Internal Use Only

# 30” ELECTRIC RANGE
# SERVICE MANUAL

## MODEL: LSE4613ST
## LSE4613BD

**CAUTION**
BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

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# FORWARD

This LG Service Manual, “ 30” Freestanding Self-Cleaning Electric Range,” provides the technician with information on the operation and service of the Freestanding Self-Cleaning Electric Range. It is to be used as a training Service Manual. For specific information on the model being serviced, refer to the “Owner’s Manual” or “Tech Sheet” provided with the electric range.

# SAFETY PRECAUTIONS

- Repairs of the appliance should be carried out by a licensed technician only. Incorrect repairs may result in dangerous situations. If you need repairs, contact an LG Service Center or your dealer.
- If the power cord is defective, it must be replaced by a qualified service agent with a UL listed range cord.
- Electrical leads and cables should not be allowed to touch the oven.
- Rating plate is located on the left side of warming drawer.
- The power supply of the appliance should be turned off when it is being repaired.

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

- **DO NOT Touch when the oven operates.**

- The interior parts will be very hot.

LG Electronics assumes no responsibility for any repairs made
on our products by anyone other than Authorized Service Technicians.

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# GENERAL

## IMPORTANT SAFETY INSTRUCTIONS

Read and follow all instructions before using your oven to prevent the risk of fire, electric shock, injury to person, or damage when using the range. This guide don't cover all possible conditions that may occur. For further assistance contact your service agent or manufacturer.

⚠ This is the safety alert symbol. This symbol alerts you to potential hazards that can kill or hunt you and others. All safety messages will follow the safety alert symbol and either the word "WARNING" or "CAUTION". These word means :

**⚠ WARNING** This symbol will alert you to hazards or unsafe practices which could cause serious bodily harm or death.

**⚠ CAUTION** This symbol will alert you to hazards or unsafe practices which could cause bodily injury or property damage.

### ⚠ WARNING

- **DO NOT step or sit on the door and install the Anti-Tip Bracket packed with range.**
  - The range could be tipped and injury might result from spilled hot liquid, food, or the range itself.
  - If the range is pulled away from the wall for cleaning, service, or any other reason, ensure that the Anti-Tip Device is properly reengaged when the range is pushed back against the wall.
- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**
  - Failure to do so can result in severe personal injury, death or electrical shock.
- **DO NOT touch heating elements or interior surfaces of oven.**
  - Heating element may be hot even though they are dark in color.
  - Interior surfaces of an oven become hot enough to cause burns.
- **During and after use, do not touch, or let clothing or other flammable materials contact heating elements or interior surfaces of oven until they have had sufficient time to cool.**
  - Other surfaces of the appliance may become hot enough to cause burns among these surfaces are oven vent openings and surfaces near these openings, oven doors, and windows of oven doors.
- **DO NOT store items of interest to children in cabinets above a range or on the back guard of a range.**
  - Children climbing on the range to reach items could be seriously injured.

### ⚠ CAUTION

- **Always use Pot Holders or oven mitts when removing food from the Warming Drawer.**
  - You can be burned as cookware and plates will be hot.
- **Be careful when you work on the electric range handling the sheet metal part.**
  - Sharp edge may be present and you can cut yourself.
- **Be careful not to bend the fan blade**
  - Failure to do so can result in vibration, noise, and poor performance of convection when operating.
- **Be careful not to scratch or chip the oven liner paint when you remove the oven light socket in the next step.**
- **Turn power OFF before removing the Warming Drawer.**
- **Be careful when removing and lifting the door.**
- **DO NOT lift the door by the handle.**
  - Failure to do so can result in personal injury as the door is very heavy.

# IMPORTANT SAFETY INSTRUCTIONS

- Be sure your appliance is properly installed and grounded by a qualified technician.
- Do not repair or replace any part of the appliance unless specifically recommended in the manual.
  All other servicing should be referred to a qualified technician.
- Always disconnect power to appliance before servicing by removing the fuse or switching off the circuit breaker

## ⚠ WARNING

- **DO NOT step or sit on the door and install the Anti-Tip Bracket packed with range.**

- The range could be tipped and injury might result from spilled hot liquid, food, or the range itself.
- If the range is pulled away from the wall for cleaning, service, or any other reason, ensure that the Anti-Tip Device is properly reengaged when the range is pushed back against the wall.

To reduce the risk of tipping of the range, the range must be secured by properly installed anti-tip devices. To check if the bracket is installed properly,

- **Warming drawer :** grasp the top rear edge of the Range and carefully attempt to tilt it forward.
  verify that the anti-tip devices are engaged.
- **Storage drawer :** Remove drawer and verify leveling leg is inserted into and fully secured by the anti-tip devices.

Refer to the installation manual for proper anti-tip bracket installation.

## ⚠ WARNING

- **DO NOT touch heating elements or interior surfaces of oven.**

- Heating element may be hot even though they are dark in color.
- Interior surfaces of an oven become hot enough to cause burns.

- **During and after use, do not touch, or let clothing or other flammable materials contact heating elements or interior surfaces of oven until they have had sufficient time to cool.**

- Other surfaces of the appliance may become hot enough to cause burns among these surfaces are oven vent openings and surfaces near these openings, oven doors, and windows of oven doors.

## ⚠ WARNING

- **DO NOT store items of interest to children in cabinets above a range or on the back guard of a range.**

- Children climbing on the range to reach items could be seriously injured.

# IMPORTANT SAFETY INSTRUCTIONS

- **Do Not Leave Children Alone -** Children should not be left alone or unattended in area where appliance is in use. They should never be allowed to sit or stand on any part of the appliance.
- **Never Use Your Appliance for Warming or Heating the Room.**
- **Storage in or on Appliance –** Flammable materials should not be stored in an oven or near surface units. Be sure all packing materials are removed from the appliance before operating it. Keep plastics, clothes and paper away from parts of the appliance that may become hot
- **Wear Proper Apparel –** Loose-fitting or hanging garments should never be worn while using the appliance.
- **Do Not Use Water on Grease Fires –** Turn off oven to avoid spreading the flame. Smother the fire or flame by closing the door or use dry chemical, baking soda or foam- type extinguisher.
- **Use Only Dry Potholders –** Moist or damp potholders on hot surfaces may result in burns from steam.
  Do not let potholder touch hot heating elements. Do not use a towel or other bulky cloth.

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

## SURFACE COOKING UNITS

- **Use Proper Pan Size –** This appliance is equipped with one or more surface units of different sizes. Select utensils having flat bottoms large enough to cover the surface unit heating element. The use of undersized utensils will expose a portion of the heating element to direct contact and may result in ignition of clothing. Proper relationship of utensil to burner will also improve efficiency.
- **Never Leave Surface Units Unattended at High Heat Settings –** Boil overs may cause smoking and greasy spillovers may ignite.
- **Make Sure Reflector Pans or Drip Bowls Are in Place –** Absence of these pans or bowls during cooking may subject wiring or components underneath to damage.
- **Protective Liners –** Do not use aluminum foil to line surface unit drip bowls or oven bottoms, except as suggested in the manual. Improper installation of these liners may result in a risk of electric shock, or fire.
- **Glazed Cooking Utensils –** Only certain types of glass, glass/ceramic, ceramic, earthenware, or other glazed utensils are suitable for range-top service without breaking due to the sudden change in temperature.
- **Utensil Handles Should Be Turned Inward and Not Extend Over Adjacent Surface Units –** To reduce the risk of burns, ignition of flammable materials, and spillage due to unintentional contact with the utensil, the handle of a utensil should be positioned so that it is turned inward, and does not extend over adjacent surface units.
- **Do Not Soak Removable Heating Elements –** Heating elements should never be immersed in water.
- Be sure you know which control pads operate each surface unit. Make sure you turned on the correct surface unit.

## SELF-CLEAN OVENS

- **Do Not Clean Door Gasket –** The door gasket is essential for a good seal. Care should be taken not to rub, damage, or move the gasket.
- **Do Not Use Oven Cleaners –** No commercial oven cleaner or oven liner protective coating of any kind should be used in or around any part of the oven.
- **Clean in the self-clean cycle only parts listed in this manual.** Before self-cleaning the oven, remove the broiler pan and any utensils from the oven.
- **Never keep pet birds in the kitchen –** the health of birds is extremely sensitive to the fumes released during an oven self-clean cycle. Fumes may be harmful or fatal to birds. Move birds to well-ventilated room.
- **Important Instruction –** In the event the self-clean mode "F" code goes on, or three long beeps sound, oven is malfunctioning in the self-clean mode. Turn off or disconnect appliance from power supply and have serviced by a qualified technician.

## VENTILATING HOODS:

- **Clean Ventilating Hoods Frequently –** Grease should not be allowed to accumulate on hood or filter.
- **When flaming foods under the hood, turn the fan on.**

## OVEN

- **Use Care When Opening Door –** Let hot air or steam escape before you remove or replace food in the oven
- **Do Not Heat Unopened Food Containers –** Build-up of pressure may cause container to burst and result in injury.
- **Keep Oven Vent Ducts Unobstructed –** the oven vent is located above the left rear surface unit. this area could become hot during oven use. Never block this vent and never place plastic or heat-sensitive items on vent
- **Placement of Oven Racks –** Always place oven racks in desired location while oven is cool. If rack must be moved while oven is hot, do not let potholder contact hot heating element in oven.
- **Do Not** allow aluminum foil or meat probe to contact heating elements.

## GLASS / CERAMIC COOKING SURFACES

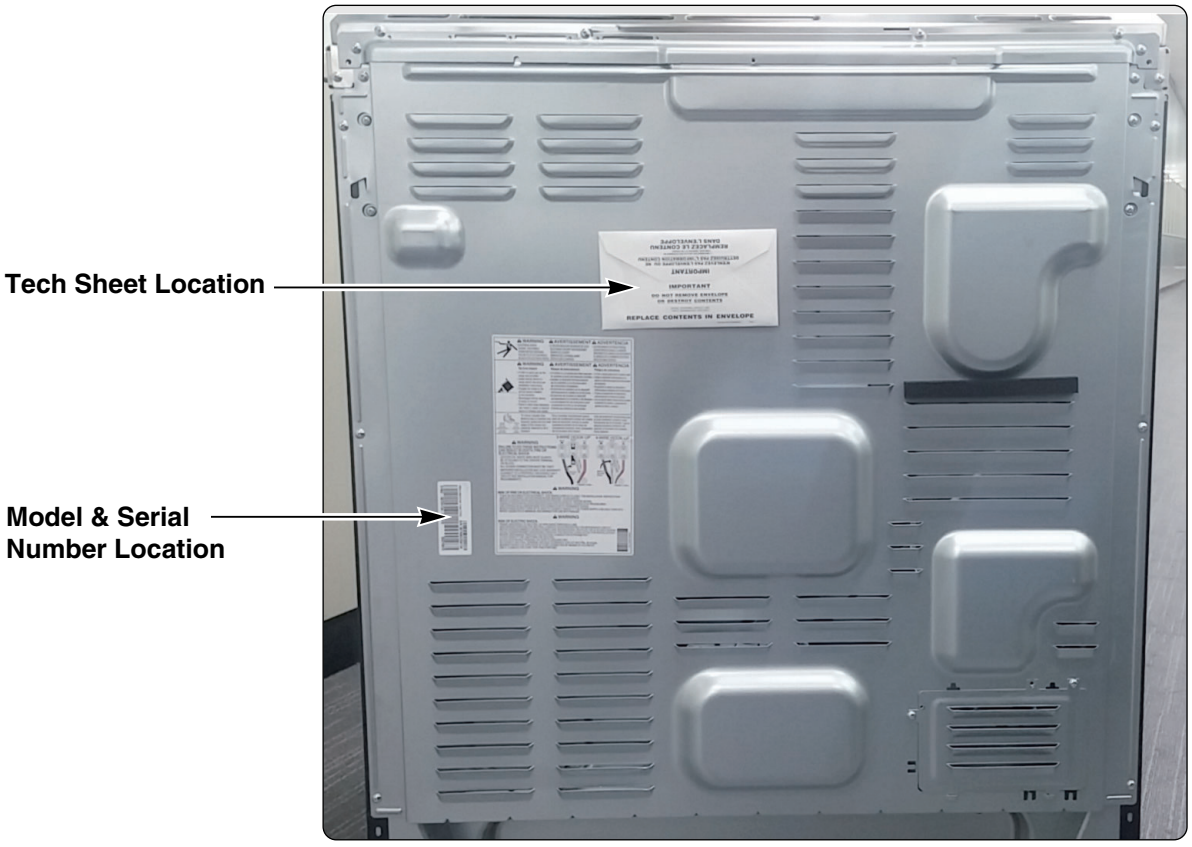
- **Do Not Cook on Broken Cook-Top –** If cook-top should break, cleaning solutions and spillovers may penetrate the broken cook-top and create a risk of electric shock. Contact a qualified technician immediately.
- **Clean Cook-Top With Caution –** If a wet sponge or cloth is used to wipe spills on a hot cooking area, be careful to avoid steam burn. Some cleaners can produce noxious fumes if applied to a hot surface.

## DEEP FAT FRYERS:

- Use extreme caution when moving the grease kettle or disposing of hot grease.

# MODEL & SERIAL NUMBER LABEL AND TECH SHEET LOCATIONS

The Model/Serial Number label and Tech Sheet locations are shown below.



# SPECIFICATIONS

| Model Number | | LSE4613ST / LSE4613BD |
|---|---|---|
| Category | | Slide-in oven range |
| **Overall** | Width | 29 7/8 |
| | Installation type | Slide-In |
| | Color availability | STS |
| **Control** | Oven | Glass Touch |
| | Cooktop | Knob |
| | Display | VFD |
| | Electronic clock & timer | Yes |
| | Control lock capability | Yes |
| | Audible preheat signal | Yes |
| | Special function | Setting (6 categories)<br>1. Change hour mode on Clock<br>2. Convection Auto Conversion On/Off<br>3. Oven Temp Adjust<br>4. Preheat alarm light On/Off<br>5. Beeper volume High/Low/Mute<br>6. Select Fahrenheit or Celsius temperature |
| **Cooktop** | Material | Ceramic glass |
| | # of element | 5 |
| **Power** | LR | 6"- 1,200W |
| | RR | 6"- 1,200W |
| | CR | 7"- 100W |
| | LF | 9"/6"- 3,200W/1,400W |
| | RF | 9"/6"- 2,700W/1,700W |
| **Oven** | Capacity(cu.ft) | **6.3** |
| | Broil element | 4,200 W |
| | Bake element | No |
| | Convection System | Yes |
| | -Convection element | 2,500 W |
| | # of Racks | 3 Standard rack |
| | Interior oven light | 120V, 40W |
| | Proof | Yes |
| | Cook & warm | Yes |
| | Favorites | No |
| | Easy clean | Yes |
| | Door lockout | Yes |
| **Drawer** | Type | Storage drawer |
| | Element | No |
| | Warming rack | No |
| **Dimensions (inch)** | Oven Interior(W x H x D) | 24 7/8 x 21 3/8 x 20 |
| | Exterior - Width | 29 7/8 |
| | Exterior - Height | 35 15/16 (Cooktop), 47 5/16 (Backguard) |
| | Exterior - Depth | 26 9/16 (Door), 28 7/8 (Handle) |
| | Net weight: Lbs (Kg) | 187.8 lbs (85.2kg) |
| **Power** | Rating | 13.5Kw(120/240V AC) / 10.1Kw(120/208V AC) |

# USING YOUR RANGE

## GENERAL INFORMATION

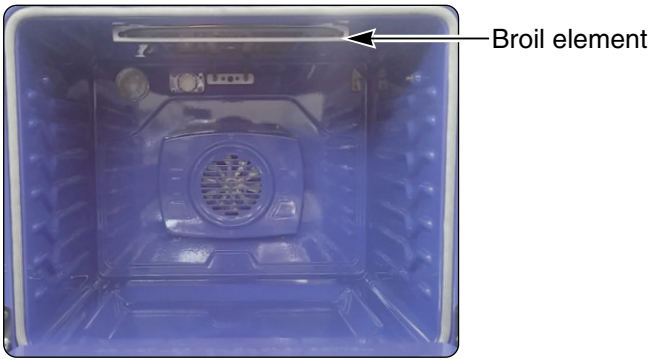
### Rating Label

Model numbers are recorded on the rating label. Rating label is located on the lower front left corner of the oven frame. It can be seen by opening the storage drawer or warming drawer. Before ordering parts, write down the correct model and serial number from rating label. This avoids incorrect shipments and delays. Please refer to parts reference material when ordering replacement parts.

### Functional Operation

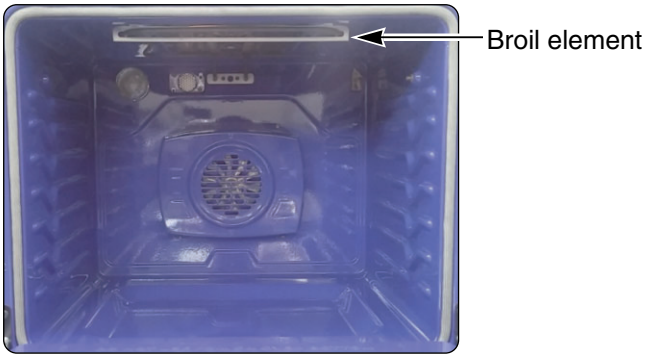
#### Bake Mode

Upper and rear elements operate during bake. Bake can be used to cook foods which are normally baked. Oven must be preheated.



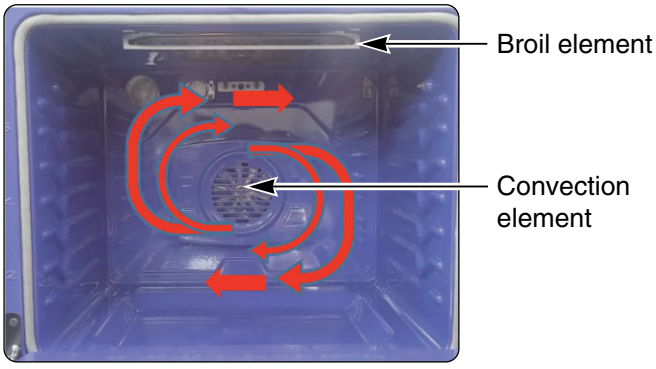

#### Broil Mode

Top element operates during broil. Broil can be used to cook foods which are normally broiled. All foods should be turned at least once except fish, which does not need to be turned.




#### Convection Bake / Roast Mode

Upper element, lower element, Rear element(some model) and fan operate during convection bake. Convection bake should be used for cooking casseroles and roasting meats. Oven should be preheated for best results when using convection bake. Pans do not need to be staggered. Difference between bake and convection mode is fan speed and amount of cycling time. When cook with bake mode, fan speed and amount of cycle tine is lower than convection mode. Difference between convection bake and convection roast at high temperature (More 330F) is that amount of broil cycling time. Broil cycling time of convection roast is more than twice than convection bake mode.

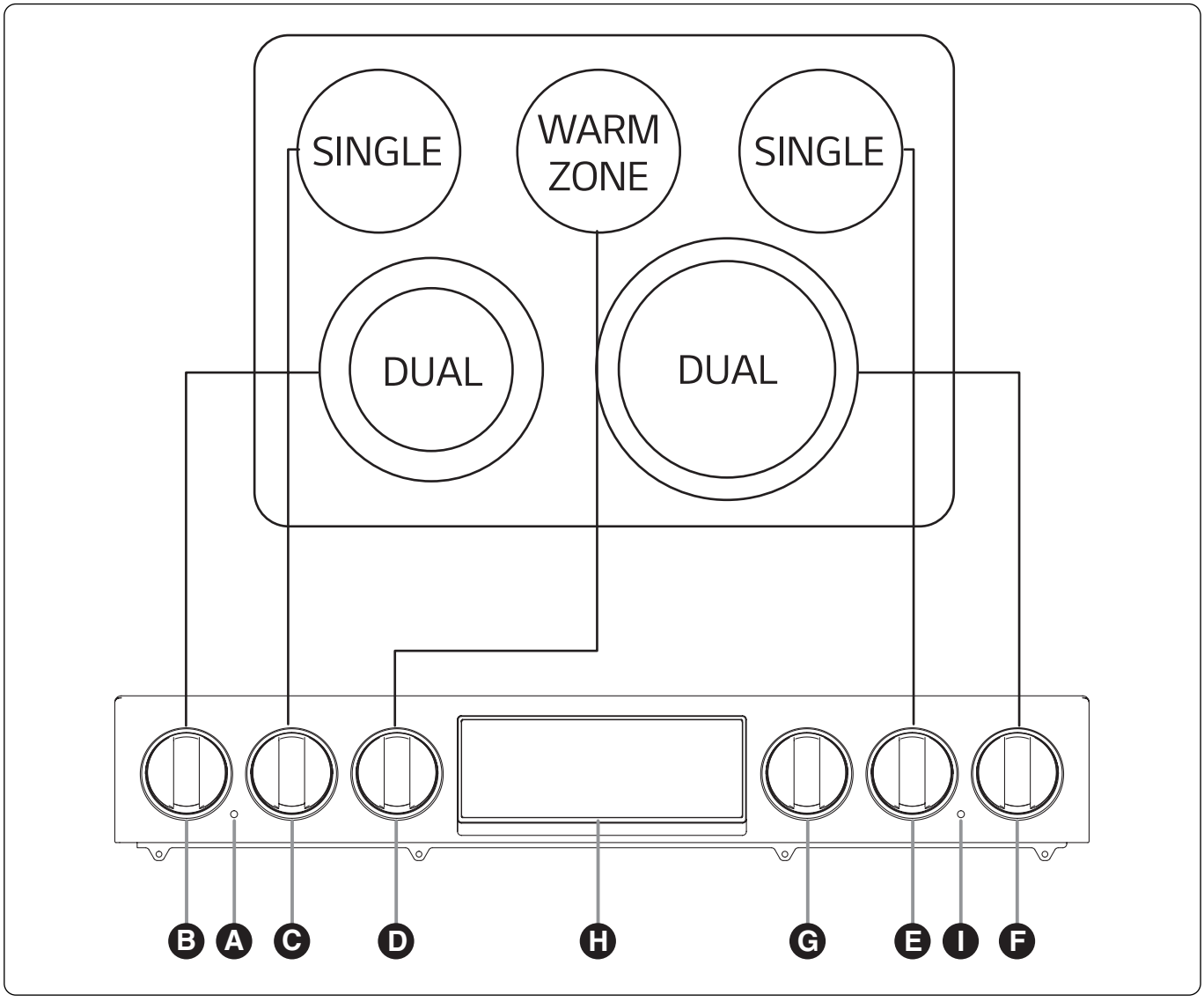



#### Cooking Guide

Refer to the owners manual for recommendations of times and temperatures. Times, rack position, and temperatures may vary depending on conditions and food type. For best results, always check food at minimum time. When roasting, choose rack position based on size of food item.

# USING YOUR RANGE

## CONTROL PANEL FEATURES




**A. ELEMENT ON/OFF INDICATOR LIGHT:** Shows whether the surface element is turned on/off or hot.

**B. LEFT FRONT (DUAL) CONTROL KNOB :** Use to control Left Front Element.

**C. LEFT REAR (SINGEL) CONTROL KNOB :** Use to control Left Rear Element.

**D. CENTER REAR (WARM) CONTROL KNOB :** Use to control Center Rear Element.

**E. RIGHT REAR (SINGLE) CONTROL KNOB :** Use to control Center Rear Element.

**F. RIGHT FRONT (DUAL) CONTROL :** Use to control Right Front Element.

**G. LOWER OVEN CONTROL KNOB :** Use to control lower oven

**H. ELECTRIC OVEN CONTROL :** Use to control Electric Oven.

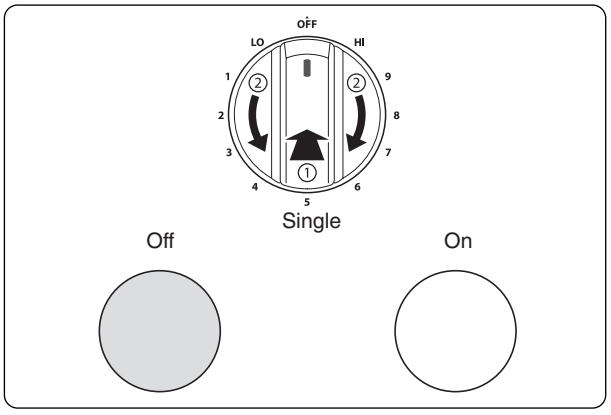
**I. HOT SURFACE INDICATOR LIGHT :** It will glow as long as any surface cooking area is too hot to touch

# USING YOUR RANGE

Use to turn on the surface elements. An infinite choice of heat settings is available from LOW to HIGH. The knobs can be set on or between any of settings.

## To turn on a Single element:

1. Push the Single element knob in.
2. Turn the knob in either direction to the desired setting.
   The control knob clicks when it is positioned at both Off and Hi.




**NOTE:**

- Hi is the highest temperature available.
- Lo is the lowest temperature available.

## To turn on the Dual element:

There is one dual element located in the left front position. Use the dual element as a dual or single element.

1. Push in the appropriate knob.

2-1. Turn the knob counterclockwise to use it as a Single element.

2-1. Turn the knob clockwise to use it as a Dual unit.

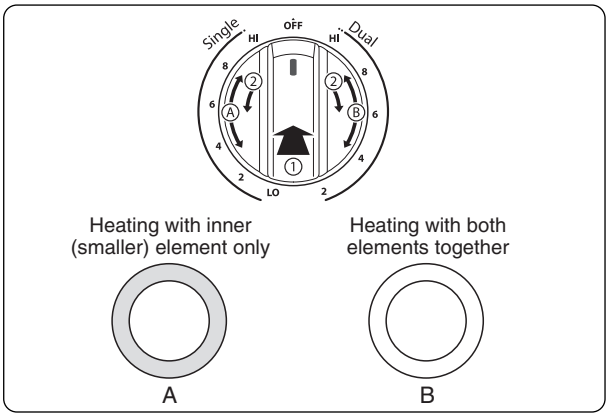

## To turn on the Dual element:

There is one dual element located in the left front position. Use the dual element as a dual or single element.

1. Push in the appropriate knob.

2-1. Turn the knob counterclockwise to use it as a Single element.

2-1. Turn the knob clockwise to use it as a Dual unit.

## To turn on the Warming Zone:

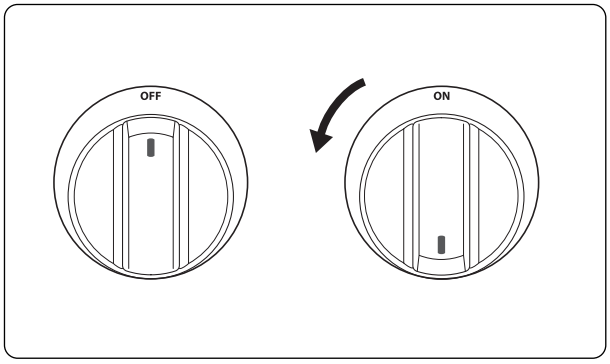
**⚠ CAUTION**

- **FOOD POISON HAZARD: Bacteria may grow in food at temperatures below 140 °F.**

- Always start with hot food. Do not use the warm setting to heat cold food.
- Do not use the warm setting for more than 2 hours.

The Warming Zone, located in the back center of the glass surface, will keep hot, cooked food at serving temperature. Use the Warming Zone to keep food warm after it has already been cooked. Attempting to cook uncooked or cold food on the Warming Zone could result in a food-borne illness.

1. Turn the control knob to the On position.

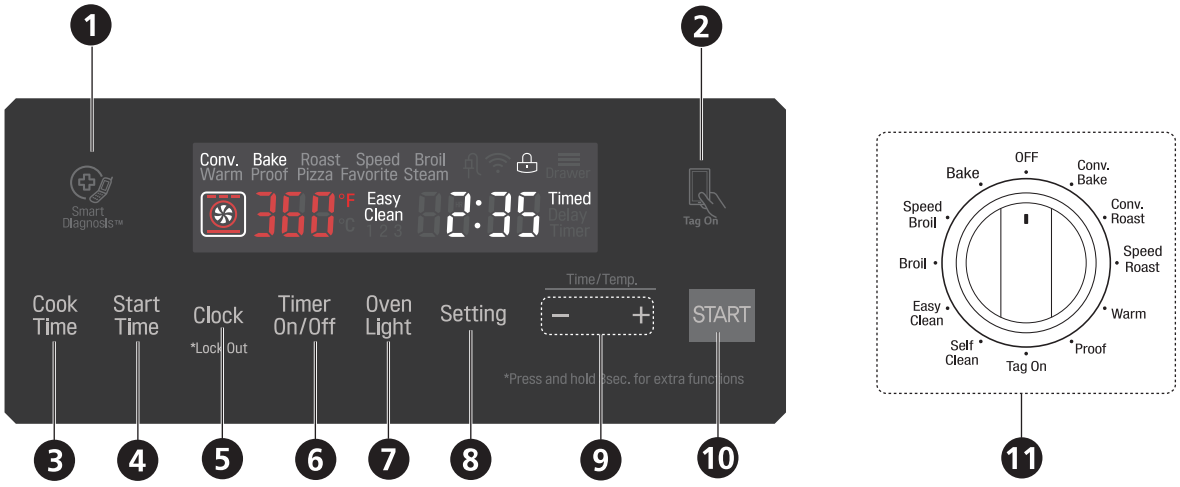



**NOTE:**

- For best results, food on the warmer should be kept in its container or covered with a lid or aluminum foil to maintain food quality.
- The warmer will not glow red like the other cooking elements.
- The Warming Zone can be operated as a single element on some models.

# USING YOUR RANGE

## CONTROL PANEL FEATURES




1. **Smart Diagnosis TM –** Use during the Smart Diagnosis feature.
2. **Smart Features –** The Tag On icon, for use with Smart Features.
3. **Cook Time**
   – Press the button to set the desired amount of time for food to cook. The oven shuts off when the set cooking time runs out.
4. **START TIME**
   – Press the button to set the delayed timed cook. The oven starts at the set time.
5. **Clock / Lockout**
   – Press the button to Set the time of day
   – Press and hold button for three seconds to lock the door and control panel.
6. **Timer On/Off –** Press the button to set or cancel timer on oven.
7. **Oven Light –** Press the button to turn oven light on or off.
8. **WSetting –** Press the button to select and adjust oven settings.
9. **- /+ –** Press the plus button to increase cooking time or oven temperature.
   Press the minus button to decrease cooking time or oven temperature.
10. **Start –** Press the button to start all oven features.
11. **Oven Mode Knob –** Turn the knob to select oven operating mode

# USING YOUR RANGE

### *1. SETTING THE CLOCK*

1. Set both oven mode knobs to the Off position.
2. Press Clock for three seconds.
3. Press plus(+) or minus(-) to select the desired time. Plus(+) to increase the time and minus(-) to decrease the time.
4. Press Start to enter the time and start the clock.

### *2. TO TURN ON/OFF THE OVEN LIGHT*

The oven light automatically turns ON when the door is opened. The oven light may also be manually turned ON or OFF by pressing the **OVEN LIGHT** pad

***Note:*** The oven light cannot be turned on if self-clean feature is active.

### *3. TIMER ON/OFF*

The Timer On/Off serves as an extra timer in the kitchen that beeps when the set time has run out. It does not start or stop cooking.
The Timer On/Off feature can be used during any of the oven control functions.

**To set the Timer (for example to set 5 minutes):**

1. Set the oven mode knob to the Off position.
2. Press the Timer On/Off. 0:00 with HR inside it appears and Timer flashes in the display.
3. Press plus(+) or minus(-) to set the desired time. Plus(+) to increase the time and minus(-) to decrease the time.
4 .Press Timer On/Off to start the Timer.
   The remaining time countdown appears in the display.

***Note:*** If Timer On/Off is not pressed, the timer returns to the time of day.

### *4. SETTING PAD: 6 types of category*

**1) CHANGE HOUR MODE ON CLOCK**

1. Set the oven mode knob to the Off position.
2 .Press Setting.
3 .Press plus(+) or minus (-) to set the desired hour mode on the clock.
4 .Press Start to accept the desired change.

**2) CONVECTION AUTO CONVERSION**

1. Set the oven mode knob to the Off position.
2 .Press Setting until Auto appears in the display.
3 .Press plus(+) or minus(-) to enable or disable the feature.
4 .Press Start to accept the change.

**3) THERMOSTAT ADJUSTMENT**

1. Set the oven mode knob to the Off position.
2. Press Setting until AdJU appears in the display.
3. To increase the temperature, press plus (+) until the desired amount appears in the display.
   To decrease the temperature, press minus (-) until the desired amount appears in the display.
4. Press Start to accept the change.

**4) PREHEATING ALARM LIGHT ON/OFF**

1. Set the oven mode knob to the Off position.
2. Press Setting until PrE appears in the display.
3. Press plus(+) or minus(-) to turn the function on/off.
4. Press Start to accept the change.

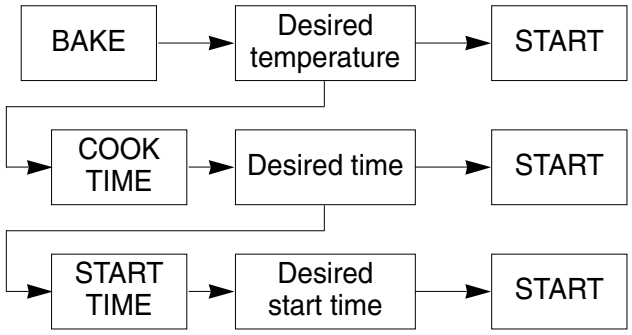
**5) BEEPER VOLUME**

1. Set the oven mode knob to the Off position.
2. Press and hold Start Time for three seconds. Then press Start Time repeatedly until Beep appears in the display.
3. Press plus(+) or minus(-) to select the desired volume.
4. Press Start to accept the change.

**6) TEMPERATURE UNIT (°F or °C)**

1. Set the oven mode knob to the Off position.
2. Press Setting until Unit appears in the display.
3. Press plus(+) or minus(-) to select F(Fahrenheit) or C(Centigrade).
4. Press Start to accept the change.

### *5. BAKE, TIMED BAKE, DELAYED TIMED BAKE*




* This feature can also be used with the: CONVECTION BAKE and CONVECTION ROAST modes.

### *6. OVEN LOCKOUT*

1. Set the oven mode knob to the Off position.
2. Press and hold Clock for three seconds.
3. The lock melody sounds, Loc appears in the display and the lock icon blinks in the display.
4. Once the oven door is locked, the lock indicator stops blinking and remains on.
5. To deactivate the Lockout feature, press and hold Probe for three seconds. The unlock melody sounds and the door and the controls unlock.

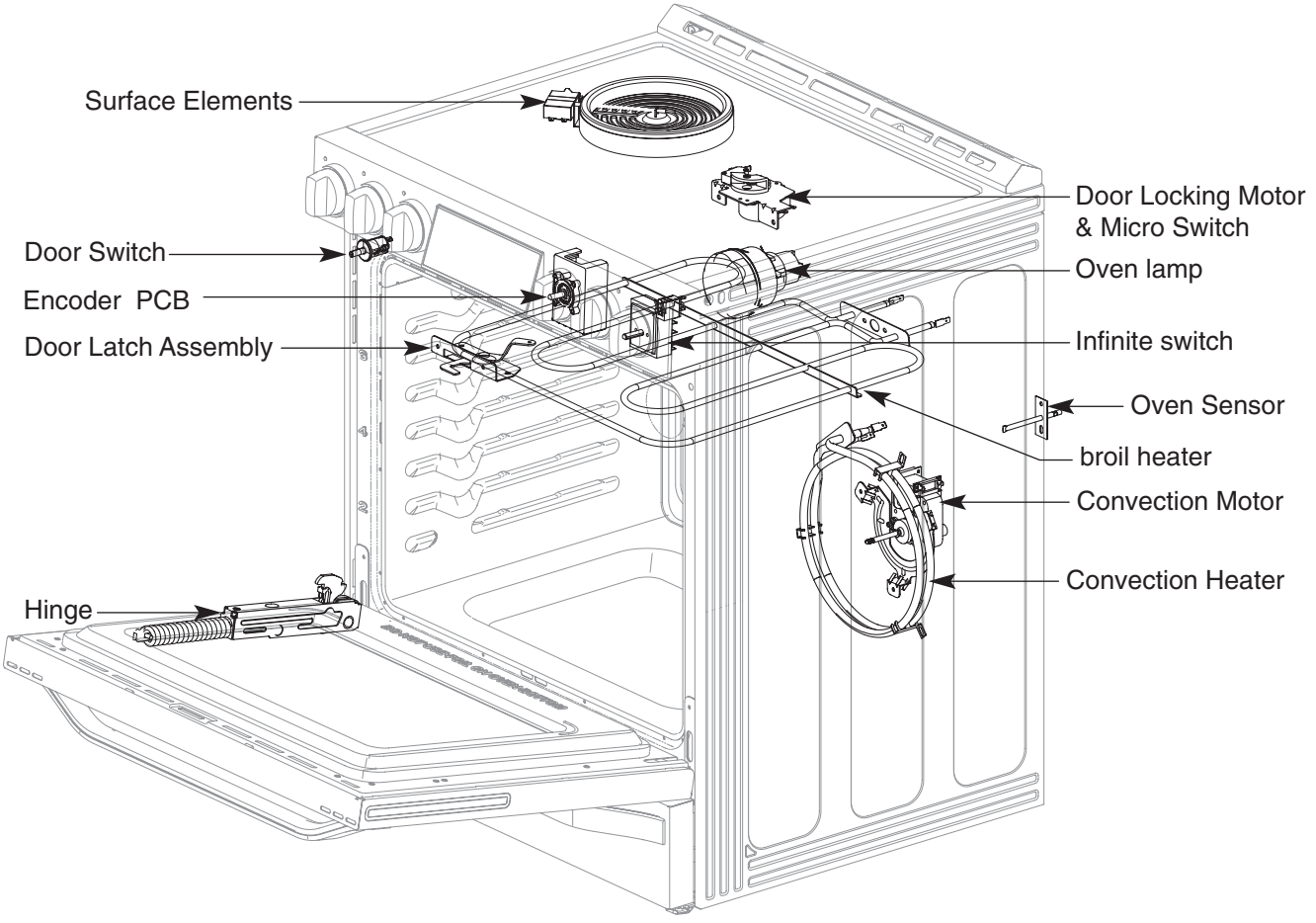
### *7. SELF-CLEAN*

1. Remove all racks and accessories from the oven.
2. Turn the oven mode knob to select Self Clean. The oven defaults to the recommended four hour Self Clean for a moderately soiled oven. Press plus(+) or minus(-) to select a Self Clean Time from 3 to 5 hours.
3. Press Start Time.
4. Press plus(+) or minus(-) to enter the time of day you would like the Self Clean to start.
5. Press Start.

# COMPONENT ACCESS

This section instructs you on how to service each component inside the range. The components and their locations are shown below.

## COMPONENT LOCATIONS



# COMPONENT ACCESS

## REMOVING THE BACK COVER

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

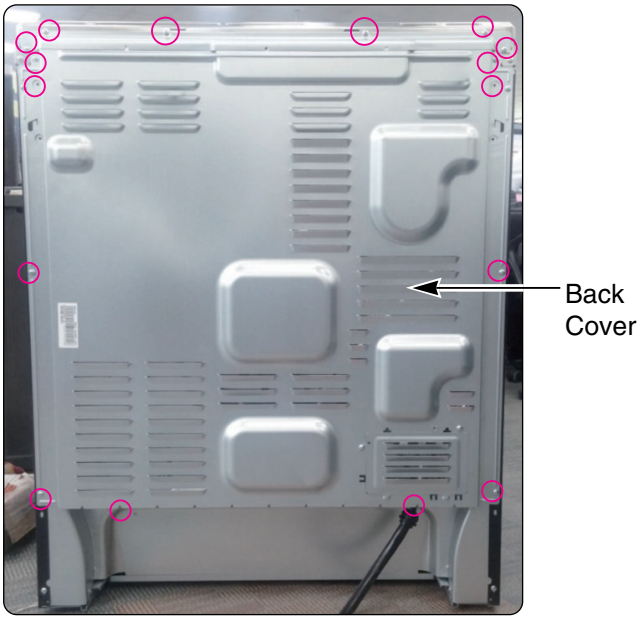
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Pull the range away from the wall so that you can access the rear panel.
3. To remove the back cover, remove 15 screws from the back cover



# COMPONENT ACCESS

## REMOVING THE OVEN RELAY PCB, POWER PCB

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
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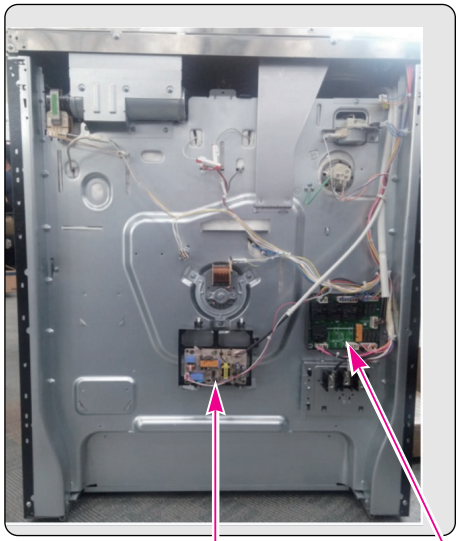
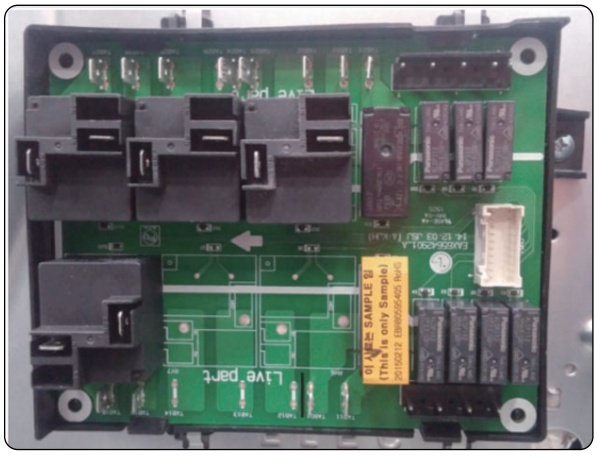
- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

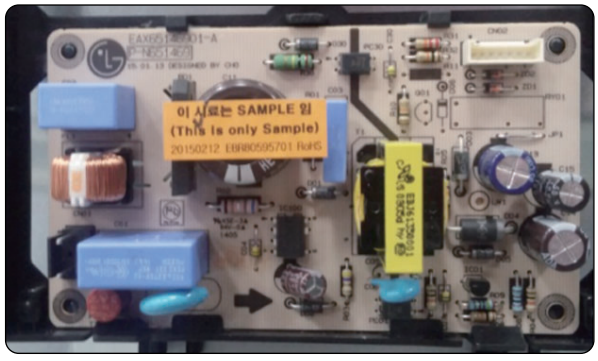
1. Turn off the electrical supply going to the range.
2. Pull the range away from the wall so that you can access the rear panel.
3. Remove back cover (See step 3 on page 3-2)




4. **To remove the Oven Relay PCB,** Disconnect 8ea connectors.



5. **To remove the Power PCB,** Disconnect 2ea connectors.



# COMPONENT ACCESS

## REMOVING THE CONTROLLER

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

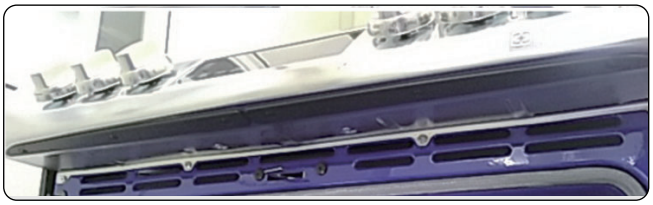
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

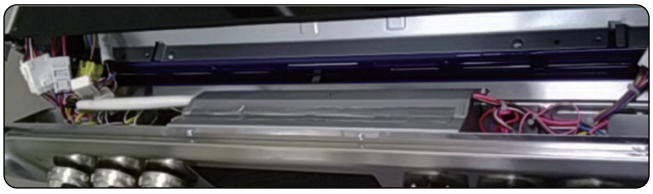
1. Turn off the electrical supply going to the range.
2. Open the oven door.
3. Remove the 2 screws located at the front side of the cooktop.

4. Remove the 4 screws located under the controller.



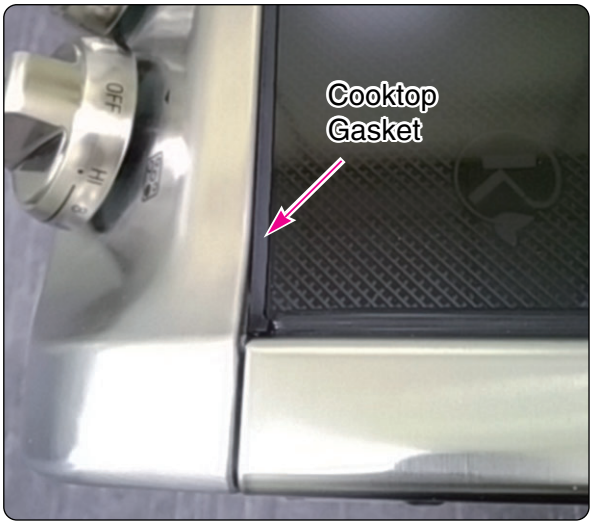
5. Pull the controller from the range

6. To remove the controller



You can remove the controller after unplug the 7ea connectors of Main PCB and Cooktop

REASSEMBLY NOTE : When you reinstall the controller make sure that the cooktop gasket is fixed into the cooktop correctly.



## REMOVING THE MAIN PCB AND KEY PCB ASSEMBLY

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

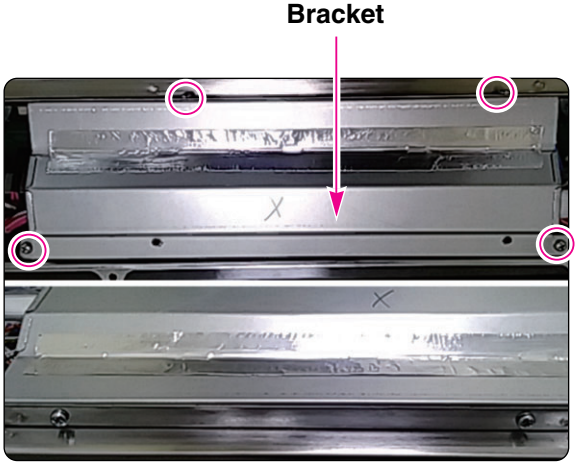
- Failure to do so can result in severe personal injury, death or electrical shock.

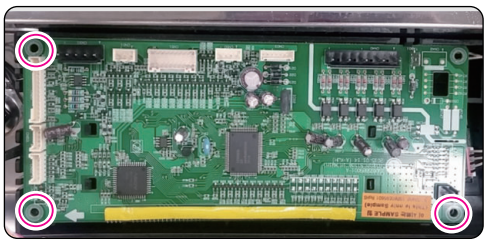
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

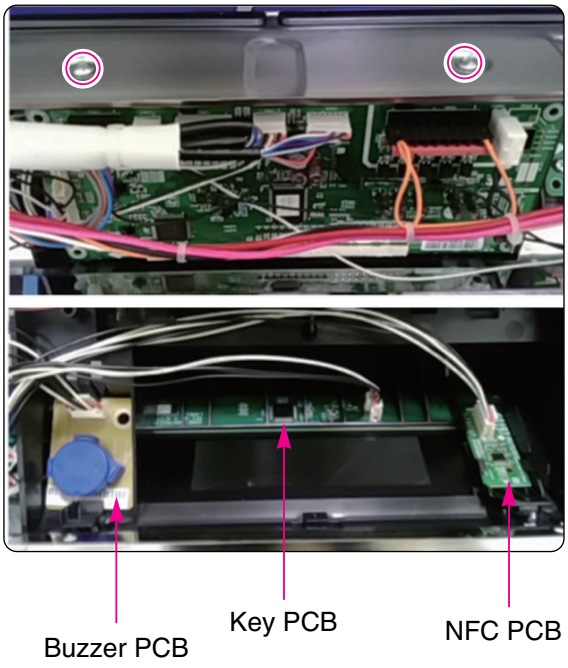
- Sharp edge may be present and you can cut yourself.
- After complete separation of the Controller from the product, please removed the PCB Assembly.

1. Turn off the electrical supply going to the range.
2. Pull the controller from the range. (See page 3-4)
3. Remove 4 screws of bracket and separate bracket from controller.
4. To remove the Main PCB, remove the 3 screws of Main PCB and separate Main PCB after unplugging the connectors.



5. To remove the Key PCB assembly remove the 2 screws under the controller.



# COMPONENT ACCESS

## REMOVING KNOB AND INFINITE SWITCH

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

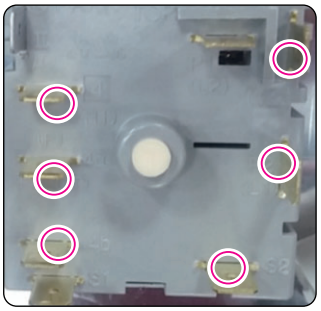
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

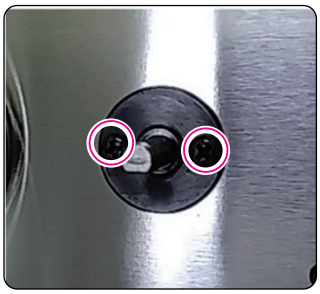
- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

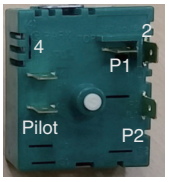
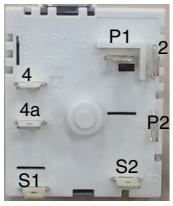
1. Turn off the electrical supply going to the range.
2. Pull the controller from the range. (See page 3-4)
3. There are 5 Infinite switches. When you check Infinite switches, firstly check the electric test each other.
   (refer to the page 4-5 ~ 4-9)
4. To remove the Infinite switch (ex. RF switch)
   a) Disconnect the all wire to fault Infinite switch
   b) Pull out a knob from the Infinite switch shaft.




c) Remove the 2 screw of Knob Housing



d) After replacing the infinite switch, finally check the electric and wiring.

| Picture |  <LR,CR,RR> |  <LF,RF> | | | |
|---|---|---|---|---|---|
| Position | LR | CR | RR | LF | RF |
| P1 | YL-YL | YL | PK-PK | YL-YL | PK |
| P2 | RD-BN | BN | RD-RD | RD-RD | RD-BK |
| 2 | BR | OR | BR | YL | YL |
| 4 | VI | WH | VI | GY | GY |
| 4a | - | - | - | BL | BL |
| 4b | - | - | - | - | - |
| Pilot | WH-WH | WH-WH | WH-WH | - | |
| S1 | - | - | - | RD | RD |
| S2 | - | - | - | WH-OR | WH |

# REMOVING THE CERAMIC GLASS COOKTOP AND THE SURFACE ELEMENT

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

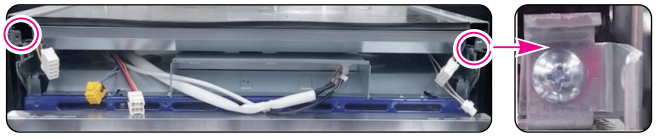
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

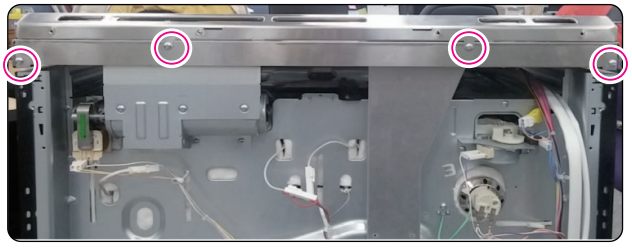
- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Pull the range away from the wall so that you can access the rear panel.
3. Pull the controller from the range. (See page 3-4)
4. To remove the ceramic glass cooktop

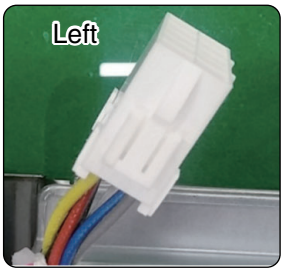
   a) Remove 2 screws in front of cooktop.



   b) Remove 4 screws on the back cover from the cooktop

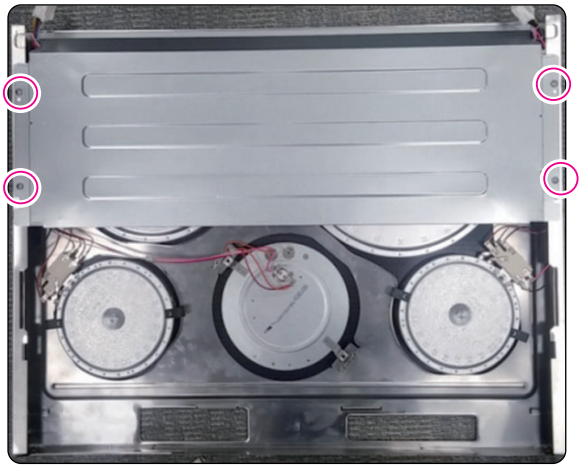


   c) Remove 2 connectors which connect controller harness with cooktop harness.





   d) Remove 4 screws on the bracket from the cooktop.



# REMOVING THE COOLING MOTOR, THERMAL DISK AND DOOR SWITCH

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

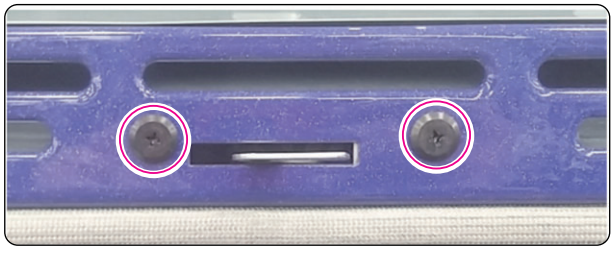
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Pull the range away from the wall so that you can access the rear panel.
3. Open the oven door.
4. Pull the controller from the range. (See page 3-4)
5. Remove the cooktop (See 3-7)
6. To remove the door latch:

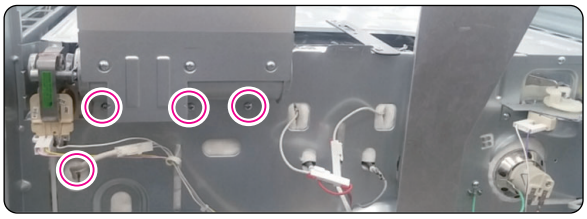
   a) Remove the two screws from the door latch

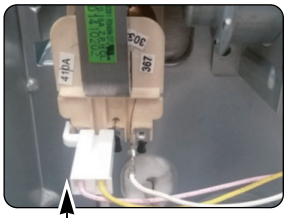


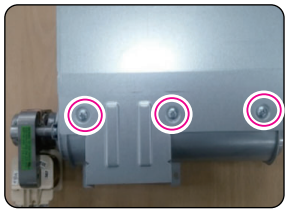
   b) Remove the 3 screws on the back panel for remove cooling motor

   c) Remove the wires from the cooling motor

   d) Remove the 3 screws on the main duct from the cooling motor



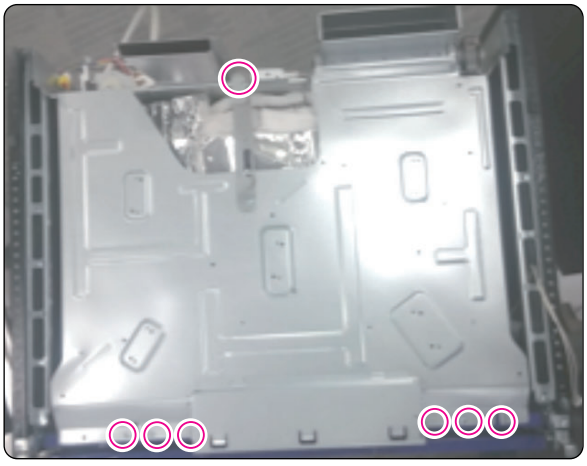




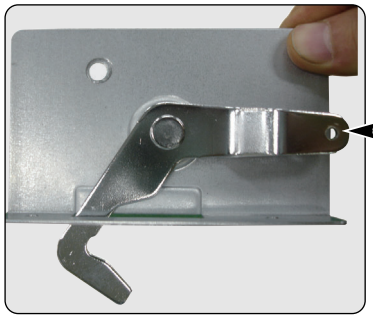
Side Brackets

   e) To remove the main duct, remove the 7 screws on the main duct

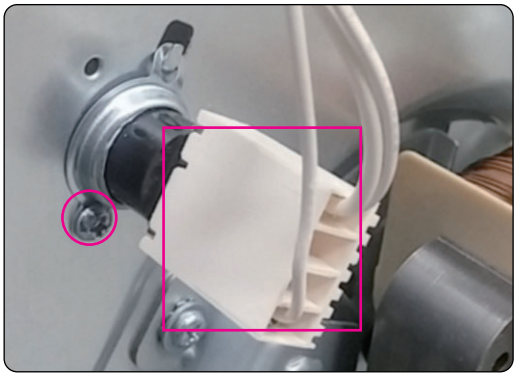
   f) To remove the main duct, remove the 2 screws on the back panel



e) Remove the door latch from the burner box and unhook the actuating rod.

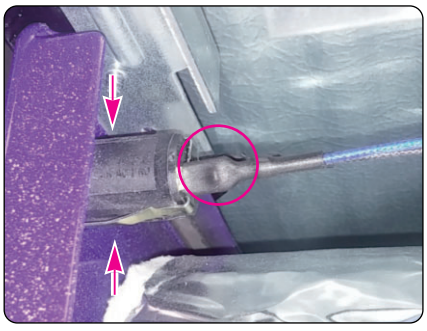



7. To remove the thermal disk, remove the 1 screw and remove the connector.



The thermostat is located on the cavity cover . It opens at 356°F/180°C and closes when the oven temperature cools below 14°F/-10°C.

8. To remove the door switch
   a) Disconnect the wires from the terminal
   b) Remove the door switch from the range. To do this, squeeze tabs and use a ratchet extension or a small socket, and tap it out of the hole with a hammer.



# COMPONENT ACCESS

## REMOVING THE BROIL ELEMENT

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

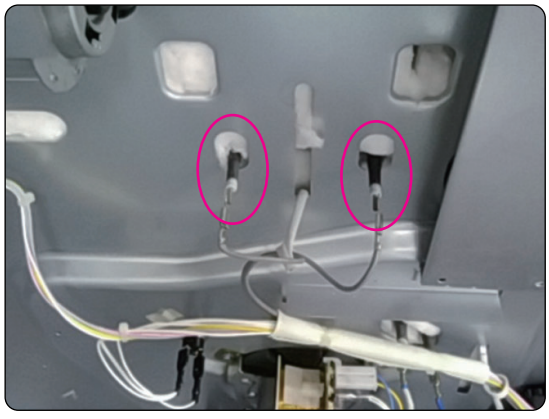
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

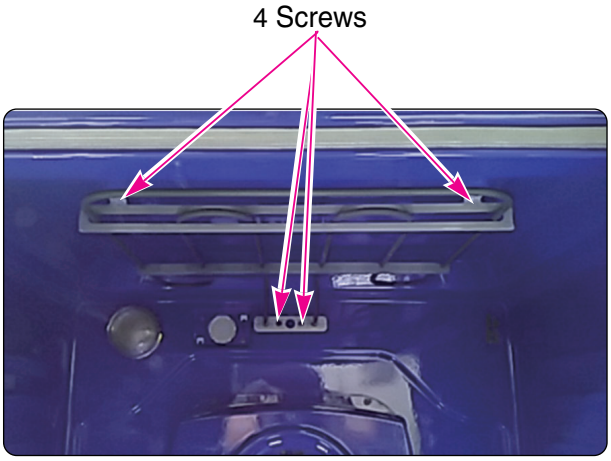
- Sharp edge may be present and you can cut yourself.

**BROIL ELEMENT (SHEATH HEATER)**

1. Turn off the electrical supply going to the range.
2. Open the oven door and remove the racks from inside the oven.
3. To remove the outer broil element:
   a) Unplug 2 receptacle at each point.

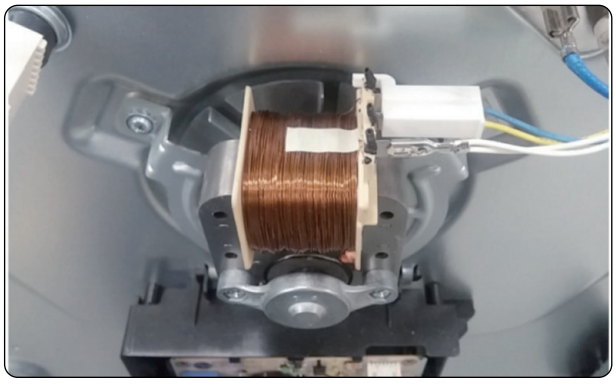


b) Remove the 4 screws from the front and rear brackets.



## REMOVING THE CONVECTION ELEMENT, FAN BLADE AND FAN MOTOR

1. Disconnect power and remove oven racks.
2. Pull the range out of its mounting location so that you can access the rear of the unit.
3. Remove the rear panel from the unit.
   (See step 3 on page 3-2 for procedure)
4. Disconnect the wire connection.



5. Remove the four Fan cover screws and set the fan cover aside.

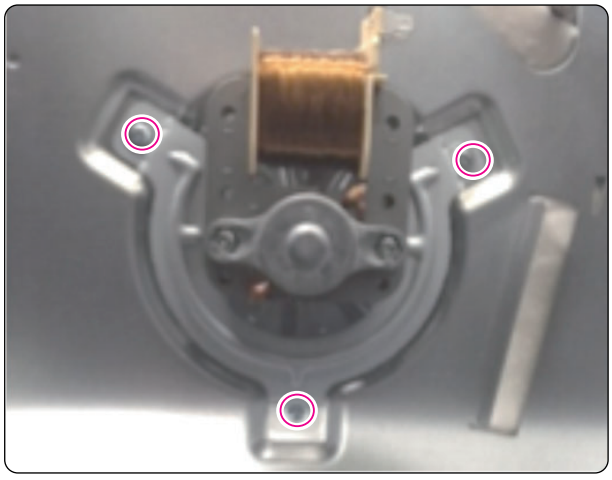
6. Remove the two convection element screws and pull the element forward.

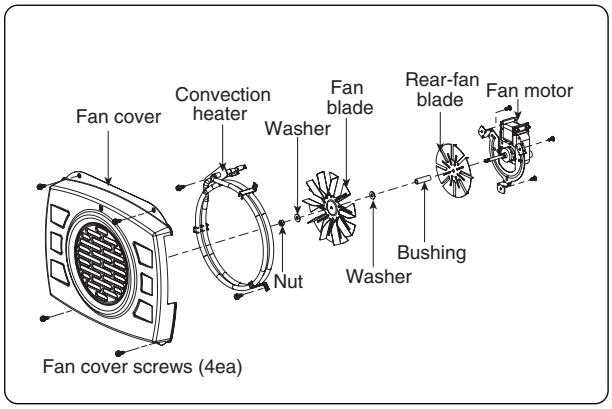
7. **To remove Fan blade,** remove Nut by screwing clockwise. Fan blade can be replaced from inside oven.

**⚠ CAUTION**

- **Be careful not to bend the fan blade**
  - Failure to do so can result in vibration, noise, and poor performance of convection when operating.

8. **To remove Fan motor assembly**, disconnect wire connection and remove the three bracket screws
9. Pull the fan motor assembly forward.





# COMPONENT ACCESS

## REMOVING THE OVEN LIGHT & SOCKET ASSEMBLY

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

- Failure to do so can result in severe personal injury, death or electrical shock.

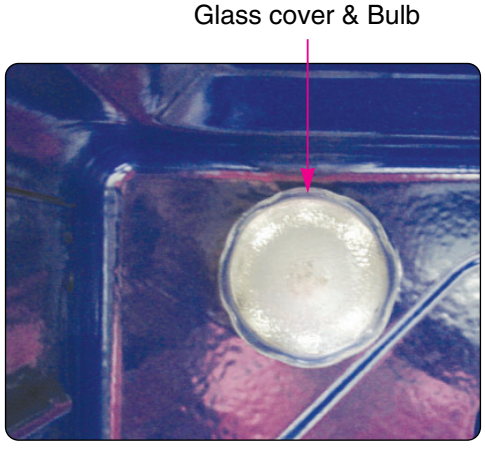
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

**To replace:**

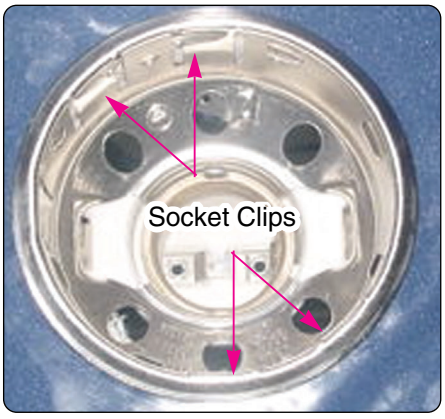
1. Unplug range or disconnect power.
2. Turn the glass bulb cover in the back of the oven counterclockwise to remove.
3. Turn bulb counterclockwise to remove from socket.
4. Replace bulb and bulb cover by turning clockwise.



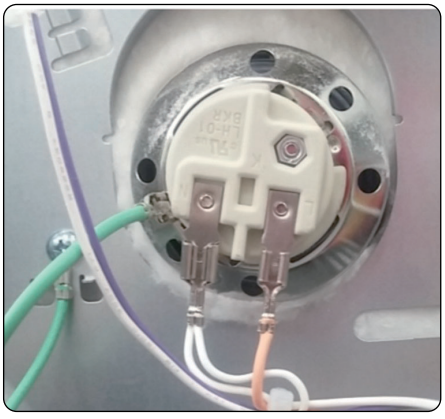

**⚠ CAUTION**

- **Be careful not to scratch or chip the oven liner paint when you remove the oven light socket in the next step.**

5. Use a screwdriver and bend the clips on the oven light socket away from the edges of the liner hole, and pull the socket out of the liner.
   NOTE: If it is too difficult to remove the socket from the front of the oven, you will have to push the socket out from the back of the unit.




6. Disconnect the wires from the socket terminals.



# REMOVING THE LATCH DRIVE ASSEMBLY

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

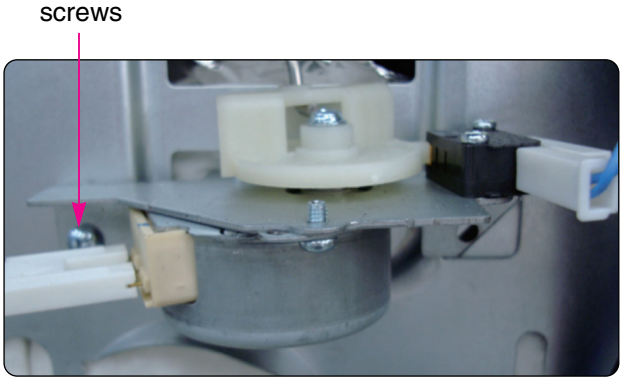
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Pull the range away from the wall so that you can access the rear panel.
3. Remove lamp, controller and back cover. (See the page 3-2)
4. Disconnect the wires from the latch drive motor and switch.
5. Remove the 1 mounting screws from the latch drive.

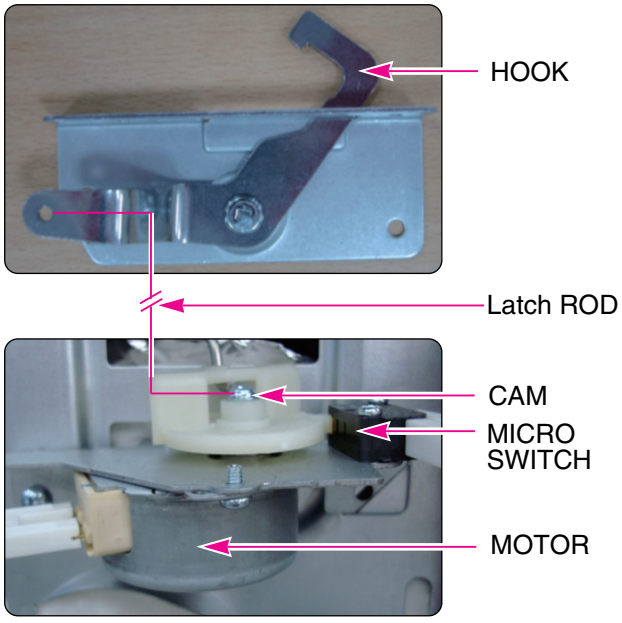



6. Unhook the Latch rod from the cam.

## DOOR LOCKING MECHANISM

The door lock assembly is located at the back side of range.
The structural elements are as below.

1. When the oven control is programmed and started for the Self clean and Lock out mode, PCB (Power control board) chip operates the motor.




2. The cam moves the door hook connected to latch rod from unlocked position to locked position (from locked Position to unlocked position)
3. The cam activates the micro switch that causes the motor to stop.
4. The locked status remains until the range temperature drops to approximately 500F after end of the self clean or lock out feature is reactivated. The motor operates to unlock door at that time.

## REMOVING THE OVEN TEMPERATURE SENSORS

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

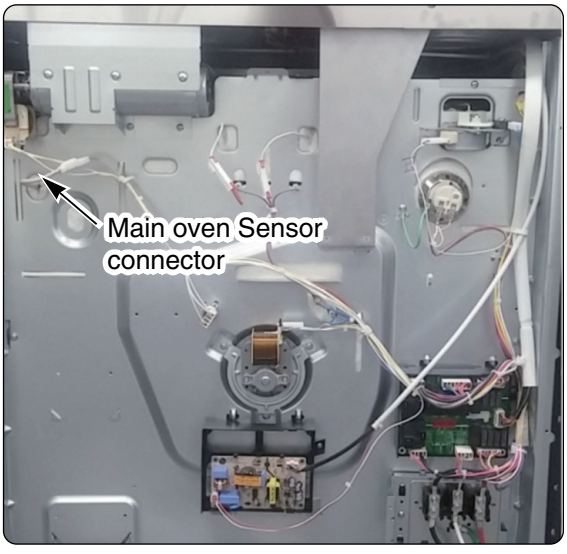
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

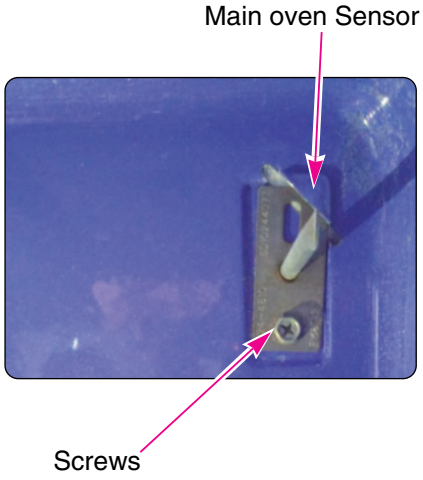
- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Open the oven door and remove the racks from the oven.
3. Pull the range away from the wall so that you can access the rear panel.
4. Remove the 15 screws from the rear panel and remove the panel (see step 3 on page 3-2).




5. **To remove an oven temperature sensor,** zdisconnect the connector from the main harness and remove the mounting screw in oven cavity.



# REMOVING & REPLACING THE LIT-OFF OVEN DOOR AND DRAWER

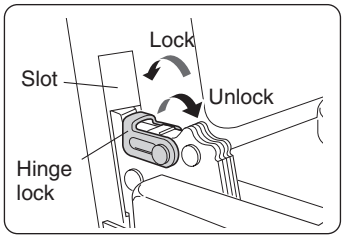
**⚠ CAUTION**

- **Be careful when removing and lifting the door.**
- **DO NOT lift the door by the handle.** The door is very heavy.

## Removing the Door

***Step. 1***

Fully open the door.

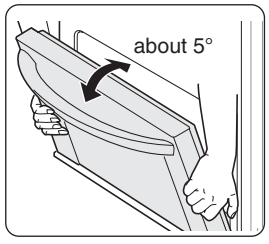



***Step. 2***

Unlock the hinge locks, rotating them as far toward the open door frame as they will go.

***Step. 3***

Firmly grasp both sides of the door at the top.




***Step. 4***

Close the door to the removal position (approximately five degrees) which is halfway between the broil stop position and fully closed.
If the position is correct, the hinge arms will move freely.

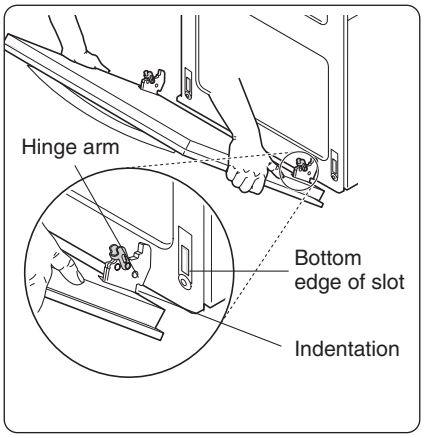
***Step. 5***

Lift door up and out until the hinge arms are clear of the slots.

## Replacing the Door

***Step. 1***

Firmly grasp both sides of the door at the top.




***Step. 2***

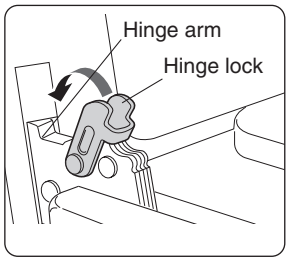
With the door at the same angle as the removal position, seat the indentation of the hinge arms into the bottom edge of the hinge slots. The notch in the hinge arms must be fully seated into the bottom edge of the slots.

***Step. 3***

Open the door fully. If the door will not open fully, the indentation is not seated correctly in the bottom edge of the slots.

***Step. 4***

Lock the hinge locks, rotating them back toward the slots in the oven frame until they lock.




***Step. 5***

Close the oven door.

# REMOVING & REPLACING THE LIT-OFF OVEN DOOR AND DRAWER

**⚠ CAUTION**

- **Disconnect the electrical power to the range at the main fuse or circuit breaker panel. Failure to do so can result in severe personal injury, death, or electrical shock.**

## Removing the Drawer

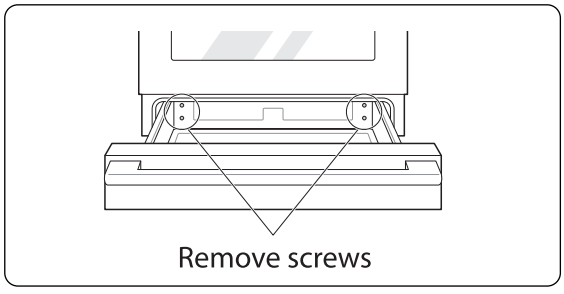
Most cleaning can be done with the drawer in place; however, the drawer may be removed if further cleaning is needed. Use warm water to thoroughly clean.

***Step. 1***

Fully open the drawer.

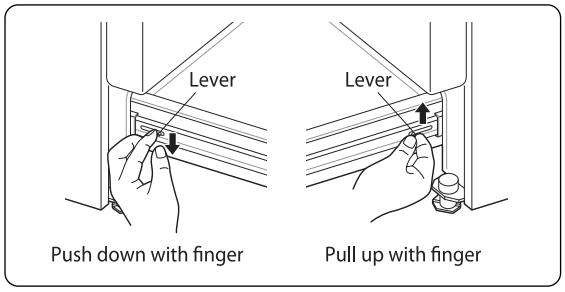
***Step. 2***

Remove the two screws.




***Step. 3***

Locate the glide lever on each side of the drawer. Push down on the left glide lever and pull up on the right glide lever.




***Step. 4***

Pull the drawer away from the range.

## Replacing the Door

***Step. 1***

Pull the bearing glides to the front of the chassis glide.

***Step. 2***

Align the glide on each side of the drawer with the glide slots on the range.

***Step. 3***

Push the drawer into the range until levers click (approximately 2 inch).

***Step. 4***

Pull the drawer open again to seat bearing glides into position.

***Step. 5***

Replace the two screws.

# COMPONENT ACCESS

## REMOVING A SIDE PANEL

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

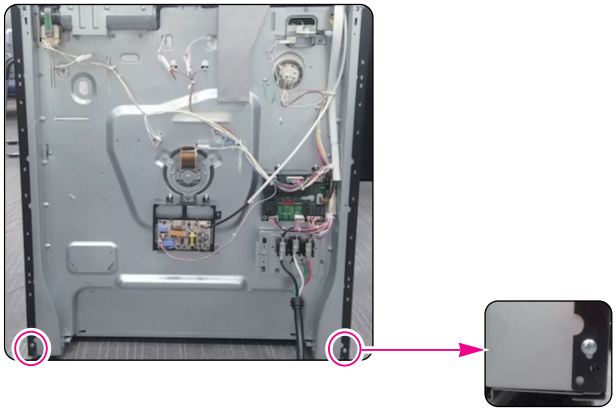
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

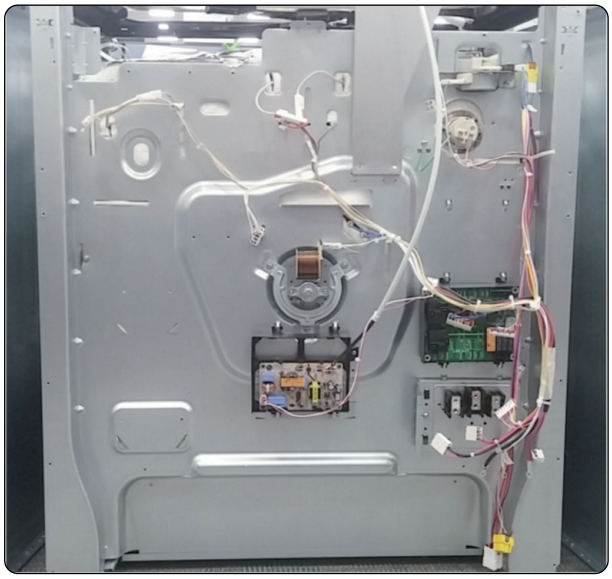
- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Turn off the electrical supply going to the range.
2. Remove the oven door from the range
   (see page 3-15)
3. Pull the range away from the wall.
4. Remove the back cover of the range
   (see page 3-2)
5. Pull the controller from the range.
   (see page 3-4)
6. Remove the cooktop (See page 3-7)
7. Remove the screw from the left or right side panel.



8. Pull the back of the side panel out from the range approximately 10˚



9. Push forward and remove the side panel.

## REMOVING THE OVEN DOOR HANDLE & GLASS

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

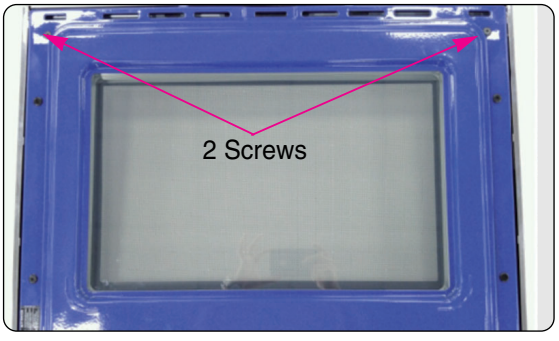
- Failure to do so can result in severe personal injury, death or electrical shock.

**⚠ CAUTION**

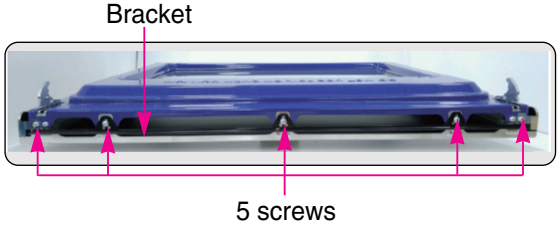
- **Be careful when you work on the electric range handling the sheet metal part.**

- Sharp edge may be present and you can cut yourself.

1. Remove the oven door from the range (see page 3-16 for the procedure).
2. Place the oven door on a padded work surface with the front glass facing up.
3. Remove 2 screws from door frame top.



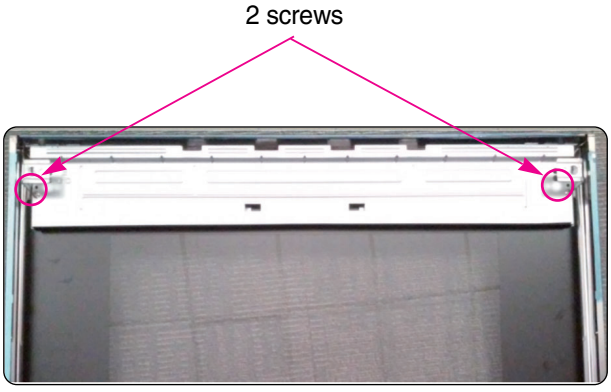

4. Remove 5 screws from door bottom and remove the bracket.



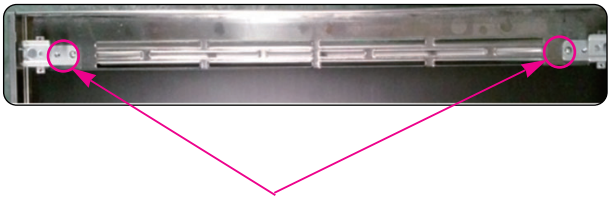

5. After disassembling the frame assembly set it aside.

**6. To remove the door handle & air guide**

a) Remove 2 screws from air guide and then remove the air guide by lifting that.




b) Remove 2 screws from handle and then remove the door bracket and door handle.

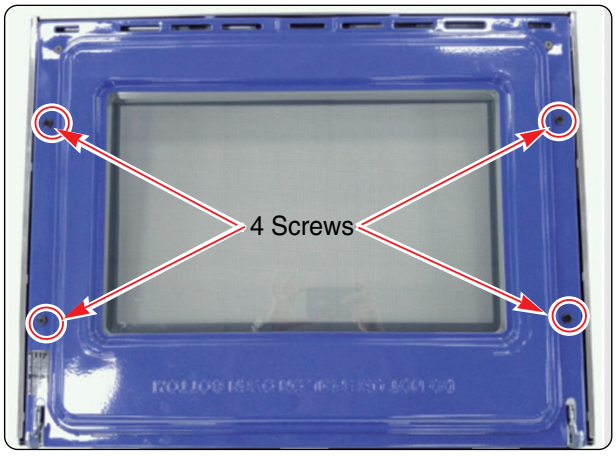


**7. To remove a hinge hanger assembly:**

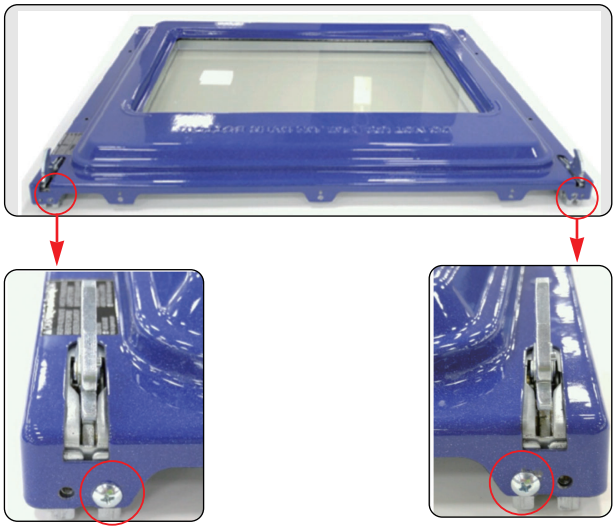
a) Follow the step 3~4 on page 3-16.

b) Place the frame assembly on a padded work surface.

c) Remove 4screws from door frame middle.

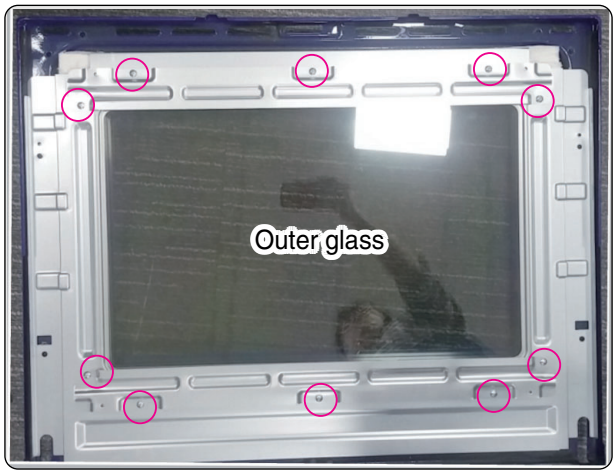



d) Remove the 2 screws from the hinge bottom.



e) Remove the hinge hanger after removing the door frame.

**8. To remove the oven door glass assembly:**




a) Lift the outer glass and bracket out of the door liner.

b) Lift the insulation cover out of door liner.

c) Lift the inner oven door glass and bracket assembly out of door liner.


REASSEMBLY NOTE: When you reinstall the insulation around the oven door glass, make sure that the insulation is not visible in the glass after the door is reassembled.

## REMOVING THE OVEN DOOR GASKET

**⚠ WARNING**

- **DISCONNECT power supply cord from the outlet before servicing.**
- **Replace all panels and parts before operating.**
- **RECONNECT all grounding devices.**

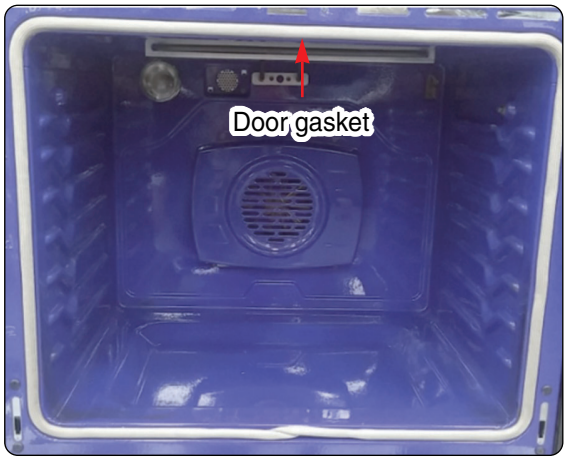
- Failure to do so can result in severe personal injury, death or electrical shock.

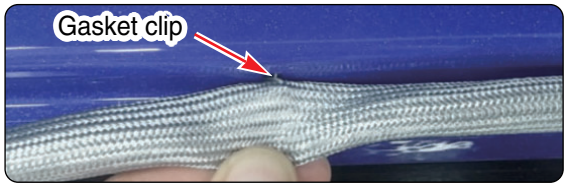
**⚠ CAUTION**

- **Be careful when you work on the electric range handling the sheet metal part.**

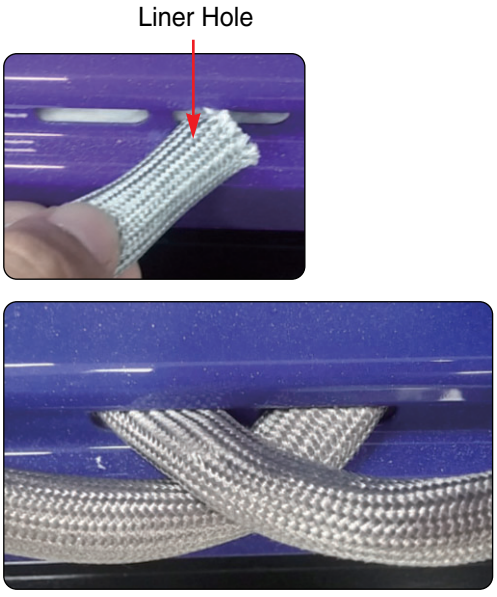
- Sharp edge may be present and you can cut yourself.

1. Open the oven door to its fully down position.
2. Pull the oven door gasket clips out of the liner holes until all of the clips are removed.




3. Pull the ends of the gasket out of the liner holes.




REASSEMBLY NOTE: When you install the new gasket, make sure that all of the clips are seated in their liner holes, and that the ends of the gasket are pushed fully into their holes. Use the pointed end of a pencil to push the gasket ends into the holes.

# COMPONENT TEST

## Before testing any of components, perform the following checks:

**NOTE:**
**1. The most common cause for control failure is corrosion on connectors.**
**Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures**
**2. ALL units in the first few days of use should be checked for mis-wiring or loose connections**

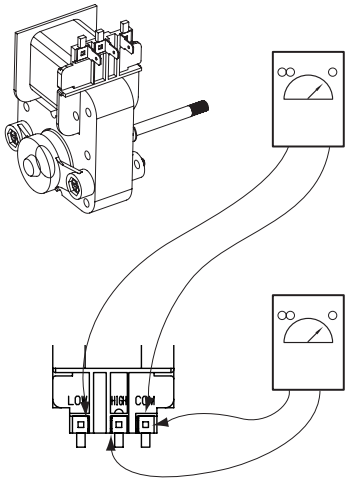
1. All/tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per-volt DC, or greater.
2. Check all connections before replacing components, looking for broken or loose wires, Failed terminals, or wires not pressed into connectors far enough.
3. Resistance checks must be made with power cord unplugged from outlet, and with wiring harness or connectors disconnected.

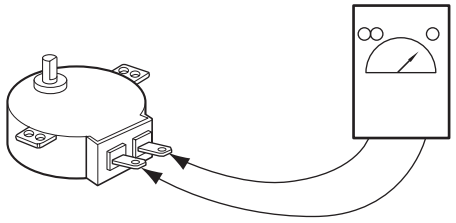
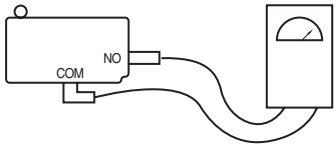
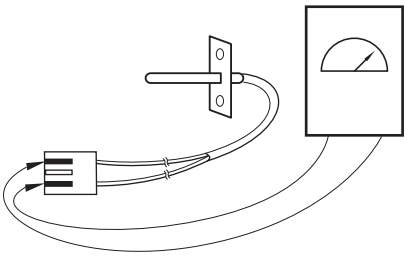
**⚠ WARNING**

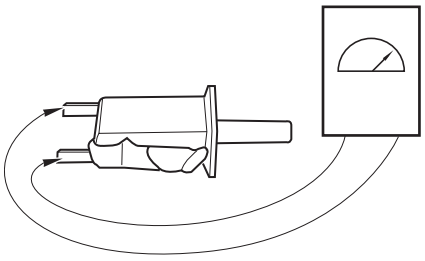
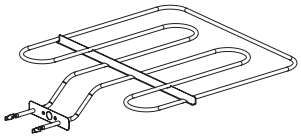
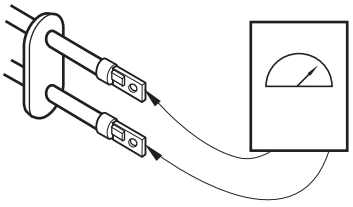
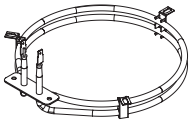
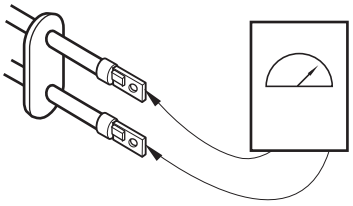
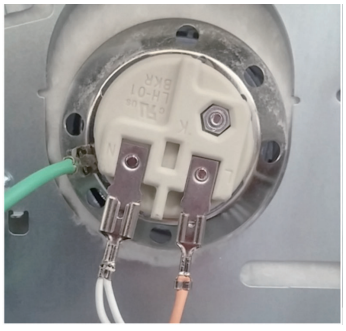
- **Disconnect power supply cord from the outlet before servicing**
- **Replace all panels and parts before operating**
- **Reconnect all grounding devices after servicing**

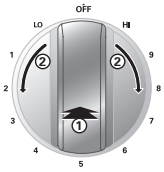
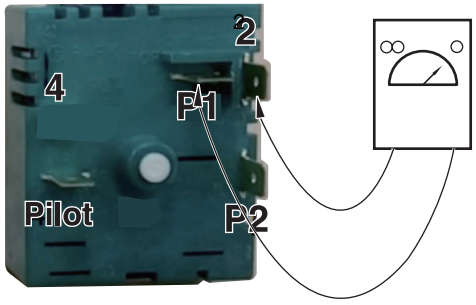
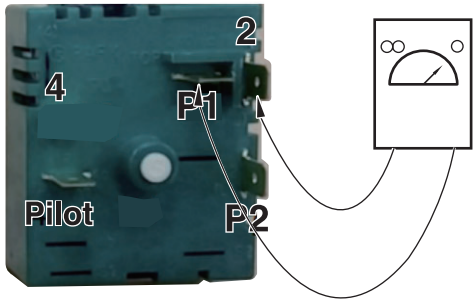
- Failure to do so can result in death or electrical shock

**NOTE: Below Ω value were tested at room temperature (77F/25°C)**

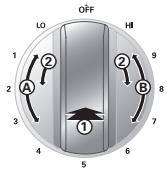
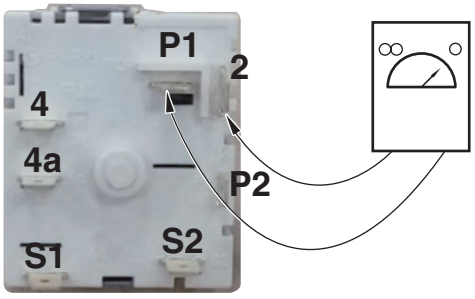
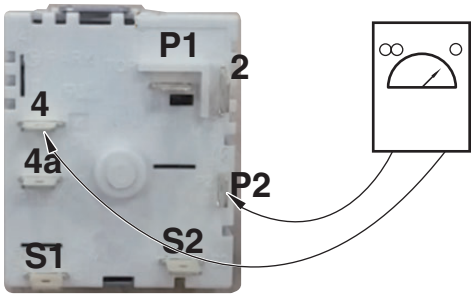
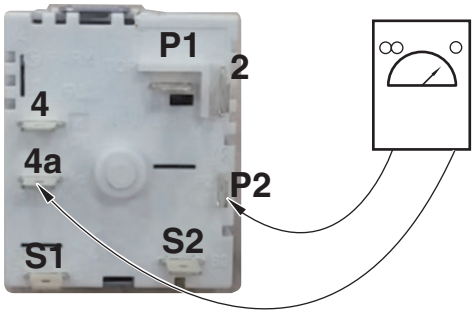
| Components | Test procedures | Results |
|---|---|---|
| Convection Motor | 1. Refer to page 3-12 for the servicing procedure<br>2. Measure the resistance<br>(Multiple meter scale: R x 1)<br>  | Normal: Approximately<br>Low-COM : 30 Ω<br>High-COM : 23.7 Ω<br>If not replace<br>Abnormal: Infinite (open)<br>below 5Ω (shorted) |

<table>
<tr><th>Components</th><th>Test procedures</th><th colspan="2">Results</th></tr>
<tr><td>Door locking Motor</td><td>1. Refer to page 3-14 for the servicing procedure<br>2. Measure the resistance<br>(Multiple meter scale: R x 1000)<br>  </td><td colspan="2">Normal: Approximately<br>2.6 kΩ ± 10%<br>If not replace<br>Abnormal: Infinite(open)<br>below 5Ω (shorted)</td></tr>
<tr><td rowspan="2">Micro Switch<br>(normally open type)</td><td rowspan="2">1. Refer to page 3-14 for the servicing procedure<br>2. Measure the resistance<br>(Multiple meter scale: R x 1000)<br>  </td><td>Door latch open<br>  <br>Continuity</td><td>Door latch Locked<br>  <br>Infinite</td></tr>
<tr><td colspan="2">NOTE: After checking for the continuity of switch, make sure that they are connected correctly</td></tr>
<tr><td rowspan="2">Oven Sensor</td><td>1. Refer to page 3-15 for the servicing procedure<br>2. Measure the resistance after cooling down<br>(Multiple meter scale: R x 1000)<br>  </td><td colspan="2">Normal: Approximately<br>1.09 kΩ ± 10%<br>If not replace<br>NOTE: Ω Value was tested at room temperature (77F/25˚C)</td></tr>
<tr><td>NOTE: Oven sensor is so sensitive to temperature<br>Do test after cooling down sufficiently</td><td colspan="2"></td></tr>
</table>

| Components | Test procedures | Results |
|---|---|---|
| Door switch | 1. Refer to page 3-9 for the servicing procedure<br>2. Measure the resistance after cooling down (Multiple meter scale: R x 1000)<br>  | Door open: Continuity<br>Door closed: Infinite |
| Broil heater<br>  | 1. Refer to page 3-10 for the servicing procedure<br>2. Measure the resistance after cooling down (Multiple meter scale : R x 1)<br>  | Normal: Approximately 23 Ω ± 10%<br>If not replace<br>**NOTE:** Ω Value was tested at room temperature (77F/25˚C)<br>Be careful the element is sensitive to temperature. |
| Convection heater<br>  | 1. Refer to page 3-12 for the servicing procedure<br>2. Measure the resistance after cooling down (Multiple meter scale : R x 1)<br>  | Normal: Approximately 13.5 Ω ± 10%<br>If not replace<br>**NOTE:** Ω Value was tested at room temperature (77F/25˚C)<br>Be careful the element is sensitive to temperature. |
| Oven lamp | 1. Measure the resistance after cooling down (Multiple meter scale: R x1)<br>  | Normal: Below 5 Ω.<br>If not replace |

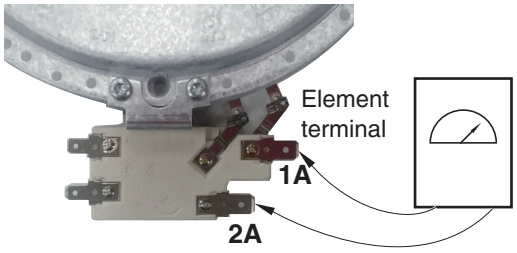
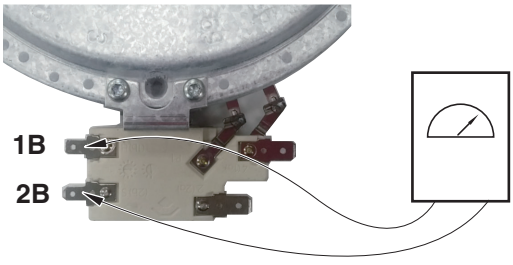
| Components | Test procedures | Results |
|---|---|---|
| Infinite switch<br>(Single units):<br>LR switch<br>RR switch<br>CR switch<br>  | 1. Refer to page 3-6 for the servicing procedure.<br>2. Set the Multiple meter scale to the R x 1000.<br>3. Disconnect all wires from infinite switch.<br>4. When turn on/turn off the knob, position measure the resistance between P1 to 2.<br>  <br><br>5. When turn on/turn off the knob, position measure the resistance between L2 to H2.<br>  <br> | |

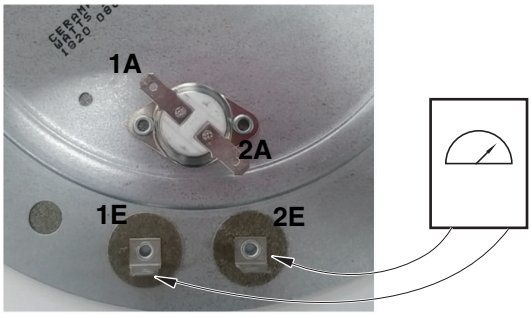
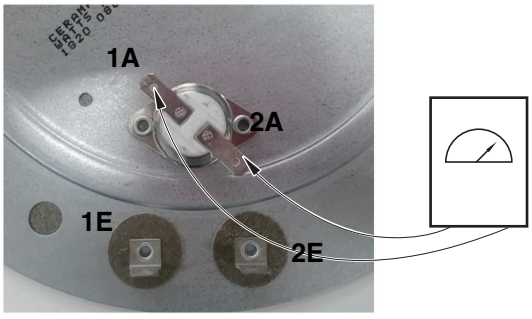
| | Infinite Switch | Knob Position | Results | |
|---|---|---|---|---|
| Single type | LR/RR/CR | Off | P1 to 2 | Infinite(open circuit) |
| | | | P2 to 4 | Infinite(open circuit) |
| | | On | P1 to 2 | Continuity(short circuit) |
| | | | P2 to 4 | Continuity(short circuit) |

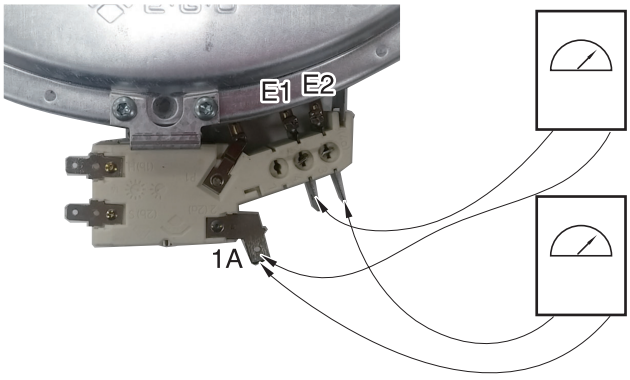
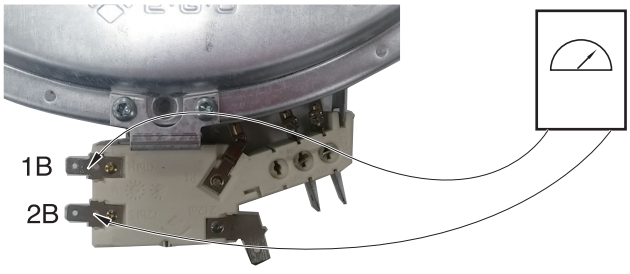
| Components | Test procedures | Results |
|---|---|---|
| Infinite switch<br>(Double units):<br>LF,RF switch<br>  | 1. Refer to page 3-6 for the servicing procedure.<br>2. Set the Multiple meter scale to the R x 1000.<br>3. Disconnect all wires from infinite switch.<br>4. Push in and turn left knob to check the single type.<br>5. When turn on/turn off the knob, position measure the resistance between P1 to 2.<br>  <br>6. When turn on/turn off the knob, position measure the resistance between P2 to 4 and P2 to 4a.<br>  <br>  | |

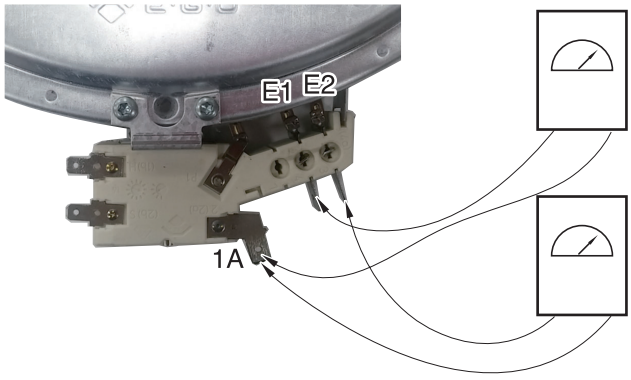
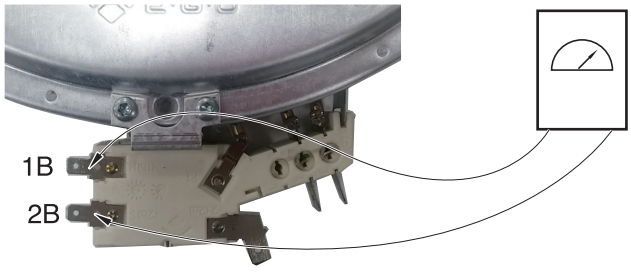
| Components | Test procedures | Results |
|---|---|---|
| Infinite switch<br>(Double units):<br>LF switch | 8. After check the single type, check the dual type at the same procedure. | |

| | Infinite Switch | Knob Position | Results | |
|---|---|---|---|---|
| Dual type | LF | Off | P1 - 2 | Infinite (open circuit) |
| | | | P2 - 4 | Infinite(open circuit) |
| | | | P2 - 4a | Infinite (open circuit) |
| | | On (Single) | P1 - 2 | Continuity (short circuit) |
| | | | P2 - 4 | Continuity (short circuit) |
| | | | P2 - 4a | Infinite (open circuit) |
| | | On (Dual) | P1 - 2 | Continuity (short circuit) |
| | | | P2 - 4 | Continuity (short circuit) |
| | | | P2 - 4a | Continuity (short circuit) |

| Components | Test procedures | Results |
|---|---|---|
| **Single surface units:**<br>Left Rear (LR)<br>and<br>Right Rear(RR)<br>Element | 1. Refer to page 3-7 for the servicing procedure<br>2. Set the Multiple meter scale to the R x 1<br>3. Disconnect wires from cook-top elements<br>4. Touch the ohmmeter test leads to the element terminal 1A and 2A.<br>The meter should indicate 46 Ω ± 10%<br>  <br><br>5. Touch the ohmmeter test leads to limiter terminals 1B and 2B.<br>With the temperature below 150˚F, the meter should indicate an open circuit(infinite).<br>With the temperature above 150˚F, the meter should indicate continuity (0Ω).<br>  <br> | Normal: Approximately 46 Ω,<br>If not replace<br><br>Below 150˚F<br>→ open circuit(infinite).<br><br>Above 150˚F<br>→ continuity (0 Ω) |

| Components | Test procedures | Results |
|---|---|---|
| Center Rear(CR) Element<br>: Warming Zone (Plane Heater) | 1. Refer to page 3-7 for the servicing procedure<br>2. Set the Multiple meter scale to the R x 1<br>3. Disconnect wires from cook-top elements<br>4. Touch the ohmmeter test leads to the element terminal E1 and E2.<br>The meter should indicate 570Ω ± 10%<br>  <br> | Normal: Approximately 570 Ω, If not replace |
| | 5. Touch the ohmmeter test leads to limiter terminals 1A and 2A<br>With the temperature below 150˚F, the meter should indicate an open circuit(infinite).<br>With the temperature above 150˚F, the meter should indicate continuity (0Ω).<br>  <br> | Below 150˚F<br>→ open circuit(infinite).<br><br>Above 150˚F<br>→ continuity (0 Ω) |

| Components | Test procedures | Results |
|---|---|---|
| **Dual surface units:**<br>Left Front(LF)<br>Element | 1. Refer to page 3-7 for the servicing procedure<br>2. Set the Multiple meter scale to the R x1<br>3. Disconnect wires from cook-top elements<br>4. Touch the ohmmeter test leads to the (E1 & 1A) and (E2 & 1A) the meter should indicate :<br>- (E1 & 1A) → 38 Ω ± 10%<br>- (E2 & 1A) → 30 Ω ± 10%<br>  <br>5. Touch the ohmmeter test leads to limiter terminals 1B and 2B.<br>With the temperature below 150˚F, the meter should indicate an open circuit(infinite).<br>With the temperature above 150˚F, the meter should indicate continuity (0 Ω).<br>  | Normal: Approximately 38 Ω<br><br>Normal: Approximately 30 Ω<br><br>Below 150˚F<br>→ open circuit (infinite).<br><br>Above 150˚F<br>→ continuity (0 Ω) |

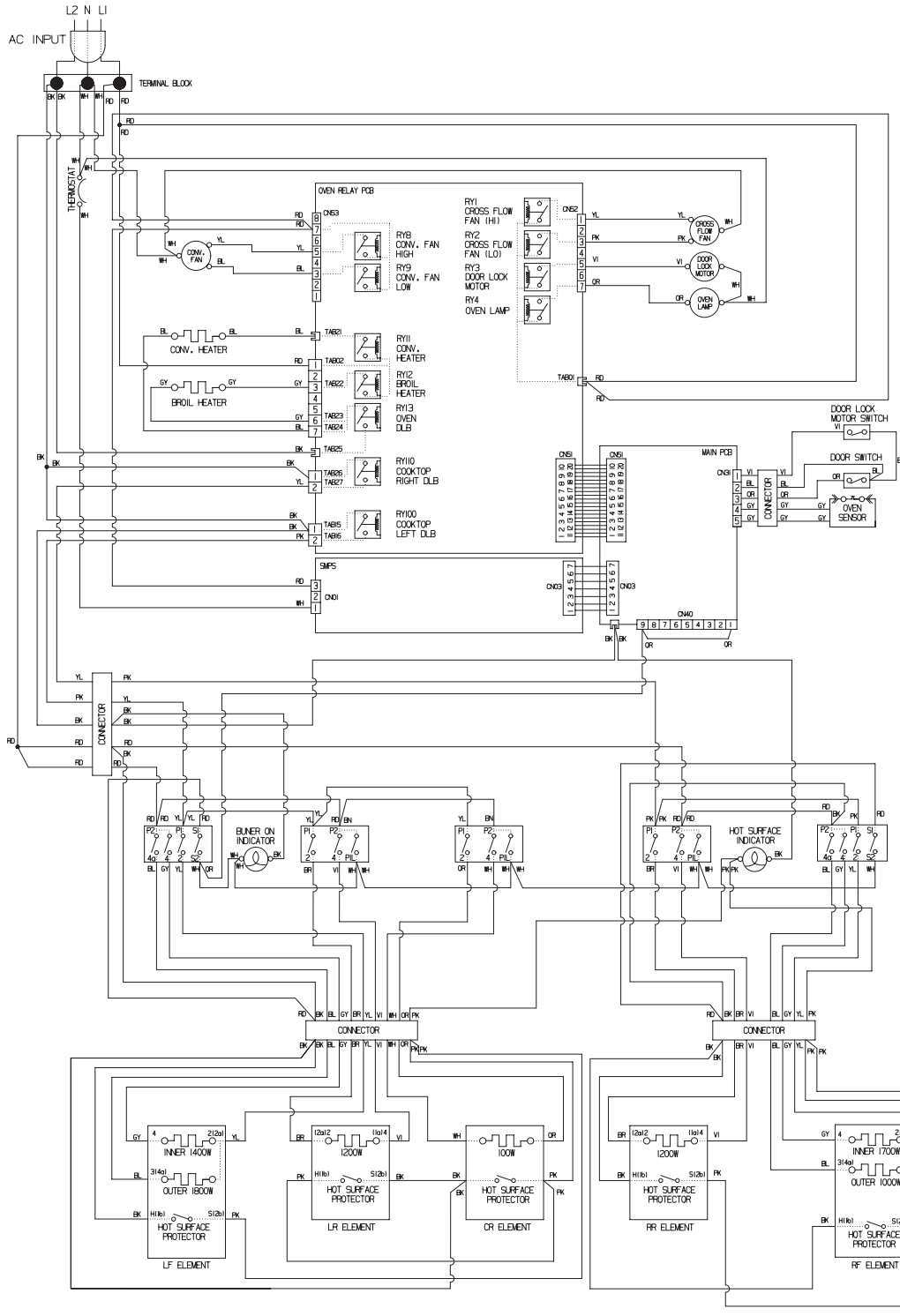
| Components | Test procedures | Results |
|---|---|---|
| **Dual surface units:**<br>Right Front(RF)<br>Element | 1. Refer to page 3-7 for the servicing procedure<br>2. Set the Multiple meter scale to the R x1<br>3. Disconnect wires from cook-top elements<br>4. Touch the ohmmeter test leads to the (E1 & 1A) and (E2 & 1A) the meter should indicate :<br>- (E1 & 1A) → 32 Ω ± 10%<br>- (E2 & 1A) → 54 Ω ± 10%<br>  <br>5. Touch the ohmmeter test leads to limiter terminals 1B and 2B.<br>With the temperature below 150˚F, the meter should indicate an open circuit(infinite).<br>With the temperature above 150˚F, the meter should indicate continuity (0 Ω).<br>  | Normal: Approximately 32 Ω<br><br>Normal: Approximately 54 Ω<br><br>Below 150˚F<br>→ open circuit (infinite).<br><br>Above 150˚F<br>→ continuity (0 Ω) |

# SCHEMATIC DIAGRAM

**⚠ WARNING**

POWER MUST BE DISCONNECTED BEFORE SERVICING THE APPLIANCE. FAILURE TO DO SO CAN RESULT IN DEATH OR ELECTRICAL SHOCK.

**NOTE:**
Schematic diagram shows oven door opened and unlocked.All elements are set to “OFF”.




WIRE COLORS

| SYMBOL | COLOR |
|---|---|
| WH | WHITE |
| BK | BLACK |
| RD | RED |
| YL | YELLOW |
| PK | PINK |
| BL | BLUE |
| BR | BROWN |
| GN | GREEN |
| GY | GRAY |
| OR | ORANGE |
| VI | VIOLET |

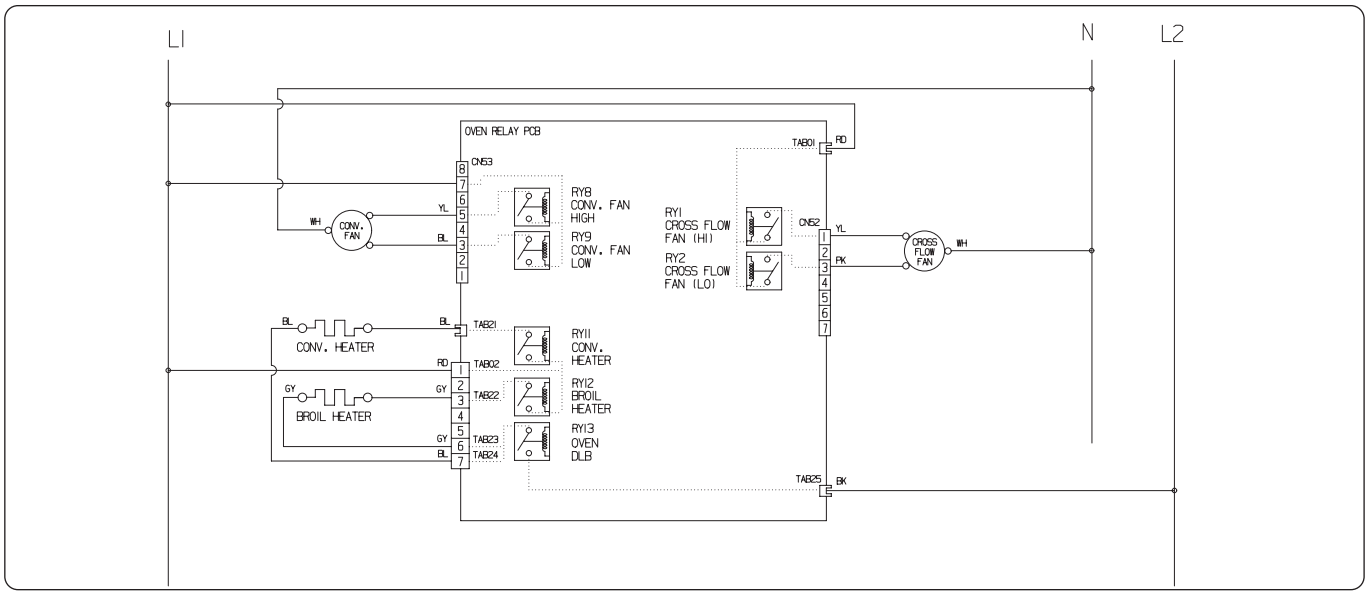
# STRIP CIRCUITS

## Complete the following steps before checking electric oven circuit :

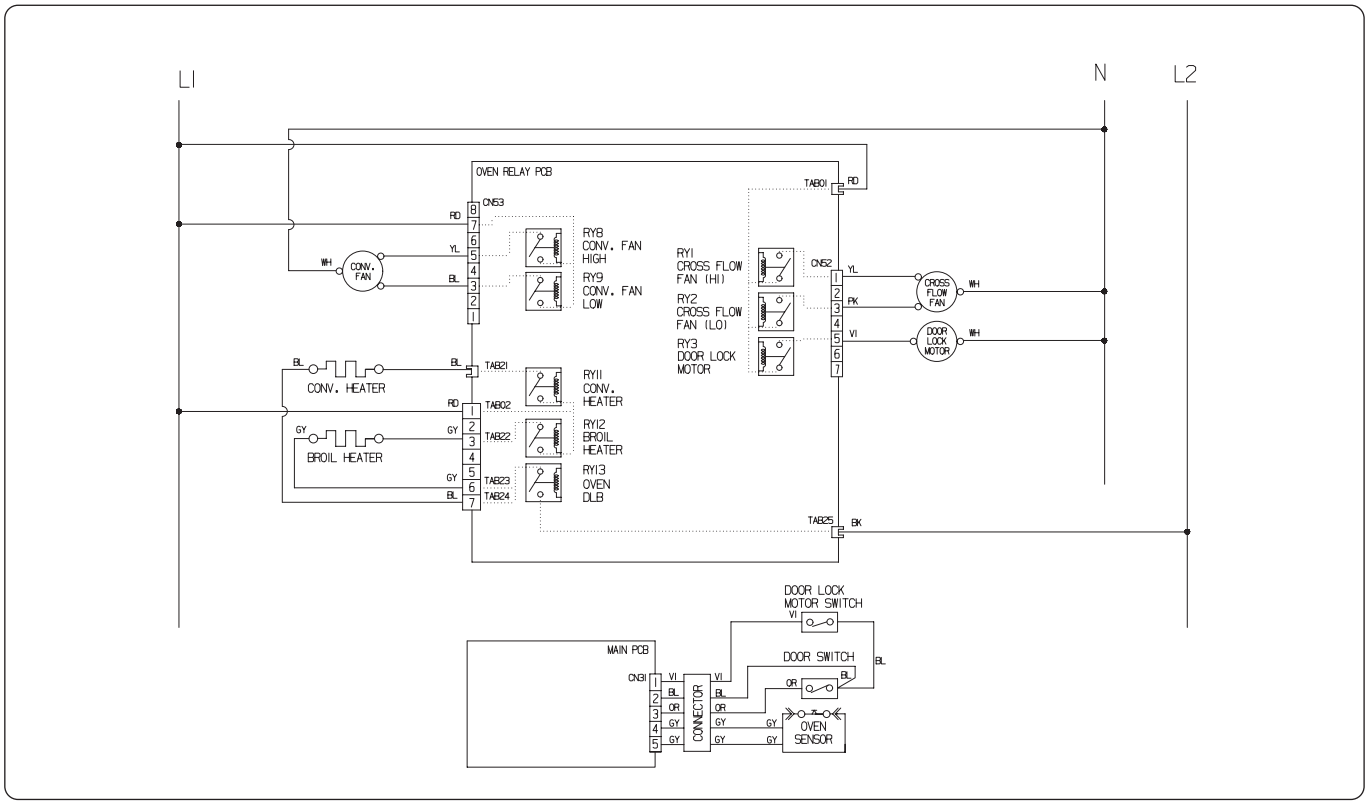
1.Check the line voltage, household fuse or circuit breaker.
2.Check for loose wiring or mis-wiring within electric range.
**NOTE:** The following individual circuits are for use in diagnosis, and are shown in the ON position.

## For Model: LSE4613ST / LSE4613BD

### BAKE / CONV. BAKE / CONV. ROAST / SPEED ROAST

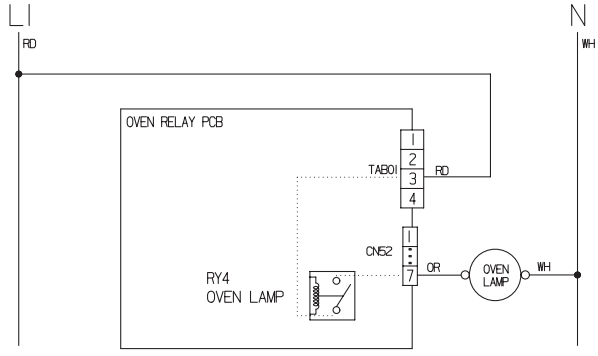



### SELF CLEANING

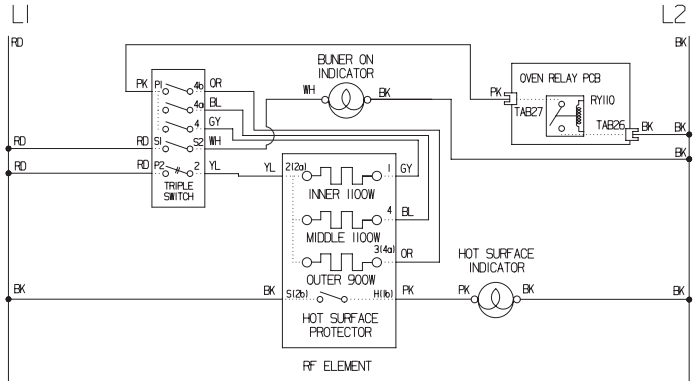


# For Model: LSE4613ST / LSE4613BD

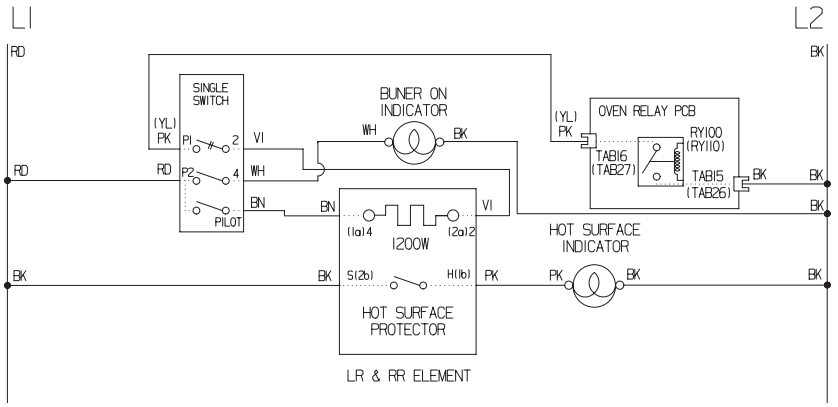
## OVEN LIGHT




## CR COOK-TOP ELEMENT

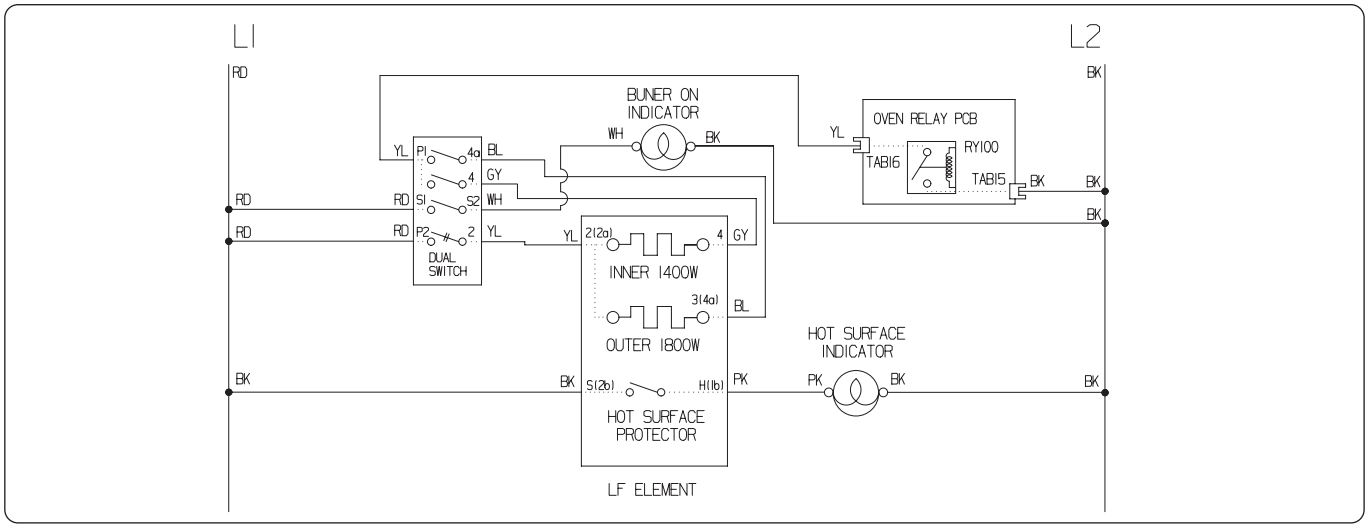



## LR&RR COOK-TOP ELEMENT

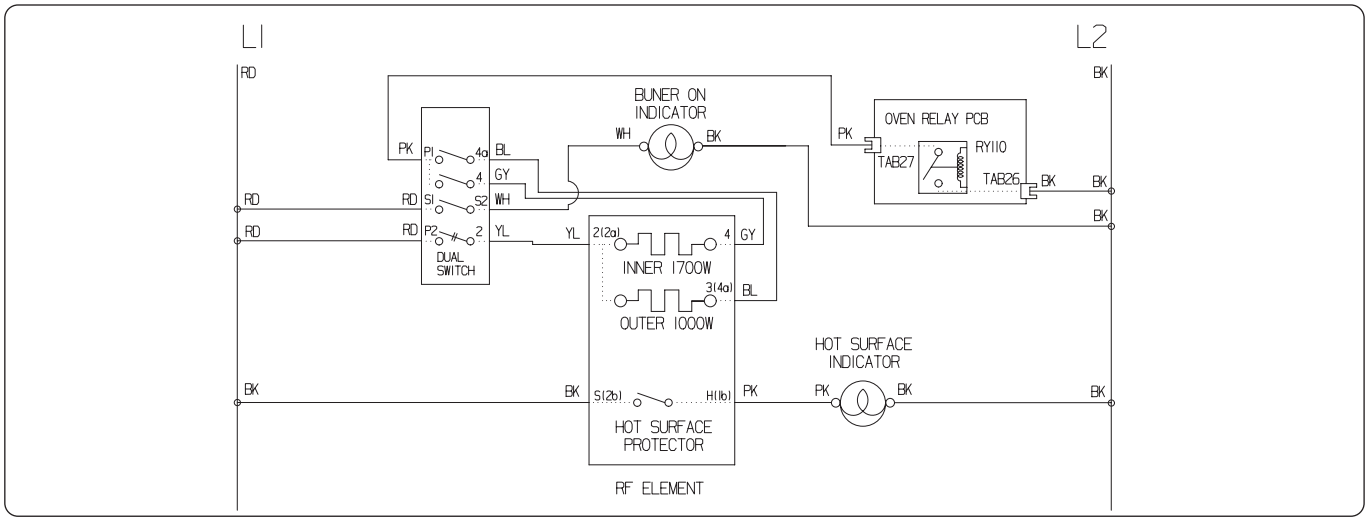


# For Model: LSE4613ST / LSE4613BD

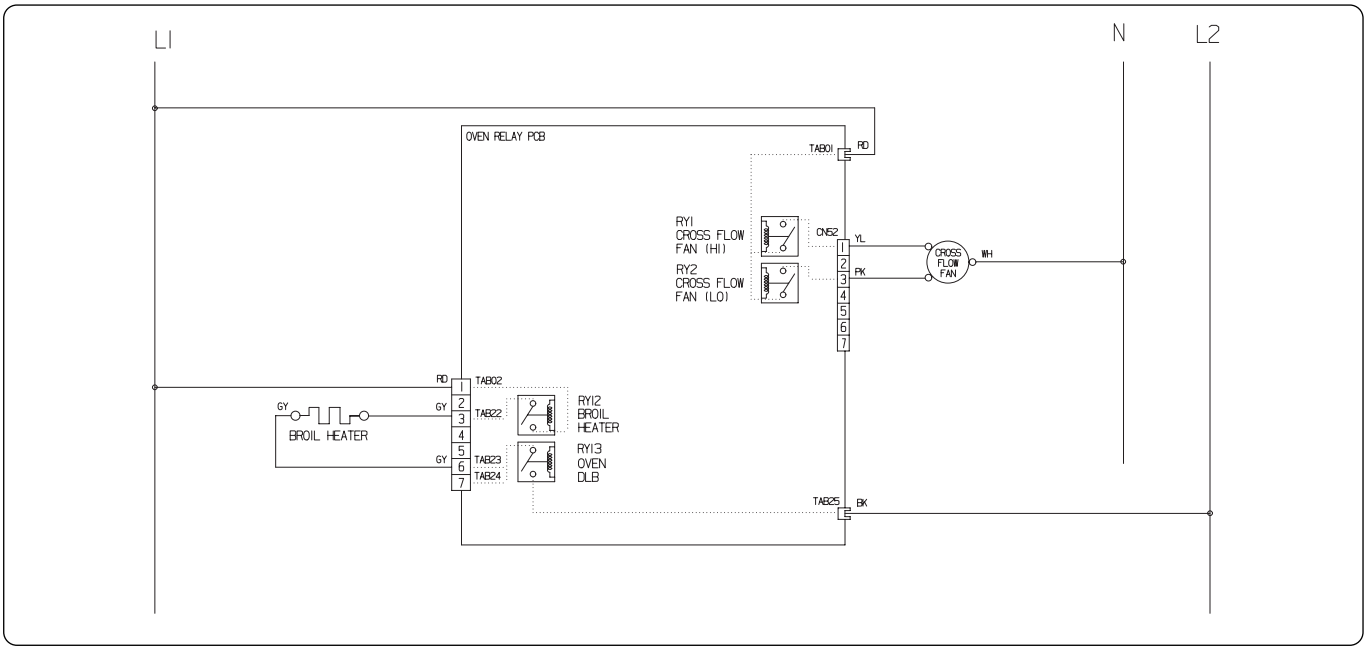
## LF COOK-TOP ELEMENT



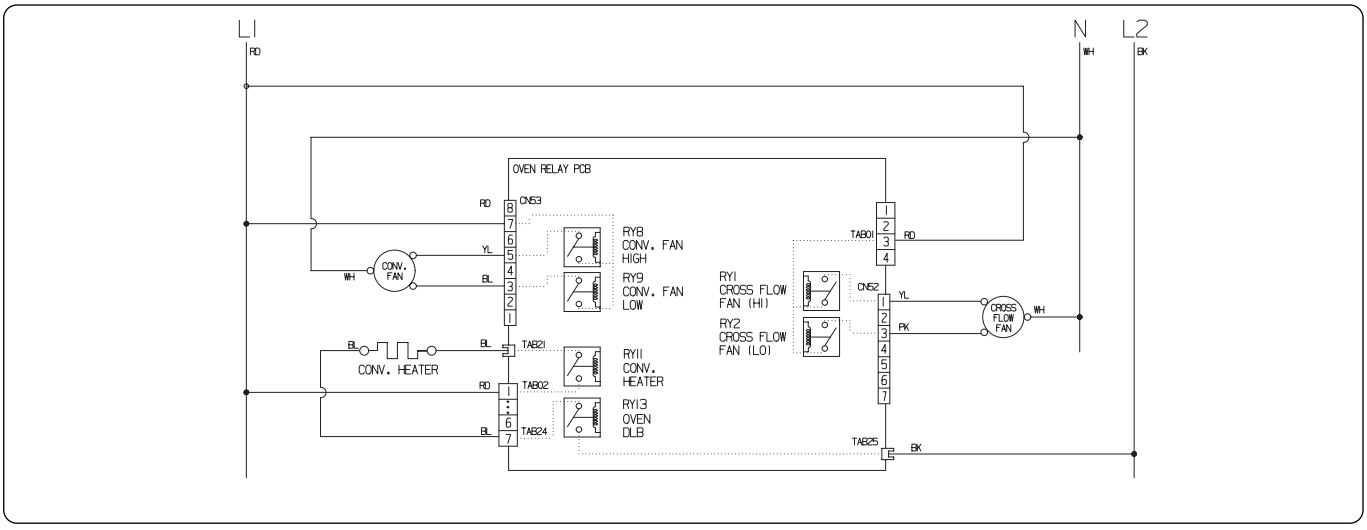

## RF COOK-TOP ELEMENT



## BROIL



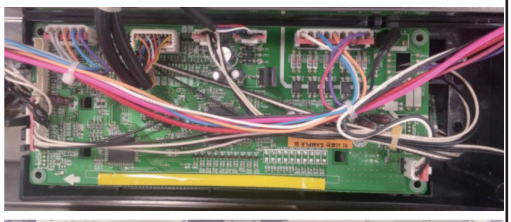

## WARM / PROOF / EASY CLEAN

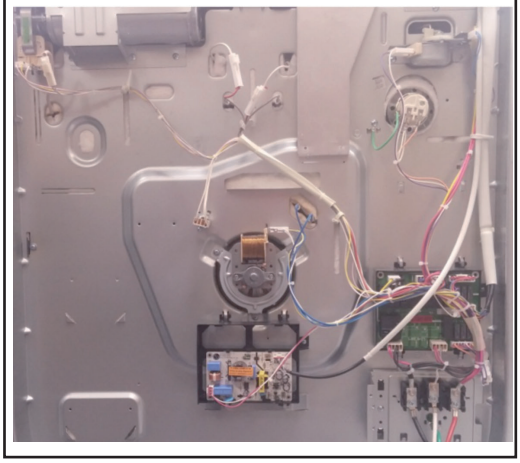


# COMPOSITION OF CONTROL

**Front**

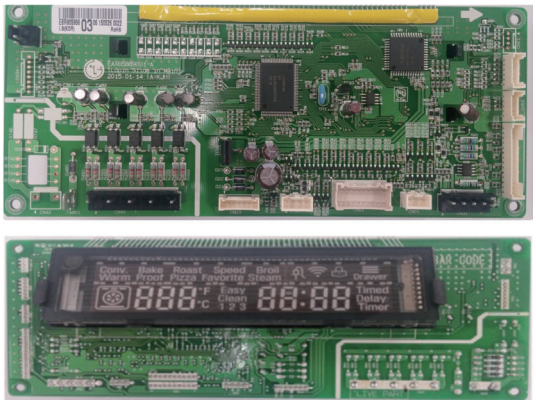
**Back**



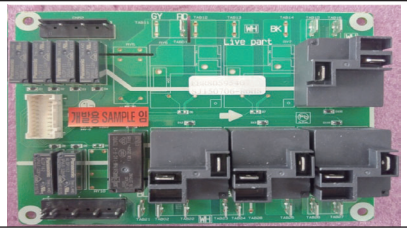


***Controller assembly***

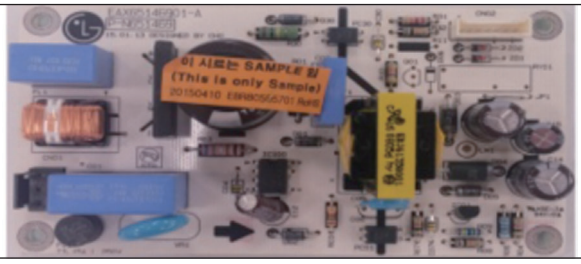
***Main PCB ( P/N : EBR80595606)***



***Relay PCB ( P/N : EBR80595407)***



***SMPS PCB ( P/N : EBR80595701)***

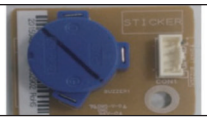


***Touch PCB ( P/N : EBR79627801)***

***Encoder PCB ( P/N : EBR80327001)***

***NFC PCB ( P/N : EBR78789101)***

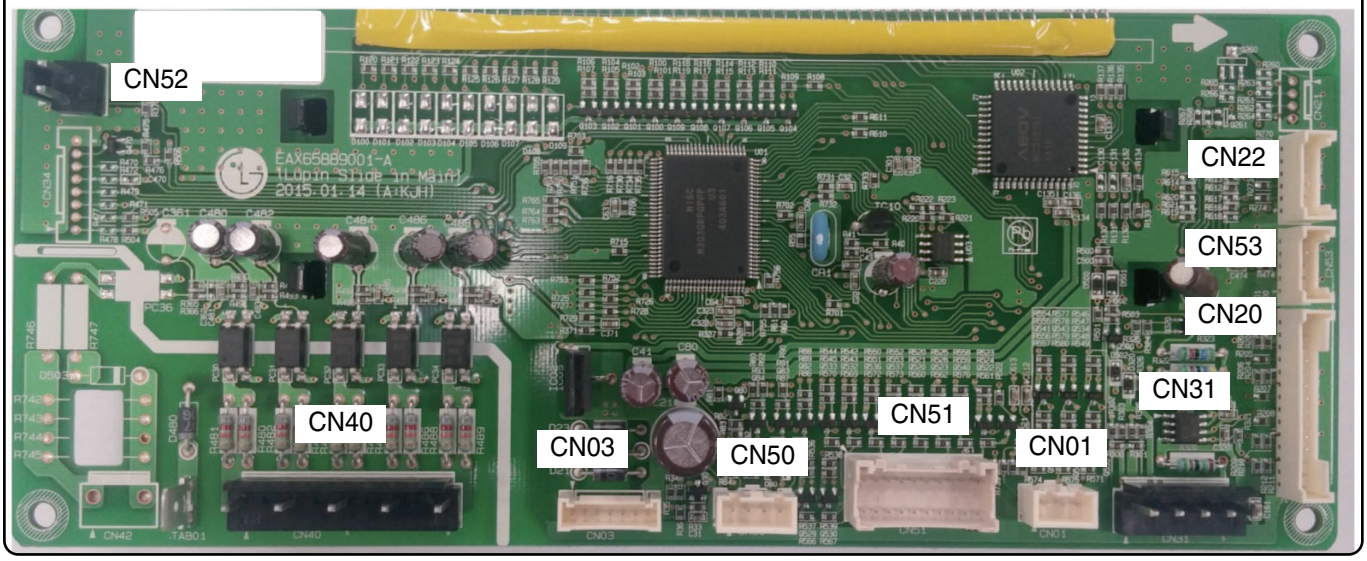
***Buzzer PCB ( P/N : EBR76332902)***



# COMPOSITION OF CONTROL

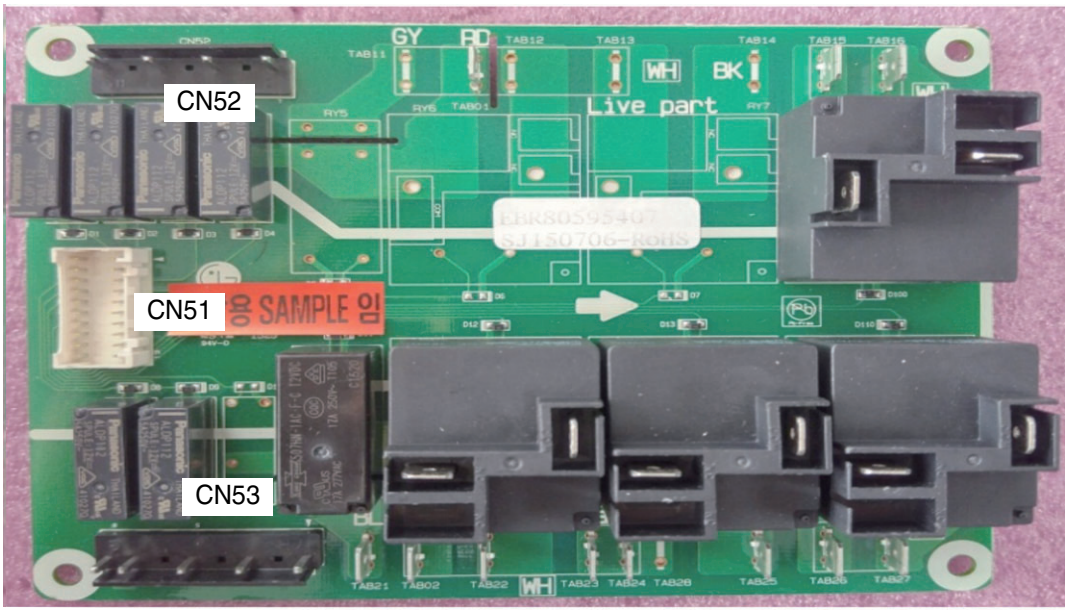
## Main PCB

**( P/N : EBR80595606)**




## Relay PCB

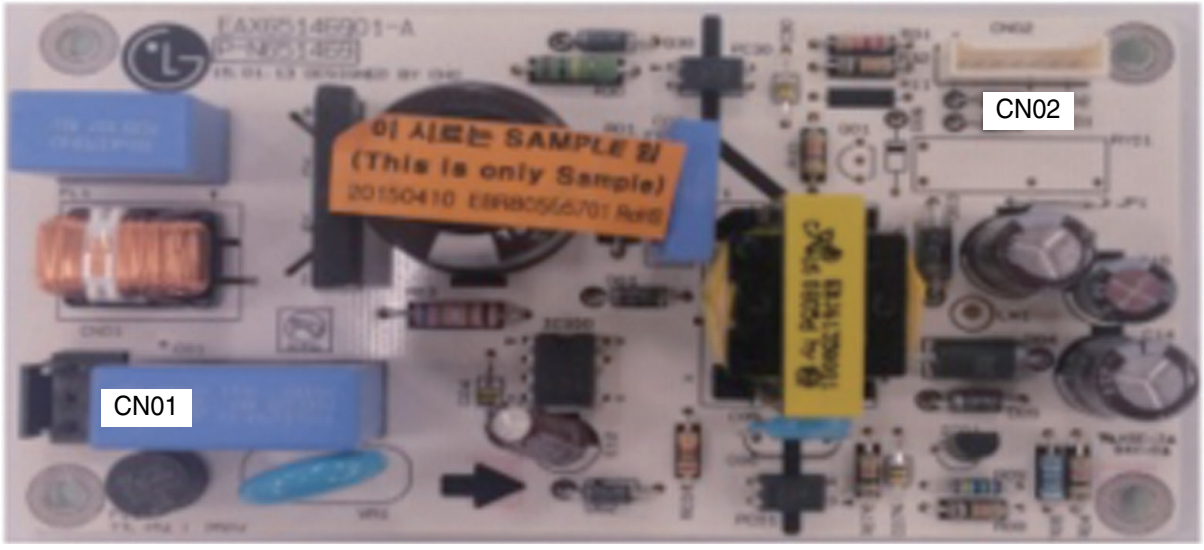
**( P/N : EBR80595407)**



# COMPOSITION OF CONTROL

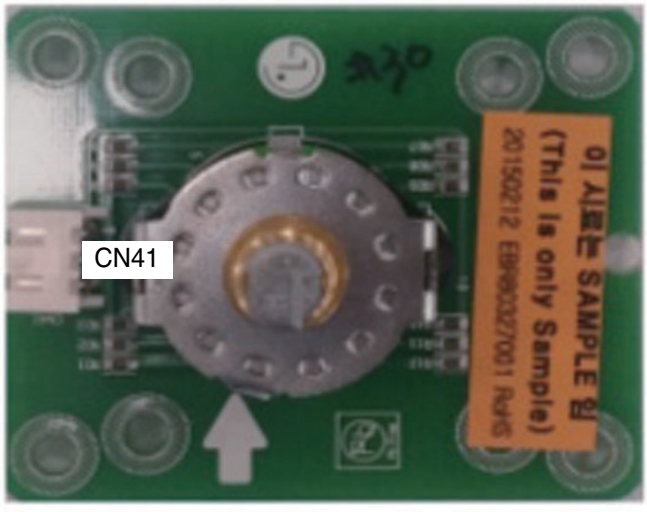
## SMPS PCB

**( P/N : EBR80595701)**




## Encoder PCB

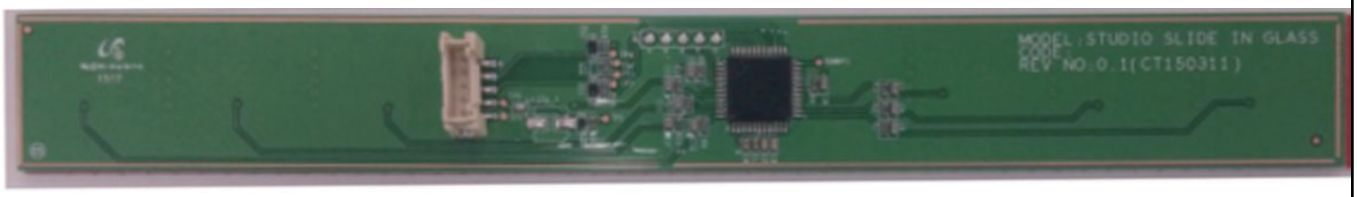
**( P/N : EBR80327001)**



# COMPOSITION OF CONTROL

## Touch PCB

**( P/N : EBR79627801)**




## NFC and Buzzer PCB

**( P/N : EBR78789101)**

**( P/N : EBR76332902)**

# SVC TEST MODE

## 7-1 Sequence of SVC Test Mode

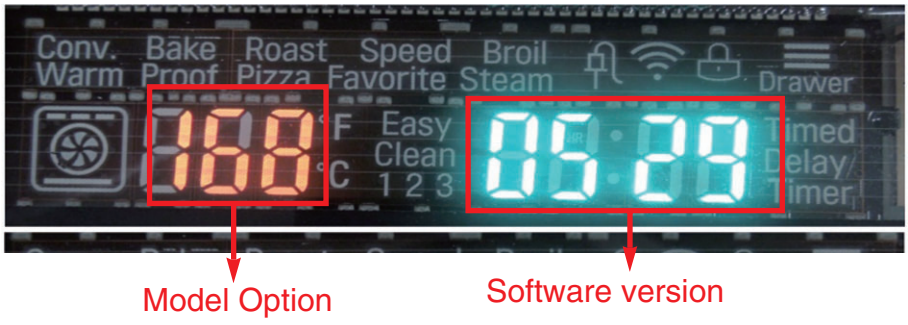
**▮ To enter the test mode, follow these steps:**

(1) Press the any button, and encoder is placed in the Off

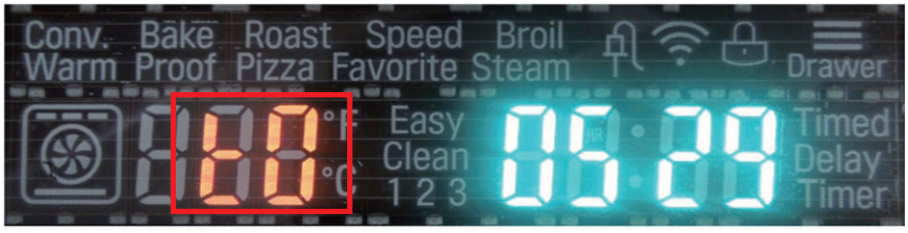
(2) Press the button in the following order

: + →_→ Oven light (Oven Light hold for 3 seconds)


(3) Press the OVEN LIGHT button again. (hold for 3seconds)

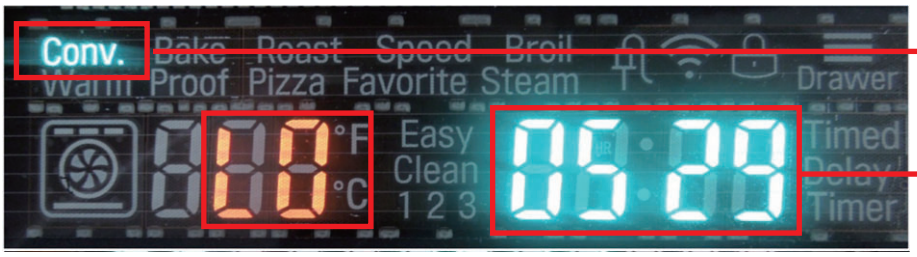



(4) Select the “t0” by press the + button.




(5) Press the START button.


(6) Start the test by press the START button again.



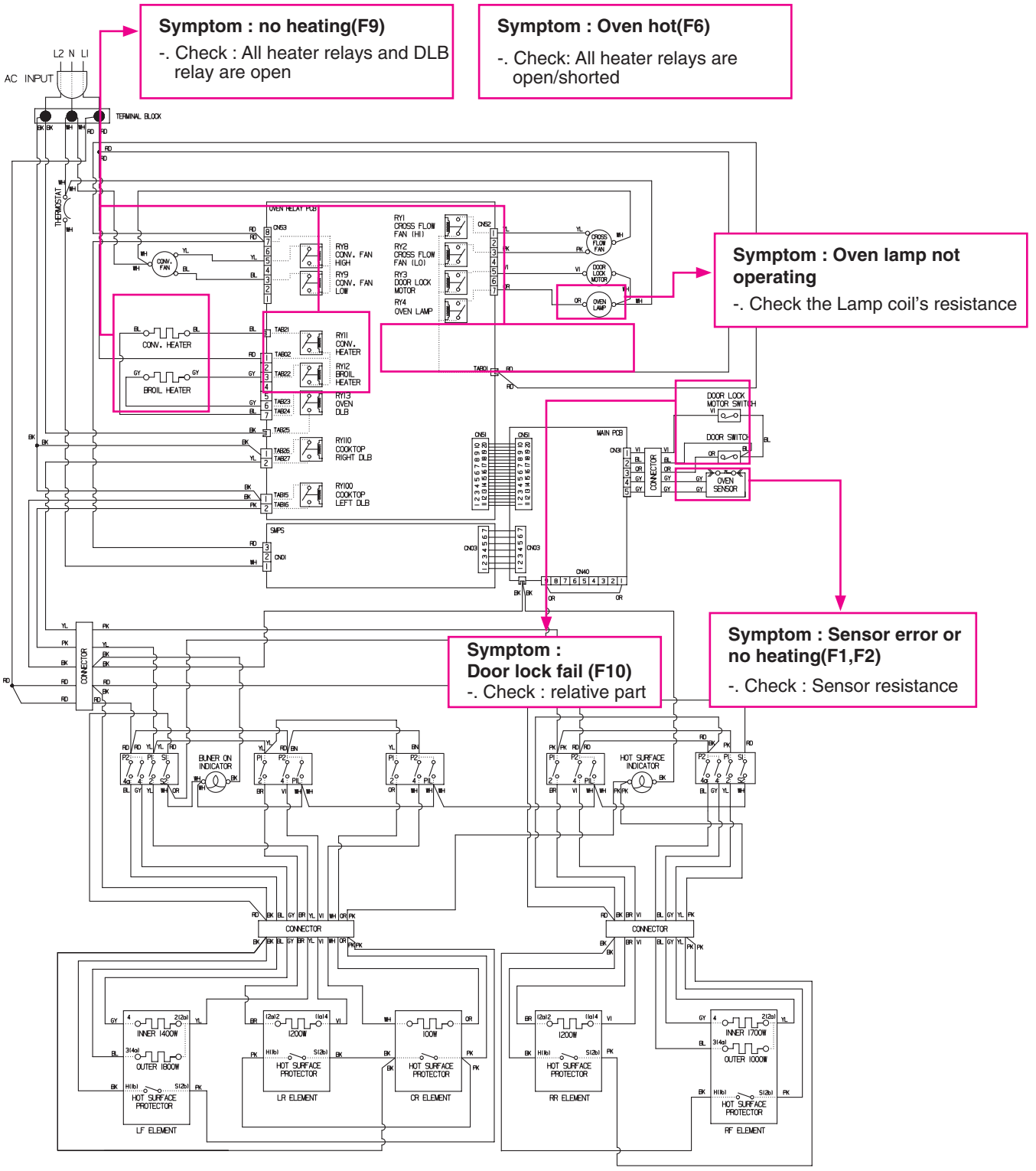

Current inspecting Relay's information is displayed

(7) Whenever you input the START button,
the relay operation sequence should be as seen below.

**※ Relay Operation Sequence**

| STEP | RY11 Conv. Heater | RY12 Broil Inner | RY13 DLB | RY8 C/Fan High | RY9 C/Fan Low | RY1 B/Fan High | RY2 B/Fan Low |
|---|---|---|---|---|---|---|---|
| 1 | ○ | ● | ● | ○ | ○ | ○ | ○ |
| 2 | ● | ○ | ● | ○ | ● | ○ | ● |
| 3 | ● | ○ | ● | ● | ○ | ● | ○ |
| 4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5 | ○ | ● | ● | ○ | ○ | ○ | ○ |
| 6 | ● | ○ | ● | ○ | ● | ○ | ● |
| 7 | ● | ○ | ● | ● | ○ | ● | ○ |
| 8 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9 | ○ | ● | ● | ○ | ○ | ○ | ○ |
| 10 | ● | ○ | ● | ○ | ● | ○ | ● |
| 11 | ● | ○ | ● | ● | ○ | ● | ○ |
| 12 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 13 | ○ | ● | ● | ○ | ○ | ○ | ○ |
| 14 | ● | ○ | ● | ○ | ● | ○ | ● |
| 15 | ● | ○ | ● | ● | ○ | ● | ○ |
| 16 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## 7-2 Basic Check Summary



# TROUBLESHOOTING

## 8-1 Check the Failure Code

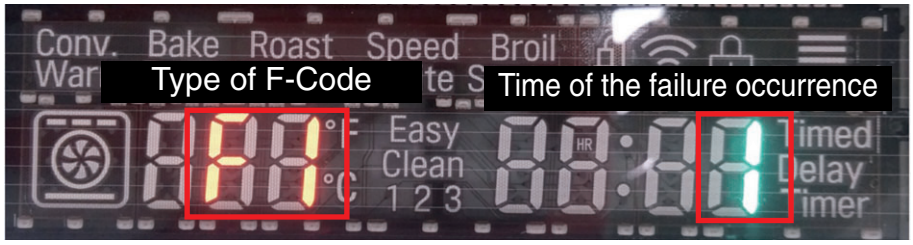
**▮ When the oven has a malfunction while cooking,**

Cooking will be canceled and log data of F-code will be recorded in EEPROM.
F-code will not display during normal operation.

**▮ Check the failure code following these steps.**

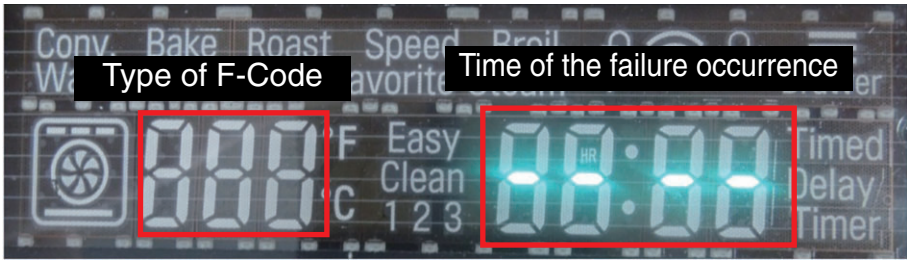
1. Press the any button, and encoder is placed in the Off
2. Press the button in the following order
   : + →_ → Oven light (Oven Light hold for 3 seconds)

If the oven has a malfunction, the Oven will show the failure Code, like FIG. 1




< FIG. 1 >

If the oven do not has any failure, the Oven will show it like FIG. 2




< FIG. 2 >

**NOTE:**
After checking the F code, press the “CLEAR” button to remove all codes.

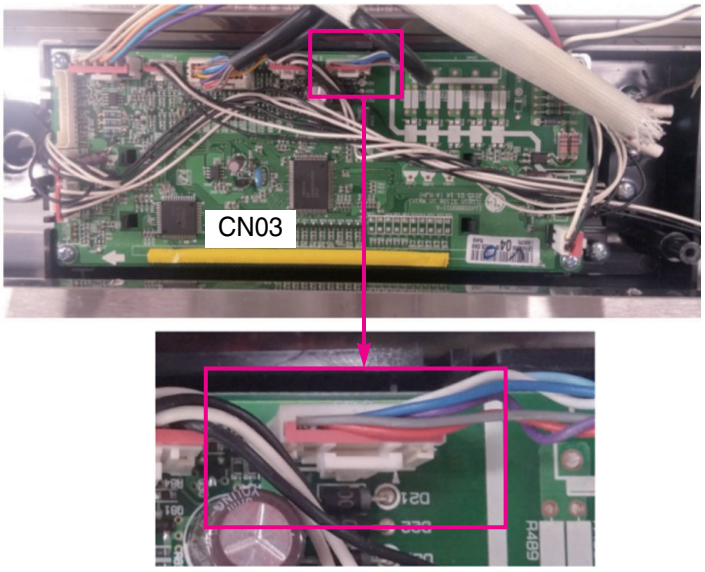
# TROUBLESHOOTING

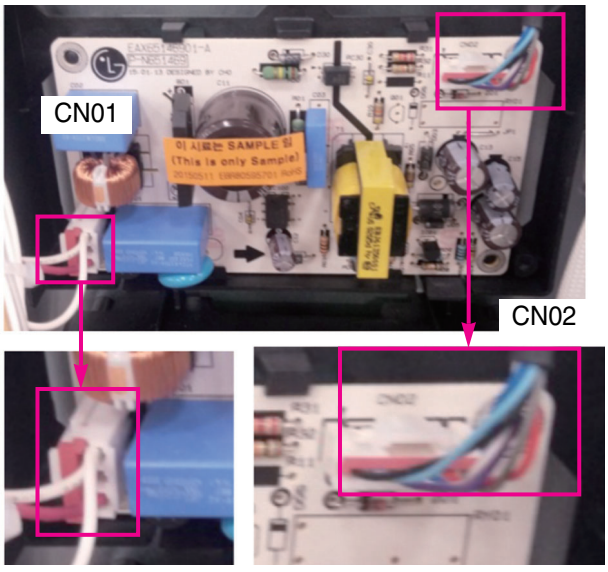
## 8-2 Failure Code Summary

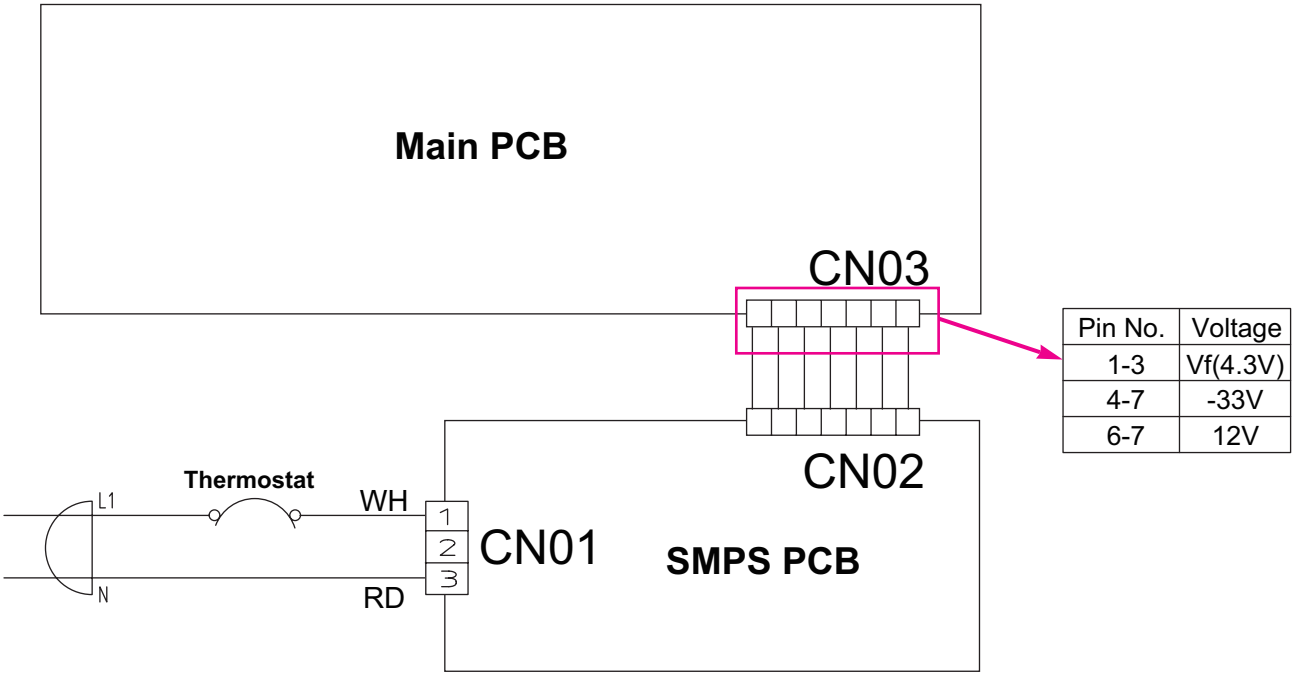
| Code | Description | explanation | Check point |
|---|---|---|---|
| **F1** | **Sensor open** | Oven Thermistor is open | 1. Wiring<br>2. Oven Sensor |
| **F2** | **Sensor short** | Oven Thermistor is shorted. | 1. Wiring<br>2. Oven Sensor |
| **F3** | **Key short** | 1. If '25 key short' occurred 3 times in 90 seconds.<br>2. If communication is impossible with Touch IC more than 60 seconds | 1. .Wiring<br>2.Touch PCB |
| **F6** | **Oven hot** | The oven temperature is over 650 ˚F continuously during 2 minutes on cooking except self cleaning. | Oven Sensor |
| **F9** | **Oven No heating** | EXCEPT PROOF and WARM<br>Starting temperature of 130 ˚For less, and the oven door is closed, the oven inside temperature does not go up more than 10˚F compared with the starting temperature for 5minutes after the start of cooking. | 1. Electric Wiring<br>2. Oven Sensor |
| **F10** | **Door Lock Fail** | In case of Door Lock Failure during operating Lock motor. | 1. Electric Wiring<br>2. Motor's Resistance<br>3. Micro Switch |

# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Power Failure (Dead)**<br>**2. No Display** | 1. Check Electrical Wiring<br>2. Check the SMPS PCB Input Voltage with CN01 |




| Pin No. | Voltage |
|---|---|
| 1-3 | Vf(4.3V) |
| 4-7 | -33V |
| 6-7 | 12V |

# CHECKING FLOW CHART BY FAILURE

Power Failed (Dead), No display?

**Plug the unit**

**1** Check the button beep. Touch the Clear button, Can hear the beep sound?

Yes → Change the Main PCB

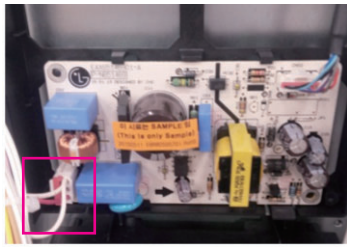
No

**2** Check the connection of Power Cord. Normal?

No → Reconnect. If defective harness, replace or fix

Yes

**3** Check the connection of SMPS PCB.(CN01) Normal?

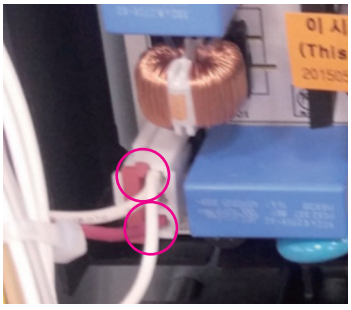


No → Reconnect. If defective harness, replace or fix

Yes

**4** Check the AC input of SMPS PCB.
- SMPS PCB CN01 (Pin 1 and 3)

120V AC?



Yes → Go to 7 (On the next Page)

No

**5** Check the connection of L1 and N at Terminal block. Normal?

No → Reconnect.

Yes

**6** Check the Thermostat
- Normal : Short
- Abnormal : Open

Normal?

No → Replace the Thermostat

Yes

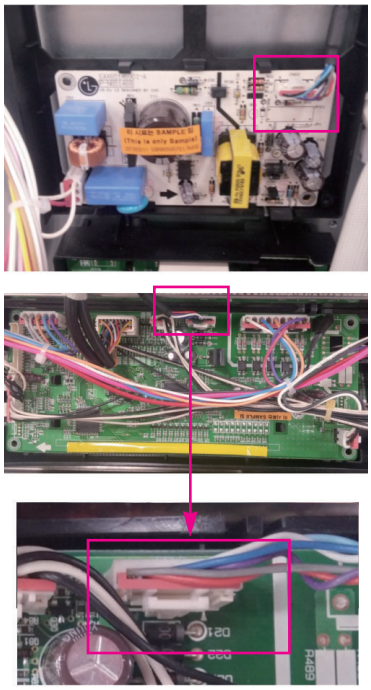
Replace the SMPS PCB

# CHECKING FLOW CHART BY FAILURE

**7**

Check the connecting states between CN02 of SMPS PCB and CN03 of Main PCB.

Is it OK?



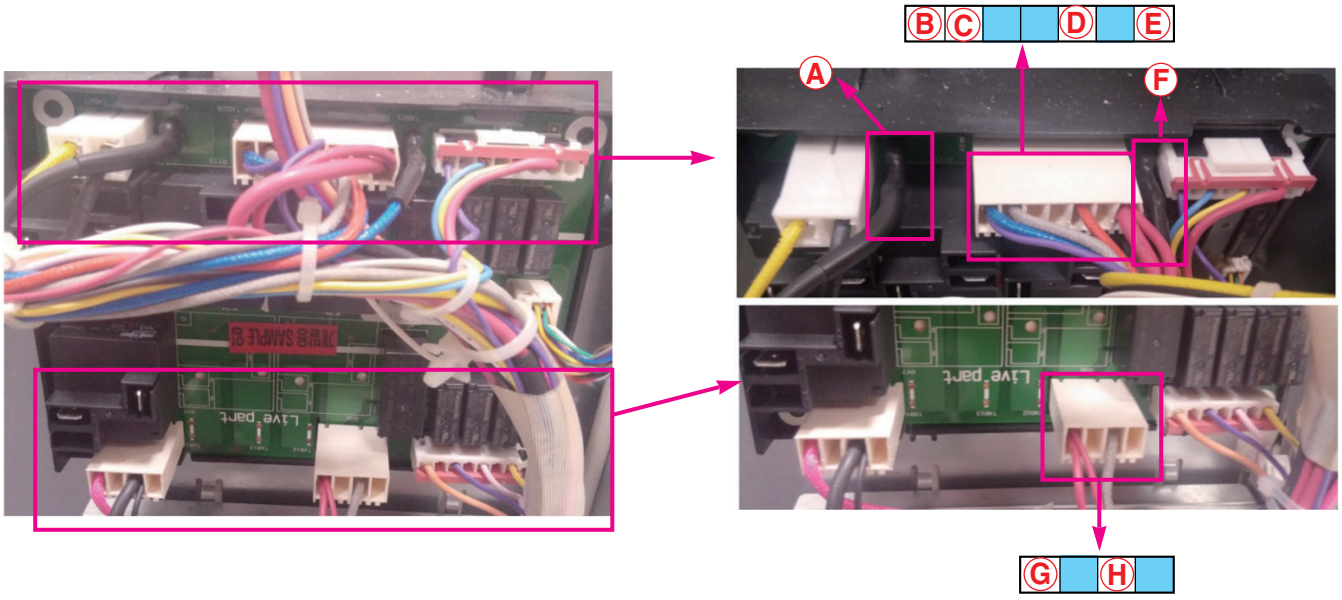
Yes → Replace the Main PCB

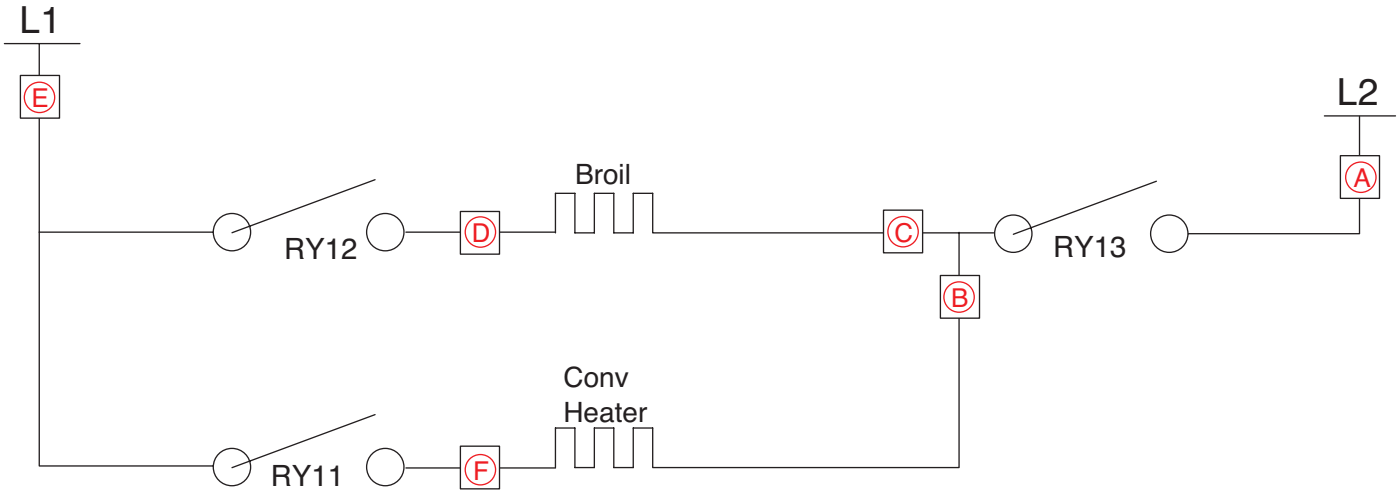
No ↓

Reconnect. If defective harness, replace or fix.
If the same phenomenon occurs even though after fixed connection, you should replace the Main PCB

# CHECKING FLOW CHART BY FAILURE

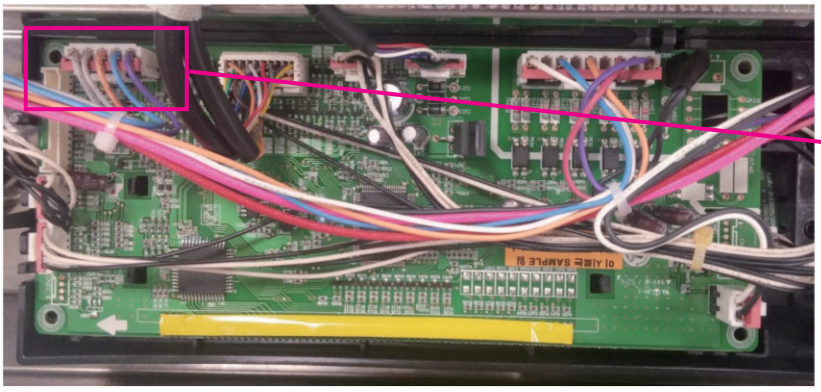
| *Symptom* | *Check Point* |
|---|---|
| **1. No heating**<br>**2. F9** | 1. Check Electric Wiring<br>2. Check Heater's Resistance.<br>3. Check the Sensor. |

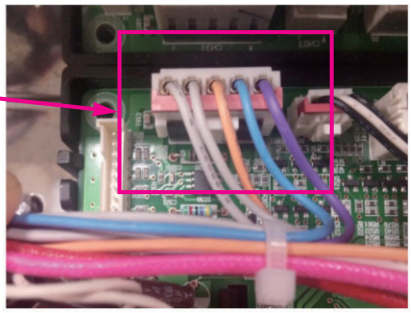


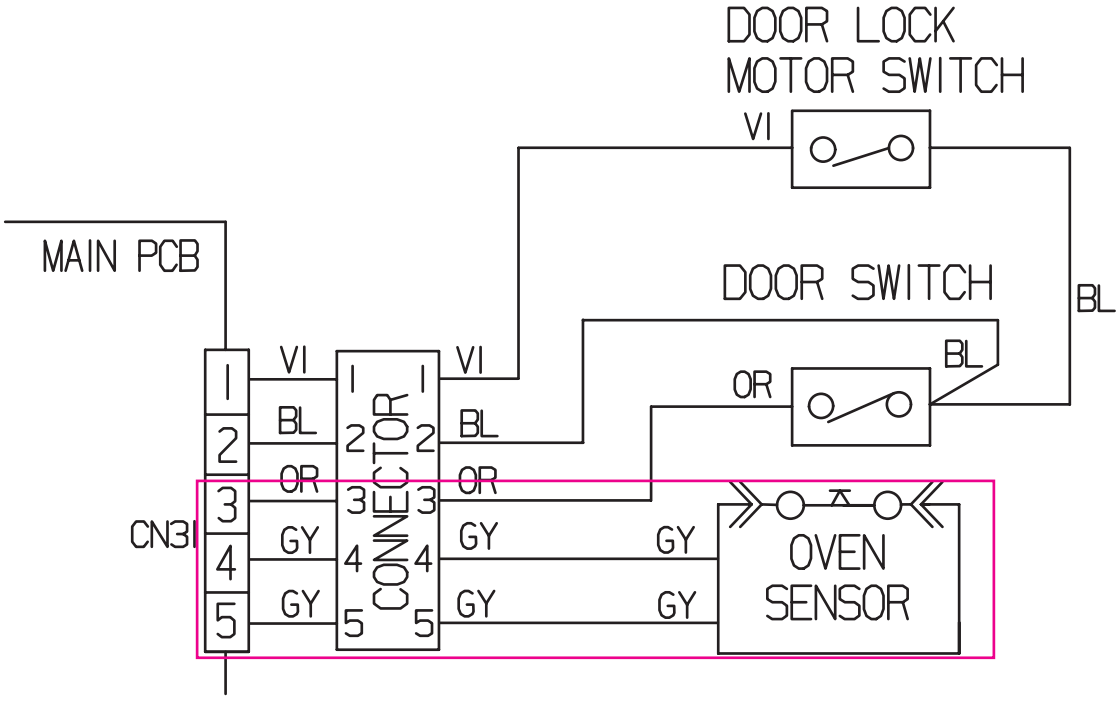
# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. No heating**<br>**2. F9** | 1.Check Electrical Wiring<br>2.Check Heater's Resistance.<br>3.Check the Sensor. |





**CN31**



# CHECKING FLOW CHART BY FAILURE

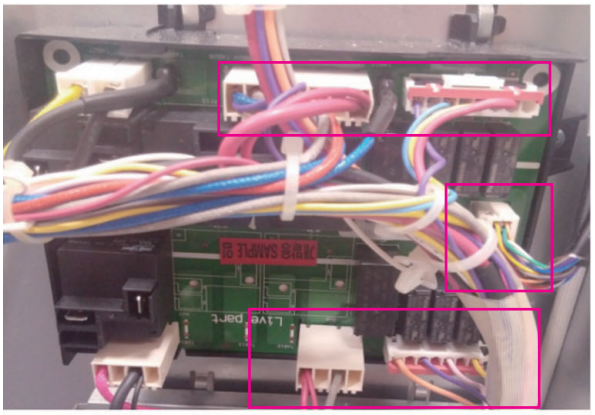
Oven does NOT heat, F9?

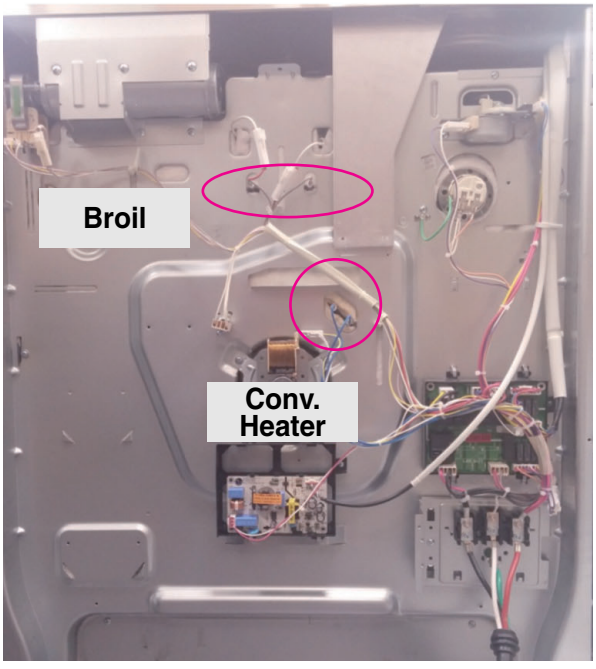
**Unplug the unit**

**1**

Is the Connector disconnected or loose?
(1) Electric wiring of Relay PCB All taps.
(2) Electric wiring of electric element

Yes → Reconnect. If defective harness, Replace or fix



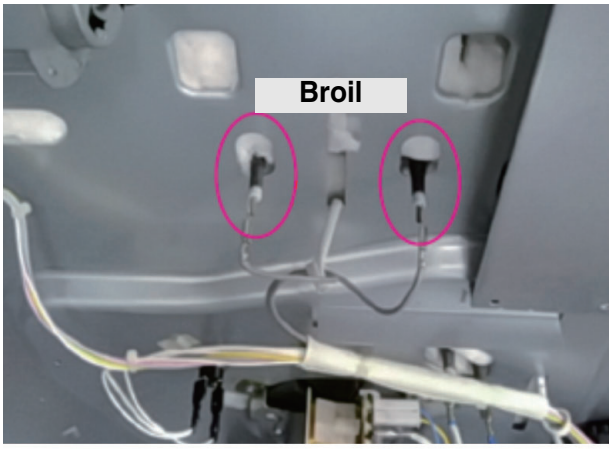


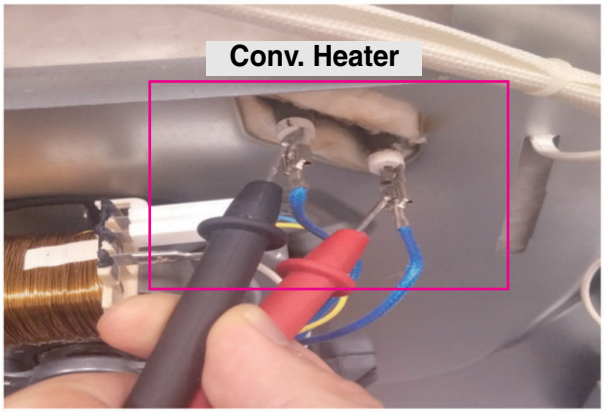

No

**2**

Check the resistance of each heater. Normal? (Measure the resistance after cooling down. The resistance is shown below)

No → Replace the failed heater




yes

# CHECKING FLOW CHART BY FAILURE

**3**

**Range Of resistance**

| Heater | Resistance[Ω] Approximately |
|---|---|
| Broil | 13.5 |
| Conv. Heater | 23 |

Yes

**Plug in the unit**

**4**

Is the value of thermistor normal? (Refer below) Check with the test mode

Yes → Go to No 6

**To enter the test mode, follow these steps:**

1. **Press the any button, and encoder is placed in the Off**
2. **Press the button in the following order : + → _ → Oven light (Oven Light hold for 3 seconds).**


3.


4.


5.


**Normal :** Thermistor value at room temp is from 70˚F to 90˚F

No

**Unplug the unit**

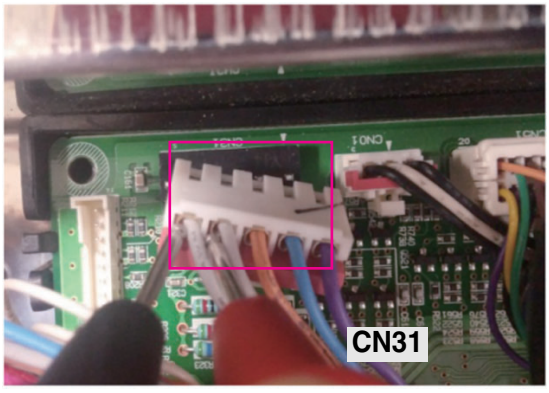
**5**

Is the resistance of thermistor normal?

No → Replace the defective Thermistor

Check:

Pins 4 and 5 of CN31 in main PCB
**Normal**- approximately 1.09kΩ at 25˚C



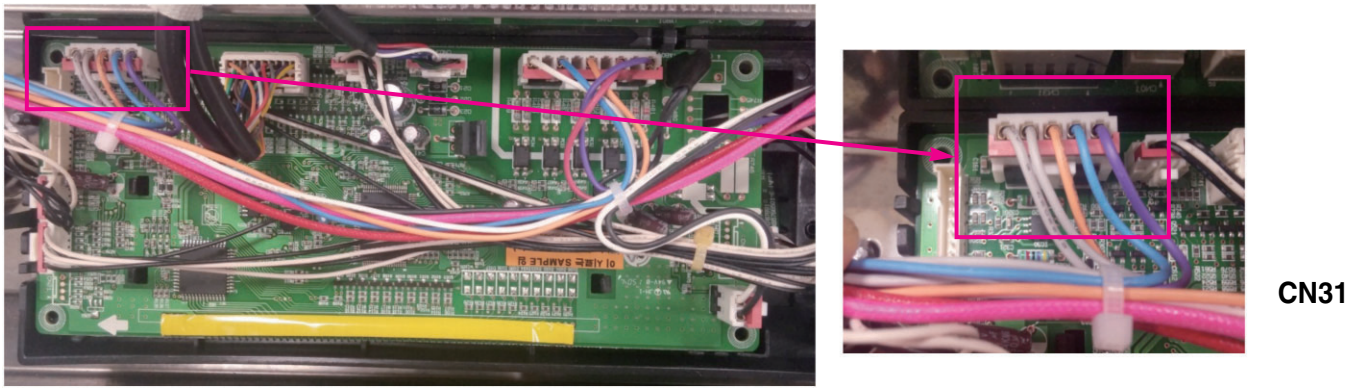

Yes

**6**

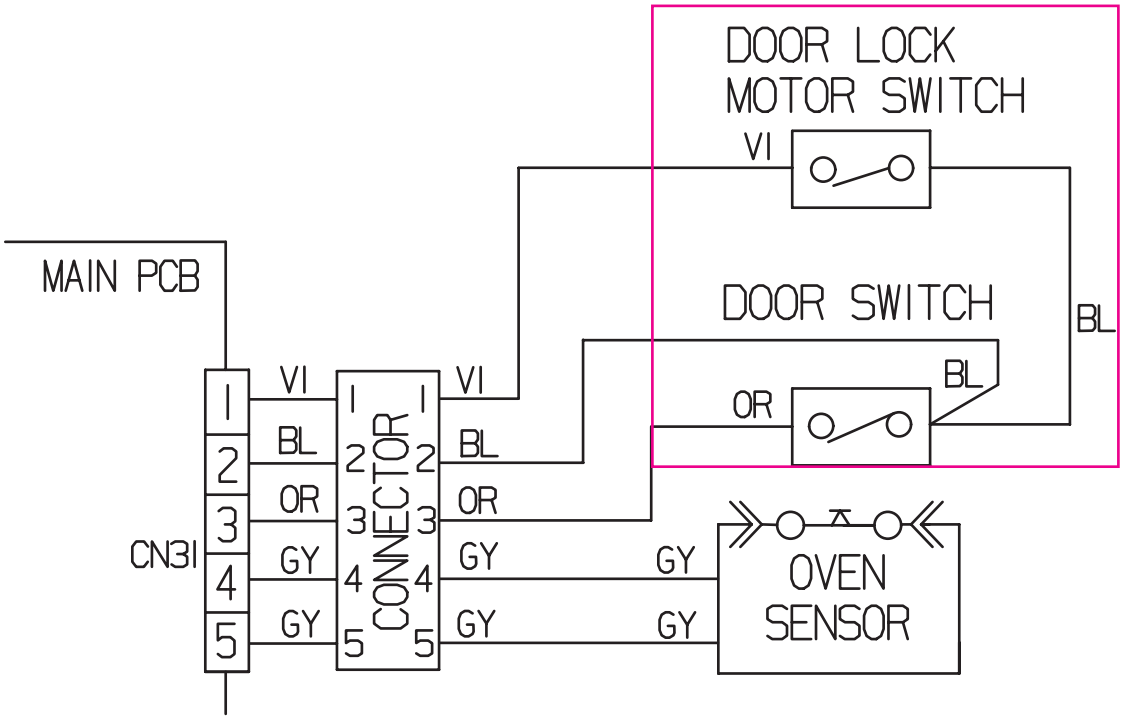
Replace the Relay PCB.
If the same phenomenon occurs even though after replace Relay PCB, you should replace the Main PCB

# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Door Lock System Failure**<br>**2. F10** | 1. Check the Electrical wiring<br>2. Check the Motor's Resistance<br>3. Check the Relay PCB (Door Lock Relay) |

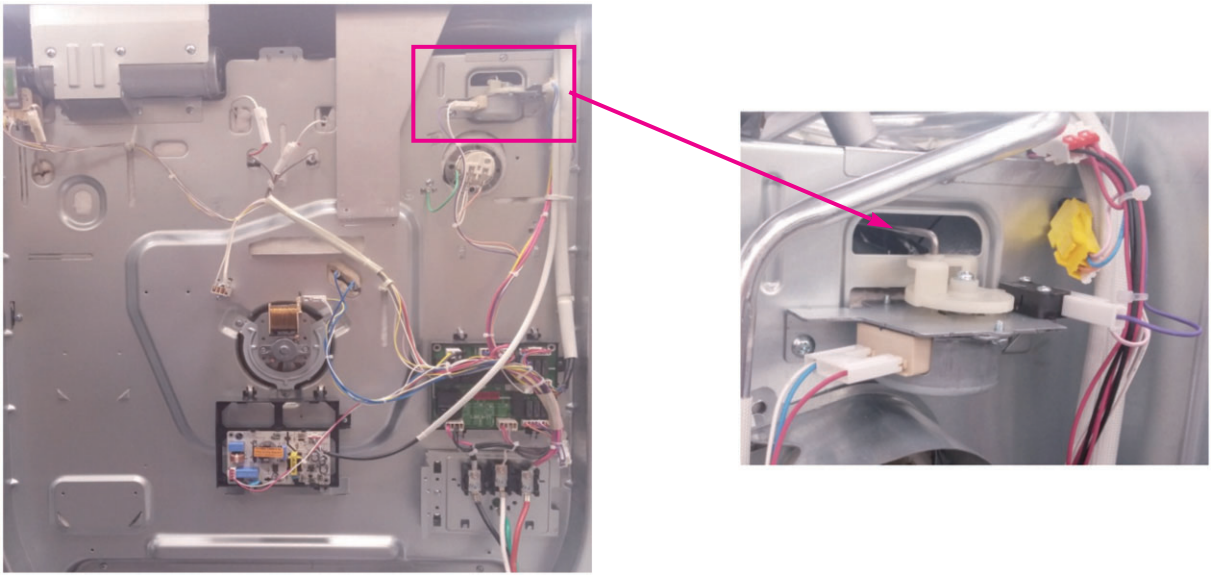


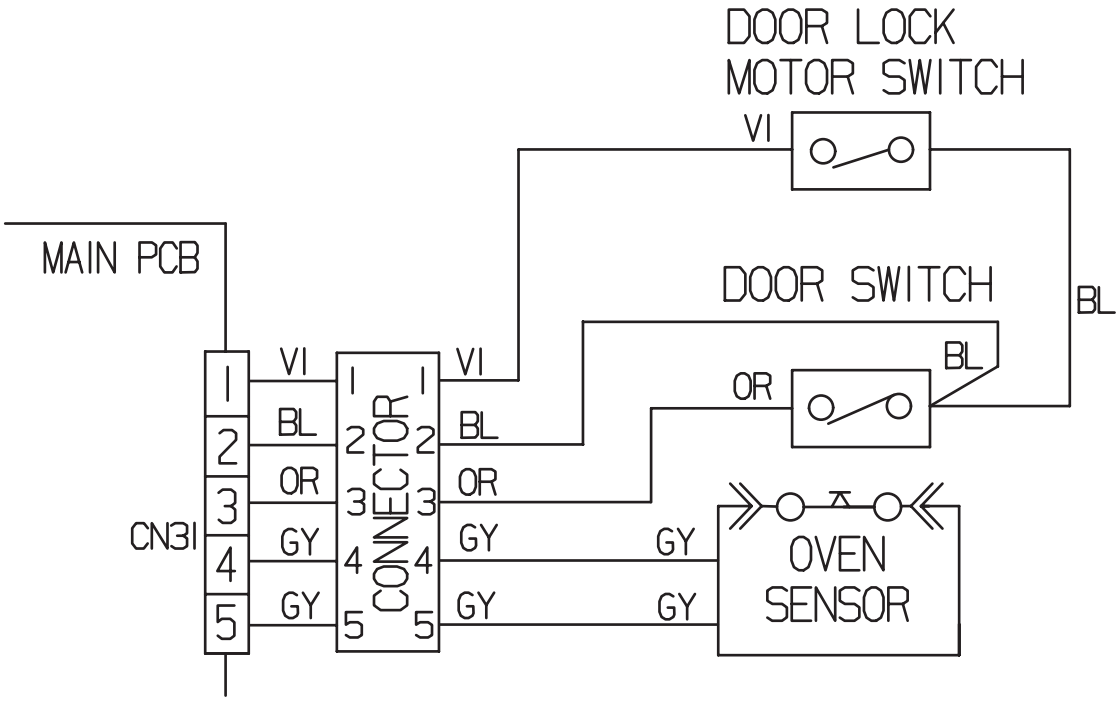
**CN31**



# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Door Lock System Failure**<br>**2. F10** | 1. Check the Electrical wiring<br>2. Check the Motor's Resistance<br>3. Check the Relay PCB (Door Lock Relay) |





# CHECKING FLOW CHART BY FAILURE

Door Lock System Failure,F10?

**Plug in the unit**

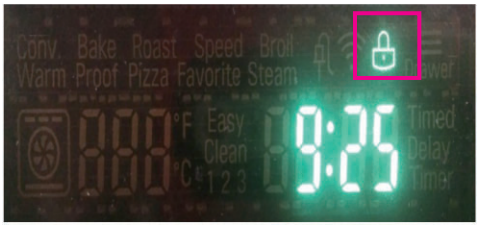
**Note :**
Just after self-clean start, the door lock motor starts to rotate.
During this time if the door lock switch does NOT operate properly after rotating twice, then supervising circuit detects a Door Lock failure and the F10 error code appears.

**1**

Check the operation of door lock motor.

Press PROBE button fo 3 seconds.
and try to open the door.
Does the door open?

Yes → Reconnect or adjust the connection


Door lock icon turns on.

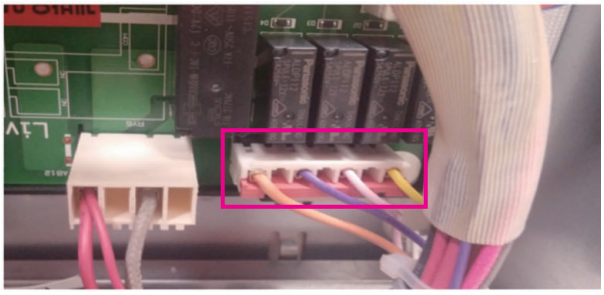
No → It is normal. Check the wiring

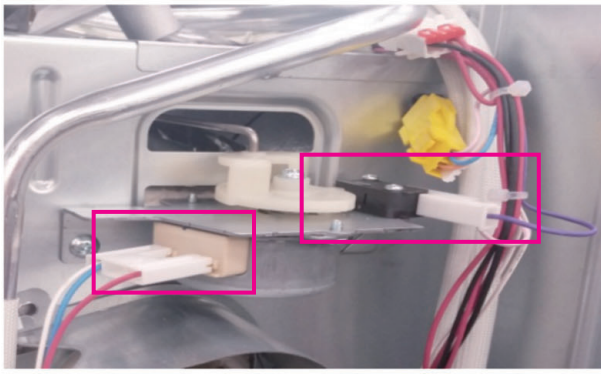
**Unplug the unit**

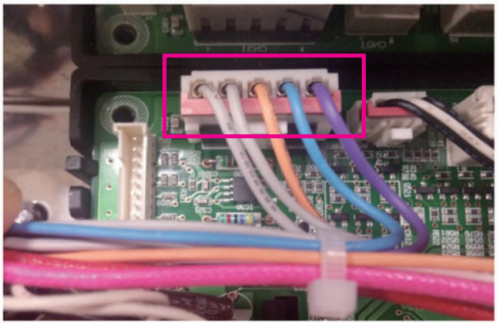
**2**

Is the Connector disconnected or loose?
Check the following :
(1) Electric wiring of relay in Relay PCB
(2) Electric wiring of Locking Motor and Micro Switch
(3) Electric wiring of CN31 of Main PCB

Yes → Reconnect. If defective harness, replace or fix







No

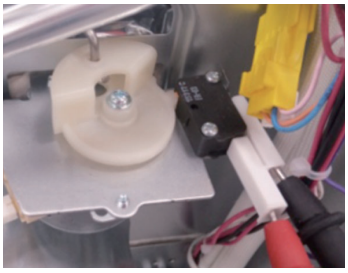
# CHECKING FLOW CHART BY FAILURE

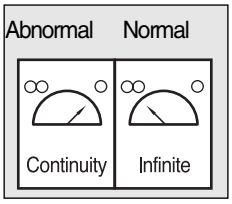
**3**

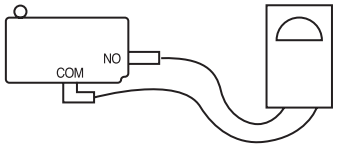
Is the door lock switch (micro switch) normal?

No → Replace the micro switch

measure the resistance of door lock switch ➔ normally open type






Yes

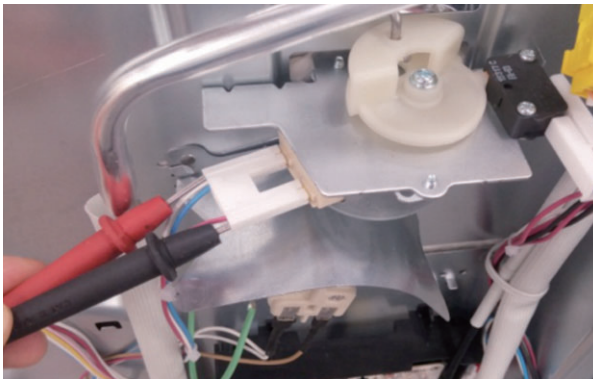
**4**

Is the resistance of the lock motor normal ?

No → Replace the lock motor

measure the resistance of lock motor

Normal : approximately 2.6kΩ
Abnormal : infinite or below 5 Ω

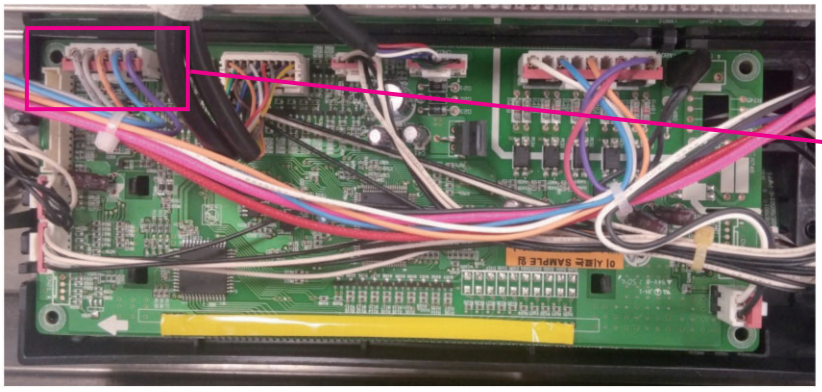


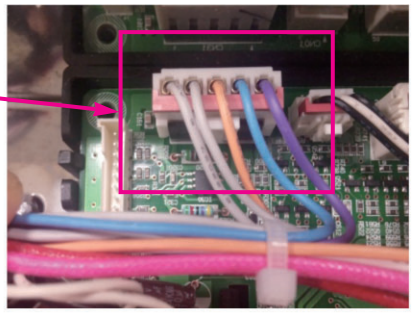
Yes

Replace the Relay PCB.
If the same phenomenon occurs even though after replace Relay PCB, you should replace the Main PCB.

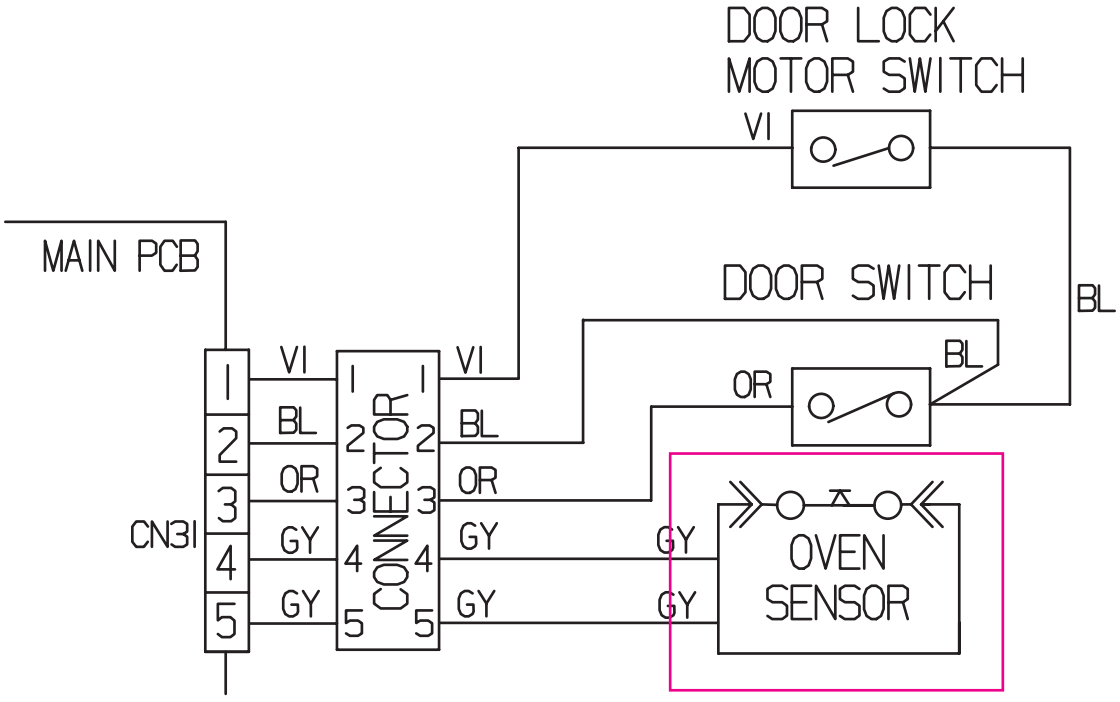
# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Sensing Fail**<br>**2. F1**<br>**3. F2** | 1.Check the Electrical Wiring<br>2.Check the Test Mode<br>3.Check the Sensor's Resistance |





**CN31**



# CHECKING FLOW CHART BY FAILURE

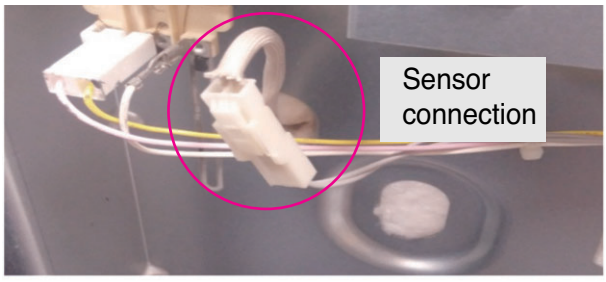
Sensing Fail, F1, F2?

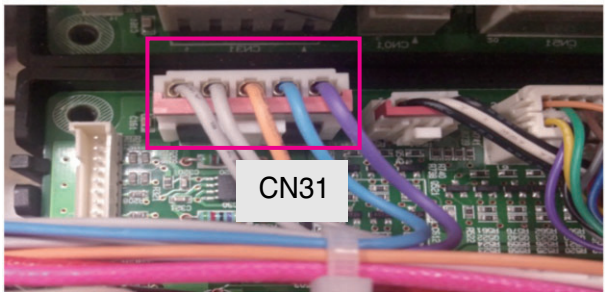
**Unplug the unit**

**1**

Is the Connector disconnected or loose?
1. Sensor connection
2. CN31 of Main PCB

Yes → Reconnect or adjust the connection




No

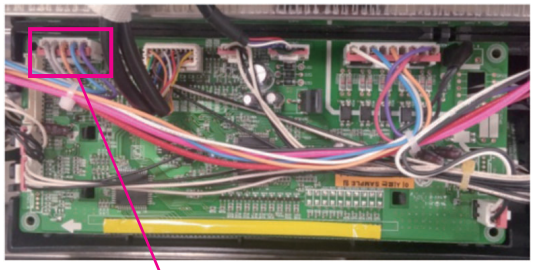
**2**

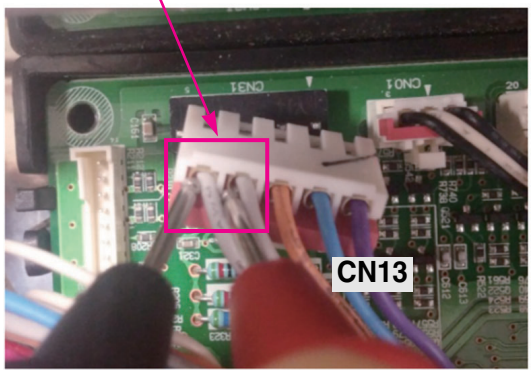
Is the resistance of thermistor normal?

No → Replace the defective Thermistor

Check:

Pins 4 and 5 of CN31 wiring in main PCB
**Normal-** approximately 1.09kΩ at 25˚C






Yes

# CHECKING FLOW CHART BY FAILURE

**Plug in the unit**

**3**

Is the value of thermistor normal? (Refer below)
Check with the test mode

Yes → Replace the Relay PCB

**To enter the test mode, follow these steps:**

1. **Press the any button, and encoder is placed in the Off**
2. **Press the button in the following order : + → _ → Oven light (Oven Light hold for 3 seconds).**


3.


4.


5.


**Normal :** Thermistor value at room temp is from 70˚F to 90˚F

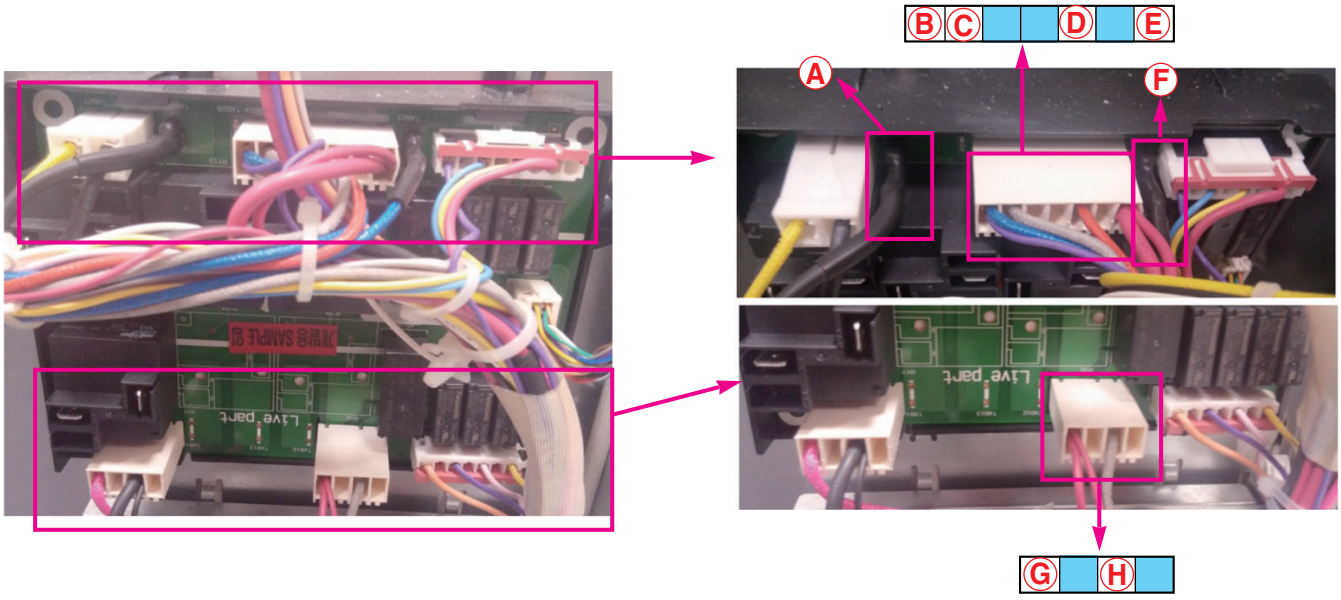
No ↓

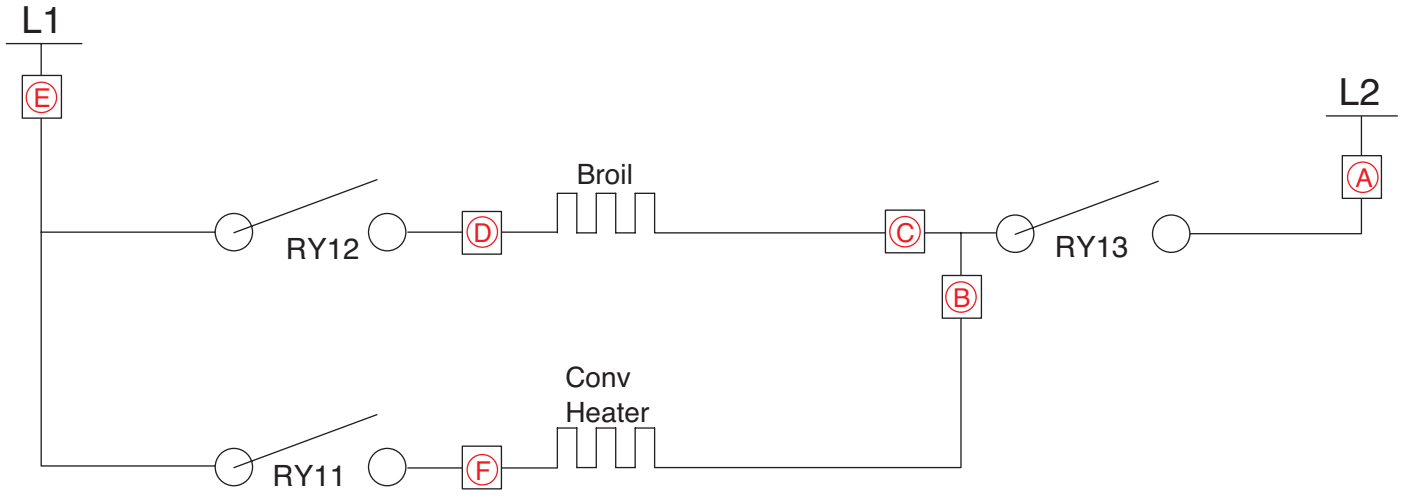
**4**

Replace the Main PCB.

# CHECKING FLOW CHART BY FAILURE

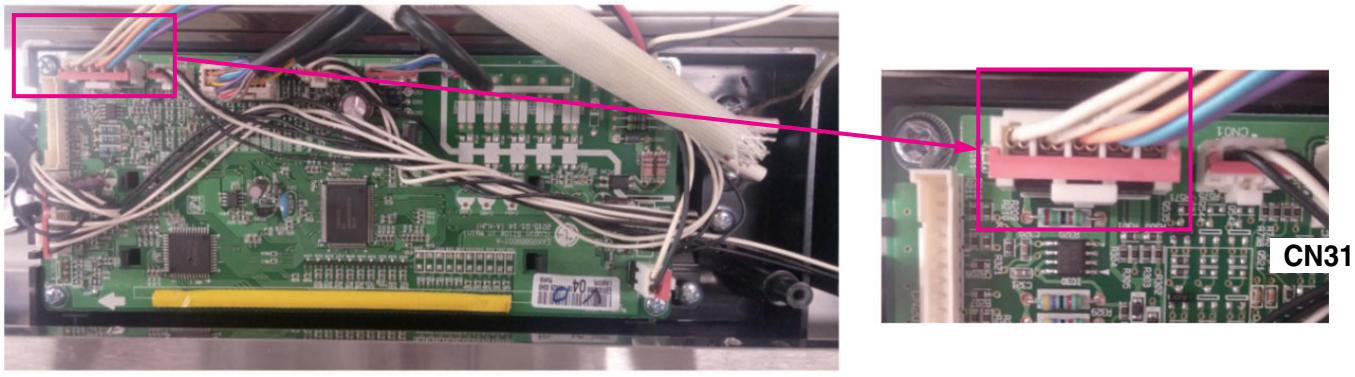
| *Symptom* | *Check Point* |
|---|---|
| **1. Oven hot**<br>**2. F6** | 1.Check the Resistance of the Relay.<br>2.Check the Sensor's Resistance |

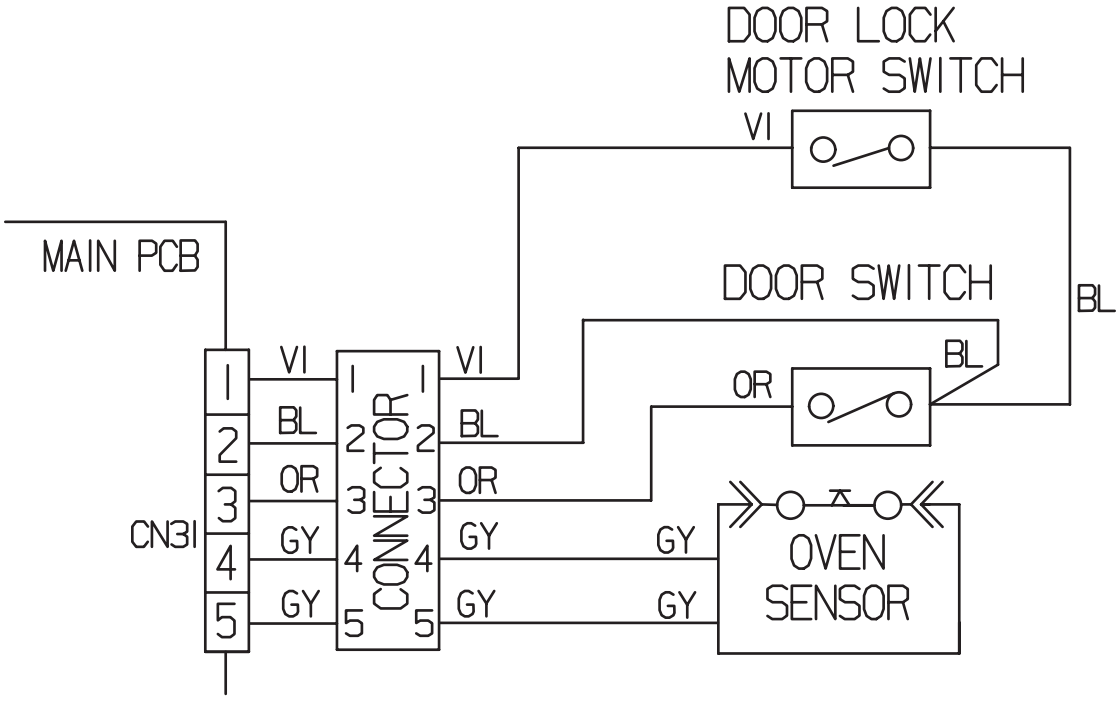


# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Oven hot**<br>**2. F6** | 1.Check the Resistance of the Relay.<br>2.Check the Sensor's Resistance |



# CHECKING FLOW CHART BY FAILURE

Oven hot, F6?

Yes

**Unplug the unit**

**1**

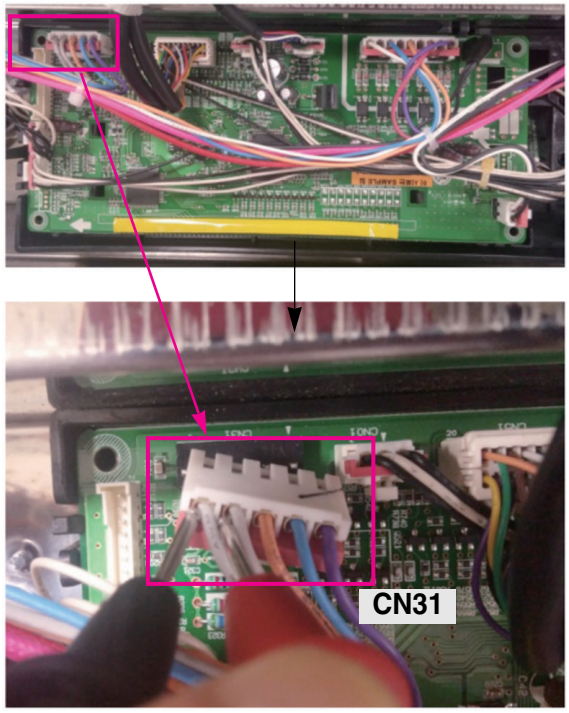
Is the resistance of thermistor normal?

No → Replace the defective Thermistor

Check:

Pins 4 and 5 of CN31 in main PCB

Normal- approximately 1.09kΩ at 25˚C




Yes

**2**

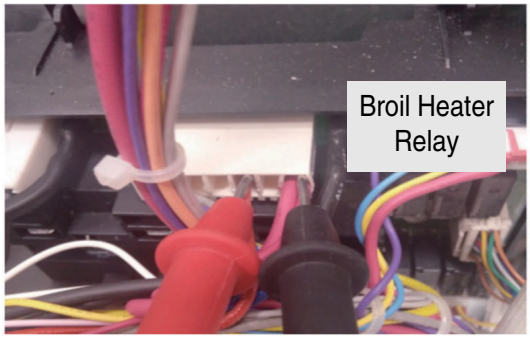
Is the heater relay normal?

No → Replace the Relay PCB

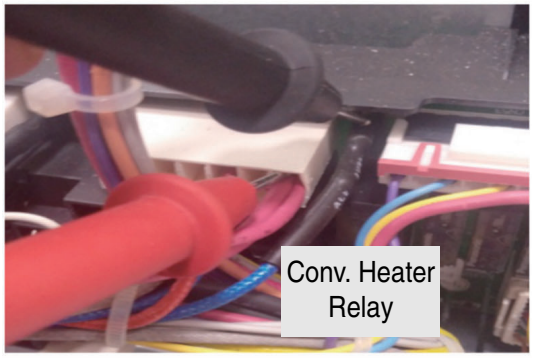
Measure the resistance of Heater relay and Live.

**Normal :** infinite

**Abnorma l :** shorted




**Tab 02 and Tab 22 : RY12**




**Tab 02 and Tab 21 : RY11**

Yes

# CHECKING FLOW CHART BY FAILURE

**3**

Is the DLB relay normal?
Measure the resistance

**Normal :** infinite
**Abnormal :** shorted

No → Replace the relay PCB


Tab 23(or Tab 24) and Tab 25 : RY13

Yes ↓

**Plug in the unit**

**4**

Is the value of thermistor normal? (Refer below)
Check with the test mode

Yes → Replace the Main PCB

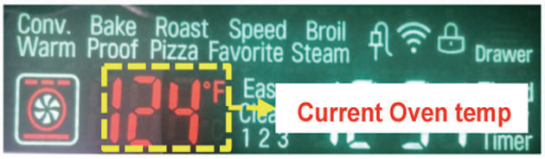
**To enter the test mode, follow these steps:**

1. **Press the any button, and encoder is placed in the Off**
2. **Press the button in the following order : + → _ → Oven light (Oven Light hold for 3 seconds).**


3.


4.


5.

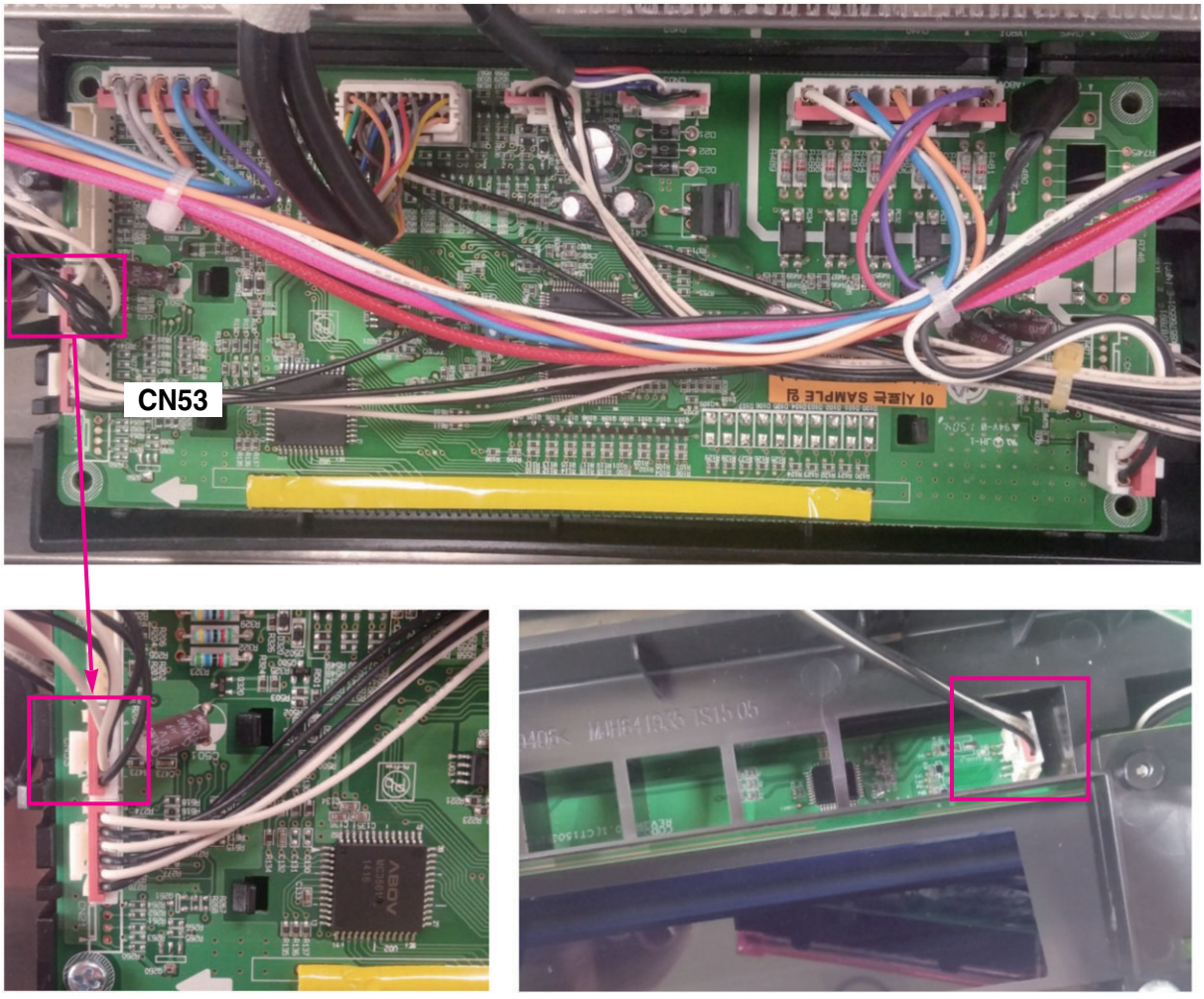



**Normal :** Thermistor value at room temp is from 70˚F to 90˚F

No ↓

# CHECKING FLOW CHART BY FAILURE

| *Symptom* | *Check Point* |
|---|---|
| **1. Key not working**<br>**2. F3 Error** | 1. Check the Door Locking System.<br>2. Check the Electrical Wiring. |



# CHECKING FLOW CHART BY FAILURE

F3 error (Button short error)
Or button does not input

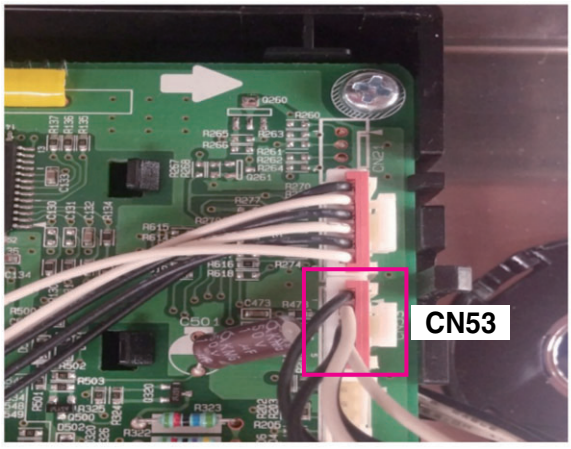
↓

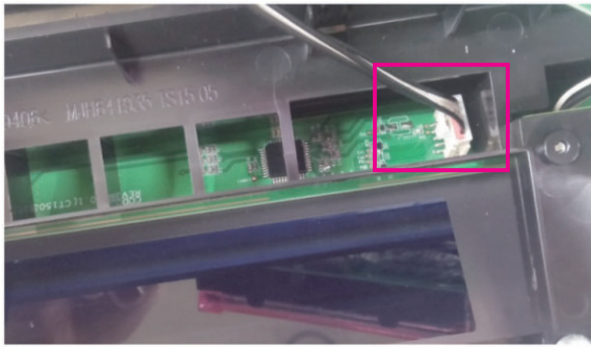
**Unplug the unit**

**1**

Check the connecting states between Key pad and CN03 of Main PCB.
Is it OK?

No → Reconnect or adjust the connection



↓ Yes

**Plug in the unit**

**2**

Replace the Control panel.
(With Glass Touch PCB)
And then check button operation using key test mode

**o enter the test mode, follow these steps:**

1. **Press the any button, and encoder is placed in the Off**
2. **Press the button in the following order : + → _ → Oven light (Oven Light hold for 3 seconds).**


3. **Press the OVEN LIGHT button again. (hold for 3seconds)**

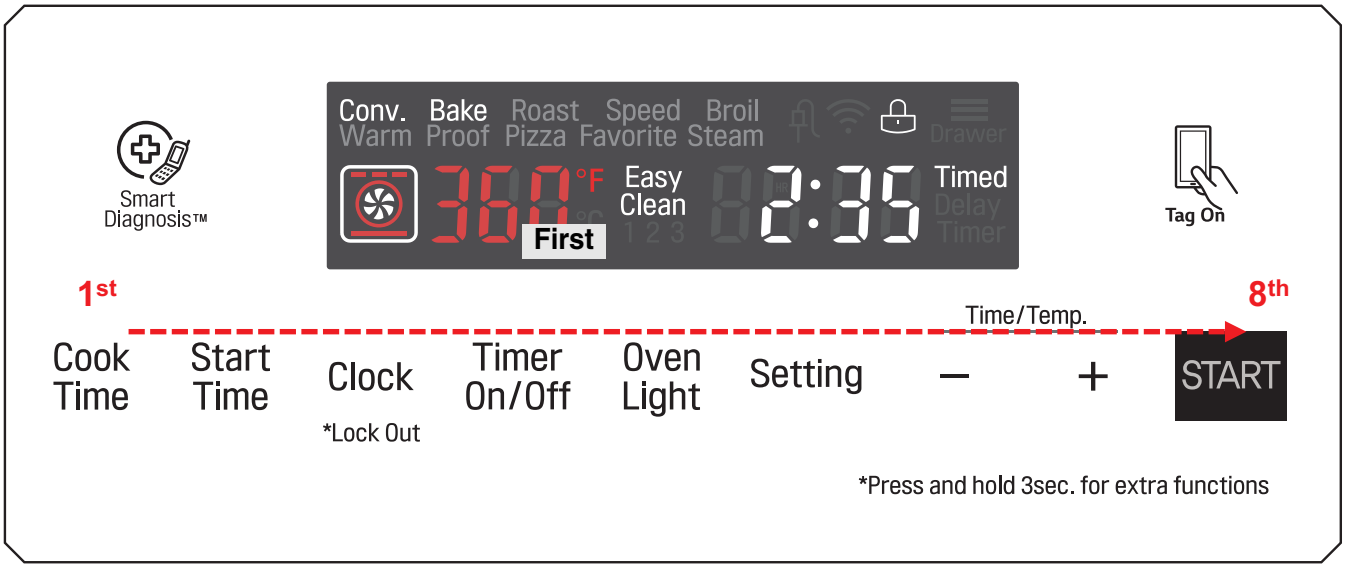

4. **Select the “t7” by press the + button**
5. **Press the START and Check the button. (Refer to the next page, appendix)**

↓ Yes

**3** If button is not operated, Replace the Main PCB

# APPENDIX

## Key operation Test sequence




※ **How to check button operation**

1. Keys should be accessed according to the above sequence and check the beep sound when key is accessed If Key is the normal operation will be the number that corresponds to the Key displayed on the VFD

2. If the key access order was changed, the buzzer make double beep sound
3. The buzzer does NOT beep when a key was accessed, it would be defected.

※ **How to stop - Key Test mode**

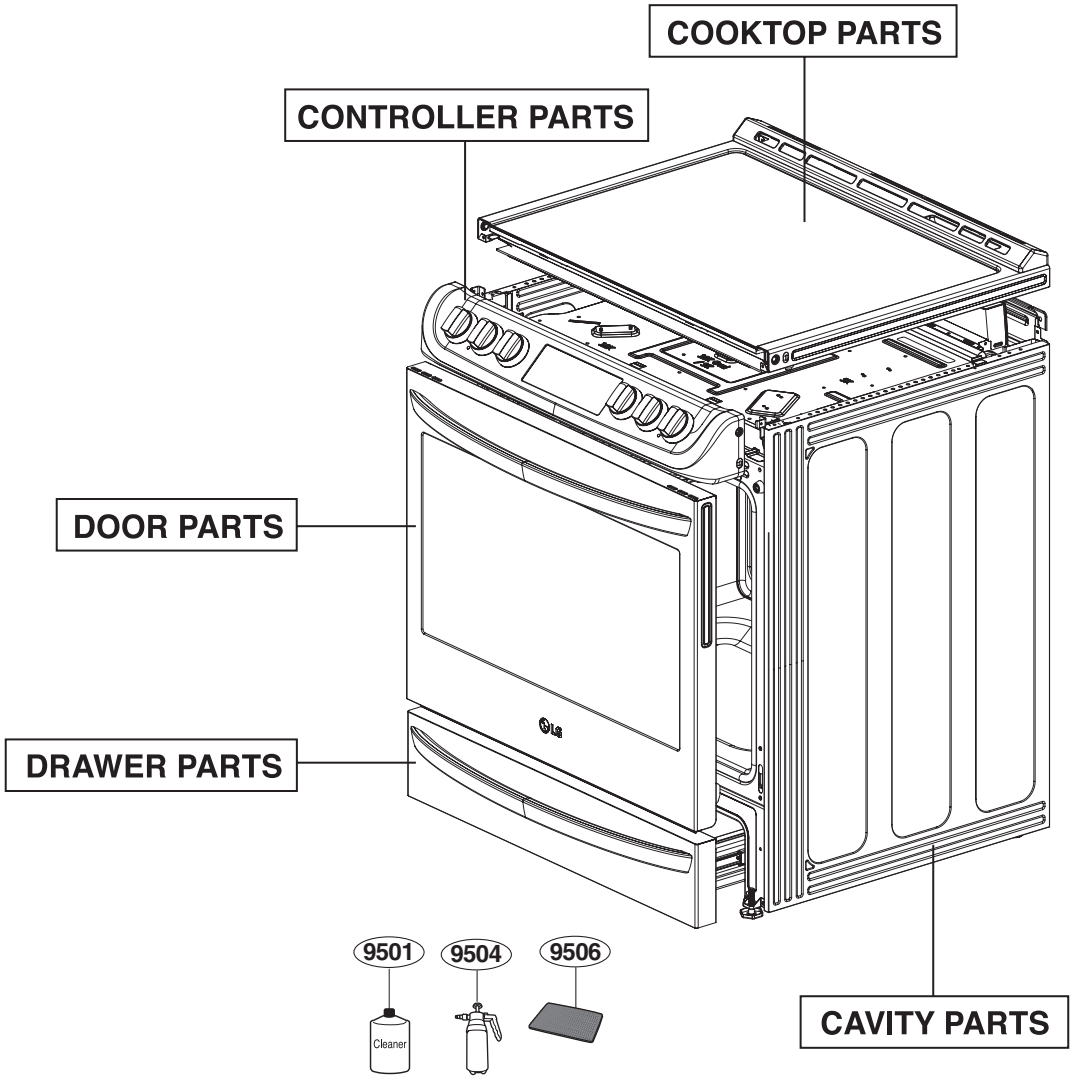
- Press 1st(Cook time) ➜ 2nd ➜… ➜8th (START)

# EXPLODED VIEW

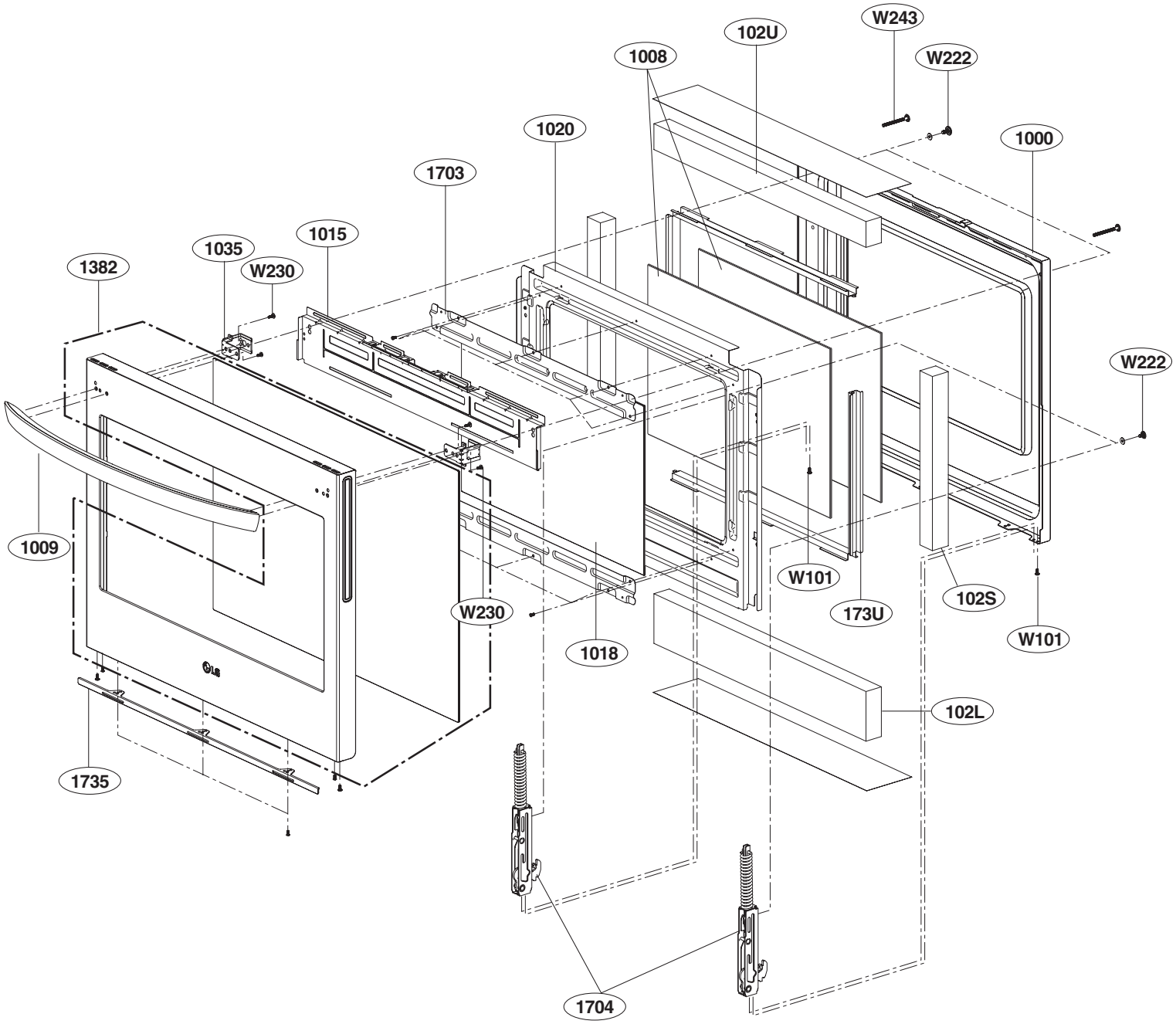
## INTRODUCTION

**MODEL:**

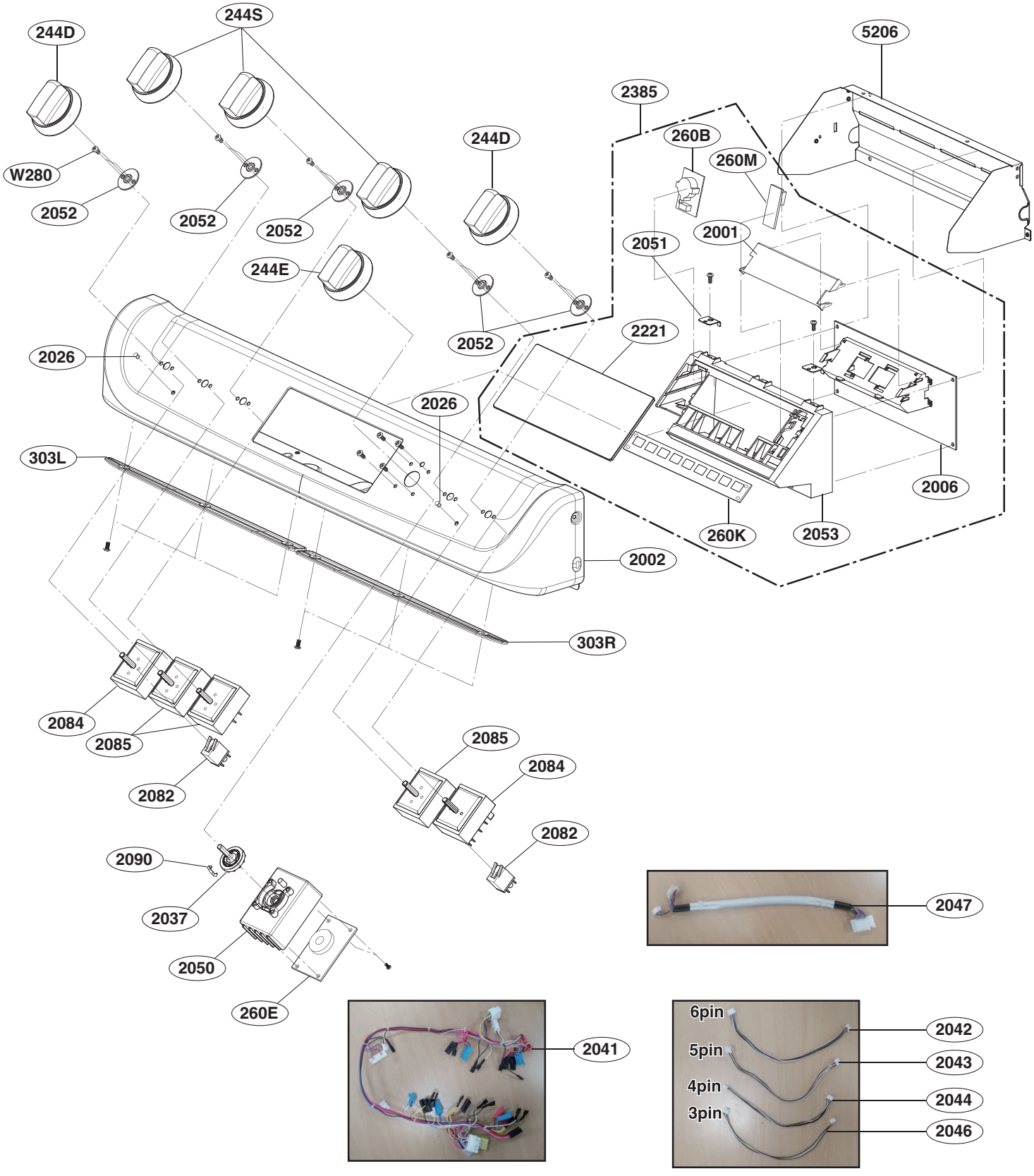
| Customer Model | Product Code | SVC Model |
|---|---|---|
| LSE4613ST | FS1775LS.ASTLLGA | LSE4613ST /00 |
| LSE4613BD | FS1775LS.ABDLLGA | LSE4613BD /00 |



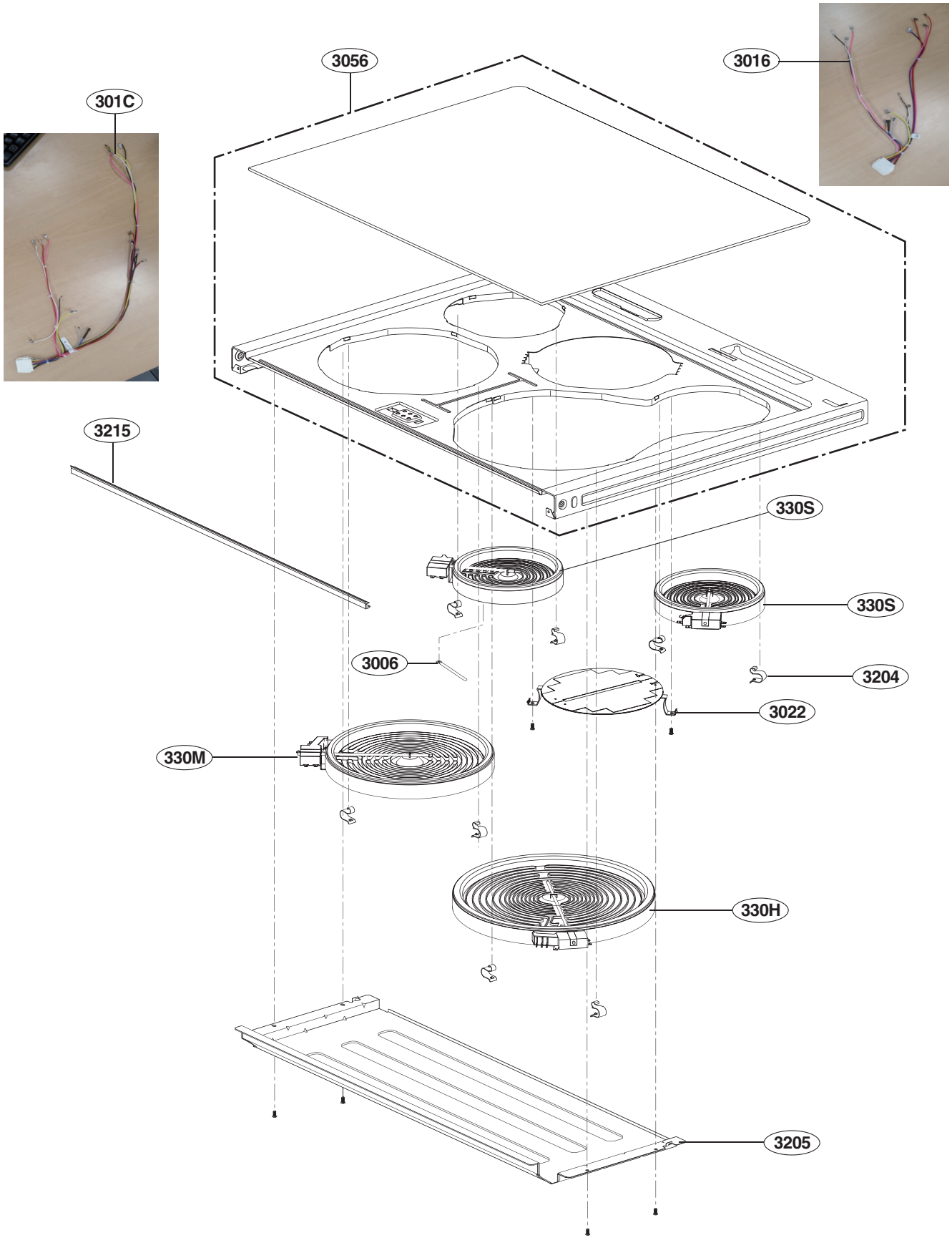
# DOOR PARTS



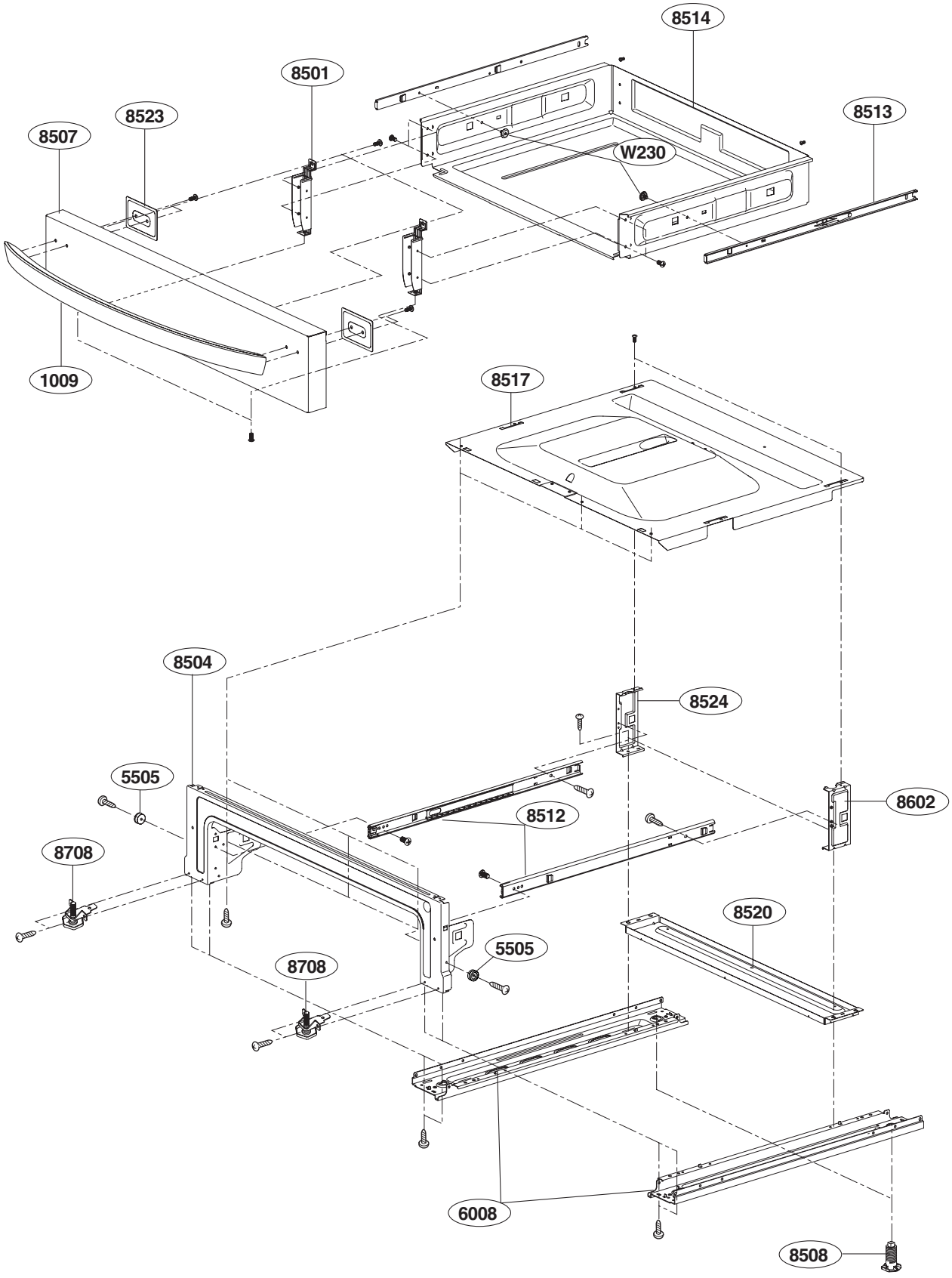
# CONTROLLER PARTS



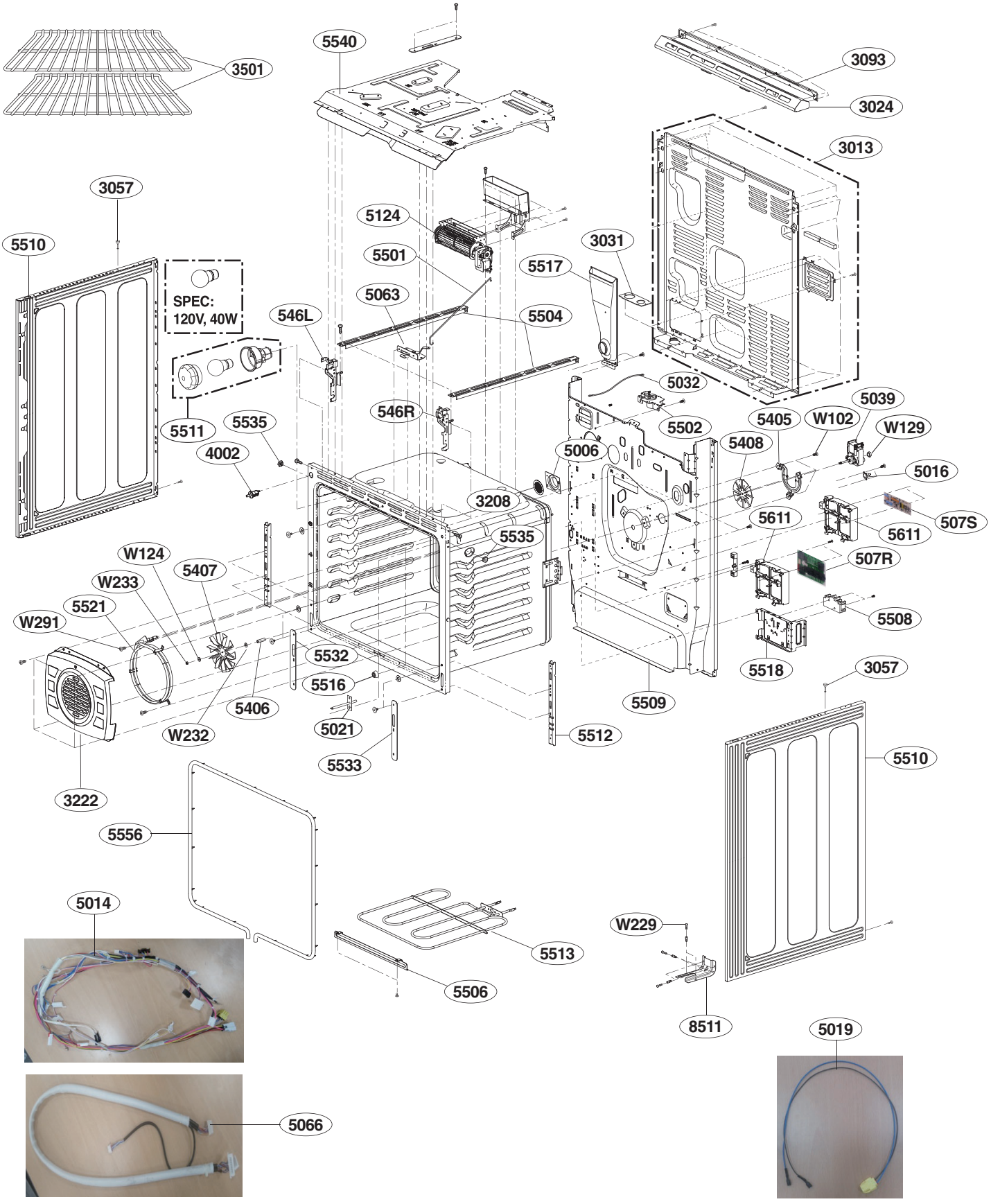
# COOKTOP PARTS



# DRAWER PARTS



# CAVITY PARTS

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