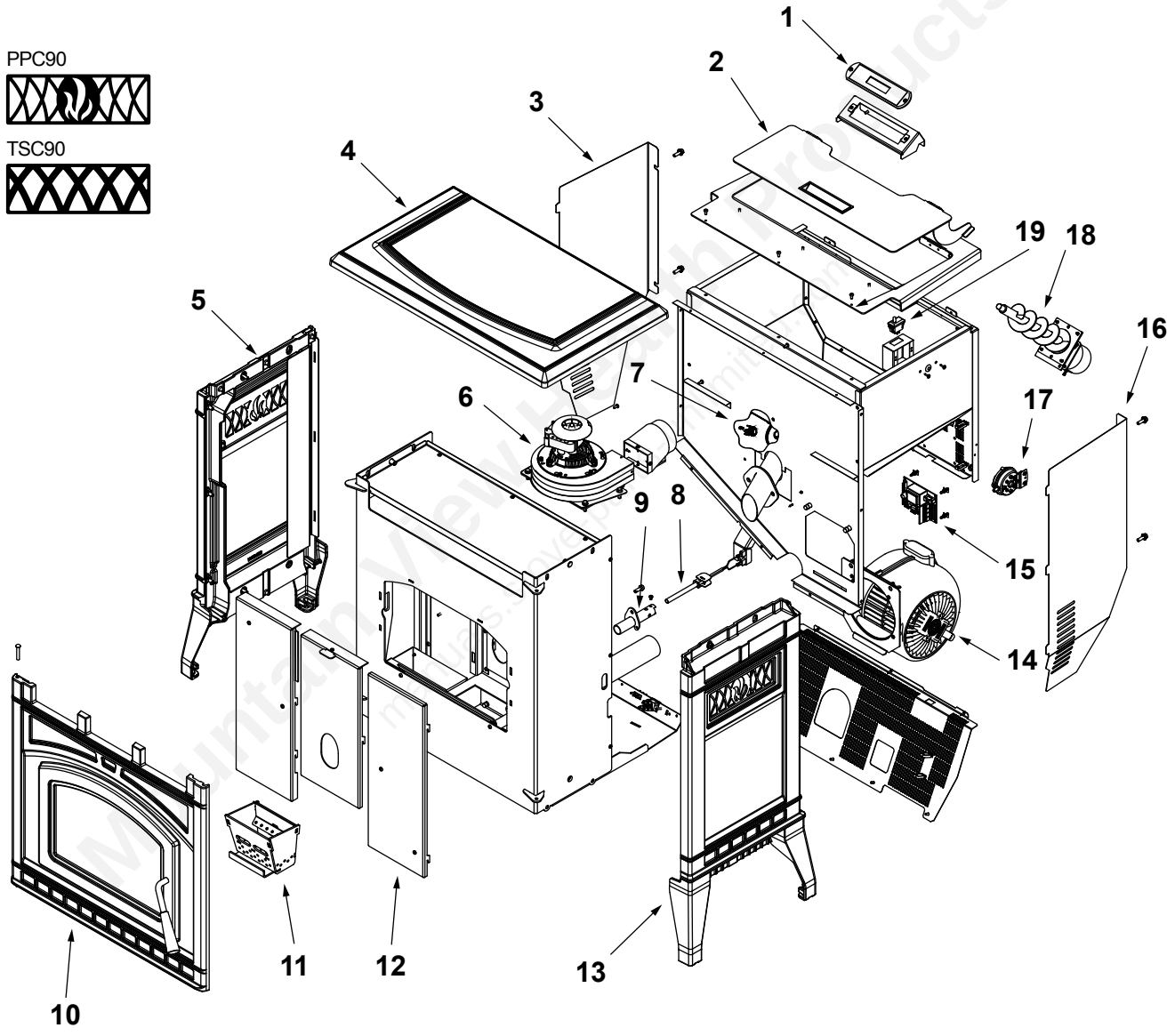
SERVICE MANUAL
PPC90 / TSC90

Beginning Manufacturing Date: July 2016
Ending Manufacturing Date: Active



Part number list on following page.

06/21

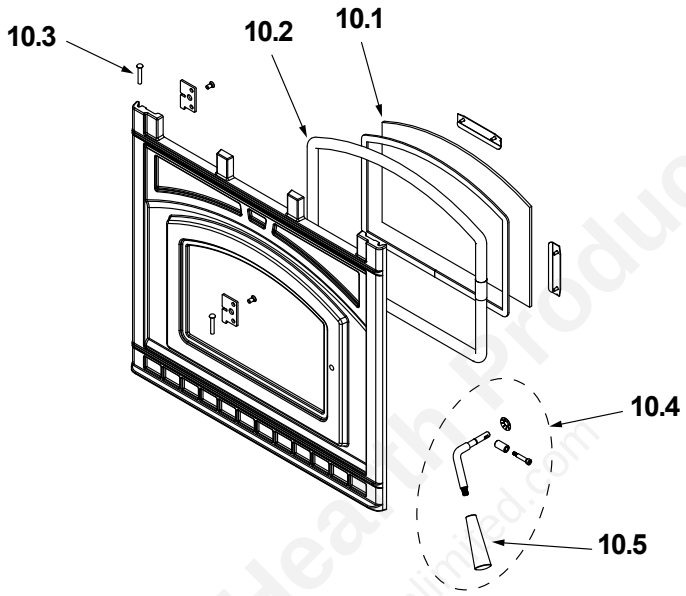
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number.

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
1	Digital Control	Includes cable	SRV7093-036	**Y**
2	Hopper Lid Assembly		SRV7093-019-1	
3	Side Curtain, Left Hand		SRV7093-154	
4	Cast Top		7093-201MBK	
5	Cast Side Assembly, Left Hand	PPC90	7093-046-1MBK	
		TSC90	7093-046-3MBK	
6	Exhaust Combustion Blower		812-4400	**Y**
	Gasket, Between Blower Housing and Motor		812-4710	**Y**
	Gasket, Between Blower Housing and Stove		SRV240-0812	**Y**
7	Snap Disc Manual Reset		SRV230-0080	**Y**
8	Igniter Kit		SRV7000-660	
9	Igniter Chamber Kit		SRV7077-110	
10	Face Assembly		**See following Pages**	
11	Firepot		SRV7077-003	
12	Baffle Kit		SRV7079-006	
13	Cast Side Assembly, Right Hand	PPC90	7093-045-1MBK	
		TSC90	7093-045-3MBK	
14	Convection Blower		KS-5020-1052	
	Convection Blower Brakcet		SRV7081-210	
	Convection Blower Gasket		SRV7081-195	
15	Control Board		SRV7093-050	**Y**
	Wire Harness		SRV7093-184	**Y**
16	Side Curtain, Right Hand		SRV7093-153	
17	Vacuum Switch		SRV7000-531	**Y**
18	Feed Assembly Kit		**See following Pages**	
19	Hopper Switch		SRV7000-612	**Y**
	Ambiant Probe		SRV7000-668	
	Ash Bucket Assembly	Pkg of 2	SRV7093-034	
	Component Pack		SRV7093-028-1	
	Exhaust Probe		SRV7000-669	
	Hose, Barb Assembly		SRV229-0920	
	Hose, Vacuum, 5/32 Id	3 Ft	SRV240-0450	**Y**
	Wire Clip	Pkg of 10	7000-400/10	**Y**
	Wire Harness		SRV7093-184	
	Wire Harness Thermostat Block		SRV7080-152	

See Following page for additional servcie parts

1/21

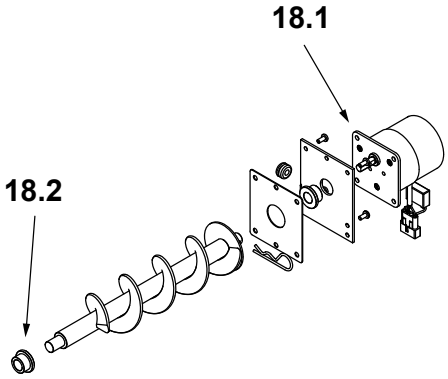
#10 Door Assembly



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number.

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
10	Face Assembly		7093-041-1MBK	
10.1	Glass Assembly		SRV7093-023	Y
10.2	Rope, Door, 3/4” x 84”		832-1680	Y
10.3	Hinge Pin	Pkg of 2	433-1590/2	
10.4	Door Handle Kit	Includes Black Handle	SRV7093-024D	Y
10.5	Handle, Black Phenolic Kit		KS-5140-1442	Y

#18 Feeder Assembly



18	Feed Assembly Kit		SRV7077-014	Y
18.1	Feed Motor		SRV7000-670	Y
18.2	Feed Shaft Bushing	Pkg of 2	7000-600/2	

PELPRO TROUBLESHOOTING MANUAL

INTRODUCTION

The purpose of this troubleshooting guide is to provide step by step procedures for diagnosing issues with the PelPRO PPC90 and TSC90. A digital or analog multimeter will be required for many of the troubleshooting steps in this guide.

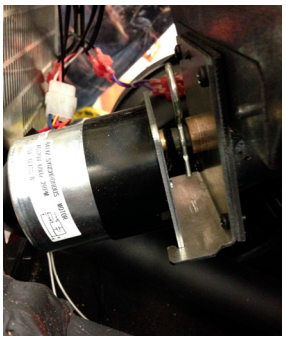
When troubleshooting with the multimeter, it's important to disconnect the appliance from wall power while locating the electrical connections that need to be checked. Connect the multimeter to the test locations detailed in this guide and then plug the appliance back into wall power. Take care to avoid letting any exposed wires or connectors from contacting the metal chassis of the Appliance or from touching exposed skin. The appliance is energized with 115VAC power from the wall and there is a risk of shock or electrocution. If you are not familiar or comfortable working with energized electrical circuits, please contact a certified NFI Installer or certified electrician to complete that portion of troubleshooting.

When instructed to check a appliance for power from the control board, the multimeter will need to be set to check Voltage, often displayed as "V" on the meter. If the meter is not auto-sensing, AC voltage will need to be chosen when specified in the instructions. AC voltage is also sometimes shown as ~ V on multimeters. If instructed to check VDC, DC voltage will have to be chosen on the multimeter. Voltage checks are typically used when motors and blowers are not running and we are attempting to determine if the component is bad or is the control board is not sending power to the component.

Some components can be verified for functionality by checking the resistance of the part. Igniters and fuses are the most common parts that can be verified by resistance checking with a multimeter. Resistance is measured in ohms (Ω) and most multimeters will have that symbol next to the resistance setting. Unlike voltage, resistance is always measured with the appliance completely deenergized from wall power. There is no risk of shock or electrocution when the appliance is unplugged from wall power and components are being verified for resistance. When resistance is being checked, this manual will provide an expected resistance in Ω, however a number slightly above or below the specified value does not indicate a bad component. If the multimeter shows MAX or Out of Range, this indicates infinite resistance, meaning an open circuit and a bad component. A resistance of 0 ohms for a component indicates an electric short circuit and again a bad component.

PART LOCATIONS

FEED MOTOR

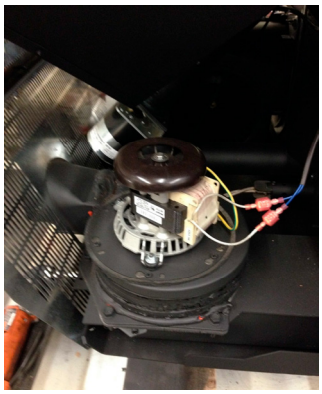


The feed motor is located on the back of the unit towards the bottom. Removing the rear screen and left side panel is the best way to access the motor.
Once access is gained, simply pulling the pin on the auger shaft will release the feed motor.

IGNITER

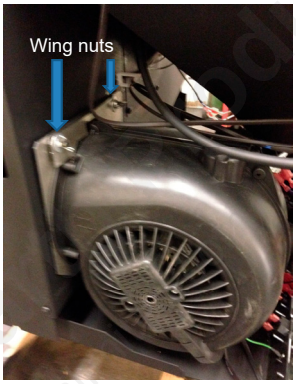
The igniter is located at the back of the firebox in the middle. Removing the left access panel will allow you to see it. There is a Phillips head screw holding the igniter in place.

EXHAUST BLOWER



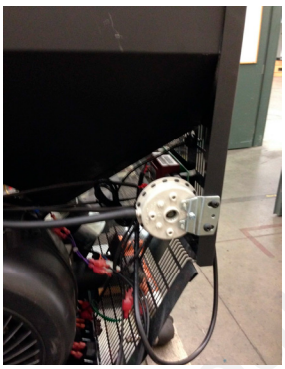
Remove the left side panel to access the blower. A Phillips head screwdriver will be needed to remove the blower from the housing.

CONVECTION BLOWER



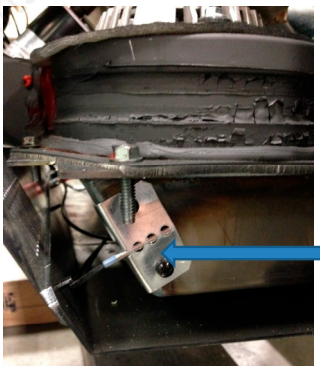
Remove the right side panel to access the blower. Two wing nuts hold it in place. Removal is a little tight, so the blower will need to be rotated a little to get it out. Removing the vacuum switch is a good option if you need a little more room taking the blower out.

VACUUM SWITCH



Remove the right side panel. Two Phillips screws hold it in place.

EXHAUST TEMP PROBE

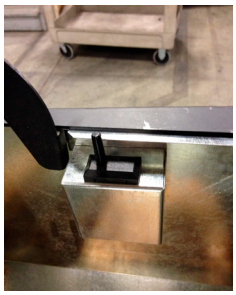


Remove the left side panel to access the probe. Two Phillips head screws hold it in place.

#3 SNAP DISC

Remove the left side panel to access the snap disc. Two Phillips head screws hold it in place.

HOPPER SWITCH



It is located under the hopper lid on the right side the stove. The right side panel will need to be removed to access the 2 mounting screws for the hopper switch bracket.

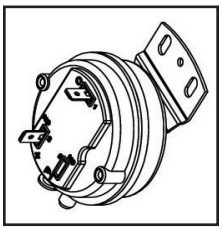
Operation Flow Chart

1: Set user interface to desired temperature.

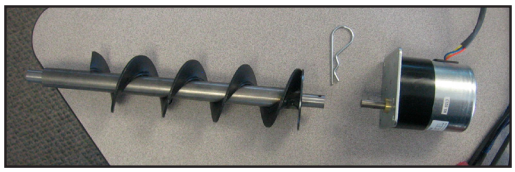
2: Exhaust blower turns on.

3: Igniter turns on.

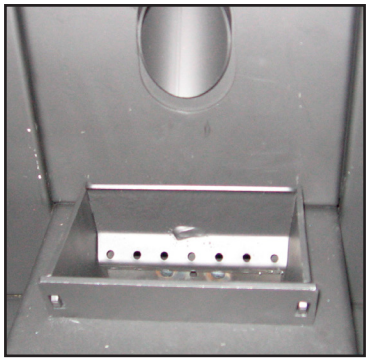
4: Vacuum switch closes.



5: Feed motor will turn on after the 1 min igniter preheat sequence expires. Initial feed will be for 60 seconds and stop.

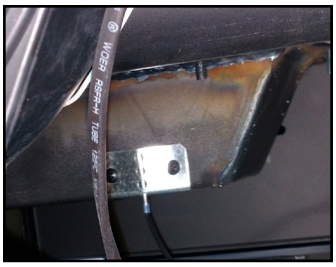


6: Pellets ignite in the firepot.



Operation Flow Chart

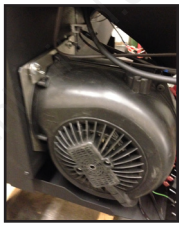
7: Exhaust probe senses a 6 degree increase per minute for 2 consecutive minutes.



8: Igniter turns off.

9: Flame stabilization mode begins. The feed motor will cycle for 3 minutes.

10: Convection blower turns on and increases speed as the appliance heats up.



The exhaust probe will sense 140 degrees and turn on the convection blower at a low speed.

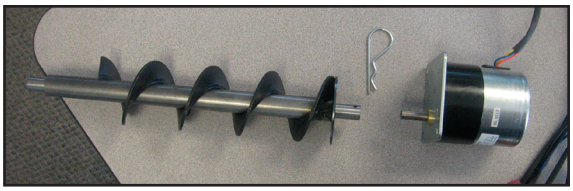
11: A bar graph in the top right corner of the display will show the current power level. Power level will vary depending on room temp vs set temp on the dial.

Feed Rates: (7 Second Cycle)	
	PPC90/TSC90
Power Level 1:	0.9 sec “on time”
Power Level 2:	1.5 sec “on time”
Power Level 3:	1.9 sec “on time”
Power Level 4:	2.3 sec “on time”
Power Level 5:	2.7 sec “on time”

12: Set temperature is met.

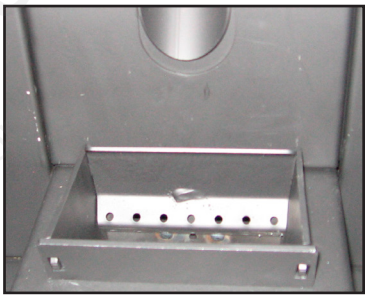
Operation Flow Chart

13: Feed motor turns off.



14: Exhaust blower starts the shutdown cycle. Blower will run at maximum rpm.

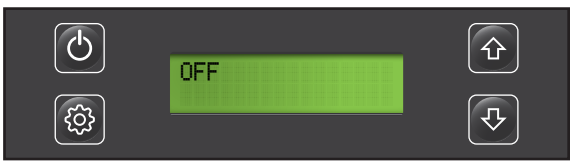
15: Fire goes out in the firepot. Appliance will continue to cool.



16: Exhaust probe drops below 140 degrees and shuts the convection blower off.

17: 17 minute shutdown timer expires and the exhaust blower shuts off.

18: End of the cycle.



ERROR CODE DEFINITIONS

Error codes will look like this on the display

Code #1	Fuel Feed Alarm. Most likely the appliance ran out of fuel or the flames are adjusted too low.
Code #2	Exhaust Temperature is above or below the acceptable range. Exhaust probe has failed or the flames need to be adjusted.
Code #3	Ambient Temperature is above or below the acceptable range. Ambient probe has failed.
Code #4	Missed Ignition Alarm. Appliance has either ran out of fuel or the firepot needs to be cleaned. Also it is possible that the igniter has failed if the appliance is clean.
Code #5	Digital Display Communication Alarm. Appliance lost power while the appliance was running or there was a bad connection from the display to the control board. Board may need replaced.
Code #7	Exhaust temperature over heat alarm. Appliance got too hot. Check the heat exchanger and exhaust system for obstructions. Make sure the flame height is correct.

Troubleshooting

ALARM CODE

T/S CHART

SYMPTON

WARNING

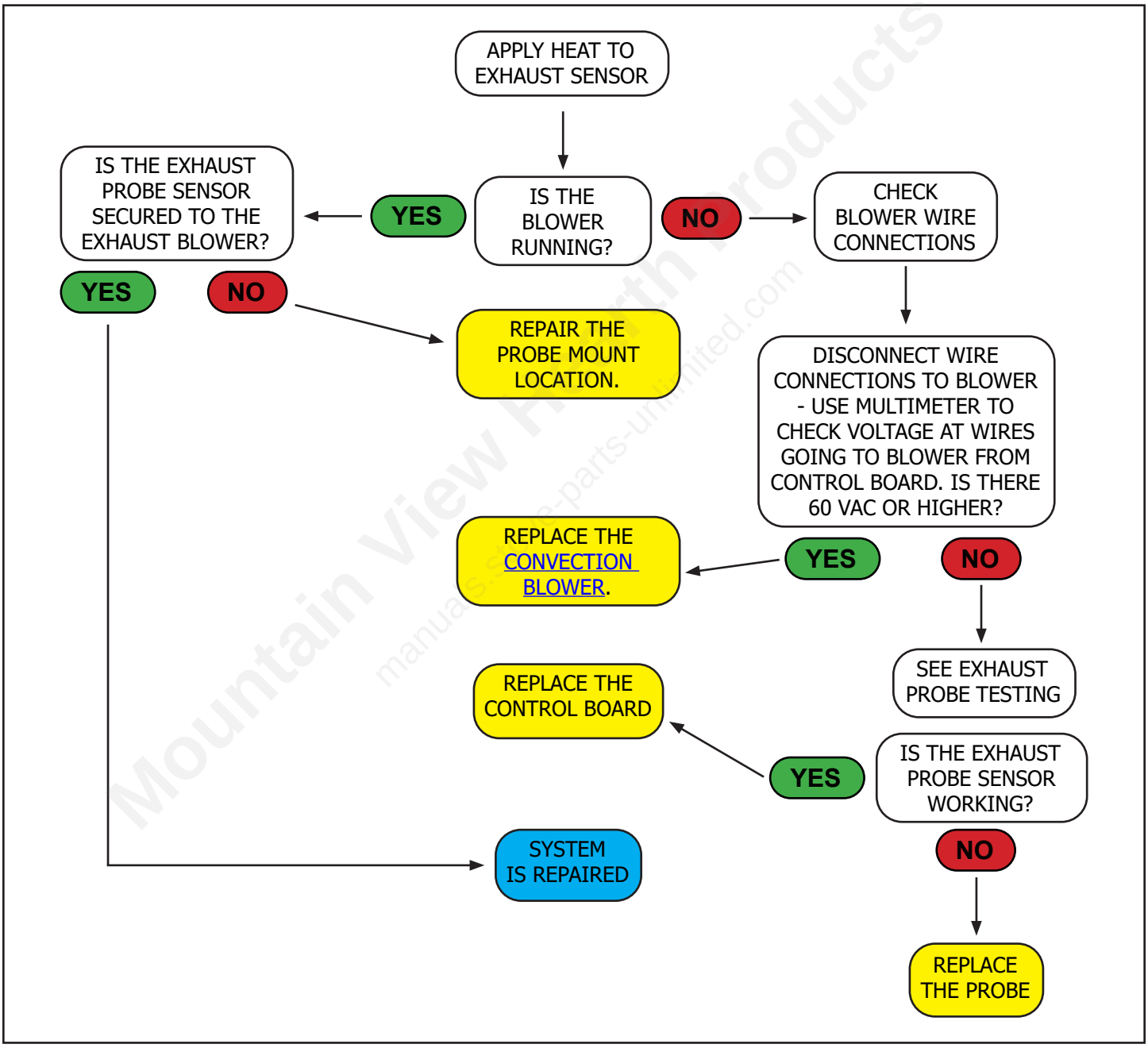
ALWAYS UNPLUG THE STOVE BEFORE CLEANING, REPLACING COMPONENTS, RESETTING SNAP DISCS AND CHECKING WIRE CONNECTIONS.

REFER TO THE OWNERS MANUAL FOR INFORMATION ON MAKING ADJUSTMENTS TO THE APPLIANCE OR FOR THE PROCEDURES FOR REPLACING PARTS.

CONVECTION BLOWER TROUBLESHOOTING

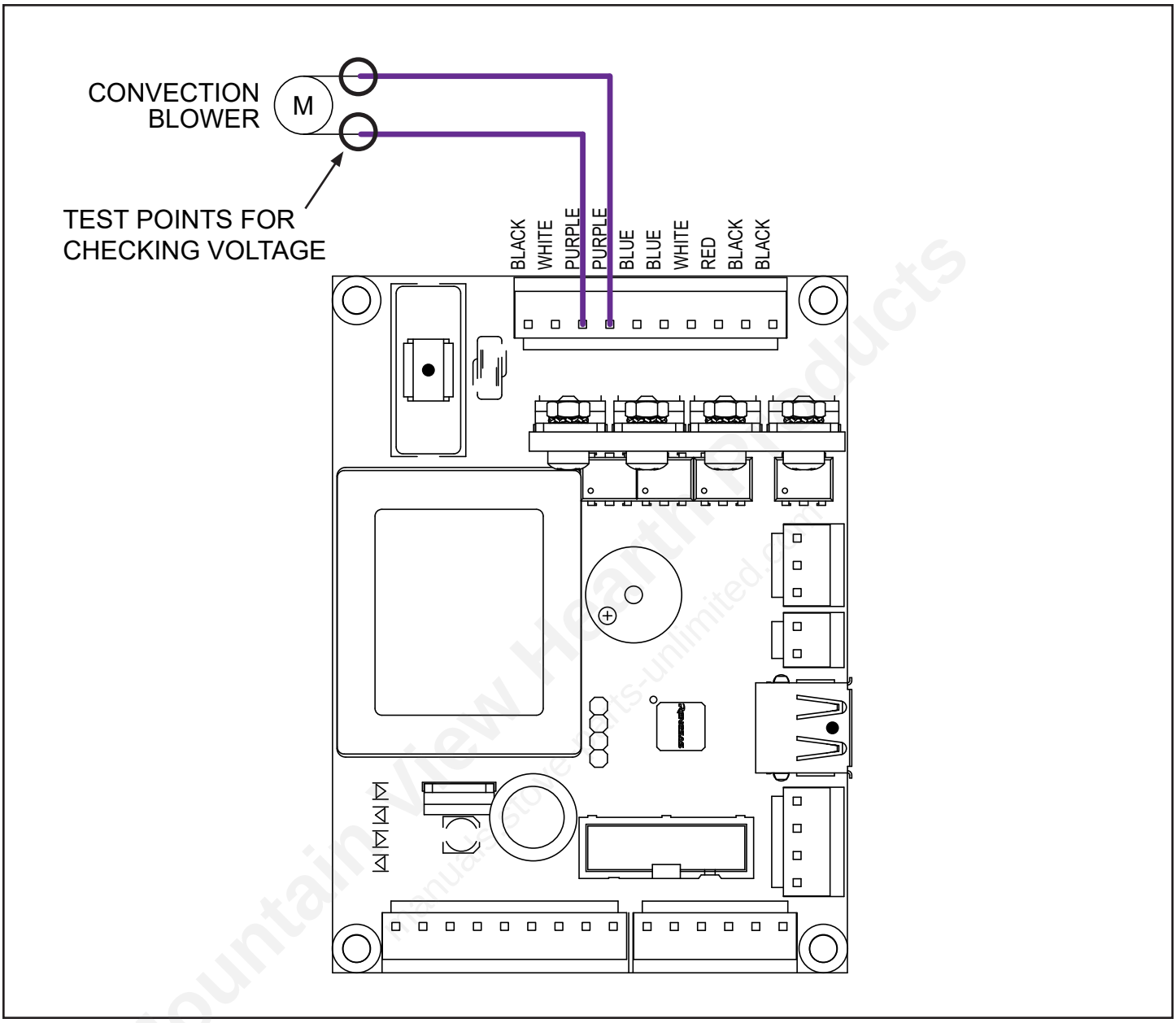
WARNING

ELECTRICAL HAZARD:
UNIT MUST BE CONNECTED TO POWER FOR SOME TROUBLESHOOTING STEPS. DO NOT ALLOW ENERGIZED CONNECTIONS TO TOUCH UNIT BODY OR EXPOSED SKIN.



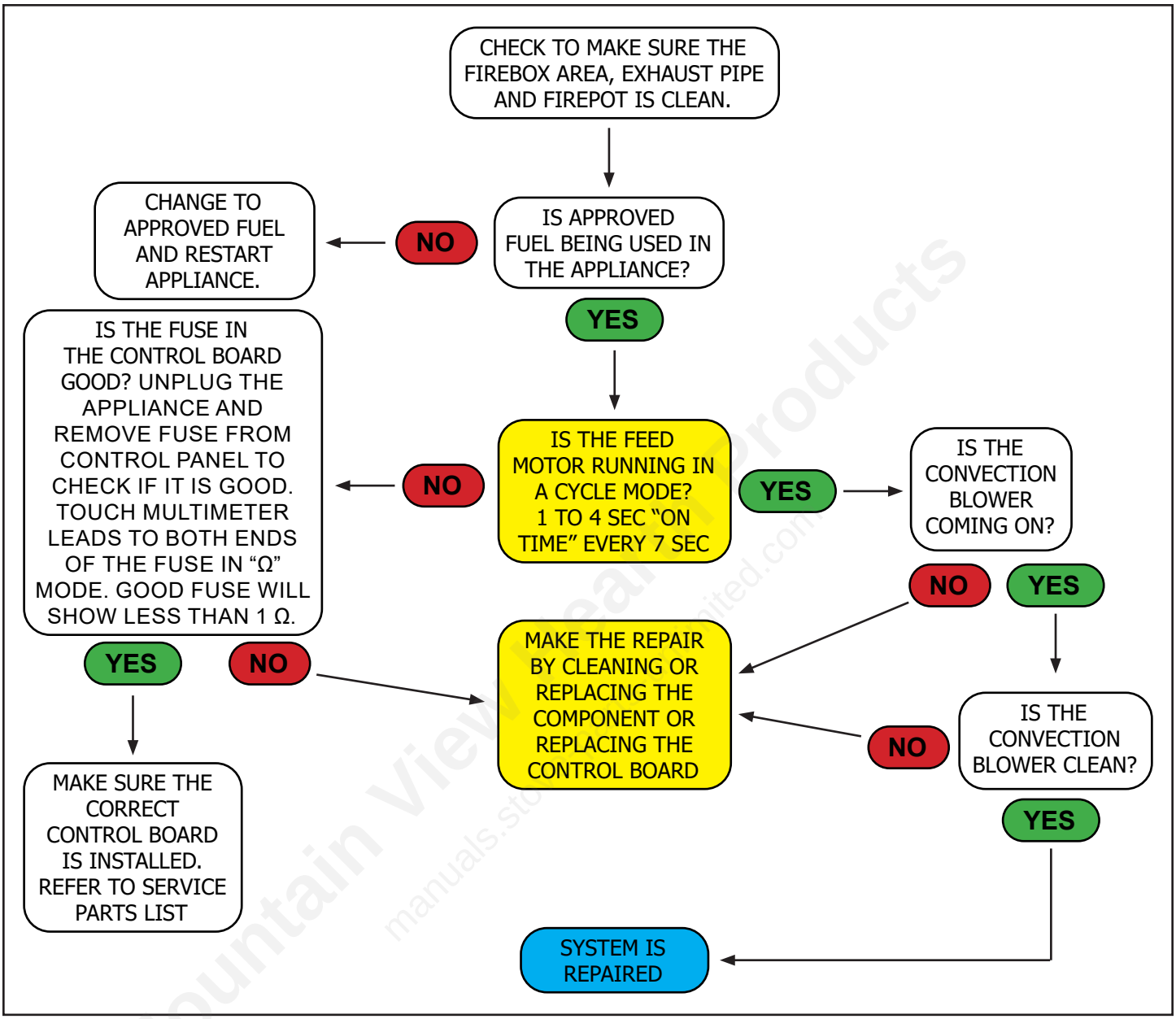
Testing locations and readings on next page.

CONVECTION BLOWER TROUBLESHOOTING



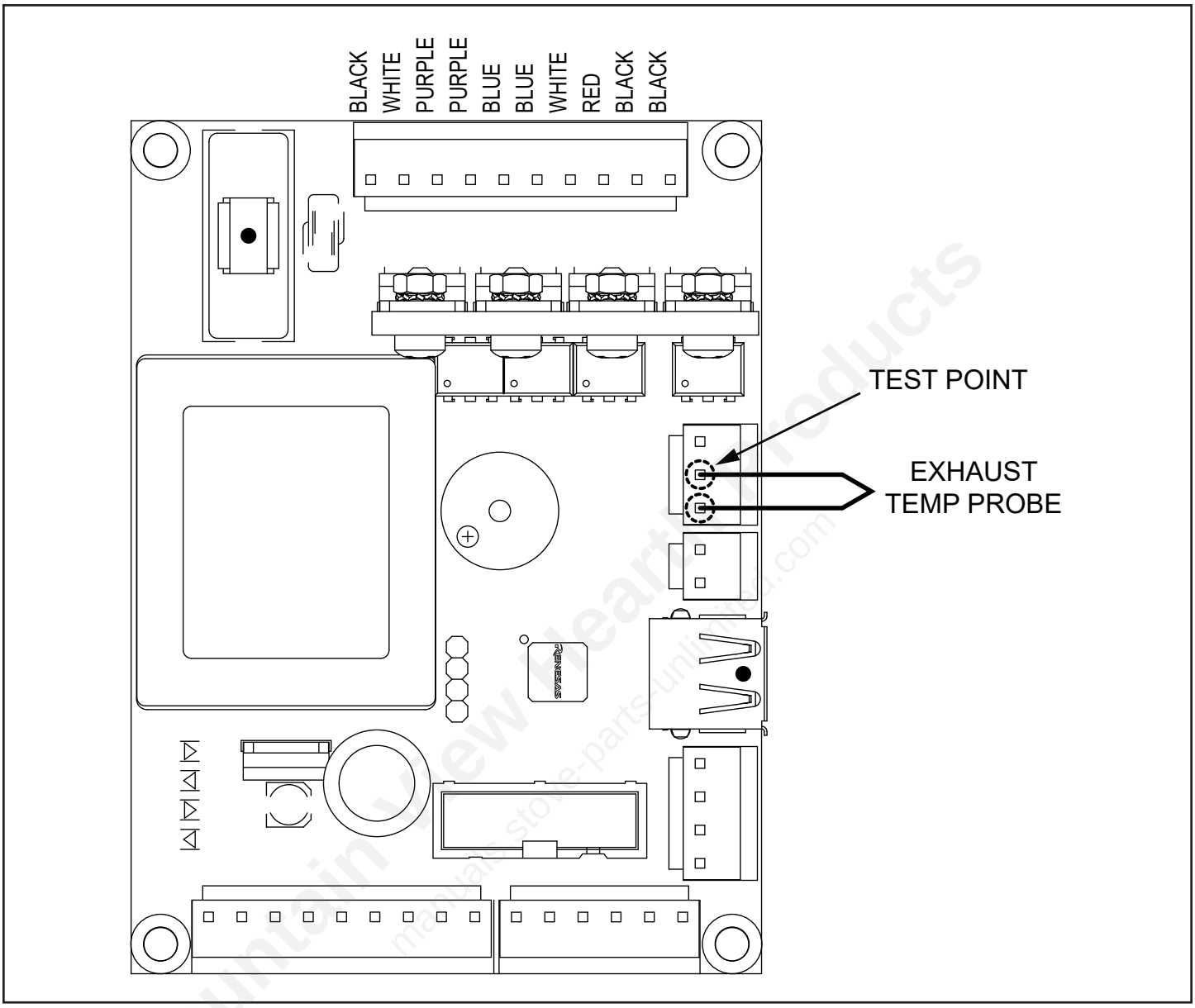
CONVECTION BLOWER VOLTS RANGE: 63VAC TO 114VAC (+/- 5VAC)
Convection blower range changes depending on power level.

CODE #7: EXHAUST OVER TEMPERATURE



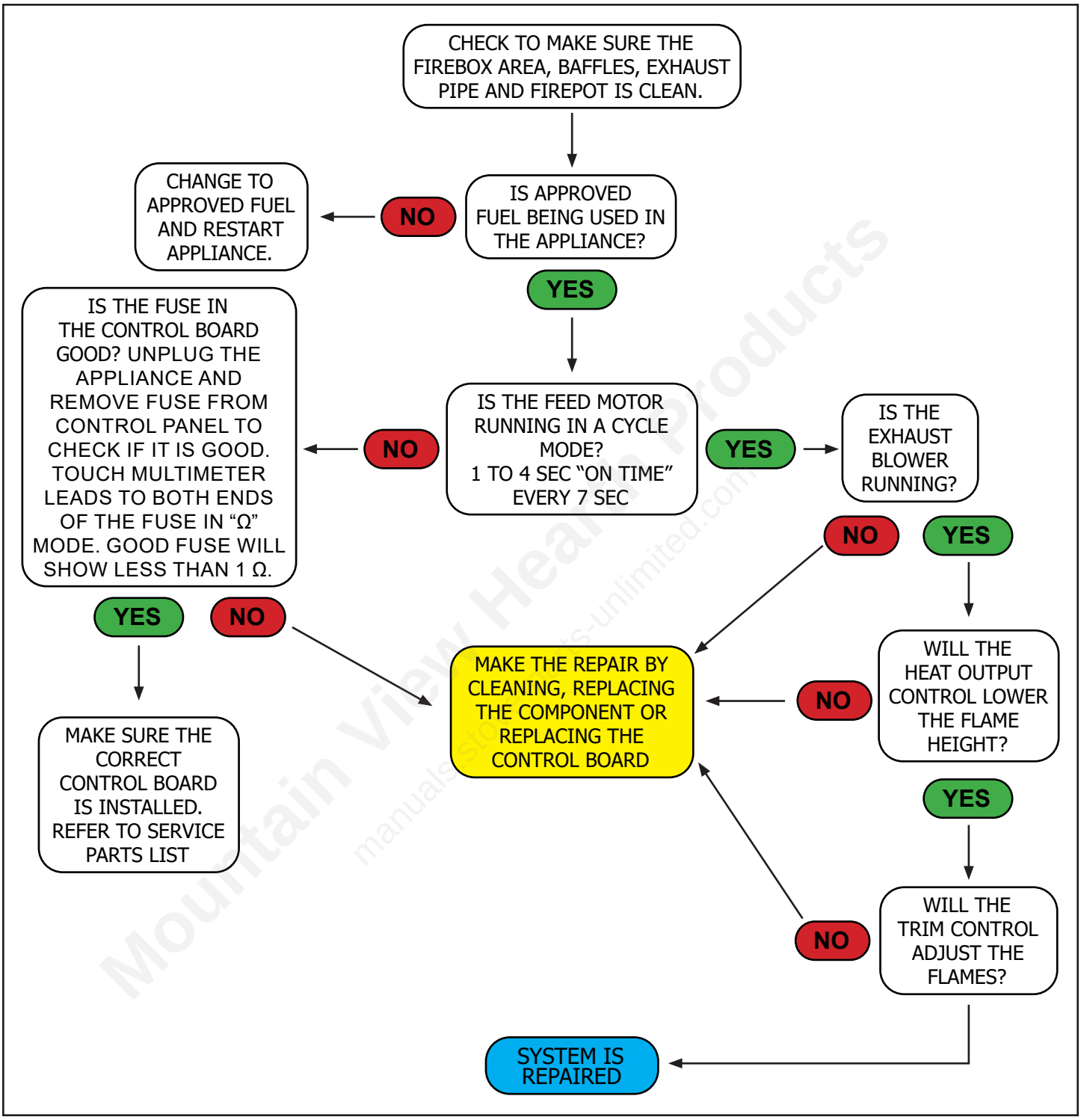
Test locations and readings on next page.

CODE #7: EXHAUST OVER TEMPERATURE



AT ROOM TEMPERATURE, THE EXHAUST PROBE WILL READ AROUND 100K OHMS. AS HEAT IS APPLIED TO THE PROBE, THE OHMS READING WILL CONTINUE TO GET SMALLER.

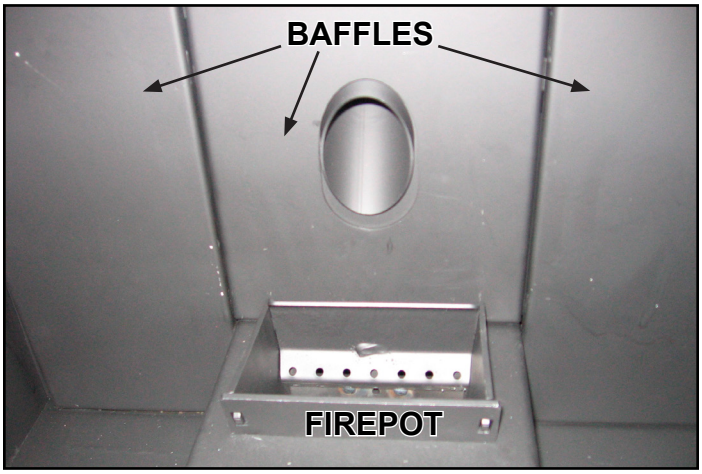
LAZY OR SOOTY FLAMES



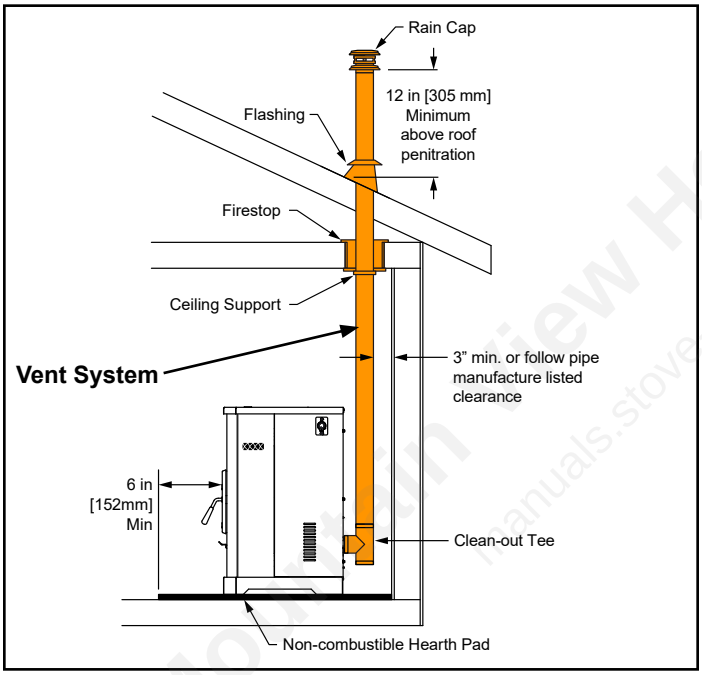
Cleaning locations next page

LAZY OR SOOTY FLAMES

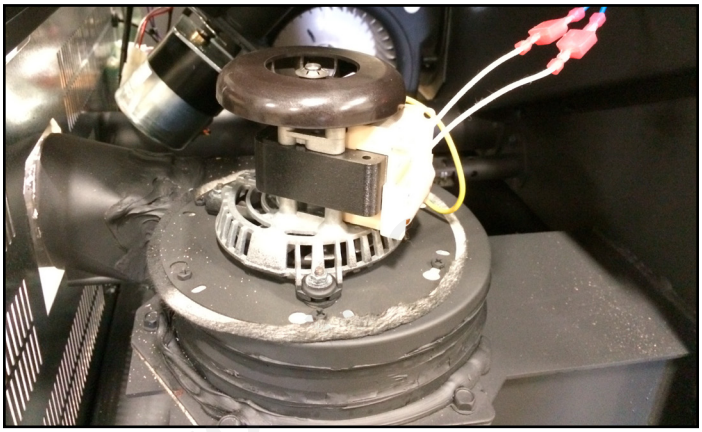
1. Clean Firepot and Baffles



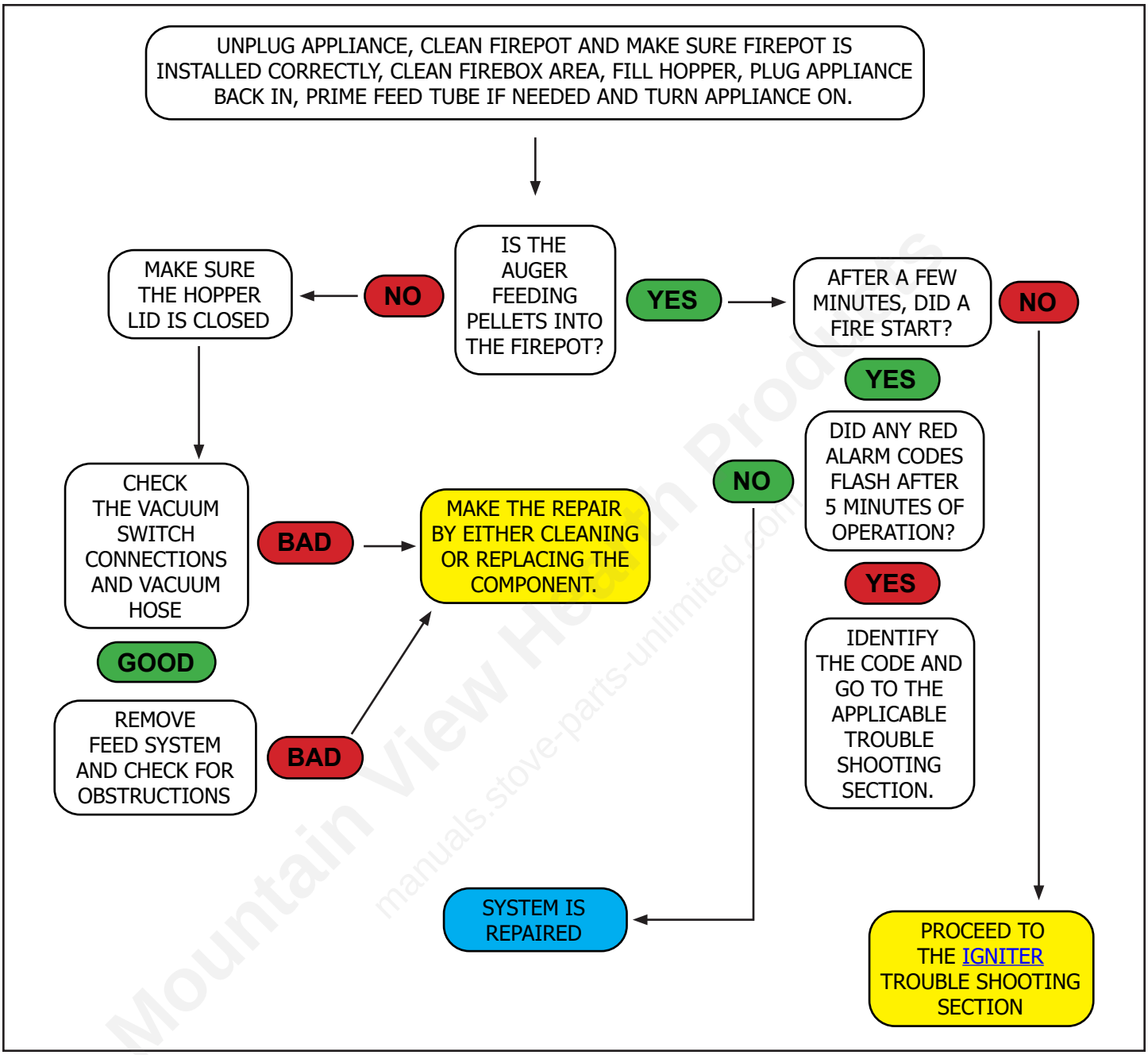
2. Clean the Vent System



3. Clean the Exhaust Blower. (Refer to Owner's manual for more instructions)

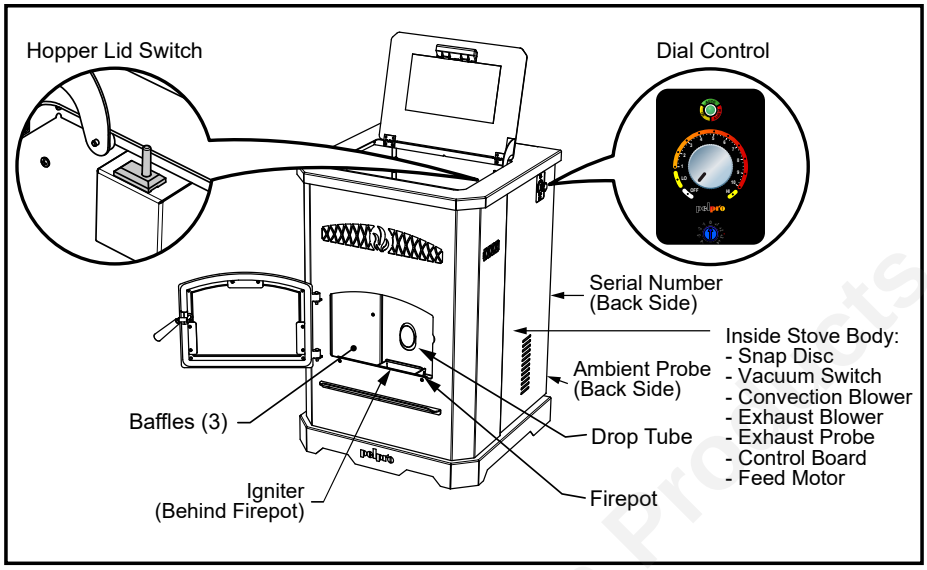


CODE #1: FUEL FEED ALARM

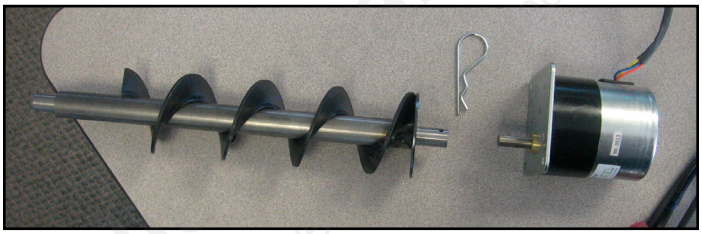


CODE #1: FUEL FEED ALARM

1. Check to see if the Hopper is empty

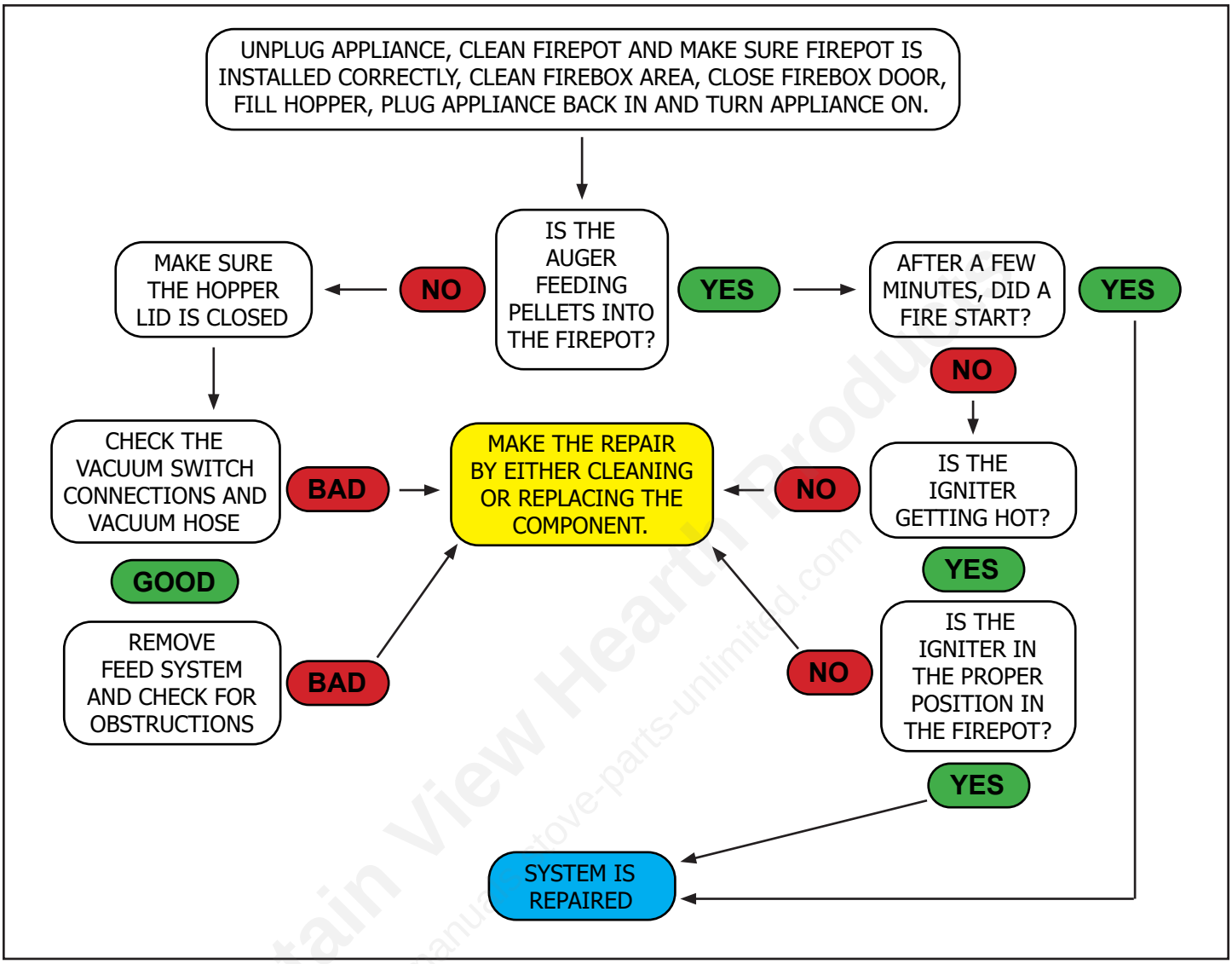


2. Check for a Feed Motor jam



3. Check flame height adjustment.

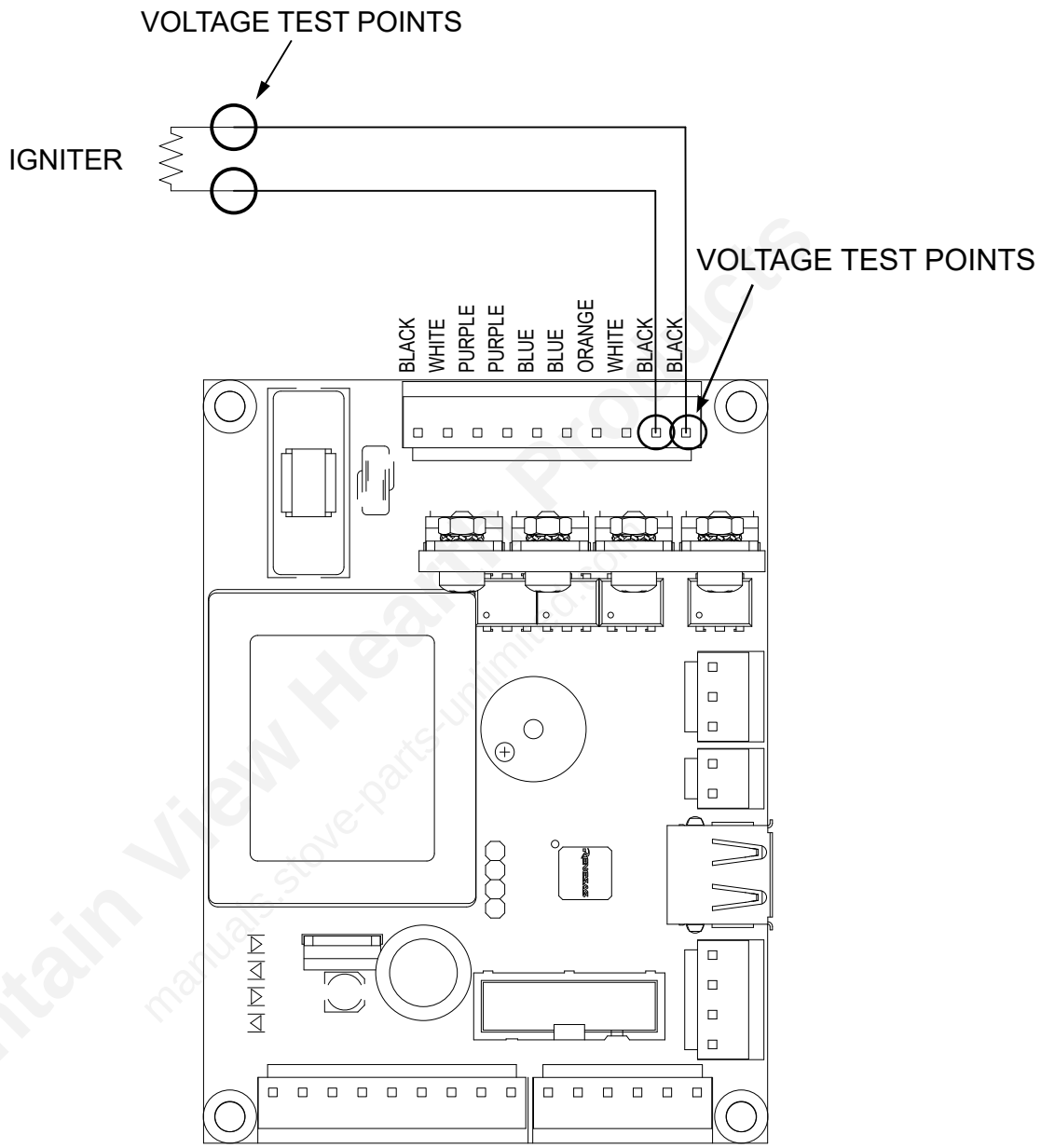
CODE #4: MISSED IGNITION



Test locations & readings on next page.

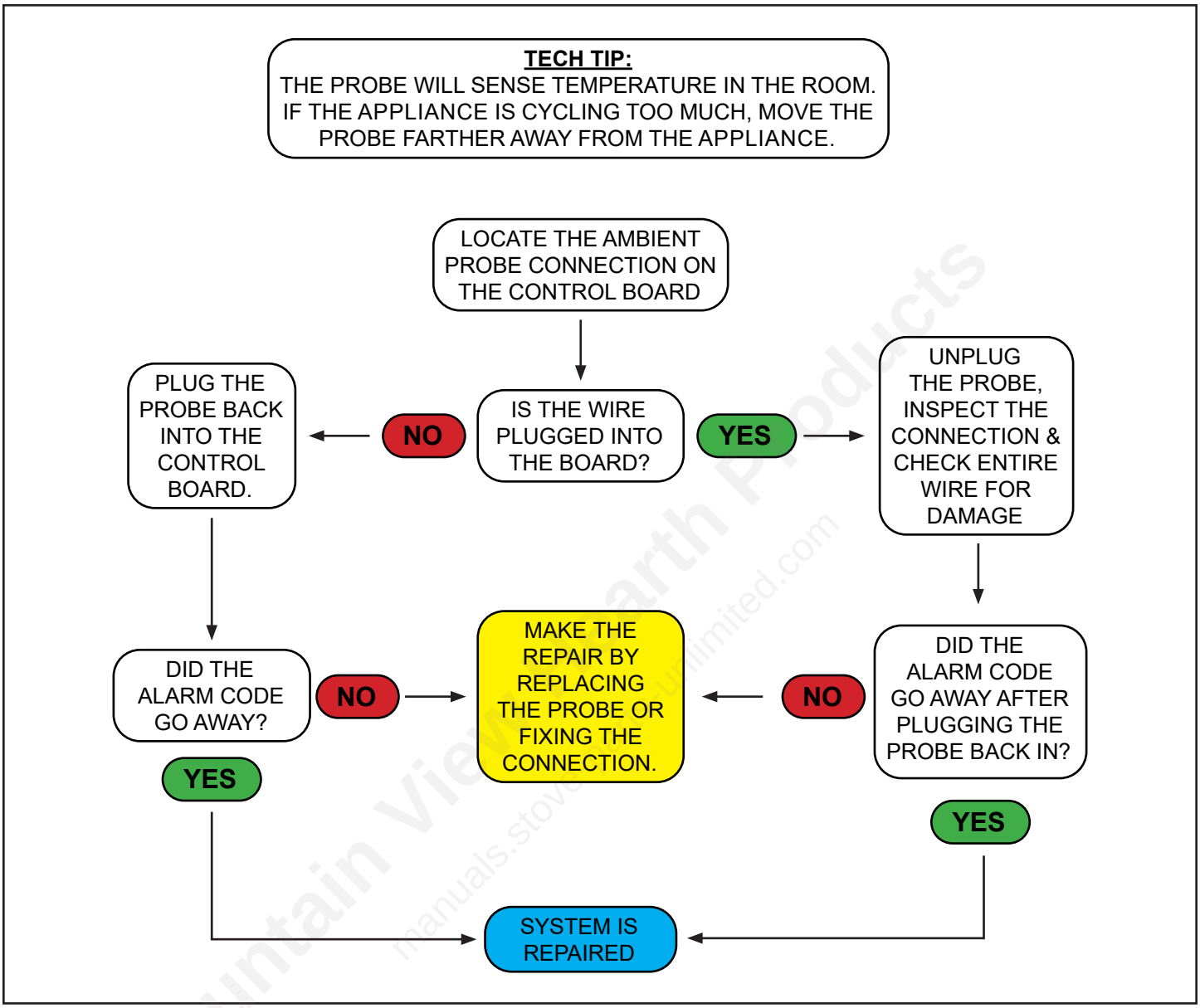
CODE #4: MISSED IGNITION

IGNITER TROUBLESHOOTING



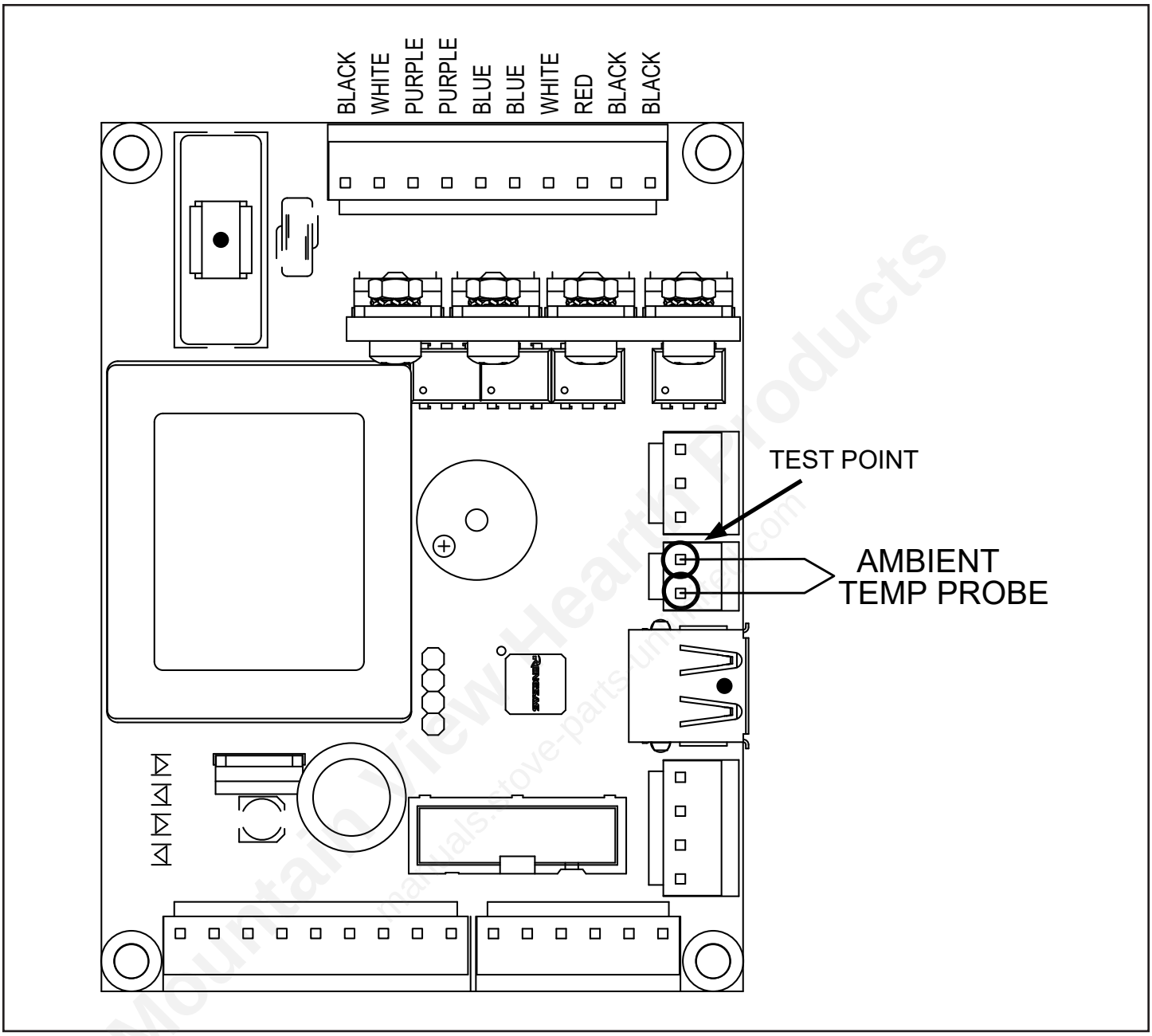
IGNITER SPECS:
300W /// 115 VAC
RESISTANCE: 48 OHMS

CODE #3: AMBIENT PROBE ALARM



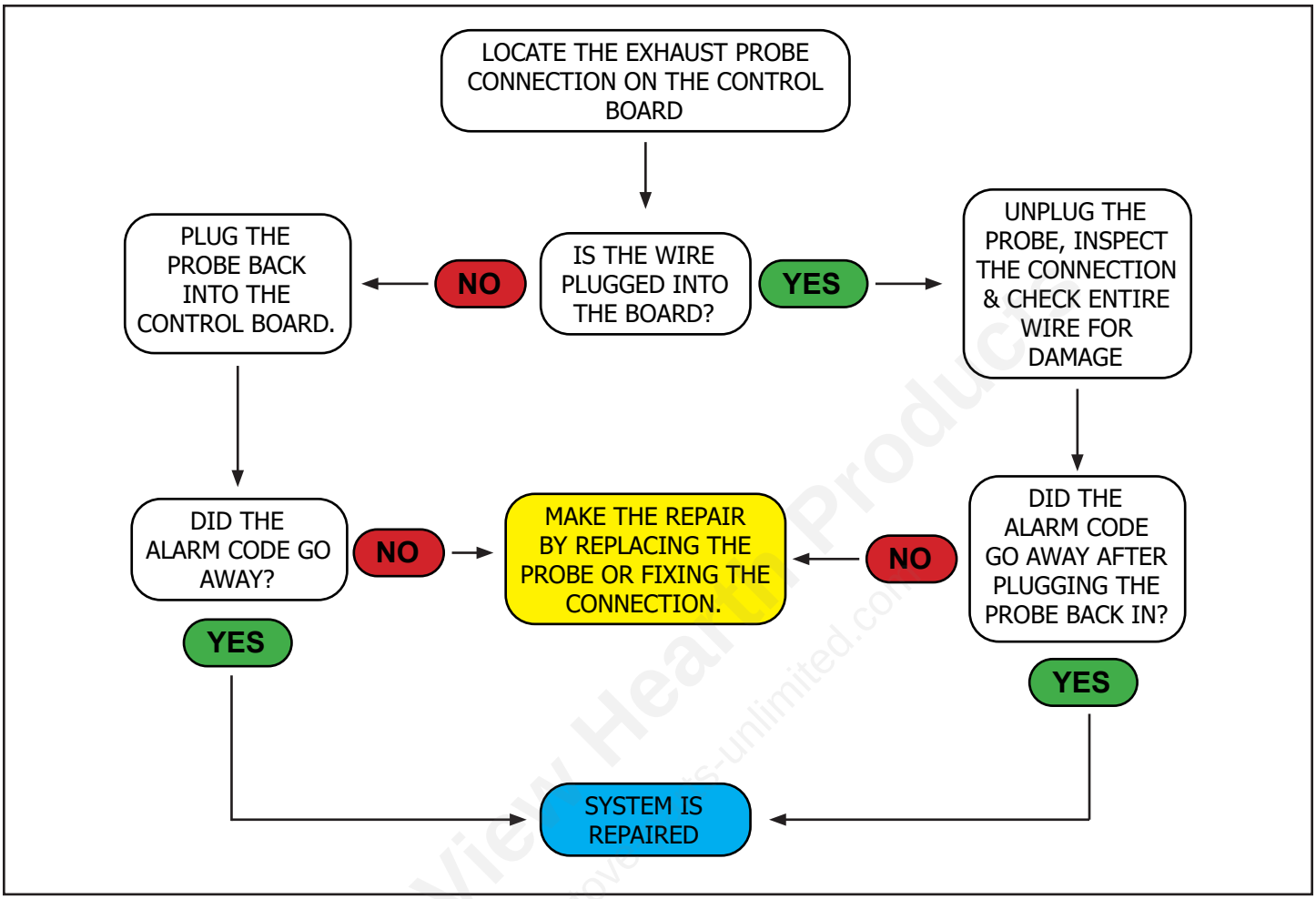
See next page for test locations and Readings.

CODE #3: AMBIENT PROBE ALARM



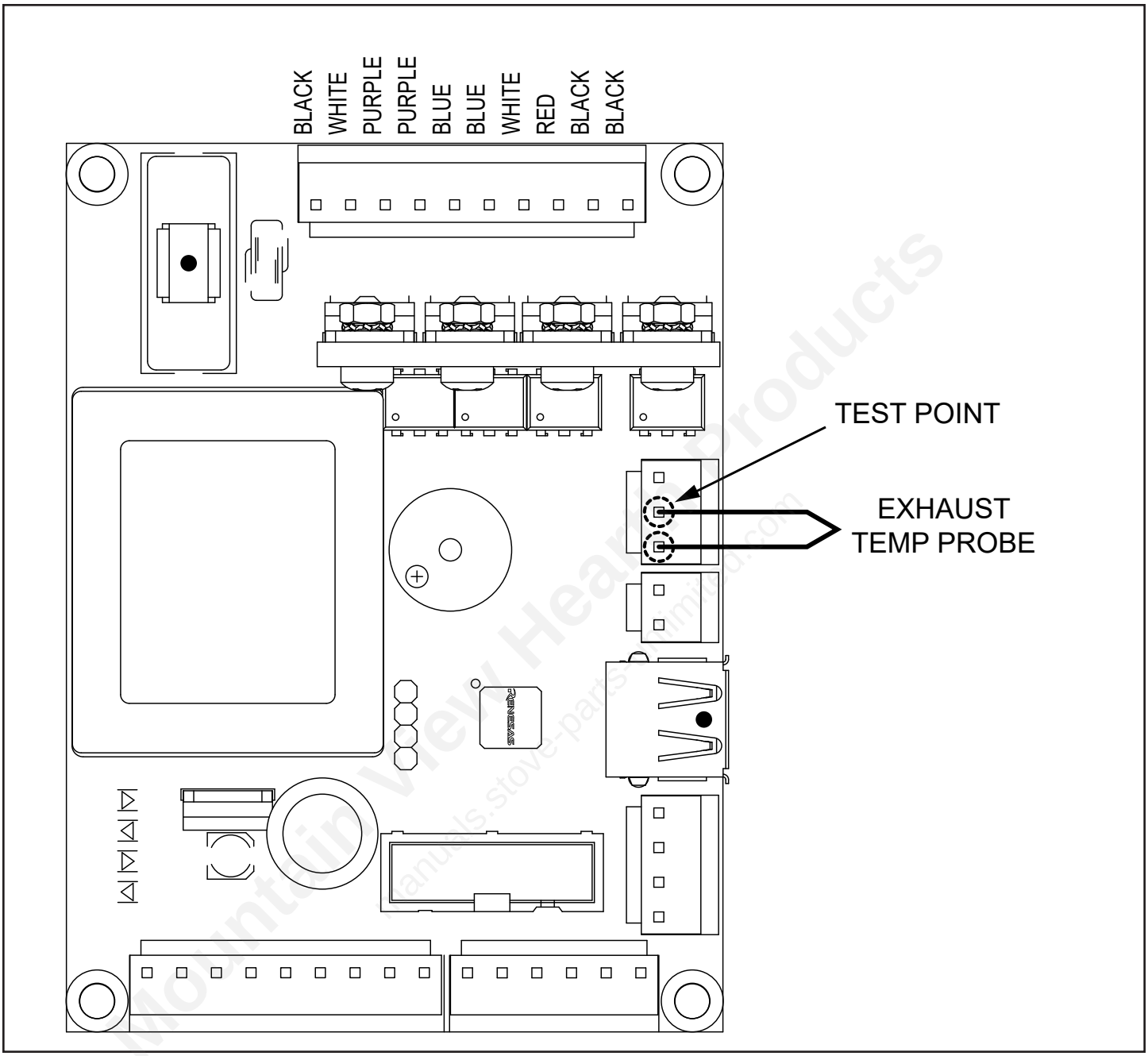
AT ROOM TEMPERATURE, THE EXHAUST PROBE WILL READ AROUND 100K OHMS. AS HEAT IS APPLIED TO THE PROBE, THE OHMS READING WILL CONTINUE TO GET SMALLER.

CODE #2: EXHAUST PROBE ALARM



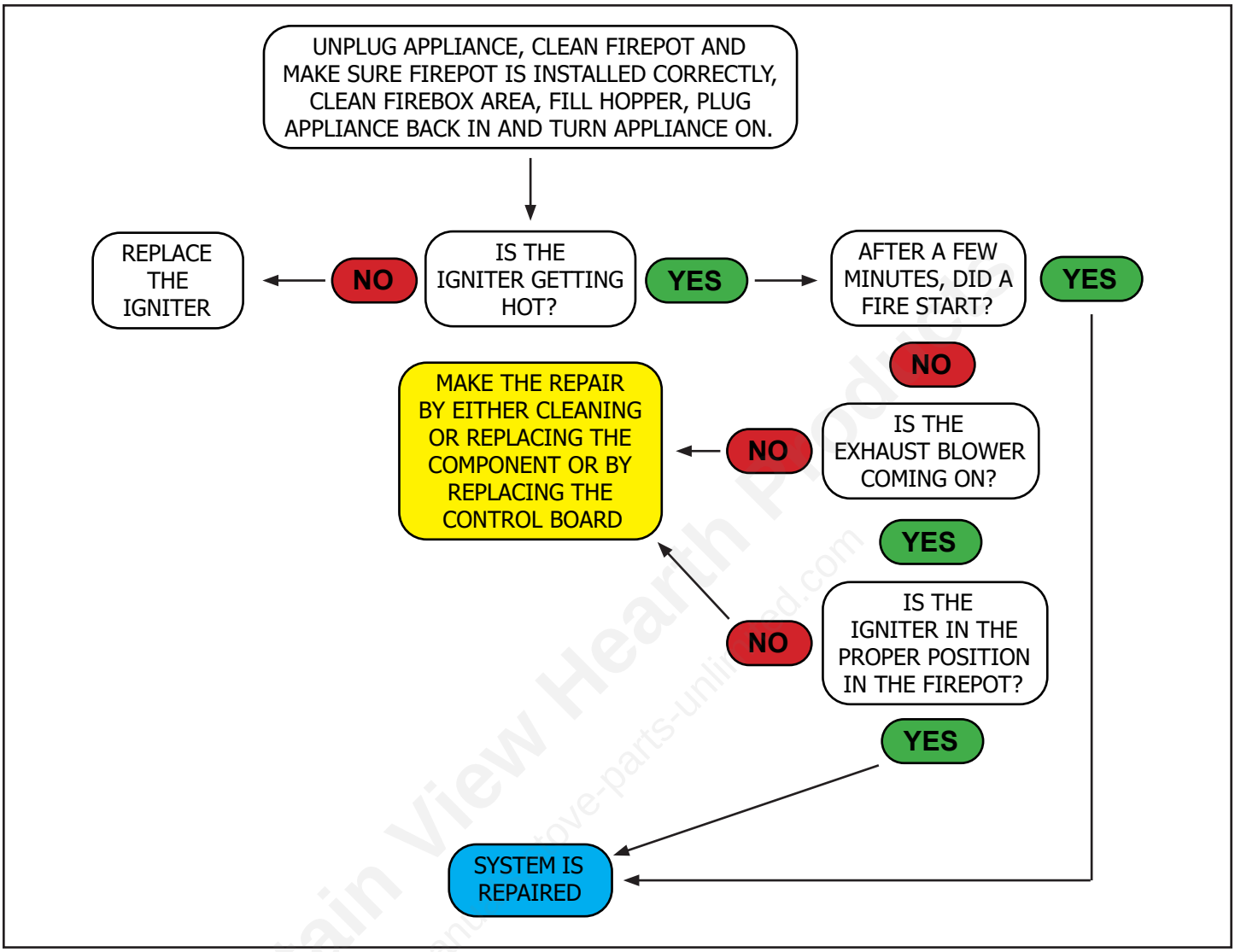
Test locations and readings on next page

CODE #2: EXHAUST PROBE ALARM



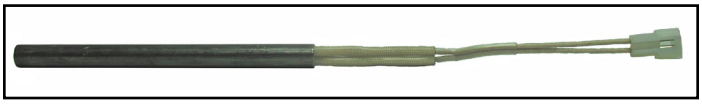
AT ROOM TEMPERATURE, THE EXHAUST PROBE WILL READ AROUND 100K OHMS. AS HEAT IS APPLIED TO THE PROBE, THE OHMS READING WILL CONTINUE TO GET SMALLER.

NOT LIGHTING THE FUEL

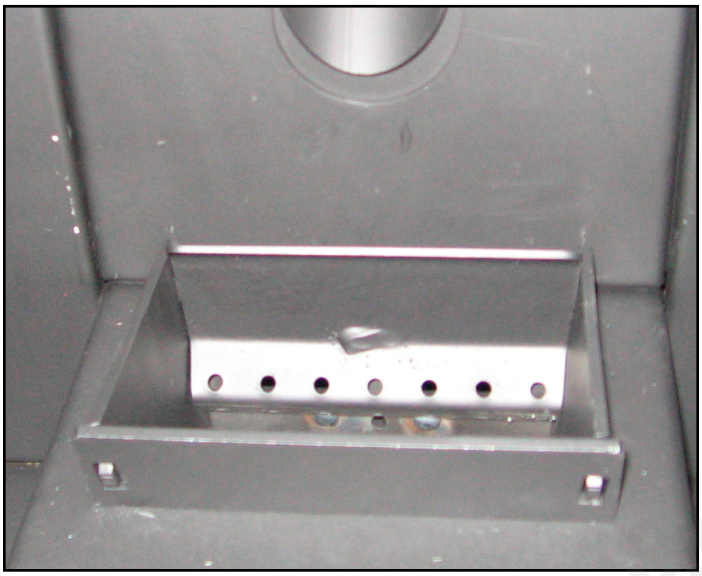


NOT LIGHTING THE FUEL

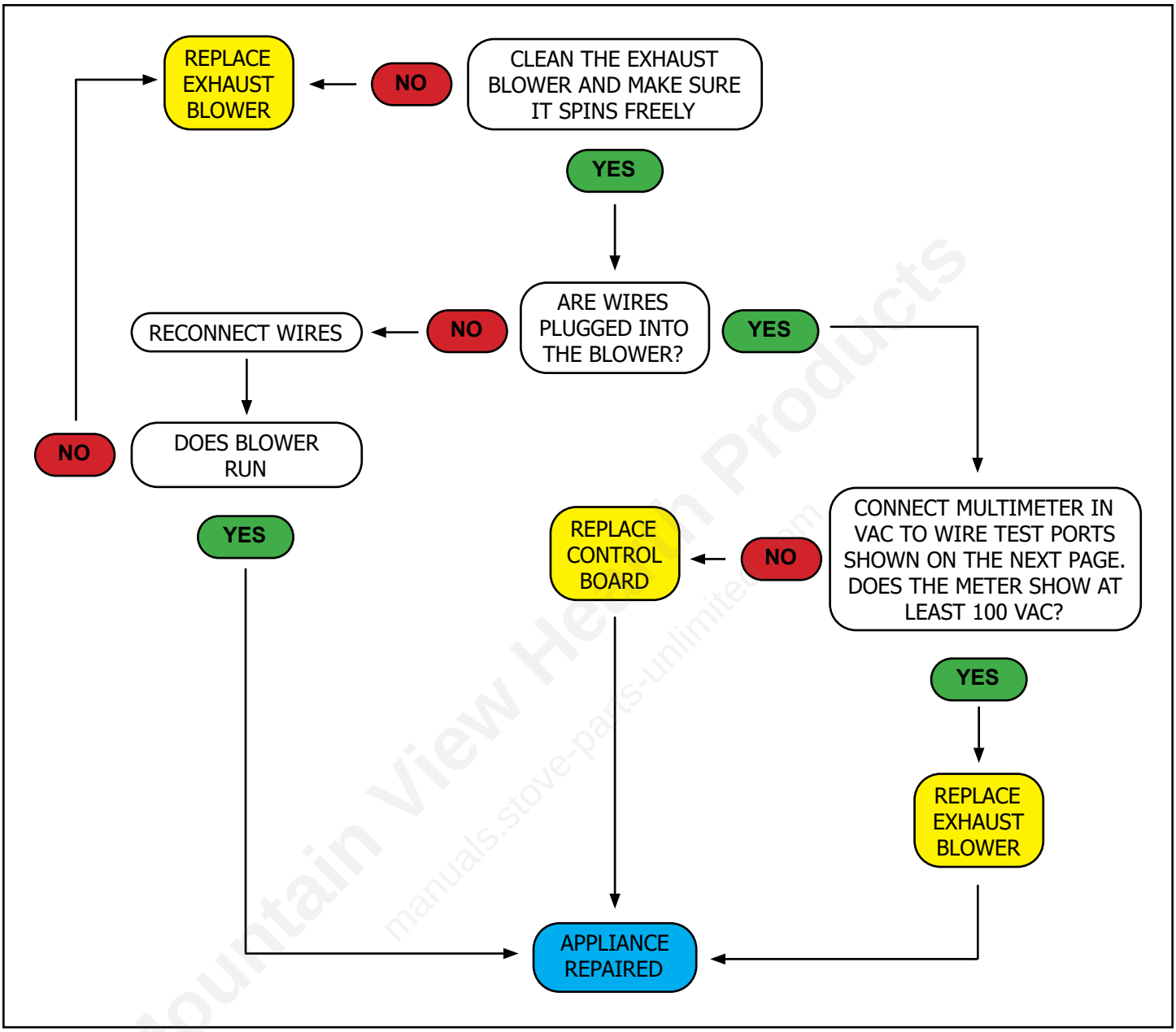
1. Check Igniter



2. Check Firepot Position

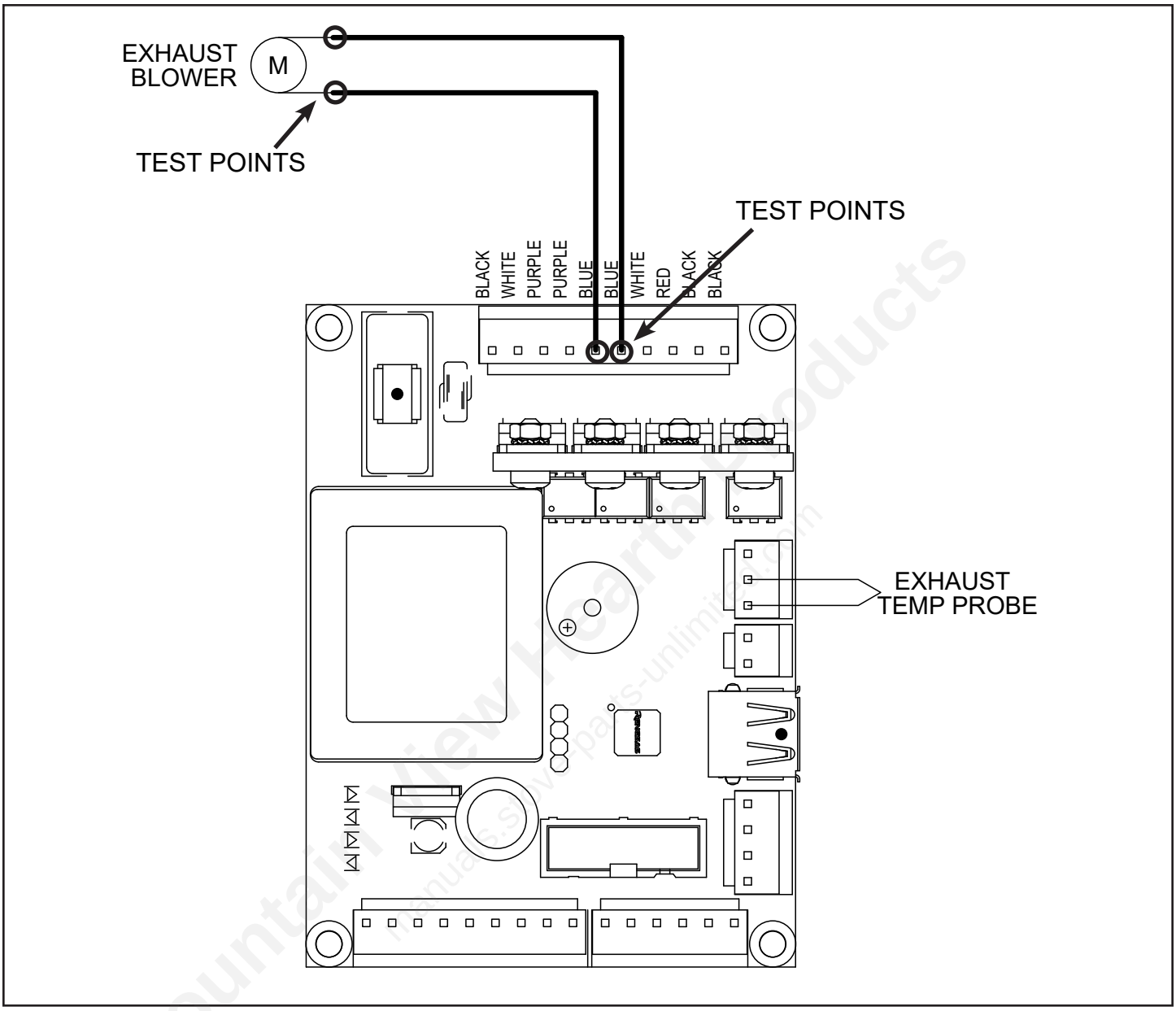


EXHAUST BLOWER NOT COMING ON

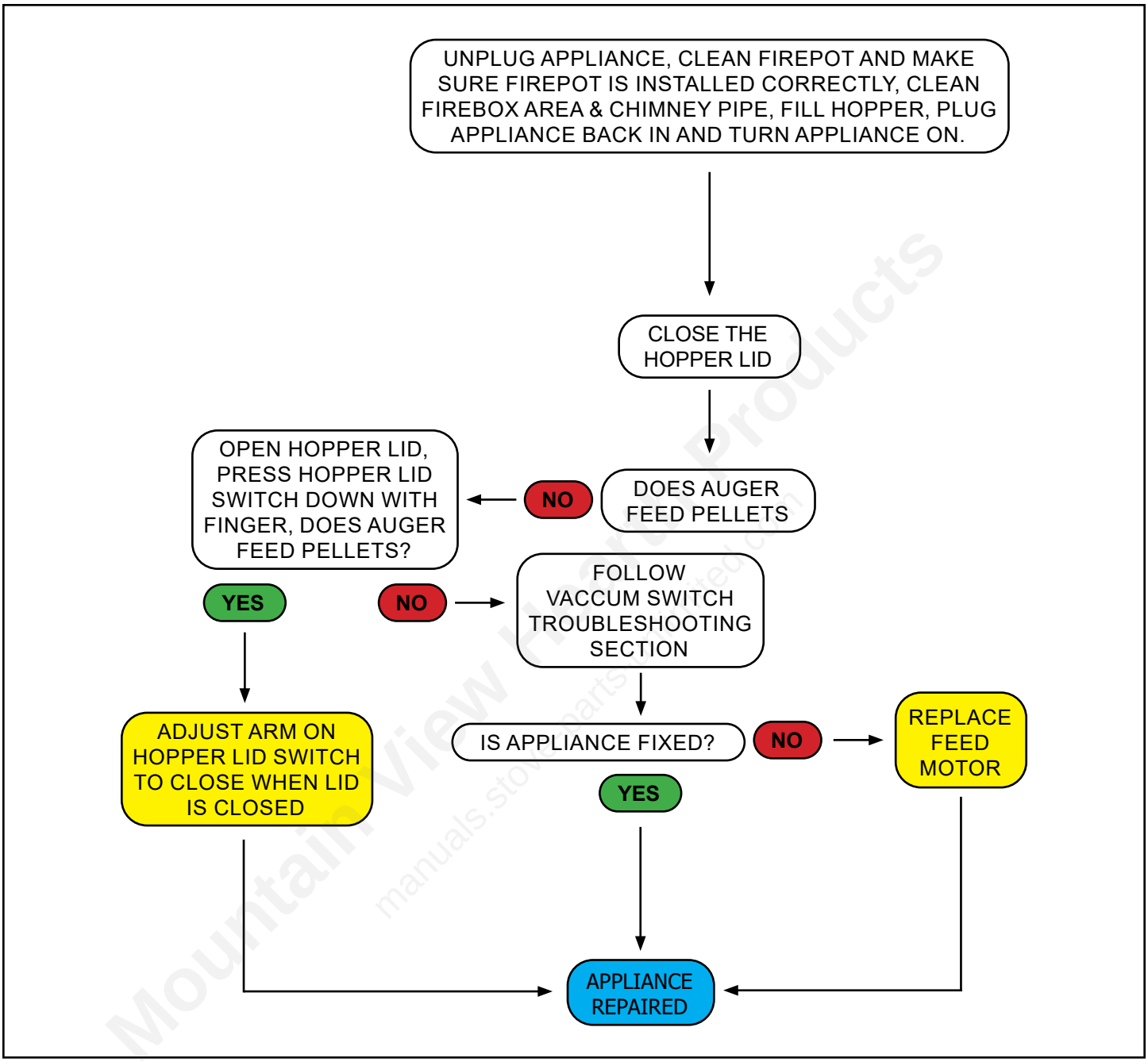


Test points on next page

EXHAUST BLOWER NOT COMING ON

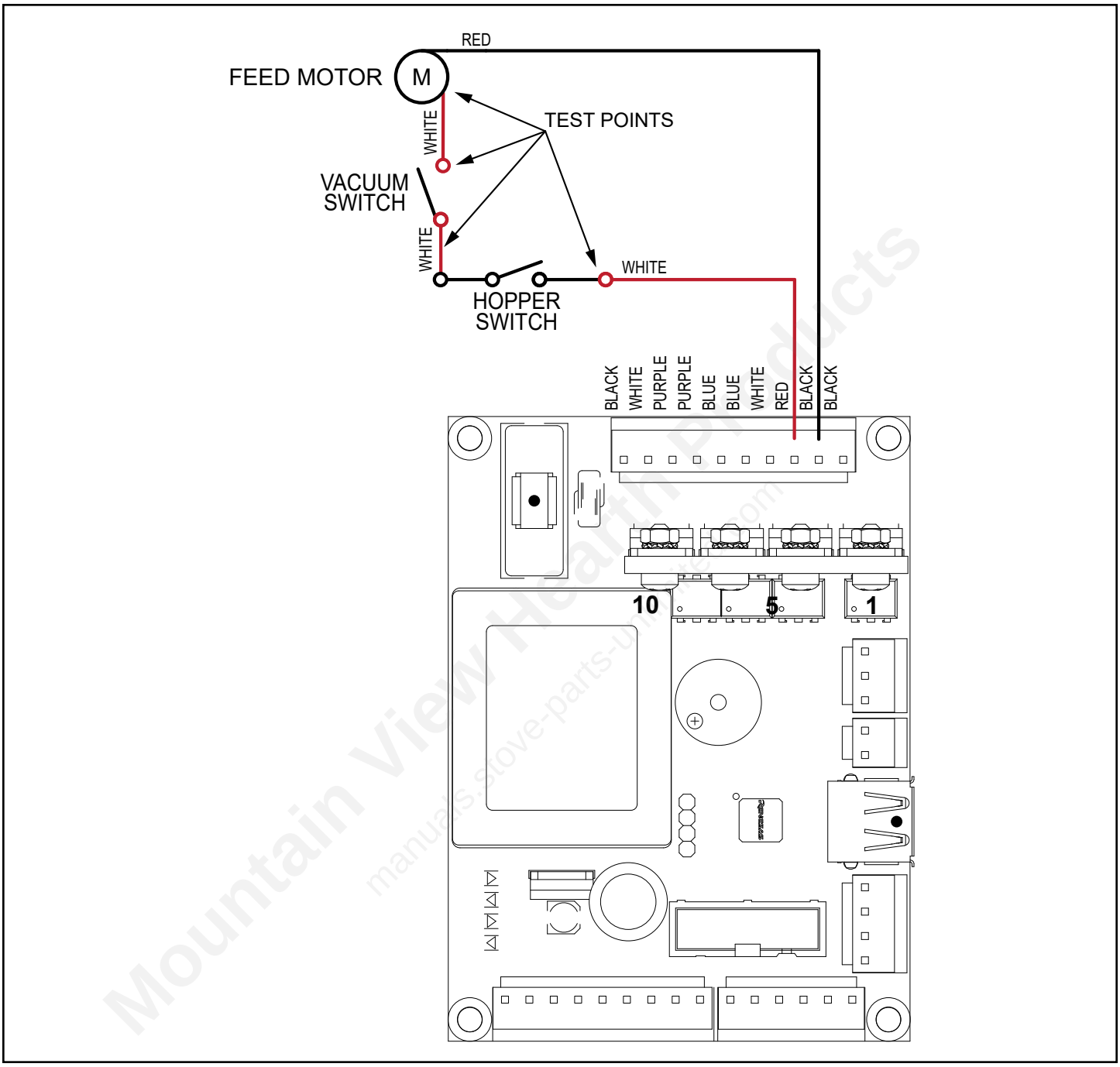


NOT FEEDING PELLETS



Test locations and readings on next page.

NOT FEEDING PELLETS



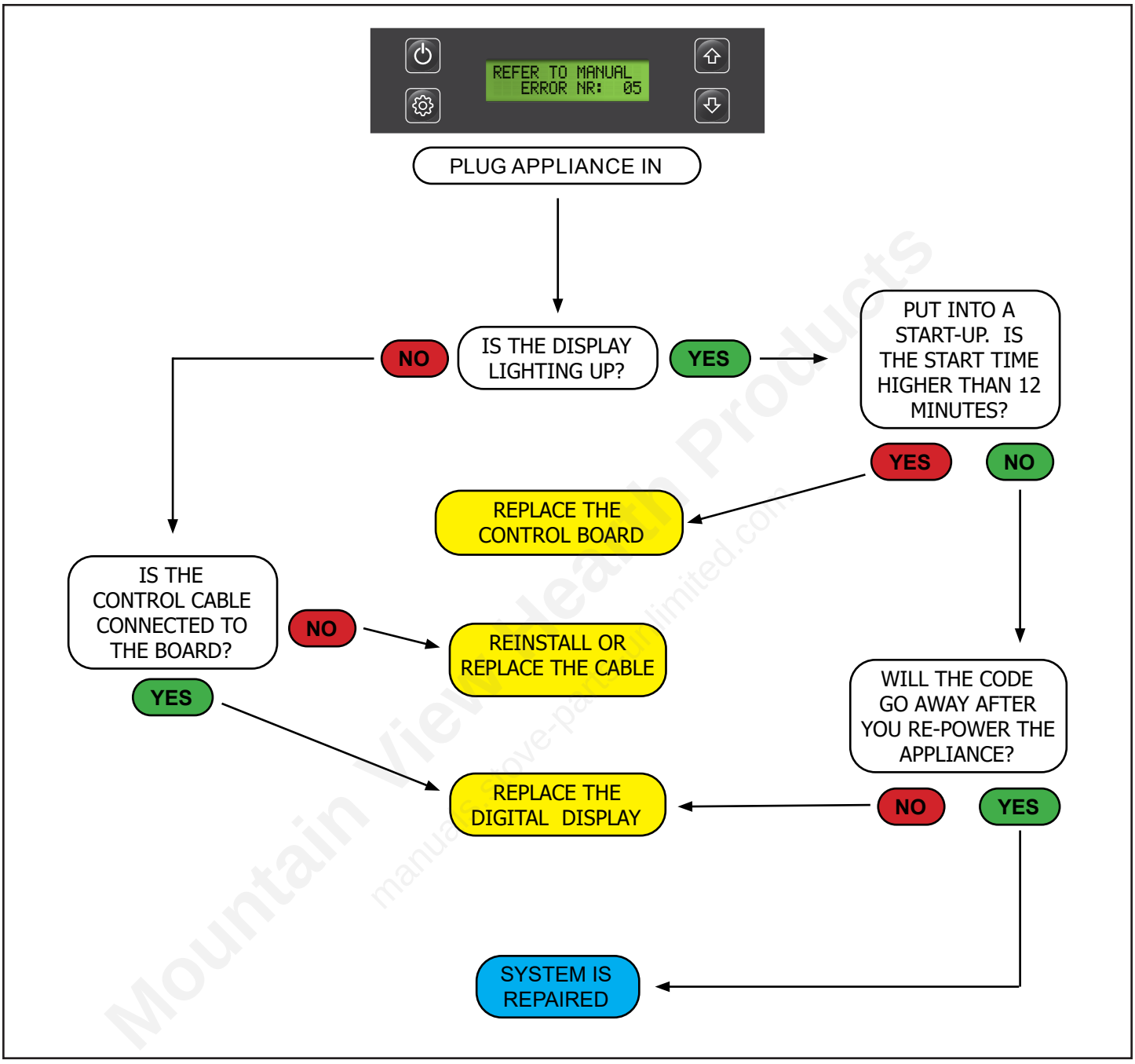
HOPPER SWITCH IS CLOSED WHEN THE HOPPER LID IS CLOSED.

VACUUM SWITCH IS CLOSED WHEN THE EXHAUST BLOWER IS ON.

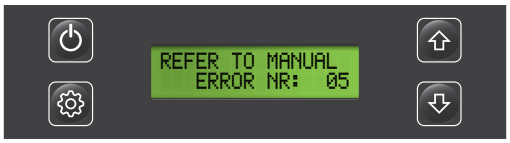
FEED MOTOR RUNS ON 115 VAC.

ALL CIRCUITS MUST BE CLOSED FOR THE FEED MOTOR TO WORK.

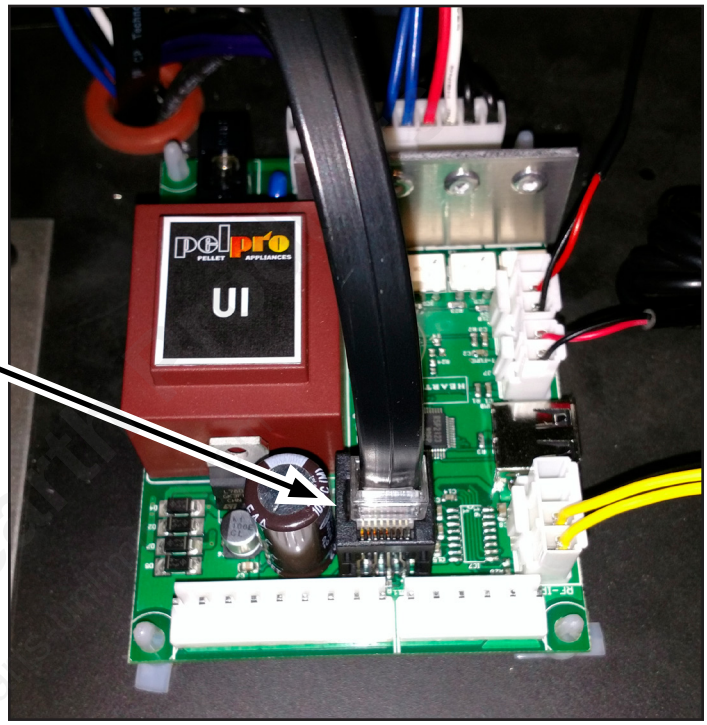
CODE #5: DIGITAL DISPLAY ALARM



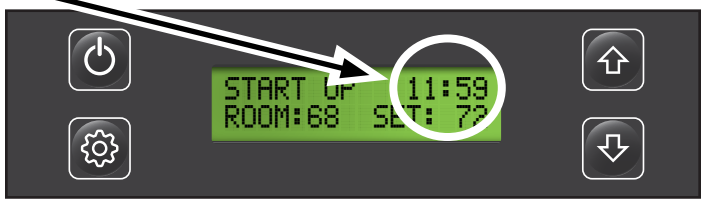
CODE #5: DIGITAL DISPLAY ALARM



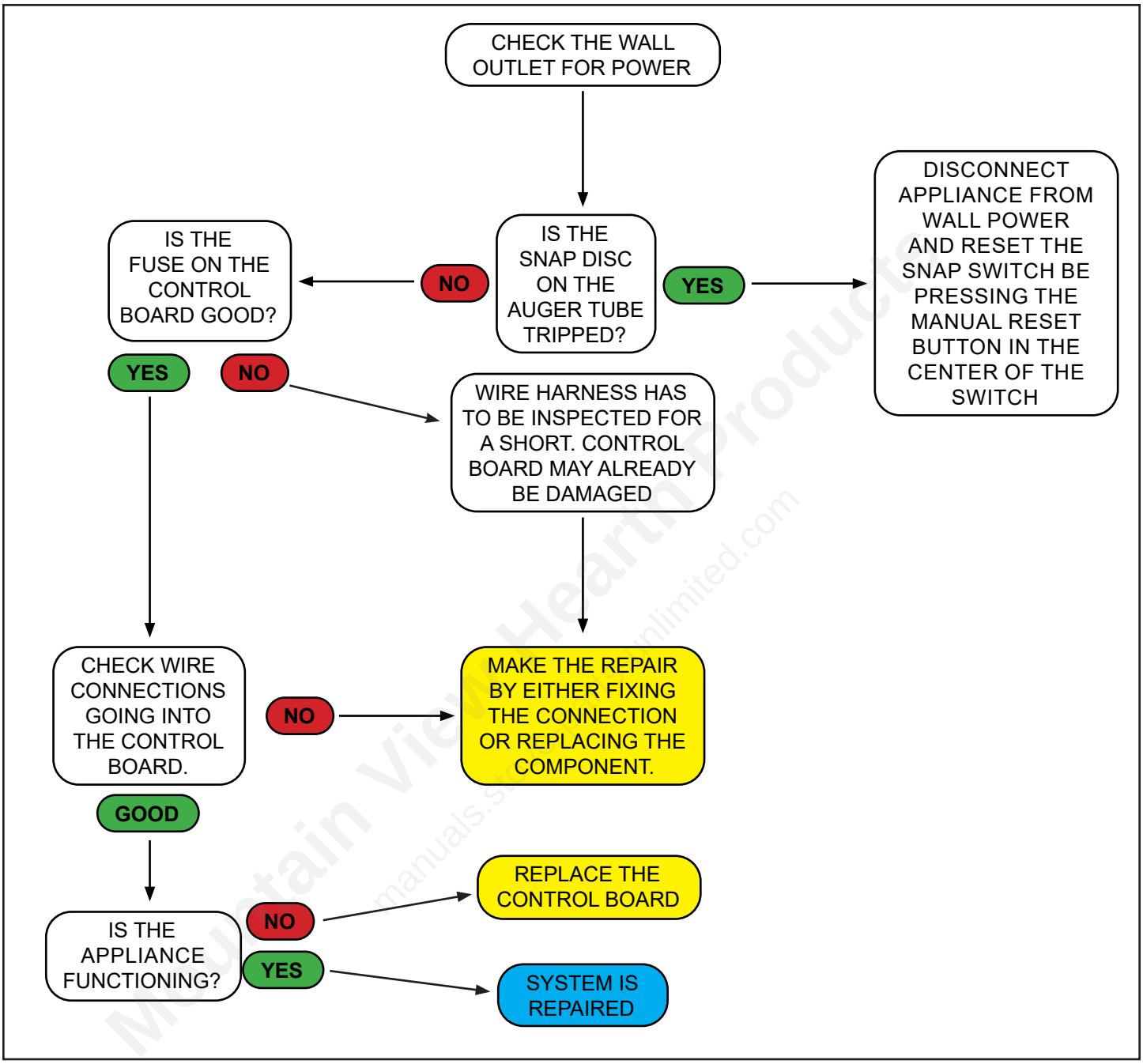
1. CHECK THE CABLE CONNECTION FROM THE CONTROL TO THE BOARD.



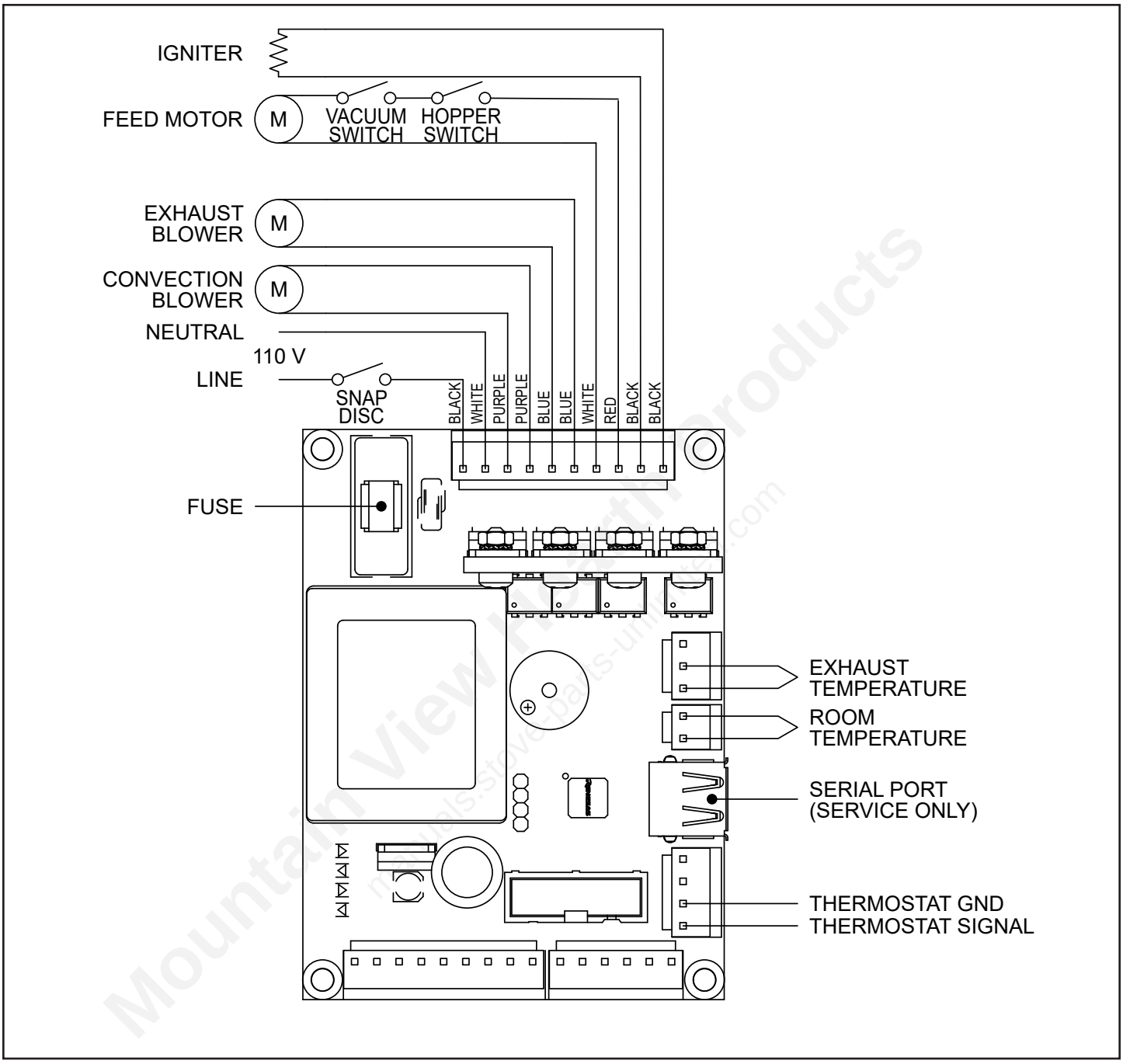
2. IF YOU CAN PUT THE APPLIANCE IN A “START-UP”, CHECK THE START UP TIME. IT SHOULD BE 12 MINS OR SHORTER. IF THE TIME SAYS AROUND 21 MINS, THE BOARD WILL NEED TO BE REPLACED.



NO POWER

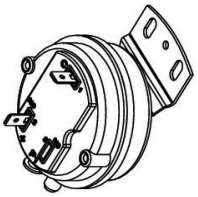


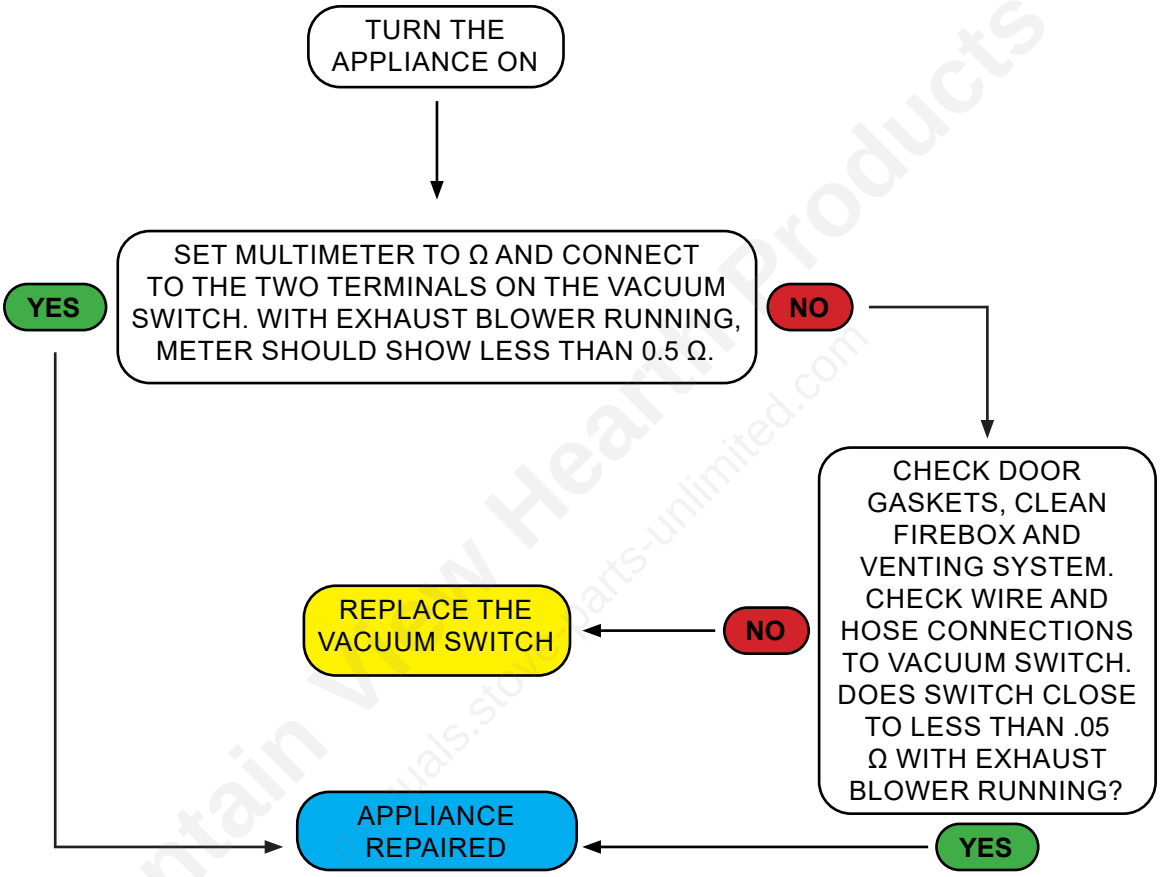
NO POWER



FIREBOX VACUUM & VACUUM SWITCH TROUBLESHOOTING

Firebox vacuum low or Vacuum switch not working





VACUUM SPECS WITH DIAL CONTROL ON "0" TRIM	
COLD APPLIANCE, PELLETS IN HOPPER, BLOWER AT MAX:	.19 TO .30 inches of WC
POWER LEVEL 1:	.11 TO .26 inches of WC
POWER LEVEL 2:	.11 TO .25 inches of WC
POWER LEVEL 3:	.12 TO .25 inches of WC
POWER LEVEL 4:	.13 TO .23 inches of WC
POWER LEVEL 5:	.15 TO .22 inches of WC
SHUTDOWN:	.17 TO .25 inches of WC

FIREBOX VACUUM & VACUUM SWITCH TROUBLESHOOTING

1. Install a vacuum "TEE" between the vacuum switch and drop tube.
2. Install the vacuum gauge to the "TEE".
3. Turn thermostat on or dial control. ***__NOTE:__ make sure fuel is in the hopper as this can effect the vacuum reading. It takes a minimum of .04 inches of water column to close the vacuum switch.****
4. Your vacuum gauge should be reading between .19 to .30 inches of water column while the exhaust blower is running on HIGH. (on a cold appliance & NO Fire).

ALL VACUUM READINGS ARE MEASURED IN INCHES OF WATER COLUMN. LONG VERTICAL VENT RUNS WILL PRODUCE **GREATER VACUUM** COMPARED TO HORIZONTAL RUNS.

NOTE:

Low vacuum can be the result of a leaking door gasket, firepot not closing all of the way, dirty heat exchanger, or plugged vent system.

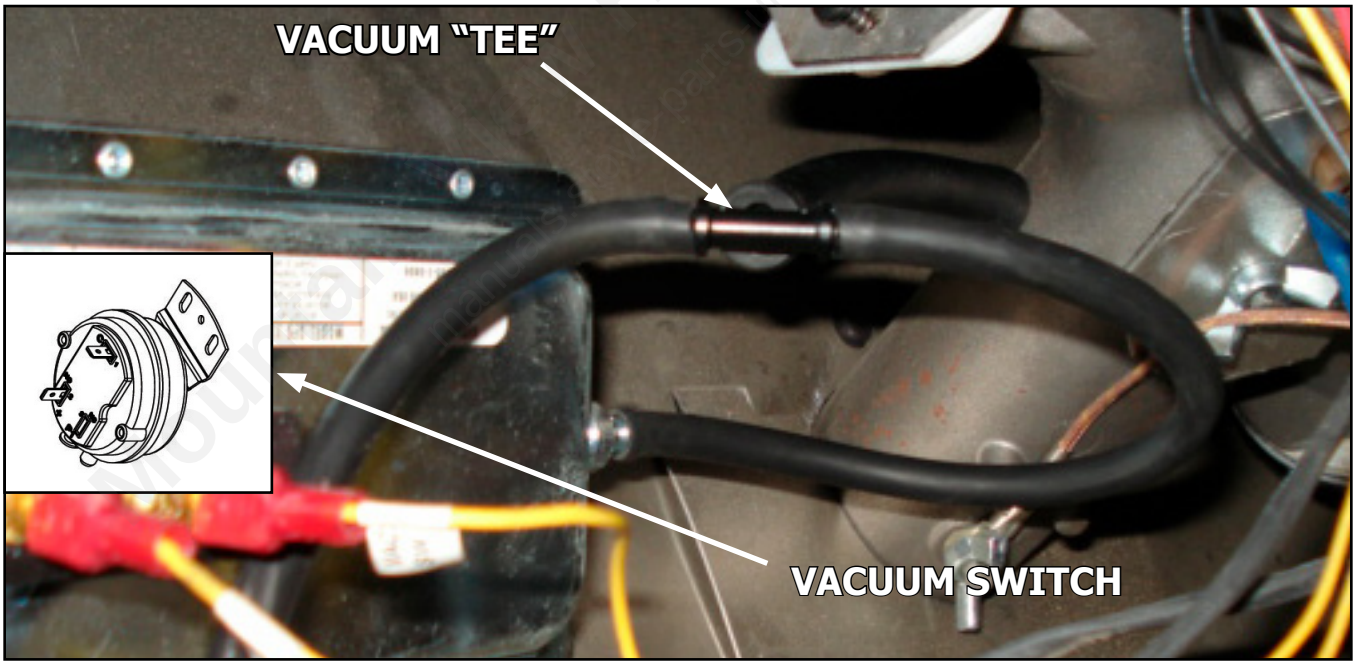
Always make sure the appliance is clean before making any repairs.

(VACUUM GAUGE)

RED = LOW VACUUM

GREEN = OPERATING RANGE

BLUE = SHUTDOWN



THERMOSTAT TROUBLESHOOTING

Thermostat not working

TURN THERMOSTAT ON & RAISE ABOVE ROOM TEMP

DID THE START-UP TIMER DISPLAY ON THE USER INTERFACE?

NO

CHECK THERMOSTAT STAT WIRE CONNECTIONS

GOOD

BAD

REPAIR THE WIRE OR REPLACE THE WIRE HARNESS

YES

PUT A JUMPER WIRE ON THE THERMOSTAT BLOCK. DID THE START-UP TIMER BEGIN?

YES

REPLACE THE THERMOSTAT

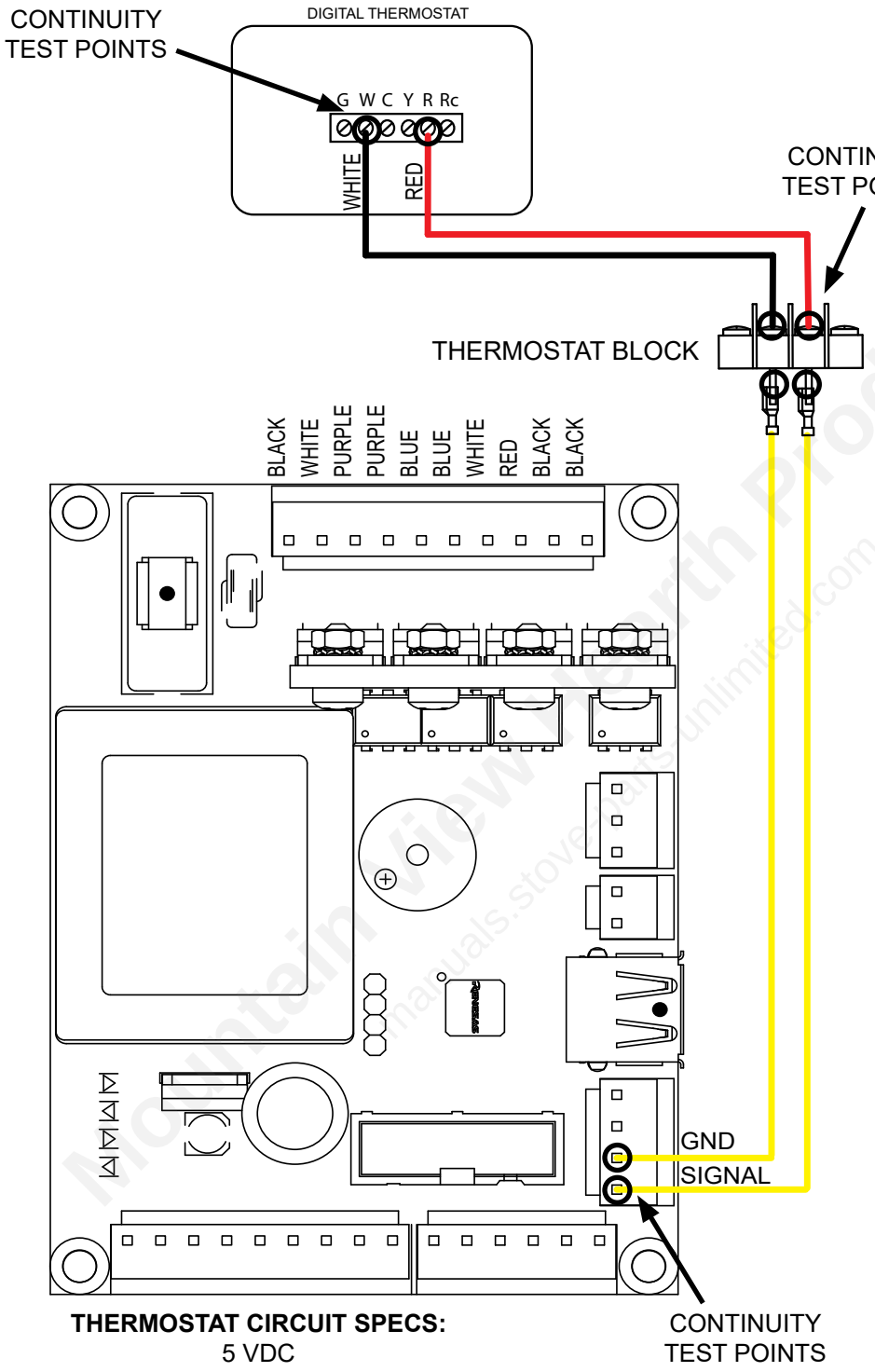
NO

MAKE SURE THE USER INTERFACE SAYS “EXTERNAL” ON THERMOSTAT SETTING.

YES

SYSTEM IS REPAIRED

THERMOSTAT TROUBLESHOOTING



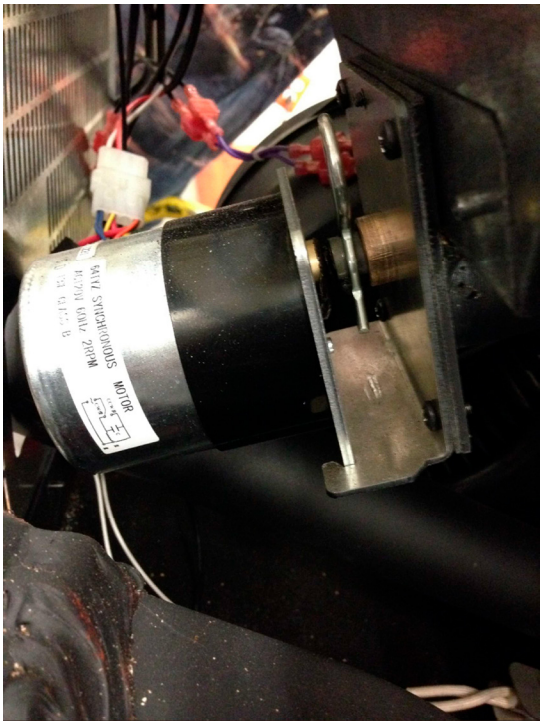
Unplug the appliance. Set Multimeter to resistance (Ω). Touch the two probes to the two ends of th white, red and both yellow wires/ The multimeter should show less than 0.1 Ω if the connections are good. If the meter shows “Max” or any value above 0.1 Ω check and replace wire connections.

THERMOSTAT CIRCUIT SPECS:
5 VDC

REPAIR PROCEDURE TABLE OF CONTENTS

FEED MOTOR REPLACEMENT

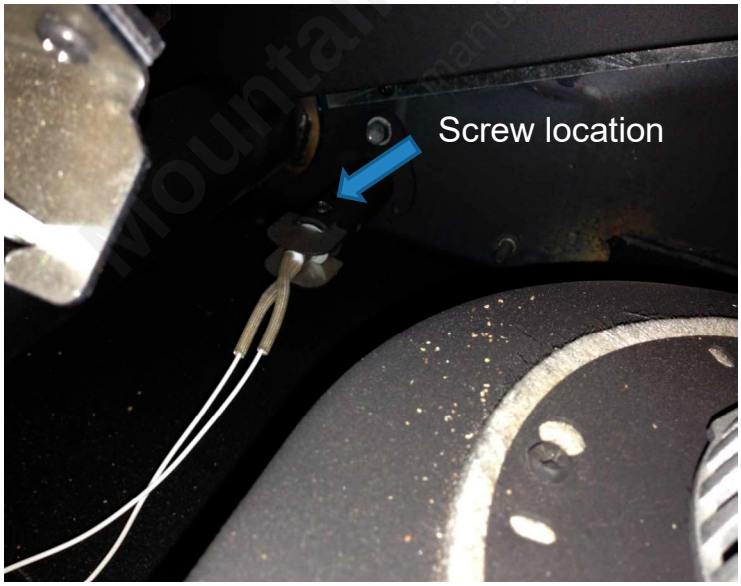
FEED MOTOR



The feed motor is located on the back of the unit towards the bottom. Removing the rear screen and left side panel is the best way to access the motor.
Once access is gained, simply pulling the pin on the auger shaft will release the feed motor.

IGNITER REPLACEMENT

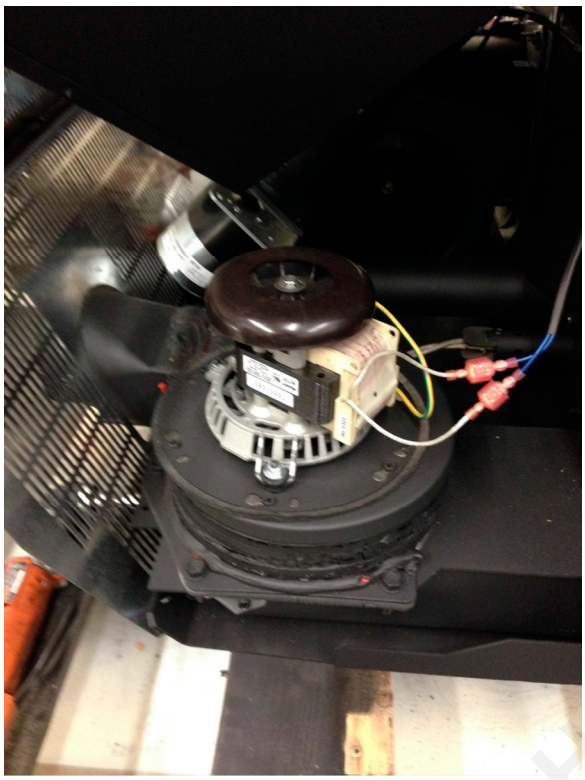
IGNITER



The igniter is located at the back of the firebox in the middle.
Removing the left access panel will allow you to see it. There is a Phillips head screw holding the igniter in place.

EXHAUST BLOWER REPLACEMENT

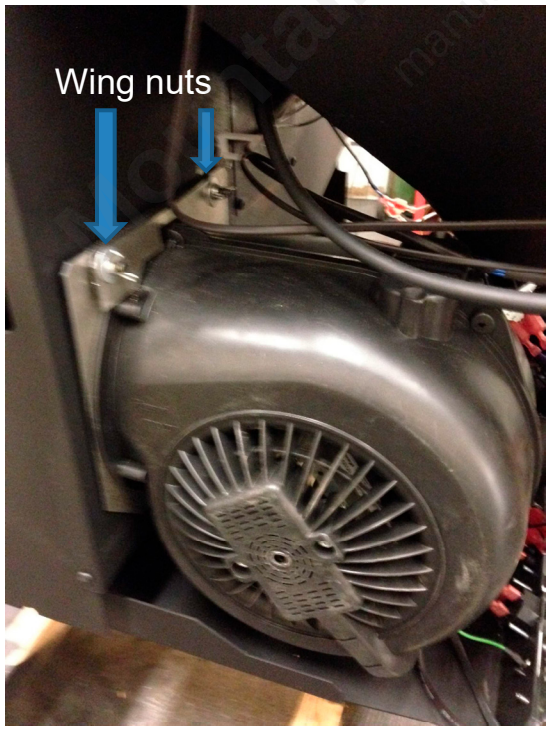
EXHAUST BLOWER



Remove the left side panel to access the blower. A Phillips head screwdriver will be needed to remove the blower from the housing.

CONVECTION BLOWER REPLACEMENT

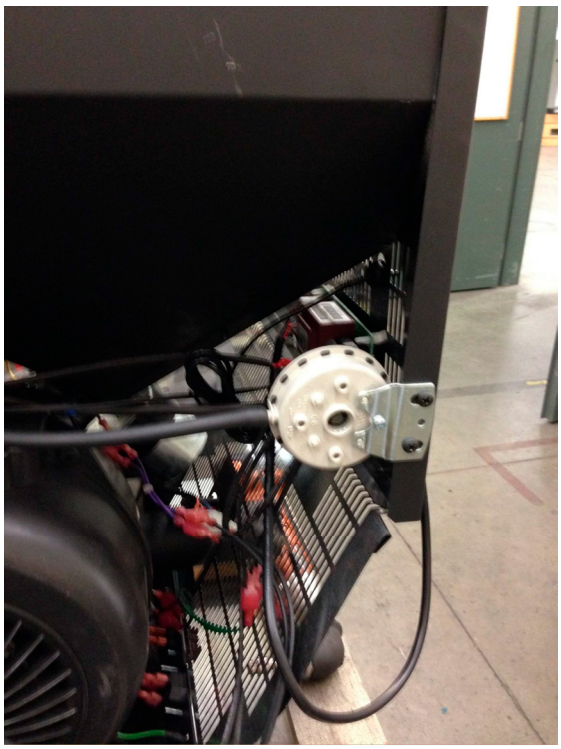
CONVECTION BLOWER



Remove the right side panel to access the blower. Two wing nuts hold it in place. Removal is a little tight, so the blower will need to be rotated a little to get it out. Removing the vacuum switch is a good option if you need a little more room taking the blower out.

VACUUM SWITCH REPLACEMENT

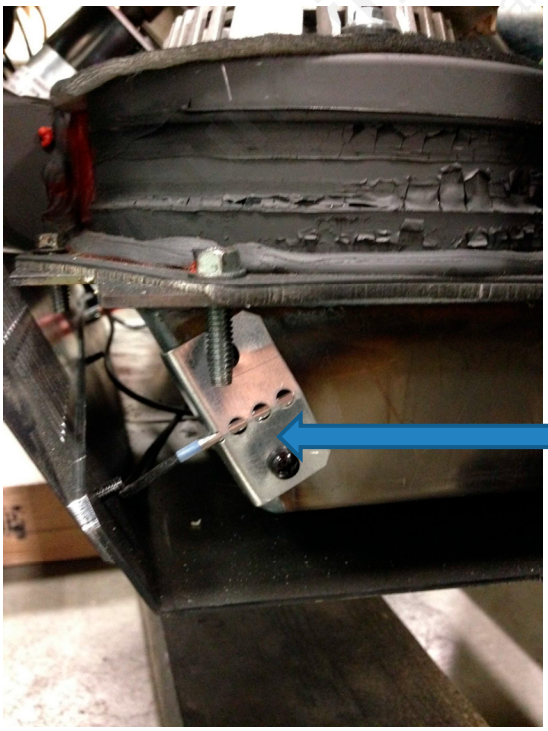
VACUUM SWITCH



Remove the right side panel. Two Phillips screws hold it in place.

EXHAUST PROBE REPLACEMENT

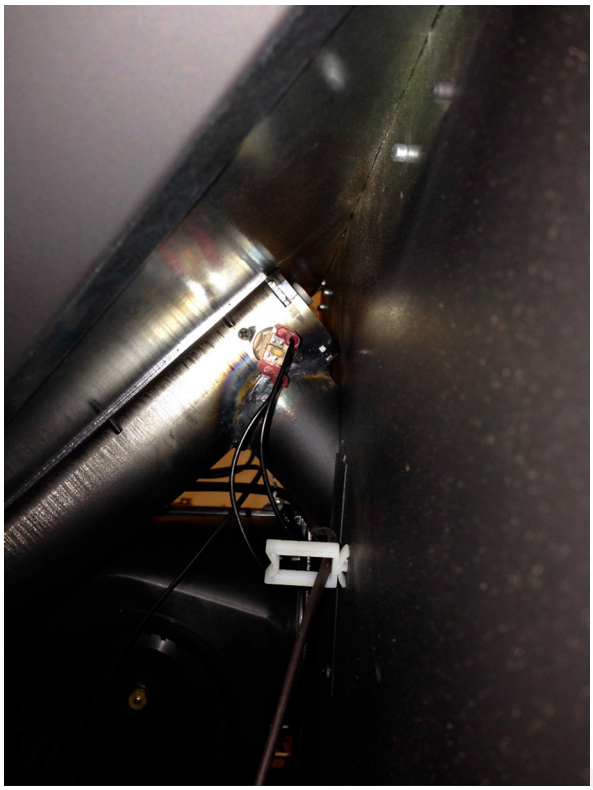
EXHAUST TEMP PROBE



Remove the left side panel to access the probe. Two Phillips head screws hold it in place.

SNAP DISC REPLACEMENT

#3 SNAP DISC



Remove the left side panel to access the snap disc. Two Phillips head screws hold it in place.

HOPPER SWITCH REPLACEMENT

HOPPER SWITCH

It is located under the hopper lid on the right side the stove. The right side panel will need to be removed to access the 2 mounting screws for the hopper switch bracket.

PPC90 SPECIFICATIONS

WATTS:	
EXHAUST BLOWER	56w
CONVECTION BLOWER	288w
IGNITER	300w
FEED MOTOR	15w
AMPS:	
EXHAUST BLOWER	.47A
CONVECTION BLOWER	2.4A
IGNITER	2.5A
FEED MOTOR	125mA
CONVECTION BLOWER VOLTS:	
LOW TO HIGH (VAC)	62v to 115v
EXHAUST BLOWER VOLT RANGE (76 TO 109+/- 2v, 0 trim):	
POWER LEVEL 1	76v
POWER LEVEL 2	80v
POWER LEVEL 3	87v
POWER LEVEL 4	95v
POWER LEVEL 5	109v
FEED MOTOR "ON" TIMES at 0 trim:	
POWER LEVEL 1	0.9
POWER LEVEL 2	1.5
POWER LEVEL 3	1.9
POWER LEVEL 4	2.3
POWER LEVEL 5	2.7
BTU INPUT:	
POWER LEVEL 1	11,055
POWER LEVEL 2	
POWER LEVEL 3	
POWER LEVEL 4	
POWER LEVEL 5	47,378
CONVECTION BLOWER CFM:	250
HOPPER CAPACITY:	
FREESTANDING	90 lbs.
VACUUM: (COLD APPLIANCE, EXHAUST BLOWER VOLTS 115, FUEL IN HOPPER)	.14" TO .21"wc

Note: Appliance was plugged into a 115V outlet. Voltages can vary depending on volts from the outlet.