporator coil section, the heating coil section (if included) and the blower section. Each channel is to be bolted to each section as shown in 9.

TABLE 4: CORNER WEIGHTS

UNIT-MODEL	Unit Weight (Lbs.)		Configuration	A	B	C	D
	Shipping	Operation					
LA300	1180	1125	HORIZONTAL	276	317	285	247
			VERTICAL	262	301	301	262
LB360	1180	1146	HORIZONTAL	281	323	290	252
			VERTICAL	266	307	307	266
LB480	1510	1426	HORIZONTAL	348	414	361	303
			VERTICAL	292	348	427	359
LB600	-	1640	HORIZONTAL	451	386	370	433
			VERTICAL	484	414	342	400

TABLE 5: ACCESSORY OPERATING WEIGHT DISTRIBUTION (LBS)*

ACCESSORY	LA300	LB360	LB480	LB600
BASE†	25	25	30	45
HOT WATER COIL	35	35	45	35
STEAM COIL 1 ROW	30	30	35	50

*. These weights should be added to each point load (W1 through W6) in table 5.

†. This accessory can only be applied on units installed in the vertical position.

NOTE: The following illustration shows how the channels should be secured to the unit using the hardware provided with the suspension accessory.

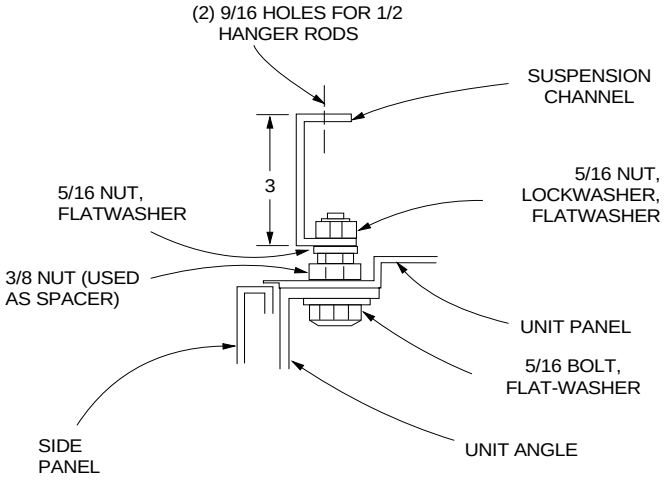
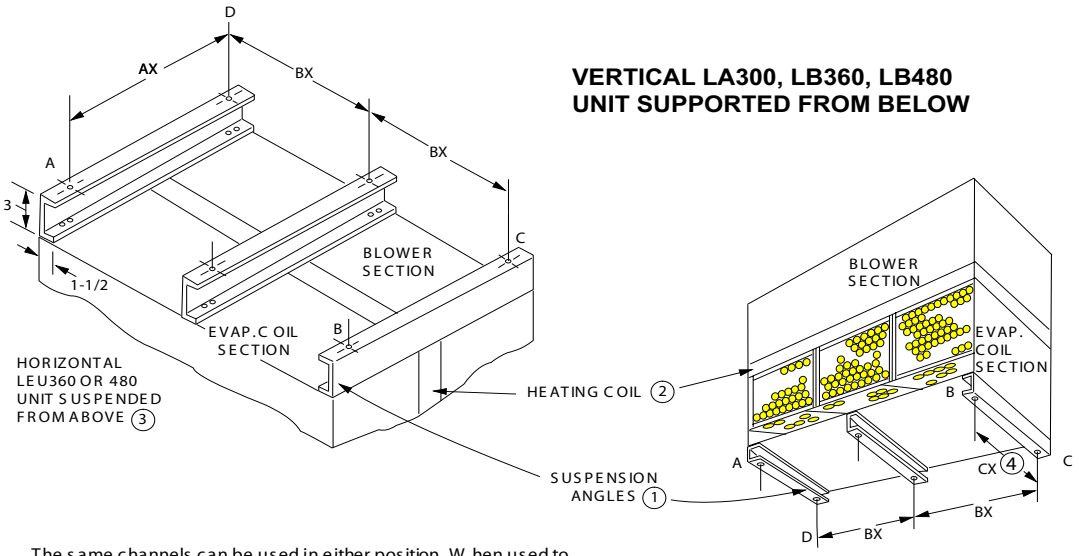


FIGURE 9 - DETAILS FOR SECURING BOTTOM MOUNTING SUPPORTS



(1) The same channels can be used in either position. When used to support at vertical unit, these channels should be cut to match the bottom dimension of the evaporator coil section.

(2) The suspension channels have two sets of mounting holes to accommodate horizontal units with or without a heating coil. On a horizontal unit without a heating coil, the suspension channels will extend 3" beyond both ends of the unit.

(3) The same channels can be used to support a horizontal, floor-mounted unit from below.

(4) After these bottom channels are cut per Note 1, a new hole will have to be drilled at the cut end if the unit is to be mounted on isolators.

FIGURE 10 - LA300/LB480/LB360 WEIGHT DISTRIBUTION

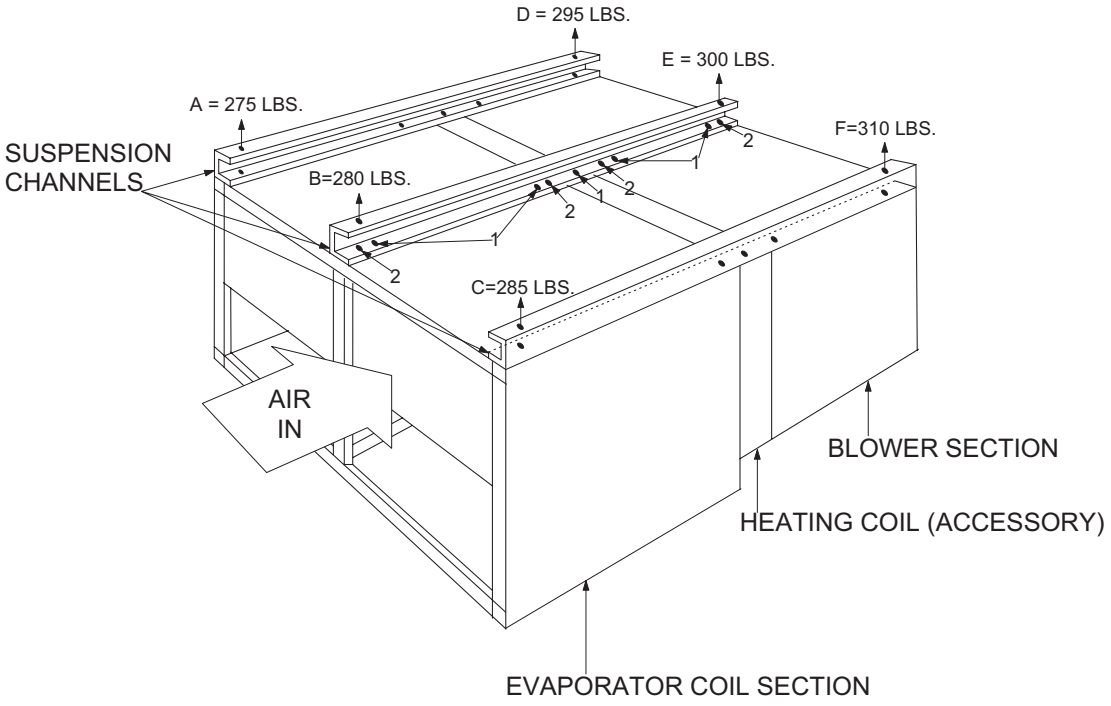


FIGURE 11 - LB600 WEIGHT DISTRIBUTION WITH SUSPENSION APPLICATION

The weights for the LB600 shown in 11 include only the evaporator coil section, the blower section with a 10HP motor and the suspension accessory. Add the weights listed for a horizontal arrangement in Table 4 to determine the weight distribution of the unit with accessories. See 12 for details on connecting the center channel to the unit at points one and two.

The weights are located 5" from both ends of each suspension channel.

When arranged horizontally (see 8) the LB600 evaporator blower can be suspended from overhead joists with hanger rods using the suspension accessory.

The suspension channels require no drilling or cutting. Each channel has enough holes in its bottom flange for:

1. Four bolted connections to the evaporator coil section. (Only two are used on the outside supports)

2. One bolted connection to the heating coil section.

3. Four bolted connections to the blower section. (Only two are used on the outside supports)

See 12 for the bolted connection in detail.

When the heating section is not included, each channel will extend 3" beyond the front and the rear of the unit. Boltholes in the bottom flange of each channel will still align with the holes provided in the top framework of the evaporator coil section and the blower section.

For both outside channels and for the 1" locations on the center channel, the bolted connections are to be made where the top sheet metal panels are attached to the unit framework. The ¼" screws and cage nuts must be removed and may be discarded. For the 2" locations on the center channel, the bolted connections are to be made through the knockouts in the top sheet metal panels. 5/16" cage nuts are provided in the unit framework under these knockout locations. Note that these cage nuts are part of the basic unit. They are not supplied with the suspension accessory.

Refer to 11 as well as Table 3 and Table 4 for mounting details and unit weight distribution.

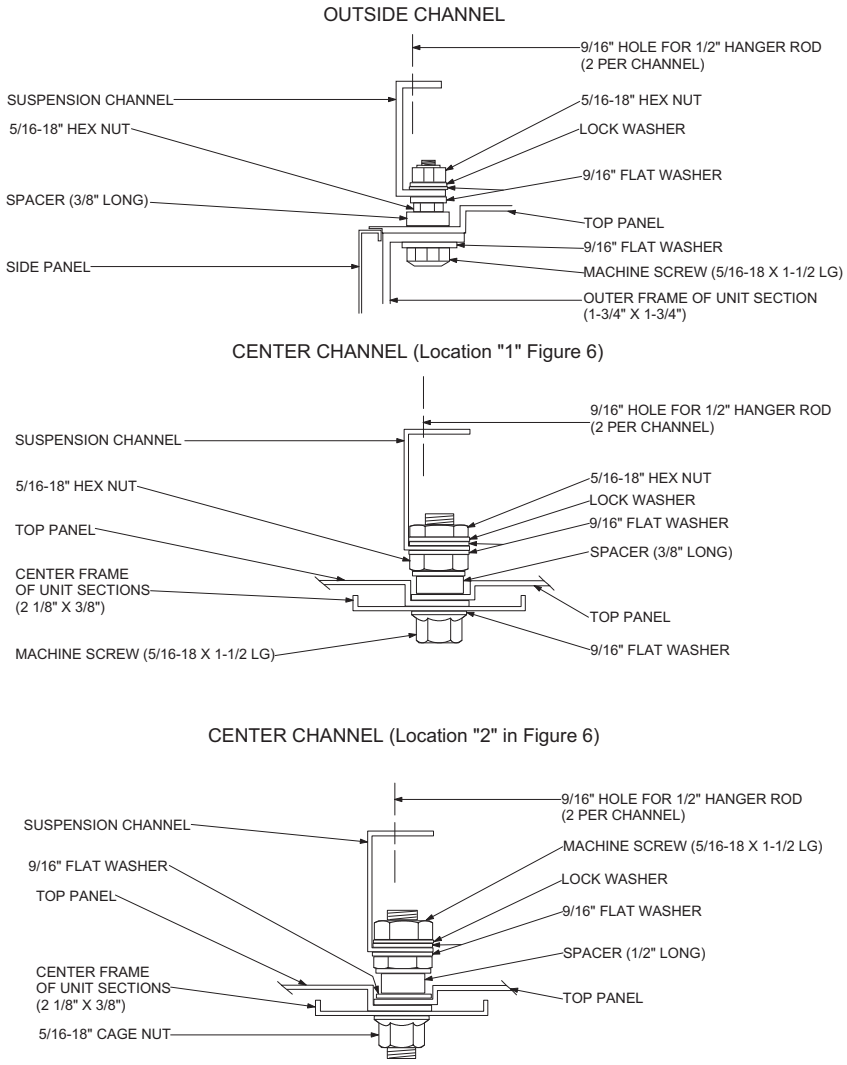


FIGURE 12 - DETAILS FOR SECURING SUSPENSION CHANNELS

DUCT CONNECTIONS

Ductwork should always be suspended with hangers or supported by legs. It should never be fastened directly to the building structure.

Allow clearance around ducts for safety in the handling of heated air and for insulation when required.

INSULATION

Ductwork insulation should meet the following criteria:

Be used when ducts pass through an unconditioned space in the cooling season or through an unheated space during the heating season.

Include a vapor barrier around the outside to prevent the absorption of moisture.

Be no less than 2 inches thick with the weatherproof coating when applied to ducts exposed to outdoor conditions.

SUPPLY AIR DUCTS

See 13 for suggested method of connecting supply air ductwork. Non-flammable material collars should be used to minimize the transmission of noise and/or vibration.

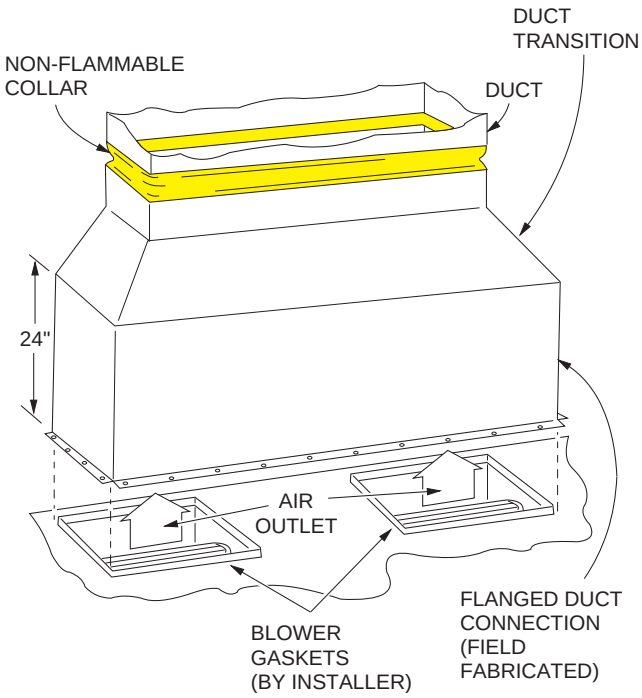


FIGURE 13 - SUGGESTED METHOD FOR CONNECTING DUCTWORK

RETURN AIR DUCT ANGLES

Return air duct angles are shipped turned in. They are intended to be unscrewed and turned for connection of duct-work. The return air grille accessory attaches in the same manner as the panels.

DRAIN CONNECTIONS

All drain lines MUST be trapped and located so they will not be exposed to freezing temperatures.

The evaporator blower has 7/8" OD steel condensate stub at each end of a single drain pan. Both ends are closed with plastic caps. A plastic or rubber ell can be used. (Field supplied) Attach the ell to the desired end and run a full size 7/8" drain line to the nearest drain facility. Seal the cap at the unused end with suitable mastic.

Drain piping should be constructed as shown in 14. The 3-inch dimension must equal or exceed the negative static pressure developed by the supply air blowers. If it does not, the condensate will not drain properly and may overflow the drain pan. The trap must be at least 2-inches deep to maintain a water seal under all operating conditions, especially when the blowers are starting.

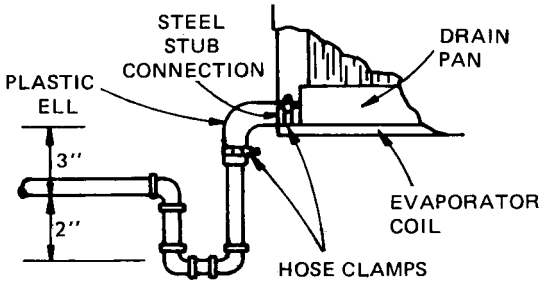


FIGURE 14 - RECOMMENDED DRAIN PIPING

REFRIGERANT MAINS

Hard drawn copper tubing should be used where no appreciable amount of bending around pipes or other obstructions is necessary. Use long radius ells wherever possible. If soft copper is used, care should be taken to avoid sharp bends that may cause a restriction.

Where refrigerant lines pass through a wall, pack fiberglass insulation and a sealing material such as permagum around the refrigerant lines to reduce vibration and to retain some flexibility in the lines.

Suitable hangers, brackets or clamps should support the refrigerant lines.

Braze all copper-to-copper joints with Silfos-5 or equivalent brazing material. Do not use soft solder.

Never braze or solder the liquid and suction lines together.

The complete suction line should be insulated with no less than ½" Armaflex or equivalent.

If it is desirable to tape or wire the liquid and suctions lines together for support purposes, they must be completely insulated from each other.

EVAPORATOR SECTION PIPING

The units are shipped with a holding charge of R-22. The connections are terminated with a copper disc brazed over the ends.

Before starting installation of the mains, be sure the unit has not developed a leak in transit by connecting a pressure gauge to the service access port. If pressure still exits, the circuit may be considered leak free. If pressure does not exist, the unit must be evacuated along with the field installed refrigerant piping.

NOTE: To minimize the possibility of system failure due to dirt and moisture, a filter-drier must be installed in each liquid line as close to the evaporator as possible. Filter-driers are not supplied with the evaporator blowers. They are supplied with the matching HA/HB series condensing units.

The temperature required to make or break a brazed joint is sufficiently high to cause oxidation of the copper unless an inert atmosphere is provided.

The liquid, suction and drain connections inside the unit must be piped to the outside. Refer to 17 and 23 for unit dimensions or the locations and the dimensions of the access openings in the unit panel.

Remove the evaporator holding charge and any caps or discs on the liquid and suction connections that will not permit a free flow of nitrogen.

Connect a supply of dry nitrogen through a reducing regulator to an access valve or charging tail. Choose a procedure that will allow nitrogen to flow continuously through the system and reach all joints to be brazed.

Begin the refrigerant main piping by installing the liquid line from the condensing unit to the evaporator liquid connection, maintaining a flow of nitrogen during all brazing operations. The filter drier and sight glass must be located in this line, close to the evaporator. Make the suction line connection at the evaporator and run the line to the condensing unit.

After puncturing the sealing caps with a small drill bit, unbraze the condensing unit suction disc and connect the line. Maintain a flow of nitrogen through the liquid line to the evaporator, through the evaporator, back to the condensing unit and out the suction connection and service port.

NOTE: Size the suction line outside the evaporator casing per the line sizing information provided in the condensing unit instruction form 035-18499-000.

EXPANSION VALVE BULB INSTALLATION

LA300

The bulbs for the thermal expansion valve on the blower units are not factory-installed in its final location; it's only temporarily taped for shipment. They must be fastened in a 4 o'clock and 8 o'clock position to the common suction line out of the evaporator coil after piping connections are made. Use the bulb clamps from the bag taped to the suction connection inside the blower unit.

LB360/LB480/LB600

The bulbs for the thermal expansion valve on the blower units are not factory-installed in its final location; it's only temporarily taped for shipment. The bulbs for system one must be fastened in a 4 o'clock and 8 o'clock position to the system one suction line of system one leaving the evaporator coil after piping connections are made. Repeat the procedure for system two, locating the bulbs in a 4 o'clock and 8 o'clock position to the system two suction line. Use the bulb clamps from the bag taped to the suction connection inside the blower unit.

NOTE: Ensure the TXV bulbs are not crossed between systems. Undesirable performance and possible compressor damage may occur.

LIQUID LINE SOLENOIDS

The unit is shipped with factory installed, normally closed, liquid line solenoid valves. When the solenoid coil is energized with a 24-volt signal, the valve will open.

During brazing operations, the valves should be placed in the OPEN position by removing the stem cap with a 9/16” wrench, then rotating the exposed valve stem inward (CLOCKWISE), approximately 10-12 full turns (from the fully CLOSED position), using a 4” adjustable wrench.

The valve stems should be returned to the CLOSED (COUNTER-CLOCKWISE) position prior to the unit’s operation. The “Pump-out” procedure is detailed in the following section.

The sequence of operation applies to the HA/HB condensing units and LA/LB air handlers when applied as a matched system. Non-matched systems will have to be field wired to operate in a similar fashion as described on page 19.

NOTE: See Liquid Line Solenoid Wiring on page 22.

PUMP OUT

The pump out function is a standard feature on the 25 to 50 ton systems. The pump out circuit is activated each time the first and third compressor stage is called for by the thermostat. As such, it's a "Pump Out On Start Up" design. A normally closed solenoid valve (POS1, 2, 3 or 4) is placed in the liquid line, just prior to expansion valve.

When cooling is not being called for by the thermostat, the pump out solenoid (POS) is not energized, so it's in the closed position. When the Simplicity™ control receives a call for cooling, it energizes a compressor. With the POS being closed, it causes the pressure on the low side of the system to begin falling.

When the low pressure switch (LPS) opens, the control board energizes its on-board pump out relay, providing a 24 vac output to an external relaly used to energized the pump out solenoid. The refrigeration circuit being controlled is not in normal operating mode.

If the low pressure switch is already open on a call for cooling, the pump out relay is energized immediately. If the LPS does not open after 5 minutes, the pump out relay is energized.

BEARING ALIGNMENT: LB600

Before the supply air blower drive is installed, turn the blower assembly by hand several times. If it doesn't rotate freely, the center bearing may have been knocked out of alignment during shipping and/or rigging. To realign, refer to 15 and the following instructions:

1. Loosen the bearing collar set screw.
2. With a drift pin in the bearing collar removal hole, loosen the bearing collar by tapping the drift pin in the direction opposite to the shaft rotation.
3. Loosen bolts "A" and "B".
4. Remove the shim.

NOTE: The bearing support angle must be horizontal to the unit and below the bearing.

5. Tighten bolts "B" without the shim.
6. Tighten bolts "A".
7. With a drift pin in the bearing collar removal hole, tighten the bearing collar by tapping the drift pin once in the direction of the shaft rotation.
8. Tighten the bearing collar set screw.
9. Loosen bolts "B"
10. Raise the blower shaft and re-install the shim between the bearing and the bearing support angle.
11. Tighten bolts "B".

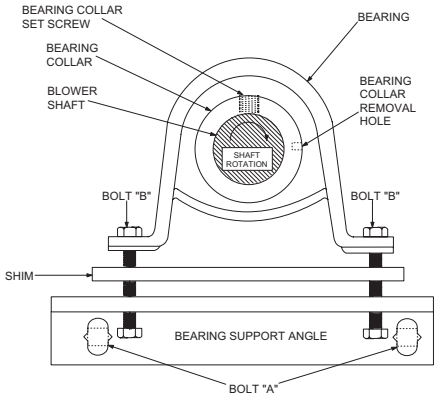


FIGURE 15 - LB600 CENTER BEARING

AIR SYSTEM ADJUSTMENT

Refer to Tables 7-11 on pages 19-20 to adjust the air system.

TWIN BELT DRIVE ADJUSTMENT

Check to see if both belts drive at the same speed. Do this by making a mark across both belts. Turn the drive several revolutions by hand. If mark has not separated, the belts are traveling at the same speed.

Twin groove blower motor pulleys should be installed with the shaft set screw (A) towards the motor (see 16).

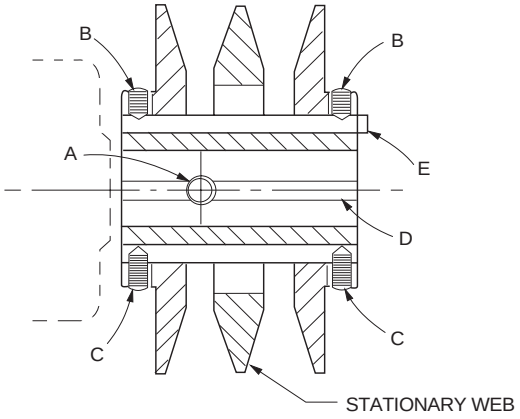


FIGURE 16 - DOUBLE GROOVE PULLEY

If necessary to align pulleys, the housing of the twin groove motor pulley may extend 25% of its length beyond end of motor shaft.

Always align twin groove pulleys using the stationary web.

The blower motor pulleys are adjustable by half turns. Select required RPM from table 5 and adjust pulley.

Check belt tension. Drive packages are supplied with fiberglass belts that must be properly tensioned at installation because they do not stretch. The belt should deflect 3/16" per foot of belt span with a 2 or 3-pound force. Alignment of the resilient motor mount can be corrected by adjustment at the slots on the end opposite the pulleys.

ELECTRICAL CONNECTIONS

The electric box ships complete with motor starter, transformers, relays and terminal block for making field connections. Remember: One air handlers with factory installed pump out solenoids, wires to the solenoid must be field connected.

Refer to Figures 30 & 31 for Indoor Unit Wiring Diagrams.

Install a power supply to meet the requirements listed in table 6.

Provide a disconnect switch and fusing as required.

Install interconnecting control wiring between condensing section, evaporator blower and room thermostat.

Starters are shipped without overloads. These must be ordered separately to match the selected motor used in the air handler. See unit's Technical Guide or price page for correct overload.

NOTE: For the 10HP 200/208-volt motors, install the power wiring to the supply air blower through the starter.

TABLE 6: ELECTRICAL DATA

UNIT MODEL	HP	FLA	VOLTAGE (3PH-60HZ)	MIN CIRCUIT AMPACITY	MAX. FUSE SIZE (Amps)
LA300	5	16.7	208	21	35
		15.2	230	19	30
		7.6	460	10	15
		6.1	575	8	15
	7.5	24.2	208	30	50
		22	230	28	45
		11	460	14	20
		9	575	11	20
LB360	5.0	16.7	208	21	35
		15.2	230	19	30
		7.6	460	10	15
		6.1	575	8	15
	7.5	24.2	208	30	50
		22	230	28	45
		11	460	14	20
		9	575	11	20
	10	30.8	208	39	60
		28	230	35	60
		14	460	18	30
		11	575	14	20
LB480	7.5	24.2	208	30	50
		22	230	28	45
		11	460	14	20
		9	575	11	20
	10	30.8	208	39	60
		28	230	35	60
		14	460	18	30
		11	575	14	20
LB600	10	30.8	208	39	60
		28	230	35	60
		14	460	18	30
		11	575	14	20
	15	46.2	208	58	100
		42	230	53	90
		21	460	26	45
		17	575	21	35

TABLE 7: MOTOR OVERLOAD ELEMENTS*

MOTOR HP	VOLTAGE	MODEL NUMBER
5	208	2MP04704600
	230	2MP04704600
	460	2MP04704900
	575	2MP04705000
7.5	208	2MP04703700
	230	2MP04704500
	460	2MP04704300
	575	2MP04704000
10	208	2MP04701600
	230	2MP04704100
	460	2MP04704200
	575	2MP04704300
15	208	2MP04704400
	230	2MP04701700
	460	2MP04704500
	575	2MP04704600

*. These units are equipped from the factory with a correctly sized motor starter; overload elements are not factory supplied. Three elements required per unit.

TABLE 8: UNIT DRIVE DATA

UNIT MODEL	DRIVE KIT MODEL NUMBER	BLOWER RPM RANGE	ADJUSTABLE MOTOR PULLEY		FIXED BLOWER PULLEY		BELTS		
			PITCH DIA. (IN.)	BORE (IN.)	PITCH DIA. (IN.)	BORE (IN.)	QTY.	PITCH LENGTH (IN.)	DESIGNATION
LA300	1LD0440	600 - 750	4.0 - 5.0	1 1/8	12.0	1 3/16	2	63.3	A62
	1LD0407	700 - 850	4.2 - 5.2	1 3/8	11.0	1 3/16	2	63.3	A62
	1LD0442	780 - 940	5.3 - 6.3	1 3/8	12.0	1 3/16	2	63.3	A62
LB360	1LD0415	636 - 795	4.0 - 5.0	1 3/8	11.0	1 3/16	2	63.3	A62
	1LD0407	668 - 827	4.2 - 5.2	1 3/8	11.0	1 3/16	2	63.3	A62
	1LD0408	827 - 986	5.3 - 6.3	1 3/8	11.0	1 3/16	2	59.7	A59
LB480	1LD0409	607 - 776	4.3 - 5.5	1 3/8	12.4	1 3/16	2	85.1	B84
	1LD0410	776 - 917	5.4 - 6.6	1 3/8	12.4	1 3/16	2	86.8	B85
LB600	1LD0411	692 - 833	4.8 - 6.0	1 3/8	12.4	1 3/16	2	78.6	B78
	1LD0412	762 - 931	5.4 - 6.6	1 5/8	12.4	1 3/16	2	76.8	B75

TABLE 9: UNIT BLOWER MOTOR DATA

UNIT MODEL	HP	MOTOR KIT MODEL NUMBER	FRAME SIZE	VOLTAGE (3PH-60-HZ)
LA300	5	2LR04605023	184	208/230/460
		2LR04605032		208/230/460
		2LR04605158		575
	7.5	2LP04607133	213	208/230/460
		2LP04607158		575
LB360	5.0	2LR04605023	184	208/230/460
		2LR04605032		208/230/460
		2LR04605158		575
	7.5	2LP04607133	213	208/230/460
		2LP04607158		575
	10	2LP04610133	215	208/230/460
		2LP04610158		575
LB480	7.5	2LP04607133	213	208/230/460
		2LP04607158		575
	10	2LP04610133	215	208/230/460
		2LP04610158		575
LB600	10	2LP04610133	215	208/230/460
		2LP04610158		575
	15	2LP04615133	254	208/230/460
		2LP04615158		575

MAINTENANCE

Filters must be cleaned or replaced as often as necessary to assure good airflow and filtering action.

To remove filters through the sides of the unit, remove either the solid side panel on the piping end, or the larger side panel on the end opposite the piping.

To remove the filters from the front of the unit, loosen 2 screws and raise the top filter retainer. The upper filters can be lifted over the center filter lip. Three wing nuts are provided under the center filter retainer. Remove these and a part of the center filter support, giving access to the bottom filters.

Drain pan(s) should be inspected regularly to assure proper drainage.

The evaporator blower bearings and blower motor bearings are permanently lubricated.

TABLE 10: FAN PEFORMANCE DATA - 25 TON

RPM	CFM														
	8,000			9,000			10,000			11,000			12,000		
	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW
600	-	-	-	0.30	2.5	2.3	0.20	3.1	2.9	0.02	3.6	3.4	-	-	-
635	0.56	2.4	2.3	0.43	2.7	2.6	0.31	3.3	3.1	0.13	3.8	3.5	-	-	-
700	0.80	3.0	2.8	0.68	3.3	3.1	0.54	3.7	3.5	0.38	4.2	3.9	0.20	4.8	4.5
775	1.12	3.7	3.4	1.00	4.0	3.7	0.85	4.4	4.1	0.70	4.8	4.5	0.54	5.3	5.0
800	1.23	3.9	3.7	1.11	4.3	4.0	0.97	4.7	4.4	0.82	5.1	4.8	0.66	5.6	5.2
875	1.60	4.8	4.5	1.48	5.1	4.8	1.34	5.6	5.2	1.19	6.0	5.7	1.04	6.6	6.2
900	1.73	5.1	4.8	1.61	5.5	5.1	1.47	5.9	5.5	1.33	6.4	6.0	1.17	7.0	6.5
940	1.95	5.6	5.2	1.82	6.0	5.6	1.70	6.5	6.1	-	-	-	-	-	-

TABLE 11: FAN PEFORMANCE DATA - 30 TON

RPM	CFM														
	10,000			11,000			12,000			13,000			14,000		
	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW
600	0.38	2.8	2.4	0.23	3.3	2.9	0.06	3.9	3.4	-	-	-	-	-	-
635	0.52	3.1	2.7	0.37	3.7	3.2	0.21	4.3	3.7	0.03	4.9	4.2	-	-	-
700	0.77	3.8	3.3	0.64	4.4	3.8	0.49	5.0	4.3	0.33	5.6	4.8	0.17	6.3	5.4
775	1.11	4.7	4.1	0.99	5.3	4.6	0.85	5.9	5.1	0.70	6.5	5.6	0.55	7.2	6.2
800	1.20	4.9	4.2	1.08	5.5	4.8	0.94	6.2	5.4	0.79	6.9	6.0	0.64	7.6	6.6
875	1.54	5.9	5.1	1.42	6.5	5.6	1.29	7.1	6.1	1.16	7.8	6.7	1.03	8.6	7.4
900	1.65	6.2	5.4	1.54	6.8	5.9	1.41	7.4	6.4	1.28	8.1	7.0	1.16	8.9	7.7
970	2.00	7.2	6.2	1.88	7.8	6.7	1.76	8.5	7.3	1.65	9.2	7.9	1.54	10.0	8.6
1000	2.15	7.6	6.6	2.03	8.2	7.1	1.92	8.8	7.6	1.81	9.5	8.2	1.71	10.4	9.0

TABLE 12: FAN PERFORMANCE DATA - 40 TON

RPM	CFM														
	12,800			14,400			16,000			17,600			19,200		
	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW
600	0.84	6.0	5.2	0.63	7.2	6.2	0.40	8.4	7.2	0.13	9.7	8.4	-	-	-
660	1.19	7.3	6.3	1.00	8.5	7.3	0.78	9.8	8.5	0.50	11.2	9.7	0.19	12.7	11.0
700	1.42	8.2	7.1	1.25	9.4	8.1	1.03	10.7	9.2	0.75	12.2	10.5	0.45	13.7	11.8
760	1.78	9.5	8.2	1.63	10.8	9.3	1.43	12.3	10.6	1.16	13.8	11.9	0.86	15.6	13.5
800	2.02	10.4	9.0	1.89	11.8	10.2	1.69	13.3	11.5	1.43	14.9	12.9	1.14	16.9	14.6
900	2.62	12.8	11.0	2.53	14.5	12.5	2.40	16.0	13.8	-	-	-	-	-	-
930	2.80	13.5	11.6	2.72	15.3	13.2	-	-	-	-	-	-	-	-	-

TABLE 13: FAN PERFORMANCE DATA - 50 TON

RPM	CFM														
	16,000			18,000			20,000			22,000			24,000		
	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW	SP	BHP	kW
600	0.82	6.0	5.2	0.59	7.2	6.2	0.35	8.4	7.2	0.08	9.7	8.4	-	-	-
660	1.17	7.3	6.3	0.96	8.5	7.3	0.73	9.8	8.5	0.45	11.2	9.7	0.14	12.7	11.0
700	1.40	8.2	7.1	1.21	9.4	8.1	0.98	10.7	9.2	0.70	12.2	10.5	0.40	13.7	11.8
760	1.76	9.5	8.2	1.59	10.8	9.3	1.38	12.3	10.6	1.11	13.8	11.9	0.81	15.6	13.5
800	2.00	10.4	9.0	1.85	11.8	10.2	1.64	13.3	11.5	1.38	14.9	12.9	1.09	16.9	14.6
900	2.60	12.8	11.0	2.49	14.5	12.5	2.35	16.0	13.8	-	-	-	-	-	-
930	2.78	13.5	11.6	2.68	15.3	13.2	-	-	-	-	-	-	-	-	-

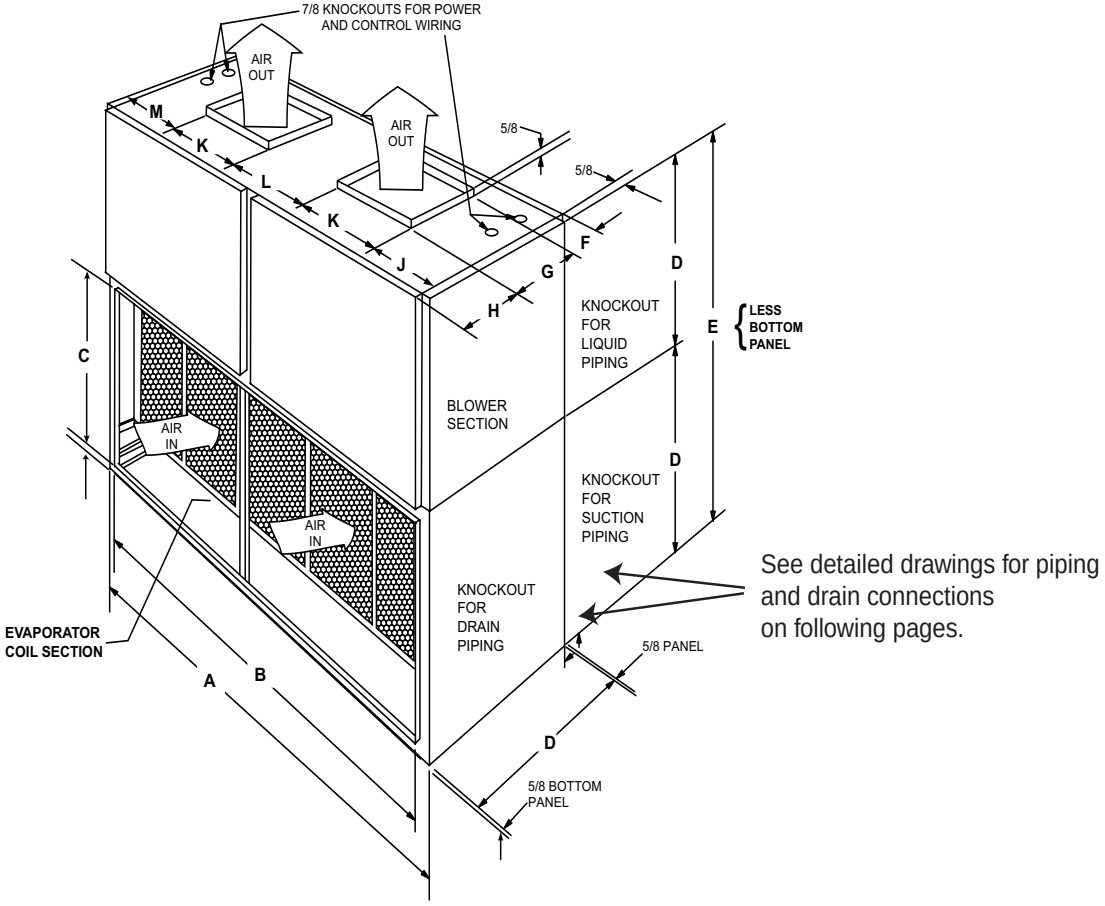


FIGURE 17 - UNIT DIMENSIONS - LA300, LB360, LB480

TABLE 14: UNIT DIMENSIONS - LA300, LB360, LB480

MODEL	A	B	C	D	E	F	G	H	J	K	L	M
LA300	100-1/8	95-5/8	33-1/4	36-5/8	74	2-1/2	18-7/8	16-1/2	15-13/16	21-7/8	18	22-9/16
LB360	100-1/8	95-5/8	33-1/4	36-5/8	74	2-1/2	18-7/8	16-1/2	15-13/16	21-7/8	18	22-9/16
LB480	103-1/8	95-5/8	40-5/8	44	88-5/8	2-1/2	18-7/8	23-7/8	20-11/16	21-7/8	18	22-11/16

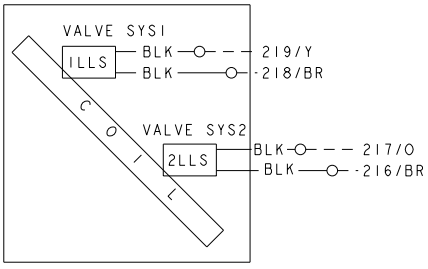


FIGURE 18 - 25 TON LIQUID LINE SOLENOID WIRING

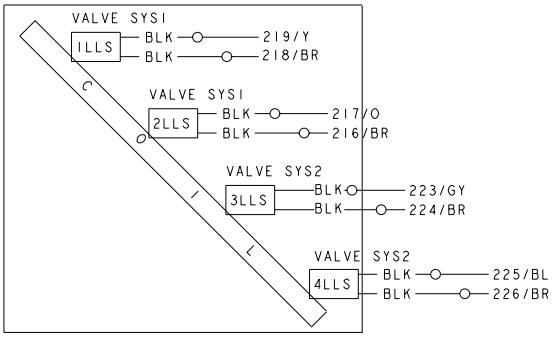


FIGURE 19 - 30, 40 & 50 TON LIQUID LINE SOLENOID WIRING

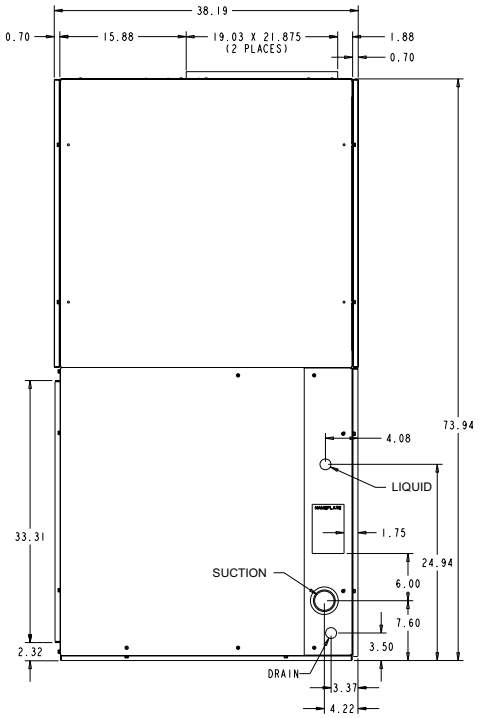


FIGURE 20 - LA300 PIPING CONNECTIONS

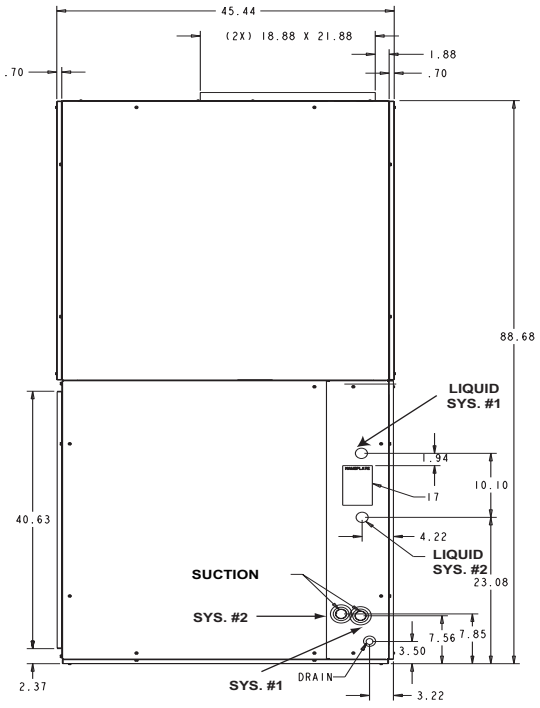


FIGURE 22 - LB480 PIPING CONNECTIONS

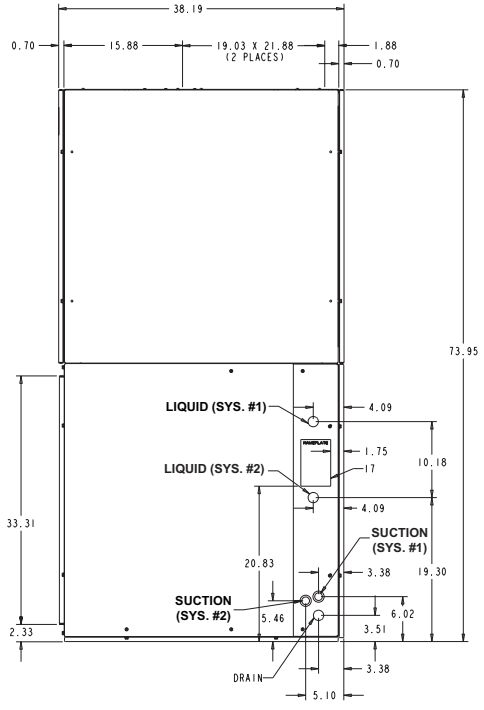


FIGURE 21 - LB360 PIPING CONNECTIONS

TABLE 15: UNIT CONNECTION SIZES

Connection Entry	Connection Size			
	LA300	LB360	LB480	LB600 + M2CX600
Suction Line Sys # 1	2-1/8	1-1/8	1-3/8	2-1/8
Suction Line Sys # 2	N/A	1-1/8	1-3/8	2-1/8
Liquid Line Sys # 1	7/8	7/8	7/8	7/8
Liquid Line Sys # 2	N/A	7/8	7/8	7/8
Power Wiring	7/8 (2)	7/8 (2)	7/8 (2)	1-3/8
Control Wiring	7/8 (2)	7/8 (2)	7/8 (2)	7/8 (2)

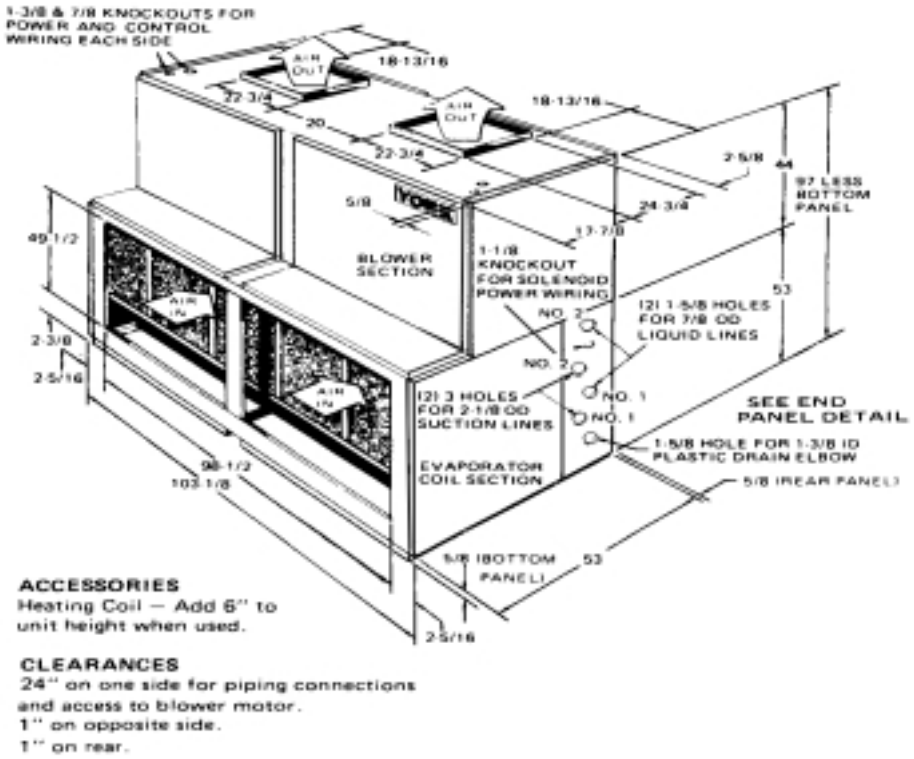


FIGURE 23 - UNIT DIMENSIONS

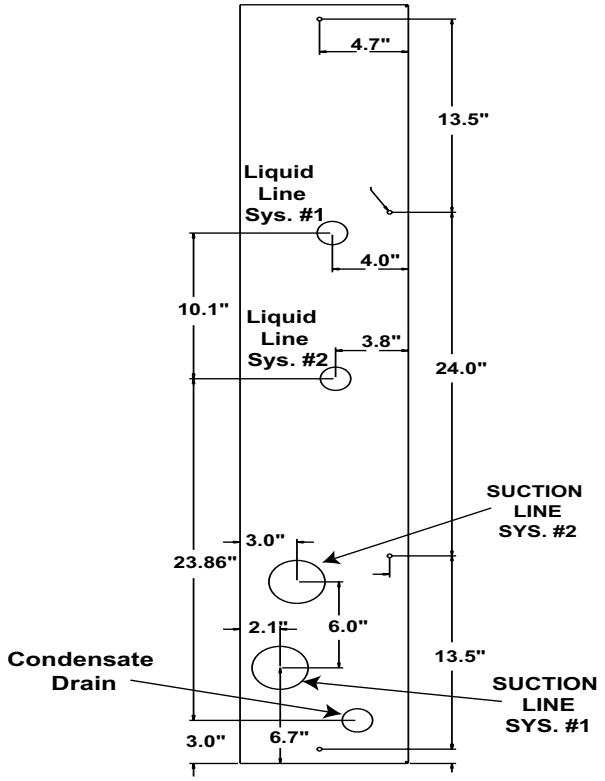


FIGURE 24 - LB600 PIPING CONNECTIONS - END PANEL DETAIL

To check the supply air CFM after the initial balancing has been completed:

1. Drill two (2) 5/16-inch holes in the side panel as shown in Figure 24.

2. Insert at least 8 inches of 1/4 inch tubing into each of these holes for sufficient penetration into the airflow on both sides of the evaporator coil.

3. Using an inclined manometer, determine the pressure drop across a dry evaporator coil. Since the moisture on an evaporator coil may vary greatly, measuring the pressure drop across the wet coil under field conditions would be inaccurate. To assure a dry coil, the refrigerant system should be de-activated while the test is being run.

4. Knowing the pressure drop across a dry coil, the actual CFM through the unit can be determined from the curves shown in Figures 25-28.

If the CFM is above or below the specified value, the supply air motor pulley may have to be readjusted. After one hour of operation, check the belt and pulleys for tightness and alignment.

⚠WARNING

Failure to properly adjust the total system air quantity can result in extensive blower damage.

After readings have been obtained, remove the tubes and seal up the drilled holes in the side panel. 5/16 inch dot plugs (P/N 029-12880) are available through normal York parts ordering procedures.

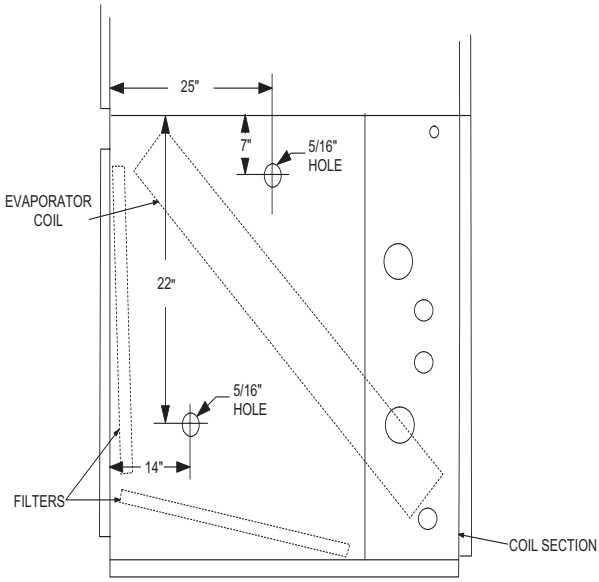


FIGURE 25 - HOLE LOCATION FOR PRESSURE DROP READING

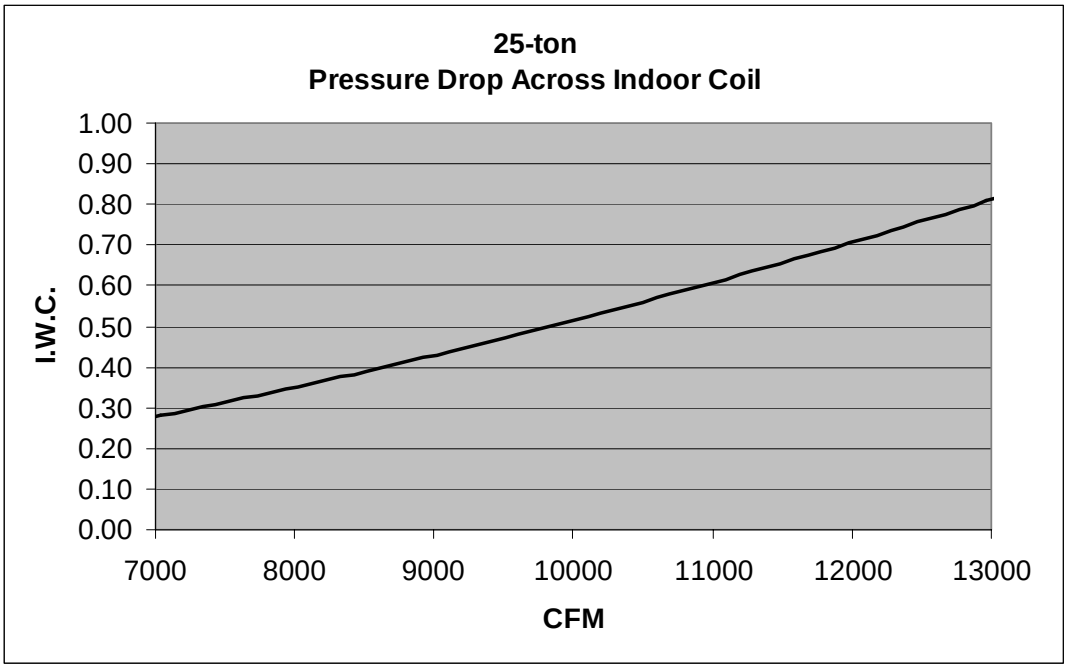


FIGURE 26 - 25-TON PRESSURE DROP VS. CFM ACROSS INDOOR COIL

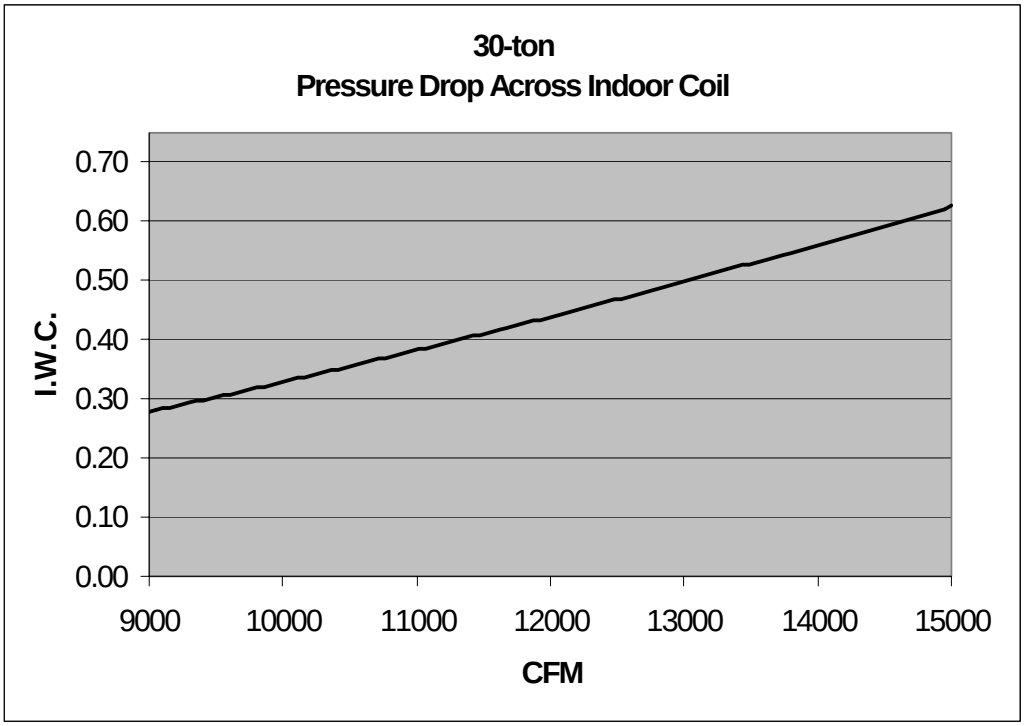


FIGURE 27 - 30-TON - PRESSURE DROP VS. CFM ACROSS INDOOR COIL

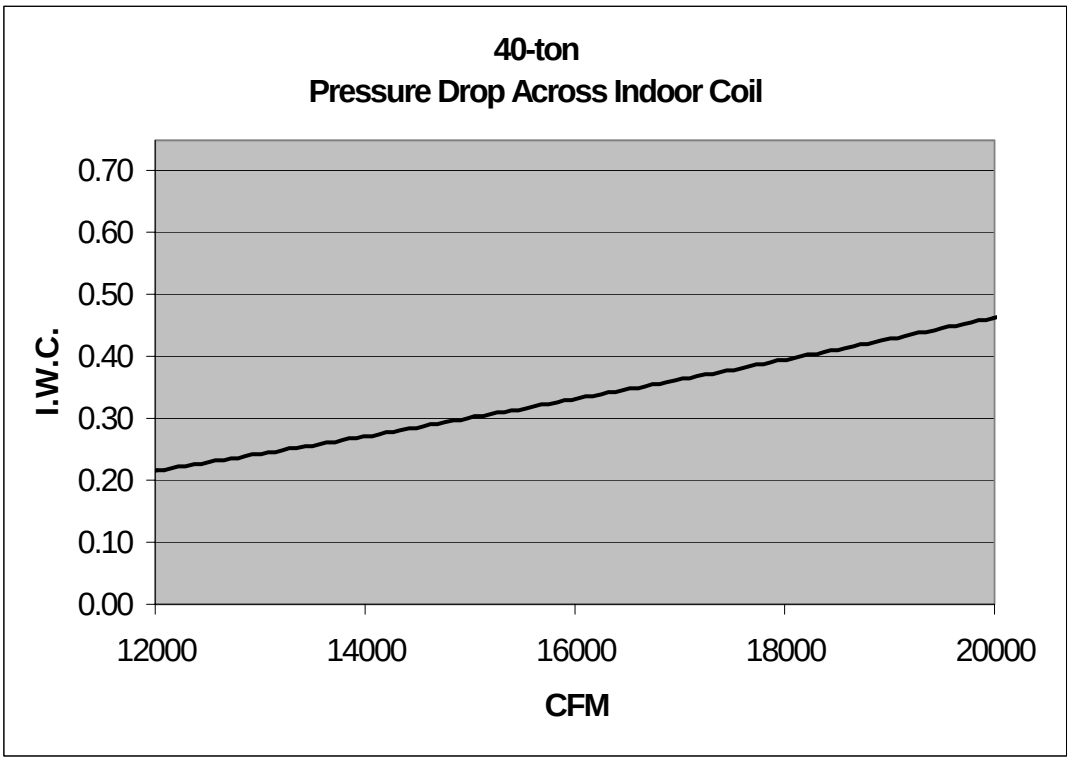


FIGURE 28 - 40 TON - PRESSURE DROP VS. CFM ACROSS INDOOR COIL (DOMESTIC)

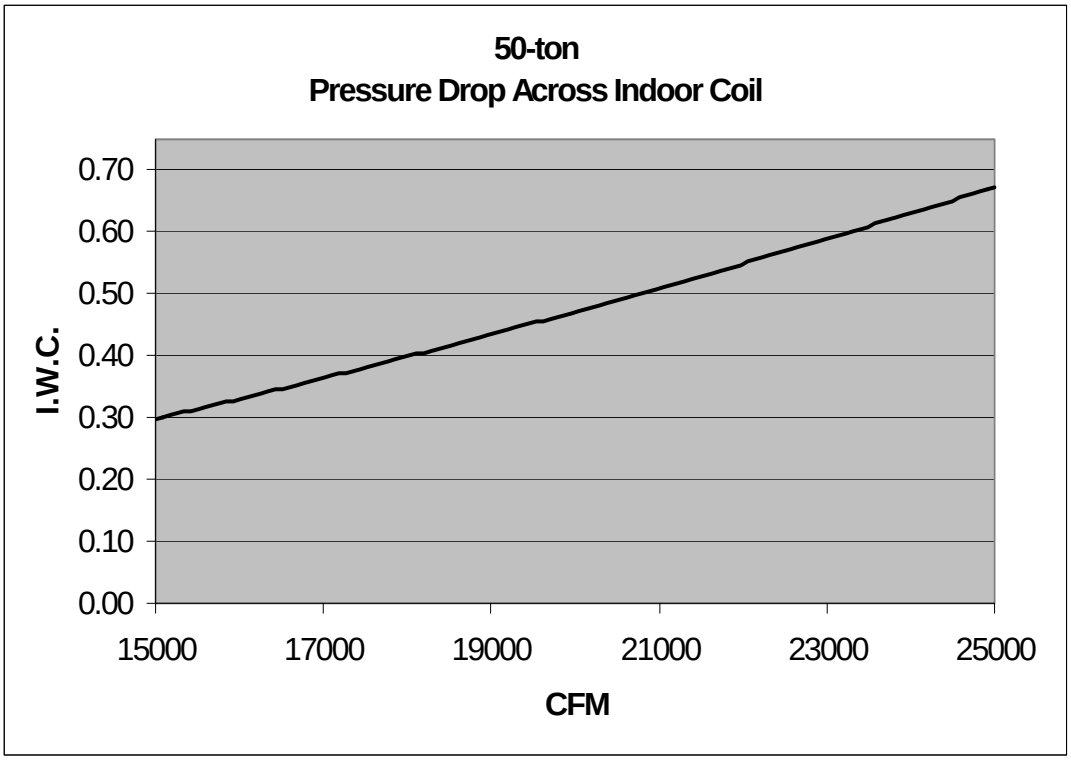


FIGURE 29 - 50 TON - PRESSURE DROP VS. CFM ACROSS INDOOR COIL

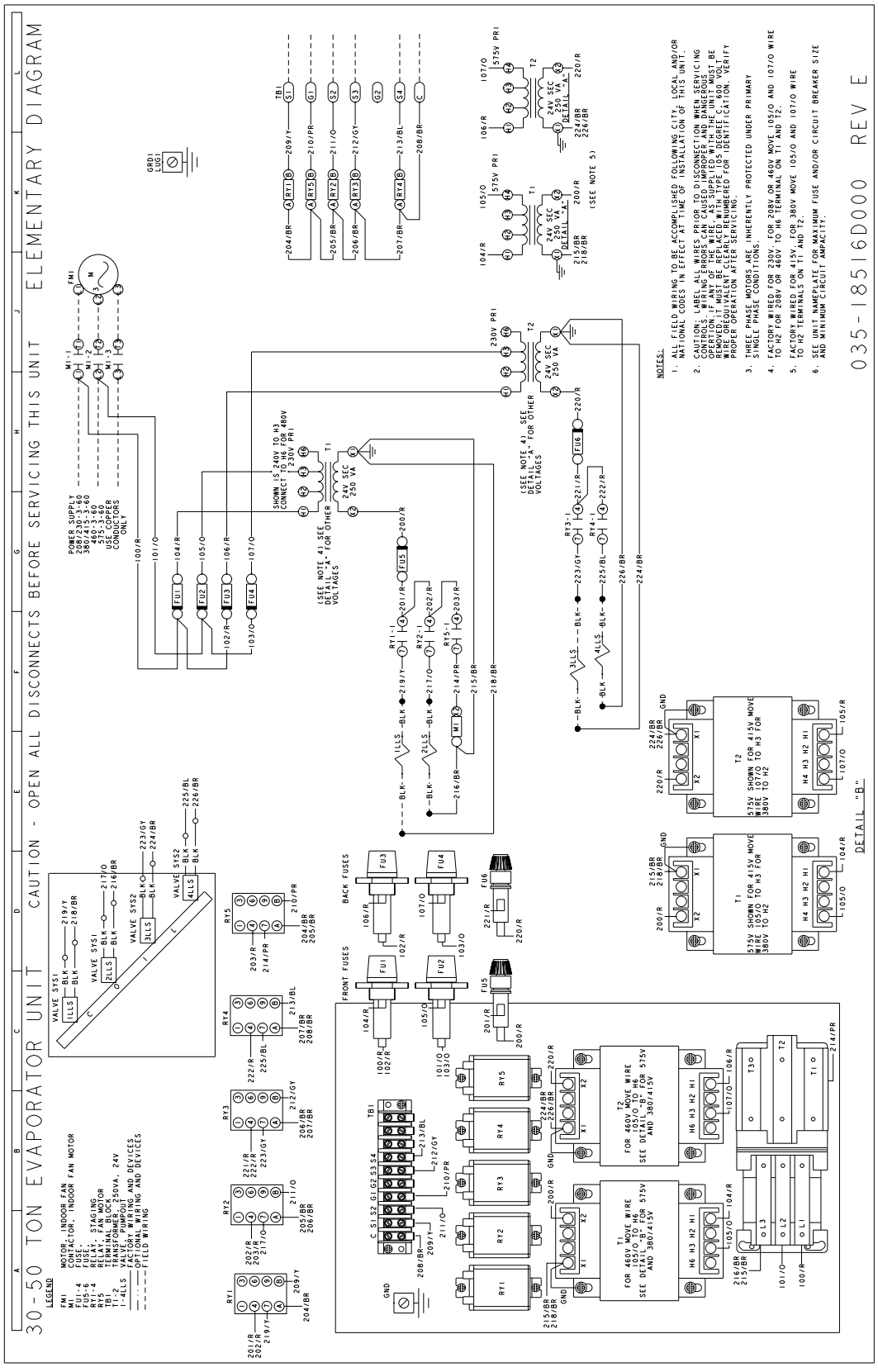


FIGURE 30 - INDOOR UNIT WIRING DIAGRAM LB360, 480 & 600

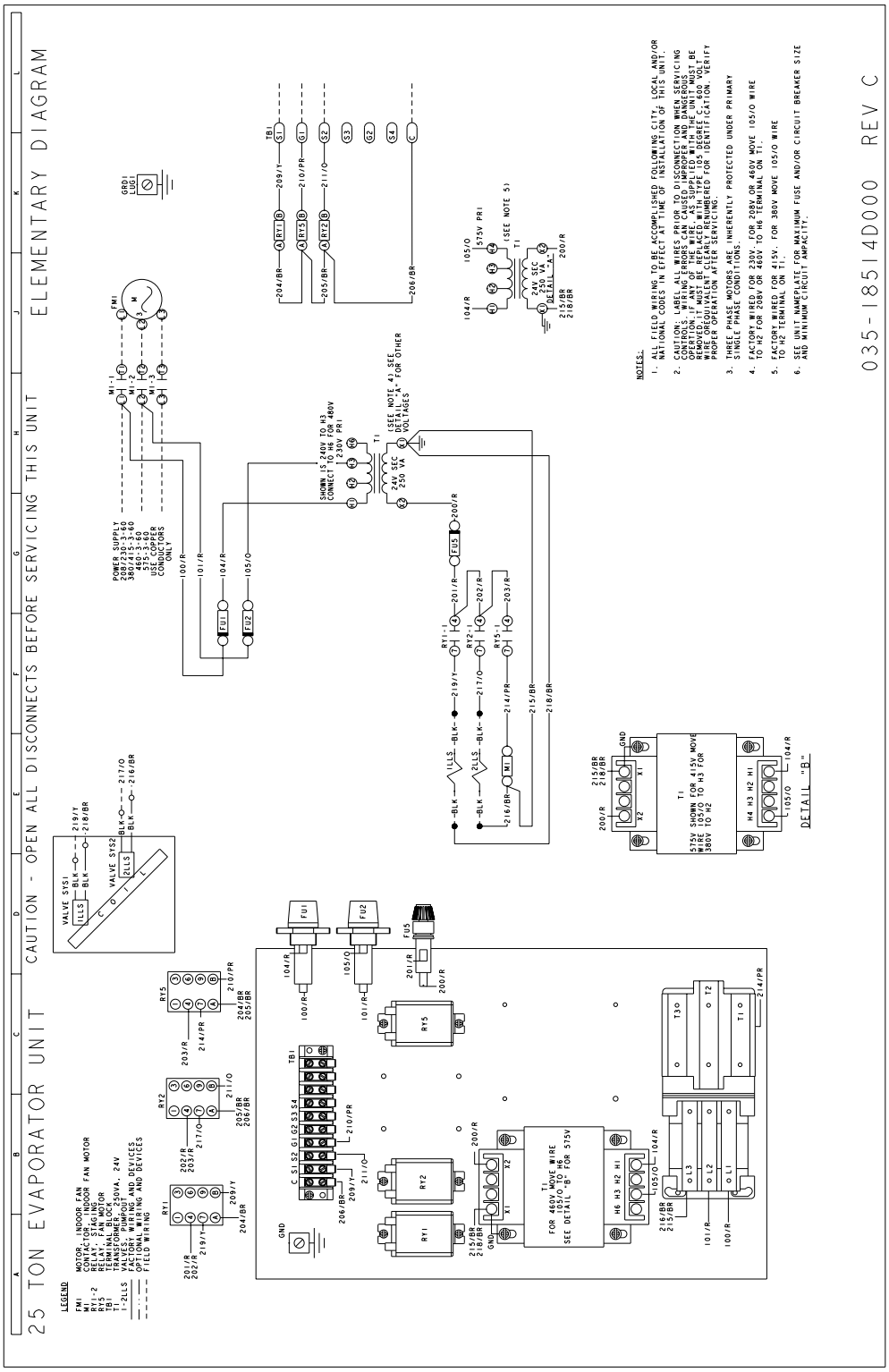


FIGURE 31 - INDOOR WIRING DIAGRAM LA300

035-18496-000-C-1102
Supersedes: 035-18496-000-B-0302

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