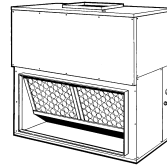


INSTALLATION MANUAL

R-410A

**MODELS: NE090-240
NF120**

**7.5 - 20 Ton
60 Hertz**



**Export Only
R-410A**

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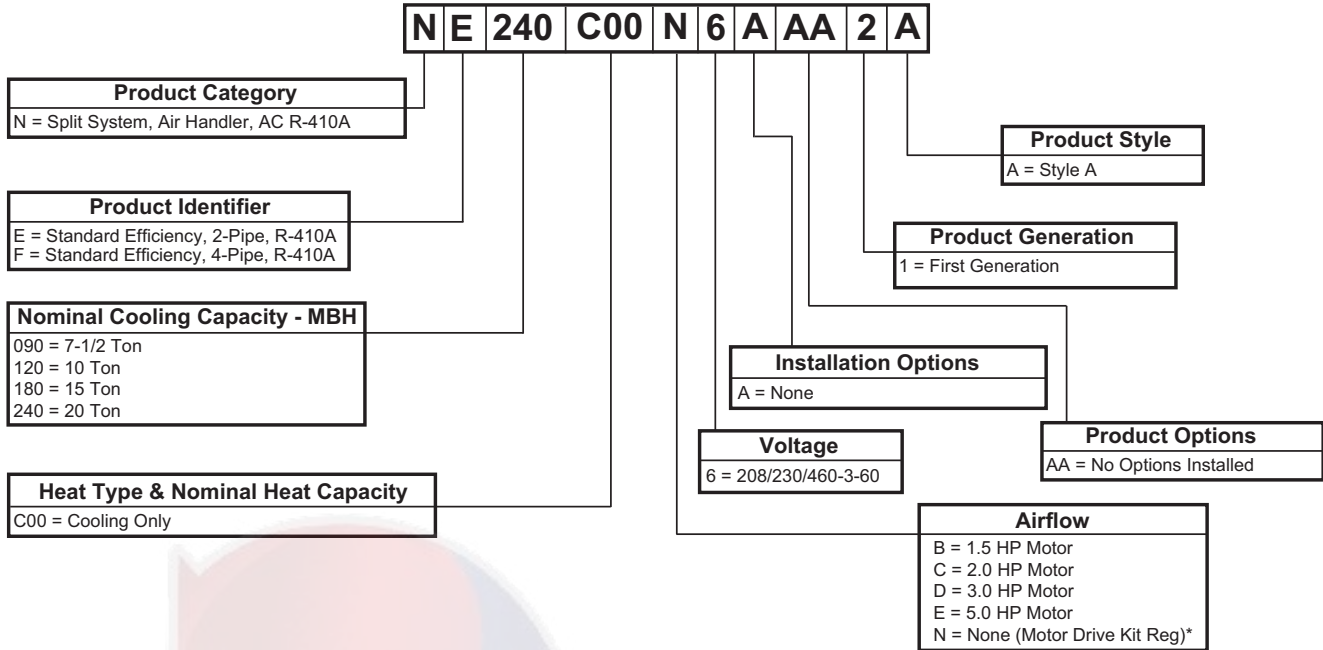
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NOMENCLATURE

Split Air Handler Model Number Nomenclature



GENERAL

The 7.5 thru 10 Ton Evaporator Blowers are single piece units which include a well-insulated cabinet, a DX cooling coil with copper tubes and aluminum fins, expansion valve(s), distributor(s), throwaway filters, a centrifugal blower, a blower motor, an adjustable belt drive and a blower motor contactor.

The unit is shipped in the vertical position ready for field installation. They can be installed for horizontal operation by reversing the position of the solid bottom panel with the return air duct flange on the front of the unit.

The 15 and 20 ton evaporator blowers are designed with two distinct modules to provide maximum application flexibility. The unit is shipped as a single package with the blower module mounted on top of the coil module. The blower module can be repositioned in the field to meet almost any installation requirement.

The 15 Ton blower module includes the blower wheel, motor and drive. The 20 Ton blower module includes the blower wheels and room for a field mounted motor and drive.

The coil modules include direct expansion coils, one inch throwaway filters, liquid line solenoid valve for 50% capacity reduction, thermal expansion valves, distributors and a condensate drain pan. Each coil module also includes a solenoid valve for

non-recycling pumpout. When the cooling requirement in the condition space is satisfied, the refrigerant is pumped into the high side of the system.

SAFETY CONSIDERATIONS

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.

▲ WARNING

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance or additional information, consult a qualified installer or service agency.

CAUTION

This system uses R-410A Refrigerant which operates at higher pressures than R-22. No other refrigerant may be used in this system. Gage sets, hoses, refrigerant containers and recovery systems must be designed to handle R-410A. If you are unsure, consult the equipment manufacturer. Failure to use R-410A compatible servicing equipment may result in property damage or injury.

CAUTION

This product must be installed in strict compliance with the enclosed installation instructions and any applicable local, state and national codes including, but not limited to, building, electrical, and mechanical codes.

WARNING

Wear safety glasses and gloves when handling refrigerants. Failure to follow this warning can cause serious personal injury.

RENEWAL PARTS

Contact your local York® parts distribution center for authorized replacement parts for this equipment.

INSPECTION

As soon as the 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.

Table 1: Physical Data - NE/NF

Component	Description	Model			
		90	120	180	240
EVAPORATOR BLOWER ¹	Centrifugal Blower (Dia. X Wd. in.)	15 X 15	15 X 15	18 X 18	(2) X15 X 12
	Fan Motor HP (Belt Drive)	1-1/2	2	3	3, 5
EVAPORATOR COIL	Rows Deep	3	3	3	3
	Finned Length (in.)	46	46	54	83
	Fins per Inch	13	13	13	13
	Face Area (ft.2)	8.6	10.2	12.0	18.4
HOT WATER COIL	Rows Deep	2	2	2	2
	Finned Length (in.)	46	46	54	83
	Fins Per Inch	12	12	12	12
	Face Area (ft.2)	6.8	6.8	10.3	14.5
	Inlet Connection	1" NPTE	1" NPTE	1-3/8" O.D	1-3/8" O.D
Outlet Connection	1" NPTE	1" NPTE	1-3/8" O.D	1-3/8" O.D	
STEAM COIL	Rows Deep	1	1	1	1
	Finned Length (in.)	45.5	45.5	54	83
	Fins Per Inch	8	8	8	8
	Face Area (ft.2)	6.6	6.6	10.13	13.8
	Inlet Connection	1-1/2" NPTE	1-1/2" NPTE	1-1/2" NPTE	1-1/2" NPTE
	Outlet Connection	1-1/2" NPTE	1-1/2" NPTE	1-1/2" NPTE	1-1/2" NPTE
AIR FILTERS	Quantity Per Unit (16" X 25" X 1")	4	4	0	0
	Quantity Per Unit (20" X 20" X 1")	0	0	6	0
	Quantity Per Unit (20" X 22" X 1")	0	0	0	8
	Total Face Area (ft.2)	11.1	11.1	16.7	24.4

1. Refer to Blower Motor and Drive Data table for additional blower and drive information.
All of these 1750 RPM motors are solid base, 56 frame with 1.15 service factor, inherent protection and permanently lubricated ball bearings.

Table 2: Unit Voltage Limitations

Power Rating ¹	Minimum	Maximum
208/230-3-60	187	252
460-3-60	432	504
575-3-60	540	630

1. Utilization Range "A" in accordance with ARI Standard 110.

Table 3: Unit Supply Air Limitations

Unit	Minimum	Maximum
NE090	2250	3750
NE/NF120	3000	5000
NE180	4500	7500
NE240	6400	9600

Table 4: Unit Temperature Limitations

Temperature	Minimum	Maximum
Wet Bulb Temperature (°F) of Air on Evaporator Coil	57	72
Dry Bulb Temperature (°F) of Air on Heating Coil	40	77

INSTALLATION

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 Tables 2, 3 and 4 for application limitations.

LOCATION

This Evaporator Blower is not designed for outdoor installation. It must be located within a building structure, either inside or outside the conditioned space.

The Evaporator Blower section allows for vertical or horizontal installation in any area offering proper electrical supply, duct and drain connections. It may be installed either with ductwork or matching plenum and inlet grill.

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

A unit being installed vertically or horizontally can be set directly on a floor or platform, or metal or wooden beams can support them.

NE090 & NE/NF120 units may be installed horizontally and suspended from above. Four 3/8" weld nuts are provided in the unit frame to accommodate hanger rods. Knockouts must be removed from the unit panels to expose these weld nuts. Refer to Figure 1 for their location and Table 5 for the individual load on each hanger rod.

NE180 units may be installed horizontally and suspended from above as shown in Figure 2. Refer to Form 035-16622-001-A-0202 for more information on the installation of the suspension accessory and for the individual load on each hanger rod.

WARNING

Be careful when attaching the hanger rods. They must not be allowed to turn or slip.

RIGGING AND HANDLING

Be careful when moving the unit. Do not remove any packaging until the unit is near its final location.

Packaging consists of a bottom wooden skid that can be lifted with a fork truck from any direction, a corrugated container that covers the entire unit, and strapping that secures the container to the skid.

The unit can be rigged with slings under the bottom skid.

CAUTION

Spreader bars should be used to prevent the slings from crushing the unit panels and frame.

Before rigging a 90, 120 or 180 unit, determine its weight from Table 5. Before rigging a 90, 120 or 180 unit for horizontal installation, determine its center of gravity using Figure 1 and Table 5, and make sure that its weight will be distributed equally.

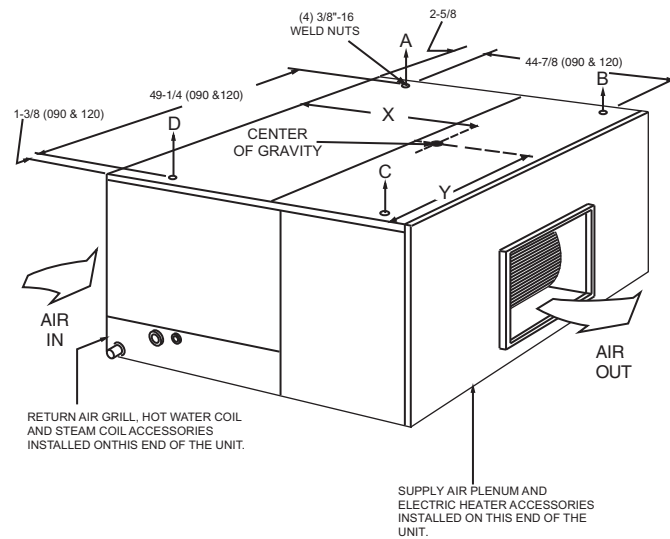


Figure 1: Suspension Mounting (Horizontal) - NE090 and NE/NF120

Table 5: Suspension Mounting (Horizontal) Weights - NE090, NE/NF120 and NE180

Unit Model	Shipping Weight (lb)	Operating Weight (lb)	CG (in)		4-Point Loading (lb)			
			X	Y	A	B	C	D
NE090	350	325	26.5	24.0	72	77	91	85
NE/NF120	380	355	26.5	24.0	79	85	99	92
NE180	465	425	32.0	29.4	101	105	112	107

Table 6: Operating Weights (LB) - NE090, NE/NF120 and NE180

MODEL		090	120	180	
BASIC UNIT	(Cooling Only)	320	355	425	
	Base	55	55	65	
ACCESSORIES	Return Air Grill	15	15	20	
	Supply Air Plenum	100	100	115	
	Hot Water Coil	105	105	135	
	Steam Coil	115	115	145	
	Electric Heater	10 KW		66	
		16 KW		70	
		26 KW		74	
36 KW			77		
72 KW			125		

Figure 2: Suspension Accessory (Horizontal) - NE180

Table 7: Operating Weights (LB) - NE240

MODEL		240	
Basic Unit	Operating		847
	Motor & Drive	3 HP	90
5 HP		120	
Accessories	Base		120
	Return Air Grille		15
	Supply Air Plenum		150
	Hot Water Coil		150
	Steam Coil		150

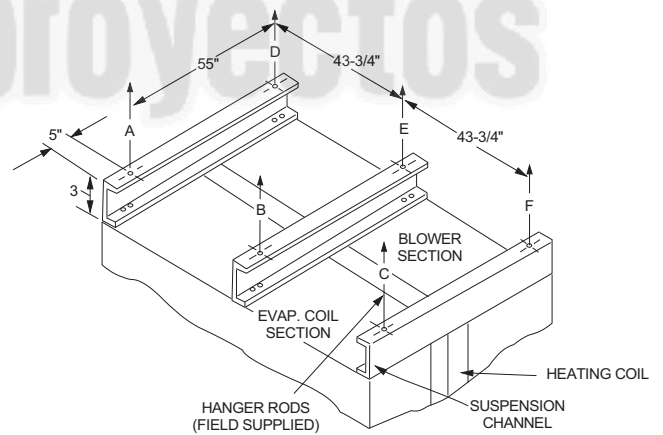


Figure 3: Suspension Accessory (Horizontal) - NE240

Table 8: Suspension Weights (LB) - NE240

SUSPENSION POINT	W/ 3HP MOTOR*
A	142
B	132
C	152
D	162
E	132
F	127
Total Weight	847

CLEARANCES

Refer to the unit dimension details in Figures 25, 26 and 16, and for clearances required for servicing and for proper unit operation see Tables 22, 23 and 24.

VERTICAL AND HORIZONTAL INSTALLATION - NE090 AND NE/NF120

The unit is built as a single cabinet with two condensate drain pans. This allows the unit to be installed in either the vertical or horizontal position for maximum flexibility.

On vertical applications, the air velocity across the cooling coil keeps the condensate from dripping off the finned surface onto the filters.

On horizontal applications, the unit must be installed with the condensate drain pan under the entire cooling coil.

- The Supply Air Plenum and the Return Air Grill accessories can be used on either arrangement.
- The Base accessory can only be used on the vertical arrangement.

When installed horizontally, the unit is designed for ceiling suspension. Four 3/8"-16 weld nuts are provided in the angle supports on the front of the unit (the side with the logo). Knockouts are provided in the exterior panels for access to these weld nuts. Hanger rods must be field supplied.

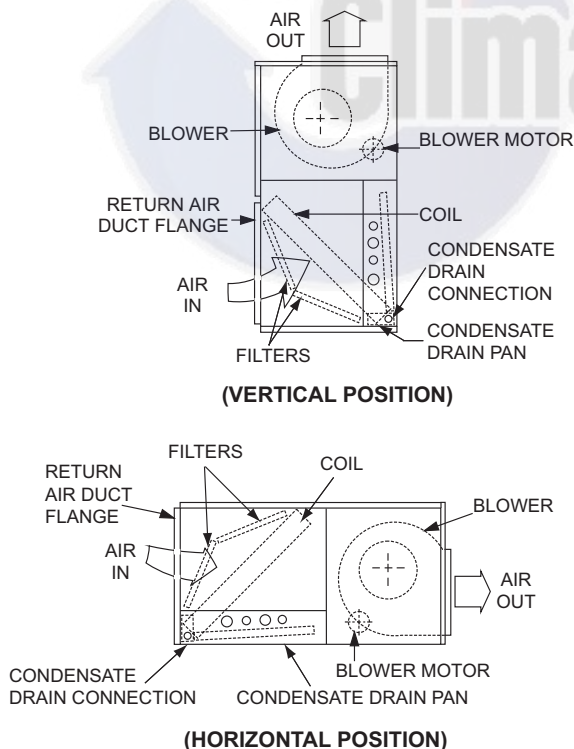


Figure 4: Vertical and Horizontal Application - NE090 and NE/NF120

VERTICAL AND HORIZONTAL INSTALLATION - NE180

The unit has two distinct modules; a blower module and a coil module. The unit is shipped in the vertical position with a vertical air discharge as shown in illustration (a). The blower module can be repositioned in the field as shown in illustrations (b) and (c) for maximum flexibility.

- The Supply Air Plenum, Return Air Grill and Base accessories can be applied on arrangement (a).
- The Return Air Grill and Base accessories can be applied on arrangement (b).
- The Supply Air Plenum, Return Air Grill and Suspension accessories can be applied on arrangement (c).

The blower can be repositioned per the following instructions:

1. Remove the panels from the blower section.
2. Remove the four Phillips machine bolts that hold the coil and blower sections together. A bolt is located near each corner.
3. Move the blower section to the proper location.
4. Attach the blower section to the coil section with the machine bolts removed in Step 2.
5. Before replacing the panel, see Duct Connection and Drain Connection.
6. Replace the panels.

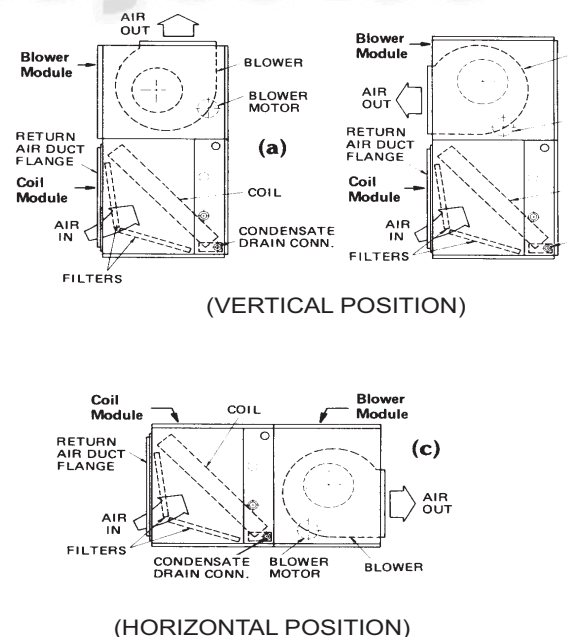


Figure 5: Vertical and Horizontal Application - NE180

VERTICAL AND HORIZONTAL INSTALLATION - NE240

The unit has two distinct modules; a blower module and a coil module. The unit is shipped in the vertical position as shown in illustrations 1. The blower module can be repositioned in the field as shown in illustrations (1 thru 6) and (7 thru 12) for maximum flexibility.

- The Supply Air Plenum, Return Air Grill and Base accessories can be applied on arrangements (1 & 4).
- The Return Air Grill and Base accessories can be applied on arrangements (2, 3, 5 & 6).
- The Supply Air Plenum, Return Air Grill and Suspension accessories can be applied on arrangement (7 thru 12).

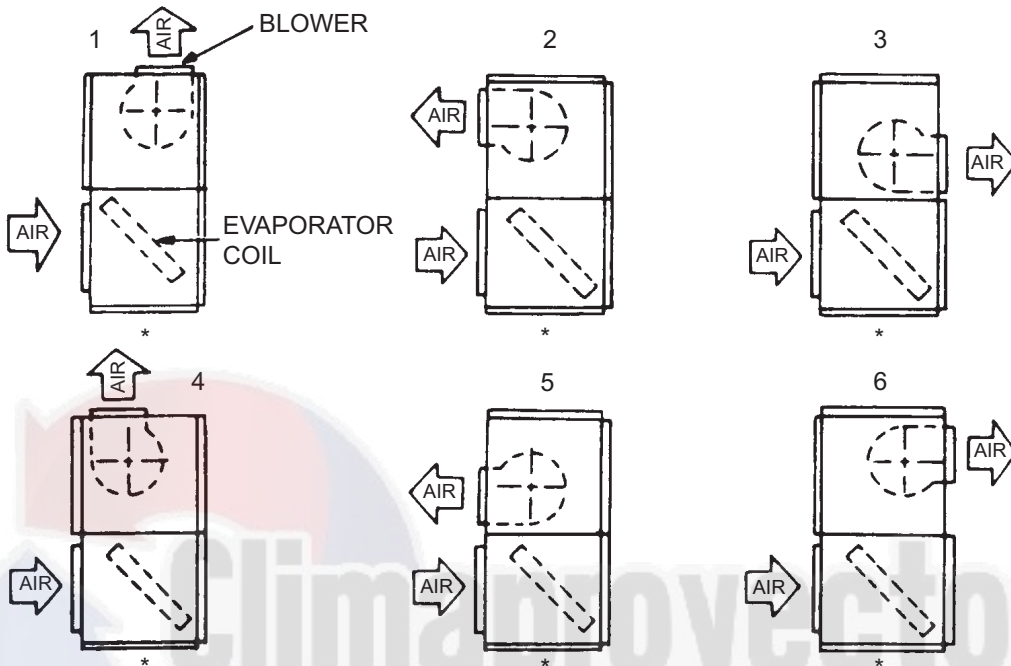


Figure 6: Vertical Arrangement - NE240

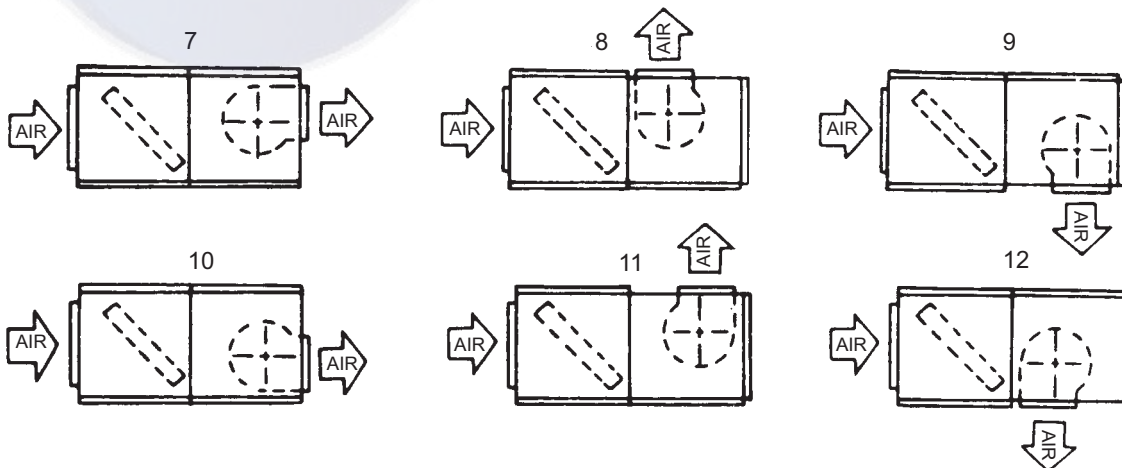


Figure 7: Horizontal Arrangement - NE240

BLOWER MOTOR MOUNTING LOCATIONS - NE240

The unit is shipped from the factory without a motor and drive. The motor mounting assembly, however, is factory-installed as shown in Figure 8. Figure 9 shows a detailed view of the motor mounting assembly (the mounting plate and the channels) with a motor. **Power wiring for blower motor is field supplied.**

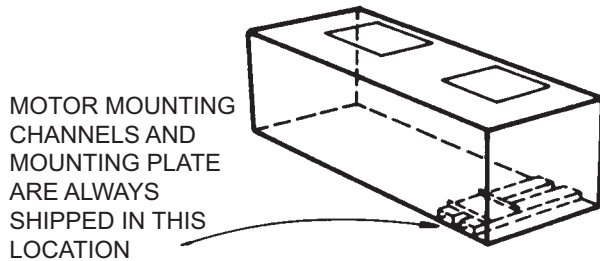


Figure 8: Shipping Location for Motor Mounting Assembly - NE240

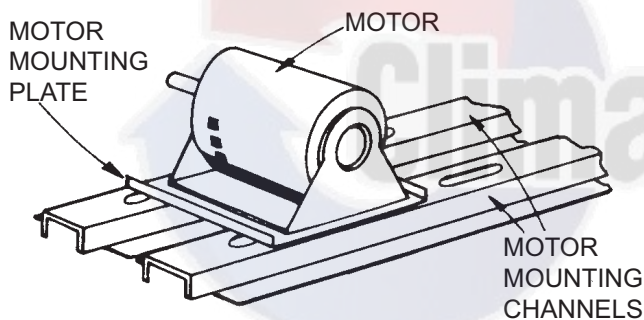


Figure 9: Typical Motor Mounting Assembly and Motor - NE240

MOTOR ARRANGEMENTS - NE240

The recommended motor location for each blower arrangement is as follows. Refer to Figure 10.

For Location A:

1. Install the motor and drive package. The motor mounting assembly is already in the correct position.

For Location D:

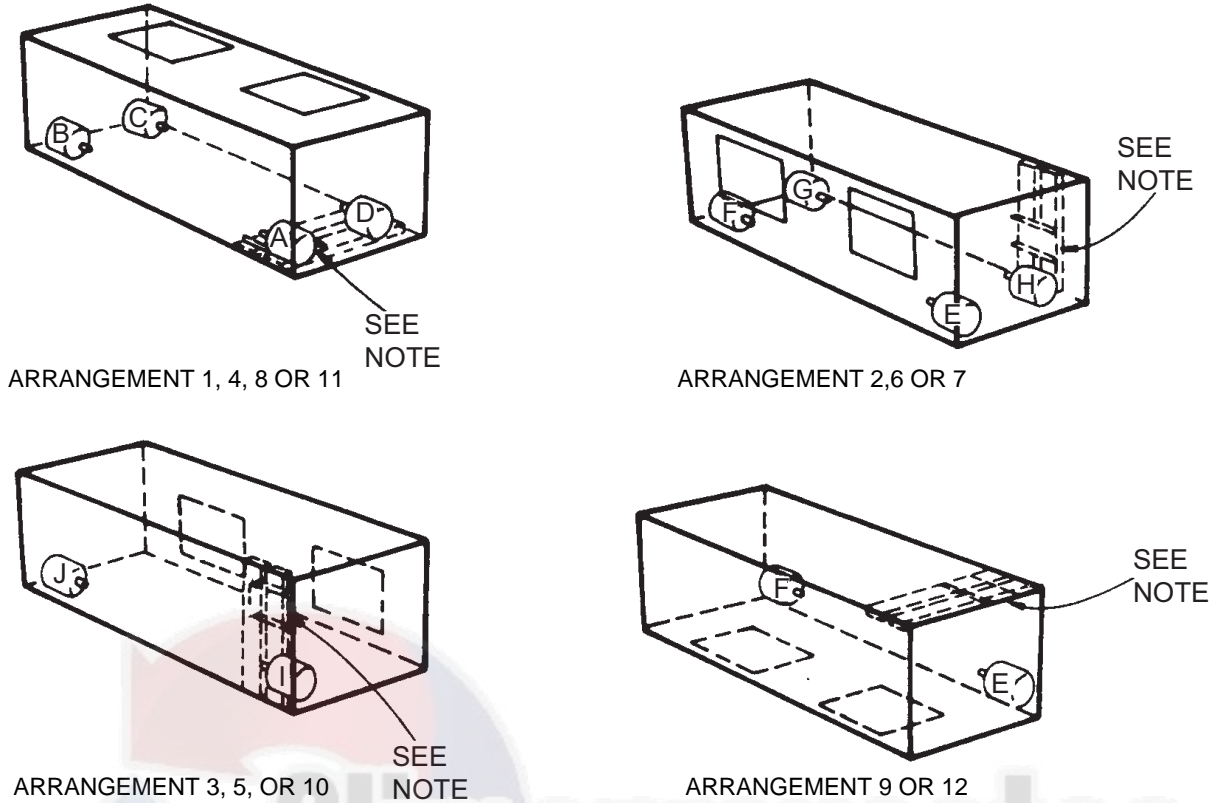
1. Move the motor mounting plate to the other end of the mounting channels. Do not rotate the mounting plate.
2. Install the motor and drive package.

For all other locations:

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

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 arrangements 2,3,5,6,7,9,10 and 12 of Figures 6 and 7, the motor mounting assembly should be relocated before the two sections are rejoined.

2. **For locations C,F,H, and J only**, rotate the motor mounting plate 180 degrees on the mounting channels. **Do not rotate the plate for location D,E,G, or I.**
3. Install the motor and drive package.



ARRANGEMENT 1, 4, 8 OR 11

ARRANGEMENT 2,6 OR 7

ARRANGEMENT 3, 5, OR 10

ARRANGEMENT 9 OR 12

NOTE: SINCE THE MOTOR MOUNTING ASSEMBLY CANNOT BE SECURED TO THE PANEL WITH THE BLOWER OPENINGS, THE MOTOR CANNOT BE INSTALLED IN ANY OF THE NORMALLY RECOMMENDED BOTTOM POSITIONS. SHIPPING LOCATION FOR THE MOTOR MOUNTING PLATE ON THE MOUNTING CHANNELS.

Figure 10: Motor Location Arrangements - NE240

DUCT CONNECTIONS

Design and install all ducts in accordance with all national and/or local codes.

Refer to Figures 11 and 12 for suggested method of connecting supply air ductwork.

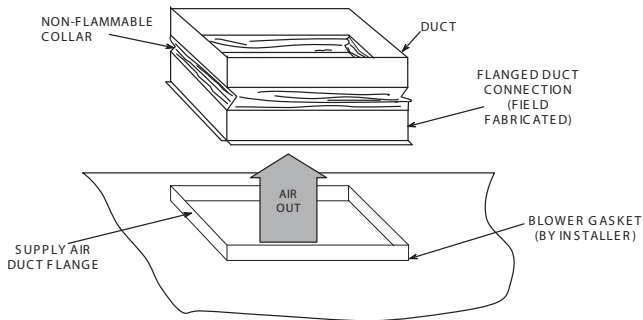


Figure 11: Supply Air Duct Connections - NE090, NE/NF120 and NE180

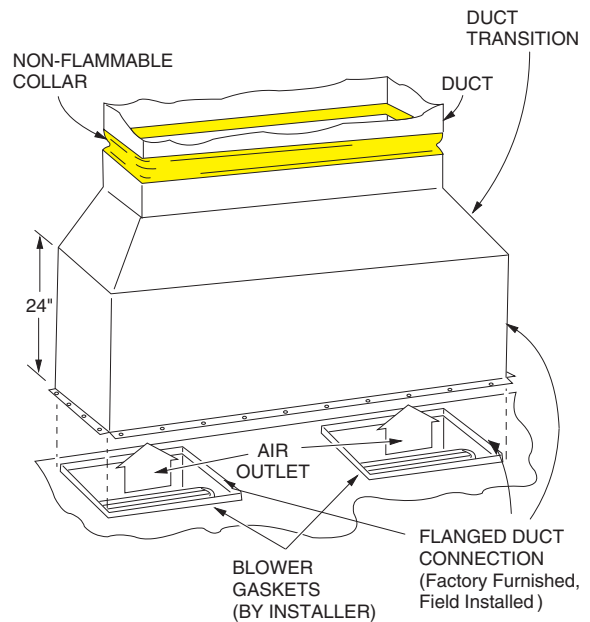


Figure 12: Supply Air Duct Connection - NE240

Ducts should be sized no smaller than the duct flanges on the unit or the electric heater (if used). Refer to the unit dimension details (Figures 25 and 26) and the heater detail (Figure 13) for these sizes. Refer to Form 131002 for installation instructions on the electric heater.

Use flexible fiber glass or plastic cloth collars or other non-flammable material at the unit duct connections to minimize the transmission of noise and vibration.

Insulate all ductwork running through unconditioned areas to prevent moisture condensation and to provide more economical operation.

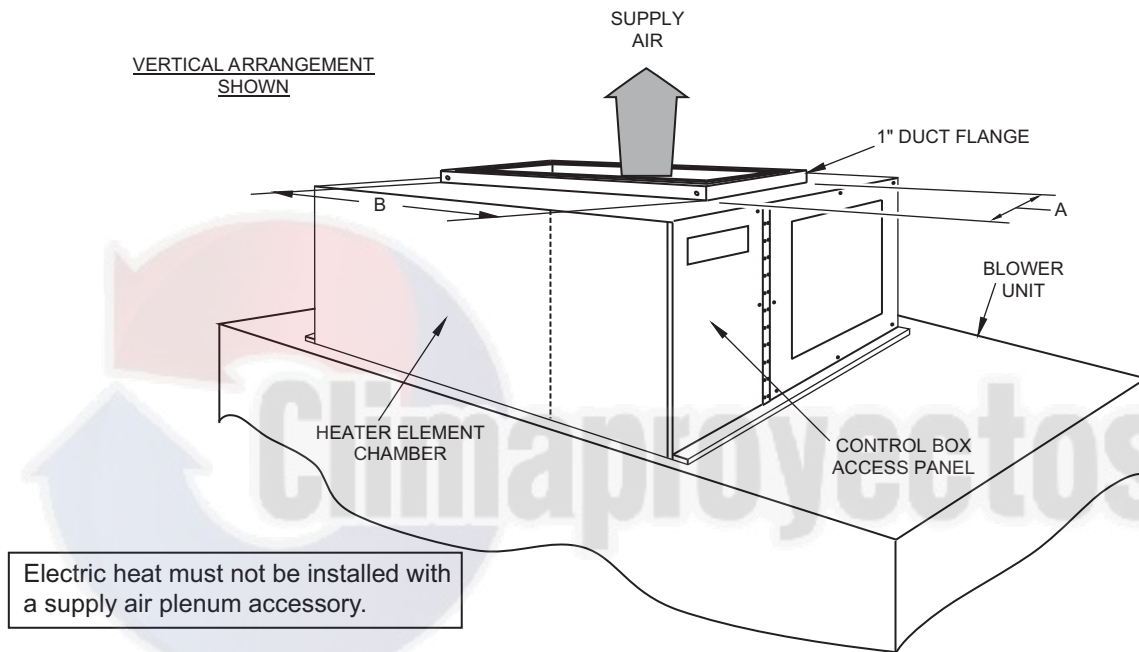
The return air duct flange is factory-mounted on the front of the unit, but it can be reversed with the solid bottom panel for horizontal applications.

When the return air grill is used, the duct connection frame is not used.

NOTE: If return air duct is not used, applicable installation codes may limit the unit to installation only in a single story residence.

A supply air plenum (Figure 14), a base (Figure 15), and a return air grill (Figure 16) are available as field-installed accessories, and one of the following respective instruction forms will be packed with each.

The supply air plenum and the return air grill should be used in lieu of ductwork only when a free blow/free return application is practical.



Electric heat must not be installed with a supply air plenum accessory.

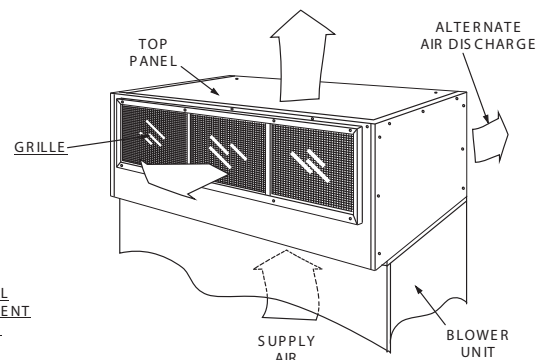
Figure 13: Electric Heat Accessory

Table 9: Electric Heat Opening Dimensions

DIMENSIONS	7.5, 10 & 15 TON
A	19-1/4
B	22-1/4

Table 10: Unit Accessories

Supply Air Plenum		
Accessory Model	Unit Model	Instruction Number
1SP0451	090/120	035-16650-001/11262
1SP0452	180	035-16650-001/11262
1SP0405	240	035-06935-000/10333
Base		
1BS0451	090/120	035-16632-001/11249
1BS0452	180	035-16632-001/11249
1BS0405	240	035-16648-001/11258
Return Air Grill		
1RG0451	090/120	035-16621-001/11240
1RG0452	180	035-16621-001/11240
1RG0405	240	



Plenums should be field mounted on the supply air end of blower units for either vertical or horizontal application. For rear discharge, rotate plenum 180 degrees. For horizontal discharge on a horizontal unit, the grille panel and the top panel will be arranged differently. Refer to Form 035-16650-001 for installation and assembly instructions.

Figure 14: Supply Air Plenum Accessory

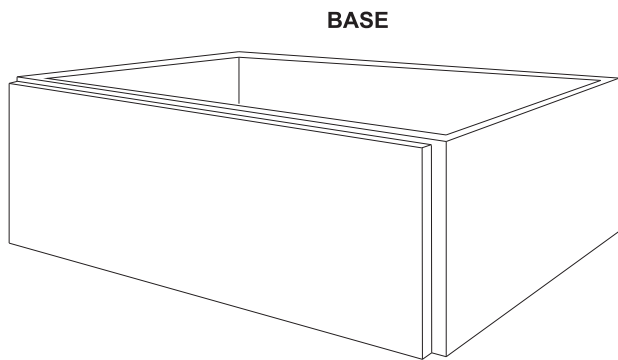


Figure 15: Base Accessory

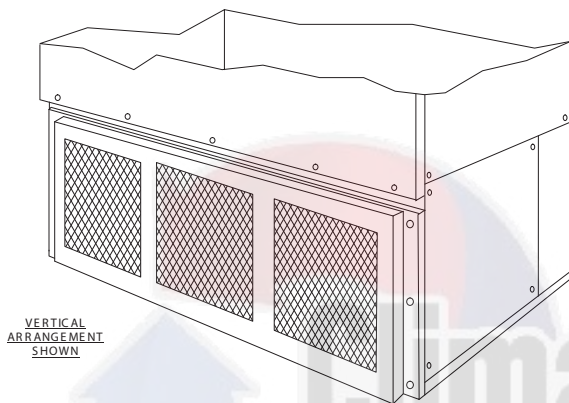


Figure 16: Return Air Grill Accessory

DRAIN CONNECTION

The drain line must be trapped because the coil is located on the negative side of the supply air blower. It must be protected from freezing temperatures.

A 7/8" O.D. drain connection extends through right hand side of cabinet. Refer to Figure 17 for recommended drain piping.

The drain connection is located on the same side of the unit as the refrigerant connections. The line should be insulated where moisture dripping will be objectionable or cause damage to the area.

The 3" dimension must equal or exceed the negative static pressure developed by the supply air blower. If it does not, the condensate will not drain properly and may overflow the drain pan. The trap must be at least 2-1/2" deep to maintain a water seal under all operating conditions, especially during blower start-up.

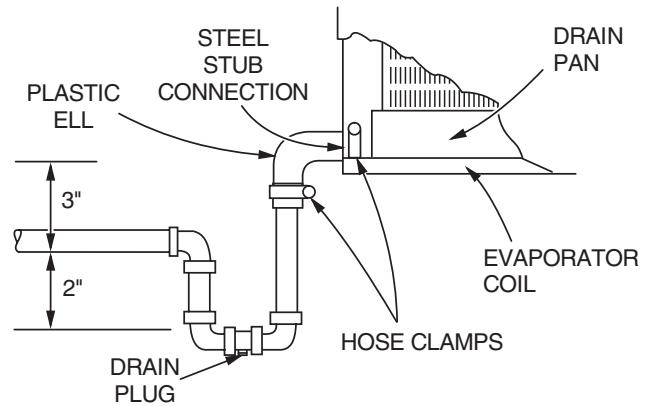


Figure 17: Recommended drain piping

NOTE: The unit may have to be raised off the floor to allow enough height for the drain trap.

REFRIGERANT MAINS

⚠ CAUTION

This Split-System (Air Condensing / Heat Pump / Air Handling) unit is one component of an entire system. As such it requires specific application considerations with regard to the rest of the system (air handling unit, duct design, condensing unit, refrigerant piping and control scheme).

Failure to properly apply this equipment with the rest of the system may result in premature failure and/or reduced performance / increased costs. Warranty coverage specifically excludes failures due to improper application and Unitary Products specifically disclaims any liability resulting from improper application.

Please refer to the equipment Technical Guide, Installation Manual and the piping applications bulletin 247077 or call the applications department for Unitary Products @ 1-877-UPG-SERV for guidance.

Line Sizing

When sizing refrigerant pipe for a split-system air conditioner, check the following:

1. Suction line pressure drop due to friction.
2. Liquid line pressure drop due to friction.
3. Suction line velocity for oil return.
4. Liquid line pressure drop due to vertical rise. For certain piping arrangements, different sizes of suction line pipe may have to be used. The velocity of the refrigerant vapor must always be great enough to carry the oil back to the compressor.

5. **Evaporator Located Below Condenser** - On a split system where the evaporator blower is located below the condenser, the suction line must be sized for both pressure drop and for oil return.
6. **Condenser Located Below Evaporator** - When the condenser is located below the evaporator blower, the liquid line must be designed for the pressure drop due to both friction loss and vertical rise. If the pressure drop due to vertical rise and friction exceeds 60 psi, some refrigerant will flash before it reaches the thermal expansion valve.

Flash gas:

1. Increases the liquid line pressure loss due to friction that in turn causes further flashing.
2. Reduces the capacity of the refrigerant control device which starves the evaporator.
3. Erodes the seat of the refrigerant control device.
4. Causes erratic control of the refrigerant entering the evaporator.

Take Adequate Precautions

Many service problems can be avoided by taking adequate precautions to provide an internally clean and dry system and by using procedures and materials that conform to established standards.

Use hard drawn copper tubing where no appreciable amount of bending around pipes or other obstructions is necessary. If soft copper is used, care should be taken to avoid sharp bends that may cause a restriction. Pack fiberglass insulation and a sealing material such as permagum around refrigerant lines where they penetrate a wall to reduce vibrations and to retain some flexibility.

Support all tubing at minimum intervals with suitable hangers, brackets or clamps.

Braze all copper-to-copper joints with Silfos-5 or equivalent brazing material. Do not use soft solder. Insulate all suction lines with a minimum of 1/2" ARMAFLEX or equivalent that meets local code. Liquid lines exposed to direct sunlight and/or high temperatures must also be insulated. Never solder suction and liquid lines together. They can be taped together for convenience and support purposes, but they must be completely insulated from each other.

Before beginning installation of the main lines, be sure that the evaporator section has not developed a leak in transit. Check pressure at the Schrader valve located on the header of each coil. If pressure still exists in the system, it can be assumed to be leak free. If pressure DOES NOT exist the section will need to be repaired before evacuation and charging is performed.

A filter-drier MUST be field-installed in the liquid line of every system to prevent dirt and moisture from damaging the system. Properly sized filter-driers are shipped with each condensing section.

NOTE: Installing a filter-drier does not eliminate the need for the proper evacuation of a system before it is charged.

A field-installed moisture indicating sight-glass should be installed in the liquid line(s) between the filter-drier and the evaporator coil. The moisture indicating sight-glass can be used to check for excess moisture in the system.

The evaporator coil has copper sealing disks brazed over the ends of the liquid and suction connections. The temperature required to make or break a brazed joint is high enough to cause oxidation of the copper unless an inert atmosphere is provided.

NOTE: Dry Nitrogen should flow through the system at all times when heat is being applied and until the joint has cooled. The flow of Nitrogen will prevent oxidation of the copper lines during installation.

Always punch a small hole in sealing disks before unbrazing to prevent the pressure in the line from blowing them off. Do not use a drill as copper shavings can enter system.

NOTE: Solenoid and hot gas bypass valves (if used) should be opened manually or electrically during brazing or evacuating.

NOTE: Schrader valves located on unit service valves should have their stem removed during brazing to prevent damage to the valve.

Start Installation

Start Installation of main lines at the condenser unit. Verify the service valves are fully seated by screwing the stem of both valves down into the valve body until it stops. Remove the Schrader valve stem and connect a low-pressure nitrogen source to the service port on the suction line valve body. Punch a small hole in the sealing disk; the flow of Nitrogen will prevent any debris from entering the system. Wrap the valve body with a wet rag to prevent overheating during the brazing process. Overheating the valve will damage the valve seals. Unbrazing the sealing disk, cool the valve body and prepare the joint for connections of the main lines. Repeat for the liquid line valve body.

WARNING

Never remove a cap from an access port unless the valve is fully back-seated with its valve stem in the maximum counter-clockwise position because the refrigerant charge will be lost. Always use a refrigeration valve wrench to open and close these service valves.

Connect the main liquid line to the liquid line connection on the condenser unit, while maintaining a flow of Nitrogen. Cool the valve body and replace the Schrader valve stem on the service port of the liquid line service valve.

Install the liquid line from the condenser 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, leaving the O.D. unit.

Connect a low-pressure nitrogen source to the Schrader valve located on the evaporator section coil headers. Punch a small hole in the sealing disks, the flow of Nitrogen will prevent any debris from entering the system. Unbrazed both liquid and suction sealing disks and prepare the joints for connections of the main lines.

Connect the main liquid line to the liquid line connection on the evaporator section, while maintaining a flow of Nitrogen.

Make the suction line connection at the evaporator and run the line to the condenser unit. Connect the main suction line to the suction line connection on the condenser unit, while maintaining a flow of nitrogen. Cool the valve body and replace the Schrader valve stem on the service port of the liquid line service valve.

Once the brazing process is complete, leak testing should be done on all interconnecting piping and the evaporator before proper evacuation to 500 microns is performed. Once the line set and evaporator section is properly evacuated the service valves can be opened and the condensing unit is now ready to charge with the appropriate weight of refrigerant.

CAUTION

This system uses R-410A Refrigerant which operates at higher pressures than R-22. No other refrigerant may be used in this system. Gage sets, hoses, refrigerant containers and recovery systems must be designed to handle R-410A. If you are unsure, consult the equipment manufacturer. Failure to use R-410A compatible servicing equipment may result in property damage or injury.

WARNING

Wear safety glasses and gloves when handling refrigerants. Failure to follow this warning can cause serious personal injury.

NOTE: This instruction covers the installation and operation of the basic air handling unit. For refrigerant piping installation instructions refer to document 247077 "Application Data - General Piping Recommendations for Split System Air Conditioning and Heat Pumps".

EXPANSION VALVE BULB INSTALLATION

N090-240 Models

Thermal expansion valve bulbs are not factory-installed in their final locations. They are only temporarily secured for shipment. Thermal expansion valve bulbs are equipped with capillary tubes to allow placement of the bulbs anywhere along the suction line. Insulate the bulbs to ensure proper valve operation. Do not attempt to install the TXV bulb(s) until all other piping connections are complete.

NF120 Models

After all piping connections are made, fasten the expansion valve bulb from System 1 to the corresponding suction line in a 4 o'clock or 8 o'clock position using one of the bulb clamps provided. Repeat the procedure for System 2. Expansion valve bulbs may be mounted outside the unit by pulling them through the slotted bushing located on the patch plate and placed on the matching system suction line. Insulate the bulbs to ensure proper valve operation.

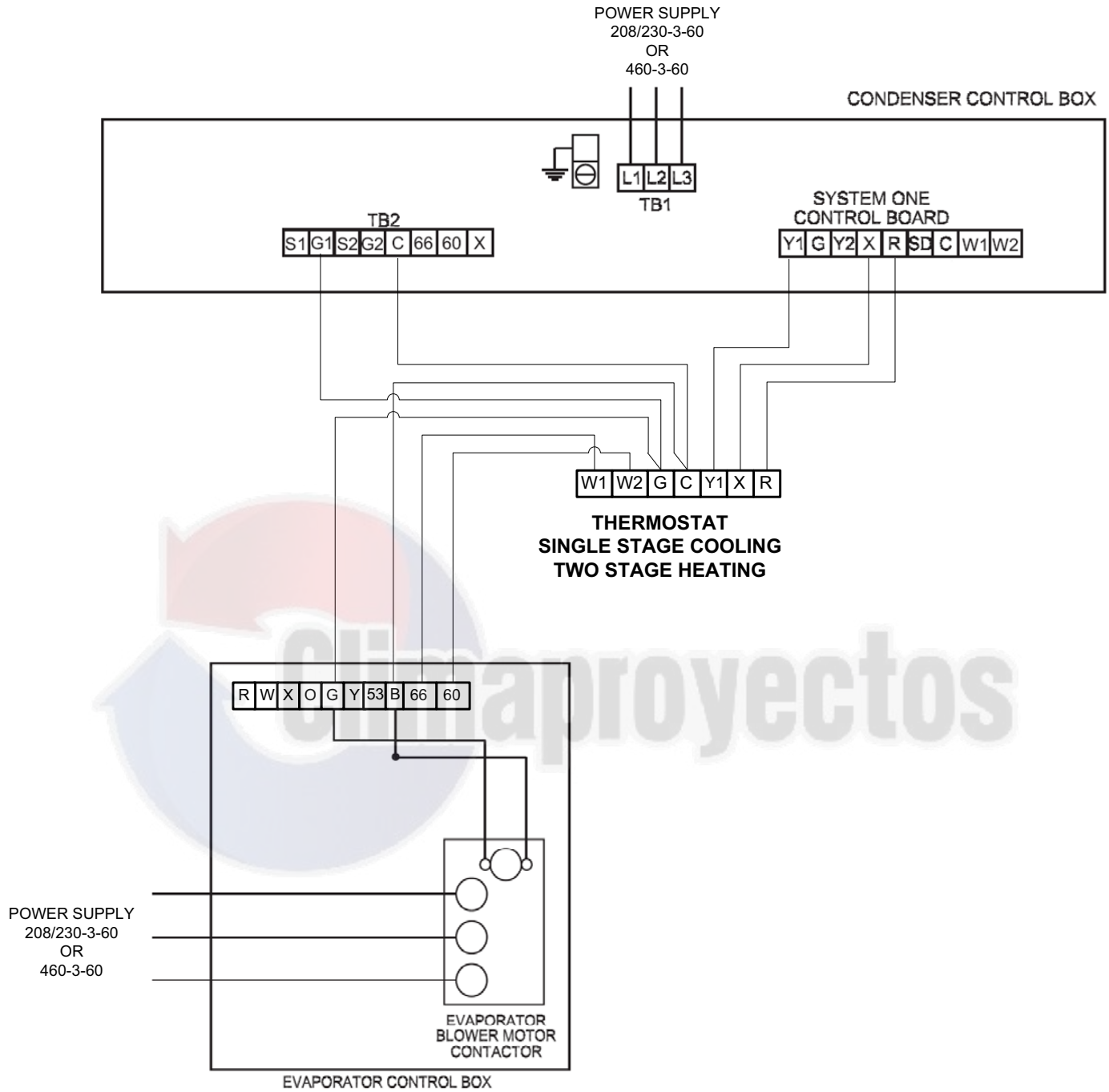


Figure 18: Typical Field Wiring Diagram - NE90 Air Handling Unit With YC90 Condensing Unit

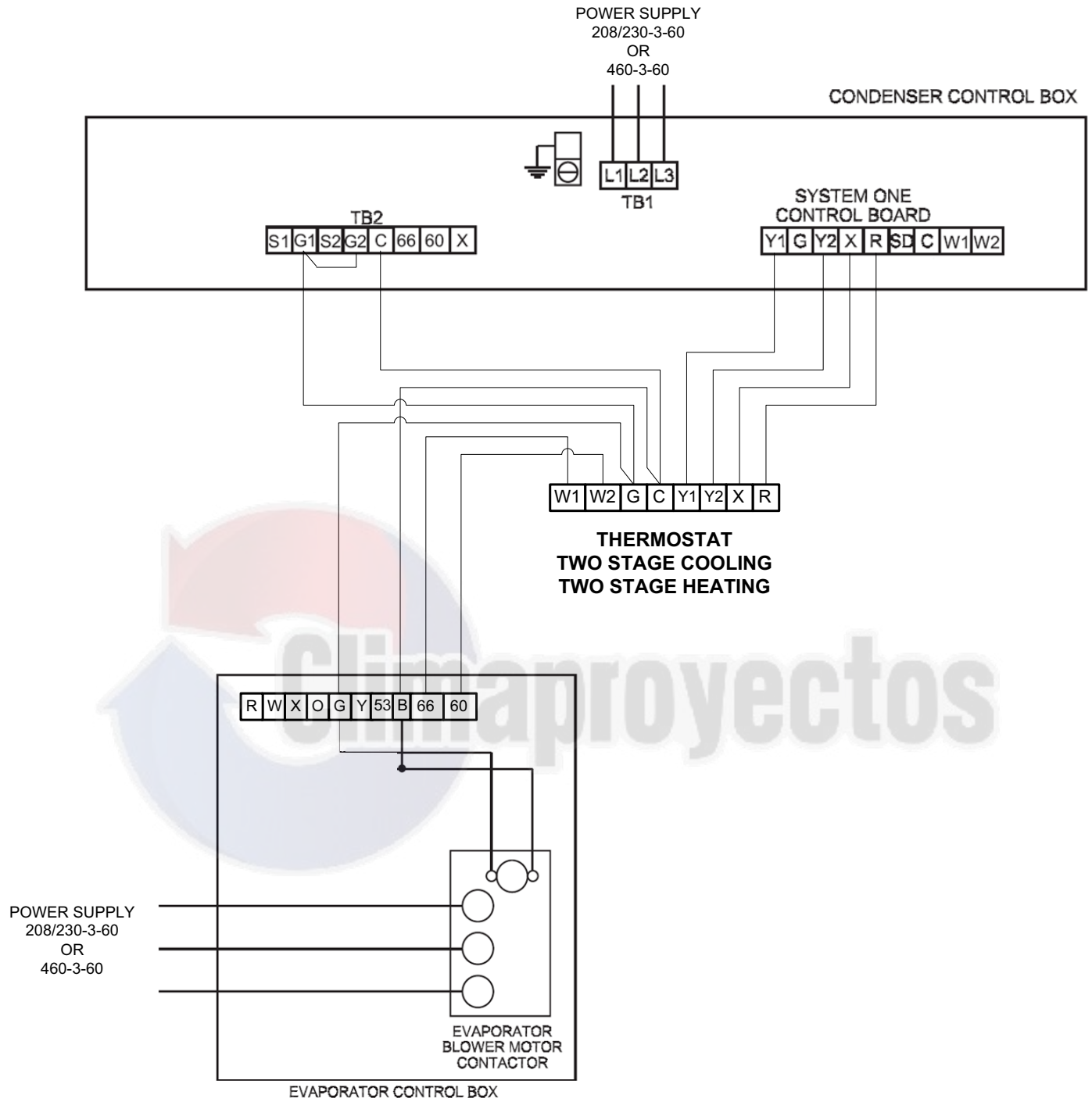


Figure 19: Typical Field Wiring Diagram - NE120-180 Air Handling Unit With YC120-180 Condensing Unit

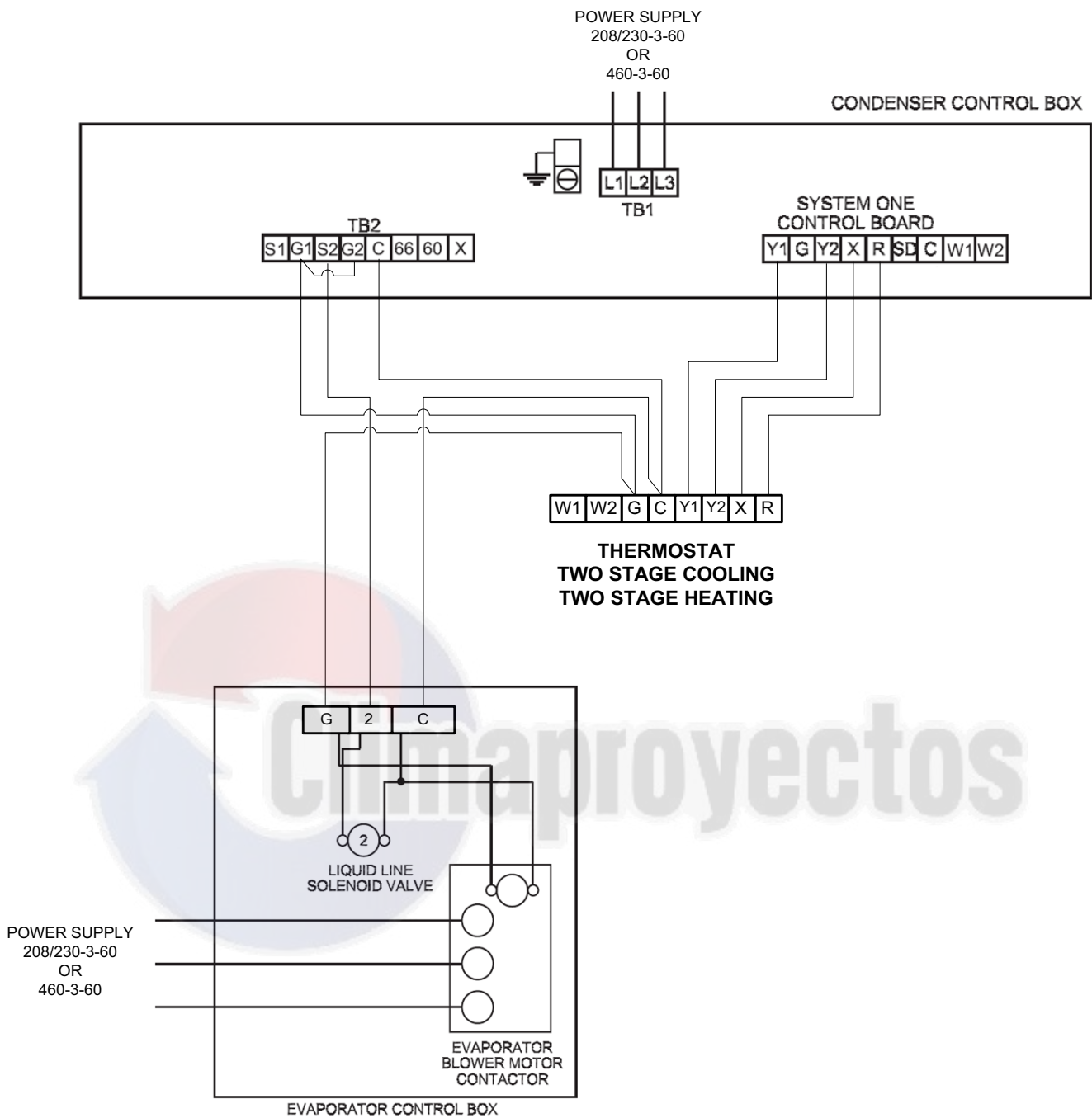


Figure 20: Typical Field Wiring Diagram - NE240 Air Handling Unit With YC240 Condensing Unit

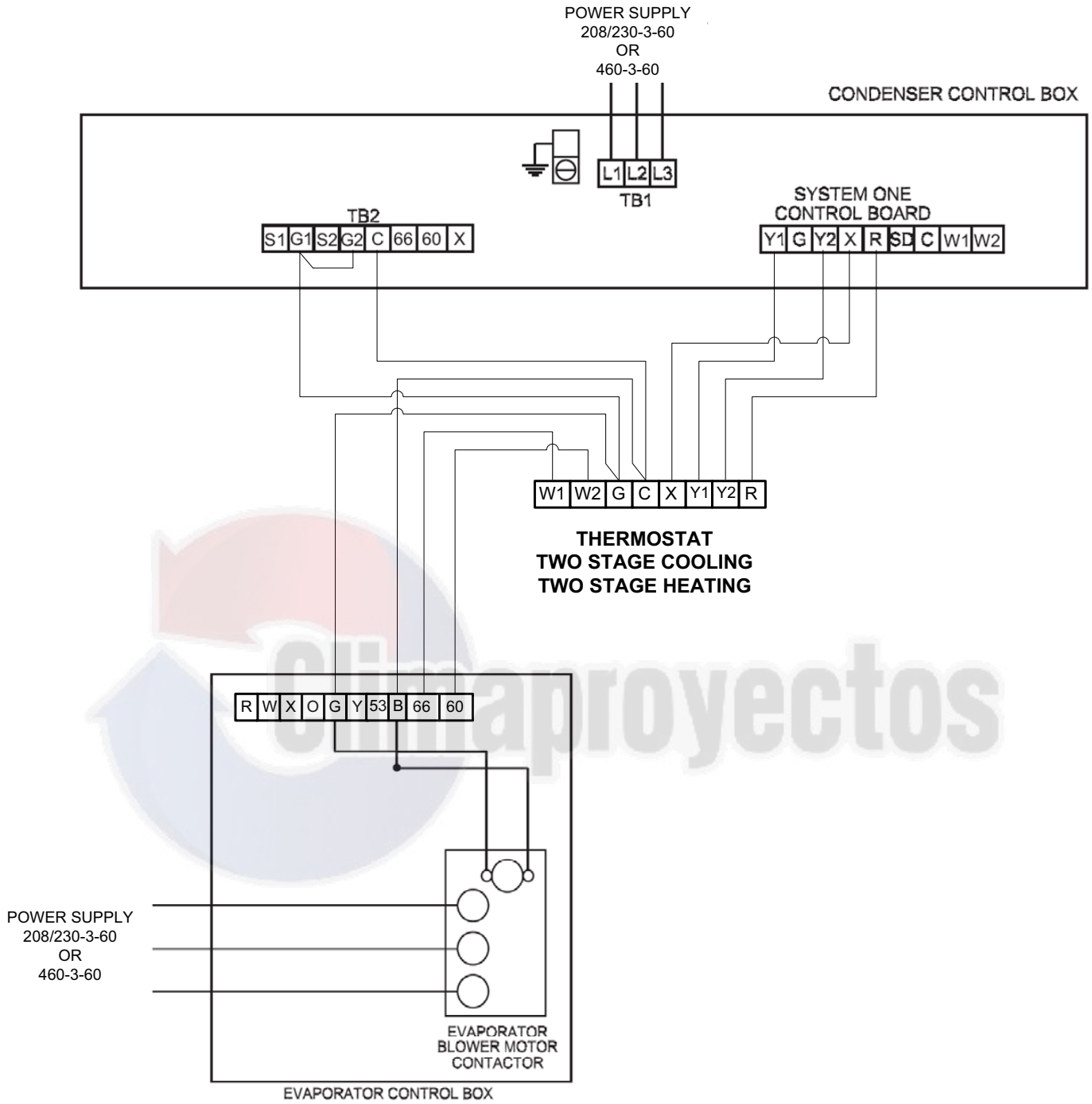


Figure 21: Typical Field Wiring Diagram - NF120 Air Handling Unit With YD120 Condensing Unit

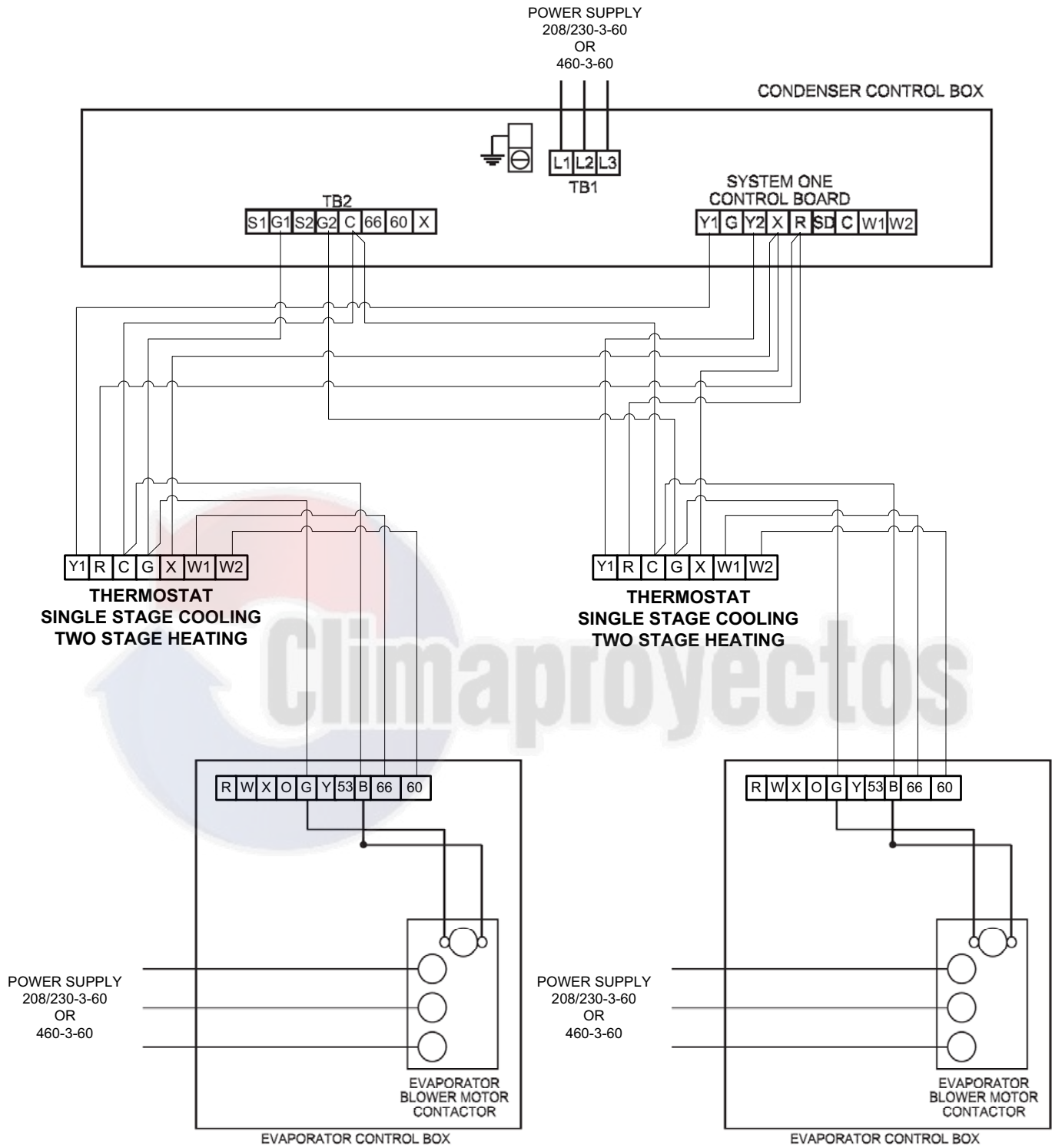


Figure 22: Typical Field Wiring Diagram - Twin NE90-120 Air Handling Units With YD180-240 Condensing Unit

POWER AND CONTROL WIRING

Install electrical wiring in accordance with the latest National Electrical Code (NFPA Standard No. 70 and/or local regulations). The unit must be grounded in accordance with these codes.

POWER WIRING

Remove the knockout from the units rear panel (7/8" for NE180, 1-3/8" for NE090 and NE/NF120) for power wiring conduit through this opening. Connect the conduit to the required field-supplied fitting and the power wiring to blower motor contactor 10M in unit control box.

If the unit includes an electric heat accessory, route the power wires into heater control box in lieu of the unit. Refer to electric heat instruction 131002 for additional installation information.

CONTROL WIRING

Route the low voltage control wiring through the 7/8" hole (with bushing) in the units rear panel. Add a 1/2" conduit fitting to the 7/8" hole in the unit control box, route control wiring through this opening and connect them to the terminals on block 4TB.

CONTROL WIRE SIZING

Wire Size	Maximum Total Circuit Length (Feet)
#19 Solid	130
#18 Solid	170
#18 Stranded	180
#16 Stranded	270
#14 Stranded	455
#12 Stranded	730

To determine the total circuit length, add the following distances:

- 1 - Outdoor Unit to Indoor Unit _____
- 2 - Indoor Unit to Thermostat _____
- 3 - Thermostat to Indoor Unit _____
- 4 - Indoor Unit to Outdoor Unit _____
- 5 - Outdoor Unit to Elec. Heater _____
- Total Circuit Length _____

Refer to Figures 25, 26 & 27 for location of power and control wiring openings in rear panel of the units. Refer to Figures 19 and 20 for typical field wiring. Refer to Table 11 to size the disconnect switch, the power wiring and the fuses.

NOTE: Three phase motor rotations may be incorrect when unit is first started. Reverse phase (leads L1 and L2) at blower motor contactor to obtain correct rotation.



Table 11: Electrical Data - NE/NF

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA ¹ (Amps)	Max Fuse ² / Breaker ³ Size (Amps)
			FLA	Model	KW	Stages		
NE090C00B								
1.5	208-3-60	5.0	None	---	---	---	6.3	15
			10 KW	7.5	1	20.8	32.3	35
			16 KW	12	2	33.4	47.9	50
			26 KW	19.5	2	54.2	74.0	80
			36 KW	27	2	75.1	100.1	110
	230-3-60	5.2	None	--	---	--	6.5	15
			10 KW	10	1	24.1	36.6	40
			16 KW	16	2	38.5	54.6	60
			26 KW	26	2	62.5	84.7	90
			36 KW	36	2	86.6	114.8	125
	460-3-60	2.5	None	---	---	---	3.1	15
			10 KW	10	1	12.0	18.2	20
			16 KW	16	2	19.2	27.2	30
			26 KW	26	2	31.3	42.2	45
			36 KW	36	2	43.3	57.3	60
(NE/NF)120C00C								
2.0	208-3-60	6.6	None	---	---	---	8.3	15
			10 KW	7.5	1	20.8	34.3	35
			16 KW	12	2	33.4	49.9	50
			26 KW	19.5	2	54.2	76.0	80
			36 KW	27	2	75.1	102.1	110
	230-3-60	6.8	None	---	---	---	8.5	15
			10 KW	10	1	24.1	38.6	40
			16 KW	16	2	38.5	56.6	60
			26 KW	26	2	62.5	86.7	90
			36 KW	36	2	86.6	116.8	125
	460-3-60	3.4	None	---	---	---	4.3	15
			10 KW	10	1	12.0	19.3	20
			16 KW	16	2	19.2	28.3	30
			26 KW	26	2	31.3	43.3	45
			36 KW	36	2	43.3	58.4	60
NE180C00D								
3.0	208-3-60	9.6	None	---	---	---	12.0	15
			10 KW	7.5	1	20.8	38.1	40
			16 KW	12	2	33.4	53.7	60
			26 KW	19.5	2	54.2	79.8	80
			36 KW	27	2	75.1	105.8	110
			72 KW	72	2	150.1	162.1	175
	230-3-60	9.4	None	---	---	---	11.8	15
			10 KW	10	1	24.1	41.8	45
			16 KW	16	2	38.5	59.9	60
			26 KW	26	2	62.5	89.9	90
			36 KW	36	2	86.6	120.0	125
			72 KW	72	2	173.2	185.0	200
	460-3-60	4.7	None	---	---	---	5.9	15
			10 KW	10	1	12.0	20.9	25
			16 KW	16	2	19.2	29.9	30
			26 KW	26	2	31.3	45.0	45
			36 KW	36	2	43.3	60.0	70
			72 KW	72	2	86.6	92.5	100

Table 11: Electrical Data - NE/NF (Continued)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA ¹ (Amps)	Max Fuse ² / Breaker ³ Size (Amps)
		FLA	Model	KW	Stages	Amps		
NE240C00								
3.0	208-3-60	9.6	None	---	---	---	12.0	15
	230-3-60	9.4	None	--	---	---	11.8	15
	460-3-60	4.7	None	---	---	---	5.9	15
5.0	208-3-60	14.0	None	---	---	---	17.5	20
	230-3-60	14.0	None	--	---	---	17.5	20
	460-3-60	7.0	None	---	---	---	8.8	15

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

SUPPLY AIR BLOWER ADJUSTMENT

The RPM of the supply air blower will depend on the required CFM, the unit accessories and the static resistances of both the supply and the return air duct system. With this information, the RPM for the supply air blower can be set using Table 12.

Knowing the required blower RPM and the blower motor HP, the setting (turns open) for the supply air motor pulley can be determined from Table 12.

Each motor pulley has:

1. A threaded barrel with two flats (or notched recesses) 180 degrees apart.
2. A movable flange with one set screw.

After the movable flange has been rotated to the proper number of “turns open”; the set screw should be tightened against the flat on the barrel to lock the movable flange in place. If the pulley includes a locking collar, the locking collar must be loosened to adjust the setting of the movable flange.

Note the following:

1. The supply air CFM must be within the limitations shown in Table 3.
2. All Pulleys can be adjusted in half turn increments.
3. The tension on the belt should be adjusted for a deflection of 3/16 of an inch per foot of belt span with an applied force of 2 to 3 pounds. Moving the blower motor mounting plate makes this adjustment. Refer to Figure 21. Turning the adjustment bolt (B) moves the motor mounting plate up or down. Note - NEVER loosen the two nuts (C). Two hex nuts (A) have to be loosened to move the mounting plate and retighten after the mounting plate has been moved to the proper position.

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

Table 12: Supply Air Blower Motor Pulley Adjustment

Turns Open	Blower (RPM)				
	090	120	180	240	
	1.5 HP	2 HP	3 HP	3 HP	5 HP
5	644	690	654	621	863
4	690	739	690	656	894
3	736	789	726	690	925
2	782	838	763	725	957
1	828	887	799	759	988
0	874	936	836	794	1019

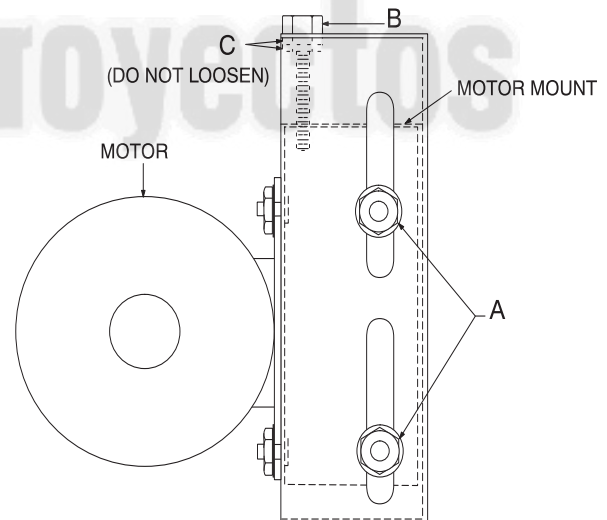


Figure 23: Typical Motor Mounting Assembly

4. All pulleys are factory aligned.
5. All supply air motor pulleys are factory set at 3 “turns open”.

After the supply air blower motor is operating, adjust the resistances in both the supply and the return duct systems to balance the air distribution throughout the conditioned space. The job specifications may require that this balancing be done by someone other than the equipment installer.

completed:

Drill two 5/16-inch holes in the side panel as shown in Figure 21.

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

NOTE: The tubes must be inserted and held in a position perpendicular to the airflow so that velocity pressure will not affect the static pressure readings.

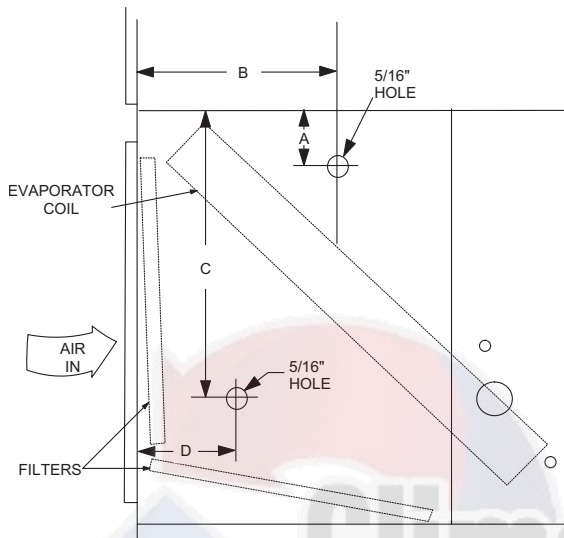


Figure 24: Hole Locations (Pressure Drop Readings)

Table 13: Hole Location Dimensions

Model	Dimensions (in.)			
	A	B	C	D

Table 13: Hole Location Dimensions

Model	A	B	C	D
090	3	17	14	8
120	3	17	14	8
180	7	22	18	10

- 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 a wet coil under field conditions would be inaccurate. To assure a dry coil, the refrigeration system should be de-activated while the test is being run.
- Knowing the pressure drop across a dry coil, the actual CFM through the unit can be determined from the curve in Figure 23.

If the CFM is above or below the specified value, the supply air motor pulley may have to be re-adjusted. 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" dot plugs (P/N 029-13880) are available through normal parts ordering procedures.

NOTE: Shut down the refrigeration system before taking any test measurements to assure a dry evaporator coil.

Table 14: Blower Motor and Drive Data - NE090, NE/NF120 and NE180

MODEL	BLOWER RANGE (RPM)	MOTOR		ADJUSTABLE MOTOR PULLEY				FIXED BLOWER PULLEY				BELT (NOTCHED)		
		HP	FRAME	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	PITCH LENGTH (IN.)	QTY.
090	644/874	1-1/2	56	1VL44	4.15	3.0-4.0	7/8	AK79	7.75	7.5	1	A36	37.3	1
120	690/936	2	56	1VL44	4.15	3.0-4.0	7/8	BK80	7.75	7.0	1	A36	37.3	1
180	654/835	3	56	1VP50	4.75	3.6-4.6	7/8	BK105	10.25	9.5	1	A57	58.3	1

Table 15: Blower Motor and Drive Data - NE240

DRIVE ACCESSORY MODEL NO.	BLOWER RANGE (RPM)	MOTOR		ADJUSTABLE MOTOR PULLEY				FIXED BLOWER PULLEY				BELT (NOTCHED)		
		HP	FRAME	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	PITCH LENGTH (IN.)	QTY.
1LD0404	621/794	3	56	1VP50	4.75	3.6-4.6	7/8	AK104	10.25	10.0	1-3/16	A55	56.3	1
1LD0406	863/1019	5	184	2VP71	7.1	5.5-6.5	1-1/8	2AK114	11.25	11.0	1-3/16	A57	58.3	2

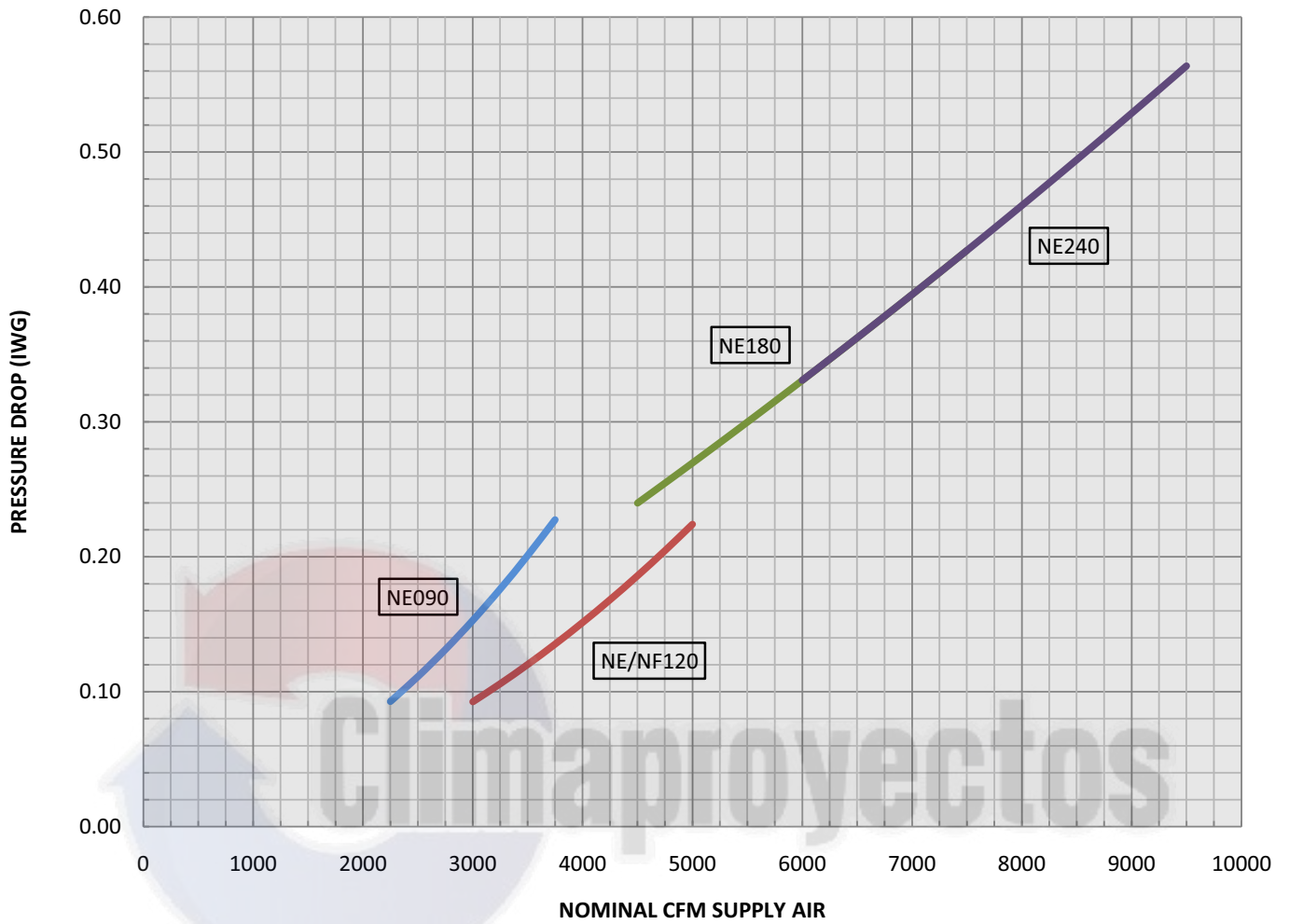


Figure 25: Pressure Drop Across A Dry Evaporator Coil VS. Supply Air CFM - NE090, NE/NF120, NE180 and NE240

Table 16: Supply Air Blower Performance - NE090 (7.5 TON)

CFM	EXTERNAL STATIC PRESSURE											
	0.2			0.4			0.6			0.8		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
2200	561	281	0.30	612	400	0.43	670	530	0.57	734	661	0.71
2400	579	414	0.44	630	533	0.57	688	663	0.71	752	794	0.85
2600	599	542	0.58	649	662	0.71	707	792	0.85	771	922	0.99
2800	619	666	0.71	670	786	0.84	728	916	0.98	792	1047	1.12
3000	640	786	0.84	691	905	0.97	749	1035	1.11	813	1166	1.25
3200	662	901	0.97	713	1021	1.10	771	1151	1.23	835	1282	1.37
3400	684	1013	1.09	735	1132	1.21	793	1262	1.35	857	1393	1.49
3600	706	1120	1.20	757	1239	1.33	815	1369	1.47	879	1500	1.61
3800	728	1223	1.31	779	1342	1.44	837	1472	1.58	900	1603	1.72
4000	750	1322	1.42	800	1441	1.55	859	1571	1.69	922	1702	1.83
4200	771	1418	1.52	822	1537	1.65	880	1667	1.79	944	1798	1.93
4400	792	1510	1.62	843	1629	1.75	901	1759	1.89	965	1890	2.03
4600	813	1599	1.72	864	1718	1.84	922	1848	1.98	986	1979	2.12

CFM	EXTERNAL STATIC PRESSURE											
	1.0			1.2			1.4			1.6		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
2200	801	783	0.84	869	886	0.95	936	962	1.03	1000	999	1.07
2400	819	916	0.98	887	1019	1.09	954	1095	1.17	1018	1132	1.21
2600	838	1044	1.12	906	1148	1.23	973	1223	1.31	1038	1261	1.35
2800	859	1169	1.25	927	1272	1.36	994	1348	1.45	1058	1385	1.49
3000	880	1288	1.38	948	1392	1.49	1015	1467	1.57	1079	1505	1.61
3200	902	1404	1.51	970	1507	1.62	1037	1583	1.70	1101	1620	1.74
3400	924	1515	1.63	992	1618	1.74	1059	1694	1.82	1123	1731	1.86
3600	945	1622	1.74	1014	1725	1.85	1081	1801	1.93	1145	1838	1.97
3800	967	1725	1.85	1036	1828	1.96	1103	1904	2.04	1167	1941	2.08
4000	989	1824	1.96	1057	1928	2.07	1124	2003	2.15	1189	2041	2.19
4200	1011	1920	2.06	1079	2023	2.17	1146	2099	2.25	1210	2136	2.29
4400	1032	2012	2.16	1100	2116	2.27	----	----	----	----	----	----
4600	1052	2101	2.25	----	----	----	----	----	----	----	----	----

 Exceeds the BHP limitation.

Table 17: Supply Air Blower Performance - NE/NF120 (10 TON)

CFM	EXTERNAL STATIC PRESSURE											
	0.2			0.4			0.6			0.8		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
2800	571	122	0.13	630	332	0.36	682	489	0.52	733	618	0.66
3000	595	349	0.37	654	559	0.60	706	716	0.77	756	845	0.91
3200	619	558	0.60	678	768	0.82	730	925	0.99	780	1054	1.13
3400	643	753	0.81	702	964	1.03	754	1120	1.20	804	1249	1.34
3600	667	939	1.01	726	1149	1.23	778	1306	1.40	829	1435	1.54
3800	692	1119	1.20	751	1329	1.43	803	1485	1.59	853	1614	1.73
4000	716	1294	1.39	775	1504	1.61	827	1661	1.78	877	1790	1.92
4200	740	1468	1.57	799	1678	1.80	852	1834	1.97	902	1963	2.11
4400	765	1641	1.76	824	1851	1.99	876	2008	2.15	926	2136	2.29
4600	789	1815	1.95	848	2025	2.17	900	2182	2.34	950	2310	2.48
4800	813	1991	2.14	872	2201	2.36	924	2357	2.53	974	2486	2.67
5000	837	2169	2.33	896	2380	2.55	948	2536	2.72	998	2665	2.86
5200	861	2352	2.52	920	2562	2.75	972	2718	2.92	1022	2847	3.05
5400	884	2538	2.72	943	2748	2.95	995	2905	3.12	1045	3033	3.25
5600	907	2728	2.93	966	2939	3.15	1019	3095	3.32	1069	3224	3.46

CFM	EXTERNAL STATIC PRESSURE											
	1.0			1.2			1.4			1.6		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
2800	786	744	0.80	846	893	0.96	920	1092	1.17	1010	1364	1.46
3000	809	971	1.04	870	1121	1.20	943	1319	1.41	1034	1592	1.71
3200	833	1180	1.27	894	1329	1.43	967	1528	1.64	1057	1800	1.93
3400	857	1375	1.48	918	1525	1.64	991	1723	1.85	1082	1996	2.14
3600	882	1561	1.67	942	1711	1.84	1016	1909	2.05	1106	2182	2.34
3800	906	1741	1.87	967	1890	2.03	1040	2088	2.24	1130	2361	2.53
4000	930	1916	2.06	991	2066	2.22	1064	2264	2.43	1155	2536	2.72
4200	955	2090	2.24	1016	2239	2.40	1089	2437	2.61	1179	2710	2.91
4400	979	2263	2.43	1040	2412	2.59	1113	2610	2.80	1203	2883	3.09
4600	1003	2437	2.61	1064	2586	2.77	1137	2784	2.99	1228	3057	3.28
4800	1027	2613	2.80	1088	2762	2.96	1161	2960	3.18	1252	3233	3.47
5000	1051	2791	2.99	1112	2941	3.15	1185	3139	3.37	----	----	----
5200	1075	2973	3.19	1136	3123	3.35	----	----	----	----	----	----
5400	1098	3160	3.39	----	----	----	----	----	----	----	----	----
5600	----	----	----	----	----	----	----	----	----	----	----	----


 Exceeds the BHP limitation.

Table 18: Supply Air Blower Performance - NE180 (15 TON)

CFM	EXTERNAL STATIC PRESSURE											
	0.2			0.4			0.6			0.8		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
4000	555	382	0.41	594	620	0.67	633	851	0.91	676	1085	1.16
4200	562	616	0.66	600	854	0.92	640	1085	1.16	683	1319	1.42
4400	569	828	0.89	608	1066	1.14	648	1297	1.39	690	1531	1.64
4600	577	1022	1.10	616	1260	1.35	656	1491	1.60	698	1725	1.85
4800	586	1202	1.29	624	1440	1.55	664	1671	1.79	707	1905	2.04
5000	595	1372	1.47	634	1610	1.73	673	1841	1.97	716	2075	2.23
5200	604	1533	1.64	643	1771	1.90	683	2002	2.15	726	2236	2.40
5400	614	1689	1.81	653	1927	2.07	693	2158	2.31	735	2392	2.57
5600	624	1841	1.97	663	2079	2.23	703	2310	2.48	745	2544	2.73
5800	635	1991	2.14	673	2228	2.39	713	2459	2.64	756	2694	2.89
6000	645	2140	2.30	684	2378	2.55	724	2609	2.80	766	2843	3.05
6200	656	2290	2.46	695	2528	2.71	735	2759	2.96	777	2993	3.21
6400	667	2442	2.62	706	2679	2.87	746	2910	3.12	788	3145	3.37
6600	679	2596	2.78	717	2833	3.04	757	3064	3.29	800	3299	3.54
6800	690	2753	2.95	729	2991	3.21	768	3222	3.46	811	3456	3.71
7000	701	2915	3.13	740	3153	3.38	780	3384	3.63	823	3618	3.88

CFM	EXTERNAL STATIC PRESSURE											
	1.0			1.2			1.4			1.6		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
4000	723	1333	1.43	775	1604	1.72	833	1910	2.05	900	2258	2.42
4200	729	1567	1.68	781	1839	1.97	840	2144	2.30	907	2493	2.67
4400	737	1779	1.91	789	2051	2.20	848	2356	2.53	915	2704	2.90
4600	745	1973	2.12	797	2245	2.41	856	2550	2.74	923	2899	3.11
4800	754	2153	2.31	806	2425	2.60	864	2730	2.93	931	3079	3.30
5000	763	2323	2.49	815	2594	2.78	873	2899	3.11	940	3248	3.48
5200	772	2484	2.66	824	2755	2.96	883	3061	3.28	950	3409	3.66
5400	782	2640	2.83	834	2911	3.12	893	3216	3.45	960	3565	3.82
5600	792	2792	2.99	844	3063	3.29	903	3368	3.61	970	3717	3.99
5800	802	2942	3.16	854	3213	3.45	913	3518	3.77	980	3867	4.15
6000	813	3091	3.32	865	3362	3.61	924	3667	3.93	991	4016	4.31
6200	824	3241	3.48	876	3512	3.77	935	3817	4.10	1002	4166	4.47
6400	835	3392	3.64	887	3664	3.93	946	3969	4.26	1013	4318	4.63
6600	846	3547	3.80	898	3818	4.10	957	4123	4.42	1024	4472	4.80
6800	858	3704	3.97	910	3976	4.26	968	4281	4.59	1035	4629	4.97
7000	869	3866	4.15	921	4137	4.44	980	4442	4.77	1047	4791	5.14

 Exceeds the BHP limitation.

Table 19: Supply Air Blower Performance - NE240 (20 Ton)

CFM	EXTERNAL STATIC PRESSURE											
	0.2			0.4			0.6			0.8		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
6400	600	1.42	1.49	650	1.63	1.71	750	2.10	2.21	800	2.38	2.50
7200	650	1.90	2.00	700	2.16	2.27	750	2.44	2.56	800	2.71	2.85
8000	700	2.50	2.63	750	2.78	2.92	800	3.09	3.25	850	3.44	3.61
8800	750	3.19	3.35	800	3.52	3.70	850	3.87	4.07	900	4.29	4.51
9600	800	4.00	4.20	850	4.40	4.62	900	4.82	5.07	950	5.26	5.53

CFM	EXTERNAL STATIC PRESSURE											
	1.0			1.2			1.4			1.6		
	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP	RPM	W	BHP
6400	850	2.38	2.80	900	2.96	3.11	950	3.29	3.46	1000	3.64	3.82
7200	850	2.71	3.19	900	3.38	3.55	950	3.73	3.92	1000	4.12	4.33
8000	900	3.44	3.99	950	4.22	4.43	1000	4.64	4.88	-	-	-
8800	950	4.29	4.97	1000	5.18	5.44	-	-	-	-	-	-
9600	-	5.26	-	-	-	-	-	-	-	-	-	-

Table 20: Static Resistance For Unit Accessories (IWG) - NE090 - NE/NF120

CFM	Electric Heat KW				Supply Air Plenum	Return Air Grill	Hot Water Coil	Steam Coil
	10	16	26	36				
2200	0.01	0.01	0.03	0.04	0.02	0.02	0.07	0.11
2400	0.01	0.02	0.03	0.05	0.03	0.03	0.09	0.13
2600	0.01	0.02	0.04	0.06	0.03	0.03	0.10	0.15
2800	0.01	0.03	0.04	0.07	0.04	0.04	0.12	0.16
3000	0.01	0.03	0.05	0.08	0.04	0.04	0.14	0.18
3200	0.02	0.04	0.06	0.09	0.05	0.05	0.16	0.20
3400	0.02	0.04	0.07	0.10	0.05	0.05	0.17	0.23
3600	0.02	0.05	0.07	0.11	0.06	0.06	0.19	0.25
3800	0.02	0.06	0.08	0.12	0.06	0.06	0.22	0.27
4000	0.03	0.06	0.09	0.14	0.07	0.07	0.24	0.30
4200	0.03	0.07	0.10	0.15	0.07	0.07	0.26	0.33
4400	0.03	0.07	0.11	0.16	0.08	0.08	0.28	0.36
4600	0.03	0.08	0.12	0.18	0.09	0.09	0.31	0.39
4800	0.04	0.08	0.13	0.19	0.10	0.10	0.33	0.43
5000	0.04	0.09	0.14	0.21	0.10	0.10	0.36	0.46

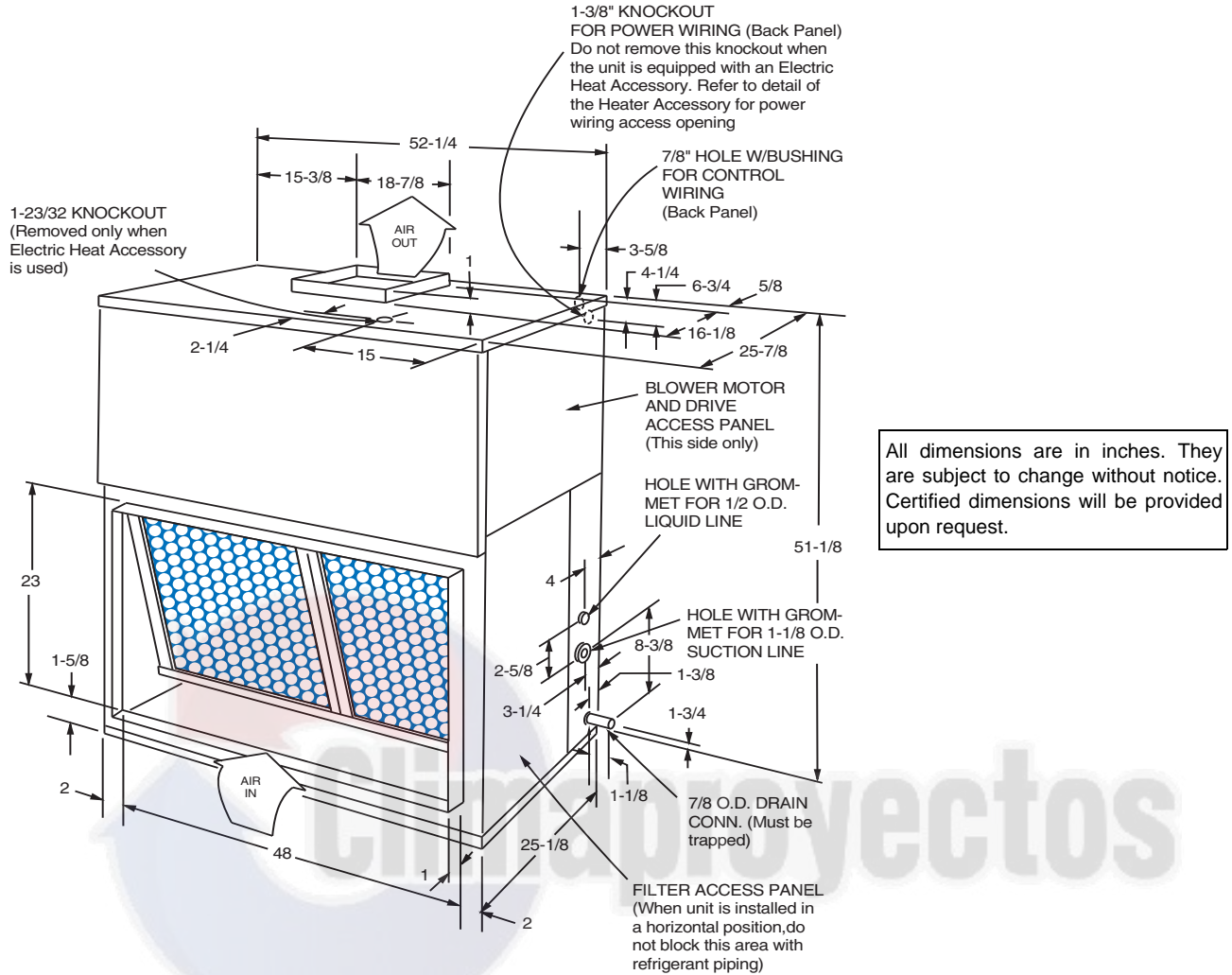
Table 21: Static Resistance For Unit Accessories (IWG) - NE180

CFM	Electric Heat KW					Supply Air Plenum	Return Air Grill	Hot Water Coil	Steam Coil
	10	16	26	36	72				
4600	0.03	0.08	0.12	0.18	0.23	0.05	0.05	0.31	0.39
4800	0.04	0.08	0.13	0.19	0.25	0.06	0.06	0.33	0.43
5000	0.04	0.09	0.14	0.21	0.27	0.06	0.06	0.36	0.46
5200	0.04	0.10	0.16	0.23	0.29	0.06	0.06	0.38	0.50
5400	0.05	0.10	0.17	0.24	0.31	0.07	0.07	0.41	0.54
5600	0.05	0.11	0.18	0.26	0.34	0.07	0.07	0.44	0.58
5800	0.06	0.11	0.20	0.28	0.37	0.08	0.08	0.47	0.62
6000	0.06	0.12	0.21	0.30	0.40	0.08	0.08	0.50	0.66
6200	0.07	0.13	0.22	0.32	0.43	0.08	0.08	0.53	0.71
6400	0.07	0.13	0.24	0.34	0.47	0.09	0.09	0.56	0.75
6600	0.08	0.14	0.25	0.36	0.51	0.09	0.09	0.59	0.80
6800	0.08	0.15	0.27	0.38	0.55	0.10	0.10	0.62	0.85
7000	0.09	0.15	0.29	0.41	0.59	0.10	0.10	0.66	0.90
7200	0.09	0.16	0.30	0.43	0.64	0.10	0.10	0.69	0.95
7400	0.10	0.17	0.32	0.45	0.68	0.11	0.11	0.73	1.01

Table 22: Static Resistance For Unit Accessory (IWG) - NE240

CFM	Supply Air Plenum	Return Air Grille	Non Freeze Steam Coil	Hot Water Coil
6400	.03	.04	.14	.07
7200	.03	.05	.17	.08
8000	.04	.06	.21	.10
8800	.05	.07	.25	.12
9600	.06	.08	.29	.14





All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

Figure 26: Unit Dimensions - NE090 and NE/NF120

ACCESSORIES

- ELECTRIC HEATER - Add 14-1/4" to unit height when used.
- SUPPLY AIR PLENUM - Add 27-1/2" to unit height when used.
- BASE - Add 20" to unit height when used.

Table 23: Unit Clearances - NE090 and NE/NF120

MINIMUM CLEARANCES		090-120
Side with RETURN AIR opening		24"
Side with SUPPLY AIR opening ¹		24"
Side with PIPING CONNECTIONS		24"
Side opposite with PIPING CONNECTIONS		1"
Bottom ²		-
MINIMUM CLEARANCES		090-120

1. Overall dimensions of the unit will vary if an electric heater, a supply air plenum or a base is used.
 2. Allow enough clearance to trap the condensate drain line.

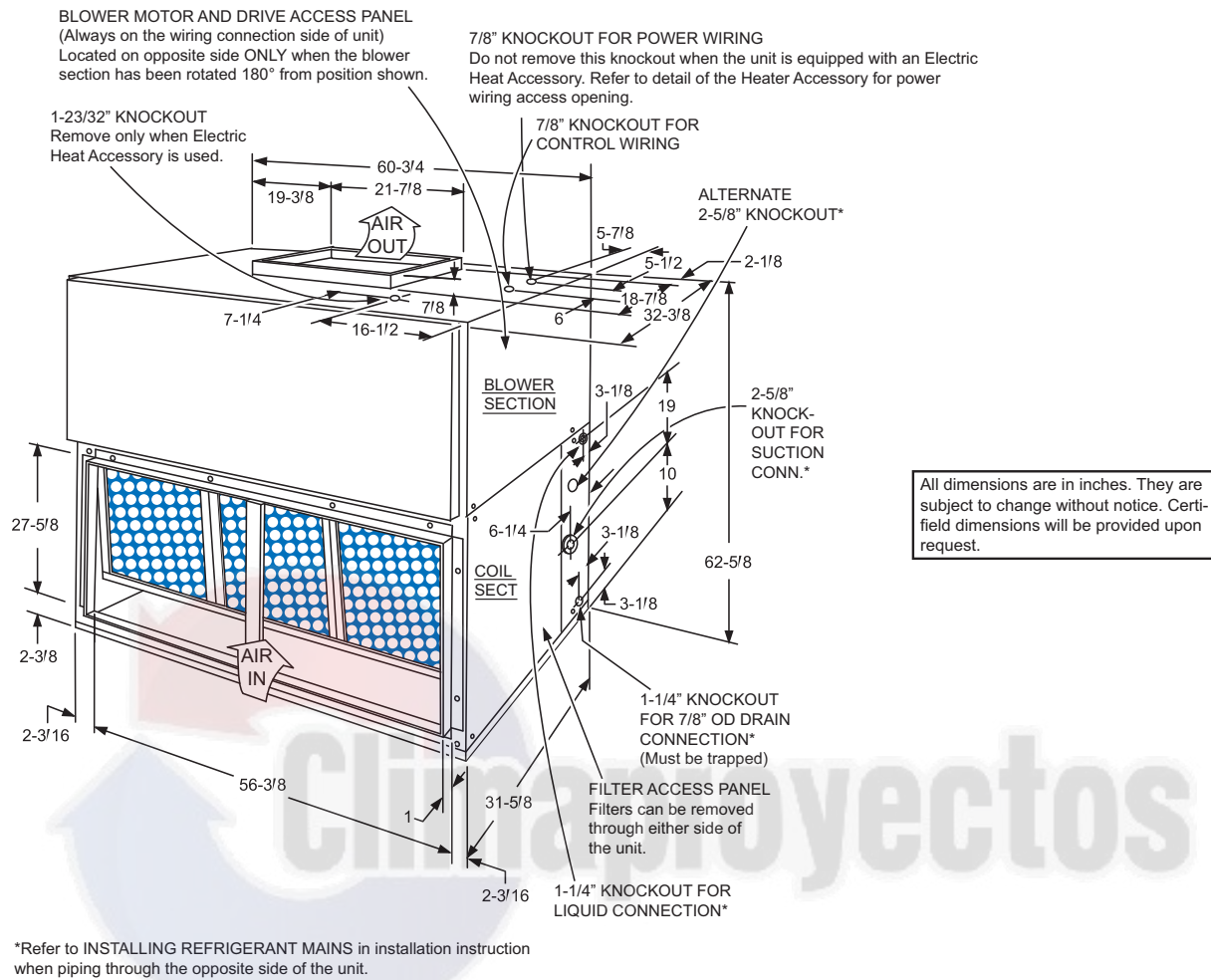


Figure 27: Unit Dimensions - NE180

ACCESSORIES

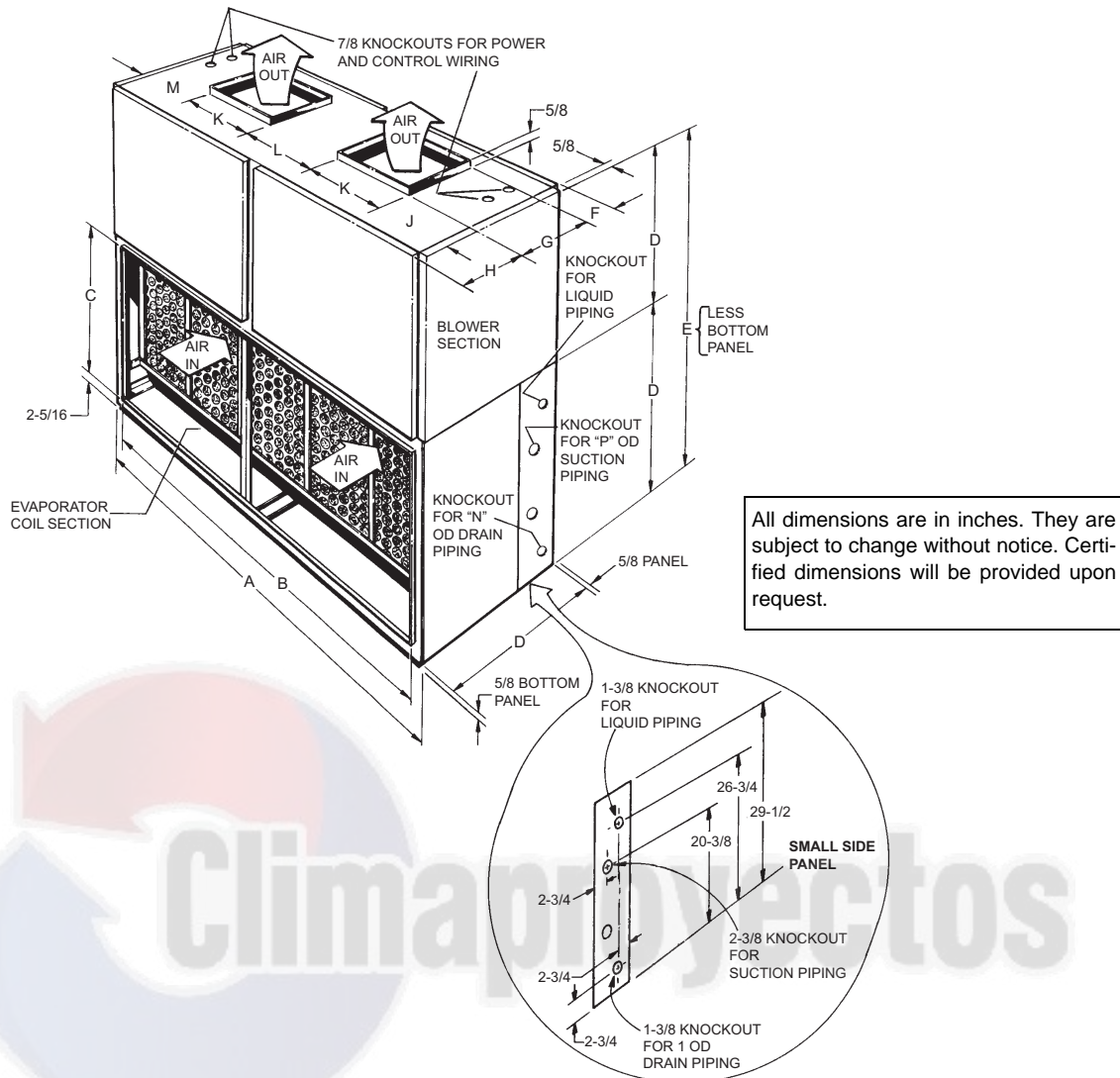
- **ELECTRIC HEATER** - Add 14-1/4" to unit height when using 10, 16, 26, or 36 KW heater
- **SUPPLY AIR PLENUM** - Add 27" to unit height when used.
- **BASE** - Add 24" to unit height when used.
- **HOT WATER OR STEAM COIL** - Add 6" to unit depth when used.

Table 24: Unit Clearances - NE180

MINIMUM CLEARANCES	180
Side Air with RETURN AIR opening	24"
Side with SUPPLY AIR opening ¹	24"
Side with PIPING CONNECTIONS	24"
Side opposite PIPING CONNECTIONS ²	24"
Bottom ³	-

1. Overall dimension of the unit will vary if an electric heater, a supply air plenum or a base is used.

2. If the coil has to be removed, this dimension is required to loosen screws that secure the coil to the unit frame. This dimension will also be required for blower motor access if the piping connections are made on the opposite side of the unit.
3. Allow enough clearance to trap the condensate drain lines.



All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

Figure 28: Unit Dimensions - NE240

Table 25: UNIT DIMENSIONS - NE240

A	B	C	D	E	F	G	H	J	K	L	M	N	P
89-1/2	85	26-1/8	29-1/2	59	2-7/16	15-7/8	12-7/16	20-3/4	16	16	20-3/4	1	1-5/8

NOTE: All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

ACCESSORIES

- Hot Water or Steam Coil - Add 6" to overall height when used
- Supply Air Plenum - Add 24-5/8" to overall height when used
- Base - Add 23-3/8 inches to overall height when used

1. Overall dimension of the unit will vary if an electric heater, a supply air plenum or a base is used.
2. If the coil has to be removed, this dimension is required to loosen screws that secure the coil to the unit frame. This dimension will also be required for blower motor access if the piping connections are made on the opposite side of the unit.
3. Allow enough clearance to trap the condensate drain lines.

Table 26: Unit Clearances - NE240

MINIMUM CLEARANCES	240
Side Air with RETURN AIR opening	24"
Side with SUPPLY AIR opening ¹	24"
Side with PIPING CONNECTIONS	24"
Side opposite PIPING CONNECTIONS ²	24"
Bottom ³	-

MAINTENANCE

EVAPORATOR COIL

Do not allow dirt to accumulate on the evaporator coil or other parts of the evaporator air circuit. Clean as often as necessary to assure good system performance. Use a brush, vacuum cleaner attachment or other suitable means.

FILTERS

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

Refer to the unit dimension detail (Figure 16) for the location of the filter access panel.

DRAIN PAN

The drain pan should be inspected regularly to assure proper drainage.

LUBRICATION

The bearings for the blower shaft and the blower motor are permanently lubricated and should not require additional lubrication.

BELTS

Maintain belt tension to extend belt life. Replace when signs of failure begin to appear.

