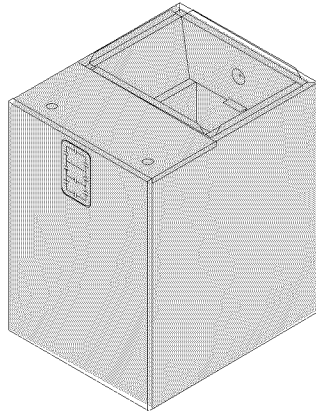


# INSTALLATION INSTRUCTIONS

## Modular Blower (Electric Furnace)

### MF08B1500B, MF12F1900B, MF16J2200B, MF20L2400B

These instructions must be read and understood completely before attempting installation.




### SAFETY CONSIDERATIONS

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


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

In Canada refer to the current editions of the Canadian Electrical Code CSA C22.1 Recognize safety information.

This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

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 **WARNING**

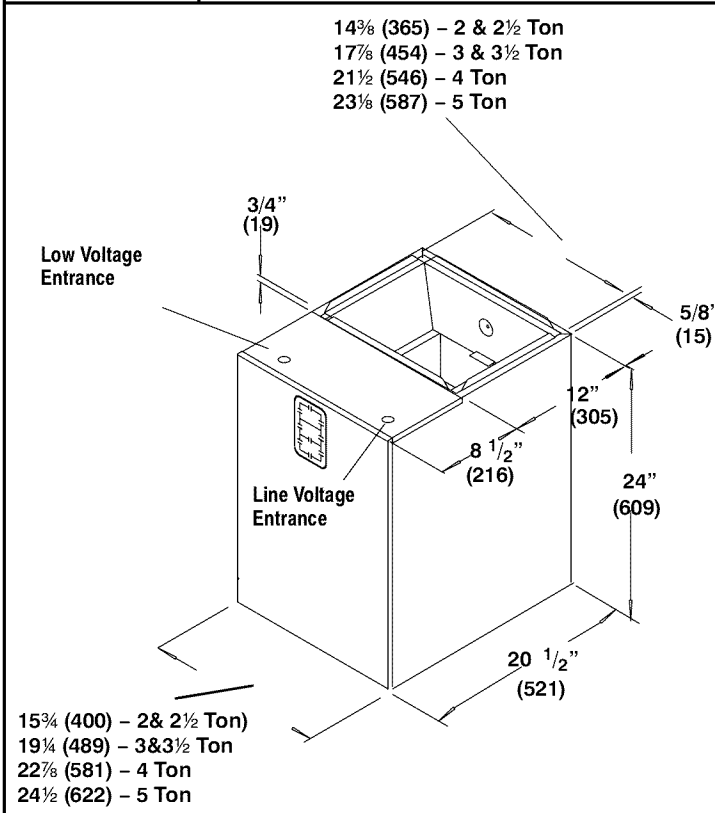
**ELECTRICAL SHOCK HAZARD**

Failure to turn off electric power could result in personal injury or death.

Before installing or servicing system, turn off main power to the system. There may be more than one disconnect switch, including accessory heater(s).

Figure 1

Nominal Installation Dimensions and Clearances – in(mm)



CLEARANCES	
<b>NO HEATERS</b>	
All Sides	0"
From Supply Duct	0"
Recommended Service From Front	20" (508 mm)
(Service for blower, filter if installed)	
<b>WITH HEATERS</b>	
All Sides	0"
From First Three Feet of Supply Duct to Combustibles	1" (25mm)
From Duct after Three Feet	0"
Recommended Service From Front	20" (508mm)
(Service for blower, heaters if installed)	

**⚠ WARNING**

**FIRE HAZARD**

Failure to follow this warning could result in personal injury, death, and/or property damage.

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" (914 mm) of the supply end of the modular unit.

**GENERAL INFORMATION**

**⚠ WARNING**

**PERSONAL INJURY, AND/OR PROPERTY DAMAGE HAZARD**

Failure to carefully read and follow this warning could result in personal injury, death, equipment malfunction, and/or property damage.

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.

Installation must conform with local building codes and with the National Electrical Code NFPA70 current edition.

**INTRODUCTION**

The MF modular blower cabinet uses a 208/230V PSC blower motor, with an electronic fan control board. The MF may be used for cooling or heat pump applications either with or without electric heat. Installations without electric heat require a NO HEAT KIT (EHIA00KN10). The cabinet can be installed in an upflow, downflow or horizontal position. Refer to **Figure 3 and 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" (51mm) fiberglass insulation with a vapor barrier should be used.

**HEATER PACKAGES**

Factory approved, field installed, UL listed heater packages are available from the equipment supplier. See unit rating plate for a list of factory approved heaters (electric heat accessory models EHIA only). Heaters that are not factory approved could cause damage which would not be covered under the equipment warranty.

**⚠ CAUTION**

**CUT HAZARD**

Failure to follow this caution may result in personal injury.

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

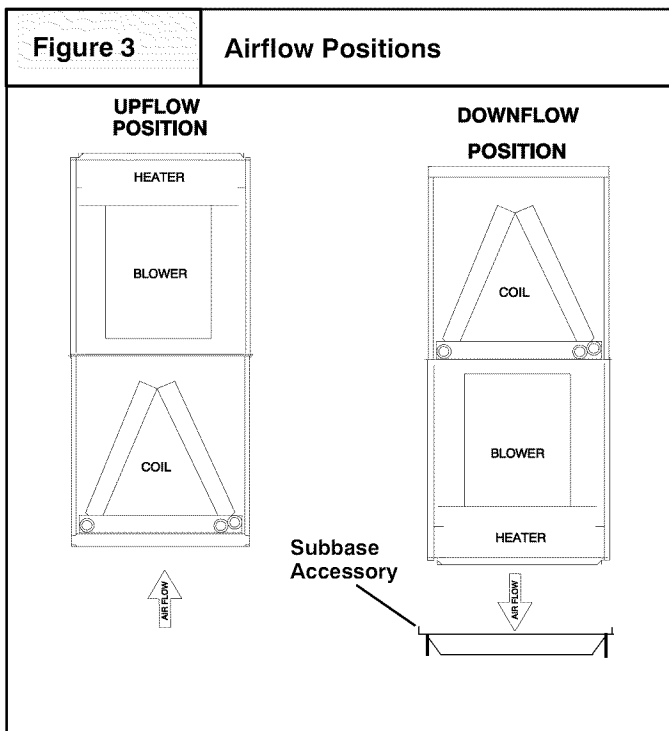
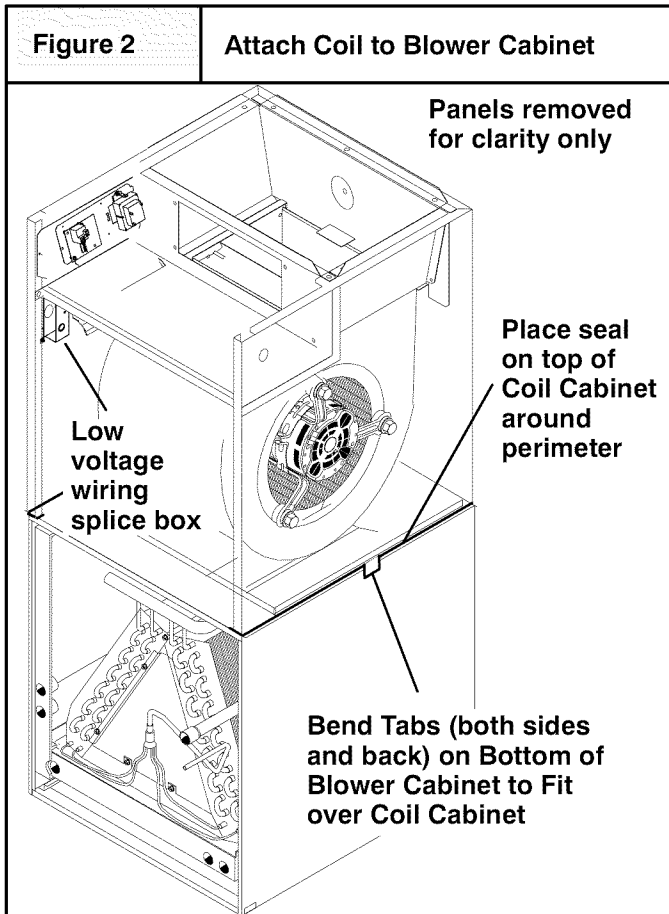
**INSTALLATIONS**

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

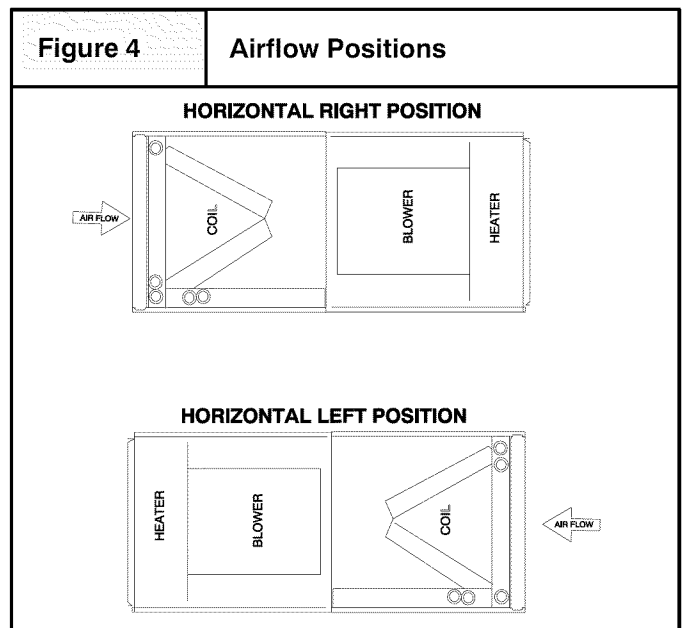
The cabinet can be installed in a closet with a false bottom to form a return air plenum, or mounted on an open platform inside the closet. Platform should be high enough to provide a free (open) area for adequate return airflow into the bottom of the cabinet. The open area can be on the front side or 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

The modular blower cabinets can be installed in either downflow, horizontal left, or horizontal right applications. When a coil cabinet is applied, refer to the coil installation manual for proper drain pan and airflow requirements. They must have the drain pan repositioned for right hand airflow. Refer to coil installation manual.

	<b>CAUTION</b>
<b>PROPERTY DAMAGE HAZARD</b>	
Failure to follow this caution may result in property damage.	
A field fabricated auxiliary drain pan, with a separate drain is <b>REQUIRED</b> for all installations over a finished living space or in any area that may be damaged by overflow from a restricted main drain pan. In some localities, local codes require an auxiliary drain pan for <b>ANY</b> horizontal installation.	



### 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. Refer to **Figure 5**.
3. Ensure that there is adequate room to remove service and access panels after installing supporting brackets.

- Place field installed vibration isolators in auxiliary drain pan to support cabinet.

**DUCT CONNECTIONS**

**Supply Duct**

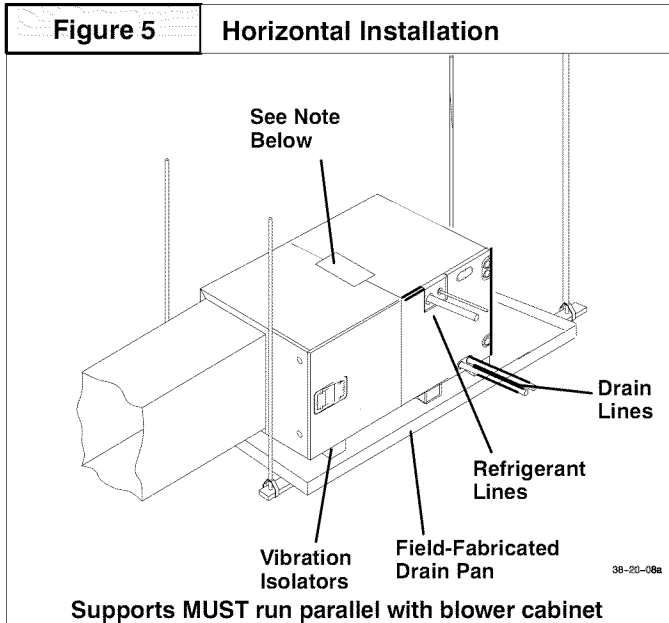
Supply duct must be attached to the outside of flange on outlet end of unit. Flexible connectors may be used if desired. Maintain clearances from supply duct to combustibles when heaters are installed. Refer to **Figure 1** and unit rating plate.

**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.



**NOTE:** If increased structural strength is needed in the horizontal position, use field supplied two connecting plates in place of the tabs on the bottom of the blower.

**ELECTRICAL CONNECTIONS**

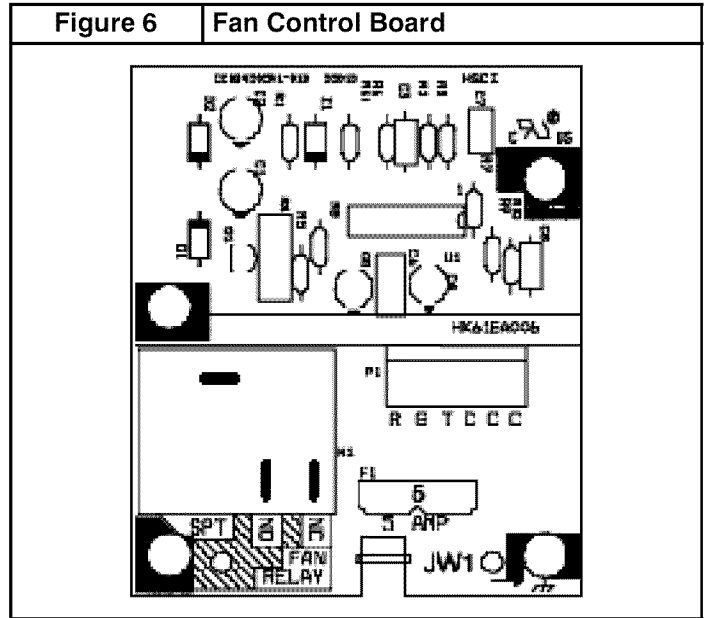
The MF modular blower utilizes an electronic fan control board which has a low voltage circuit protective fuse (5 AMP), and pigtail connections for thermostat hook up. The fan control also has a relay for blower operation, and built in 90 second blower-off *time delay relay* (TDR). To disable the TDR feature, snip the jumper wire JW1. Refer to **Figure 6**.

**⚠ WARNING**

**ELECTRICAL SHOCK or UNIT DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, and/or property damage.

If a disconnect switch is to be mounted on unit, select a location where drill and fasteners will not contact electrical refrigeration components.



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.

Before proceeding with electrical connections, make certain that supply voltage, frequency, phase, and circuit ampacity are as specified on the unit rating plate. See unit wiring label for proper field high and low voltage wiring. Make all electrical connections in accordance with the NEC and any local codes or ordinances that may apply. Use copper wire only. The unit must have a separate branch electric circuit with a field-supplied disconnect switch located within sight from and readily accessible from the unit.

**NOTE:** When a pull-out type disconnect is removed from the unit, only the Load side of the circuit is de-energized. The Line side remains live until the main (remote) disconnect is turned off.

**⚠ WARNING**

**ELECTRICAL SHOCK or UNIT DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, and/or property damage.

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.

**⚠ WARNING**

**ELECTRICAL SHOCK HAZARD**

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

Turn off the main (remote) disconnect device before working on incoming (field) wiring. Incoming (field) wiring on the line side of the disconnect found in the modular blower unit remains live, even when the pull-out is removed. Service and maintenance to incoming (field) wiring cannot be performed until the main disconnect switch (remote to the unit) is turned off.

MF units installed without electric heat require the use of a factory-authorized No Heat Kit (accessory part number EHIA00KN10). This kit provides the electrical connections necessary to supply the unit with 208/230V power when electric heat is not present.

For units without electric heat:

1. Locate adapter and filler plates with screws inside package. If necessary, adjust plates to allow for installation of No Heat Kit required inside cabinet. Refer to **Figure 7**.
2. Secure No Heat Kit accessory with four (4) screws.
3. Connect the 9-pin plug from No Heat Kit wiring into the receptacle that attaches to fan control board.
4. Connect ground wire to unit ground lug.
5. Connect 208/230V power leads from field disconnect to terminal block assembly on No Heat Kit.

For units with electric heat, see Electric Heater Installation Instructions and blower airflow requirements.

NOTE: Transformer is factory-wired for 230V operation. For 208V applications the transformer must be rewired to the 208V tap. Refer to unit wiring label.

**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.

**LOW VOLTAGE CONTROL CONNECTIONS**

Wire low-voltage in accordance with wiring label on the blower (also refer to **Figures 8 - 12**. Use 18 AWG color-coded, insulated (35°C minimum) wire to make the low-voltage connections between: thermostat, indoor equipment, and outdoor equipment. If thermostat is located more than 100 feet (31m) from the unit (as measured along the low voltage wire), use 16 AWG color-coded, insulated (35°C minimum) wire. All wiring must be NEC Class 1 and must be separated from incoming power leads. Refer to outdoor unit wiring instructions for additional wiring recommendations.

Field supplied low-voltage wiring should be field connected inside control splice box area (secure with wire nuts), and strain relief bushing or rubber grommet to seal cabinet opening.

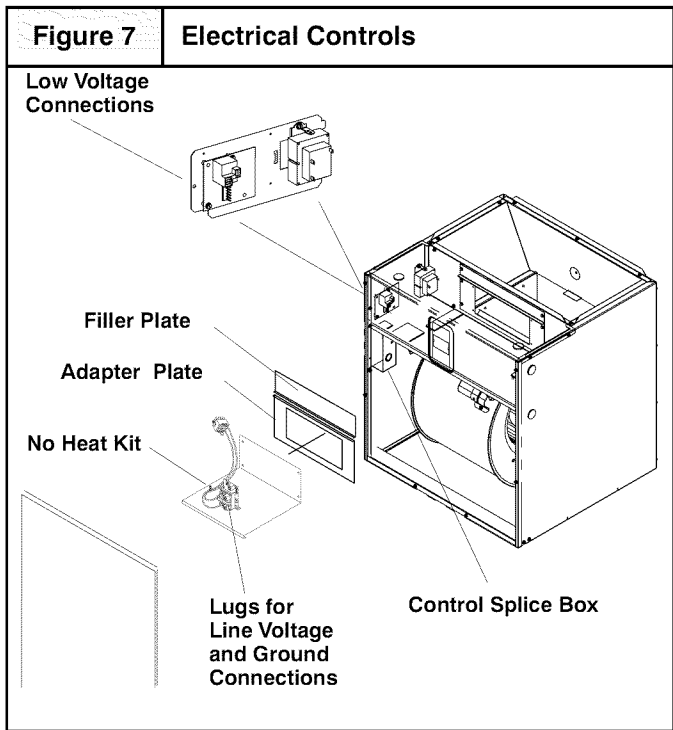
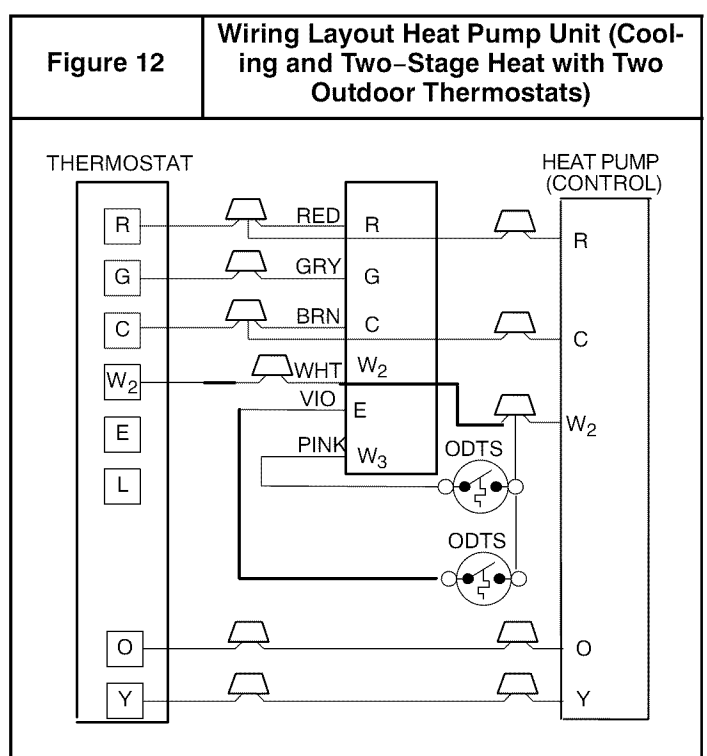
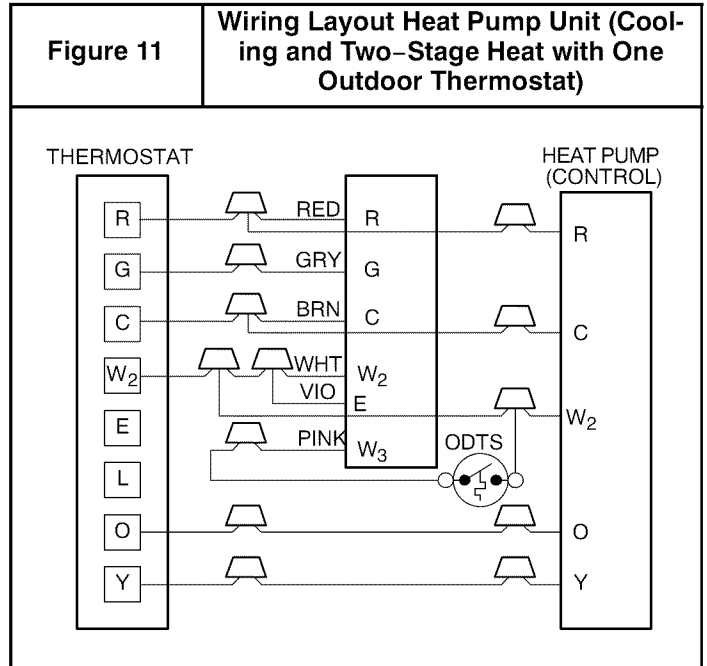
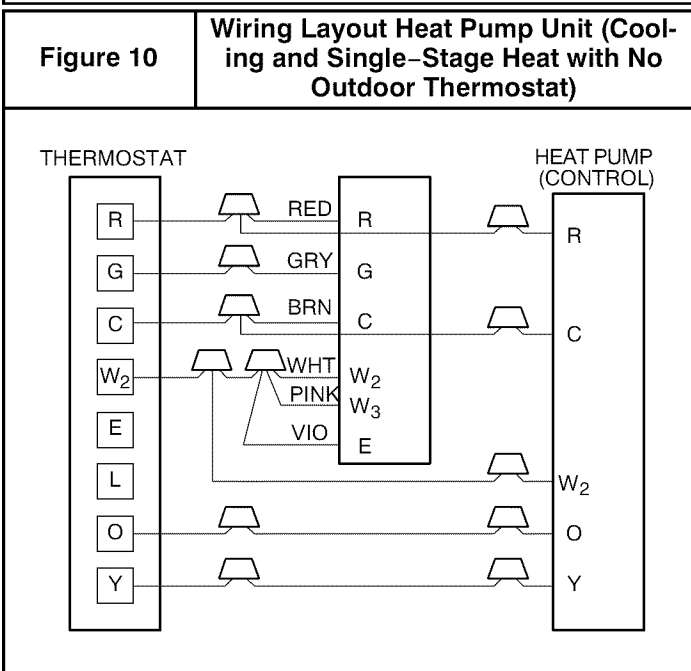
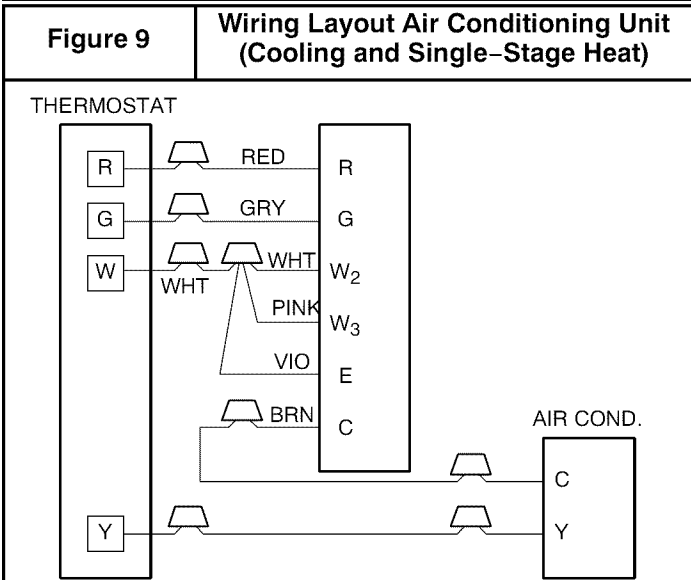
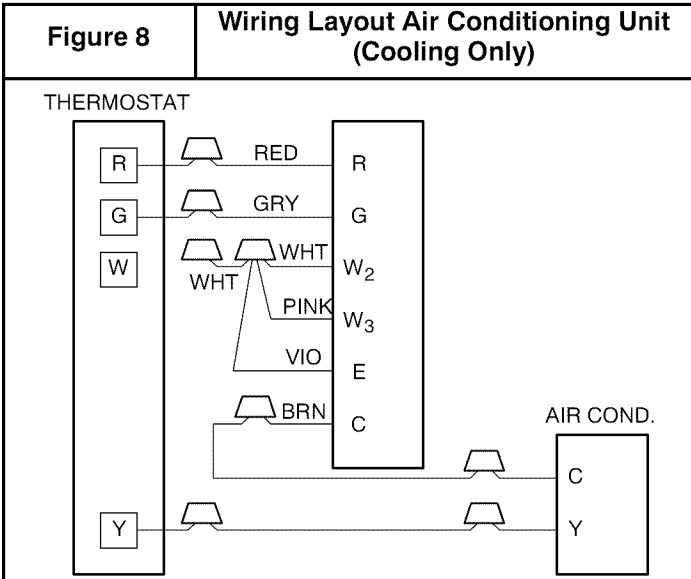


Table 1	Supply Circuit			Supply Circuit No.	H.P.	Max. Motor Amps	MCA Branch Circuit AMP	Max Over-current Protection Device (Amps)	Recommended				
	Volts	Phase	Hertz						Supply Wire 75°C copper			Ground Wire	
									# of Wires	Min Size	Max. Ft.(m) Length	# of Wires	Min Size
MF08*	208	1	60	Single	1/3	2.5	3.1	15	2	14	105 (32)	1	14
	230												
MF12*	208	1	60	Single	1/2	2.9	3.6	15	2	14	105 (32)	1	14
	230												
MF16*	208	1	60	Single	1/2	2.9	3.6	15	2	14	105 (32)	1	14
	230												
MF20*	208	1	60	Single	3/4	6.0	7.5	15	2	14	90 (27)	1	14
	230												

\* Modular blower without electric heat



### CHANGING MOTOR SPEED

To change the blower speed, disconnect the black wire at the blower motor terminal block and reconnect at the desired blower speed tap (refer to **Table 4**).

### HEATER STAGING

The modular controls are factory circuited for single-stage electric heat operation. Refer to **Table 2** for available heaters and **Table 3** for unit airflow based without a coil, filter, or electric heat applied.

When two-stage electric heat is desired (refer to **Table 2 – Heat Strip Staging**), separate out the pink W3 wire from W2 & E connections. Refer to **Table 2-2** and wiring diagram **Figure 11**. W3 can be separated and controlled by the indoor wall thermostat (if multi-stage capable), or by an outdoor thermostat (ODTS). Refer to ODTS kit instruction for proper wiring.

When three-stage electric heat is desired, cut the W2 wire nut off and discard. Strip W2, W3, and E. Refer to **Table 2-3**, and wiring diagram **Figures 12**. Connect according to the thermostat kit instructions or ODTS kit instructions for proper wiring.

Table 2	Heat Strip Staging		
	2-1	2-2	2-3
	Single-Stage Operation (no staging – all electric heat together)	Two-Stage Capable	Three-Stage Capable (with ODTS only)
Single-Phase	EHIA05KB / KN EHIA07KB / KN EHIA10KB / KN EHIA15KB EHIA20KB EHIA25KB	EHIA15KB EHIA20KB EHIA25KB	EHIA25KB10
Three-Phase	EHIA10HB EHIA15HB EHIA20HB EHIA25HB	EHIA10HB EHIA15HB EHIA20HB EHIA25HB	EHIA20HB EHIA25HB

KB is single-phase with circuit breaker

KN is single-phase with terminal block (no-breaker)

HB is three-phase with circuit breaker

Table 3	Minimum Motor Speed Tap Selection For Electric Heater					
	Electric Heater SIZE kW					
Model	5 kW	7.5 kW	10 kW	15 kW	20 kW	25 kW
MF08	LOW	LOW	LOW	MED	--	--
MF12	LOW	LOW	LOW	LOW	MED	--
MF16	LOW	LOW	LOW	MED	MED	HIGH
MF20	LOW	LOW	LOW	LOW	LOW	MED

LOW = low speed tap selection

MED = medium speed tap selection

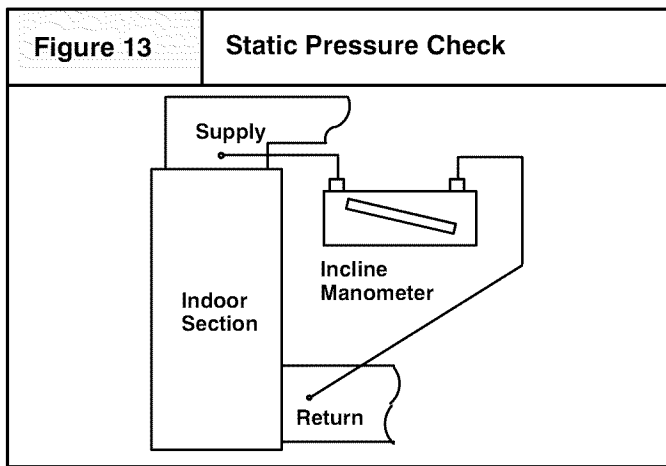
HIGH – high speed tap selection

### 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. Refer to **Figure 13**.
2. Drill holes in the ducts for pressure taps, pilot 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, **Table 4**, to find the 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. Refer to the unit’s *Installation Instructions* for airflow information.

**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, avoiding direct radiant heat from the heater elements.
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. Be sure to seal all holes in ducts if any were created during this process.

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 in wc (50 Pa) for Downflow Subbase Kit.

**Table 4** Airflow is blower only, no coil attached

MF08		in wc						
SPEED	VOLTS	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	230v	1029	1020	1007	985	960	915	862
	208v	872	860	845	825	797	765	721
Med	230v	1286	1270	1254	1220	1180	1125	1058
	208v	1113	1105	1091	1070	1042	1000	947
High	230v	1500	1470	1432	1380	1315	1250	1168
	208v	1317	1305	1286	1255	1220	1170	1008

MF08		Pa						
SPEED	VOLTS	50	75	100	125	149	174	199
Low	230v	486	481	475	465	453	432	407
	208v	412	406	399	389	376	361	340
Med	230v	607	599	592	576	557	531	499
	208v	525	521	515	505	492	472	447
High	230v	708	694	676	651	621	590	551
	208v	622	616	607	592	576	552	476

MF12		in wc						
SPEED	VOLTS	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	230v	973	975	979	979	973	955	931
	208v	811	815	816	810	797	780	749
Med	230v	1284	1295	1301	1305	1302	1280	1246
	208v	1084	1084	1084	1090	1089	1065	1030
High	230v	1663	1670	1671	1655	1631	1585	1519
	208v	1383	1385	1390	1390	1383	1365	1328

MF12		Pa						
SPEED	VOLTS	50	75	100	125	149	174	199
Low	230v	459	460	462	462	459	451	439
	208v	383	385	385	382	376	368	353
Med	230v	606	611	614	616	614	604	588
	208v	512	512	512	514	514	503	486
High	230v	785	788	789	781	770	748	717
	208v	653	654	656	656	653	644	627

MF16		in wc						
SPEED	VOLTS	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	230v	1020	1015	1009	1002	991	975	950
	208v	858	845	830	815	801	780	749
Med	230v	1379	1385	1386	1379	1364	1343	1309
	208v	1156	1154	1149	1144	1134	1120	1098
High	230v	1776	1782	1783	1765	1738	1698	1643
	208v	1496	1496	1496	1495	1495	1470	1433

MF16		Pa						
SPEED	VOLTS	50	75	100	125	149	174	199
Low	230v	481	479	476	473	468	460	448
	208v	405	399	392	385	378	368	353
Med	230v	651	654	654	651	644	634	618
	208v	546	545	542	540	535	529	518
High	230v	838	841	841	833	820	801	775
	208v	706	706	706	706	706	694	676

MF20		in wc						
SPEED	VOLTS	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	230v	1492	1495	1492	1475	1451	1395	1308
	208v	1246	1245	1238	1225	1203	1175	1125
Med	230v	1969	1955	1935	1890	1818	1700	1570
	208v	1641	1640	1633	1615	1584	1510	1406
High	230v	2696	2600	2492	2350	2192	2020	1844
	208v	2417	2355	2287	2200	2092	1940	1774

MF20		Pa						
SPEED	VOLTS	50	75	100	125	149	174	199
Low	230v	704	706	704	696	685	658	617
	208v	588	588	584	578	568	555	531
Med	230v	929	923	913	892	858	802	741
	208v	774	774	771	762	748	713	664
High	230v	1272	1227	1176	1109	1034	953	870
	208v	1141	1111	1079	1038	987	916	837



**ELECTRIC HEATER STATIC PRESSURE DROP**

Single-Phase						
CFM	EHIA 05	EHIA 07	EHIA 10	EHIA 15	EHIA 20	EHIA 25
in wc						
600	0.01	0.01	0.01	-	-	-
700	0.01	0.01	0.01	-	-	-
800	0.01	0.01	0.01	0.01	-	-
900	0.01	0.01	0.01	0.01	-	-
1000	0.01	0.01	0.01	0.01	0.02	-
1100	0.01	0.01	0.01	0.02	0.02	-
1200	0.01	0.01	0.01	0.02	0.02	-
1300	0.01	0.02	0.02	0.02	0.02	-
1400	0.01	0.02	0.02	0.02	0.03	0.03
1500	0.01	0.02	0.02	0.02	0.03	0.04
1600	0.01	0.02	0.02	0.03	0.03	0.04
1700	0.01	0.02	0.02	0.03	0.03	0.04
1800	0.01	0.02	0.02	0.03	0.04	0.04
1900	0.01	0.02	0.02	0.03	0.04	0.05
2000	0.01	0.02	0.02	0.03	0.04	0.05

Three-Phase						
CFM	N/A	N/A	EHIA 10	EHIA 15	EHIA 20	EHIA 25
in wc						
600			0.01	-	-	-
700			0.01	-	-	-
800			0.01	0.01	-	-
900			0.01	0.01	-	-
1000			0.01	0.01	0.02	-
1100			0.01	0.02	0.02	-
1200			0.01	0.02	0.02	-
1300			0.02	0.02	0.02	-
1400			0.02	0.02	0.03	0.03
1500			0.02	0.02	0.03	0.04
1600			0.02	0.03	0.03	0.04
1700			0.02	0.03	0.03	0.04
1800			0.02	0.03	0.04	0.04
1900			0.02	0.03	0.04	0.05
2000			0.02	0.03	0.04	0.05

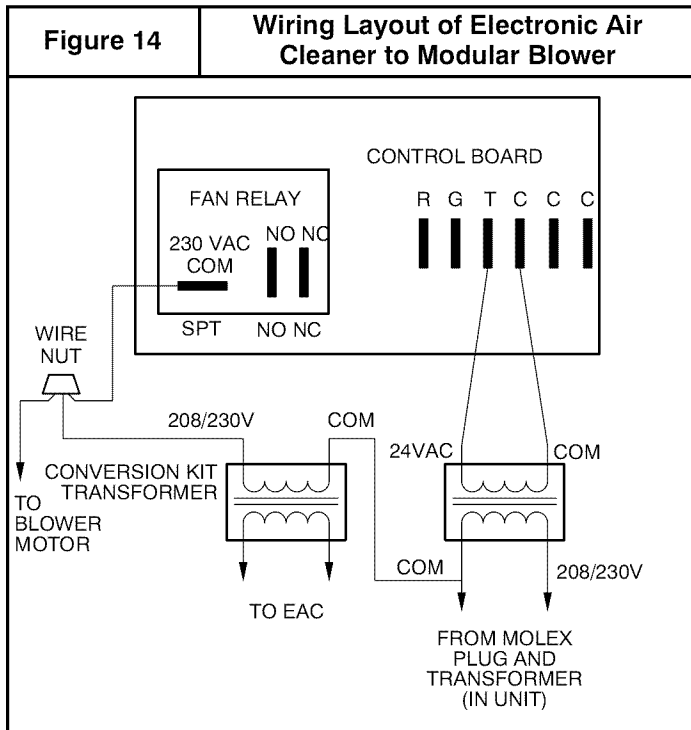
Single-Phase						
L/s	EHIA 05	EHIA 07	EHIA 10	EHIA 15	EHIA 20	EHIA 25
Pa						
283	2	2	2	-	-	-
330	2	2	2	-	-	-
378	2	2	2	2	-	-
425	2	2	2	2	-	-
472	2	2	2	2	5	-
519	2	2	2	5	5	-
566	2	2	2	5	5	-
613	2	5	5	5	5	-
661	2	5	5	5	7	7
708	2	5	5	5	7	10
755	2	5	5	7	7	10
802	2	5	5	7	7	10
849	2	5	5	7	10	10
897	2	5	5	7	10	12
944	2	5	5	7	10	12

Three-Phase						
L/s	N/A	N/A	EHIA 10	EHIA 15	EHIA 20	EHIA 25
Pa						
283			2	-	-	-
330			2	-	-	-
378			2	2	-	-
425			2	2	-	-
472			2	2	5	-
519			2	5	5	-
566			2	5	5	-
613			5	5	5	-
661			5	5	7	7
708			5	5	7	10
755			5	7	7	10
802			5	7	7	10
849			5	7	10	10
897			5	7	10	12
944			5	7	10	12

## ACCESSORIES

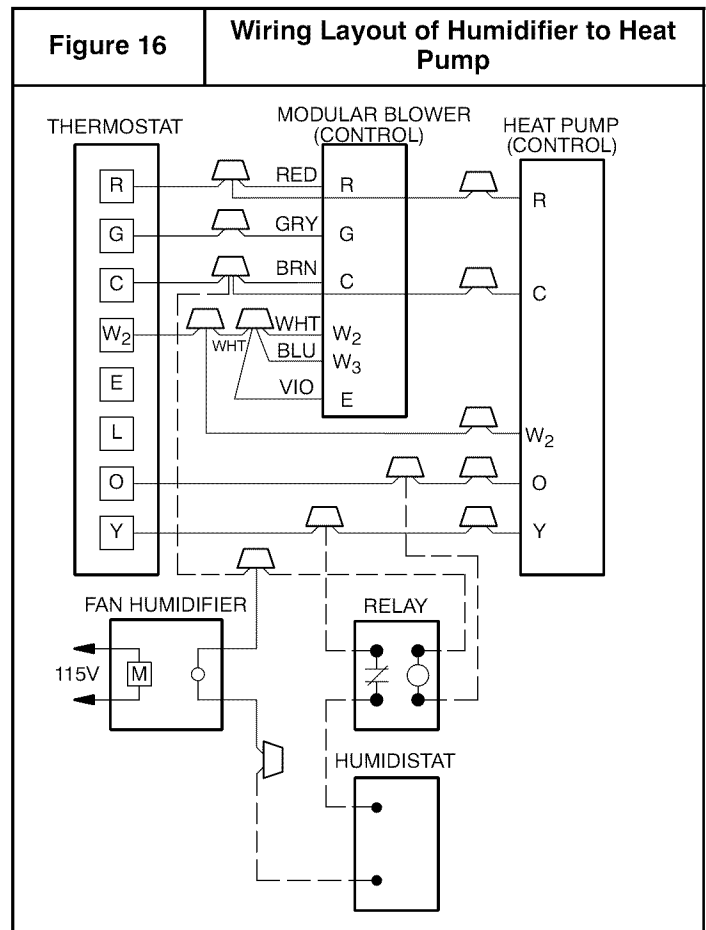
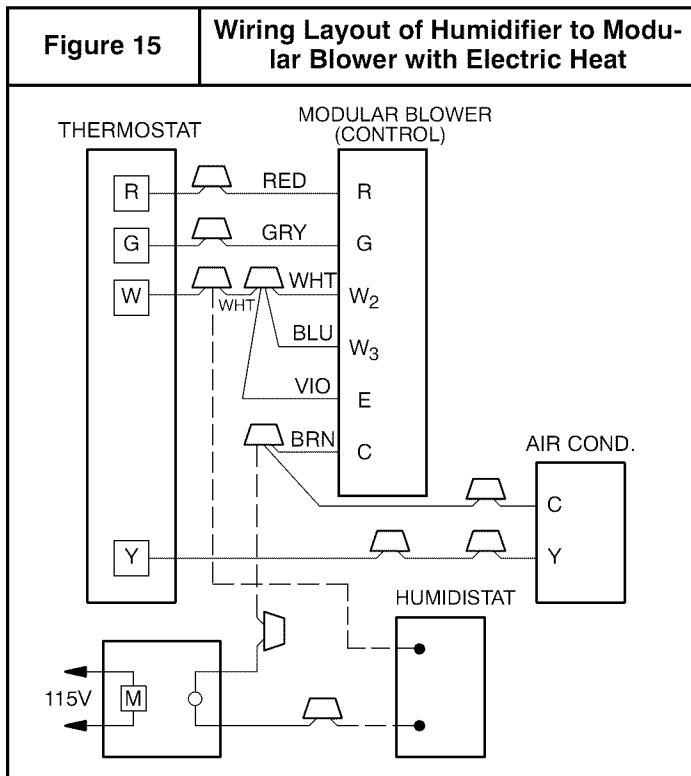
### ELECTRIC AIR CLEANER

The Electronic Air Cleaner may be connected to MF as shown in **Figure 14**. This method requires a field supplied transformer. See Electronic Air Cleaner literature for kit requirements.



### HUMIDIFIER

Connect humidifier and humidistat to modular blower unit as shown in **Figures 15 and 16**.



## SEQUENCE OF OPERATION

### A. CONTINUOUS FAN

Thermostat closes R to G. G energizes fan relay on FAN CONTROL BOARD which completes the high voltage circuit to indoor blower motor. When G is de-energized, there is a built in 90 second blower-off time delay relay (TDR). To disable the TDR feature, snip the jumper wire JW1.

### B. COOLING MODE

Air Conditioner Only:

Thermostat energizes R to G and Y. G energizes fan relay on fan control board which completes high-voltage circuit to indoor blower motor. Y energizes the 24 low-voltage contactor in condensing unit. When call is satisfied, Y drops out and there is a 90 second blower TDR before fan relay opens.

Heat Pump:

Same as above - except thermostat will also energize O for reversing valve operation in cooling mode. O will typically remain energized by the thermostat (after cooling call is satisfied), or until the mode is changed to heating.

### C. HEAT PUMP

Cooling Mode:

Thermostat energizes R to G, Y and O. G energizes indoor fan relay on fan control board which completes high-voltage circuit to indoor blower motor. Y energizes the outdoor 24V low-voltage circuit in heat pump to energize compressor. O energizes reversing valve in cooling mode and typically remains energized until the mode is changed to heating. When thermostat cooling call is satisfied. Y drops out. O remains energized, and there is a 90 second TDR before indoor fan relay opens.

Heating Mode:

Thermostat energizes R to G and Y only (no O signal in heating). G energizes indoor fan relay on fan control board which completes high-voltage circuit to indoor blower motor. Y energizes the outdoor 24V low-voltage circuit in heat pump to energize compressor. The reversing valve is not energized in heating unless a defrost cycle should occur. When call is satisfied, Y drops out and there is a 90 second TDR before indoor fan relay opens.

**D. HEAT PUMP HEATING WITH AUXILIARY ELECTRIC HEAT**

Cooling Mode:

Same operation as above in Heat Pump Cooling Mode.

Heating Mode:

Same operation as above in Heat Pump Heating Mode with the addition of W. Thermostat energizes R to G, Y, and W. W energizes electric heat relay(s) which completes circuit to heater element(s). When W is de-energized, electric heat relay(s) open, turning off heater elements. The White wire in pigtail connects W2, W3, and E together. This maybe separated for heater staging when available, see electric heat kit for more information.

**E. ELECTRIC HEAT OR EMERGENCY HEAT MODE**

Thermostat closes R to W. W energizes electric heat relay(s) which completes circuit to heater elements(s). Blower motor is energized

through N.C. (normally closed) contacts on fan relay. When W is de-energized, electric heat relay(s) opens.

**CARE AND MAINTENANCE**

The system should be regularly inspected by a qualified service technician. Consult the servicing dealer for recommended frequency. Between visits, the only consumer service recommended or required is air filter maintenance and condensate drain operation.

**AIR FILTER**

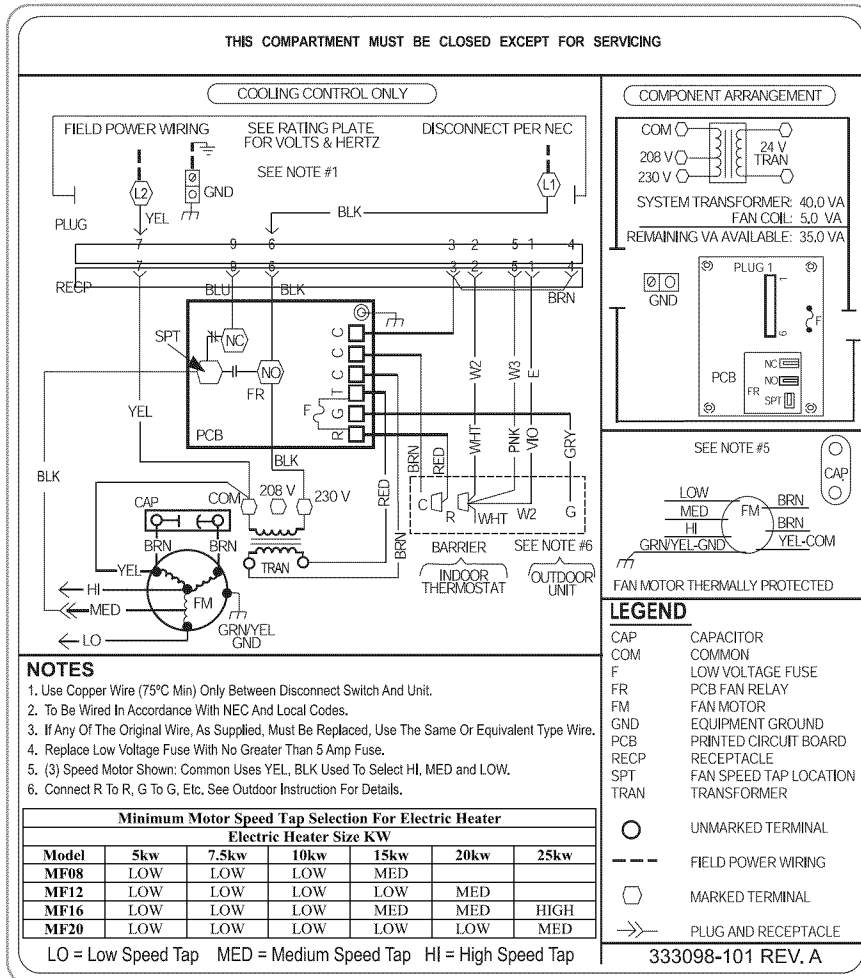
Inspect air filters at least monthly and replace or clean as required. Disposable type filters should be replaced. Reusable type filters may be cleaned by soaking in mild detergent and rinsing with cold water. The frequency of cleaning depends upon the hours of operation and the local atmospheric conditions. Install filters with the arrows on the side pointing in the direction of air flow. Clean filters keep unit efficiency high.

**LUBRICATION**

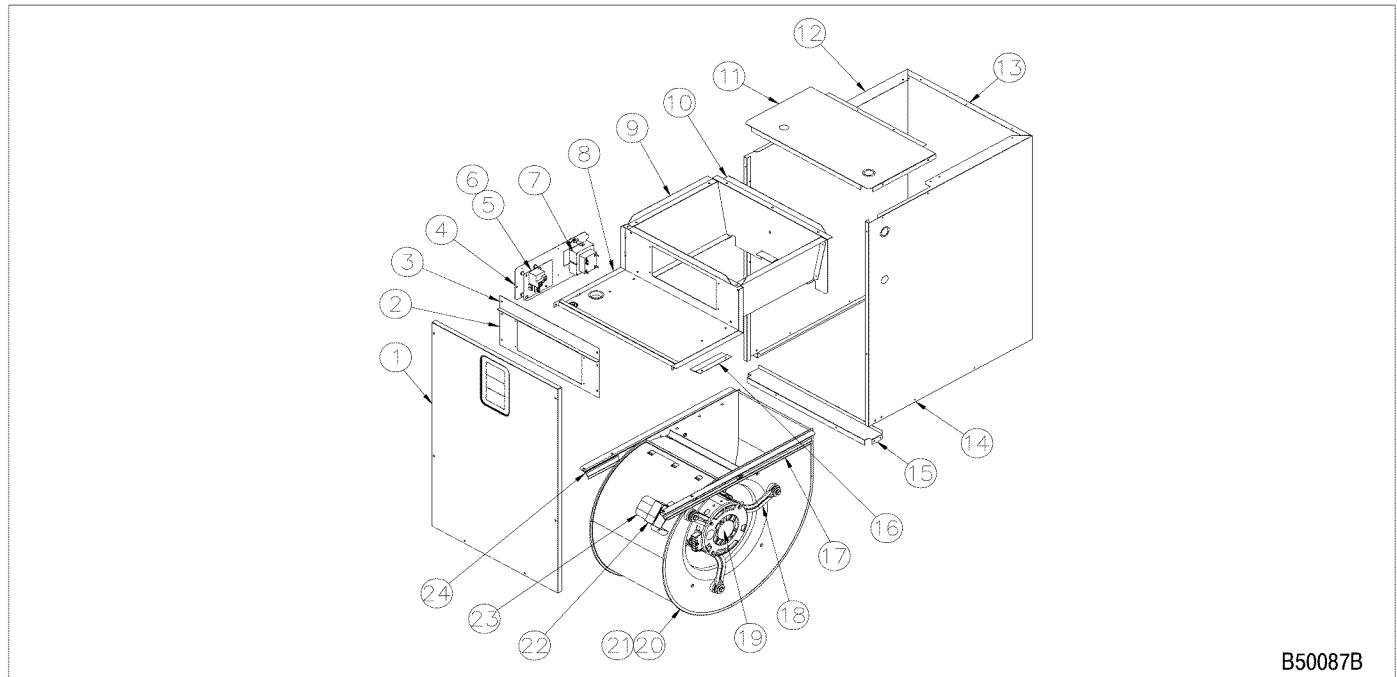
The bearings of the blower motor are permanently lubricated.

**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.



# Replacement Parts Expanded View



B50087B

## Replacement Parts

KEY NO.	PART NUMBER	DESCRIPTION					OLD PART #
			MF08B1500B2	MF12F1900B2	MF16J2200B2	MF20L2400B2	
1	B6000813	BLOWER DOOR ASS'Y	1	-	-	-	1176308
	B6000814		-	1	-	-	1176309
	B6000815		-	-	1	-	1176310
	B6000816		-	-	-	1	1176311
2	B60029	PLATE HEATER ADAPTER	-	1	1	1	1084606
3	B60048	PLATE HEATER FILLER	-	-	1	1	1084608
4	B60026	BRACKET CTL MTG	1	1	1	1	1176334
5	R99G010	FAN CONTROL BOARD	1	1	1	1	1171734
6	B60030	WIRE HARNESS	1	1	1	1	1089050
7	L01F012	TRANSFORMER 208/230-24v, 40VA	1	1	1	1	1082611
8	B60057	FRONT BLOWER DECK	1	-	-	-	1176322
	B60058		-	1	-	-	1176323
	B60059		-	-	1	-	1176324
	B60060		-	-	-	1	1176325
9	B60022	SIDE BLOWER DECK	2	-	-	-	1176326
	B60038		-	2	-	-	1176327
	B60041		-	-	2	-	1176328
	B60044		-	-	-	2	1176329
10	B60023	REAR BLOWER DECK	1	-	-	-	1176318
	B60039		-	1	-	-	1176319
	B60042		-	-	1	-	1176320
	B60045		-	-	-	1	1176321
11	B6000701	PANEL TOP ASS'Y	1	-	-	-	1176330
	B6000702		-	1	-	-	1176331
	B6000703		-	-	1	-	1176332
	B6000704		-	-	-	1	1176333
12	B60019	L.H. SIDE WRAPPER	1	1	1	1	1176316
13	B6001801	BACK WRAPPER	1	-	-	-	1176312
	B6001802		-	1	-	-	1176313
	B6001803		-	-	1	-	1176314
	B6001804		-	-	-	1	1176315

KEY NO.	PART NUMBER	DESCRIPTION					OLD PART #
			MF08B1500B2	MF12F1900B2	MF16J2200B2	MF20L2400B2	
14	B60020	R.H. SIDE WRAPPER	1	1	1	1	1176317
15	B6003601	BRACE, BOTTOM FRONT	1	-	-	-	1069603
	B6003602		-	1	-	-	1069604
	B6003603		-	-	1	-	1069605
	B6003604		-	-	-	1	1087670
16	B6005601	DECK BLOWER RAILS RIGHT	1	1	1	1	NA
	B6005602	DECK BLOWER RAILS LEFT	1	1	1	1	NA
17	B6006101	BLOWER RAILS R.H.	1	1	1	1	1085521
18	B0188801	MOTOR MOUNT ASS'Y (BAND AND LEGS)	1	1	1	-	NA
	B0188802		-	-	-	1	NA
19	B0189003	MOTOR ASS'Y (WITH MOTOR MOUNTS) 1/3HP - 3Spd	1	-	-	-	1083044
	B0189005	1/2HP - 3Spd	-	1	-	-	1083045
	B0189007	1/2HP - 3Spd	-	-	1	-	1083045
	B0189009	3/4HP - 3Spd	-	-	-	1	1083046
20	Z011027	BLOWER HOUSING WITH WHEEL DD10-7	1	-	-	-	1176353
	Z011028		-	1	-	-	1176354
	Z011029		-	-	1	1	1176355
21	Z01L011	BLOWER WHEEL DD10x7x1/2 CW CV	1	-	-	-	600586
	Z01L012		-	1	-	-	600587
	Z01L013		-	-	1	1	96839
22	B60050	CAPACITOR CLAMP	1	1	1	1	1176307
23	L011003	CAPACITOR 370V 10 MFD	1	1	1	-	1171729
	L011005		-	-	-	1	1171730
24	B6006102	BLOWER RAILS L.H.	1	1	1	1	1085504