



SERVICE MANUAL

FOR

COMFORTGUARD™ CAB AIR SYSTEM

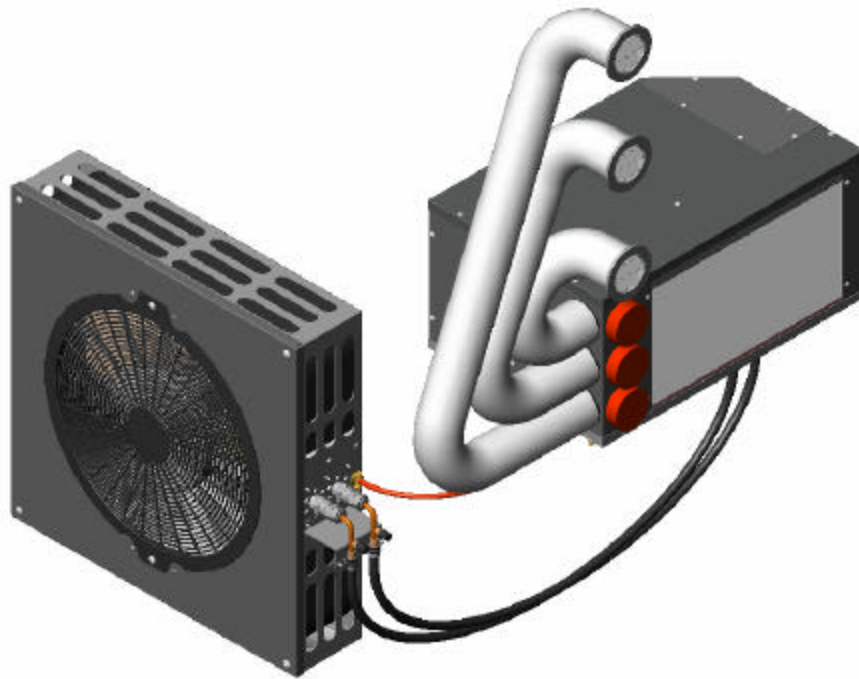


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1. WARNINGS

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.

SHOCK HAZARD

TO PREVENT THE POSSIBILITY OF SEVERE PERSONAL INJURY, DEATH, OR EQUIPMENT DAMAGE DUE TO ELECTRICAL SHOCK, ALWAYS BE SURE THE POWER SUPPLY TO THE APPLIANCE IS DISCONNECTED BEFORE DOING ANY WORK ON THE APPLIANCE. THIS CAN NORMALLY BE ACCOMPLISHED BY SWITCHING THE BREAKER FOR THE AIR CONDITIONER TO OFF, DISCONNECTING ALL EXTERNAL ELECTRICAL

CONNECTIONS AND CORDS, SWITCHING ON-BOARD ELECTRICAL GENERATORS AND INVERTER TO OFF, AND REMOVING THE CABLE FROM EACH POSITIVE TERMINAL ON ALL STORAGE AND STARTING BATTERIES.

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 judgment for the best method of attaining access to perform service.

3. UNIT SPECIFICATIONS AND IDENTIFICATION

SPLIT SYSTEM A/C

THIS EVAPORATOR FOR INDOOR USE ONLY

MODEL NUMBER **6330B875**

FOR USE ONLY WITH: 6330-610 CONDENSER
6330A625 ACCESSORY PACK

MAX. OVERCURRENT PROTECTIVE DEVICE: 25 A

I.D. BLOWER MOTOR H.P. 0.3

BLOWER MOTOR VOLTS/Hz/AMPS 115/60/2.9

O.D. FAN MOTOR H.P. 1/8

FAN MOTOR VOLTS/Hz/AMPS 115/60/1.4

COMPRESSOR VOLTS/Hz/RLA 115/60/9.2

COMPRESSOR BCSC/LRA 10.3/54.0

HEATER VOLTS/AMPS (LOW) 115/10.2

HEATER VOLTS/AMPS (HIGH) 115/20.4

DESIGN PRESSURES LOW SIDE 150 PSIG

HIGH SIDE 300 PSIG

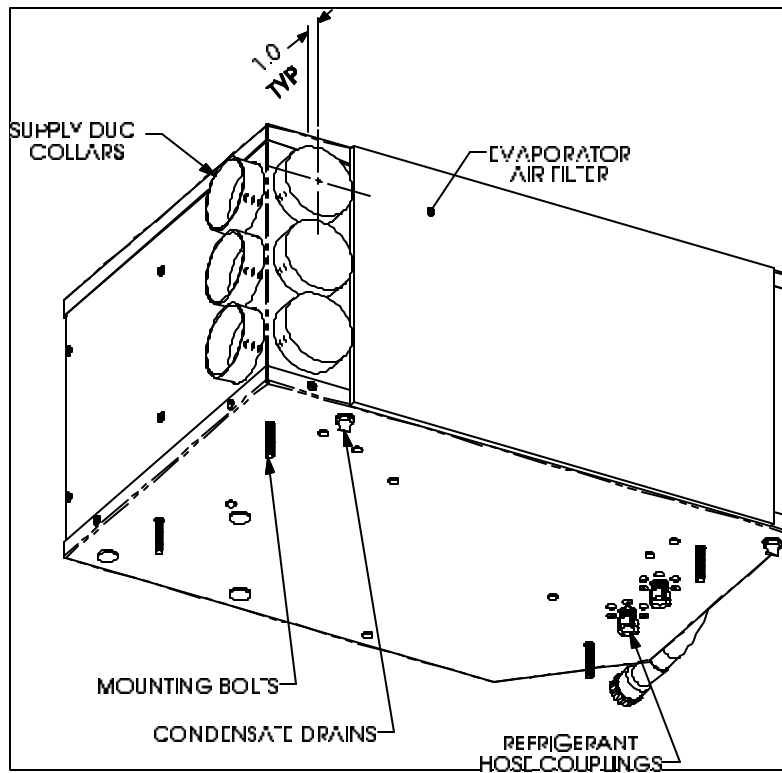
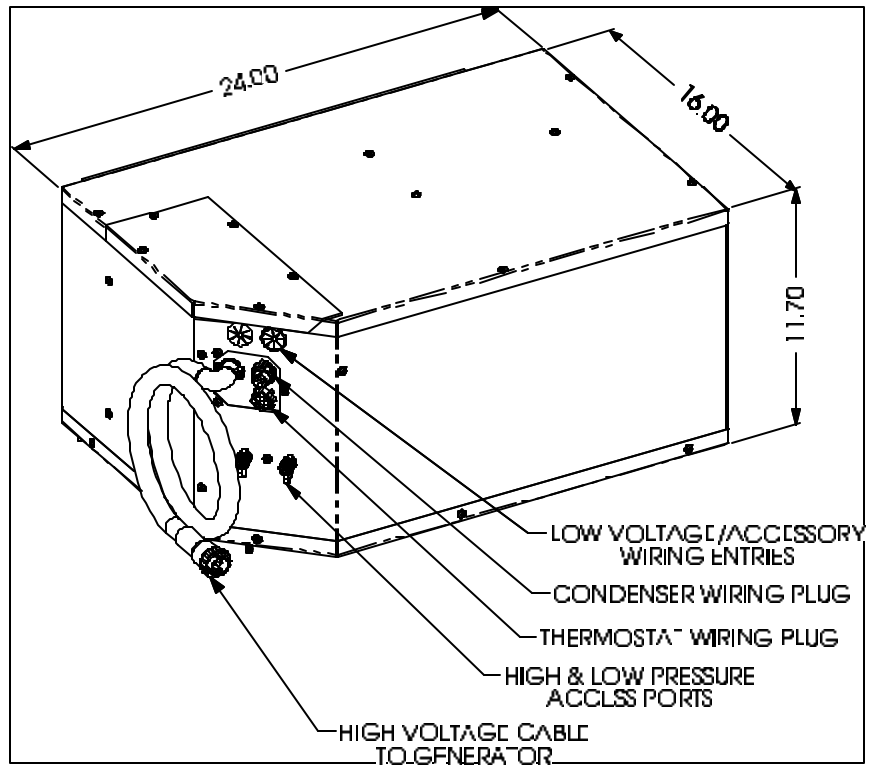
R-22 CHARGE WEIGHT: 28.5 OZ (1.8 LB)

REFLECTS CHARGE WITH 8 FT. HOSE SET.

IF RE-CHARGING, ADD 1 OZ FOR EACH FOOT
OF HOSE SET OVER 8 FEET.

COMPRESSOR PART NO. 1450-230

4. UNIT DEPICTION FIGURES



5. GENERAL INFORMATION

The ComfortGuard™ Cab Air Conditioner comes standard with an easy to operate two stage electronic wall thermostat.

The evaporator section which mounts under the bunk delivers up to 350 cubic feet per minute of cool, comfortable air and when two stage electric heat is selected on the wall thermostat, it will warm up even the coldest cab.

The condenser section heavy case protects the important condenser coil from road grime, rocks or gravel that can get thrown up by the tires and cause real damage. Unlike competitive units that have to be mounted vertically, the Cab

Air condenser is designed to mount in any orientation. Up-side-down, right-side-up, or laying flat on its back, it still delivers the cool.

This kit includes one-shot quick connect pre-charged line sets, and also includes registers, duct work and mounting templates. Everything you will need to install the unit.

All the electrical connections are design mated to the ComfortGuard™ Auxiliary Power Unit for true “plug and play” installations.

6. THERMOSTAT SPECIFICATIONS

See Pages 6 & 7 for thermostat information.



RVP Part#: 6330*335

AP7863

Non-Programmable Electronic Thermostat

2 Heat/1 Cool
Non-Programmable
Manual Changeover

- Up to two-stage heat / one-stage cool
- Mercury-free, environmentally safe
- For use with 12 VDC systems
- Non-heat pump
- Manual Changeover



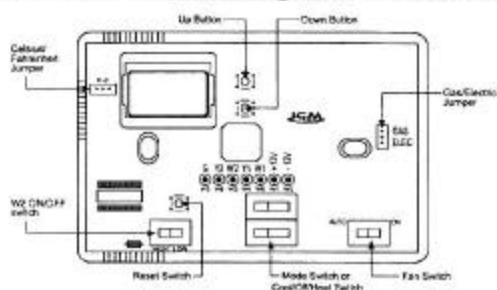
Notes: Actual thermostat is black with white markings

Installation, Operation & Application Guide

For more information on our complete range of American-made products - plus wiring diagrams, troubleshooting tips and more, visit us at www.icmcontrols.com



Parts Diagram



Specifications

- Input:**
- Voltage: 12 VDC
- Output:**
- Maximum: 1 amp per terminal (3 amp total for all terminals)
 - Temperature control ranges: 45°F to 90°F (7°C to 32°C)
 - Accuracy: $\pm 1^\circ\text{F}$ ($\pm 0.5^\circ\text{C}$)
 - Set temperature defaults: 78°F (25°C) cooling / 68°F (20°C) heating
 - Compressor time delay: 3 minutes
 - System configurations: Multi-stage - Two-stage heat or Two-stage cool

Important Safety Information

- Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing this thermostat.
- Read all of the information in this manual before installing this thermostat.
- This thermostat should be installed only by a professional contractor.
- This is a 12 VDC low-voltage thermostat; do not install on voltages higher than 15 VDC.
- All wiring must conform to local and national building and electrical codes and ordinances.
- Do not short (jumper) across terminals on the gas valve or at the system control to test installation; this will damage the thermostat and void the warranty.
- Do not switch system to cool if the temperature is below 50°F (10°C). This can damage the air conditioning system and may cause personal injury.
- The thermostat will not control your heating/air conditioning system without power; it requires a continuous 12 VDC circuit for proper system control.
- Use this thermostat only as described in this manual.

To Remove Existing Thermostat



ELECTRICAL SHOCK HAZARD - Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

1. Turn off power to the heating and cooling system by removing the fuse or switching off the appropriate circuit breaker.
2. Remove cover of old thermostat. This should expose the wires.
3. Label the existing wires with the enclosed wire labels before removing wires.
4. After labeling wires, remove wires from wire terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install this thermostat.

To Install Thermostat



ELECTRICAL SHOCK HAZARD - Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

IMPORTANT: Thermostat installation must conform to local and national building and electrical codes and ordinances.

Note: Do not mount the thermostat on an outside wall, in direct sunlight, behind a door, or in an area affected by a vent or duct.

1. Turn off power to the heating and cooling system by removing the fuse or switching off the appropriate circuit breaker. Move the Cool/Off/Heat switch to OFF.
2. Move the FAN AUTO/ON switch to AUTO.
3. To remove cover, insert and twist a coin or screwdriver in the slots on the sides of the thermostat.
4. Put thermostat base against the wall where you plan to mount it. (Be sure wires will feed through the wire opening in the base of the thermostat).
5. Mark the placement of the mounting holes.
6. Set thermostat base and cover away from working area.
7. Using a 3/16" drill bit, drill holes in the places you have marked for mounting.
8. Use a hammer to tap supplied anchors into mounting holes.
9. Align thermostat base with mounting holes and feed the control wires through wire opening.
10. Use supplied screws to mount thermostat base to wall.

CAUTION: Be sure exposed portion of wires does not touch other wires.

11. Connect plug to installer provided mating receptacle (AMP # 1-480673-0 with pins 61627-1) or cut off plug and use wire nuts.
12. Seal hole for wires behind thermostat with non-flammable insulation or putty.
13. Set the Gas/Electric jumper to gas.
14. Set the temperature scale jumper to Fahrenheit or Celsius.
15. Replace cover on thermostat by snapping it in place.
16. Turn on power to the system at the main service panel.

Operation

Setting the Setpoint Temperature

Step 1: Press the $\vee$ or $\wedge$ button; the current temperature setpoint displays.



Step 2: Press the $\vee$ or $\wedge$ button until the desired temperature setpoint displays.



The new temperature setting is automatically saved. After 5 seconds, the display returns to showing the current room temperature.

Setting a New Temperature Differential

IMPORTANT: The default temperature differential is factory set at 1°F. When your room temperature varies by 1°F, the thermostat turns your system on. If you notice your system turning on and off too frequently, increase the temperature differential accordingly.

Step 1: Remove the cover and press the reset button.

Step 2: The display will show This is the temperature differential setting.

Step 3: Press the $\vee$ or $\wedge$ button to adjust the temperature differential down or up.

Differential Setting	°F	°C
1	1°F	0.5°C
2	2°F	1.0°C
3	3°F	1.5°C

The display will return to the room temperature display five seconds after the last input. The new temperature differential setting will be saved.

Changing Fahrenheit to Celsius

The temperature displays in degrees Fahrenheit as a factory set default. Follow these steps to change to degrees Celsius:

Step 1: Remove the cover.

Step 2: Move the *F/C* jumper to the desired position, *F* or *C* using the center pin as a common.

Step 3: Press the reset button and reinstall the cover. Your LCD readout changes accordingly.

Starting the Thermostat

Step 1: Move the *Fan* switch into the *Auto* position.

- In *Auto*, indoor fan runs only during a heating or cooling cycle
- In *On*, indoor fan runs continuously

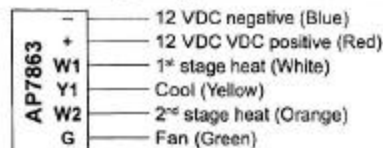


Step 2: Move the *Mode* switch to either *Cool* or *Heat* position, depending on the season. The thermostat will now operate and maintain the room temperature at the desired setpoint.



- **Note:** When the thermostat operates the system, there is built-in compressor protection. After the compressor turns off, the system will not turn it back on for about three minutes. This protects the compressor.

Wiring Diagram



HI/LO Heat Switch:

- If operating with a generator, set to HI
- If operating from a 15 AMP "shore" supply, set to LO to avoid tripping the shore supply circuit breaker.

Troubleshooting

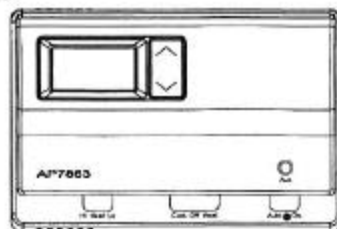
Symptom	Remedy
The system isn't turning on	Check the wiring (see Installation)
LCD is blank	Verify you have 12 VDC at the thermostat
Thermostat does not turn on the system as frequently as it should	Decrease the temperature differential (see Setting a New Temperature Differential)
Thermostat is not properly controlling the fan	Check that the fan switch settings match your system (gas or electric)
Thermostat is continuously turning on and off	Increase the temperature differential (see Setting a New Temperature Differential)
Set temperature has changed	After extending power interruptions, set temperature will return to default settings Heat 68°F (20°C), Cool 78°F (25°C)
Temperature displayed is not accurate	Your thermostat has two options for temperature readout: Fahrenheit (default) or Celsius; check that the "Jumper" is properly set to your preference Plug the hole for wiring behind the thermostat with non-flammable insulation to prevent airflow into the thermostat

LED Indicator

There is one LED indicator located on the front of the thermostat. It is designed to inform you of the following:

AUX (GREEN):

This turns on when the second stage heating is in operation. Auxiliary heating turns on 2 degrees below first stage and is not adjustable.



ONE-YEAR LIMITED WARRANTY

The Seller warrants its products against defects in material or workmanship for a period of one (1) year from the date of manufacture. The liability of the Seller is limited, at its option, to repair, replace or issue a non-cash credit for the purchase price of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller's instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined by Seller to be non-defective are subject to a \$30.00 per hour inspection fee. This warranty constitutes the Seller's sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.

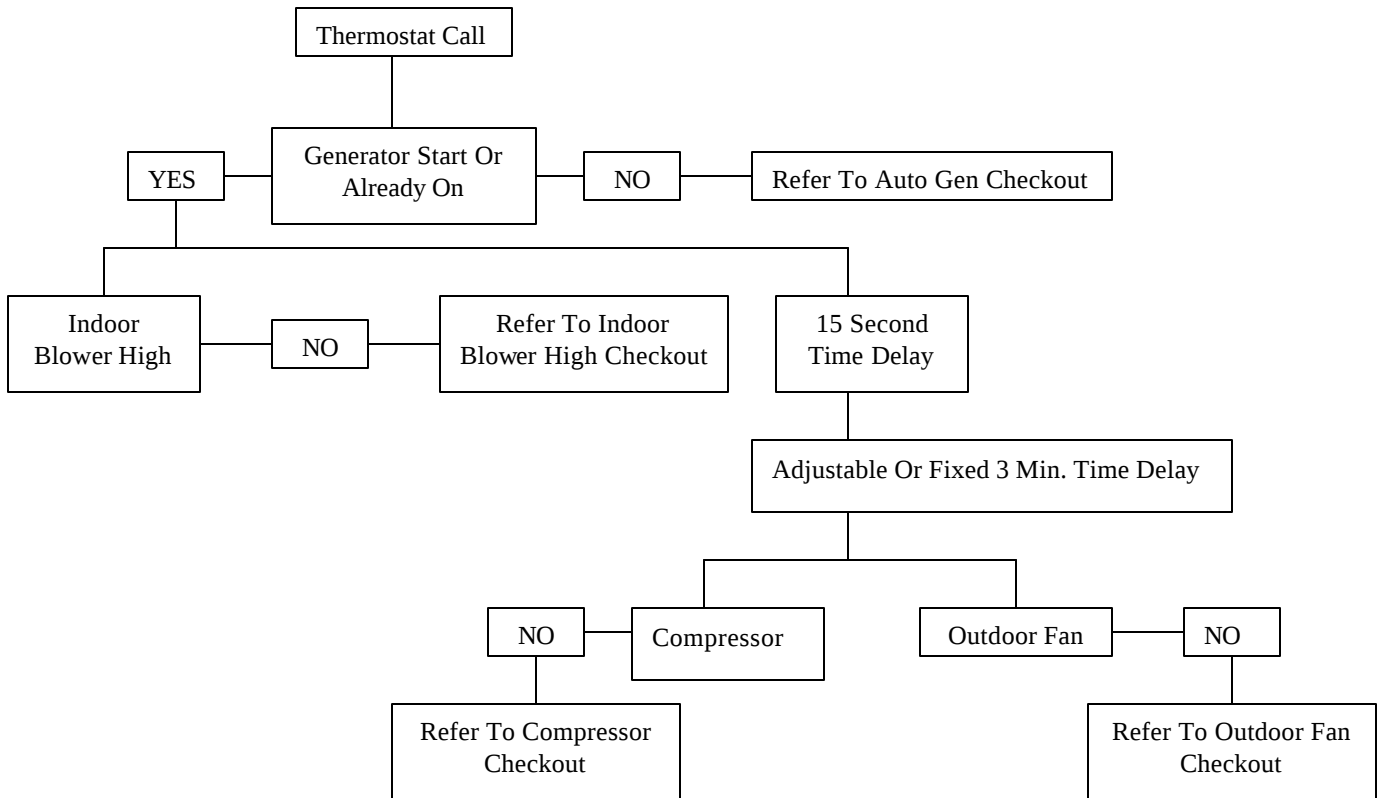


Patent No. 424,953
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LII330

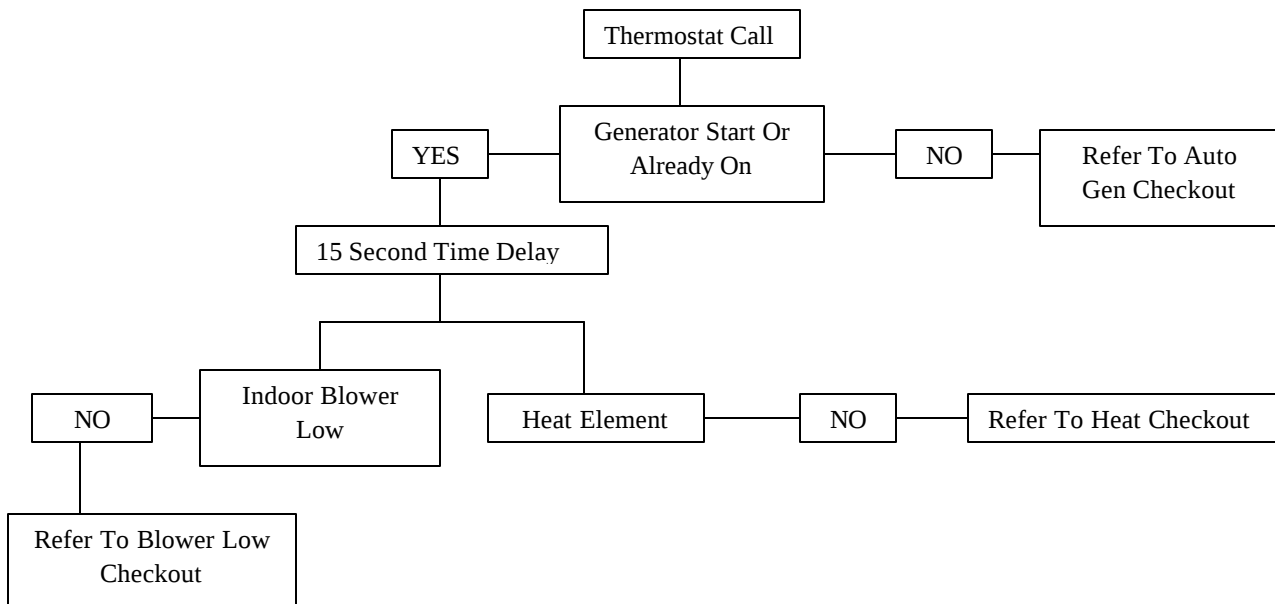
7. SEQUENCE OF OPERATION

6330 “-” MODEL COOLING MODE



8. SEQUENCE OF OPERATION

HEATING MODE



9. ELECTRICAL DIAGNOSTIC FLOW CHARTS

COMFORTGUARD™ CAB AIR

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. 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.

**! WARNING – SHOCK
HAZARD**

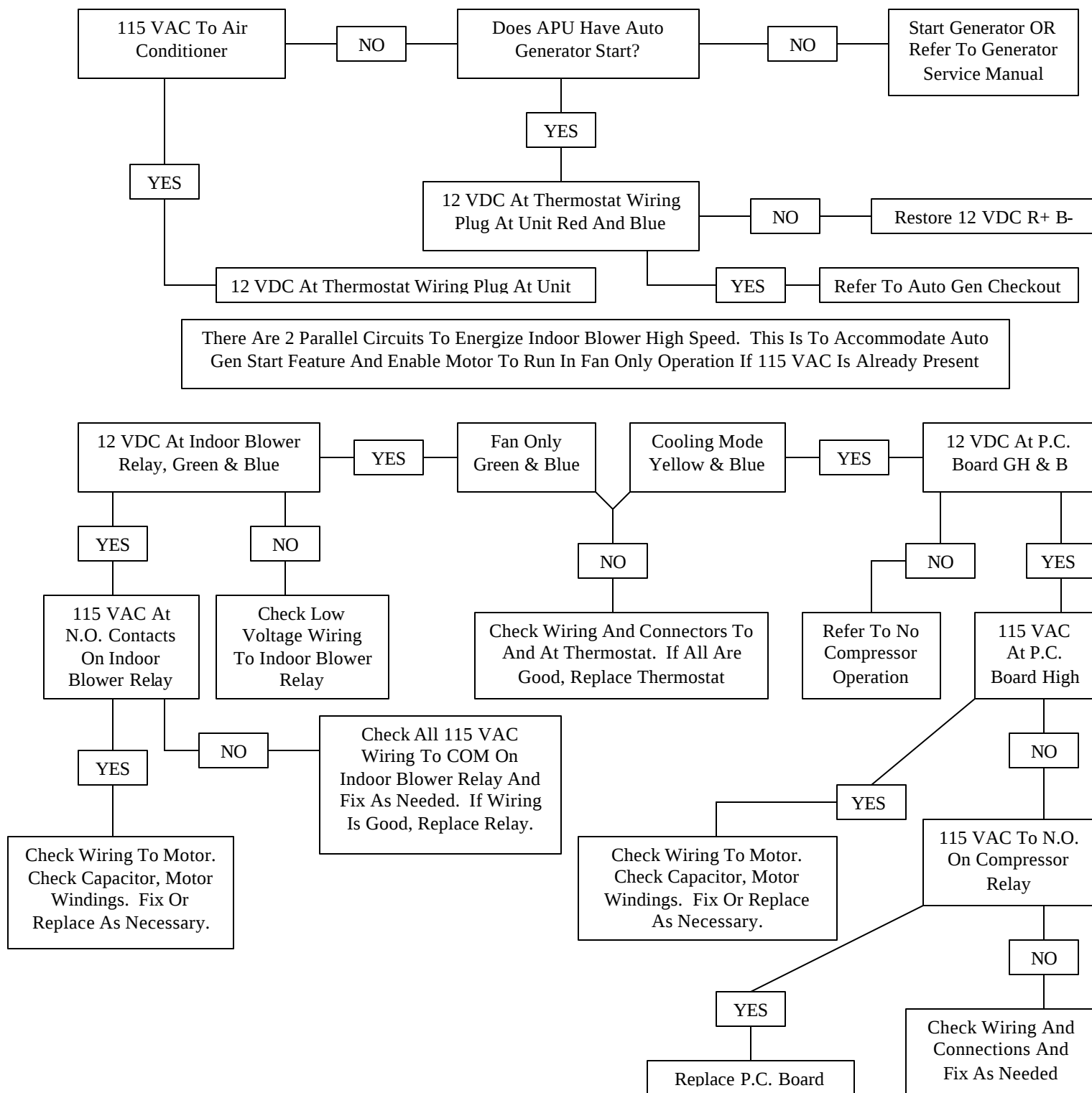
To prevent the possibility of severe personal injury, death, or equipment damage due to electrical shock, always be sure the power supply to the appliance is disconnected before doing any work on the appliance. This can normally be accomplished by switching the breaker for the air conditioner to OFF, disconnecting all external electrical connections and cords, switching on-board electrical generators and INVERTOR to OFF, and removing the cable from each positive terminal on all storage and starting batteries.

DANGER

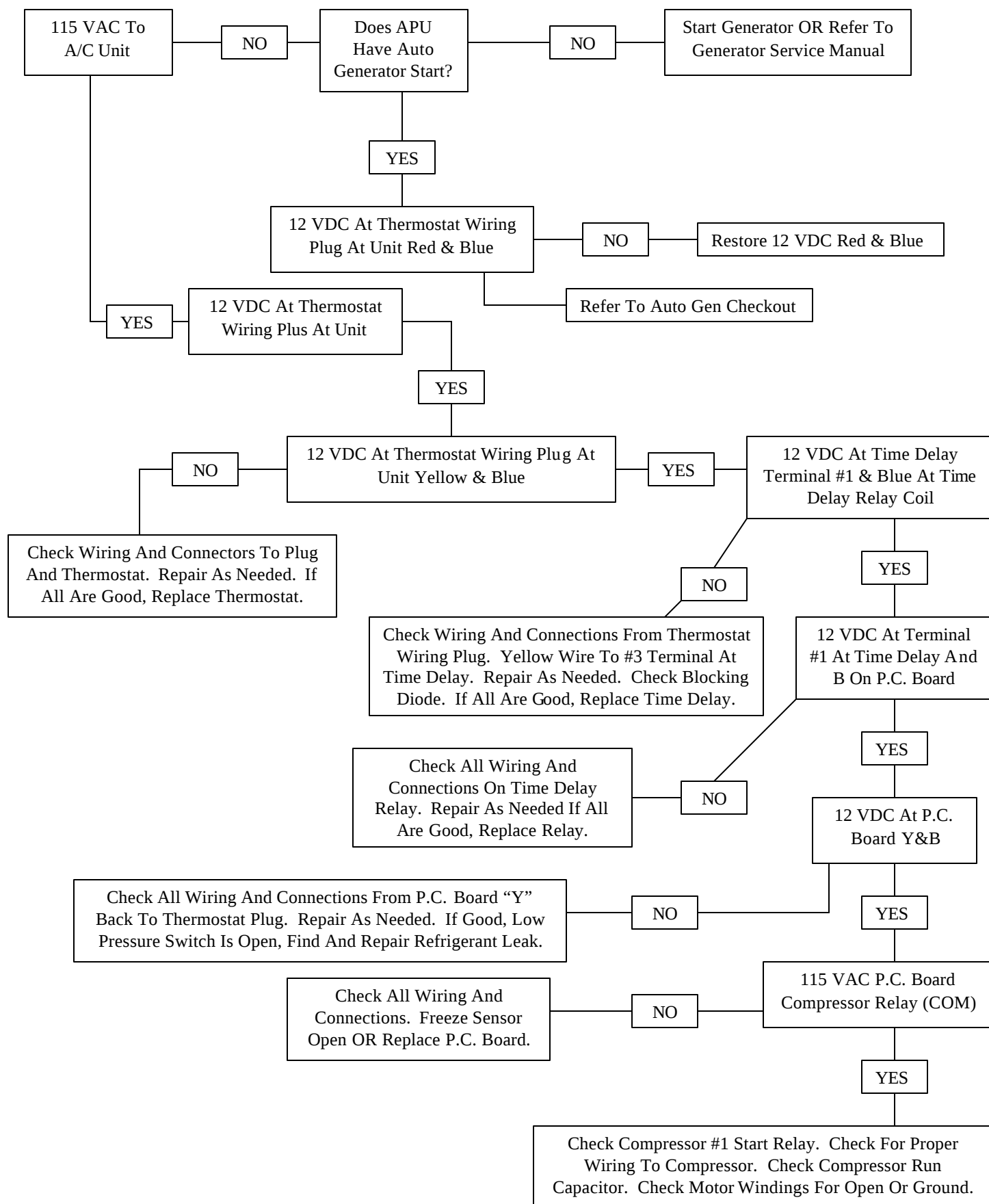
**SOME DIAGNOSTIC TESTING MAY BE DONE ON
ENERGIZED CIRCUITS. ELECTRICAL SHOCK CAN
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NO INDOOR BLOWER HIGH SPEED COOLING MODE OR FAN ONLY

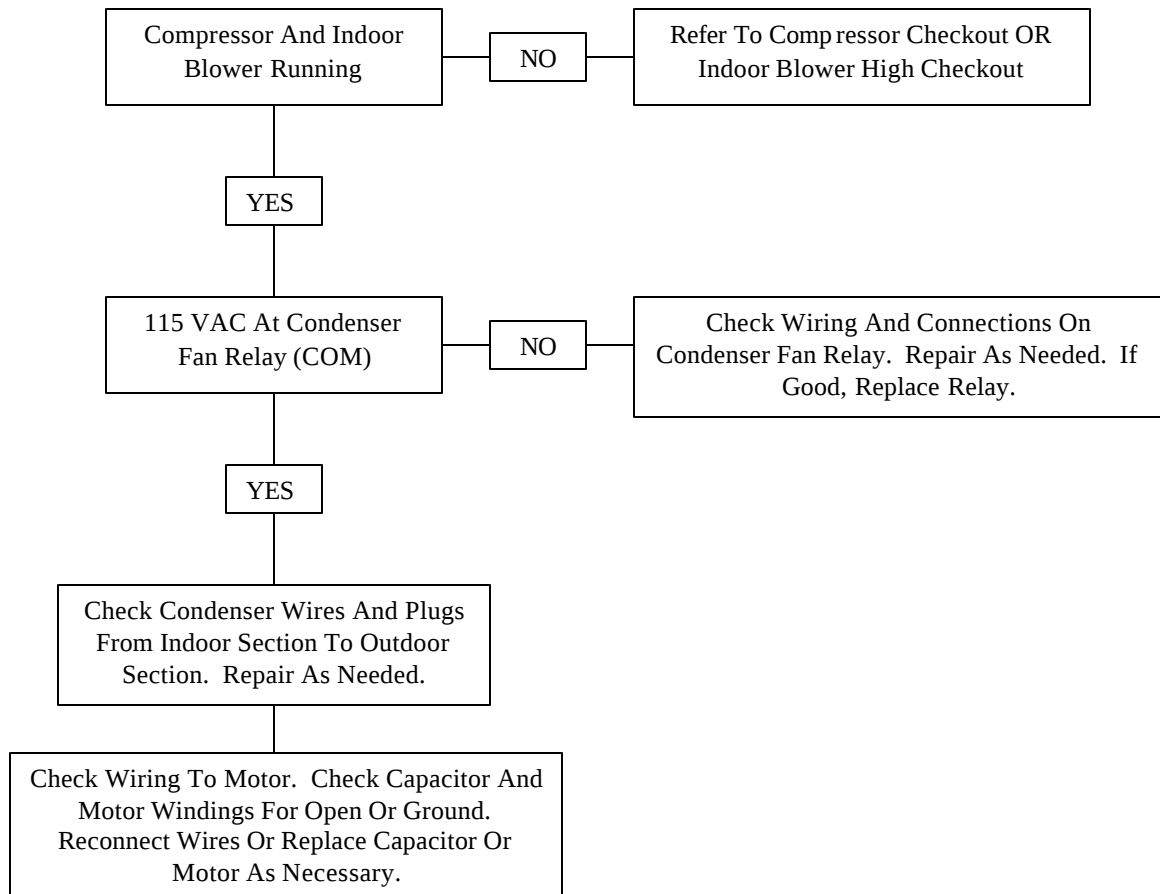
Note: All operating functions subject to thermostat time delays.



NO COMPRESSOR OPERATION

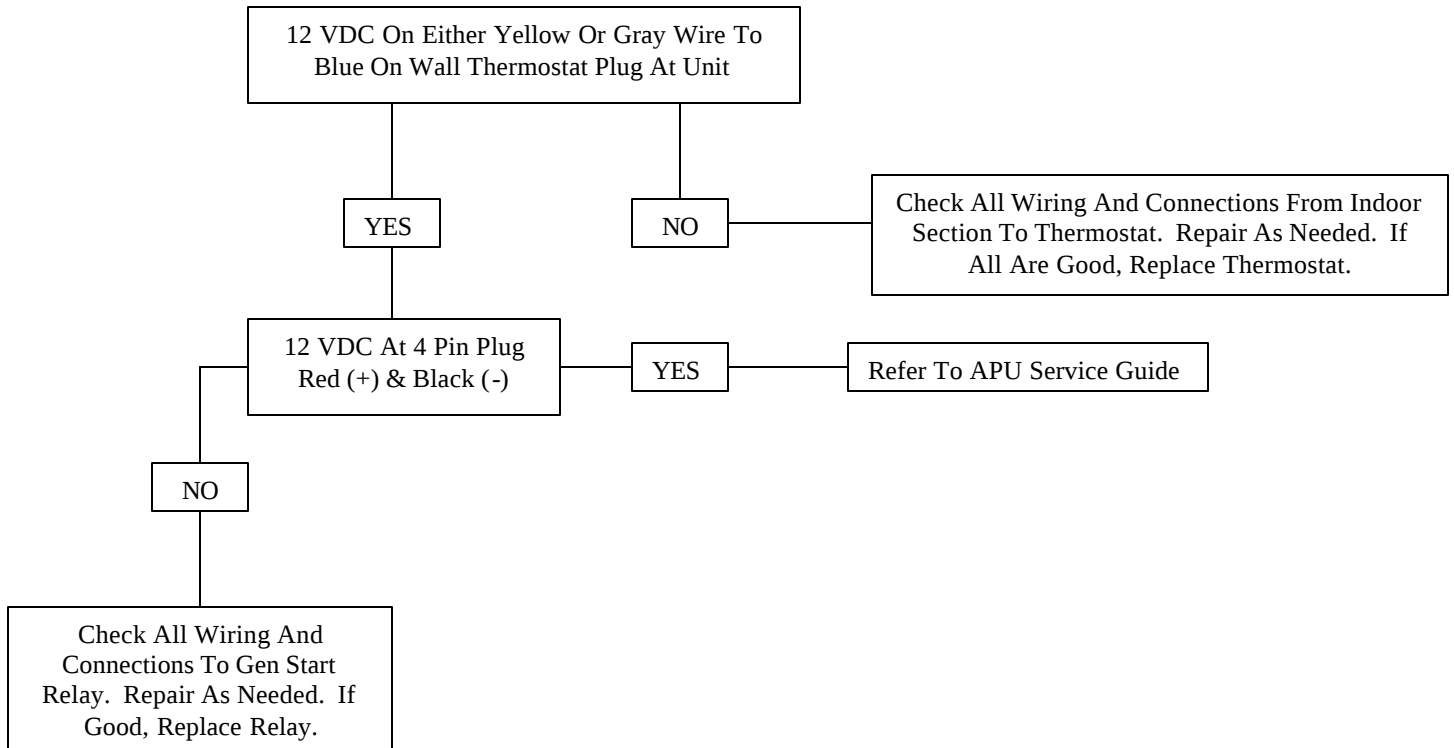


OUTDOOR FAN CHECKOUT

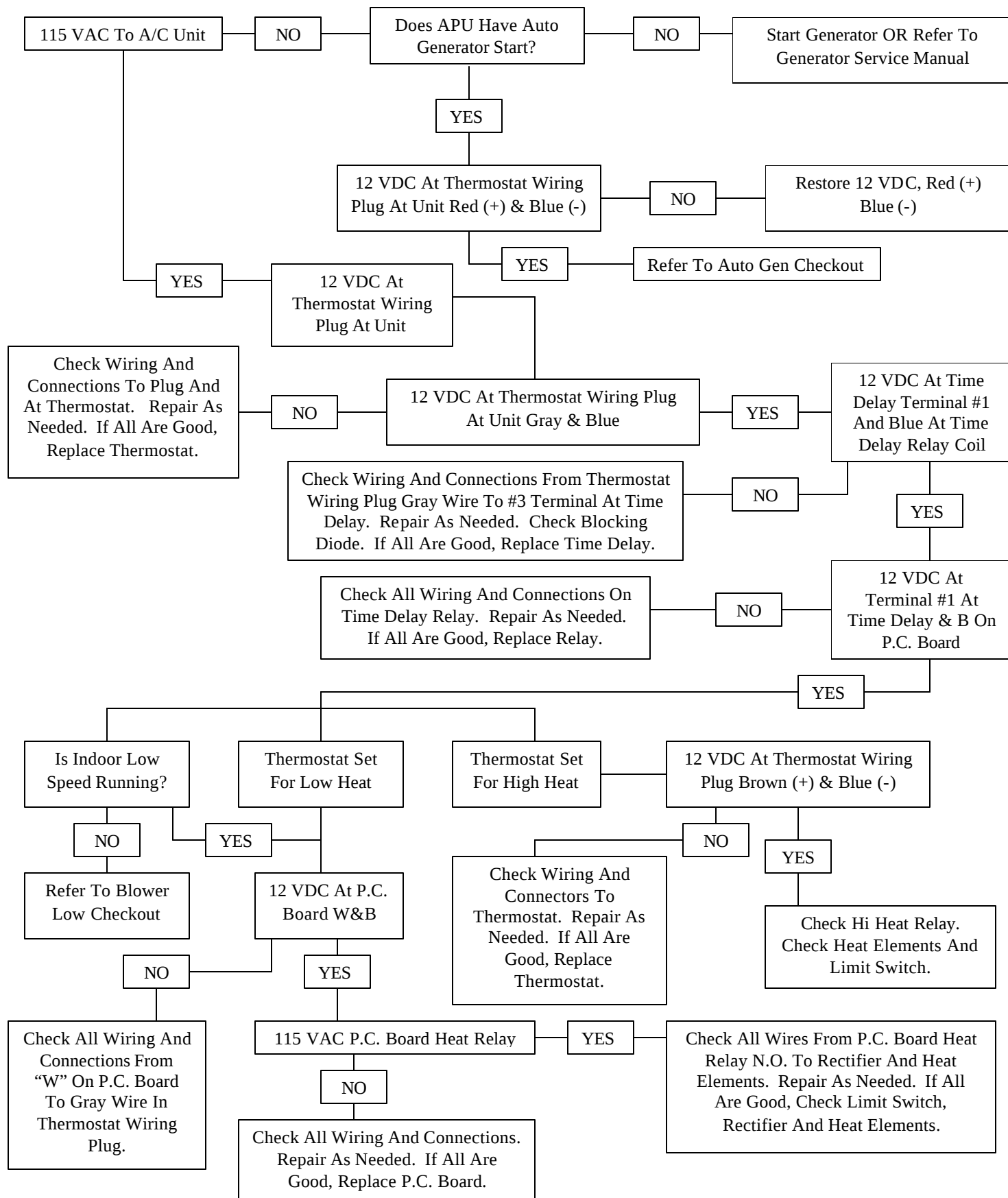


AUTO GEN CHECKOUT

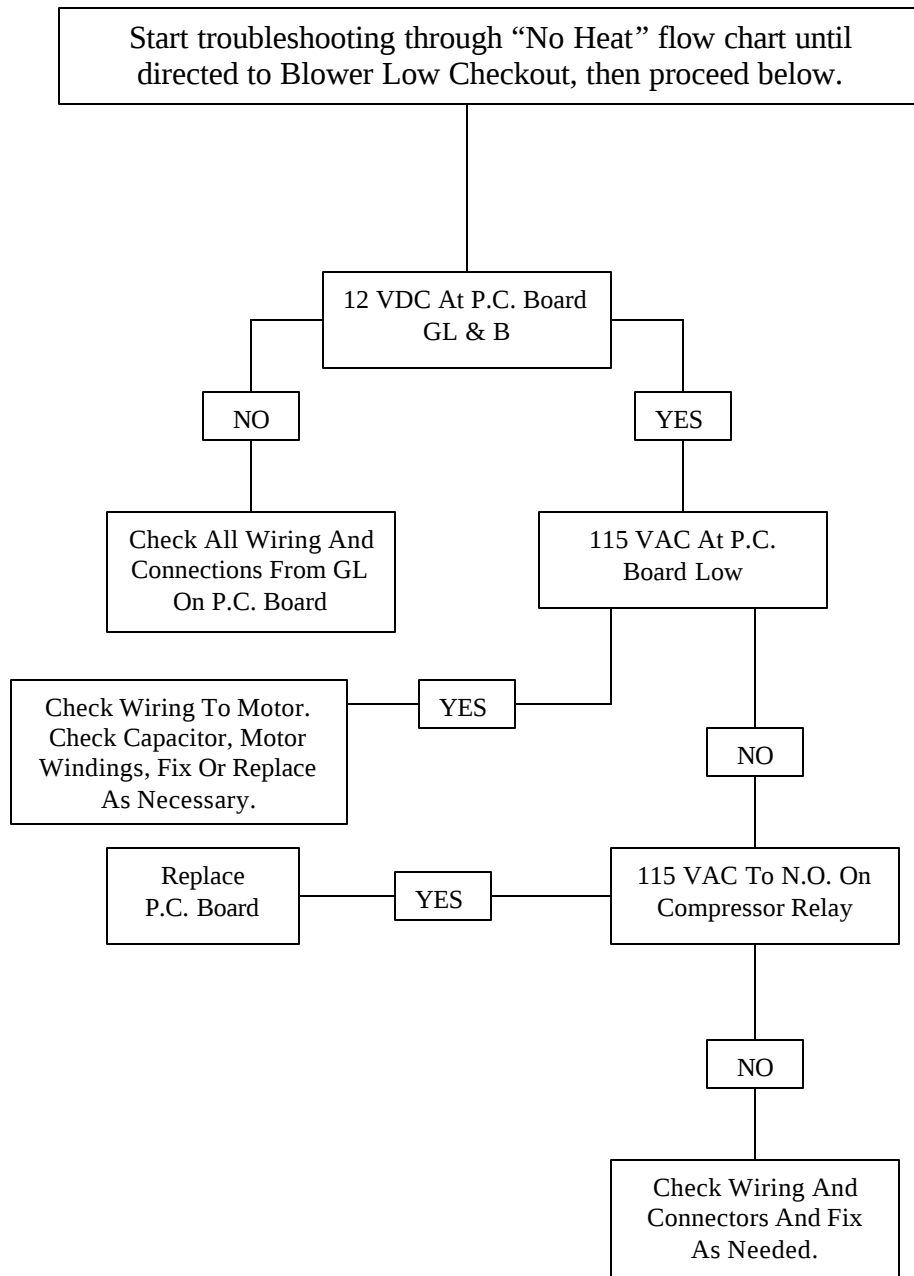
Thermostat should be calling for Heat or Cool.



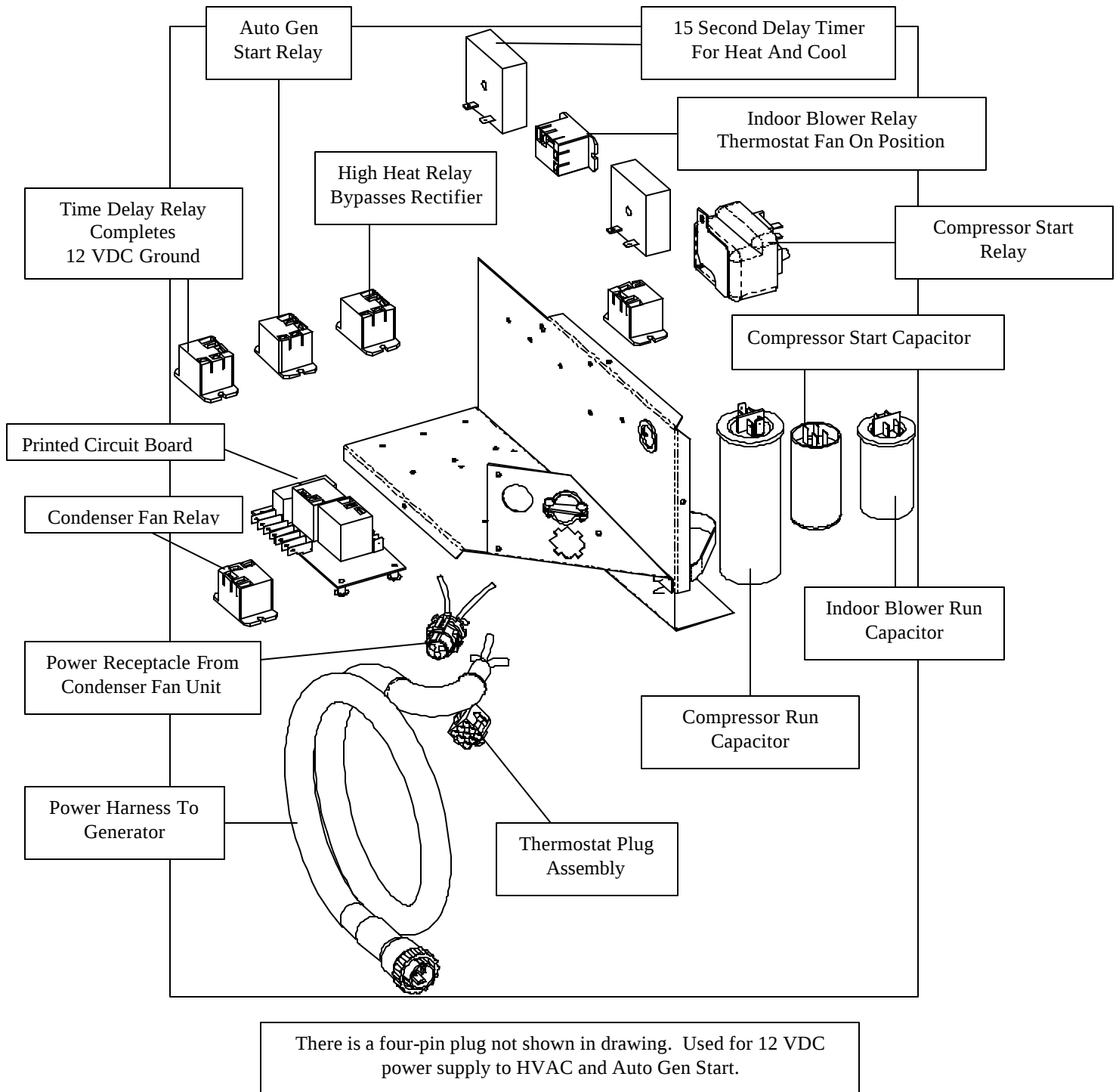
NO HEAT



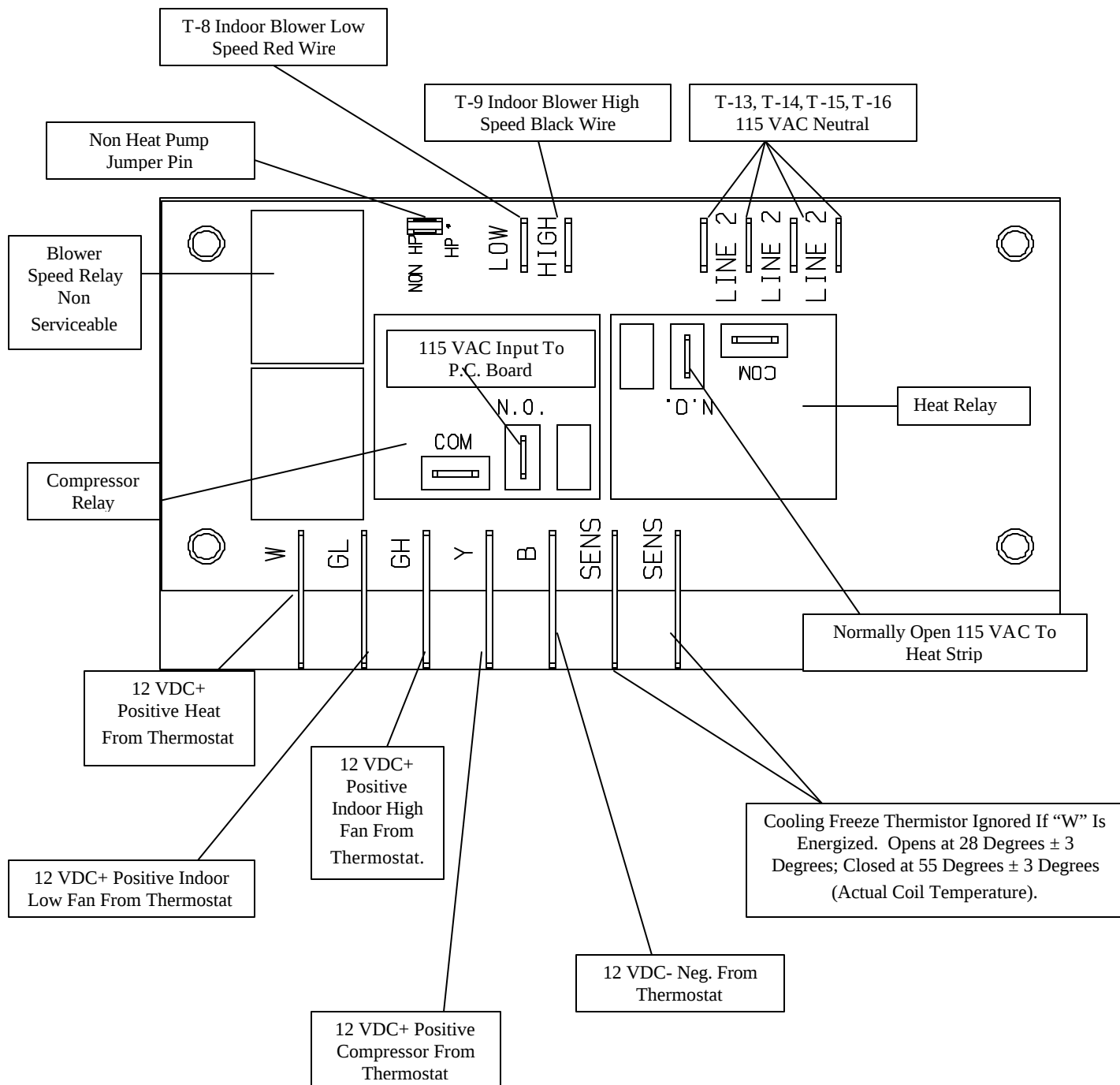
BLOWER LOW CHECKOUT



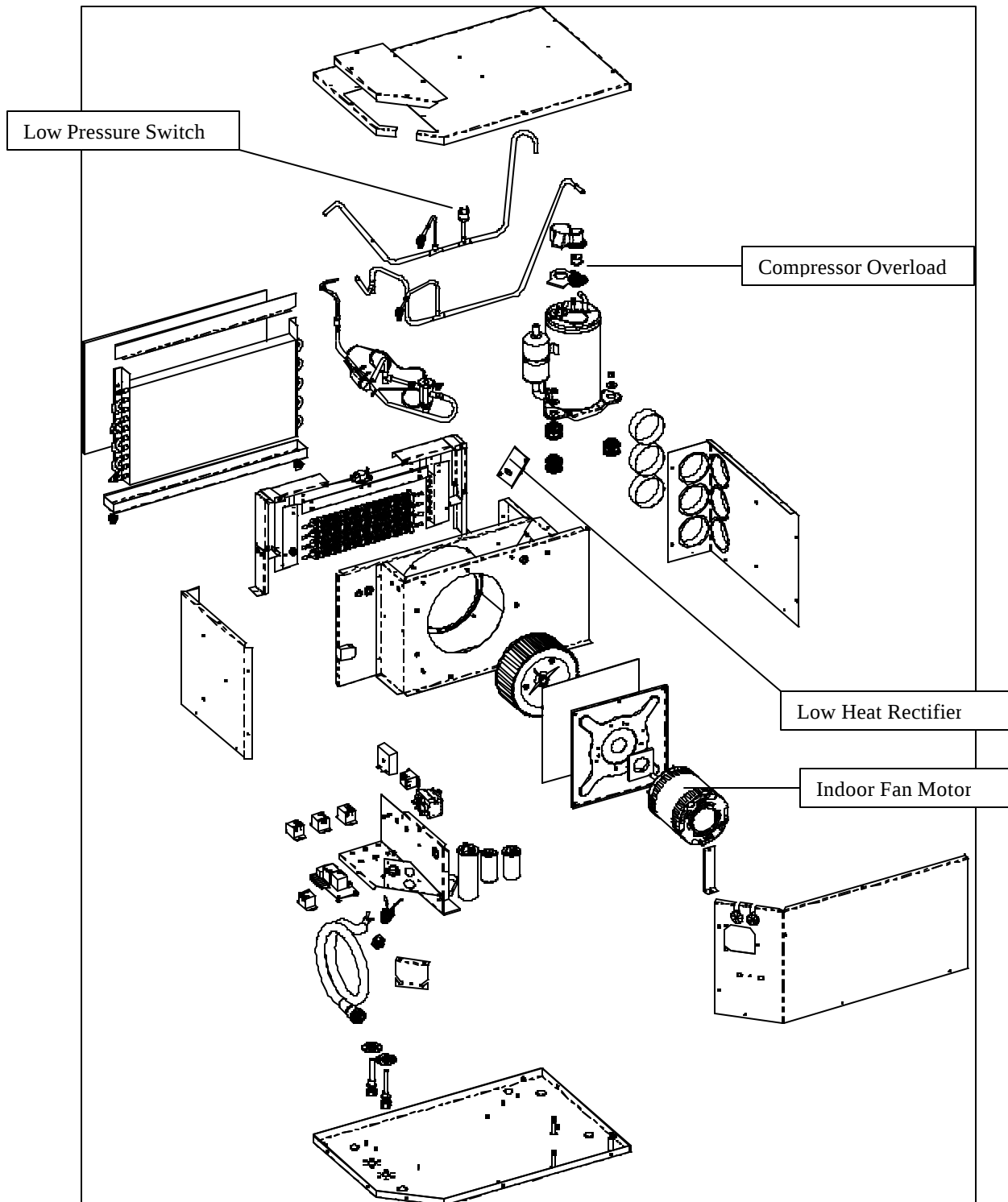
10. CONTROL BOX COMPONENTS



10A. PRINTED CIRCUIT BOARD

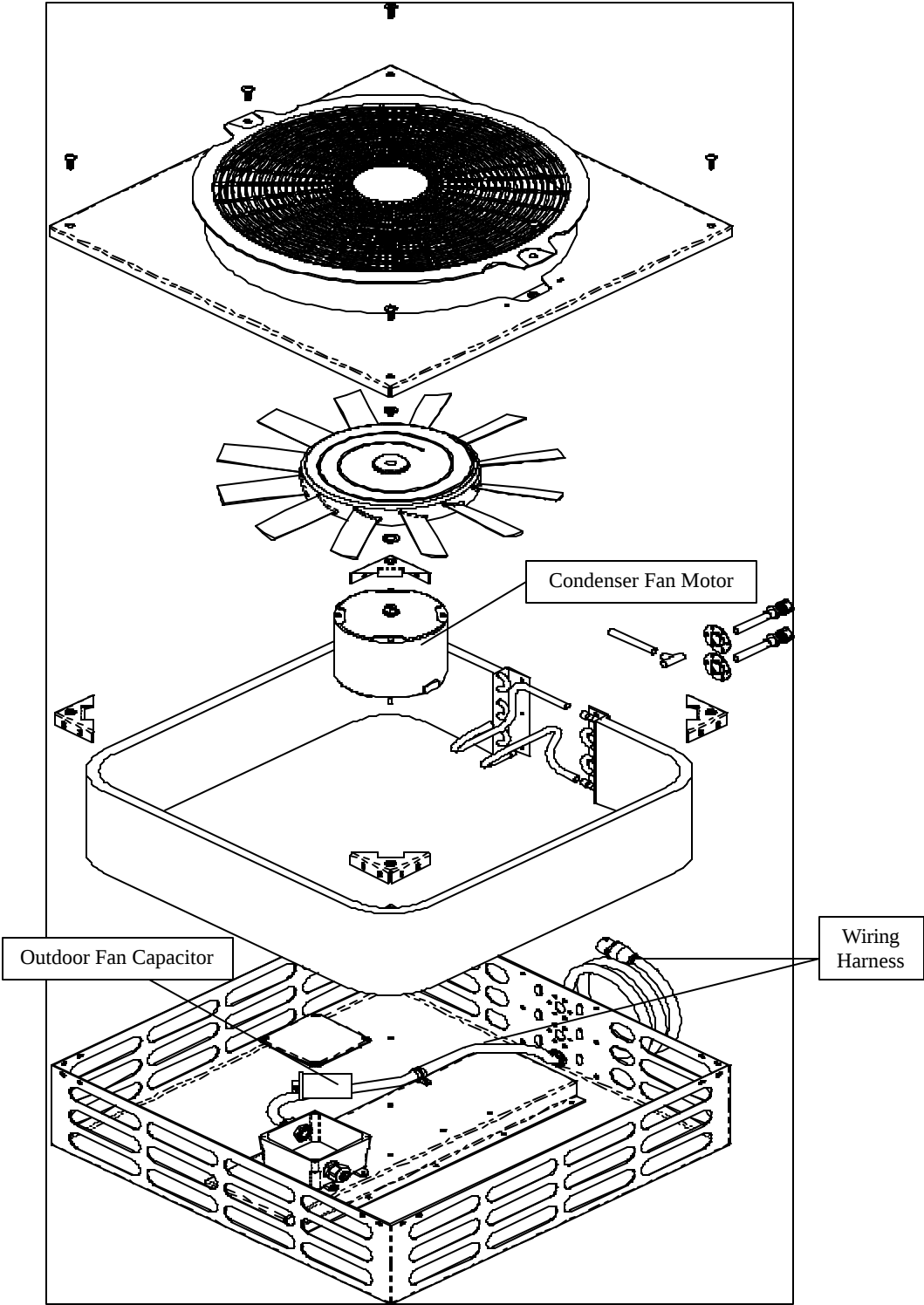


10B. EVAPORATOR ELECTRICAL COMPONENTS



-37-

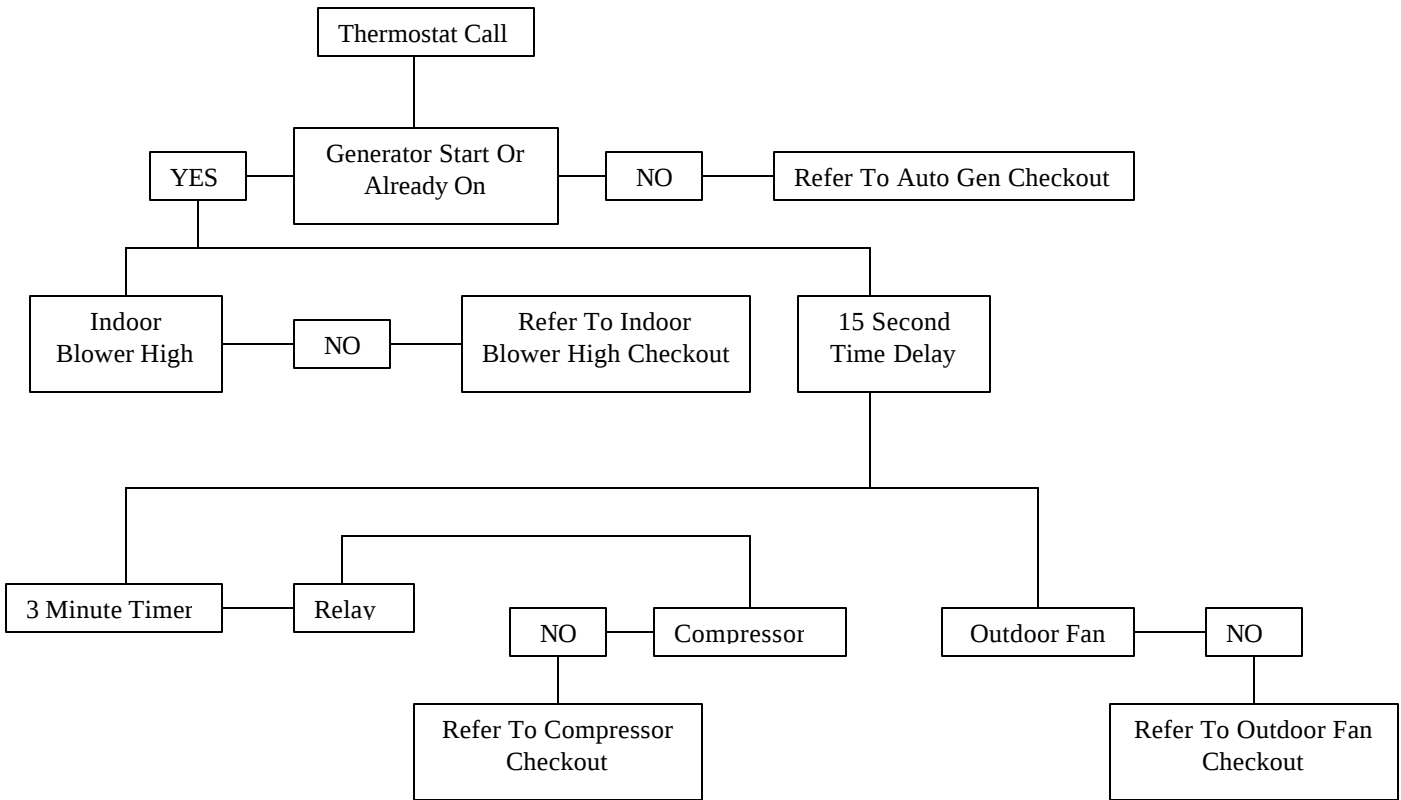
10C. CONDENSER ELECTRICAL COMPONENTS



SEQUENCE OF OPERATION

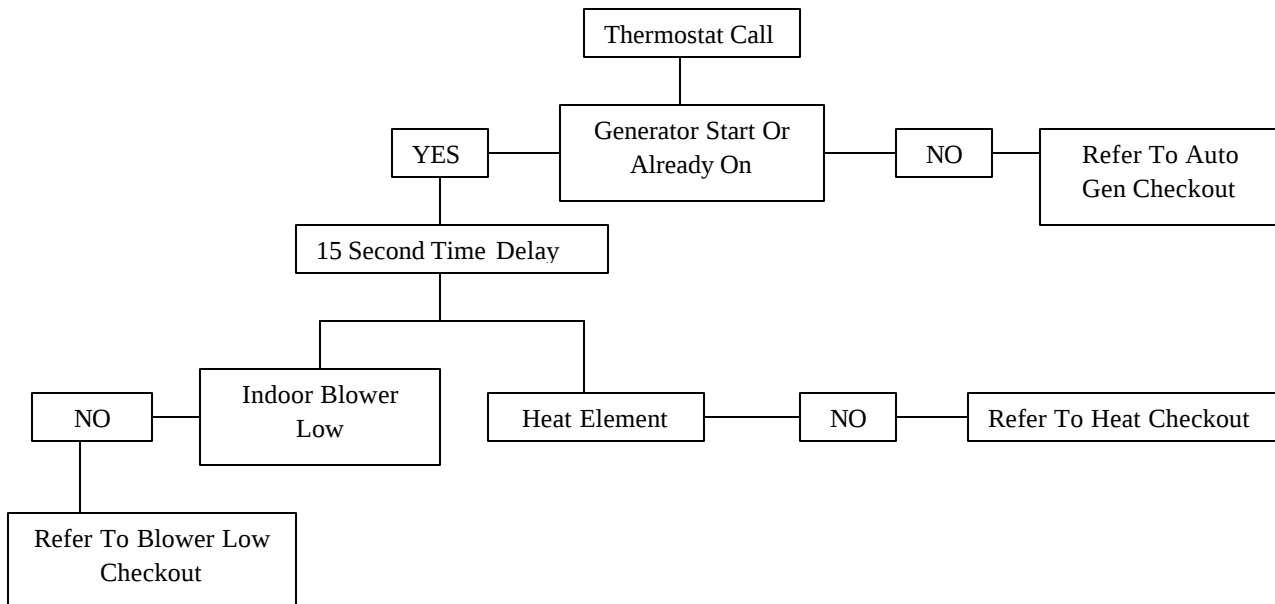
6330 "A" MODEL

COOLING MODE



SEQUENCE OF OPERATION

HEATING MODE



ELECTRICAL DIAGNOSTIC FLOW CHARTS

COMFORTGUARD™ CAB AIR

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.

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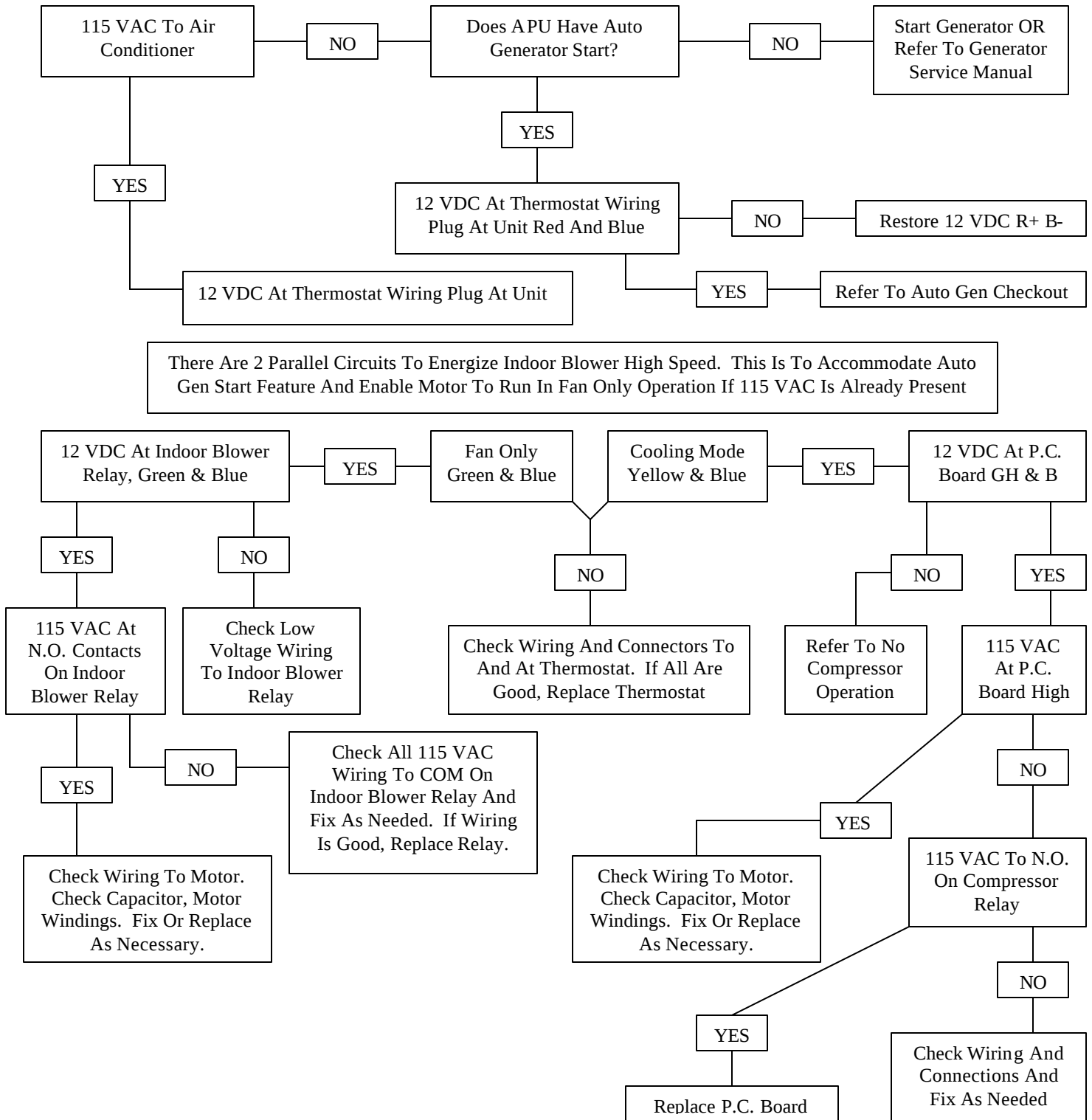
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DANGER

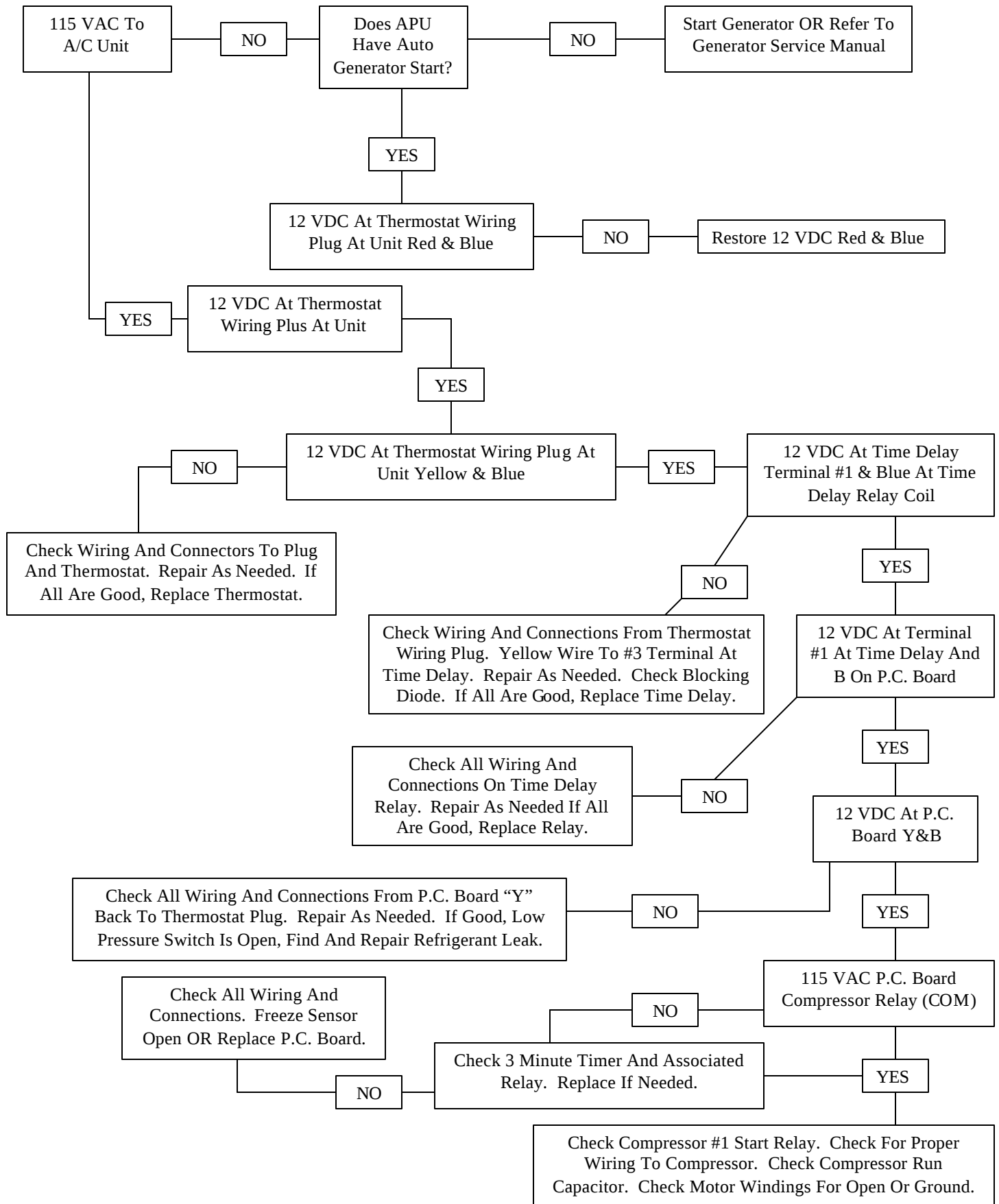
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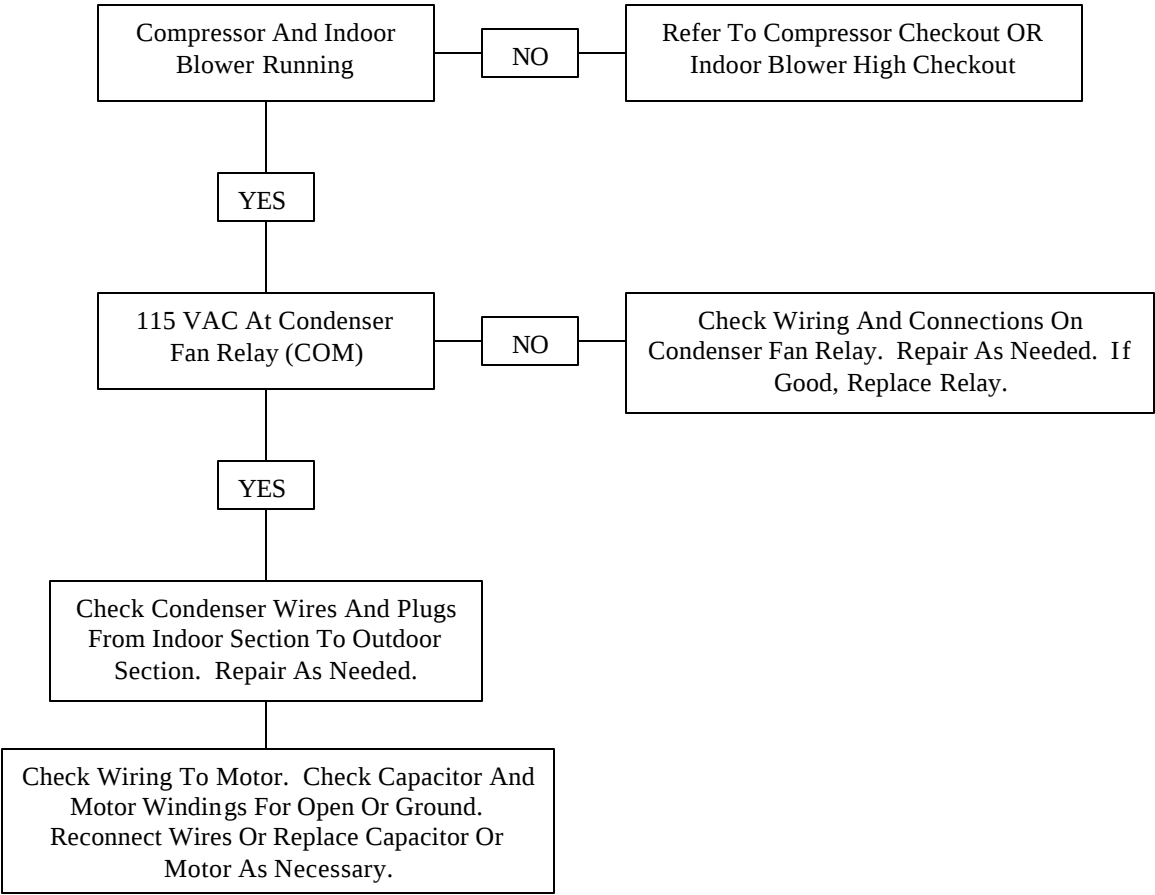
Note: All operating functions subject to thermostat time delays.



NO COMPRESSOR OPERATION

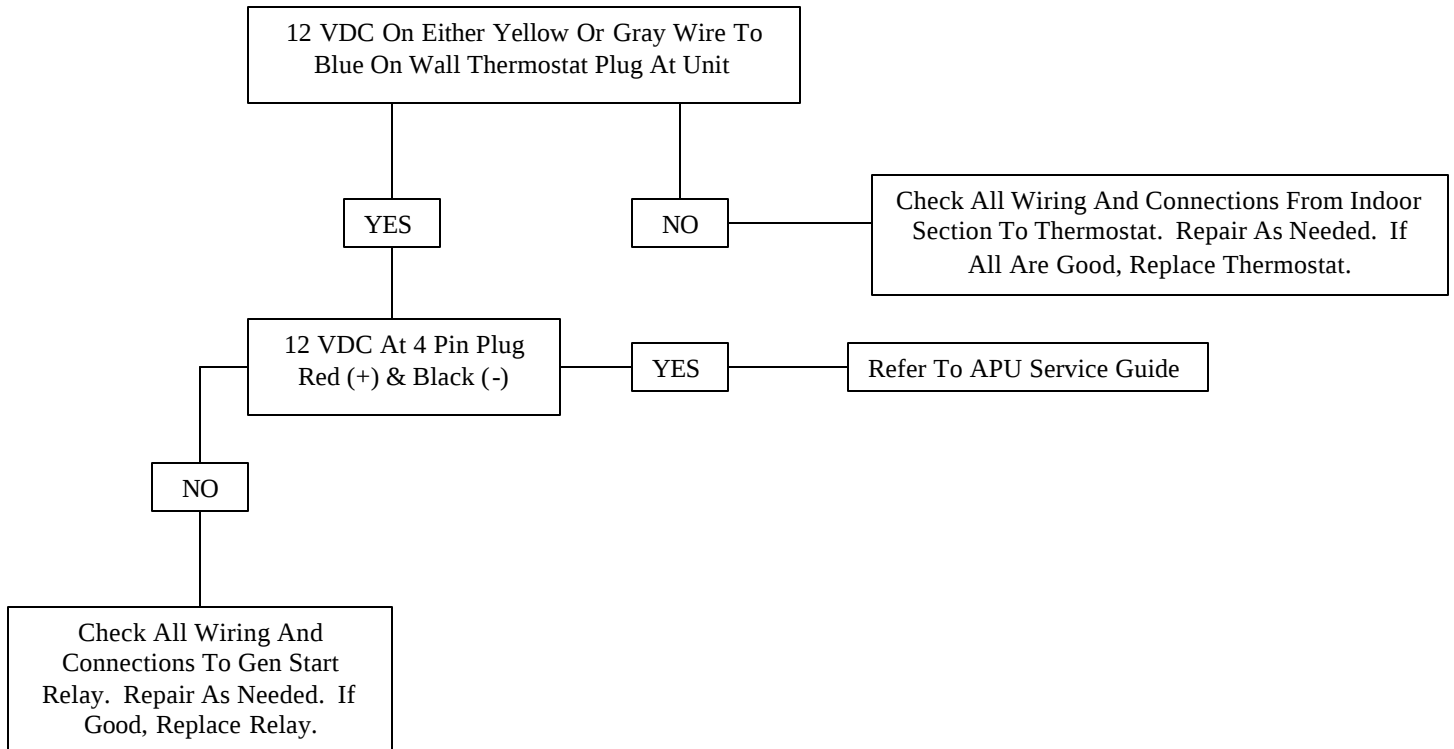


OUTDOOR FAN CHECKOUT

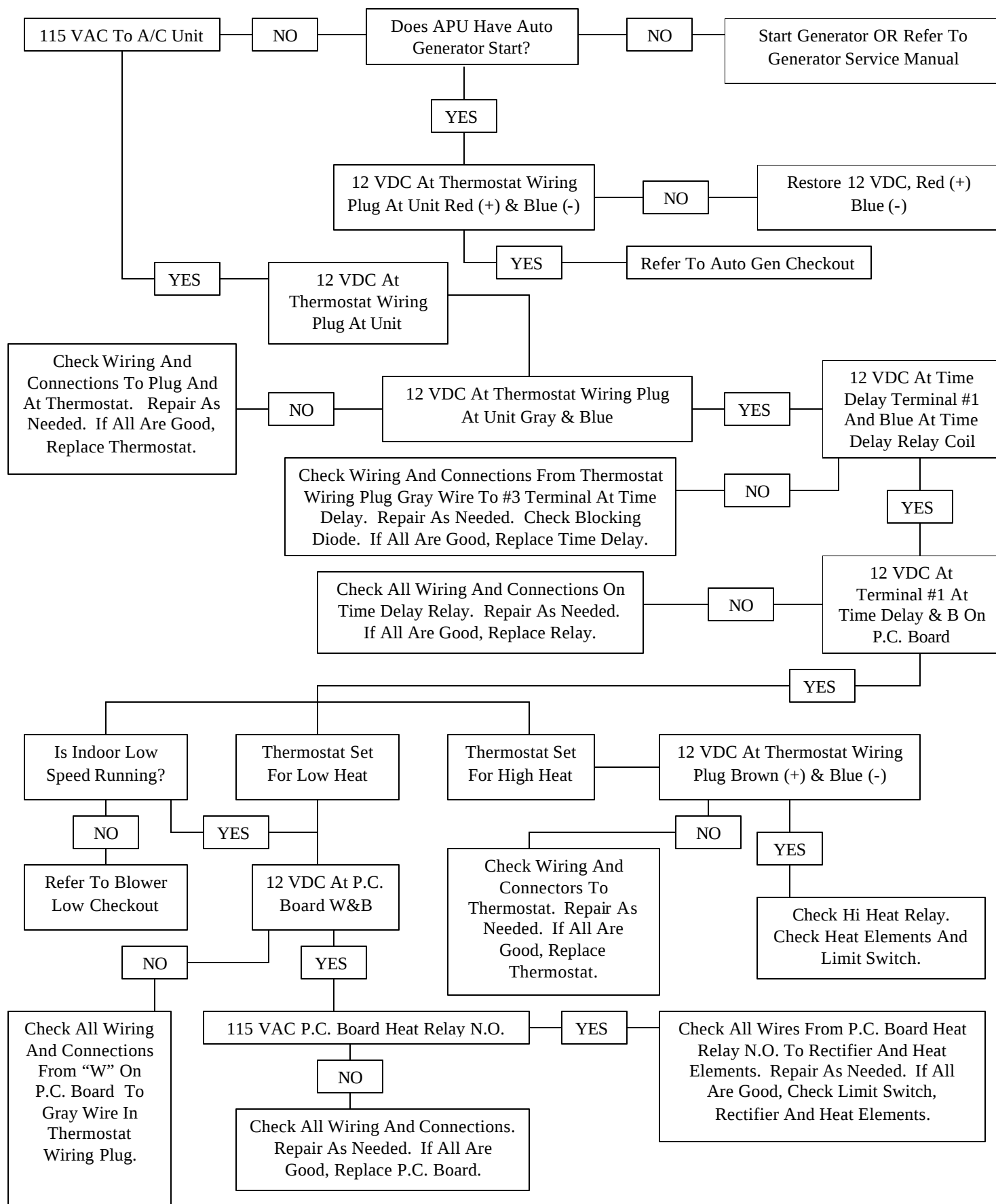


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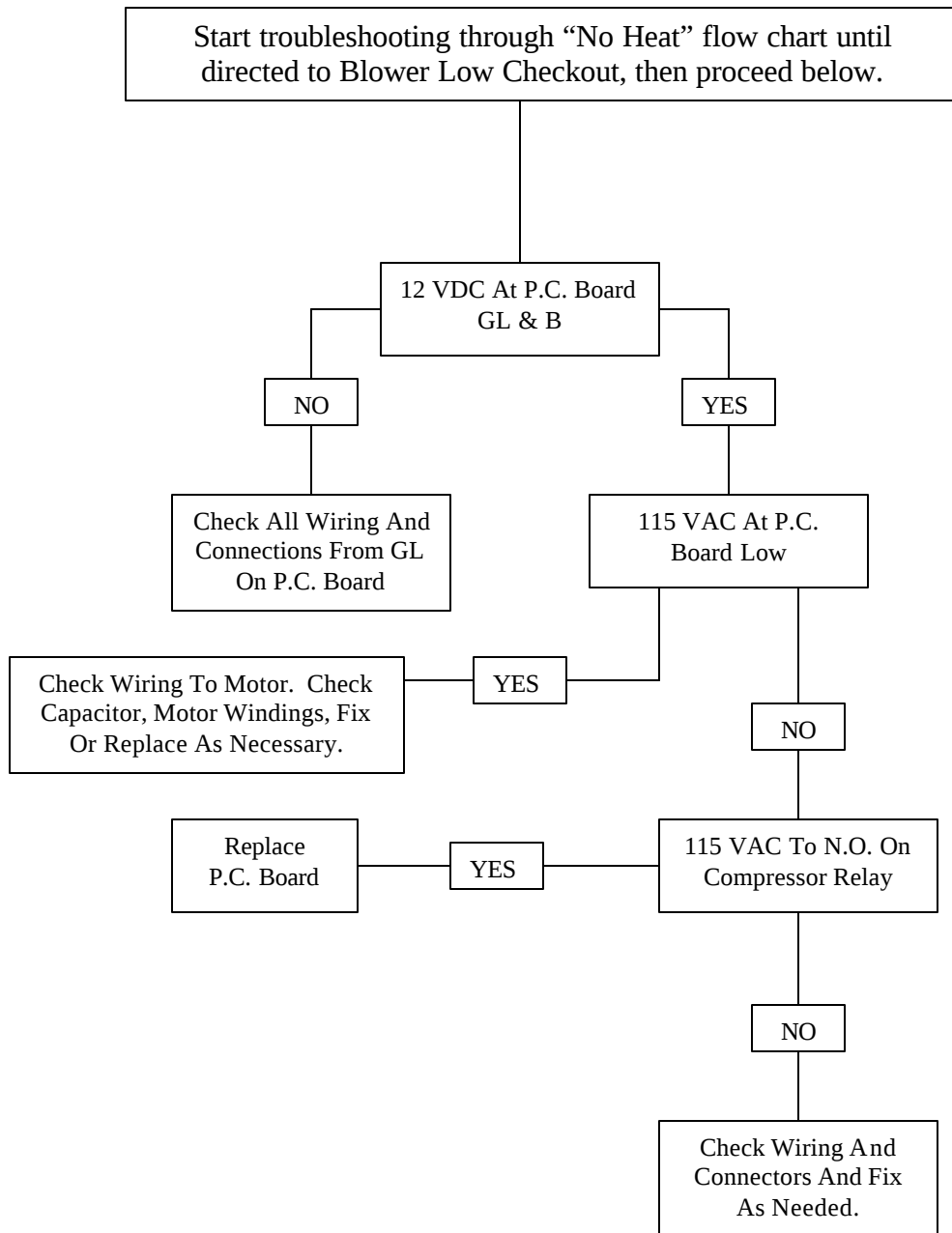
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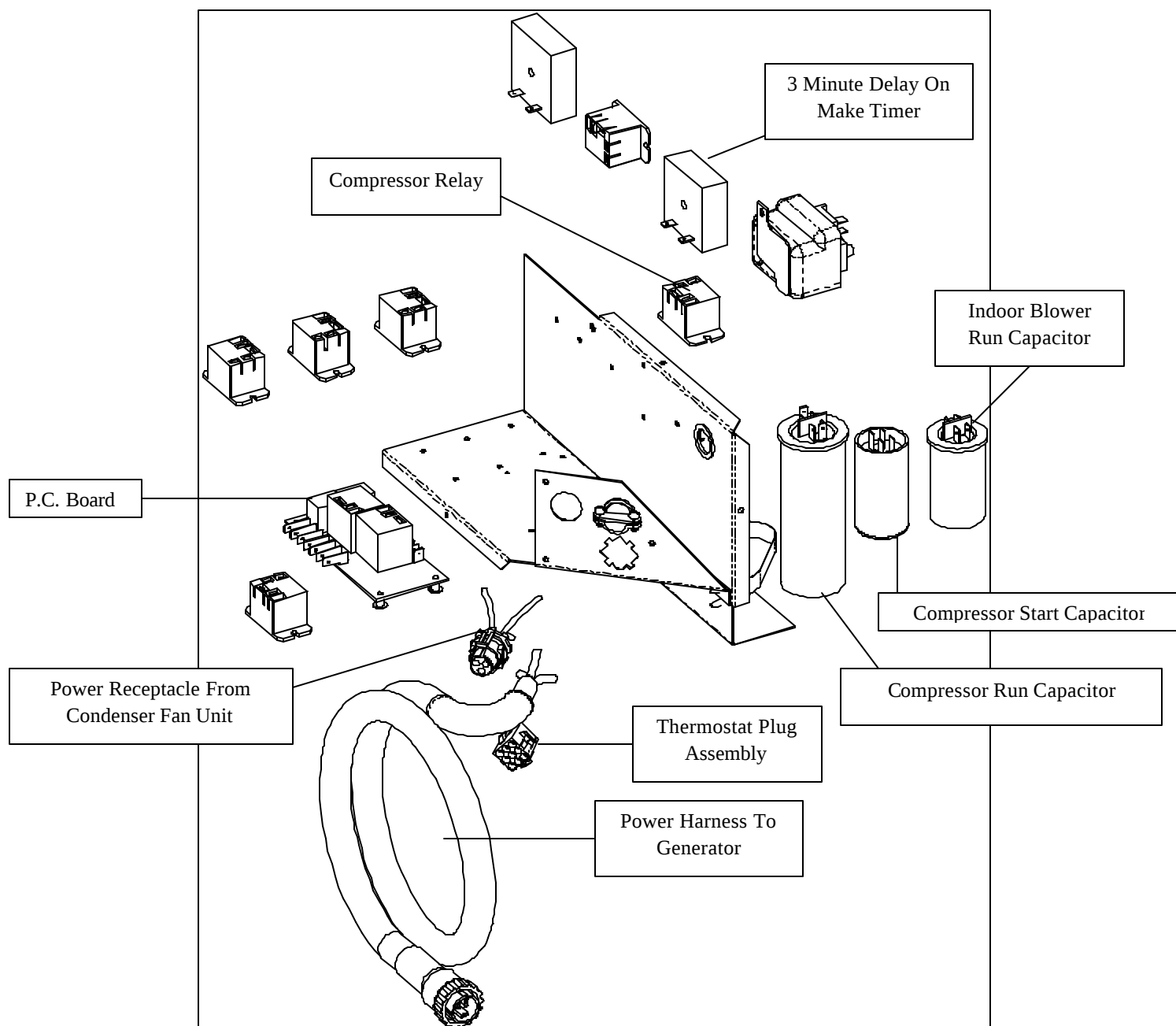
NO HEAT



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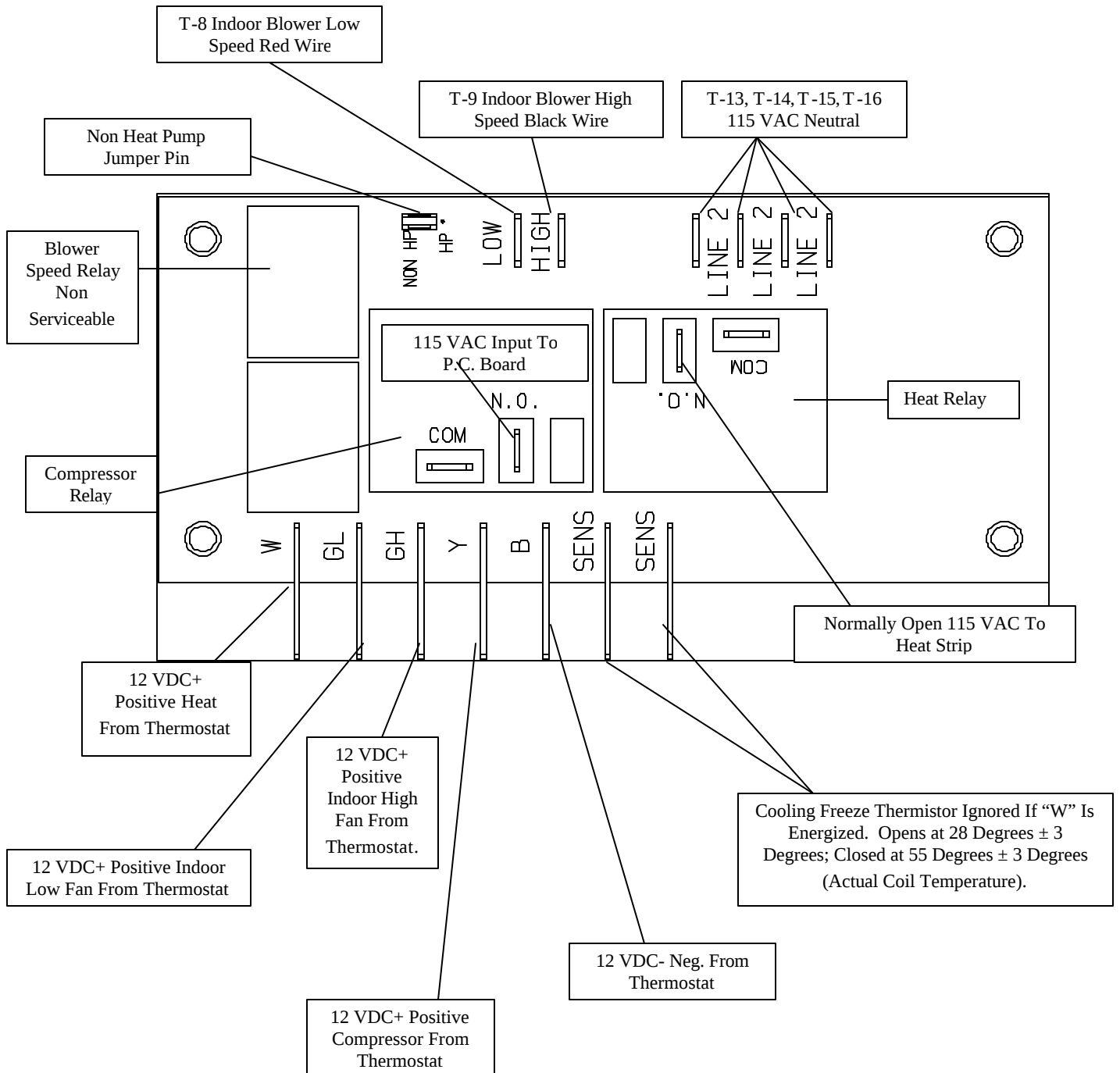


CONTROL BOX COMPONENTS



There is a four-pin plug not shown in drawing. Used for 12 VDC power supply to HVAC and Auto Gen Start.

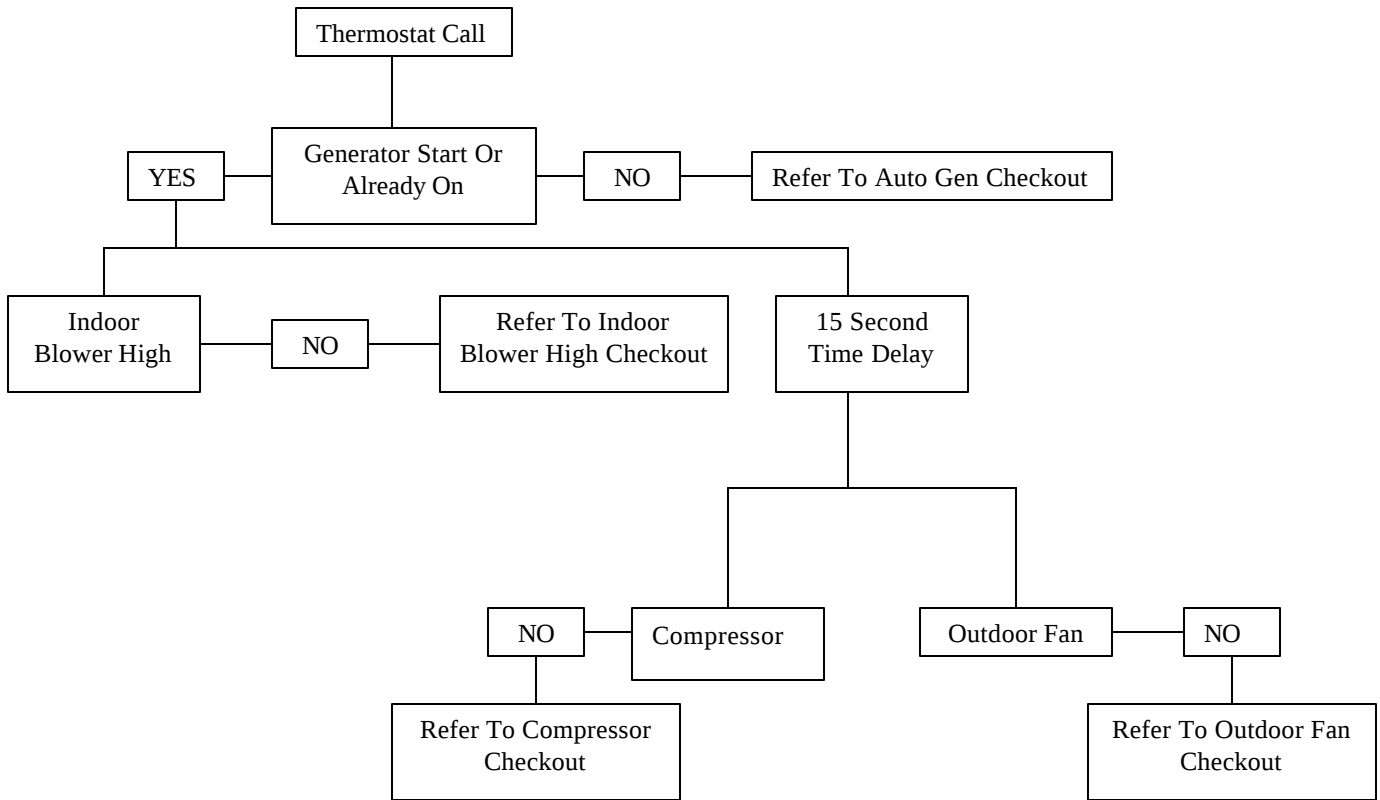
PRINTED CIRCUIT BOARD



SEQUENCE OF OPERATION

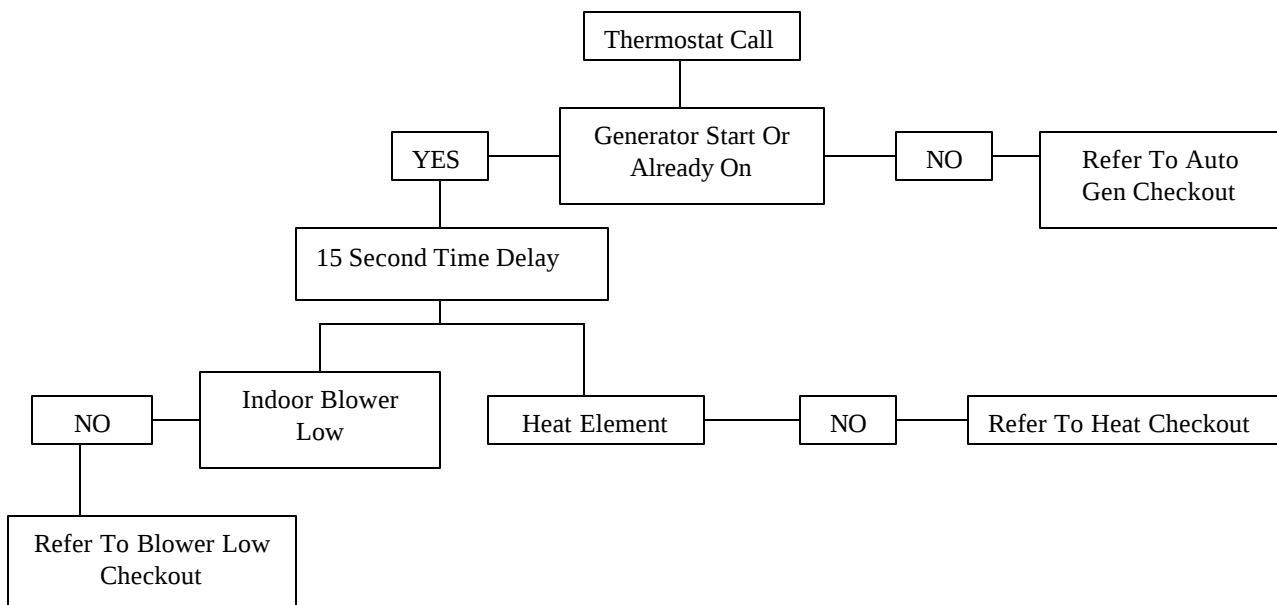
6330 "B" MODEL

COOLING MODE



SEQUENCE OF OPERATION

HEATING MODE



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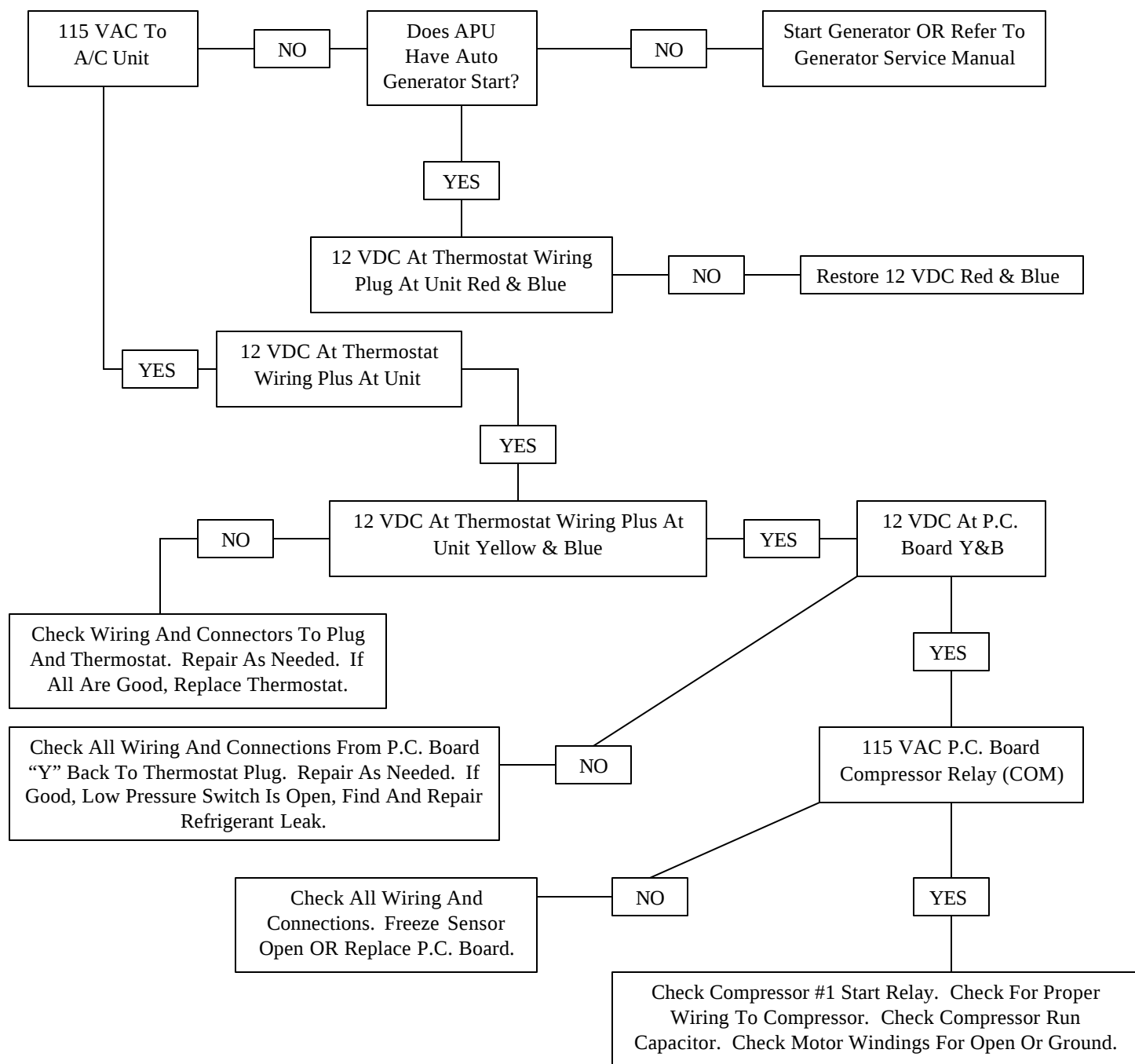
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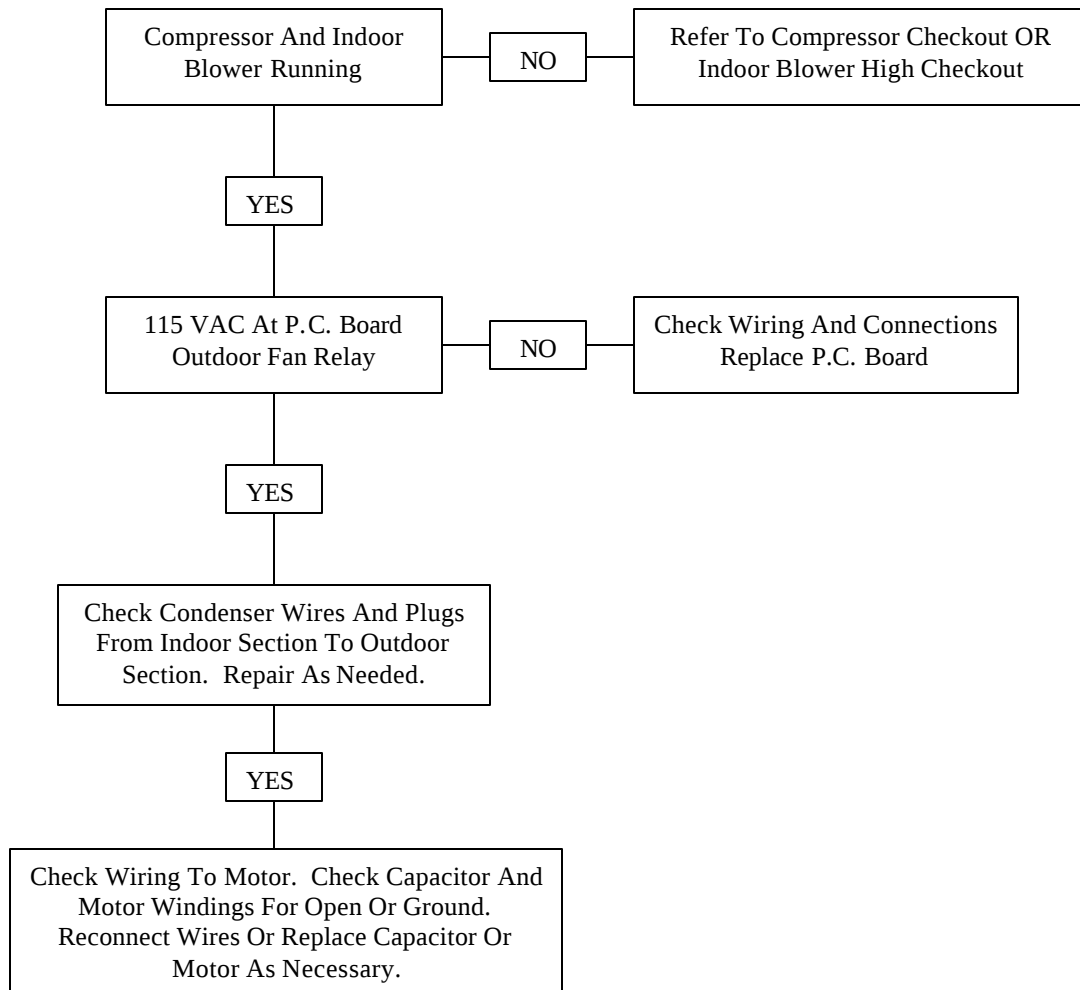
Note: All operating functions subject to thermostat and printed circuit board time delays.



NO COMPRESSOR OPERATION

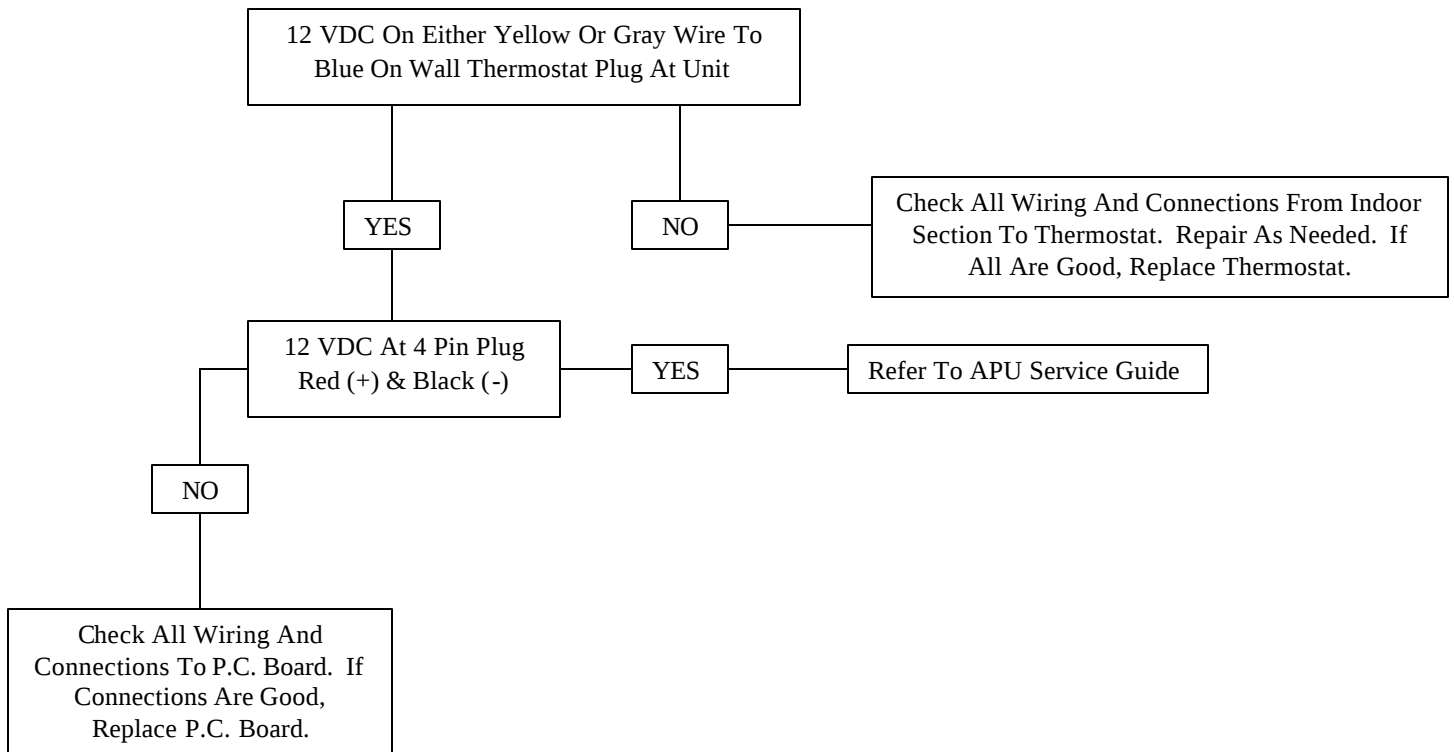


OUTDOOR FAN CHECKOUT

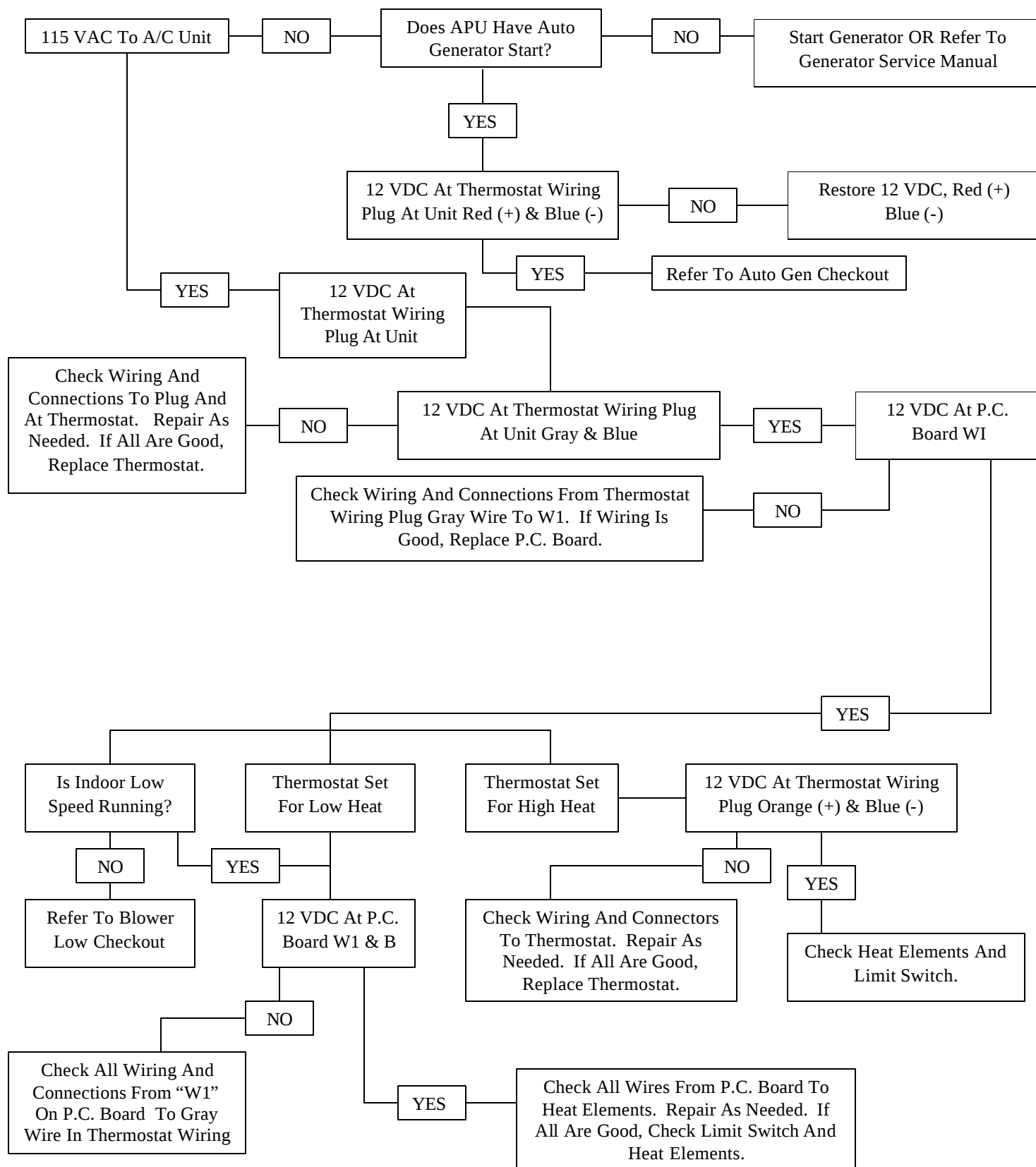


AUTO GEN CHECKOUT

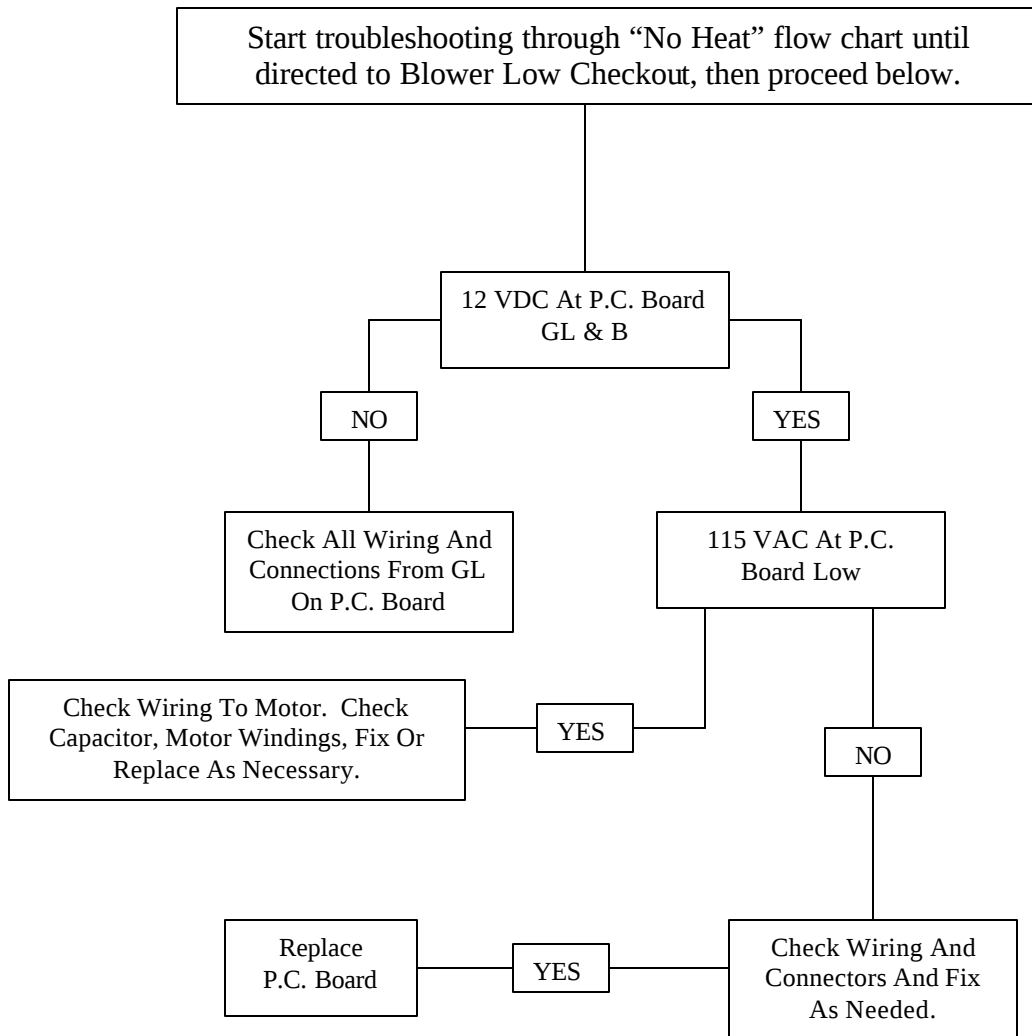
Thermostat should be calling for Heat or Cool.



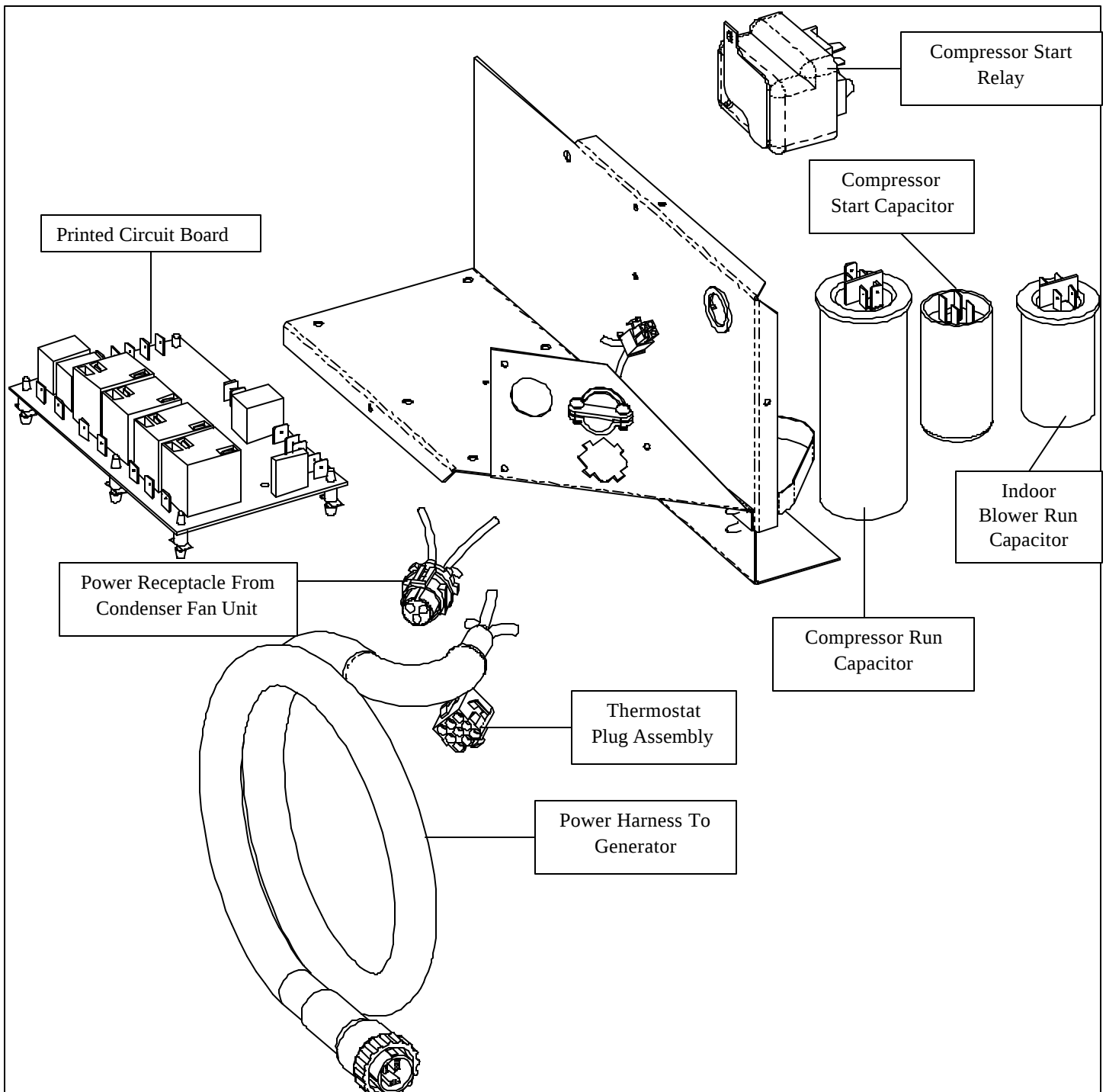
NO HEAT



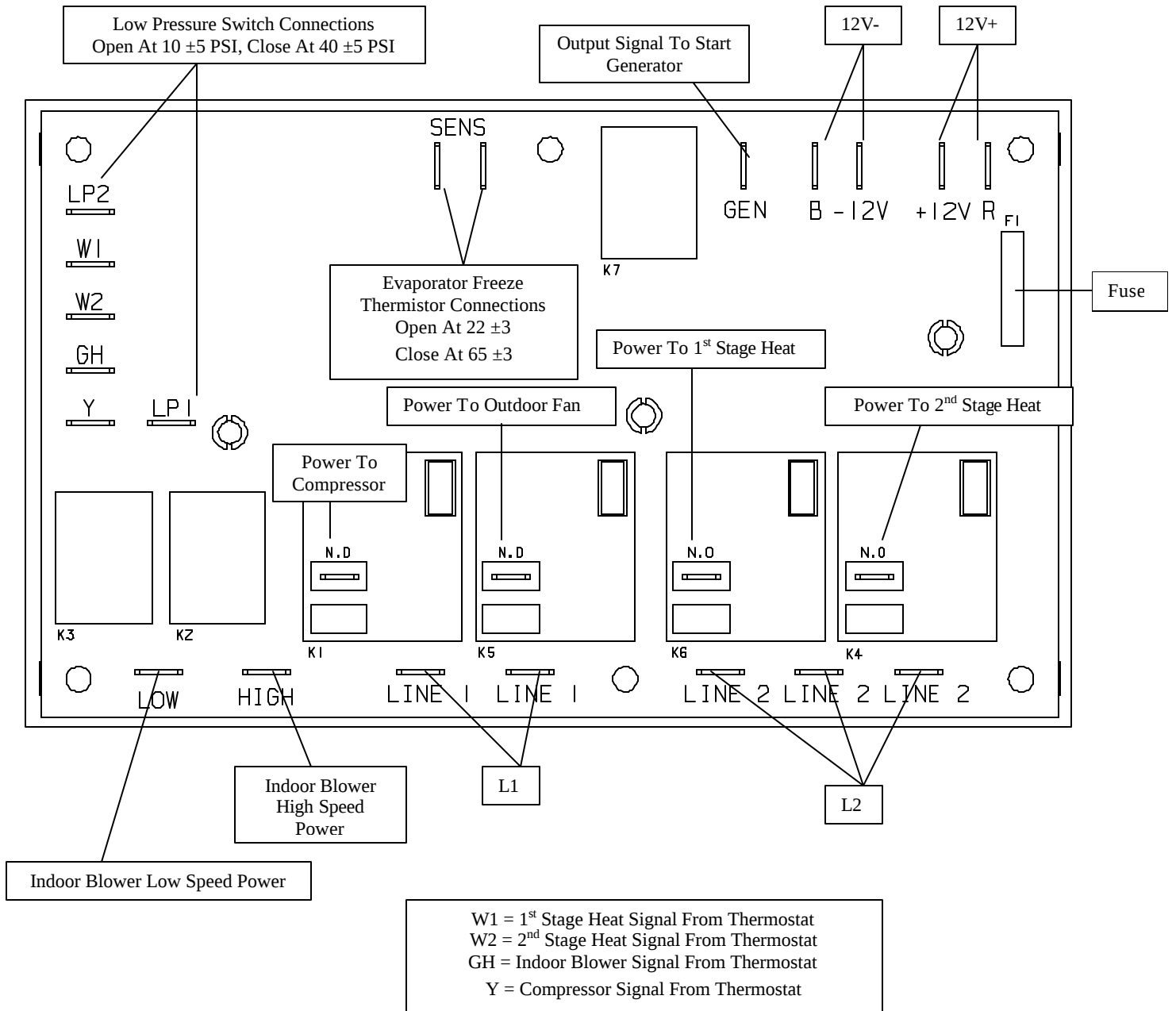
BLOWER LOW CHECKOUT



CONTROL BOX COMPONENTS

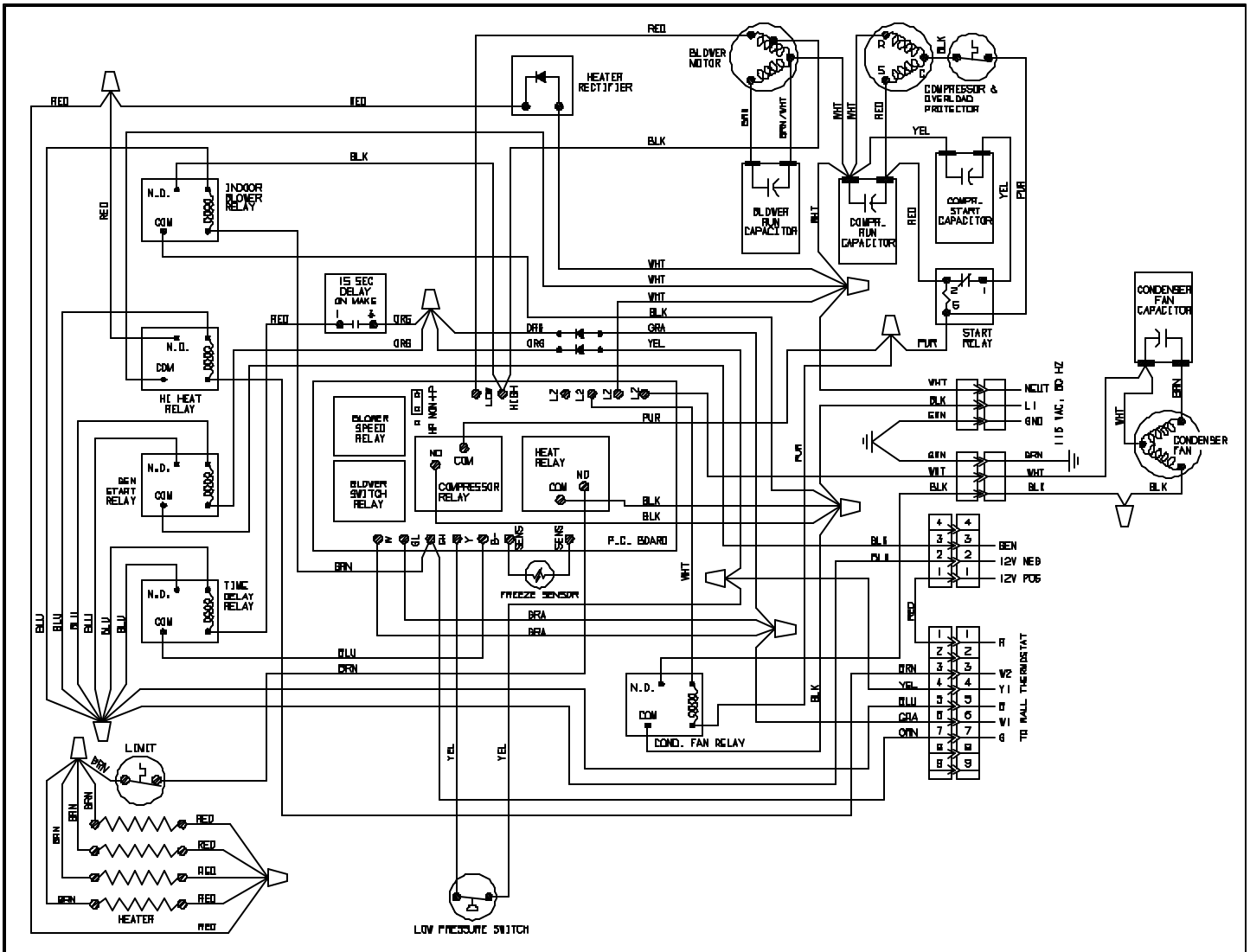


PRINTED CIRCUIT BOARD



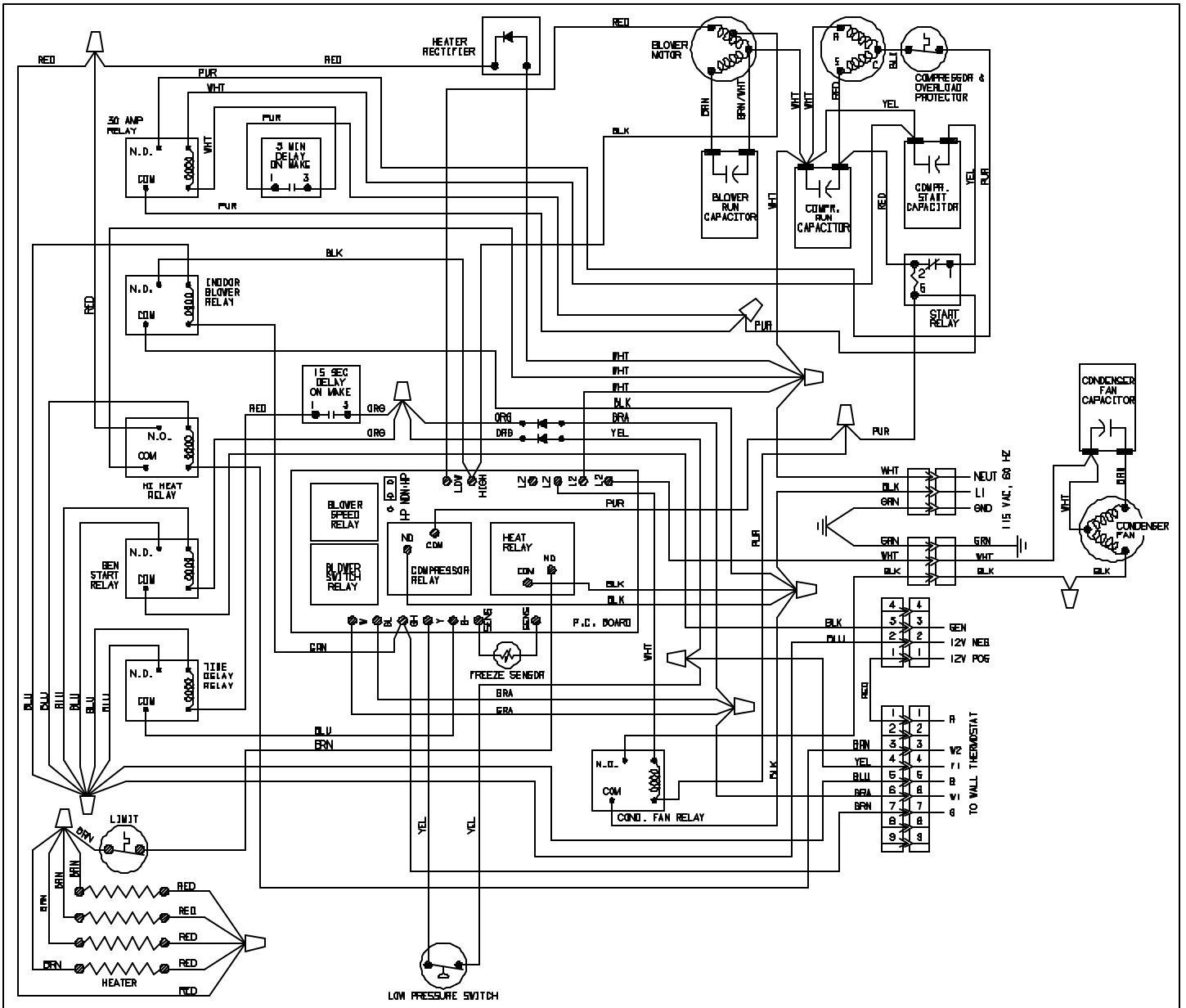
11. WIRING DIAGRAM

6330 “-” MODEL



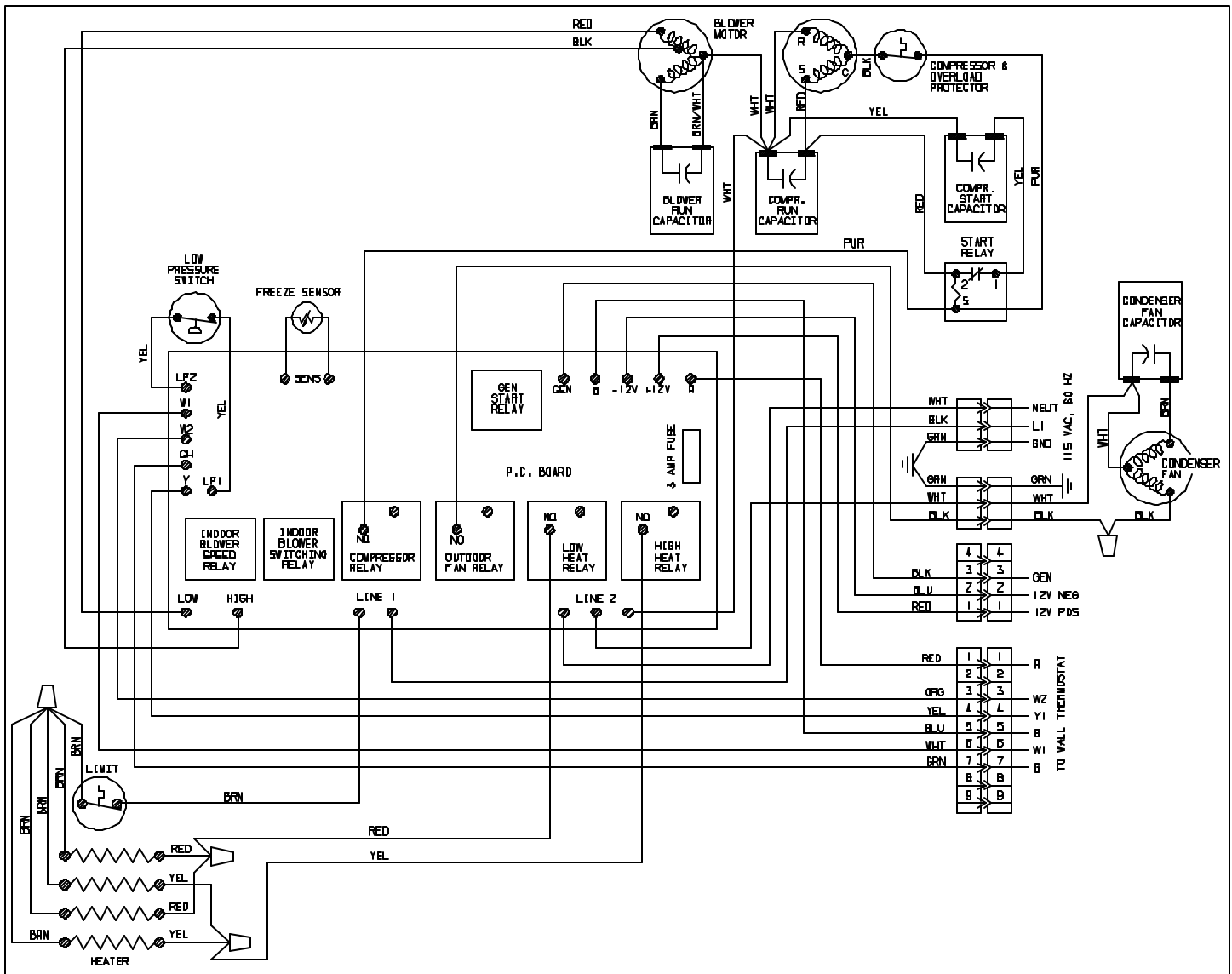
WIRING DIAGRAM

6330 "A" MODEL



WIRING DIAGRAM

6330 "B" MODEL





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