

## C24GA SERIES CONVECTION STEAMERS

### MODELS

C24GA6	ML-136021
C24GA10	ML-136022

#### - NOTICE -

This manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

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# TABLE OF CONTENTS

GENERAL .....	4
Introduction .....	4
Installation .....	4
Operation .....	4
Cleaning .....	4
Specifications .....	4
Gas Line Pressures .....	4
Burner Pressure .....	4
Electrical .....	4
Water Supply .....	4
Tools .....	4
Standard .....	4
Special .....	4
REMOVAL AND REPLACEMENT OF PARTS .....	5
Covers and Panels .....	5
Cooking Compartment Right Side Panel .....	5
Cooking Compartment Flue Wrap .....	5
Cooking Compartment Left Side Panel .....	5
Cabinet Base Right Side Panel .....	5
Cabinet Base Left Side Panel .....	6
Cabinet Base Front Panel .....	6
Cabinet Base Rear Panel .....	6
Cooking Compartment Door .....	6
Door Assembly .....	6
Door Gasket .....	7
Door Handle .....	7
Door Latch Assembly .....	8
Compartment Controls .....	8
Main Burner .....	9
Gas Combination Control Valve .....	9
Generator Assembly .....	9
Fill and Cold Water Solenoid Valves .....	11
Pilot Spark/Probe Flame Sensor .....	12
SERVICE PROCEDURES AND ADJUSTMENTS .....	13
Blower Air Pressure Adjustment .....	13
Air Pressure Switch Adjustment .....	13
Pilot Burner Adjustment .....	14
Operating Pressure Switch .....	15
Thumb Wheel Adjustment .....	16
Inlet Water/Steam Strainer .....	16
Automatic Ignition Systems .....	17
Spark Ignition Control Test .....	17
Ignition Test .....	18
Manifold Pressure Adjustment .....	18
Cooking Compartment .....	19
Controls .....	19
Door .....	19
Latch Adjustment .....	19
Striker Adjustment .....	20
Delimiting the Generator .....	20
Cooking Cycle Test .....	21
General .....	21
Probe Inspection .....	21

ELECTRICAL OPERATION ..... 22

    Water Level Controls ..... 22

        Low Level Cut-Off & Differential Control ..... 22

    Sequence of Operation ..... 22

        Initial Fill and Preheat Conditions ..... 22

    Schematics ..... 25

    Component Location Cabinet Base Generator ..... 28

    Component Function Cabinet Base Generator ..... 29

    Component Location Cooking Compartment ..... 31

    Component Function Cooking Compartment ..... 32

        General ..... 32

TROUBLESHOOTING ..... 33

    General ..... 33

    Water Not Being Supplied to Generator ..... 33

    Pilot Or Main Burner Will Not Light ..... 33

    Drain Solenoid Valve Does Not Drain ..... 33

    Water Accumulating in Compartment ..... 33

    Cooking Cycle Cannot be Activated ..... 33

    Steamer Achieves Pressure Slower Than Normal ..... 33

    Troubleshooting Sequence Of Operation ..... 34

TROUBLESHOOTING CHART ..... 35

CONDENSED SPARE PARTS LIST ..... 38

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# GENERAL

## INTRODUCTION

Procedures in this manual will apply to all models unless specified. Pictures and illustrations can be of any model unless the picture or illustration needs to be model specific.

## INSTALLATION

Refer to the Installation and Operation Manual for detailed installation instructions on steamers.

## OPERATION

Refer to the Installation and Operation Manual for specific operating instructions.

## CLEANING

Refer to the Installation and Operation Manual for specific cleaning instructions.

## SPECIFICATIONS

### Gas Line Pressures

- Operating Pressure  
Natural - Recommended 2.5" W.C.  
Propane - Recommended 10.0" W.C.
- Incoming Pressure  
Natural - Recommended 7.0" W.C. min.  
Propane - Recommended 11.0" W.C. min.

### Burner Air Pressure

0.4" W.C.

### Electrical

Voltage: 120/60/1

Amps: 2.5 Amps

Frequency: 50/60 Hz

### Water Supply

Supply pressure: 20-60 psig

Hardness\*: Less than 3 grains

Silica: Less than 13 ppm

Total Chloride: Less than 4.0 ppm

pH Range: 7 to 8

Undissolved Solids: Less than 5 microns

(\*17.1 ppm = 1 grain of hardness)

## TOOLS

### Standard

- Standard set of hand tools.
- VOM with A.C. current tester (Any quality VOM with a sensitivity of at least 20,000 ohms per volt can be used.)

### Special

- Gas leak detection equipment.
- Gas Manometer.
- Loctite 271
- Screwdriver, 1/8 X 4 cabinet tip

# REMOVAL AND REPLACEMENT OF PARTS

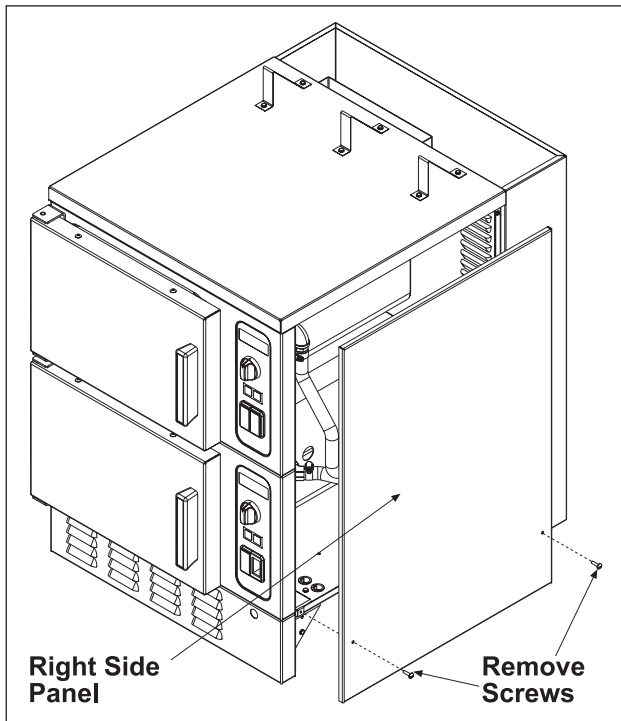
## COVERS AND PANELS



**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

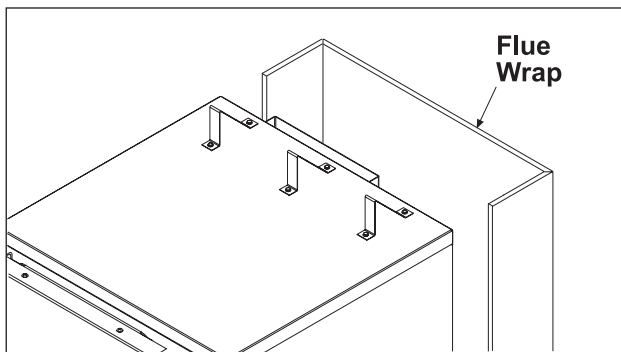
### Cooking Compartment Right Side Panel

1. Remove the screws then remove the right side panel from the compartment.



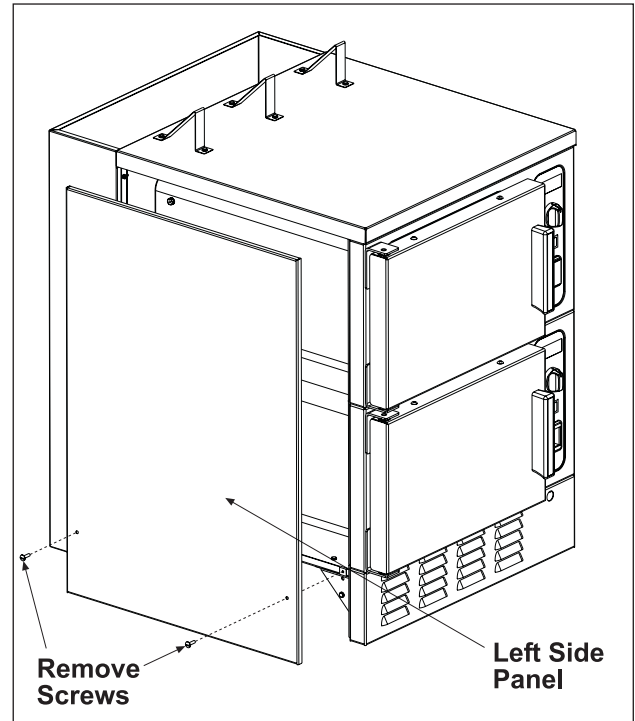
### Cooking Compartment Flue Wrap

1. Remove left and right side panels from compartment. Remove screws that secure flue wrap.



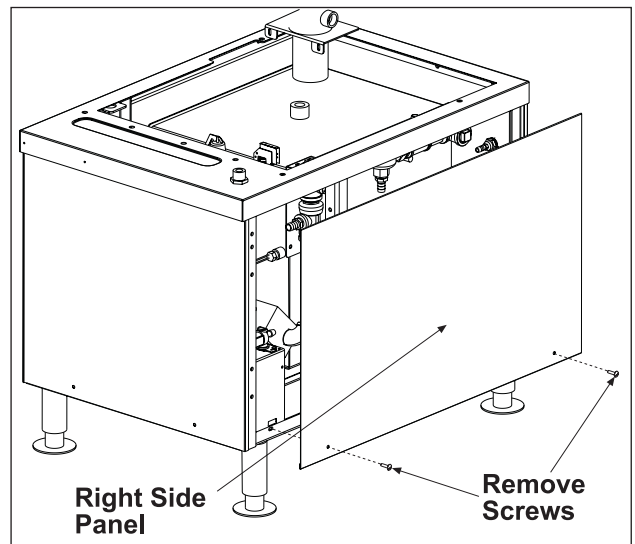
### Cooking Compartment Left Side Panel

1. Remove the screws then remove the left side panel from the compartment.



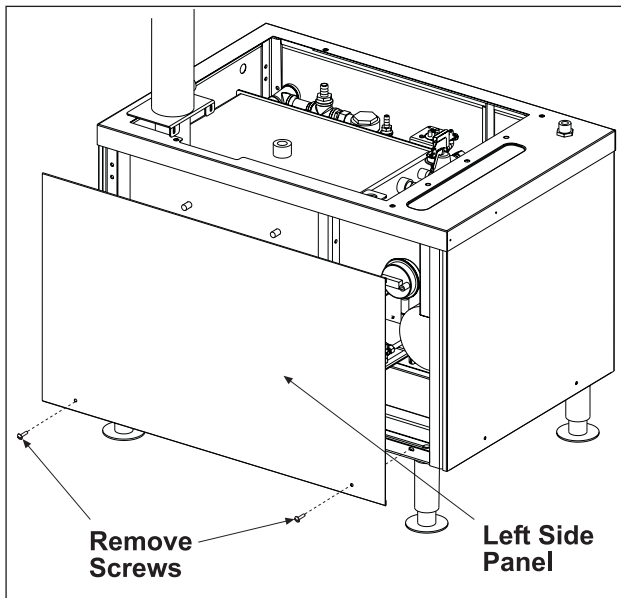
### Cabinet Base Right Side Panel

1. Remove the screws then remove the right side panel from the cabinet base.



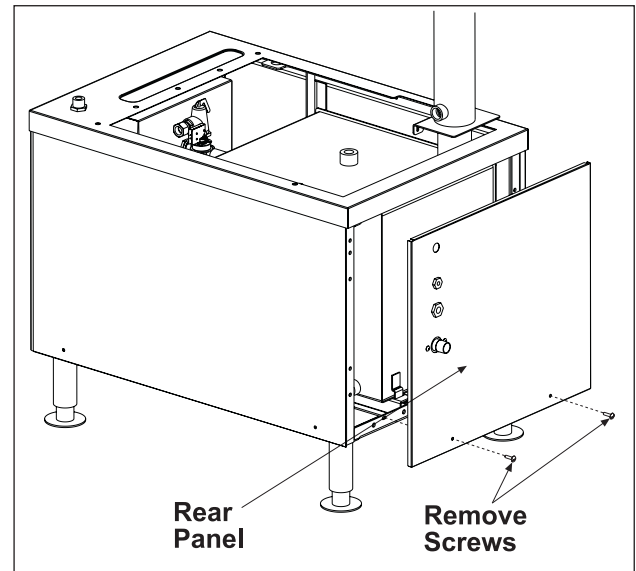
**Cabinet Base Left Side Panel**

1. Remove the screws then remove the left side panel from the cabinet base.



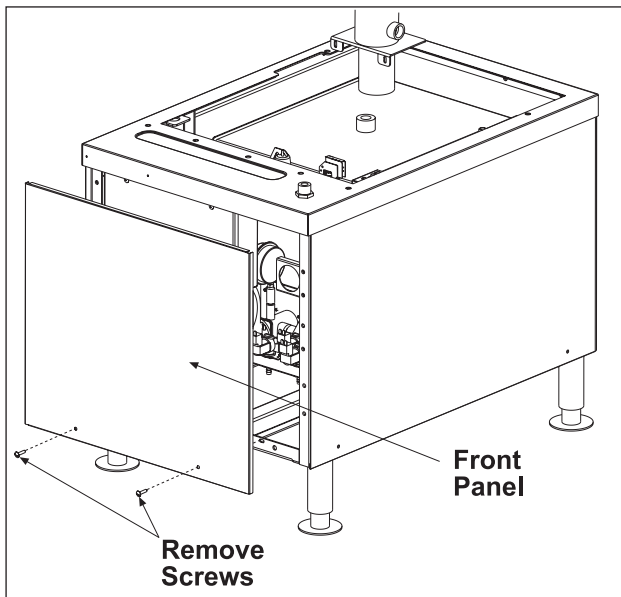
**Cabinet Base Rear Panel**

1. Remove the screws then remove the rear panel from the cabinet base.



**Cabinet Base Front Panel**

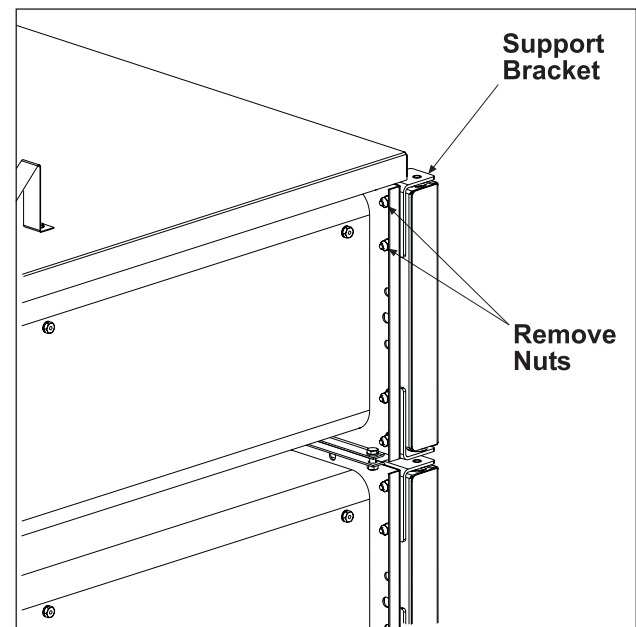
1. Remove the screws then remove the front panel from the cabinet base.



**COOKING COMPARTMENT DOOR**

**Door Assembly**

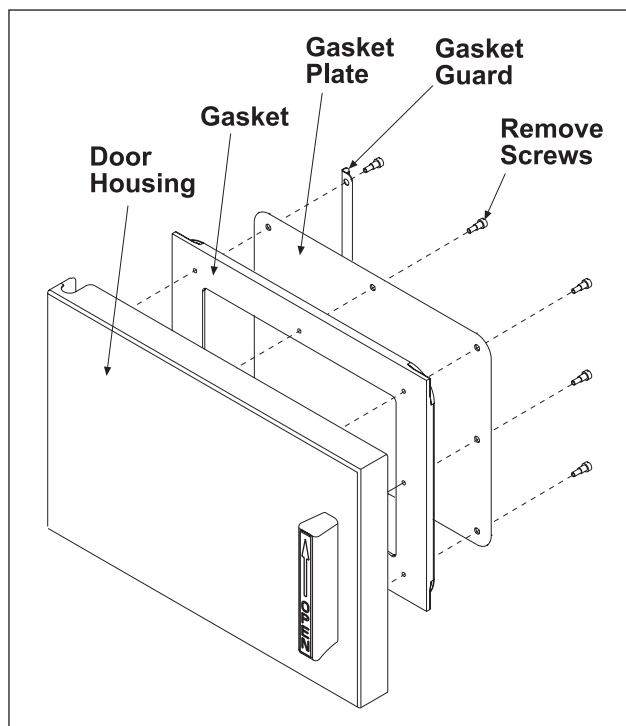
1. Remove compartment left side panel as outlined under COVERS AND PANELS.
2. Remove nuts from top door support bracket.



3. Open the door and lift from bottom hinge.
4. Reverse the procedure to install and check for proper operation.

### Door Gasket

1. Open the door.
2. Remove screws from the gasket guard and gasket plate.
3. Remove the gasket guard and the gasket plate.

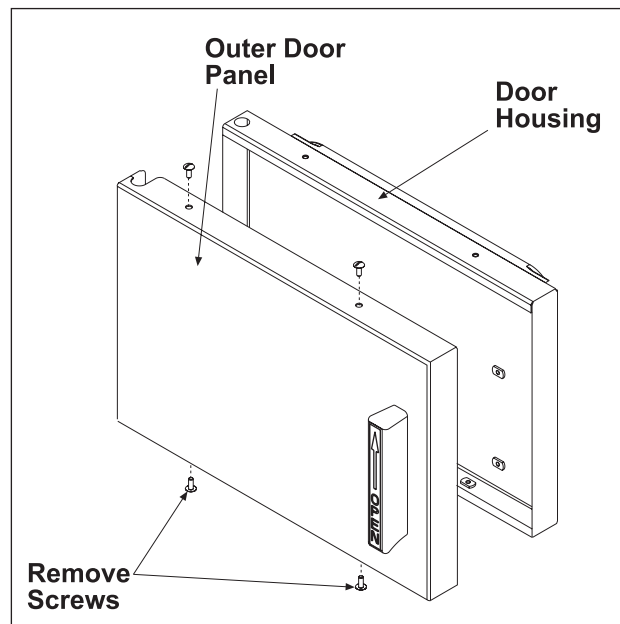


4. Position the new gasket on the gasket plate.
5. Reverse the procedure to install.
6. Adjust the door as outlined under SERVICE PROCEDURES AND ADJUSTMENTS.

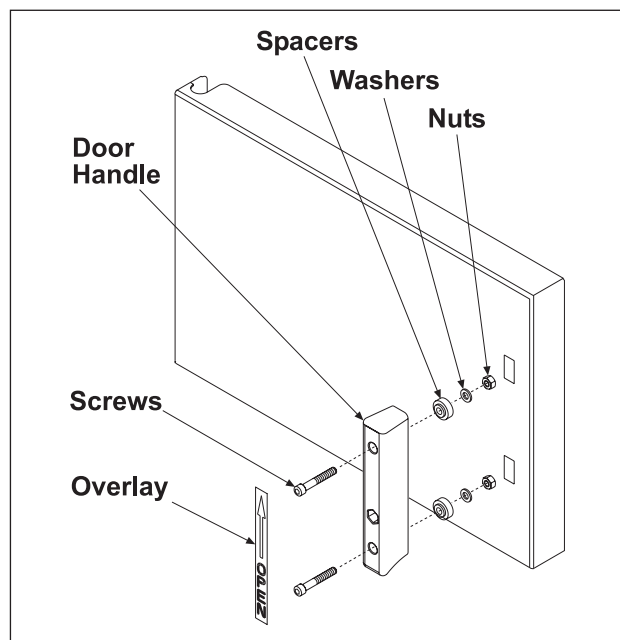
Damage to the gasket sealing surface, such as nicks or cuts, will cause steam leakage.

### Door Handle

1. Open the door.
2. Remove screws from the top and bottom of the door.
3. Pull the outer door panel out from the door housing.



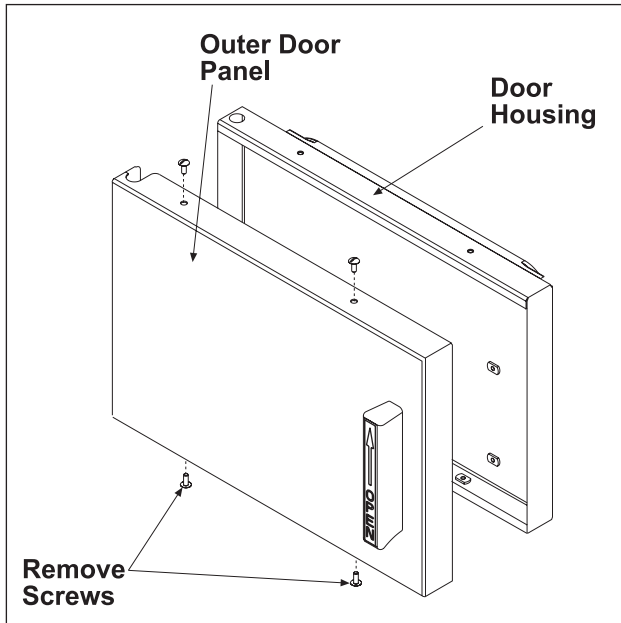
4. Remove the plate, nuts, washers and spacers from the handle screws and remove the door handle from the door.



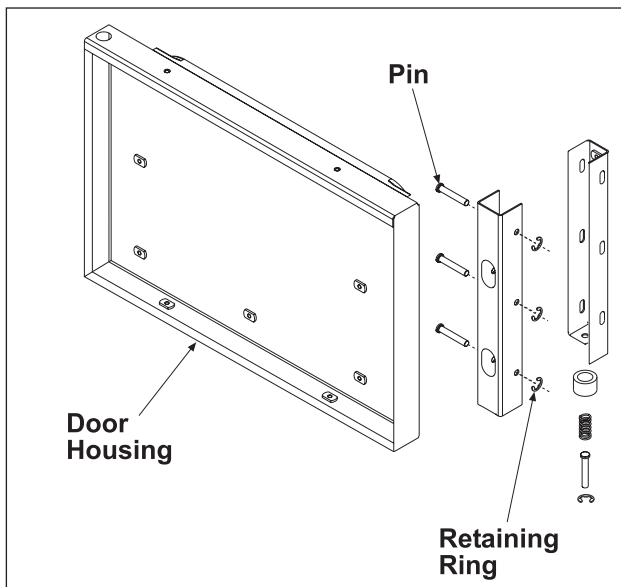
5. Reverse procedure to install. When installing the spacers, the smaller diameter fits into the slot in the door and the latch. Use Loctite 271 to secure fasteners.

### Door Latch Assembly

1. Open the door.
2. Remove screws from the top and bottom of the door.
3. Pull the outer door panel out from the door housing.



4. Remove the pins and retaining rings.



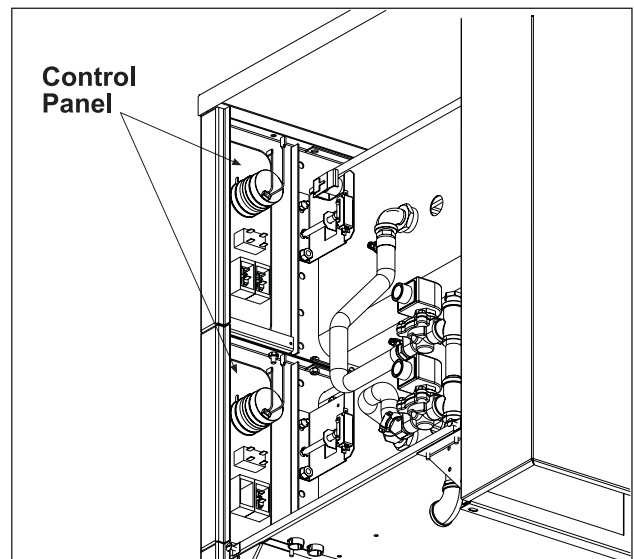
5. Remove the latch assembly from the door.
6. Reverse procedure to install. Use Loctite 271 to secure fasteners.

### COMPARTMENT CONTROLS



**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove compartment right side cover as outlined under COVERS AND PANELS.
2. Remove the component being replaced.
3. Reverse the procedure to install the replacement component, then check steamer for proper operation.



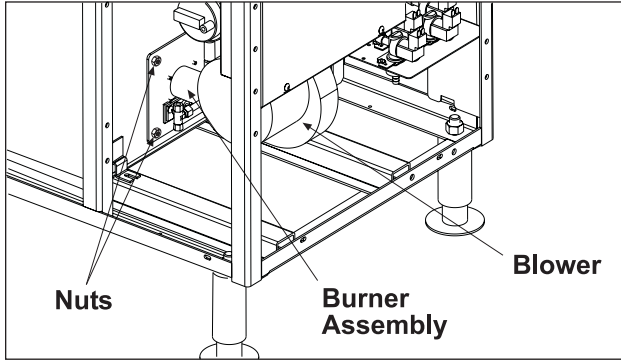


## MAIN BURNER



**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove front and side covers as outlined under COVERS AND PANELS.
2. Disconnect the gas line at gas combination control valve.



3. Disconnect wires to burner assembly.
4. Remove the nuts securing burner to tank.
5. Drop blower end of burner assembly slightly down to clear control box and push all interfering wires out of the way so that burner can be pulled out of tank.
6. Reverse procedure to install burner assembly.

## GAS COMBINATION CONTROL VALVE



**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

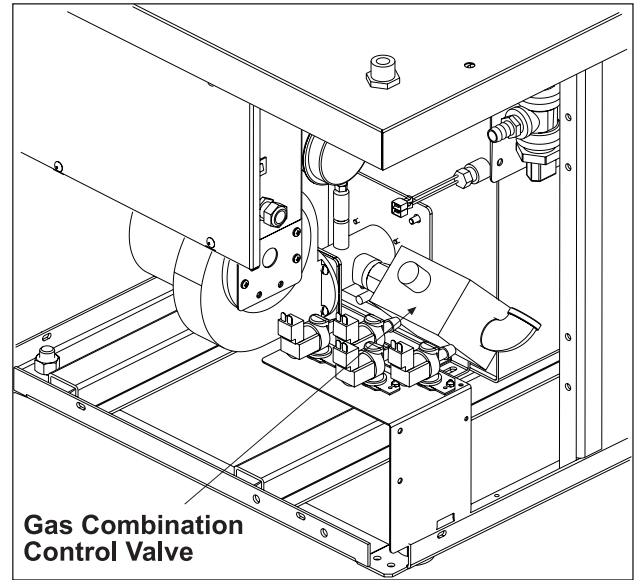
**WARNING:** SHUT OFF THE GAS SUPPLY BEFORE SERVICING THE UNIT.

**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

- A. CHECK ALL JOINTS PRIOR TO THE GAS VALVE (SOLENOID) BEFORE LIGHTING THE UNIT.
- B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.

Gas combination control valves are not serviceable and should not be disassembled. Once the problem has been isolated to this control, replace it. Do not attempt to repair the assembly.

1. Remove the front and right side panels as outlined under COVERS AND PANELS.
2. Remove main burner as outlined in MAIN BURNER.
3. Disconnect electrical supply wires running to the gas combination control valve.



4. Disconnect the pilot gas supply tube from the control and pipe connections on each side of the gas combination control valve.
5. Reverse procedure to install and check unit for proper operation.

## GENERATOR ASSEMBLY



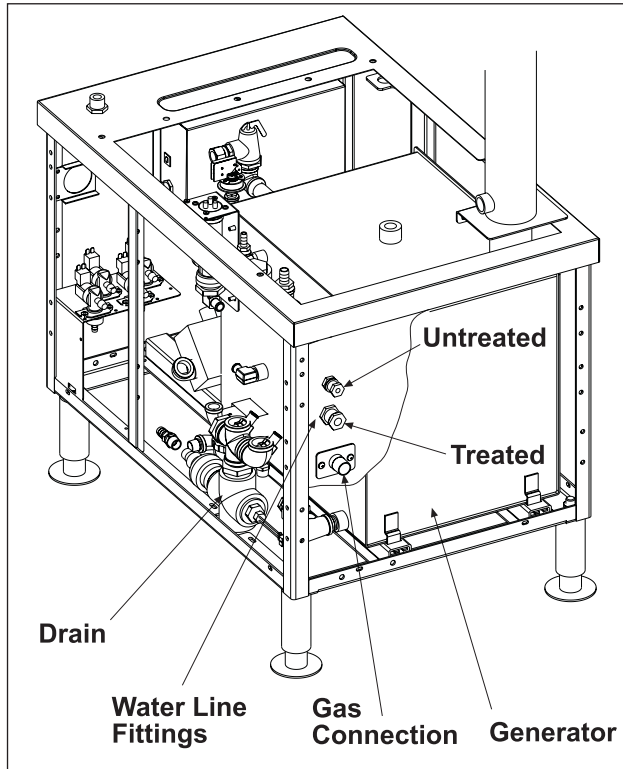
**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

**WARNING:** SHUT OFF THE GAS SUPPLY BEFORE SERVICING THE UNIT.

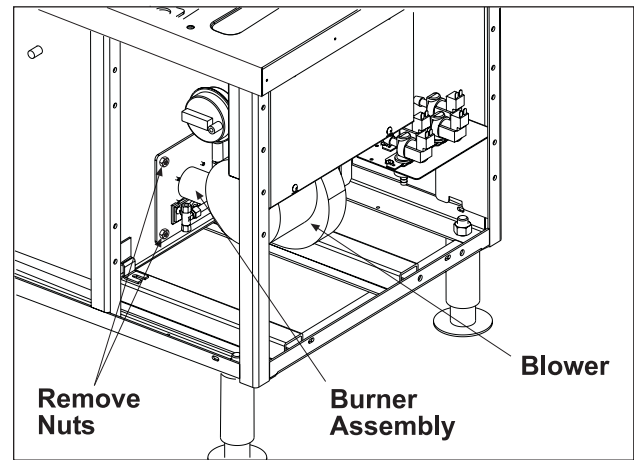
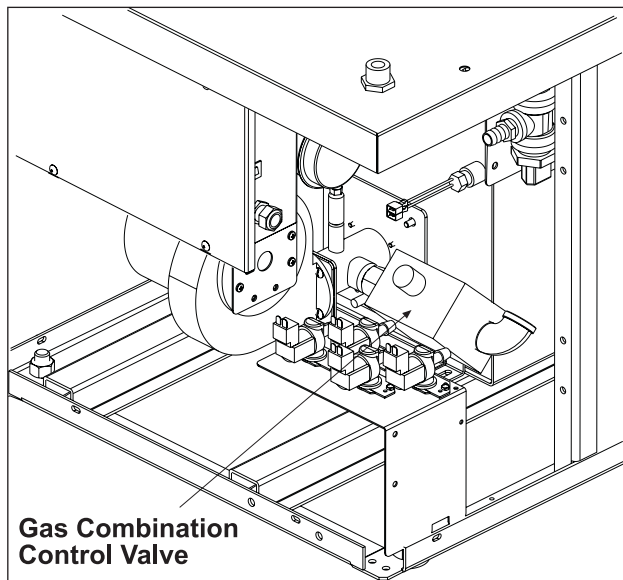
**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

- A. CHECK ALL JOINTS PRIOR TO THE GAS VALVE (SOLENOID) BEFORE LIGHTING THE UNIT.
- B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.

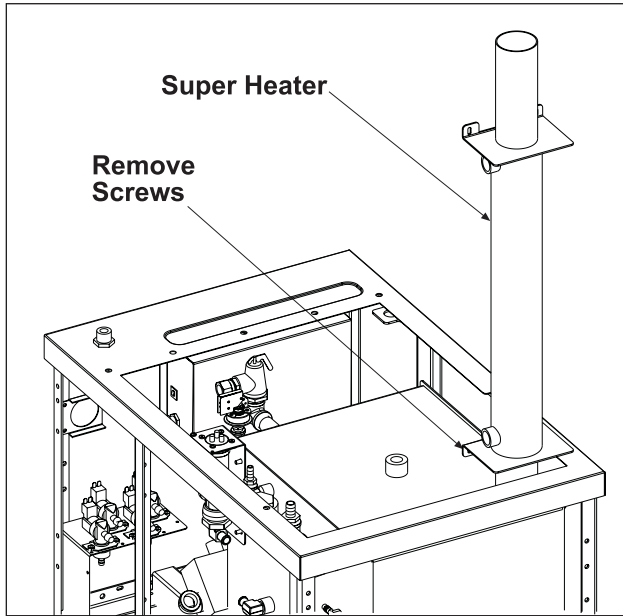
1. Drain the generator and allow steamer to cool, if necessary.



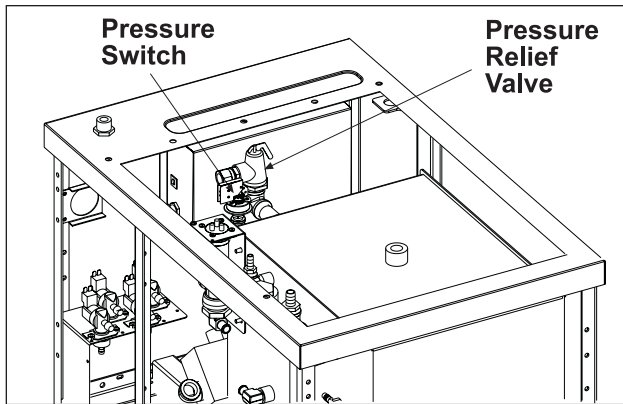
2. Remove rear and side panels as outlined under COVERS AND PANELS.
3. Disconnect gas line at gas combination control valve.



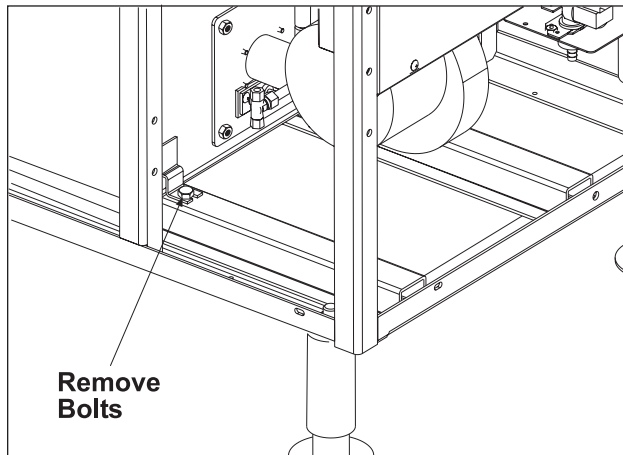
4. Disconnect wires to burner assembly.
5. Disconnect wires from gas combination control valve.
6. Remove the nuts securing the burner to generator.
7. Drop blower end of burner assembly slightly down to clear control box and push all wires out of the way so that burner can be pulled out of tank.
8. Disconnect wires from the 195°F thermostat mounted to the generator and operating pressure switch.
9. Loosen hose clamp attaching lower flexible water line at back panel and use a wrench to disconnect barb fitting from main inlet water connection.
10. Loosen hose clamp attaching upper flexible water line at back panel and use a wrench to disconnect barb fitting from main inlet water connection.
11. Remove water line from generator. Remove steam hoses from steam trap and supply to super heater.
12. Disconnect gas tubing from rear panel
13. Remove steel drain tube at tank.
14. Disconnect union between tank and drain.
15. Loosen cable clamp screws securing electrical cable at rear panel so that cable is free to move.
16. Remove screws to free super heater and lift super heater off flue pipe.



16. Rotate pressure relief valve coupling to allow pressure relief valve to be rotated about 90° so that valve is below generator top level.
17. Remove pressure switch from generator.



18. Remove bolts attaching front of generator to frame.



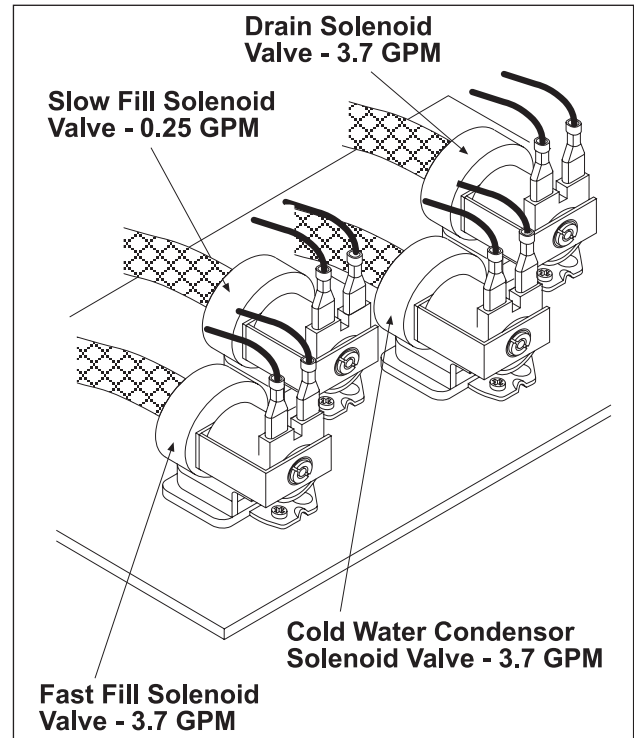
19. Move any interfering components out of the way, then push generator slightly forward to disengage feet and remove generator from rear of cabinet.
20. Reverse procedure to install generator.

## FILL AND COLD WATER SOLENOID VALVES

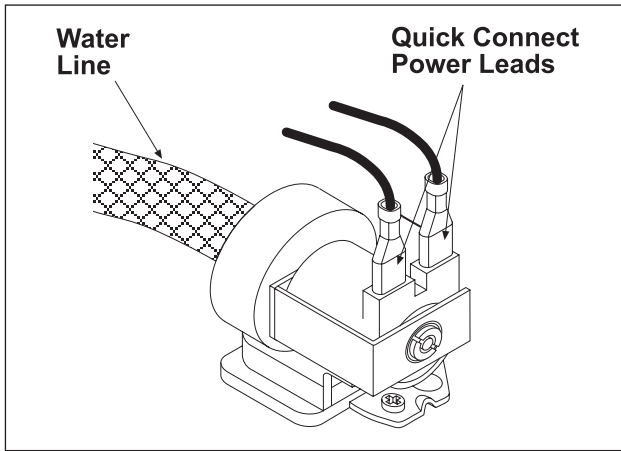


**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Turn off the water supply to the steamer.
2. Remove front and side covers as outlined under COVERS AND PANELS.



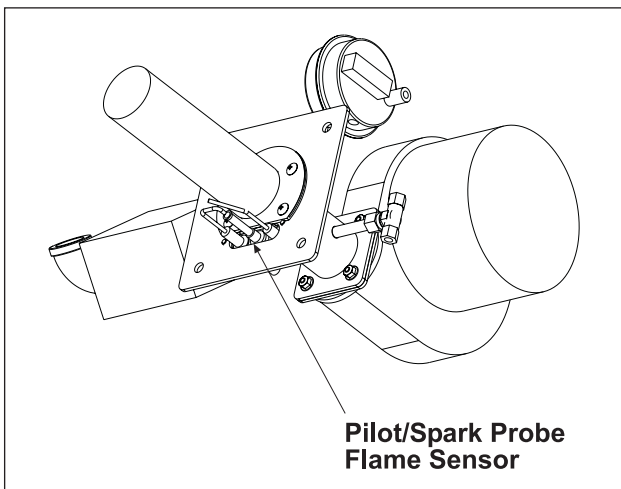
3. Pull the quick connect power leads off the solenoid valve being serviced.



4. Disconnect the water lines for the solenoid valve being serviced and remove the solenoid valve from the unit.
5. Reverse procedure to install solenoid valve.

### PILOT/SPARK PROBE FLAME SENSOR

1. Remove main burner assembly as outlined under MAIN BURNER in REMOVAL AND REPLACEMENT OF PARTS.
2. Remove the pilot assembly by disconnecting gas tube to the pilot burner and remove screws holding pilot assembly.



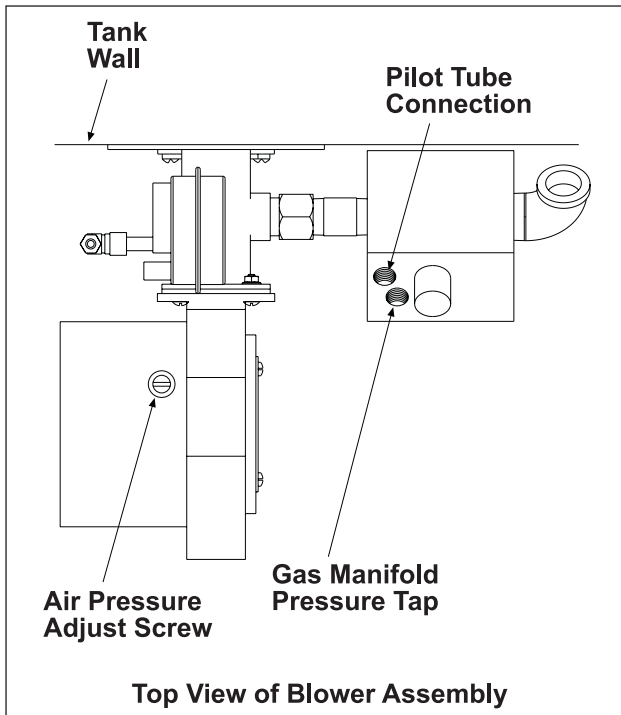
3. Replace the malfunctioning flame sensor or pilot assembly.
4. Reverse procedure to install a new flame sensor or pilot assembly.
5. Check for proper operation.

# SERVICE PROCEDURES AND ADJUSTMENTS

**WARNING:** CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER AND FOLLOW LOCKOUT / TAGOUT PROCEDURES, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

## BLOWER AIR PRESSURE ADJUSTMENT

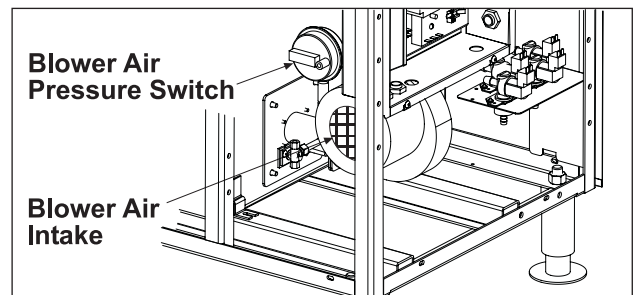
Adjust the blower air pressure at the gas combination manifold pressure tap. Turn the gas valve off. Remove pipe plug from pressure tap on the outlet side of the gas combination valve and install a gas manometer. The air pressure should be 0.35"W.C. (0.09 kPa) to 0.4"W.C. (1 kPa). If the reading is not correct adjust blower speed control adjustment screw clockwise to increase and counter-clockwise to decrease.



## AIR PRESSURE SWITCH ADJUSTMENT

Blower air pressure adjustment must be performed before proceeding with this procedure.

The air pressure switch senses the pressure level produced by the blower for combustion. When the pressure is sufficient, the switch closes and supplies power to the ignition control module. The gas ignition sequence starts to light the gas pilot and then main burner. If gas pilot is not lighting (valve not energized), the ignition control module may not be receiving power, assuming the minimum water level is satisfied. Check the air pressure switch operation then adjust if necessary as outlined in the procedure below.



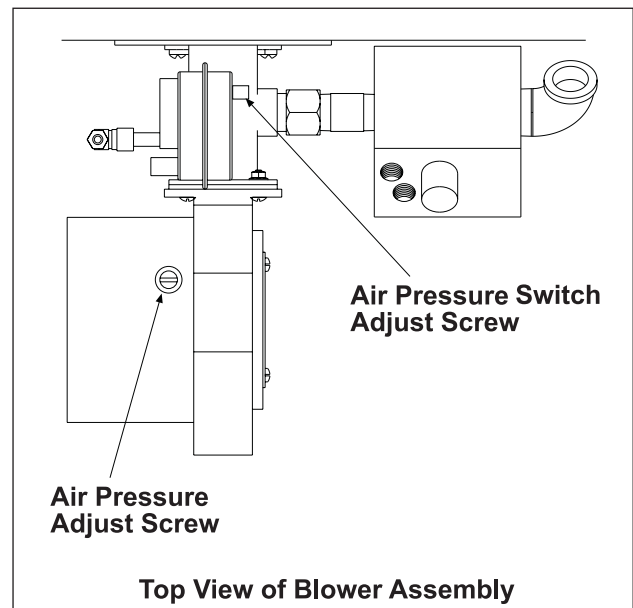
1. Turn the power switch off.
2. Remove the front panel from the cabinet base.
  - A. Inspect the air intake to the blower for debris build up and clogging.
    - 1) If debris is found, clean it away from the air intake.
  - B. Turn the power switch on and verify main burner ignition.
    - 1) If burner ignites no adjustment to the pressure switch setting is necessary.
    - 2) If burner does not ignite, proceed to step 3.
3. Turn the main gas valve to off.
4. Adjust the air pressure switch setting as follows:
  - A. Turn the adjustment screw fully clockwise to the highest setting.
  - B. Slowly turn the adjustment screw counter-clockwise until main gas valve energizes then add 1/2 turn to the adjustment.

The screw head should not extend out past the screw housing.

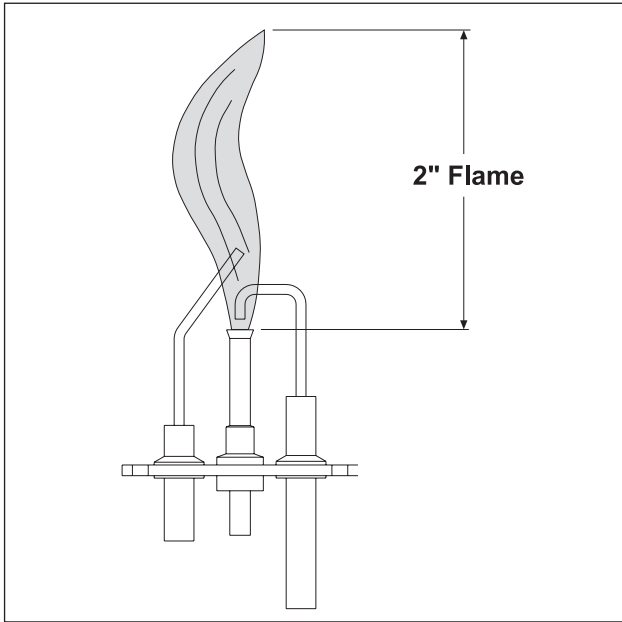
- 1) If gas valve energizes, proceed to step 5.
- 2) If gas valve does not energize, check the following:
  - a. Remove the lead wires from the switch and verify with a meter that the switch contacts are closing with the blower on. If necessary, continue to turn the adjustment screw several turns counter-clockwise to close the switch contacts.
  - b. If the switch contacts are not closing, turn the power switch off, remove the pressure switch from the manifold and check the air orifice for debris build up and clogging. If debris is found, clean it away from the orifice.
  - c. Replace the orifice, pressure switch and connect the lead wires to the switch. Turn the power switch on and adjust the pressure switch again as outlined in steps 4A and 4B. Verify the pilot gas valve is energizing.
  - d. If the pilot gas valve is not energizing and power is available to the pressure switch, turn the power switch off. Replace with a new air pressure switch and adjust the switch as outlined from step 3 thru the end of this procedure.
5. Restart the ignition sequence by turning the power switch off, waiting 3 seconds, then back on.
  - A. Listen or use a meter for gas pilot ignition to verify operation.
    - 1) If gas pilot ignition is successful, listen for main gas burner ignition to verify operation.
  - B. Verify the pilot and main burner both ignite in succession.
    - 1) Restart the ignition sequence by rapidly turning the power switch off then back on. A rapid switching is needed to keep the generator from starting automatic blowdown.
  - C. Listen for main gas burner ignition to verify operation.

## PILOT BURNER ADJUSTMENT

1. Shut the gas off at combination gas valve.
2. Remove cover from manifold pressure tap.
3. Install a barb fitting and connect manometer.
4. Turn on the steamer, let generator fill.
5. Verify air pressure setting is between 0.35" and 0.4" W.C.
6. Verify air pressure switch adjustment.



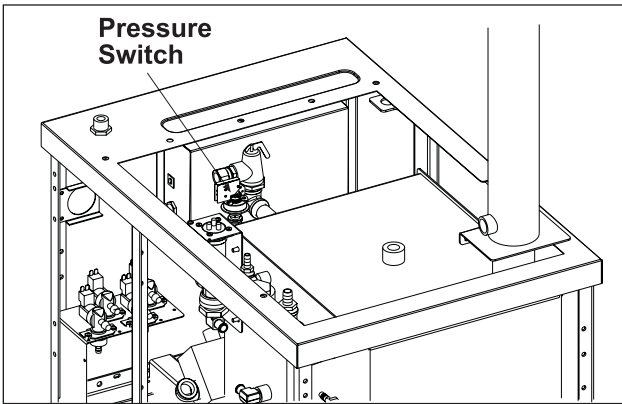
7. Turn off the steamer.
8. Remove pilot assembly from burner.
9. Remove cap from pilot adjustment screw.
10. Using cabinet tip screwdriver turn pilot adjustment screw all the way in.
11. Back out pilot adjustment screw 1 (one) turn counter clockwise.
12. Remove the wire from main valve (wire # 35).
13. Turn on the steamer, let generator fill.
14. Turn on combination gas valve.
15. Observe pilot flame; adjust pilot flame length using pilot adjustment screw. Set flame to approx. 2" long (Pilot flame should be a nice blue flame; with slight touch of yellow permissible at tip.)



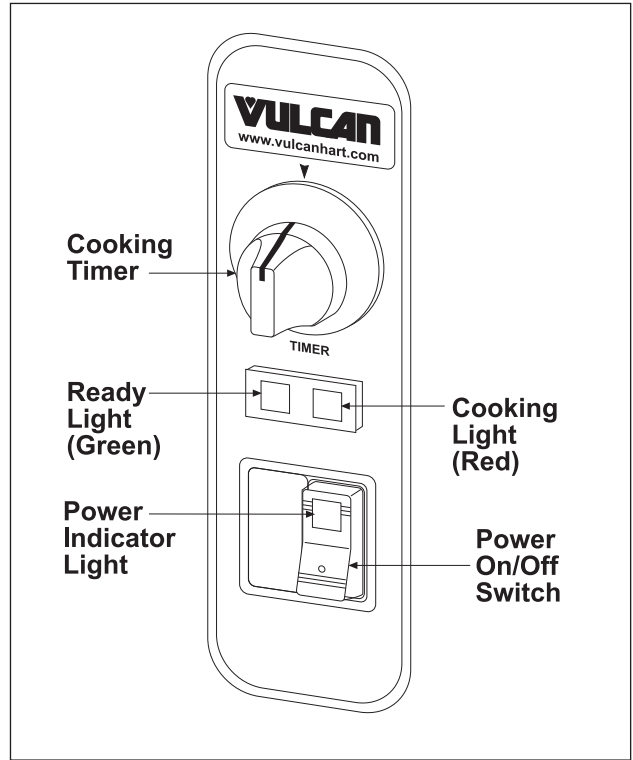
16. Turn off the machine.
17. Re-install pilot, reconnect wire # 35.
18. Turn on the machine, let generator fill
19. Observe proper functioning of gas burner.

**Operating Pressure Switch**

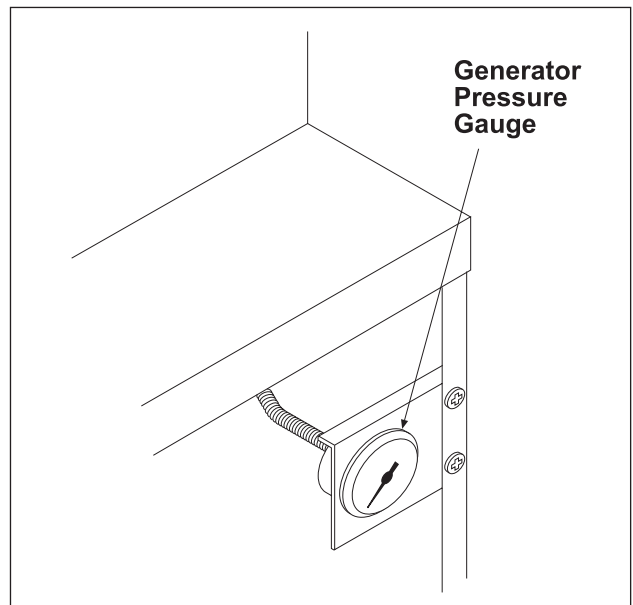
1. Remove the cabinet base front panel as outlined under COVERS AND PANELS. Pressure switch is located behind control box.



2. Turn the power on and let the generator come up to pressure.
3. After the ready light comes on, turn one of the cooking compartment timers on to exhaust steam from the generator.



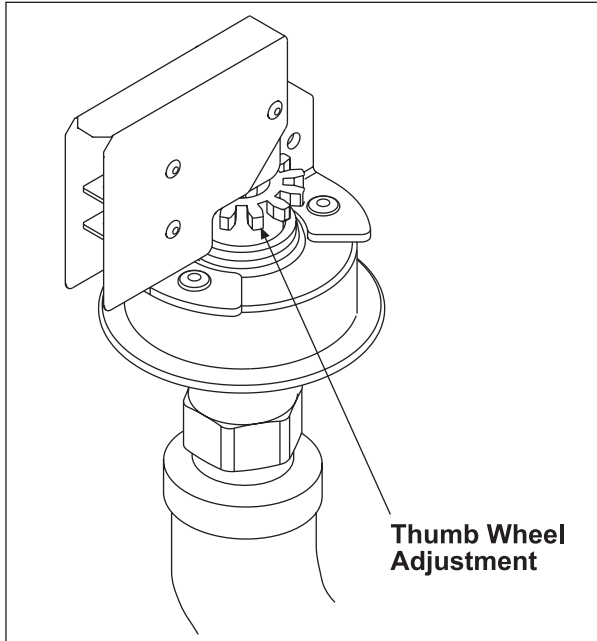
4. Observe generator pressure gauge reading for several cycles and verify that the burner is cycling off at 3.5 to 4 psi.



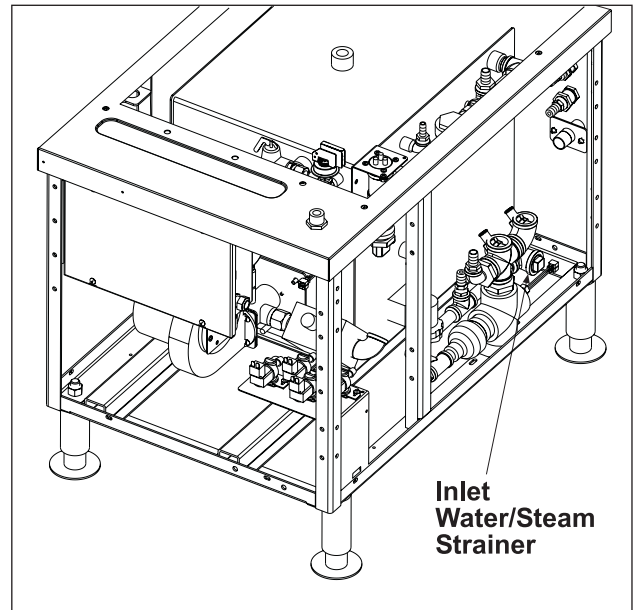
### Thumb Wheel Adjustment

The thumb wheel directly below the microswitch changes both the cut-out (off) and the cut-in (on) points of the operating Pressure Switch.

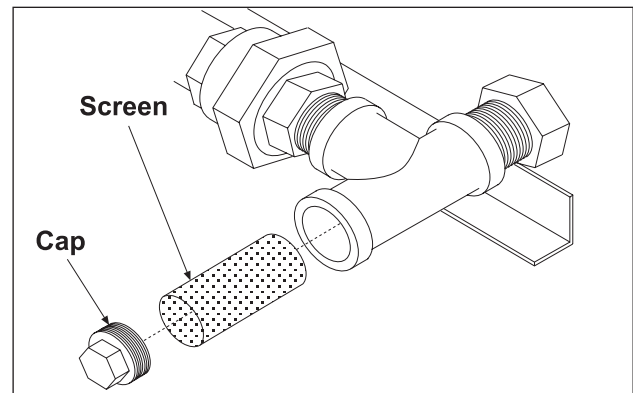
Turn the thumb wheel to obtain the proper cut-out (off) setting. Turning thumb wheel clockwise increases the pressure. The cut-out (off) setting should be 3.5 to 4 psi.



### Inlet Water/Steam Strainer



1. Unscrew the cap from the body.



2. Remove the screen and any foreign particles trapped in the opening.
3. Rinse the screen thoroughly to remove accumulated debris and replace the screen in the valve body. If the screen cannot be thoroughly cleaned, replace it with a new one.
4. Reinstall the cap.

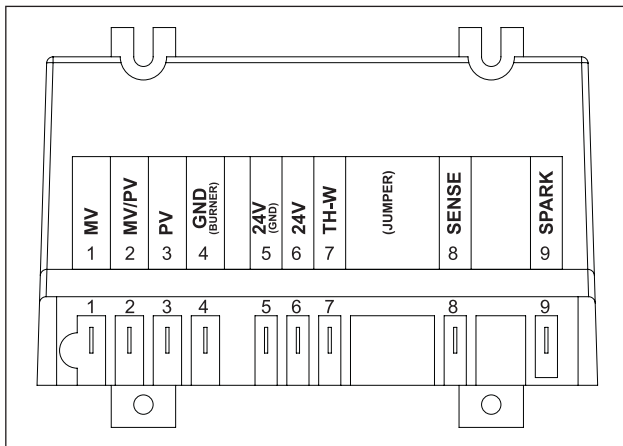


## AUTOMATIC IGNITION SYSTEMS

When the main power switch is turned on and the water level is above LLCO, the ignition control module is energized with 24 volts between terminals five and six. High voltage is sent from terminal nine to the spark electrode and an output of 24 volts is sent from terminals two and three to the pilot coil in the combination valve, allowing gas to flow to the pilot. The sparking will continue for 90 seconds or until the flame sensor has confirmed that an adequate pilot flame is present.

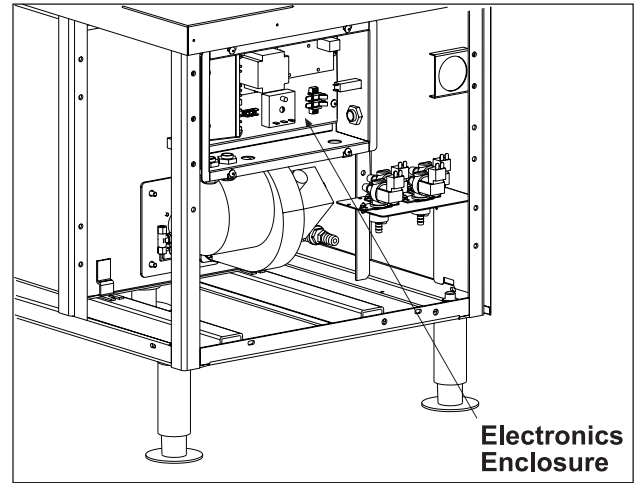
Once the pilot flame is confirmed, a 24 volt output from terminal one will be sent to the gas combination control valve.

TERMINAL NO.	DESCRIPTION
1	Voltage (24 VAC) will be present on MV terminal #1 with the pilot sensing electrode sensing an adequate pilot flame. This output will remain present as long as the pilot flame remains adequate.
2	Common MV/PV.
3	The Pilot Voltage (24 VAC) will be present on terminal #3 at the instant an input voltage is supplied to the module. This voltage will remain present on terminal #3 providing an adequate pilot flame is established within 90 seconds. In the event that an adequate pilot flame is not established within 90 seconds this output voltage will drop out.
4	Ground (burner).
5	Ground (24 VAC Neutral).
6	24 VAC Input.
8	Flame Sensor.
9	High Voltage to spark electrode.

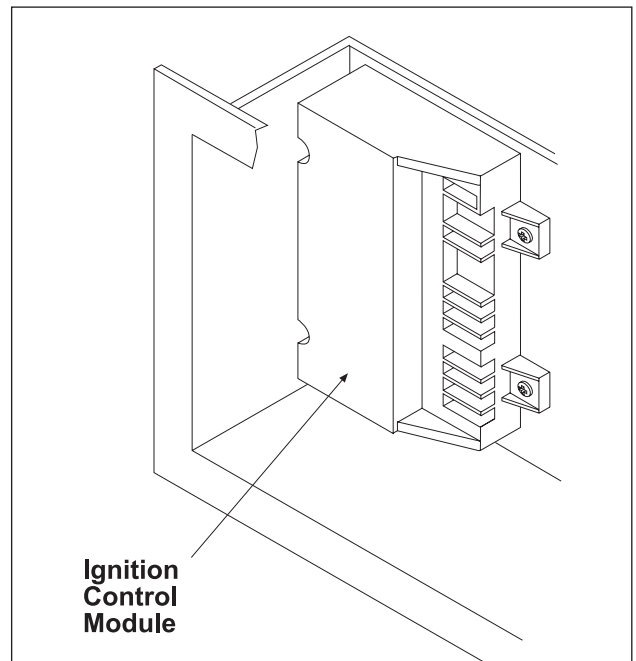


### Spark Ignition Control Test

The ignition control module and ignition control module transformer are located in the electronics enclosure behind the generator base front cover.



1. Check for earth ground.

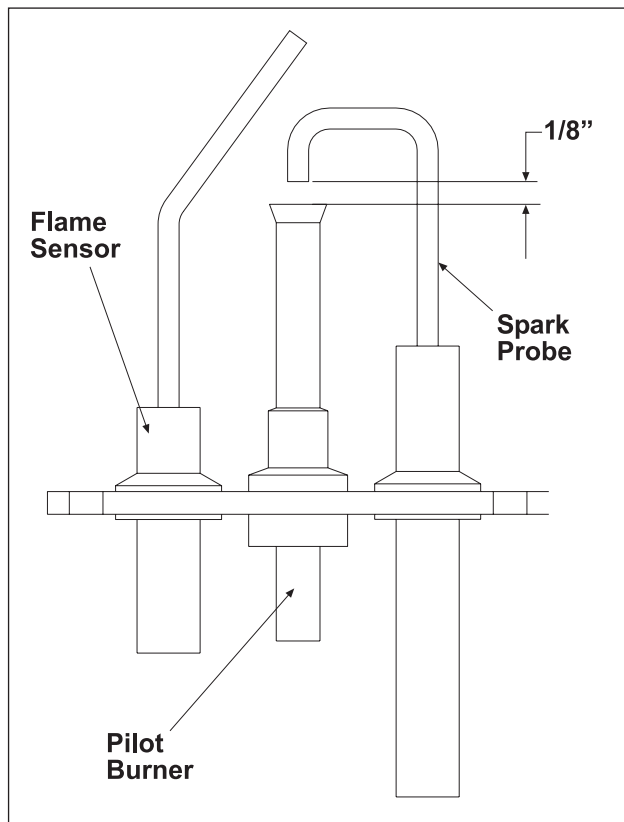


2. Check to ensure that all electrical terminal connections on the ignition control module and the igniter are clean and tight.
3. Verify that the ignition control module and the igniter have good ground wire connections. The igniter mounting bracket should have good metal to metal contact to its mounting surface.
4. Turn the main power switch on. Make sure LLCO light is on.
5. Check for 24VAC output on the ignition control module transformer.

- A. If 24VAC is present, then replace ignition control module and retest. It may take up to 3 seconds for the module to reset if main power is turned off then back on.
- B. If 24VAC is not present, then ensure that transformer is receiving 120VAC input. If ignition control module transformer is receiving proper voltage, then replace ignition control module transformer and retest.

## IGNITION TEST

1. The gap between the spark probe and the pilot burner should be approximately 1/8". If the gap appears to be excessive or poor sparking is occurring, remove the electronic ignition pilot and adjust gap.



2. Inspect the ceramic flame rod insulator for cracks or evidence of exposure to extreme heat, which can permit leakage to ground. If either of these conditions exist, then replace the pilot igniter assembly.
3. Check the ignition cable for tightness or damaged insulation.
4. Check unit for proper operation.

Inspect the pilot burner orifice. This should be approximately 1/8" in diameter and free of debris.

## MANIFOLD PRESSURE ADJUSTMENT

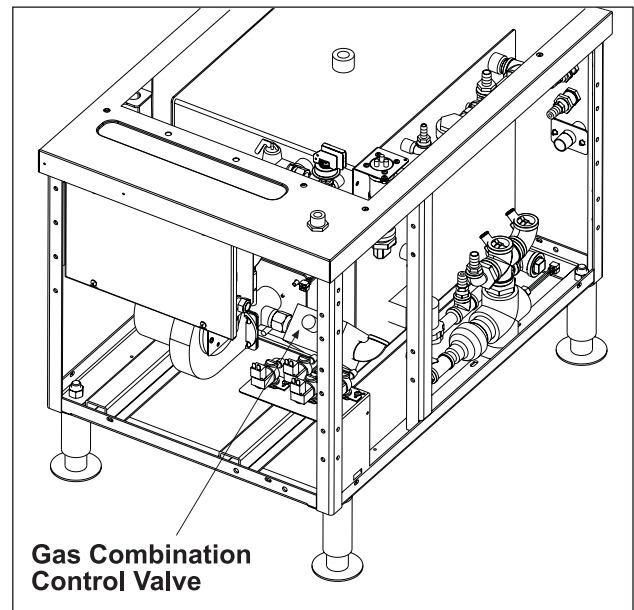


**WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

**WARNING:** SHUT OFF THE GAS SUPPLY BEFORE SERVICING THE UNIT.

**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

- A. CHECK ALL JOINTS PRIOR TO THE GAS VALVE (SOLENOID) BEFORE LIGHTING THE UNIT.
  - B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.
1. Remove front, right and left side panels from cabinet base as outlined under COVERS AND PANELS.
  2. Turn the gas combination control valve off.



3. To measure the manifold pressure, remove the 1/8" NPT plug (pressure tap) on the outlet side of the gas combination control valve and attach a manometer.
4. Turn the gas supply valve and the main power switch on. Allow generator to fill.

5. Verify burner air pressure is 0.35" to 0.4" W.C.
6. Turn the gas combination control valve on and wait until main burner lights.
7. Observe the manometer pressure reading and compare to the pressure chart below.

GAS PRESSURE READINGS (INCHES W.C.)				
	MANIFOLD	LINE*		
GASTYPE		RECOMMENDED	MIN	MAX
Natural	2.5	7.0	5.0	14
Propane	10.0	11.0	11.0	14

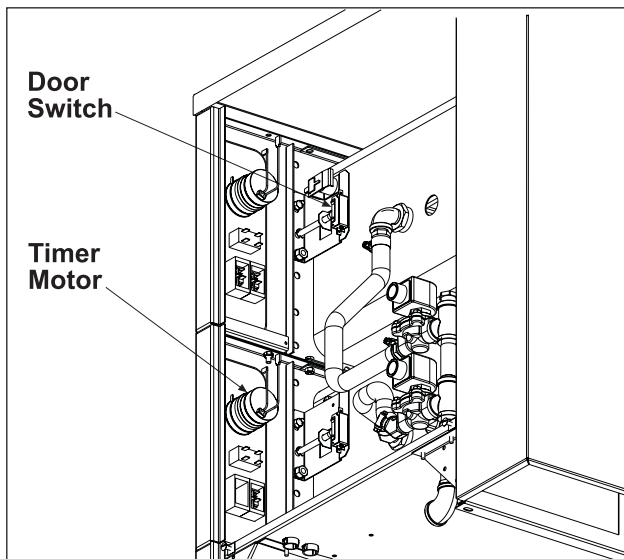
\* If the incoming line pressure is less than the minimum stated, then the manifold pressure cannot be set correctly.

8. Once the correct pressure has been set, turn the power switch and gas supply off, replace the adjustment screw cap and 1/8" NPT plug (pressure tap) on the outlet side of the valve.

## COOKING COMPARTMENT

### Controls

1. For access to compartment controls, remove the right side panel from the cooking compartment as outlined under COVERS AND PANELS.
2. Check door switch for proper operation.



3. Check cooking timer function and contact position. See SCHEMATICS under ELECTRICAL OPERATION.
4. Check that timer motor operates when connected to power. If a problem is found in timer, replace it, do not take timer apart.

5. Check wiring for damaged insulation (no short circuit).
6. Check that all connections and terminals are securely fastened (no open circuits).
7. Check that all connections are made according to compartment control wiring diagram.

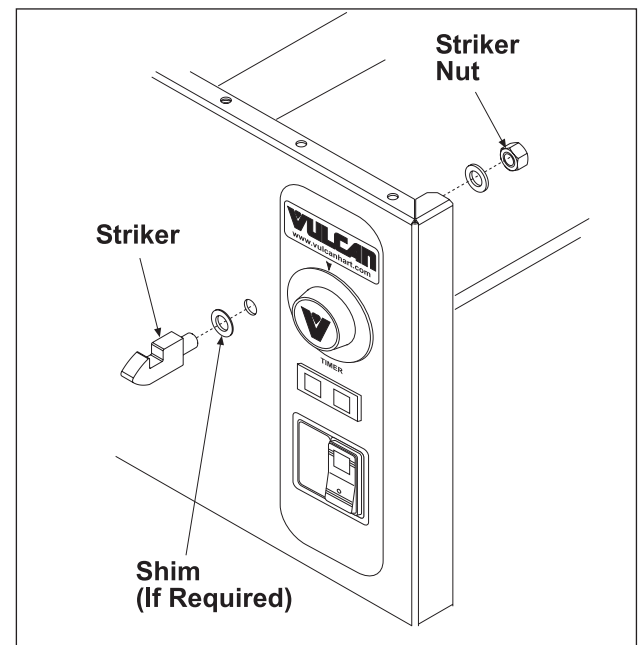
## DOOR

### Latch Adjustment

If the cabinet door jams and cannot be opened, do not force or pry the door, as damage will occur.

First, try lifting up on the bottom of the door at the handle end to disengage the latch. If that does not work, remove the right side panel from the cooking compartment as outlined under COVERS AND PANELS.

The striker that catches on the door latch is located behind the front face of the cooking cavity. Remove the nut from the striker to release it from the panel.

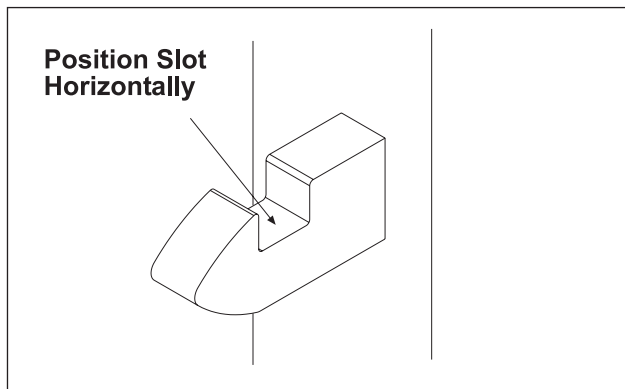


Once the nut and washer have been removed, door will open freely.

Remove any burrs on the striker that may cause the latch to stick. Reinstall the striker and adjust so door will not jam.

### Striker Adjustment

1. Reinstall the striker with the slot pointing upwards and hand tighten nut only.
2. Close the door to center the striker in the oval mounting hole.
3. Open the door and check the striker's slot for horizontal alignment. The slot on the striker must be kept horizontal in order for the door latch to catch it properly and latch.



4. Once the proper slot alignment has been set, hold the striker close to its base using an open end wrench, add Loctite to the threads, then tighten the striker nut. Be careful not to damage the striker slot when tightening or door may not latch properly. Do not over tighten as the striker will begin to turn and change alignment.
5. If door does not open easily, add shims as necessary between striker and cabinet front.
6. Repeat steps 2 thru 4.

## DELIMING THE GENERATOR

**WARNING:** READ AND FOLLOW THE INSTRUCTIONS ON THE DELIMING MATERIAL PACKAGE. AVOID CONTACT WITH SKIN AND EYES. WEAR PLASTIC OR RUBBER GLOVES AND SAFETY GOGGLES WHEN HANDLING. WASH THOROUGHLY AFTER HANDLING. IF DELIMING SOLUTION COMES IN CONTACT WITH THE SKIN OR EYES, RINSE THOROUGHLY WITH CLEAN WATER.

**WARNING:** THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER. THE COOKING COMPARTMENT CONTAINS LIVE STEAM. STAY CLEAR WHEN OPENING DOOR.

### Items Required (not provided)

- Deliming material.
- Funnel.
- Plastic or rubber gloves.

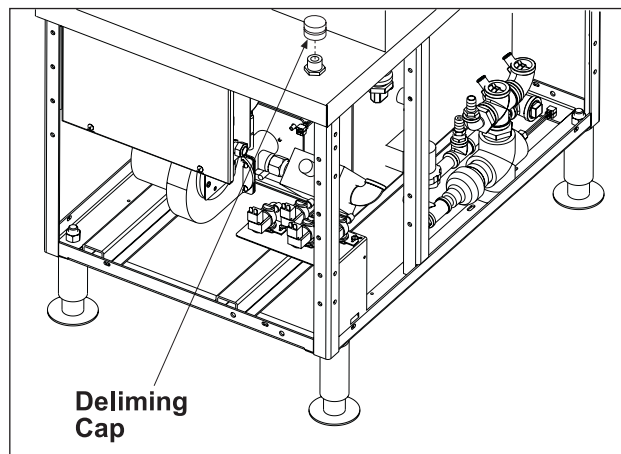
- Safety goggles or face shield.
- Measuring cup.
- 1 gallon container for mixing deliming solution.
- Petrol-Gel Lubricant or equivalent food grade grease for coating deliming port threads.

**NOTE:** Deliming solution may cause the surface of aluminum measuring tools to tarnish or etch.

### C24GA (Automatic Drain) 11 US GAL Capacity Steam Generator.

**NOTE:** This procedure is not intended to take the place of a water treatment program.

1. Turn power switch off. Wait 5 minutes for steam generator to completely drain and the drain valve to close.
2. Turn cooking timers to off.
3. Prepare deliming solution according to the instructions on the deliming material package. Follow all manufacturers' instructions.
4. Remove delime port cap on top of unit and insert funnel into delime port.



5. Pour deliming solution into the steam generator slowly to avoid spillage.
6. Remove funnel from delime port then rinse port with clean water.
7. Lightly coat delime port threads with Petrol-Gel then install delime port cap. Cap must be installed and tightened securely at all times.
8. Turn power switch on. When ready light comes on, allow steamer to remain on for 40 minutes.
9. After 20 minutes, turn cooking timers on for 1 minute to delime the steam tubes and nozzles.

10. After 40 minutes, turn power switch off and allow steam generator to completely drain, 5 minutes.
11. Rinse steam generator with clean water:
  - A. Turn power switch on. When ready light comes on, turn cooking timers on for 30 seconds to rinse the steam tubes and nozzles.
  - B. Turn power switch off and allow steam generator to completely drain.
  - C. Turn cooking timers to off.
  - D. Repeat steam generator rinse one time.
12. Clean exterior and interior using a mild solution of soap and water. Rinse with clean water then dry with a soft cloth. Leave compartment doors open when not in use.
13. The steamer is ready for operation or shutdown.

## COOKING CYCLE TEST

### General

During a cooking cycle, the gas heating system will cycle on and off as necessary to maintain steam pressure in the generator. When the steam pressure in the steam generator reaches 4 psi for the first time after machine is switched on, the steam header pressure relay latches on and supplies power to compartment controls. Ready light will illuminate (header pressure relay remains latched until the machine is switched off).

Test operation of the cooking compartment controls.

1. With both timer knobs at the off position, open the compartment doors.
2. Observe that no steam has entered the cooking compartments.
3. Close the doors.
4. Set both timer knobs at 2 minutes.
5. Confirm that the ready lights go off, the cooking lights come on, and steam begins to enter the compartments.
6. After one minute, open both doors.
7. Observe that steam has ceased to enter each compartment, cooking lights go back to ready, and one minute is remaining on each cook timer.
8. Close the doors.
9. Confirm that steam delivery and cook timing resume.

10. Observe the floor drain to ensure that live steam from the compartments is being cooled by cold water from the cold water condenser solenoid valve.
11. When the timer knobs reach 0, confirm that the buzzers sound, steam delivery ceases, cooking lights go off, and ready lights come on.
12. To silence the buzzers, turn the timer knobs to off position.
13. Turn the main power switch off to remove power from the steamer, and confirm that the red light goes out and generator drains.

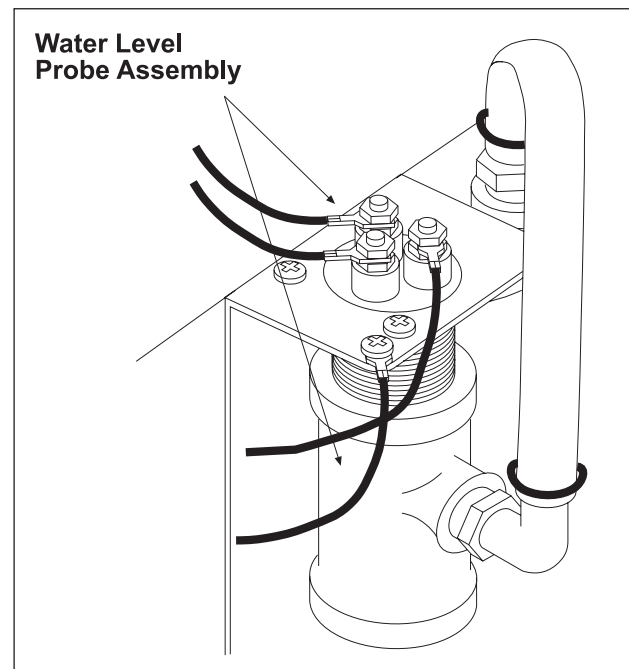
## PROBE INSPECTION

It is recommended that the generator be thoroughly inspected for excessive scale and lime build-up on a quarterly basis. In hard water areas or for units heavily used, a shorter interval should be used. This inspection consists of the following:

**Drain Plug** - Remove clean-out port plug to check for scale.

**Probe** - A check of lime build-up on the water level probe assembly.

**Controls** - A check of all generator controls, including the pressure switches.



# ELECTRICAL OPERATION

## WATER LEVEL CONTROLS

### Low Level Cut-Off and Differential Control

The steamer is equipped with three water level sensing probes (high, low and low level cut-off) and a single water level control board. The water level control board performs two functions:

1. Provide low level cut-off protection to shut off the heat source in case the water level drops below the low level cut-off (LLCO) probe.
2. Perform as a differential level control to maintain the water level between the low and high water level probes.

The input voltage (120VAC) is applied across terminals 11 and 12 of the Water Level Control (WLC). This is applied to the primary of the transformer. On one side of the transformer secondary power is provided to the control by a series path through chassis ground (terminal 10). The other side of the transformer secondary (12VAC) is attached to the probe that directs power to the other side of the internal relays (LLCO, HL, and ILR). As water enters the generator, it becomes part of the water level control's circuit. When the water level in the generator reaches a probe, that circuit is completed.

The inverse latching relay (ILR) of the board is de-energized, leaving the ILR-1 (N.O.) and ILR-2 (N.C.).

When the main power switch is turned on, power is supplied to the water level control (WLC) board which energizes the high level (HL) relay and illuminates the HL relay LED. With the HL-3 contacts closed, the generator fill solenoid is energized and water begins filling the generator.

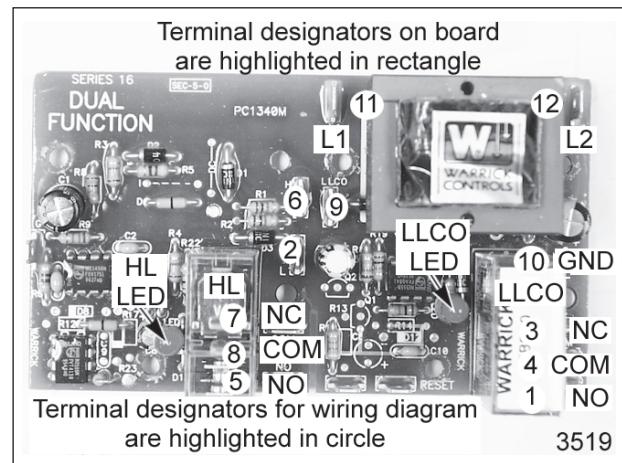
When the water level reaches the low level cut-off (LLCO) probe, the LLCO relay is energized and illuminates the LLCO LED. With the LLCO-2 contacts closed the heat source is then energized. The LLCO relay will remain energized and its LED will stay lit until the water level in the generator drops below the LLCO probe.

When the water level reaches the low level (LL) probe, power to terminal 2 on the WLC board is present but no switching occurs.

After the water level reaches the high level (HL) probe, the inverse latching relay on the board is energized and locked through the low level probe (LL) and ILR-1 contacts. With ILR-2 contacts open, this de-energizes the HL relay and the HL LED goes out. With the HL-3

contacts open, the generator fill solenoid is de-energized, stopping the flow of water into the generator.

When the water level drops below the low level (LL) probe, power is removed from the inverse latching relay, the HL relay energizes through ILR-2, and HL contacts change state. The fill solenoid is energized through HL-3 to refill the generator and the HL LED is lit. The HL relay and LED will toggle on and off during a cooking cycle as needed.



## SEQUENCE OF OPERATION

Refer to schematic diagrams 00855693, 00855424 and 00856656.

### Initial Fill and Preheat

Conditions:

- A. Power switch off.
- B. Cold water thermostat open.
- C. Drain cold water condenser solenoid de-energized.
- D. Timer delay output open.
- E. Normally closed solenoid de-energized.
- F. Generator connected to correct voltage (120VAC).
- G. Generator properly grounded.
- H. Gas and water supply valve(s) on.
- I. Main gas valve manual valve in on position.
- J. Cycling pressure switch closed.
- K. Air pressure switch open.

1. Turn power switch on.
    - A. Timer de-energized.
      - 1) Operating voltage applied to control compartment after cavity relay is latched on.
    - B. Water level control (WLC) energized.
      - 1) Low level (LL) relay N.C. contacts provide operating voltage to fast-fill solenoid.
        - a. Fast-fill solenoid energized, water begins filling the generator.
      - 2) Water reaches low level probe.
        - a. LL relay N.C. contacts open and N.O. contacts close.
        - b. Voltage applied to normally closed pressure switch (opens at 4.0 psi).
        - c. Voltage applied through HL contacts to hold thermostat (closes at 190°F).
        - d. Voltage through pressure switch applied to blower and to normally open air switch (closes at 0.4" W.C.).
        - e. Fast-fill solenoid de-energized.
    - C. Air switch closes at 0.4" W.C.
      - 1) Voltage applied to step-down transformer primary (120 VAC). Transformer steps voltage down to 24 VAC to operate ignition module.
      - 2) Voltage applied to PV terminal of gas valve and applying voltage to pilot valve and high voltage spark lead to ignite pilot.
      - 3) Flame sensor sends signal to MV relay. 1 micro-amp or higher is required to maintain pilot.
      - 4) MV relay contacts close and energizes main valve.
      - 5) Main burner ignites.
    - D. When temperature reaches 190°F, hold thermostat closes energizing the slow-fill solenoid to keep generator full.
    - E. When generator pressure reaches 4 psi, the pressure switch N.C. contacts open, the N.O. contacts close.
      - 1) Voltage is removed from:
        - a. Air pressure switch.
        - b. Blower motor.
        - c. Step-down transformer which removes voltage from ignition module.
    - F. Voltage through the N.O. contacts of the pressure switch is applied to the cavity relay in the compartments.
      - 1) Voltage applied to compartment controls after cavity relay is energized. Relay remains energized until main power is removed.
- Compartment control (Units before Dec. 1, 2005)**  
Refer to schematic diagrams 00855693 & 00855424.
1. Compartment door closed causing door switch to close and READY light to illuminate.
    - A. 120 VAC applied through door switch to timer contact 1.
    - B. Timer manually set to desired time period.
    - C. Voltage applied through contacts 1 and 3.
      - 1) Timer begins countdown.
      - 2) Steam solenoid energized allowing steam into compartment.
      - 3) Cavity relay 1 energized, energizing the CWC solenoid.
      - 4) Cook Light illuminated.
    - D. Timer times out.
      - 1) Timer contacts 1 – 3 open turning off steam solenoid and cook light.
      - 2) Timer contacts 1 – 4 close, turning on buzzer.
    - E. Buzzer manually shut off by rotating timer to off position.
  2. Power switch set to off position.
    - A. Power removed from compartment controls and generator control circuit.
    - B. Time delay relay energized.
      - 1) Delay relay starts 1000-second countdown.
      - 2) Drain solenoid energized for 1000 seconds.
      - 3) Water drained from generator.

**Compartment control (Units after Dec. 1, 2005)**

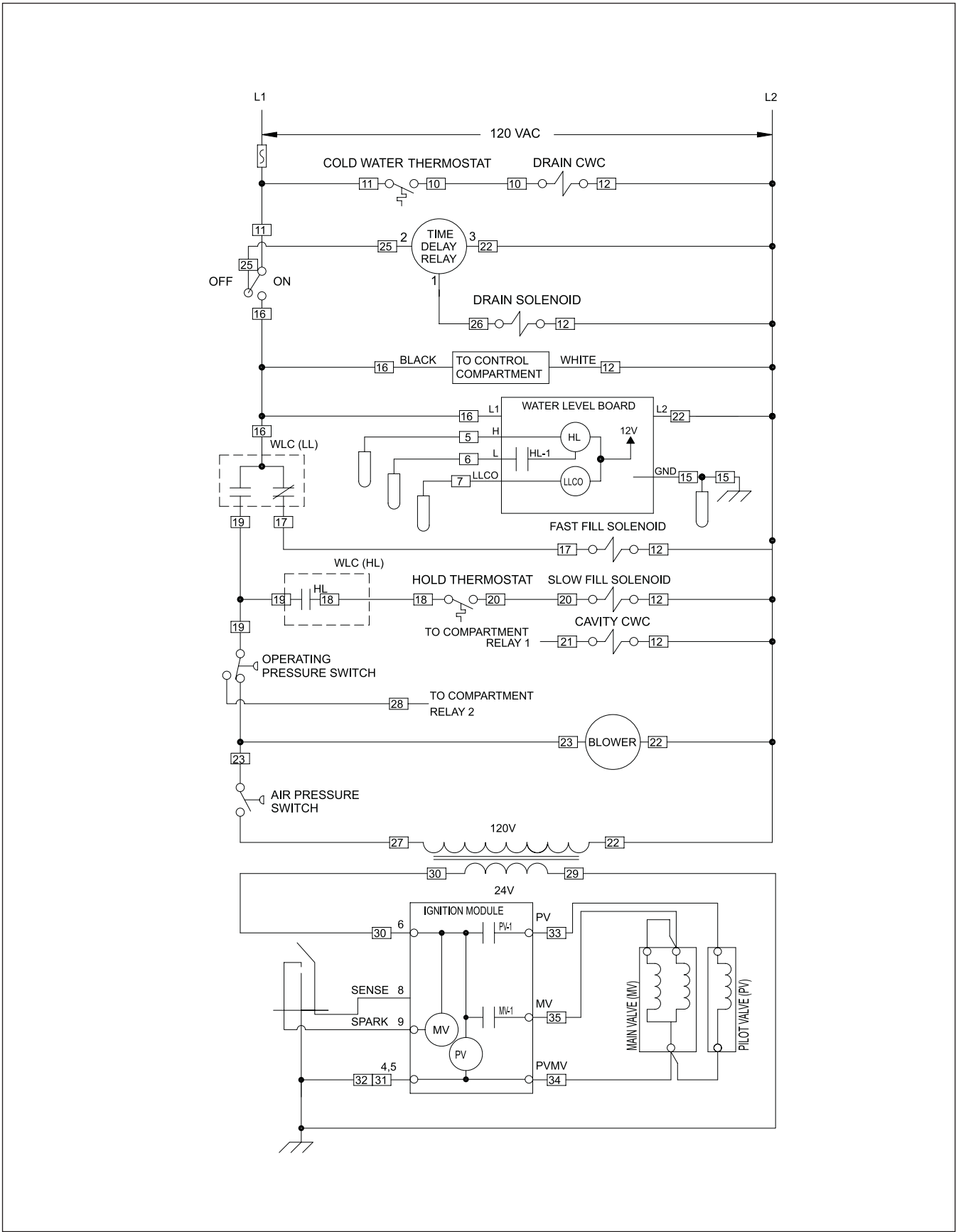
Refer to schematic diagrams 00855693 &amp; 00856656.

1. Compartment door closed causing door switch to close and Ready Light to illuminate.
  - A. 120 VAC applied through door switch to timer contact 11 and 21.
  - B. Timer manually set to desired time period.
  - C. Voltage applied through contacts 11 and 13.
    - 1) Timer begins countdown.
    - 2) Voltage applied through contacts 21 and 23.
    - 3) Steam solenoid energized allowing steam into compartment.
    - 4) Cavity relay 1 energized, energizing the CWC solenoid.
    - 5) Cook Light illuminated.
  - D. Timer times out.
    - 1) Contacts 11 – 13 open and contacts 11 and 14 close energizing the buzzer.
    - 2) Timer contacts 21 – 23 open turning off steam solenoid and COOK light.
  - E. Buzzer manually shut off by rotating timer to off position.
  - F. If timer is set to the HOLD position, contacts 21 – 23 remain closed keeping the steam solenoids energized and COOK lights turned on.
2. Power switch set to off position.
  - A. Power removed from compartment controls and generator control circuit.
  - B. Time delay relay energized.
    - 1) Delay relay starts 1000-second countdown.
    - 2) Drain solenoid energized for 1000 seconds.
    - 3) Water drained from generator.

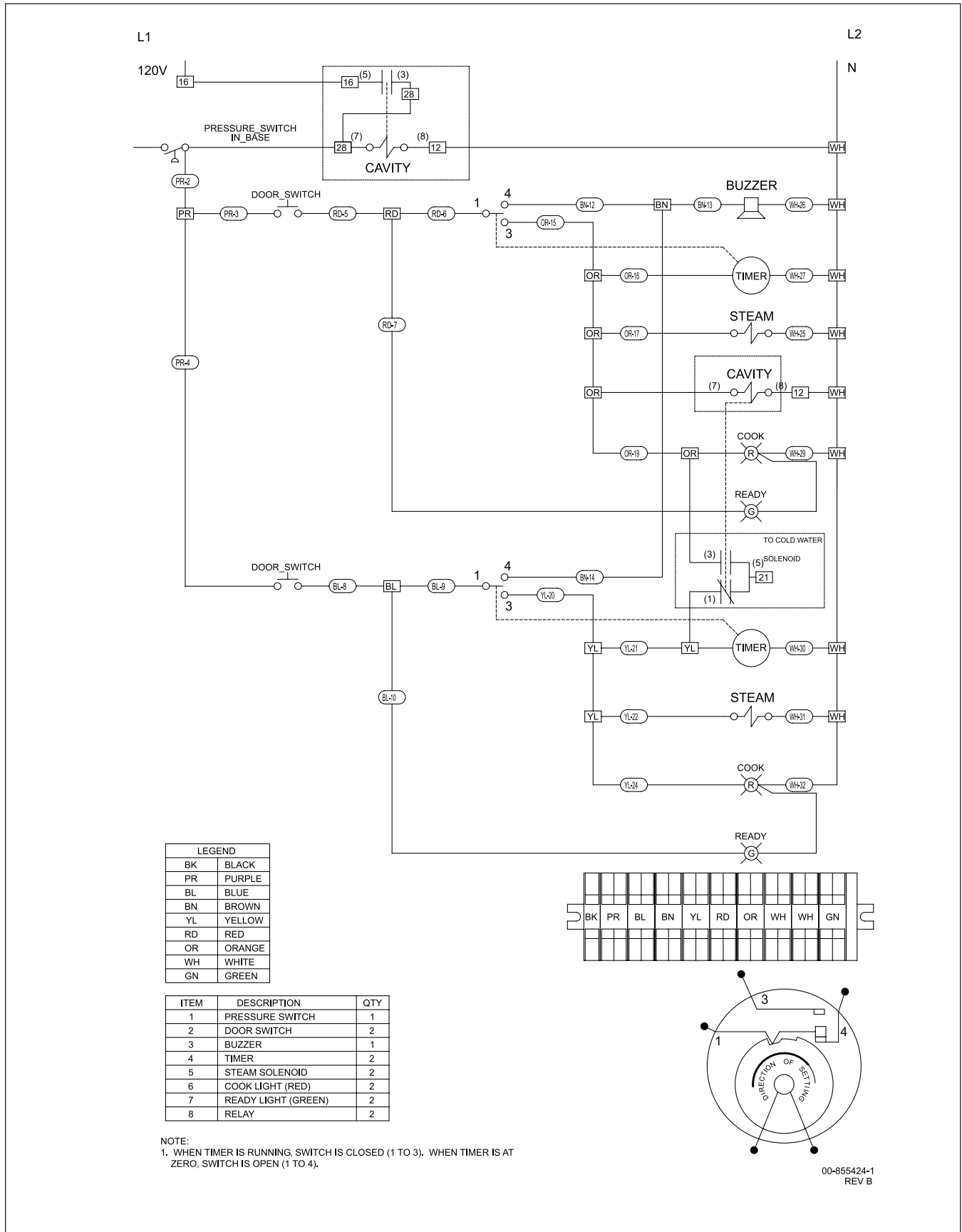


**SCHEMATIC DIAGRAMS**

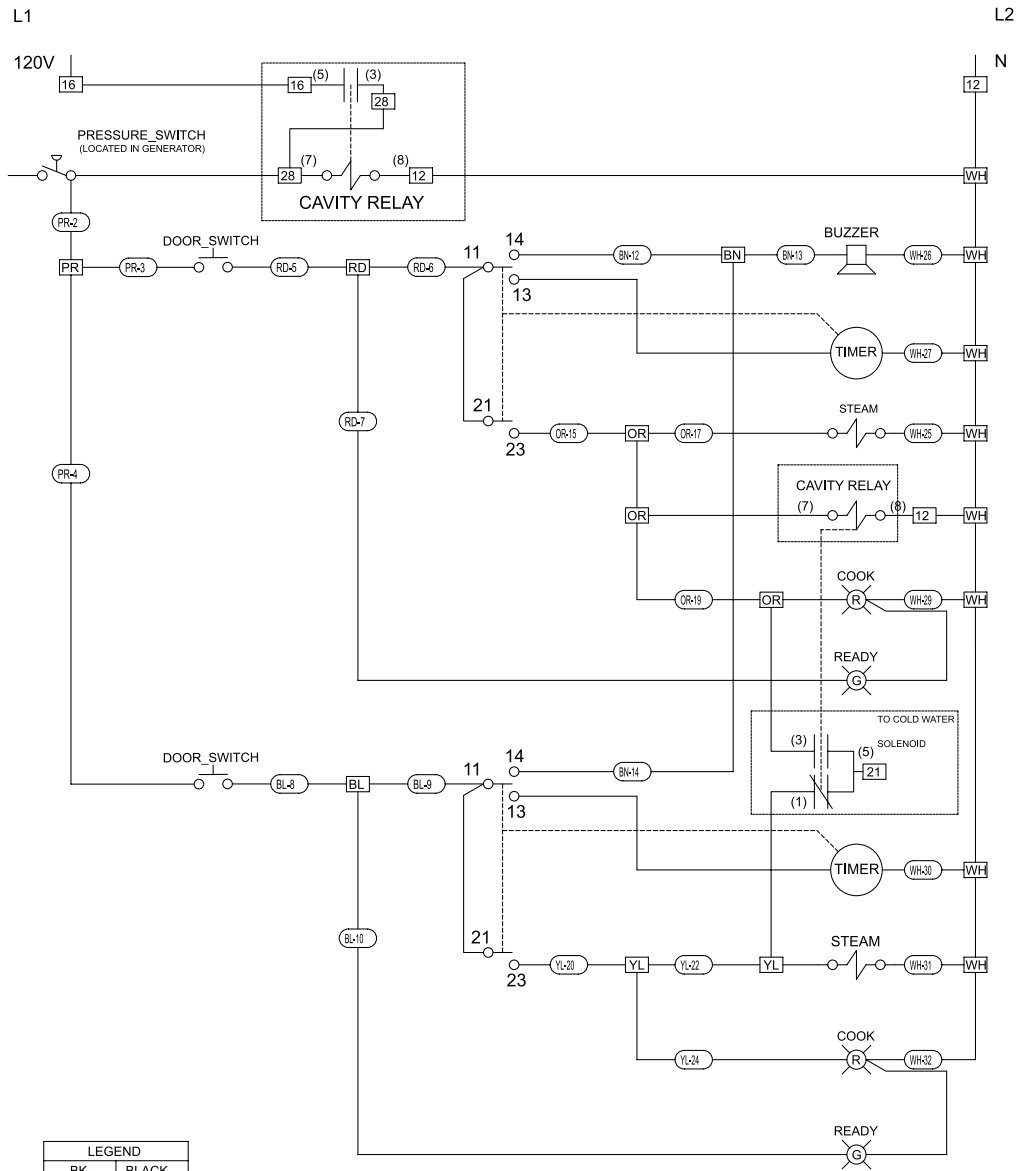
**Generator Schematic Diagram**



Schematic Diagram - Compartment Controls (Standard)



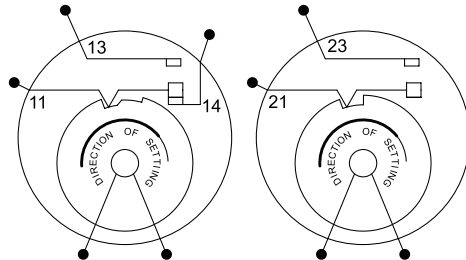
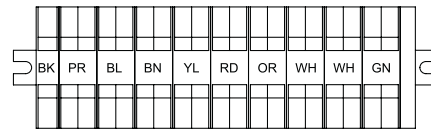
Schematic Diagram - Compartment Controls (Constant Steam)



LEGEND	
BK	BLACK
PR	PURPLE
BL	BLUE
BN	BROWN
YL	YELLOW
RD	RED
OR	ORANGE
WH	WHITE
GN	GREEN

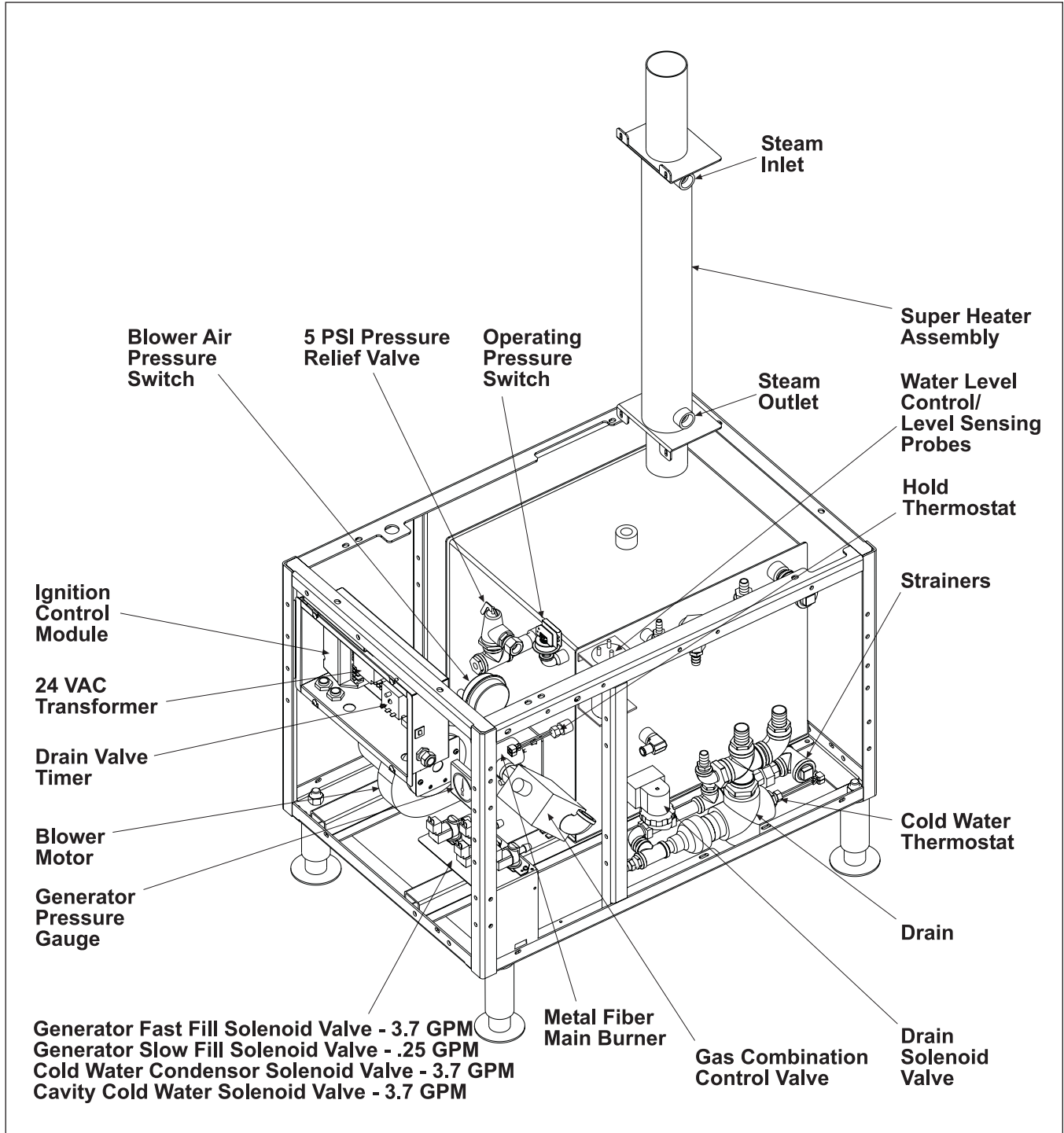
ITEM	DESCRIPTION	QTY
1	PRESSURE SWITCH	1
2	DOOR SWITCH	2
3	BUZZER	1
4	TIMER	2
5	STEAM SOLENOID	2
6	COOK LIGHT (RED)	2
7	READY LIGHT (GREEN)	2
8	RELAY	2

NOTE:  
 1. WHEN TIMER IS RUNNING, SWITCH IS CLOSED (1 TO 3).  
 WHEN TIMER IS AT ZERO, SWITCH IS OPEN (1 TO 4).



00-856656-1  
 REV B

## COMPONENT LOCATION CABINET BASE GENERATOR



## COMPONENT FUNCTION CABINET BASE GENERATOR

### Water Level Control and

**Level Sensing Probes**..... The Water Level Control circuit board and Level Sensing Probe Assembly allow water to enter the generator to fill and maintain the proper water level. These probes will also shut off the heat source to the generator if the water level drops too low.

The water level control works by using three different probe lengths to monitor the water level. The probes consist of a high level (HL), low level (LL), and low water cut-off (LLCO) probe. The level sensing probes may easily be removed to inspect for lime build up. As a rule, the condition of these devices will indicate the overall water condition of the generator. Clean the probes, if necessary.

### Generator Fast Fill

**Solenoid Valve**..... The Generator Fast Fill Solenoid Valve is located on the right side of the base and admits water at rate of 3.7 GPM to the generator when demanded by the water level control to maintain the correct water level in the generator.

### Generator Slow Fill

**Solenoid Valve**..... The Generator Slow (Trickle) Fill Solenoid Valve is located on the right side of the base and admits water to the generator at a rate of 0.25 GPM when demanded by the water level control to maintain the correct water level in the generator.

The output of the Fast Fill and Slow Fill valves are connected in a “Y” to provide a single feed to the generator.

### Cold Water Condenser (CWC)

**Solenoid Valve**..... The Cold Water Condenser (CWC) Solenoid Valve allows cold water to flow into the generator drain to condense steam and cool the hot water before it is discharged into the drain.

### Cavity Cold Water

**Solenoid Valve**..... The Cavity Cold Water Solenoid Valve allows cold water to flow into the cavity drain and cool the hot water before it is discharged into the drain.

**Operating Pressure Switch**..... The Pressure Switch is located on the front upper right corner of the generator and is accessible through the left side panel. This switch controls generator pressure between prescribed limits by turning the heat source on and off.

**Drain Solenoid Valve**..... The Drain Solenoid Valve (Drain Valve) is located on the right side of the base and is plumbed into the drain pipe of the generator. The generator will automatically drain for 1000 seconds when power is turned off by using a normally closed solenoid valve. Daily generator draining is essential to proper operation and component life by removing sediment and scalants that may be lodged in the chamber of the generator.

**Strainers**..... Strainers are used in the water inlet line to prevent foreign matter from becoming lodged in the fill or cold water condenser solenoid valves and to keep unwanted particles out of the system. Strainers are also located in the steam line and drain line.

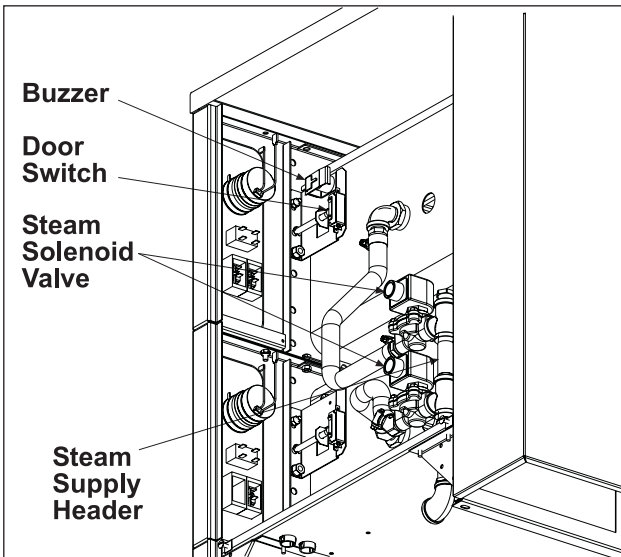
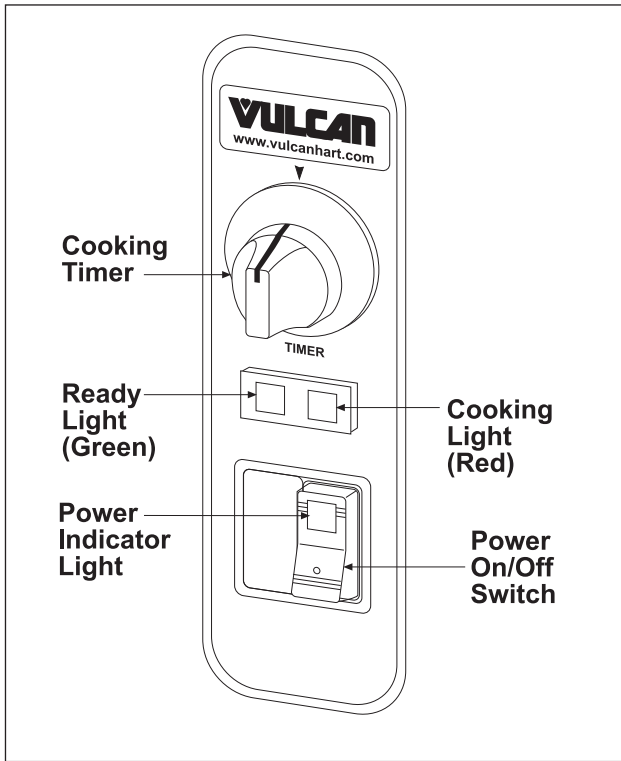
### Pressure Gauge

**(If applicable)**..... The Pressure Gauge is located on the upper right front of the base and indicates generator steam pressure.

**Cold Water Thermostat**..... The Cold Water Thermostat is located on the lower right side of the base and maintains drain temperature below 140°F by controlling the drain CWC solenoid.

- Hold Thermostat**..... The Hold Thermostat energizes the Generator Slow Fill Solenoid Valve when generator temperature reaches the non-adjustable setpoint at 190°F.
- Drain**..... The Drain is located on the lower right of the base and removes steam condensate and water from cooking compartments and generator.
- Metal Fiber Main Burner**..... The Metal Fiber Main Burner is accessible from the front. This burner heats the water in the generator to generate steam.
- Gas Combination Control Valve**.... The Gas Combination Control Valve is part of the Burner Assembly and is a gas solenoid that opens to allow gas flow when a call for heat is made and that also regulates the manifold gas pressure.
- Blower Motor**..... The Blower Motor is part of the Burner Assembly and provides airflow for the metal fiber burner. The blower is accessible through the front of the base.
- Blower Air Pressure Switch**..... The Blower Air Pressure Switch is part of the Burner Assembly and closes at 0.4" W.C. to apply operating voltage to the ignition module.
- Gas Orifice**..... The Gas Orifice is part of the Blower Assembly and controls the flow of gas to the burner.
- Ignition Control Module**..... The Ignition Control Module controls the ignition of the gas pilot and main burner.
- 24 VAC Transformer**..... The 24 VAC Transformer reduces the input 120 VAC to the 24 VAC required by the Ignition Module.
- Super Heater Assembly**..... The Super Heater Assembly (Heat Exchanger) is located at the rear of the base surrounding the flue and is used to raise the temperature of the steam by passing the steam around the flue assembly.
- Drain Valve Timer**..... The Drain Valve Timer turns on for 1000 seconds when Power On/Off Switch is set to off position to operate the Drain Solenoid.
- 5 PSI Pressure Relief Valve**..... The 5 psi Pressure Relief Valve opens if the generator pressure exceeds 5 psi to prevent further pressure rise.

## COMPONENT LOCATION COOKING COMPARTMENT



## COMPONENT FUNCTION COOKING COMPARTMENT

### General

The upper section of the steamer consists of two separate cooking compartments. Each compartment functions independently with its own set of controls. Power is supplied to the controls only after the steam pressure rises above 4 psi to energize the compartment latching relay. The relay remains energized as long as Main Power Switch is on.

- Ready Light (Green)**..... When the Green Ready Light is lit, it indicates steamer is ready to cook.
- Cooking Light (Red)**..... When the Red Cooking Light is lit, it indicates steamer is in a cooking cycle.
- Cooking Timer**..... The Cooking Timer is used to set desired cooking cycle time between 0 – 60 minutes. When a timer is set, the steam supply solenoid valve is energized to allow steam into the cooking compartment, but only after the generator has reached its operating pressure. Also, the timer energizes the buzzer when time expires. The timer can be set to the constant steam position. This allows steam to flow into the cooking compartment continuously.
- Power On/Off Switch**..... The Power On/Off Switch located on the lower compartment control panel, supplies power to the controls when in the on position, and causes the steam generating process to start in the generator.
- Power Indicator Light**..... The Power Indicator Light, located to the left of the Power On/Off Switch, is illuminated when the Power On/Off Switch is in the on position.
- Buzzer**..... The Buzzer signals the end of a cook cycle and must be turned off manually.
- Door Switch**..... The Door Switch removes electrical power to the timer.
- Steam Solenoid Valve**..... The Steam Solenoid Valve is normally closed, and when energized, opens to allow steam into the cooking compartment.
- Steam Supply Header**..... The Steam Supply Header is the main steam supply line from the generator for each cooking compartment. The header supplies steam up to the steam solenoid valve.



# TRUBLESHOOTING

## General

The following paragraphs provide descriptive information of the most common troubles that can occur in the steamer. The Troubleshooting Chart provides a list of other typical fault conditions. The left-hand column of the table lists typical symptoms and the right-hand column lists probable causes and the suggested remedies.

### Water Not Being Supplied to Generator

Turn the steamer on. Check that water supply is available to the steamer. After approximately 10 minutes, if no water is present, then check for a problem with the water solenoid valve or water level control probe.

Scalants may be covering the water level control probe giving a false indication of a sufficient water level in the generator. Detach, remove and thoroughly clean the water level probe assembly to remove scalants and lime build-up. This condition indicates extremely poor water quality being supplied to the generator and/or generator clean out and deliming has not been performed. The water condition must be cleared up immediately with a proper water conditioner to avoid further problems with the steamer. Replace the water level probes and canister assembly. Water may be draining through an open generator solenoid valve as quickly as it's fed to the generator. Particles of scale trapped in the generator solenoid valve seat may prevent the valve from closing.

### Pilot Or Main Burner Will Not Light

Check blower air pressure, air pressure switch adjustment, pilot burner adjustment, gas inlet and manifold pressures. The pilot burner orifice should be a 1/8" hole.

### Drain Solenoid Valve Does Not Drain

The drain solenoid valve is normally closed when the main power switch is in the on position. When the main power switch is set to off, the solenoid valve is energized and the generator drain valve opens for 1000 seconds.

Water contained in the generator, being under pressure, should be draining through this valve and be noticeable exhausting out the steamer drain.

If the drain operation appears to function sluggishly or not at all, scalants may be lodged in the drain pipe and/or the valve. Disconnect the drain solenoid valve from the drain line and inspect both the valve and the drain pipe fixed to the generator. If considerable scalants or lime build-up is apparent, then not only the drain solenoid valve, but also the generator and water level control must be thoroughly cleaned.

### Water Accumulating in Compartment

Water accumulation on the bottom of the cooking compartment(s) is primarily condensed steam. Failure to drain out quickly and completely may be due to debris in the compartment drain screen. Pull screen straight out and thoroughly clean, then replace. Failure to drain completely may also be due to improper leveling of the steamer.

### Cooking Cycle Cannot Be Activated

Inspect all wire terminals to ensure they are positive and secure before assuming any other problem. When the power switch on generator control box is in the on position, set the timer knob to 2 minutes. Both Ready lights should go off, Cooking lights should come on and steam should be entering both compartments.

### Steamer Achieves Pressure Slower Than Normal

If the generator requires more than 18 minutes to achieve normal operating pressure of 3 – 4 psi, then check the following conditions.

- A. A heavy build-up of scalants has possibly coated the interior of the generator. The insulating effect of the scalants hampers heat transfer. Unscrew and remove the clean-out port plug on the bottom of the generator. Using a small mirror examine interior of generator and if scalants and/or lime build-up is apparent, perform a generator clean-out and deliming procedure (see DELIMING THE GENERATOR). If considerable scalants are evident, both the generator drain solenoid valve and the water level control must also be examined.
- B. Low incoming gas pressure. Check the incoming line and manifold gas pressures as outlined in MANIFOLD PRESSURE ADJUSTMENT under SERVICE PROCEDURES AND ADJUSTMENTS.
- C. Gas combination control valve malfunction. Check the incoming and manifold gas pressures as outlined in MANIFOLD PRESSURE ADJUSTMENT under SERVICE PROCEDURES AND ADJUSTMENTS.

If pressure adjustments are made and manifold pressure remains low, replace the gas combination control valve and test the steamer for proper operation.

- D. Gas orifice clogged or obstructed around air shutter. It is possible for debris to become lodged in the small gas orifice opening over time. Clean out the gas orifice using a round metal instrument of the same hole diameter or slightly smaller. Clean as needed. If clogging reappears, the orifice should be removed, cleaned, and reinstalled. Remove any other foreign objects that appear to be obstructing the gas orifice or air shutter.

## TROUBLESHOOTING SEQUENCE OF OPERATION

STEP	FUNCTION	DESCRIPTION
1	Power On	Power Switch is switched to the on position.
2	Fill Stage 1	Boiler fills with fast fill water valve, (3.7 GPM).
3	Low Level Probe Confirmation	Low Level Probe, (LLCO), is confirmed then power is applied to burner system, fast fill valve is turned off.
4	Burner Operation	Power is supplied to operating pressure switch.
5	Blower	Blower is turned on by operating pressure switch.
6	Blower Pressure Switch	Blower air pressure switch is closed when fan is up to speed, (0.35" to 0.4" WC) and supplies 24 VAC to the ignition module.
7	Pilot Ignition	Module turns on spark ignition and supplies power to combination valve pilot valve, (PV & PV/MV terminals).
8	Flame Sense	Flame sense probe confirms pilot flame.
9	Main Burner	Ignition module supplies power to gas combination control valve, (MV & PV/MV terminals), burner ignites.
10	Generator Initial Heat Up	Generator heats up.
11	Fill Stage 2	Generator 190°F thermostat supplies signal to water level control to continue filling with trickle valve, (0.25 GPM).
12	Generator Full	Boiler will fill till high water probe is confirmed.
13	Ready	Operating pressure switch activates ready light and supplies timer motor power at 3.5 to 4.0 PSI.
14	Full Pressure	Generator burner system is terminated at 3.5 to 4.0 PSI.
15	Low Pressure	Generator burner system will turn on at 2.5 to 3.5 PSI and operate till generator pressure reaches 3.5 to 4.0 PSI.
16	Water Level	Water level is electronically controlled between the upper and middle probe operating the trickle fill valve, 0.25 GPM.
17	Cooking	Timer is set and door switch is closed power will be supplied to steam valve, cavity drain valve relay, and cook light.
18	Cold Water Condensate	Thermostat located in drain assembly will supply power to cold water condensate valve to maintain drain temp below 140°F.
19	End Cook Cycle	Timer supplies power to buzzer, removes power from steam valves, cook light, & cavity drain valve relay.
20	Power Off	Power Switch is switched to the off position.
21	Power Down	Power is removed from burner and water level controls.
22	Drain	Power is supplied to drain timer, drain valve is powered for approximately 16 minutes.

# TROUBLESHOOTING CHART

SYMPTOM	POSSIBLE CAUSES
Compartment leaks steam or water around door.	<ol style="list-style-type: none"> <li>1. Steamer not level.</li> <li>2. Worn or damaged gasket.</li> <li>3. Cavity rear strainer clogged.</li> <li>4. Drain line obstructed.</li> <li>5. Drain not to an open gap drain.</li> </ol>
Cold water condenser not operating properly.	<ol style="list-style-type: none"> <li>1. Cold water condenser solenoid inoperative or plugged.</li> <li>2. Lack of water supply.</li> <li>3. Cold water condenser thermostat malfunction.</li> <li>4. No power to cold water condenser solenoid.</li> <li>5. Plugged spray nozzle.</li> </ol>
Steam visible inside compartment when unit is not in cook mode.	<ol style="list-style-type: none"> <li>1. Steam supply solenoid not fully closing (clogged or dirty).</li> <li>2. Timer contacts 1 &amp; 3 closed.</li> </ol>
Heat coming on without water in.	<ol style="list-style-type: none"> <li>1. Scale on water level probes (shorted to ground).</li> <li>2. Retention of water in probe canister assembly.</li> </ol>
Pressure relief valve opening or leaking.	<ol style="list-style-type: none"> <li>1. Cycling pressure switch set too high.</li> <li>2. Pressure relief valve malfunction.</li> <li>3. Dirt or scale on valve seat.</li> </ol>
Generator will not heat or build pressure.	<ol style="list-style-type: none"> <li>1. Incorrect input voltage.</li> <li>2. Generator not filled.</li> <li>3. Water Level Control malfunction.</li> <li>4. Water too "pure" for probes to properly conduct electricity.</li> <li>5. Cycling pressure switch open or set too high or set too low.</li> <li>6. High limit thermostat open.</li> <li>7. Power switch malfunction.</li> </ol>
Steam output low or slow cooking.	<ol style="list-style-type: none"> <li>1. Blocked steam injector ports.</li> <li>2. Steam solenoid valve not fully opening or blocked.</li> <li>3. Steam intake shut-off valve closed.</li> <li>4. Cycling pressure switch malfunction or needs adjustment.</li> <li>5. Steam header line (supply) blockage.</li> <li>6. Pressure relief valve leaking.</li> <li>7. Steam supply lines leaking badly.</li> <li>8. Steam strainer clogged.</li> <li>9. Superheater plumbed incorrectly.</li> <li>10. Superheater cracked or clogged.</li> </ol>
Unit leaks water.	<ol style="list-style-type: none"> <li>1. Loose water, steam or drain line connections (top or base).</li> <li>2. Water line connection clamp leaking.</li> </ol>
Generator water level too high.	<ol style="list-style-type: none"> <li>1. Fast fill or slow fill solenoid does not shut off.</li> <li>2. High level probe dirty or scaled (open circuit).</li> <li>3. Water level control malfunction.</li> </ol>

SYMPTOM	POSSIBLE CAUSES
Generator does not fill.	<ol style="list-style-type: none"> <li>1. Water supply not on.</li> <li>2. Fill solenoid not opening or plugged.</li> <li>3. Water level control malfunction.</li> <li>4. Filter clogged.</li> </ol>
Timer motor does not run.	<ol style="list-style-type: none"> <li>1. Door open.</li> <li>2. Door switch inoperative.</li> <li>3. Timer not getting power.</li> <li>4. Timer motor inoperative.</li> <li>5. Ready light circuit malfunction.</li> </ol>
Door not closing properly.	<ol style="list-style-type: none"> <li>1. Door latch assembly malfunction or out of adjustment.</li> <li>2. Striker adjustment.</li> </ol>
Door won't open or hard to open.	<ol style="list-style-type: none"> <li>1. Latch won't release.</li> <li>2. Door held shut by internal vacuum due to improper drain connection.</li> <li>3. Striker adjustment.</li> <li>4. Door held shut by internal pressure.</li> </ol>
Buzzer not operating.	<ol style="list-style-type: none"> <li>1. Timer malfunction.</li> <li>2. Buzzer malfunction.</li> </ol>
Burner won't light or won't stay lit.	<ol style="list-style-type: none"> <li>1. Gas not on.</li> <li>2. Combustion air pressure switch malfunction.</li> <li>3. Ignition module not receiving power.</li> <li>4. Unit not properly grounded and/or polarity of incoming power is incorrect on automatic ignition systems.</li> <li>5. Low incoming gas pressure.</li> <li>6. Ignition module malfunction.</li> <li>7. Gas combination control valve malfunction.</li> <li>8. Generator not filling.</li> <li>9. Water level control malfunction.</li> <li>10. Water too "pure" for probes to properly conduct electricity.</li> <li>11. Generator pressure switch open or set too low.</li> <li>12. Supply line gas pressure too low.</li> <li>13. Ignition module malfunction.</li> <li>14. Obstruction in gas orifice.</li> </ol>
Pilot not lit or goes out.	<ol style="list-style-type: none"> <li>1. Gas not on.</li> <li>2. Low incoming gas pressure.</li> <li>3. Flame sense current too low; dirty or failed pilot assembly.</li> <li>4. Burners ignite too violently.</li> <li>5. Flame sense wire connection corroded.</li> <li>6. No sparking.</li> <li>7. Wrong pilot assembly used.</li> </ol>

<b>SYMPTOM</b>	<b>POSSIBLE CAUSES</b>
Spark igniter not sparking.	<ol style="list-style-type: none"><li>1. Incorrect spark gap setting.</li><li>2. Poor ground between pilot bracket and burner.</li><li>3. Loose, broken or damaged lead wires (including ground) from ignition module to ignitor.</li><li>4. Ignitor boot on ignition cable loose, damaged or missing causing excessive ignition voltage leakage.</li><li>5. Ceramic flame rod insulator on ignitor cracked or damaged from extreme heat.</li><li>6. Ignition module not receiving power.</li><li>7. Ignition module malfunction.</li><li>8. Combustion burner not operating.</li><li>9. Air pressure switch.</li></ol>

# CONDENSED SPARE PARTS LIST

## C24GA SERIES CONVECTION STEAMERS

PART NO.	DESCRIPTION
419315	POWER CORD
419359	CABLE, IGNITOR, HIGH VOLTAGE
842049	DOOR SWITCH
411500-12	TRANSFORMER 120V/24V
411690-1	TIMER COMPARTMENT
416535-4	SWITCH RELAY
416535-6	RELAY CAVITY COLD WATER CONDENSATE
423813-3	CABLE, FLAME SENSE
423987-1	CIRCUIT BREAKER 3 AMP
435968-1	SOLENOID, DRAIN (NC)
844069-1	LOW WATER CONTROL BOARD
844133-1	GAS VALVE, NATURAL
844133-2	GAS VALVE, PROPANE
850778-1	PRESSURE SWITCH, AIR
852984-10	MAIN BURNER ORIFICE, PROPANE
852984-9	MAIN BURNER ORIFICE, NATURAL
855268-1	DOOR GASKET (C24GA6)
855286-2	DOOR GASKET (C24GA10)
855373-1	SOLENOID, SLOW-FILL 0.25 GPM
855373-2	SOLENOID, FAST-FILL AND CONDENSATE 3.7 GPM
855395-1	STEAM INLET VALVE
855421-1	PRESSURE SWITCH, BOILER (4PSI)
855605-1	BLOWER, BURNER, VARIABLE SPEED
855606-1	PRESSURE RELIEF VALVE (5 PSI)
855607-1	THERMOSTAT, COLD WATER CONDENSATE 135°F
855608-1	THERMOSTAT, HOLD 190°F
850736-2	PROBES, WATER LEVEL
855627-1	PILOT IGNITOR
855628-1	GASKET, PILOT
855646-1	MAIN BURNER, ACONIT
855659-1	IGNITOR MODULE
855661-1	RELAY, TIME DELAY
855666-1	ORIFICE, PILOT AIR NATURAL
855666-2	ORIFICE, PILOT AIR PROPANE
855677-1	POWER SWITCH ON/OFF
855625-1	BURNER GASKET

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