

# Norcold Repair Guide

## 876 EG2, EG3 & 878 EG2, EG3

## Section 4

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## General Information and Specification

### OPERATING LIMITS - ALL MODELS

AC Mode: 132 VAC Max., 108 VAC Min.  
15.4 VDC Max., 10.5 VDC Min.  
DC Mode: 15.4 VDC Max., 11.5 VDC Min.  
Gas Mode: 11" W.C.  
15.4 VDC Max., 10.5 VDC Min.

### MODELS 876EG RATINGS

1450 Btu/Hr Input  
LP Gas Mode:  
11" W.C.  
LP16 Orifice  
12 Volts DC control voltage  
AC Mode:  
110 Volts AC, 300 Watts  
12 Volts DC control voltage  
DC Mode (3-Way only):  
12 Volts DC

### MODELS 878EG RATINGS

1500 Btu/Hr Input  
LP Gas Mode:  
11" W.C.  
LP16 Orifice  
12 Volts DC control voltage  
AC Mode:  
110 Volts AC, 300 Watts  
12 Volts DC control voltage  
DC Mode (3-Way only):  
12 Volts DC

### CURRENT DRAWS - ALL MODELS

Automatic Ignition - Less than 500 milliamps or .50 amps  
Humidity Heater - 240 milliamps or .24 amps  
Interior Lamp (when door open) - 600 milliamps or .60 amps  
AC Heating element - 2.7 amps at 110 Volts AC  
2.9 amps at 120 Volts AC  
DC Heating element - 13.8 amps at 12 Volts DC  
16.1 amps at 14 Volts DC



## CAUTION

OPERATION WHERE THESE LIMITS ARE EXCEEDED MAY CAUSE DAMAGE AND WILL VOID REFRIGERATOR WARRANTY.

### Information Regarding Battery Drain

As indicated in the specifications, a 12 volt DC source is required for operation on gas to provide features of automatic ignition. The current draw is less than 500 milliamps. If the Humidity Heater is also energized, this adds 240 milliamps for a total of 740 milliamps (.74 amps). This indicates that the drain on the battery is very low and has little effect on "battery run down" unless these switches are left on for long periods of time on a battery with no means of recharging.

During AC operation, 12 volt DC is required to operate the interior light, Humidity Heater, temperature sensing circuit, and the light display.

On 3-way models, the DC operation draws approximately 14 amps at 12 volts or 16 amps at 14 volts.

Battery drain should also be considered during times when the refrigerator is stored, defrosted, or occasions when the door is left open. The interior light will draw 600 milliamps and the Humidity Heater, if left on, draws 240 milliamps for a possible current draw of 840 milliamps (.84 amps). In this case, the NORMAL-STORAGE-HIGH HUMIDITY switch should be set to the STORAGE position (see section on "High Humidity- Storage").

Except for DC operation (3-way models) it is evident that the 12 volt demand is quite low; nevertheless, the refrigerator should not be operated for long periods of time from a battery only, without a means of recharge (through alternator or convertor).

### Electrical Connection - 12 Volt DC

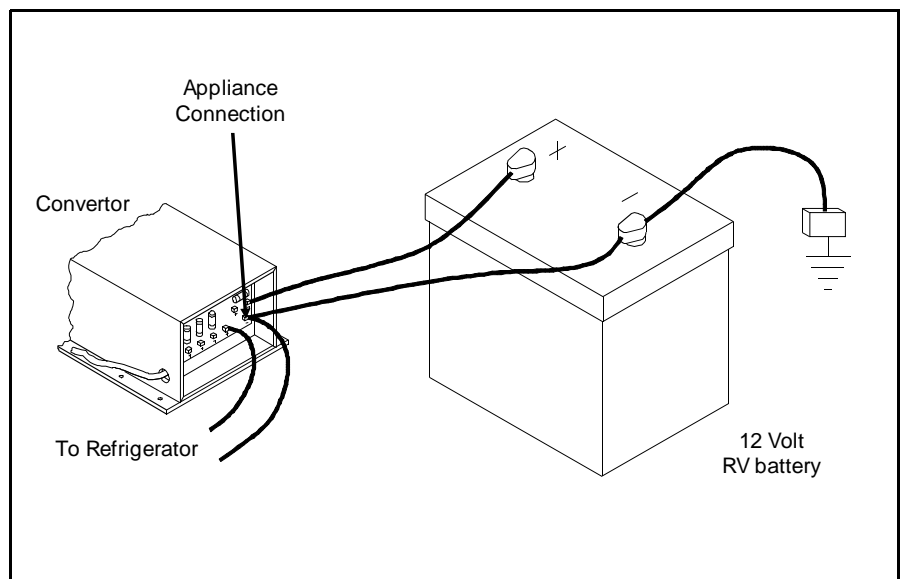


Figure 4.1 Recommended 12 Volt Connection

1. The 12 volt DC supply voltage connects to the terminal block located at the rear of the refrigerator shown in Figure 4.2.

**CAUTION**

DO NOT USE THE CHASSIS OR VEHICLE FRAME AS ONE OF THE CONDUCTORS. CORRECT POLARITY MUST BE OBSERVED WHEN CONNECTING THE DC SUPPLY.

2. The distance the current must travel from the DC supply to the refrigerator dictates the AWG wire size to be used. If the wires are too small for the distance, voltage drop will occur.

Recommended Wire Size:  
12 Volt Supply Wiring & Fuse Size

	876,878 EG2	
	min. wire size	max. fuse size
0'-20'	18 AWG	6 Amp
Over 20'	18 AWG	6 Amp

	876,878 EG3	
	min. wire size	max. fuse size
0'-20'	10 AWG	30 Amp
Over 20'	8 AWG	40 Amp

3. From the terminal block the DC supply voltage will connect to the PC board on terminals J-4 ground and J-5 (+) 12 Volts DC as shown in Figure 4.3.

**Electrical Connection - 120 Volt AC**

1. This refrigerator is equipped with a three prong plug for protection against shock hazard and must be connected into a recognized three prong receptacle as shown in Figure 4.4.

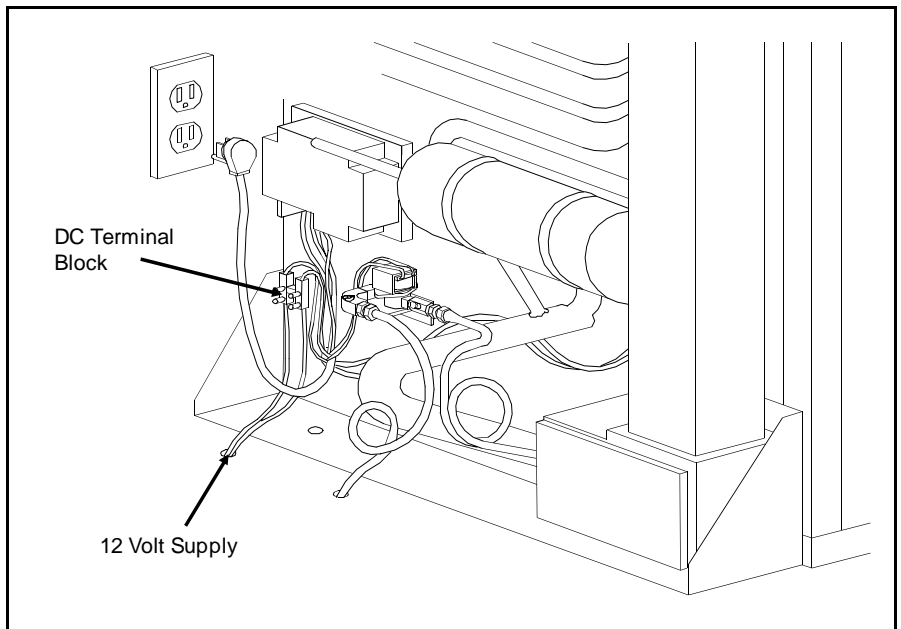


Figure 4.2 12 Volt Supply Connection

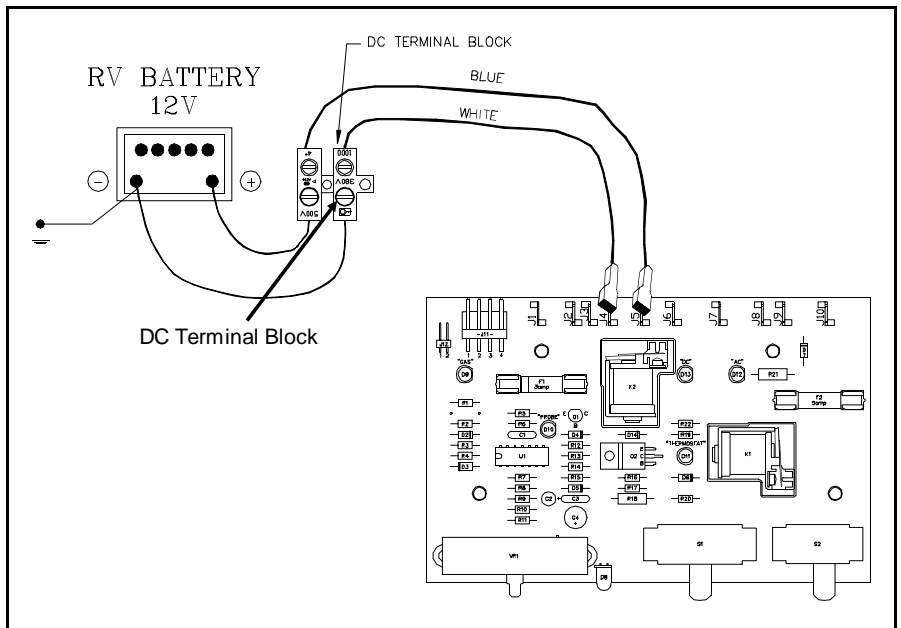


Figure 4.3 12 Volt Connection to PC Board

**WARNING**

DO NOT REMOVE (CUT) GROUNDING PRONG FROM THE REFRIGERATOR AC POWER CORD. REMOVAL OF THE PRONG CAN RESULT IN A SEVERE ELECTRICAL SHOCK, AS WELL AS VOIDING THE REFRIGERATOR ELECTRICAL CERTIFICATION AND WARRANTY. EXTENSION CORDS ARE NOT RECOMMENDED.

Note:  
12 volts DC must also be connected and available when operating on 120 volts AC since the unit Thermostat, interior light and Humidity Heater require 12 volts.

**⚠ CAUTION**

ROUTE THE AC POWER CORD SO AS TO NOT COME IN CONTACT WITH THE BURNER COVER, FLUE PIPE OR ANY OTHER COMPONENT THAT COULD CAUSE DAMAGE.

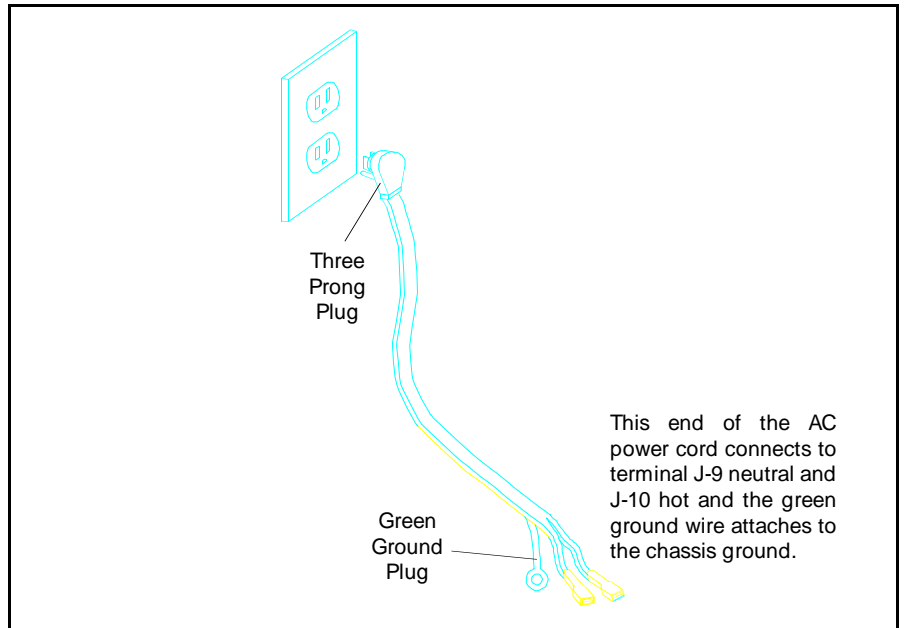


Figure 4.4 AC Supply Cord

# Location of Controls

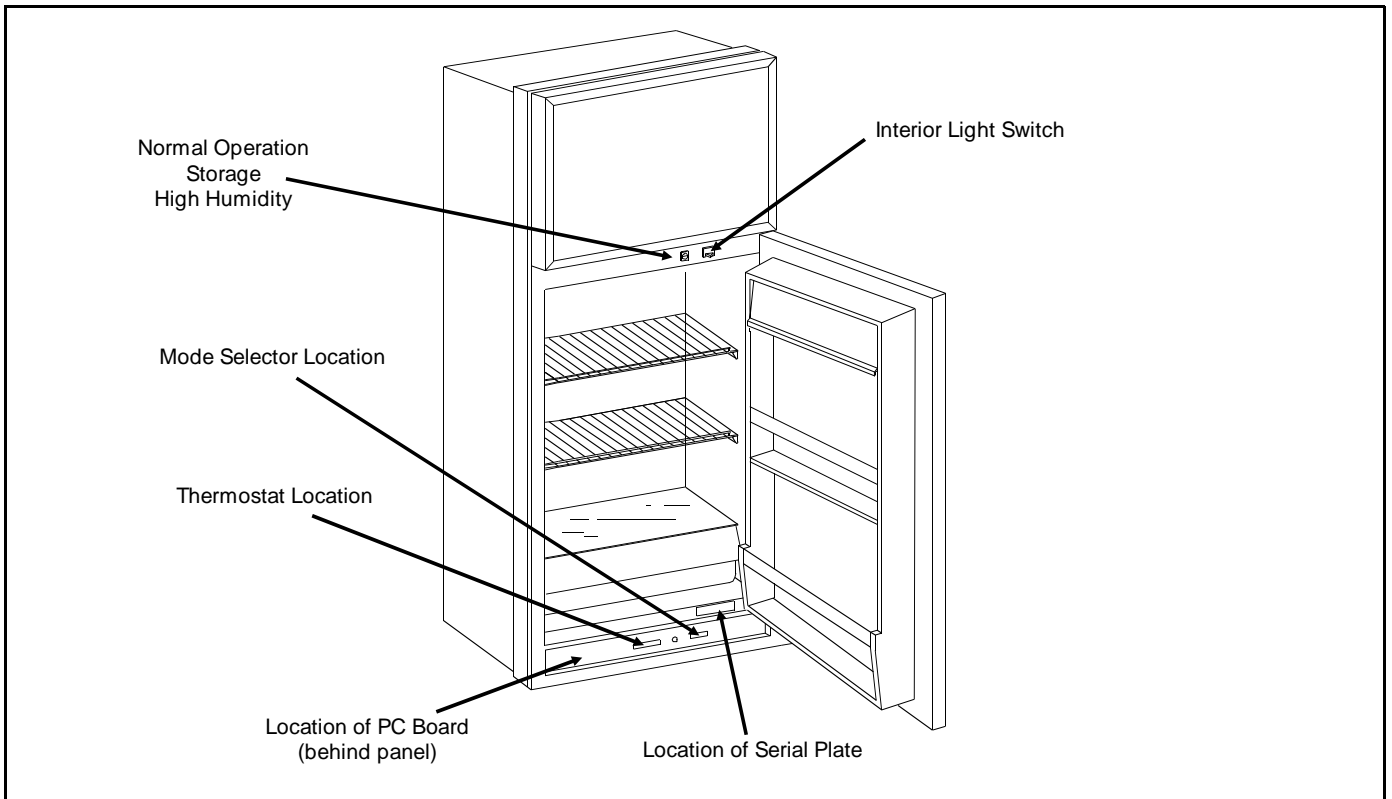


Figure 4.5 Front View

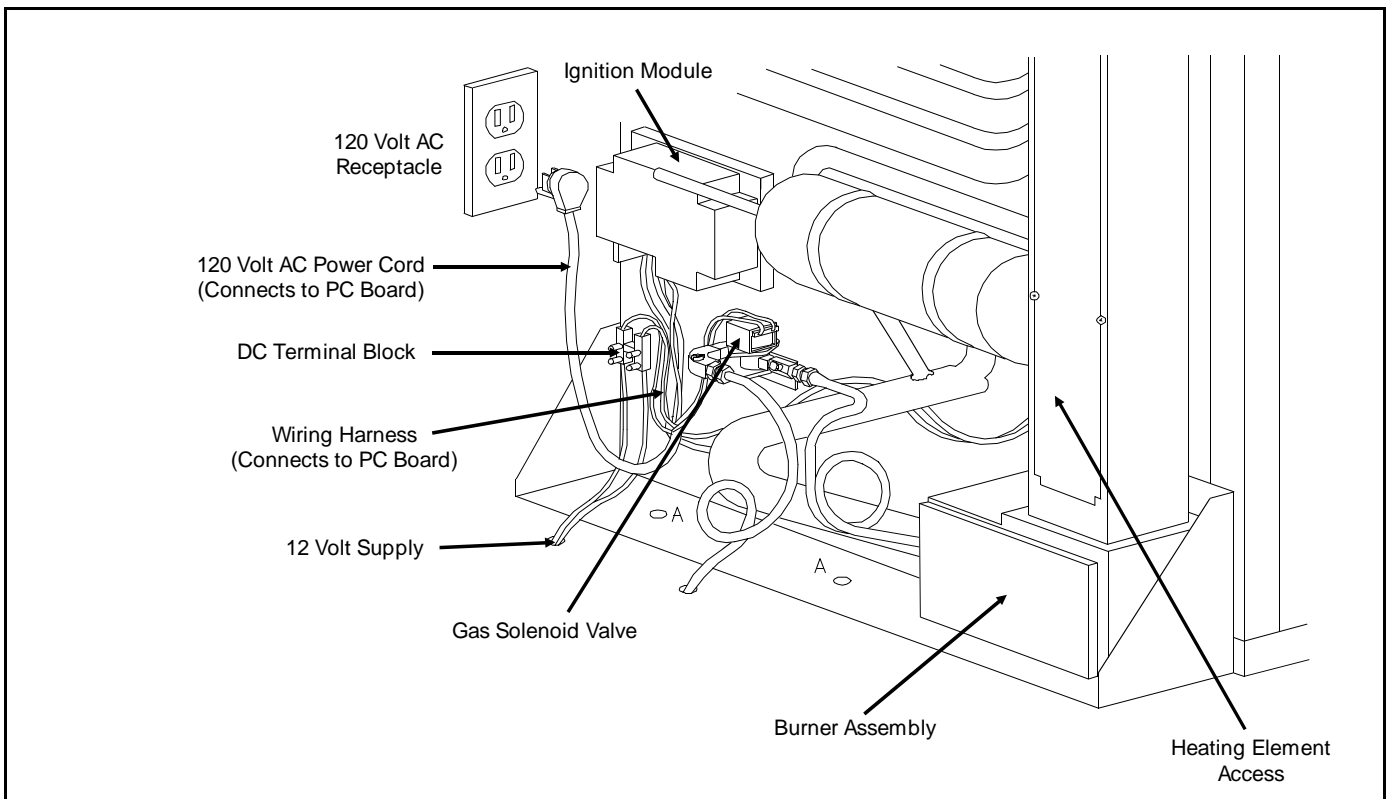


Figure 4.6 Rear View

## Operation

### Control Description

Models 876 and 878 require that 12 Volts DC be connected to the DC terminal block at the rear of the refrigerator. The 12 Volts DC is then supplied to terminals J-4 ground and J-5 positive of the circuit board. The 12 volt current is supplied through the 3 amp fuse to terminal J-1 which supplies 12 Volts DC to the interior lamp and high humidity circuits.

When the switch, located on the center divider between the two doors, is in the Normal Operation or High Humidity position the interior light will illuminate when the door is opened. 12 Volts DC is also supplied through a series of resistors and diodes where the 12 Volts is reduced to 5.6 VDC, which is the control voltage for the Thermostat circuit.

### LP Gas Mode

If the switch is in the LP mode of operation 12 Volts DC will be supplied to the Thermostat L.E.D. on the circuit board, then to the Gas L.E.D. and to terminal J-11-1 which turns on the Ignition Module.

The Ignition module sends sparks to the burner while opening the gas solenoid valve. If a flame is established within 10-20 seconds, the Ignition Module will sense the flame and stop sparking to burner. If a flame is not established within the 10-20 seconds, the Ignition Module will automatically stop sparking to the burner, shut off the 12 Volts to the Gas Valve, causing it to close and shut off the gas supply to the burner. The Ignition Module will then send 12 Volts to the printed circuit board to illuminate the red check light.

### AC Electric Mode

Models 876 and 878 require 12 Volts DC to be supplied to the DC

terminal block at the rear of the refrigerator. 120 Volts AC is supplied to terminals J-9 and J-10 when the AC power cord is plugged into an active AC receptacle. The hot side of the AC is routed from terminal J-10 through the 5 amp fuse to the normally open contact of Relay (K-1). The neutral side of the AC from J-9 is tied directly to terminal J-8 on the PC Board and to one side of AC Heater. When the selector switch is set to the electric position and the Thermostat is calling for cooling, 12 Volts DC is applied to the coil to close the relay contact. The AC L.E.D. light on the circuit board will illuminate, and 120 Volts AC will be applied to terminal J-7 on the PC Board for the AC Heater.

### DC Electric Mode (3-Way Models Only)

When + 12 Volts DC is supplied to terminals J-4 ground and J-5 (positive) of the PC Board, the + 12 Volts DC is routed directly to the normally open contact of Relay (K-2) and through the 3 amp fuse to the other refrigerator 12 Volts DC circuits. When the selector switch has been set to ELEC and DC and the Thermostat is calling for cooling, the Thermostat and the DC L.E.D.'s will illuminate on the circuit board; 12 Volts DC will be supplied through the ELEC switch and DC switch to the coil of Relay (K-2). The relay contact will close, allowing 12 Volts DC through the relay contact and to terminal J-6 of the PC Board. Current can now flow through the 20 amp fuse to the DC Heater.

**IMPORTANT INFORMATION ON 12 VOLT DC OPERATION (3-Way models only)**

The 12 volt DC mode is not designed for continuous DC operation -only for short "in transit" periods when gas or AC sources are not available.

The 12 volt DC mode cannot be used for the initial pull-down of the refrigerator compartment(s). The initial cooling operation must be done in either the gas or AC modes. The refrigerator must be cooled and stabilized before the DC operation is effective.

The following points regarding the DC operation should be considered:

- a. Operate the refrigerator in the DC mode only in periods when AC or gas operation is unavailable.
- b. The DC operation is designed to operate during a short "hold over" period, such as a four (4) to six (6) hour period while in transit. The refrigerator should not be switched to the DC mode if the food is not completely chilled.
- c. Good battery condition is essential when operating on DC. This implies an adequate recharging means which can handle the demands of the refrigerator along with other loads.
- d. The wires from the battery to the refrigerator must be of large enough size to handle the load. The connections must be clean, tight and free from corrosion. If not, a resulting voltage drop will cause a decreased cooling capacity.

## Operating & Lighting Instructions

### EG2 Models & EG3 Models

Models 876 & 878 require 12 Volts DC be applied to operate on any mode.

#### Lighting Instructions - Gas Mode



Figure 4.7

1. 12 volt DC supply must be available at the refrigerator in order to energize the direct spark ignition system and temperature control circuit.
2. Move Thermostat to mid-range position.
3. Move GAS-OFF-ELEC switch to GAS position. Sparking will start at burner and Gas Valve will open.
4. After 10 seconds, the burner should be ignited and operating normally.



Figure 4.8

5. On the initial refrigerator start-up, it may take longer than 10 seconds to allow air to be purged from the gas line. If the gas does not ignite within 10 seconds, valve will automatically shut off indicated by the red (CHECK) light.
6. To restart when the (CHECK) light is on, move switch again to GAS-OFF-ELEC switch to OFF position and wait 10 seconds- then move switch again to GAS position.



DO NOT CONTINUE TO RESET GAS SWITCH IF THE CHECK LIGHT CONTINUES TO COME ON AFTER SEVERAL TRIES.

#### Start Up Instructions - AC Mode

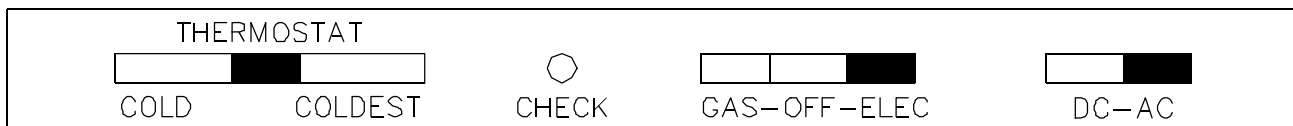


Figure 4.9

1. 120 volt AC and 12 volt DC must be supplied to the refrigerator to operate AC electric.
2. Move Thermostat to mid-range position.
3. Move DC-AC switch to AC position. Move GAS-OFF-ELEC switch to ELEC position.

## Start-Up Instructions - DC Mode

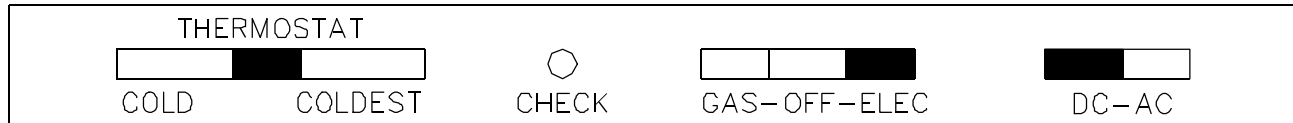


Figure 4.10

1. 12 volt DC supply must be supplied to the refrigerator to operate on DC.
2. Move Thermostat to mid-range position.
3. Move GAS-OFF-ELEC switch position. Move DC-AC switch to DC position.

## Shut Down Instructions - Gas or Electric

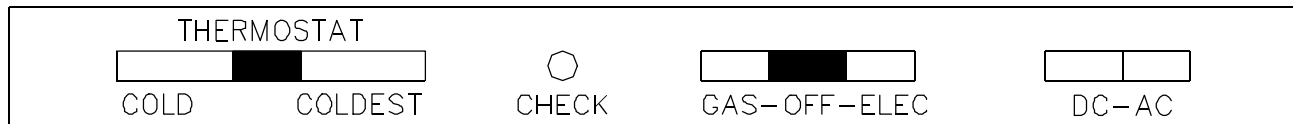


Figure 4.11

Refrigerator is shut down by moving GAS-OFF-ELEC switch to OFF.



## Parts Function

### Temperature Sensor (Thermistor)

Senses the temperature of the refrigerator interior and tells the Thermostat when to turn on and off.

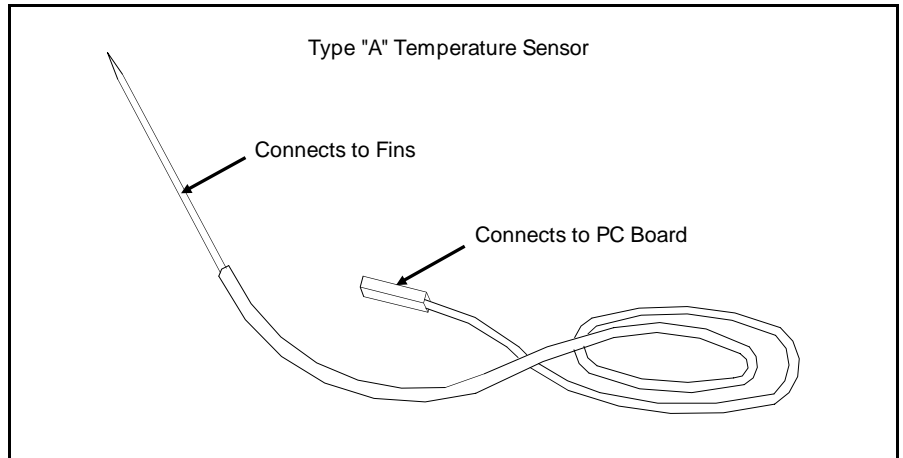


Figure 4.12a Type A Thermistor

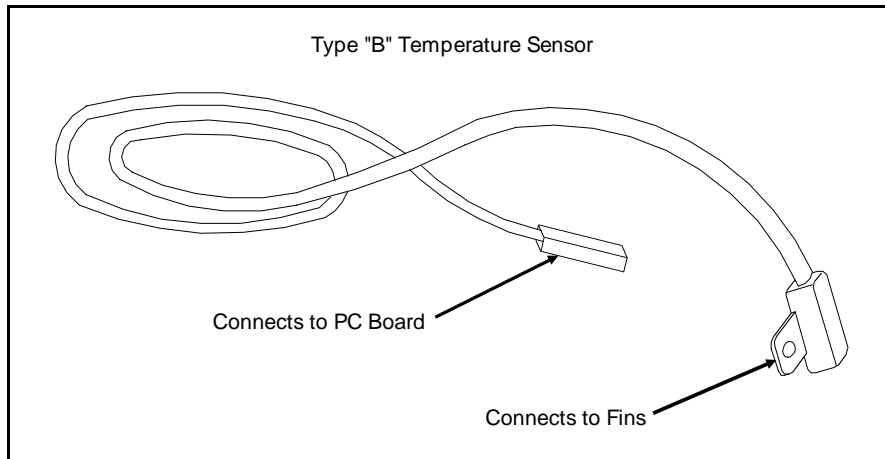


Figure 4.12b Type B Thermistor

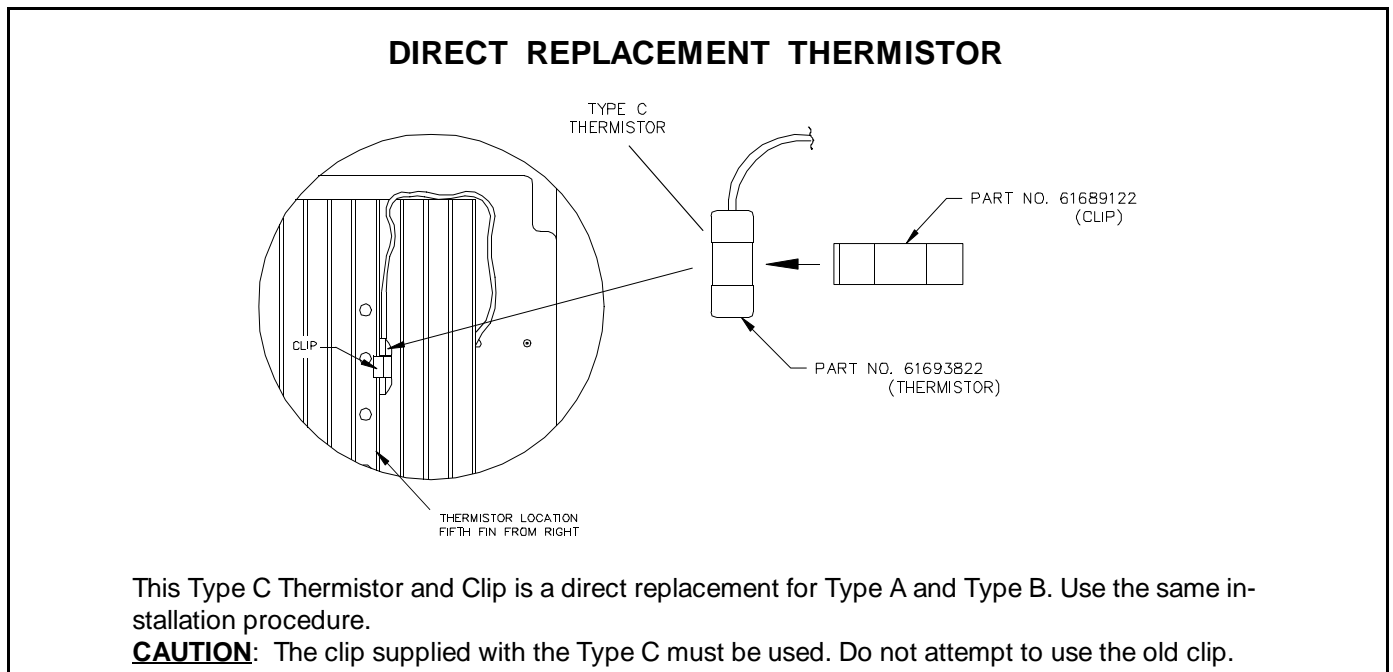


Figure 4.12c Type C Thermistor and It's Fin Location

### PC Board

If the correct input voltages are present, the PC Board will allow the owner to select the desired mode of operation, thereby supplying voltage to the circuits involved. The PC Board also supplies 12 Volts DC for operation of the interior lamp and the High Humidity heater. It also illuminates the L.E.D.s involved with the selected mode.

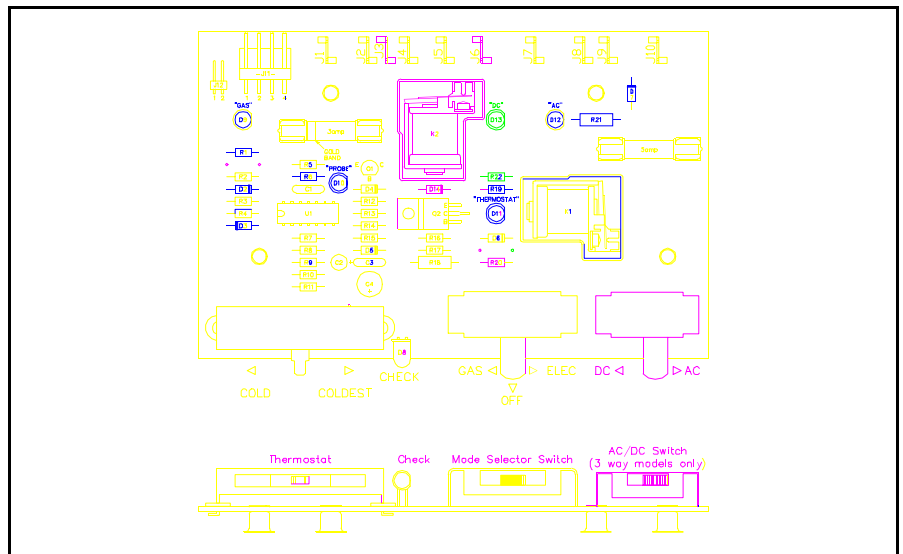


Figure 4.13 PC Board

### Ignition Module

The Ignition Module is used only during gas operation, and does the following:

1. Supplies 12 volt DC to open the Gas Valve.
2. Supplies power to Ignition electrode to ignite the burner.
3. Senses the flame through the Ignition electrode.
4. When the burner ignites and stays lit, the Ignition Module turns off the spark.
5. When the burner does not ignite, or ignites and goes out when the sparking stops, the Ignition Module will close the Gas Valve turning off the gas supply to the burner and illuminate the red check lamp.

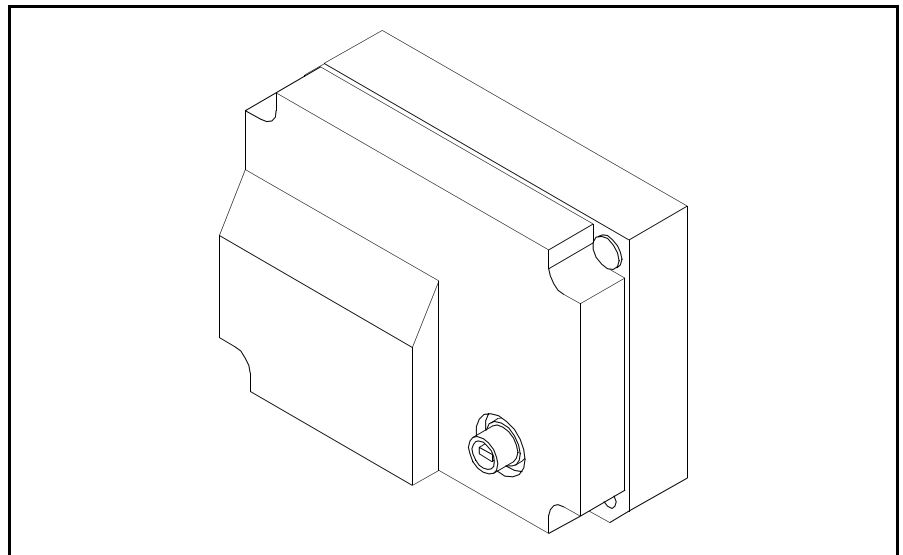


Figure 4.14 Ignition Module

### Gas Valve Assembly

The Gas Valve (solenoid valve) opens when 12 volts is supplied and closes when 12 volts is removed. When the valve opens, LP gas will flow to the burner.

The manual shut-off valve provides means to shut off the gas supply to the refrigerator.

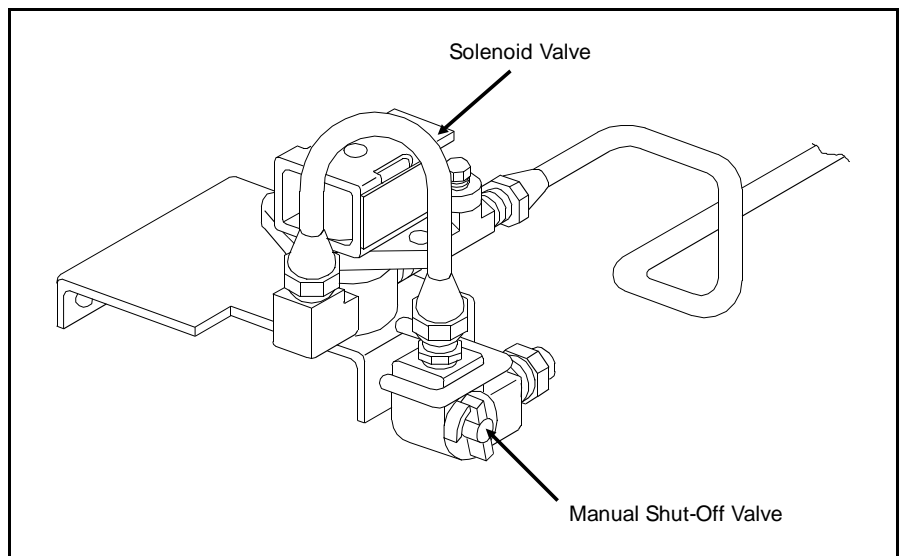


Figure 4.15 Gas Valve Assembly

### Orifice

The orifice applies the correct amount of LP gas to the burner, provided the main gas line pressure is correct.

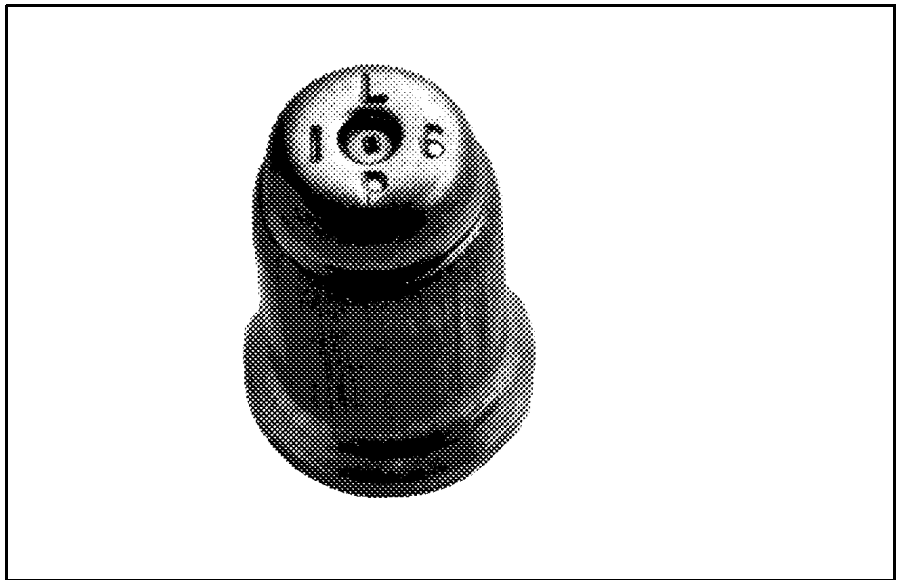


Figure 4.16 Burner Orifice

### Burner

The Burner applies heat to the generator section of the cooling unit so long as it receives the correct amount of LP gas and air.

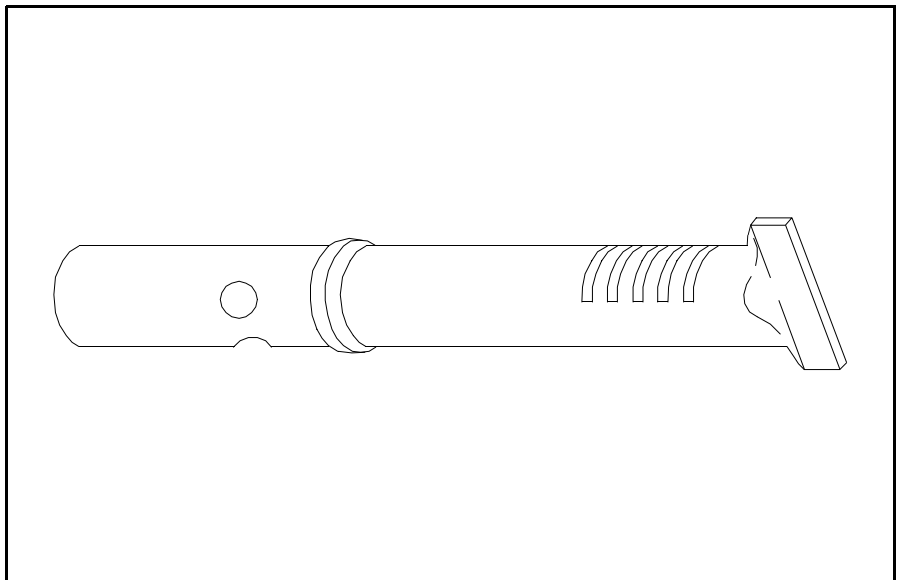


Figure 4.17 Burner

### Ignition Electrode

Sends sparks the burner to ignite the flame when supplied with energy from the Ignition Module. Also senses the heat of the flame and signals Ignition Module whether or not a flame is present.

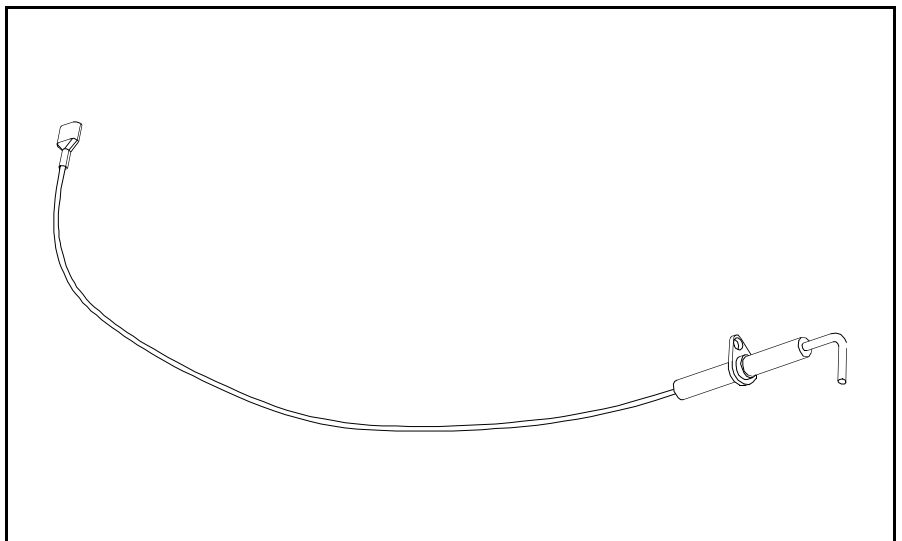


Figure 4.18 Ignition Electrode

### AC heating element

Applies specific amount of heat to the cooling unit. The heater wattage rating and operating Voltage is important for proper cooling. Figure 4.19 illustrates (A) the type used with the earlier Standard Burner and (B) the current Horizontal Burner.

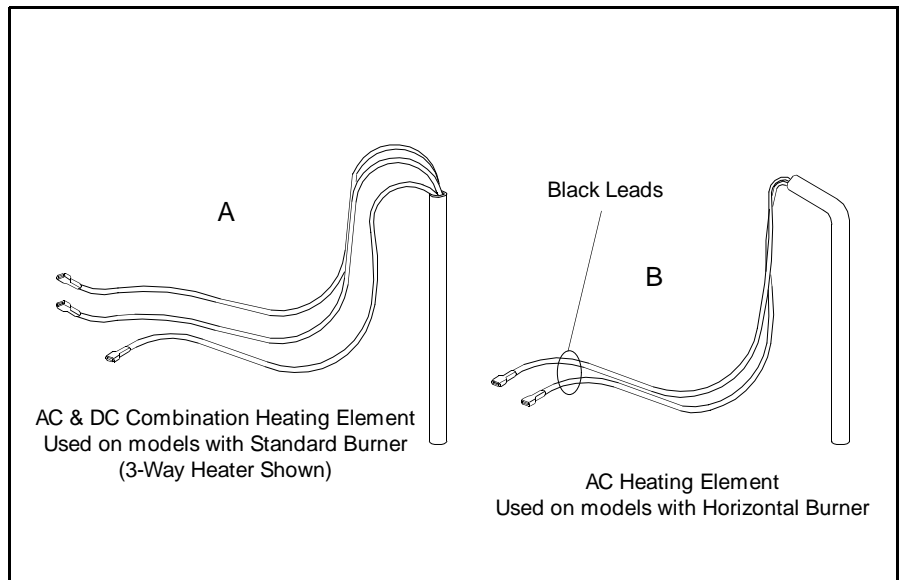


Figure 4.19 Illustration of Heater Types

### DC heating element

Applies specific amount of heat to the cooling unit, providing the DC input voltage is correct. The DC heating element does not have the capability to cool the refrigerator from an initial start, but has the capability to maintain the temperature for a short duration.

### High Humidity - Storage - Normal Operation

Setting this switch to HIGH HUMIDITY will keep the surface between the door openings dry during high humidity conditions. This position will also allow the interior light to work when the refrigerator door is opened. The NORMAL OPERATION position keeps the Humidity Heater from operating, but allows the Interior Light to operate when the door opens. The switch should be left in the NORMAL OPERATION position unless condensation is observed in this area.

When the RV is being stored for the winter this switch should be put in the STORAGE (Light Off) position. This shuts off all DC power to the light and Humidity Heater and allows the refrigerator door to be left open for airing without chance of battery drain during storage.

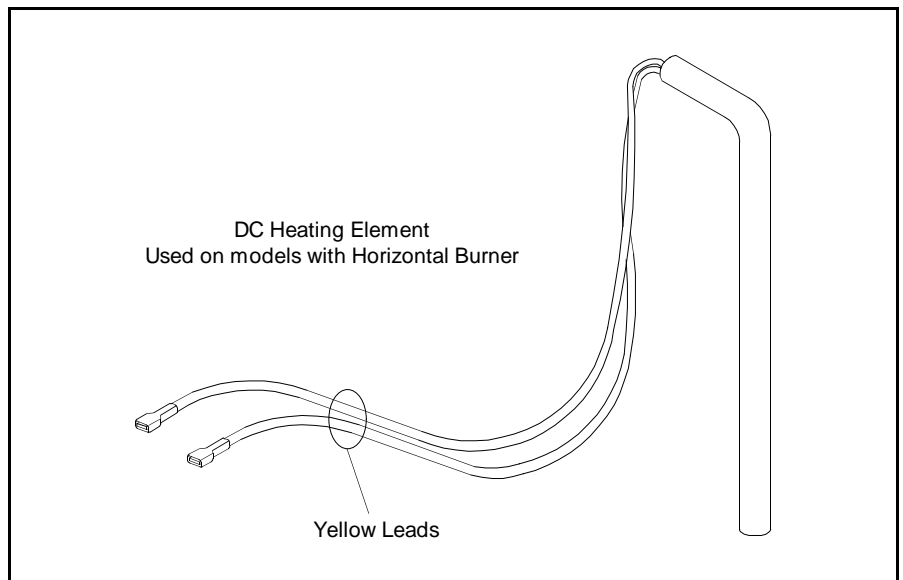


Figure 4.20 DC Heater (Current)

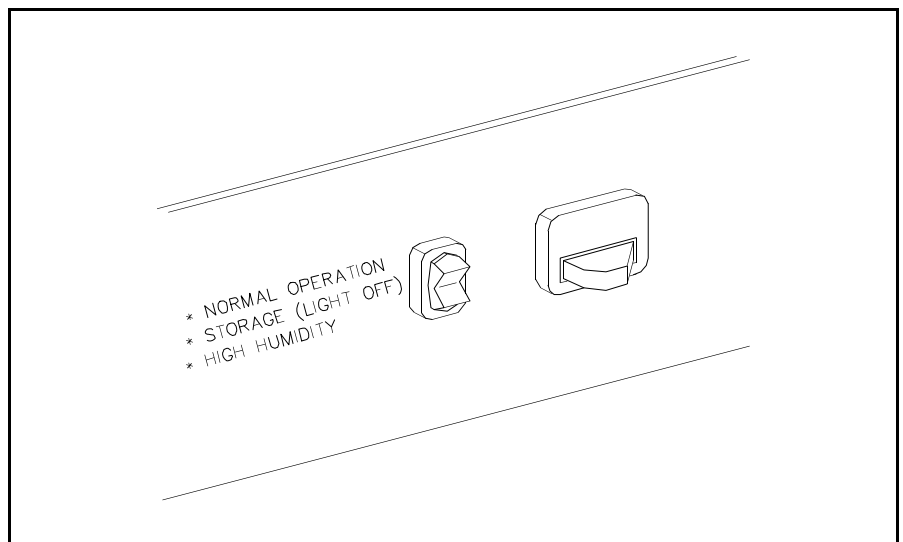


Figure 4.21 Divider Switches

## Troubleshooting

### IMPORTANT:

The trouble shooting procedures which follow require that each check be performed in sequence. Conclusions made at any point in the procedure presume that all preceding steps have been followed.

### Diagnostic L.E.D.s Location and Explanation

1. THERMOSTAT (yellow) L.E.D. indicates that 12 Volts DC is supplied through the 3 amp fuse. The L.E.D. will only turn off when the Thermostat is satisfied.
2. CHECK (Red) L.E.D. indicates that 12 Volts DC has been applied to the Ignition Module and the ignition sequence has failed.
3. GAS (red) L.E.D. indicates that the thermostat is turned on and 12 Volts DC is being supplied through the selector switch to Ignition Module.
4. DC (red) L.E.D. indicates that the thermostat is turned on and DC voltage is being supplied to the DC Heater terminals (J-3 and J-6) of the PC Board.
5. AC (red) L.E.D. indicates the thermostat is turned on and AC voltage is being supplied to the AC Heater terminals (J-7 and J-8) of the PC Board.
6. PROBE (yellow) L.E.D. For Factory use only. Do not use.

### LP Gas mode of Operation

Answer these questions before calling Norcold's Technical Services:

1. Is the mode selector switch set to the Gas position?
2. Is the Thermostat set to the mid-range position or colder?
3. Is 12 volt DC being supplied to the refrigerator's DC terminal block?

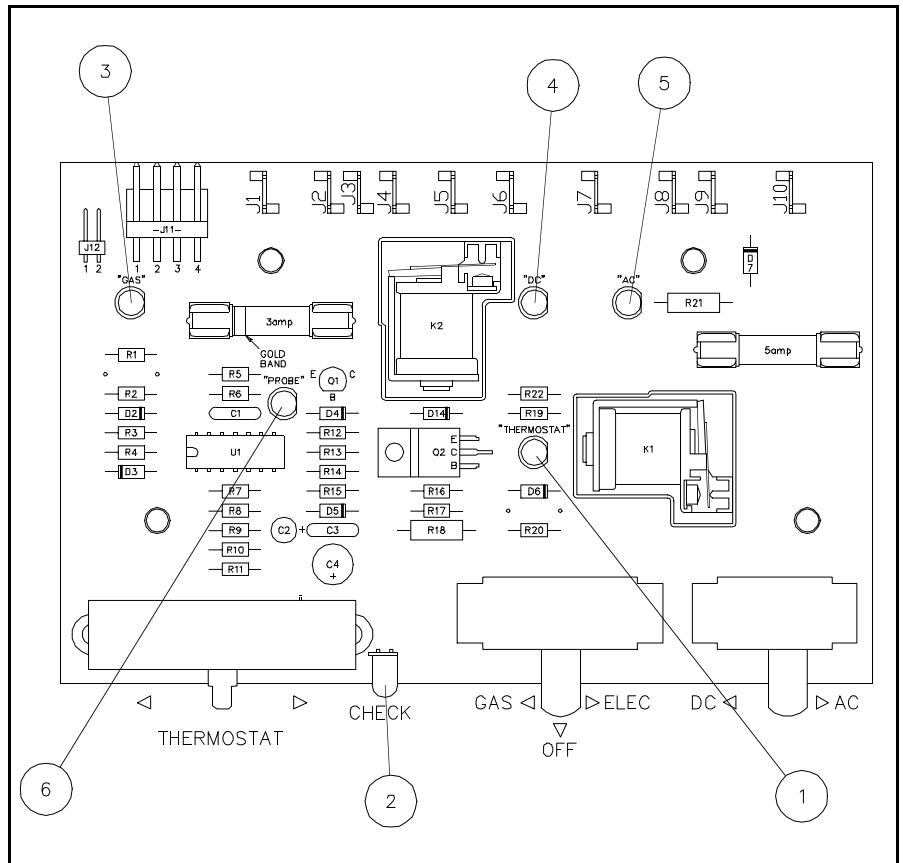


Figure 4.22 PC Board

4. Is 12 volt DC being supplied to the refrigerator's PC Board at terminals J-4 (-) and J-5 (+) ?
5. Is the 3 amp fuse blown (located on PC Board)?
6. Is the wire harness which supplies voltage to the Ignition Module connected to the PC Board and at the Ignition Module?
7. Is 12 volt DC present across solenoid Gas Valve terminals? (Voltage reading must be taken during a trial for ignition.)
8. Is the System LP Gas pressure set at 11" W.C.? What is the gas pressure to the pressure tap tee, located at the rear of the refrigerator, at the 12 volt solenoid Gas Valve? (Must be 10" W.C.)
9. Is sparking present at the burner?
10. Is the ignition wire connected at the Ignition Module and at the electrode?
11. Is the spark gap correct? (1/8" from top of Burner Head.)
12. Is the sense electrode located in flame (earlier versions only)?
13. Is the sense electrode free of carbon build-up (earlier versions only)?
14. Is the ceramic on sense electrode cracked (earlier versions only)?
15. Is the sense electrode mounted tightly to the burner bracket (earlier versions only)?
16. At the combustion chamber of the cooling unit which houses the spiral baffle. Is this area clean and free from obstruction?
17. Is the spiral baffle in place?
18. Is the burner orifice clean and the correct size?

**The following is a systematic approach for tracing faults in the gas mode:**

1. Set Mode selector switch to the "Gas" position as shown in Figure 4.23.
2. Set Thermostat to the mid-range position or higher to insure it is calling for cooling.

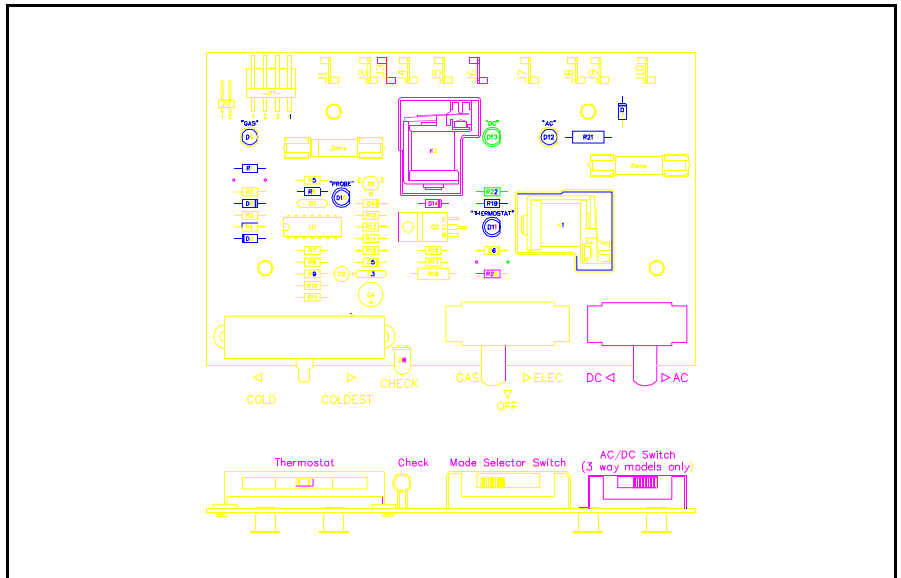


Figure 4.23 Switch Settings for Checking Gas Mode

3. Check for 12 volt DC at the DC terminal block as shown in Figure 4.24.

Acceptable readings:  
 15.4 volts DC max.  
 10.5 volts DC min.

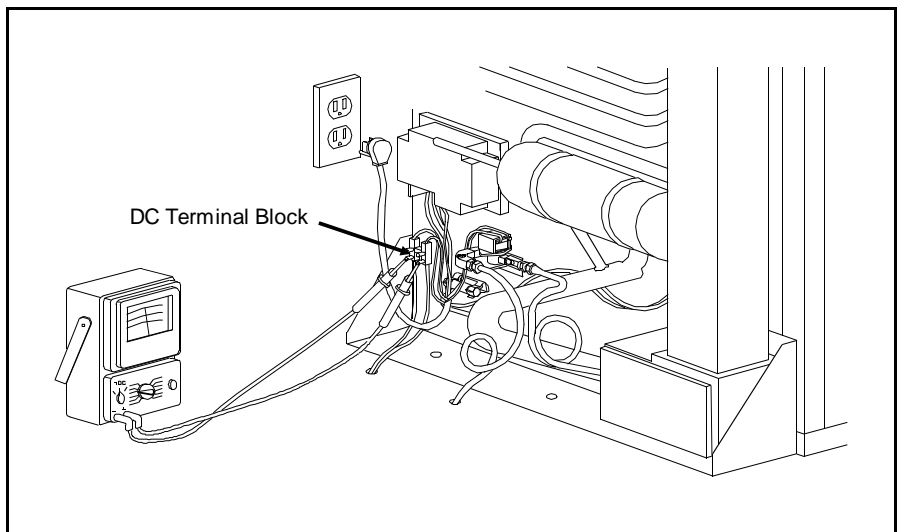


Figure 4.24 12 Volt DC Supply Check

4. Remove the 4 screws shown in Figure 4.25.

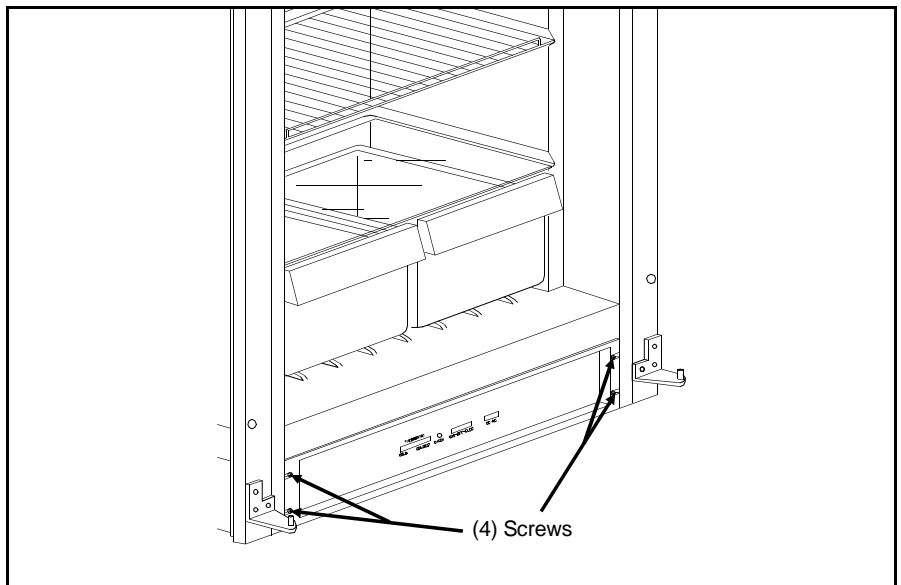


Figure 4.25 Access to PC Board

- Using extreme care, pull the control panel forward and the PC Board will be visible, as shown in Figure 4.26.

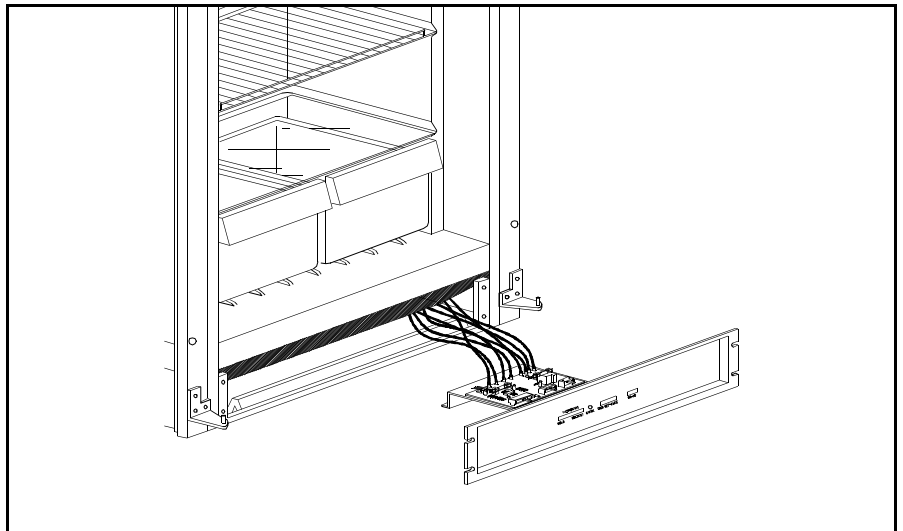
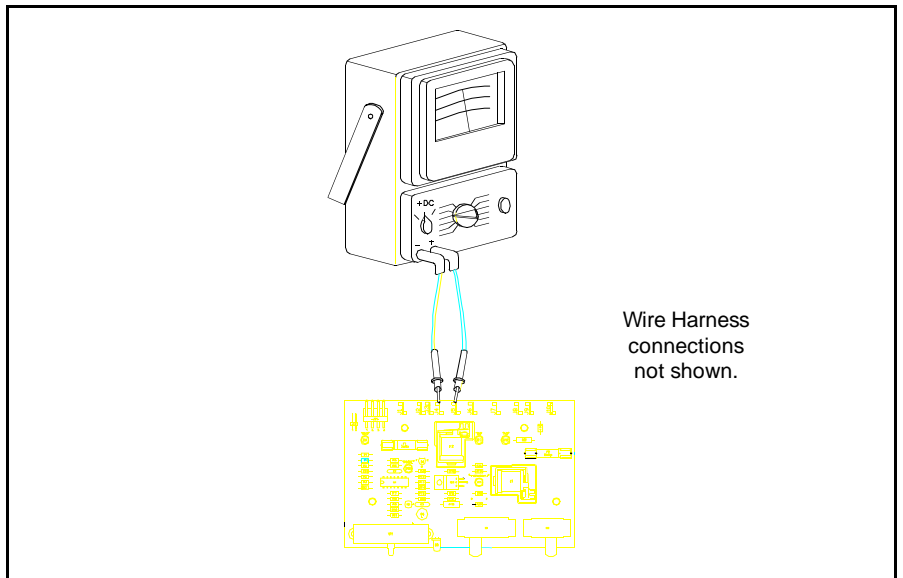


Figure 4.26 Withdrawing Control Panel

- Without disconnecting any of the wire connections to the board, check for 12 volt DC between terminals J-4 (-) and J-5 (+) (15.4 volts DC max. and 10.5 Volts DC min.) as shown in Figure 4.27.

- Check the 3 amp fuse as shown in Figure 4.28. You must read 12 Volts DC between both ends of the fuse and ground. If not, replace the fuse. Use J-4 (-) for the negative probe point.



Wire Harness connections not shown.

Figure 4.27 12 Volt DC Check

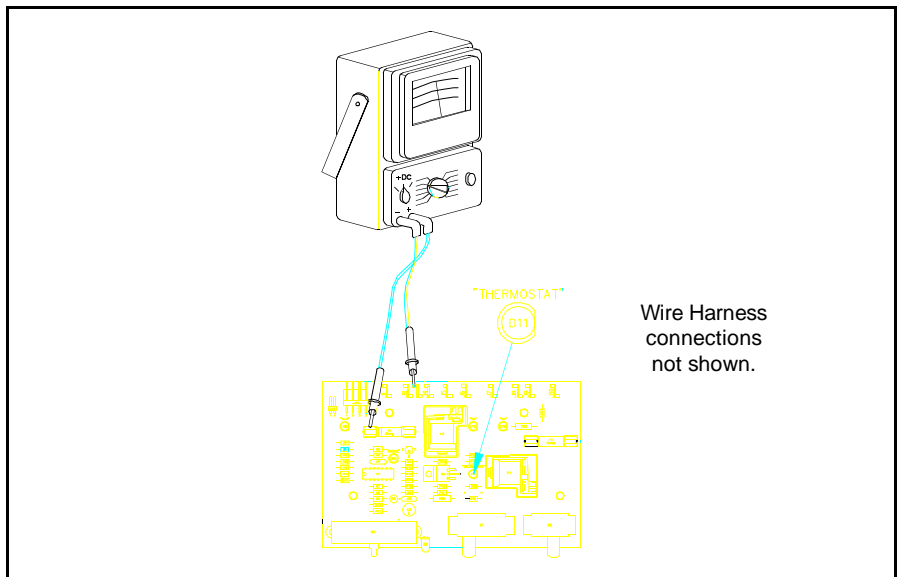
**⚠ WARNING**

NEVER OVERFUSE A CIRCUIT. REPLACE BLOWN FUSE WITH EXACT REPLACEMENT INDICATED BY NORCOLD. DO NOT OVERFUSE THE CIRCUIT. OVERFUSING OF A CIRCUIT CAN RESULT IN A FIRE.

- The Thermostat (yellow) L.E.D. must be on. If the THERMOSTAT L.E.D. is not on, replace PC board.

Note:

The Thermostat L.E.D. will not be on when the Thermostat is satisfied.



Wire Harness connections not shown.

Figure 4.28 3 Amp Fuse Check

- 9. The (red) GAS light must be on as shown in Figure 4.29. If the gas light is not on replace PC Board.
- 10. Check the 4 pin connector attached at the Ignition Module to insure there are no loose connections.

**Note:**

If checks 8 and 9 show correct indications, there is no problem with the PC Board in the Gas Mode.

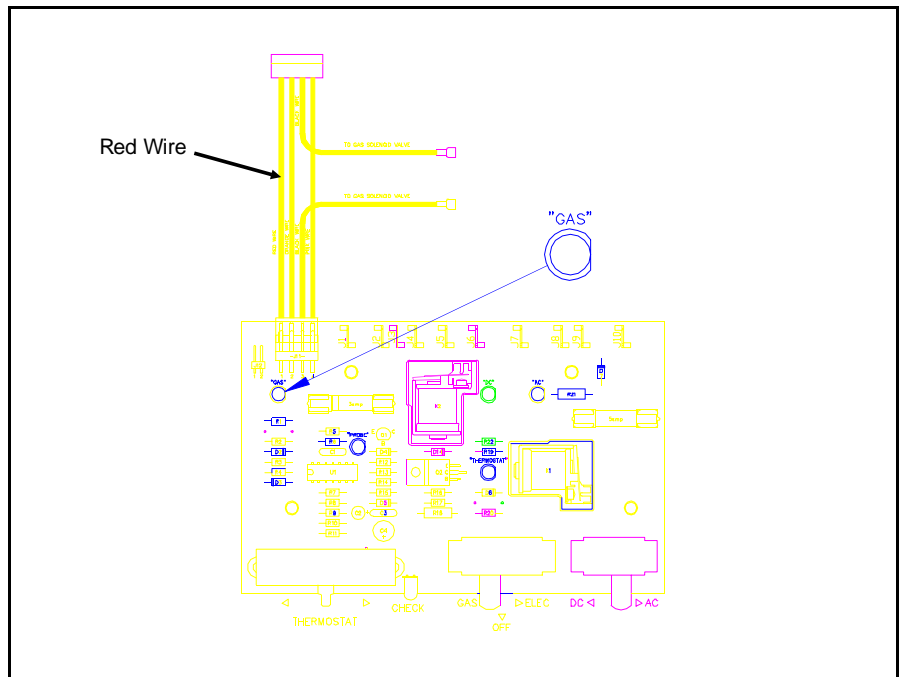


Figure 4.29 Gas Light Location

- 11. Make sure the main line LP gas supply is "on" as shown in Figure 4.30.

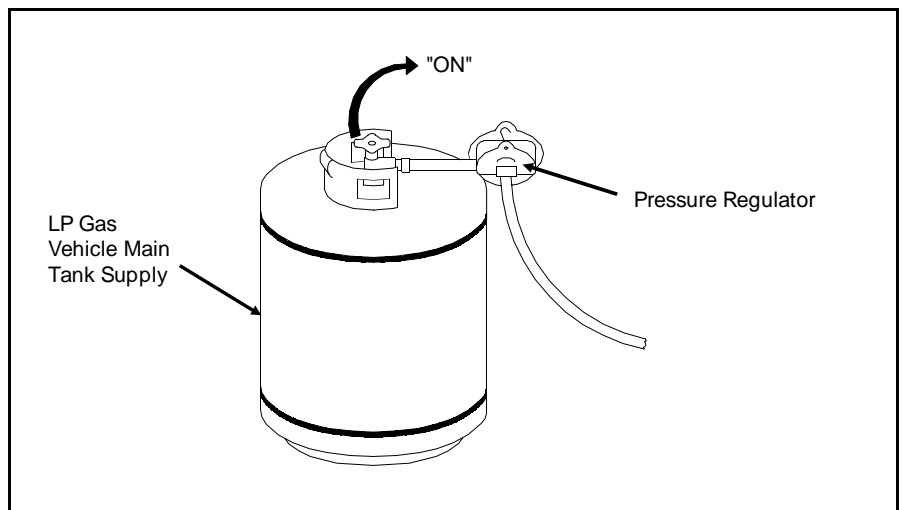


Figure 4.30 Main Gas Valve Check

- 12. Check the manual shut-off valve to insure it is in the "ON" position. See Figure 4.31.
- 13. Check for 12 volts at the 4 wire connector which attaches to the Ignition Module (red wire) as shown in Figure 4.29.

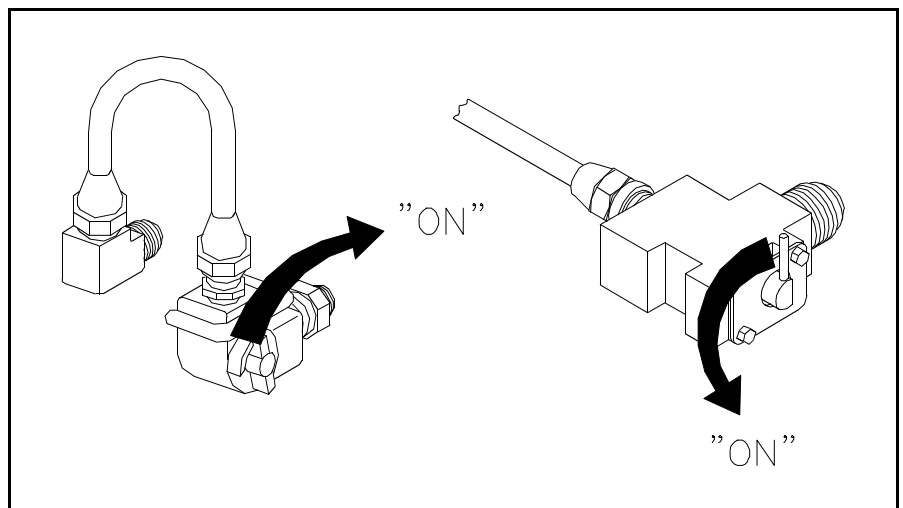


Figure 4.31 Manual Valve (Alternate Versions)



14. Check for 12 volts at the Gas Valve terminals as shown in Figure 4.32. If a flame is not established, 12 volts will only be detected during the trial for ignition. A reading of 12 volts confirms that voltage is properly routed to the Gas Valve.
15. If 12 volts is not present at the Gas Valve, and connections are proper, replace the Ignition Module.

**Note:** Be sure that the module is not in lockout, since 12 volts is de-energized during lockout and the module would be replaced unnecessarily.

16. If 12 volts is read at the valve yet the valve does not open, replace the Gas Valve.

17. Check to insure that the Ignition Module is sending sparks to the burner and that the electrode is adjusted as shown in Figure 4.33. See end of section for illustrations of earlier burner/electrodes.

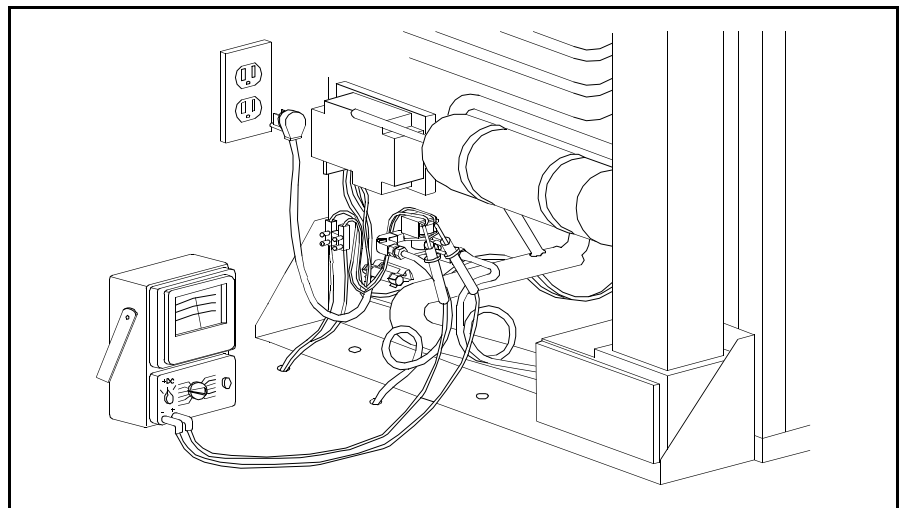


Figure 4.32 12 VDC Check at Gas Valve

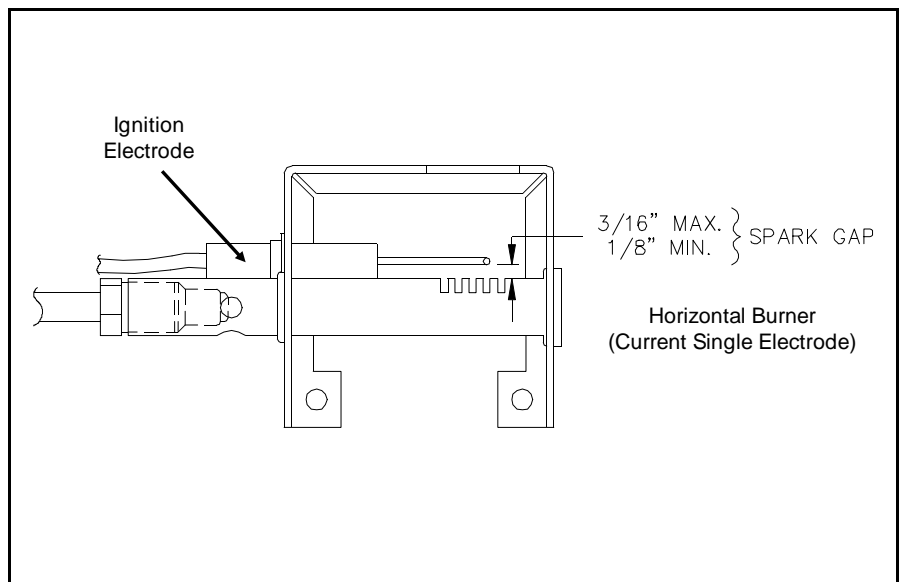


Figure 4.33 Proper Spark Gaps

18. Check to insure there are no loose connections at the electrode and Ignition Module. See Figure 4.34.

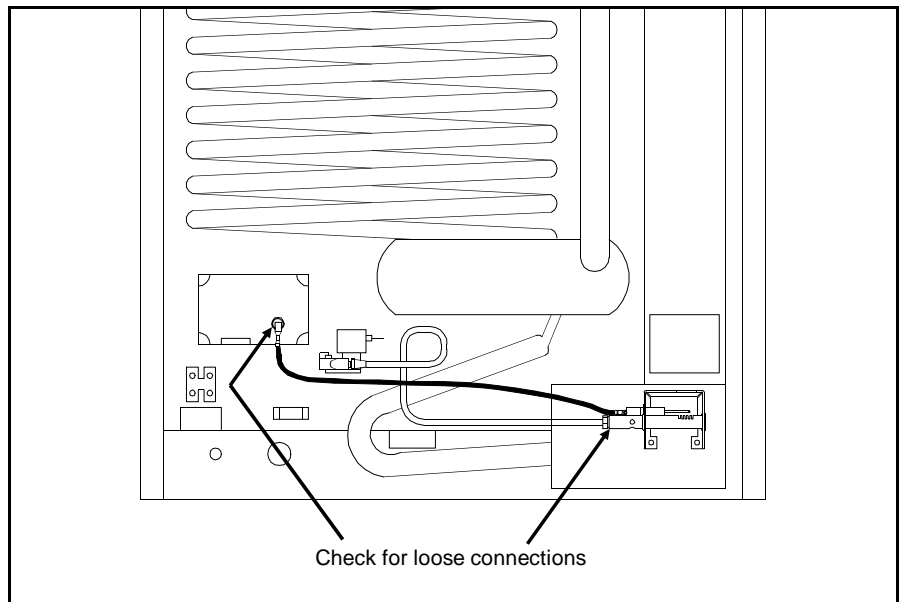


Figure 4.34 Spark Electrode Connections

19. Check continuity of the Ignition wire as shown in Figure 4.35. The meter should indicate a short circuit as shown. If not, the Ignition wire must be replaced.
20. Check for indications of cracks in the ceramic of the electrode(s).
21. Check for carbon build-up on the Sense electrode (if present). See Figure 4.33 for the Sense electrode location.
22. The electrodes should show an open circuit to ground as referenced in Figure 4.36. Check with meter as follows:
  - A. Turn the mode selector switch to OFF.
  - B. Use an ohmmeter on the Rx 10,000 scale or higher
  - C. Disconnect the wires to the electrodes.
  - D. Check for continuity between the electrodes and ground. Any needle movement indicates a bad electrode and it must be replaced.

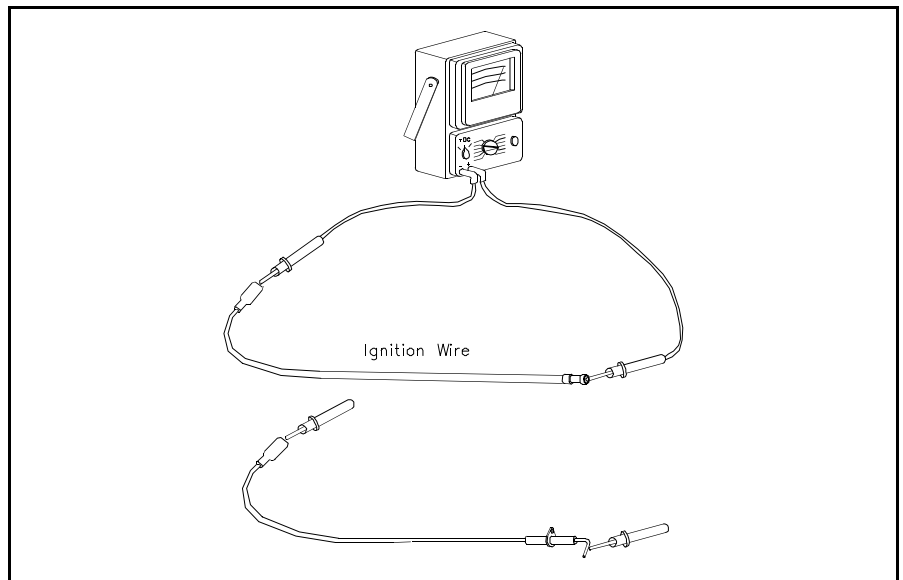


Figure 4.35 Ignition Wire Continuity Test

23. If the flame ignites then goes out after sparking ceases (10 seconds), at the burner:
  - A. Connect a manometer to the Gas Valve as shown in Figure 4.37.
  - B. With the supply gas pressure to the refrigerator at 11" W.C. (Refer to gas pressure section on how to check main supply pressure), the pressure must be checked at the refrigerator. The check point is at the pressure tap tee, located on the burner side of the gas solenoid valve.
  - C. If the gas pressure reading at the pressure tap tee is less than 10.5" W.C. with the main line pressure reading 11" W.C., replace Gas Valve. ALWAYS REPLACE 1/8" PLUG AT PRESSURE TAP.

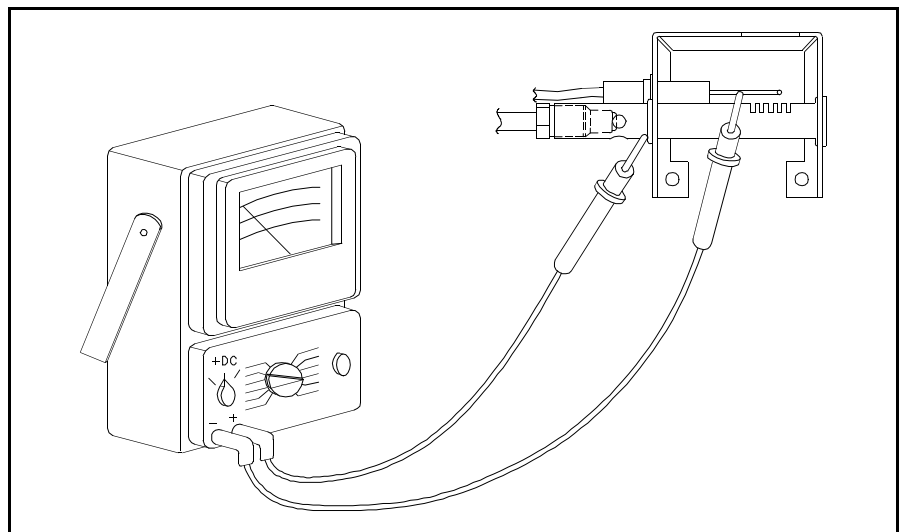


Figure 4.36 Ground Continuity Check

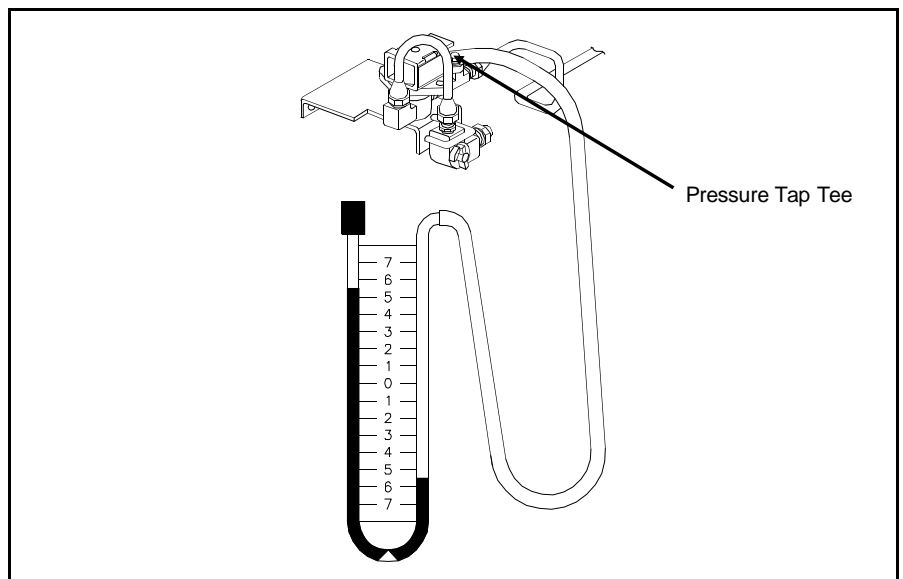


Figure 4.37 Manometer Installed at Pressure Tap

- D. Check the burner and orifice for obstructions, abnormal corrosion, spider webs, etc. as shown in Figure 4.38. See back of section for earlier versions.

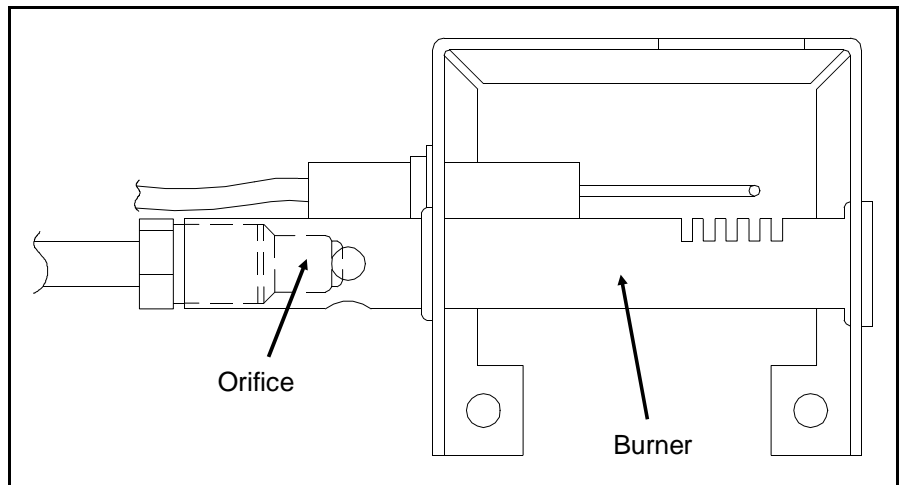


Figure 4.38 Burner and Orifice Assembly

- E. Check for corrosion build-up at the connection point (Edge Connector) of Ignition Module. See Figure 4.39. If corrosion is visible at connection point, clean with eraser of pencil. At the same time, the connections to the PC Board should be checked.

- F. If the flame still does not stay lit, replace the Ignition Module.

24. If the Ignition Module continues to spark while the flame is burning:

- A. Complete steps 23A-F.
- B. Clean the Flue tube and Baffle.
- C. If the problem is not corrected, replace the Ignition Module.

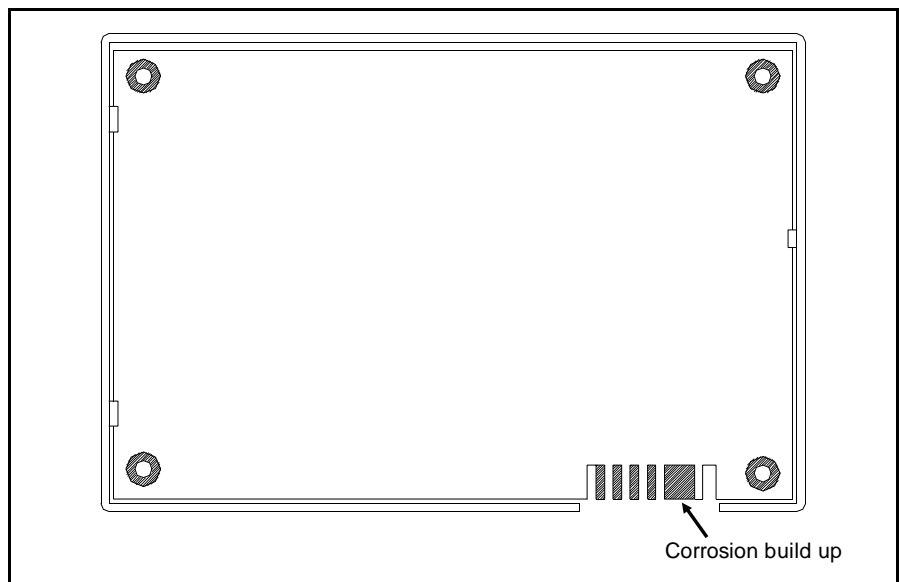


Figure 4.39 Edge Connector Location

25. If the flame is burning (Figure 4.40) but the red Check Light is on while the refrigerator is operating properly:

- A. Check for a pinched wire in the wire harness between the PC board and the Ignition Module.
- B. If the red Check Light remains on, replace the Ignition Module.

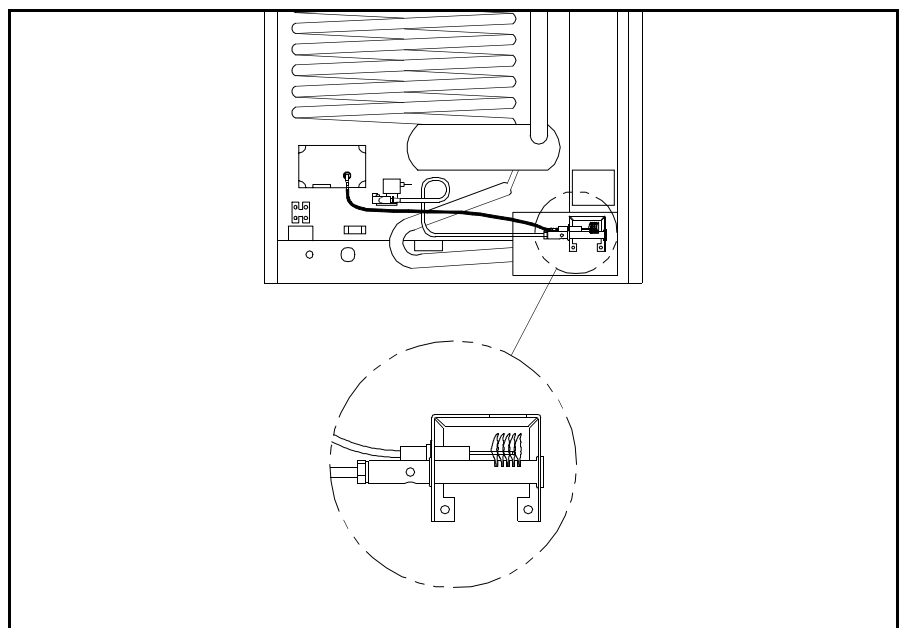


Figure 4.40 Burner Flame Check

## AC Electric Mode of Operation

See Figure 4.22 for location and explanation of Diagnostic L.E.D.'s.

### **⚠ WARNING**

USE EXTREME CAUTION WHEN WORKING ON THE AC ELECTRICAL COMPONENTS OF THE REFRIGERATOR. BEFORE REPLACING ANY ELECTRICAL COMPONENT, DISCONNECT THE AC POWER SOURCE TO THE REFRIGERATOR TO THE REFRIGERATOR. ELECTRICAL VOLTAGE CAN CAUSE SEVERE INJURY AND DEATH.

Answer these questions before calling Norcold's Technical Service:

1. Is the mode selector in the "ELEC" position? In case of 3-Way models, is the AC/DC switch set to "AC"?
2. Is the Thermostat set to the mid-range position or colder?
3. Is 120 volt AC being supplied to the receptacle into which the refrigerator is plugged?
4. Is the refrigerator AC Power Cord plugged into the receptacle?
5. Is 12 volt DC being supplied to the refrigerator DC terminal block? REMEMBER THAT 12 VOLTS DC IS REQUIRED TO OPERATE IN ANY MODE.
6. Is 120 volt AC being supplied to the refrigerator PC Board at terminals J-9 and J-10?
7. Is 12 volt DC being supplied to the refrigerator PC Board at terminals J-4 (-) and J-5 (+)?
8. Is the 5 amp fuse blown? (Located on PC Board.)
9. Is the 3 amp fuse blown? (Located on PC Board.)
10. Is AC voltage being supplied to the AC Heating Element?
11. Is the AC Heating Element the proper wattage?
12. Did you check for loose wire connections or pinched wires?

## The following is a systematic approach for trouble shooting in the AC Electric Mode:

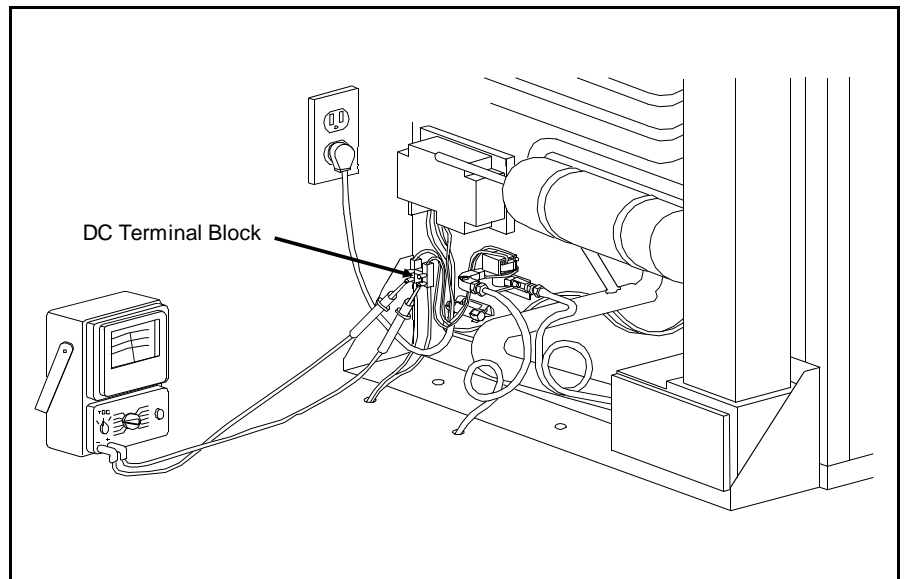


Figure 4.41 12 Volt DC Supply Check

1. Set Mode Selector to the "ELEC" position. In case of 3-Way models, set the AC-DC switch to "AC" position.
2. Set Thermostat to the mid-range position or higher to make sure it is calling for cooling.
3. Check for 12 volt DC at the DC terminal block as shown in Figure 4.41. If 12 volts not present, investigate/repair source.

**Note:**

Models 876 and 878 require 12 volts DC to operate in this mode.

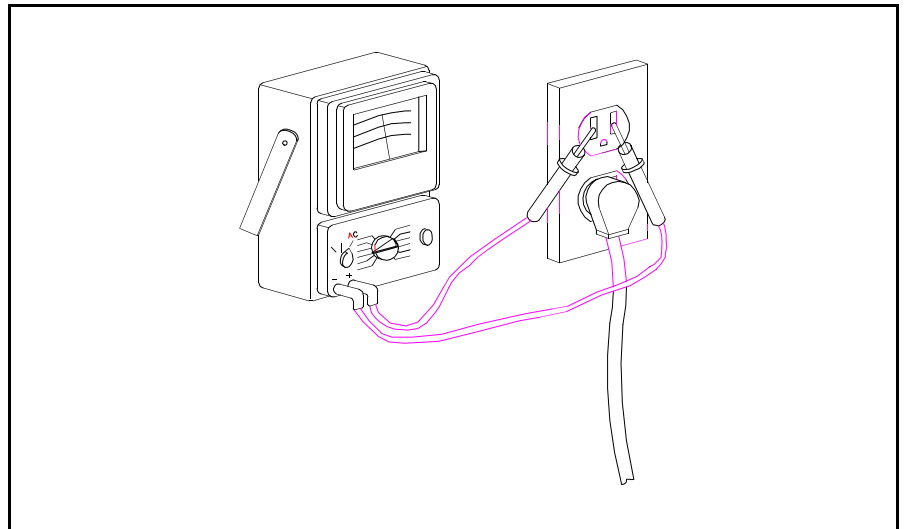


Figure 4.42 120 Volt AC Supply Check

4. Is the refrigerator AC cord plugged into the AC receptacle?
5. Check for 120 volts AC at the receptacle to which the refrigerator is connected, as shown in Figure 4.42. If 120 volts not present, investigate/repair source.

- 6. Remove the four (4) control panel screws shown in Figure 4.43.

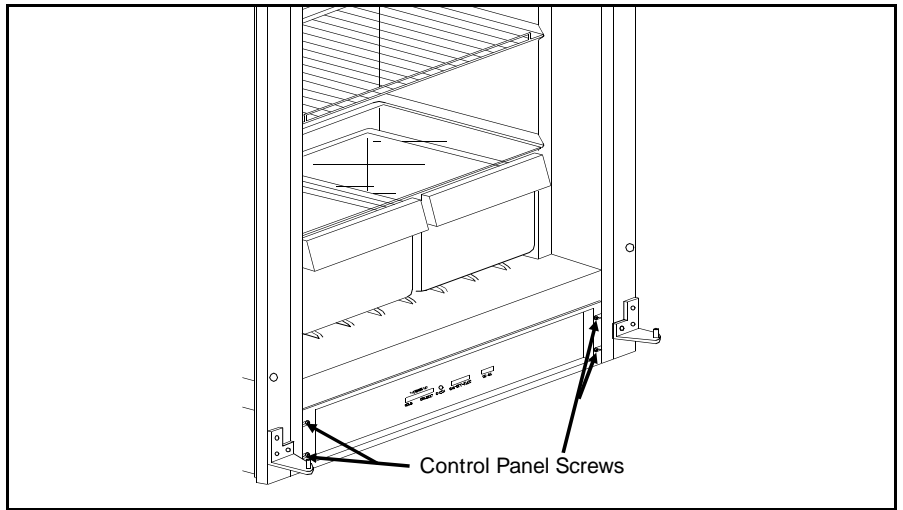


Figure 4.43 Access to PC Board

- 7. Using extreme care, pull the control panel forward and the PC Board will be visible as shown in Figure 4.44.

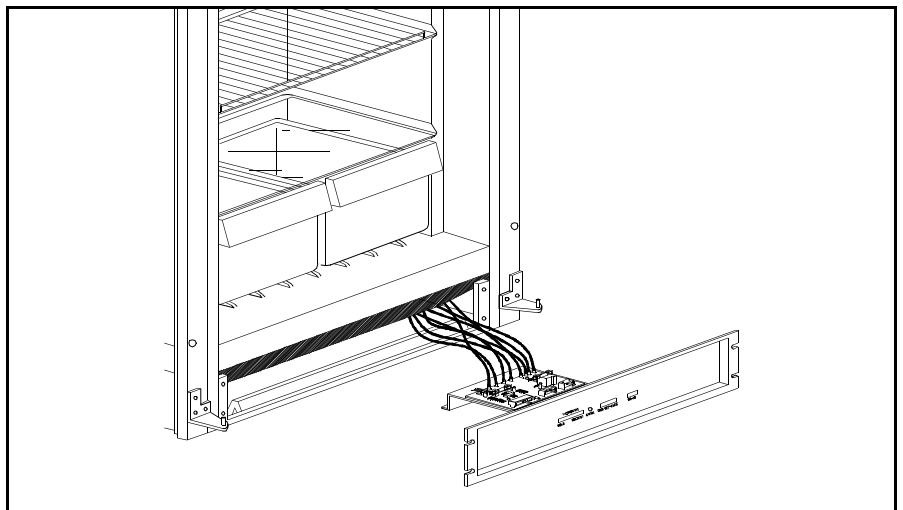


Figure 4.44 Withdrawing Control Panel

- 8. Without disconnecting any of the wire connections to the board, check for 12 volt DC between terminals J-4 (-) and J-5 (+) as shown in Figure 4.45. If 12 volts not present, a bad connection is indicated between the terminal block shown in Figure 4.41 and the PC Board.

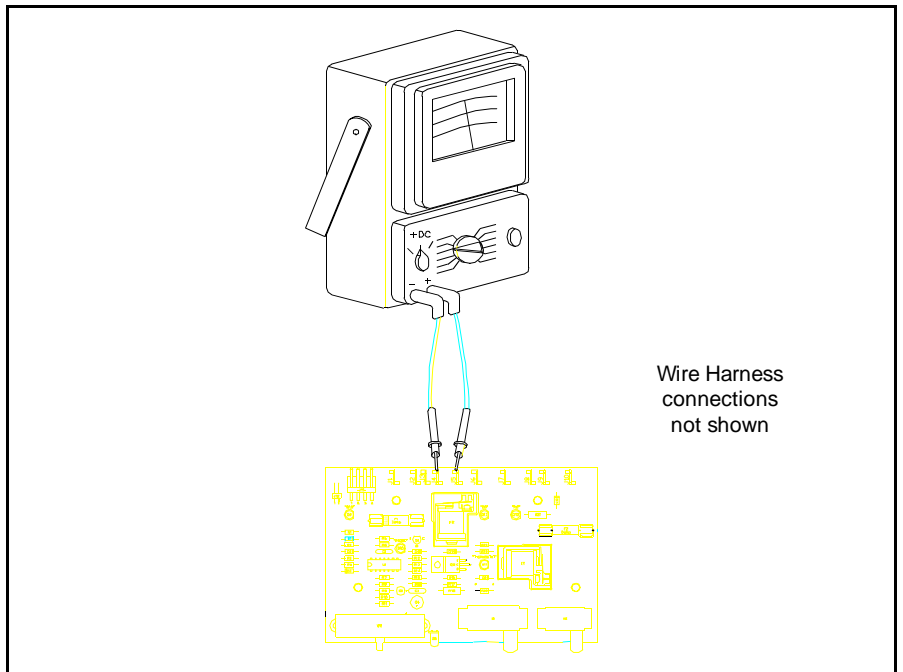


Figure 4.45 12 Volt DC Check

9. Check the 3 amp fuse located in Figure 4.46. You must read 12 Volt DC at both ends of the fuse and ground. Use J-4 (-) for the ground probe point. If the fuse is blown, replace it.

**! WARNING**

NEVER OVERFUSE A CIRCUIT. REPLACE BLOWN FUSE WITH EXACT REPLACEMENT INDICATED BY NORCOLD. OVERFUSING OF A CIRCUIT CAN RESULT IN A FIRE.

10. The Thermostat L.E.D., referenced in Figure 4.46, should now be on. If the refrigerator is calling for cooling and the Thermostat L.E.D. is not on, replace the PC board.

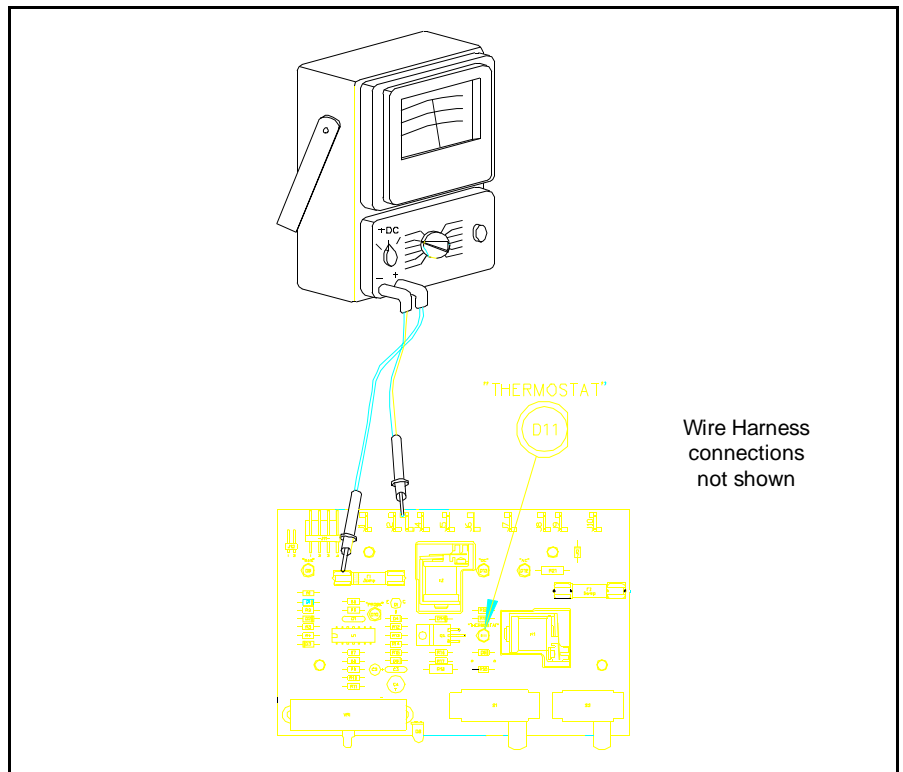


Figure 4.46 3 Amp Fuse Check

11. The "AC" L.E.D., referenced in Figure 4.47, must be on. If not:
  - A. Check for 120 Volts AC on the input end of the 5 Amp fuse as shown. Use J-8 or J-9 (NOT J-10) for the neutral probe point.
  - B. If 120 Volts is not measured, there is an open in the power cord and it must be replaced.

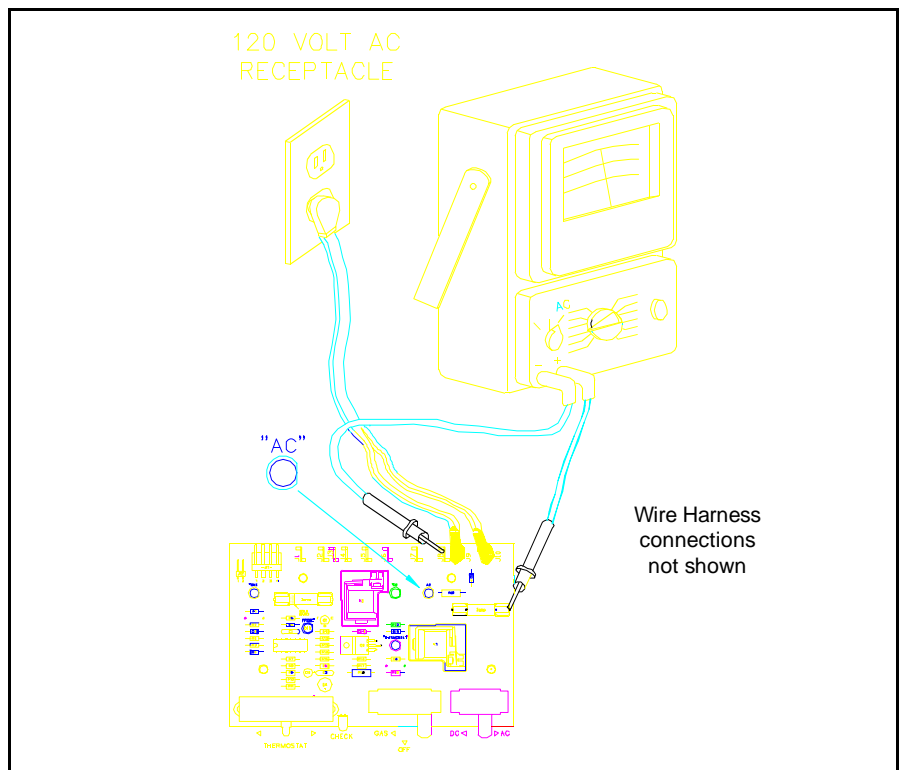


Figure 4.47 120 Volt Check at Input of 5 Amp Fuse

12. Check the 5 Amp fuse. 120 Volts must be read between the output end of the fuse and neutral as shown in Figure 4.48. Use J-8 or J-9 (NOT J-10) for the neutral probe point.
  - A. If 120 Volts is not measured, replace the 5 Amp fuse.

**⚠ WARNING**

NEVER OVERFUSE A CIRCUIT. REPLACE BLOWN FUSE WITH EXACT REPLACEMENT INDICATED BY NORCOLD. OVERFUSING OF A CIRCUIT CAN RESULT IN A FIRE.

- B. If 120 Volts is measured, the L.E.D. shown in Figure 4.48 must be illuminated.
- C. If L.E.D. (Figure 4.48) is not illuminated, replace the PC Board (Review steps 1 and 2 first).

13. If the ("AC") L.E.D. is on, but the refrigerator is not cooling:
  - A. Check for 120 volt AC between (output) terminals J-7 and J-8 of the PC Board per Figure 4.49. If 120 Volts AC is not present, replace the PC Board.

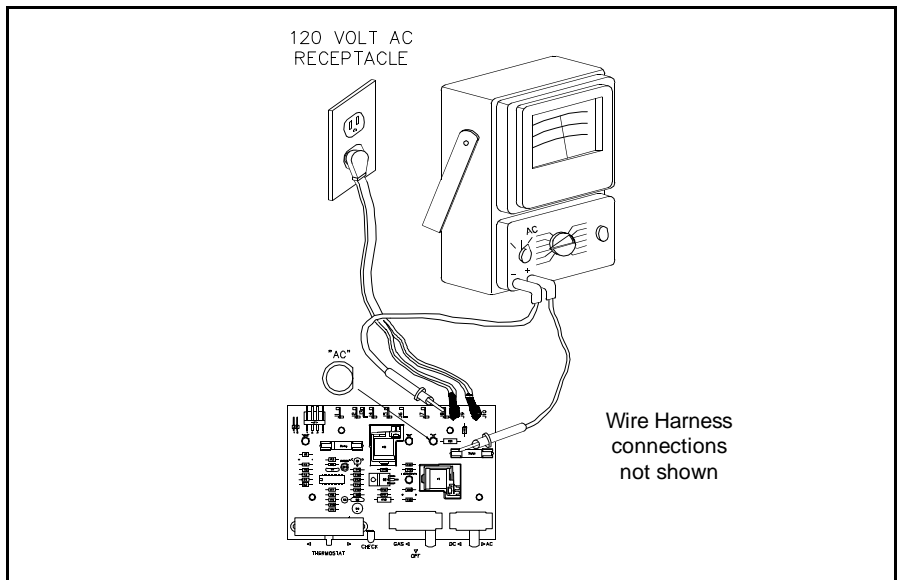


Figure 4.48 5 Amp Fuse Check

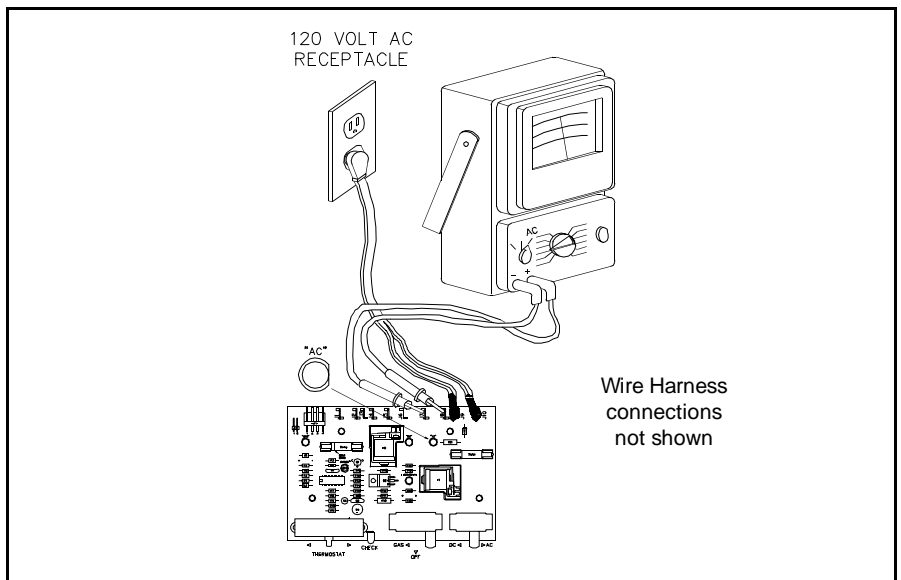


Figure 4.49 AC Output Check

- B. If 120 Volts AC is present, check resistance of A/C Heater element as shown in Figure 4.50. If not within the allowable specification (see Technical Data section), replace with one of the correct size and wattage.
- C. Set volt-ohm meter to the Rx10 scale or higher and check the heater element for a short to ground. The meter should show no movement.

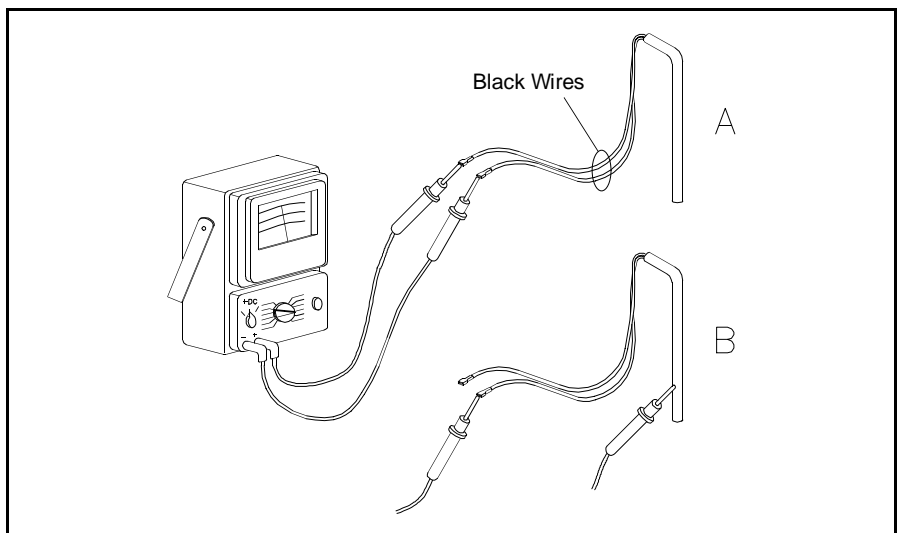


Figure 4.50 AC Heater Resistance Check

## DC Mode of Operation

See Figure 4.22 for location and explanation of Diagnostic L.E.D.'s.

Remember: this mode of operation is not designed to cool the refrigerator. This mode of operation is designed to maintain the temperature for short periods of time (4-6 hours) while in transit, once the temperature has been reached by either GAS or AC modes.

**Note:** DC mode requires that the DC voltage be: 15.4 volts DC max. 11.5 volts DC min.

Answer these questions before calling Norcold's Technical Service:

1. Is the mode selector switch set to the DC mode of operation (switches set to ELEC and DC)?
2. With the refrigerator operating, do you have DC voltage within 11.5 and 15.4 at the DC terminal block located at the rear of the refrigerator?
3. Is the 20 amp fuse blown? (Located at rear of refrigerator.)
4. Is 12 volt DC being supplied to the PC Board at terminals J-4 (-) and J-5 (+)?
5. Is the 3 amp fuse blown? (Located on PC Board.)
6. Is DC voltage being supplied to terminals J-3 (-) and J-6 (+) of the PC Board?
7. Did you check for loose wire connections?
8. Is the resistance of the DC Heating element correct? (Refer to Technical Data Sheet.)

**The following is a systematic approach for troubleshooting in the DC Electric Mode:**

1. Set the Mode Selector to ELEC AND THE AC-DC switch to the "DC" position.
2. Set Thermostat to the mid-range position or higher to ignore it is calling for cooling See Figure 4.51.

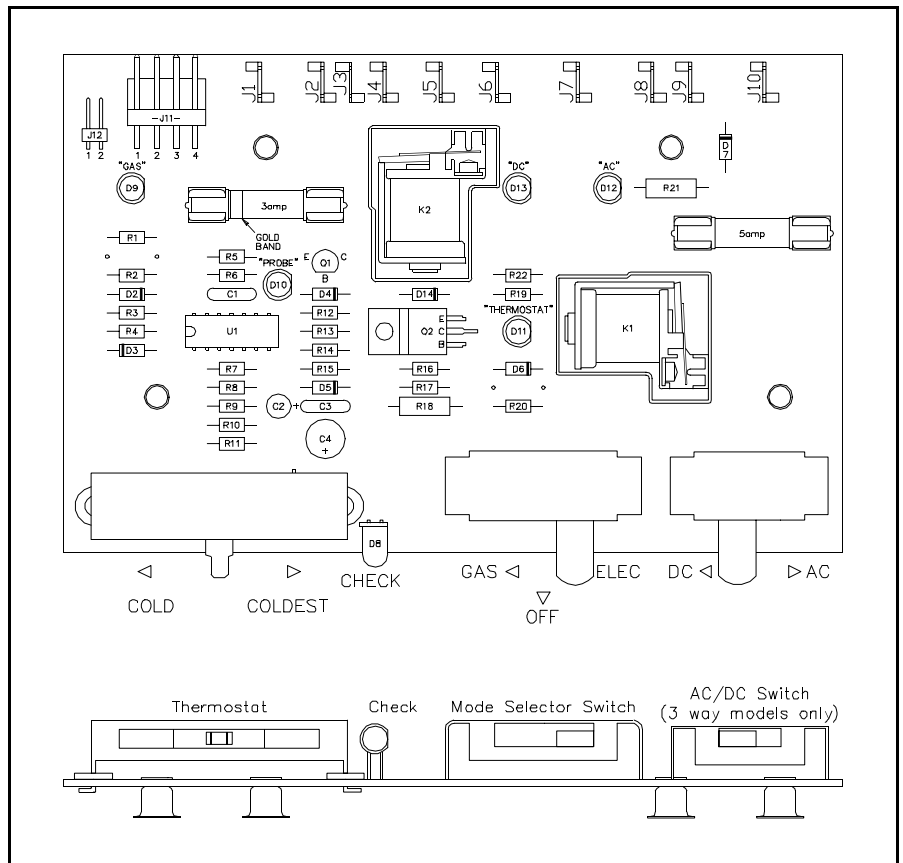


Figure 4.51 PC Board

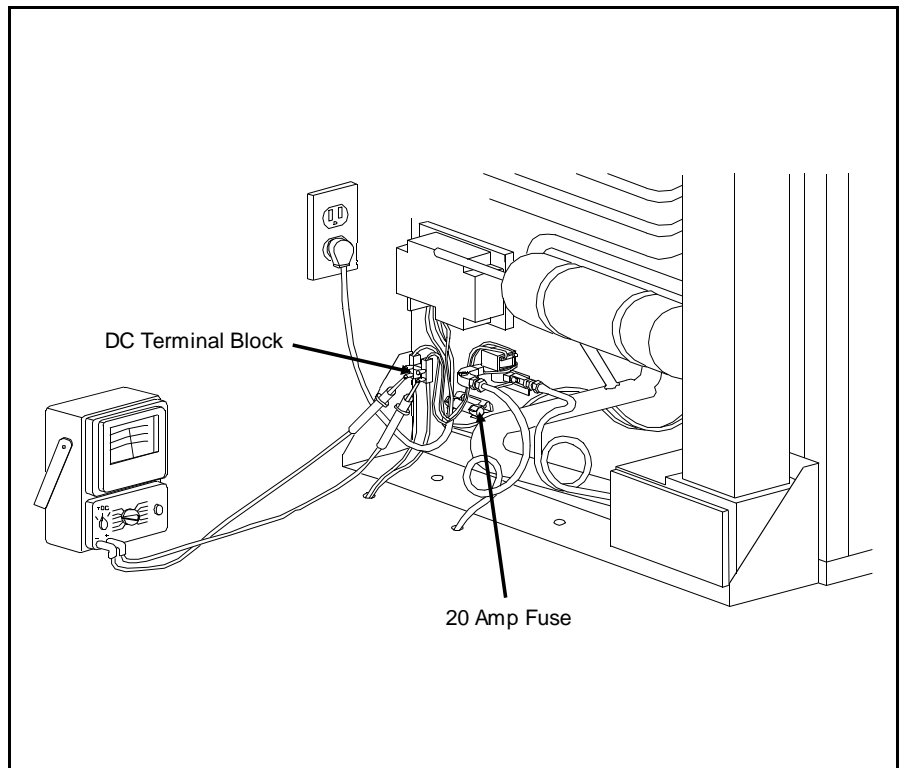


Figure 4.52 12 Volt DC Supply Check



3. Check for 12 volt DC at the DC terminal block as shown in Figure 4.52. If no voltage read, inspect/repair 12 Volt source.
4. Remove the four (4) control panel screws illustrated in Figure 4.53.

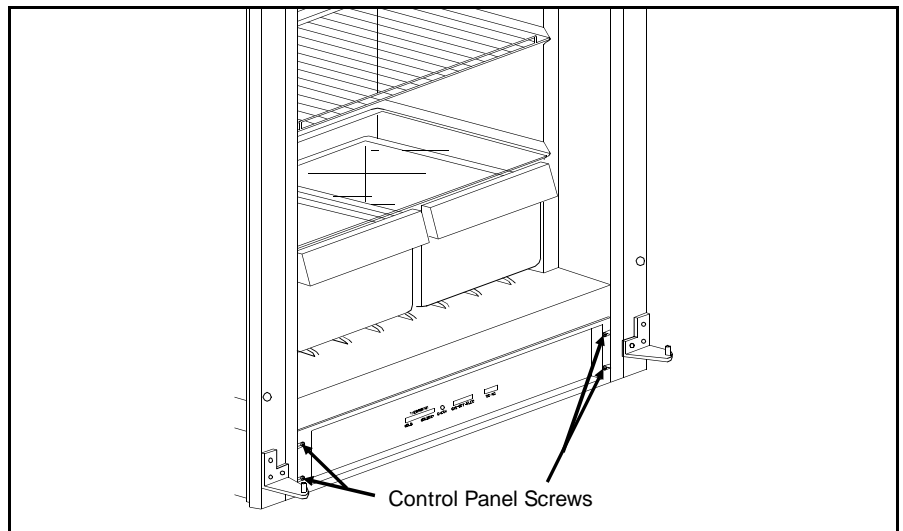


Figure 4.53 Access to PC Board

5. Using extreme care, pull the control panel forward, as shown in Figure 4.54, and the PC board will be visible.

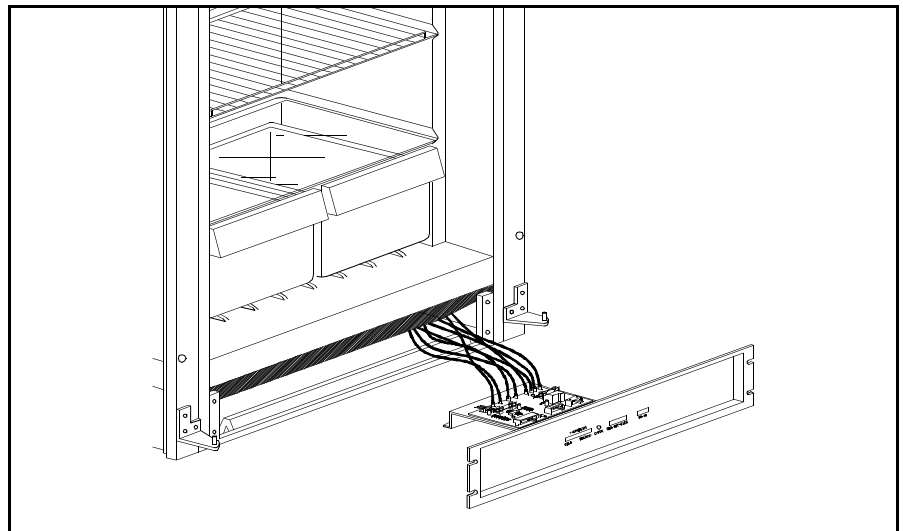


Figure 4.54 Withdrawing Control Panel

6. Check for 12 volt DC between terminals J-4 (-) and J-5 (+) as indicated in Figure 4.55
  - A. If 12 Volts not present, there is a bad connection between the terminal block shown in Figure 4.52 and the PC board.
  - B. If 12 Volts DC is present, the Thermostat L.E.D. should be on. If not, check 3 Amp fuse in the next step.

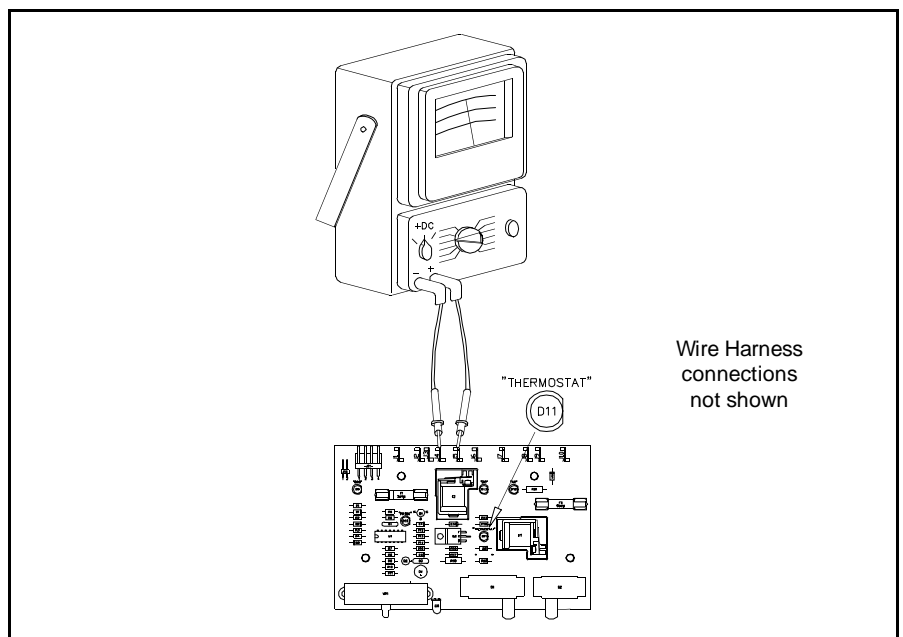


Figure 4.55 12 Volt DC Check at PC Board

7. Check the 3 amp fuse as shown in Figure 4.56. You must read 12 Volts at both ends of the fuse. Use J-4 (-) for the ground probe point. If 12 Volts is not present, replace the fuse.

**⚠ WARNING**

NEVER OVERFUSE A CIRCUIT. REPLACE BLOWN FUSE WITH EXACT REPLACEMENT INDICATED BY NORCOLD. OVERFUSING OF A CIRCUIT CAN RESULT IN A FIRE.

8. The Thermostat L.E.D. shown in Figure 4.56 should be illuminated. If the Thermostat L.E.D. is not illuminated, replace the PC Board (Review steps 1 and 2 first).
9. The "DC" L.E.D. must be on as shown in Figure 4.57.
  - A. If the "DC" L.E.D. is not on, replace PC Board.
  - B. If the "DC" L.E.D. is on but still no cooling:
    - (1) Are the DC Heater leads connected to terminals J-3 and J-6 of the PC Board?
    - (2) Check for proper DC (output) voltage between terminals J-3 and J-6 of the PC Board as shown, 11.5 volts min., 15.4 volts max..
    - (3) If voltage is not present replace PC Board (Review steps 1,2,6 and 7 first).

10. If 12 Volts DC is present, check resistance of the DC Heater element as shown in Figure 4.58. If not within allowable specification (see Technical Data section), replace heater.
  - A. Set volt-ohm meter to the Rx10 scale or higher and check the heater element for a short to ground. The meter should show no movement.

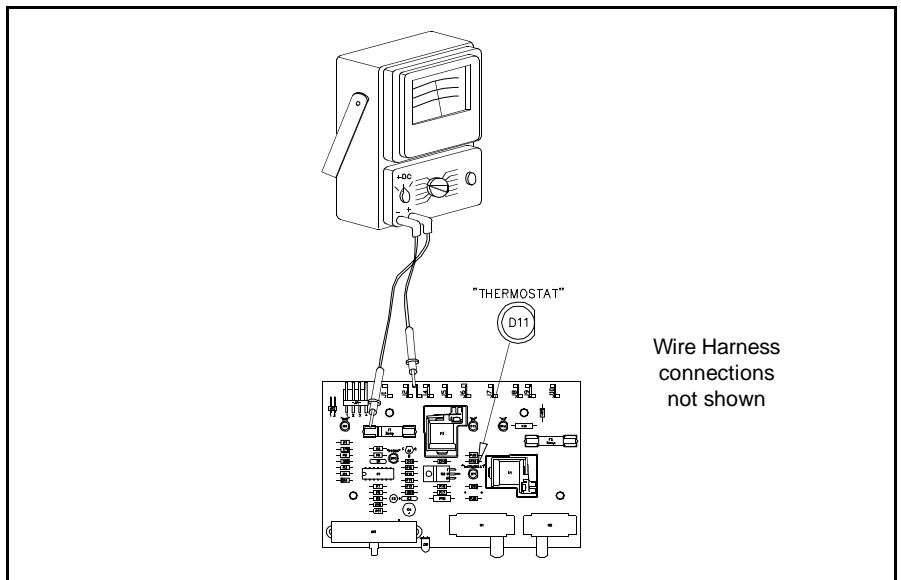


Figure 4.56 3 Amp Fuse Check

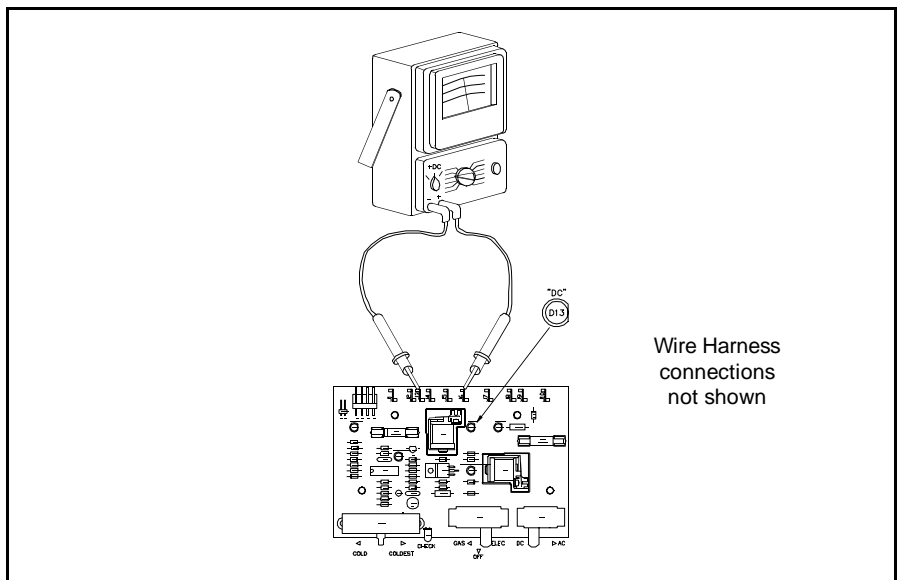


Figure 4.57 "DC" L.E.D. Location

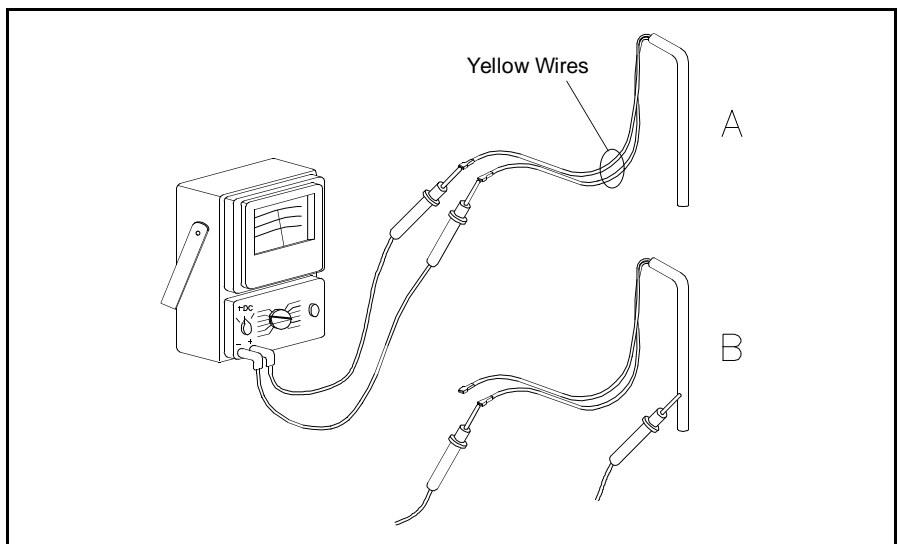
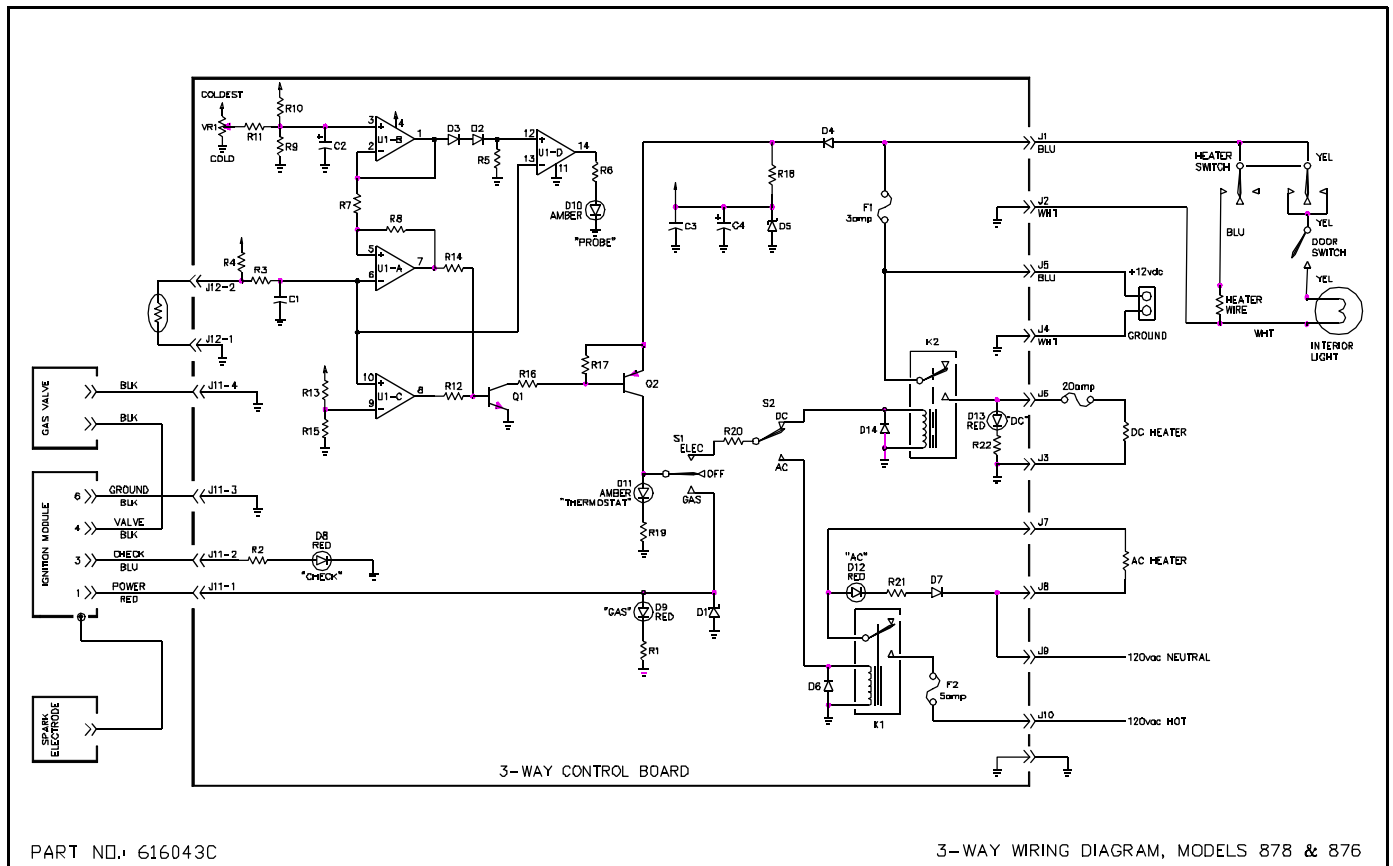
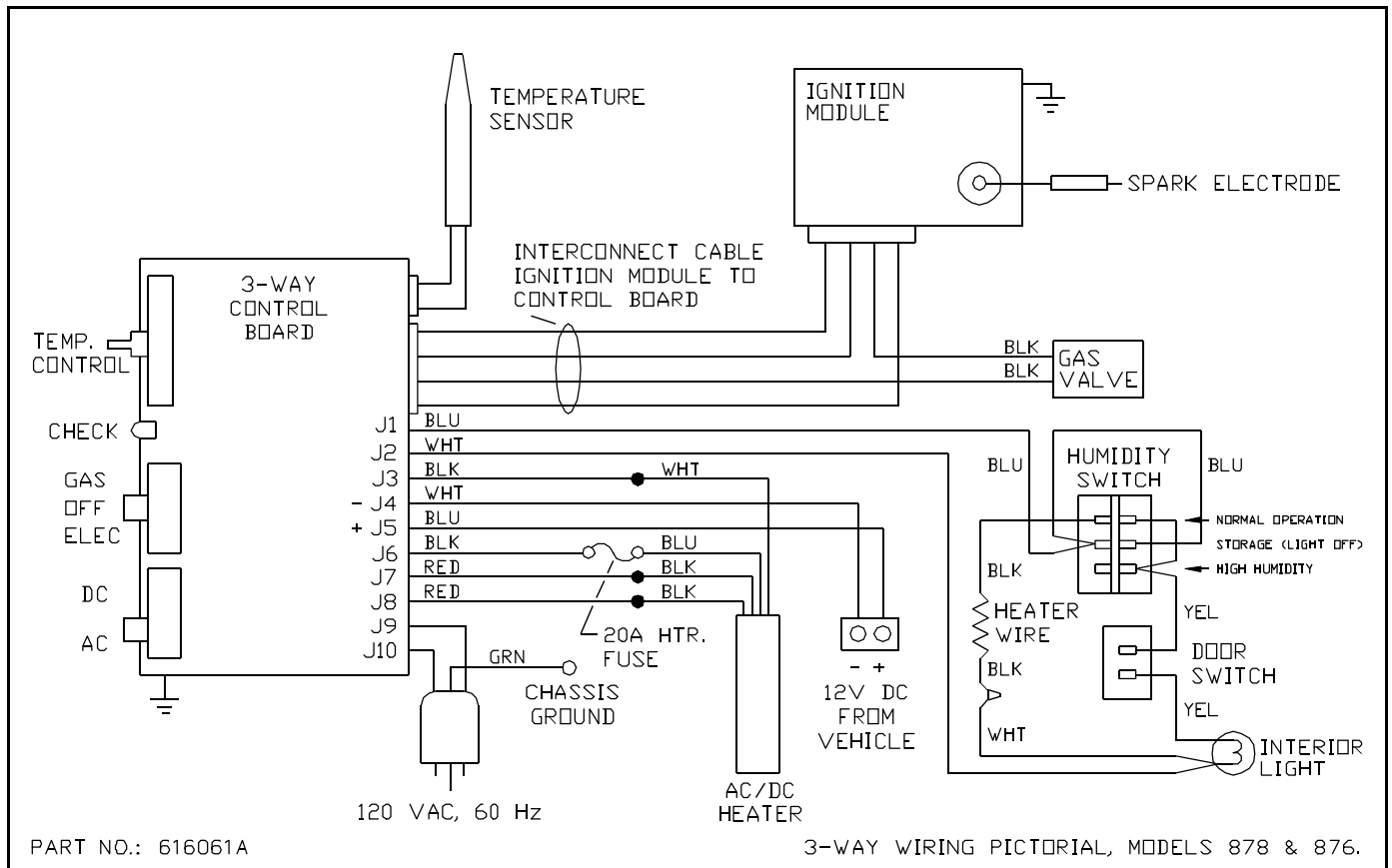
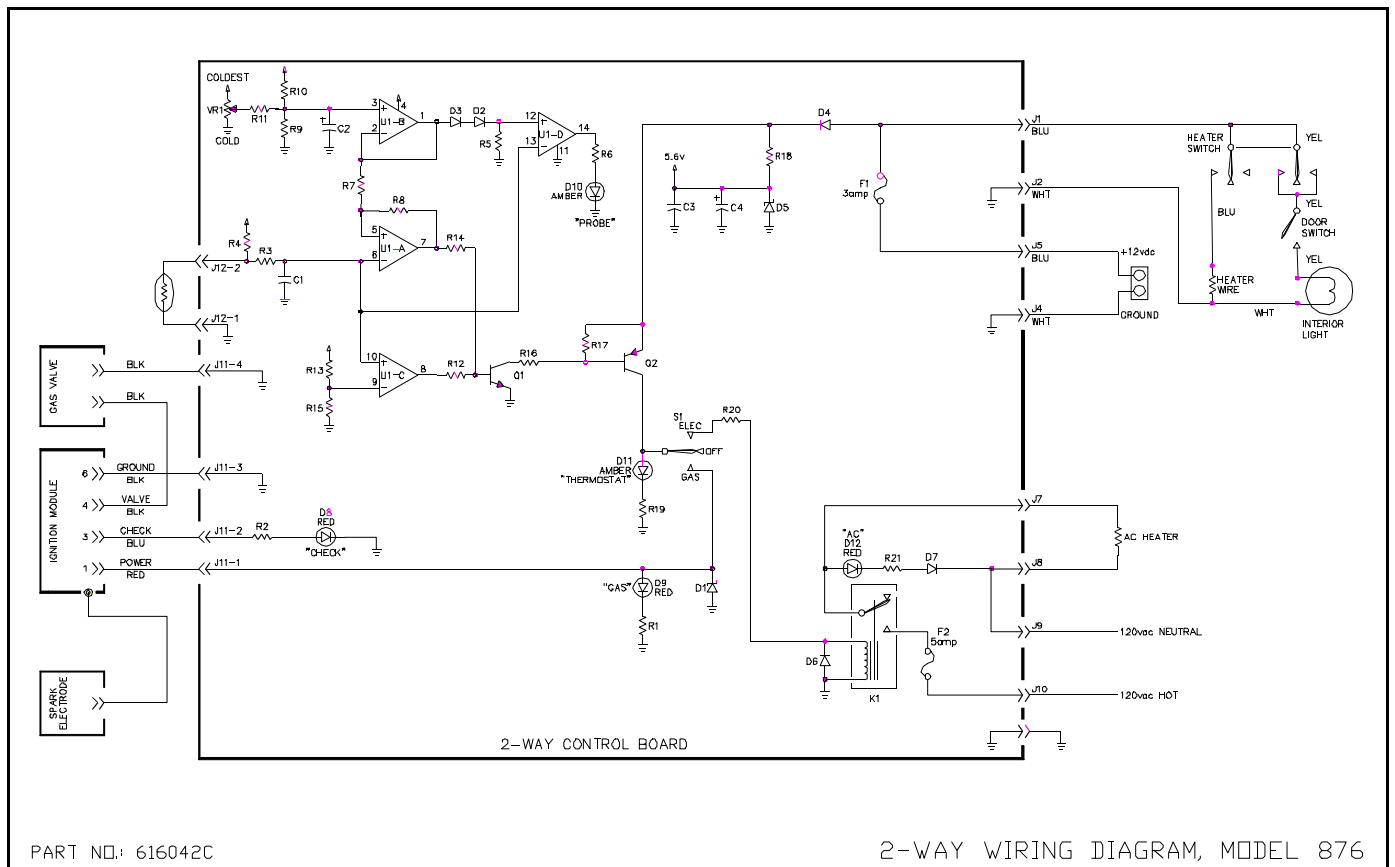
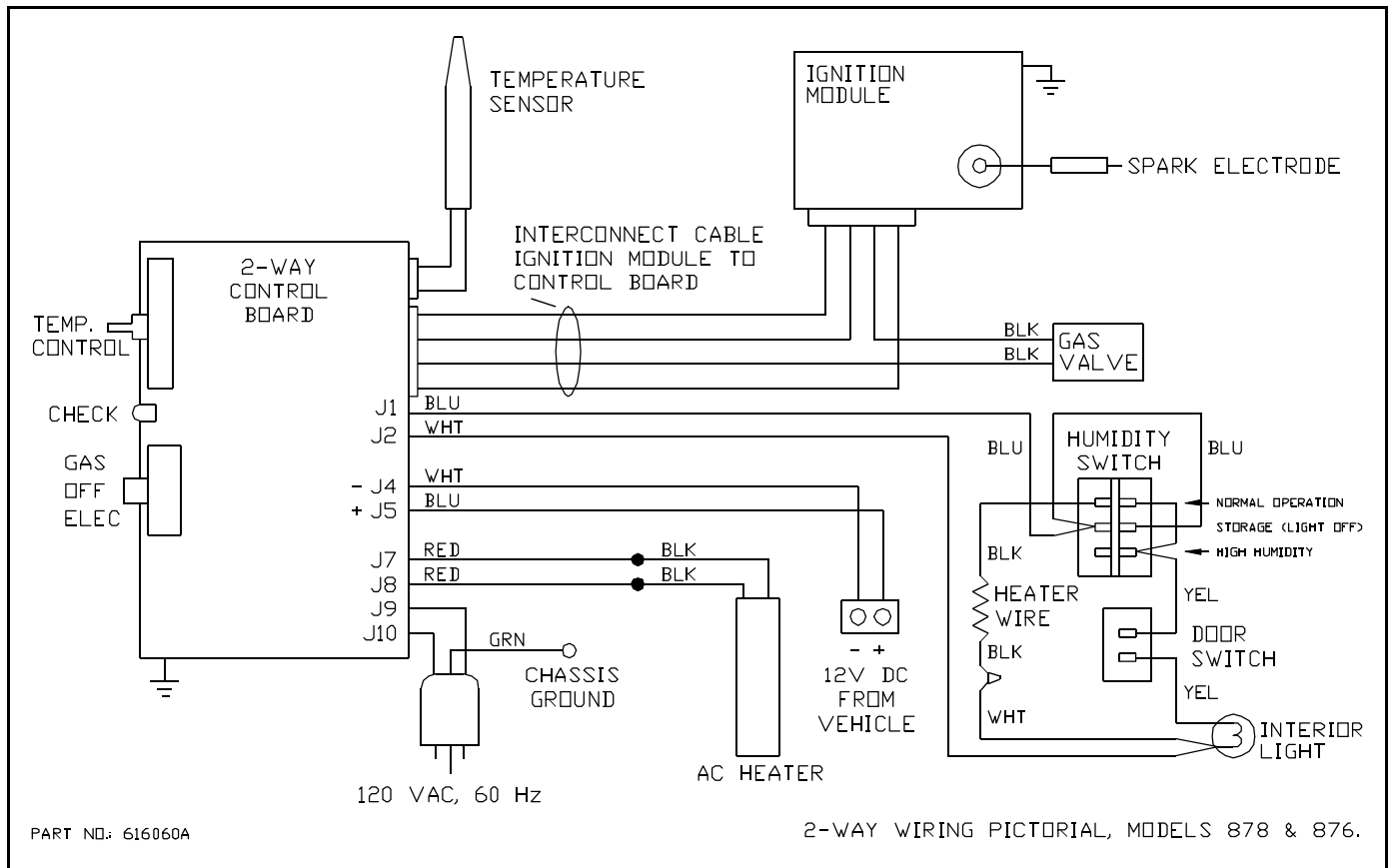


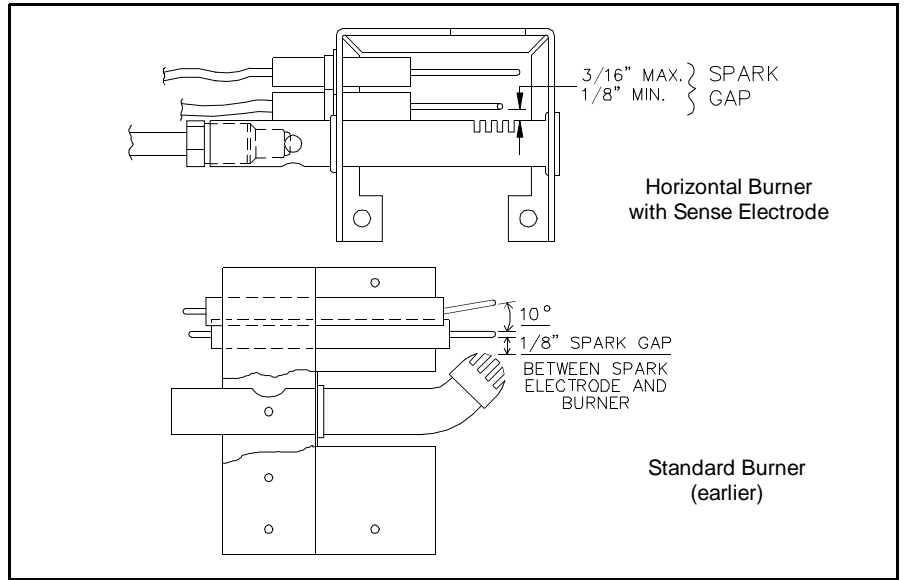
Figure 4.58



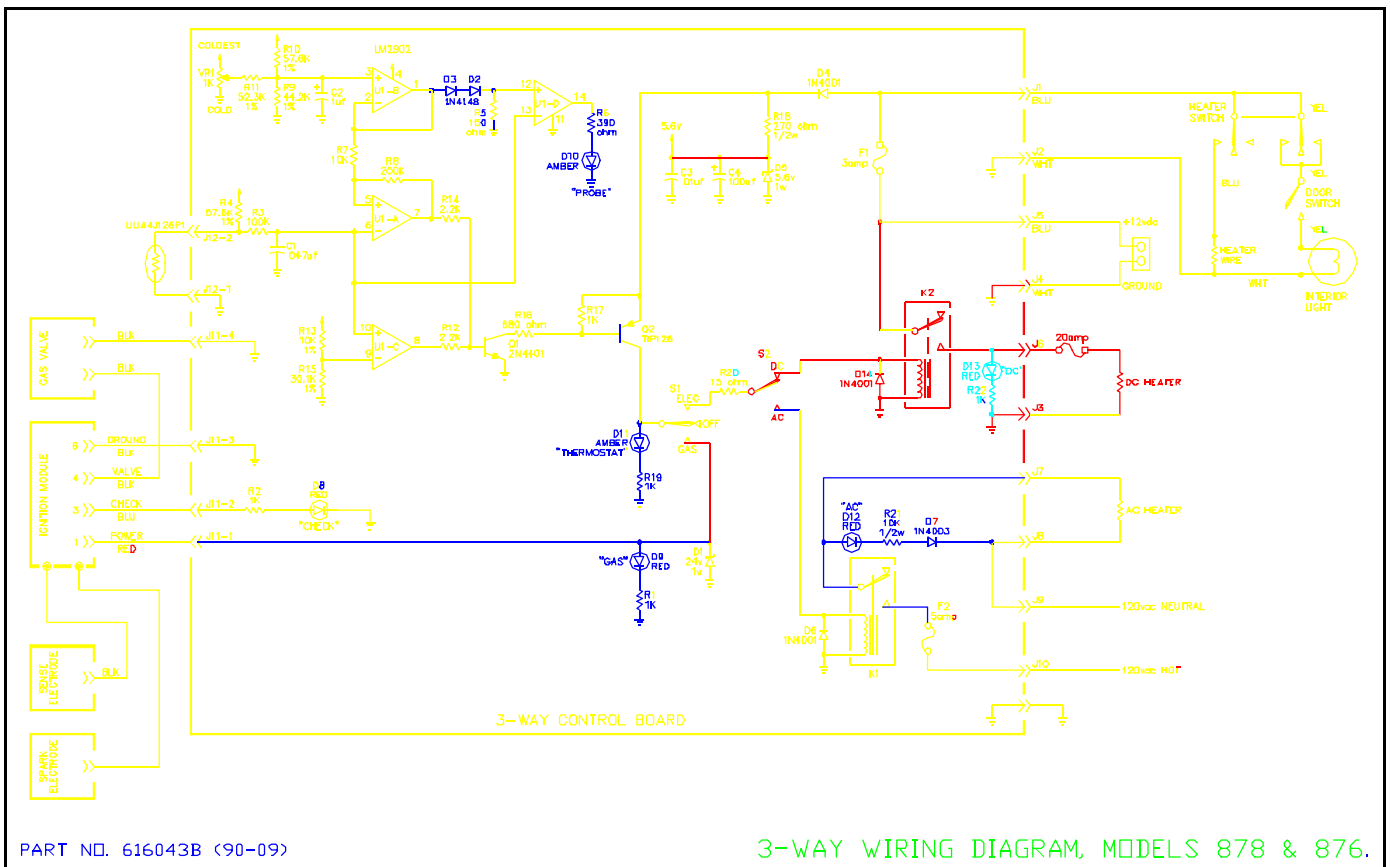
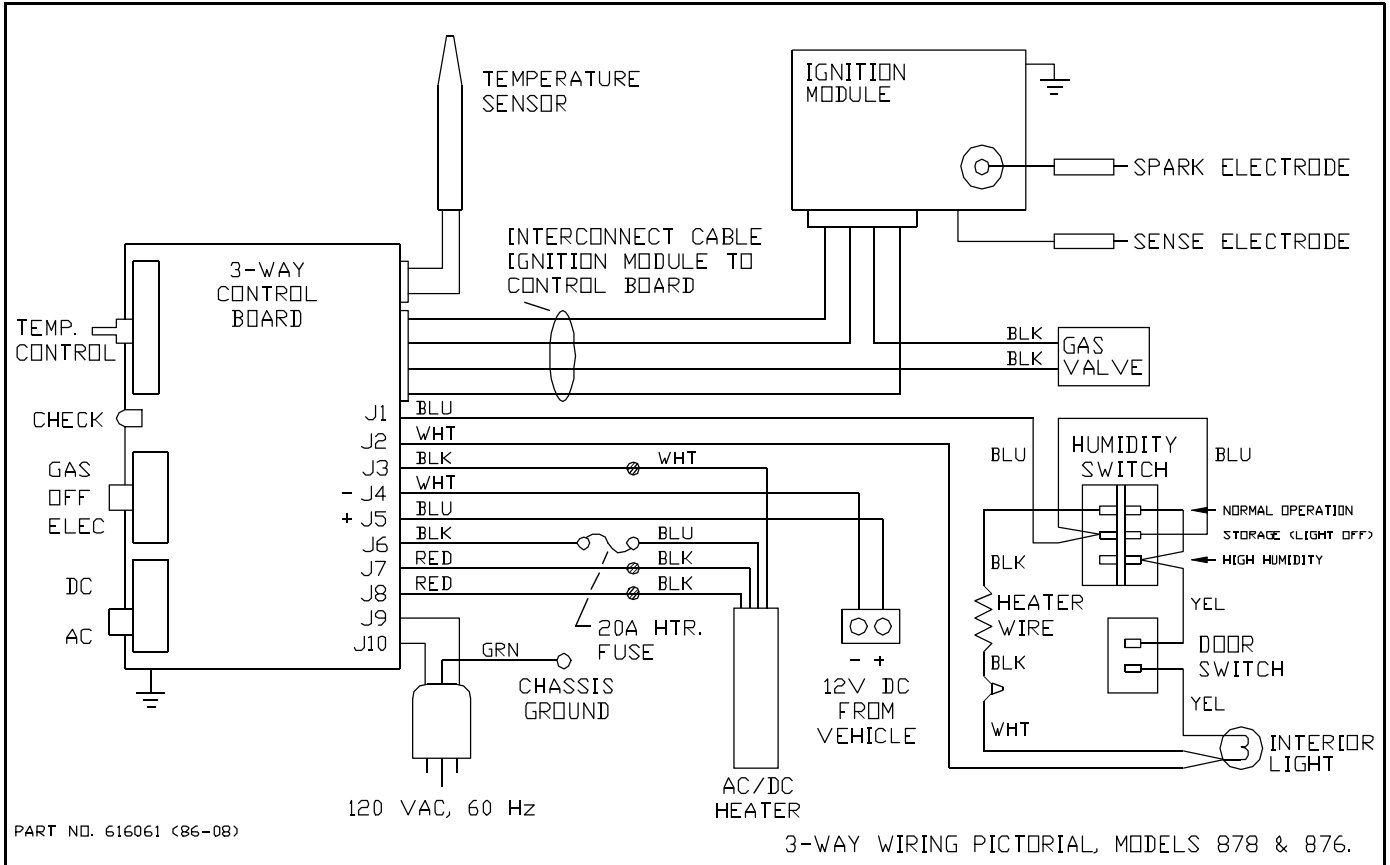


# This Page Contains Information on Earlier Versions

Spark Gaps on Earlier Versions



# This Page Contains a Wiring Pictorial & Wiring Schematic for Earlier Versions



# This Page Contains a Wiring Pictorial & Wiring Schematic for Earlier Versions

