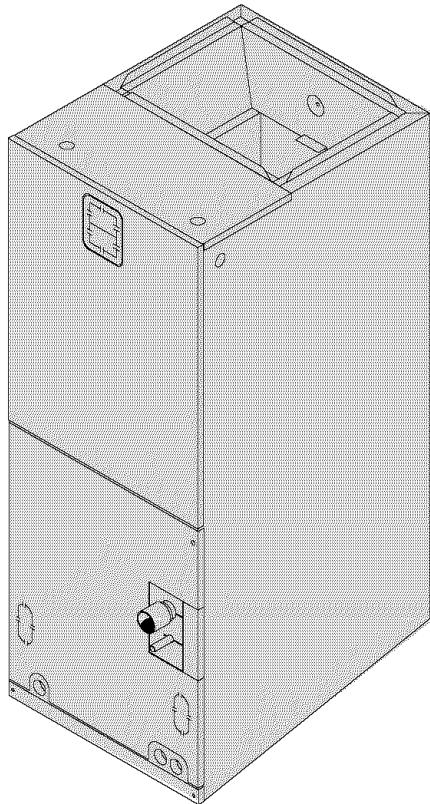


INSTALLATION INSTRUCTIONS



Use ONLY factory listed electric heaters.

Models

FCV2400C2

FCV3600C2

FCV4800C2

FCV6000C2

Requires

AMF001NHA

Accessory No Heat Kit

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Variable Speed Fan Coils

Safety Labeling and Signal Words

Danger, Warning and Caution

The signal words **DANGER**, **WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

DANGER - Immediate hazards which **WILL** result in severe personal injury or death.

WARNING - Hazards or unsafe practices which **COULD** result in severe personal injury or death.

CAUTION - Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

WARNING

The signal word **CAUTION** is used throughout this manual in the following manner:

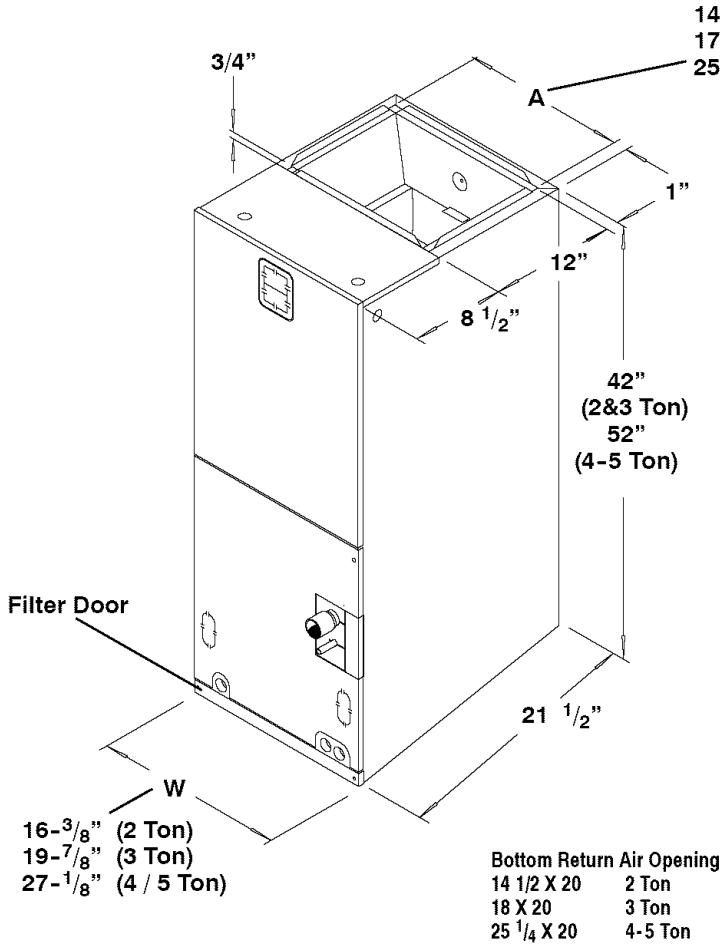
CAUTION

Product Labeling

Signal words are used in combination with colors and/or pictures on product labels.

Figure 1

Dimensions and Clearances



38-20-17

14-³/₈" (2 Ton)
17-⁷/₈" (3 Ton)
25-¹/₈" (4 / 5 Ton)

CLEARANCES	
NO HEATERS	
All Sides	0"
From Supply Duct	0"
Recommended Service From Front	20"
(Service for blower, filter if installed)	
WITH HEATERS	
All Sides	0"
From First Three Feet of Supply Duct to Combustibles	1"
From Duct after Three Feet	0"
Recommended Service From Front	20"
(Service for blower, filter, heaters if installed)	

WARNING

Fire Hazard

When heaters are installed maintain clearances from combustible materials as specified on unit rating plate. Do not use plastic lined or combustible flexible ducting within 36 inches of the supply end of the air handler.

Failure to do so can result in fire, property damage, personal injury and/or death.

General Information

WARNING

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation MUST conform with local building codes and with the National Electrical Code NFPA70 current edition.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

The blower cabinet may be used for cooling or heat pump operation with or without electric heat. Installations without electric heat, require a No Heat Kit. The cabinet can be installed in an up-flow or horizontal position (Figure 2, 3). Horizontal installations

require a horizontal kit. Some models are shipped with the horizontal kit already installed. These units are not shipped with air filters installed. Filter must be field supplied, either washable or disposal type. Washable filters are available as an accessory.

Location

Select the best position which suits the installation site conditions. The location should provide adequate structural support, space in the front of the unit for service access, clearance for return air and supply duct connections, space for refrigerant piping connections and condensate drain line connections. If heaters are being installed make sure adequate clearance is maintained from supply ductwork, See Clearances and Warning in Figure 1.

NOTE: Internal filter can be accessed from separate filter door. If the filter can **NOT** be easily accessed, a remote filter is recommended. Refer to ACCA Manual D for remote filter sizing.

If the unit is located in an area of high humidity, nuisance sweating of casing may occur. On these installations a wrap of 2" fiberglass insulation with a vapor barrier should be used.

Upflow Installations

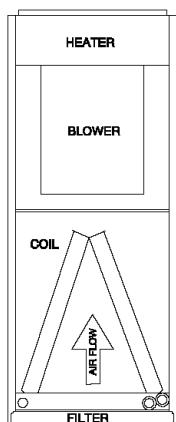
The unit is ready to install in the upflow position without modifications.

The unit **MUST** be supported on the bottom **ONLY** and set on a supporting frame or shelf. Use screws through the bottom to anchor to supporting frame.

Figure 2

Airflow Positions

UPFLOW POSITION

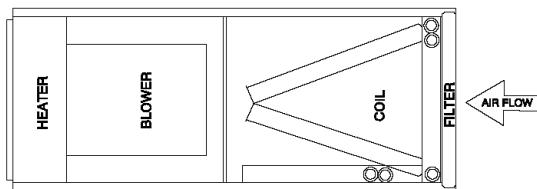


38-20-19

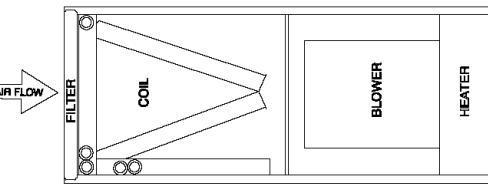
Figure 3

Airflow Positions

HORIZONTAL LEFT POSITION



HORIZONTAL RIGHT POSITION



38-20-19

3. Position side of coil drain pan into horizontal drain pan trough on deep end of pan on right side of coil.
4. Remove coil drip flanges from A-coil and reinstall on right side of coil (same side as horizontal drain pan).
5. Remove the coil support bracket from the left side of the cabinet and reinstall bracket on the right side of the cabinet.
6. Install drain plugs as required in back side of horizontal drain pan. Install plugs in A coil drain pan to prevent air leaks.
7. Slide coil assembly into cabinet being careful not to tear insulation.

NOTE: Be sure A coil pan fits into the support bracket on the back side of the cabinet and that pan is under the flange of the bracket on the right side. The brackets fit over the top edge of the A coil drain pan to hold it when it's put into the horizontal position.

8. Refer to Restrictor Orifice Selection and change restrictor if necessary, then install coil access panel.

Cabinet can now be placed on its side for horizontal airflow.

Suspended Cabinet Installation

1. The cabinet may be supported on a frame or shelf, or it may be suspended.
2. Use metal strapping or threaded rod with angle iron supports under the auxiliary drain pan to suspend cabinet. These supports **MUST** run parallel with the length of the cabinet (Figure 5).
3. Ensure that there is adequate room to remove service and access panels after installing supporting brackets.
4. Place Styrofoam blocks in auxiliary drain pan to support cabinet.

Duct Connections

Supply Duct

Supply duct must be attached to the outside of flange on outlet end of unit. Flexible connectors may be used if desired. Maintain clearances from supply duct to combustibles when heaters are installed. See Figure 1 and unit rating plate.

Return Duct

Return duct should be attached to bottom of unit using sheet metal screws or other fasteners.

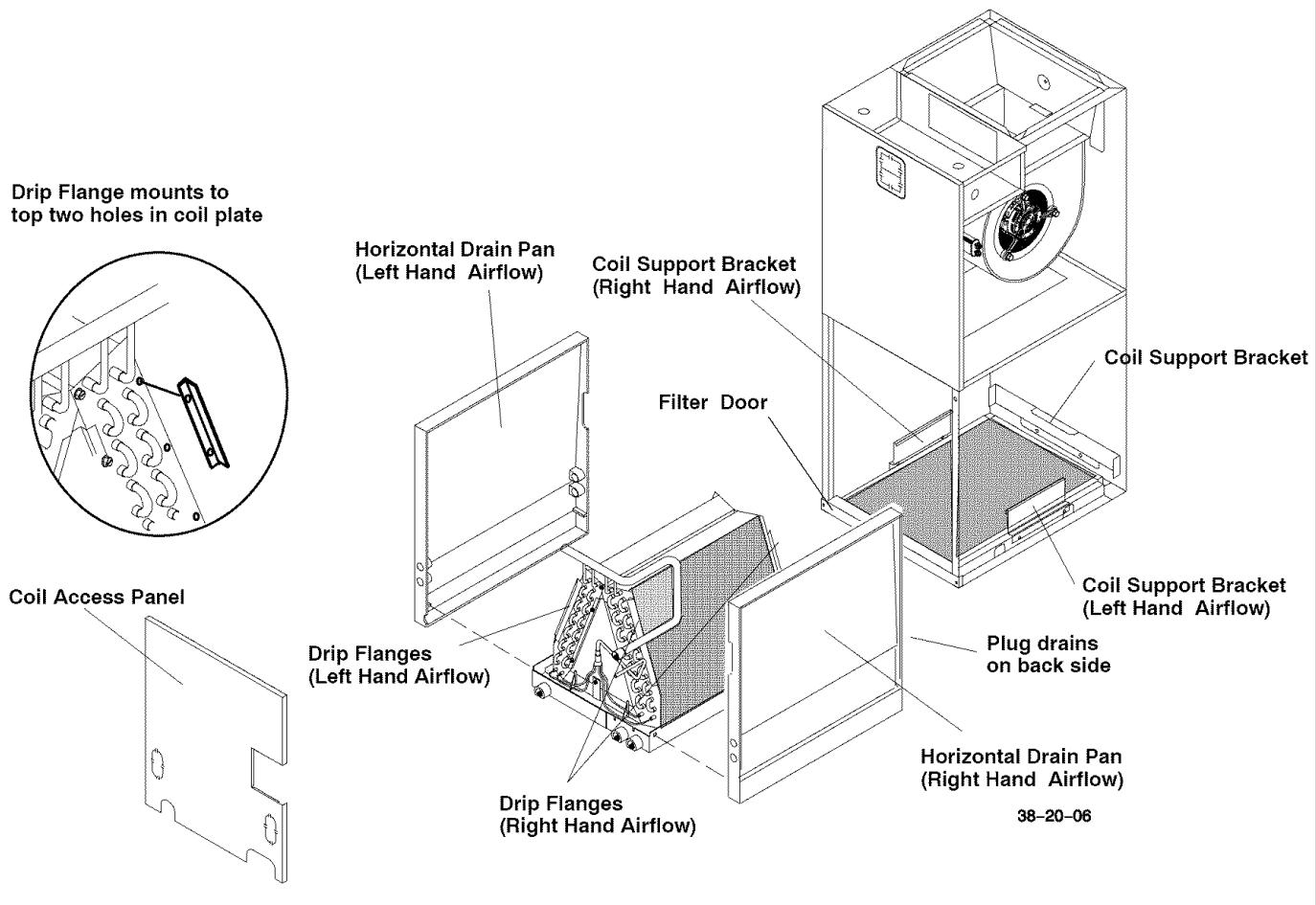
Drain Pan Installation / Conversion for Right Hand Airflow

See Figure 4

1. Remove coil access panel and carefully pull Coil/Horizontal Drain Pan Assembly out.
2. Separate horizontal drain pan from coil drain pan. The coil drain pan fits snuggly inside the horizontal pan.

Figure 4

Horizontal Drain Pan



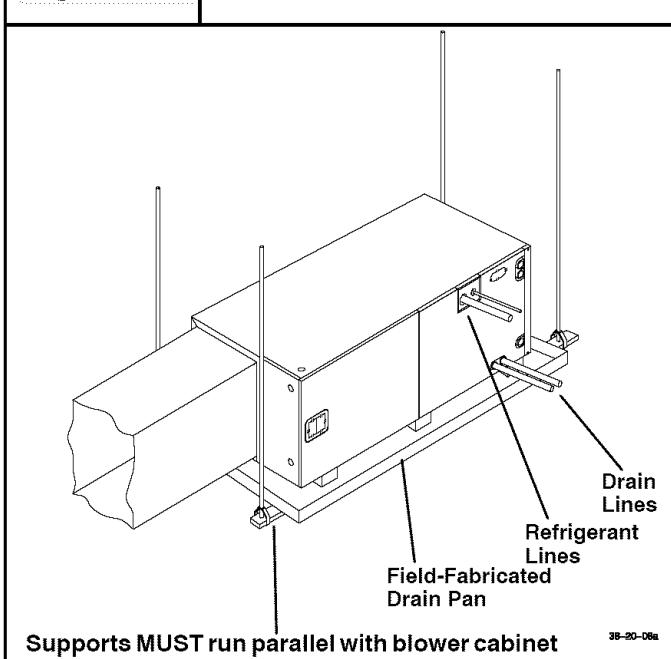
Filter Installation

Filters must be field supplied. The blower cabinet is set up for an internal filter or a remote filter grille or other means may be provided. Refer to ACCA Manual D for remote filter sizing.

To install an internal filter, remove screw securing filter door and slide filter into unit. Some filters are marked for airflow direction, make sure arrow points towards blower if marked. Washable filters are offered as an accessory. Disposable filter sizes are listed in Filter Static Pressure Drop Table.

Figure 5

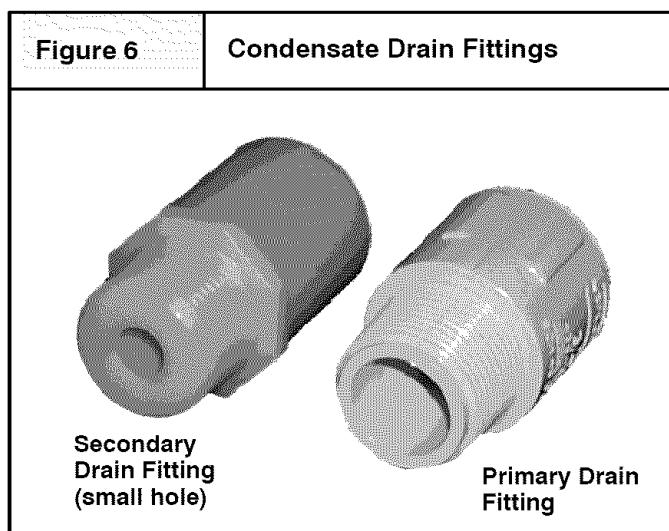
Horizontal Installation



Condensate Drain Connections

The unit is provided with 3/4" National Pipe Thread (NPT) condensate drains. (Figure 1). Any drain can be used as a primary or secondary drain depending on the fitting used. Condensate drain lines should be installed in a manner that does not obstruct access to the filter.

There is a secondary drain fitting supplied with the unit that will convert any of the primary condensate drain connections into a secondary drain connection. This fitting should be installed in any of the primary drain connections to convert it to a secondary drain.



1. Connect the drain lines to the appropriate drain fittings. 3/4" PVC or other type of drain line may be used. The drain line must not be smaller than the drain fitting.
2. Install a trap in the drain line below the bottom of the drain pan and pitch the drain lines down from the coil at least 1/4" per foot of run. Horizontal runs over 15 feet long must also have an anti-siphon air vent (stand pipe), installed ahead of the horizontal run. An extremely long horizontal run may require an oversized drain line to eliminate air trapping.

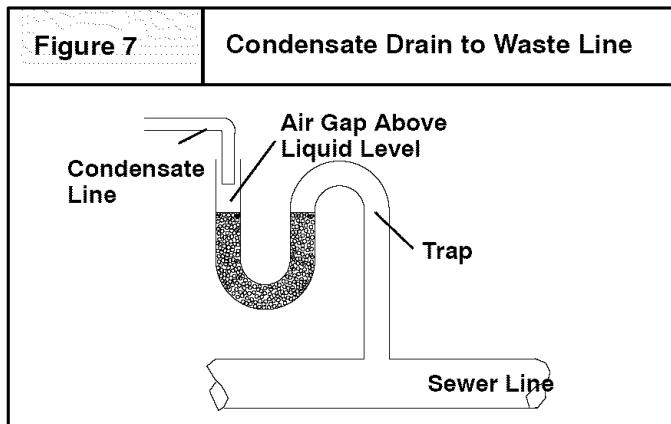
3. Route to the outside or to a floor drain, laundry tray or waste line (sewer). Check local codes before connecting to a sewer line.

4. Insulate drain lines where sweating could cause water damage.

5. If a gravity drain cannot be used, install a condensate pump. Install the pump as close to the indoor section as possible.

Waste Line Connection

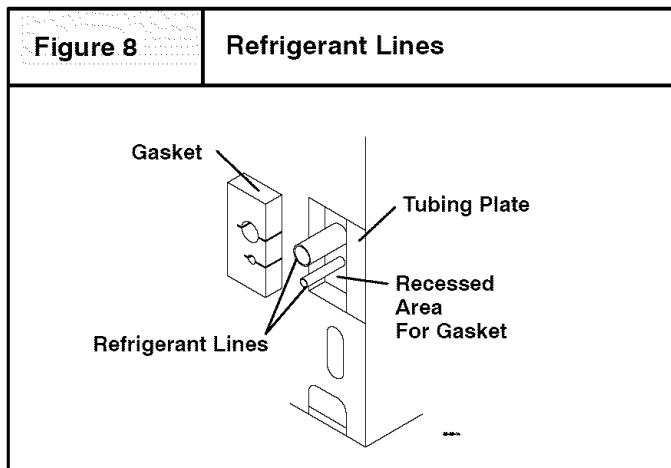
If the condensate line is to be connected to a waste line, an open trap must be installed ahead of the waste line to prevent escape of sewer gases. NEVER CONNECT THE DRAIN LINE DIRECTLY TO A WASTE LINE. ALWAYS INCLUDE AN AIR GAP AND TRAP, (Figure 7). Be sure to keep the trap filled with water during the winter or off season.



Refrigerant Line Connections

Size refrigerant lines according to information provided with outdoor condensing unit. Route the refrigerant lines to the coil in a manner that will not obstruct service access to the unit or removal of the filter.

1. Remove rubber plugs from refrigerant connections using a pulling and twisting motion. Hold refrigerant lines to avoid bending or distorting.
 2. Remove the coil door before brazing refrigerant connections to prevent damage to paint finish.
 3. Fit refrigerant lines into coil connections and remove the tubing plate and slide plate over the refrigerant lines to assure sufficient room for brazing.
 4. Reinstall tubing plate and door and install the gasket, provided with the unit, over the suction and liquid lines into the tubing plate recess to ensure an air seal around the coil.
- See Figure 8.**



Electrical Connections

WARNING

Electrical shock hazard.

Turn OFF electric power at fuse box or service panel before making any electrical connections and ensure a proper ground connection is made before connecting line voltage.

Failure to do so can result in property damage, personal injury and/or death.

All electrical work MUST conform with the requirements of local codes and ordinances and the National Electrical Code NFPA 70 current edition.

The low voltage transformer and the fan control are standard on all models and are prewired at the factory. Line voltage connections are made to the heater accessory or the lugs on the No Heat Kit.

Overcurrent Protection

The power supply wiring to the unit **MUST** be provided with overcurrent protection. Governing codes may require this to be fuses **ONLY** or circuit breakers.

For blower cabinets without heaters, a 15 amp circuit may be used.

No Heat Kit Installation

If electric heat is not used, install accessory No Heat Kit.

1. Locate adapter and filler plates, with screws inside package.
2. Attach adapter plate and filler plate to bracket if required to match cabinet. Refer to **Figure 9**.
3. Secure the No Heat Kit accessory with four screws.
4. Connect the plug from No Heat Kit wiring into the receptacle on the control board on the side of the cabinet.

CAUTION

Do not attempt to force plug as it only fits one way.

Line Voltage Connections

Line voltage wiring may be brought into the unit through the top right-hand corner or the right-hand side panel. The correct hole size required by the conduit fitting must be punched at the pilot hole location. Plug the unused pilot hole with a hole plug (supplied with unit).

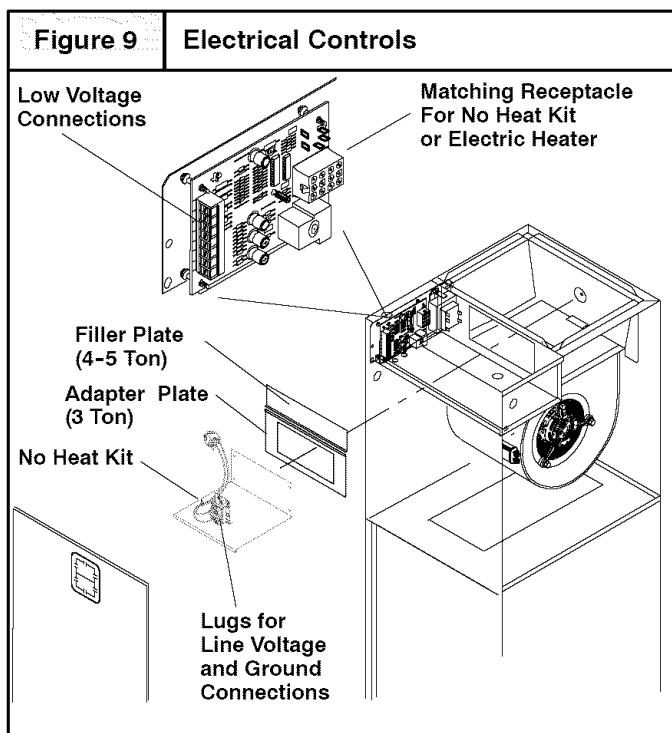
Connect field wiring to appropriate terminals on electric heater or lugs on the No Heat Kit. All line voltage connections must be made with copper wire.

Line Voltage Connection

1. Provide line voltage power supply (208V-240V) from a separate circuit(s). Size per table or table in heater manual.
2. Connect line voltage to the lugs on the No Heat Kit, or to circuit breakers or wire leads from heaters. Refer to **Figure 9** and wiring diagram.

Grounding Connection

Use a copper conductor(s) from the ground lug on the No Heat Kit or ground lugs on the electric heater to a grounded connection in the electric service panel or a properly driven and electrically grounded ground rod.



Supply Circuit			Supply Circuit No.	Nominal Motor H.P.	Maximum Motor AMPS.	Total AMPS.	Branch Circuit Ampacity*	Maximum Overcurrent Protective Device (AMPS.)	Recommended				
Volts	Phase	Hertz							Supply Wire 75 °C. Copper			Ground Wire	
									No.	Size	Length (Ft)	No.	Size
240	1	60	Single	1/2	3.3	3.3	3.8	15	2	14	104	1	14
208	1	60	Single	1/2	3.3	3.3	3.8	15	2	14	90	1	14
240	1	60	Single	1	6.6	6.6	6.9	15	2	14	104	1	14
208	1	60	Single	1	6.6	6.6	6.9	15	2	14	90	1	14

* Based on maximum ampacity allowed by Magellan control program.

Low Voltage Control Connections

The 24 volt power supply is provided by an internally wired low voltage transformer which is standard on all models. If power supply is 208 volt, the low voltage transformer must be rewired to the 208 volt tap. See the unit wiring label.

Field supplied low voltage wiring can enter the unit on the top left hand corner* or the left hand side panel. When using the left hand side panel entrance, the low voltage wiring must be fed through the entrance hole in the bottom of the blower deck into the control area.

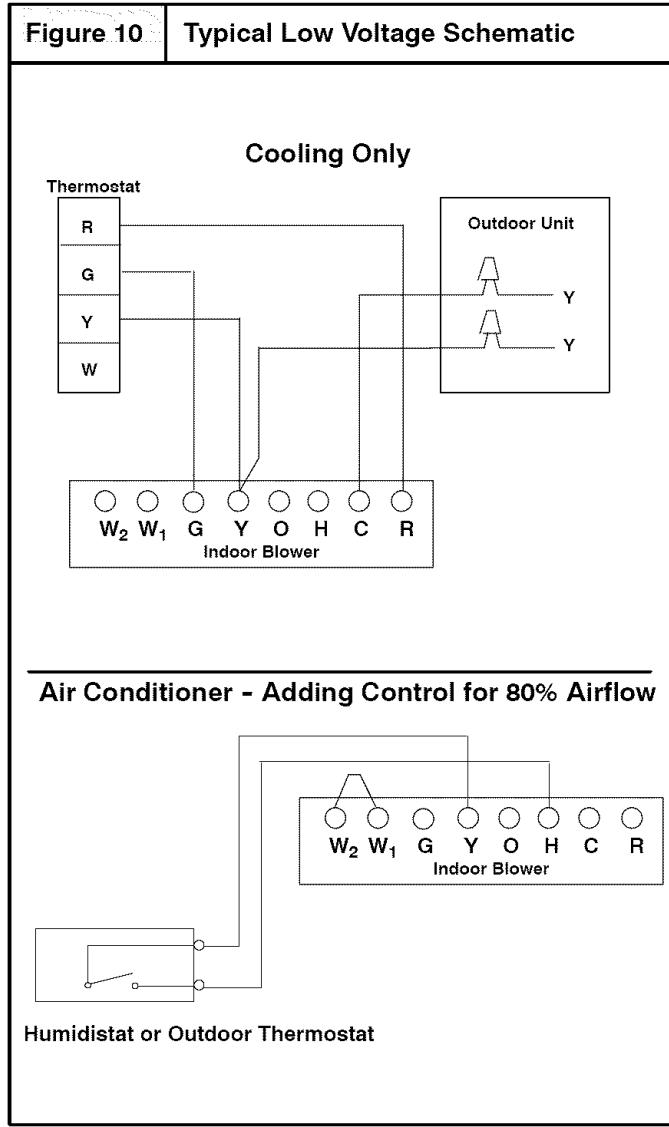
Install the strain relief bushing (supplied with unit) in the selected hole and a hole plug (supplied with unit) in the unused hole.

Connect the field wiring at the screw terminals of the control board. Refer to **Figure 9**.

Keep the low voltage wiring as short as possible inside the control box.

Complete connections between indoor blower, outdoor section, indoor thermostat and electronic outdoor thermostat (accessory) according to instruction provided with the Condenser Installation Instructions or those provided with the accessory and refer to **Figure 9**.

Figure 10 Typical Low Voltage Schematic



Adjusting Thermostat Anticipator

Set the heat anticipator of the thermostat to the proper value. See instructions provided with the thermostat before making this adjustment.

Heater Size - KW	Anticipator Setting
05	.24
07, 10	.32

Adding Humidistat or Outdoor Thermostat

Adding a humidistat or outdoor thermostat allows the airflow to be reduced to 80% of normal allowing greater humidity control. Humidistats are preferred but an outdoor thermostat can be used but can only be set based on temperature. Suggested starting point is 85 F, but this will vary depending on several factors.

The control must be wired differently on air conditioners and heat pumps. On air conditioners connect to Y and Dehum terminals H, ref **Figure 10**.

HEAT PUMPS ONLY: Heat pumps must use only the outdoor thermostat, because it is powered instead of just performing a switching function. This allows it to be out of the circuit when continuous circulation is desired, which is required for the system to operate on Fan Only for circulation, which is 60% airflow. On heat pumps connect to Y and Dehum terminals H, and C and O to power the outdoor thermostat. ref **Figure 11**.

Electric Heater Staging

The heater elements are turned on in increments. Refer to Heater Staging Table in the Heater Installation Manual. In addition on heaters larger than 5KW, the heat can be staged (1st & 2nd) either through an indoor thermostat or by using an outdoor thermostat. This satisfies staging requirements imposed by some electric utilities on heaters larger than 6 kilowatts.

A control signal (24V) from W1 on the Indoor T'stat to W1 on the control board energizes the 1st stage of heat. A control signal (24V) to W2 on the control board energizes the second stage of electric heat. To turn ON both stages at the same time, using one control signal, W1 and W2 are jumpered together.

If the indoor thermostat does not have staging capabilities, accessory electronic outdoor thermostats are available that will control two stages of electric heat.

Motor Speeds and Airflow

See Figure 12 and Page 8.

The motor speed can be set on one of eight speeds and the air flow will adjust between 60%, 80% and 100% depending on settings. Time ON / OFF settings can also be adjusted.

Determine coil static pressure drop, consult coil manual and measure duct system static pressure, then determine required speed setting from blower charts.

For Cooling - Set switches 6, 7, and 8 on the motor end bell to position 0 (off) or 1 (on) as specified on blower charts.

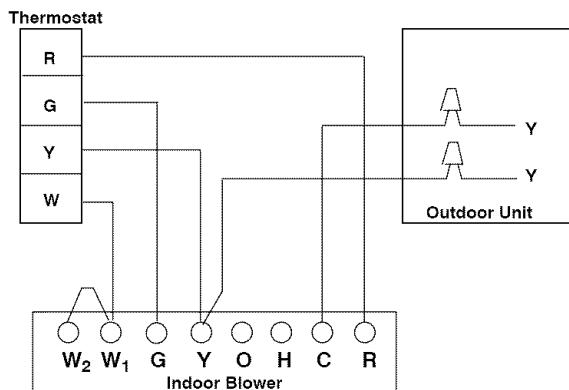
For Heating - Set switches 3, 4, and 5 on the motor end bell to position 0 (off) or 1 (on) as specified on blower charts.

Set switches 1 and 2 to position 0 (off) or 1 (on) as specified in Figure 12 to control Fan delay ON - OFF.

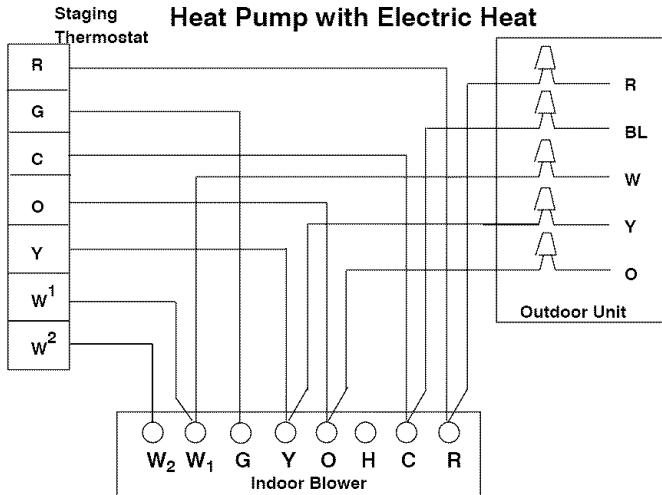
NOTE: Power must be completely OFF to unit any time switch settings are changed or settings will not take effect.

Figure 11 Typical Low Voltage Control Schematic

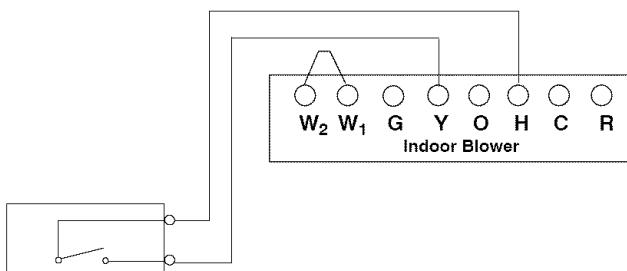
Cooling with Electric Heat



Heat Pump with Electric Heat

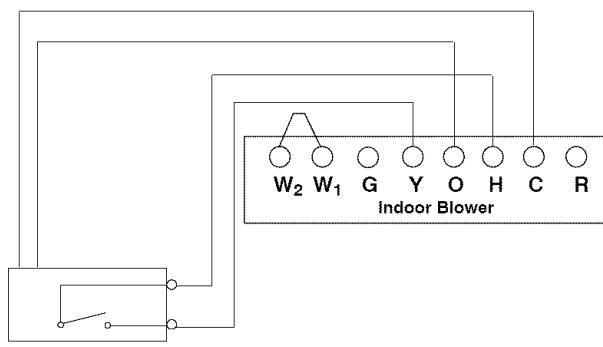


Air Conditioner - Adding Control for 80% Airflow



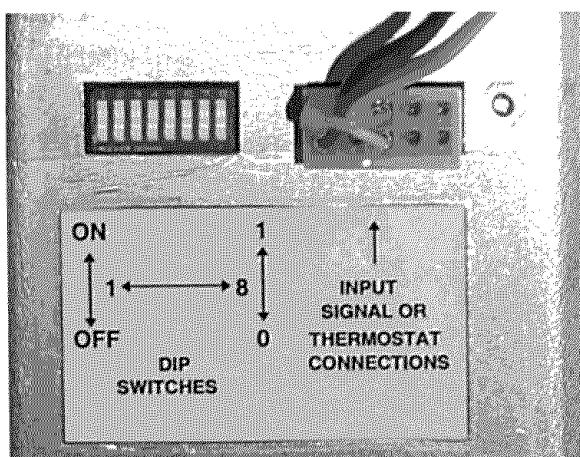
Humidistat or Outdoor Thermostat

Heat Pump - Adding Control for 80% Airflow



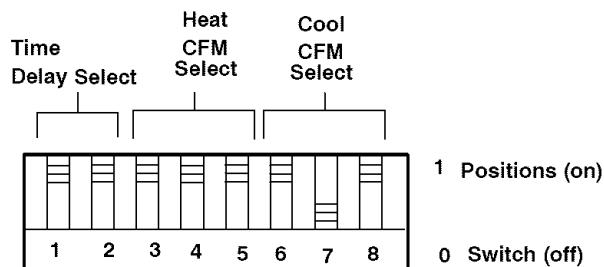
Outdoor Thermostat

Figure 12 Motor Speeds



Motor Controller mounted to blower housing

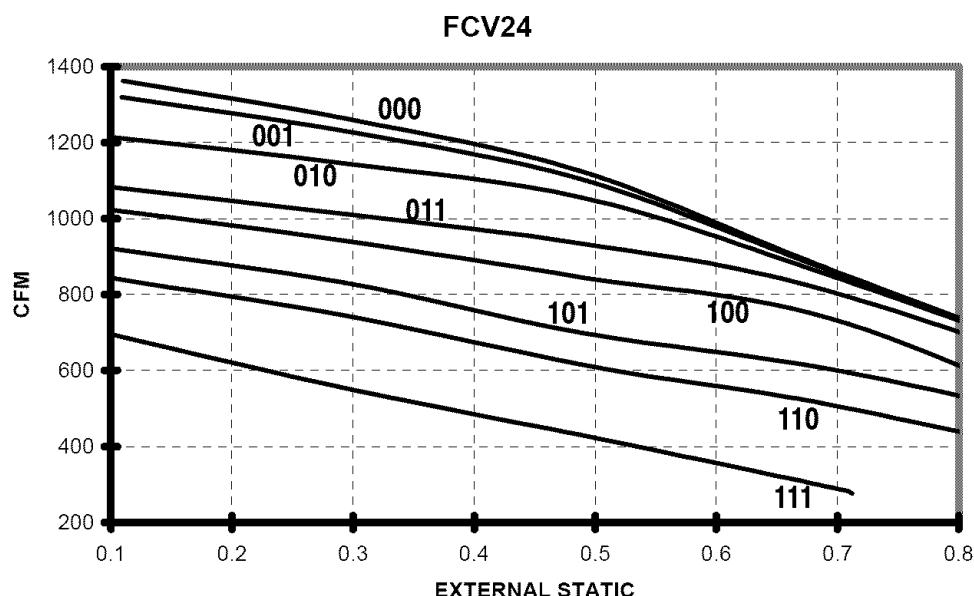
See next page for switch positions and CFM range



Available Selections:

Time Delays:

- 00 0 sec. on/ 60 sec. off (default)
- 01 0 sec. on/ 90 sec. off
- 10 0 sec. on/ 30 sec. off
- 11 0 sec. on/ 0 sec. off



NOTE:
Both sets of switches must be set

Dip Switch Settings are set at switches 6, 7 and 8 for Cooling, 3, 4, and 5 for Heating.

Dip Switch Settings

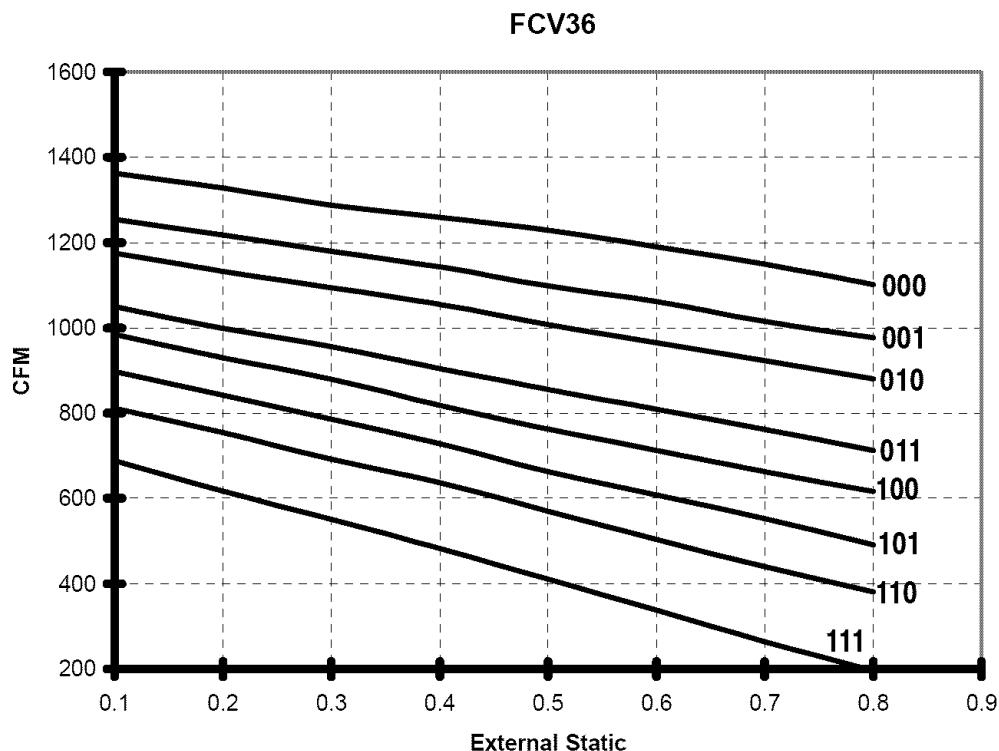
000 Highest Speed
111 Lowest Speed

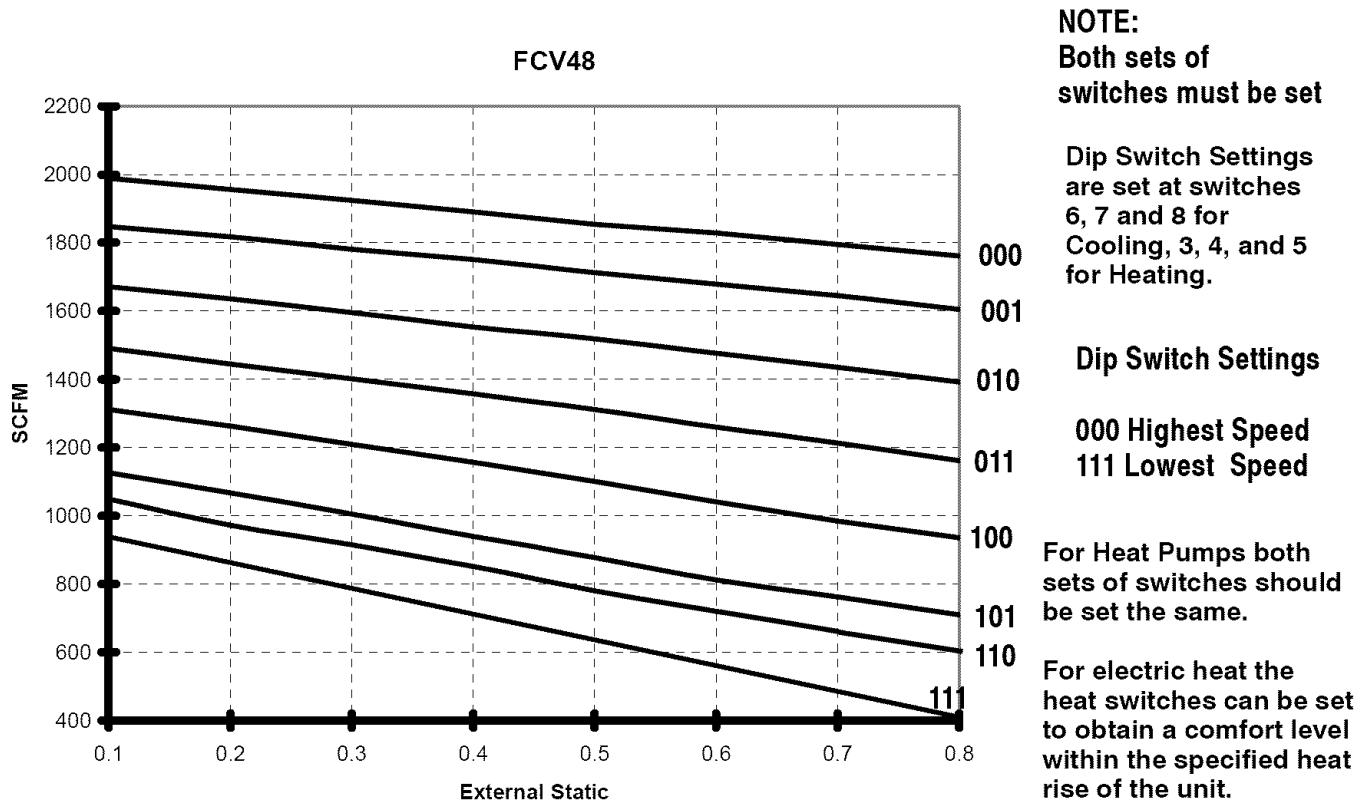
For Heat Pumps both sets of switches should be set the same.

For electric heat the heat switches can be set to obtain a comfort level within the specified heat rise of the unit.

Dip Switch Settings - 000 Highest Speed 111 Lowest Speed

Dip Switch Settings are set at switches on the motor controller.
"0" is OFF Position, "1" is ON Position

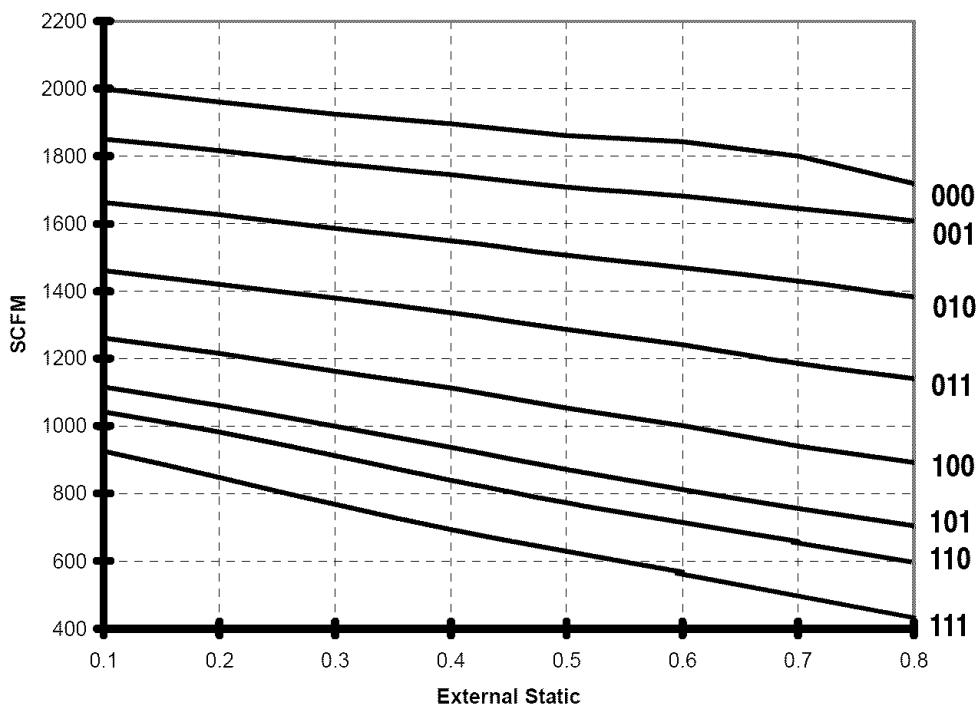




Dip Switch Settings - 000 Highest Speed 111 Lowest Speed

Dip Switch Settings are set at switches on the motor controller.
"0" is OFF Position, "1" is ON Position

FCV60

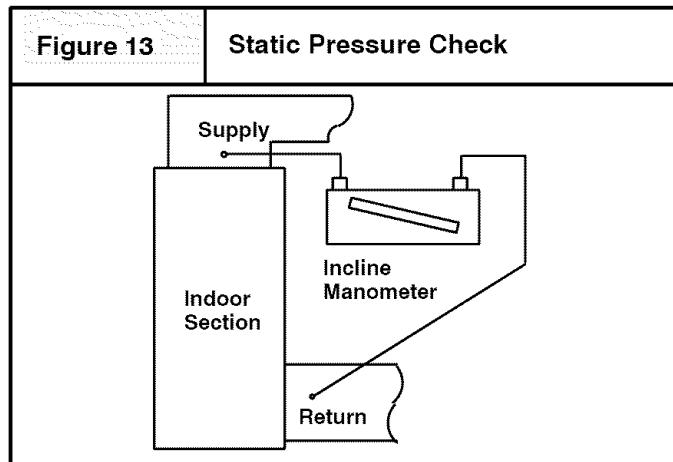


FILTER STATIC PRESSURE DROP*								
MODEL	*WASHABLE FILTER SIZE	DISPOSABLE FILTER SIZE	CFM					
			600	800	1000	1200	1400	1600
FCV24	14 1/4 X 20 1/4	14 X 20	.05	.09	.13	.19	---	---
FCV36	17 3/4 X 20 1/4	18 X 20	---	---	0.09	0.12	0.17	0.22
FCV48 / FCV60	24 3/4 X 20 1/4	25 X 20	---	---	---	0.09	0.11	0.14
								0.18

Air Flow Check

For proper system operation, the air flow through the indoor coil should be between 350 and 450 cfm per ton of cooling capacity. The air flow through the unit can be determined by measuring the external static pressure to the unit and selecting the motor speed tap that will most closely provide the required air flow.

1. Set up to measure external static pressure at the supply and return duct connections (**Figure 13**).
2. Drill holes in the ducts for pressure taps, pitot tubes, or other accurate pressure sensing devices.



3. Connect these taps to a level inclined manometer or draft gauge.
4. Ensure the coil and filter are clean, and all the registers are open.
5. Determine the external static pressure with the blower operating.
6. Refer to the Air Flow Charts, pages 9 & 10 to find the Dip Switch Speed setting that will most closely provide the required air flow for the system.
7. Refer to Motor Speeds and Airflow in these instructions if the speed is to be changed.
8. Recheck the external static pressure with the new setting, and confirm speed switch selection.

Temperature Rise Check

Temperature rise is the difference between the supply and return air temperatures.

NOTE: The temperature rise can be adjusted by changing the heating speed tap at the unit's blower terminal block.

A temperature rise greater than 60 °F (33.3 °C) is not recommended.

1. To check the temperature rise through the unit, place thermometers in the supply and return air ducts as close to the unit as possible.
2. Open **ALL** registers and duct dampers.
3. Set thermostat Heat-Cool selector to **HEAT**.
4. Set the thermostat temperature setting as high as it will go.
5. Turn electric power **ON**.
6. Operate unit **AT LEAST** 5 minutes, then check temperature rise.

NOTE: The maximum outlet air temperature for all models is 200 °F (93.3 °C).

7. Set thermostat to normal temperature setting.
8. Turn electric power **OFF**.
9. Be sure to seal all holes in ducts if any were created during this process.

Maintenance

Filters

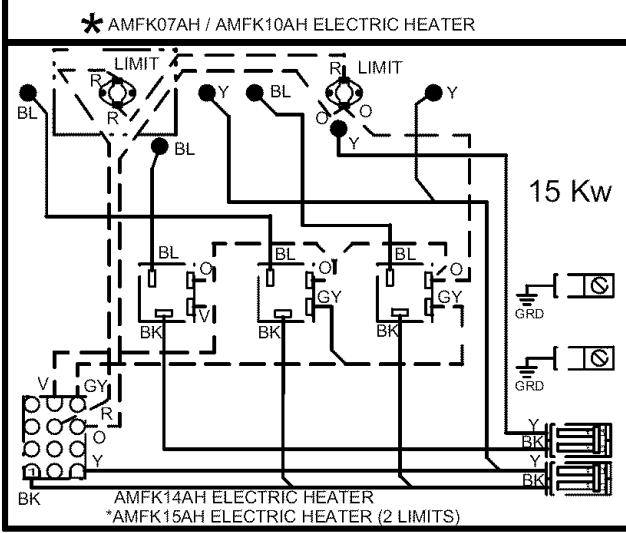
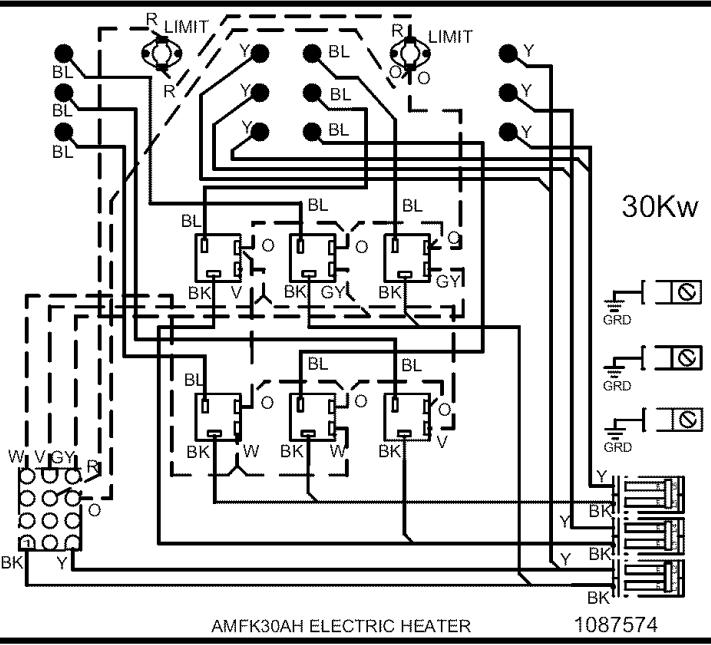
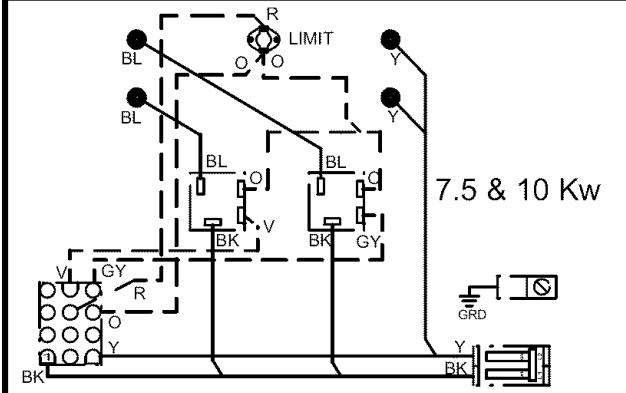
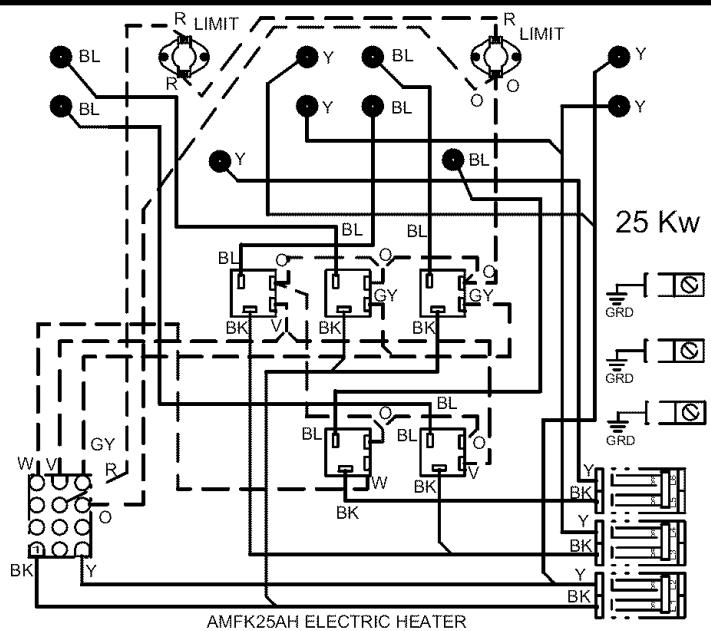
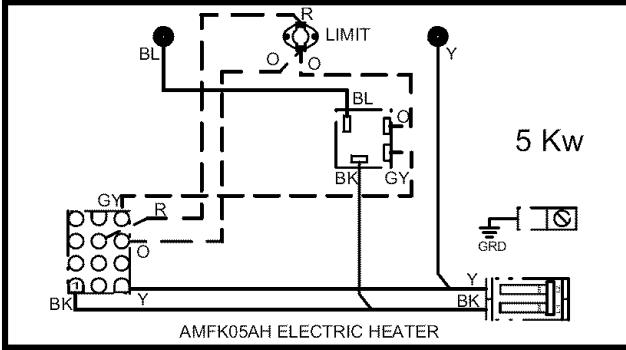
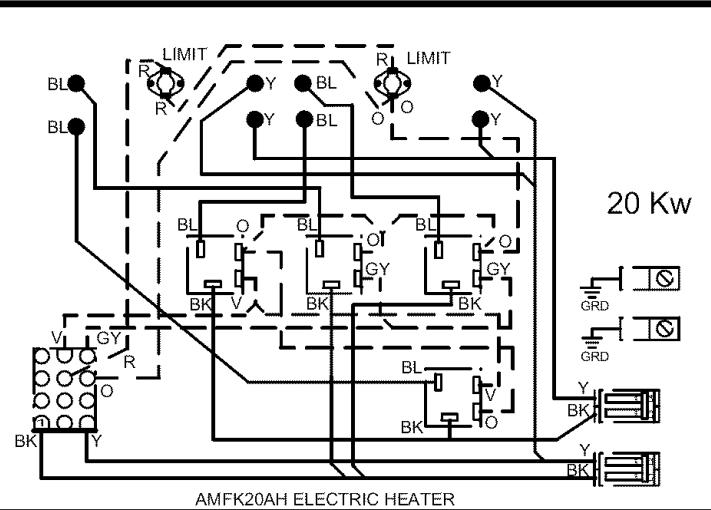
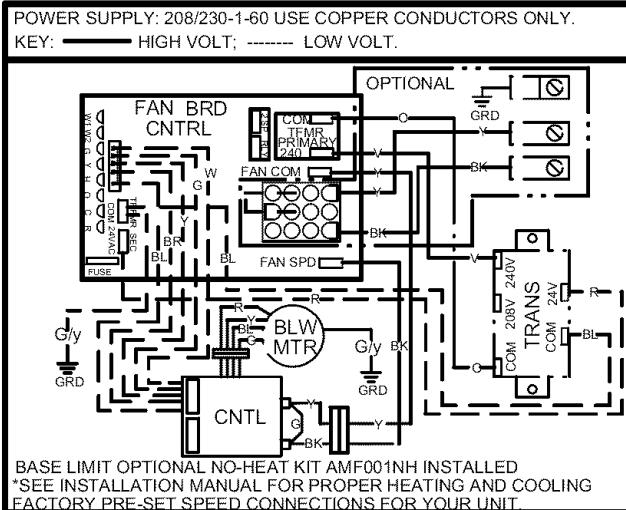
Filters must be cleaned when they become dirty. Inspect at least once per month. The frequency of cleaning depends upon the hours of operation and the local atmospheric conditions. Clean filters keep unit efficiency high.

Lubrication

The bearings of the blower motor are permanently lubricated.

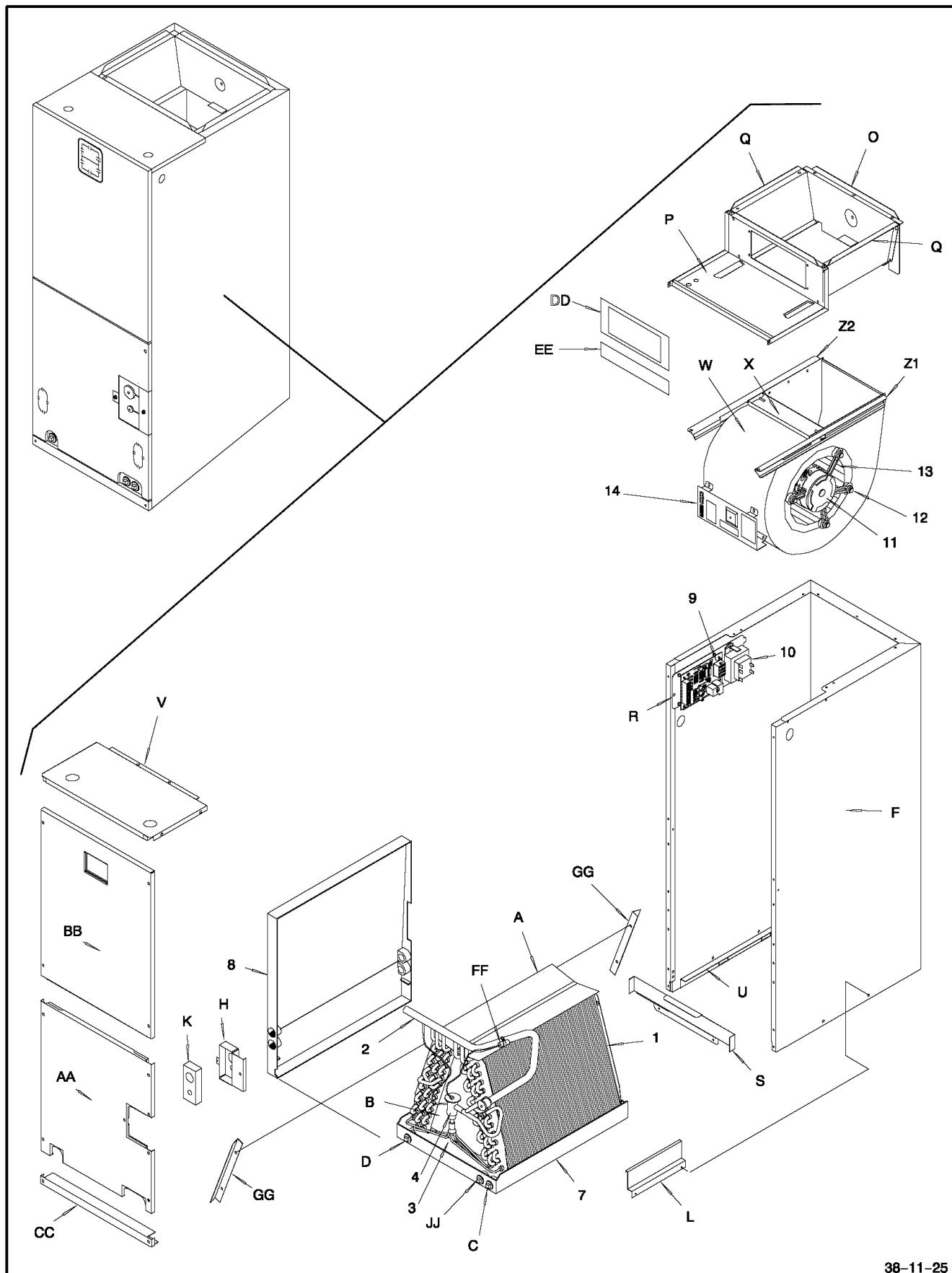
Condensate Drains

During the cooling season check the condensate drain lines to be sure that condensate is flowing from the primary drain but not from the secondary drain. If condensate ever flows from the secondary drain the unit should be promptly shut off and the condensate pan and drains cleaned to insure a free flowing primary drain.



1087574

Replacement Parts



Replacement Parts

KEY NO.	DESCRIPTION	PART NUMBER	FCV2400C2	FCV3600C2	FCV4800C2	FCV6000C2
1	Coil, Evap EXA24B15A	*****	1			
1	EXA36F19A1	*****	-	1		
1	EXA48N26A1	*****	-	-	1	
1	EXA60N26A1	*****	-	-	-	1
2	Manifold, Evaporator Suction	1083246	1			
2		1083253	-	1		
2		1083310	-	-	1	
2		1083258	-	-	-	1
3	Distributor	1062727	1	1	1	1
4	Valve, Expansion	1082871	1	1		
4		1082873	-	-	1	
4		1087341	-	-	-	1
6	Distributor Assembly	*****				
7	Pan, Drain, 15"	1082775	1			
7	19"	1082776	-	1		
7	26"	1085353	-	-	1	1
8	Pan, Drain Horizontal	1082619	1	1		
8		1082621	-	-	1	1
9	Control, Fan Timer	1085914	1	1	1	1
10	Transformer	1082611	1	1	1	1
11	Motor, Blower	1012478	1	1		
11		1012479	-	-	1	1
12	Mount, Blower Motor	1050254	1			
12		1066700	-	1		
12		1057955	-	-	1	1
13	Wheel, Blower	600585	1			
13		600587	-	1		
13		96839	-	-	1	1
14	Control, Motor	1012476	1	1		
14		1012477	-	-	1	1
A	Baffle, Top	1082955	1	1	1	
A		1082956	-	-	-	1
B	Plate, Triangular	1082779	2			
B		1082924	-	2		
B		1082782	-	-	2	2
C	Plug, Drain Pan	1083241	4	4	4	4
D	Plug, Drain Pan	1082965	1	1	1	1
F	Wrapper	1082601	1			
F		1082825	-	1		
F		1082827	-	-	1	1
H	Plate, Tubing	1085601	1	1	1	1
K	Grommet, Tubing Plate	1085603	1	1		
K		1085602	-	-	1	1

KEY NO.	DESCRIPTION	PART NUMBER	FCV2400C2	FCV3600C2	FCV4800C2	FCV6000C2
L	Bracket, Coil Hold Down	1082602	1	1	1	1
O	Panel, Rear Blower Deck	1082604	1			
O		1082844	-	1		
O		1082846	-	-	1	1
P	Panel, Front Blower Deck	1086694	1			
P		1085372	-	1		
P		1085374	-	-	1	1
Q	Panel, Side Blower Deck	1082622	2			
Q		1082847	-	2		
Q		1082849	-	-	2	2
R	Bracket, Control Fan	1085371	1	1	1	1
S	Bracket, Drain Pan	1082609	1			
S		1082927	-	1		
S		1082929	-	-	1	1
V	Panel, Top	1082610	1			
V		1082835	-	1		
V		1082837	-	-	1	1
W	Housing, Blower	1087343	1			
W		1087193	-	1		
W		1087194	-	-	1	1
X	Panel, Blower Cutoff	1082607	1			
X		1082616	-	1		
X		1082949	-	-	1	1
Z1	Rail, Blower R.H.	1085504	1	1	1	1
Z2	Rail, Blower L.H.	1085521	1	1	1	1
AA	Door, Coil Access	1085189	1			
AA		1085190	-	1		
AA		1085192	-	-	1	1
BB	Door, Blower Access	1085301	1			
BB		1082838	-	1		
BB		1082840	-	-	1	1
CC	Door, Filter Access	1085194	1			
CC		1085195	-	1		
CC		1085197	-	-	1	1
DD	Plate, Heater Adapter	1084606	-	1	1	1
EE	Plate, Heater Filler	1084608	-	-	1	1
FF	Clamp, Tube	1063118	1	1	1	1
GG	Shield, Condensate	1083333	2	2	2	2
JJ	Adapter, Male (Drain)	1085010	1	1	1	1
)(	Harness, Wire	1087518	1	1	1	1
)(	Harness, Wire	1087519	1	1	1	1
)(	Harness, Wire	1087049	1	1	1	1
)(	Manual, Installation	49601410900	1	1	1	1