Associated Products Division

SERVICE MANUAL

FOR

46101-8114
46103-8114

BACKWALL

AIR CONDITIONING SYSTEM

TABLE OF CONTENTS

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

MODEL NO.	46101-8114
SERIAL NO.	
INTERIOR ASSEMBLY	46103-725

REFRIGERANT CHARGE:

TYPE	R-410A
OZS.	15.00

DESIGN PRESSURES PSIG:

HIGH SIDE	580
LOW SIDE	160

ELECTRICAL RATINGS: SINGLE PHASE

HERTZ 60

A/C VOLTS	115	FAN MOTOR H.P.	1/8
COMPR. LRA	58.4	FAN MOTOR FLA	1.4
COMPR. RLA	8.8		

USE COMPRESSOR 1450-404

ELECTRIC HEATER

ELECTRIC HEATER AMPS	19.5
MINIMUM CIRCUIT AMPERAGE	24.25
MAXIMUM OVERCURRENT PROTECTIVE DEVICE AMPERAGE	25

RV PRODUCTS
DIV. OF AIRXCEL™ INC. WICHITA, KS 46101-180

MODEL NO.

46101-8114

SERIAL NO.

MODEL NO.	46103-8114
SERIAL NO.	
INTERIOR ASSEMBLY	46103-725

REFRIGERANT CHARGE:

TYPE	R-410A
OZS.	16.00

DESIGN PRESSURES PSIG:

HIGH SIDE	580
LOW SIDE	160

ELECTRICAL RATINGS: SINGLE PHASE

HERTZ 60

A/C VOLTS	115	FAN MOTOR H.P.	1/3
COMPR. LRA	83.0	FAN MOTOR FLA	3.8
COMPR. RLA	11.9		

USE COMPRESSOR 1450-405

ELECTRIC HEATER

ELECTRIC HEATER AMPS	19.5
MINIMUM CIRCUIT AMPERAGE	24.25
MAXIMUM OVERCURRENT PROTECTIVE DEVICE AMPERAGE	25

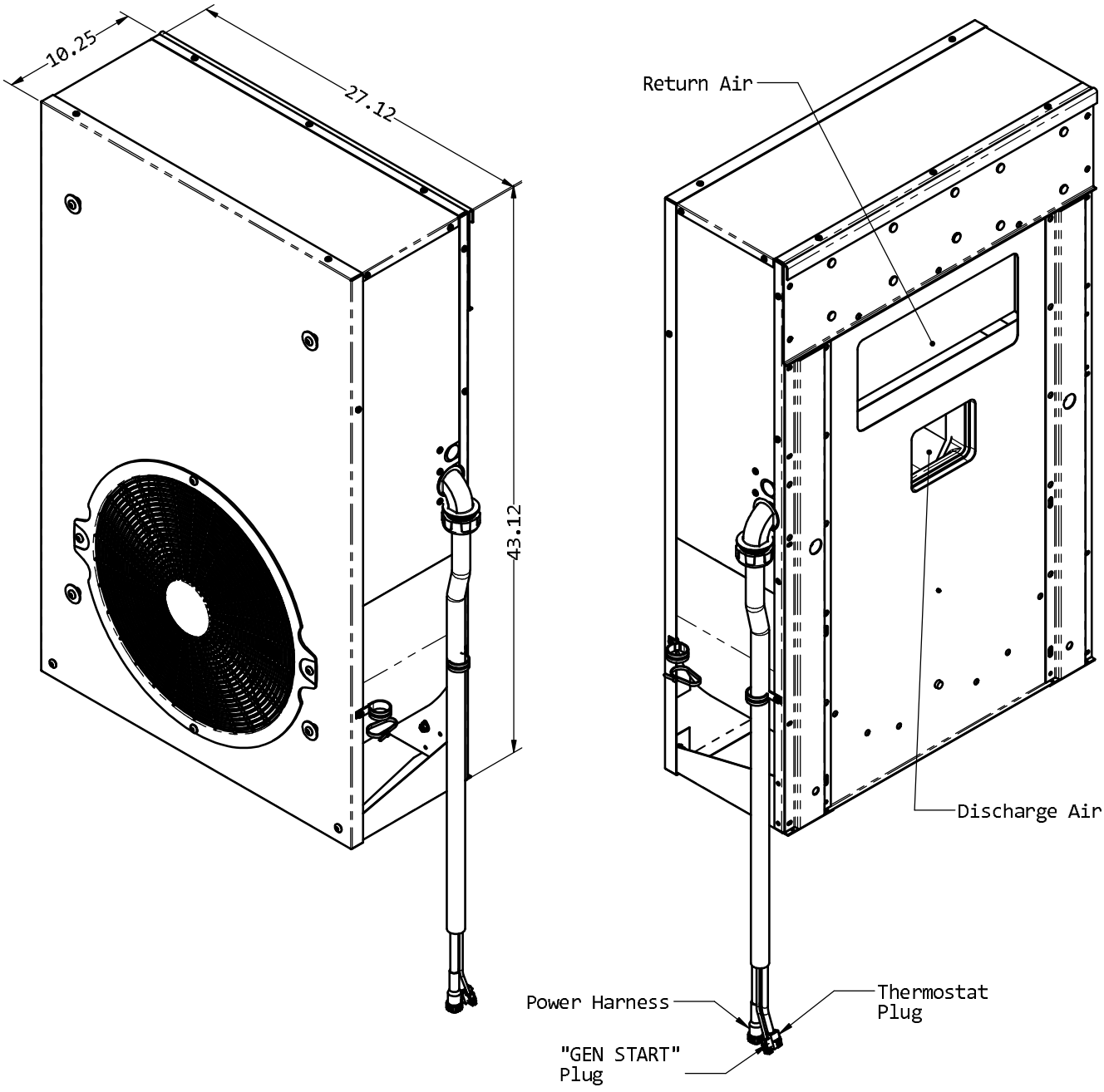
RV PRODUCTS
DIV. OF AIRXCEL™ INC. WICHITA, KS 46103-180

MODEL NO.

46103-8114

SERIAL NO.

4. UNIT DEPICTION FIGURES



5. GENERAL INFORMATION

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

The backwall air conditioner is a self-contained, pre-charged unit designed to hang vertically on the back wall of a sleeper cab. It is designed to be easily accessed for service and can be removed quickly for service or replacement.

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.

Made in USA

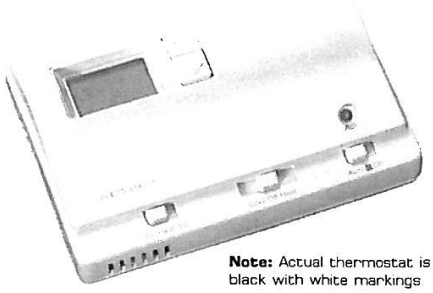
RVP Part#: 6330*335

AP7863

2 Heat/1 Cool
Non-Programmable
Manual Changeover

Non-Programmable Electronic Thermostat

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



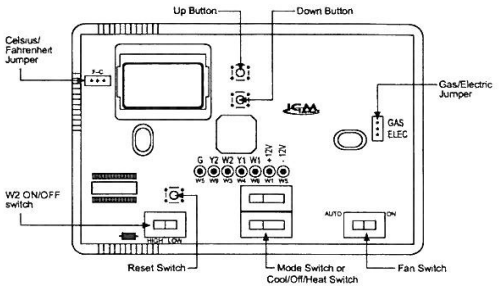
Note: Actual thermostat is black with white markings

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**

ICM CONTROLS

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: ± 1°F (± 0.5°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 ∨ or ∧ button; the current temperature setpoint displays.

Step 2: Press the ∨ or ∧ 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 ∨ or ∧ 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

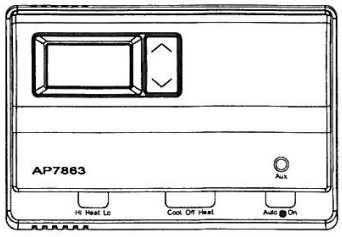
Step 2: Move the ***Mode*** switch to either ***Cool*** or ***Heat*** position, depending on the season. The thermostat will now operate and maintain the room temperature at the desired setpoint.

∴ **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.*

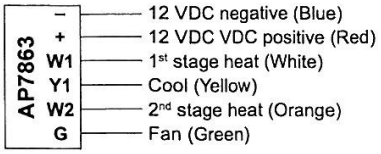
LED Indicator

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.



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

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-case credit for the purchase prices 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.

ICM CONTROLS™

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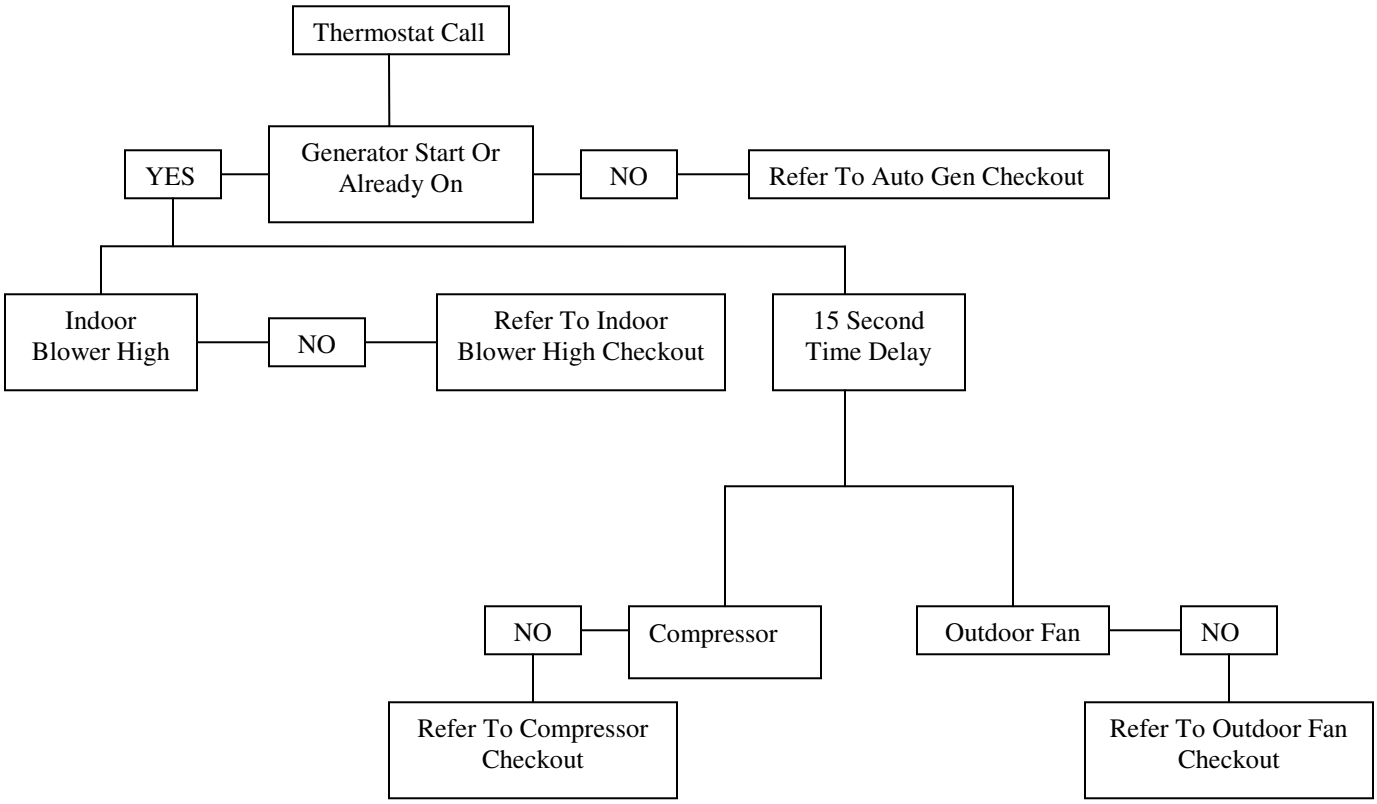
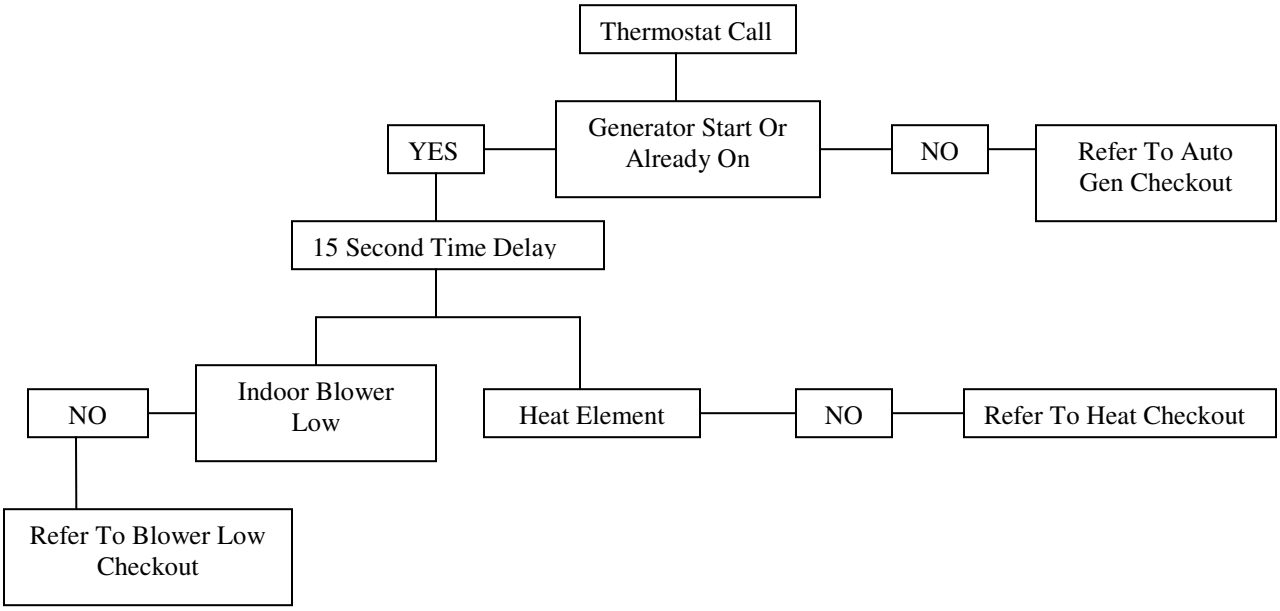
LII330

7. SEQUENCE OF OPERATION
COOLING MODE



8. SEQUENCE OF OPERATION
HEATING MODE



9. ELECTRICAL DIAGNOSTIC FLOW CHARTS

BACKWALL AIR CONDITIONER

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

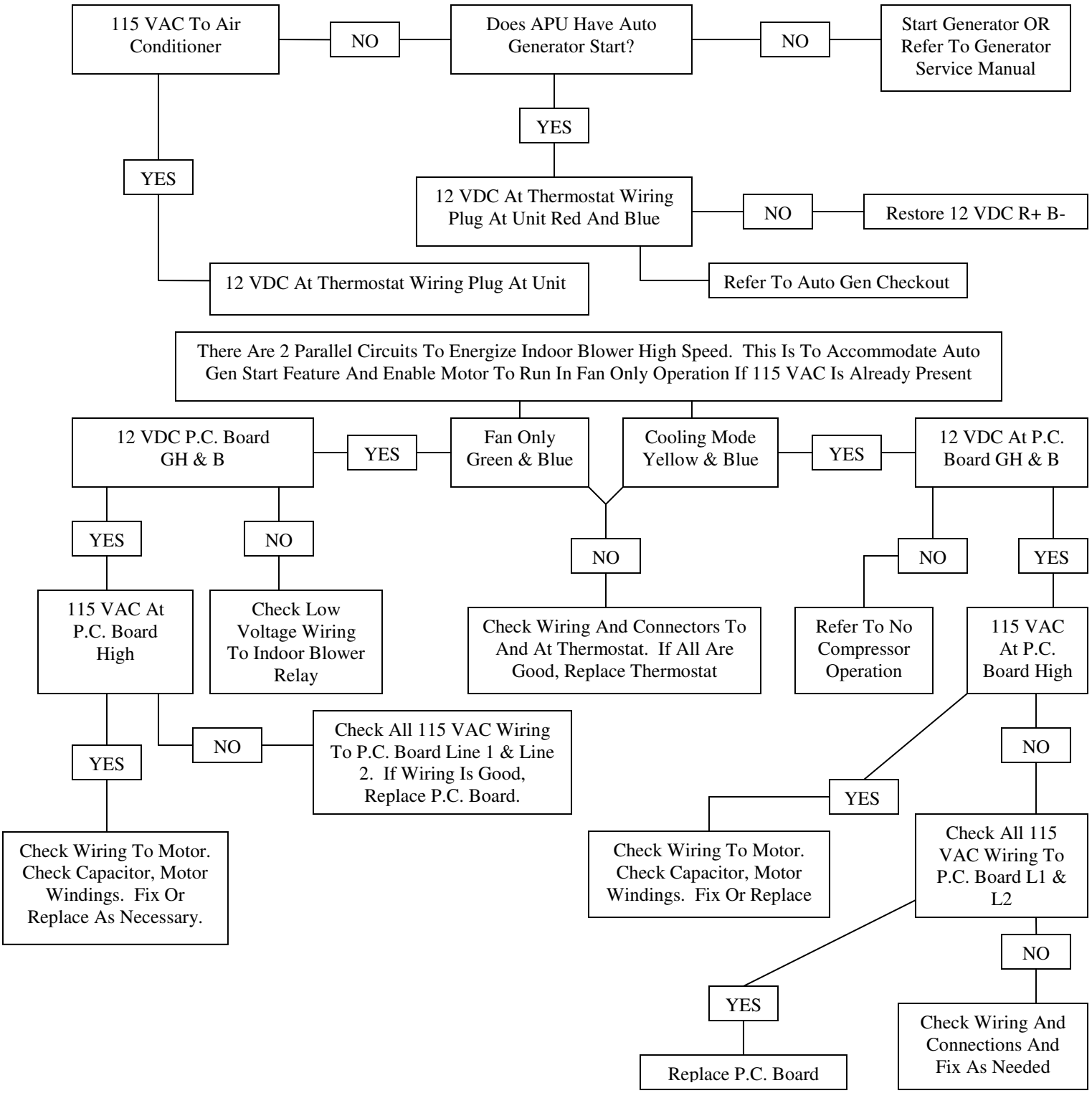
To prevent the possibility of severe personal injury, death, or equipment damage due to electrical shock, always be sure the power supply to the appliance is disconnected before doing any work on the appliance. This can normally be accomplished by switching the breaker for the air conditioner to OFF, 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

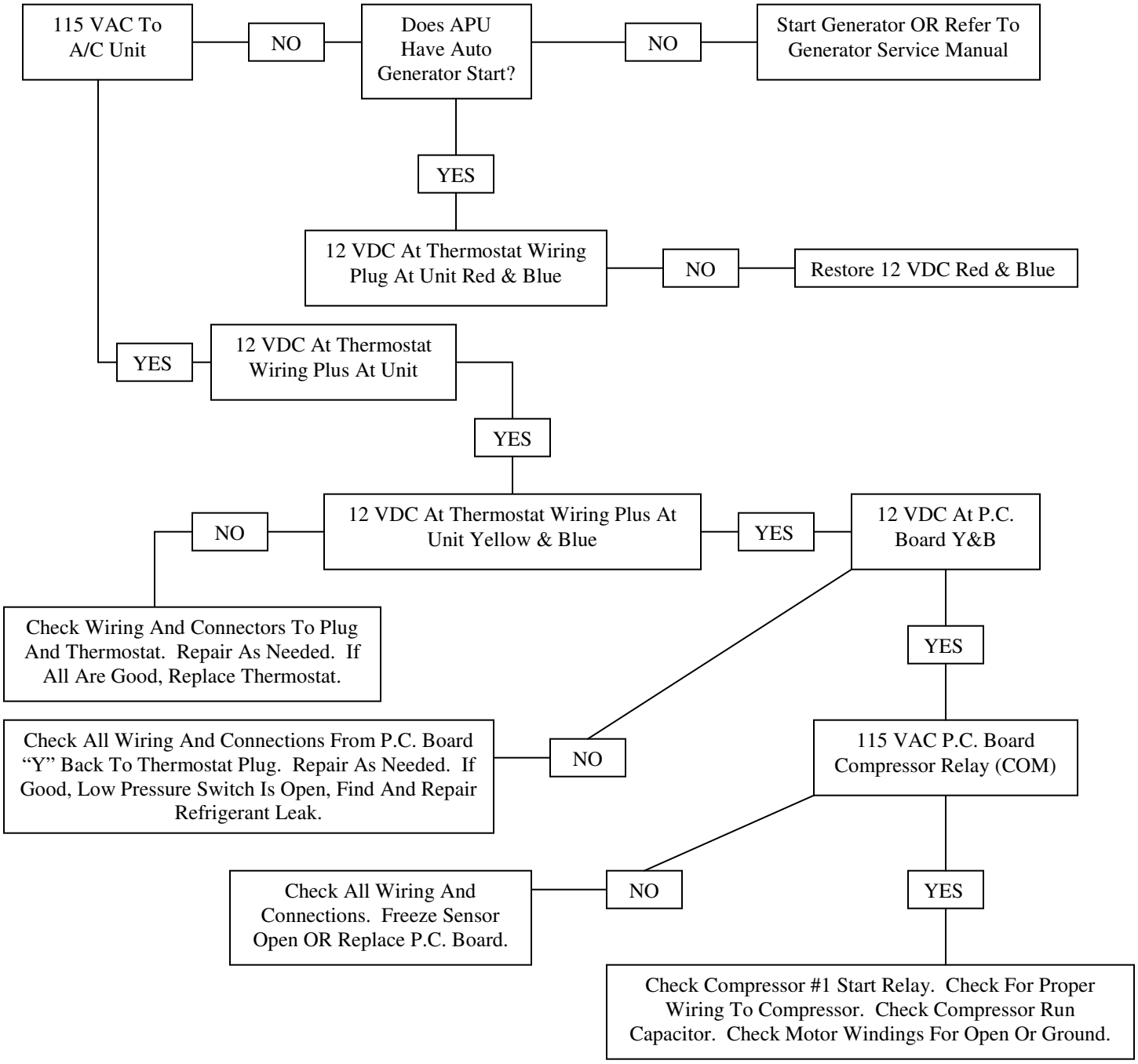
SOME DIAGNOSTIC TESTING MAY BE DONE ON ENERGIZED CIRCUITS. ELECTRICAL SHOCK CAN OCCUR IF NOT TESTED PROPERLY. TESTING TO BE DONE BY QUALIFIED TECHICIANS ONLY.

NO INDOOR BLOWER HIGH SPEED
COOLING MODE OR FAN ONLY

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

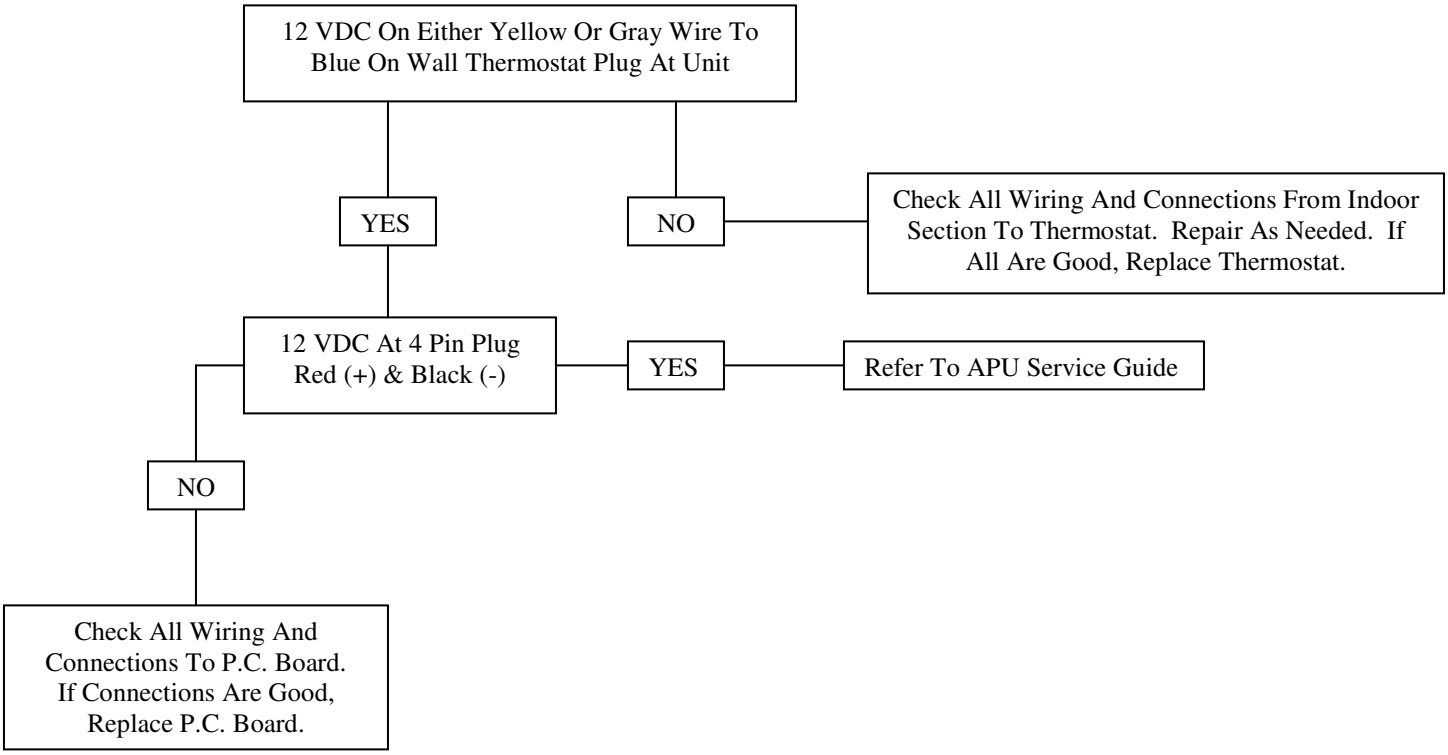


NO COMPRESSOR OPERATION

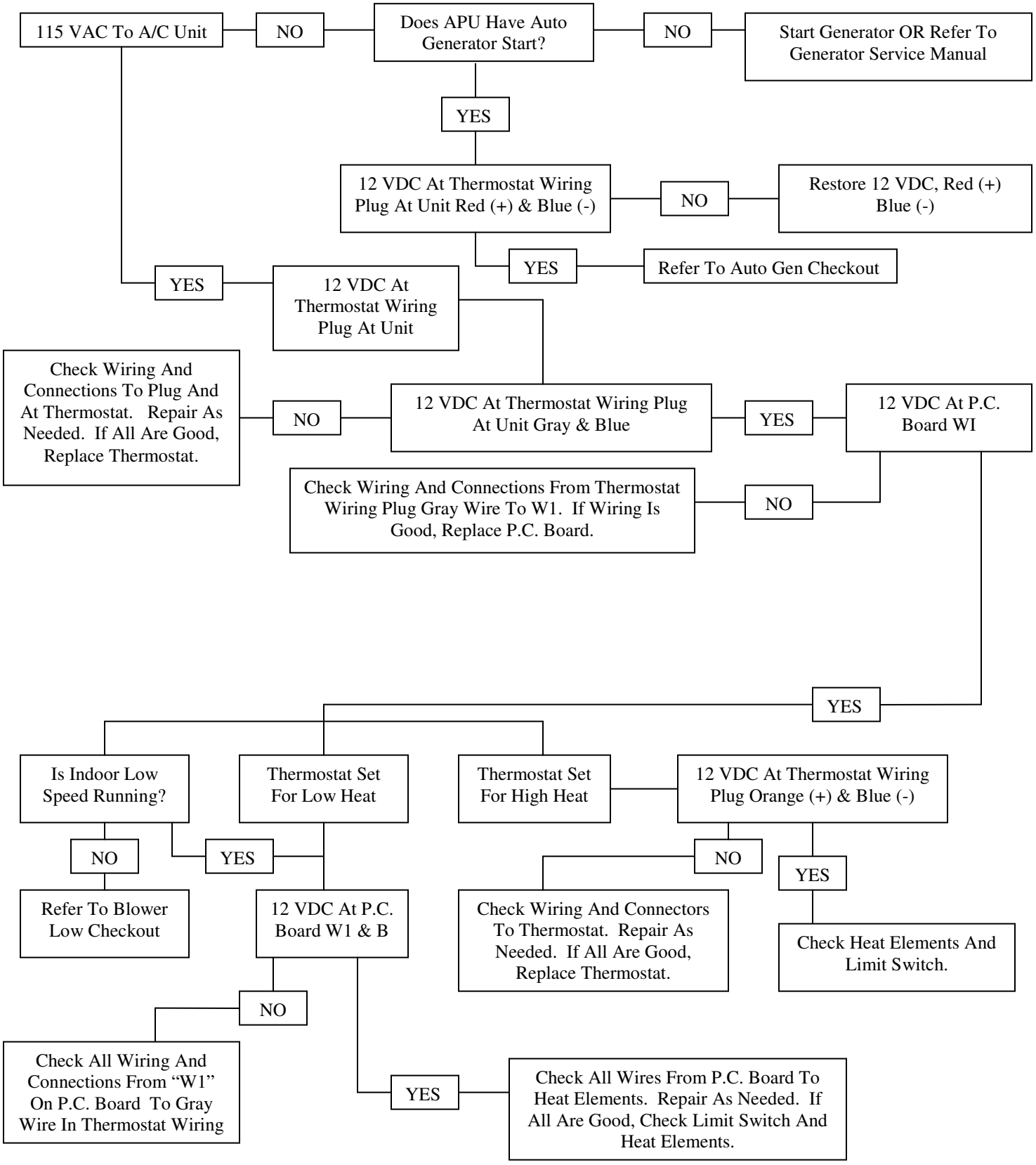


AUTO GEN CHECKOUT

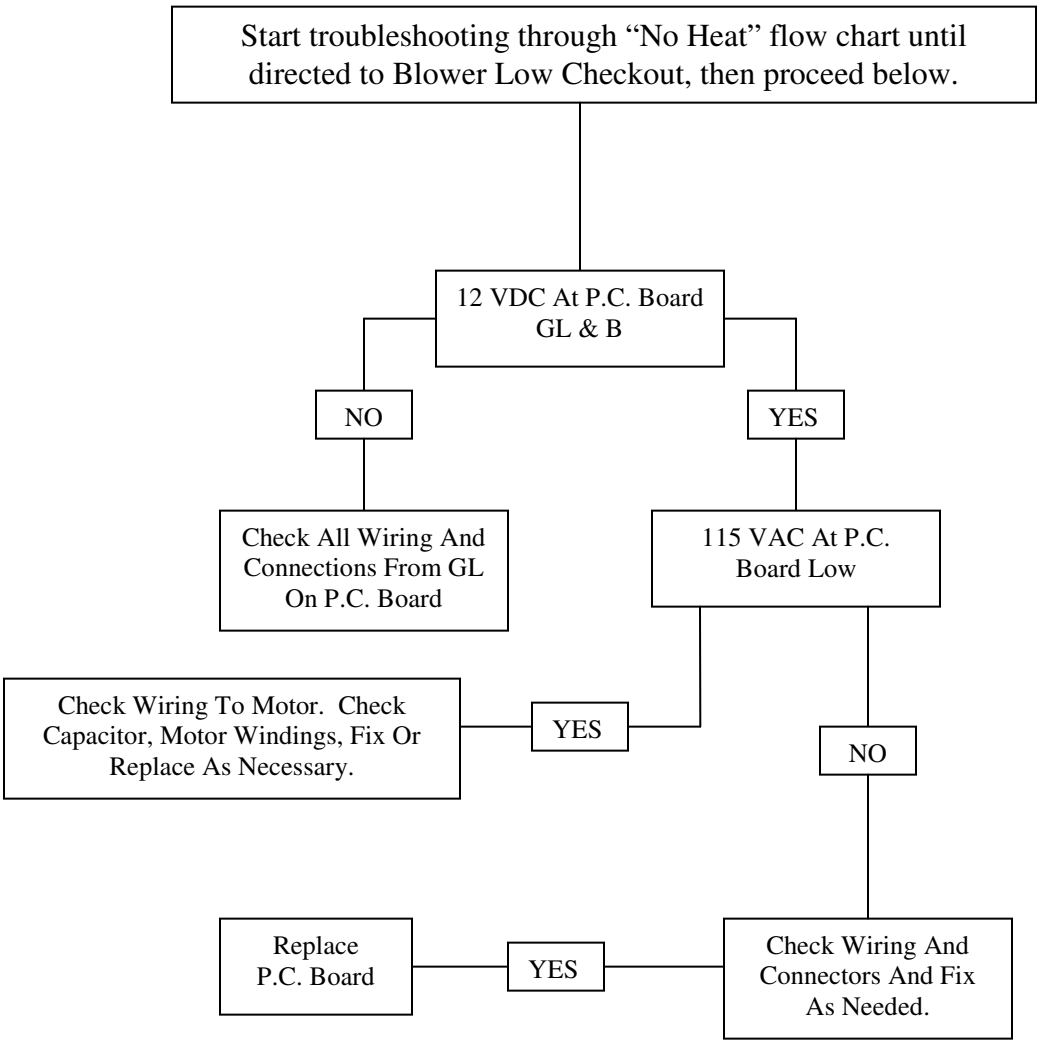
Thermostat should be calling for Heat or Cool.



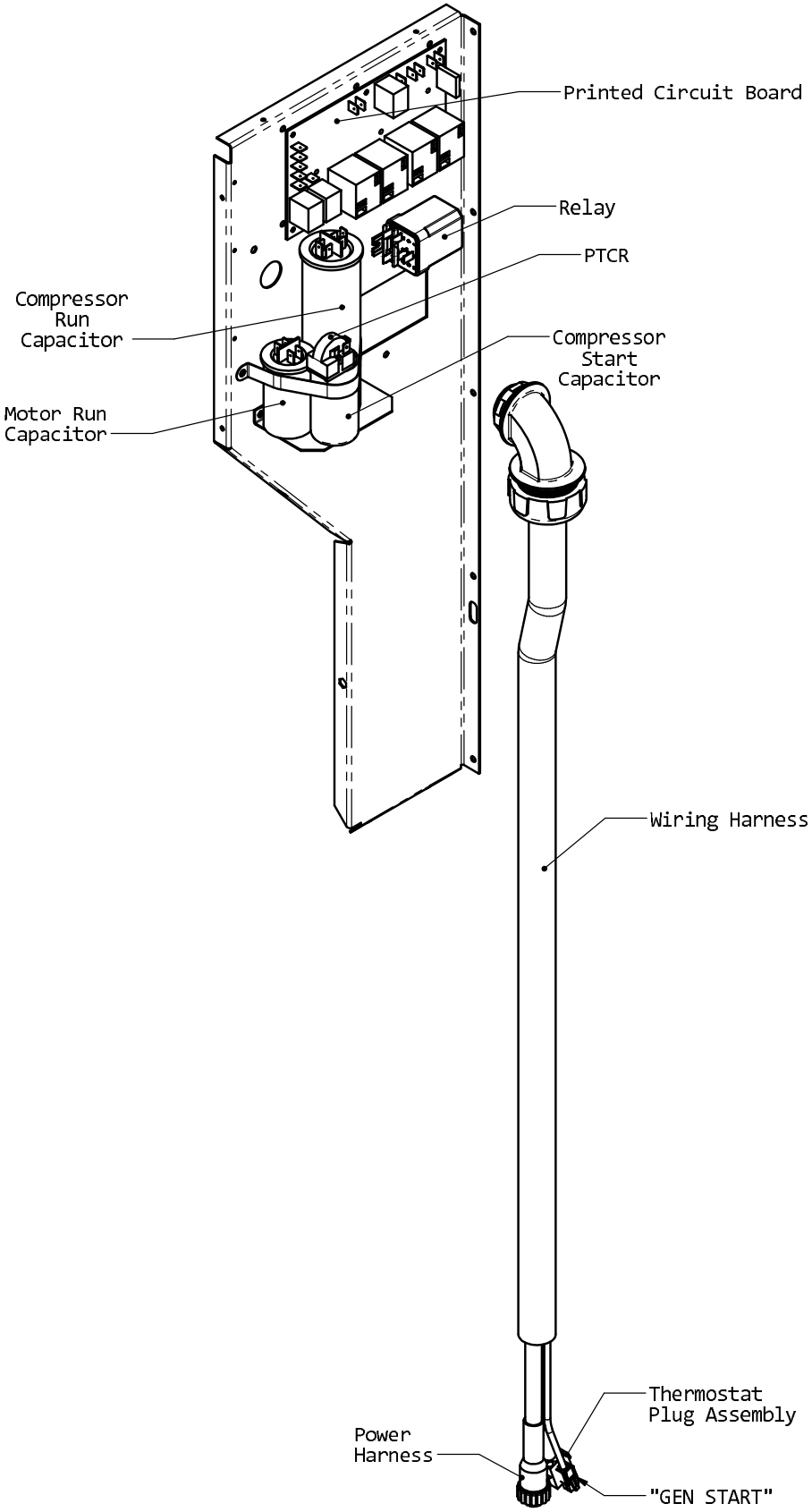
NO HEAT


115 VAC To A/C Unit
NO
Does APU Have Auto Generator Start?
NO
Start Generator OR Refer To Generator Service Manual
YES
12 VDC At Thermostat Wiring Plug At Unit Red (+) & Blue (-)
NO
Restore 12 VDC, Red (+) Blue (-)
YES
Refer To Auto Gen Checkout
YES
12 VDC At Thermostat Wiring Plug At Unit
Check Wiring And Connections To Plug And At Thermostat. Repair As Needed. If All Are Good, Replace Thermostat.
NO
12 VDC At Thermostat Wiring Plug At Unit Gray & Blue
YES
12 VDC At P.C. Board WI
Check Wiring And Connections From Thermostat Wiring Plug Gray Wire To W1. If Wiring Is Good, Replace P.C. Board.
NO
YES
Is Indoor Low Speed Running?
Thermostat Set For Low Heat
Thermostat Set For High Heat
12 VDC At Thermostat Wiring Plug Orange (+) & Blue (-)
NO
YES
Refer To Blower Low Checkout
12 VDC At P.C. Board W1 & B
NO
YES
Check Wiring And Connectors To Thermostat. Repair As Needed. If All Are Good, Replace Thermostat.
Check Heat Elements And Limit Switch.
NO
Check All Wiring And Connections From "W1" On P.C. Board To Gray Wire In Thermostat Wiring
YES
Check All Wires From P.C. Board To Heat Elements. Repair As Needed. If All Are Good, Check Limit Switch And Heat Elements.

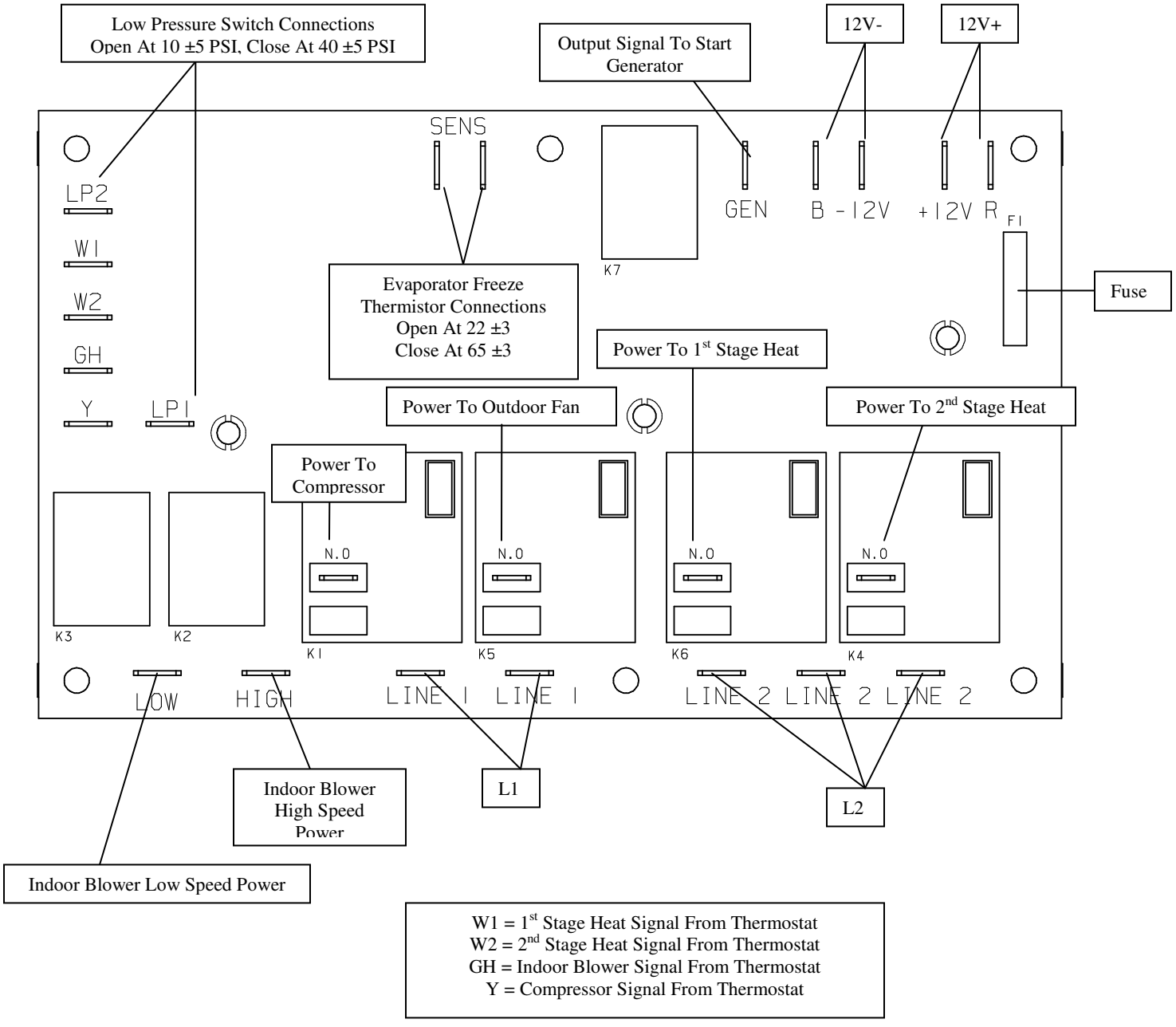
BLOWER LOW CHECKOUT



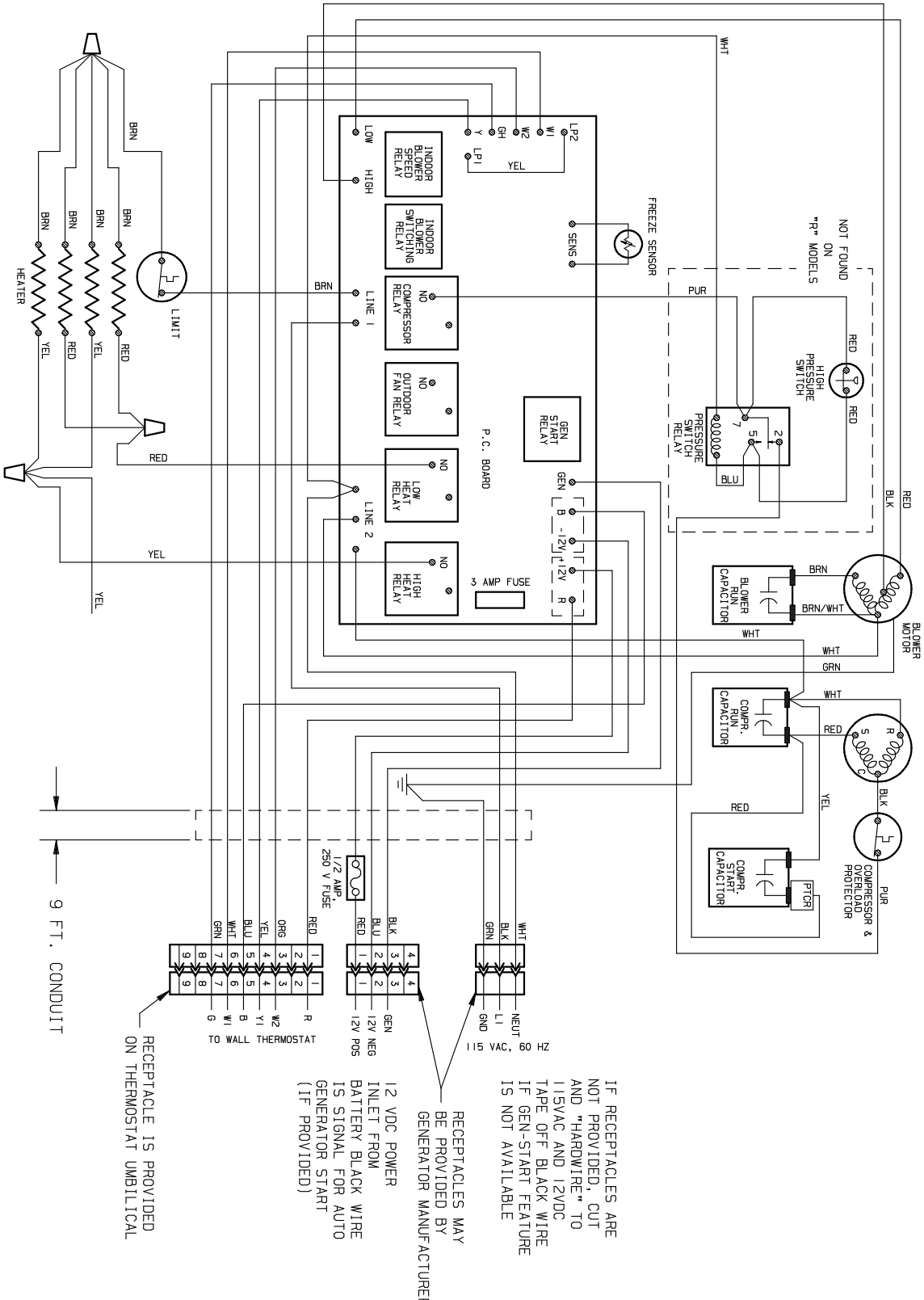
10. CONTROL BOX COMPONENTS



10A. PRINTED CIRCUIT BOARD



11. WIRING DIAGRAM



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