



SERVICE MANUAL

FOR

6536 “-” AND “A” SERIES

TWO TON PACKAGED HEAT PUMPS

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1. WARNINGS

IMPORTANT NOTICE

These instructions are for the use of qualified individuals specially trained and experienced in installation of this type equipment and related system components.

Installation and service personnel are required by some states to be licensed. PERSONS NOT QUALIFIED SHALL NOT INSTALL NOR SERVICE THIS EQUIPMENT.

NOTE

The words “Shall” or “Must” indicate a requirement which is essential to satisfactory and safe product performance.

The words “Should” or “May” indicate a recommendation or advice which is not essential and not required but which may be useful or helpful.

WARNING - SHOCK HAZARD

To prevent the possibility of severe personal injury or equipment damage due to electrical shock, always be sure the electrical power to the appliance is disconnected.

CAREFULLY FOLLOW ALL INSTRUCTIONS AND WARNINGS IN THIS BOOKLET TO AVOID DAMAGE TO THE EQUIPMENT, PERSONAL INJURY OR FIRE.

WARNING

Improper installation may damage equipment, can create a hazard and will void the warranty.

The use of components not tested in combination with these units will void the warranty, may make the equipment in violation of state codes, may create a hazard and may ruin the equipment.

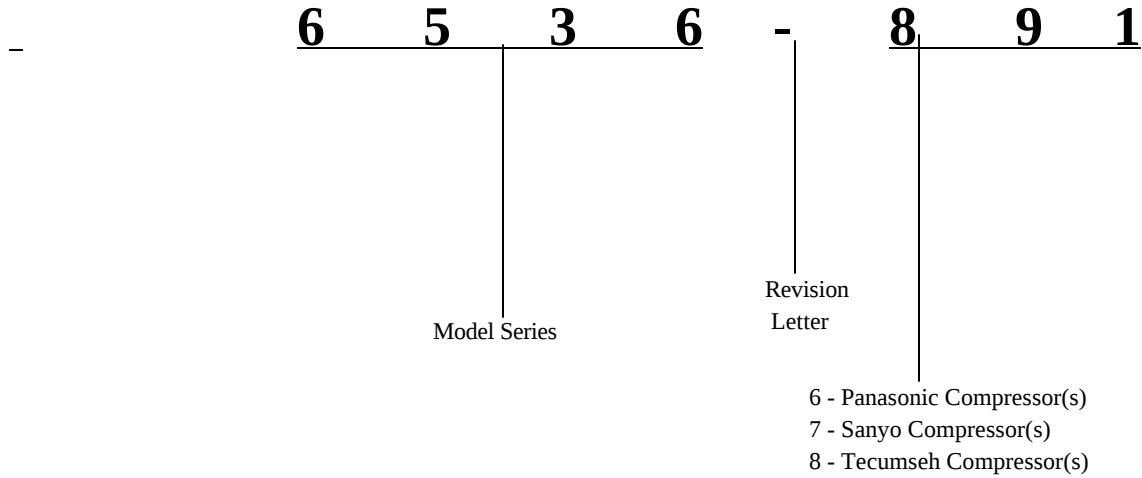
2. ACCESSIBILITY OF APPLIANCE

The accessibility of this appliance will vary from one installation to another. It shall be left to the service

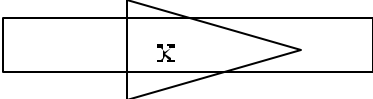
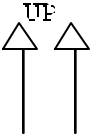
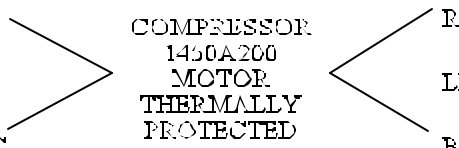
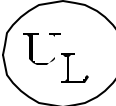
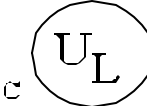
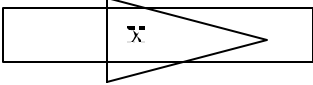
technicians judgement, the best method of attaining access to perform service.

3. UNIT DIMENSIONS AND SPECIFICATIONS

PACKAGE AIR CONDITIONER MODEL NUMBER BREAKDOWN FOLLOWS:



4. UNIT SPECIFICATIONS AND IDENTIFICATION

6536-891			
MODEL NUMBER		SERIAL NUMBER	
FOR OUTDOOR USE			
USE THERMOSTAT 5795*345 ELECTRICAL RATINGS: 115 VAC, 60 HZ, 1 PHASE			
<u>CIRCUIT #1</u>	COMPRESSOR 1450A200 MOTOR THERMALLY PROTECTED		<u>CIRCUIT #2</u>
11.2 FLA			11.2 FLA
67.0 LRA			67.0 LRA
11.4 RCSC			11.4 RCSC
2.4 FLA	I.D. BLOWER MOTOR DATA HORSEPOWER 1.5	FLA	N/A
2.8 FLA	O.D. BLOWER MOTOR DATA HORSEPOWER 1.3	FLA	2.8
19.5 AMP	MINIMUM CIRCUIT CAPACITY	AMP	18.0
25 AMP	MAXIMUM OVERCURRENT PROTECTIVE DEVICE	AMP	20
17.5 OZ	R-22 CHARGE WEIGHT	OZ	17.5
MINIMUM EXTERNAL STATIC PRESSURE 1 IN H ₂ O			
#12	0' - 25'	MIN. SUPPLY CONDUCTOR GAUGE (COPPER) UTILISER DES FILS D'ALIMENTATION EN CURVE	0' - 25' #12
#10	25' - 40'		25' - 40' #10
#8	40' - 53'		40' - 53' #8
CAUTION: RISK OF ELECTRIC SHOCK! DISCONNECT ALL POWER BEFORE OPENING PANEL. TWO DISCONNECT SWITCHES REQUIRED. ATTENTION: DEBRANCHER LE BLOC D'ALIMENTATION INSTALLE A DISTANCE AVANT D'ENTREPRENDRE LE DEPANNAGE.			
RV PRODUCTS A DIVISION OF AIRKCEL, INC. WICHITA, KS 67204			
 LISTED ROOM AIR CONDITIONER 5K59			6536-180
DESIGN PRESSURES H. SIDE 300 PSIG LO SIDE 150 PSIG			
6536-891			
MODEL NUMBER		SERIAL NUMBER	

5. UNIT DEPICTION FIGURES

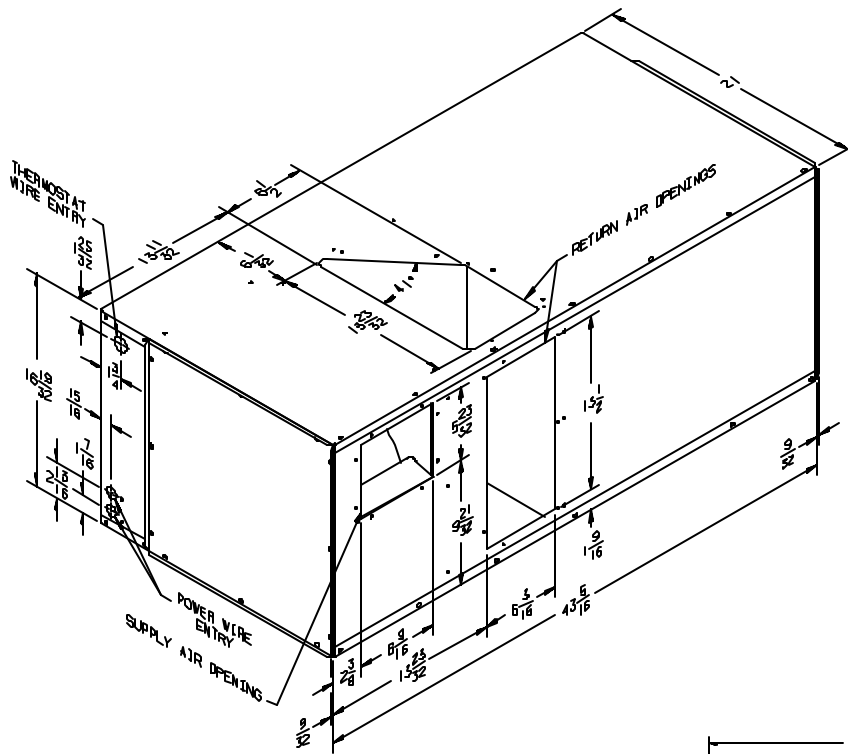
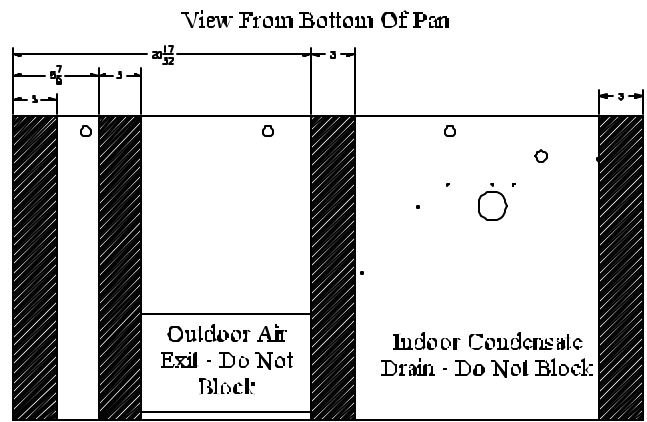


FIGURE 1



Provide Support In Cross-Hatched Areas Shown

FIGURE 2

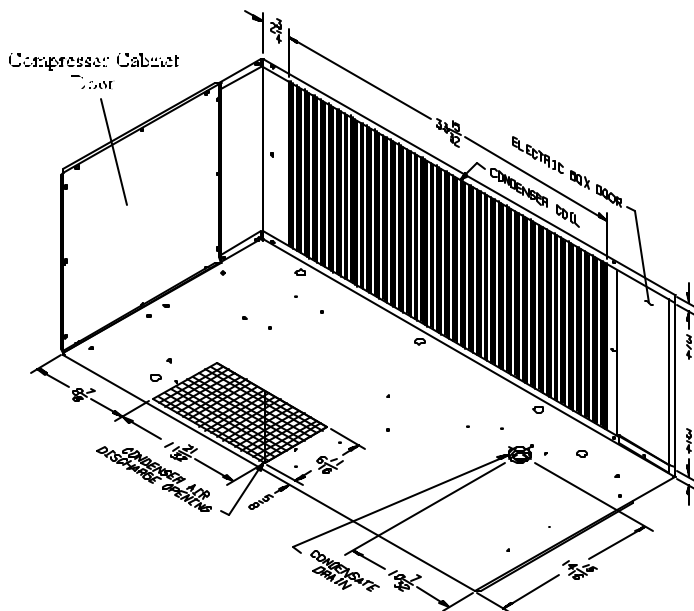


FIGURE 3

6. THERMOSTAT SPECIFICATIONS

THERMOSTAT - 6795B3451

SUB-BASE - 7330-3401

SET TEMP. RANGE:	55 TO 90 DEGREES F.
DISPLAY TEMPERATURE:	-20 TO 160 DEGREES F.
SCALE:	DEGREES FAHRENHEIT
DISPLAY FORMAT:	LIQUID CRYSTAL DISPLAY
RESOLUTION:	ONE DEGREE F.
ACCURACY:	± 2% OF DISPLAY TEMPERATURE RANGE
SAMPLING RATE:	EVERY 30 SECONDS
POWER SOURCE:	12 VDC NON-REGULATED, NON-FILTERED ± 2 VOLTS
OPERATING TEMPERATURE:	-10 TO +55 DEGREE C.
OUTPUT LOAD:	40 mA MINIMUM TO 1.5 AMP MAXIMUM FOR EACH OUTPUT

SAFEGUARDS:	STATIC ELECTRICITY PROTECTION TO END USER AFTER INSTALLATION ANTI-STATIC PACKAGING TO BE USED FOR SHIPMENT SPIKE PROTECTION TO 400 VDC ON R+ TERMINAL CONFORMAL COATING ON P.C. BOARD PROTECTION FROM MOISTURE
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DEFAULT MODE:	WHEN THE THERMOSTAT IS SWITCHED TO HEAT AND ELECTRIC HEAT IS SELECTED ON THE SUB-BASE, AND THE OUTDOOR TEMPERATURE FALLS TO A POINT AT WHICH THE HEAT PUMP SHUTS DOWN (USUALLY BETWEEN 25 - 40 DEGREES), THE SUB-BASE WILL AUTOMATICALLY ALSO CALL FOR GAS FURNACE OPERATION IF THE INDOOR TEMPERATURE DROPS TO 45 DEGREES. GAS FURNACE OPERATION WILL SHUT OFF AT 60 DEGREES. THE USER SHOULD SWITCH THE SUB-BASE TO GAS HEAT IF THIS OCCURS.
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GENERAL INFORMATION

A. Air Conditioner

This packaged heat pump mounts below the floor of the vehicle. The innovative design makes it possible to maintain a smooth, free-flowing roof line for the vehicle. It also relocates all noise and condensate drainage off the roof to below the floor of the vehicle.

The heat pump contains a dual compressor system. It combines the capacity of two roof mounted units into one highly efficient and compact package.

Each compressor is connected to a separate refrigeration circuit. The system can be operated with a single compressor when the air conditioning requirement is low, or with two compressors when maximum performance is required.

This heat pump operates a two-stage system. The first compressor and refrigeration circuit is referred to as "1st Stage". The second compressor and refrigeration circuit is referred to as "2nd Stage". First and second stage will operate as indicated below.

1st stage (the first compressor and refrigeration circuit), will operate when:

- 1) The thermostat is demanding cooling or electric heating,
- 2) The vehicle is being powered by either shore line or the on-board generator.

2nd stage (the second compressor and refrigeration circuit), will operate when:

- 1) The thermostat senses room temperature that is 2 degrees or higher than the setpoint temperature on the thermostat,
- 2) The vehicle is being powered by the on-board generator. Shore line by itself will not provide enough power to operate both first and second stage unless 50 amp service is available.

Switching and control of 1st and 2nd stage cooling is automatic. When operating from shore line, the system automatically limits operation to 1st stage only unless 50 amp service is available. When the shore line is plugged into the on-board generator, the system automatically allows for operation of both 1st and 2nd stage units. However, if when powering both

systems from the on-board generator and the cooling demand does not require that both systems operate, stage two will shut down leaving stage one in operation. **Heat operation always energizes both stages**, however, only stage one operates if power is not available to circuit #2.

B. Thermostat

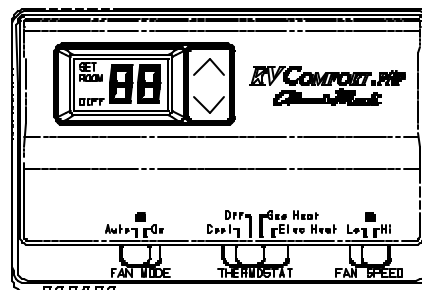
This thermostat is designed to operate 12 VDC controlled heating and air conditioning systems. It can control one stage of heating and two stages of cooling. It is a manual changeover type of thermostat between heating and cooling. Manual changeover indicates that the operator must manually switch the thermostat from cooling operation to heating. The thermostat will not make this change automatically. It also incorporates time delay circuitry. The user selectable heating mode on the sub-base allows gas heat control or heat pump operation.

The time delays amount to 3 minutes between off and on cycles. Thirty seconds of this time delay is at the turn on of

the compressors. This is to allow time for generators to stabilize when initially starting. The balance of the delay (2.5 minutes) occurs when the compressors cycle off. This is to allow time for the air conditioner pressures to balance before restarting. This delay will eliminate problems associated with short cycling and will extend equipment life. There is thirty seconds and two degrees between 1st and 2nd stage cooling. The thermostat will not call for 2nd stage cooling until room temperature rises 2 degrees above the 1st stage starting temperature. Once the thermostat calls for 2nd stage cooling, a 30 second delay is incurred to prevent both stages from starting together.

The operating setpoints are changeable to suit the comfort needs of the occupants. Instructions for setting operating temperatures (the setpoints) are covered in "Adjusting Setpoint".

7. WALL THERMOSTAT - 6536-335*



A. APPLICATION

The 6536-335* thermostat is intended for use with an RV Products 2 stage heat pump.

The thermostat connects to the heat pump with a 9 pin plug through a lifeline (RVP part number 6795C4351). The OEM (Original Equipment Manufacturer) must supply the 12 VDC wiring and the furnace control wiring which connects to the 3 pin plug on the thermostat. The OEM supplies the mating

receptacle for the 3 pin plug. RV Products suggests the thermostat wiring be minimum 18 gauge. The furnace control circuit must not exceed 1 amp. The thermostat is equipped with a replaceable fast-acting 2 amp fuse located on the base of the thermostat. The fuse is designed to "open" if the furnace is mis-wired or if there is a short in the system. Before replacing fuse, the cause of the failure must be located and corrected.

B. OPERATION

The display indicates room temperature and the word ROOM is shown on the LCD until the temperature selector is pressed; at which time the display temporarily indicates the setpoint temperature and the word SET is shown on the LCD. Each time the UP arrow is pressed, the setpoint will increase. Each time the DOWN arrow is pressed, the setpoint will decrease. Once the temperature selector button is no longer pressed for a few seconds, the room temperature will again be displayed,

and the word ROOM will be displayed on the LCD.

In the electric heat mode, if the heat pump is unable to satisfy the thermostat, the heat pump goes into lockout. DIFF will display on the thermostat LCD indicating backup heating is required to satisfy the thermostat.

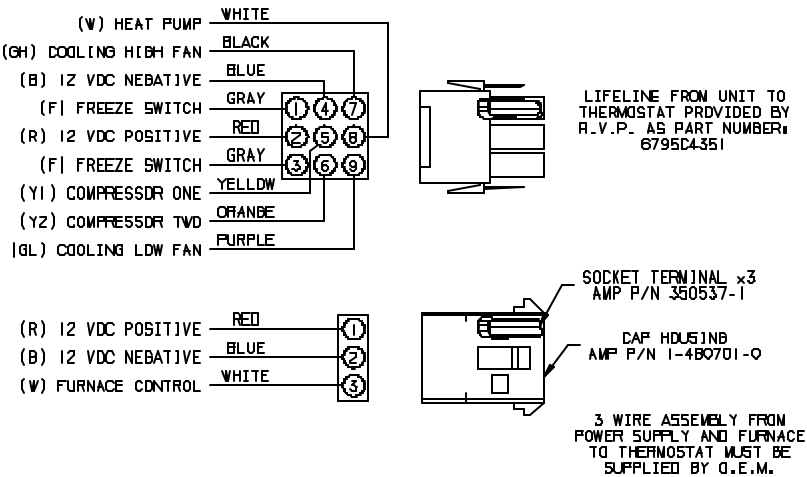
In gas heat mode, the gas furnace will provide the only source of heat and the heat pump is locked out.

NOTE

The temperature displays in degrees Fahrenheit as a factory set default (See Figure 2). To display in degrees Celsius, move the jumper marked “F” and “C” to bridge between middle pin and position “C”, then cycle 12 volt power off and then back on.

WIRING THE WALL THERMOSTAT

OEM must supply these mating parts to connect these thermostats per Figure 1. The plugs must be connected to motorcoach wiring harness before the base is secured to the wall.



Heat Pump Example To Bring On Gas Furnace As Backup Heat

Setpoint	Indoor Temp.	Operation
70	70+	No functions occur
↓↓↓	69	Heat Pump turns on (Primary heat source)
	71	Heat Pump turns off (Thermostat satisfied)
	69	Heat Pump turns on
	65	Gas Furnace turns on, Heat Pump turns off (Heat Pump not able to satisfy Thermostat) (First strike for backup heat counter)
	71	Gas Furnace turns off (Thermostat satisfied)
	69	Heat Pump turns on
	65	Gas Furnace turns on, Heat Pump turns off (Heat Pump is again unable to satisfy Thermostat), (Backup heat counter reaches 3 rd strike and Heat Pump is locked out for 2 hours), backup heat counter is reset if Heat Pump is running for more than 20 minutes and does not call for backup heat
	71	Gas Furnace turns off (Thermostat satisfied)
	69	Gas Furnace turns off (Becomes Primary heat source)
	71	Gas Furnace turns off (Thermostat Satisfied)
↓↓↓		After 2 hour lockout
	69	Heat Pump turns on (Resumes as Primary heat source)
	65	Gas Furnace turns on, Heat Pump turns off (Becomes Primary heat source) (Heat Pump is locked out for another 2 hours)
	71	Gas Furnace turns off (Thermostat Satisfied)
↓↓↓		After 2 hour lockout
	69	Heat Pump turns on (Resumes as Primary heat source)
	71	Heat Pump turns off (Thermostat Satisfied) (Backup heat counter is reset any time Heat Pump satisfies thermostat setpoint and does not need Gas Furnace)

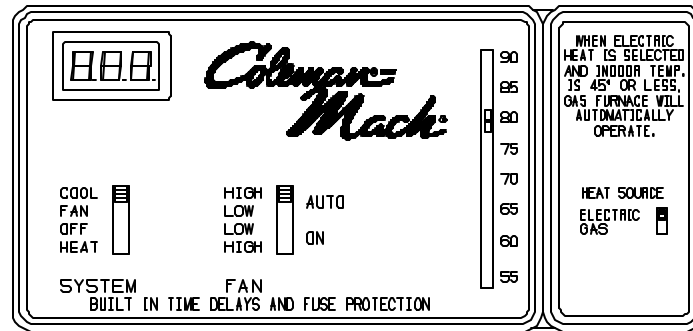
The word “DIFF” will display on LCD when backup heat is operating and the heat pump is locked out. There is a 30 second delay between Stage 1 and Stage 2. There is also a 3 minute anti-short cycle delay time for cooling.

The chart below shows the system functions with the 6536-335* thermostat. After the entire air conditioning system (and furnace system) is installed, check each position function.

6536-335* 2-STAGE HEAT PUMP WITH BACKUP HEAT THERMOSTAT OPERATION TABLE

	Mode Switch	Fan Mode Switch	Fan Speed Switch	Calling	Operation
1	Cool	Auto	Lo	No	No functions occur in this mode
2	Cool	Auto	Lo	Stage 1 1 Degree Above Set	ID fan low, compressor #1 and OD blower low cycle as needed
3	Cool	Auto	Lo	Stage 2 2 Degrees Above Set	ID fan low, compressors #1 and #2 and OD blower high cycle as needed
4	Cool	On	Lo	No	ID fan low continuous
5	Cool	On	Lo	Stage 1 1 Degree Above Set	ID fan low continuous, compressor #1 and OD blower low cycle as needed
6	Cool	On	Lo	Stage 2 2 Degrees Above Set	ID fan low continuous, compressors #1 and #2 and OD blower high cycle as needed
7	Cool	Auto	Hi	No	No functions occur in this mode
8	Cool	Auto	Hi	Stage 1 1 Degree Above Set	ID fan high, compressor #1 and OD blower low cycle as needed
9	Cool	Auto	Hi	Stage 2 2 Degrees Above Set	ID fan high, compressors #1 and #2 and OD blower high cycle as needed
10	Cool	On	Hi	No	ID fan high continuous
11	Cool	On	Hi	Stage 1 1 Degree Above Set	ID fan high continuous, compressor #1 and OD blower low cycle as needed
12	Cool	On	Hi	Stage 1 2 Degrees Above Set	ID fan high continuous, compressors #1 and #2 and OD blower high cycle as needed
13	Off	Auto	Lo or Hi	No	No functions occur in this mode
14	Off	On	Lo	No	ID fan low continuous
15	Off	On	Hi	No	ID fan high continuous
16	Gas Heat	Auto or On	Lo or Hi	No	No functions occur in this mode
17	Gas Heat	Auto or On	Lo or Hi	Stage 1	Heater will be energized to run
18	Gas Heat	Auto or On	Lo or Hi	Stage 2	There is no provision for 2 nd stage heat when operating in the gas heat mode
19	Elec Heat	Auto or On	Lo or Hi	No	No functions occur in this mode
20	Elec Heat	Auto or On	Lo or Hi	Stage 1	Heat pump will run ID fan high, both compressors, OD fan high and both reversing valves
21	Elec Heat	Auto or On	Lo or Hi	Stage 2	Backup heater will be energized to run

8. THERMOSTAT CONTROL PANEL



A. OPERATION

Your air conditioner is operated from the control panel located on the electronic wall mounted thermostat. When the furnace is connected to this thermostat, it will be operated from the same control panel.

Identification and operational descriptions for all control panel switches and display are listed below:

1. Liquid Crystal Display - We will start with the display because the display will be visible any time the system is in operation. The display will remain visible while the thermostat is on and powered.
2. System Switch - The system switch has four positions to control the operation of the heating and air conditioning systems. They are as follows:

COOL - When in the cool position, 1st and 2nd stage cooling will cycle from the cooling system setpoint. Blower operation will be controlled by the position of the Cooling Fan Switch.

HEAT - When in the heat position, the heating system will cycle from the heating system setpoint. Heat will be by electricity (heat pump) or gas as selected on sub-base. The gas heating blower will operate per the heating system manufacturer specifications.

OFF - When in the off position, no thermostat or system operation will occur.

FAN - When in the fan position, the **cooling blower** will operate continuously at high speed.

3. Cooling Fan Switch - The fan switch has four positions from which to control the operation of the cooling blower. The fan switch controls operation of the cooling blower only after the system switch is placed into the COOL position. With the system switch in any other position, the fan switch will have no effect on the operation of the cooling blower. Fan switch positions and their resulting function are listed below:

HIGH AUTO - When in the high automatic position, the cooling blower operates at high speed and cycles off and on with the 1st stage compressor. 2nd stage cooling will cycle on and off as needed having no effect on cooling blower operation.

LOW AUTO - When in the low automatic position, the cooling blower operates at low speed and cycles off and on with the 1st stage compressor. 2nd stage cooling will cycle on and off as needed having no effect on cooling blower operation.

LOW ON - When in the low on position, the cooling blower operates continuously at low speed. Stage 1 and Stage 2 compressors cycle on and off as needed.

HIGH ON - When in the high on position, the cooling blower operates continuously at high speed. Stage 1 and Stage 2 compressors cycle on and off as needed.

During heat pump operation, the blower operates at high speed with heat demand.

B. TESTING

Place the thermostat system switch into the “OFF” position. Once all safety precautions have been met, reinstate power to all systems; thermostat, cooling and heating.

OFF

Starting with the system switch in the OFF position, the display will be blank and no part of either the cooling or heating systems will be operating.

FAN

Move the system switch to FAN. The display indicates room temperature. The cooling system fan operates continuously at high speed. No other components or systems are operating.

HEATING

Move the system switch to HEAT. The display will indicate room temperature. Adjust the setpoint of the thermostat above the room temperature displayed. After 15 to 30 seconds, the heat circuit of the thermostat will activate the heating controls. Once the heat has turned on and is running, adjust the setpoint below the room temperature displayed. After 15 to 30 seconds, the heat circuit of the thermostat will turn off and deactivate the heating controls. In heat pump operation, indoor fan operates on only high speed.

COOLING

Move the system switch to COOL. The display will indicate room temperature. Adjust the setpoint above room temperature. Move the fan switch to LOW ON. The fan operates continuously at low speed.

Move the fan switch to HIGH ON. The fan operates continuously at high speed. Move the fan switch to LOW AUTO, the fan will stop. Move the fan switch to HIGH AUTO, the fan will remain off.

Adjust the setpoint 5 degrees below room temperature (if the thermostat has been powered for more than 3 minutes, 1st stage cooling and the cooling fan will come on approximately 1 minute later). If the thermostat has not been powered for more than 3 minutes, 1st stage cooling and the cooling fan will come on anywhere from 30 seconds to 3 minutes later. 2nd stage cooling will come on approximately 30 seconds after the 1st stage.

With the fan switch in HIGH AUTO, the fan will operate at high speed and cycle with stage 1 compressor. Move the fan switch to LOW AUTO. The fan will operate at low speed and cycle with stage 1 compressor. Once both stages of cooling and both fan speeds have been verified, adjust setpoint 1 degree below room temperature. After 15 to 30 seconds, 2nd stage cooling will turn off while 1st stage remains on.

9. PACKAGED AIR CONDITIONER BLOWER PERFORMANCE DATA TEST CONDITION: 115 VAC, 60 HZ, 1 PHASE, DRY COIL

CHART 1

EXTERNAL STATIC PRESSURE (INCHES OF WATER COLUMN)		0	.1	.2	.3	.4	.5	.6	.7	.8
LOW SPEED OPERATION	SCFM	543	543	543	538	532	505	476	439	384
	AMPS	2.07	1.96	1.88	1.78	1.66	1.55	1.47	1.35	1.26

EXTERNAL STATIC PRESSURE (INCHES OF WATER COLUMN)		0	.1	.2	.3	.4	.5	.6	.7	.8
HIGH SPEED OPERATION	SCFM	779	753	714	686	648	602	563	527	458
	AMPS	2.86	2.71	2.63	2.53	2.41	2.31	2.22	2.14	2.00

10. INDOOR BLOWER MOTOR REMOVAL

1. Remove indoor blower access panel.
2. Disconnect wiring from motor terminal block and capacitor.
3. Remove 4 screws from venturi (See #1, Figure 7).
4. Remove 3 screws from motor mount bracket (See #2, Figure 7).

5. Remove motor assembly from scroll.
6. Remove blower wheel and motor mounting bracket.

Note: Upon reassembly, the references made on Figures 7 and 8 shall be used for proper reassembly.

SIDE VIEW

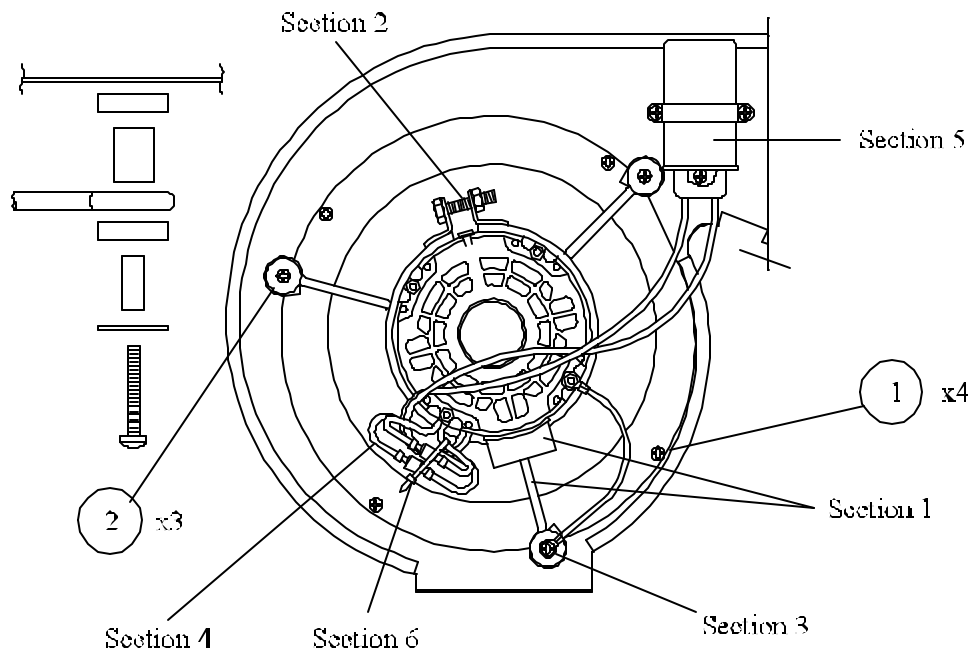


FIGURE 7

- | | |
|------------|---|
| Section 1. | Position motor with terminal block parallel to motor mount leg opposite motor clamp. Assemble motor mount into scroll in orientation shown. |
| Section 2. | Torque nut to 65 in. lbs. min. |
| Section 3. | Ground wire terminal assemblies between screw head and washer. |
| Section 4. | Motor rotation wires to be connected: Yellow to Yellow and Orange to Orange. |
| Section 5. | Alternate capacitor: 1499-546 |
| Section 6. | Bundle the rotation and capacitor wires up and wire tie together. |

END VIEW

1. Wheel must be mounted with a minimum of 5/16" clearance to scroll sides.
2. Apply grease to motor shaft before assembling wheel.
3. Torque set screw on flat of shaft to 110 #10 in. lbs.

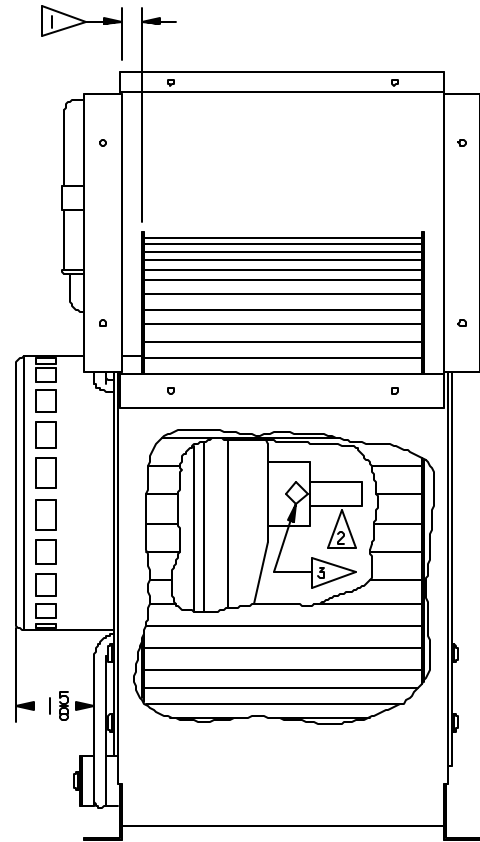


FIGURE 8

11. OUTDOOR BLOWER MOTOR REMOVAL

1. It will be necessary to remove the top panel of the unit.
 1. Remove 4 screws that attach scroll housing to basepan (See #1, Figure 9).
 2. Disconnect wiring from motor terminal block.
 3. Remove scroll/motor assembly from the unit.
 4. If at this point only the blower wheel needs replaced, then remove 4 screws from inboard venturi. Remove and replace blower wheel (see note) or else go to Step 6.
 5. Disconnect wiring at capacitor.
 6. Remove 4 screws from venturi (See #1, Figure 10).
 7. Remove 4 screws from motor mount bracket (See #2, Figure 10).
 8. Remove motor assembly from scroll.
 9. Remove blower wheel and motor mounting bracket.
- Note: Upon reassembly, the references made on Figures 9 and 10 shall be used for proper reassembly.

BOTTOM VIEW

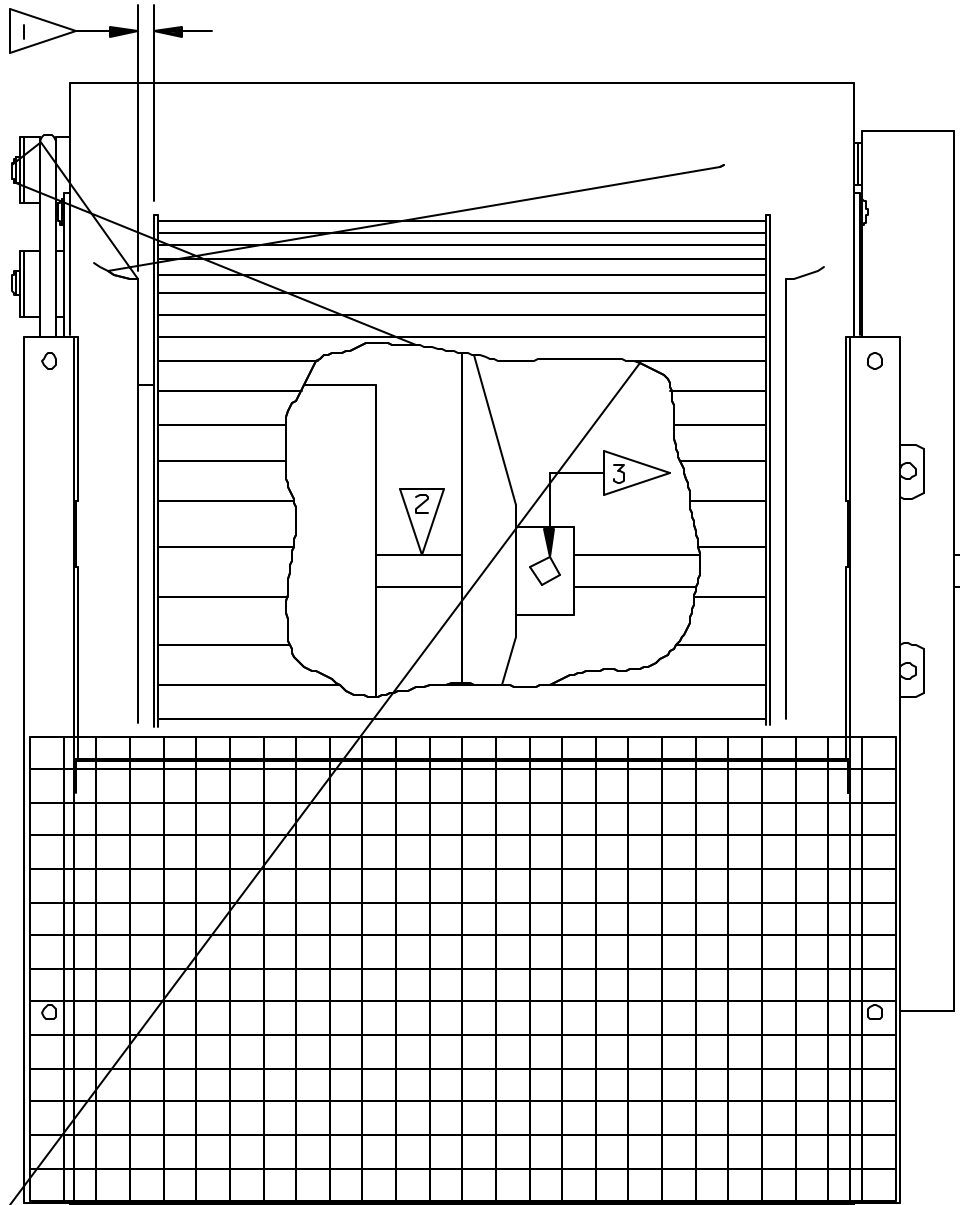


FIGURE 9

1. Wheel must be mounted with a minimum of 1/4" clearance to both venturis.
2. Apply grease to motor shaft before assembling wheel.
3. Torque set screw on flat of shaft to 110 #10 in. lbs.

SIDE VIEWS

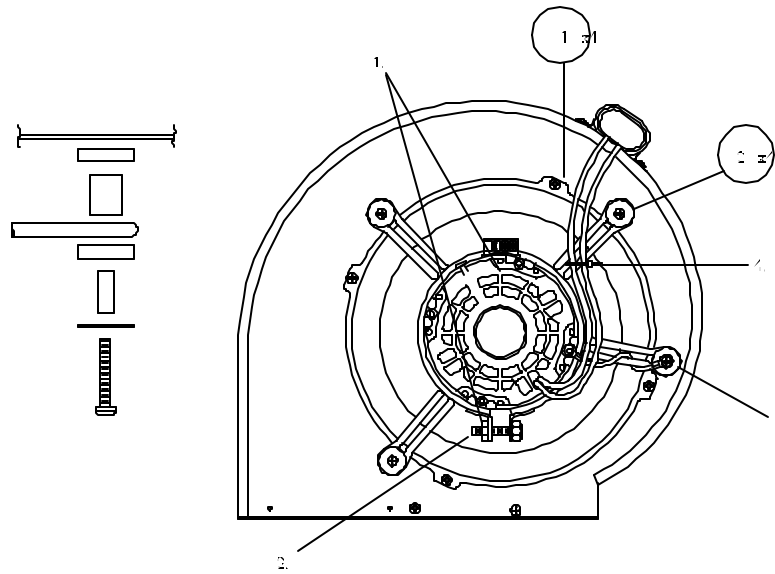
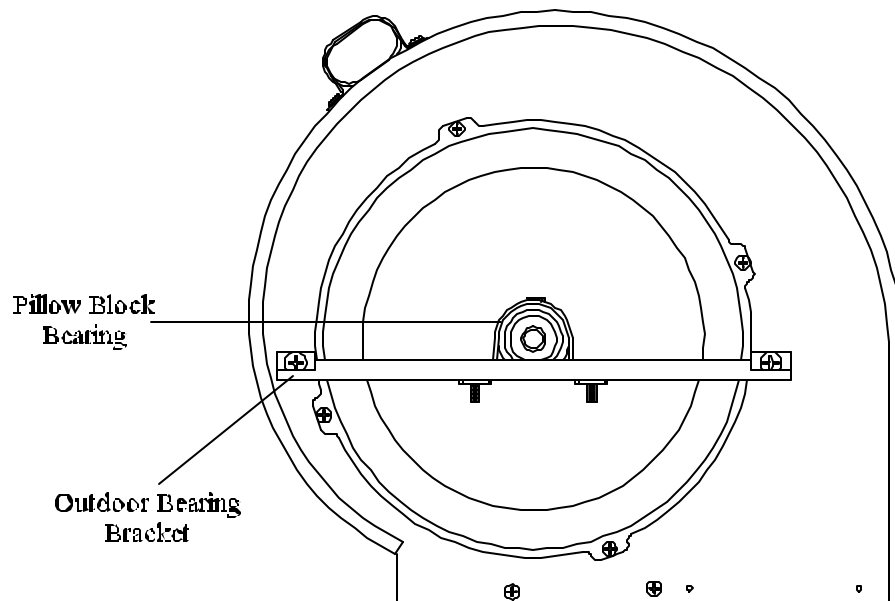


FIGURE 10

1. Position motor with terminal block opposite motor mount clamp.
2. Torque nut to 65 in. lbs. min.
3. Ground wire terminal assemblies between screw head and washer.
Wrap wire around motor mount leg to take up slack.
4. Wire tie capacitor wires to mount leg.



12. BY-FLOW RESTRICTOR REPLACEMENT

1. Remove top panel.
2. Remove Section C (See Figure 11).
3. Remove outdoor blower. Follow steps 1-4 in Outdoor Blower Motor Removal Section.
4. Be certain at this point that the refrigerant charge has been removed from the system/systems being serviced.
5. Remove clamps holding restrictor in place (See #17, Figure 12).
6. Unbraid by-flow restrictor from points 16. Make note of plumbing locations for new restrictor. Must be installed in same manner. (Note to protect any wiring that could come into contact with the torch flame or heated copper lines.)

Note: Upon reassembly, the references made on Figures 11 and 12 shall be used for proper reassembly. The assemblies shall be secured with wire ties in order to prevent excess chafing and vibration.

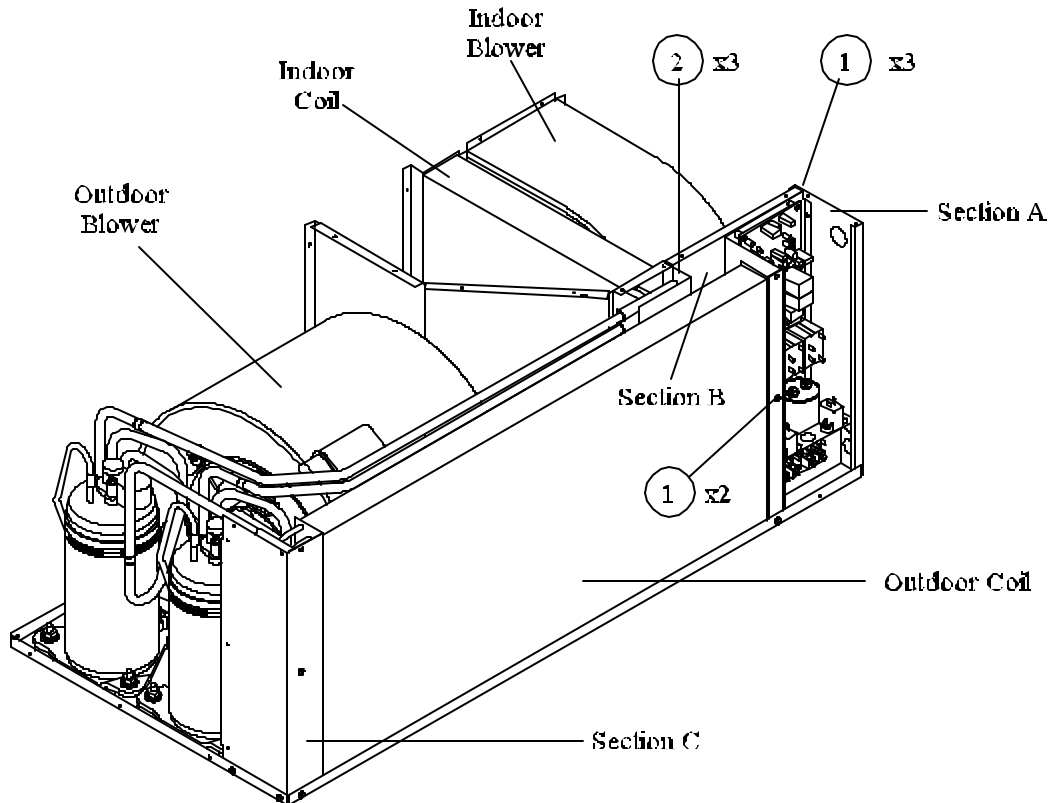


FIGURE 11



- Note: Upon reassembly, the references made on Figures 11 and 12 shall be used for proper reassembly. The assemblies shall be secured with wire ties in order to prevent excess chafing and vibration. If additional sealant is needed to seal coil header to drain pan (notched end), a silicone or perma-gum sealant is adequate. Do not use solvent base sealers that would harm the ABS plastic drain pan.

14. OUTDOOR COIL REPLACEMENT

1. Remove top panel.
2. Remove screws along wirebox side of coil (See #10, Figure 12).
3. Remove corner panel (See Section C, Figure 11).
4. Be certain at this point that the refrigerant charge has been removed from the systems.
5. Make note of plumbing locations. The plumbing will have to go back to the same locations on the new coil.
6. Unbraid discharge and liquid lines at points #2 and #4, Figure 12.
7. Remove freeze thermister.
8. Remove condenser coil.

15. COMPRESSOR REPLACEMENT

1. Remove compressor access panel.
 2. The top panel may be removed at this point if it allows technician better access to perform service.
 3. Remove refrigerant charge from system/systems being serviced.
 4. Remove terminal caps (See #13, Figure 12).
 5. Remove wiring from compressor terminal block (cut wire ties on suction line).
 6. Remove reversing valve clamp from compressor.
 7. Unbraid plumbing at points #11 and #12, Figure 12 (protect any wiring and insulation from torch flame).
 8. Remove mounting nuts and washers (See #14, Figure 12).
 9. Remove compressor from unit.
- Note: Upon reassembly, compressor wires shall be wire tied to suction lines to prevent excess chafing.

16. REVERSING VALVE REPLACEMENT

1. Remove compressor access panel.
2. Remove top panel at this point.
3. Remove refrigerant charge from system/systems being serviced.
4. Remove outdoor blower. See Outdoor Blower Removal Steps 1-4 on page 11.
5. Remove reversing valve solenoid.
6. Unbraid plumbing points at 1, 2, 3 & 4 in Figure 13 (Protect wiring).
7. Remove reversing valve from bracket.
8. When reinstalling reversing valve, wrap the valve body with a wet rag as best you can.

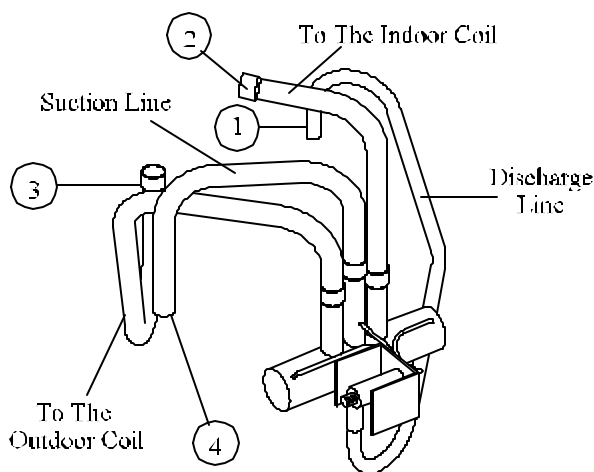


FIGURE 13

17. WIRING DIAGRAMS - THERMOSTAT

Diagram 1976E119

Electronic Wall Thermostat Assembly (12 VDC) - 6536-3451

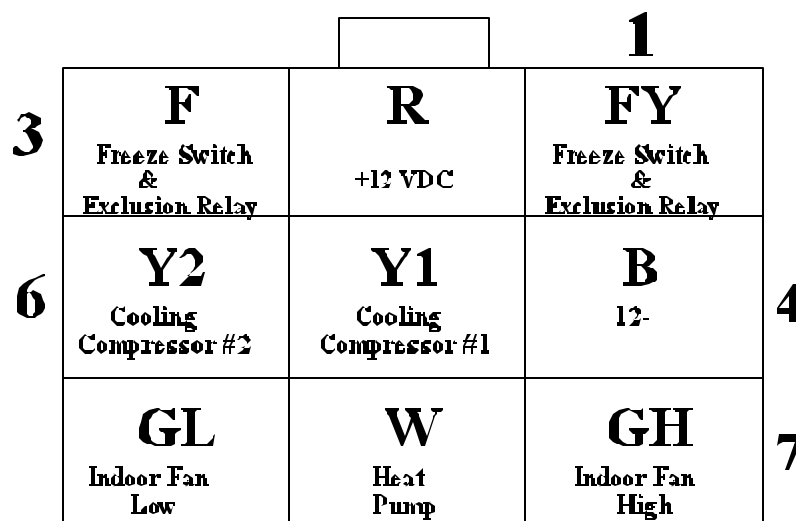
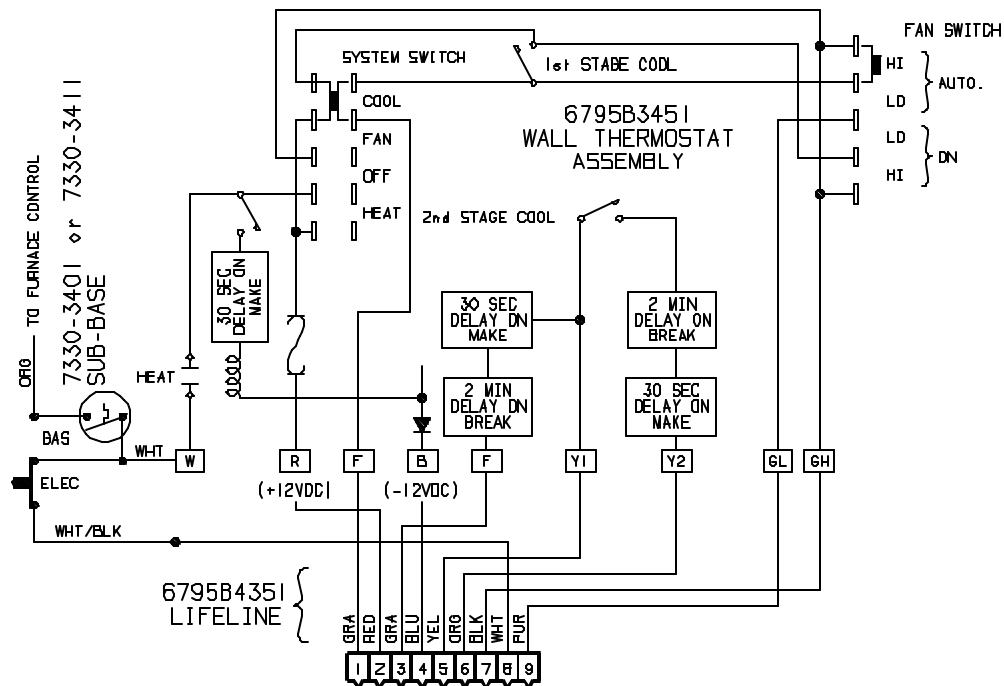
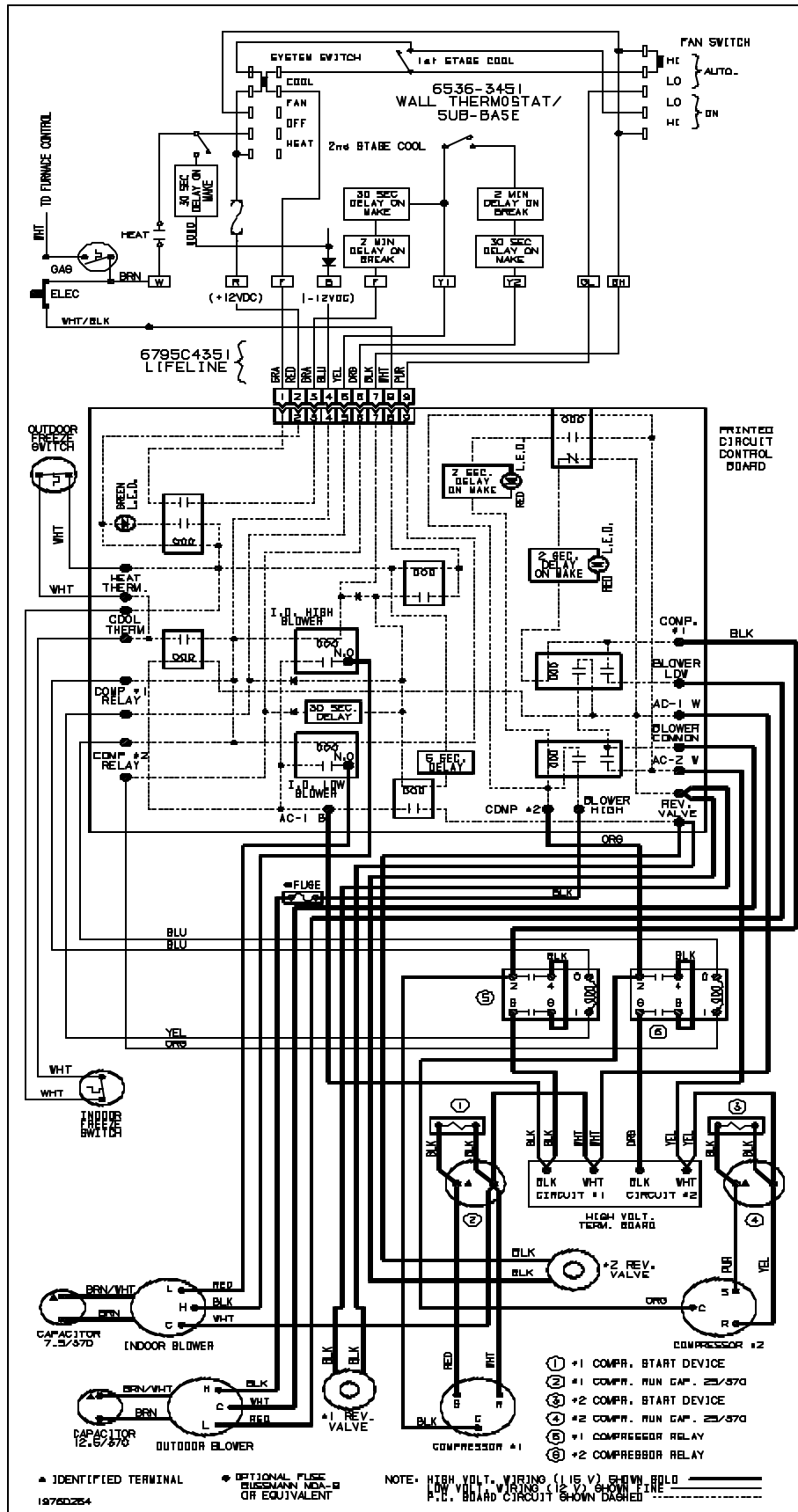


FIGURE 14

Thermostat plug positions on the p.c. board. If no voltage is detected at the p.c. board connector, check for voltage at the thermostat. Note: All functions of this heat pump are subject to thermostat time delays according to the operation manual.

18. WIRING DIAGRAM

6536 Series Two Ton Packaged Heat Pump - 2 Compressor



6536A Series Two Ton Packaged Heat Pump



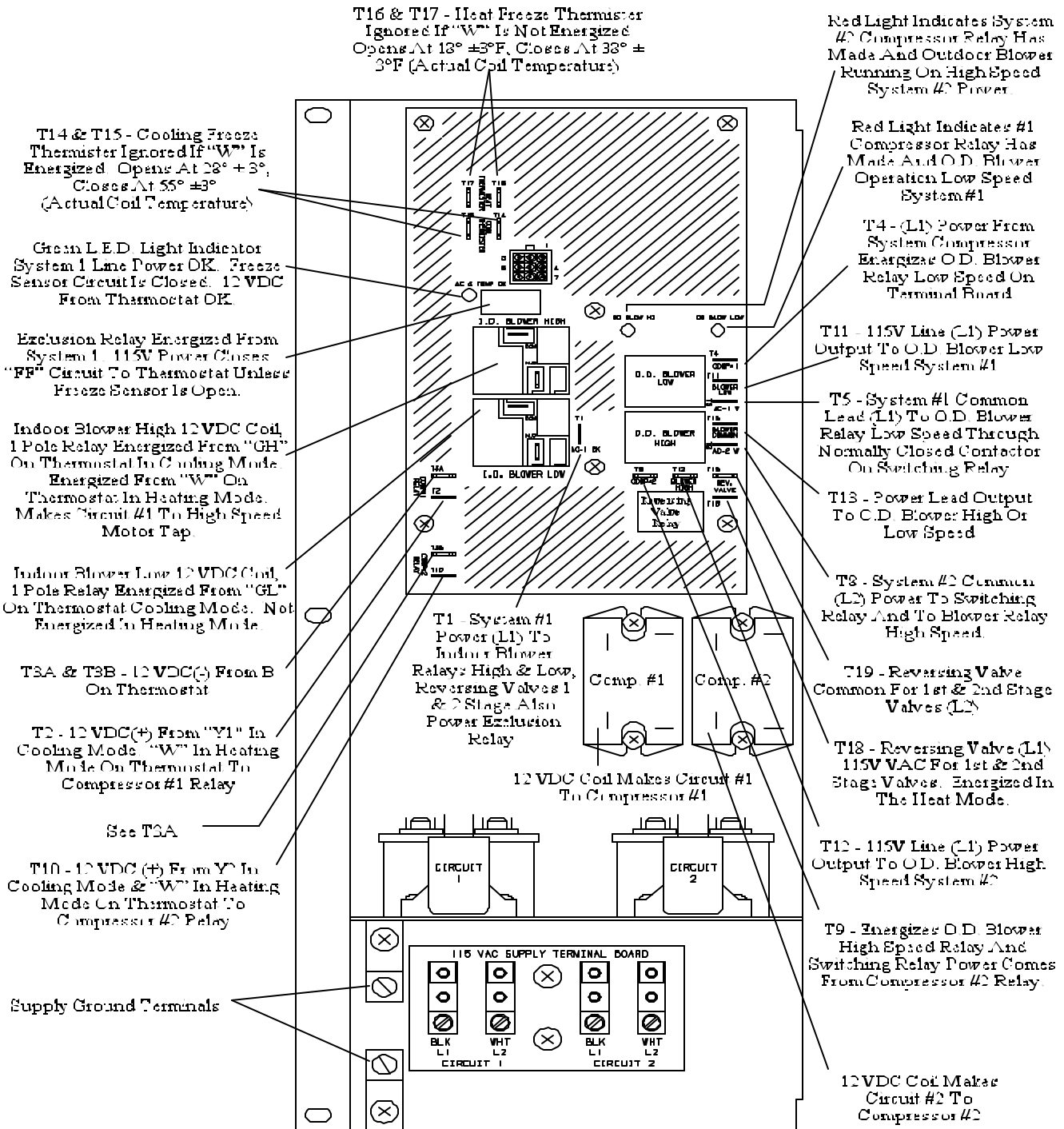
- ① +1 COMPRESSOR START DEVICE
- ② +1 COMPRESSOR RUN CAPACITOR 25/370
- ③ +2 COMPRESSOR START DEVICE
- ④ +2 COMPRESSOR RUN CAPACITOR 25/370
- ⑤ +1 COMPRESSOR RELAY
- ⑥ +2 COMPRESSOR RELAY

▲ IDENTIFIED TERMINAL

1978E254

NOTE- HIGH VOLT. WIRING (115 V) SHOWN BOLD
LOW VOLT. WIRING (12 V) SHOWN FINE

19. WIREBOX COMPONENT CHECKOUT 6536 "-" MODEL



19A. WIREBOX COMPONENT CHECKOUT

6536 "A" MODELS

T15 & T17 -Cooling Freeze Thermistor Ignored If 'W' Is Energized. Opens At 28° ± 3, Closes At 55° (Actual Coil Temperature).

Green L.E.D. Light Indicator System 1
Line Power OK. Flame Sensor Circuit
Closed. 12 VDC From Thermocouple OK

13A & 13B -12 VDC (-)
FROM "B" ON THE LOWER TAIL.

Exclusion Relay Energized From System 1. 115V Power Closes "FF" Circuit To Thermostat Unless Freeze Sensor Is Open.

I14 & I15 - Heat Exch
Thermistor Ignored If "U" Is
Not Energized. Opern A118
±3, Closure A138. Actual
Coil Temperature.

112 - 115V Line (L1) Power
Output to OD Blower High
Speed System #2.

19 - Engine; OD
Blower High Speed Relay
And Switching Relay.
Power Comes From
Compressor #2 Relay.

111 - 115V Line (L1) Power
Output To OD Blower Low
Speed System #1.

14 - (L1) Power From System
Compressor Energizes OD
Blower Relay Low Speed On
Internal Board.

Red Light Indicator #1
Compressor Relay Has
Made And OD Blower
Operation Low Speed
System #1.

113 - Power Lead Output
To OD Blower High On
Low Speed

IS - System #2 Common
(L2) Power To Switching
Relay And To Blower Relay
High Speed.

110 - 12 VDC (+)
From V2 In
Cooling Mode,
"V" In Heat Mode
On Thermostat To
Compressor #2
Relay.

See I3A

12 - 12 VDC (+) From
"A" In Cooling Mode.
"V" In Heat Mode On
Thermostat To
Compressor #1 Relay.

Receiving Value (L1)
115V VAC For 1st
2nd Stage Vacuum.
Energized In Heat
Mode.

17 - 115 VAC (L1) Out
To Indoor Blower Low
Speed.

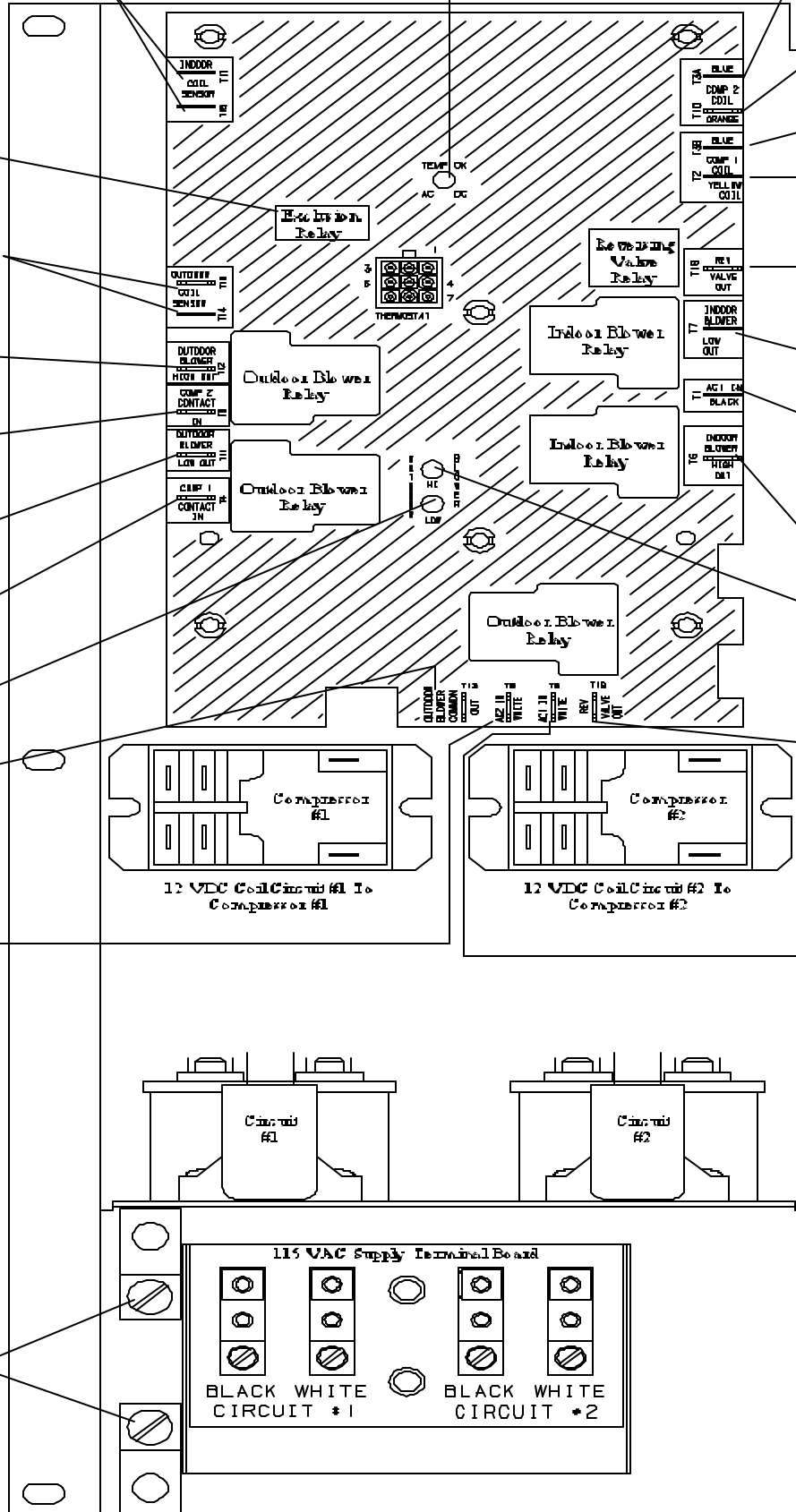
11- System #1 Power
(L1) To Indoor Blower
Relays High & Low
Reversing Valves 1 & 2
Stage. Also Power
Exclusion Relay.

13 - 115 VAC (LI)
On To Indoor
Blower High Speed.

Red Light Indicator
System #2 Compressor
Relay Has Made And
Outdoor Blower
Running On High
Speed System #2
Power.

—119 - Reversing Valve
Common For 1st & 2nd
Stage Valves (L2).

IS - System #1
Common Lead (L1) To
OD Blower Relay Low
Speed Through
Normally Closed
Contact for On
Switching Relay.



20. SERVICE PROBLEMS AND POSSIBLE SOLUTIONS

COOLING MODE

<u>Problems</u>	<u>Possible Solutions</u>
1. Nothing Runs - Cooling Mode	No A/C Voltage, No 12 VDC, Thermostat, Wiring, P.C. Board
2. IDFM Runs, No Compressor, No ODFM	Cooling Freeze Thermistor - (Insufficient Indoor Air Flow), Thermostat, Wiring, Compressor, Contactor, P.C. Board
3. IDFM Runs, ODFM Runs, No Compressor	Insufficient Voltage To Unit, Run Capacitor, Start Device, Overload, Wiring, Compressor
4. IDFM Runs, Compressor Runs, No ODFM	Run Capacitor, Fan Motor, P.C. Board, Wiring
5. Compressor Runs, ODFM Runs, No IDFM	Thermostat, Run Capacitor, Wiring, Fan Motor, P.C. Board
6. Compressor, ODFM, IDFM Runs, Insufficient Cooling	Air Flow Restriction, High Ambient Temperature, Undersized Refrigeration System, Very Little Or No Refrigerant Charge, Compressor
7. Compressor, ODFM, IDFM Runs, Unit Is Heating While In Cool Mode	Thermostat, Wiring, P.C. Board, Reversing Valve

HEATING MODE

<u>Problems</u>	<u>Possible Solutions</u>
1. Nothing Runs - Heat Mode	No A/C Voltage, No 12 VDC, Thermostat, Sub-base, Wiring, P.C. Board
2. IDFM Runs, No Compressor, No ODFM	Heating Freeze Thermister, Low Outdoor Ambient Conditions, Wiring, Compressor, Contactor, P.C. Board
3. IDFM Runs, ODFM Runs, No Compressor	Insufficient Voltage To Unit, Run Capacitor, Start Device, Overload, Wiring, Compressor
4. IDFM Runs, Compressor Runs, No ODFM	Run Capacitor, Fan Motor, Wiring, P.C. Board
5. Compressor Runs, ODFM Runs, No IDFM	Run Capacitor, Fan Motor, Wiring, P.C. Board
6. Compressor Runs, ODFM Runs, IDFM Runs, Insufficient Heating	Air Flow Restriction, Low Ambient Temperature, Undersized Refrigeration System, Very Little Or No Refrigerant Charge, Compressors
7. Compressor, ODFM, IDFM, Unit Is Cooling While In Heat Mode	Wiring, P.C. Board, Reversing Valve

21. ELECTRICAL FLOW CHARTS

6536 SERIES

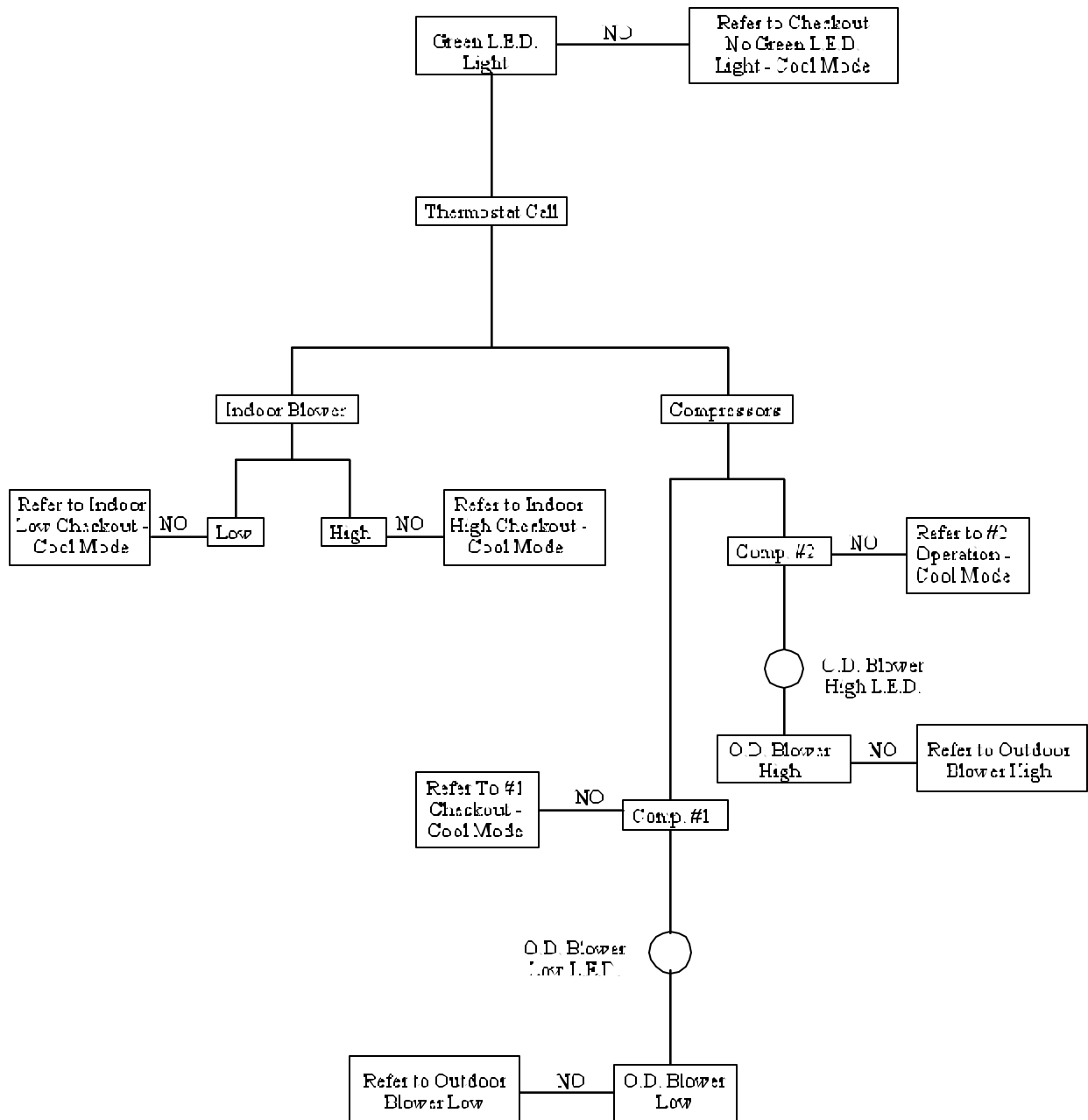
With the use of these flow charts, you will be able to quickly identify a non-working problem. Determine if the problem is high or low voltage and then solve the problem.

IMPORTANT NOTICE

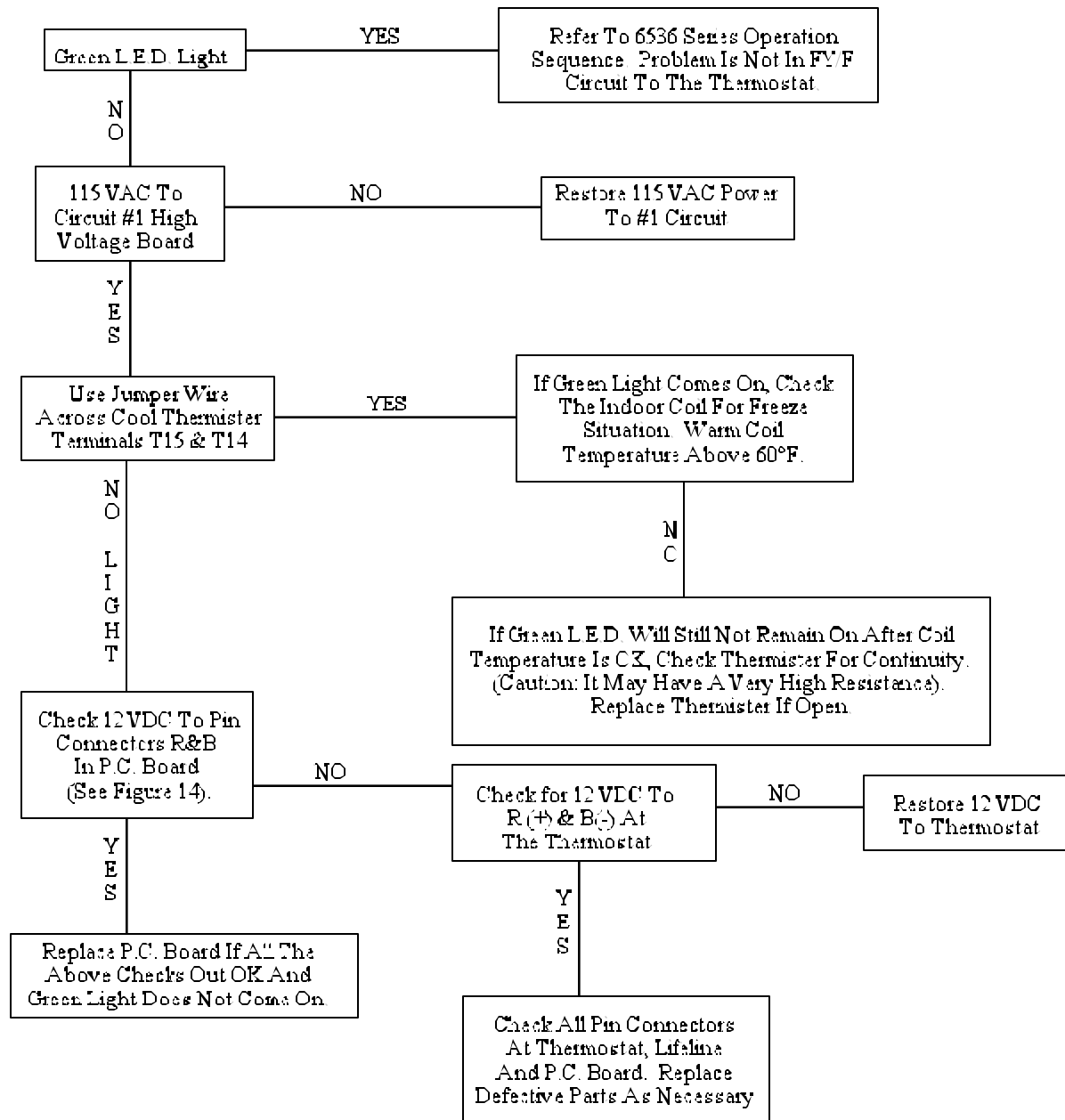
When using a jumper wire to diagnose a low voltage problem, **Never Short Any Positive Terminal to Ground or the Terminal Marked "B"**. Serious thermostat or p.c. board damage may occur.

To use these flow charts, start at the **top left** corner. Using a volt-ohm meter, check what is indicated in that box. If the answer to what is indicated is **No**, **work horizontally** until you find the problem. When the answer is **Yes or OK**, **work the chart downward** until you locate the problem. **Do Not Move Downward** on any chart until all preceding steps have been confirmed good. **Do Not** start in the middle of any chart without knowing everything previous (upward on the chart) is OK or you may replace the wrong part.

A. 6536 SERIES OPERATION SEQUENCE COOLING MODE



COOLING MODE
CHECK/NO GREEN L.E.D. LIGHT
FY/Y CIRCUIT TO THE THERMOSTAT



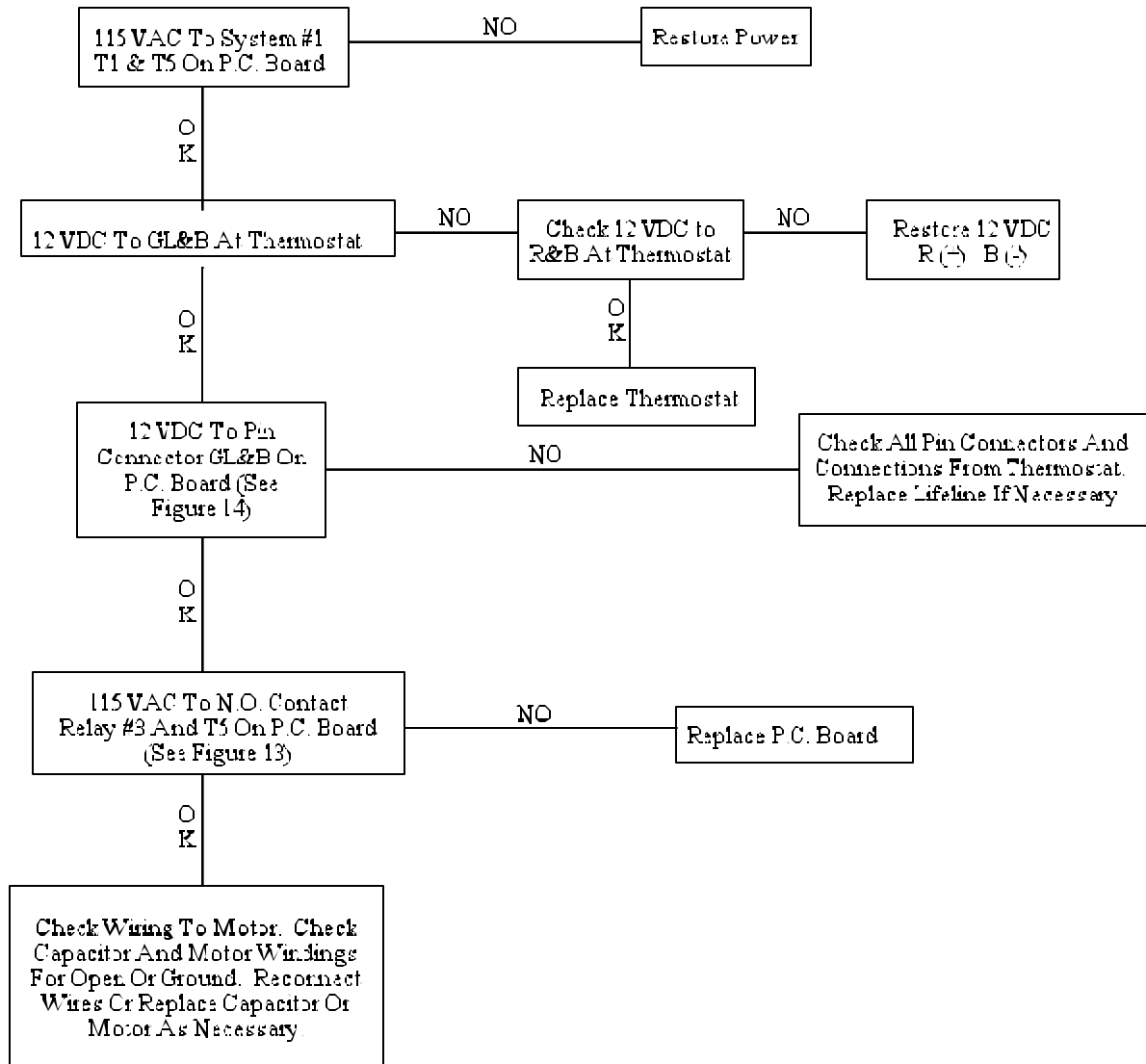
* Outdoor Thermister Is Ignored When "W" Is Not Energized

Note: The green light on the 6536A model has some new functions:

1. If the light is on solid, then everything is OK.
2. If the light is blinking slowly, the unit is in a 3 minute time delay.
3. If the light is blinking fast, there is either no line voltage to Circuit #1 or one of the thermistors are open.

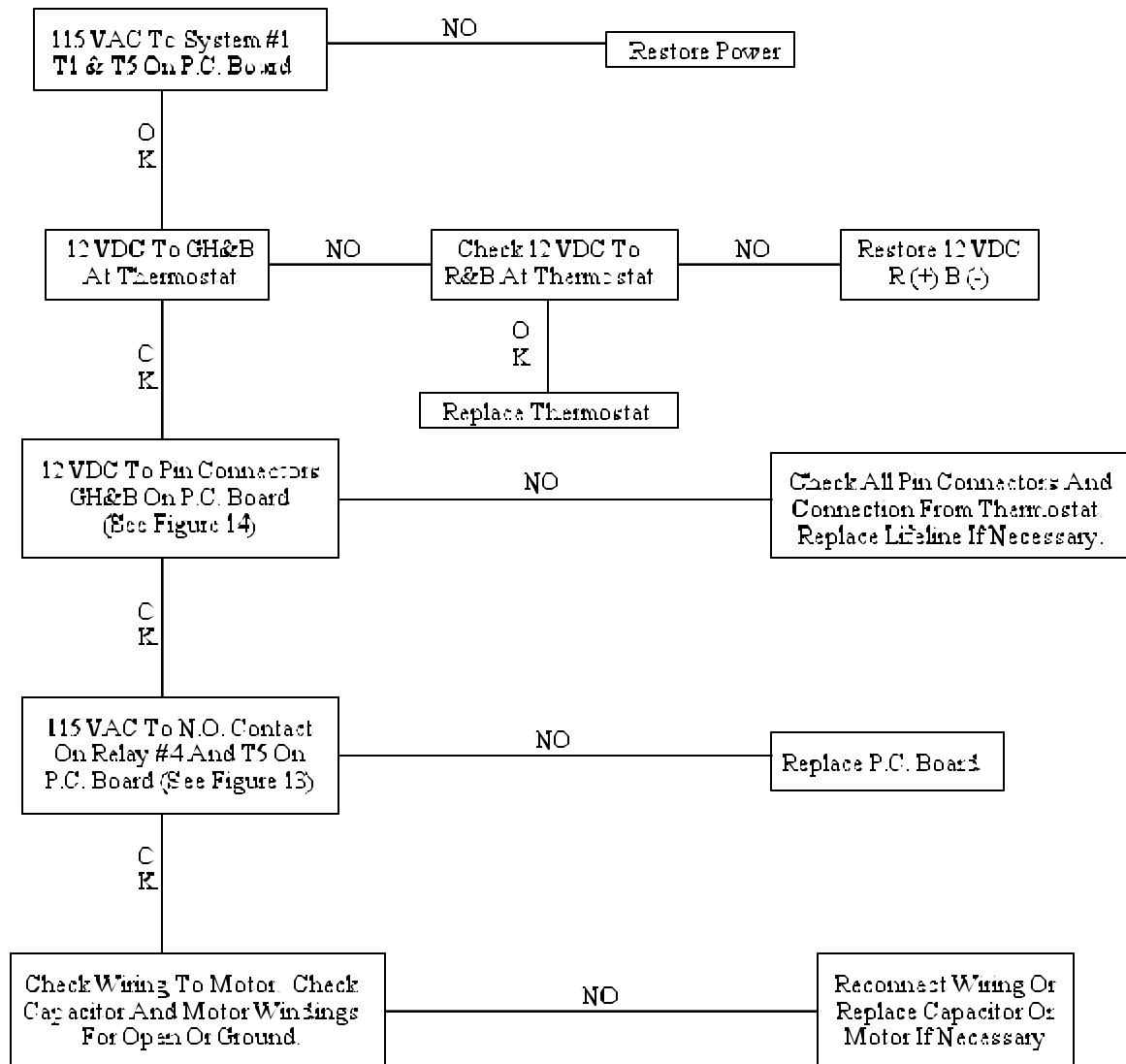
I.D. BLOWER LOW SPEED THERMOSTAT ON LOW FAN COOL ONLY

Note: All operating functions subject to thermostat time delays.



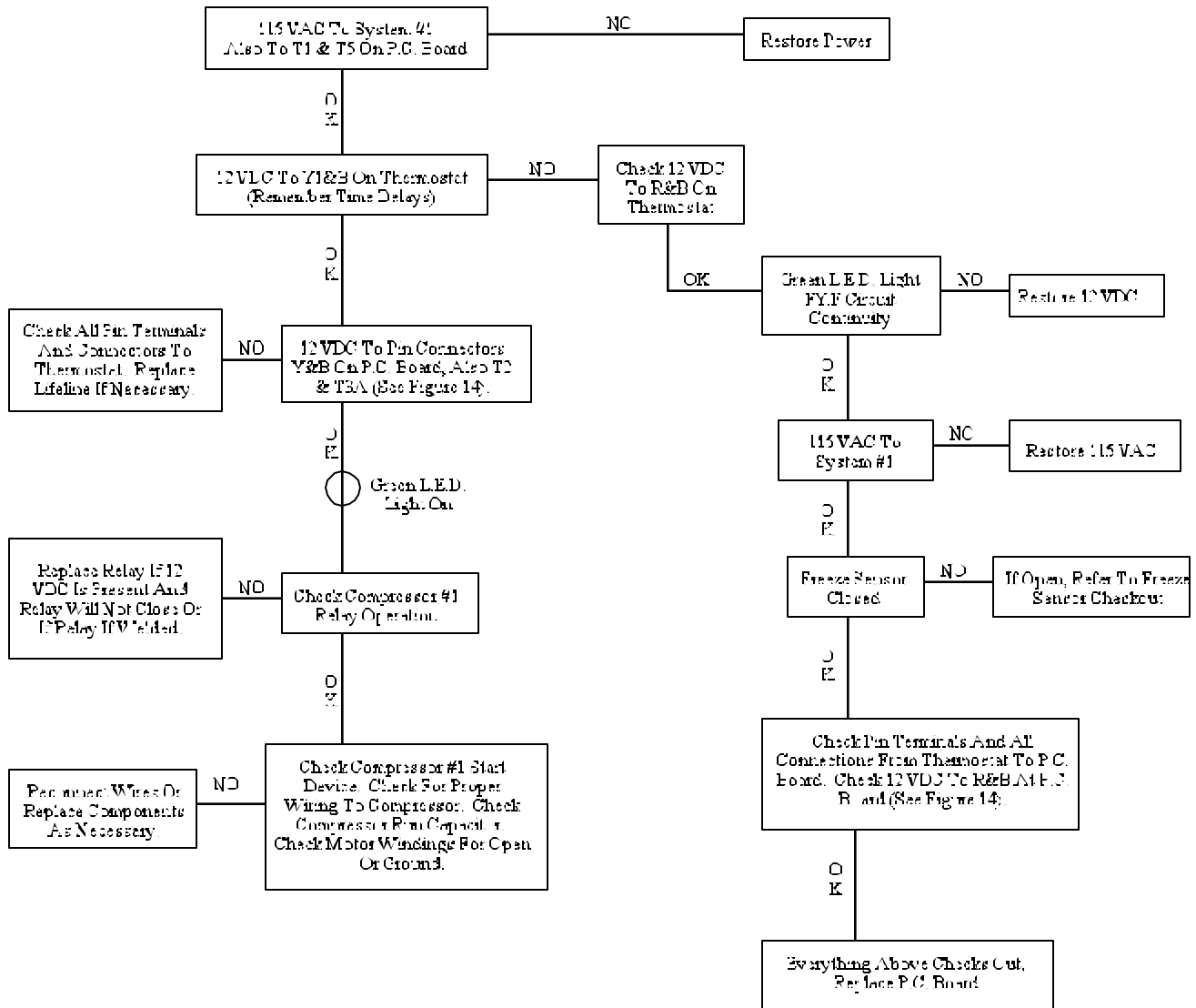
I.D. BLOWER HIGH SPEED THERMOSTAT ON HIGH FAN COOL ONLY

Note: All operating functions subject to thermostat time delays.



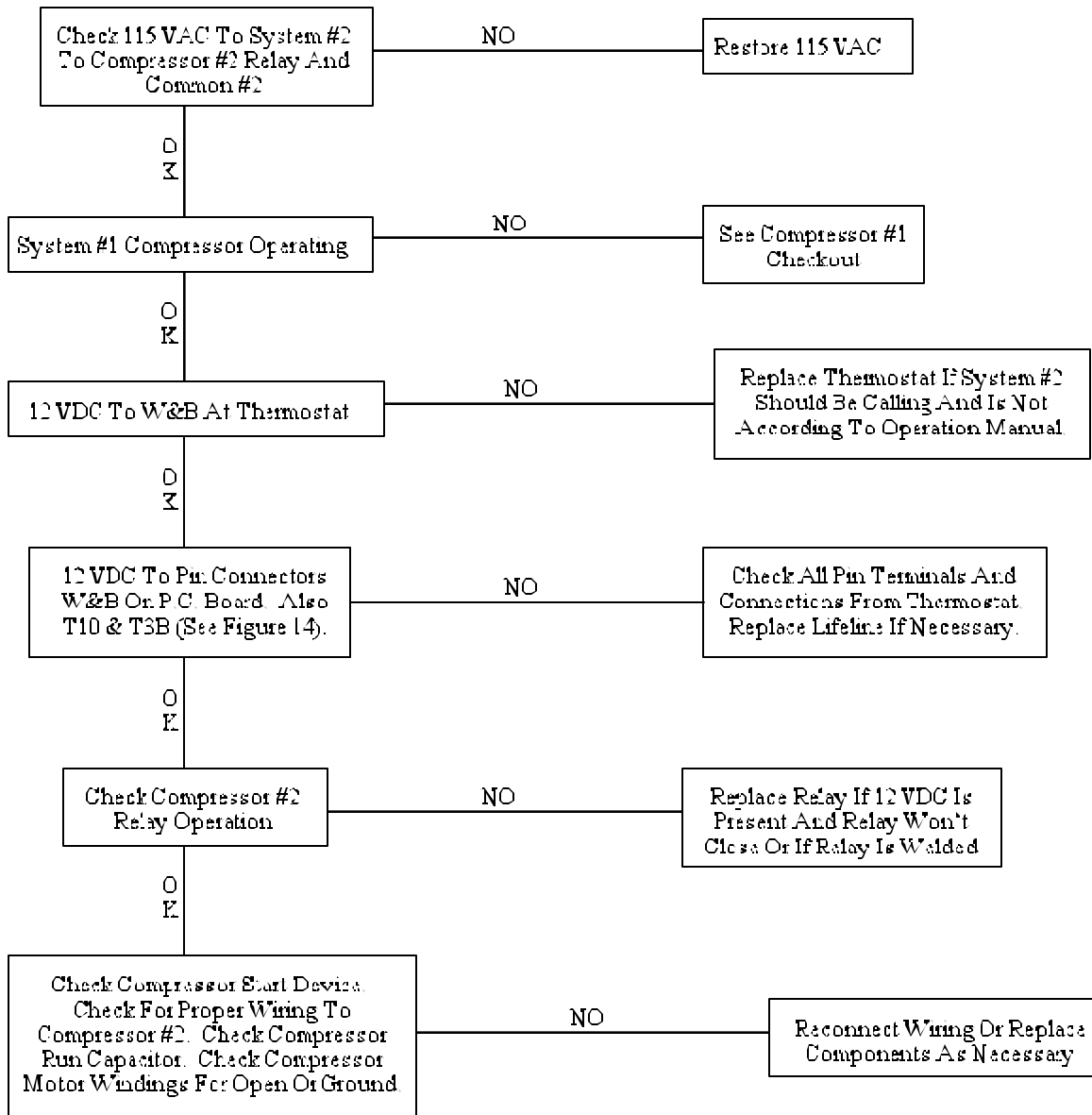
COMPRESSOR #1 CHECKOUT **THERMOSTAT CALLING FOR COMPRESSOR** **COOLING ONLY**

Note: All operating functions subject to thermostat time delays.

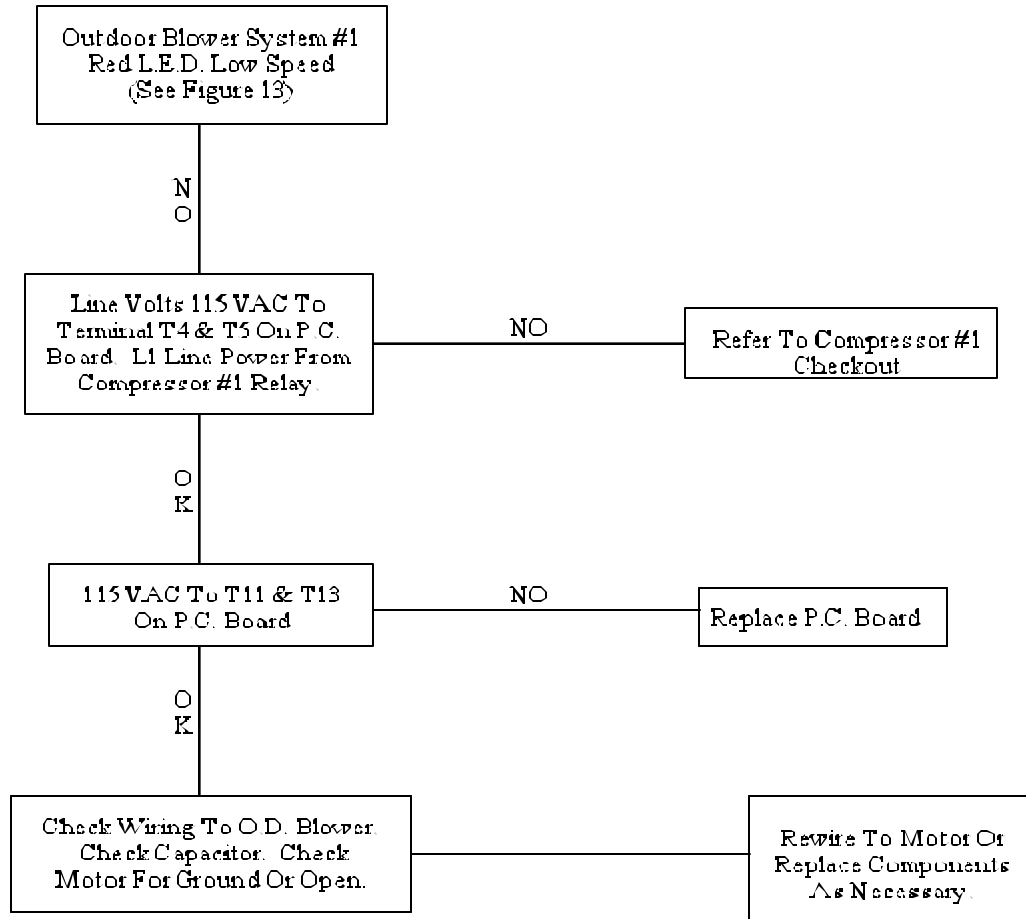


COMPRESSOR #2 CHECKOUT THERMOSTAT CALLING STAGE 2 COOLING ONLY

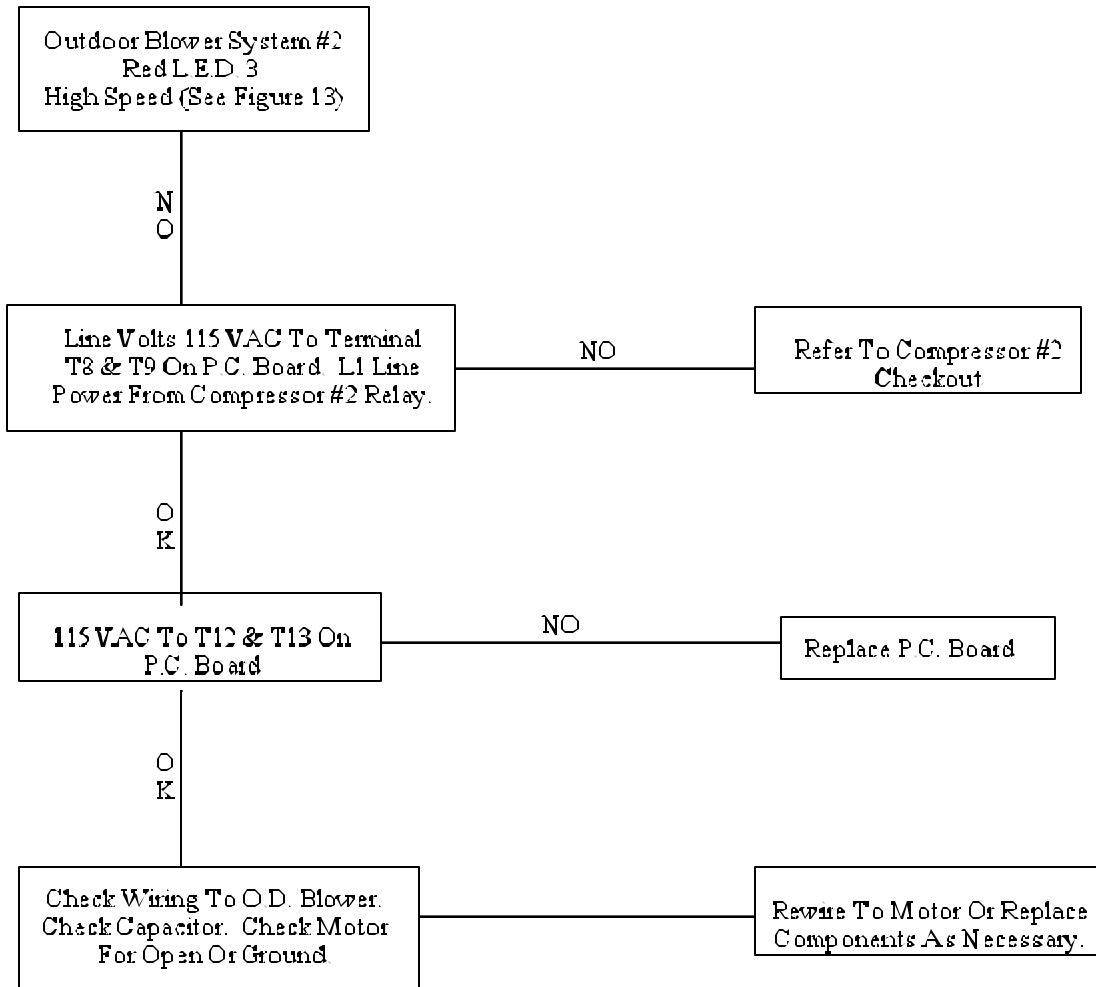
Note: All Operating Functions Subject To Thermostat Time Delays



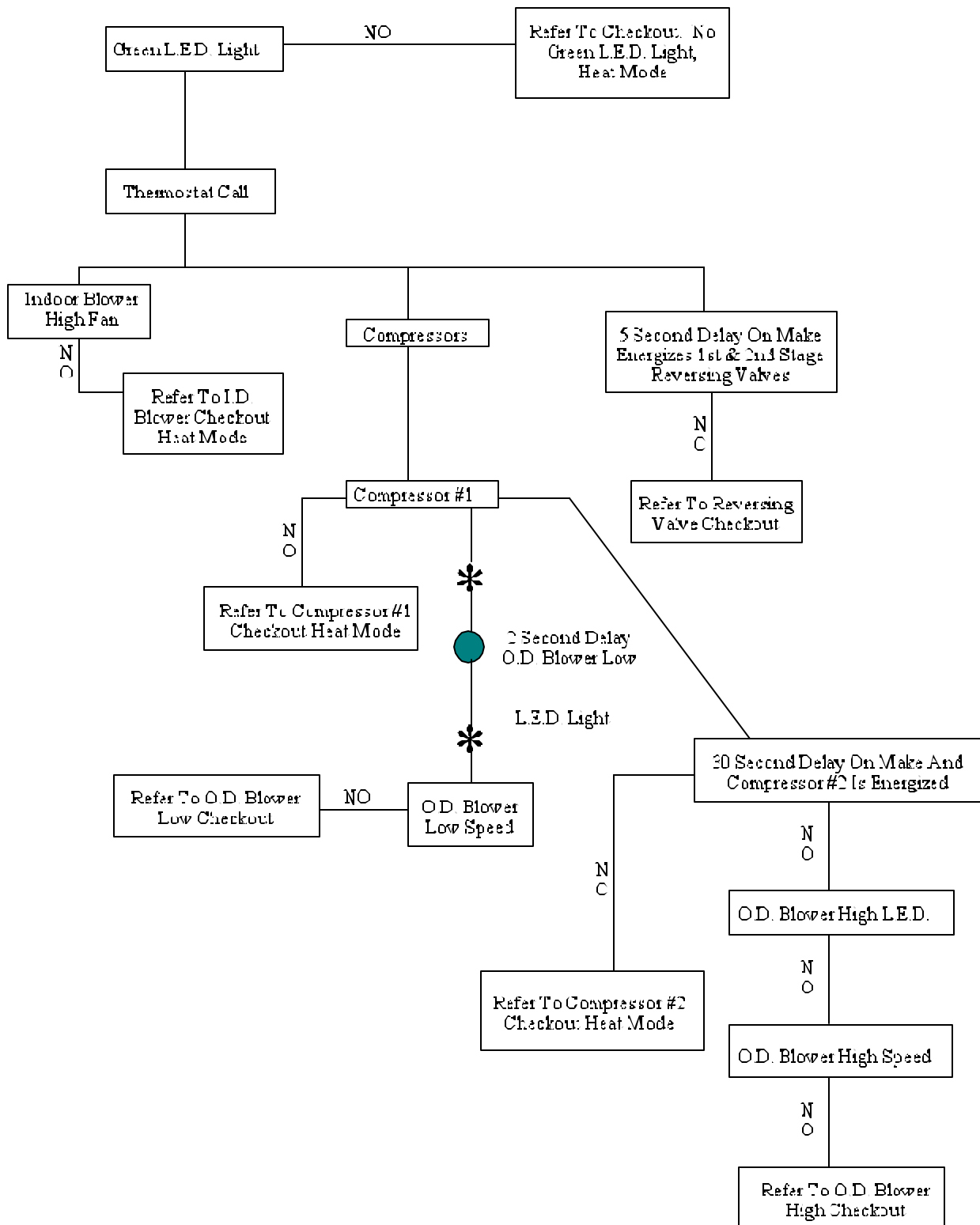
**CHECKOUT OUTDOOR BLOWER
LOW SPEED
HEATING AND COOLING MODES**



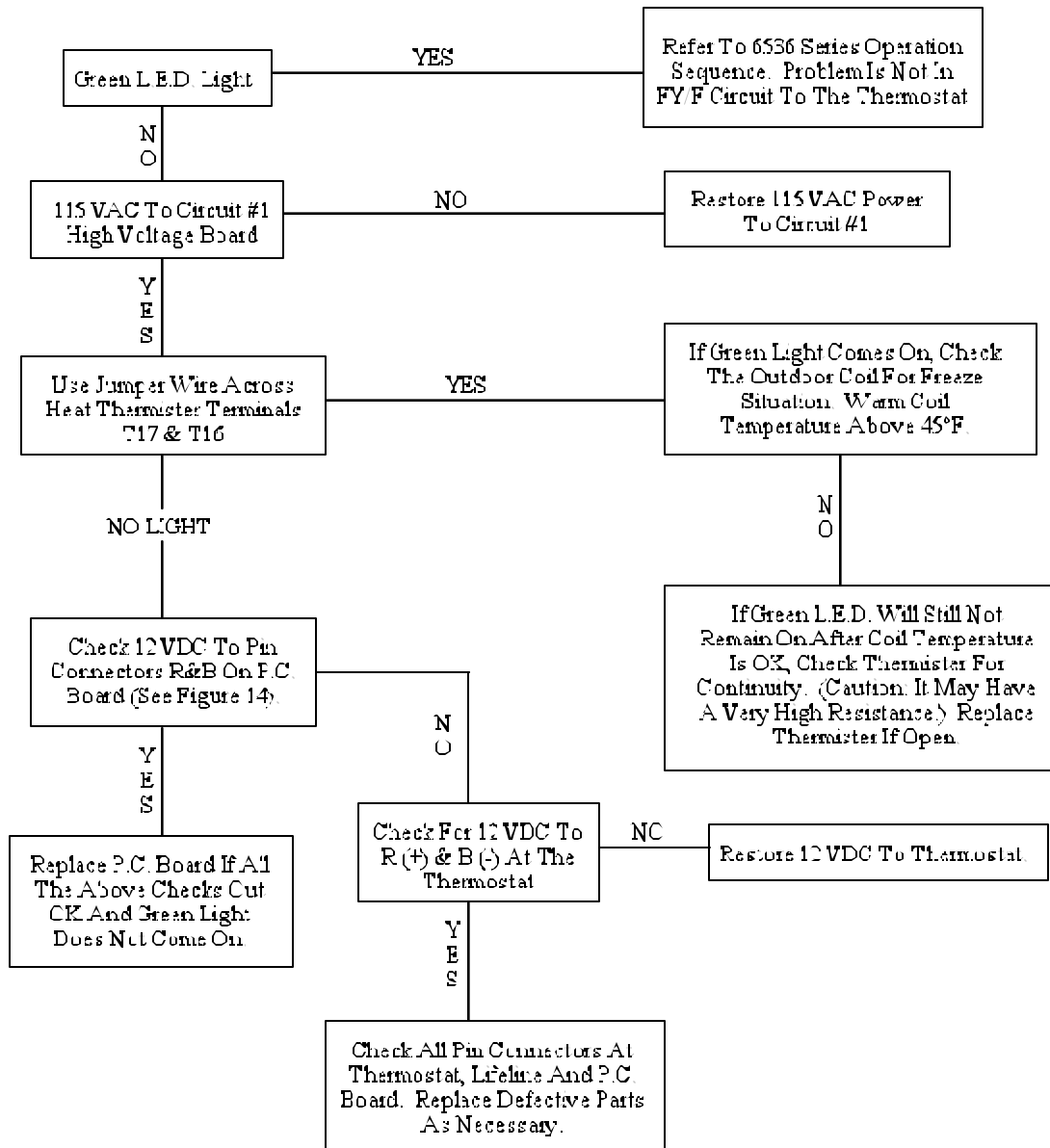
**CHECKOUT OUTDOOR BLOWER
HIGH SPEED
HEATING AND COOLING MODES**



B. 6536 SERIES OPERATION SEQUENCE HEATING MODE



HEAT/MODE CHECKOUT/NO GREEN L.E.D. LIGHT F/F CIRCUIT TO THE THERMOSTAT

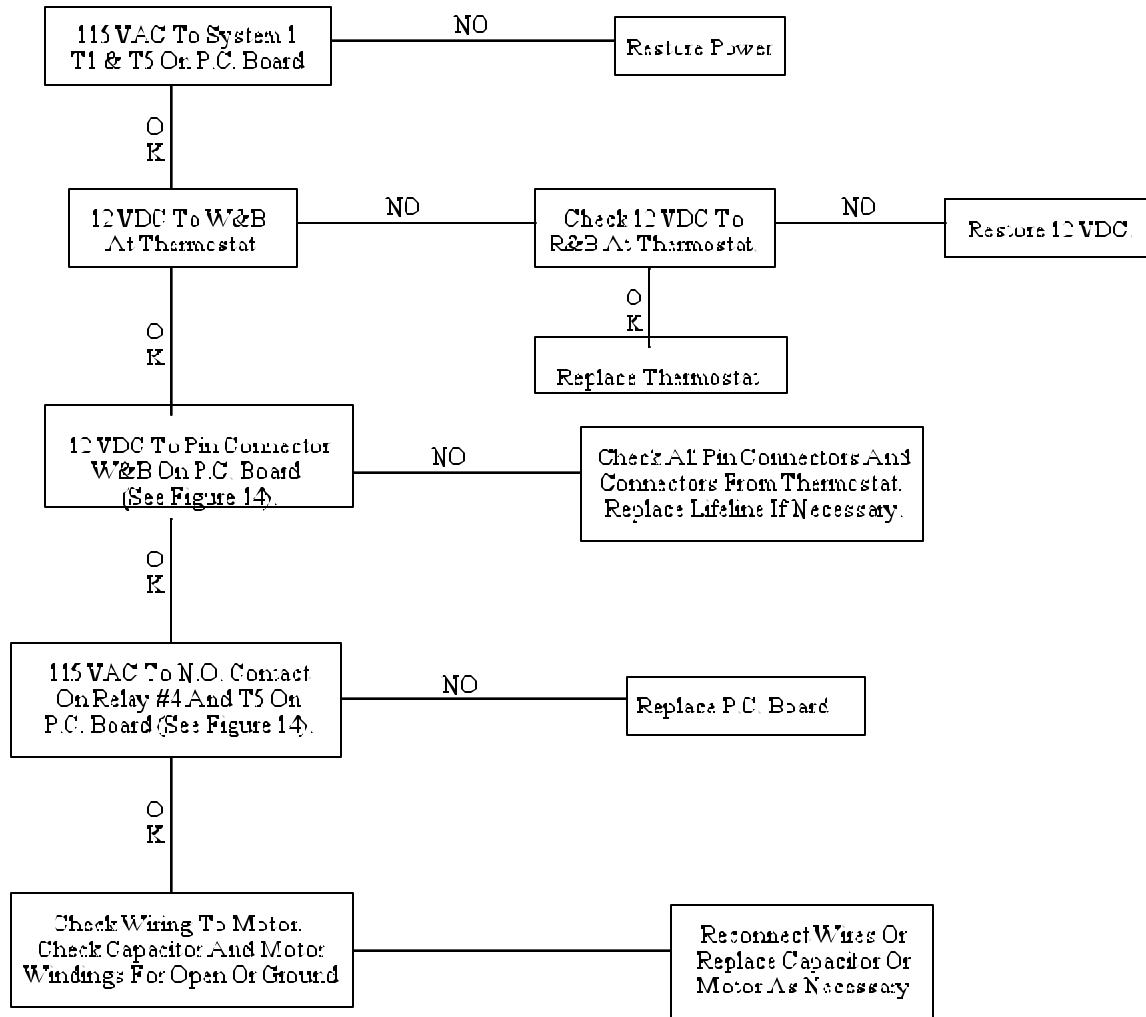


* Indoor Thermister Is Ignored When "W" Is Energized.

HEAT MODE

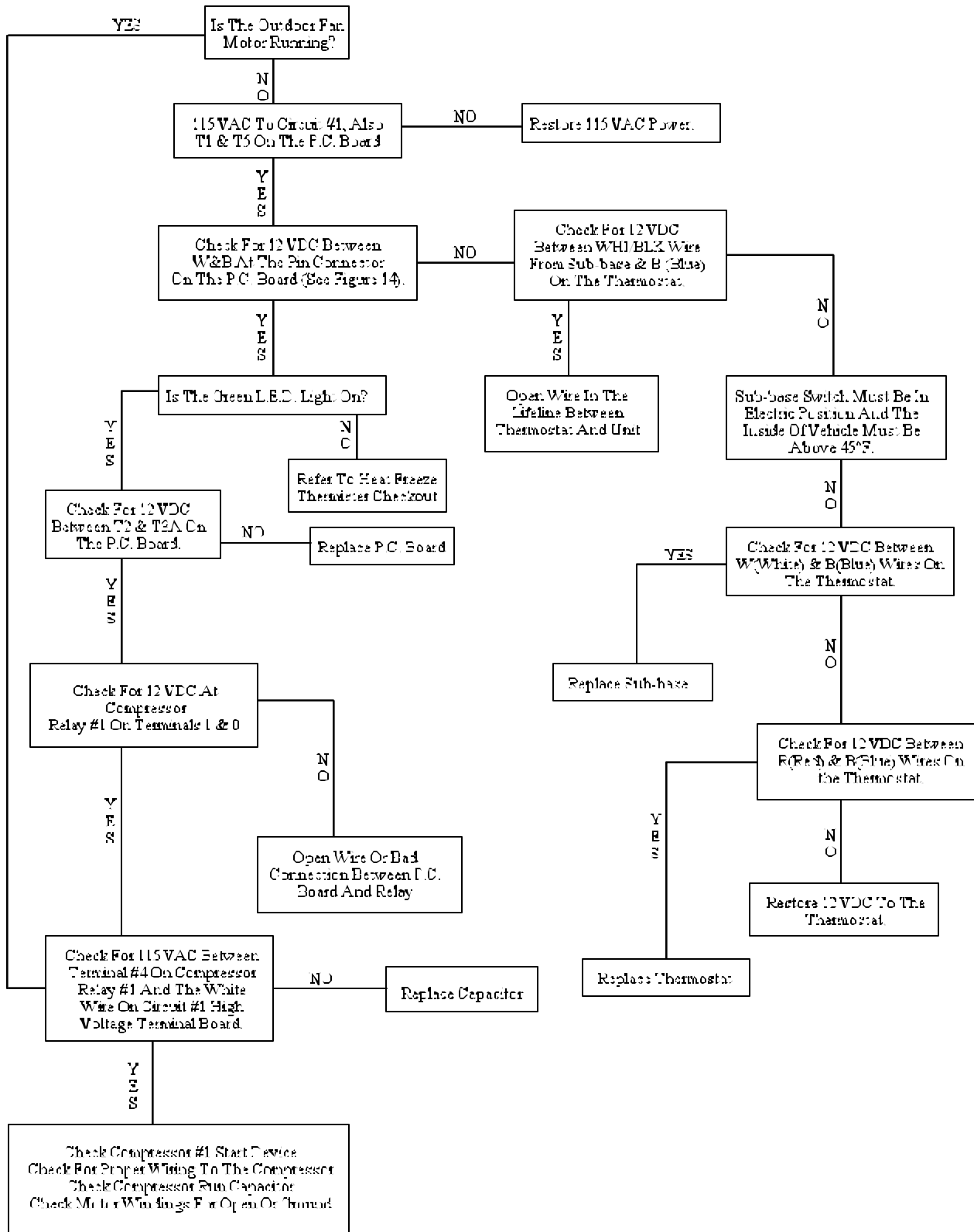
I.D. BLOWER CHECKOUT

Note: High Fan Speed Is Energized Only.
All Operating Functions Subject To Thermostat Time Delays.



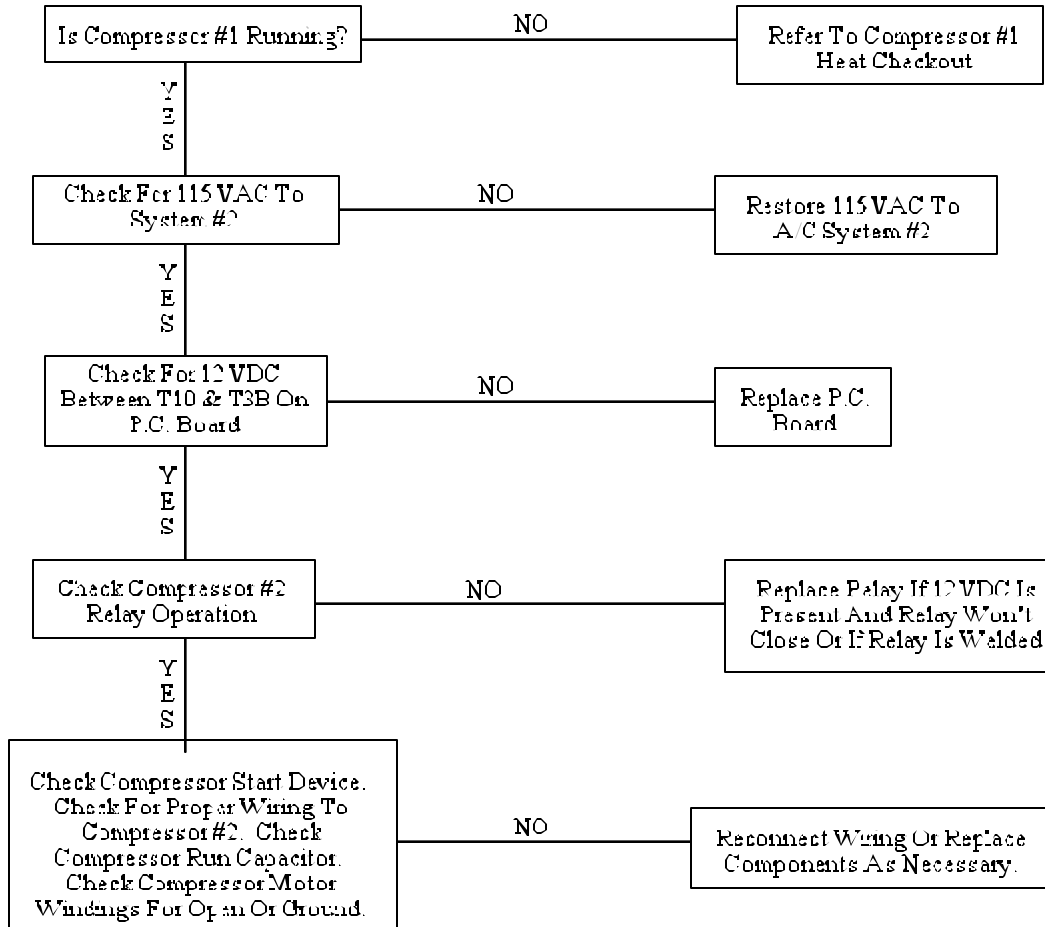
COMPRESSOR #1 CHECKOUT HEAT MODE

Note: All Operating Functions Subject To Thermostat And P.C. Board Time Delays.
Sub-base Must Be In The Electric Mode.



HEAT PUMP COMPRESSOR #2 CHECKOUT (HEAT MODE)

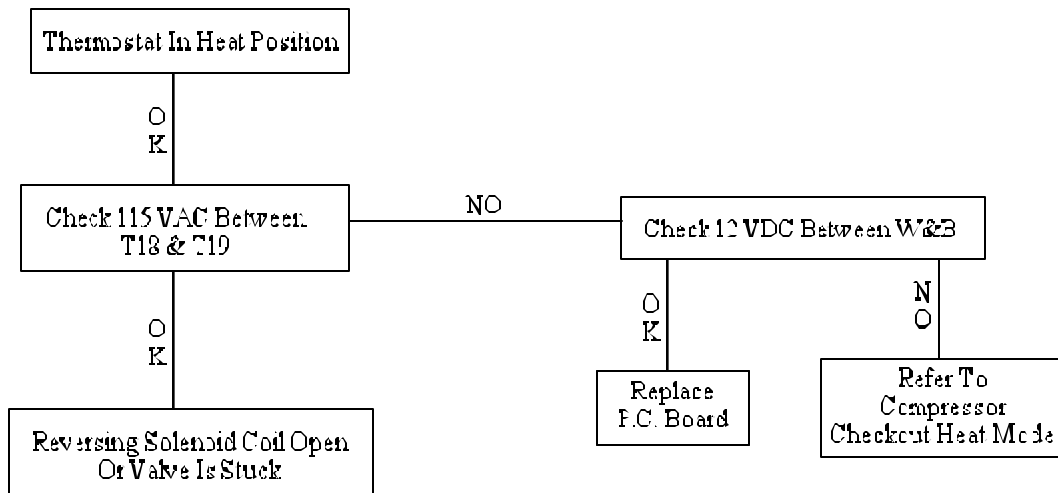
Note: All Operating Functions Subject To Thermostat And P.C. Board Time Delays.
Sub-base Must Be In Electric Mode.



REVERSING VALVE CHECKOUT HEAT MODE

Note: Reversing Valve Is Energized In The Heat Mode And Is Subject To
Thermostat And P.C. Board Time Delays.

Note: If Compressor And Fan Motors Not Running, Refer To Proper Checkouts.
Once The Reversing Valve Has Energized, The P.C. Board Locks The Valve
Into An Energized Position Until The Wall Thermostat Is Put In The Cool
Position And Actually Has A Demand For Cooling, Sending 12 VDC Down Y1.





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