



**CLASSIC**

**Heat Pump Product Manual  
Vertical Wall-Mount Heat Pumps  
with Front Control Box Panel**

**Installation & Operation Manual**  
10+ EER Vertical Wall-Mount Heat Pumps

**MODELS:**  
AVHA 36-42-48-60



This manual may include information for options and features which may not be included on the unit being installed. Refer to the unit data label or Model Identification to determine which features and options this unit is equipped with.

**INSTALLER:** Affix the instructions on the inside of the building adjacent to the thermostat.  
**END USER:** Retain this manual for future reference.

*Manufactured By:*

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The most current version of this manual can be found at [www.Marvair.com](http://www.Marvair.com).

## How To Use This Manual

This manual is intended to be a comprehensive guide to the installation of the Marvair® Classic family of vertical packaged heat pumps. It contains installation, troubleshooting, maintenance, warranty, and application information. The information contained in this manual is to be used by the installer as a guide only. This manual does not supersede or circumvent any applicable national or local codes. For information on the efficiency, cooling and heating performance, please refer to the Classic Product Data Sheets. The most current version of all literature can be found on our website at [www.Marvair.com](http://www.Marvair.com).

If you are installing the heat pump unit, first read Chapter 1 and scan the entire manual before beginning the installation as described in Chapter 2. Chapter 1 contains general, descriptive information and provides an overview which can speed up the installation process and simplify troubleshooting.

If a malfunction occurs, follow this troubleshooting sequence:


1. Make sure you understand how the heat pump unit works (Chapters 1 & 3).
2. Identify and correct installation errors (Chapter 2).
3. Refer to the troubleshooting information in Chapter 4.
4. Identify defective part(s). (Chapter 5).

If you are still unable to correct the problem, contact the Factory at 1-800-841-7854 for additional assistance.

**Please read the following “Important Safety Precautions” before beginning any work. Failure to follow these rules may result in death, serious bodily harm, property damage and damage to the equipment.**

## Important Safety Precautions

1. USE CARE when LIFTING or TRANSPORTING equipment.
2. TRANSPORT the UNIT UPRIGHT. Laying it down on its side may cause oil to leave the compressor and breakage or damage to other components.
3. TURN ELECTRICAL POWER OFF AT THE breaker or fuse box BEFORE installing or working on the equipment. LINE VOLTAGES ARE HAZARDOUS or LETHAL.
4. OBSERVE and COMPLY with ALL applicable PLUMBING, ELECTRICAL, and BUILDING CODES and ordinances.
5. SERVICE may be performed ONLY by QUALIFIED and EXPERIENCED PERSONS.
  - \* **Wear safety goggles when servicing the refrigeration circuit**
  - \* **Beware of hot surfaces on refrigerant circuit components**
  - \* **Beware of sharp edges on sheet metal components**
  - \* **Use care when recovering or adding refrigerant**
6. Use **COMMON SENSE - BE SAFETY-CONSCIOUS**

This is the safety alert symbol . When you see this symbol on the unit and in the instruction manuals be alert to the potential for personal injury. Understand the signal word DANGER, WARNING, CAUTION and IMPORTANT. These words are used to identify levels of the seriousness of the hazard.

 **DANGER** Failure to comply will result in death or severe personal injury and/or property damage.

 **WARNING** Failure to comply could result in death or severe personal injury and/or property damage.

 **CAUTION** Failure to comply could result in minor personal injury and/or property damage.

 **IMPORTANT** Used to point out helpful suggestions that will result in improved installation, reliability or operation.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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Your equipment is covered by a LIMITED WARRANTY against defects in material and workmanship.

This is a vertical, wallmount unit designed for many different applications in both residential and commercial settings. It is self-contained and arrives completely assembled, factory-charged and wired. The unit is 100% run-tested at the factory to ensure proper operation. Your unit is supplied with high-quality copper tubing and enhanced aluminum-finned coils for high heat transfer efficiency and long life. The unit cabinet is constructed of G-90 galvanized steel. All exterior surfaces are finished with a baked-on polyester coating. This will provide excellent corrosion protection in most applications. However, if the unit is installed in an area with a corrosive atmosphere, such as near an industrial plant or on the seacoast, additional coating should be considered to extend the life of the coils and cabinet.

This unit was designed for up to 105°F of ambient temperature for the cooling mode; for heating mode, this unit was designed for up to 78°F of room temperature and minimum 15°F ambient temperature.

## INSPECTION AND UNPACKING

A thorough inspection of the shipping container should be made immediately upon receiving your unit. Look for any punctures or openings. If it appears as if damage has occurred, it should be noted on the freight bill before signing. The delivering carrier should be contacted immediately to inspect damage, and no installation work should begin until this inspection is completed.

### **⚠ DANGER**

**BEFORE PERFORMING ANY WORK ON THIS EQUIPMENT, POWER SUPPLY MUST BE TURNED OFF AT THE HOUSEHOLD SERVICE BOX TO AVOID THE POSSIBILITY OF SHOCK, INJURY, DEATH, OR DAMAGE TO EQUIPMENT.**

## SAFETY RULES

### **⚠ WARNING**

**FAILURE TO FOLLOW THESE RULES AND INSTRUCTIONS COULD CAUSE A MALFUNCTION DESTRUCTION OF EQUIPMENT WHICH COULD RESULT IN PROPERTY DAMAGE, SERIOUS BODILY INJURY, OR DEATH.**

1. Installation and repair **MUST** be done by a qualified person. The equipment should be inspected before use and at least once annually by a professional service person.
2. **AVOID ELECTRICAL SHOCK!** Turn power OFF when servicing. There may be more than one disconnect switch to de-energize unit.
3. Close cover(s) before returning breaker(s) to "ON" position.
4. Please observe good safety practices by wearing personal protective equipment such as gloves and safety glasses to avoid injury.
5. Installation **MUST** conform to local codes. In the absence of local codes, refer to the National Electrical Code (NEC), ANS/NFPA No. 70-1993 and recommendations made by the National Board of Fire Underwriters.

In all cases, the equipment **MUST** be installed in accordance with the installation instructions described in this manual.

### **⚠ WARNING**

**IMPROPER INSTALLATION MAY DAMAGE EQUIPMENT, CAN CREATE HAZARD, AND WILL VOID THE WARRANTY**

## OPERATING INSTRUCTIONS

If heating and cooling functions are controlled by separate thermostats, turn the furnace thermostat to the "OFF" position during the cooling season to prevent simultaneous operation of the heating and cooling systems. Reverse the procedure during the heating season.

If the same thermostat controls both heating and cooling functions, set the thermostat to either HEAT or COOL as desired.

Set the desired temperature on your thermostat and set the fan switch to "ON" (for continuous air circulation) or to "AUTOMATIC" (for air circulation only when the heat pump system is operating).

### **IMPORTANT**

Wait at least three (3) minutes after turning the air conditioner off before trying to restart. If an attempt is made to start the compressor before the refrigerant pressures are equalized, the compressor motor may trip on its overload. An additional waiting period will be required before restarting.

## MAINTENANCE

1. Always install and keep filters clean. Check filters every 2 weeks. Clean or replace if necessary. The factory-installed filter is located behind the center front access panel.

TO CHANGE SYSTEM FILTER:

- A. Turn the power to the unit off at the unit disconnect. The disconnect is located on the front of the unit behind a small access door.
- B. Remove the front center access door from the unit.
- C. Remove and replace the filter with the type and size indicated in the table below.
- D. Replace the access door and turn on the power to the unit

**NOTE:** If your system has a filter grille installed in the return air opening, the unit filter should have been discarded during installation.

The filter installed into the return air grille assembly should be replaced with the same size and type provided with the grille.

If your system is equipped with a fresh air intake, the filter for the fresh air assembly is accessed through the front center panel. The filter is a permanent washable type.

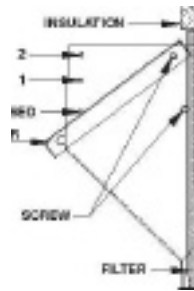
Unit Model	QTY	Filter Size - In (mm)	Type
36	1	16 x 30 x 1 (406 x 762 x 25)	(Standard) Disposable
36	1	16 x 30 x 2 (406 x 762 x 51)	(Optional) Pleated
42,48,60	1	20 x 30 x 1 (508 x 762 x 25)	(Standard) Disposable
42,48,60	1	20 x 30 x 2 (508 x 762 x 51)	(Optional) Pleated

### **⚠ WARNING**

**SERIOUS INJURY MAY RESULT IF WATER SPRAY IS DIRECTED TOWARD LIVE ELECTRICAL CONNECTIONS OR POWER SOURCE.**

#### TO CLEAN FRESH AIR INTAKE FILTER:

- A. Follow steps A and B at left  
"TO CHANGE SYSTEM FILTER".
  - B. Gently pull out the filter from the bottom.
  - C. Wash the filter with water.
  - D. Reinstall the filter, by sliding it into the retaining rail.
  - E. Replace the access door and turn the power on to the unit.
2. Keep the outdoor coil clean. Wash it down with a garden hose if necessary.



BE SURE THE UNIT DISCONNECT IS IN THE "OFF" POSITION AND THAT ALL ELECTRICAL POWER TO THE UNIT IS TURNED OFF BEFORE CLEANING THE SYSTEM.

3. Since the heat pump is located outdoors, it is exposed to all weather elements. Treat it with a good automobile paste wax twice a year (in the spring and fall).

Check with your contractor if you have any questions regarding the maintenance or operation of your unit.

### INSTALLATION (A: CODES)

The installer SHALL comply with all local, state, and federal codes and/or regulations pertaining to this type of equipment and its installation. Such codes and/or regulations should take precedence over any recommendations contained herein.

Installations SHALL be made in accordance with the National Electrical Code, local codes, and recommendations made by the National Board of Fire Underwriters.

### INSTALLATION (B: UNIT SITE SELECTION)

1. To eliminate noise from being transmitted into noise sensitive areas, the unit should NOT be installed on walls adjoining bedrooms, sleeping quarters, or adjacent to windows.
2. Locating the unit as close as possible to the main duct system or area to be conditioned, will prevent lengthy duct runs and unnecessary thermal and air-pressure losses.
3. The clearance to combustibles is 0" on all sides, and 1/4" for the first three (3) feet of supply duct.
4. The condenser air inlets (left, right and bottom inlets) SHALL be located at least 8" away from walls or other obstructions for unrestricted airflow.
5. The condenser air outlet should be located at least 6' away from any obstructions to prevent recirculation of condenser air.
6. Bottom of the unit SHALL be located at least 12" away from the ground or other obstructions for unrestricted airflow.
7. Service clearance is 28" from the electrical box access panel located on the front of the unit and 28" from the center, upper, and lower front access panels.
8. The wall selected for unit installation MUST be able to or be made to safely support the weight of the unit.
9. Do NOT locate where heat, lint or exhaust fumes will be discharged on the unit (as from dryer vents).

### INSTALLATION (C: UNIT PREPARATION)

1. AVHA model units have top rain flashing built onto the unit. The bottom-mounting flange for all models is shipped separately and in place. (Refer to "Section J. Unit Installation" for the recommended use of the bottom flange.)
2. Electrical entrances are located on the right side and left side of all AVHA units. Refer to "Section H. Electrical Hook-up" for details.
3. Bend the lids of return and supply opening to form a return and supply air collars and install air gaskets.
4. The supply and return air ducts should be checked to be sure they:
  - e. Match the openings on the unit to be installed.
  - f. Have the same distance between them vertically as the openings on the unit to be installed.
5. Return and supply grilles must be used when the return and supply are not ducted. When a supply grille is used in the installation, the louver spacing must be no greater than 5/8 inch.
6. If the factory-installed filter is used on your installation, access to the filter is made through the center panel on the front of the unit.

IF A REMOTE FILTER IS USED, SUCH AS A FILTER GRILLE, THE FACTORY-INSTALLED FILTER MUST BE REMOVED AND DISCARDED.

### INSTALLATION (D: DUCTWORK)

1. Properly-sized duct systems are critical for satisfactory operation of any air conditioning system. All ductwork MUST be correctly sized for the design air flow requirement of the equipment.
2. The recommended operation duct static is to deduct 0.07" W.C. for any size of heater 5 kW to 20 kW on factory or field-installed heaters.
3. Ductwork routed through wall cavities, as well as any duct not in conditioned space, MUST be insulated. Supply ducting routed through exterior walls MUST be insulated with 1" insulation to the back of the unit.
4. Supply and return air ducts should be flush with the exterior wall and sized to fit over the unit duct collars in order to compress the collar air gasket.
5. If supply duct is flashed to the exterior of a building constructed with combustible material, the flashing MUST be insulated in order to maintain the required clearances to combustible materials. Required clearance is 1/4" for the first three (3) feet of supply duct.

### INSTALLATION (E: FILTERS)

1. One-inch disposable filters are supplied standard in each unit. Two-inch disposable filters can also be used and are available as an option. The filter rack is adjustable to accommodate 2" filters. The filter rack on this series is adapted by removing the 1" filter brackets. Refer to the Maintenance section for the procedures for changing the filters.
2. If a filter grille is used in the installation, the filter should be properly sized to allow a maximum velocity of 400 FPM.

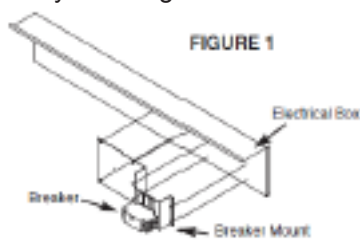
WHEN A FILTER IS USED, THE FACTORY-INSTALLED FILTER MUST BE REMOVED.

## INSTALLATION (F: ELECTRICAL POWER)

The installer **MUST** check available power to make certain it matches the unit nameplate rating and that constant voltage can be maintained to the unit. Unsatisfactory and unsafe performance could otherwise result. The local power company should be contacted about questions concerning power supply.

## INSTALLATION (G: BREAKER/DISCONNECT)

These units are standard equipped from the factory with a unit disconnect. This is in the form of a circuit breaker (230V models) or disconnect (460V models). If an optional electric heat kit is to be installed, follow the instructions included with the heater assembly. See Figure 1 for reference.



### ⚠ WARNING

**ELECTRICAL EQUIPMENT SHOULD BE INSTALLED BY A QUALIFIED, LICENSED ELECTRICIAN. IMPROPER ELECTRICAL HOOK-UP MAY DAMAGE EQUIPMENT, CAN CREATE A HAZARD AND WILL VOID WARRANTY.**

## INSTALLATION (H: ELECTRICAL HOOKUP)

The line voltage electrical service can be routed through the right side panel or left side panel. Each area is supplied with two line voltage knock-outs (1/2" – 3/4" and 1" – 1 1/4"). Low voltage wiring can be routed through the right side panel.

**NOTE:** When routing line voltage through the return air compartment, conduit **MUST** be used (even though this is a dry area) to comply with the NEC code. Refer to the ELECTRICAL DATA tables for minimum wire size and maximum breaker size. All wire sizes listed under the dual-feed circuit column are based on no more than three (3) conductors in the same conduit. If two circuits or more than three (3) conductors are to be routed in the same conduit, the ampacity of the wire size listed **MUST** be derated. Refer to Article 310 of the NEC code for adjustment factors. Be sure to install a ground wire of the proper size to the unit's equipment ground lug.

The blower motor must be powered by 240V or 277V supply. If the unit is supplied by 460V power, and a neutral connection is unavailable, the motor may be powered by a 460V to 277V or 240V transformer.

## INSTALLATION (I: LOW VOLTAGE WIRING)

230 volt, 1- and 3-phase units are equipped with dual-primary voltage transformers for 208/240 volt operation. These models are factory wired to the 240 volt tap. For 208 volt operation connect the factory-installed black wires from the 240 volt tap to the 208 volt tap. The acceptable voltage range of the tap is as follows.

Tap	Voltage Range
240 Volt	253 - 216
208 Volt	220 - 187

Six (6) conductor thermostat wires should be run from the thermostat location to the unit. If the unit is equipped with a

powered fresh air option, seven (7) conductor thermostat wires should be run to the unit. Thermostat wire should be sized as shown on the table below.

Wire Gauge	Maximum Length - Ft (meters)
20	45 (13.7)
18	60 (18.3)
16	100 (30.5)
14	160 (48.8)
12	250 (76.2)

Refer to wiring diagrams for connection details.

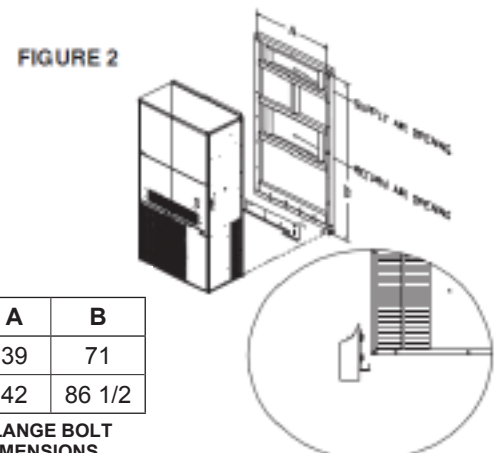
## STAGING OF ELECTRIC HEAT

Units with electric heat assemblies are wired for two stage heat in normal operation. The first stage is refrigerant heat (Y and G terminals are energized and the O terminal is de-energized). The second stage is auxiliary resistance heat (W is energized). AVHA units are equipped with an emergency heat lock-out relay. This will disable the compressor when the E terminal is energized. Do not install a jumper between the W and E terminals; this would keep the compressor contacts from being energized and prevent the compressor from operating.

## INSTALLATION (J: UNIT INSTALLATION)

AVHA UNITS ARE FOR USE IN 1-STORY BUILDINGS ONLY.

- As previously stated, the wall that the unit is to be installed onto **MUST** be strong enough to support the unit under the condition for which it will be used. For example, a unit to be installed on a building that is intended to be transported will require more wall strength than a unit installed at a permanent site. Existing walls may need additional reinforcement. **NEVER RELY ON EXTERIOR SIDING OR PLYWOOD TO SUPPORT THE UNIT.** Figure 2 below represents a typical installation of a single-story stud wall at a permanent site. Since building materials and techniques vary with regions and intended use, a building contractor and/or local building code official **MUST** be consulted for suitable construction methods.
- Locate and attach the lower mounting bracket in the desired location on the building.
- Apply a suitable amount of caulk or silicone across the entire length of the top rain flashing and side mounting flanges.
- Remove the flanges on both ends of the pallet and slide the unit approximately 2" off the rear of pallet. Lift unit gently into location with fork truck, taking care to align unit with lower mounting bracket.
- While allowing a small portion of weight on the lower bracket, push the unit against the wall and fasten appropriately.



## SPECIAL NOTES FOR UNIT INSTALLATION

1. Minimum 12" clearance at the bottom of the unit for unrestricted airflow
2. Ensure the ambient temperature uniformity around unit
3. Intake and discharge of the outdoor air flow must not be restricted or altered
4. All insulation and sealing related to the installation must be completed properly
5. External Static pressure should not exceed the minimum value in the AHRI Standard 390

## INSTALLATION (K: CONDENSATE DRAIN)

A 3/4" drain hose is located on the bottom side of the unit. The drain may be extended for condensate removal to comply with local codes (use fitting size or larger). Install a condensate trap on this line.

## INSTALLATION (L: OPTIONS)

Marvair wallmount air conditioners and heat pumps have the ability to equip a variety of options:

- Electric Heat 5-20kW
- Sound Attenuation Module
- Powered Ventilation Damper
- Low Ambient Packages
- Economizer
- Lead Lag Controllers

Option kits must be installed according to the respective installation manual to ensure safe and reliable operation. Installation manuals are included with the option kit or can be found on the Marvair website, [www.marvair.com](http://www.marvair.com).

## INSTALLATION (M: SEQUENCE OF OPERATION)

### COOLING MODE

Low-voltage thermostat terminal R is connected to Y, O, and G, at the unit low-voltage terminal board.

The system reversing valve is energized during the cooling mode. Power is supplied to the reversing valve solenoid through the low-voltage O terminal. The low-voltage Y terminal to the control will energize the contactor latch coil (causing the contactor to energize the compressor). The low-voltage Y terminal to the control will also energize the control's timer. During the cooling mode, the defrost thermostat is open (coil temperature is above 30°F) and will not allow the time to be accumulated to initiate the defrost mode. The outdoor fan is wired through the N/C points of the control's relay and the N/O points of the contactor. The fan motor will be energized whenever the contactor is energized (except during defrost).

### HEATING MODE

Low-voltage terminal R is connected to Y and G, at the unit low-voltage terminal board.

The system reversing valve is not powered during the heating mode. With the thermostat system switch turned to heat. The Y terminal will energize the compressor, outdoor fan, and the indoor blower.

### DEFROST MODE

To prevent ice build-up on the coil during the heating mode, as the outdoor coil temperature falls below 30°F ±5°F, an outdoor

defrost thermostat closes. (This thermostat is located on a coil tube.) When the thermostat closes, the timer on the defrost control starts accumulating the compressor run time. After the selected time (30, 60, or 90 minutes) has been accumulated, the controller will start the defrost cycle regardless of the outside temperature. During the defrost cycle, the system is switched back into the cooling mode by the control de-energizing the reversing valve solenoid. The N/C pole of the control fan relay is opened, turning off the outdoor fan to allow the outdoor coil to be warmed (defrosted) faster. The defrost control energizes the indoor auxiliary heat relays through the E terminal to temper the indoor supply air. This terminal should be connected to E (second-stage heat) on the thermostat.

After the defrost thermostat reaches 65°F ±5°F, the defrost cycle will end. The control will not allow the defrost to continue longer than 10 minutes.

### DEFROST TIME SELECTION

The defrost control has three selectable time intervals: 30, 60 and 90 minutes. The timing is factory set at 60 minutes. This timing has been determined by testing to provide the best operating efficiency. In areas where the humidity is lower than normal, the timer may be set to a higher time (90 minutes). To change the time, move the timer jumper to the postmarked 30 for 30 minutes, 60 for 60 minutes, or 90 for 90 minutes.

### DEFROST TEST POST

The defrost control has test posts to speed up the defrost time setting by a factor of 256.

If you want to initiate a defrost without waiting for the time to accumulate, you can jumper the two test pins (marked test). If the coil temperature is above 30°F you will need to jumper the DFT (defrost thermostat) terminals to simulate a closed thermostat. The defrost cycle should occur in 7 seconds for a 30-minute setting, 14 seconds for a 60-minute setting, and 17 seconds for an 90-minute setting. If the jumper is removed immediately when the defrost cycle starts, the cycle will end if the defrost thermostat is opened (coil above 65°F). If the test pins remain jumped, and the defrost thermostat is closed, the defrost will end in 2.3 seconds, which is the 10-minute default.

**DURING THE ABOVE TEST, DO NOT CONTACT OR SHORT ANY OTHER PIN. THIS MAY DAMAGE THE CONTROL.**

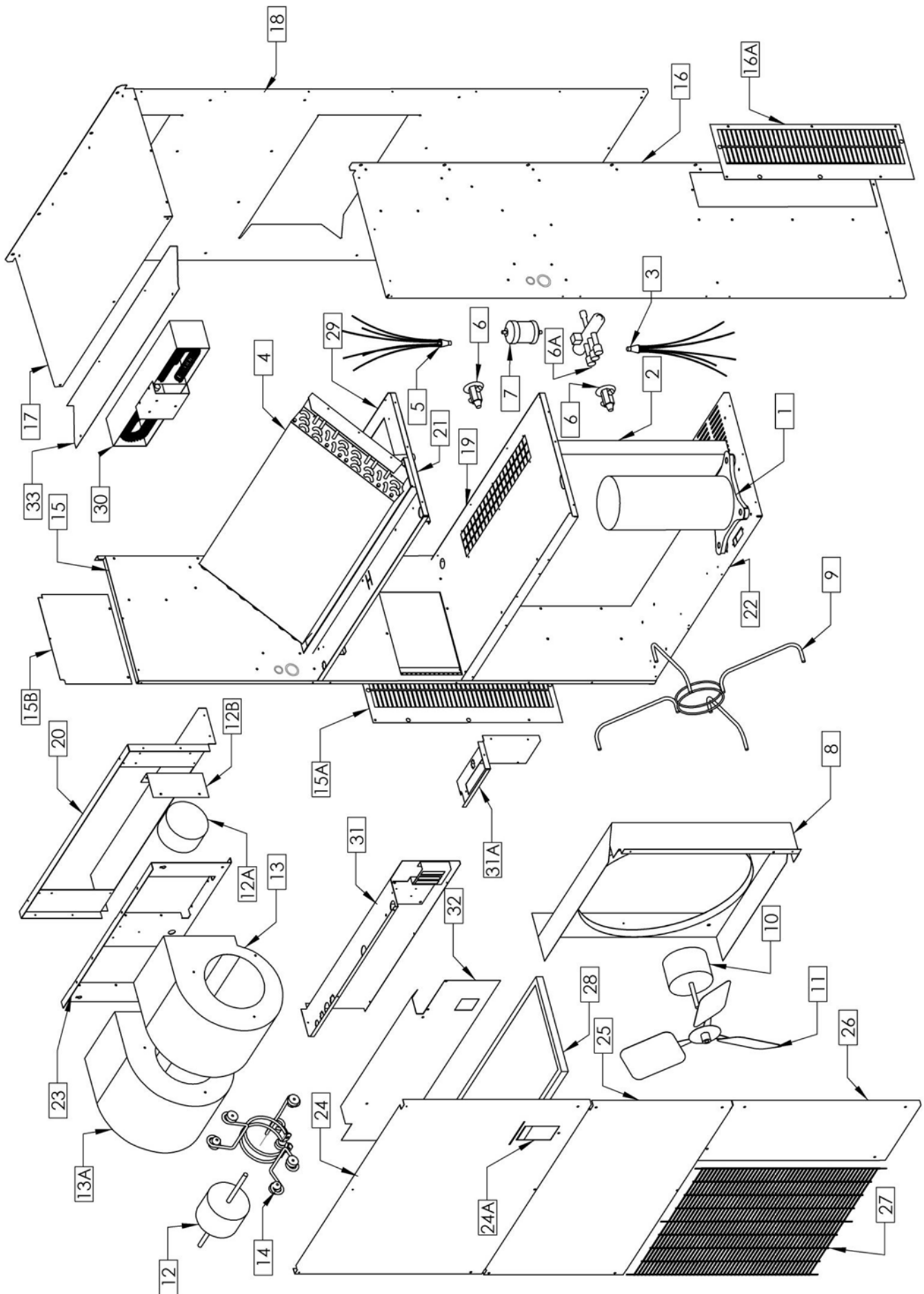
## INSTALLATION (N: HIGH-PRESSURE LOCKOUT)

### FIELD CHARGING

Compared to a cooling-only unit, a heat pump is difficult to field charge correctly without the use of charging scales. It is recommended the charge be weighed in with an accurate charging scale. The correct charge weight can be found on the unit name plate.

AVHA units may be equipped with a high-pressure switch. This switch is wired through a lockout relay to lock out the system if the high side pressure exceeds 650 psi. The high side pressure MUST be below 450 psi before the system can be reset.

EXPLODED PARTS DRAWING - 36/42/48/60



	PART NUMBER	DESCRIPTION	36S	36T	36D	42/48S	42/48T	42/48D	60S	60T	60D
1	COMP-BZP31-001	ZP31K5EPFV130	X								
1	3020004	ZP31K5ETF5130		X							
1	3020005	ZP31K5ETFD130			X						
1	COMP-BZP44-001	ZP44K5EPFV130				X					
1	COMP-BZP44-003	ZP44K5ETF5130					X				
1	COMP-BZP44-004	ZP44K5ETFD130						X			
1	COMP-BZP54-001	ZP54K5EPFV130							X		
1	COMP-BZP54-003	ZP54K5ETF5130								X	
1	COMP-BZP54-004	ZP54K5ETFD130									X
2	COND-H436	OUTDOOR COIL	X	X	X						
2	3070001	OUTDOOR COIL				X	X	X	X	X	X
3	550505	DISTRIBUTOR 3 CIRCUIT-OD COIL	X	X	X						
3	550517	DISTRIBUTOR 6 CIRCUIT-OD COIL				X	X	X	X	X	X
4	T36-EVAP	EVAP COIL	X	X	X						
4	3070002	EVAP COIL				X	X	X	X	X	X
5	550517	DISTRIBUTOR 6 CIRCUIT-EVAP	X	X	X						
5	550521	DISTRIBUTOR 9 CIRCUIT-EVAP				X	X	X	X	X	X
6	TXV410-E3	TXV VALVE	X	X	X						
6	TXV410-E5-HP	TXV VALVE				X	X	X	X	X	X
6A	550792	REVERSING VALVE									
7	61508	BI-FLOW FILTER DRIER	X	X	X	X	X	X	X	X	X
8	T36-0008	FAN SHROUD HV36	X	X	X						
8	T60-0008	FAN SHROUD HV48-60				X	X	X	X	X	X
9	421508	MOTOR MOUNT OD FAN	X	X	X						
9	259109	MOTOR MOUNT OD FAN				X	X	X	X	X	X
10	025015/3010014	MOTOR OD 230V 825 RPM	X	X							
10	025018	MOTOR OD 460V 1/4 HP 825 RPM			X						
10	351145	MOTOR OD 230V 1075 RPM 1/2 HP				X	X		X	X	
10	351146	MOTOR OD 460V 1/2 HP						X			X
11	259114	OD FAN BLADE 22" HV36-60	X	X	X	X	X	X	X	X	X
12	359104	1/3 HP ECM BLOWER MTR 230V/277V	X	X	X						
12A	3010020	1/3 HP ECM MODULE	X	X	X						
12	359105	1/2 HP ECM BLOWER MTR 230V/277V				X	X	X	X	X	X
12A	3010021	1/2 HP ECM MODULE				X	X	X	X	X	X
12B	T36-0131	ECM MODULE BRACKET	X	X	X	X	X	X	X	X	X
13	050001	R.BLOWER WHEEL 98-7T CW	X	X	X						
13A	050000	L.BLOWER WHEEL 98-7T CCW	X	X	X						
13	3020002	R.BLOWER WHEEL 100-9T CW				X	X	X	X	X	X
13A	3020003	L.BLOWER WHEEL 100-9T CCW				X	X	X	X	X	X
14	421506	BLWR MTR BRKT	X	X	X	X	X	X	X	X	X
14A	454280	BLWR MTR BRKT GROMMET TUBE	X	X	X	X	X	X	X	X	X
14B	454282	BLWR MTR BRKT WASHER TUBE	X	X	X	X	X	X	X	X	X
14C	454284	BLWR MTR BRKT MOUNTING SLEEVE	X	X	X	X	X	X	X	X	X
14D	454236	BLWR MTR BRKT WASHER	X	X	X	X	X	X	X	X	X
14E	750058	BLWR MTR BRKT BOLT(1/4-20)	X	X	X	X	X	X	X	X	X
15	T36-0000B	ASSEMBLY LEFT SIDE PANEL HV36	X	X	X						
15A	T36-0135	OD.GRILL INLET LEFT SIDE HV36	X	X	X						
15	T60-0008	ASSEMBLY LEFT SIDE PANEL HV48-60				X	X	X	X	X	X
15A	T60-0091	OD.GRILL INLET LEFT SIDE HV48-60				X	X	X	X	X	X
15B	T36-0126	ERV INTAKE AIR PANEL	X	X	X	X	X	X	X	X	X
16	T36-0001B	ASSEMBLY RIGHT SIDE PANEL HV36	X	X	X						
16A	T36-0134	OD.GRILLINLET RIGHT SIDE HV36	X	X	X						
16	T60-0001B	ASSEMBLY RIGHT SIDE PANEL HV48-60				X	X	X	X	X	X
16A	T60-0081	OD.GRILL INLET RIGHT SIDE HV48-60				X	X	X	X	X	X
17	T36-0007B	TOP HV36	X	X	X						
17	T60-0007B	TOP HV48-60				X	X	X	X	X	X
18	T36-0012	ASSEMBLY REAR PANEL HV-36	X	X	X						
18	T60-0012	ASSEMBLY REAR PANEL HV48-60				X	X	X	X	X	X
19	T36-0003	ASSEMBLY DIVIDER DECK HV-36	X	X	X						
19	T60-0003	ASSEMBLY DIVIDER DECK HV48-60				X	X	X	X	X	X
20	T36-0005	ASSEMBLY BLOWER DECK HV36	X	X	X						
20	T60-0005	ASSEMBLY BLOWER DECK HV48-60				X	X	X	X	X	X
21	2022-0006P	ASSEMBLY DRAIN PAN HV36	X	X	X						
21	2023-0006P	ASSEMBLY DRAIN PAN HV48-60				X	X	X	X	X	X
22	T36-0098	BASE PAN ASSEMBLY HV36	X	X	X						
22	T60-0098	BASE PAN ASSEMBLY HV48-60				X	X	X	X	X	X
23	T36-0018	BLOWER FLANGE HV36	X	X	X						
23	T60-0018	BLOWER FLANGE HV60				X	X	X	X	X	X
24	T36-0010B	UPPER FRONT PANEL HV36	X	X	X						
24	T60-0010B	UPPER FRONT PANEL HV48-60				X	X	X	X	X	X
24A	2022-5062	DISCONNECT ACCESS DOOR HV36-60	X	X	X	X	X	X	X	X	X
24B	70518	DISCONNECT ACCESS DOOR LATCH HV36-60	X	X	X	X	X	X	X	X	X
25	T36-0011B	MIDDLE FRONT PANEL (no fresh air) HV36	X	X	X						
25	T36-0011EB	MIDDLE FRONT PANEL (economizer f/a) HV36	X	X	X						
25	T36-0011FB	MIDDLE FRONT PANEL (barometric f/a) HV36	X	X	X						



	PART NUMBER	DESCRIPTION	36S	36T	36D	42/48S	42/48T	42/48D	60S	60T	60D
25	T60-0011B	MIDDLE FRONT PANEL (no fresh air) HV48-60				X	X	X	X	X	X
25	T60-0011EB	MIDDLE FRONT PNL (economizer f/a) HV48-60				X	X	X	X	X	X
25	T60-0011FB	MIDDLE FRONT PNL (barometric f/a) HV48-60				X	X	X	X	X	X
26	T36-0017B	COMPRESSOR ACCESS DOOR HV36	X	X	X						
26	T60-0017B	COMPRESSOR ACCESS DOOR HV48-60				X	X	X	X	X	X
27	2022-5015	LOWER CONDENSER GRILL HV36	X	X	X						
27	2023-5015	LOWER CONDENSER GRILL HV48-60				X	X	X	X	X	X
28	659930	AIR FILTER DISPOSABLE 16x30x1 HV36	X	X	X						
28	3090005	AIR FILTER PLEATED 16x30x2 HV36	X	X	X						
28	659926	AIR FILTER DISPOSABLE 20x30x1 HV48-60				X	X	X	X	X	X
28	659924	AIR FILTER PLEATED 20x30x2 HV48-60				X	X	X	X	X	X
29	T36-0094	EVAP COIL DECK/FILTER RACK HV36	X	X	X						
29	T60-0094	EVAP COIL DECK/FILTER RACK HV48-60				X	X	X	X	X	X
29A	T36-0132	2 INCH FILTER BRKT HV36	X	X	X						
29A	T60-0132	2 INCH FILTER BRKT HV48-60				X	X	X	X	X	X
29B	T36-0133	1 INCH FILTER BRKT HV36	X	X	X						
29B	T60-0131	1 INCH FILTER BRKT HV48-60				X	X	X	X	X	X
	ETA1-05-HP	FIELD INSTALL HEAT KIT 5KW 1 PHASE 230V	X			X			X		
30	3010002	HEATER 5KW 1PH 230V	X			X			X		
	ETA1-10-HP	FIELD INSTALL HEAT KIT 10KW 1 PHASE 230V	X			X			X		
30	3010003	HEATER 10KW 1PH 230V	X			X			X		
	ETA3-06	FIELD INSTALL HEAT KIT 6KW 3 PHASE 230V		X			X			X	
30	3010006	HEATER 6KW 3PH 230V		X			X			X	
	ETA3-09	FIELD INSTALL HEAT KIT 09 KW 3 PHASE 230V		X			X			X	
30	3010007	HEATER 09 KW 3PH 230V		X			X			X	
	ETA4-06	FIELD INSTALL HEAT KIT 6KW 3 PHASE 460V			X			X			X
30	3010010	HEATER 6KW 3P 460V			X			X			X
	ETA4-09	FIELD INSTALL HEAT KIT 09KW 3 PHASE 460V			X			X			X
30	3010011	HEATER 09KW 3P 460V			X			X			X
	454332	SWITCH LIMIT 245F ONE SHOT	X	X	X	X	X	X	X	X	X
	454323	SWITCH LIMIT 160-30F 240	X	X	X	X	X	X	X	X	X
31	T36-0009	CONTROL PANEL HV36	X	X	X						
31A	T36-0093	TERMINAL BOARD PANEL HV36	X	X	X						
31	T60-0009	CONTROL PANEL HV48-60				X	X	X	X	X	X
31A	T60-0093	TERMINAL BOARD PANEL HV48-60				X	X	X	X	X	
32	T36-0036	CONTROL PANEL COVER HV36	X	X	X						
32	T60-0036	CONTROL PANEL COVER HV48-60				X	X	X	X	X	X
33	T36-0015	HEAT SHIELD HV36	X	X	X						
33	T60-0015	HEAT SHIELD HV48-60				X	X	X	X	X	X
	453150	COMP CONTACTOR 1 POLE 1P 25 AMP	X			X					
	453770	COMP CONTACTOR 2 POLE 1P 40 AMP							X		
	453772	COMP CONTACTOR 3 POLE 3P 25 AMP		X	X		X	X		X	X
	452842	PHASE MONITOR		X	X		X	X		X	X
	450502	COMP CAPACITOR 7.5/80X370V							X		
	450370	COMP CAPACITOR 7.5/45X370V	X								
	450378/450377	COMP CAPACITOR 10/70X370V -/-7.5/110X370V				X					
	450205	COND. MTR CAPACITOR 7.5X370V		X	X		X	X		X	X
	451000	TERMINAL BLOCK	X	X	X	X	X	X	X	X	X
	452752	TRANSFORMER 208/240V 50VA 24V	X	X		X	X		X	X	
	452756	TRANSFORMER 480V 50VA 24V			X			X			X
	452200	FAN RELAY	X	X		X	X		X	X	
	0821N-0084A	FAN RELAY			X			X			X
	42004	CIRCUIT BREAKER 2 POLE 1P 60 AMP 240V	X			X			X		
	453807	CIRCUIT BREAKER 3 POLE 3P 60 AMP		X			X			X	
	451955	DISCONNECT KIT 460V			X			X			X
	451956	DISCONNECT KNOB 460V			X			X			X
	0415-0028	LOW VOLTAGE TERMINAL BOARD	X	X	X	X	X	X	X	X	X
	454388	LOW PRESSURE SWITCH	X	X	X	X	X	X	X	X	X
	451988	HIGH PRESSURE SWITCH	X	X	X	X	X	X	X	X	X
	452195	LOCKOUT RELAY	X	X	X	X	X	X	X	X	X
	451995	DEFROST BOARD	X	X	X	X	X	X	X	X	X
	0445-0007	DEFROST TERMINATION SENSOR	X	X	X	X	X	X	X	X	X
	451049	JUMPER BAR ASSEMBLY	OPTIONAL	OPTIONAL		OPTIONAL	OPTIONAL		OPTIONAL	OPTIONAL	
	451840	OPTION BOARD	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	451992	FAN CYCLE SWITCH	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	1082628	CRANKCASE HEATER	OPTIONAL	OPTIONAL	OPTIONAL						
	1064905	CRANKCASE HEATER				OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	C-OPT-SH2-410	LOW AMBIENT KIT	OPTIONAL	OPTIONAL	OPTIONAL						
	C-OPT-SH-410	LOW AMBIENT KIT				OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	710805	SUPPLY GRILL	OPTIONAL	OPTIONAL	OPTIONAL						
	710810	SUPPLY GRILL				OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	710835	RETURN FILTER GRILL	OPTIONAL	OPTIONAL	OPTIONAL						
	710840	RETURN FILTER GRILL				OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL

## CLASSIC AVHA HEAT PUMP ELECTRICAL DATA

### Summary Electrical Ratings (Wire and Circuit Breaker Sizing)

AVHA Heat Pumps with Ventilation Configurations:

*Manual Damper, up to 15% Outside Air ("N")*

*Economizer, up to 100% Outside Air with Pressure Relief ("C")*

*Motorized Damper, up to 450 CFM of Outside Air with Pressure Relief ("B")*

*Manual Damper, up to 450 CFM of Outside Air ("Y")*

*Manual Damper, up to 15% Outside Air with Pressure Relief ("Z")*

ELECTRIC HEAT		000 = None		050 = 5 kw		060 = 6 kw		090 = 9 kw		100 = 10 kw		150 = 15 kw	
BASIC MODEL	VOLTAGE PHASE / HZ	SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>	
		MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>
AVHA36HPA	208/230-1-60	25.0	40	50.0	60					77.0	980	96.8	100
AVHA42HPA	208/230-1-60	27.0	40	52.0	60					79.0	80	98.8	100
AVHA48HPA	208/230-1-60	33.0	50	59.0	60					85.0	90	105.8	110
AVHA60HPA	208/230-1-60	39.0	60	65.0	70					91.0	100	111.8	115
AVHA36HPC	208/230-3-60	16.0	30			34.0	40	43.0	50			61.0	70
AVHA42HPC	208/230-3-60	23.0	35			41.0	50	50.0	60			68.0	70
AVHA48HPC	208/230-3-60	23.0	40			41.0	50	50.2	60			68.0	70
AVHA60HPC	208/230-3-60	26.0	40			44.0	50	53.0	60			71.0	80
AVHA36HPD	460-3-60	9.0	15			18.0	20	23.0	25			32.0	40
AVHA42HPD	460-3-60	11.0	15			20.0	25	25.0	25			34.0	40
AVHA48HPD	460-3-60	12.0	15			21.0	25	25.0	30			35.0	40
AVHA60HPD	460-3-60	14.0	20			23.0	30	27.0	30			37.0	40

<sup>1</sup>MCA = Minimum Circuit Ampacity (Wiring Size Amps)

<sup>2</sup>MFS = Maximum Fuse Size

<sup>3</sup>SPPE = Single Point Power Entry

MCA & MFS are calculated at 230 volts on the AVHAxxHPA and AVHAxxHPC models. The 460 volts AVHAxxHPD models are calculated at 460 volts. This chart should only be used as a guideline for estimating conductor size and overcurrent protection. For the requirements of specific units, always refer to the data label on the unit.

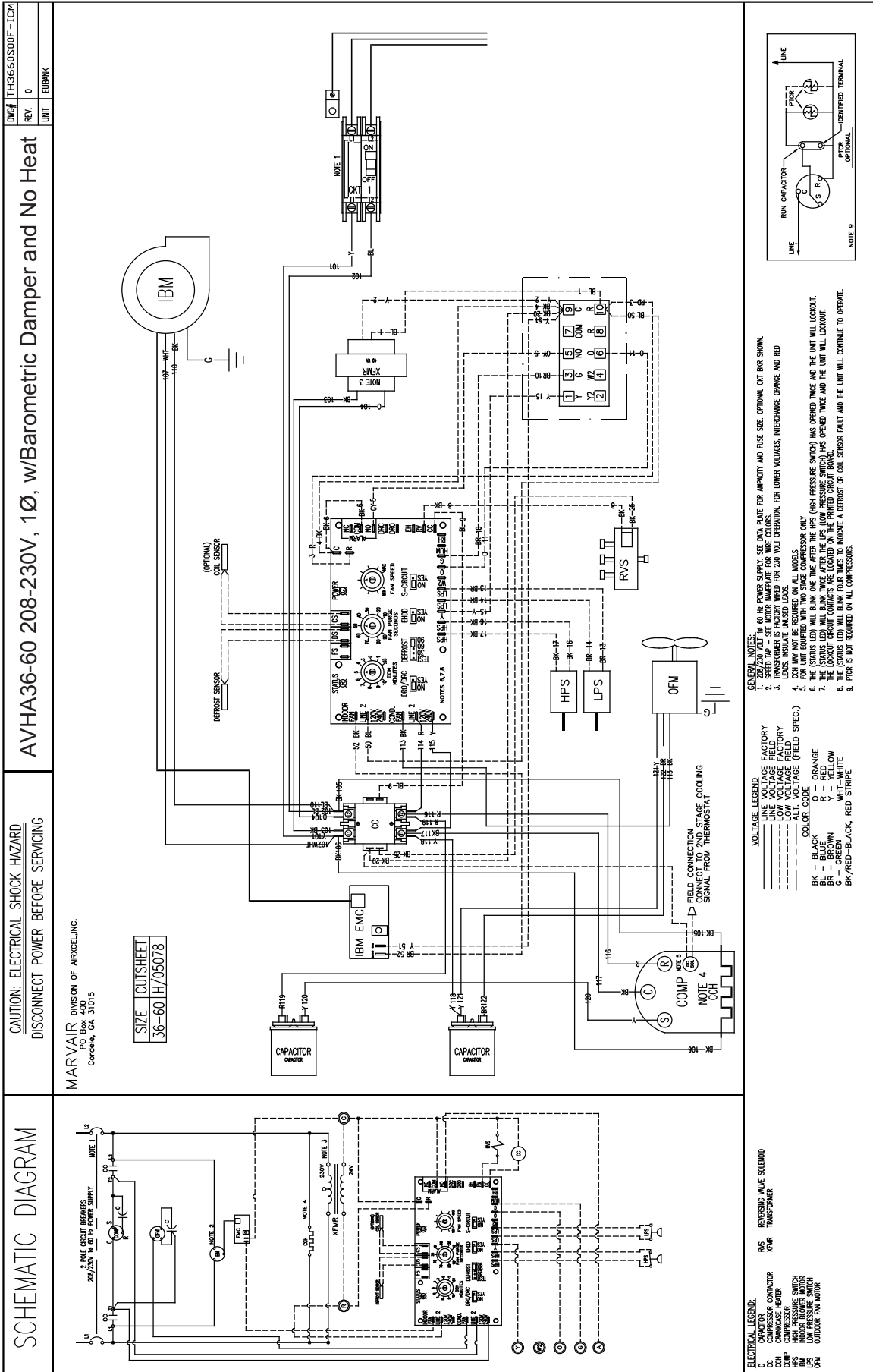


Figure 3: Typical Wiring Diagram, AVHA36-60 208-230V, 1Ø w/Barometric Damper & No Heat

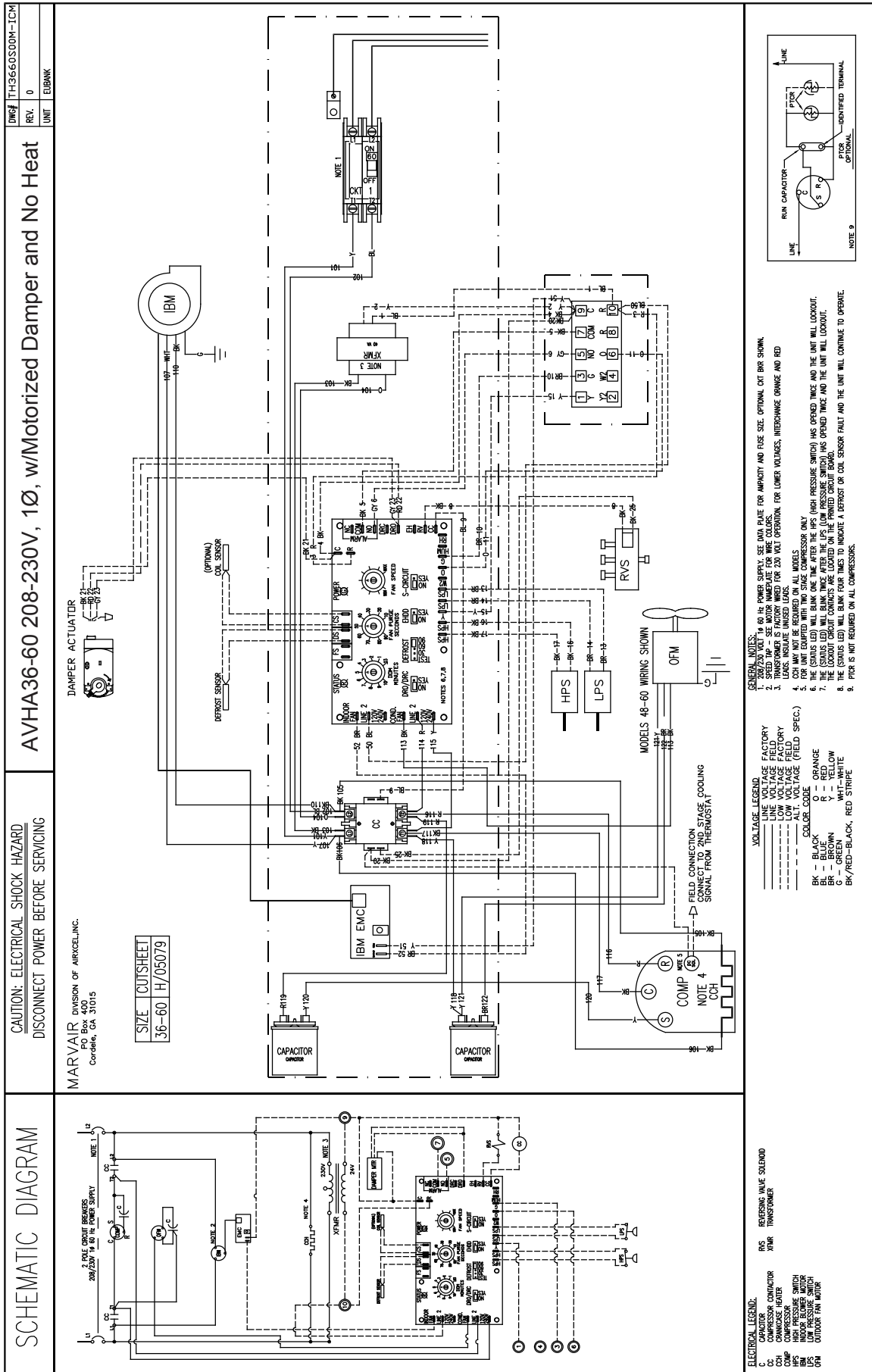
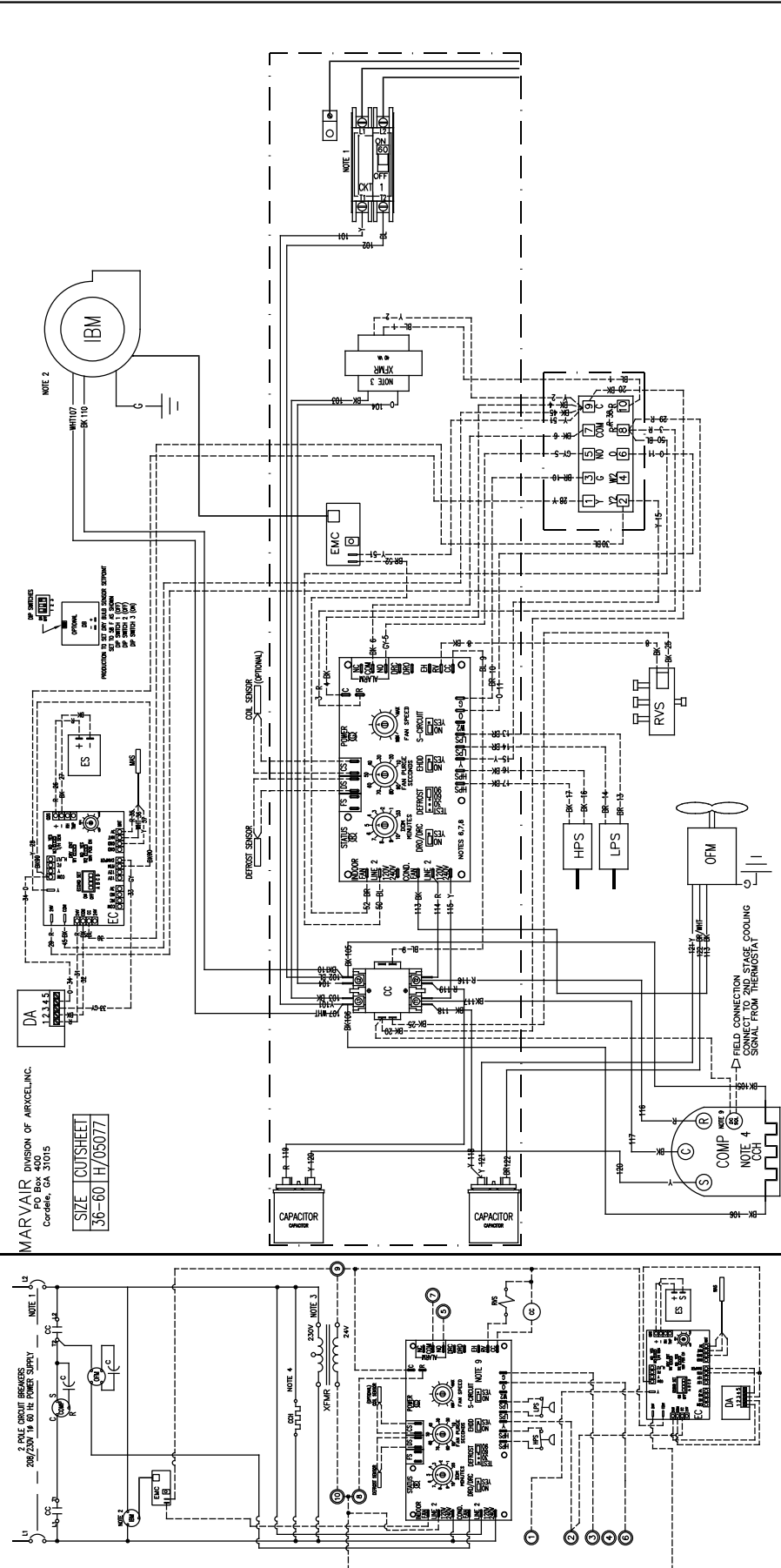


Figure 4: Typical Wiring Diagram, AVHA36-60 208-230V, 1ϕ w/Motorized Damper & No Heat

**CAUTION: ELECTRICAL SHOCK HAZARD**  
**DISCONNECT POWER BEFORE SERVICING**  
 MARVAIR DIVISION OF ARACEL, INC.  
 122445  
 36-60 H/05077  
 SIZE CUTSHEET  
 36-60 H/05077  
 CORDELE, GA 31015

**SCHEMATIC DIAGRAM**



**ELECTRICAL LEGEND:**

- COMP - COMPRESSOR
- CON - CONDENSER COIL
- COIL - COIL
- DA - DAMPER ACTUATOR
- EMC - ELECTRONIC MOTOR CONTROL
- EM - ELECTRONIC MOTOR CONTROL
- HPS - HIGH PRESSURE SWITCH
- HR - HEAT RECOVERY COIL
- IM - INDOOR BLUETOOTH MOTOR
- LPS - LOW PRESSURE SWITCH
- MAS - MILD AIR SENSOR
- RHS - REVERSE VALVE SILEND
- TRM - TRANSFORMER

**VOLTAGE LEGEND:**

- LINE VOLTAGE FACTORY
- LINE VOLTAGE FIELD
- LOW VOLTAGE FACTORY
- LOW VOLTAGE FIELD
- ALT. VOLTAGE (FIELD SPEC)

**COLOR CODE:**

- BK - BLACK
- BL - BLUE
- BR - BROWN
- Y - YELLOW
- W - WHITE
- BK/RED - BLACK, RED STRIPE

**GENERAL NOTES:**

1. 60 Hz POWER SUPPLY. SEE DATA SHEET FOR AMPLITUDE AND RISE SIZE. OPTIONAL OUT SIDE SHOWN.
2. FACTORY PROGRAMMED EXAM MOTOR.
3. WIRING MUST BE IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.
4. COIL MAY NOT BE REQUIRED ON ALL MODELS.
5. FOR UNIT EQUIPPED WITH TWO STAGE COMPRESSOR ONLY (HIGH PRESSURE SWITCH) HAS OPENED TRIP AND THE UNIT WILL LOCKOUT.
6. FOR UNIT EQUIPPED WITH TWO STAGE COMPRESSOR ONLY (LOW PRESSURE SWITCH) HAS OPENED TRIP AND THE UNIT WILL LOCKOUT.
7. THE LOCKOUT CIRCUIT CONTACTS ARE LOCATED ON THE PRINTED CIRCUIT BOARD.
8. CONTACTS MARKED WITH "L" INDICATE A LOCKOUT OF COIL SENSOR FAULT AND THE UNIT WILL CONTINUE TO OPERATE.
9. PRESS IS NOT REQUIRED ON ALL COMPRESSORS.

**NOTE 9:**

**Figure 5: Typical Wiring Diagram, AVHA36-60 208-230V, 1Ø w/Economizer & No Heat**

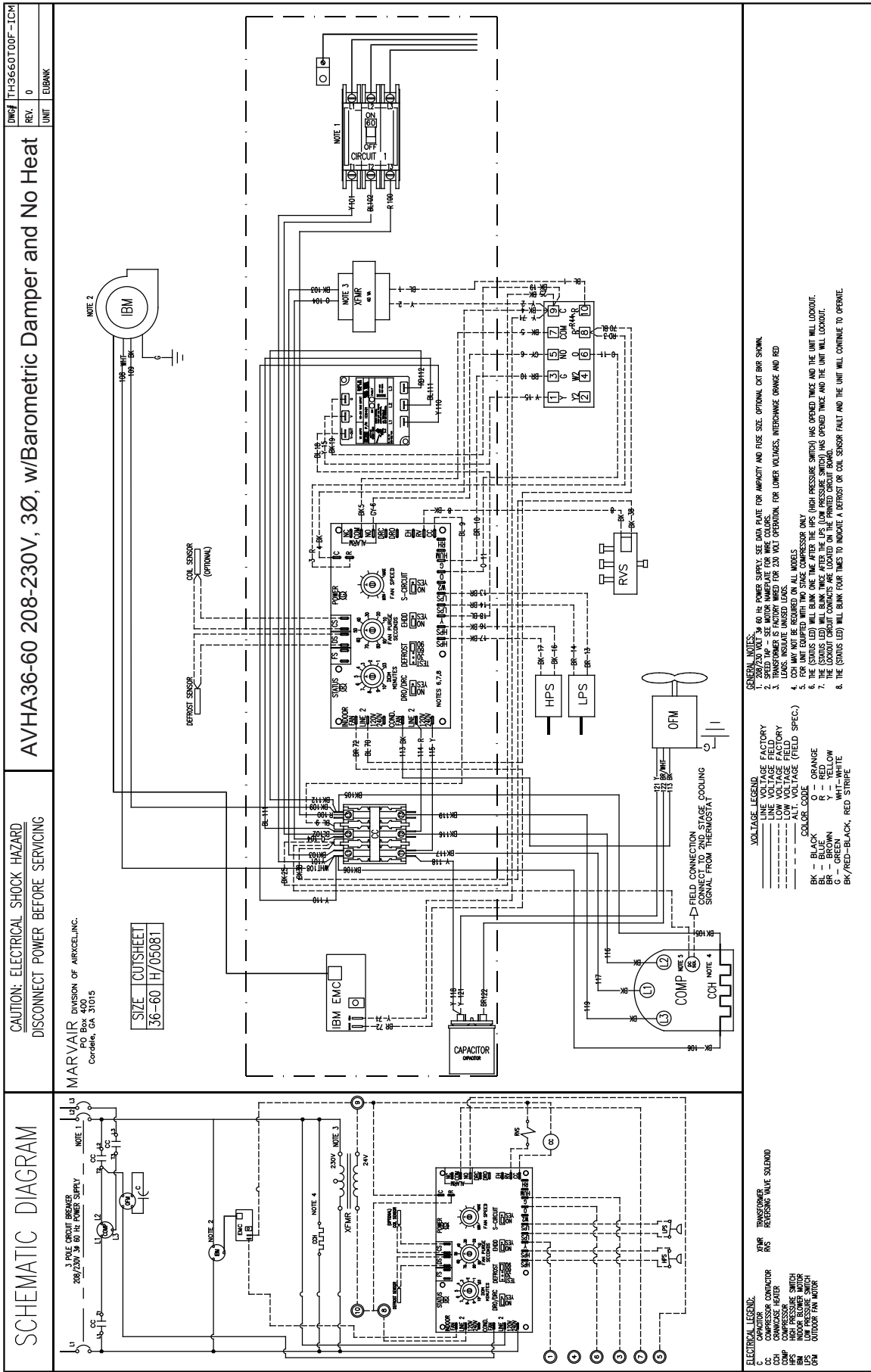


Figure 6: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø w/Barometric Damper & No Heat

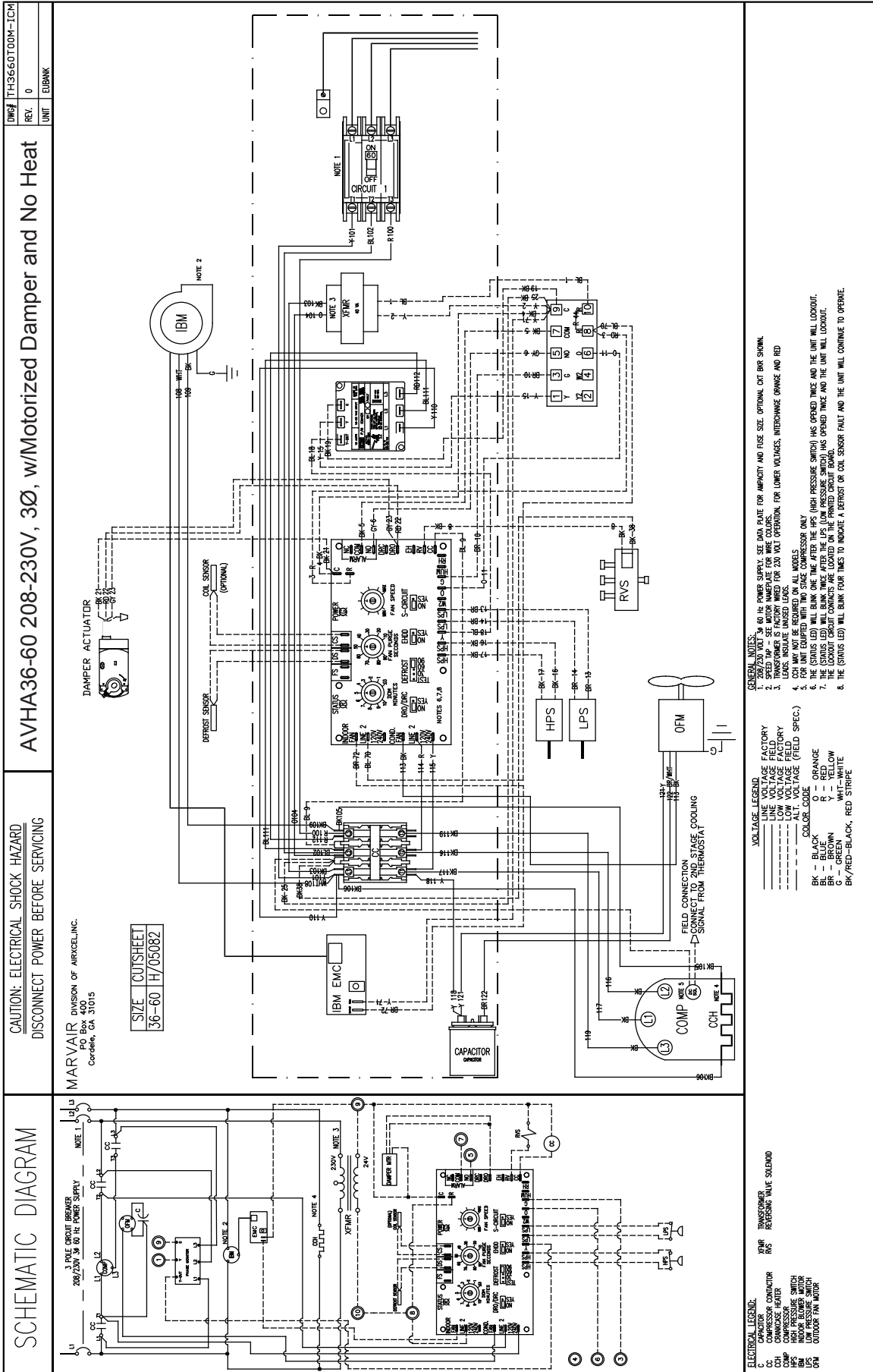


Figure 7: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø w/Motorized Damper & No Heat

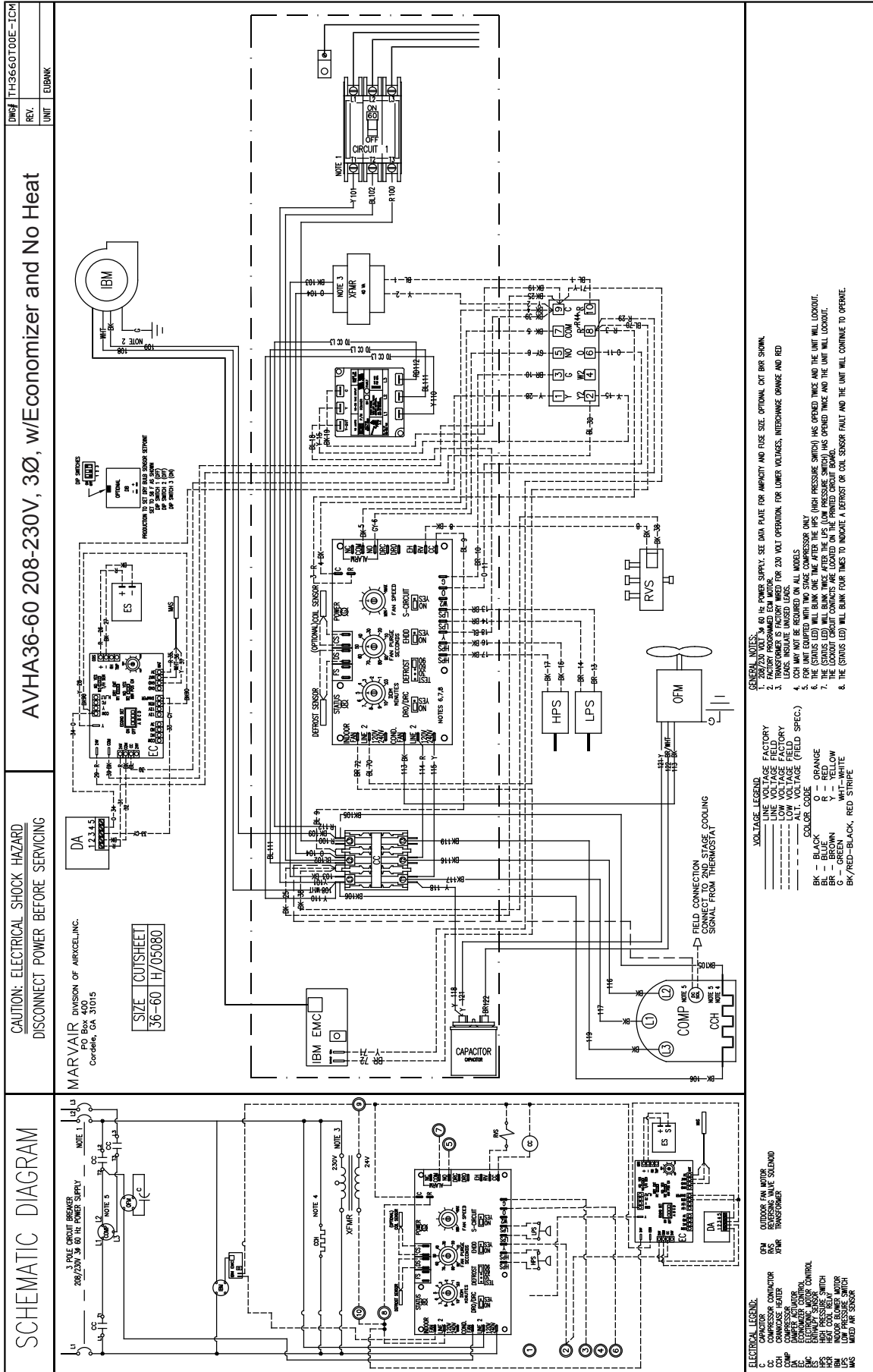


Figure 8: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø w/Economizer & No Heat



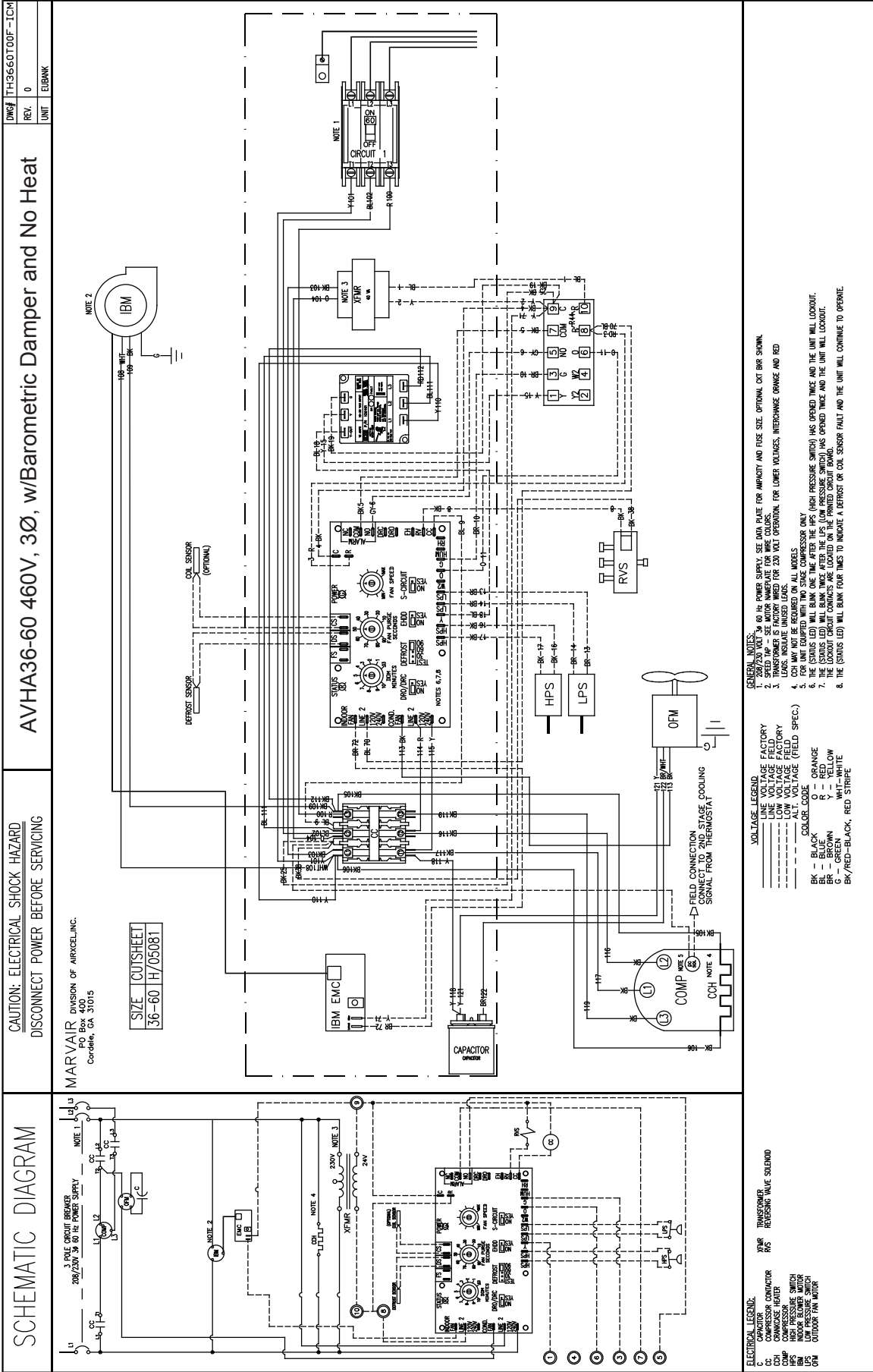


Figure 9: Typical Wiring Diagram, AVHA36-60 460V, 3Ø w/Barometric Damper & No Heat

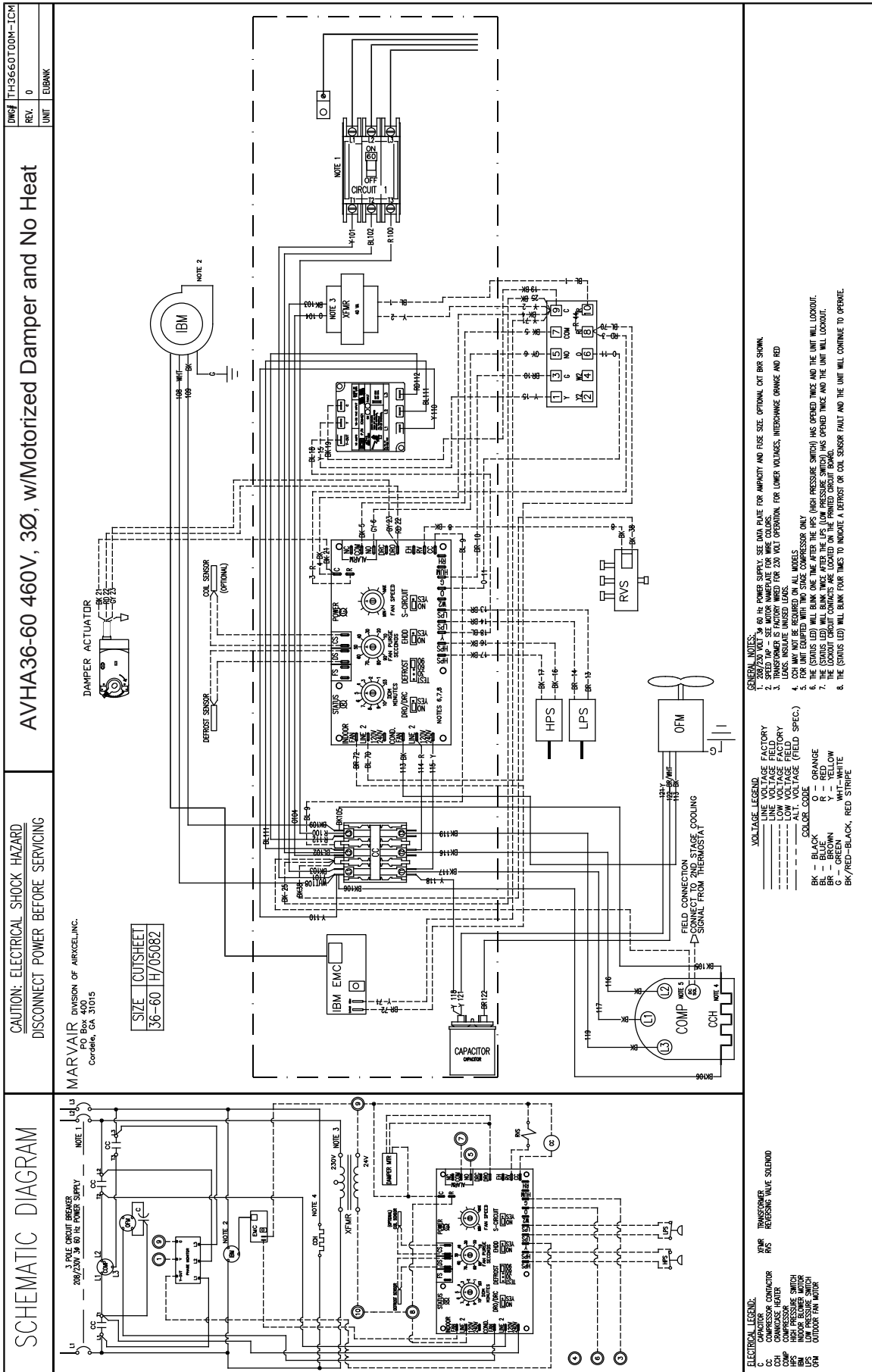
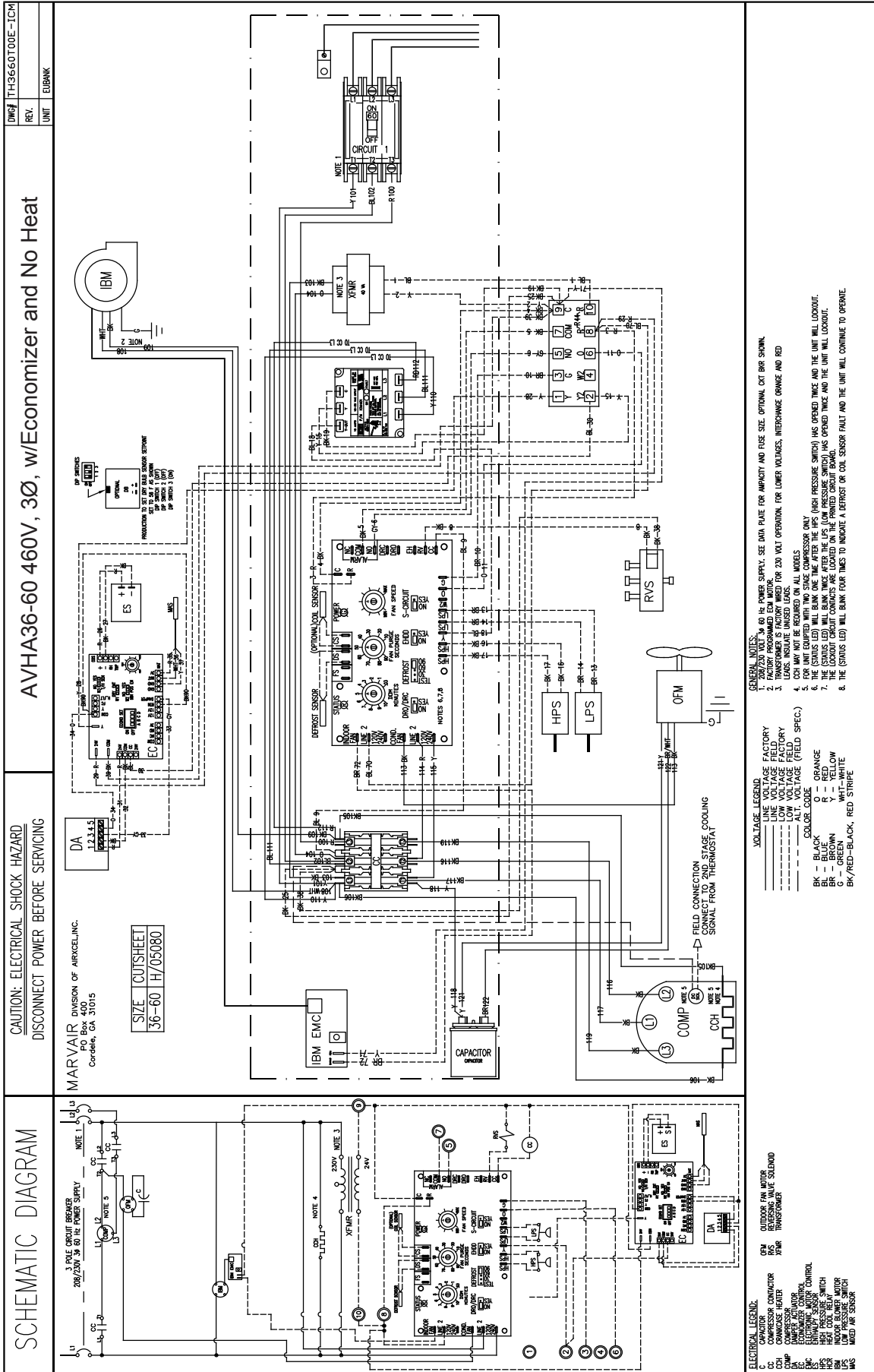


Figure 10: Typical Wiring Diagram, AVHA36-60 460V, 3Ø w/Motorized Damper & No Heat



**Figure 11: Typical Wiring Diagram, AVHA36-60 460V, 3Ø w/Economizer & No Heat**

SUPPLEMENTARY DIAGRAM: 1PH 5 KW HEATER WIRING

DWG# THHK055  
REV.  
UNIT EUBANK  
SCALE NTS

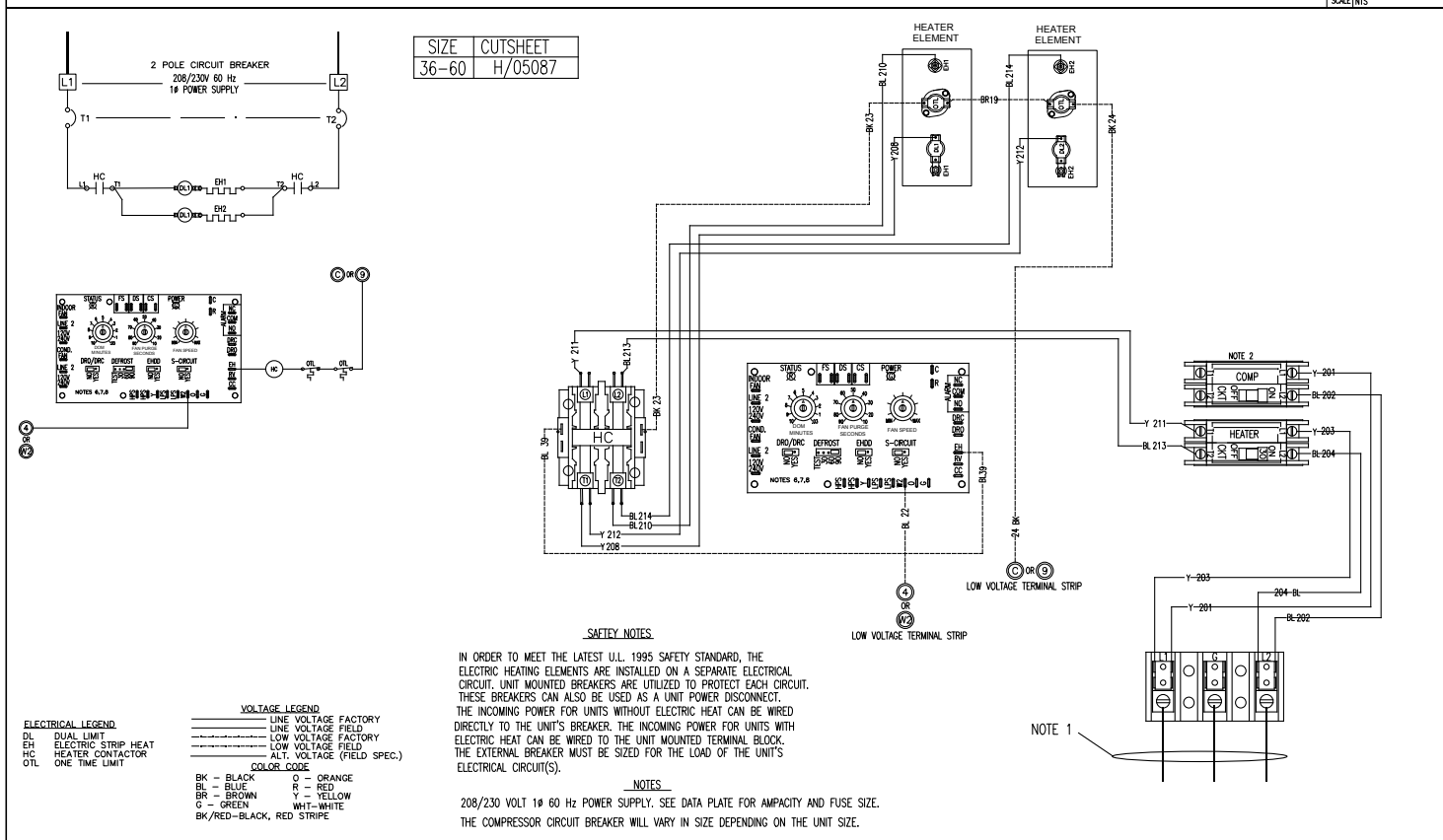


Figure 12: Typical Wiring Diagram, AVHA36-60 208-230V, 1Ø 5kW Heater Circuit

SUPPLEMENTARY DIAGRAM: 1PH 10 KW HEATER WIRING

DWG# THHK10S  
REV.  
UNIT EUBANK  
SCALE NTS

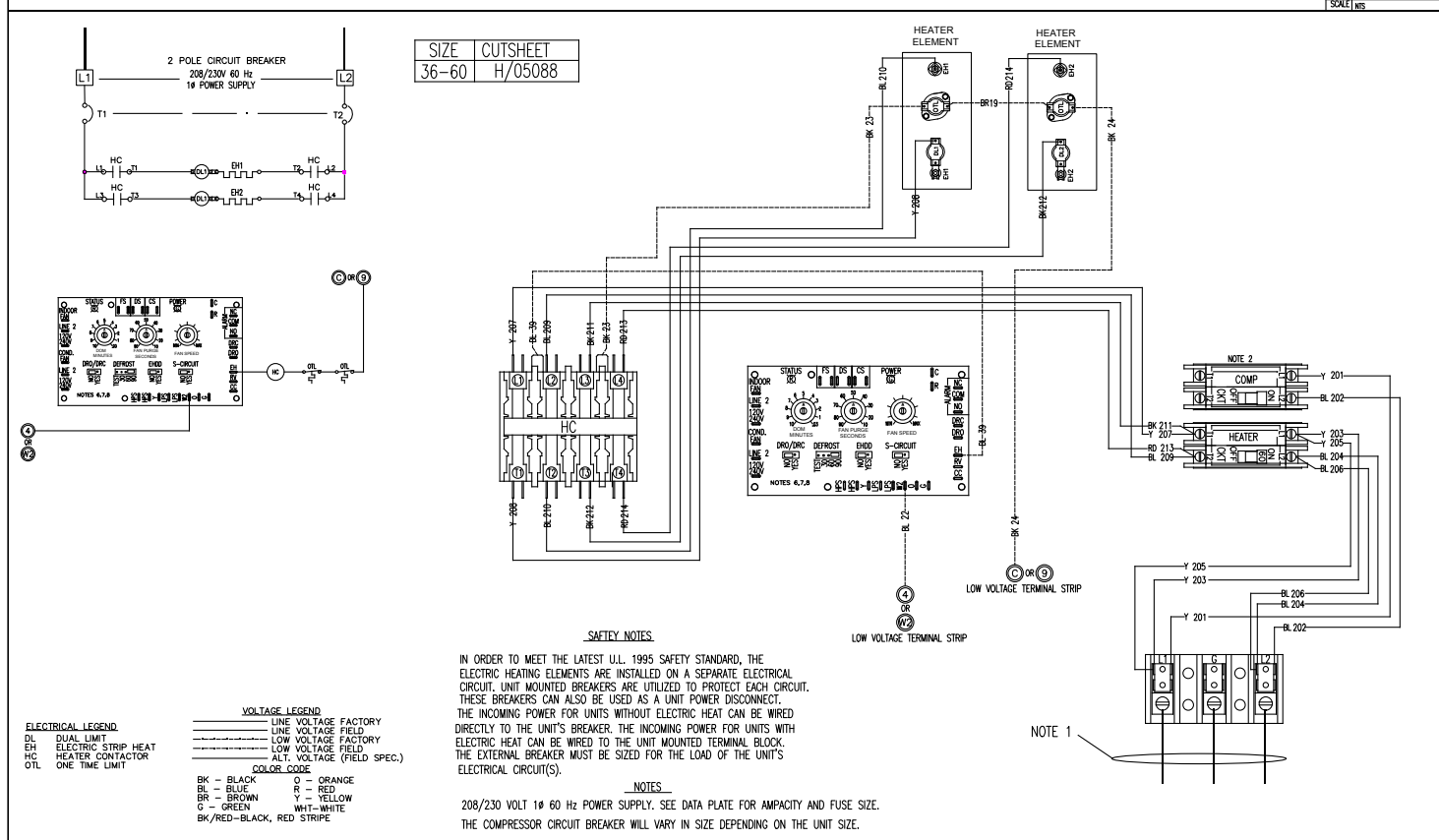


Figure 13: Typical Wiring Diagram, AVHA36-60 208-230V, 1Ø 10kW Heater Circuit

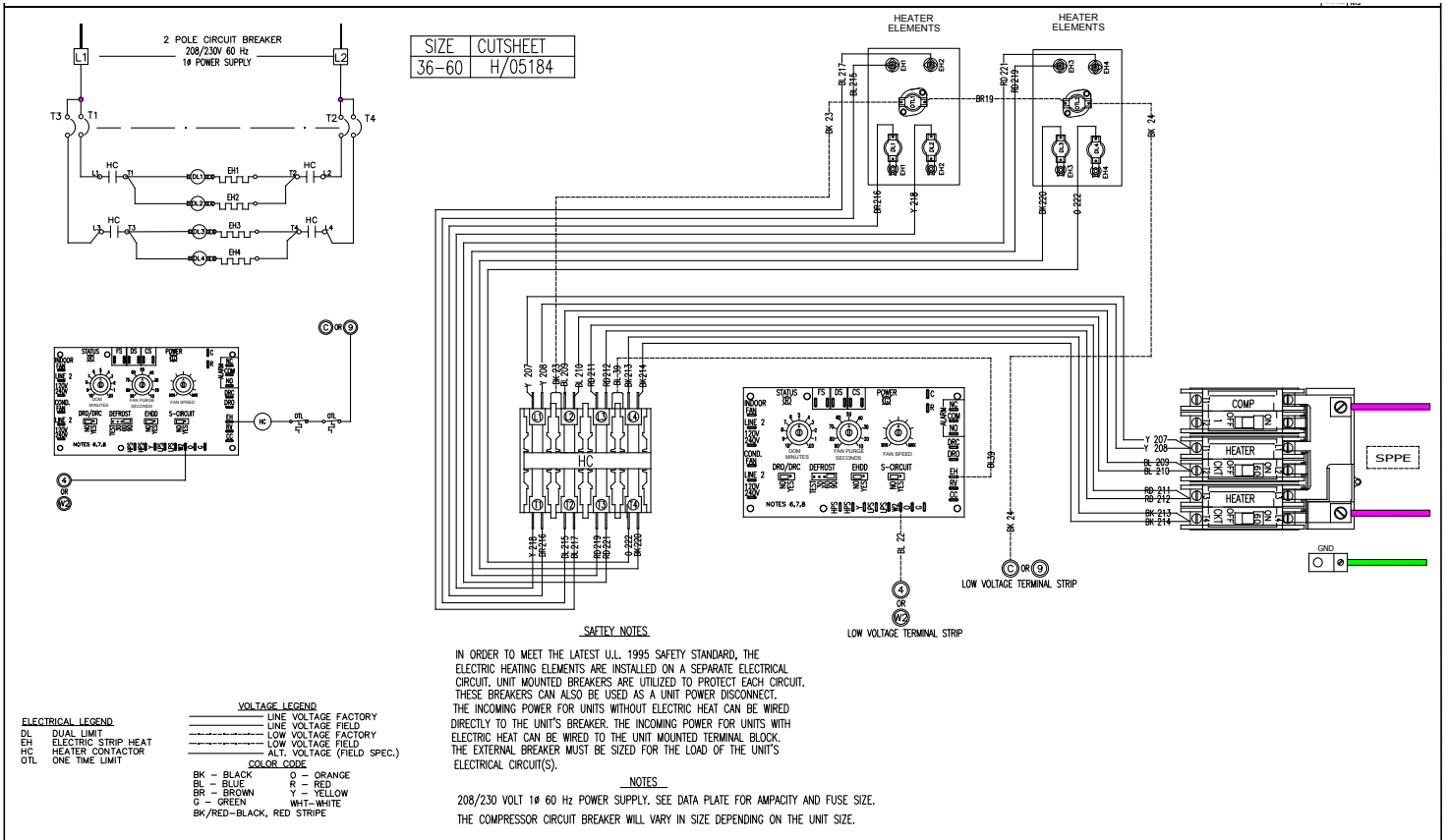


Figure 14: Typical Wiring Diagram, AVHA36-60 208-230V, 1Ø 15kW Heater Circuit

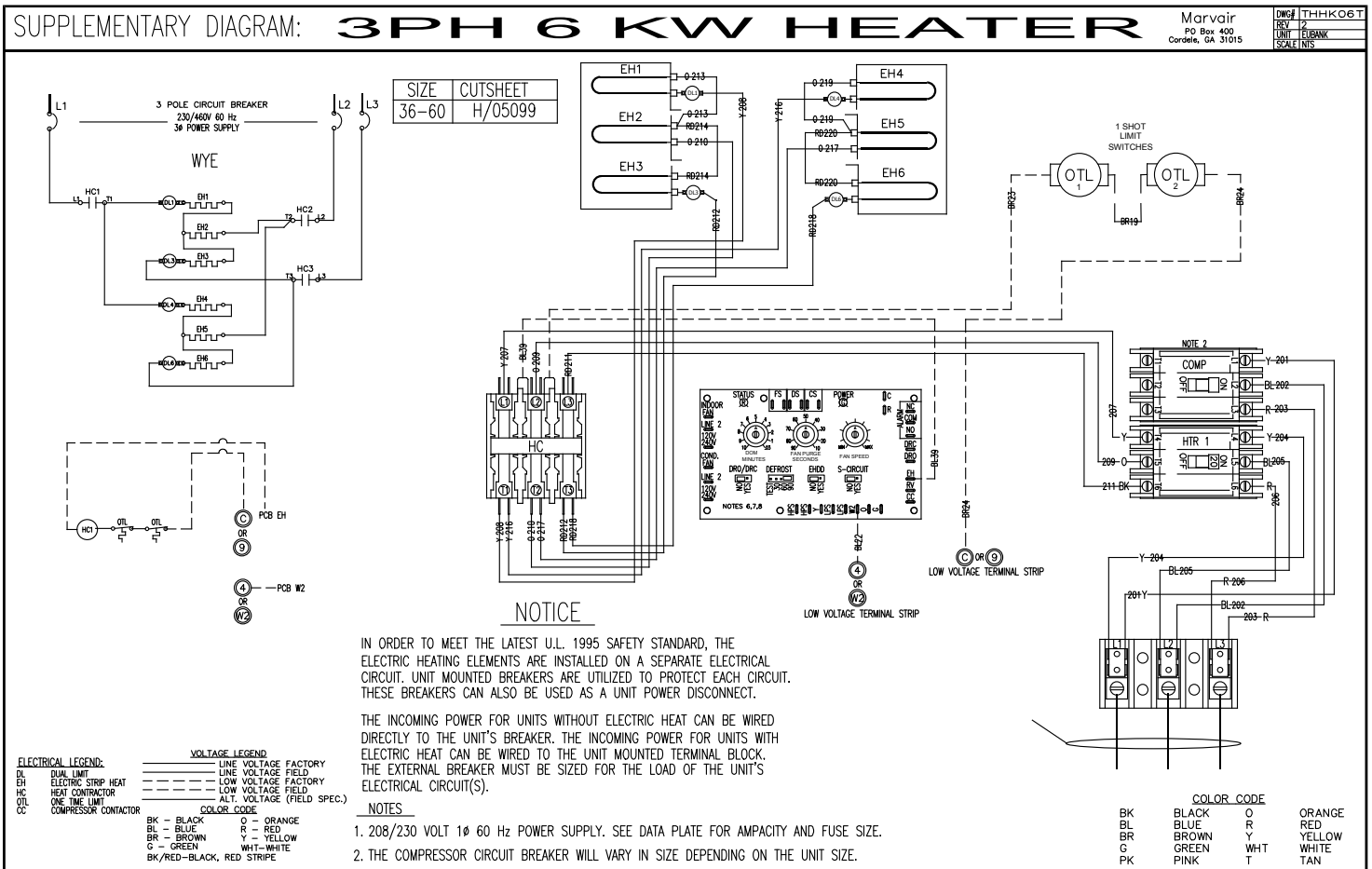
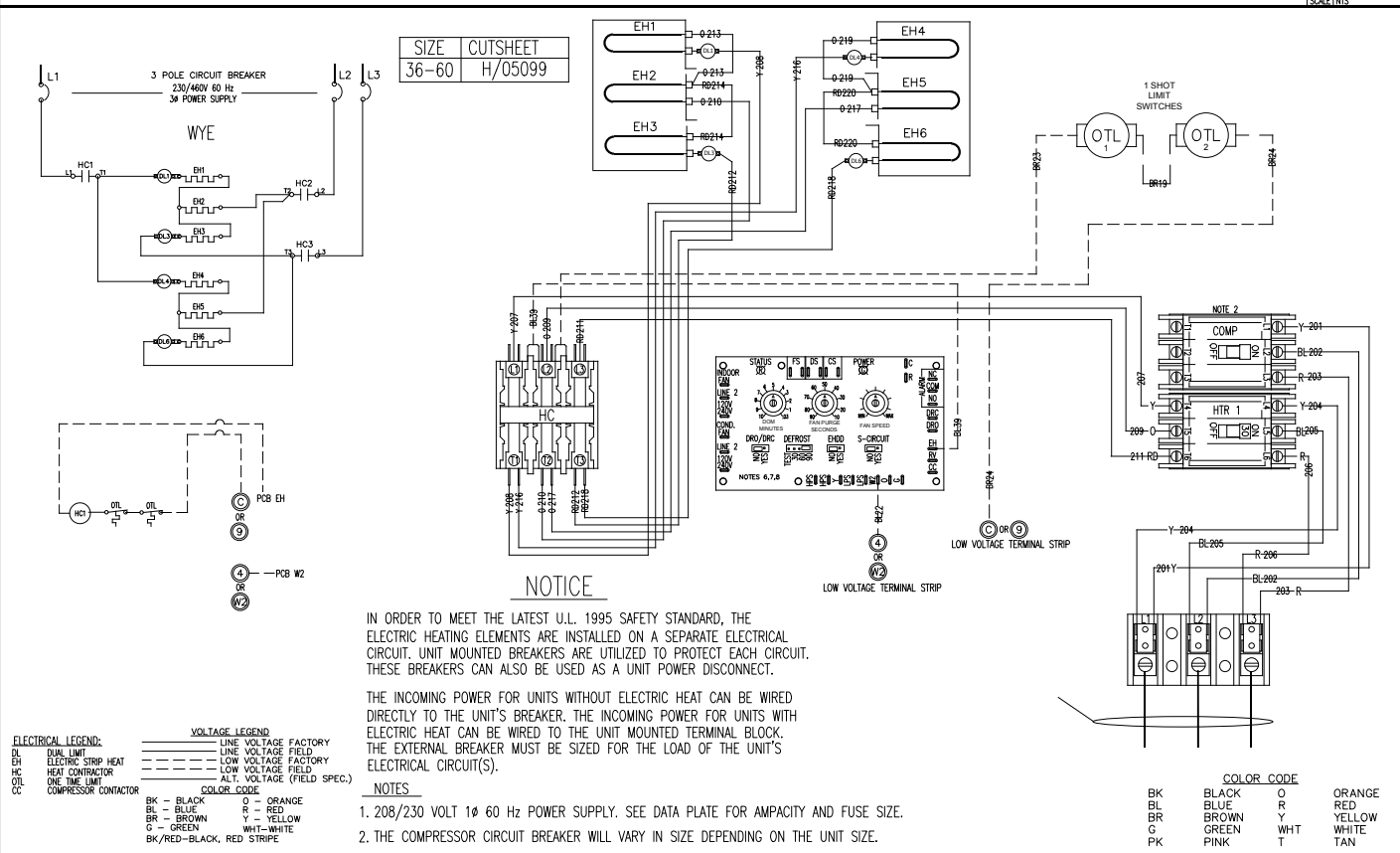


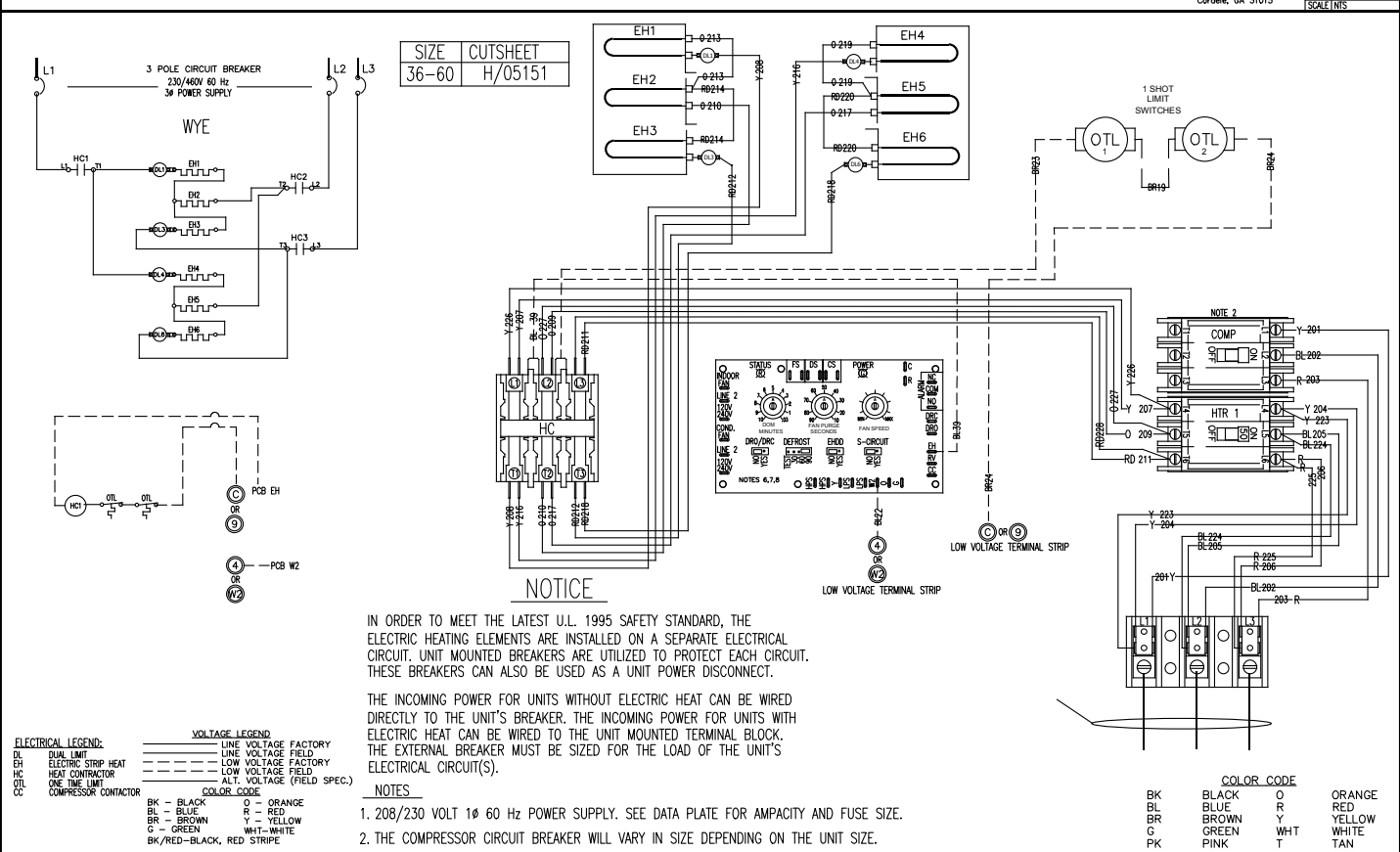
Figure 15: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø 6kW Heater Circuit

SUPPLEMENTARY DIAGRAM: **3PH 9 KW HEATER** Marvair  
PO Box 400  
Cordale, GA 31015 DWG# TTHK09T  
REV# 12  
UNIT# FUBANK  
SCALE# NIS



**Figure 16: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø 9kW Heater Circuit**

SUPPLEMENTARY DIAGRAM: **3PH 15 KW HEATER** Marvair  
PO Box 400  
Cordale, GA 31015 DWG# TTHK15T  
REV# 11  
UNIT# FUBANK  
SCALE# NIS



**Figure 17: Typical Wiring Diagram, AVHA36-60 208-230V, 3Ø 15kW Heater Circuit**

SUPPLEMENTARY DIAGRAM: **3PH 6 & 9KW HEATER** Marvair PD Box 400 Cordale, GA 31015 DWG# THHK0609D

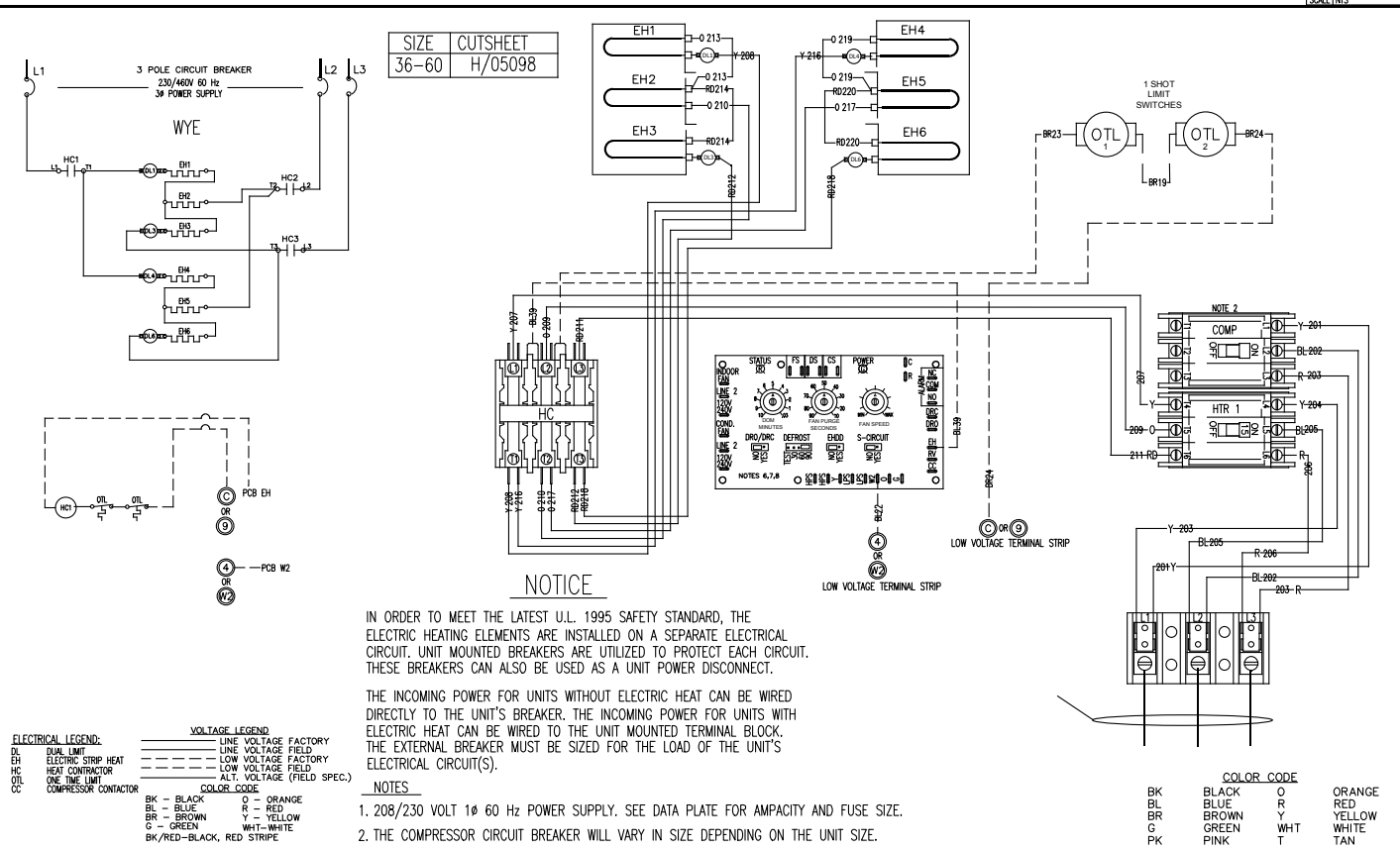


Figure 18: Typical Wiring Diagram, AVHA36-60 460V, 3Ø 6 & 9kW Heater Circuit

SUPPLEMENTARY DIAGRAM: **3PH 15 KW HEATER** Marvair PD Box 400 Cordale, GA 31015 DWG# THHK15D

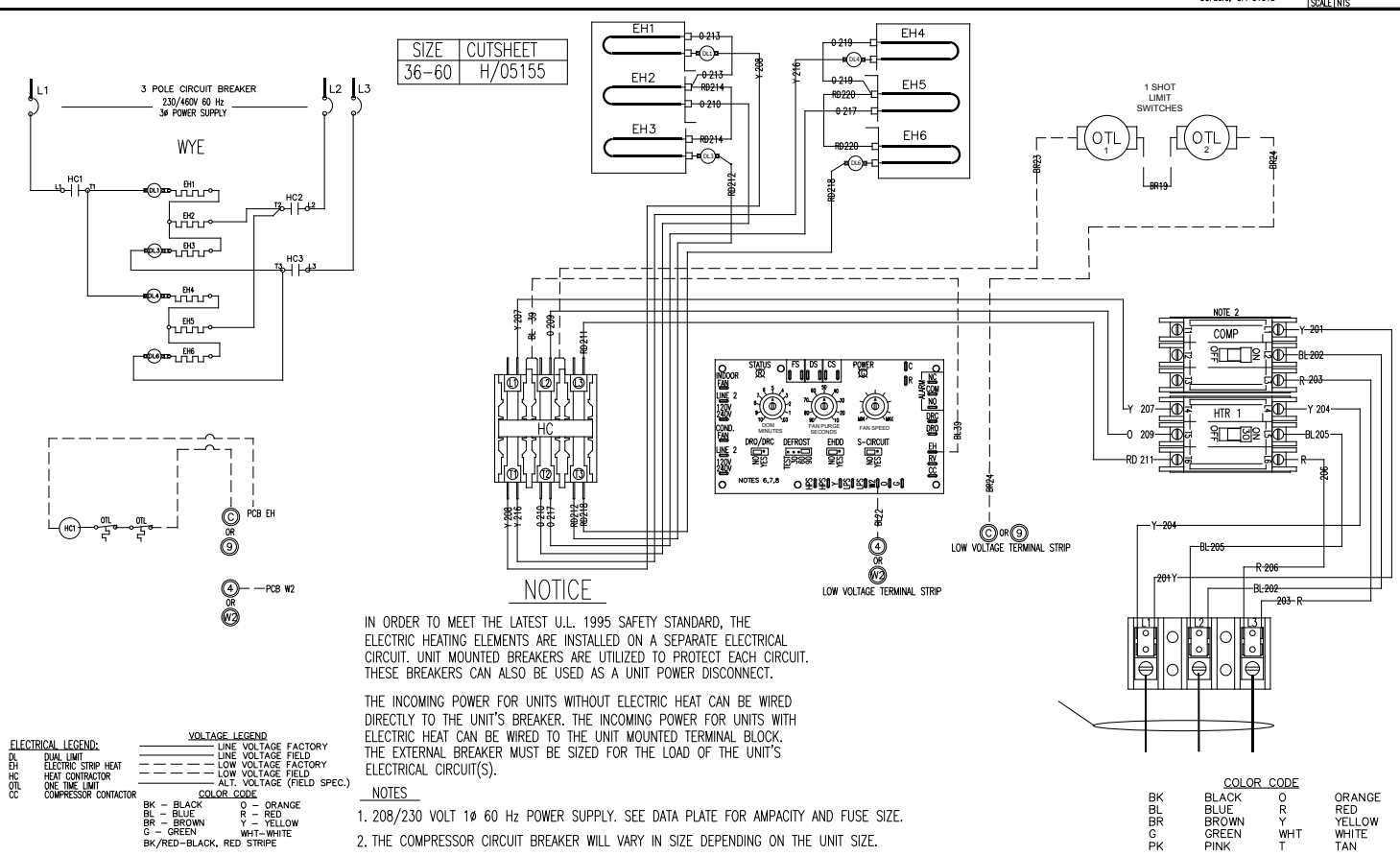
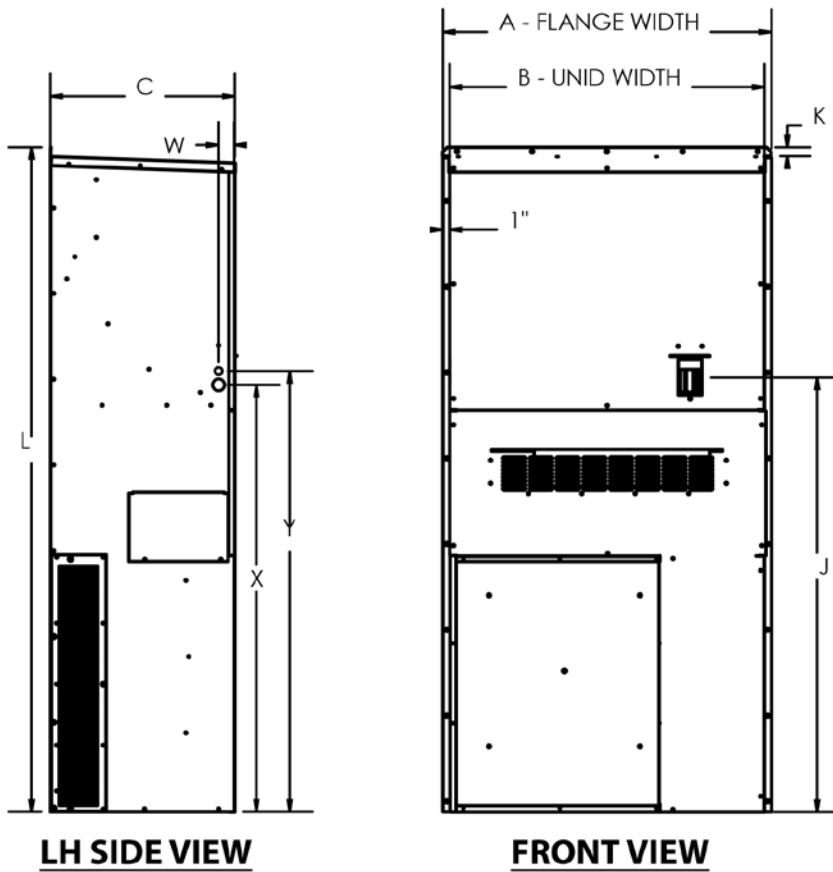
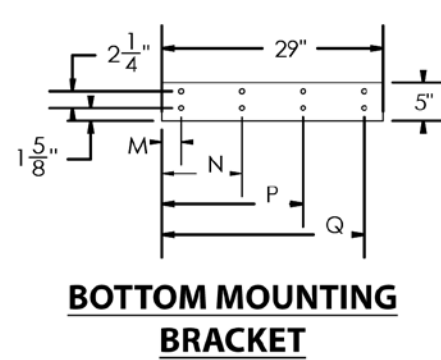
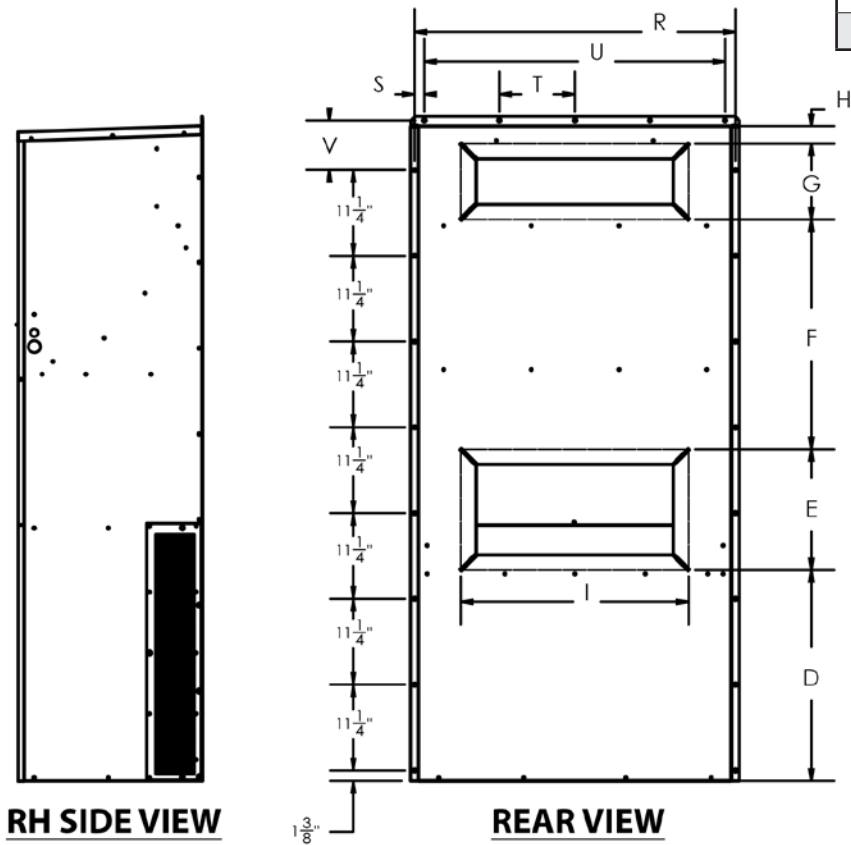


Figure 19: Typical Wiring Diagram, AVHA36-60 460V, 3Ø 15kW Heater Circuit

# CLASSIC AVHA HEAT PUMP DIMENSIONAL DATA



Cabinet Dimensions - Inches (MM)		
Model	AVHA36	AVHA42,48,60
A	40 (1,016)	43 (1,092)
B	38 (965)	41 1/8 (1,045)
C	18 3/4 (476)	24 1/8 (613)
D	28 1/2 (724)	27 1/2 (699)
E	14 (356)	16 (406)
F	18 (457)	30 (762)
G	8 (203)	10 (254)
H	1 7/8 (48)	2 1/4 (57)
I	28 (711)	30 (762)
J	50 1/2 (1,283)	57 1/8 (1,451)
K	1 1/8 (29)	1 1/8 (29)
L	71 1/2 (1,816)	87 1/8 (2,213)
M	2 1/2 (64)	2 1/2 (64)
N	10 1/2 (267)	10 1/2 (267)
P	18 1/2 (470)	18 1/2 (470)
Q	26 1/2 (673)	26 1/2 (673)
R	38 7/8 (987)	42 1/8 (1,070)
S	1 1/8 (29)	1 1/4 (32)
T	9 1/8 (232)	9 7/8 (251)
U	36 3/8 (924)	39 3/8 (1,000)
V	2 1/8 (54)	6 1/2 (165)
W	2 (51)	2 (51)
X	48 1/4 (1,226)	56 (1,422)
Y	50 (1,270)	57 7/8 (1,470)







156 Seedling Dr.  
 Cordele, GA 31015  
 TEL (229) 273-3636  
 FAX (229) 273-8633

## CLASSIC AVHA 10+ EER WALLMOUNT HEAT PUMPS

### NOMENCLATURE

