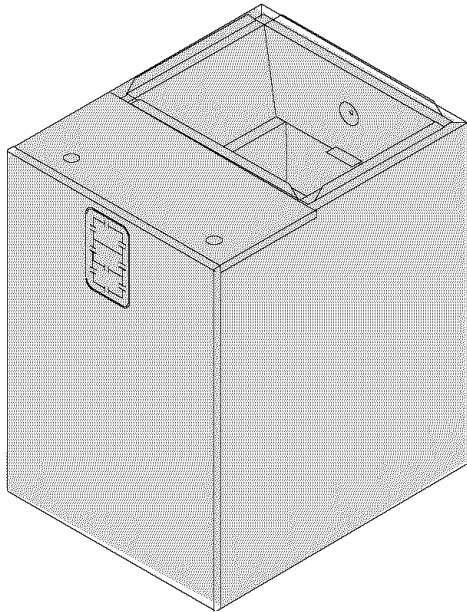


# INSTALLATION INSTRUCTIONS



**Models**  
MF08B1500A  
MF12F1900A  
MF16J2200A  
MF20N2600A

**With**  
**AMF001NHA**  
**Accessory No Heat Kit**

Use **ONLY** factory listed electric heaters.

## Modular Blower (Electric Furnace)

### Contents

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### 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**

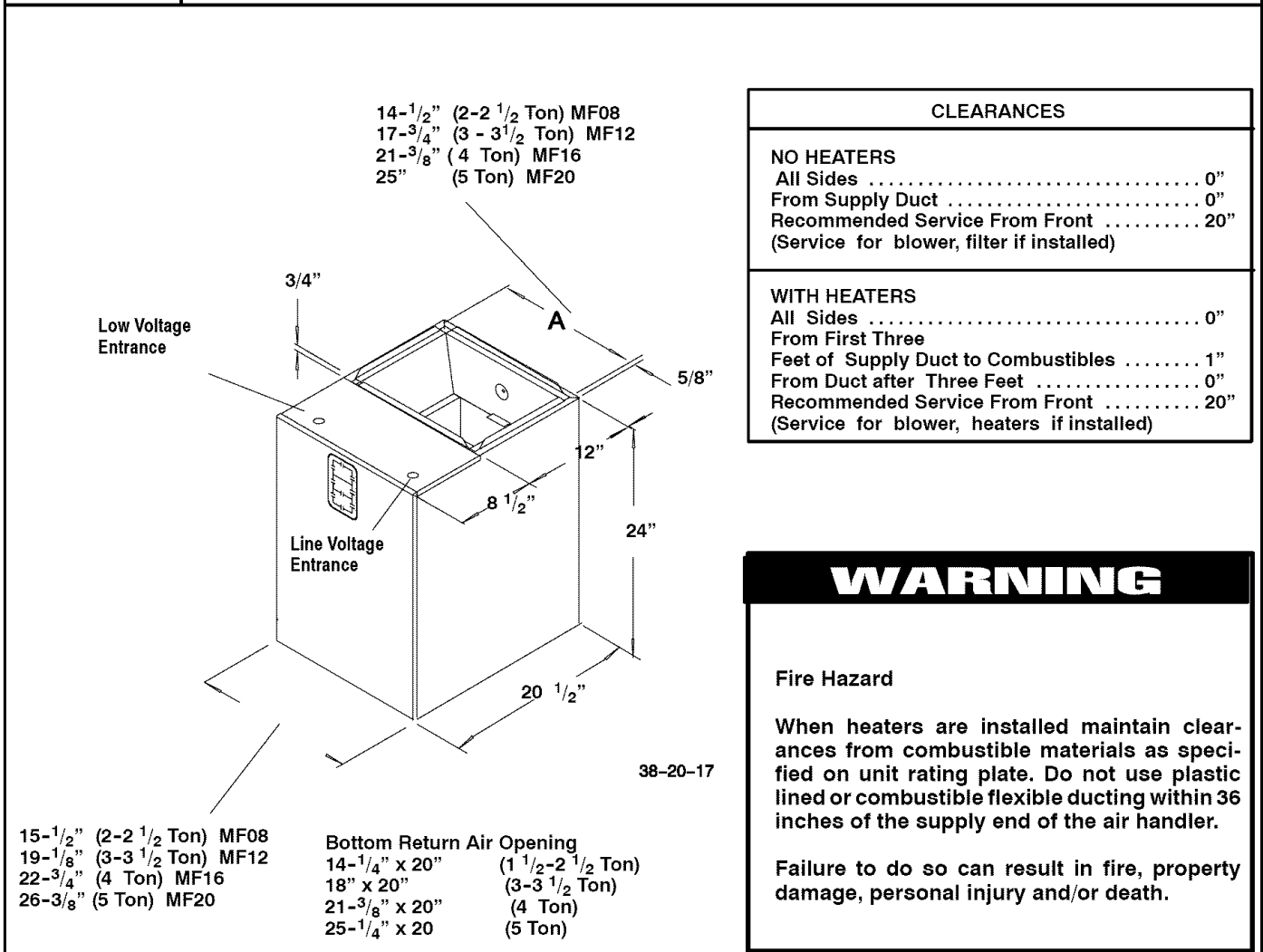
The signal word **CAUTION** is used throughout this manual in the following manner:

**CAUTION**

#### Product Labeling

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

**Figure 1** Nominal Installation Dimensions and Clearances



**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 upflow, downflow or horizontal position (Figure 3, 4).

**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.

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.

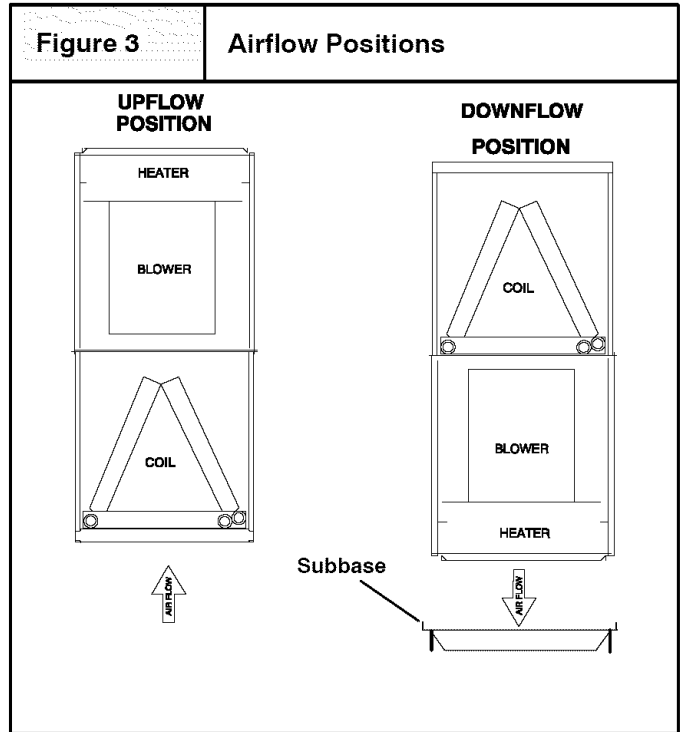
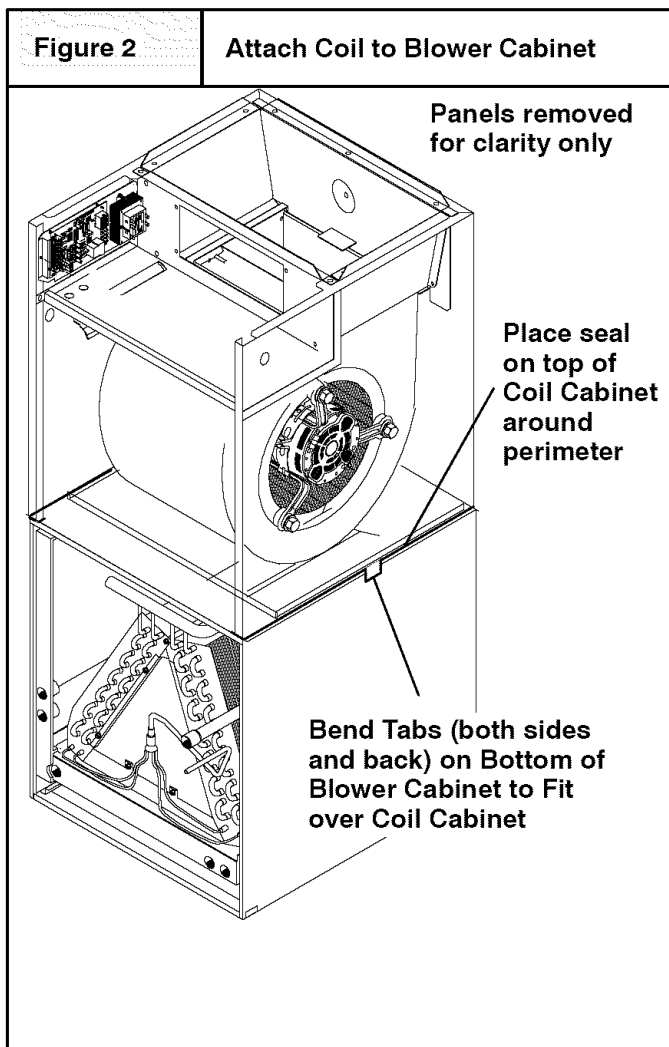
**Installations**

The unit is ready to install in any position without modifications. Refer to the coil instructions for information on drain pan configurations etc. Make sure coil is set up properly for desired position of blower cabinet.

Coil must be secured to blower cabinet with the three tabs that are part of the blower cabinet base. Bend the tabs out from the bottom so they fit over the coil cabinet.

Position coil cabinet in relation to the blower so they will be correct for desired application.

For upflow and horizontal applications apply foam seal strip around top of coil cabinet. For downflow application apply foam seal strip around bottom of coil cabinet. Set blower on top of coil cabinet so they are flush. Secure cabinets together using the three tabs on the bottom of the cabinet. Bend the tab out from the bottom so it fits over the coil cabinet. If no pilot holes are present, drill a hole as required for a screw.



**Downflow Installations**

Refer to instructions with Subbase Kit.

**Non-Ducted Return Air Closet Installation**

The cabinet can be installed in a closet with a false bottom to form a return air plenum, or mounted on an open platform inside the closet. Platform should be high enough to provide a free (open) area for adequate return airflow into the bottom of the cabinet. The open area can be on the front side or a combination of front and sides, providing there is clearance on the sides between cabinet and closet. **Refer to ACCA Manual D for sizing and free area recommendations.**

**NOTE:** Local codes may limit application of systems without a ducted return to single story dwellings.

**Horizontal Left and Right Installations**

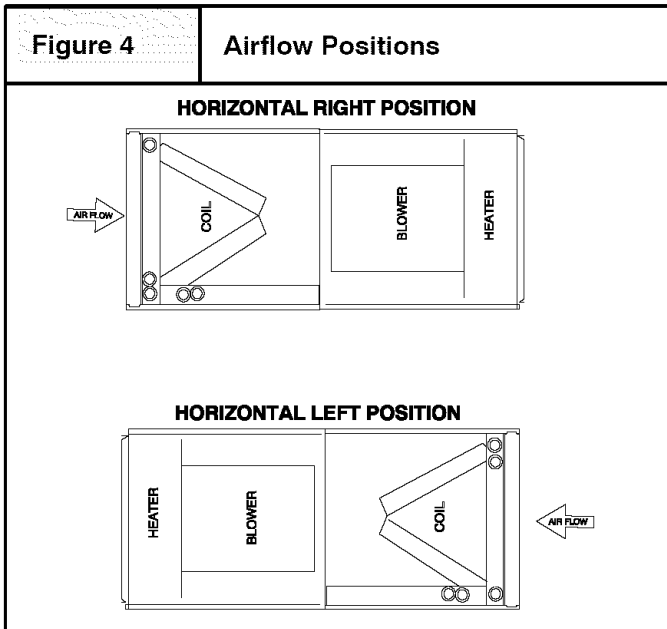
Coil cabinets that are shipped with the horizontal drain pan installed are set up for horizontal left hand airflow. They must have the drain pan repositioned for right hand airflow. Refer to coil installation manual.

**CAUTION**

**A field fabricated auxiliary drain pan, with a separate drain is REQUIRED for all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes require an auxiliary drain pan for ANY horizontal installation.**

Figure 4

Airflow Positions



### 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

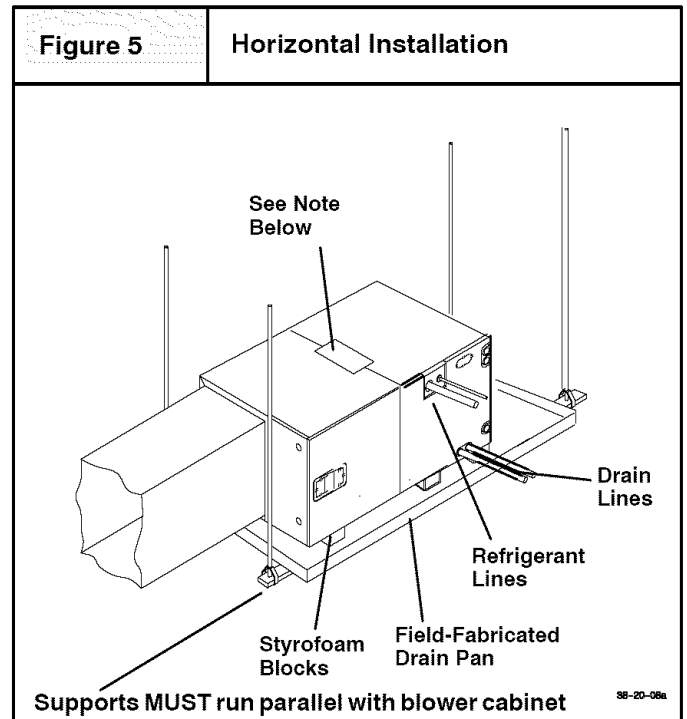
Return duct should be attached to bottom of unit using sheet metal screws or other fasteners.

### Filter Installation

Filters must be field supplied. A remote filter grille or other means must be provided. Refer to ACCA Manual D for remote filter sizing.

Figure 5

Horizontal Installation



### NOTE

If increased structural strength is needed in the horizontal position, use the two connecting plates that are shipped with the Multipoise Coil Cabinet in place of the tabs on the bottom of the blower.

## 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 6**.
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. A hole for a 1/2" or 3/4" conduit fitting is provided.

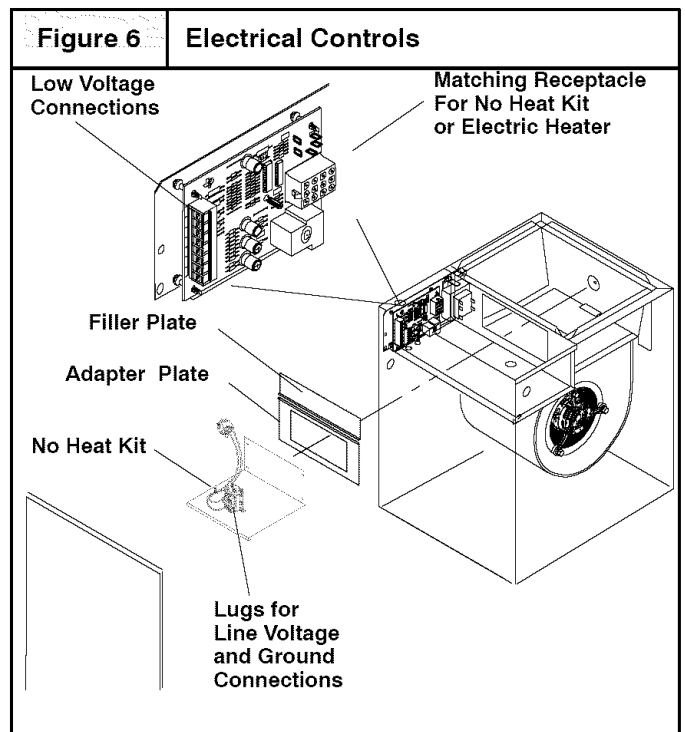
Connect field wiring to appropriate terminals on electric heater or lugs on the No Heat Kit. All line voltage connections must be made with copper wire.

### Line Voltage Connection

1. Provide line voltage power supply (208V-240V) from a separate circuit(s). Size per table below or the table in electric 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 6** 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 installed grounding rod.



Supply Circuit			Supply Circuit No.	Maximum Motor AMPS.	Total AMPS.	Branch Circuit Ampacity	Maximum Overcurrent Protective Device (AMPS.)	Recommended				
								Supply Wire 75 ° C. Copper			Ground Wire	
Volts	Phase	Hertz						No.	Size	Max. Length (Ft)	No.	Size
240	1	60	Single	6.0	6.0	7.5	15	2	14	104	1	14
208	1	60	Single	6.0	6.0	7.5	15	2	14	90	1	14

### 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 enters the unit on the top left hand corner.

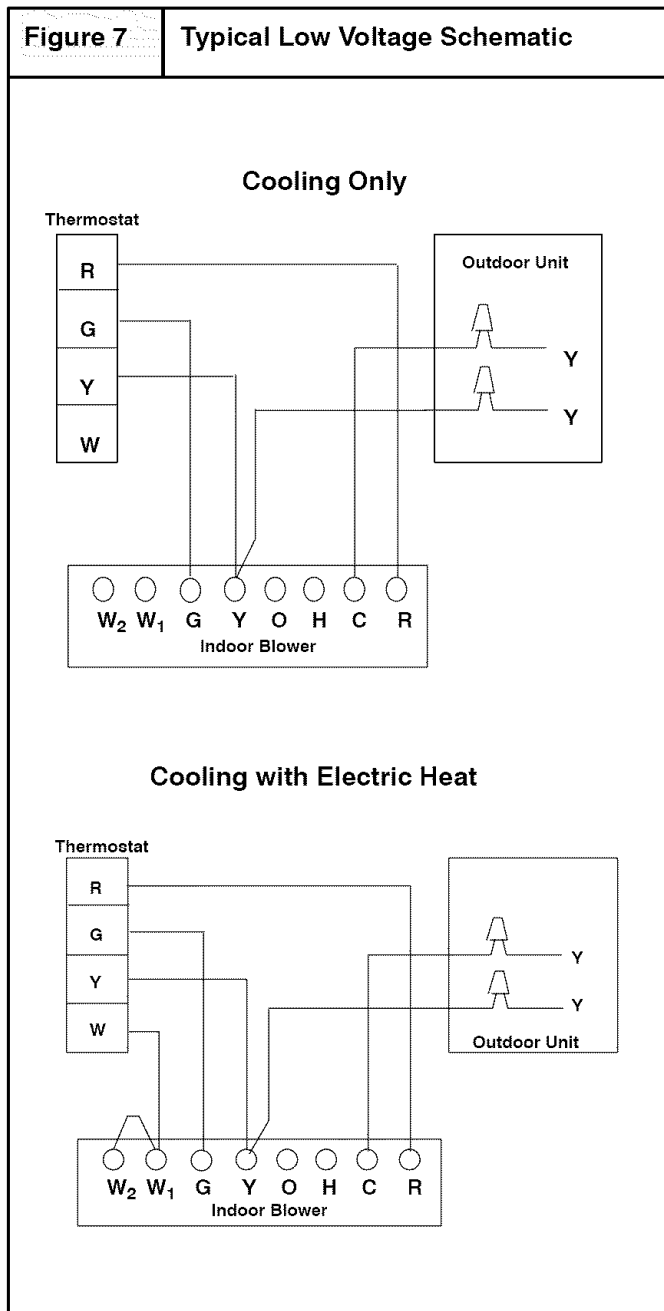
Install the strain relief bushing (supplied with unit) in the hole.

Connect the field wiring at the screw terminals of the control board. Refer to **Figure 6**.

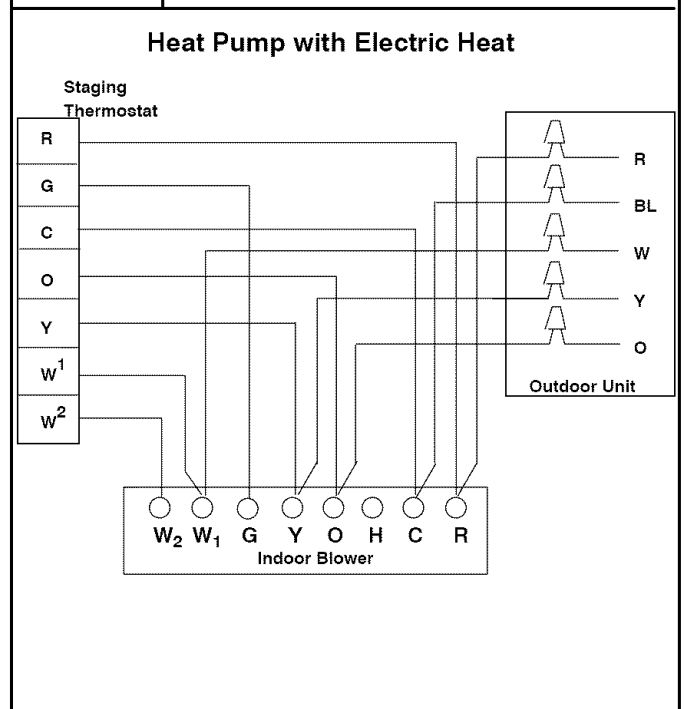
Keep the low voltage wiring as short as possible inside the control box.

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 **Figures 7 and 8**.

**Figure 7** Typical Low Voltage Schematic



**Figure 8** Typical Low Voltage Schematic



### Changing Motor Speed

The blower motor comes from the factory wired for medium or high speed. To change the blower speed, disconnect the black wire at the blower motor terminal block and reconnect at the desired blower speed tap.

### Adjusting Thermostat Anticipator

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

### 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.

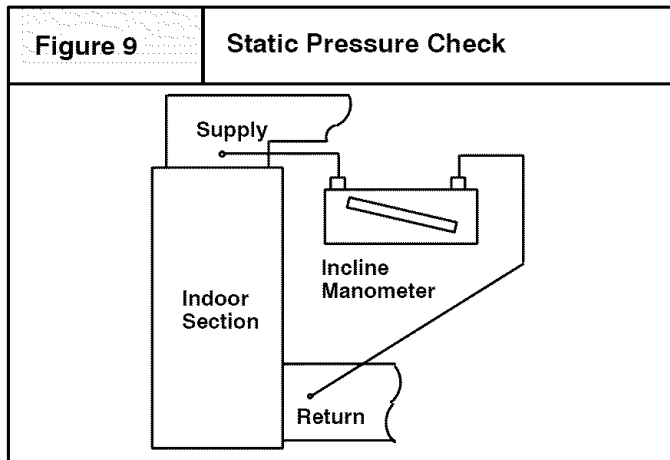
A control signal (24V) from W1 on the Indoor T'stat to W1 on the control board energizes the 1st stage of heat. A control signal (24V) to W2 on the control board energizes the second stage of electric heat. To turn ON both stages at the same time, using one control signal, W1 and W2 are jumpered together.

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

## 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 9**).
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 Data tables, page 8 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

External filters must be supplied for the system. 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.

Airflow Based on no coil, no filter, no electric heat. Deduct heater static shown in heater static table. Deduct coil static, See Coil Specification Sheet. Deduct .20 for Downflow Subbase Kit.

MF08		SP IN. WG.							
TAP	Volts	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	230V	1053	1013	965	911	856	761	654	552
	208V	863	827	788	725	641	568	492	381
MED	230V	1333	1281	1221	1150	1060	990	857	743
	208V	1156	1115	1059	997	941	853	738	618
HIGH	230V	1553	1486	1411	1328	1227	1106	1032	865
	208V	1394	1336	1272	1195	1096	1023	924	774

MF16		SP IN. WG.							
TAP	Volts	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	230V	1103	1088	1067	1040	994	921	849	749
	208V	872	847	820	788	750	696	630	530
MED	230V	1500	1493	1470	1438	1383	1303	1143	993
	208V	1229	1223	1198	1169	1123	1031	926	798
HIGH	230V	1912	1879	1830	1771	1684	1577	1429	1154
	208V	1629	1609	1584	1545	1478	1393	1214	1058

MF12		SP IN. WG.							
TAP	Volts	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	230V	1103	1092	1086	1060	1024	973	906	803
	208V	903	893	877	858	830	781	728	642
MED	230V	1498	1473	1451	1409	1352	1277	1173	1044
	208V	1246	1239	1222	1202	1160	1098	1014	906
HIGH	230V	1860	1815	1760	1685	1596	1491	1352	1178
	208V	1602	1584	1553	1501	1432	1347	1241	1096

MF20		SP IN. WG.							
TAP	Volts	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	230V	1673	1670	1669	1643	1587	1461	1298	1081
	208V	1320	1306	1289	1237	1147	1006	810	576
MED	230V	2060	2030	1980	1912	1835	1723	1594	1444
	208V	1676	1656	1613	1531	1381	1201	986	683
HIGH	230V	2554	2459	2352	2242	2116	1966	1809	1606
	208V	2420	2334	2244	2137	2021	1875	1732	1558



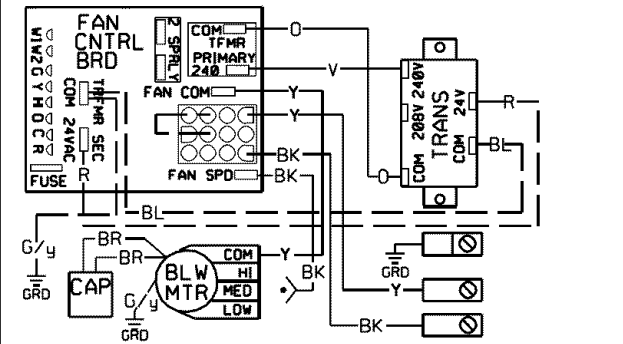
Sequence Of Operation			
Mode	Thermostat to Control Board 24 volt	Control State	Control Function
<b>Electric Heat Only</b>			
Constant Blower (Fan Switch ON)	G	On	Fan On.
		Off	Fan Off.
Thermostat calls for Heat	G & W1 & W2	On	Fan On, 1st Stage Of Heat On, then 2nd Stage Of Heat On.
		Off	2nd then 1st Stage Of Heat Off. 6 sec delay, then Fan Off.
<b>Cooling Only Unit With Electric Heat</b>			
Constant Blower (Fan Switch ON)	G	On	Fan On.
		Off	Fan Off.
Cooling Only Unit (Thermostat calls for Cooling)	Y & G	On	Compressor On, Fan On.
		Off	Compressor Off, 60 Second Delay - Then Fan Off.
Cooling Only Unit (Thermostat calls for Heat)	G & W1 & W2	On	Fan On, 1st Stage Of Heat On, then 2nd Stage Of Heat On.
		Off	2nd then 1st Stage Of Heat Off. 6 sec delay, then Fan Off.
<b>Heat Pump With Electric Heat</b>			
Heat Pump (Thermostat calls for Cooling)	Y & G & O	On	Compressor On, Reversing Valve Energized, Fan On.
		Off	Compressor Off, 60 Second Delay And Then Fan Off.
Heat Pump (Thermostat calls for Heat)	Y & G	On	Compressor On, Fan On
Heat Pump cannot maintain proper temp.	Y & G & W1 & W2	On	1st Stage Of Heat On, then 2nd Stage Of Heat On
Electric Heat Temperature satisfied		Off	2nd then 1st Stage Of Heat Off
Heat Pump (Goes into Defrost Mode)	Y & G & O & W1 & W2	On	Reversing valve switches unit to cooling, 1st Stage Of Heat On, then 2nd Stage Of Heat On
		Off	Reversing valve switches back to heating, 2nd then 1st Stage Of Heat Off
Heat Pump (Room temp. satisfied)	Y & G	Off	Compressor Off, 60 Second Delay And Then Fan Off.
Heat Pump (Emergency Heat)	G & W1 & W2	On	Fan On, 1st Stage Of Heat On, then 2nd Stage Of Heat On.
		Off	2nd then 1st Stage Of Heat Off. 6 sec delay, then Fan Off.

NOTE: Electric Heat Elements are controlled by relays with a delay sequence from the logic board to provide sequencing between elements.

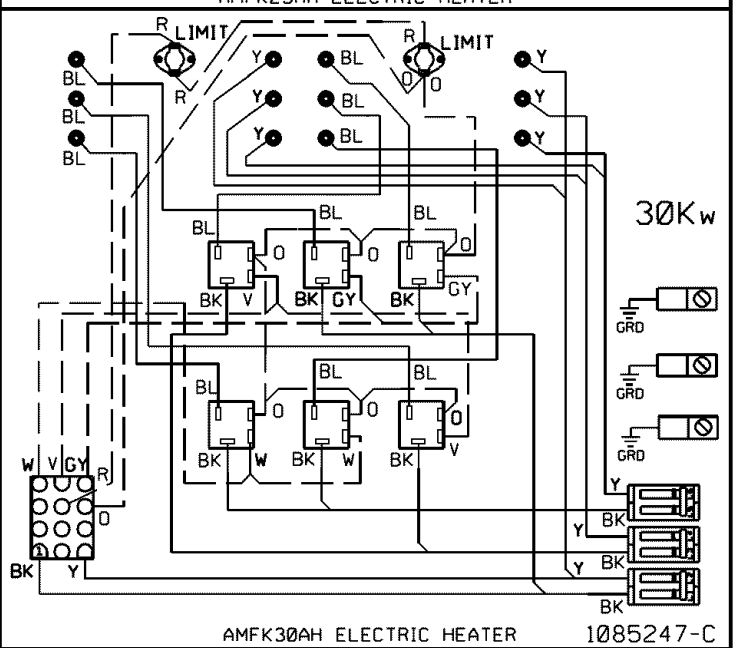
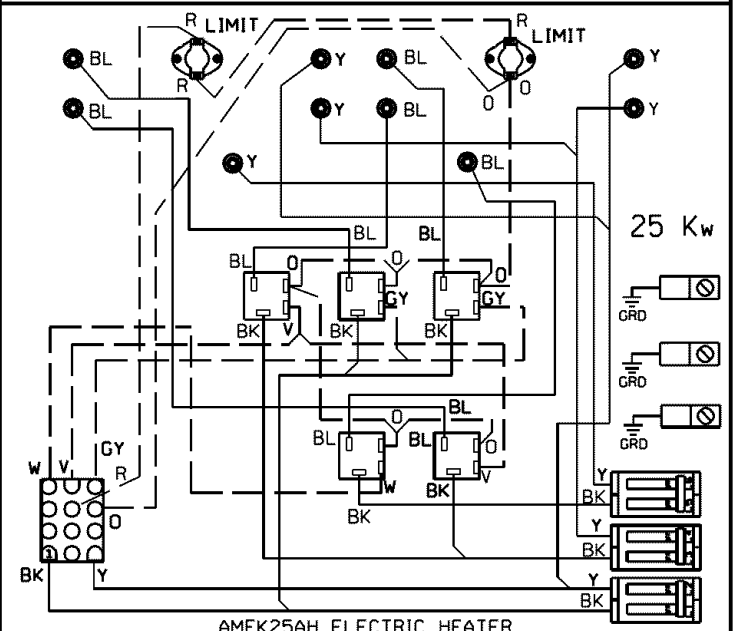
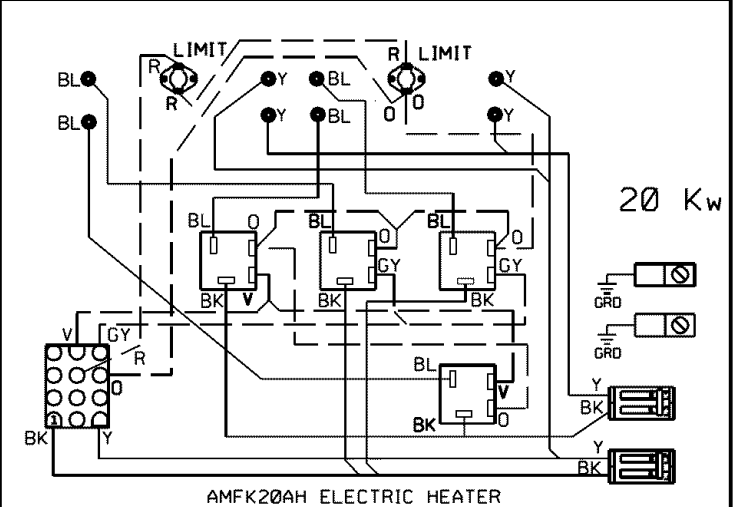
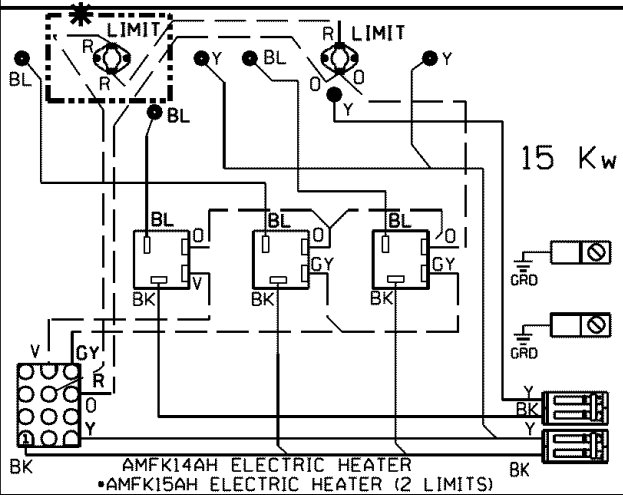
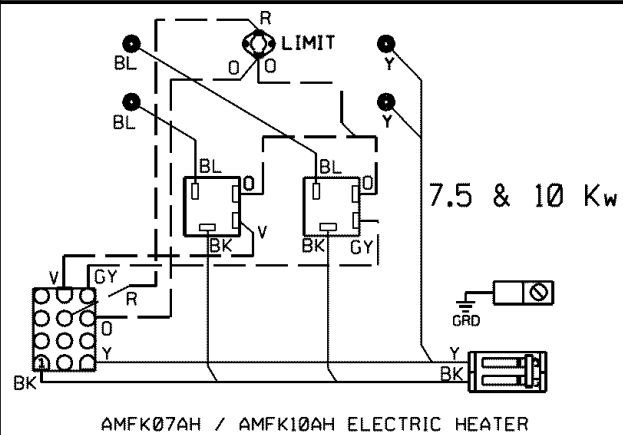
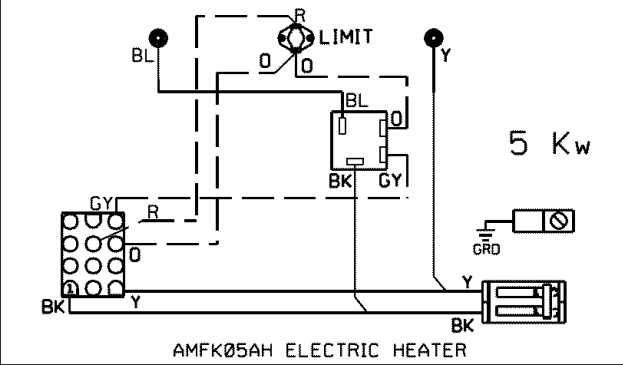
## Limit Operation

The temperature limit responds to over-temperature conditions in the air duct. If the temperature limit trips, the electric heater relays will be de-energized and the fan relay will be energized. Once the limit resets, the control will resume normal operation. If the limit trips four times during a single call for heat, the control will go into a 1 hour soft lockout. During the soft lockout, the fan relay will respond to thermostat inputs but the heater relays are disabled. If the control detects a limit trip during the soft lockout, the control will go into a hard lockout. Once in a hard lockout, the fan relay is locked on and the heater relays are disabled. Turning the power to the unit off and then on will clear this state.

POWER SUPPLY: 208/230-1-60 USE COPPER CONDUCTORS ONLY.  
 KEY: ——— HIGH VOLT; - - - - - LOW VOLT.



BASE UNIT WITH NO-HEAT KIT AMF00INH INSTALLED  
 \*SEE INSTALLATION MANUAL FOR PROPER HEATING AND COOLING  
 FACTORY PRE-SET SPEED CONNECTIONS FOR YOUR UNIT.



Replacement Parts

KEY NO.	DESCRIPTION	PART NUMBER					KEY NO.	DESCRIPTION	PART NUMBER				
			MF08B1500A1	MF12F1900A1	MF16J2200A1	MF20N2600A1				MF08B1500A1	MF12F1900A1	MF16J2200A1	MF20N2600A1
9	Control, Fan Timer	1085914	1	1	1	1	Q	Panel, Side Blower Deck	1082622	2			
10	Transformer	1082611	1	1	1	1	Q		1082847	*	2		
11	Motor, Blower	1083044	1				Q		1082848	*	*	2	
11		1083045	*		1		Q		1082849	*	*	*	2
11		1083046	*	*	*	1							
12	Mount, Blower Motor	1002801	1	1	1	1	R	Bracket, Control Mtg	1085371	1	1	1	1
12		609227	*	*	*	1	V	Panel, Top	1085857	1			
13	Wheel, Blower	600586	1				V		1085865	*	1		
13		600587	*	1			V		1085866	*	*	1	
13		96839	*	*	1	1	V		1085867	*	*	*	1
14	Capacitor, 10MFD, 370V	1094956	1	1	1	1	W	Housing, Blower	1085580	1			
14	Capacitor, 15MFD, 370V	1094959	*	*	*	1	W		1085578	*	1		
F1	Panel, Side (Right)	1085854	1	1	1	1	W		1085579	*	*	1	1
F2	Panel, Rear	1085861	1				X	Panel, Blower Cutoff	1082607	1			
F2		1085862	*	1			X		1082616	*	1		
F2		1085863	*	*	1		X		1082949	*	*	1	1
F2		1085864	*	*	*	1	Y	Clamp, Capacitor	1095020	1	1	1	1
F3	Panel, Side (Left)	1085855	1	1	1	1	Z1	Rail, Blower R.H.	1085504	1	1	1	1
G	Brace, Bottom	1069603	1				Z2	Rail, Blower L.H.	1085521	1	1	1	1
G		1069604	*	1			BB	Door, Blower Access	1085856	1			
G		1069605	*	*	1		BB		1085858	*	1		
G		1069606	*	*	*	1	BB		1085859	*	*	1	
O	Panel, Rear Blower Deck	1082604	1				BB		1085860	*	*	*	1
O		1082844	*	1			DD	Plate, Heater Adapter	1084606	*	1	1	1
O		1082845	*	*	1		EE	Plate, Heater Filler	1084608	*	*	1	1
O		1082846	*	*	*	1	(	Harness, Wire	1085018				
P	Panel, Front Blower Deck	1082603	1				)	Manual, Installation	44201220200	1	1	1	1
P		1085372	*	1									
P		1085373	*	*	1								
P		1085374	*	*	*	1							

