SERVICE MANUAL



SG SERIES GAS CONVECTION OVENS

MODELS	**SG4** **SG6**
STACKED MODELS	**SG44** **SG66**

- NOTICE -

This Manual is prepared for the use of trained Hobart Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Hobart 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 Hobart Service Technician.

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A Product of Vulcan
3600 North Point Blvd Baltimore, MD 21222
F45525 Rev. C (1026)

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SERVICE UPDATES

SERVICE UPDATES - SG

October 2018

- FLAME SENSE CURRENT TEST
- OVEN DOORS (INDEPENDENT DOORS) Starting at Production Date of 1/22/2018
- INTERIOR LIGHTS (Rear Mounted, Round)
- INTERIOR LIGHTS (Side Mounted, Square)
- DOOR ADJUSTMENT
- COMPONENT LOCATION
- SCHEMATICS
- WIRING DIAGRAM
- IGNITION MODULE DIAGNOSTICS

TIS DOCUMENT LIST - SG4 and SG6

SERVICE TAB	
Document Title	**Document Type**
SG4 and SG6 Service Manual	Service Manual
NCC Temp Control with Harness Kit	Service Kit Instructions (SKI)

SERVICE TAB (Multimedia)	
Document Title	**Document Type**
Repair Flood-Damaged Food Equipment	Service Bulletin
Installation and Operation	I &O Manual
Fundamentals of Gas	Service Instructions
SG4 & SG6 Gas Convection Ovens	Instructions
SG Series Gas Covection Oven I&O	Operator
TSB 1037A Hobart to Vulcan "Common" Model Cross Reference List	Technical Service Bulletin (TSB)
TSB 1301 Onwatch Quicklook 72 for Gas Cooking Equipment	Technical Service Bulletin (TSB)
Rating Plate Locations on Current Vulcan-Hart/Wolf Equipment	Service Bulletin
SG4 Convection Oven Wiring Diagram	Electrical Diagram
SG4 Series Covection Oven	Specification Sheet

PARTS TAB	
Document Title	**Document Type**
Part Catalog for Gas Convection Oven	Parts Catalog

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.

MODELS

MODEL	FEATURES				OPTIONS	
	CAVITY DEPTH	TEMPERTURE CONTROL	DOORS (50/50)	COOK TIMER	CASTERS	BLOWER 208/240/60/1
SG4	26.5"	Solid State	Independent	1-Hour Dial	Optional	Optional
SG6	30.5"	Solid State	Independent	1-Hour Dial	Optional	Optional

INSTALLATION

Refer to the ***Installation and Operation Manual*** for detailed installation instructions on single or stacked ovens.

OPERATION

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

CLEANING

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

LUBRICATION

- Cavity blower motor has sealed bearings and requires no additional lubrication.
- Huskey™ TF-1000 grease or equivalent high temperature Teflon grease.

SPECIFICATIONS

Electrical

Voltage - 120/60/1

Amps - 8.0 Amps

Input BTU Rating

Natural Gas - 60,000 BTU input at 5.0 in. W.C.

Propane Gas - 60,000 BTU input at 10.0 in. W.C.

Gas Line Pressures

Natural - Recommend (in. W.C.) 8.0, Min 6.0

Propane - Recommend (in. W.C.) 11.0, Min 11.0

Maximum 14.0 in. W.C. (Nat. or Prop.)

TOOLS

Standard

- Standard set of hand tools
- VOM with ability to measure micro amp current

  VOM with minimum of NFPA-70E CAT III 600V, UL/CSA/TUV listed. Sensitivity of at least 20,000 ohms per volt. Meter leads must also be rated at CAT III 600V.
- Gear Puller to remove blower

Special

- Temperature tester (thermocouple type)
- Manometer

REMOVAL AND REPLACEMENT OF PARTS

COVERS AND PANELS



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

Top Front Cover

1. The top front cover is secured with four (4) screws, two on each side of cover. Remove these screws then remove the cover from the oven.

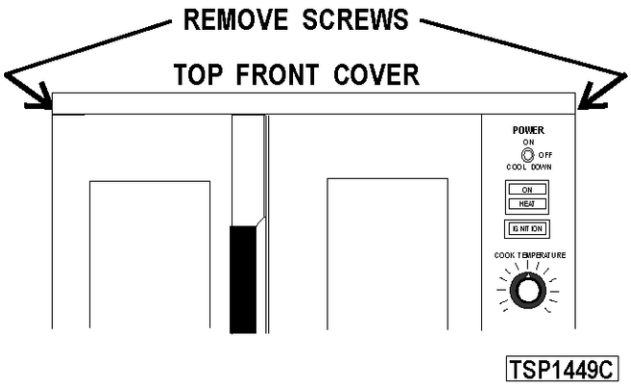


Fig. 1

2. Reverse the procedure to install.

Bottom Front Cover

1. The bottom front cover is secured with four (4) screws, two on each side of cover. Remove these screws then remove the cover from the oven.

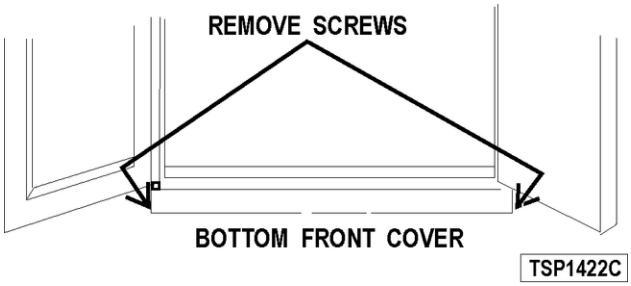


Fig. 2

2. Reverse the procedure to install.

Control Panel

1. Remove three (3) screws on the right side which secure the control panel then pull the panel away from the oven.

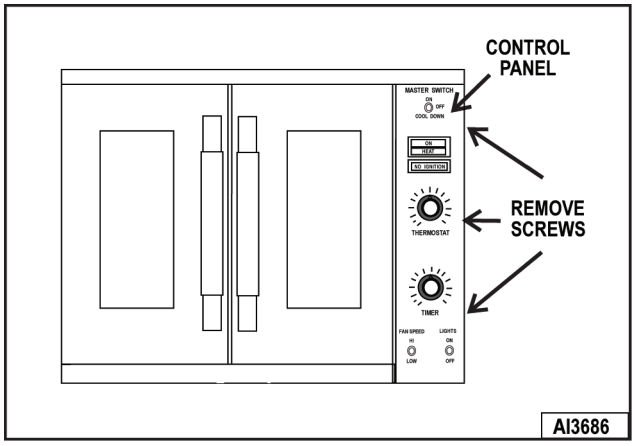


Fig. 3

NOTE: If the oven has a mechanical (KX type) thermostat, it must be removed from the control panel first, before removing the control panel.

2. Disconnect the temperature probe leads from the solid state temperature control.
3. Unplug the wire harness connector to the control panel components.
4. Reverse the procedure to install.

Right Side Panel

1. Remove the screws which secure the right side of the top front cover, bottom front cover and control panel.
2. Remove the remaining six screws securing the right side panel.

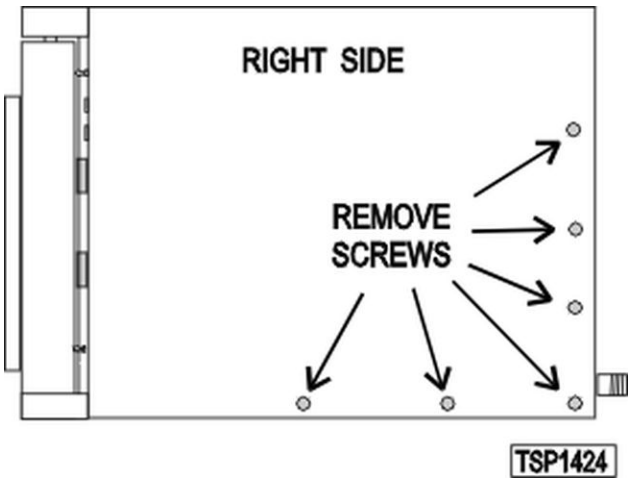


Fig. 4

3. Pull the right side panel out at the bottom then down to remove.
4. Reverse the procedure to install.

CONTROL PANEL COMPONENTS



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Removable Components Procedure

1. Remove the CONTROL PANEL.
2. Remove the component being replaced.
3. Reverse the procedure to install the replacement component, then check oven for proper operation.

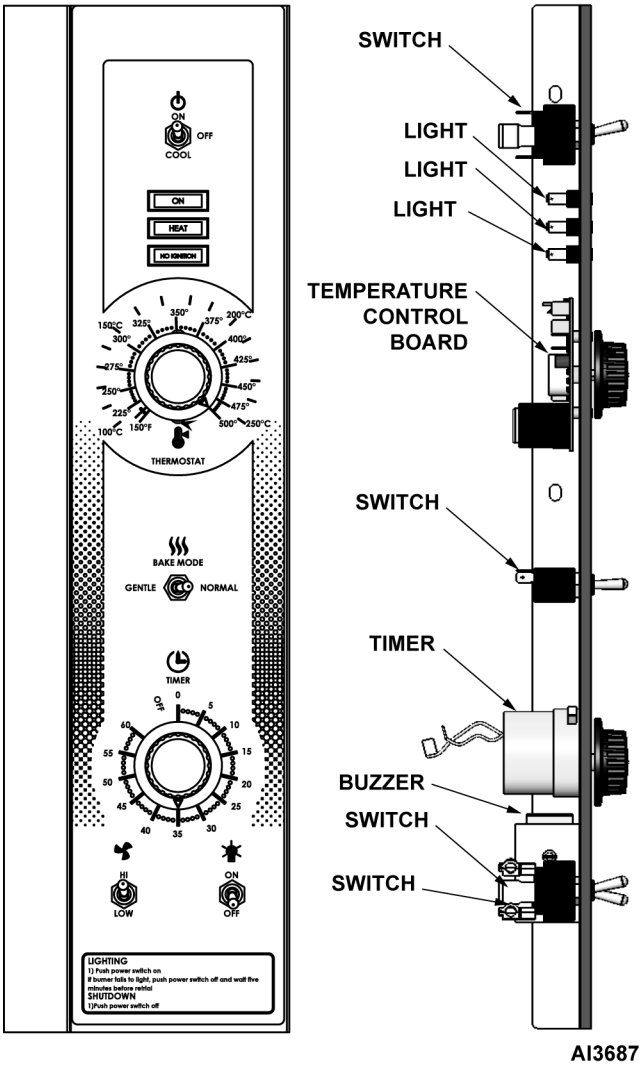


Fig. 5

Name / Electrical Callout	Function
Power Toggle Switch (S1)	Determines the mode of operation: ON, OFF, or COOL DOWN.
Indicator "ON" Light	Indicates when oven is powered on.
Indicator "HEAT" Light	Indicates when oven is heating.
Indicator "NO IGNITION" Light	Indicates no flame detected by flame sensor.
Temperature Control	Analog temperature controller.
Timer	Allows user to set cooking timer.
Alarm / Buzzer	Signals the end of a cook cycle when cooking time ends.

Name / Electrical Callout	Function
Oven Light Switch (S2)	Controls the oven cavity lights.
Fan Speed Switch (S3)	Controls blower motor speed between High and Low settings.

COMPONENT PANEL COMPONENTS



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Removable Components Procedure

1. Remove the as outlined RIGHT SIDE PANEL.

NOTE: If right side panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Disconnect the wire leads to the component being replaced.
3. Remove the component.
4. Reverse the procedure to install the replacement component and check oven for proper operation.

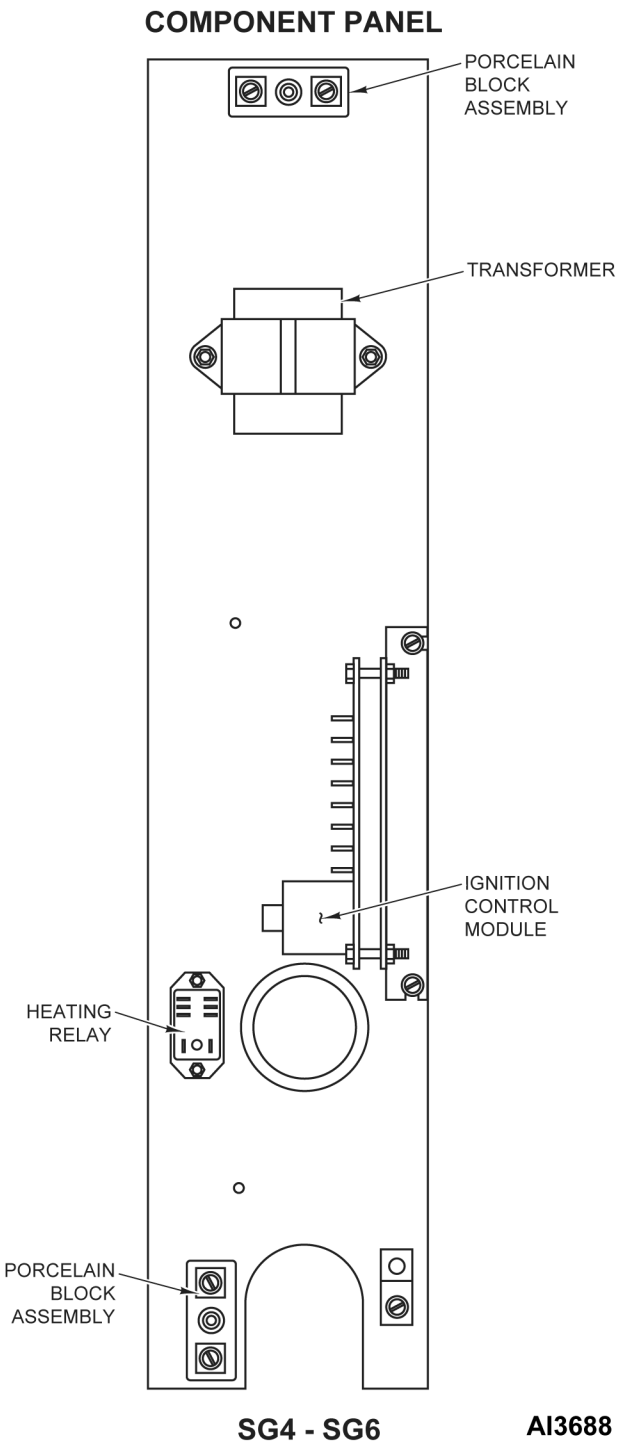


Fig. 6

TEMPERATURE PROBE



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the RIGHT SIDE PANEL.

NOTE: If right side panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Disconnect the probe leads from the solid state temperature control.
3. Remove the racks and right rack support.
4. Remove the probe guard.

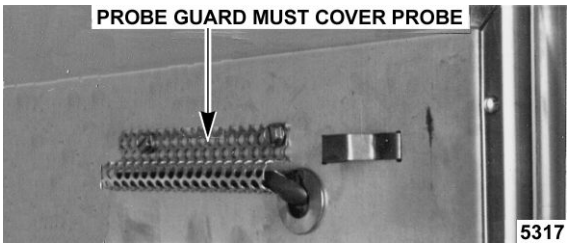


Fig. 7

5. Remove probe by pushing it through the oven wall and into the control panel area.

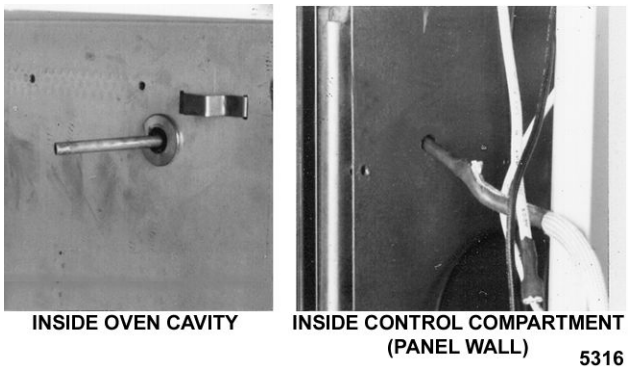


Fig. 8

NOTE: The hole in the oven cavity wall does not line up straight with the oven cavity outer shell, therefore the probe must be removed at an angle.

6. Reverse the procedure to install the replacement probe.
7. Adjust the temperature control as outlined under SOLID STATE TEMPERATURE CONTROL CALIBRATION.

GAS BURNER



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the BOTTOM FRONT COVER.
2. Disconnect the ignition cable and the flame sense lead wire.

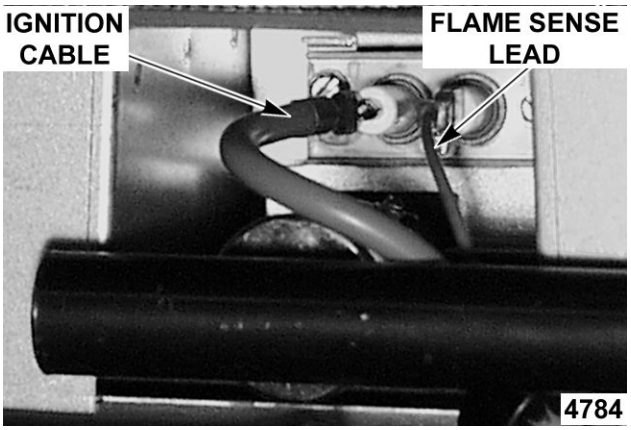


Fig. 9

3. Disconnect the ignition cable and the flame sense lead wire.

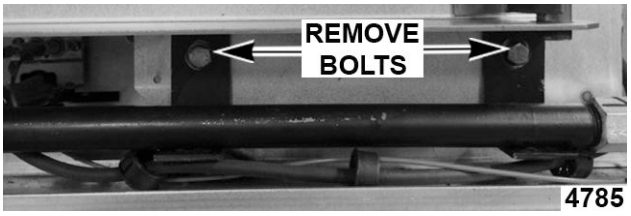


Fig. 10

4. Remove the screws securing the burner cover then lift out.

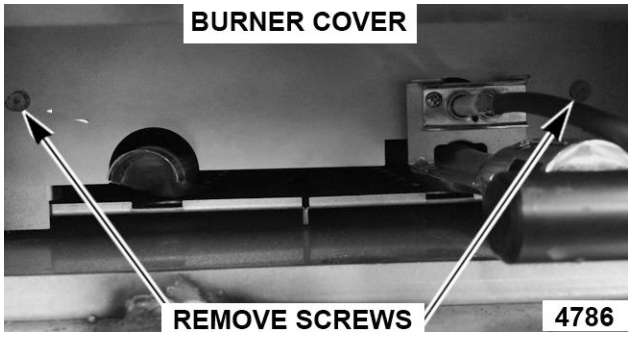


Fig. 11

5. Grasp the burner and lift out.

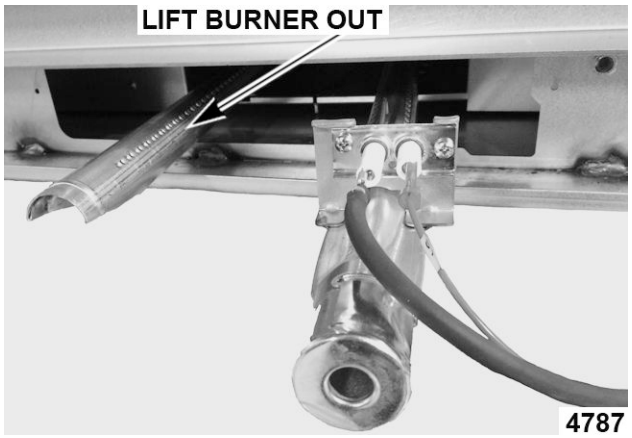


Fig. 12

6. Reverse procedure to install the replacement burner.

NOTE: Ensure that burner positioning bracket (U shaped end) is inserted into slot at the rear of the burner chamber.

7. Check for proper operation.

GAS ORIFICE



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the BOTTOM FRONT COVER.
2. Remove the bolts securing the gas manifold to the oven and place the manifold to the side.

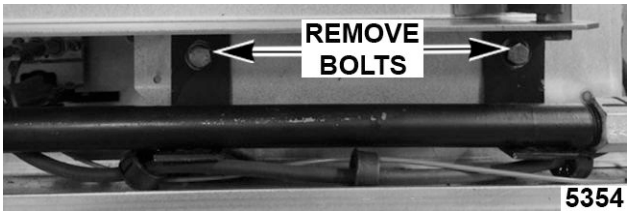


Fig. 13

3. Remove the gas orifice from the spud on the manifold and replace with the correct orifice for the given altitude.

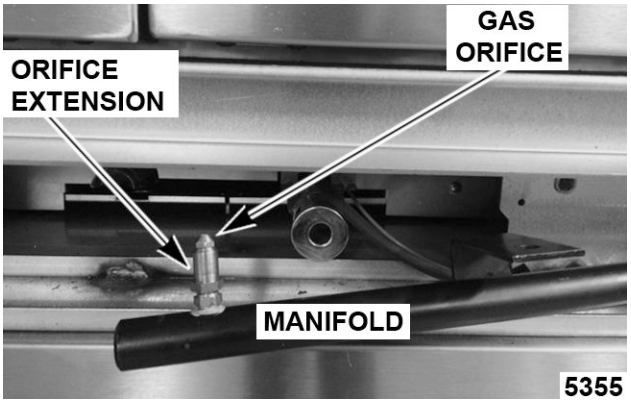


Fig. 14

4. Reverse procedure to install and check for proper operation.

GAS SOLENOID VALVE



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS 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.

1. Remove the Control Panel and the RIGHT SIDE PANEL.

NOTE: If is right side panel not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Disconnect the lead wires.
3. Disconnect the compression fittings to the valve.

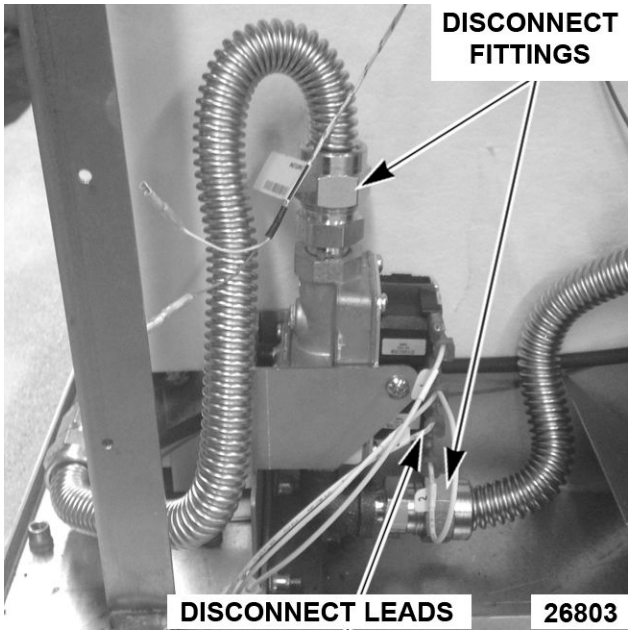


Fig. 15

4. Loosen the bolts securing the valve and bracket assembly then remove the screws securing the valve to the bracket.

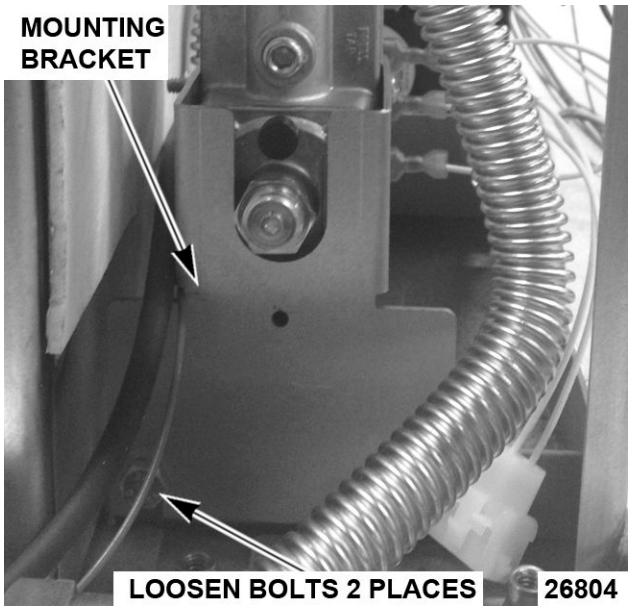


Fig. 16

5. Verify new gas valve is configured for the proper gas type.

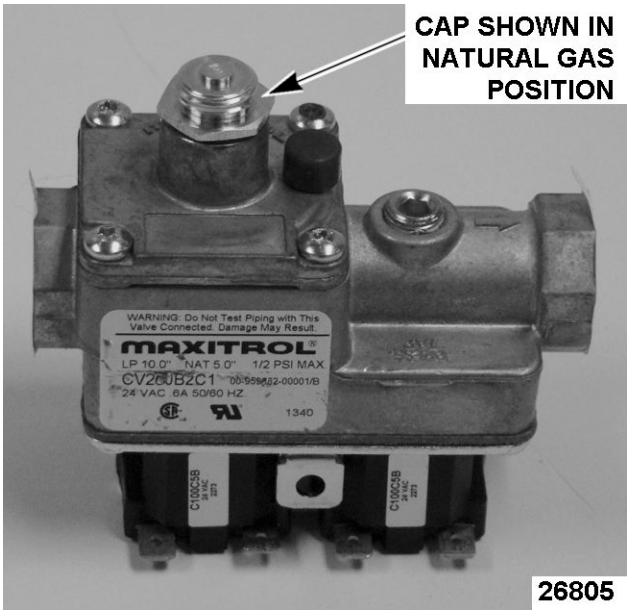


Fig. 17

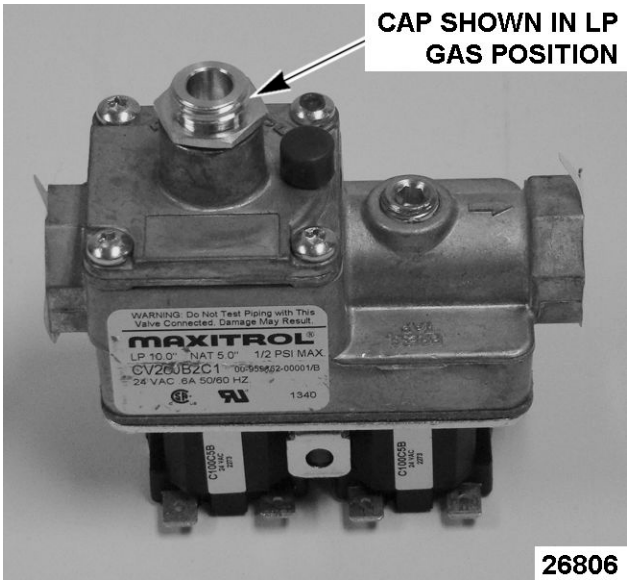


Fig. 18

A. To change gas type unscrew and reverse cap to show the proper gas type.

   1) Make sure gasket is positioned between cap and valve body.

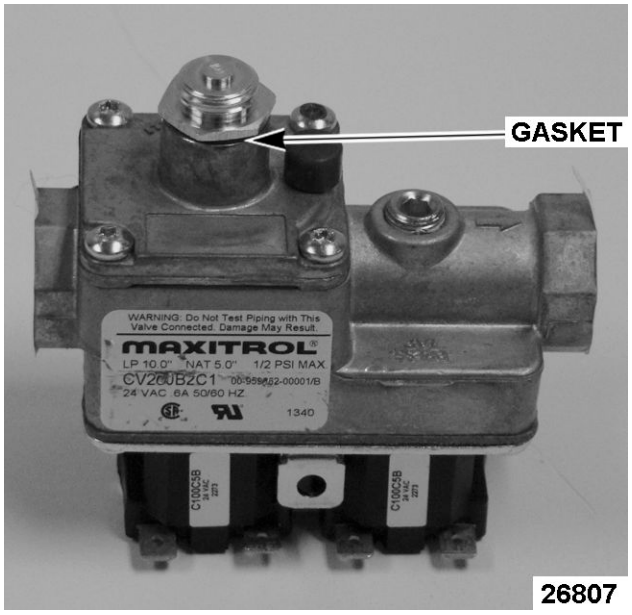


Fig. 19

6. Reverse the procedure to install the replacement gas valve.
7. Check pressure as outlined under GAS VALVE PRESSURE CHECK.

IGNITION CONTROL MODULE



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the RIGHT SIDE PANEL.

NOTE: If right side panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Loosen the screws securing the mounting bracket to the component panel and remove the bracket.

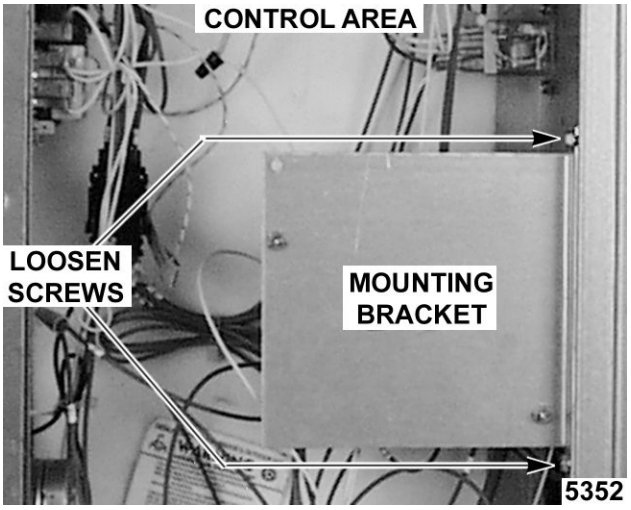


Fig. 20

3. Disconnect the lead wires and igniter cable from the ignition module board.

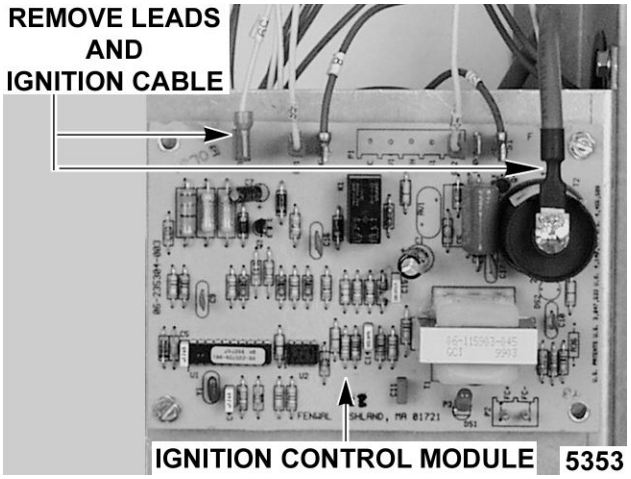


Fig. 21

4. Remove the ignition module board from the mounting bracket.
5. Reverse the procedure to install the replacement ignition module board.

SPARK IGNITER AND FLAME SENSE



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the gas burner as outlined under GAS BURNER.
2. Remove the screws securing the ignitor and flame sense to burner then remove the assembly.

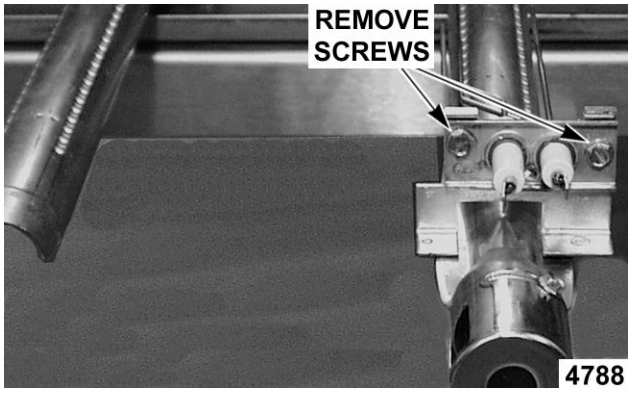


Fig. 22

3. Reverse the procedure to install the assembly and check for proper operation.

NOTE: Check to ensure the spark gap distance is approximately 1/8". If the gap appears to be excessive or poor sparking is occurring then adjust.



Fig. 23 PREVIOUS PRODUCTION SHOWN

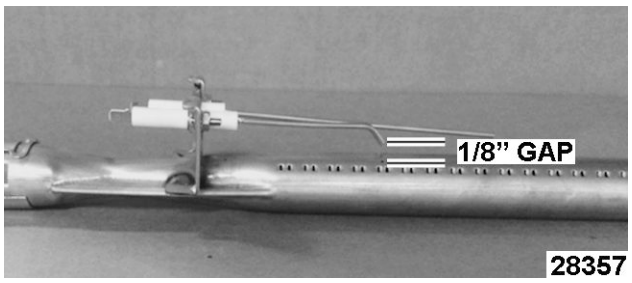


Fig. 24 CURRENT PRODUCTION SHOWN

BLOWER AND MOTOR Ending at Production Date of 3/18/2018



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Take out the racks and rack supports.
2. Remove screws securing the “snorkel” and remove the snorkel.

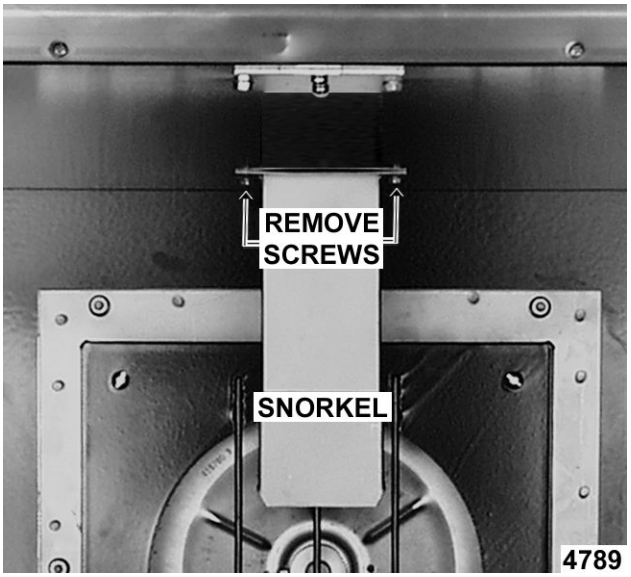


Fig. 25

3. Remove screws securing baffle panel and remove the panel.

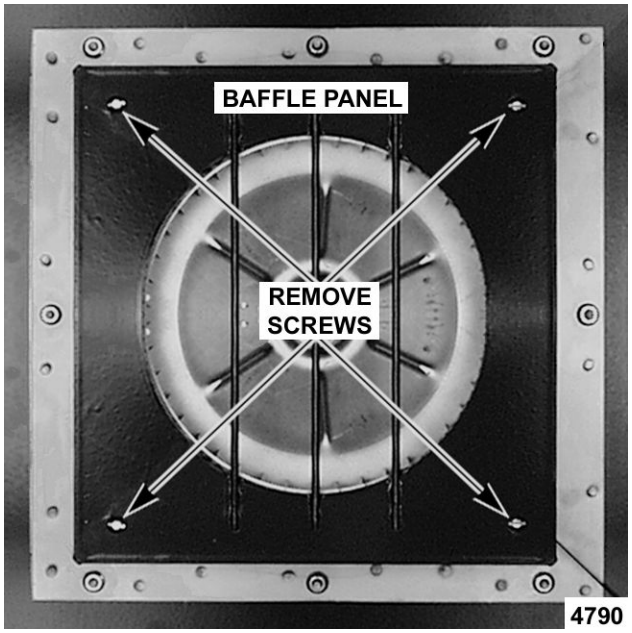


Fig. 26

4. If replacing:
   A. **Blower Only** - Loosen set screws on blower hub and using a bearing puller, remove blower from motor shaft.
      1) Reverse procedure to install and adjust blower position as outlined under BLOWER ADJUSTMENT.
   B. **Motor** - perform step 4A and continue procedure.
5. Remove the screws securing the air baffle to the rear wall at the lower right hand corner.

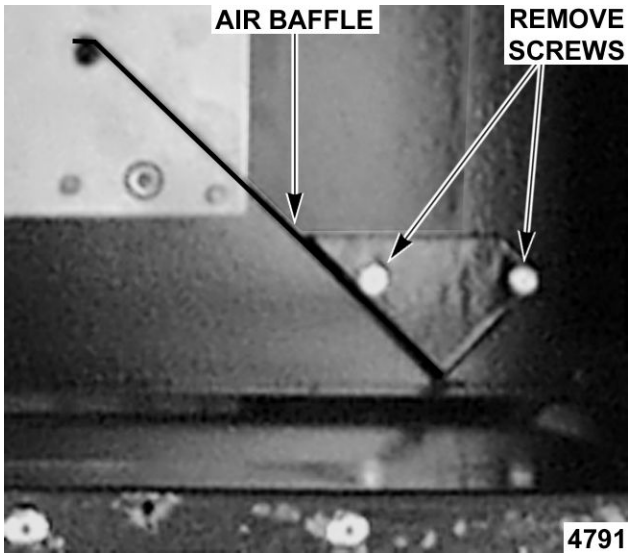


Fig. 27

6. Remove the nuts that secure the motor mounting plate to the rear wall.

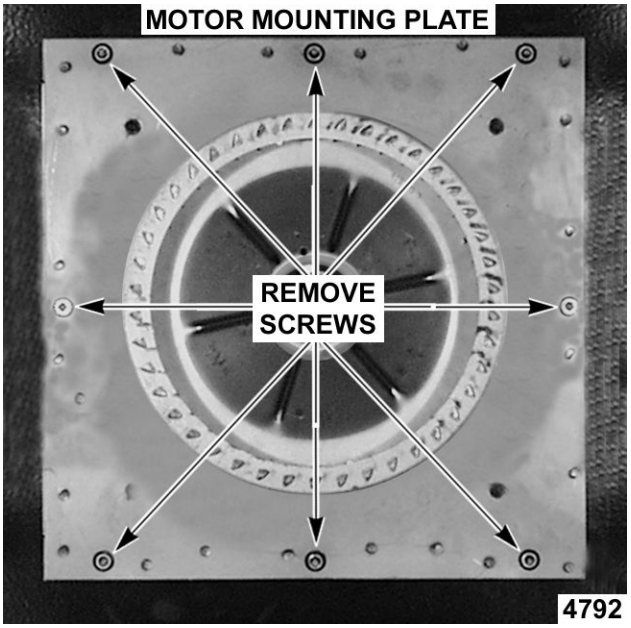


Fig. 28

7. Place a piece of cardboard on the bottom of the oven cavity to protect its surface from any damage during motor assembly removal.
8. Pull the motor assembly into the oven cavity and place it on the cardboard.
9. Remove the junction box cover from the motor, disconnect lead wires and remove the conduit.
10. Remove motor mounting bolts and flat washers then lift the motor from the mounting plate.
11. Position the replacement motor on the motor mounting plate and install mounting bolts and washers. **Hand tighten mounting bolts only.**
12. Reconnect lead wires at the motor, replace conduit and junction box cover.

NOTE: Check data plate on motor for wiring schematic. The motor must rotate clockwise when viewed from the shaft end.

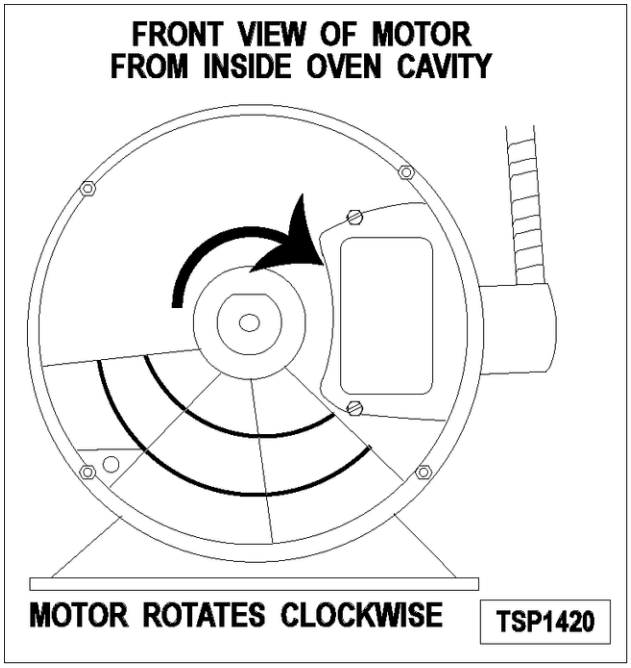


Fig. 29

13. Slide blower onto motor shaft until hub is flush with end of shaft then tighten set screws.
14. Adjust motor position until blower is parallel to motor mounting plate as outlined under BLOWER ADJUSTMENT.
15. Position motor mounting plate on the rear wall and secure with nuts and washers.
16. Replace the baffle panel and “snorkel”.
17. Replace the air baffle on the rear wall at the lower right hand corner.
18. Remove cardboard from the bottom of the oven cavity.
19. Install rack guides and racks.
20. Check oven for proper operation.

BLOWER AND MOTOR Starting at Production Date of 3/19/2018



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.



⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Remove RIGHT SIDE PANEL(S).
2. Disconnect motor harness (1, Fig. 30).

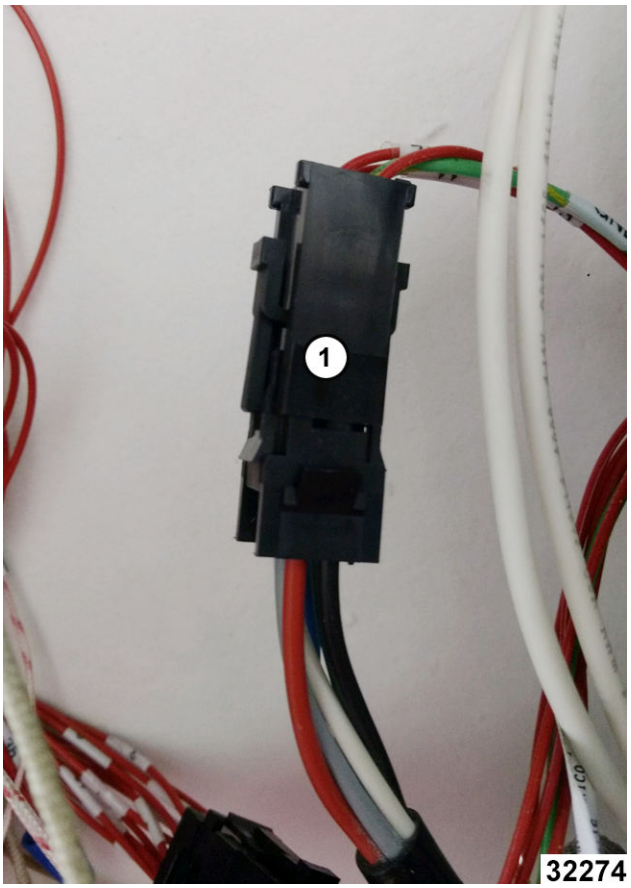


Fig. 30

3. Pinch cord grip together to remove from rear panel.

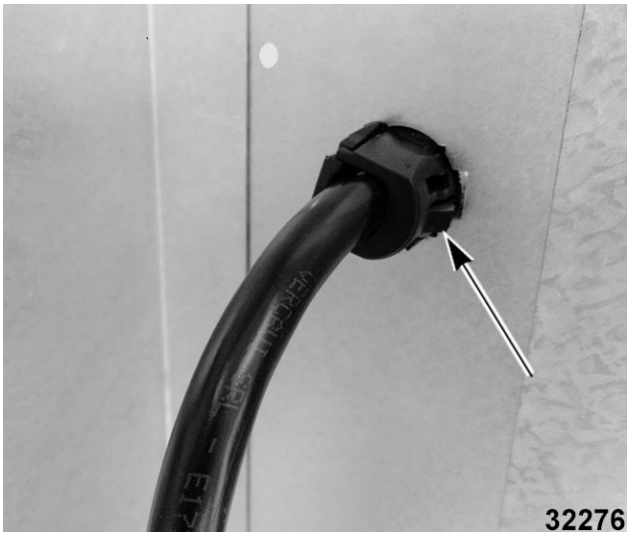


Fig. 31

4. Push motor wiring harness/cord out hole in rear panel.

5. Remove racks.
6. Remove screws securing "snorkel" and remove snorkel.

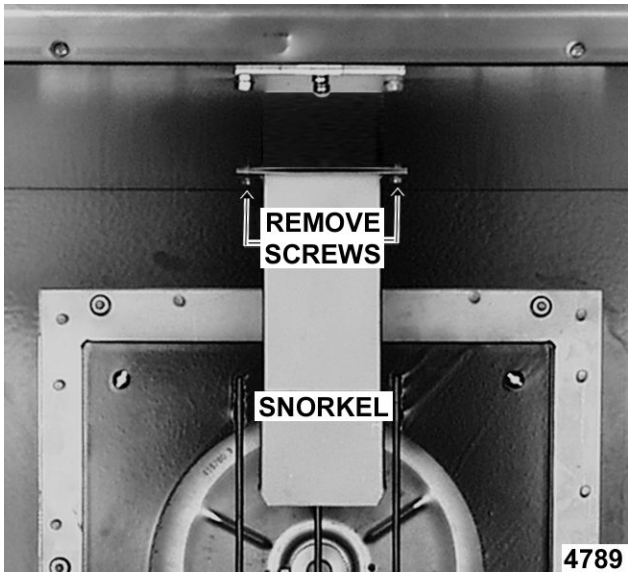


Fig. 32

7. Remove blower baffle screws (2, Fig. 33) if applicable.

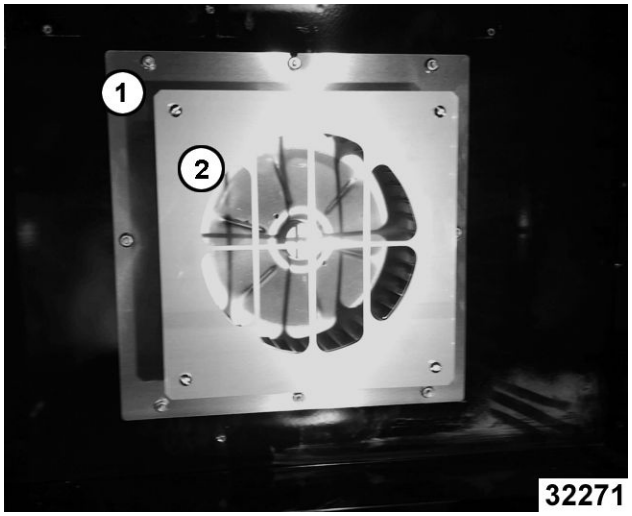


Fig. 33

8. Remove motor mounting plate nuts (1, Fig. 33).
9. Place a piece of cardboard on bottom of oven cavity to protect its surface from any damage during motor assembly removal.
10. Pull motor assembly into oven cavity and place on cardboard.
11. Remove motor mounting bolts and washers and lift motor off mounting plate.

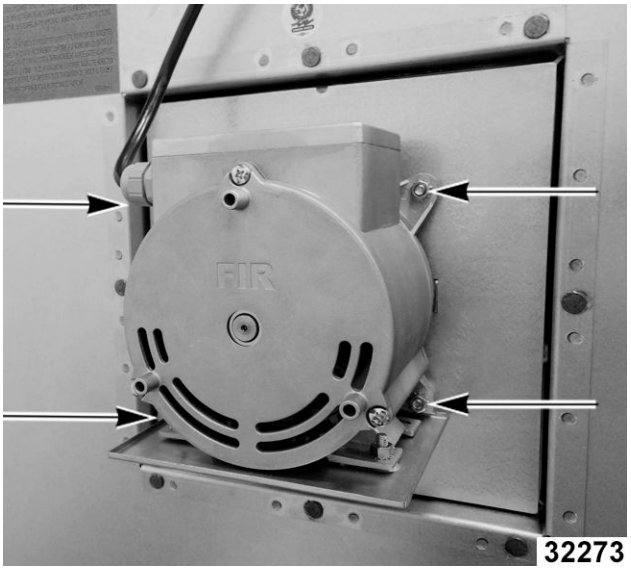


Fig. 34

NOTE: Motor graphics are shown with motor installed.

12. Remove drip pan from motor and install onto replacement motor.

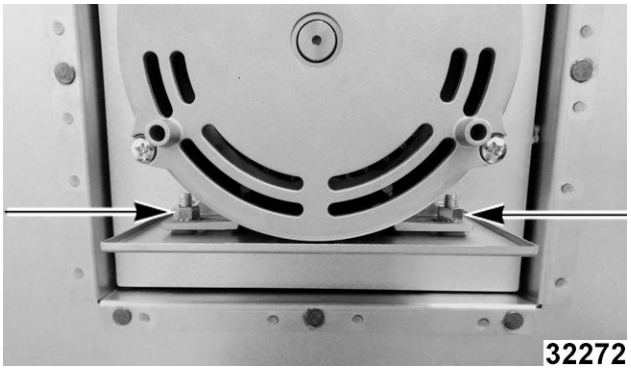


Fig. 35

13. Reverse procedure to install.
14. Verify operation.

OVEN DOORS AND BEARINGS (INDEPENDENT DOORS) Ending at Production Date of 1/21/2018



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the TOP FRONT COVER and BOTTOM FRONT COVER.
2. Remove the door switch lever.

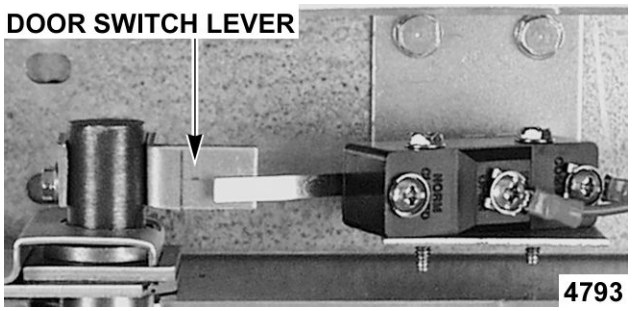


Fig. 36

3. Remove the lower door seal strip to expose the mounting screws of the door assembly.
4. Remove the two (2) lower sill bolts by the lower door shaft and the four (4) counter-sunk screws from the lower sill.

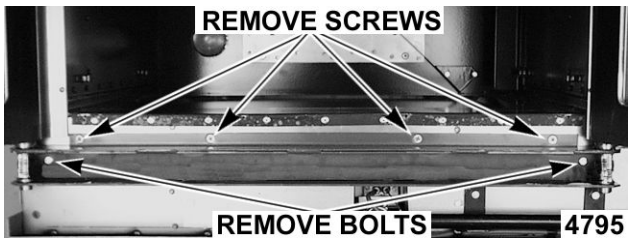


Fig. 37

NOTE: The door assembly is heavy and will drop down once the last screw is removed. If removing door assembly with-out assistance, the ignition cable, flame sense lead and gas manifold should also be removed to avoid damage to these components.

5. Tilt the top of the door slightly forward and lift the door up until the bottom of the door shaft clears the opening in the sill.
6. Lay the door flat to prevent damage.
7. The top and bottom bearings are now accessible for inspection and/or replacement if needed.
   A. If bearings are OK, proceed to step 8.
   B. If replacing the top bearing, remove the top bearing retainer and top bearing.

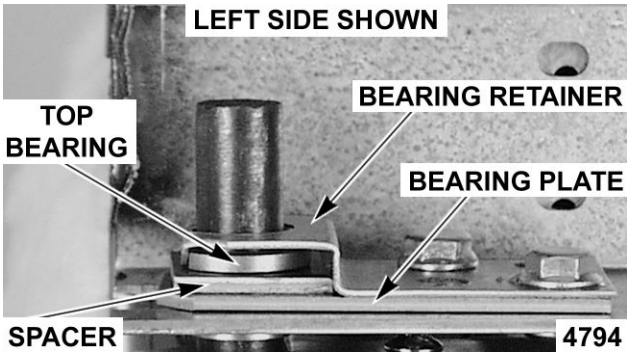


Fig. 38

   C. If replacing the bottom bearing, remove it from the door shaft or the lower sill opening.
8. Reverse procedure to install door assembly and check for proper adjustment as outlined under DOOR ADJUSTMENT and DOOR SWITCH ADJUSTMENT.

OVEN DOORS (INDEPENDENT DOORS) Starting at Production Date of 1/22/2018



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove TOP FRONT COVERS.
2. If servicing right side door, remove door switch lever (1, Fig. 39).

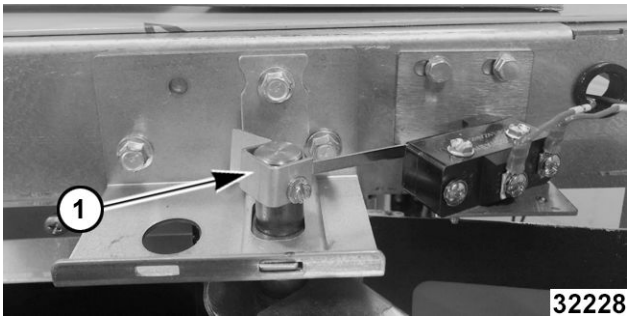


Fig. 39

3. While supporting door, remove hex bolts holding upper bearing retainer (1, Fig. 40) and upper shaft bracket (2, Fig. 40).

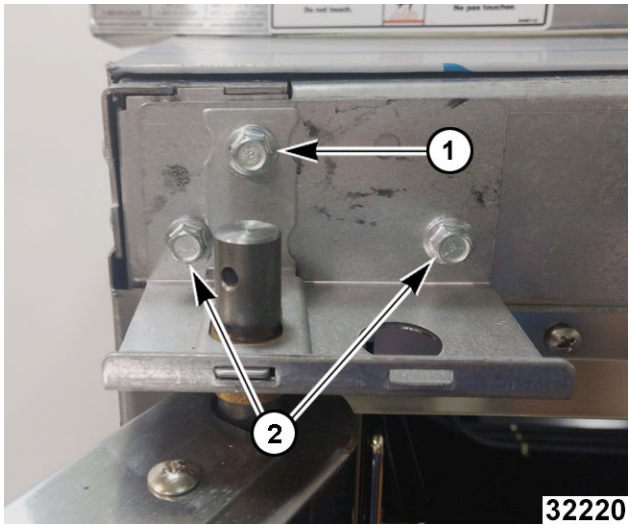


Fig. 40

4. Lift door off lower shaft bracket.

NOTICE

Lay door on flat protective surface to service.

5. Reverse procedure to install.
6. Perform DOOR SWITCH ADJUSTMENT if servicing right side door.

ROLLER LATCH ASSEMBLY (INDEPENDENT DOORS)



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the screws that attach roller latch assembly to door.

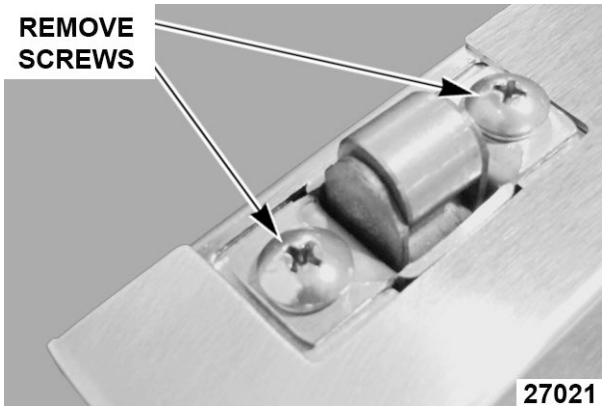


Fig. 41

2. Reverse procedure to install.

DOOR WINDOW



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the screws at the top and bottom of door.

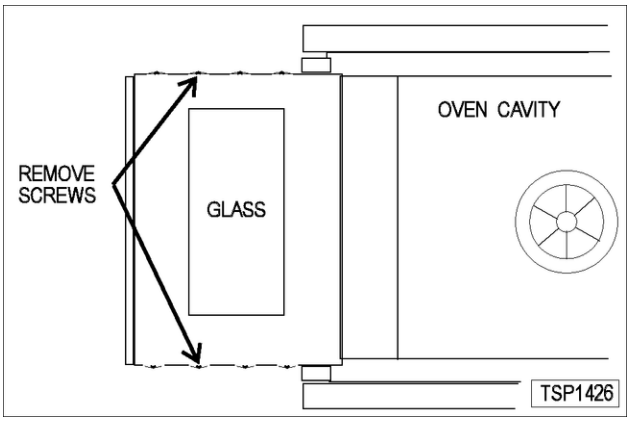


Fig. 42

2. Independent doors:
   A. Remove the door handle then remove the outer door panel.
   B. Lift out the inner door panel and window assembly.

NOTE: Left door only - remove door seal from the inside edge of the door.

3. Simultaneous doors:
   A. If replacing window on the left door, remove the handle from the front of the door then remove door seal from the inside edge of the door.
      1) Lift out the inner door panel and window assembly.
      2) If replacing window on the right door, remove the screws along the inside edge (if applicable) of the door then remove the inner door panel and window assembly.
4. Remove the screws securing the window “tabs” to the door bracket and lift the window assembly out from the door frame.

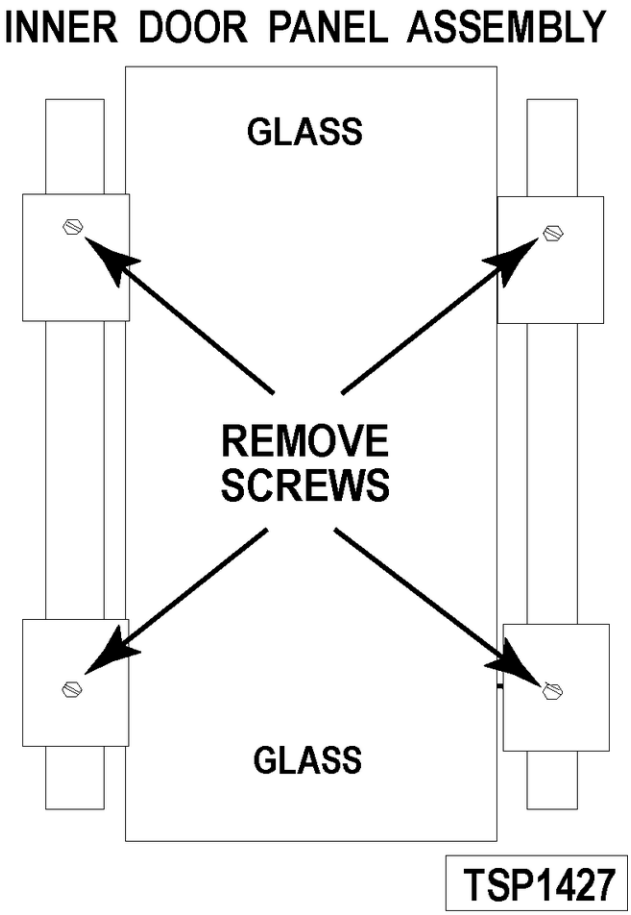


Fig. 43

5. Reverse procedure to install the replacement window.

DOOR SWITCH



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the TOP FRONT COVER.
2. Disconnect the lead wires to the door switch.
3. Remove the switch.

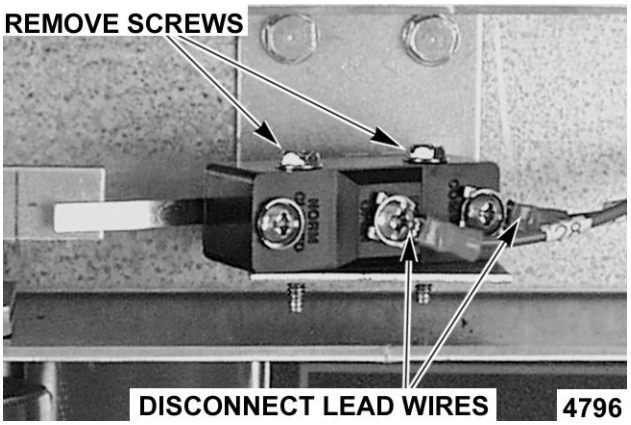


Fig. 44

4. Reverse procedure to install the replacement switch and check for proper adjustment as outlined under DOOR SWITCH ADJUSTMENT.

HIGH LIMIT THERMOSTAT



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Take out racks from the oven.
2. Remove the high limit thermostat cover/ mounting plate from inside the oven cavity at the top.

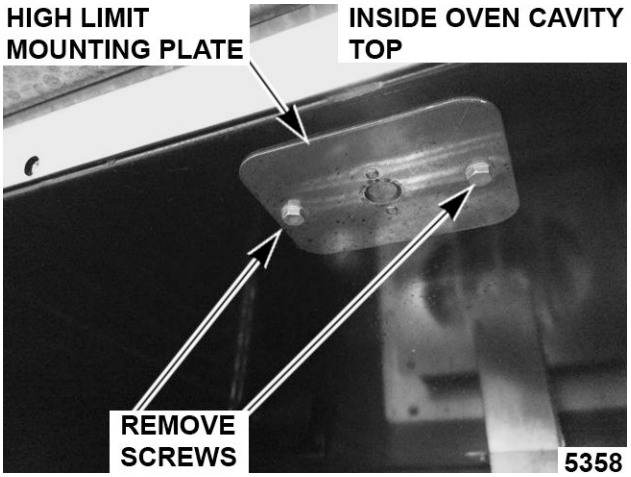


Fig. 45

3. Disconnect lead wires from high limit thermostat then remove high limit thermostat from cover/ mounting plate.

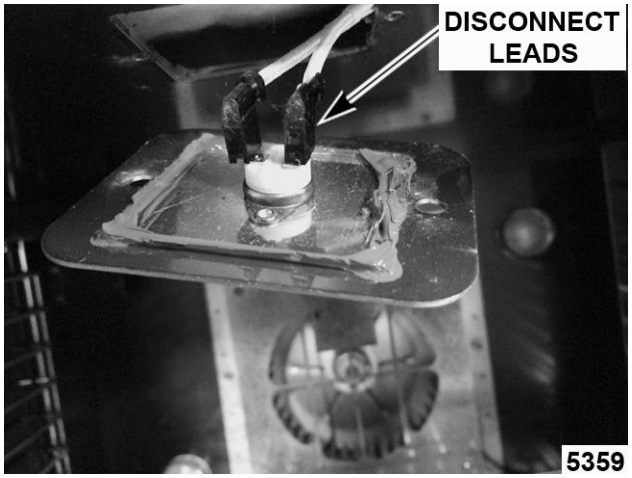


Fig. 46

NOTE: Remove the old RTV from the cover and mating surfaces inside the oven cavity and apply new RTV before installing.

4. Reverse procedure to install.

INTERIOR LIGHTS



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Lamp

1. Remove the racks.
2. Unscrew the glass lens for the light being replaced then unscrew the bulb.

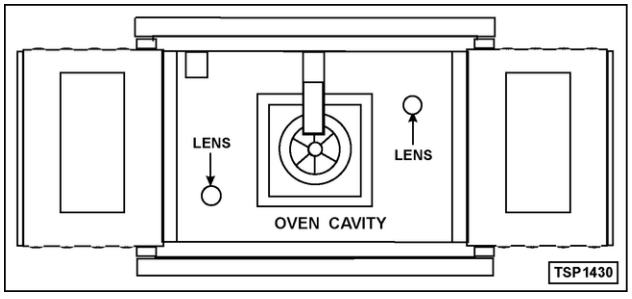


Fig. 47

3. Replace bulb then reverse the procedure to install.



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Lamp Assembly

1. Remove the lens and bulb.
2. Remove the springs from the retaining tabs (2 places) on the socket.

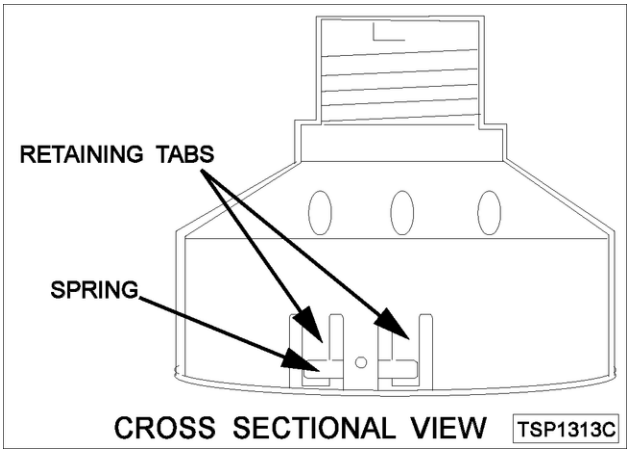


Fig. 48

3. Depress the retaining tabs and pull the socket out from the oven, far enough to disconnect the lead wires.
4. Remove the socket from the oven.
5. Attach the lead wires to the replacement socket.
6. Insert the socket into the hole in the oven and push until the socket is held in place by the retaining tabs.
7. Install the light bulb and lens.
8. Check for proper operation.

COOLING FAN



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the RIGHT SIDE PANEL.

NOTE: If right side panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Disconnect the lead wires to the fan motor by removing wire nuts.
3. Remove the screws securing the air deflector to the fan then loosen the tab screw holding the fan to the component panel. Rotate the tab so that the fan will clear and remove the fan.

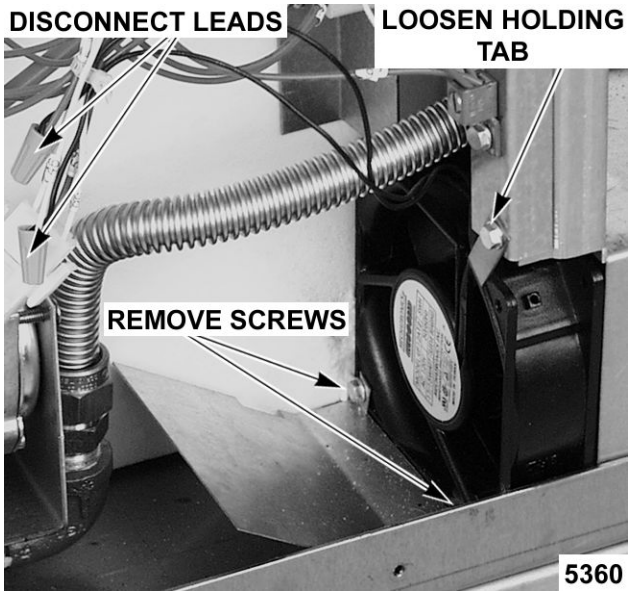


Fig. 49

4. Reverse the procedure to install the replacement fan and check for proper operation.

NOTE: The fan must be installed so air is pulled from the rear of the oven and blown into the control area. The arrow on the fan body indicates “air flow” direction and should be pointing toward the controls.

NOTE: Ensure fan is seated “squarely” against the air tube and the oven bottom.

NOTE: The air deflector should be angled upwards at approximately 30 degrees to properly direct the air flow.

INTERIOR LIGHTS (Rear Mounted, Round)



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Lamp

1. Remove racks.
2. Unscrew glass lens for the light being replaced then unscrew bulb.

NOTE: Use a cloth when handling bulb so you do not leave fingerprints on bulb.

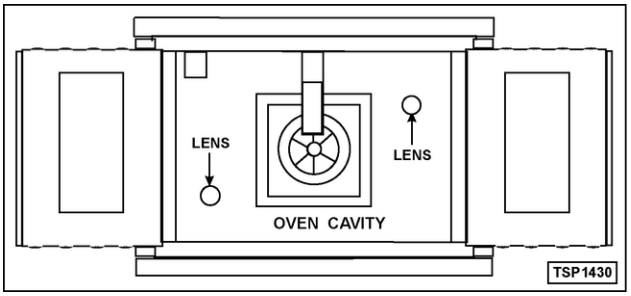


Fig. 50

3. Replace bulb then reverse procedure to install.



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

Lamp Assembly

1. Remove lens and bulb.
2. Remove springs from retaining tabs (2 places) on the socket.

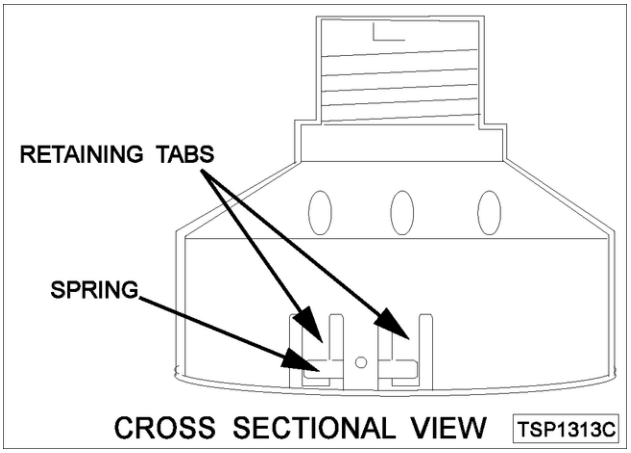


Fig. 51

3. Depress retaining tabs and pull socket out from the oven, far enough to disconnect lead wires.
4. Remove socket from the oven.
5. Attach lead wires to the replacement socket.
6. Insert socket into the hole in oven and push until socket is held in place by retaining tabs.
7. Install light bulb and lens.
8. Check for proper operation.

INTERIOR LIGHTS (Side Mounted, Square)

Bulb Replacement



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove racks and right-side hand rack guide.
2. Pull lamp cover off.
3. Grasp lamp using a clean cloth and remove from lamp assembly.

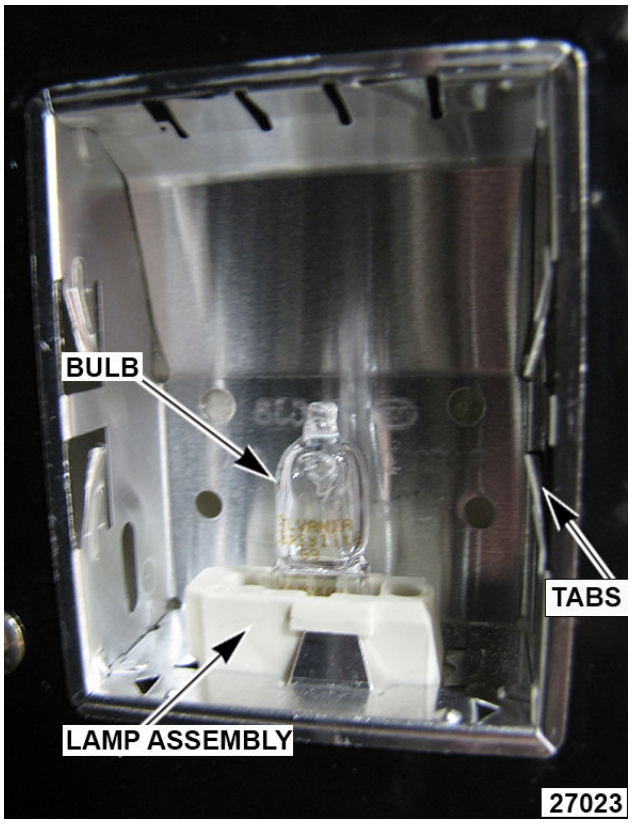


Fig. 52

4. Reverse procedure to install new bulb.

NOTE: Verify gasket (1, Fig. 53) is flat on lamp cover and not damaged.

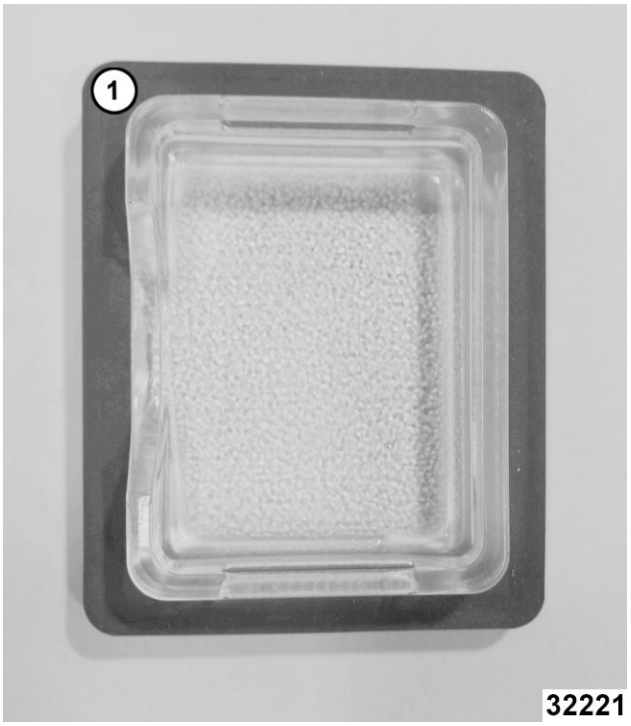


Fig. 53

Lamp Assembly Replacement



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove racks.
2. Remove BULB if reusing.
3. Lift right side rack guide off oven cavity.
4. Pull lamp cover off from the top or bottom.
5. Insert narrow blade screwdriver into tab and bend out to release. Repeat with second tab.

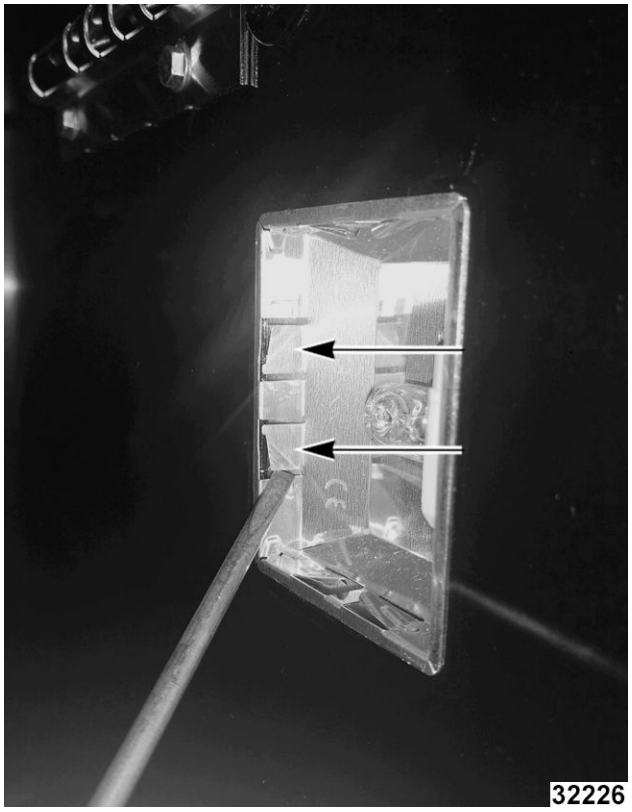


Fig. 54

6. Pull lamp housing out of oven cavity.
7. Disconnect wires.

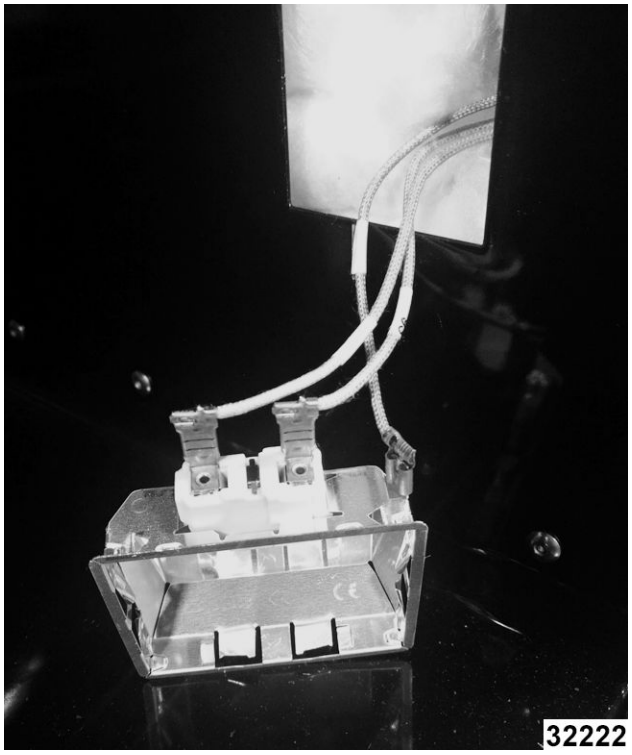


Fig. 55

8. Reverse procedure to install.

NOTE: Verify gasket (1, Fig. 56) is flat on lamp cover and not damaged.

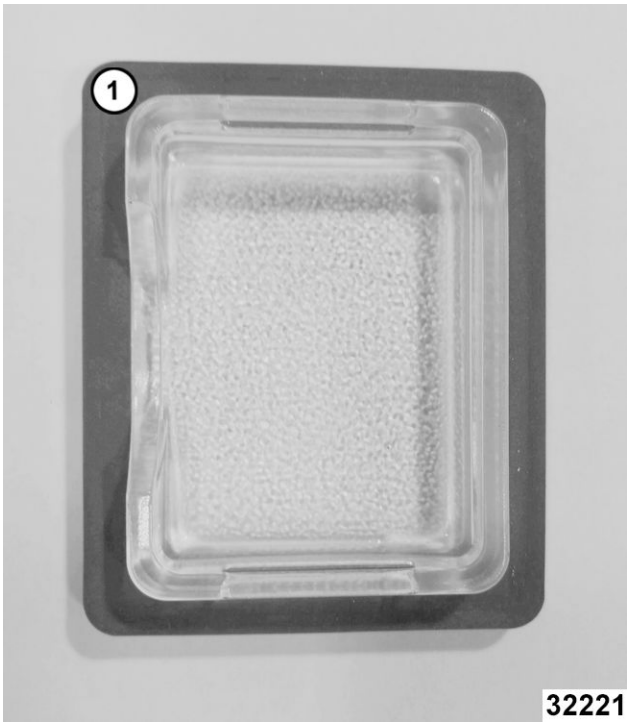


Fig. 56

DOOR ADJUSTMENT



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Check the doors to make sure they have a .125 (1/8") gap between them and that the vertical edge of the door is parallel to the vertical door seal. If the doors are not positioned in this manner, adjust the doors as described.

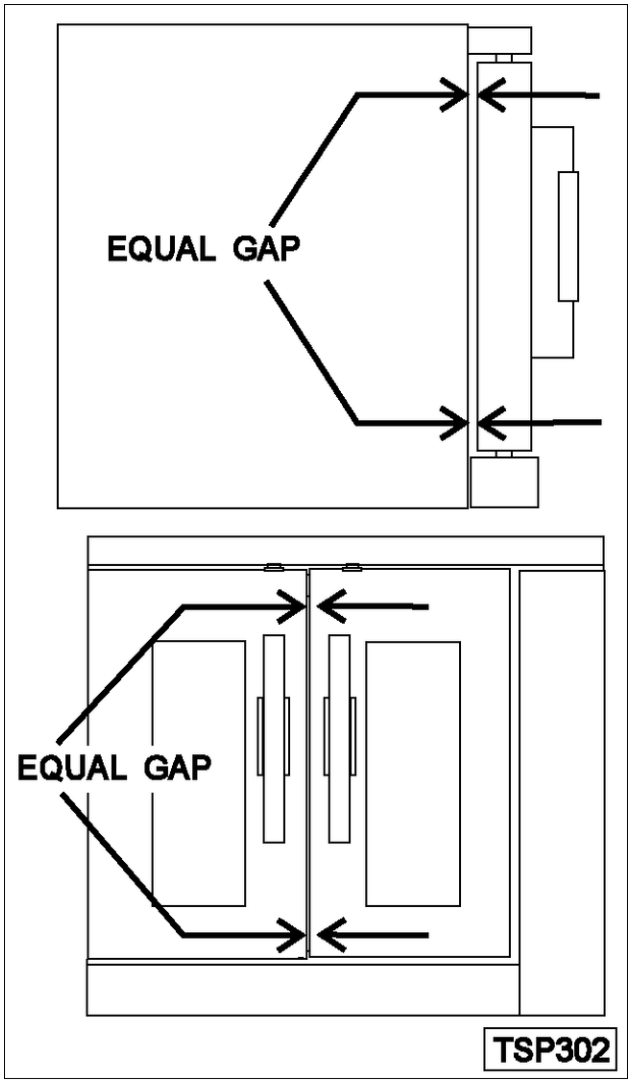


Fig. 57

2. Remove the TOP FRONT COVER.
3. Loosen the screws/bolts that secure the upper door brackets just enough to allow door movement.

   Figure Shown below (Left Side) is ending at Production Date of 1/21/2018.

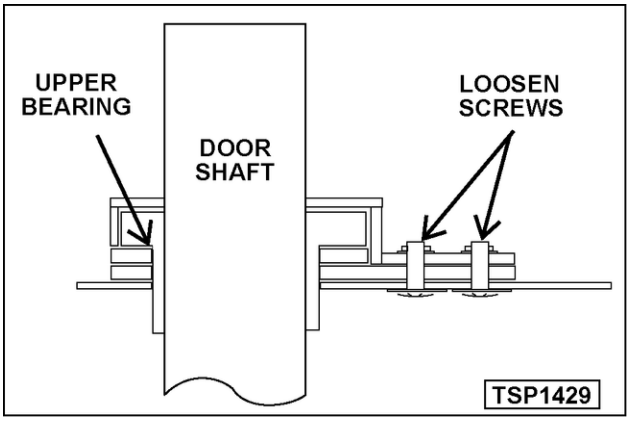


Fig. 58

Figure shown below (Left Side) is starting at Production Date of 1/22/2018.

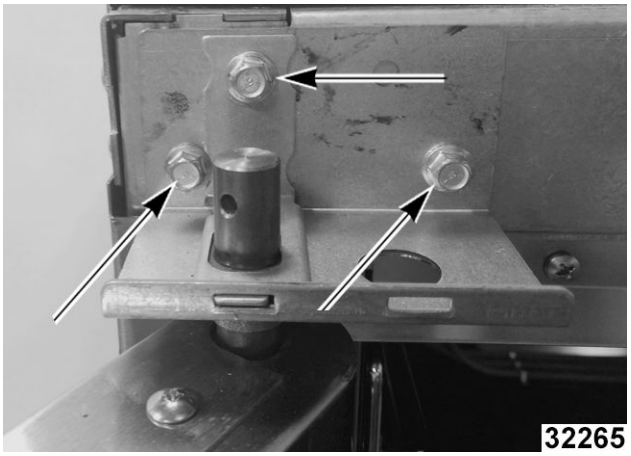


Fig. 59

4. Move the door until proper alignment is achieved then tighten the screws/bolts on the upper door bearing hardware.
5. Repeat and on the opposite door, if necessary.
6. Install TOP FRONT COVER.

SERVICE PRODCEDURES AND ADJUSTMENTS

SOLID STATE TEMPERATURE CONTROL CALIBRATION



⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

1. Place a thermocouple in the geometric center of the oven cavity.
2. Set the ON-OFF-COOL DOWN switch to ON.
3. Set the NORMAL - GENTLE BAKE switch to NORMAL.
4. Set the temperature control dial to 350°F.
5. Allow the oven temperature to stabilize (normally 3 cycles).
6. Record the temperature at which the Heat lamp goes OFF and comes ON for at least two complete heating cycles.
7. Calculate the differential by subtracting the temperature indicated when the lamp goes out from the temperature indicated when the lamp comes on.

   Differential = Heat lamp OFF - Heat lamp ON

   Example: 360° (lamp off) - 340° (lamp on) = 20°

   A. The differential calculated should be **less** than 20°F.

      1) If the differential is **less** than 20°F, the temperature control circuit is functioning properly.

      2) If the differential is **more** than 20°F:

         a. Check the temperature probe as outlined under TEMPERATURE PROBE TEST.

         b. If the probe is functioning properly then temperature control is malfunctioning.

            a) Install a replacement temperature control and check calibration.

8. Calculate the average temperature by adding the temperature indicated when the lamp goes out to the temperature indicated when the lamp comes on and dividing this answer by 2.

   [Temp. (lamp off) + Temp. (lamp on)] ÷ 2 = Average Temp. Example: (360° + 340°) ÷ 2 = 350°

   A. If the average temperature is **less** than 10°F from the dial setting, the thermostat is properly calibrated.

   B. If the average temperature is **more** than 10°F from the dial setting, the thermostat calibration must be adjusted.

      1) Loosen the temperature control knob set screw and remove the knob from the stem.

      2) Access the adjustment potentiometer located at the 3 o'clock position.

         a. Turn clockwise to increase, counterclockwise to decrease temperature

         b. Repeat the average temperature calculation in Step 8..

NOTE: Allow the oven to cycle at least two times between adjustments before performing the calculation.

            a) If the average temperature still differs **more** than 10°F from the dial setting, adjust the thermostat calibration until the average temperature is within tolerance.

   C. If the above adjustment cannot be obtained, replace the temperature control and check calibration.

SOLID STATE TEMPERATURE CONTROL TEST



⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

1. Remove the RIGHT SIDE PANELS.

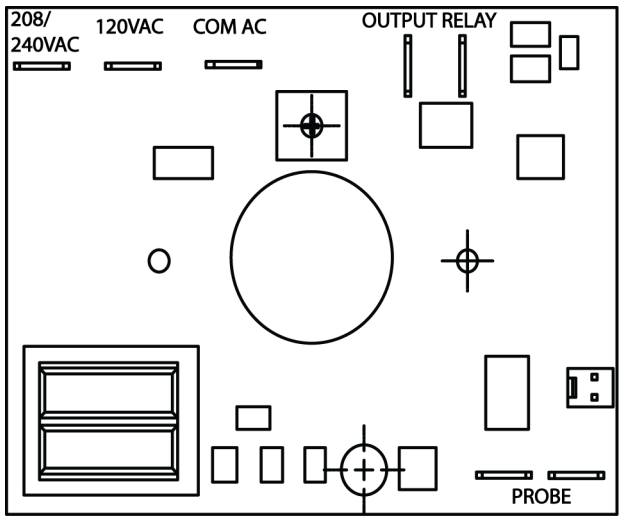
NOTE: If right side panel is not accessible, this component can be serviced by removing CONTROL PANEL.

2. Place a thermocouple in the geometric center of the oven cavity.

NOTE: Oven temperature must be below 450°F.

NOTE: If oven is equipped with "Cook and Hold" option, set to Cook (normal cooking) before continuing.

3. Set the temperature control to the maximum setting.
4. Check machine data plate for correct voltage to oven. Refer to diagram below for proper terminal locations and voltages before checking the control. Use the correct terminals for the corresponding voltage.
5. Turn the power switch to ON.



AI3754

Fig. 60

6. Check for proper voltage across terminals COM AC to 120VAC or COM AC to 208-240VAC for power to the control.
   A. If correct, proceed to step 7.
   B. If incorrect, problem is **not** with the temperature control. See TROUBLESHOOTING.
7. Check relay voltages on the board:
   A. For 120VAC controls - check across OUTPUT RELAY terminal (left side) to 120VAC terminal for input to the internal relay. Check across OUTPUT RELAY terminal (right side) to 120 VAC for output from the internal relay.
   B. For 208-240VAC controls - check across OUTPUT RELAY terminal (left side) to 208-240VAC terminal for input to the internal relay. Check across OUTPUT RELAY terminal (right side) to 208-240VAC for output from the internal relay.
      1) If input voltage to the internal relay is correct, proceed to step 8. If input voltage to the internal relay is not present, problem is not with the temperature control. See TROUBLESHOOTING.
      2) If output voltage from the internal relay is correct proceed to step 8. If output voltage from the internal relay is not correct, check temperature probe as outlined under TEMPERATURE PROBE TEST.

8. Set the temperature control to the minimum setting.

NOTE: Oven temperature **must** be above 300°F.

9. Check for zero (0) volts AC across terminals OUTPUT RELAY terminal (right side) to 120VAC or OUTPUT RELAY terminal (right side) to 208-240VAC for no output from the internal relay.
   A. If correct, temperature control is functioning properly.
   B. If incorrect, check temperature probe as outlined under TEMPERATURE PROBE TEST.
      1) If temperature probe is OK:
         a. Turn the power switch OFF.



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

         b. Replace the temperature control and check calibration as outlined under SOLID STATE TEMPERATURE CONTROL CALIBRATION.

TEMPERATURE PROBE TEST (SOLID STATE CONTROL)



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures. There may be multiple circuits. Be sure all circuits are disconnected.

⚠ WARNING

The unit and its parts are hot. Use care when operating, cleaning or servicing the unit.

NOTE: The temperature probe used in conjunction with the solid state temperature control is a NTC (Negative Temperature Coefficient) thermistor. As temperature increases the resistance value decreases. It is not polarity sensitive.

1. Open oven doors.
2. Locate temperature probe (upper front right corner, inside cavity) (Fig. 61).

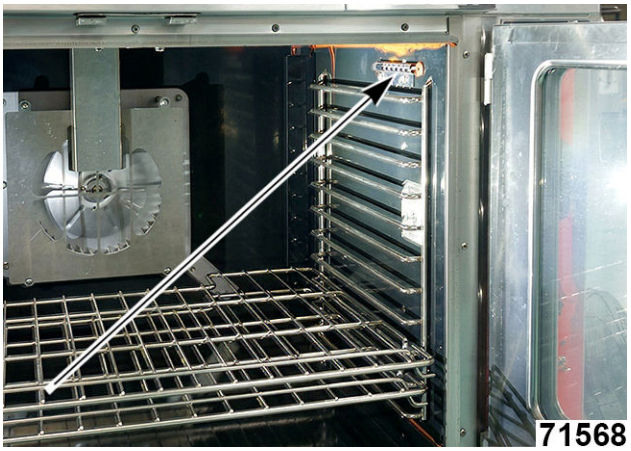


Fig. 61

NOTE: A temperature reading must be taken near the oven's probe. The recommended tool is a digital temperature tester with a K-type thermocouple.

3. Attach/secure temperature tester probe in close proximity to oven probe.
4. Close doors.
5. Remove CONTROL PANEL.
6. Remove probe lead wires from solid state temperature control (Fig. 62).

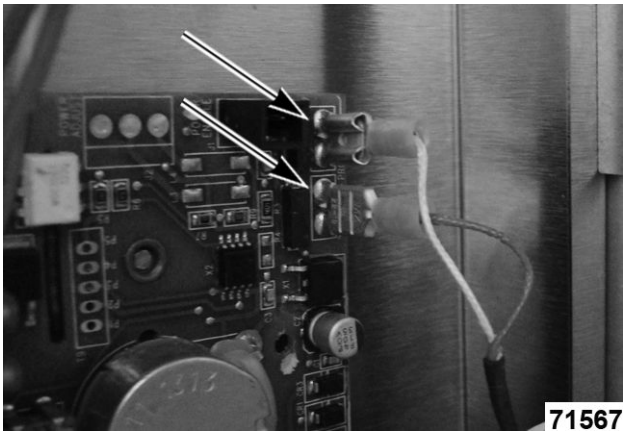


Fig. 62

7. Place digital multimeter lead on each wire.

NOTE: Prevent false readings by avoiding bare hand contact with meter leads.

8. Set digital multimeter to lowest setting for ohms denoted by Ω symbol.

NOTE: Colors of wires and probe leads do not matter.

9. Record temperature reading on temperature tester.

NOTE: Make sure temperature reading is stabilized before proceeding.

10. Record resistance reading.
11. Reference Temperature/Resistance Range Chart and compare temperature and resistance readings.

NOTE: If measured resistance values are inside given tolerance then probe is functioning properly. If meter reads OL (open probe), or (0) (dead short), or is out of range, then replace probe and retest.

Temperature/Resistance Range Chart

Temperature (°F)	Range (kΩ)	Range (Ω)
60	150.370 - 153.408	150,370 - 153,408
65	132.602 - 135.281	132,602 - 135,281
70	117.211 - 119.579	117,211 - 119,579
75	103.847 - 105.944	103,847 - 105,944
77	99.000 - 101.000	99,000 - 101,000
80	92.212 - 94.075	92,212 - 94,075
100	57.376 - 60.925	57,376 - 60,925
150	21.006 - 22.306	21,006 - 22,306
200	8.956 - 9.510	8,956 - 9,510
250	4.217 - 4.661	4,217 - 4,661
300	2.233 - 2.468	2,233 - 2,468
350	1.238 - 1.454	1,238 - 1,454
400	0.757 - 0.888	757 - 888
450	0.488 - 0.573	488 - 573
500	0.330 - 0.387	330 - 387

12. Reverse procedure to install.

GAS VALVE PRESSURE CHECK



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Turn gas supply off at manual shutoff valve.
2. Remove the RIGHT SIDE PANEL.

NOTE: If right side panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

3. Remove the plug from the manifold pressure port.



Fig. 63

4. Install hose barb adapter and attach manometer tube.
5. Turn gas supply to the oven back on.
6. Plug the unit in and turn the power switch ON.
7. Set the temperature control to its highest setting and allow burner to ignite.

NOTE: The burner must be lit during test.

NOTE: Accurate gas pressure readings can only be made with the gas on and the burner lit.

GAS TYPE	PRESSURE READINGS (IN W.C.)			
	MANIFOLD	LINE		
		RECOMMENDED	MIN	MAX
Natural	5.0	8.0	6.0	14.0
Propane	10.0	11.0	11.0	
NOTE: If the incoming line pressure to the valve is **less** than the minimum stated, then the manifold pressure will not be maintained				

VERIFICATION OF SPARK AT IGNITOR



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the BOTTOM FRONT COVER.
2. Disconnect the high voltage "ignition cable" from the spark ignitor.

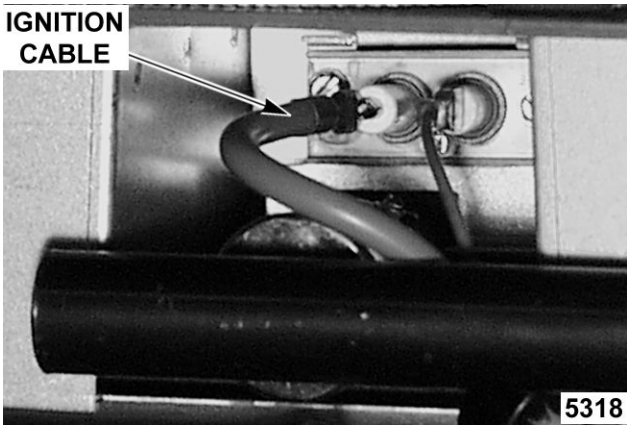


Fig. 64

⚠ WARNING

DO NOT HOLD THE WIRE WITH YOUR HANDS FOR THIS TEST. THE MANUAL GAS VALVE MUST BE CLOSED.

3. Clamp the ignition cable in a manner that will position the end of the cable 3/16" from the oven frame (bare metal surface).

NOTE: It is critical that the cable be held 3/16" away from the surface of the oven frame or sparking may not occur even though the sparking circuit is functioning properly.

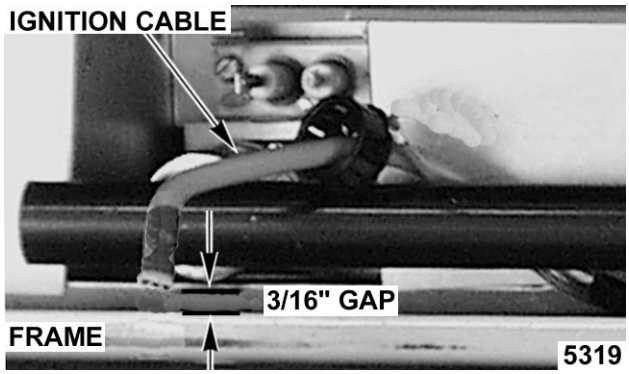


Fig. 65

4. Plug the oven in and set the temperature control to the maximum setting.
5. Turn the power switch ON.
6. Sparking should occur after a 4 second delay, for a duration of 7 seconds then repeat twice after a 15 second purge time. Arching from the ignition cable to the oven frame should be observed.

DOOR SWITCH ADJUSTMENT



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the Top Front Cover.
2. Door operation:
   A. **Independent doors** - The switch actuator should be operated by the switch lever when the right door is between 1" and 1 ½" from being closed.
   B. **Simultaneous doors** - The switch actuator should be operated by the switch lever when the right door is ½" from being closed.
3. If adjustment is necessary, bend the switch actuator to obtain the proper setting.

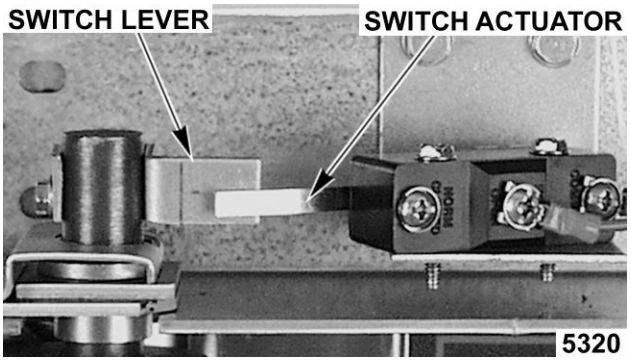


Fig. 66

4. Install the top front cover.
5. Apply power to the oven and check for proper operation.

BLOWER ADJUSTMENT



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the blower motor and mounting assembly by following steps 1 through 8 as outlined under BLOWER AND MOTOR Ending at Production Date of 3/18/2018 .
2. Loosen the motor mounting bolts.
3. Adjust the motor position until the blower is parallel to and 1/4 inch away from the motor mounting plate. Check for squareness of the blower to the motor mounting plate at the top, bottom, left and right of the blower.
   A. If the blower is square then tighten motor mounting bolts and proceed to Step 4..
   B. If the blower is not square continue adjusting until proper spacing is achieved then tighten motor mounting bolts.

NOTE: If necessary, place shims between motor and frame.

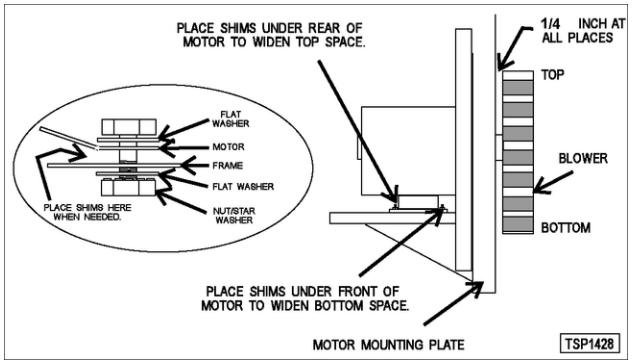


Fig. 67

4. Reverse the procedure to install.

DOOR ADJUSTMENT



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Check the doors to make sure they have an equal gap between them and that the vertical edge of the door is parallel to the vertical door seal. If the doors are not positioned in this manner, adjust the doors as described.

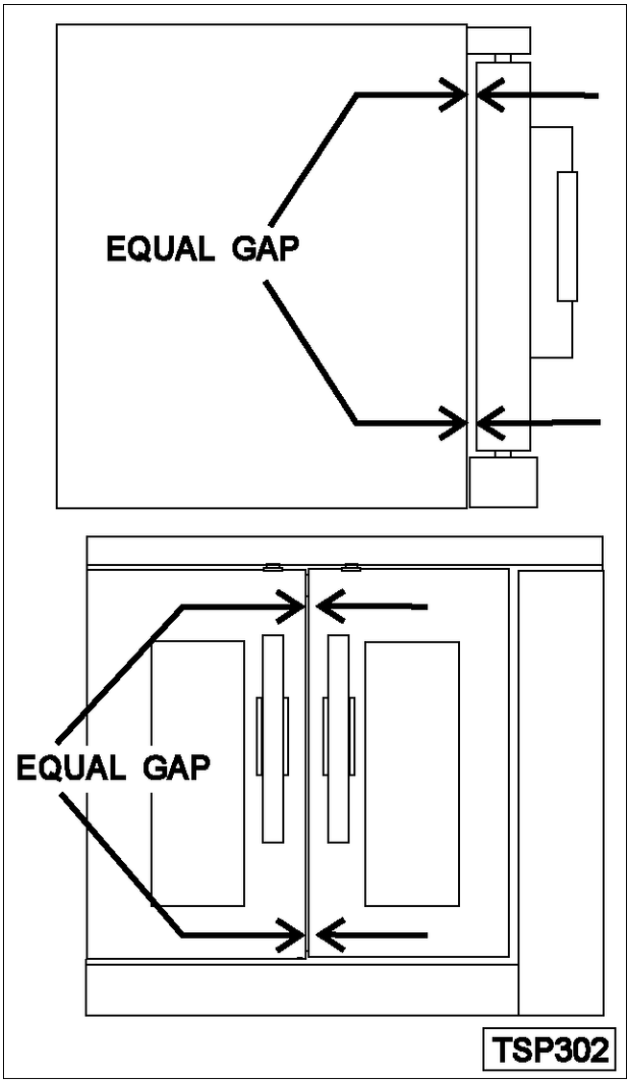


Fig. 68

2. Remove the TOP FRONT COVER.
3. Loosen the screws that secure the upper door bearings and related hardware, just enough to allow door movement.

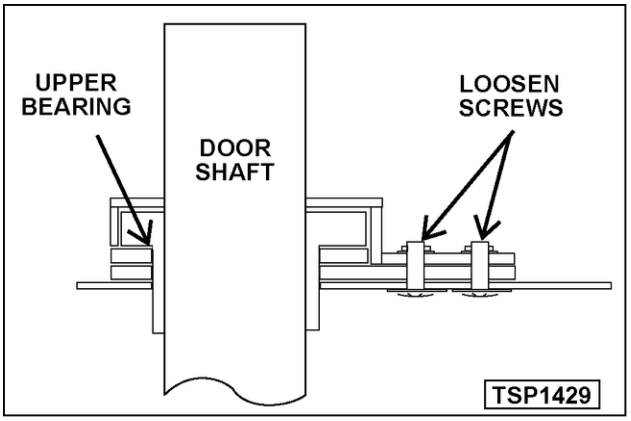


Fig. 69

4. Move the door until proper alignment is achieved then tighten the screws on the upper door bearing hardware.
5. Repeat step 3 and 4 on the opposite door, if necessary.

DOOR STRIKE ADJUSTMENT (INDEPENDENT DOORS)

NOTE: For units with serial number starting with 48 made after 8/12/07 and serial number starting with 54 made after 8/26/07.



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove TOP FRONT COVER.
2. Open the doors and inspect door strike for proper shape.
   A. Replace if bent. Do not bend strike plate.
   B. If adjustment is necessary, loosen fasteners, close doors and insure contact between door inner surface and upper horizontal seal. Slide door strike plate until contact with roller latch is made. Tighten strike plate fasteners.

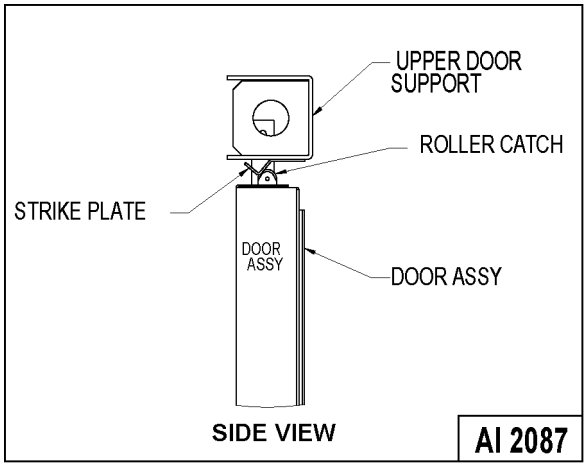


Fig. 70

3. Open and close the doors several times while observing the roller latch and strike plate operation.
   A. Replace roller latch if malfunctioning as outlined under ROLLER LATCH ASSEMBLY (INDEPENDENT DOORS) and adjust as outlined in this procedure.
4. Each oven door should open with a force of 8 to 25 pounds when pulled at the handle. The adjustments must allow the doors to remain closed during normal operation and allow opening without exertion by the user.

FLAME SENSE CURRENT TEST



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove screws securing right side of the top front cover, bottom front cover and control panel.
2. Remove right side panel mounting screws.

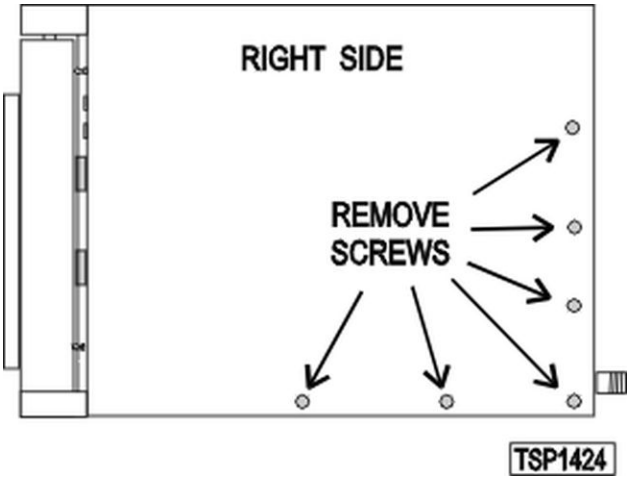


Fig. 71

3. Pull right side panel out from the bottom then down to remove.
4. Remove top screw and loosen bottom screw securing the ignition control module mounting bracket.

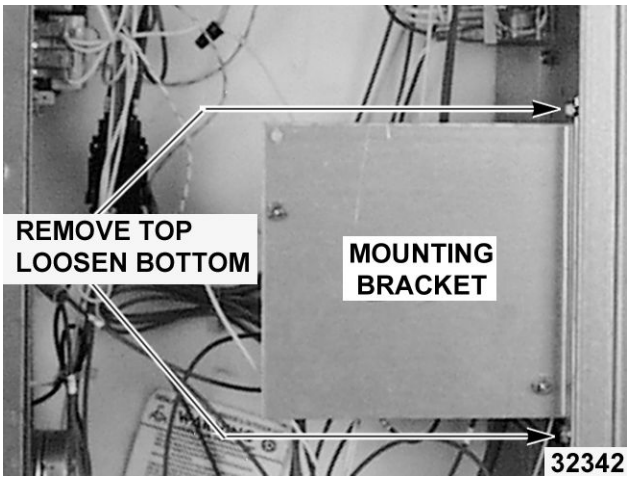


Fig. 72

5. Position bracket horizontally by pulling forward 90 degrees, with ignition module facing up for accessibility.
6. Re-apply power to unit.
7. Set VOM meter to read Micro Amps.
8. Place red (Positive) lead on FC+ and black (Negative) lead on FC- terminals on ignition module to test.

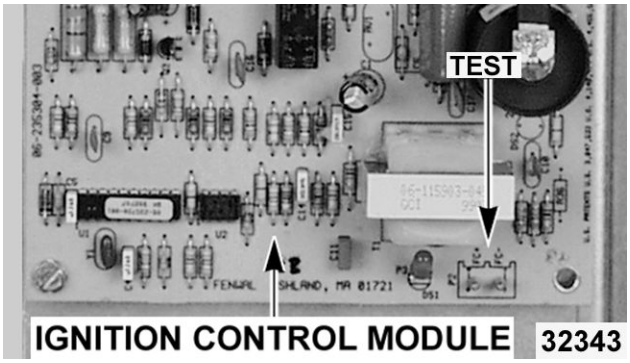


Fig. 73

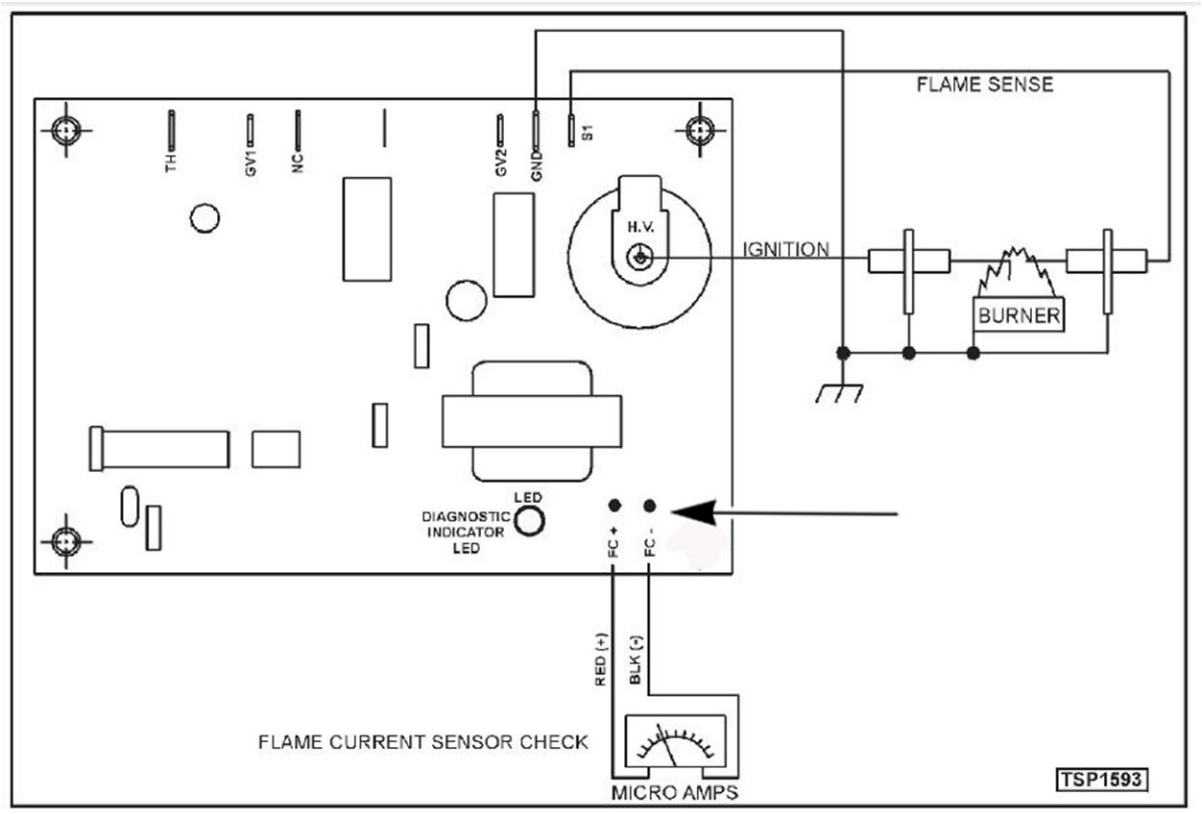


Fig. 74

9. Set the oven to call for heat and measure the Micro Amps reading.

NOTICE

Micro Amp reading from the flame sensor should measure a minimum of 0.7 Micro Amps to maintain burner ignition.

- If Micro amp reading is correct and the burner lights but does not maintain flame, replace ignition module.
- If Micro Amp reading is **NOT** correct, check wiring from flame sensor/igniter to the ignition module. If wiring is OK, adjust, clean or replace flame sensor/igniter.

10. Install ignition control module mounting bracket and right panel.
11. Verify operation.

ELECTRICAL OPERATION

COMPONENT LOCATION

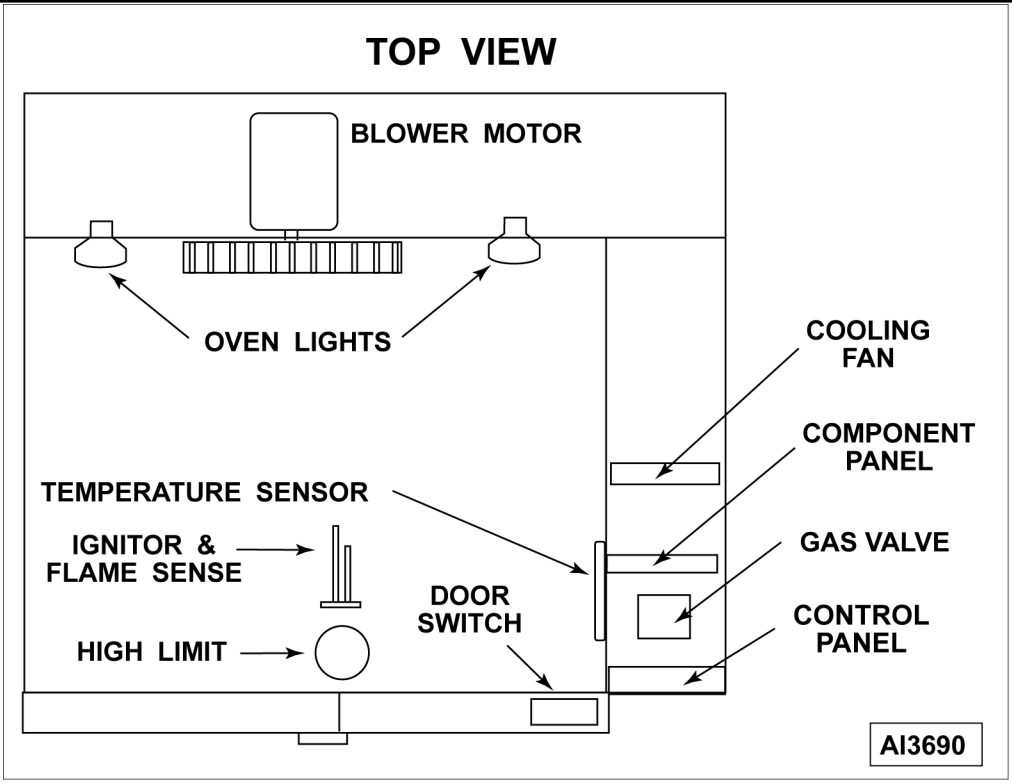


Fig. 75 SHOWN IS UP TO MANUFACTURE DATE OF3/18/2018

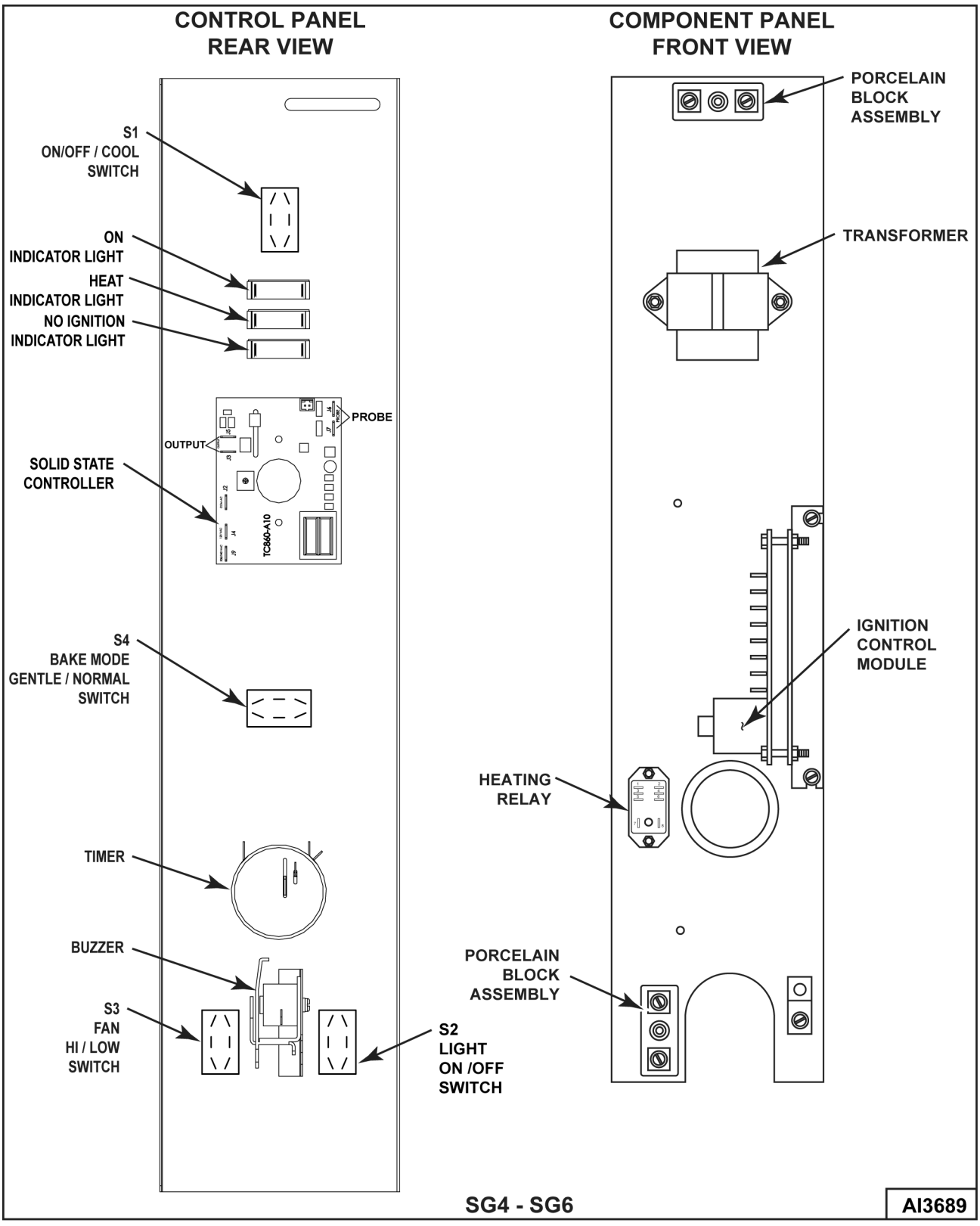


Fig. 76 ENDING AT PRODUCTION DATE OF 3/18/2018

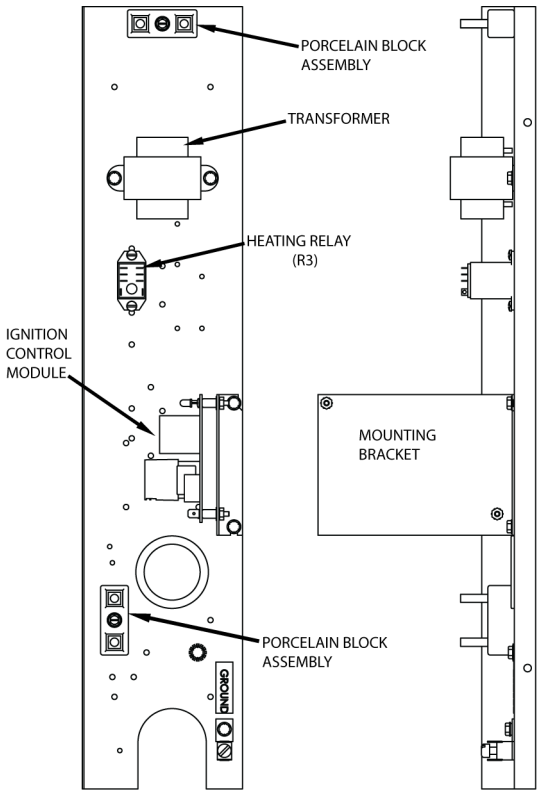


Fig. 77 STARTING AT PRODUCTION DATE 3/18/2018 - 120V STANDARD

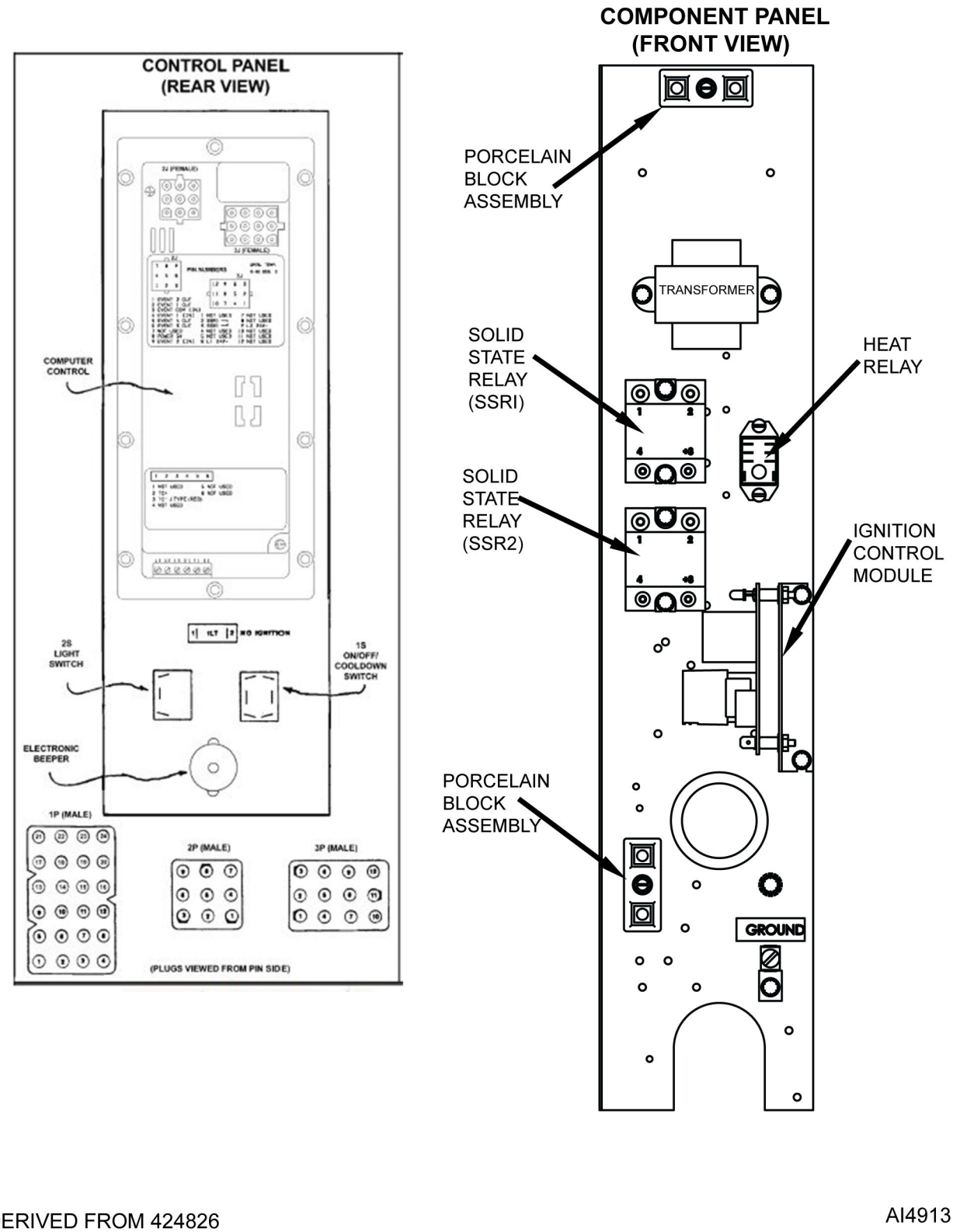


Fig. 78 STARTING AT PRODUCTION DATE 3/18/2018 - 120V COMPUTER

COMPONENT FUNCTION

Power Switch (S1)	Determines the mode of operation; ON, OFF, or COOL DOWN.
Oven Light Switch (S2)	Controls the oven cavity lights.
Fan Speed Switch Hi/Low (S3)	Controls blower motor speed between Hi and Low settings.
Bake Mode Switch (S4)	Selects the cooking mode of the oven between Normal and Gentle Bake. Controls call for heat 100% for Normal 75% for Gentle Bake.
Buzzer	Signals the end of a cook cycle.
Timer	Counts the time of the product and signals the buzzer at the end of the cycle.
Door Switch	Allows the oven to operate when the doors are closed but stops the oven from operating when the doors are opened.
Blower Motor	Operates the oven cavity blower (convection fan). Also, an internal centrifugal switch on the motor is utilized to allow the connection of power to the heat relay (R3) when the motor is at operating speed.
Transformer (T1)	Provides 24VAC power to the ignition control module and heating circuit.
Solid State Temperature Control	Monitors temperature sensor and regulates the oven cavity temperature by controlling the heat relay (R3) through the blower motor centrifugal switch contacts.
High Limit Thermostat	Protects the oven from temperatures above 550°F by removing power from the 1st valve (safety) on the dual solenoid gas valve which stops the flow of gas to the burner. Auto resets at 500°F.
Ignition Control Module	Controls the gas ignition cycle - Energizes the 2nd valve (main) on the dual solenoid gas valve, generates spark for burner ignition, monitors the presence of a flame and controls the No Ignition light. The ignition times are: 4 second self diagnostic test (initial power ON); 7 second ignition trial; 3 ignition trials with a 15 second purge between each trial.
Igniter/Flame Sense	Ignites the gas and senses the presence of a flame. The flame presence generates a micro-amp "flame sense" current that is monitored by the ignition control module. A flame sense current of 1.0 micro amp (minimum) is required to maintain burner ignition.
Power On Light	Lit whenever the power switch (S1) is turned to ON or Cool Down mode.

Heat Light	Lit whenever temperature control is calling for heat.
No Ignition Light	Lit when power is turned ON, during ignition trial & gas purge time and when no flame is detected by flame sensor. If the oven fails to ignite after 3 attempts, it will remain lit until power is reset.
Temperature Probe	Senses the oven temperature for the solid state temperature control. Converts the temperature into a resistance valve which is monitored by the temperature control board. The probe is an RTD (resistance temperature detector) of the Thermistor type. As temperature increases the resistance value decreases.
Gas Valve (Dual Solenoid)	Allows gas flow to the burner when the 1st valve (safety) and 2nd valve (main) solenoid coils are both energized.
Cooling Fan	Circulates cooler air from rear of oven forward to cool components in the control area.

SEQUENCE OF OPERATION

SG4, SG6 (Solid State Temperature Control)

Schematic diagram AI3691 will be used to explain the electrical sequence of operation.

Normal Cycle

1. Conditions.
   - A. Oven connected to correct voltage.
     1) L1 (HOT) to power switch (S1).
     2) L2 (NEUTRAL or SECOND LINE) to one side of the following components: power ON light, heat light, temperature control board terminal T2 (120VAC) or terminal T3 (208- 240VAC), oven cavity lights, buzzer, "Cook" timer motor, heat relay coil (R3), convection fan motor common ©), transformer primary (T1), motor speed (Hi/Low) switch and the component cooling fan.
   - B. Oven properly grounded.
   - C. Gas supply valve ON.
   - D. Gas combination control valve ON.
   - E. Power switch (S1) OFF.
   - F. Oven light switch (S2) ON/OFF (position has no affect on the function of the "Cook" cycle).
   - G. Temperature control dial set to lowest temperature (fully counterclockwise).
   - H. High limit switch CLOSED.
   - I. Timer in the OFF position.
   - J. Oven doors Closed.
     1) Door switch contacts CLOSED.
   - K. Oven cavity temperature below 140°F.
2. Set temperature control dial to desired temperature.
3. Power switch (S1) turned ON.
   - A. Component cooling fan energized.
   - B. Power ON light (Amber) comes ON.
   - C. Power to one side of the following components: Timer terminal 1, transformer primary (T1).

NOTE: Power is available to the oven light switch (wire #20) to turn the oven cavity lights ON when the light switch is turned ON; and power is available to the normally open N.O. side (wire #28) of the door switch contacts and connects power to additional components when the door switch contacts are CLOSED (door closed).

1) Transformer (T1) energized.
   a. Power (24VAC) to one side of the following components: heat relay (R3) normally open (N.O.) contacts, high limit --- connected through the normally closed (N.C.) contacts to the 1st valve (safety) on the dual solenoid gas valve.

a) 1st valve (safety) on the gas valve energized.

NOTE: Gas does not flow to the burner until the 2nd valve (main) is energized.

2) With door switch closed, power is applied to motor speed switch (Hi/Low).

a. When the convection fan motor reaches operating speed, the centrifugal switch (N.O.) on the motor closes.

b. Power to normally open (N.O.) side of internal relay contacts (terminal 7) on the temperature control board.

3) Power is also connected back through a second set of contacts on the power switch (S1) to terminal 8 on the temperature control board.

a. Solid state temperature control energized. If the oven temperature is below set point, the temperature control will energize its internal relay. The normally open (N.O.) contacts close and apply power to the following components:

a) Heat light (clear) comes ON.

b) Power is connected through the centrifugal switch contacts on the convection fan motor, heat relay (R3) is energized, (R3) contacts (N.O.) close and the heating circuit is powered.

c) Ignition control module is energized.

d) No ignition light (red) comes ON, module performs a self diagnostic test for 4 seconds, 2nd valve (main) on the gas valve is energized. Gas starts to flow to the burner, sparking begins, the "no ignition" light goes out and burner lights. Sparking continues for up to 7 seconds or until a flame is established. If a flame is "sensed", the "no ignition" light stays out and burner remains lit. If a flame is not "sensed" after 7 seconds of sparking, the "no ignition" light comes back on, 2nd valve (main) on the gas valve is de-energize and gas flow to the burner stops. Ignition trial cycle repeats after a 15 second purge between cycles for two additional tries before locking out. To reset after a lockout, turn power switch (S1) OFF then ON.

4. Oven reaches set temperature.

A. Temperature control de-energizes internal relay and the normally open (N.O.) contacts OPEN.

1) Heat light goes out.

2) Power removed from heat relay (R3).

a. R3 normally open (N.O.) contacts OPEN.

a) Power removed from 2nd valve (main) on the gas valve and gas flow to the burner stops.

5. The oven will continue to cycle on the temperature control until the doors are opened or power switch (S1) is turned to the OFF or COOL DOWN position.

Cool Down Cycle (Solid State Temperature Control)

1. Conditions.

A. Oven is ON.

B. Oven cavity temperature needs to be lowered.

C. Doors are open.

1) Door switch contacts OPEN

D. Cook timer in the OFF position.

2. Power Switch (S1) turned to COOL DOWN.

NOTE: With door switch contacts OPEN (doors open), the convection fan motor will still run and continue to cool the oven. However, power would be removed from the following components: Power ON light (goes out), transformer T1 (de-energized) and to the component cooling fan.

A. Power to motor speed switch (Hi/Low).

1) Motor speed (Hi/Low) relay (R1) is energized and contacts change state.

a. Convection fan motor energized.

b. When Convection fan motor reaches operating speed the

centrifugal switch on the motor closes but no power is available for connection to other components.

3. If door switch is CLOSED (doors closed), power is supplied to one side of the following components: Power ON light (Amber), oven light switch (S2), timer terminal 1, transformer primary (T1) and component cooling fan.
   A. Power ON light (Amber) comes ON.
   B. Transformer (T1) energized.
      1) Power (24VAC) to one side of the following components: heat relay (R3) normally open (N.O.) contacts, high limit --- connected through the normally closed (N.C.) contacts to the 1st valve (safety) on the dual solenoid gas valve.
         a. 1st valve (safety) on the gas valve energized.

NOTE: Gas does not flow to the burner until the 2nd valve (main) is energized.

4. The oven will remain in this condition until the power switch (S1) is turned to the OFF or ON position.

SCHEMATICS

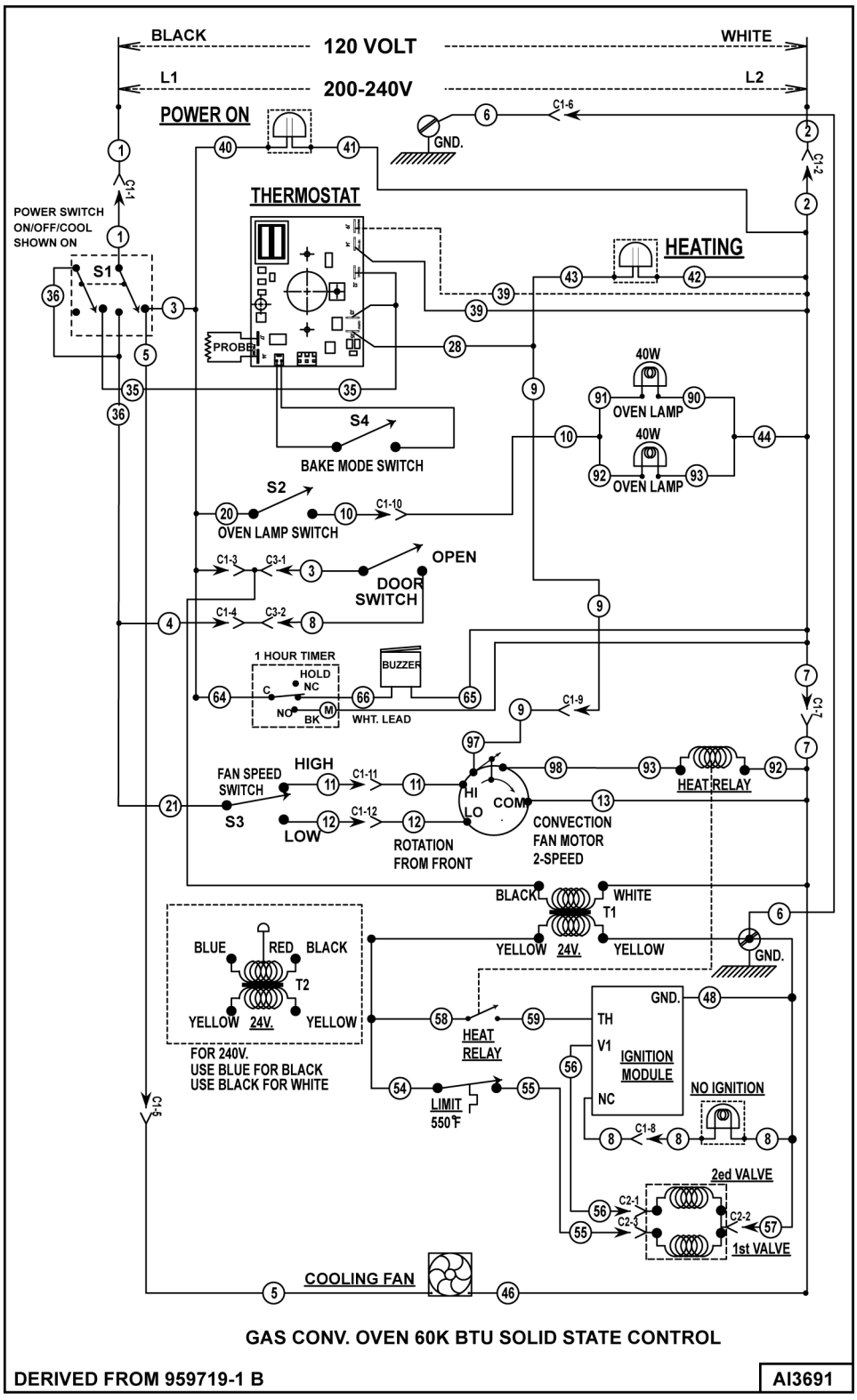
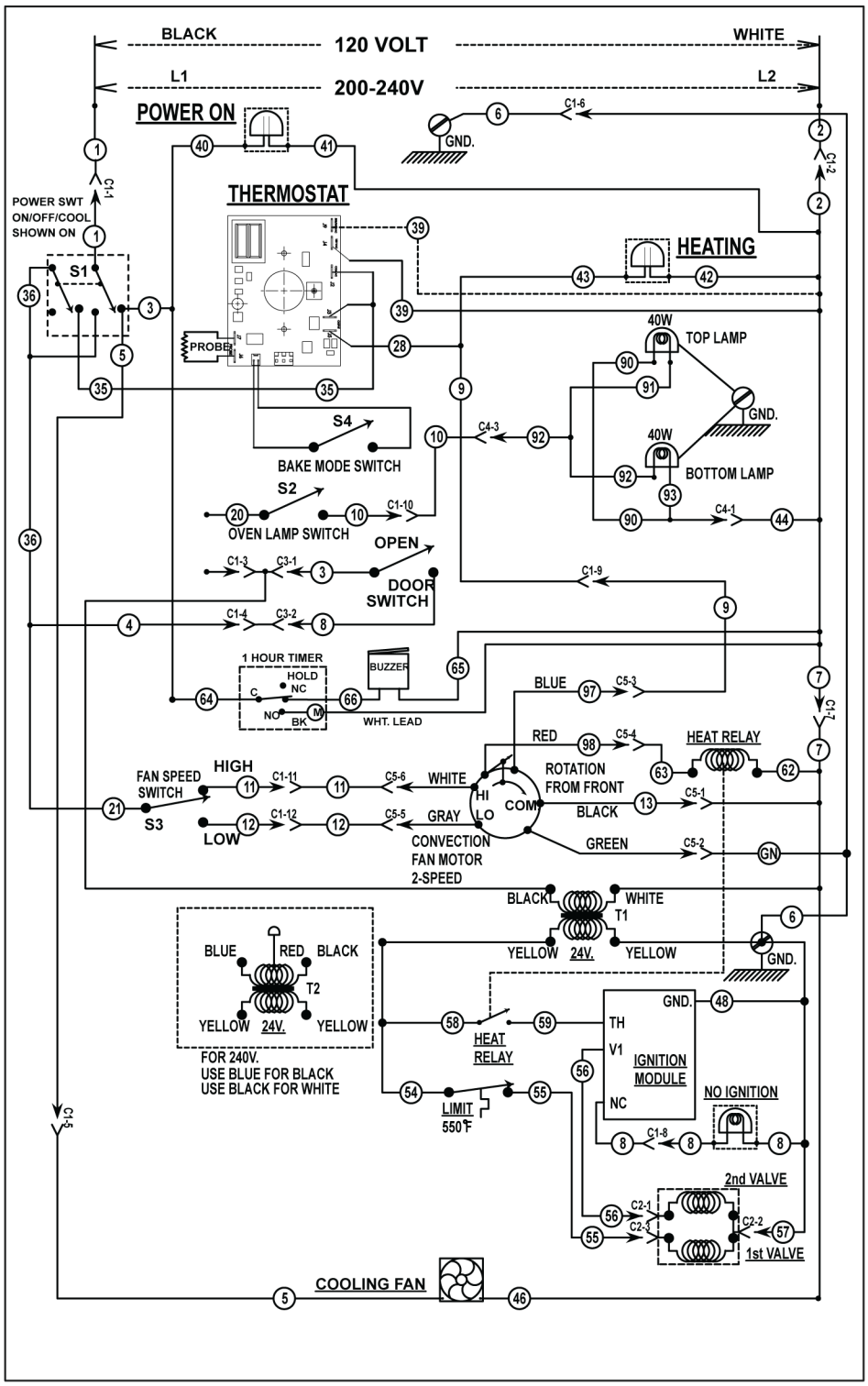


Fig. 79 ENDING AT PRODUCTION DATE OF 3/18/2018



SG4 & SG6 SOLID STATE CONVECTION OVEN 120 TO 240V.

DERIVED FROM 959719-1 Rev. C

AI4893

Fig. 80 STARTING AT PRODUCTION DATE OF 3/19/2018

WIRING DIAGRAM

See Wiring Diagram AI3692 for production date up to 3/18/2018

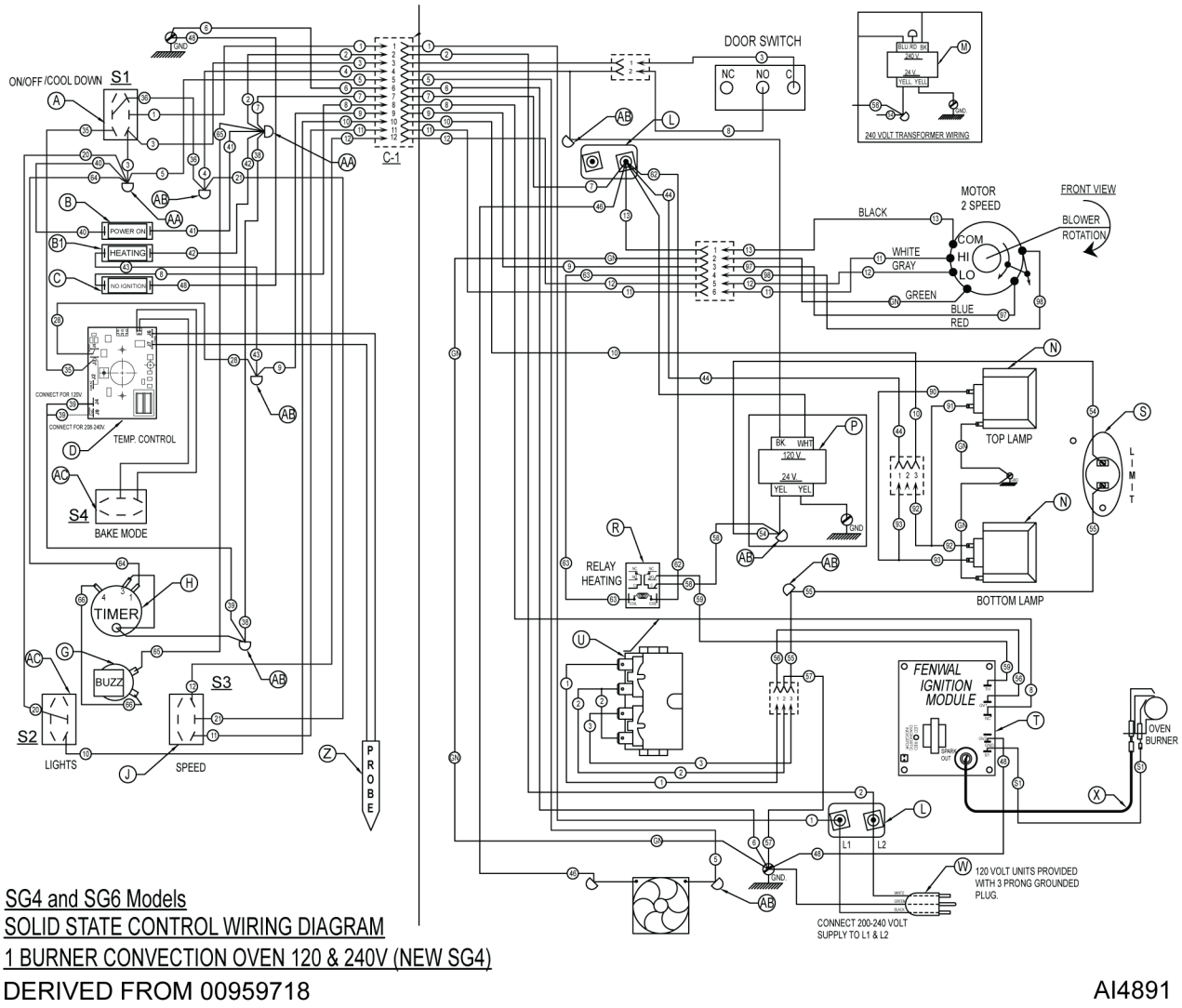


Fig. 81 STARTING AT PRODUCTION DATE OF 3/19/2018

TROUBLESHOOTING

ALL MODELS



⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

SYMPTOMS	POSSIBLE CAUSES
Blower motor doesn't run with 1S in "Cool Down" or "On" position.	1. Line voltage. 2. Power switch (S1) malfunction. 3. Switch (S3) malfunction. 4. Interconnecting wiring malfunction. 5. Motor inoperable.
Blower motor doesn't run in "On" position. "Cool Down" functions OK.	1. Door switch malfunction. 2. Power switch contacts inoperative. 3. Interconnecting wiring malfunction.
Blower motor doesn't run in "Cool Down" position. Runs OK in "On" position.	1. Power switch malfunction. 2. Interconnecting wiring malfunction.
Gas does not ignite; No spark; No Ignition Light ON.	1. Shorted electrode on ignitor/flame sense. 2. Ignitor cable (high voltage) OPEN. 3. Heat relay (R3) malfunction. 4. Transformer (T1) inoperative. 5. High limit thermostat open. 6. Interconnecting wiring malfunction. 7. Ignition Module malfunction.
Sparks but gas does not ignite.	1. Gas solenoid valve OFF or inoperative. 2. Manual gas valve CLOSED. 3. Gas supply OFF or Insufficient gas pressure. 4. Interconnecting wiring malfunction. 5. Ignition Module malfunction.
Gas ignites but will not maintain flame.	1. Igniter lead connections malfunction. 2. Ignitor ground inoperative.

SYMPTOMS	POSSIBLE CAUSES
	3. Ignitor/flame sense malfunction. 4. Insufficient gas pressure. 5. Snorkel vent plugged, obstructed or missing. 6. Incorrect polarity from transformer (T1) to Ignition module.
Excessive or low heat.	1. Temperature probe malfunction. 2. Temperature control board malfunction. 3. Gas pressure Insufficient. 4. Gas orifice plugged or obstructed.
Mechanical Timer inoperative or not functioning properly.	1. Interconnecting wiring malfunction. 2. Line voltage incorrect. 3. Timer malfunction.
Component cooling Fan does not run.	1. Motor inoperable. 2. Interconnecting wiring malfunction.
Uneven Cooking.	1. Convection Fan motor speed/direction. 2. Poor combustion. A. Gas pressure incorrect. B. Exhaust vent plugged or obstructed. C. Snorkel Vent plugged or obstructed. 3. Air flow Baffles missing or damaged.
Intermittent problems.	1. High ambient temperatures. 2. Wiring connections loose. 3. Cooling fan malfunction.
No power to temperature control.	1. Power switch (S1) in “Cool Down”. 2. Door or door switch open.

IGNITION MODULE DIAGNOSTICS

NUMBER OF LED FLASHES	INDICATES	POSSIBLE CAUSE
2 Flashes	Burner flame with no call for heat.	1. Main gas valve stuck open, burner on with no call for heat from the temperature control system. Replace main gas valve. 2. Check flame sensor and sensor wire. 3. Ignition module malfunction.
3 Flashes	Ignition system has locked out.	1. Ignition module could not “Prove” flame after three tries

NUMBER OF LED FLASHES	INDICATES	POSSIBLE CAUSE
		for ignition within the lockout time timing provided. A. Check for gas supply to burner. B. Check for spark to ignition electrode. 1) Check spark gap (gap should be 1/8"). C. Check ignition cable for continuity. D. Check for flame current in flame sense wire (0.000001 Amp Min. DC) using FC designated terminals. 1) Check burner adjustment (air/gas). **NOTE:** If A thru D check out, replace ignition module.
4 Flashes	Internal board problem.	1. Ignition module malfunction. Remove power from “R” terminal for five seconds then reconnect. If fault remains, replace ignition module.