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# TECHNICAL MANUAL

## AVPTC Air Handlers

- Refer to Service Manual RS6200006 for installation, operation & troubleshooting information.
- All safety information must be followed as provided in the Service Manual.
- Refer to the appropriate Parts Catalog for part number information.
- Models listed on page 3.

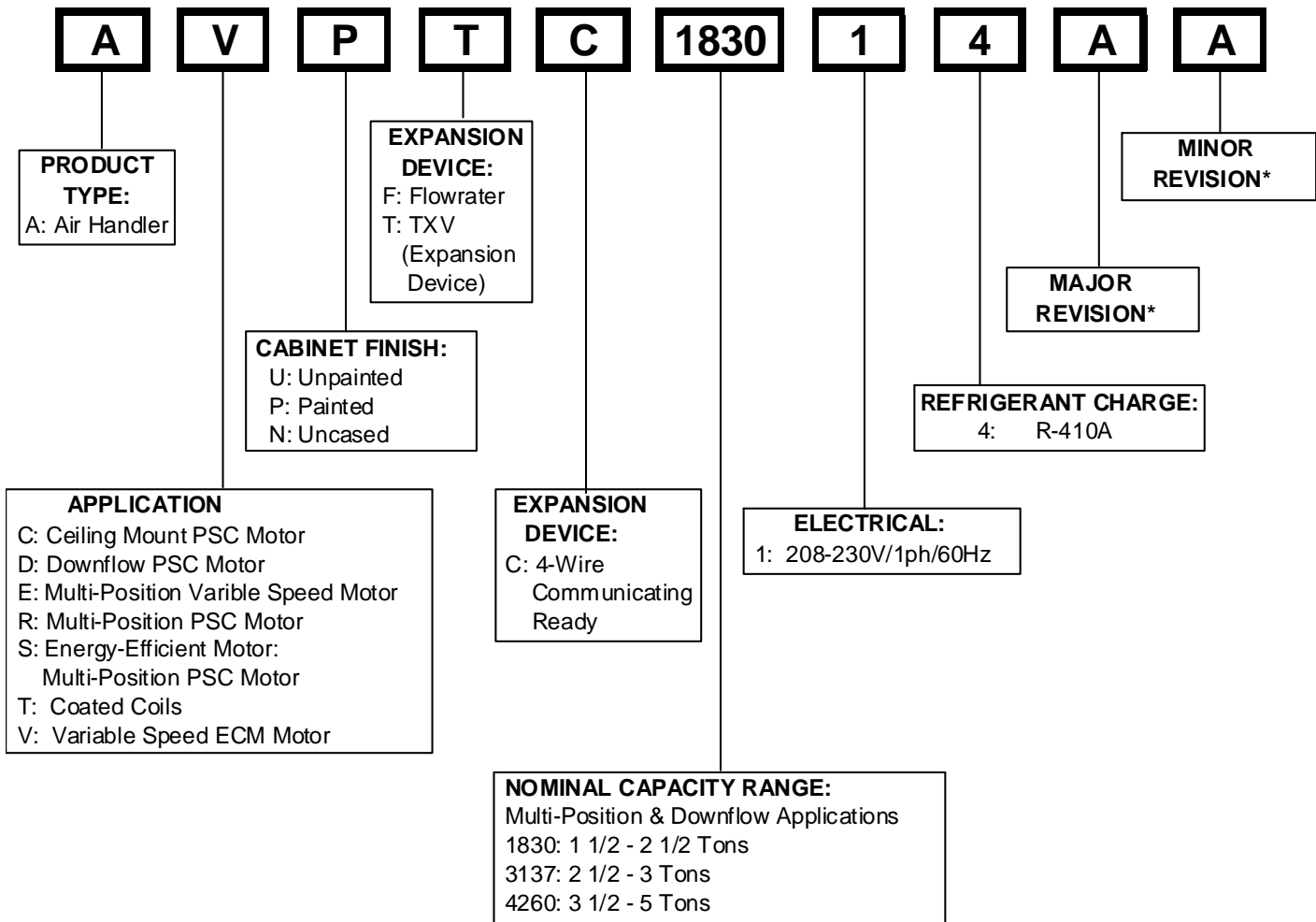


This manual is to be used by qualified, professionally trained HVAC technicians only. Goodman does not assume any responsibility for property damage or personal injury due to improper service procedures or services performed by an unqualified person.

RT6121001r2  
January 2011

# PRODUCT IDENTIFICATION

The model number is used for positive identification of component parts used in manufacturing. Please use this number when requesting service or parts information.



All Airhandlers use DIRECT DRIVE MOTORS. Power supply is AC 208-230v, 60 hz, 1 phase.

**WARNING**

**HIGH VOLTAGE!**

Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.

**WARNING**

Goodman will not be responsible for any injury or property damage arising from improper service or service procedures. If you install or perform service on this unit, you assume responsibility for any personal injury or property damage which may result. Many jurisdictions require a license to install or service heating and air conditioning equipment.

**WARNING**

Installation and repair of this unit should be performed **ONLY** by individuals meeting (at a minimum) the requirements of an "entry level technician", as specified by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury or death.

# PRODUCT IDENTIFICATION

The model number is used for positive identification of component parts used in manufacturing. Please use this number when requesting service or parts information.

AVPTC183014\*\*

AVPTC313714\*\*

AVPTC426014\*\*



The United States Environmental Protection Agency (“EPA”) has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary by jurisdiction. Should questions arise, contact your local EPA office.



Do not connect or use any device that is not design certified by Goodman for use with this unit. Serious property damage, personal injury, reduced unit performance and/or hazardous conditions may result from the use of such non-approved devices.



To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this appliance.

# PRODUCT DESIGN



## WARNING

When installing or servicing this equipment, safety clothing, including hand and eye protection, is strongly advised. If installing this equipment in an area that has special safety requirements (hard hats etc.), observe these requirements. To protect the unit when brazing close to the painted surfaces, the use of a quenching cloth is strongly advised to prevent scorching or marring of the equipment finish.



## WARNING

### HIGH VOLTAGE

Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



## WARNING

The unit **MUST** have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. The electrical ground circuit may consist of an appropriately sized electrical wire connecting the ground lug in the unit control box to the building electrical service panel. Other methods of grounding are permitted if performed in accordance with the “National Electric Code” (NEC)/“American National Standards Institute” (ANSI)/“National Fire Protection Association” (NFPA) 70 and local/state codes. In Canada, electrical grounding is to be in accordance with the Canadian Electric Code CSA C22.1. Failure to observe this warning can result in electrical shock that can cause personal injury or death.



## WARNING

If this appliance is installed in an enclosed area such as a garage or utility room with any carbon monoxide (CO) producing appliance (i.e. automobile, furnace, water-heaters, etc.), ensure the area is properly ventilated.

## AIR HANDLERS

*\*See Air Handler Specification Sheet for Proper Combinations.*

**ALL AIR HANDLERS USE DIRECT DRIVE MOTORS. POWER SUPPLY IS 220-240 V, 60 HZ, 1 PHASE**

### Installation

Before installing this appliance insure that it is properly sized and adequate power is available.

This appliance can be installed in the vertical position without modification.

The horizontal left and downflow positions require product modification and instructions for these field conversions can be found in the AVPTC installation instruction manual.

This product is designed for zero inches (0 inches) clearance; however, adequate access for service or replacement must be considered without removing permanent structure. This unit can be installed on a platform when deemed necessary.

In an attic installation a secondary drain pan must be provided by the installer and placed under the entire unit with a separate drain line properly sloped and terminated in an area visible to the owner. This secondary drain pan is required in the event that there is a leak or main drain blockage. Closed cell insulation should be applied to the drain lines in unconditioned spaces where sweating may occur.

Appliances installed in garages, warehouses or other areas where they may be subjected to mechanical damage must be suitably guarded against such damage by installing behind protective barriers, being elevated or located out of the normal path of vehicles. When installed on a base, the base must also be protected by similar means.

Heating and cooling equipment located in garages, which may generate a glow, spark or flame capable of igniting flammable vapors, must be installed with the ignition source at least 18"[46cm] above the floor level.

When more than one appliance is installed in a building it shall be permanently identified as to the area or space serviced by the equipment.

# PRODUCT DESIGN

When this product is installed in the downflow installation in an unconditioned space, remove the horizontal drain pan and install the following insulation kit

AVPTC Model	Insulation Kit
1830	DPI36-42/20
3137 4260	DPI48-61/-20

This kit is used to prevent sweating on the vertical drain pan.

To prevent the horizontal drain pan from sweating in high humidity applications, it is recommended that a DPIH insulation accessory kit be used. NOTE: The DPIH insulation kit is not supplied with this product and must be purchased separately.

See following chart for the correct DPIH kit.

AVPTC Model	Insulation Kit
1830	DPIH36-42
3137 4260	DPIH48-61

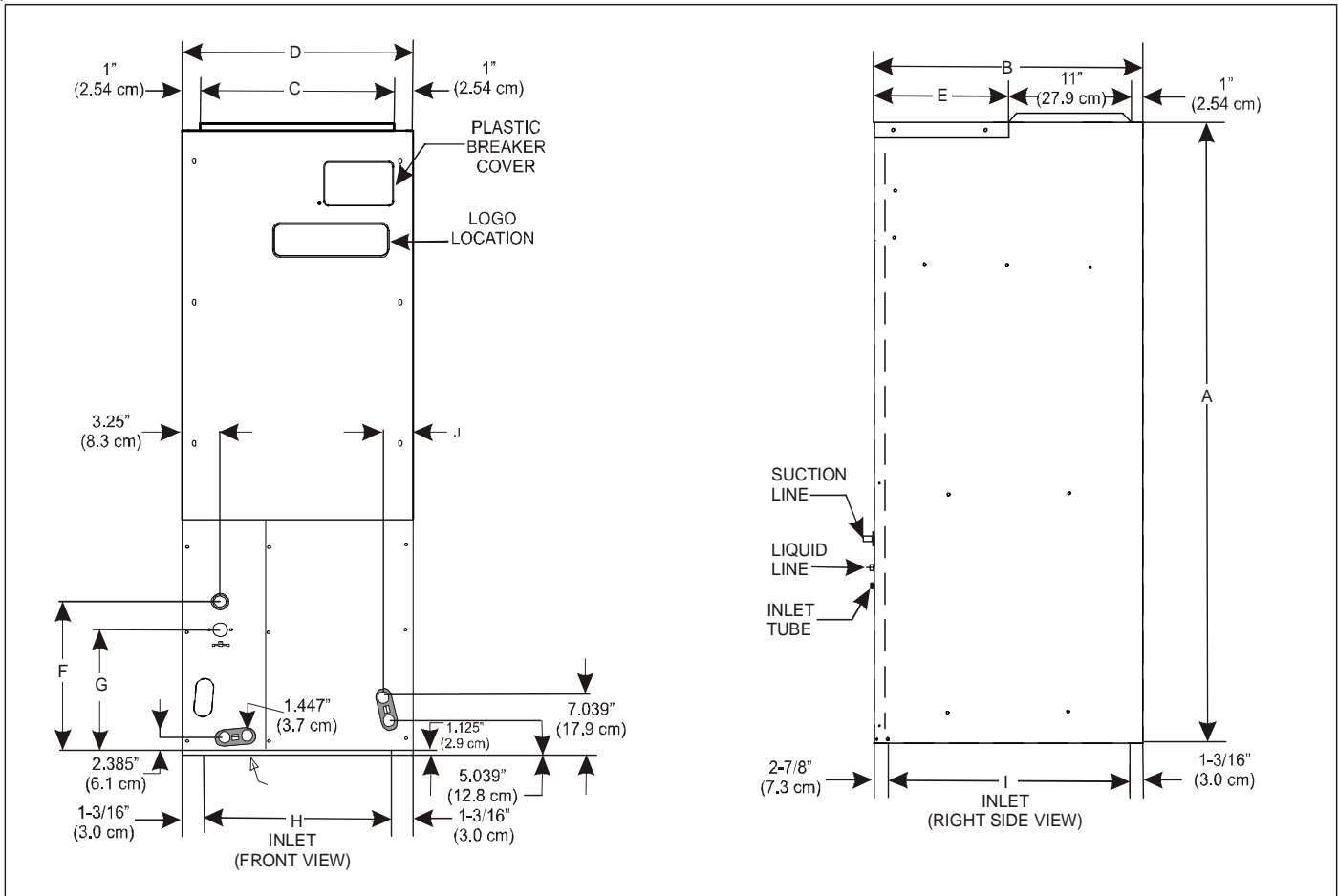
\*AVPTC is a multi-position, variable-speed air handler and is used with R-410A. The unit's blower design includes a variable-speed ECM motor and is compatible with heat pumps and variable-capacity cooling applications. (See note below.)

**\*NOTE:** Factory-sealed to achieve a 2% or less leakage rate at 1.0" water gauge external duct static pressure.

Complies with the Factory-sealed Air Handling Credit as listed in the 2001 Florida Building Code, Chapter 13, Section 610.2.A.2.1.

# PRODUCT DIMENSIONS

# AVPTC



Model	A	B	C	D	E	F	G	H	I	J
AVPTC183014	46 3/4"	22"	17 1/2"	19 1/2"	10"	14 1/2"	11 15/16"	17 1/8"	17 15/16"	2"
AVPTC313714	53 1/4"	24"	20"	22"	12"	19 5/8"	11 15/16"	19 5/8"	19 15/16"	1 13/16"
AVPTC426014	53 1/4"	24"	20"	22"	12"	19 5/8"	11 15/16"	19 5/8"	19 15/16"	1 13/16"

# PRODUCT SPECIFICATIONS

# AVPTC

	AVPTC183016*	AVPTC313716*	AVPTC426016*
<b>Blower Wheel</b>			
Diameter	9 1/2"	10 5/8"	10 5/8"
Width	8"	10 5/8"	10 5/8"
<b>Lineset Connection Size</b>			
Coil Drain Connection FPT	3/4"	3/4"	3/4"
Liquid	3/8"	3/8"	3/8"
Suction	3/4"	7/8"	7/8"
<b>Electrical Data</b>			
Voltage	208/240	208/240	208/240
Min. Circuit Ampacity	4.9/4.9	6.5/6.5	8.6/8.6
Max. Overcurrent Device (amps)	15/15	15/15	15/15
Minimum VAC	197	197	197
Maximum VAC	253	253	253
<b>Blower Motor</b>			
FLA	3.90	5.20	6.90
HP	1/2	3/4	1
<b>Ship Weight (lbs)</b>	127	178	197

# BLOWER PERFORMANCE DATA

Speed Selection Dip Switches								Electric Heat Airflow and Temperature Rise Table						
	Cool Selection Switches		Adjust Selection Switches		Profile Selection Switches			Htr Kw	9	10	11	AVPTC 183014*	AVPTC 313714*	AVPTC 426014*
		1	2	3	4	5		6		3	ON	ON	ON	600
TAP								5	ON	ON	OFF	700	700	700
A	OFF	OFF	OFF	OFF	OFF	OFF		6	ON	OFF	ON	800	800	800
B	ON	OFF	ON	OFF	ON	OFF		8	ON	OFF	OFF	1000	1000	1000
C	OFF	ON	OFF	ON	OFF	ON		10	OFF	ON	ON	1200	1200	1200
D	ON	ON	ON	ON	ON	ON		15	OFF	ON	OFF	NR	1400	1400
Profiles	Pre-Run		Short-Run		OFF Delay			20	OFF	OFF	ON	NR	NR	1600
A	-----		-----		60 sec/100%			21	OFF	OFF	OFF	NR	NR	1600
B	-----		30 sec/50%		60 sec/100%			NOTE: Airflow data shown applies to the emergency heat mode (electric heat only) in either legacy mode operation or fully communicating mode operation.						
C	-----		7.5 min/82%		60 sec/100%									
D	30 sec/50%		7.5 min/82%		30 sec/50%									
								Cooling/Heat Pump Airflow Table						
<p><b>To set airflow:</b> (1) Select model and desired high stage cooling airflow. Determine the corresponding tap (A, B, C, or D). Set dip switches 1 and 2 to the appropriate ON / OFF positions. (2) Select model and installed electric heater size. Set switches 9, 10, and 11 to the appropriate ON/OFF positions. (3) Select the airflow adjustment factor tap A and D are 0%; Tap B is +10%; Tap C -10%. Set dip switches 3 and 4 to the appropriate ON / OFF positions.</p> <p><b>To set Comfort Mode:</b> Select desired Comfort Mode profile (see profiles above). Set switches 5 and 6 to the appropriate ON / OFF positions.</p>								Model	Tap	Low Stage Cool	High Stage Cool			
								AVPTC 183014*	A	422	630			
									B	563	840			
									C	694	1036			
									D	825	1232			
								AVPTC 313714*	A	409	610			
									B	553	825			
									C	696	1040			
									D	829	1237			
								AVPTC 426014*	A	810	1210			
B	943	1408												
C	1047	1562												
D	1209	1804												
								NOTE: Airflow data shown applies to legacy mode operation only. For a fully communicating system, please see the outdoor unit's installation instructions for cooling and heat pump airflow data. See <i>ComfortNet™ System - Airflow Consideration</i> section for details.						

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## Heat Kit Selection

MODEL S	AVPTC183014A*	AVPTC313714*	AVPTC426014A*
HKR-03*	X	X	X
HKR-05*/-05C*	X	X	X
HKR-06*	X	X	X
HKR-08*/-08C*	X	X	X
HKR-10*/-10C*	X <sup>1</sup>	X	X
HKR-15C		X <sup>2</sup>	X
HKR-20C			X <sup>3</sup>
HKR-21C			X <sup>3</sup>

\* Revision level that may or may not be designated.

C Circuit breaker option.

<sup>1</sup> For units operating in Legacy mode, use dip switches 9-ON, 10-OFF, 11-OFF, to obtain 1000 CFM, or 9-OFF, 10-ON, 11-ON to obtain 1200 CFM. For units operating in Communicating mode, use dip switch 8 kW Htr to obtain 1000 CFM or 10 kW Htr to obtain 1200 CFM.

<sup>2</sup> This heater kit can only be used for '1000 CFM or higher' applications.

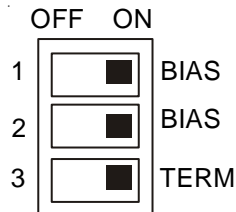
<sup>3</sup> This heater kit can only be used for '1200 CFM or higher' applications.



# BLOWER PERFORMANCE DATA

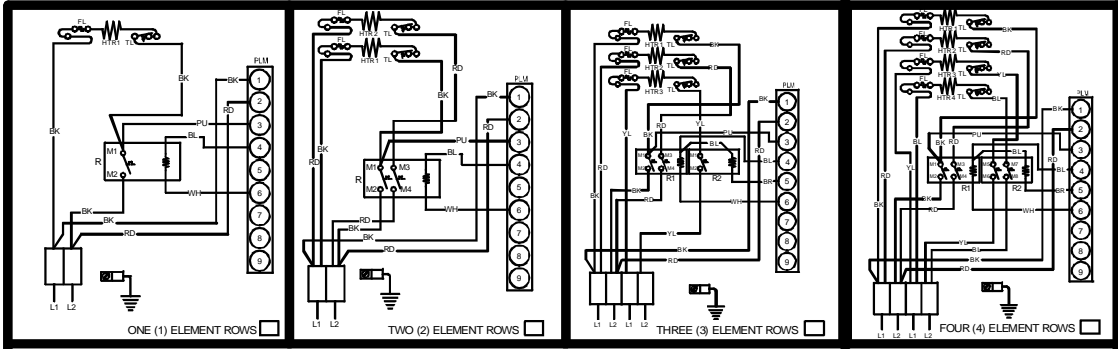
Indoor Control			Outdoor Control		Data Line Voltages, Vdc		
BIAS Dipswitches		TERM Dipswitch	TERM Dipswitches		1-C	2-C	1-2
Switch 1	Switch 2	Switch 3	Switch 1	Switch 2			
ON	ON	ON	ON	ON	>2.5	<2.5	>0.2
ON	ON	OFF	ON	ON	>2.8	<2.2	>0.6
ON	ON	ON	OFF	ON	>2.8	<2.2	>0.6
ON	ON	ON	ON	OFF	>2.8	<2.2	>0.6
ON	ON	OFF	OFF	OFF	5	0	5
OFF	ON	ON	ON	ON	0	0	0
ON	OFF	ON	ON	ON	5	5	0
OFF	OFF	ON or OFF	ON or OFF	ON or OFF	0	0	0

TERM1 / TERM2 = Termination dipswitches at outdoor unit. See installation instructions with CT™ compatible outdoor unit.

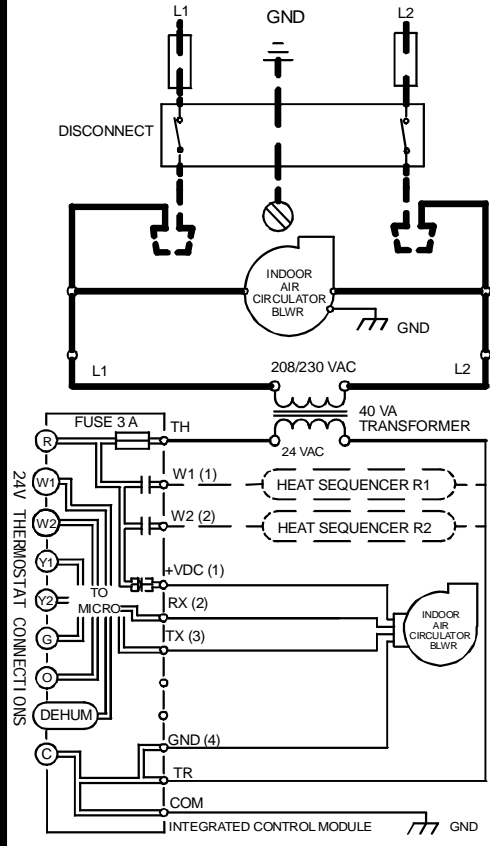
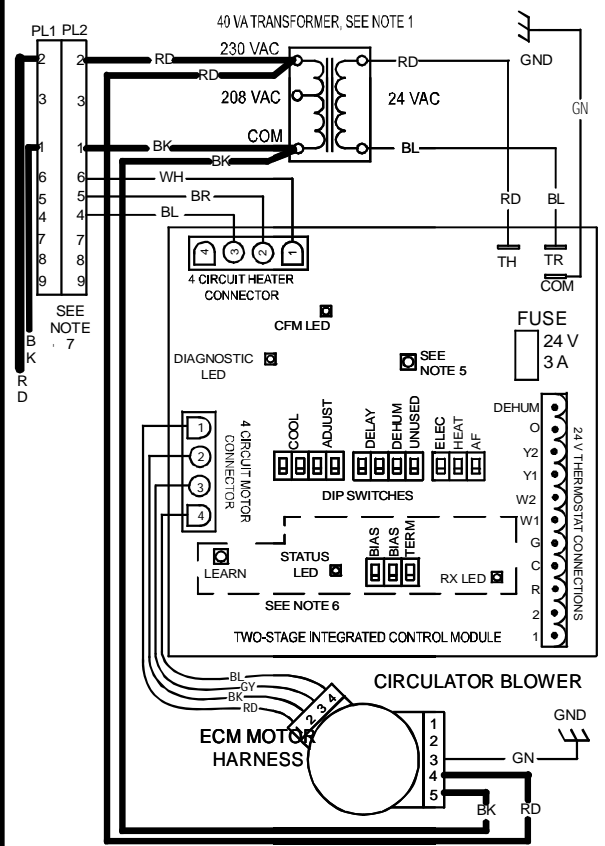


Indoor Unit BIAS and TERMINATION Dipswitches

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



NOTE: WHEN INSTALLING HEATER KIT, ENSURE SPEED TAP DOES NOT EXCEED MINIMUM BLOWER SPEED (MBS) SPECIFIED FOR THE AIRHANDLER/HEATER KIT COMBINATION ON THIS UNIT'S S&R PLATE. AFTER INSTALLING OPTIONAL HEAT KIT, MARK AN 'X' IN THE  PROVIDED ABOVE. MARK ACCORDING TO NUMBER OF HEATER ELEMENT ROWS INSTALLED. NO MARK INDICATES NO HEAT KIT INSTALLED.



- NOTES:
1. PLACE RED WIRE ON TRANSFORMER TERMINAL 2 FOR 208 VAC OPERATION.
  2. MANUFACTURER'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
  3. IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THIS UNIT MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C. USE COPPER CONDUCTORS ONLY.
  4. UNIT MUST BE PERMANENTLY GROUNDING AND CONFORM TO N.E.C. AND LOCAL CODES.
  5. TO RECALL THE LAST 6 FAULTS, MOST RECENT TO LEAST RECENT, DEPRESS SWITCH FOR MORE THAN 2 SECONDS WHILE IN STANDBY (N THERMOSTAT INPUTS)
  6. BIAS AND TERM DIP SWITCHES MUST BE IN "ON" POSITION. RED STATUS LED PROVIDES NETWORK STATUS. GREEN RX LED INDICATES NETWORK TRAFFIC. USE LEARN BUTTON TO RESET NETWORK.
  7. DISCARD CONNECTOR PL1 WHEN INSTALLING OPTIONAL HEAT KIT

COLOR CODES:

- PK PINK
- BR BROWN
- WH WHITE
- BL BLUE
- GY GRAY
- RD RED
- YL YELLOW
- OR ORANGE
- VT VIOLET
- GN GREEN
- BK BLACK

LOW VOLTAGE (24V)	---
LOW VOLTAGE FIELD	—
HI VOLTAGE (230V)	—
HI VOLTAGE FIELD	—
JUNCTION	⊙
TERMINAL	○
INTERNAL TO INTEGRATED CONTROL	—
EQUIPMENT GND	⏏
FIELD GND	⏏
FIELD SPLICE	⏏
RESISTOR	⏏
OVERCURRENT PROT. DEVICE	⏏
PLUG CONNECTION	⏏

**0140A00039 REV. C**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.