



# EVOLUTION NATURAL GAS / PROPANE SERVICE MANUAL



## ACCUTEMP PRODUCTS INC

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# REVISION SHEET

Current Revision: 1902  
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Change:  
Revision and update

1. Ceramic insulators should not be in or close to the flame.
2. Electrode assemblies should not be adjusted or disassembled. Electrodes should have a gap spacing of  $0.125 \pm 0.031$  in ( $3.12 \pm 0.81$  mm). If this spacing is not correct, the assembly must be replaced. Electrodes are NOT field adjustable.
3. Exceeding the temperature limits can cause nuisance lockouts and premature electrode failure.

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# WARNING SYMBOL DEFINITIONS

## SYMBOL DEFINITIONS

Symbols are used to attract your attention to possible dangers. They are only effective if the operator uses proper accident prevention measures. Some of the symbols are boxed text; while others maybe just picture icons. Please give this information the respect they deserve for safe operation.

### Symbol Icons

Below are definitions of the symbol icons used in this manual.



#### **DANGER**

Indicates an imminently hazardous situation; which, if unchanged, will result in death or serious injury.



#### **CAUTION**

Indicates a potentially hazardous situation; which, if unchanged, will result in minor or moderate injury.



#### **NOTE**

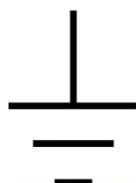
Advises the reader of information or instructions, vital to the operation or maintenance of the equipment.



#### **CAUTION - HOT SURFACE**



#### **DANGEROUS VOLTAGE**



#### **EARTH GROUND**

# SAFETY PRECAUTIONS



## **ELECTRICAL SHOCK HAZARD WHILE WORKING ON ENERGIZED EQUIPMENT.**

Unplug equipment prior to removing any components effected by electricity.

## **FLAMMABLE GAS HAZARD WHILE WORKING ON GAS EQUIPMENT.**

Shut-Off the Supply Gas Valve to the equipment prior to removing any components effected by supplied gas.

## **BURN HAZARD WHILE WORKING ON STEAM PRODUCING EQUIPMENT.**

When accessing the cooking chamber, be sure to always stand back while slowing opening the door to allow the chamber to vent off the steam. Never reach into the cooking chamber before it has completely vented off the steam.

Never reach into the cooking chamber or handle hot items without wearing the proper heat protective gloves. Steam coming out of the holes on the right side of the cooking chamber is invisible and can cause severe burns.

Water inside the steam chamber, creating steam, has a temperature of 212°F and will cause burns if touched or spilled on the skin.

## **PERSONNEL INJURY HAZARD WHILE PICKING UP OR MOVING HEAVY EQUIPMENT.**

Always use 2 people and proper lifting techniques when picking-up, moving, or flipping-over heavy equipment.

## **SLIP & FALL HAZARD WHILE WORKING ON WATER HOLDING EQUIPMENT.**

Keep the floor in front of the equipment clean and dry. If spills occur, clean them up immediately to avoid potential injuries.

# WARNING & CAUTION NOTES



**ONLY QUALIFIED SERVICE TECHNICIANS SHOULD PERFORM MAINTENANCE ON THIS EQUIPMENT.**



- **DO NOT** use abrasive or steel materials, such as wire brushes or metal scouring pads to clean the Water Sensors.
- **DO NOT** use Silica Sandpaper to clean the Water Sensors or Ignitor/Flame Sense Probes. It leaves a residue that will not allow Water Sensors to work properly.
- **DO NOT** manually fill water above the Water Level Mark on the left side of steam chamber above the High Limit Level Sensor.

# 1.0 Sequence of Operation

## 1.1 MANUAL FILL:

### Power Cord Plugged-In & PWR Button Not Pushed

1. Line Voltage (120/240VAC) comes in through the Terminal Strip and 3A fuse until it reaches the Transformer.
2. Line Voltage is also applied to the Ignition Module on pin L1, after it goes through the 3A fuse.
3. The Transformer steps-down the Line Voltage to 24VAC and applies that, through the Overtemp Switch & Overfill Reed Switch (*Auto-Fill Only*), to the Water Sensor Board, the Control/Keypad Board, and Ignition Module on pin V2.
4. *(The red LED light on the Water Sensor Board will be flashing at a rapid rate.)*
5. The AC coil of Control Relay #1 (CR#1) is energized.

### PWR Button Pushed & Water Level Is Below the Low Water Level Sensor

1. PWR Button pushed and the Low Water Light Indicator will be ON and Alarm will sound.
2. *(The red LED light on the Water Sensor Board will continue to flash at a rapid rate.)*
3. **PRE** is displayed on the Control/Keypad Board.

### PWR Button Pushed & Water Is Filled to the Water Level Mark

1. PWR Button pushed and the Low Water Light Indicator will be OFF and no Alarm will sound, due to the Low Water Level Sensor being satisfied. *(The red LED light on the Water Sensor Board will have a 1 second flash rate.)*
2. Low Water Sensor's signal will close the Water Sensor Control Board's K2 Relay, which will turn-off the Low Water Light and send a power signal to pin 5 of Control Relay #2 (CR#2), pin 24VAC of the Ignition Module, and the Gas Control Pilot Valve.
3. The Control/Keypad Board will send a 24VDC signal to Control Relay #2 closing the DC coil *(as long as the Door Switch and the Chamber Pressure Switch is closed; allowing the Time Delay Relay #1 to close after a 5 second delay, which will create a buffer for power to the DC coil).*
4. Control Relay #2's DC coil is closed, allowing the power signal from K2 Relay to pass from pin 5 to pin 3 of Control Relay #2; sending power to the Ignition Module on pin TH.

# 1.0 Sequence of Operation

## 1.2 AUTO-FILL (OPTIONAL):

### Power Cord Plugged-In & PWR Button Not Pushed

- Same as Manual Fill.

### PWR Button Pushed & Water Level Is Below the Low Water Level Sensor

1. PWR Button pushed and the Low Water Light Indicator will be lit.
2. *(The red LED light on the Water Sensor Board will be flashing at a rapid rate.)*
3. The Water Sensor Board sends a signal to the Water Sensor Board's K1 Relay to open the Auto-Fill Valve and start filling the steam chamber with water.
4. *(This process will continue every time the water level falls below the Low Water Level Sensor.)*

### PWR Button Pushed & Water Level Is At the Low Water Level Sensor or Above

- Same as Manual Fill.

### Water Level Is At the High Limit Water Level Sensor

1. When the water level reaches the High Limit Water Level Sensor, the Water Sensor Board will continue to activate the Auto-Fill Valve for 30 seconds then turn it off.

2. *(The red LED light on the Water Sensor Board will have a 2 second flash rate.)*
3. This process will continue every time the water level falls below the High Limit Water Level Sensor.

### Water Level Is Filled Too High in the Steam Chamber

1. When the water level gets too high in the steam chamber, the Float Ball will rise on the Reed Switch sensor peg until the Reed Switch does not read the magnetic field from the Float Ball.
2. This will cause the Control Relay #1 AC coil's voltage to drop, dis-engaging the relay from the steamer's normal operation; and also lighting the High Water (Over-Fill) Indicator Lamp on the Control Panel.
3. Loss of Control Relay #1 cause the loss of the control signal to pin 5 of Control Relay #2; causing it to turn off the Ignition Module and close the Gas Control Valve which stops the gas feed to the Gas Power Burner.
4. *(To restart the steamer, drain the water out until the High Water (Over-Fill) Indicator Light turns-off. Pressing the PWR button ON will begin the start-up procedure.)*

# 1.0 Sequence of Operation

## 1.3 Ignition System:

### Ignition Module

1. Power signal to the Ignition Module's pin TH, activating the Power Burner Fan from pin IND on the Ignition Module.
2. Air pressure from the Power Burner Blower will close the Power Burner Blower Pressure Switch, supplying power to pin PSW.
3. Ignition Module will send control signals from pin V1 to the Time Delay Relay #2, and to the Gas Control Main Valve. At the same time, Ignition Voltage is sent to the Ignitor Probe creating a spark between the probe and GND.
4. The Time Delay Relay #2 operates for 4 seconds, allowing the Gas Enrichment Valve to supply a dense amount of gas (compensation for poor quality source gas), in conjunction with the Gas Control Valve's gas.
5. The Ignition Module will look for a signal from the Flame Sense Probe, via pin S1, to indicate that the gas was lit and burning a flame.

**Serial Break 56686 and below:** *If no flame is sensed within 4 seconds of ignition start, the module will lockout.*

**Serial Break 56687 and above:** *If no flame is sensed within 4 seconds of ignition start, then the*

*Ignition Module will retry ignition twice more. After a 3rd fail, the module will lockout.*

### Gas Power Burner & Heat Transfer

1. When the Gas Enrichment and Gas Control Valves are opened, gas is sent through the Gas Orifice and mixed with air from the Power Burner Fan; then it is distributed through the Gas Burner's surface ports to be ignited by the Ignitor Probe's spark.
2. Flame Sense signal will cause the Ignition Module to keep the Gas Control Valve open, supplying gas to the burner. *(The flame should be a blue color for maximum efficiency).*
3. The heat generated in the Gas Burner Box will be transferred, by the Heat Transfer Plate, evenly over the bottom of the steam chamber; boiling the water inside to create steam for cooking.

## 1.0 Sequence of Operation

### 1.4 Temperature Sensor (RTD) and Control/Keypad Board

1. As the temperature rises in the steam chamber, the RTD will vary the resistance, to the Control/Keypad Board to provide a digital Temp Display.
2. Control Panel will show **PRE** on initial heat-up until the steam chamber reaches **195°F**; then **COO** will be display between **195°F** and **212°F**.
3. The operating default mode on initial power ON is COOK mode; which causes the steamer to go to the operating temperature of **212°F**.
4. In HOLD mode; the steamer's temperature is displayed on the Control Panel until the HOLD temperature's preset value is reached; then **HLD** is displayed. The Control/Keypad Board will regulate temperature via the RTD input, based on that HOLD preset value. *(This value can be changed using the program function on the Control/Keyboard Control.)*

## 2.0 Main Component Information

Component	Part #	Purpose
Transformer	<u>Assembly Part#</u> AT0A-2779-3	<ul style="list-style-type: none"> <li>Steps-down the Supply Line Voltage to 24 -28VAC.</li> </ul>
Overtemp Switch ( <i>Thermal Limit SW3</i> )	AT0E-4743-1 (SN 54759 onwards) AT1E-2653-4 (below SN 47503)	<ul style="list-style-type: none"> <li>Normally closed switch that provides a safety feature to the machine in case the Gas heating system overheats.</li> <li>If the Gas heating system <u>overheats</u>, the switch will <u>open</u> and turn the steamer <u>off</u>; while lighting the red LED Overtemp Light on the Control Panel.</li> <li>The steamer will <u>not</u> turn on until the temperature has dropped enough to allow the Overtemp Switch to close again.</li> </ul>
Control / Keypad Board	AT0E-3625-1	<ul style="list-style-type: none"> <li>Human interface for steamer operations through push-buttons, operations, &amp; display readouts.</li> <li>Provides power to Control Relay #2 (24VDC).</li> <li>Receives input from the Temperature (RTD) Sensor and displays the water temperature on the LED readout.</li> <li>Maintains the preset HOLD temperature.</li> </ul>
Water Sensor Control Board	AT0E-3230-2	<ul style="list-style-type: none"> <li>Receives inputs from Water Sensor Probes and implements corresponding actions for those inputs based on the water level in the steam chamber.</li> <li>Controls the Auto-Fill Valve (<i>if installed</i>) and receives inputs that provides actions for the desired water level needs.</li> </ul>
Water Sensor Probe	AT1E-2652-1	<ul style="list-style-type: none"> <li>Teflon exterior with a stainless steel center that uses the minerals in the water to complete the electrical circuit to the Water Board.</li> <li><b>MUST BE CLEAN TO WORK PROPERLY.</b></li> </ul>
Low Water Level Probe		<ul style="list-style-type: none"> <li>Once the Low Water Sensor is satisfied, it will allow the Ignition Module to activate.</li> <li>If the water level is below the sensor, the Water Board will activate the Auto-Fill Valve (<i>if installed</i>) filling the unit the water until the High Limit Water Sensor is satisfied.</li> </ul>
High Water Level Probe		<ul style="list-style-type: none"> <li>On initial chamber water fill, once the water level reaches and satisfies the Operational Water Sensor, the Water Board will keep the Auto-Fill Valve open for 30 additional seconds..</li> <li>After initial chamber water fill, when the water level drops below the sensor's operational level; the Water Board will open the Auto-Fill Valve for 30 seconds to raise the water level back above the High Limit Water Sensor.</li> <li>This process will repeat as long as the water level stays above the Low Water Sensor.</li> </ul>
Auto-Fill Valve (OPTIONAL)	AT1A-3841-1	<ul style="list-style-type: none"> <li>Solenoid Valve that allows water to flow into the steam chamber; that is controlled automatically by the Water Board based on inputs from the Water Sensor Probes.</li> </ul>

## 2.0 Main Component Information

Component	Part #	Purpose
Water Over-Fill Sensor Switch (OPTIONAL)	<u>Reed Switch:</u> AT0A-3519-3  <u>Float Ball:</u> AT0P-3233-1	<ul style="list-style-type: none"> <li>Magnetic Reed Switch is used in conjunction with a Float Ball. If the water rises too high, the switch opens and turns off the steamer.</li> <li>When the switch opens, the High Water Overfill LED will light. The user will have to drain the water out and turn the steamer back ON; otherwise, the steamer will remain shutdown.</li> </ul>
Control Relay #1 (AC)	AT0E-2825-5	<ul style="list-style-type: none"> <li>Controls AC Volt input &amp; output signals which provide actions from the Water Sensor Board.</li> </ul>
Door Switch	AT0A-3660-1	<ul style="list-style-type: none"> <li>Magnetic Switch used to ensure that the door is closed and latched prior to generating steam</li> <li>Ignition Module will <b>not</b> activate if this switch is <b>not</b> closed (Door Open).</li> </ul>
Chamber Pressure Switch	<u>S#: 34769 &amp; Up</u> AT0E-3617-4  <u>S#: 34768 &amp; Lower</u> AT1A-3847	<ul style="list-style-type: none"> <li>Normally closed switch that allows pressure to build-up inside the steam chamber.</li> <li>Opens when the steam chamber pressure reaches 1/2" Water column</li> <li>Ignition Module will <b>not</b> activate if this switch is <b>not</b> closed (Switch Open).</li> </ul>
Time Delay Relay #1	AT0E-2500-1	<ul style="list-style-type: none"> <li>Normally open switch that closes after 5 seconds (once Door Switch &amp; Chamber Pressure Switch are closed) to allow the Ignition Module to activate and light the Gas Burner.</li> </ul>
Control Relay #2 (DC)	AT0E-2825-6	<ul style="list-style-type: none"> <li>Receives 24VDC (if the safety conditions are met) to the coil allowing the Ignition Module to activate the Power Burner Blower.</li> </ul>
Power Burner Blower	AT0E-3759-1	<ul style="list-style-type: none"> <li>Provides the correct amount of air into the Gas Burner Box to allow the gas from the Gas Burner to ignite and burn efficiently.</li> </ul>
Blower Pressure Switch	AT0E-3617-4	<ul style="list-style-type: none"> <li>Closes once air pressure from the Power Burner Fan is applied.</li> <li>Ignition Module will <b>not</b> activate if the switch is <b>not</b> closed (Switch is Open due to no air from the Blower or the switch is defective).</li> </ul>
Ignition Module	AT0E-3760-3	<ul style="list-style-type: none"> <li>Receives inputs and provides control signals to the Gas Control Valve and Gas Enrichment Valve.</li> <li>Provides the voltage to the Ignitor Probe to ignite the gas from the Gas Power Burner.</li> <li>Senses the input from the Flame Sense Probe (if there is a flame from the Burner or not) and makes appropriate control signal outputs based if there is a flame from the burner or not.</li> </ul>
Ignitor Probe	<u>Assembly Part#</u> AT1E-3795-1	<ul style="list-style-type: none"> <li>Uses high voltage, supplied by the Ignition Module, to form a spark between the Ignitor Probe and the GND Probe.</li> <li>Ignites the gas/air mixture from the Gas Power Burner.</li> </ul>
Flame Sense Probe		<ul style="list-style-type: none"> <li>Verifies that a flame is present and if no flame is sensed; the Ignition Module will go into lockout and deactivates all gas valves.</li> </ul>

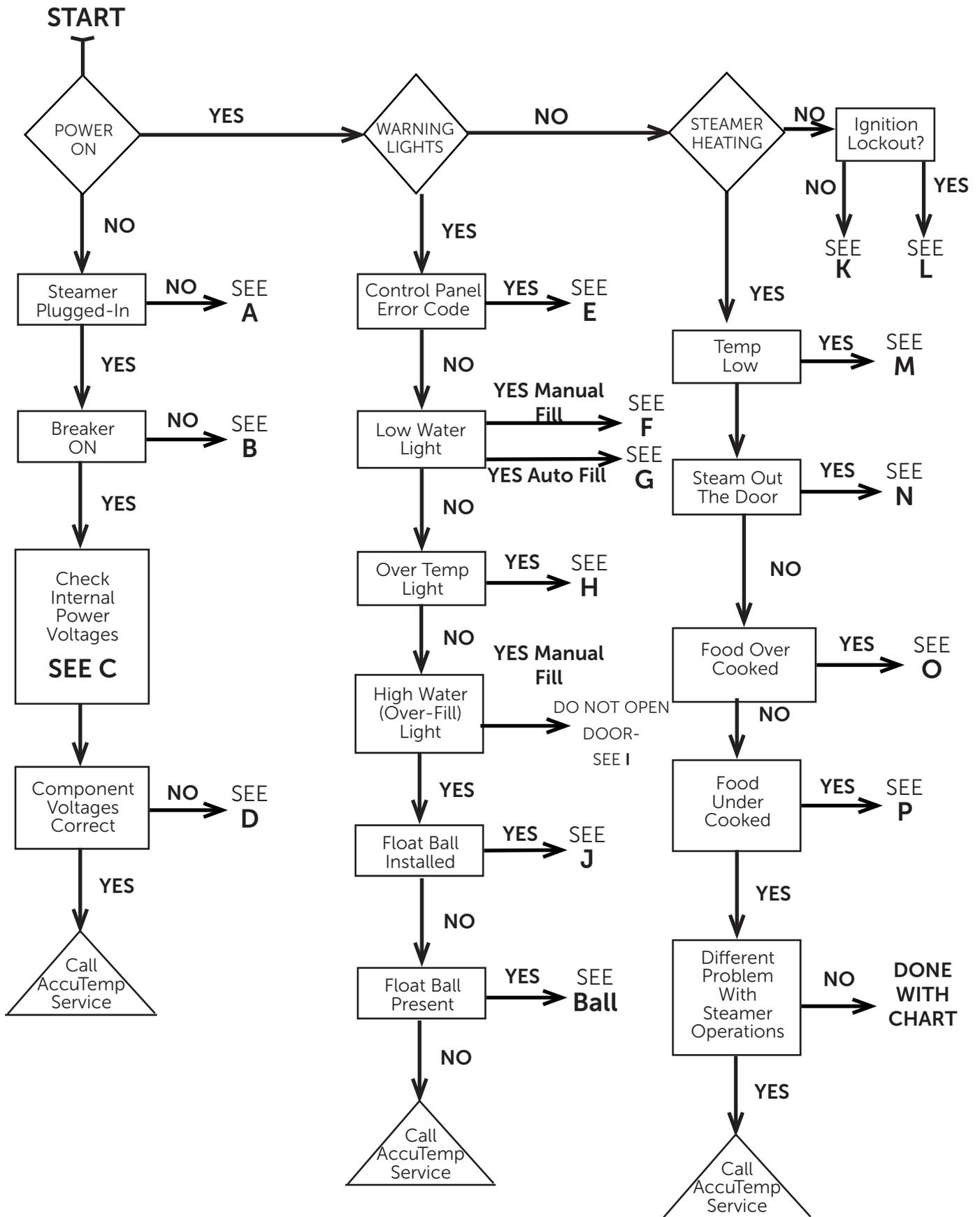
## 2.0 Main Component Information

Component	Part #	Purpose
Time Delay Relay #2	AT0E-2500-2	<ul style="list-style-type: none"> <li>Closes for 4 seconds, on initial start-up, to allow the Gas Enrichment Valve to open; providing a high concentration of gas to help ignite poor quality gas on cold start-ups.</li> </ul>
Gas Enrichment Valve	AT0P-3818-1	<ul style="list-style-type: none"> <li>Used to provide a richer concentration of gas to the Burner on cold start-ups. Helps to compensate for poor quality supplied gas.</li> <li>Controlled by Time Delay Relay #2 and the Ignition Module.</li> </ul>
Gas Control Valve	<u>Natural Gas:</u> AT2E-1806-2  <u>Propane Gas:</u> AT2E-1806-3	<ul style="list-style-type: none"> <li>Controls and maintains a constant flow of gas to the Gas Power Burner.</li> <li>Controlled by the inputs from the Ignition Module.</li> </ul>
Gas Orifice	<u>Natural Gas:</u> AT0B-3758-1  <u>Propane Gas:</u> AT0B-3758-2	<ul style="list-style-type: none"> <li>Provides the correct ratio of gas volume and pressure to the burner via a preset diameter hole size.</li> <li>Orifice Size for <b>NG: .135 +/- .001"</b> &amp; for <b>PG: .0935</b></li> <li><b>See P.35 for gas orifice size based on altitude.</b></li> </ul>
Gas Power Burner	AT1A-3768-1	<ul style="list-style-type: none"> <li>Dispenses the mixture of gas and air evenly over its surface to provide maximum flame and heat dispersal efficiency.</li> </ul>
Gas Power Burner Box	AT1A-3769-1	<ul style="list-style-type: none"> <li>Chamber that positions the Burner and contains the flue gasses produced from the burner's flame.</li> </ul>
Temperature (RTD) Sensor	AT0E-3626-1	<ul style="list-style-type: none"> <li>Provides temperature input to Control/Keypad Board, which displays the temperature in the steam chamber based on resistance changes from the Temperature (RTD) Sensor.</li> <li>Used to maintain the preset HOLD mode temperature.</li> </ul>
Door Assembly	AT1A-3600-1	<ul style="list-style-type: none"> <li>Keeps the steam trapped inside the steam chamber to allow pressure to build and cycle the Chamber Pressure Switch.</li> </ul>
Drain Valve	AT1P-2239-1	<ul style="list-style-type: none"> <li>Manually Open/Close valve used to drain water from the steam chamber.</li> </ul>

### ADDITIONAL COMPONENT PART NUMBERS

Component	Part #	Component	Part #
Pilot Lamp, 24V Red	AT0E-1800-2	Inner Door Assembly	AT1A-3647-1
Fuse, Slo-Blo 3A	AT0E-2731-1	Door Hinge (Pair)	AT1H-2058-3
Ignition Cable	AT0E-3810-1	Door Latch Assy, Ceramic Magnet	AT1H-3609-1
Gasket, Door	AT1G-2633-1	Door Latch Mounting Plate	AT1M-3046-1

# 3.0 Troubleshooting Flowchart



### 3.1 Troubleshooting Table

REF LETTER	POSSIBLE CAUSE	TROUBLESHOOTING STEPS
A	Power cord disconnected.	Confirm proper voltage is present at receptacle. Plug-in Power Cord.
	Power cord damaged/ broken.	Call Accutemp to confirm power to unit and secure correct part # for cord/plug assembly.
B	Breaker is tripped.	Reset breaker.
C	Transformer	Confirm 120V single phase incoming voltage on primary side.  Confirm 24-32V output on secondary side.  If no out put on secondary, ohm between secondary terminals to check for shorted coil.
	Fuse (3.0A)	Test across fuse.  Check for 120V across fuse. If 120V present across fuse, the fuse has failed.
	Overtemp Switch	If the overtemp switch is open - the overtemp alert light should be illuminated.  To confirm failure, check for voltage between the Common wire attached to terminal #6 on Control Relay 1 (AC) and the common wire (yellow) on the transformers secondary side. If no voltage the overtemp switch is open
	Control Panel not responding to input.	Unplug the unit whenever disconnecting wires for the main control board. Check for incoming 24VAC on wires attached to J2-1 & J2-2 on the control board.  If voltage is present, the control board has failed.  When a failure on the board is confirmed - inspect the unit for water infiltration as a precaution against future failure.

REF LETTER	POSSIBLE CAUSE	TROUBLESHOOTING STEPS
D	Bad component voltages.	Check the wiring to the component; including wire-to-connectors, GND's, and damage. If a component output is bad, then it may need replaced.
E	Error Code: -1F or -99F for Temperature (RTD) Probe. EC: -1F = Open Temp (RTD) EC: -99F = Shorted Temp (RTD)	Inspect connection between RTD wires at J3-1 & 2 on control board. Any loose connections should be repaired/recrimped.  Detach RTD wires from control board at J3-1 & 2. Ohm across wires while steamer is at room temp.  RTD is a 1000 ohm sensor (see Fig.PG). If RTD ohms correctly replace control board, otherwise, replace RTD.
	Low Water Sensor Not Satisfied	Water Sensors are steel studs circled by white teflon and are located inside cooking chamber on left hand wall towards unit front.  Water sensors must be kept thoroughly clean. This should always be the first step with any water alarm.  On a manual fill unit - ensure unit has been filled with water
F	Water Level Board	An LED light on D3 will flash based on water level. Single second intervals indicate the water level board does not sense water A three second interval indicated the water level board is satisfied with the water level to allow for heating.  If water board has three second interval and low water light is illuminated, remove pink wire at J9 on the water board. If the low water light goes out - replace water board. If light remains - call AccuTemp for assistance at 800-480-0415

G	Low Water Sensor Not Satisfied (Autofill) FIG 3.1A	<p>Water Sensors are stainless steel studs circled by white teflon and are located inside cooking chamber on left hand wall towards unit front.</p> <p>Water sensors must be kept thoroughly clean. This should always be the first step with any alarm</p>
	Water Level Board (Autofill) FIG 3.1B	<p>An LED light on D3 will flash based on water level. Single second intervals indicate the water level board does not sense water A three second interval indicated the water level board is satisfied with the water level to allow for heating.</p> <p>If the indicator light is flashing on a single second interval - the water board should close the K1 relay which provide power to the autofill solenoid valve and allow the unit to fill</p> <p>If unit is not filling remove the blue wire from J6 and the brown wire from J5. Test for AC voltage across the wires. FIG 3.1.C If AC voltage is present, connect the two wires together using a jumper wire. If the unit fills with the jumper in place - replace the water board. If the unit does not fill after bypassing the board, proceed to Auto-fill Solenoid. If voltage is not present, see below</p>
	Control Board	
	Autofill Solenoid Valve FIG 3.1D	<p>Remove wires from the solenoid and test for 24VAC. If voltage is present, replace valve. If there is no voltage, see above to troubleshoot water board.</p>



FIG 3.1A

FIG 3.1B



FIG 3.1D

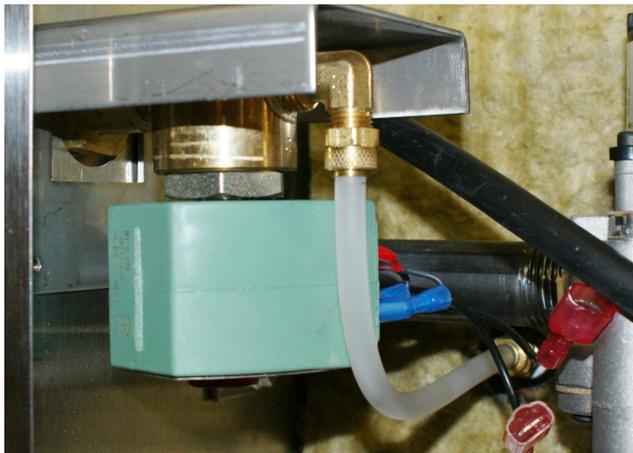
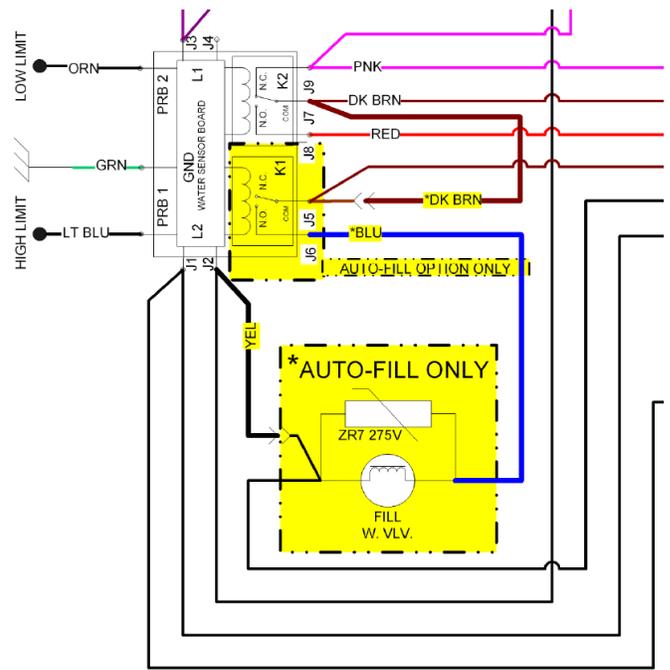


FIG 3.1C



H	<p>Steamer Over-temp switch has opened.</p>	<p>Ensure unit has water in it - if it does not, clean water sensors as indicated in <i>Reference Letter G</i>, 'Low Water Sensor Not Satisfied.' Fill and restart unit. If problem persists, see below:</p> <p>To confirm failure, check for voltage between the Common wire attached to terminal #6 on Control Relay 1 (AC) and the Common wire (yellow) on the transformers secondary side. FIG 3.1E If no voltage the over-temp switch is open.</p> <p>If unit shows overtemp alarm as soon as plugged in and the overtemp is confirmed to be open - replace over-temp switch</p> <p>Allow unit ten minutes to for unit to cool. Switch will reset automatically. Run unit from a cold start with fresh water. Once the unit has reached cook (Coo on display) ensure the burner begins to cycle on and off. If it does not - refer to reference letter K - pressure switch.</p> <p>If unit over-temps before it reaches cook: inspect bottom of cooking chamber (remove Steam Collector Pan first). Any scale build up should be cleaned away. If problem persists, contact AccuTemp Products.</p>
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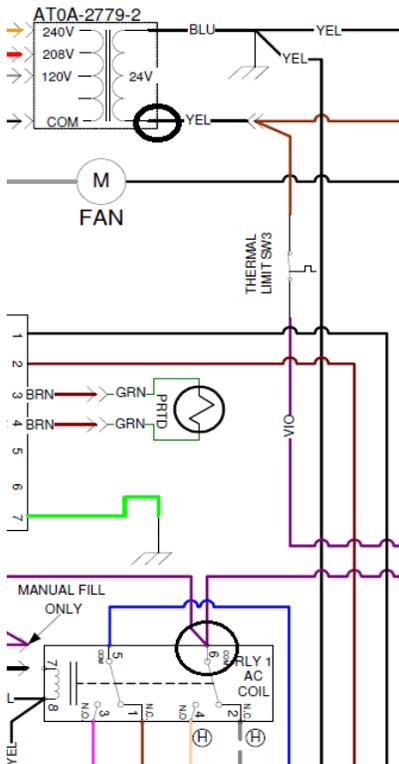


FIG 3.1E

I	DO NOT OPEN DOOR!	Use drain valve to allow excess water to drain out until High Water alarm turns off. If alarm does not stop after draining all water - see below
	Control Relay 1 (AC) FIG 3.1F	Check for voltage across the violet wire attached to Terminal #7 and the yellow wire attached to Terminal #8. Disconnect wires to test.  If voltage is present, ohm across Terminals #7 and #8 on control relay with wires detached. Ohm reading should be approximately 160Ω.  If voltage is not present, check output on secondary side of transformer.
J	DO NOT OPEN DOOR!	Turn the unit off. Use drain valve to allow excess water to drain out until High Water alarm turns off. If alarm does not stop after draining all water - see below
	Operational Water Sensor	Ensure that both the water probes are thoroughly clean. If not, clean and retry operation
	Installation Issues	Ensure the unit is level, front to back and side to side. An unlevel margin of 1/2" can create high water issues. This issue is more commonly seen in top steamers when part of a double stack.  Remove Steam Collector Pan from bottom of cooking chamber. With the unit empty, observe the fill cycle. Is the water stream coming into the unit under high pressure? If the stream impacts the right hand wall of the unit, or close to, the incoming water pressure should be lowered. This must be done external to the unit.
	Float Ball FIG 3.1G	Confirm Float ball is in place and both it and the stem it sits on are clean.  If there is another AccuTemp Steamer at the location, switch the float balls between the units. If the issue follows the float ball, replace the float ball.

J	Reed Switch	<p>The reed switch is located inside the sensor peg. With the float ball in place: Confirm continuity through the switch by testing at the Control Relay 1: Check for voltage across the black wire attached to Terminal #7 and the yellow wire attached to Terminal #8. Disconnect wires to test (FIG 3.1G).</p> <p>If voltage is present - replace the control relay.</p> <p>If voltage is not present, replace the reed switch</p>
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FIG 3.1F

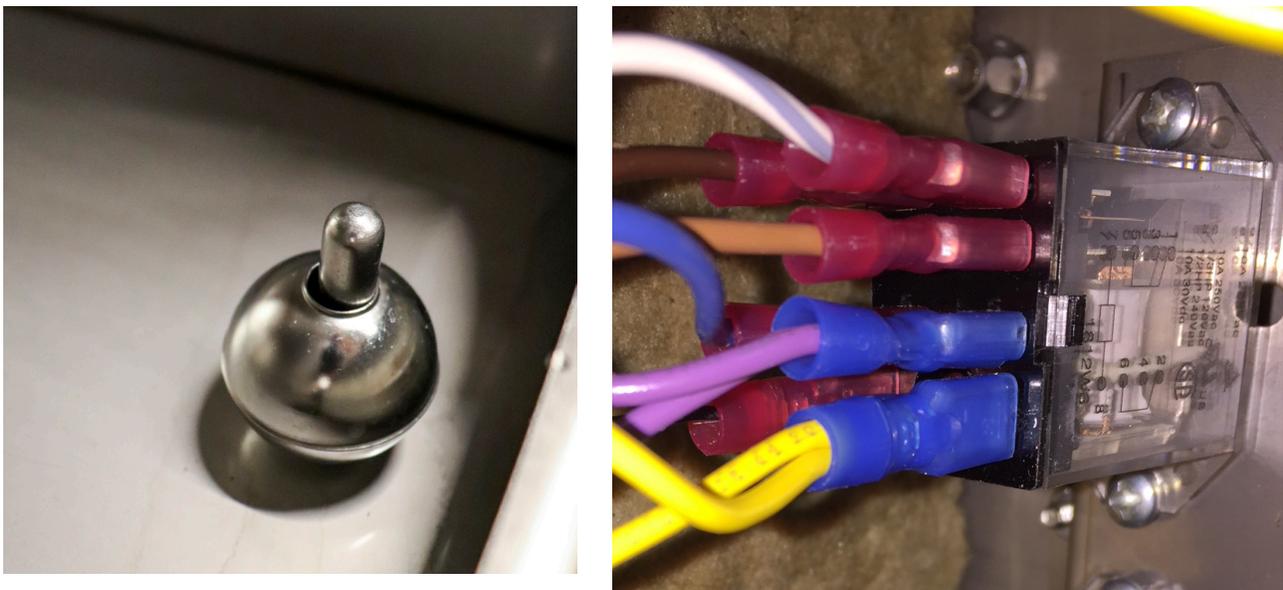
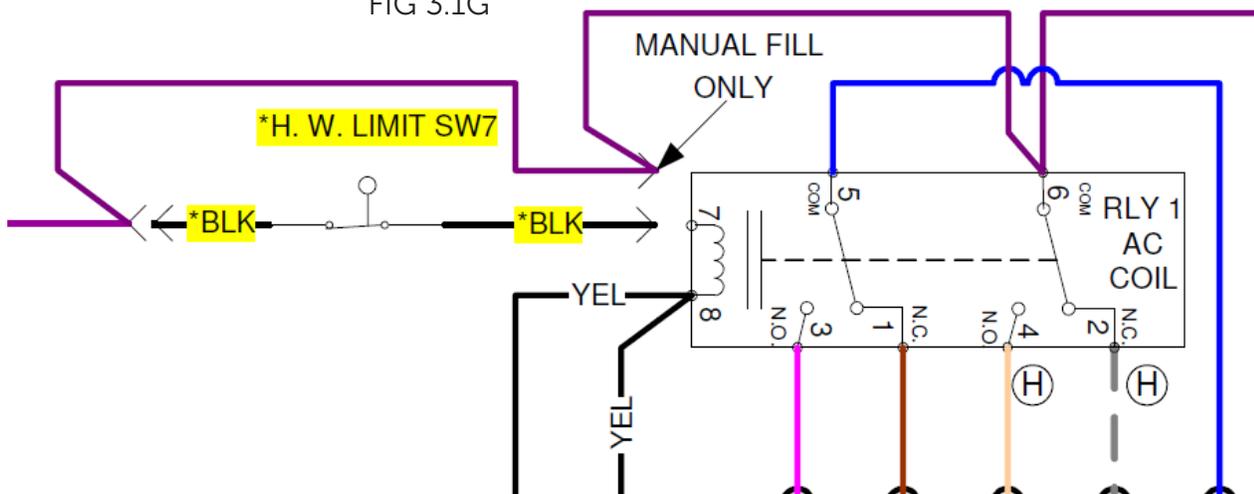
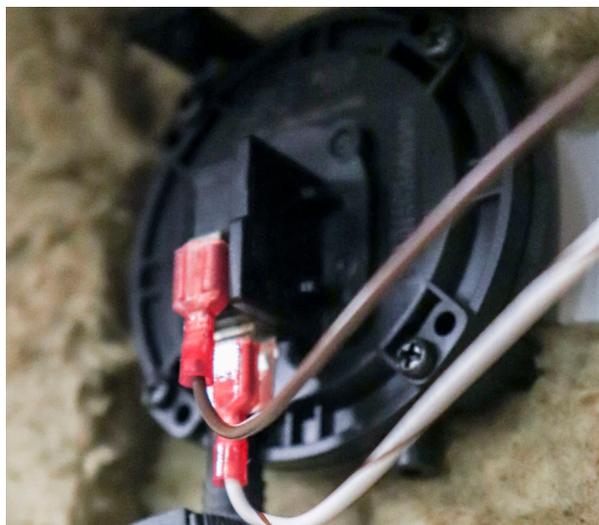
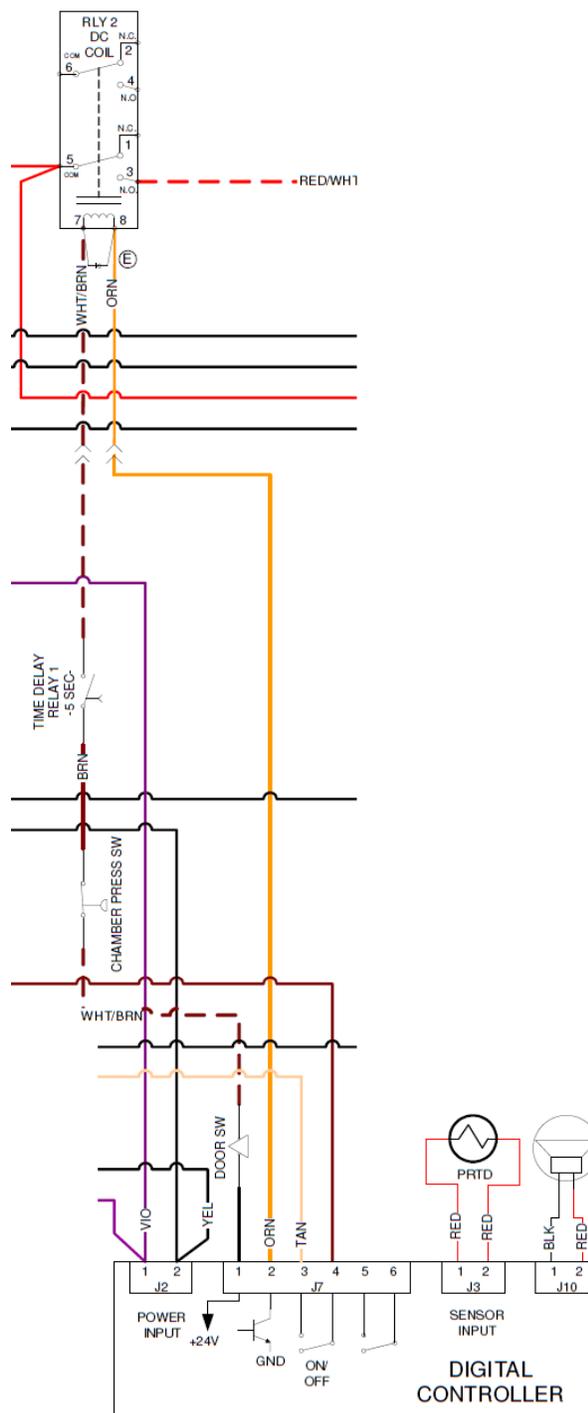


FIG 3.1G

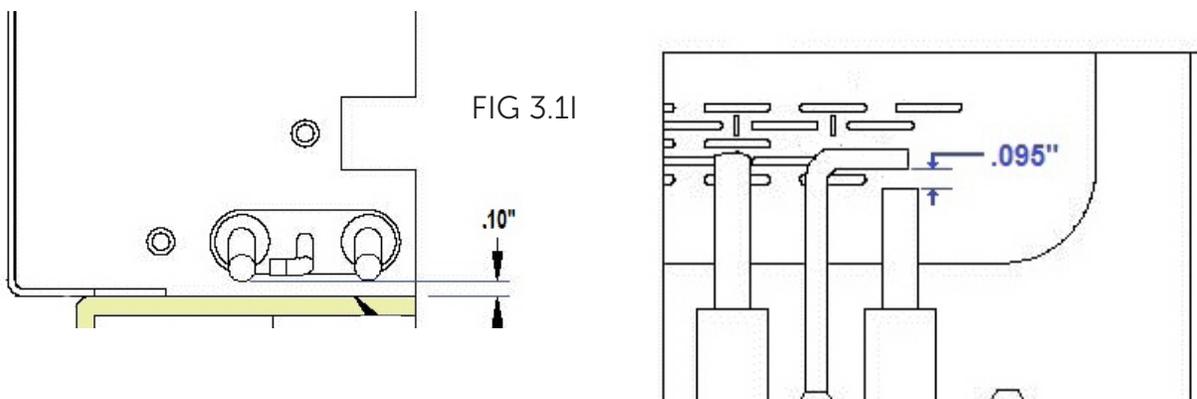


K	Chamber Pressure Switch FIG 3.1H	<p>Switch is normally closed. Disconnect wires from common and normally closed. Check for 24VDC between the wires. If there is no voltage see Control Board for further testing.</p> <p>If voltage is present, test for continuity across the common and normally closed terminals. If there is no continuity, open the door of the steamer. If there is still no continuity, replace pressure switch. If there is continuity, the steam vent requires cleaning.</p>
	Main Control Board	<p>Unplug unit. With unit unplugged - remove red wire from Terminal #J7-1 and the Orange wire from #J7-2. Restore power to the unit. Carefully test for 24VDC accross between the Terminals on the board. If there is no voltage, replace main control board. If voltage is present, see below.</p>
	Door Switch (switch is located behind magnetic door plate, could be left or right of steamer based on how the unit is hinged).	<p>Perform following test: Unplug unit. Reattach orange wire to #J7-2. Using a jumper wire - connect Terminal #J7-1 to the common on the pressure switch. Resupply power to unit If starts to heat - replace door switch.</p>
	Time Delay relay #1 (5 second delay)	<p>Relay is normally open. Check for continuity during the first 5 -10 seconds of pressing PWR ON button. Do not remove wires to check continuity.</p>
	Control Relay #2 (DC)	<p>Check for 24-30VDC at Pins 7 &amp; 8 on the CR2 Coil. Check for 24VAC on pin 3. Ensure Relay Contacts are closing and not stuck open.</p>

FIG 3.1H

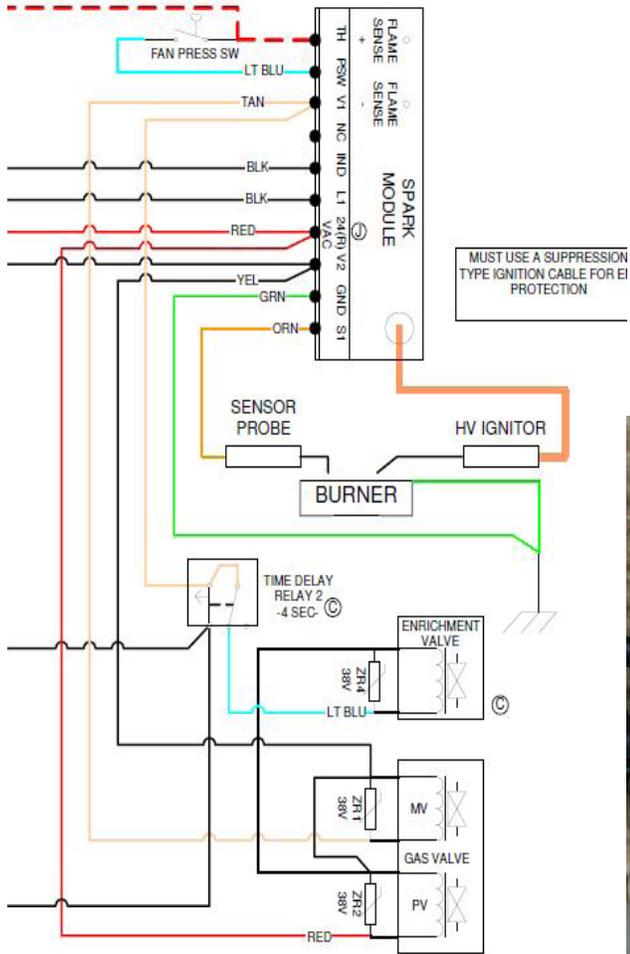


L	Ignition (Spark) Module (FIG 3.1L)	<p>Check the Red LED light on the module for the following indications (listed on the module):</p> <p><b>Constant Illumination = Control Fault</b> (Turn unit OFF &amp; back ON, if LED goes out; then ignition module is OK.)</p> <p><b>1 Flash = Air Vent Blockage / No Blower Pressure</b></p> <p><b>2 Flashes = Flame with No Call For Heat</b></p> <p><b>3 Flashes = Ignition Lookout (No Gas Present)</b></p> <p>If there is AC voltage on the red/white stripe wire to the module, but the fan is not engaging and there is no fault light - replace module.</p> <p>If control fault continues to appear - replace module.</p>
	Power Burner Blower	<p>Ensure that the air shutter is set to between 2.5 - 5. The gap is preset at the factory. See page 33 for further tests.</p> <p>If the blower motor engages, the unit is receiving the call to heat.</p>
	Blower Pressure Switch	<p>Switch is normally open.</p> <p>Check that switch closes at .2" Water Column (WC) &amp; that voltage is present on Lt Blue wire to Ignition Module at pin PSW.</p>
	Flame Sensor	<p>Check that probe is not oxidized or broken.</p> <p>Ensure probe is secure and orange wire is securely connected. If oxidized, this should be cleaned. DO NOT use sandpaper or an abrasive containing silica.</p>
	Ignition Probe & Cable (FIGURE 3.1l)	<p>Check that the probes are <u>not</u> oxidized or broken.</p> <p>Check that the Ignition Cable has a good connection to Ignition Probe.</p> <p>Verify that the Ignition Probes are in the correct position to the Burner's surface as required.</p>



	Gas Valve Control (Dual Coil Solenoid) Pilot Valve	<p>The pilot valve opens when the water board is satisfied and engages the K2 relay. To test the valve is engaged:</p> <ol style="list-style-type: none"> <li>1. Connect a manometer to the dual valve.</li> <li>2. Open the door to the steamer.</li> <li>3. Power the unit on.</li> <li>4. If auto-fill, allow the unit to fill. If manual, fill the unit to the water line.</li> </ol> <p>If the valve is engaged, the supply pressure of the system will register on the manometer. Check that the gas pressure is within the acceptable tolerance for the internal valve</p> <p>Maximum Tolerance = 13.95 Water Column</p>
L	Gas Valve Control (Dual Coil Solenoid) Main Valve	<p>Once the ignition module receives the call to heat it will engage the blower and then the main valve coil. Test by completing the steps above for the pilot valve, then do the following:</p> <ol style="list-style-type: none"> <li>1. With supply pressure registered, close the door to the unit.</li> <li>2. The unit should begin its ignition sequence.</li> <li>3. When the main valve opens, the manometer should register a change in pressure. It should now show the dynamic pressure.</li> <li>4. Check that the Gas Pressure is at the correct WC value: <b>5" for Natural Gas &amp; 10" for Propane.</b></li> </ol> <p>To adjust see section 3.2</p>
	Gas Enrichment Valve	<p>Check to ensure that the Time Delay Relay #2 is opening the Gas Enrichment Valve for 4 seconds. (Signal from Spark Module out of pin V1.)</p>

FIG 3.1L



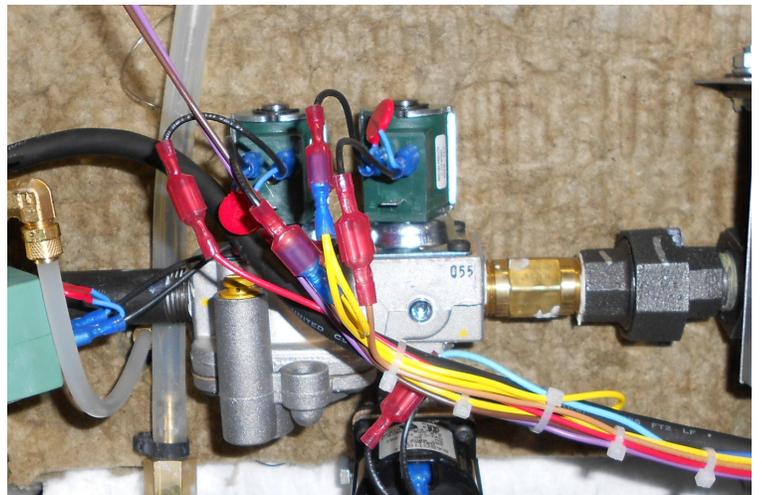
Gas Valve in SN 58401 and below



Gas Enrichment Valve



Gas Valve in SN 58402 and above



M	Steam Vent Blocked	<p>Steam should be coming out of vent at back of steamer.</p> <p>If the steamer operates with the door cracked but not with it shut, the vent is blocked.</p> <p>Follow the 1/4" silicon condensate line to the top left of the unit. It will be attached to a 90 deg. elbow. Remove that elbow from the fitting above. Using compressed air or a thin wire brush, clean both fittings.</p> <p>Ensure that there is at least a minimum of 1/4" slope for every foot added, of extended exhaust piping. Ensure that any extended exhaust piping is made of stainless steel, or copper; and a minimum of 3/4" in diameter.</p>
	Steam Temperature is Not at Desired Cook Temp	<p>Check that the door is closed and no steam is escaping from it.</p> <p>Verify that low water indicator light is <u>not</u> lit.</p> <p>Check that steamer is in the COOK mode and <b>NOT</b> in the HOLD mode.</p>
N	Door Assembly	<p>Check to see if the Door is seating completely around the face of the Steamer.</p> <p>Check that the Door Gasket does <u>not</u> have any cuts, nicks, debris, or discolorations (<i>white or grey</i>).</p> <p>Perform a 'dollar bill test.' Trap a dollar bill between the closed door and frame of the unit. There should be significant resistance when attempting to pull the dollar free. Little or no resistance indicates a poor seal. The fit of the door can be adjusted:</p> <ol style="list-style-type: none"> <li>1. Remove hinge covers.</li> <li>2. Loosen 6 screws holding hinge to unit.</li> <li>3. Apply pressure door to attain better fit</li> <li>4. Retighten screws.</li> </ol>
	Pressure Switch	<p>Check that the Chamber Pressure Switch opens and closes</p> <p>checking the Ohms reading while blowing into its input hose. (<i>Disconnect the hose from the chamber inlet hole.</i>)</p>
	Steam Vent Blocked	See M

O	Food Cook Time Too Long	<p>Refer to M to ensure unit is cycling heat correctly. Ensure that the proper Cook Time is being used.</p> <p><b>Refer to the Installation/Operators Manual for cooking tips if no mechanical reason is found for this symptom.</b></p>
P	Food Cook Time <u>Not</u> Long Enough	<p>Ensure that the steamer is in the COOK mode and <u>not</u> the HOLD mode. (HOLD <i>has a preset temp value that is below that of 212°F.</i>)</p> <p>Check that proper pan placement is being utilized for best cooking conditions. (See <i>Owners Manual</i>)</p> <p>Ensure that the Drain Ball-Valve is shut tightly or possible loss of heating efficiency.</p> <p><b>Refer to the Installation/Operators Manual for cooking tips if no mechanical reason is found for this symptom.</b></p>

## 3.2 TROUBLESHOOTING NOTES



# TROUBLESHOOTING NOTES

If the steamer's gas burner is not igniting, ensure that you have verified and recorded the following, prior to calling the AccuTemp Service hotline:

- With the Gas Burner operating, the Water Column (WC) value of the gas pressure from the steamer's Gas Control Valve is 5" WC = Natural Gas or 10" WC = Propane Gas.
- The micro-Amp ( $\mu\text{A}$ ) value of the Flame Sense Probe (Ignition Module pins FC+ & FC-) should have a minimum value of 2.5  $\mu\text{ADC}$ .

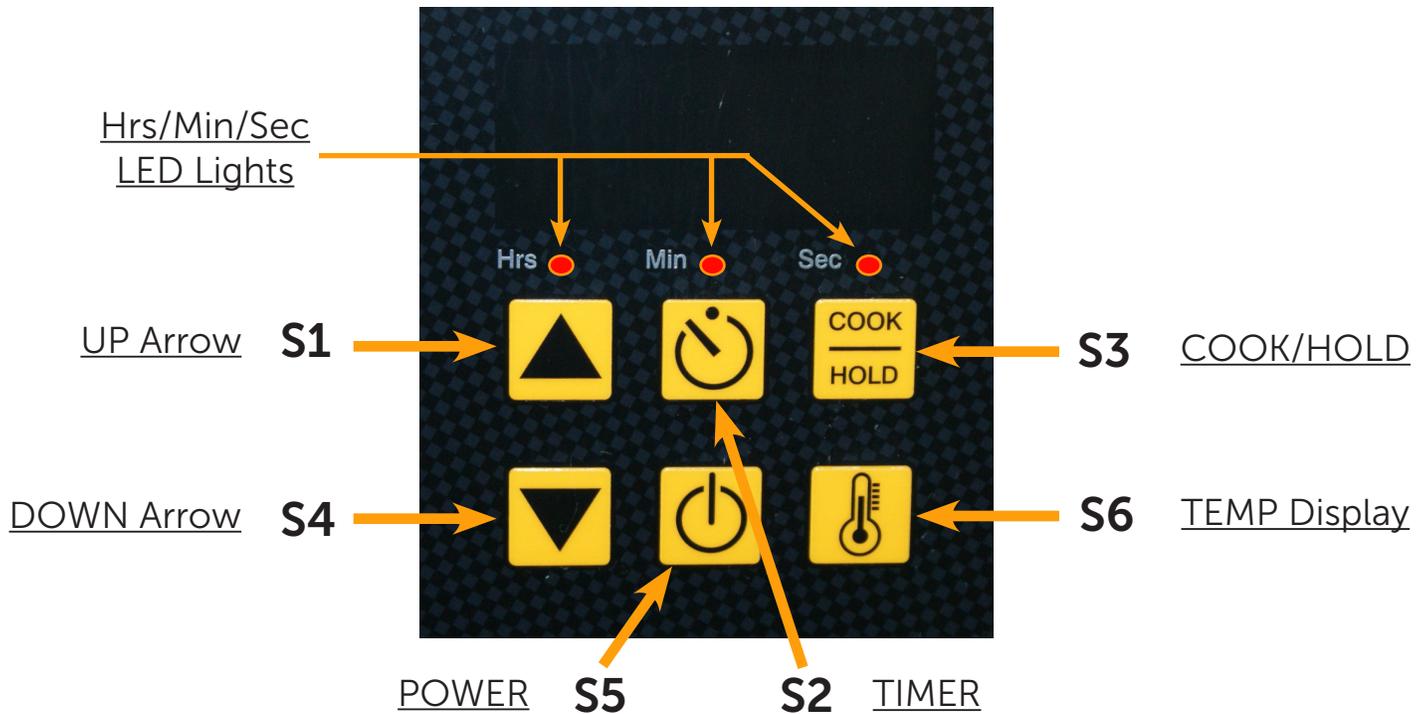
If the steamer is not reaching temperature:

- Ensure that the steamer is not in the HOLD Mode versus the COOK Mode. The default mode for the steamer, when the PWR button is turned ON, is COOK. So, if the operator presses the Timer Button then the Cook/Hold button; the operator has just placed the steamer in the HOLD Mode and the steamer will not reach 212°F (COOK Mode).
- Ensure that the steam vent (located on the back of the steamer) is not blocked or clogged. If the customer has added an extended exhaust pipe, there's an increased chance of vent blockage, if the exhaust pipe is not installed properly. The exhaust pipe should be made of copper, galvanized or stainless steel. The exhaust pipe should have a diameter of 3/4"; and be sloped 1/4" for every 12" of length (recommend a height no greater than 24"). Also, the addition of extra fittings that can alter the gravitational flow of the steam condensation, can cause blockage. If vent blockage does occur, it will cause the chamber pressure switch to stay open; which prevents the heater from turning back on; and the temperature will continue to drop. Blocked vent can additionally cause steam to blow out of the door.

**Auto-Fill Steamer:** If the steamer is overfilling with water and causing the steamer to shut-off:

- Ensure the steamer is level, front to back and side to side. An un-level steamer can cause the water in the steam chamber to collect in the front of the steamer, causing the Over-Fill Float Ball to raise and trip the Reed Switch prematurely (every time the steamer is turned ON). Once the Reed Switch trips, it will cause an Over-Fill Light and Buzzer; while turning off the steamer and preventing its usage.
- Ensure that both of the Water Sensors are clean. Build-up of scale or crud will prevent the Water Sensors from providing the appropriate control signals to the Auto-Fill Valve, causing it to overfill with water.
- Ensure that the water pressure being supplied to the Auto-Fill Valve should not be greater than 60 psi. If water pressure is too high, then a larger volume of water will be added to the steam chamber during the auto-fill cycle; causing the steamer to overfill with water.

### 3.3 MODIFYING CONTROL / KEYPAD PROGRAM SETTINGS



**ENTERING PROGRAM MODE:** Simultaneously, depress and hold **S4** & **S6** for minimum of **8 seconds** or until the **Hrs LED** blinks and the display shows a Hold Temp number (default is 180°F). Now the Controller can operate under the Program Function Parameters.

- S1 - Increase Program Item (Will cycle the Hrs/Min/Sec LED light)
- S4 - Decrease Program Item (Will cycle the Hrs/Min/Sec LED light)
- S3 - Increase Program Value (Will change the Digital Readout display)
- S6 - Decrease Program Value (Will change the Digital Readout display)
- S2 - Exit & Save**

***Program Mode Function Parameter Table***

			Change PROGRAM Using Up/Down Arrows	Change PROGRAM Settings using Cook/Hold and Temp display buttons		
Hrs LED	Min LED	Sec LED	PROGRAM	MIN	MAX	GAS
Blink	OFF	OFF	HOLD Temp Value = Degree F	MIN Temp	MAX Temp	180
ON	OFF	OFF	Default Timer Value = Hours	0	8	0
OFF	ON	OFF	Default Timer Value = Minutes	0	59	30
OFF	OFF	ON	TEMP Probe Offset = Degree F	0	50	0
ON	ON	ON	TEMP Probe Offset = Neg/Pos Diff	NEG = 1	POS = 0	0
<b>Blink</b>	<b>Blink</b>	<b>Blink</b>	<b>Hysteresis</b>	2	10	<b>3</b>
<b>ON</b>	<b>Blink</b>	<b>Blink</b>	<b>TEMP Regulating Mode</b>	On/Off = 0	PID = 1	<b>0</b>
Blink	ON	Blink	Proportioning BAND TIME	4	10	10
Blink	Blink	ON	Proportioning BAND WIDTH	4	10	10

**RESETTING CONTROLLER TO FACTORY DEFAULT VALUES ON THE GAS STEAMER CAN CAUSE AN IGNITION MODULE CONTROL FAULT.**

## **REPROGRAMMING BOARD AFTER RESET**

When a new Controller is installed on a Gas Evolution, it must be reprogrammed. The Hysteresis and Temp regulating mode must be adjusted, to do so, attend the follow instructions:

1. Depress S4 (down arrow) & S6 (Temp display) buttons at the same time and hold for eight seconds.
2. After 8 seconds, the Hrs LED light will blink and 180F will appear on the display. Release S4 and S6.
3. Press S1 (up arrow) to navigate through the programming menu to Hysteresis. The Hysteresis option selected when all three LED Lights blink (Hrs, Min, Sec), and 0002 shows on the display.
4. Press S3 (cook/hold) to change the display from 0002 to 0003.
5. Press S1 again to navigate to TEMP Regulating mode. When this option is selected the Hrs LED will be permanently illuminated and the Min and Sec LEDs will blink. The display will show 0001.
6. Press S3 (Cook/hold) to cycle through options until display shows 0000.
7. Press S2 to save the input

## **REPROGRAM HOLD TEMP**

1. Depress S4 (down arrow) & S6 (Temp display) buttons at the same time and hold for eight seconds.
2. After 8 seconds, the Hrs LED light will blink and 180F will appear on the display. Release S4 and S6.
3. Press S4 or S6 (cook/hold or temp display) to change the value of the hold temp.
4. Press S2 (timer) to save the input. Press S5 (Power) to exit without saving.

**PLEASE NOTE, PROGRAMMING GUIDELINES ARE SUBJECT TO CHANGE BASED ON SOFTWARE REVISION - THESE INSTRUCTIONS ARE BASED ON REVISION 16.**

## 3.4 Ignition System Notes

# OPERATIONAL CONDITION NOTES

- The Water Column (WC) value for the gas pressure being supplied to the steamer should be between: Natural Gas = 7" to 10" WC    Propane Gas = 11" to 13" WC.
- If the supplied gas pressure coming into the steamer is .5 PSI (13.8" WC) or higher; an External Gas Regulator is needed in-line, prior to entering the steamer. If an External Regulator is required, it must be rated at 125% of the BTU/hr rating or higher.
- The DC micro-Amp ( $\mu\text{A}$ ) value for the Flame Sense Probe must be at a minimum value of 2.5  $\mu\text{ADC}$ , which can be tested at the Ignition Module pins FC+ & FC-. The Ignition Module will enter ignition lockout if the value is below .07 $\mu\text{ADC}$ .
- AUTO-FILL STEAMER: The water pressure being supplied to the Auto-Fill Valve should not be greater than 60 psi.

### Measuring Gas Pressure Setup



FIG 3.4A

Manometer

### Measuring Flame Sense Setup

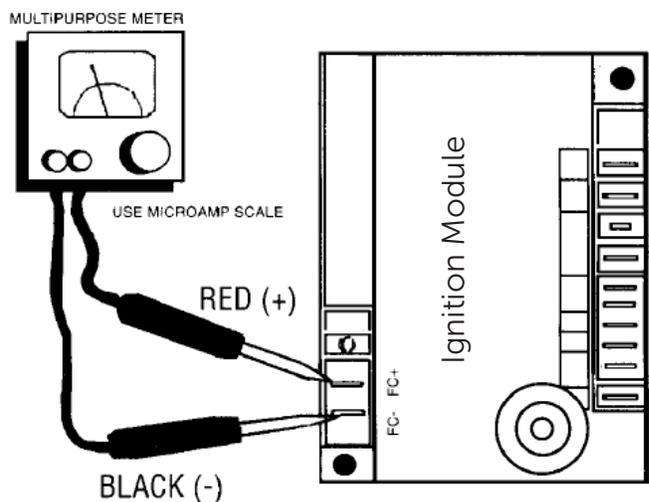
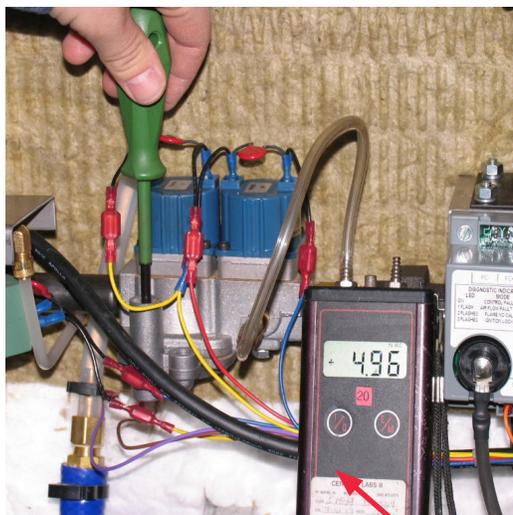


FIG 3.4B

## Carbon Monoxide Test

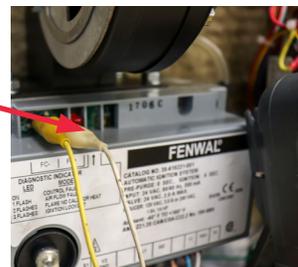
FIG 3.4C



Manometer

FIG 3.4D

FC+ and FC- pins



Multimeter

FIG 3.4E

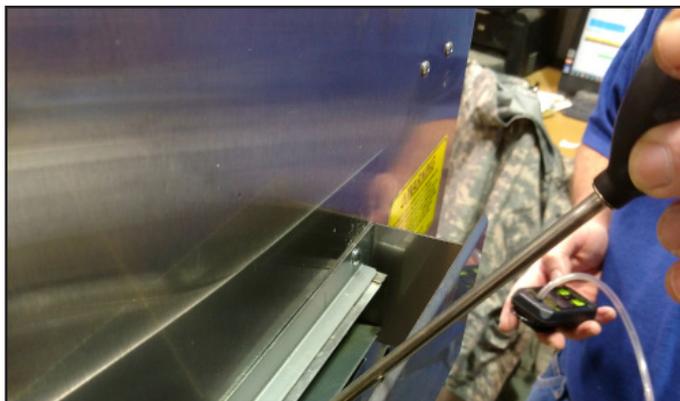
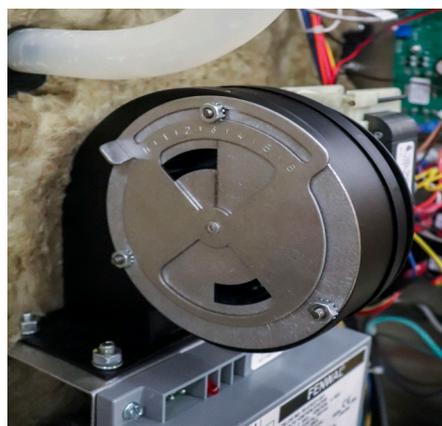


FIG 3.4F



1. Attach a manometer to the dual gas valve. With the burner running, ensure the gas pressure is set to 5"WC for Natural Gas and 10"WC for Propane (FIG 3.4C).
2. Attach a multimeter to the FC+ and FC- pins on the ignition module and confirm a flame sense of between 4-7 $\mu$ A (FIG 3.4B & 3.4D).
3. A CO test must also be conducted to assure the steamer is within factory specifications.
4. The steamer must be operated for a least 15 minutes to equalize the temperature for the whole system prior to testing. The burner must be operational for the test and the reading taken at the flue opening. (FIG 3.4E)
5. If the reading is higher than 250ppm, the air shutter on the blower motor can be adjusted (minimum setting 2.5, maximum setting 4.75) to alter the reading (FIG 3.4F). Adjust and test until the CO reading is at or below 250ppm. Make sure to tighten the retaining fastener for the blower after each setting.

## Ignitor/Flame Sense Probe Spacing Measurement

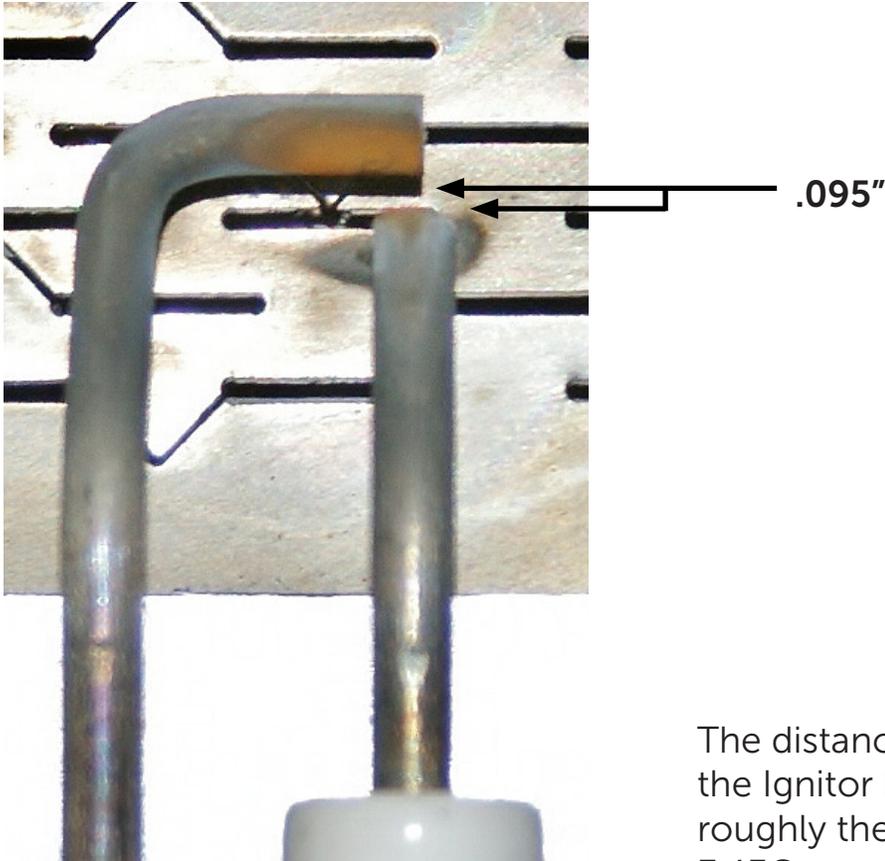


FIG 3.4G

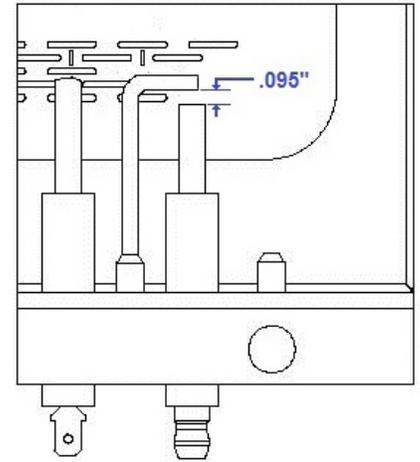
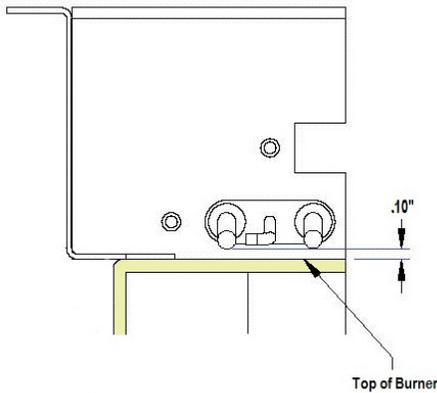


FIG 3.4H

The distance between the GND Probe and the Ignitor Probe is .095". (This distance is roughly the thickness size of a nickel, FIG 3.4EG)



The distance between the Flame Sense Probe/Ignitor Probe and the Burner's surface is .10". (This distance is roughly the thickness size of a nickel.)

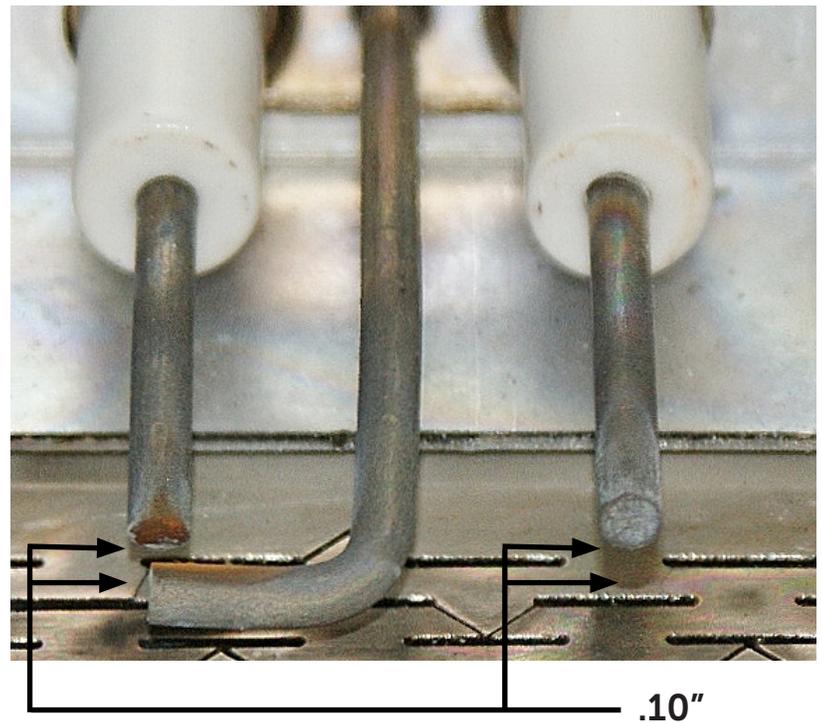


FIG 3.4I

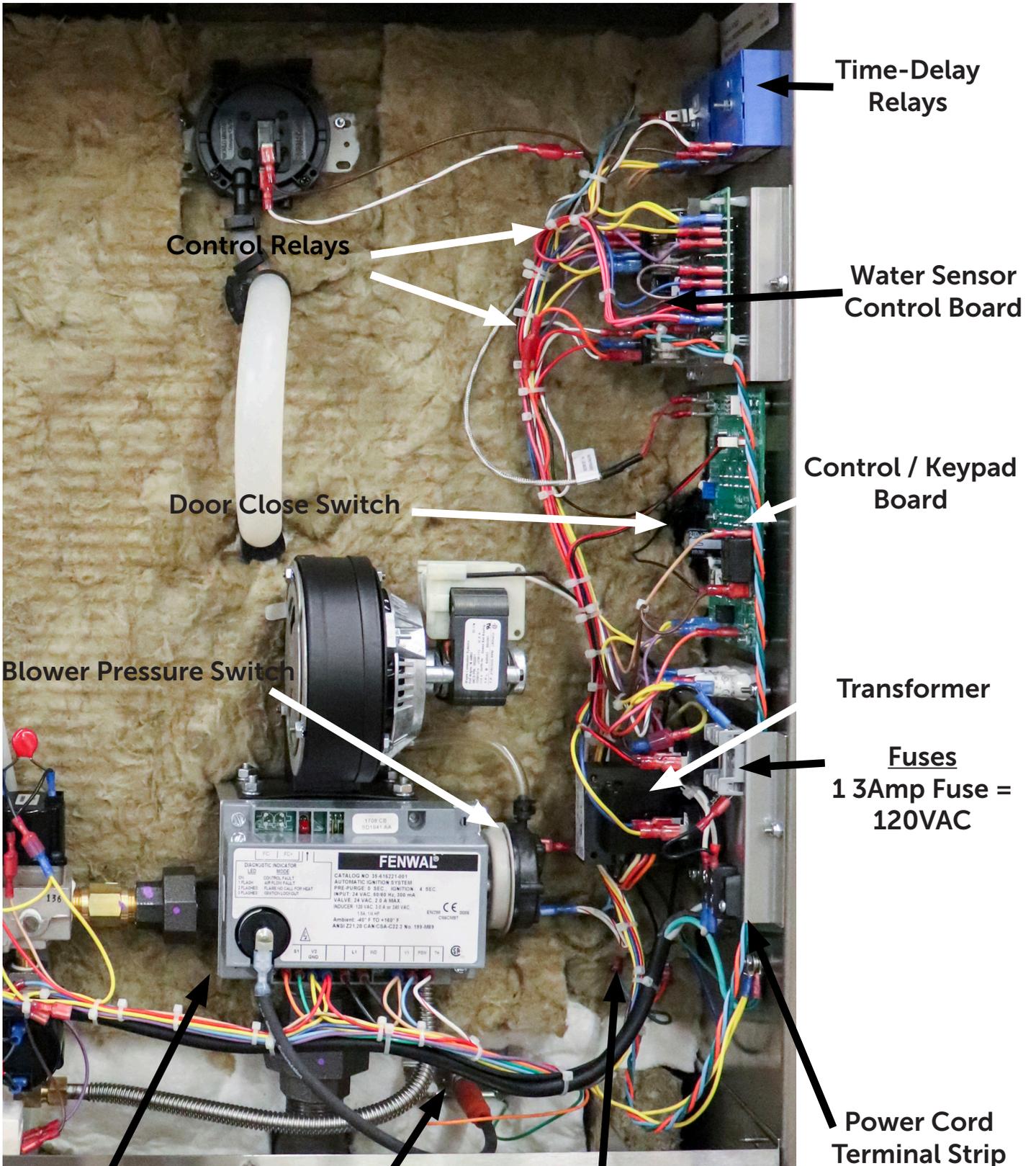
## Gas Orifice Size to Altitude Chart

Heating Valve Natural Gas: 900 BTU's/hr			Propane: 2200 BTU's/hr	
	Enrichment	Main	Enrichment	Main
Altitude ft	Orifice	Burner	Orifice	Burner
3000	60	29	68	3/32
4000	60	29	71	3/32
5000	62	30	72	42
6000	62	30	72	43
7000	63	0.125	73	43
8000	64	31	73	44
9000	65	31	73	44
10000	66	31	74	45
11000	67	32	74	46
12000	68	33	75	46
13000	68	34	76	49
14000	69	7/64	76	49

Heating Valve Natural Gas: 1000 BTU's/hr			Propane: 2300 BTU's/hr	
	Enrichment	Main	Enrichment	Main
Altitude ft	Orifice	Burner	Orifice	Burner
3000	60	29	68	3/32
4000	60	29	71	3/32
5000	62	30	72	42
6000	62	30	72	43
7000	63	0.125	73	43
8000	64	31	73	44
9000	65	31	73	44
10000	66	31	74	45
11000	67	32	74	46
12000	68	33	75	46
13000	68	34	76	49
14000	69	7/64	76	49

Heating Valve Natural Gas: 1100 BTU's/hr			Propane: 2500 BTU's/hr	
	Enrichment	Main	Enrichment	Main
Altitude ft	Orifice	Burner	Orifice	Burner
3000	60	30	68	3/32
4000	60	30	71	3/32
5000	62	0.125	72	42
6000	62	31	72	43
7000	63	31	73	43
8000	64	32	73	44
9000	65	32	73	44
10000	66	34	74	45
11000	67	35	74	46
12000	68	35	75	46
13000	68	35	76	49
14000	69	37	76	49

### 3.5 LOCATION OF ELECTRICAL COMPONENTS



Time-Delay Relays

Control Relays

Water Sensor Control Board

Door Close Switch

Control / Keypad Board

Blower Pressure Switch

Transformer

Fuses  
1 3Amp Fuse =  
120VAC

Ignition Module

Ignitor / Flame Sense Probe

Water Sensors

Power Cord Terminal Strip

## 4.0 Removal and Replacement of Components

### 4.1 Removal and Replacement of Supply Power Components

#### CORD & PLUG ASSEMBLY

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the Power Cord Leads (Black, White, Red, and/or Green) from the Terminal Strip.
4. On the inside of the unit, remove the retaining nut on the threads of the Power Cord Cable Fitting & pullout the Power Cord.
5. **Re-install in reverse order.**



FIG 4.1A

#### FUSE

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Pry the Fuse(s) out of the Fuse Block with a flat-head screwdriver or fuse puller.  
1 3A Fuse = 120VAC
4. **Re-install in reverse order.**

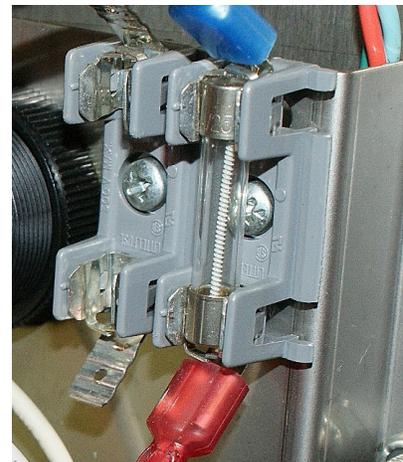


FIG 4.1B

#### TRANSFORMER

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location terminal).
4. Remove the 2 mounting nuts and then remove the Transformer.
5. **Re-install in reverse order.**

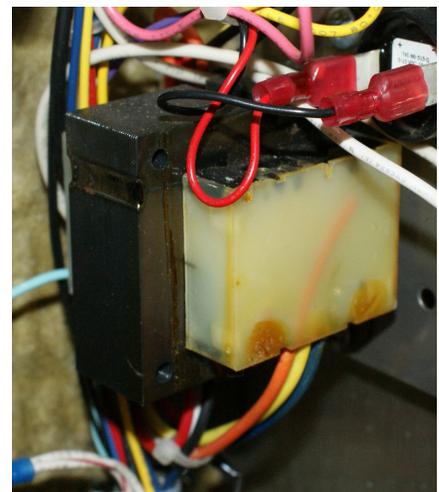


FIG 4.1C

## 4.2 Removal and Replacement of Water Level Control Components

### WATER SENSOR CONTROL BOARD

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location pin).
4. **Carefully**, push in the locking leg on the 4 plastic posts while pulling the Water Board up off the posts (note the board's orientation).
5. Remove the Water Board.
6. Remove Plastic legs - these should also be replaced.
7. Re-install in reverse order.



FIG 4.2A

### AUTO-FILL VALVE

1. Unplug the Unit & drain any remaining water from the steam chamber.
2. Close the supply water valve and disconnect the Supply Water Hose coming into the steamer.
3. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
4. Disconnect the wires from the Auto-Fill Valve (*note the wire color to its location pin*).
5. Disconnect the Auto-Fill Valve Hose Fitting (FIG 4.2B)
6. On the back of the steamer, remove the 4 mounting screws securing the Auto-Fill Valve bracket on the inside of the steamer.
7. Remove the Auto-Fill Valve.
8. **Re-install in reverse order. Ensure Sealant is re-applied to all pipe threading.**

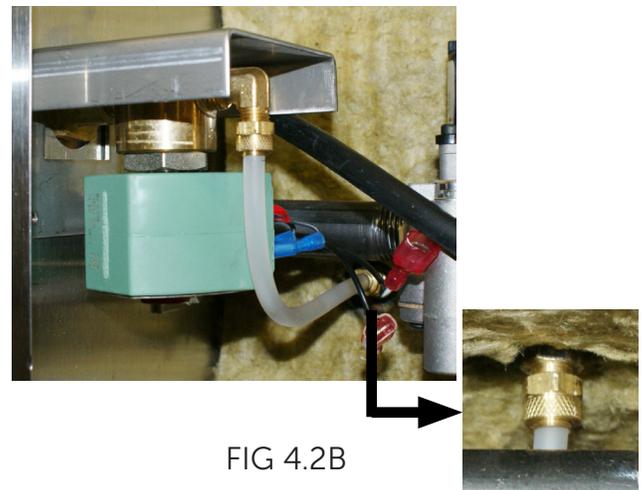


FIG 4.2B

## WATER SENSORS

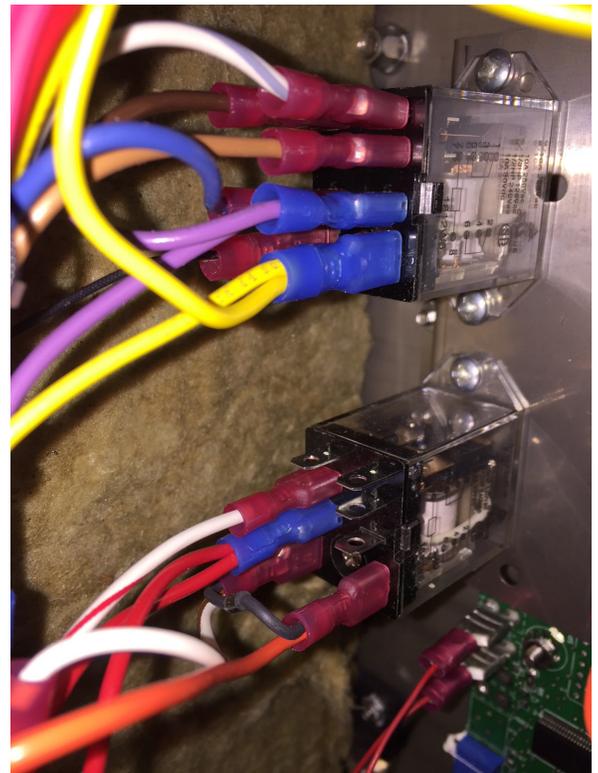
1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Open the door and ensure that all the water is drained from the steam chamber.
4. Disconnect the wire from the backside of the Water Sensor (access via left-side panel).
5. Remove the retaining nut that mounts the Water Sensor to the Steam Chamber.
6. Push the Water Sensor through the hole in the steam chamber from the backside.
7. **Re-install in reverse order. Torque Sensor Nuts to between 12-15 In-Lbs.**



FIG 4.2C

## CONTROL RELAYS

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location pin).
4. Remove the 2 mounting screws and then remove the correct voltage type Control Relay.
5. **Re-install in reverse order.**



### OVER-FILL REED SWITCH (Auto-fill only)

1. Unplug Unit & close the supply water valve.
2. Disconnect the water line from the back of the steamer & drain any remaining water from the steam chamber.
3. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
4. Disconnect the REED Switch wires (*note the wire color to its location pin*).
5. Turn the unit upside-down and remove its legs. (*Unbolt from stand and then turn unit upside-down if applicable.*)
6. Remove Bottom Cover by removing the Sheet Metal Screws holding it in place. (*Remove Drain Pan Rails if applicable.*)
7. Remove the front, insulation pieces that are laying on-top of the Over-Fill Reed Switch (*Wire is ran in-between the insulation pieces*).
8. Remove the retaining nut and lock washer holding the Reed Switch inside the Sensor Post.
9. Remove the High Water Reed Switch (FIG 4.2E).

### **10. Re-install in reverse order.**

### MAGNETIC FLOAT BALL (Auto-fill only)

1. Open the steamer door and remove the left-side pan rail.
2. Lift and remove the steam collection cover plate.
3. Remove the Float Ball off of the High Water Reed Switch Sensor Post.
4. **Re-install in reverse order. Ensure Sensor Post & Float Ball hole are clean before re-installing.**

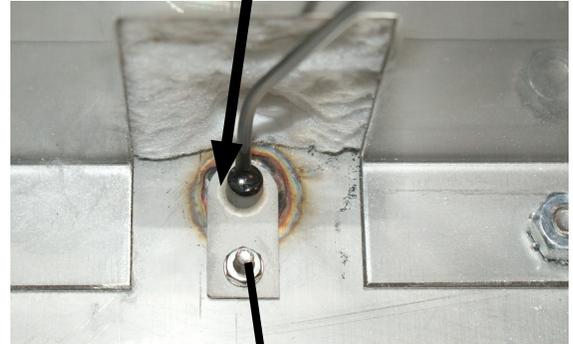


FIG 4.2E



FIG 4.2F

## DRAIN VALVE

1. Unplug the Unit & drain any remaining water from the steam chamber.
2. Turn the unit upside-down and remove its legs. (*Unbolt from stand and then turn unit upside-down if applicable.*)
3. Remove Bottom Cover by removing the Sheet Metal Screws holding it in place. (*Remove Drain Pan Rails if applicable.*)
4. Remove the Drain Handle Cover Plate, and the insulation surrounding the Drain Valve.
5. Remove the Drain Pipe from the Drain Valve.
6. Remove the Drain Valve, apply heat to ease removal.
7. **Re-install in reverse order. Ensure Sealant is re-applied to all pipe threading.**

FIG 4.2G

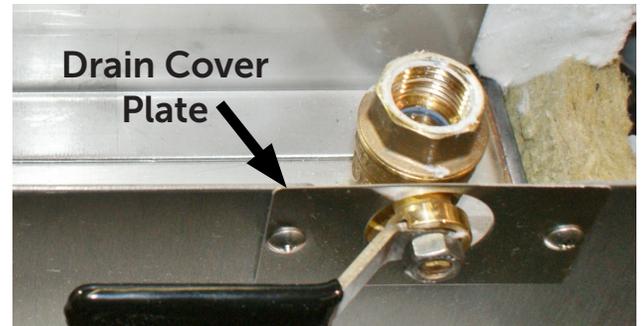
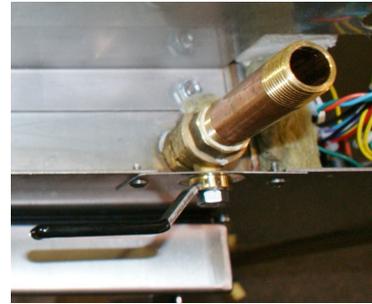


FIG 4.2H

## DRIP PAN

1. Unplug the Unit.
2. Remove the 4 Sheet Metal Screws at the bottom of the Front Panel.
3. Slide the Drip Pan(s) out from between the Front Panel and the Bottom Panel. (*Ensure the split Drip Pans are sloped towards the center of the steamer.*)
4. **Re-install in reverse order.**

**Split Drip Pan**



**Solid Drip Pan**



## 4.3 Removal and Replacement of Heat Control Components

### MAIN CONTROL BOARD

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location terminal).
4. Remove the 7 mounting nuts and then remove the Control Panel CCA.
5. *(If accessing the Program Mode is needed, go to **page 10** for more details.)*
6. **Re-install in reverse order.**



FIG 4.3A

### CHAMBER PRESSURE SWITCH

1. Unplug the Unit & remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
2. Disconnect the Wiring Terminals from the Chamber Pressure Switch (note the wire color to its location terminal).
3. Remove the hose clamp and disconnect the hose from the Chamber Pressure Switch.
4. Remove the 2 mounting nuts holding the Chamber Pressure Switch to chamber cavity.
5. Remove the Chamber Pressure Switch
6. **Re-install in reverse order.**

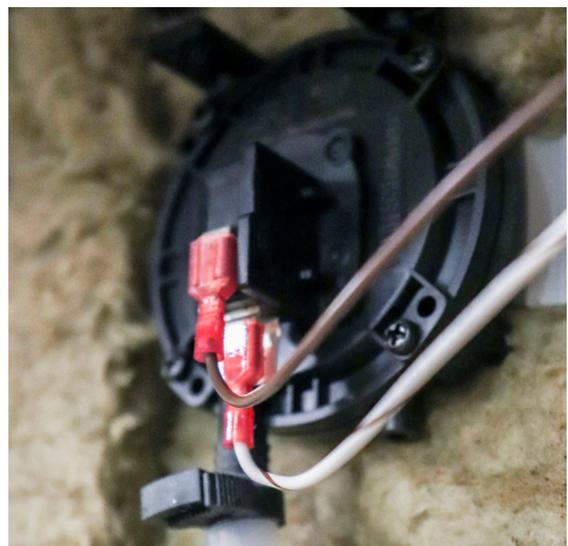


FIG 4.3B

### TIME-DELAY RELAYS

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires from the desired Time-Delay Relay (note the wire color to its location pin).
4. Remove the mounting nut and then remove the desired Time-Delay Relay.
5. *(Ensure the time-delay pot is set to the correct delay time...TDR#1 = 5sec / TDR#2 = 4sec).*
6. **Re-install in reverse order.**



FIG 4.3C

## DOOR SWITCH

### *Door Latch on the Left-Hand Side*

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the probe wires: Control/ Keypad Panel J7 Pin 1 & the White/Brown wire from the Chamber Pressure Switch (the wires to the location pins are enter-changeable).
4. Push back the insulation, so you can access the other mounting nut to be removed.
5. Remove the 2 mounting nuts and then remove the Door Switch (4.3D).

### **6. Re-install in reverse order.**

### *Door Latch on the Right-Hand Side*

1. Unplug the Unit.
2. Remove the Left-Side, Right-Side, and Top Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the probe wires: Control/ Keypad Panel J7 Pin 1 & the White/Brown wire from the Chamber Pressure Switch; and pull the wires up, over the top of the steamer (the wires to the location pins are enter-changeable).
4. Remove the insulation on the right side, to access the Door Switch to be removed (4.3E).

FIG 4.3D



FIG 4.3E



## 4.4 Removal and Replacement of Ignition Control Components

### IGNITION MODULE

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Remove the mounting nut on the Ignition Cable.
4. Disconnect the wires (note the wire color to its location pin).
5. Remove the 2 mounting screws and then remove the correct voltage type Control Relay.
6. **Re-install in reverse order.**

FIG 4.4A



### IGNITOR & FLAME SENSE PROBE

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires from the probes (note the wire to its probe location).
4. Remove the 2 mounting bolts and then remove the Probe Assembly.
5. **Re-install in reverse order. Ensure that the GND Probe is angled towards the Burner's Surface.**

FIG 4.4B

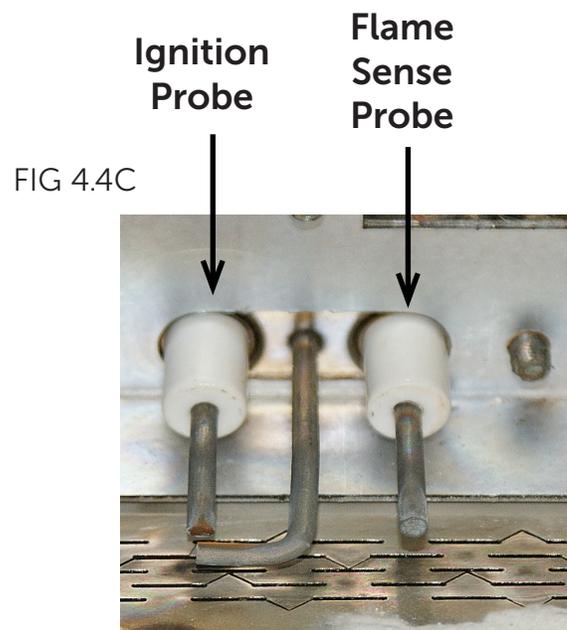
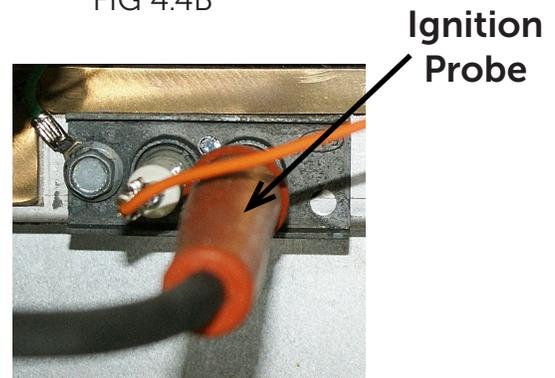


FIG 4.4C

## GAS CONTROL VALVE

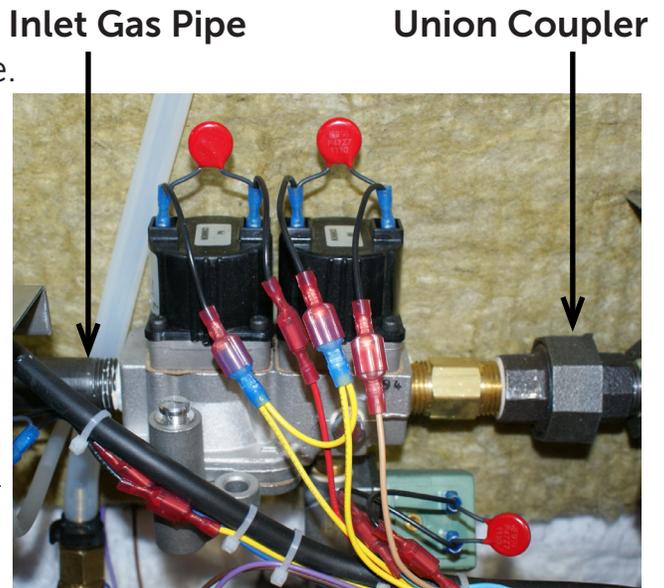
1. Shut OFF the Supply Gas Valve & disconnect the Supply Gas Hose.
2. Unplug the Unit & remove the Left-Side Panel.
3. Disconnect the Gas Line from the Enrichment Valve to the Burner (FIG 4.4A).
4. Disconnect the Wiring Terminals from the Gas & Enrichment Valves (note wire color location to each valve's wires).
5. Disconnect the Union Coupler on the out- Inlet Gas Pipe
6. Loosen the Retaining Bracket of the Inlet Gas Pipe (left side of Gas Control Valve). FIG 4.4B
7. Disconnect the Gas Control Valve's Inlet Gas Pipe.
8. Remove the Gas Orifice & Gas Union Coupler.
9. Remove the Gas Enrichment Valve.
10. **Re-install in reverse order. Ensure Sealant is re-applied to all pipe threading.**



FIG 4.4C



FIG 4.4D



## GAS ENRICHMENT VALVE

1. Shut OFF the Supply Gas Valve & disconnect the Supply Gas Hose.
2. Unplug the Unit & remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the Gas Line from the Enrichment Valve to the Burner (FIG 4.4C)
4. Disconnect the Wiring Terminals from the Enrichment Valve (note wire color location to the valve's wires).
5. Disconnect and remove the Enrichment Valve from under the unit's Gas Control Valve.
6. Remove the 90° elbow.
7. Remove the MOV Wires (*note their location on the Enrichment Valve*).
8. **Re-install in reverse order. Ensure Sealant is re-applied to all pipe threading.**

 **After Replacing Gas Valves, it is Mandatory to Check and Verify that the Gas Valve has the Proper Water Column (WC) Value Measured with a Manometer.**  
**Also Confirm No Gas Leaks Are Present, see page 33**

FIG 4.4E

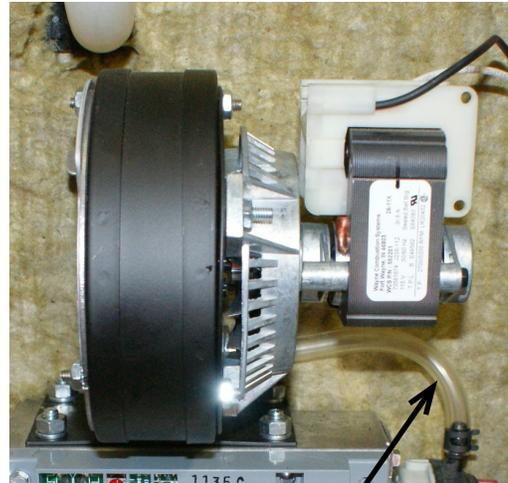


Orifice

## POWER BURNER BLOWER

1. Unplug the Unit & remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
2. Disconnect the Wiring Terminals from the Fan (*note wire color location to the Fan's wires*).
3. Disconnect the Blower Pressure Switch Hose from the bottom of the Power Burner Blower.
4. Note position of old blower air shutter before removing.
5. Remove the 4 mounting nuts at Blower base.
6. Remove the Power Burner Blower.
7. **Re-install in reverse order.**  
**Ensure the Blower's Air Shutter is set as follows: Natural = 3" & Propane = 3"**

FIG 4.4F



Fan Pressure Switch Hose



After Replacing the Blower - perform a CO analysis at the flue. See Page 34 for full guidance.

## POWER BURNER BLOWER PRESSURE SWITCH

1. Unplug the Unit & remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
2. Disconnect the Wiring Terminals from the Power Burner Blower Pressure Switch (*note wire color location to the switch's wires*).
3. Remove the hose clamp and disconnect the hose to the Power Burner Blower Pressure Switch.
4. Remove the 2 mounting screws on the Power Burner Blower Pressure Switch mounting bracket.
5. Remove the 3 screws holding the Power Burner Blower Pressure Switch to the mounting bracket.
6. Remove the Power Burner Blower Pressure Switch.
7. **Re-install in reverse order.**

FIG 4.4G



## 4.5 Removal and Replacement of Gas Supply and Burner Components

### GAS ORIFICES

1. Shut OFF the Supply Gas Valve & disconnect the Supply Gas Hose.
2. Unplug the Unit & remove the Left-Side Panel.
3. Disconnect the Gas Union Coupler on the output (right) side of the Gas Control Valve (FIG 4.5A).
4. Loosen the Retaining Bracket of the Inlet Gas Pipe (left side of Gas Control Valve).
5. Remove the Gas Union Coupler Fitting from the Gas Orifice.
6. Remove the Gas Orifice from the Gas Control Valve.
7. Disconnect the Burner Union Coupler below the Ignition Module (FIG 4.5B).
8. Pull-out the Ignition Module Bracket and angle it to allow access to the end of the Gas Enrichment Valve Hose, attached to the piping behind the Ignition Module Bracket (FIG 4.5C).
9. Detach the Gas Enrichment Hose fitting to allow access to the Gas Enrichment Orifice
10. Remove the Gas Enrichment Orifice from the Gas Enrichment Hose fitting (FIG 4.5D).
11. **Re-install in reverse order. Ensure Sealant is re-applied to all pipe threading.**

FIG 4.5A

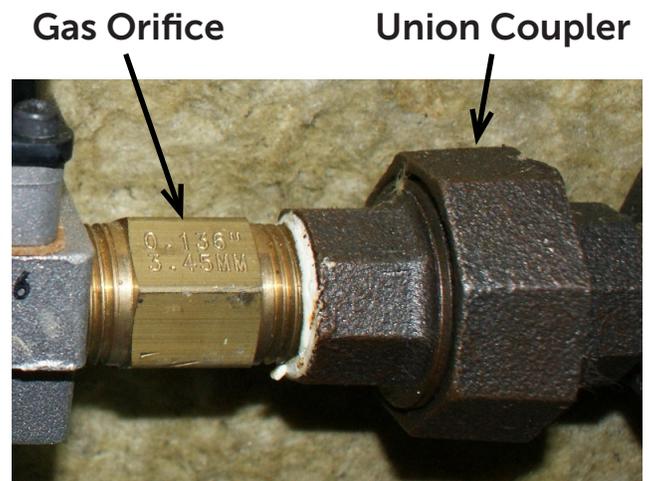
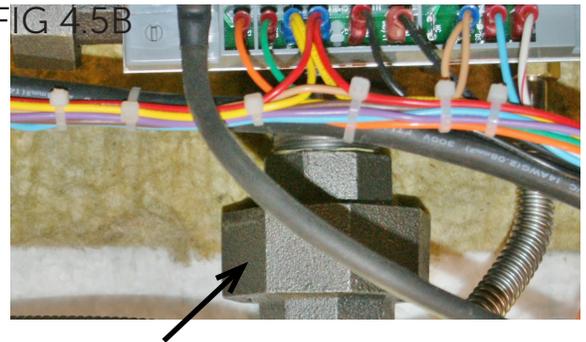


FIG 4.5B



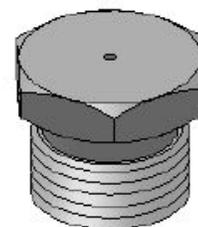
Burner Union Coupler

FIG 4.5C



Gas Enrichment Hose End Fitting

FIG 4.5D



 After Replacing Gas Orifices, it is Mandatory to Check and Verify that the Gas Valve has the Proper Water Column (WC) Value Measured with a Manometer. Also Confirm No Gas Leaks Are Present, see page 33

 **USE THE GAS ORIFICE PER ALTITUDE CHART, ON PAGE 35, TO ENSURE THE PROPER ORIFICE SIZES IS USED.**

## GAS POWER BURNER

AT1Z-5475: Burner Replacement Kit, SN 47503 and Higher  
Kit contains the following parts

PART NUMBER	DESCRIPTION	QUANTITY
AT1A-3768-1	Burner Assembly	1
AT1E-3795	Probe Assembly	1
AT0E-3810-1	Ignition Cable	1
AT0F-2777-31030	#8x3/8 Exterior Panel Screws	4
AT0I-3799-6	Insulation Ceramic Left Side x 1	1

### TOOLS REQUIRED:

Medium Adjustable Pipe Wrench.

# 2 Phillips screwdriver

Slotted screwdriver

Inch pound Torque Socket Wrench with extension and following  
socket heads:

5/16"

7/16"

Multimeter

Manometer

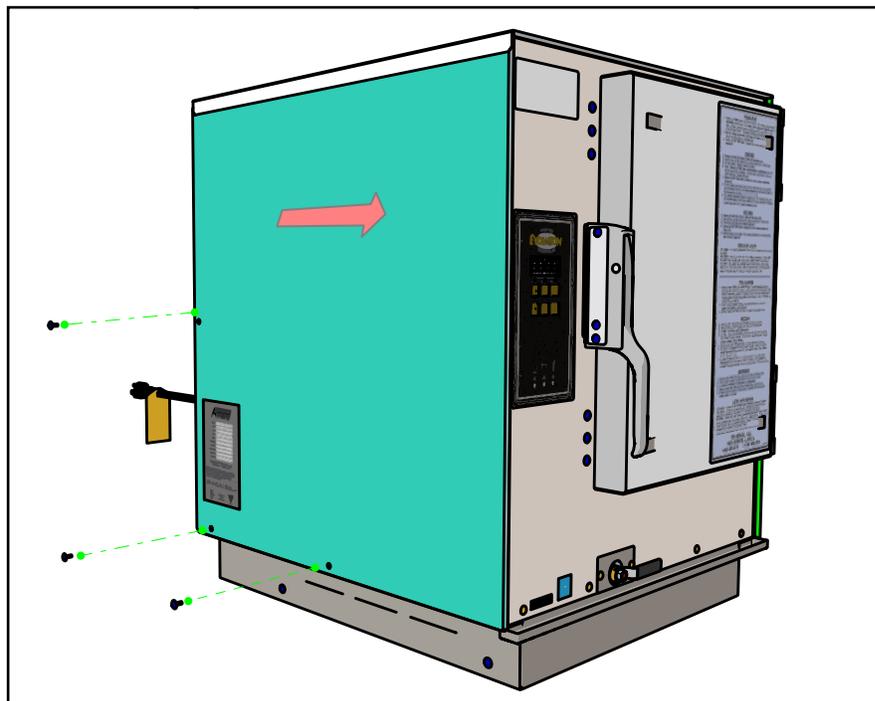
Needle Nose pliers

CO Meter

Utility Knife

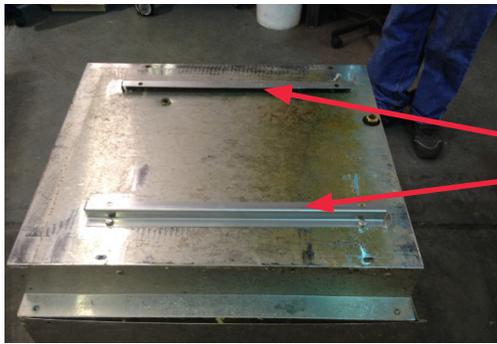
1. Turn off breaker for the unit from electrical power supply and lockout/tagout the breaker
2. Unplug unit and disconnect Water Supply and Drain Hose if applicable.
3. Shut **OFF** the Gas Supply and disconnect Gas Connection to the appliance.
4. If unit is on stand, remove from stand by removing the four 1/4"-20 bolts and lock washers. A minimum of two people will be required.
5. Move to a non food preparation area.
6. Remove the pan racks, steam collector and overflow float (Auto Fill) from the cooking chamber and set in a safe place. Use caution in handling the overflow float to reduce the risk of damage.
7. Remove the Left-Side Panel by removing the three sheet metal screws holding it in place and retain for reassembly. (FIG 4.5E)

FIG 4.5E



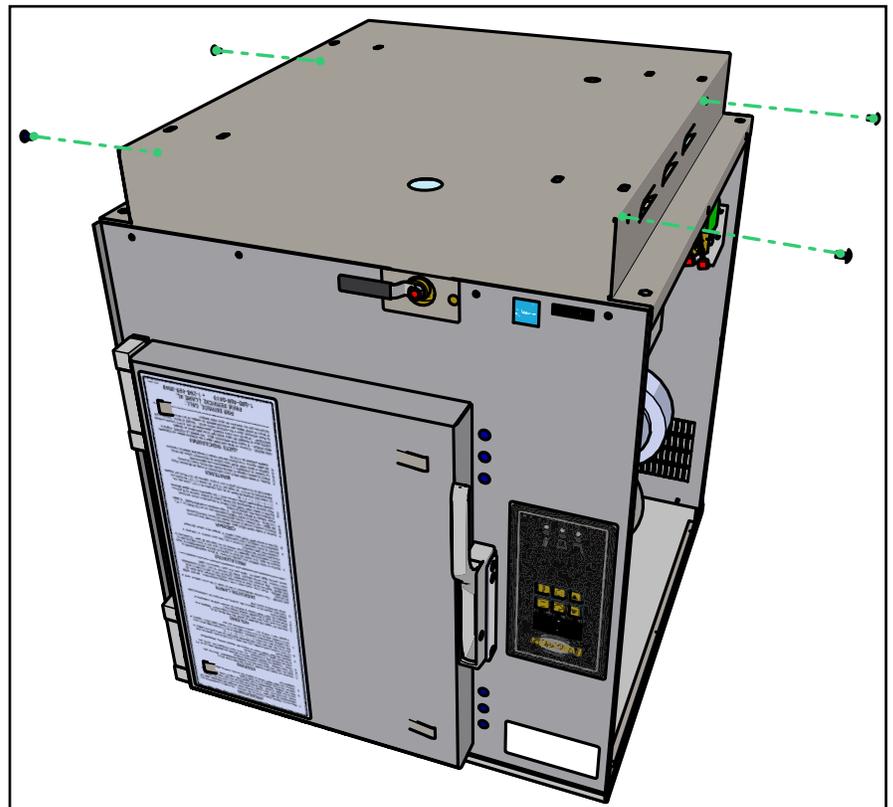
8. Turn unit upside down on to a movers blanket or other material to reduce scratching. This will require two people minimum.
9. If unit has legs, remove the leg assemblies by removing the four 1/4"-20 bolts and lock washers for each leg assembly. Retain for reassembly.
10. Remove the four fasteners holding the pan retainer rails in place. Remove rails and retain (FIG 4.5F).
11. Remove the four fasteners (two on each side) of the bottom pan assembly (FIG 4.5G). Retain for reassembly.

FIG 4.5F



Pan Rails

FIG 4.5G



12. Remove the four fasteners and the single drain pan (Auto-Fill or Drain option) or two drain edges with two fasteners per drain edge (Manual-Fill). (FIG 4.5H) Retain for reassembly.
13. Remove the five fasteners attaching the rear panel and the remaining side panel to the bottom pan assembly. (FIG 4.5I) Retain for reassembly.
14. (Manual Fill) Remove the vent drain (1/4" hose) clamp and remove hose from the barbed fitting. Retain for reassembly.
15. (Manual-Fill) Remove the bottom pan assembly by lifting up until clear of the assembly underneath. (FIG 4.5K) Retain for reassembly.
16. Remove bottom pan assembly by lifting up and pushing forward until the hose is clear. Continue lifting up until it is clear of the assembly below. (FIG 4.5K). Retain for reassembly.

FIG 4.5H

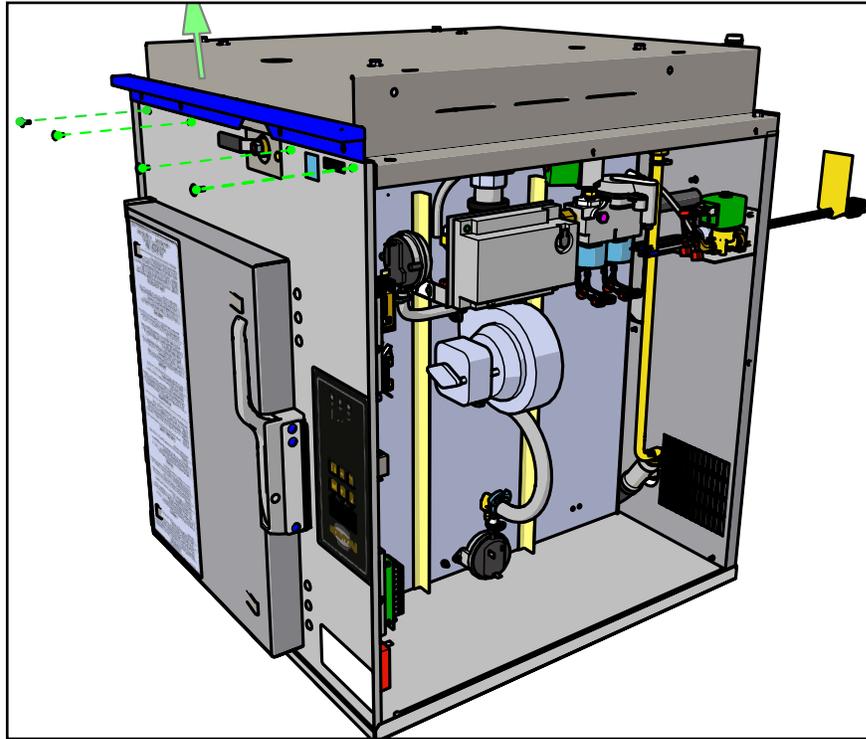


FIG 4.5I

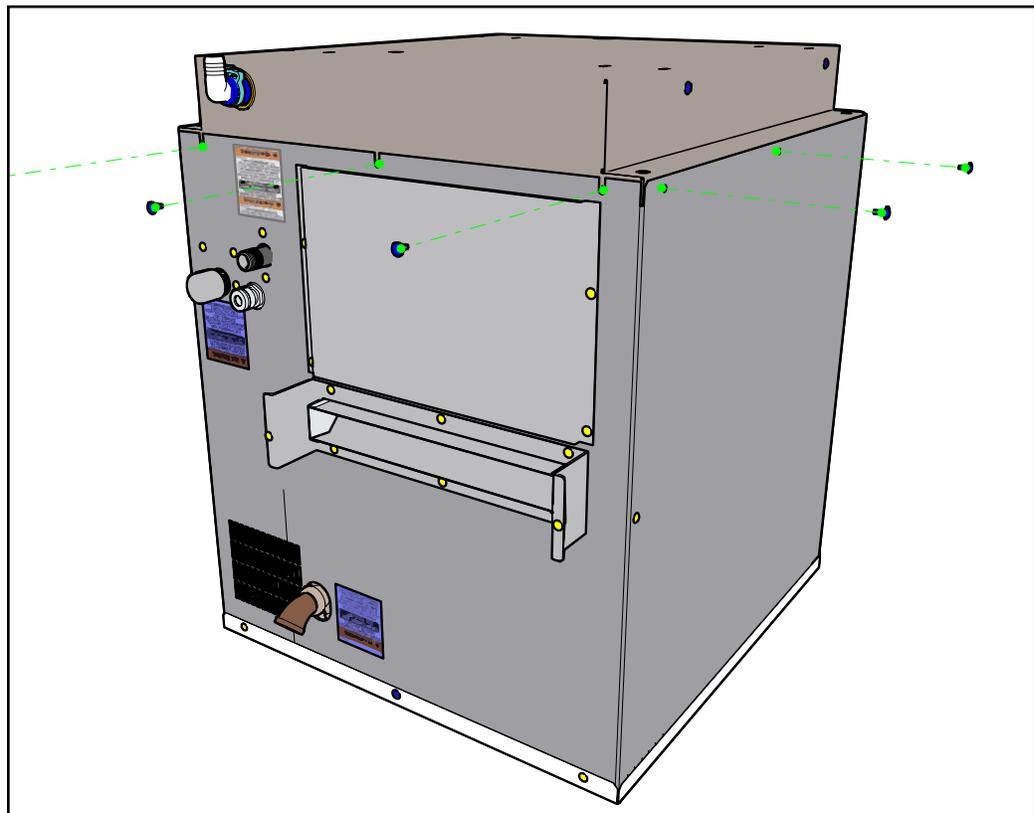


FIG 4.5J

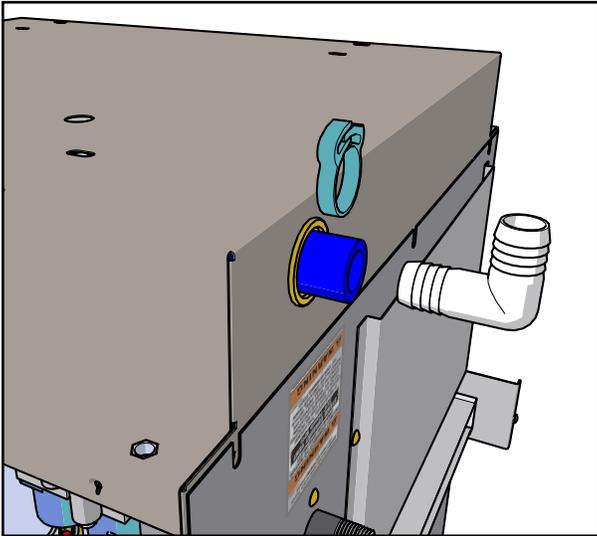
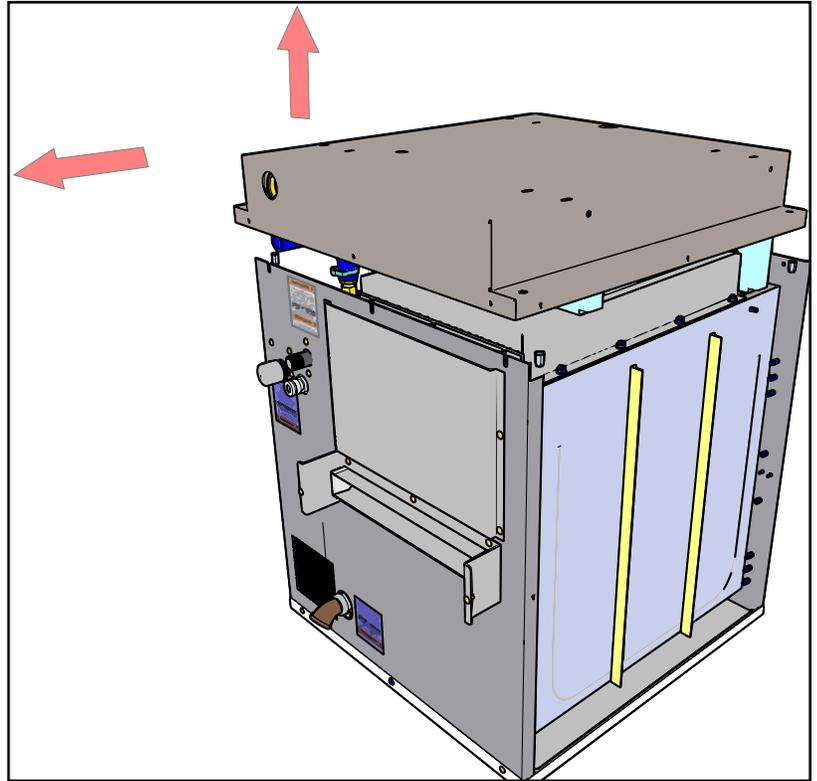


FIG 4.5K



17. (Auto-Fill or Drain Option)) Remove hose clamp and 90° drain hose fitting (FIG 4.5J).
18. Remove the two pieces of insulation covering the burner box assembly. (FIG 4.5L) Retain for reassembly.
19. Remove two hose clamps retaining the large section of hose and remove from each barbed fitting. Pull toward the front of the unit to remove. (FIG 4.5M) Retain hose clamps and hose for reassembly.
20. Disconnect the wires from the flame sense and ignitor probe and remove the ground wire by removing the fastener that retains it to its probe location. (FIG 4.5N). Retain fasteners for reassembly.

FIG 4.5L

**Auto-Fill or Optional  
Drain**

**Insulation Covering  
Burner**

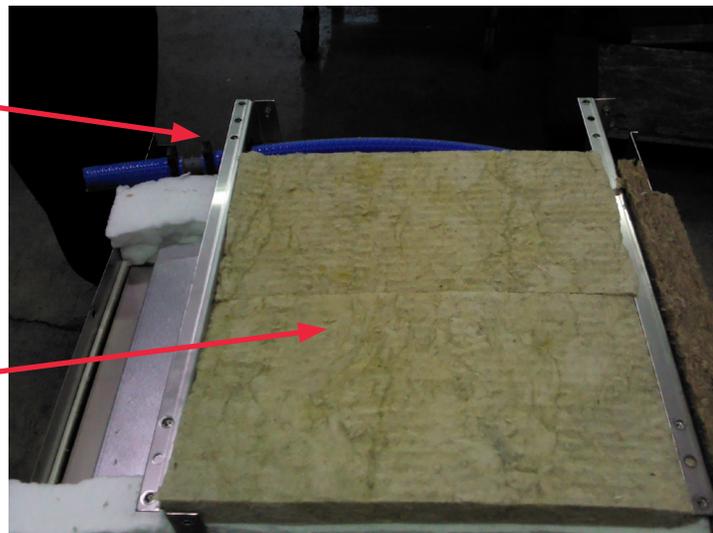
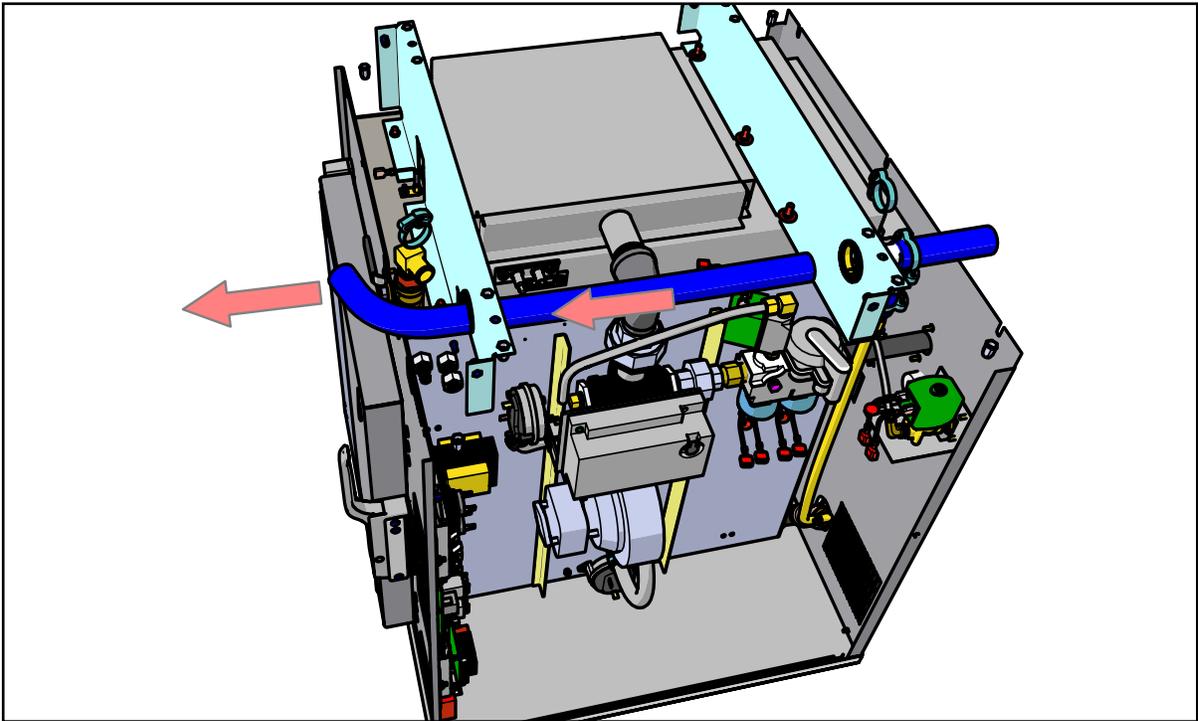
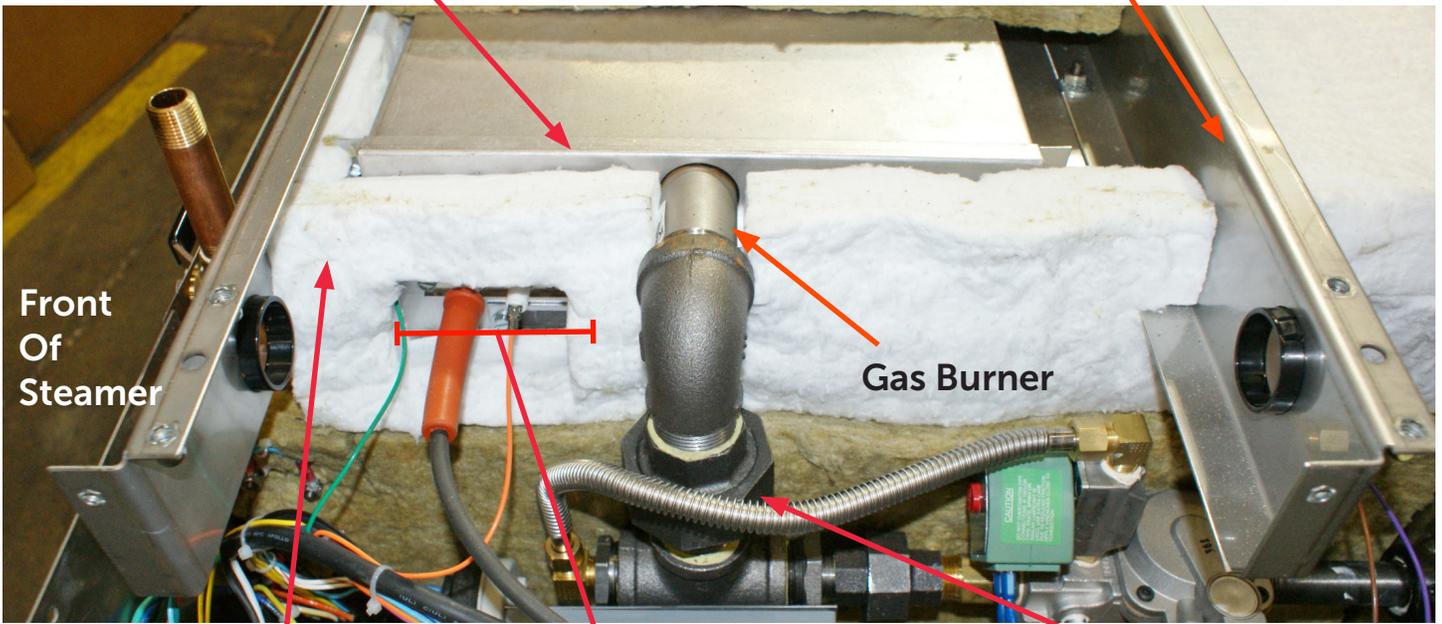


FIG 4.5M



Gas Burner Box Bottom

Bottom Cross-Brace



Front Of Steamer

Gas Burner

Ceramic Insulation

Ignitor, Flame Sense and Ignitor Ground Wire

Gas Union

FIG 4.5N

21. Remove the 2 mounting fasteners and then remove the Probe Assembly and discard. (FIG 4.5O) Retain fasteners for reassembly
22. Remove the Ignition Cable from the Module and discard. (FIG 4.5P)
23. Loosen gas train union at the burner. This will require a medium sized pipe wrench or channel locks. The union must be turned to the left in this orientation to loosen. (FIG 4.5Q). Make sure to support the gas train after the union is disconnected, failure to do so will stress the wires in the unit.  
 **The gas train must be supported after the union is disconnected, failure to do so will stress wires in the unit**
24. Cover the opening in the gas train union to prevent insulation and debris from falling into gas train interior (FIG 4.5Q).
25. Remove ceramic white insulation that covers site glass window & ignition electrodes and discard (FIG 4.5N).
26. Using a socket wrench, remove two 10-32 zinc plated hex screws holding burner into the Combustion box (FIG 4.5R). Slide the burner out from combustion box assembly (FIG 4.5S).
27. After sliding new burner into place, insert and tighten two retaining screws until snug. The burner should not move once screwed into place.
28. Re-install in reverse order. When installing the bottom cover, insert all fasteners into place before tightening.
29. With the unit reassembled several tests must be completed **Go to page 33 for the instructions for the tests.**

 **After Replacing the Burner - perform a CO analysis at the flue. See Page 33 & 34 for full guidance.**



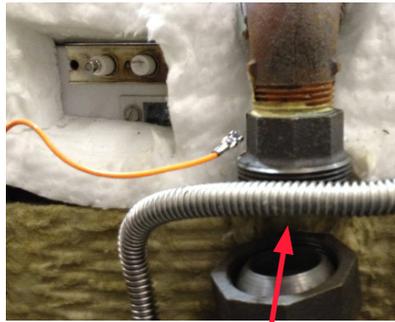
Ground Fastener  
Ignition Probe  
Flame Sense Rod

FIG 4.5O



Ignition Cable/Ignition Module

FIG 4.5P



Union Fitting



Union Fitting Covered

FIG 4.5Q



#10-32 Hex Screws

FIG 4.5R

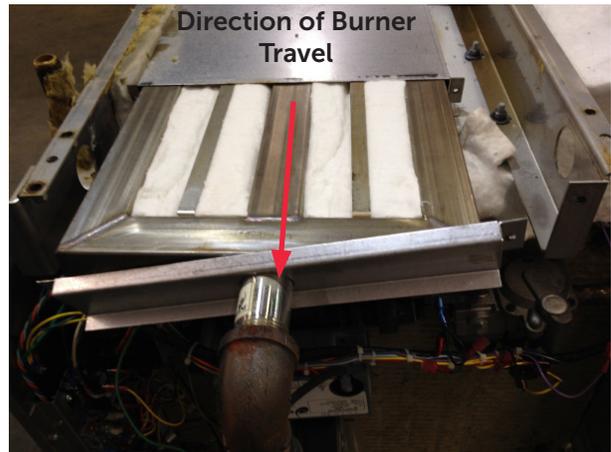


FIG 4.5S

## 4.6 Removal and Replacement of Door Assembly

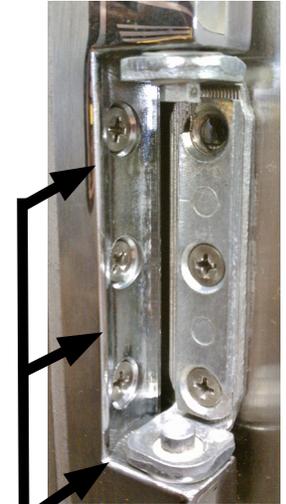
### DOOR ASSEMBLY

1. Unplug the unit and shut the Door.
2. Remove the Hinge Covers (FIG 4.6A).
3. Remove the 3 hinge screws going into the face of the steamer of the Bottom Hinge (FIG 4.6B).
4. While supporting the Door on the hinge-side, remove the 3 hinge screws into the face of the steamer of the Top Hinge.
5. Pull the door handle and remove the Door.
6. **Re-install in reverse order. Ensure Anti-sieze is re-applied to all hinge screws.**

FIG 4.6A



FIG 4.6B



Face Screws

FIG 4.6C

Inner Door



FIG 4.6D



FIG 4.6E



**⚠** If the Door Handle Latch Is Moved to the Opposite Side, Ensure That the Door Switch Is Moved to the Corresponding Door Handle Latch Side .  
**STEAMER WILL NOT OPERATE IF NOT DONE.**

### INNER-DOOR PANEL

1. Unplug the unit and shut the Door.
2. Remove the Hinge Covers (FIG 4.6A).
3. Remove the very bottom screw on the door hinge-side of the Bottom Hinge.
4. Remove the very top screw on the door hinge-side of the Top Hinge.
5. Pull the door handle and open the door
6. Lift and pull out the Inner Door Panel.
7. **Re-install in reverse order. Ensure Anti-sieze is re-applied to all hinge screws.**

**⚠** Ensure That the Inner Door is Reinstalled with its Middle Brace Bar Behind the Door Latch Tab FIG 4.6D  
Also, Ensure That the Screw Retainer Openings are Lined-Up with the Door's Hinge Side FIG 4.6E

## DOOR HANDLE LATCH ASSEMBLY

1. Unplug the unit & shut the Door.
2. Remove the Hinge Covers (FIG 4.6F).
3. Remove the very bottom screw on the door hinge-side of the Bottom Hinge & remove the very top screw on the door-side hinge of the Top Hinge.
4. Pull the door handle and open the door
5. Lift and pull out the Inner Door Panel.
6. Remove the 3 mounting nuts and screws, holding the Door Handle Latch to the side of the door, and the Inner Door Holding Tab.
7. Remove the Door Handle Latch Assembly.
8. **Re-install in reverse order. Ensure Anti-sieze is re-applied to all hinge screws.**

FIG 4.6F



## DOOR HINGE

1. Unplug the unit & shut the Door.
2. Remove the Hinge Covers (FIG 4.6A).
3. Remove the 3 hinge screws going into the face of the steamer of the Bottom Hinge.
4. While supporting the Door on the hinge-side, remove the 3 hinge screws into the face of the steamer of the Top Hinge.
5. Pull the door handle and remove the Door.
6. Remove the very bottom screw on the door hinge-side of the Bottom Hinge & remove the very top screw on the door-side hinge of the Top Hinge.
7. Lift and pull out the Inner Door Panel.
8. Remove the remaining door-side screws for the hinge or hinges to be replaced. *(Note the orientation of the Hinge Spacer Bars as they relate to the Hinge orientation.)*
9. Remove the Door Hinge or Hinges.

**Re-install in reverse order. Ensure Anti-sieze is re-applied to all hinge screws.**

 **Ensure That the Inner Door is Reinstalled with its Middle Brace Bar Behind the Door Latch Tab (FIG 4.6G).**  
**Also, Ensure That the Screw Retainer Openings are Lined-Up with the Door's Hinge Side (FIG 4.6H).**

FIG 4.6G



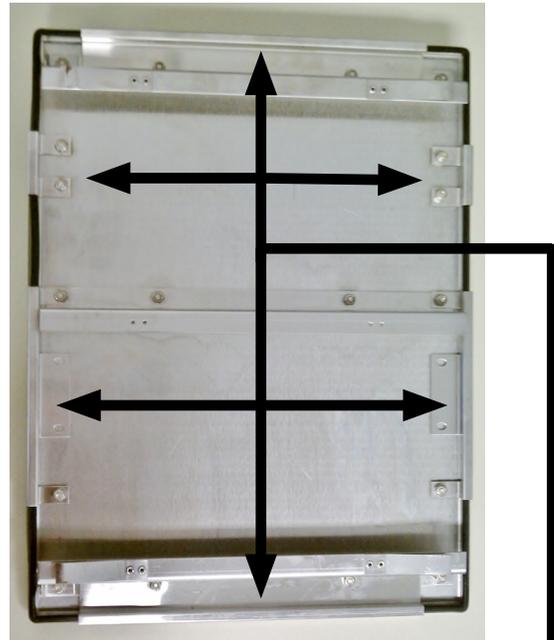
FIG 4.6H



# DOOR COMPONENTS REMOVAL & INSTALLATION

## DOOR GASKET

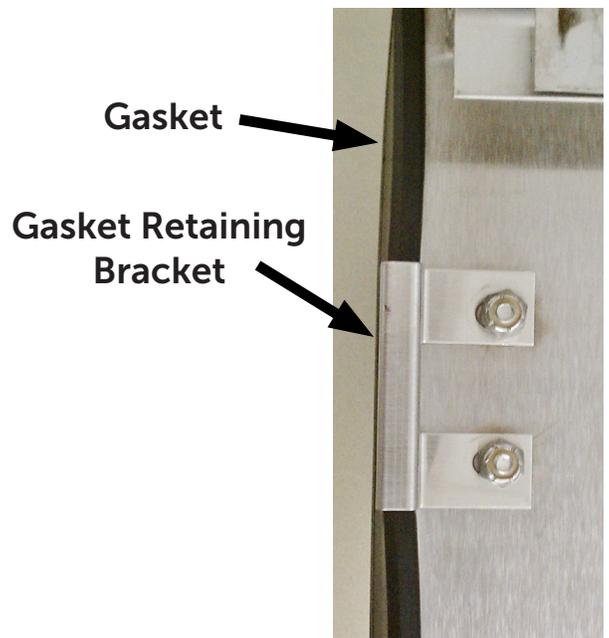
1. Unplug the unit & shut the Door.
2. Remove the Hinge Covers (FIG 4.6A).
3. Remove the very bottom screw on the door hinge-side of the Bottom Hinge & remove the very top screw on the door-side hinge of the Top Hinge.
4. Pull the door handle and open the door
5. Lift and pull out the Inner Door Panel.
6. Remove the 6, Gasket retaining brackets by removing the 12 nyloc mounting nuts holding them in place.
7. Remove the Door Gasket.
8. **Re-install in reverse order. Ensure Anti-sieze is re-applied to all hinge screws.**



Gasket Retaining  
Brackets

### **INSTALLATION NOTE:**

- Make sure the new Door Gasket is untangled.
- Starting at one corner, stretch the Gasket to the opposite corner.
- Repeat this sequence until all 4 corners are seated.
- Push the Gasket down all the way around to ensure the Gasket seats firmly on the inner door.



Ensure That the Inner Door is Reinstalled with its Middle Brace Bar Behind the Door Latch Tab FIG 4.6D.

Also, Ensure That the Screw Retainer Openings are Lined-Up with the Door's Hinge Side FIG 4.6E.

## 4.7 Removal and Replacement of Temperature Sensors

### TEMPERATURE (RTD) SENSOR

1. Unplug the Unit.
2. Remove the Left-Side, Right-Side, and Top Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the probe wires from the Control/Keypad Panel and pull them from the left, over the top, to the steamer's right-side (the wires to the location pins are enter-changeable).
4. Remove the mounting nut and then remove the Temperature (RTD) Sensor.
5. Re-install in reverse order. Ensure Thermal Paste is applied to the Temperature (RTD) Sensor.



FIG 4.7A



FIG 4.7B



FIG 4.7C

### OVERTEMP - THERMAL DISK

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location pin).
4. Remove the 2 mounting screws and then remove the Overtemp Switch.
5. Re-install in reverse order.

### OVERTEMP - BULB STYLE THERMOSTAT

1. Unplug the Unit.
2. Remove the Left-Side Panel by removing the Sheet Metal Screws holding it in place.
3. Disconnect the wires (note the wire color to its location pin, FIG 4.7D).
4. Use a torque wrench to remove the nut holding the capillary wire retaining bracket in place (FIG4.7C).
5. Slowly remove the sensor from the heat transfer plate.
6. Remove the 2 mounting screws holding the thermostat to the unit.
7. Re-install in reverse order.



Retaining Bracket



FIG 4.7D  
Thermostat





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