RANGE TRAINING MANUAL
ALL ELECTRIC - DUEL FUEL - ALL GAS

BOSCH

Range Training Program

Model Numbers…All Electric Ranges

HES252U…. Most featured model, 30” White

HES255U…. Most featured model, 30” Stainless

HES256U…. Most featured model, 30” Black

HES242U…. Medium featured model, 30” White

HES245U…. Medium featured model, 30” Stainless

HES246U…. Medium featured model, 30” Black

HES247U…. Medium featured model, 30” Biscuit

HES232U…. Standard featured model, 30” White

HES235U…. Standard featured model, 30” Stainless

HES236U…. Standard featured model, 30” Black

Model Numbers…Duel Fuel Ranges

HDS252U…. Most featured model, 30” White

HDS255U…. Most featured model, 30” Stainless

HDS256U…. Most featured model, 30” Black

Model Numbers…All Gas Ranges

HGS252UC…. Most featured model, 30” White

HGS255UC…. Most featured model, 30” Stainless

HGS256UC…. Most featured model, 30” Black

HGS242UC…. Medium featured model, 30” White

HGS245UC…. Medium featured model, 30” Stainless

HGS246UC…. Medium featured model, 30” Black

HGS247UC…. Medium featured model, 30” Biscuit

HGS232UC…. Standard featured model, 30” White

HGS235UC…. Standard featured model, 30” Stainless

HGS236UC…. Standard featured model, 30” Black

Model Number…Explanation

The first three letters indicate product type:

HES….All Electric, **HDS**….Dual Fuel, **HGS**….All Gas

The first two numbers indicate the level of features:

25….Most features, **24**….Medium features, **23**….Standard features

The third number indicates the color:

2….White, **5**….Stainless, **6**….Black, **7**….Biscuit

The next two letters….**UC**….Indicates United States & Canada. If model only has a **U**, it is not certified for Canada.

These last two letters will be followed in production by…./01, /02, /03 etc, this indicates the service code level, and must be included as part of the model number to ensure that the correct parts are ordered for service

Product Description

The Electric Range has three models offering a range of features.

This product description section will describe the **HES25UC** which is the range with the most features

Note Standard models feature mechanical controls with knobs

The cooktop section features a Touch & Turn TM sensor pad with a central control dial that operates all cooktop functions. Unlike an ordinary dial mTwisT is held to the cooktop with a magnet mounted behind the control panel. When lifted off, it reveals a smooth, glass surface for easy cleaning

Product Description

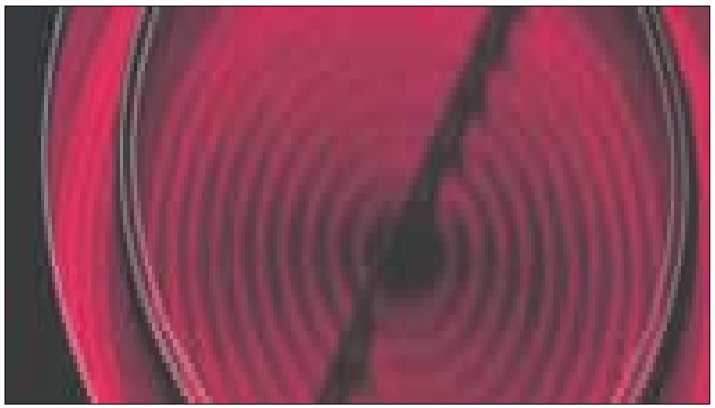
All Electric Range

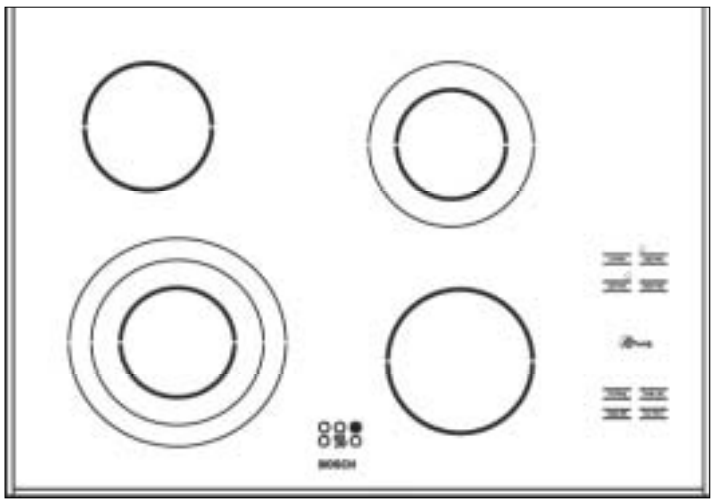
- Widest oven cavity
- Automatic oven light
- Largest warming drawer
- Flexible element sizes
- UltraSpeed TM elements
- Electronically controlled warming drawer
- Largest oven window
- Full extension oven rack
- Touch & Turn TM oven control
- mTwist TM cooktop control
- Genuine European Convection
- Low profile cooktop
- Flush to cabinet front

Note

Not all models have all the features

Features





The UltraSpeed TM elements are in every Bosch electric top.

The elements are very high quality and have a longer lifespan than traditional coils or halogen elements.

The elements respond either on or off within three seconds and cycle on and off to maintain temperature.

Dual and Triple rings allow for expansion of the elements to increase the size of the cookware that can be used. This expansion provides the most versatile amount of cooking area in a cooktop configuration

mTwist ™ -- Touch & Turn ™

Operation

- Two step operation
- Simple and intuitive to operate
- Ceramic glass control panel
- Touch to choose element
- Turn to change power level
- Removable knob
- Safety power off
- Easy to clean

Keep Warm Feature

- All elements have a “keep warm” feature on mTwisT TM models
- Elements remain on at 3% wattage
- Excellent for holding or simmering foods
- Indicates “keep warm” on all zones by the letter “L” for low heat

Product Description -- Touch and Turn ™ Control

Powerful technology made easy to use. Functions are selected with the touch-through-glass sensor pad, then all settings are adjusted with one central dial. It's another Bosch innovation that simplifies high technology with a very intuitive and easy-to-use control

Control Panel Display

- Clear text display
- Intuitive operation
- Automatic help prompt
- Animated display
- Indicates preheat temperature
- Chime tones to indicate operation
- Select menu
- Displays oven & warming operations

Control Panel Display -- Options

- "Lock Keys"
- Sabbath mode selection
- Oven calibration
- English, French or Spanish
- F or C degree display
- 12 or 24 hour clock
- Beep volume
- Visible clock or no clock
- Demonstration mode
- Original factory settings

Control Panel Display -- Features

Electronic Thermostat: The oven regulates temperature by using a premium sensor with state of the art software to control the elements. Temperatures can be set from 100 F to 550 F in 5 degree increments.

Digital Display Window: The range has a full text display window. The window displays:

- Clock
- Timer settings
- Temperature probe settings
- Warming drawer indicator
- Cooking mode
- Timed cooking mode
- Active elements
- Temperature
- Preheating
- Remove rack reminder
- lock indicator
- Sabbath mode

Oven -- Features

Cooking Modes: The range has one of the most versatile ovens on the market today, with 10 different cooking modes everything is possible.

- Thermal Bake
- Convection Bake
- Convection Roast
- Broil
- Convection Broil
- Automatic Temperature Probe
- Dehydrating
- Proof Mode
- Sabbath Mode
- Keep Warm Mode

Timed Cooking Modes: Set the oven to cook in convection roast, convection bake or thermal bake for a set period of time. The oven shuts off once the set cooking duration has been reached. This mode makes following a recipe easy and worry-free.

Oven -- Features

Delayed Start Cooking:
User can set the oven to come on at a specific time, and cook for a specific amount of time. Meals are then ready when the user gets home.

Two Timers:
Timing is easy with built in timers that beep and acknowledge time is up.

Self-Clean with Rack Removal Reminder:
Self-cleaning is an automatic 4 hour cycle, or it can be manually set from 3to 5 hours. Once the cycle is set the oven beeps and tells the user to remove the racks. Once the oven reaches 350 F the oven door locks for safety. Self-clean temperature is 850 F.

Sabbath Mode:
The Sabbath mode allows the oven to remain on with or without the light in thermal bake mode for up to 48 hours.

Oven Elements

Broil Element:
10-pass broil element 3,250 watts of power. Even heat distribution, recessed for safety, longevity and clean-ability.

Convection Element:
Gives genuine European convection ™ 1,100 watts of power. Enhances multi-rack and full meal cooking, better baking and browning.

Bake Element:
8-pass bake element which is hidden for safety, longevity and clean-ability. 2,000 watts of power. Takes 10 to 13 minutes to reach 350 F in bake mode.

Available Cooking Modes Electric Oven

Cooking Mode	Symbol	Default Temperature	Temperature Range	Elements
Convection Bake		325 degrees F	100 to 525 degrees F	Upper, lower and third rear
Thermal Bake		350 degrees F	100 to 550 degrees F	Upper and lower
Convection Roast		325 degrees F	100 to 525 degrees F	Upper and lower
Thermal Broil		450 or 550 degrees F	Low or High	Upper
Convection Broil		550 degrees F	High (550 degrees F)	Upper and convection fan
Temperature Probe		0 degrees F	100 to 300 degrees F	Refer to all bake modes
Dehydrate		140 degrees F	100 to 160 degrees F	Third rear and convection fan
Proof		100 degrees F	85 to 110 degrees F	Upper and lower
Sabbath		350 degrees F	100 to 550 degrees F	Upper and lower Light on or off
Keep Warm		170 degrees F	140 to 225 degrees F	Upper and lower

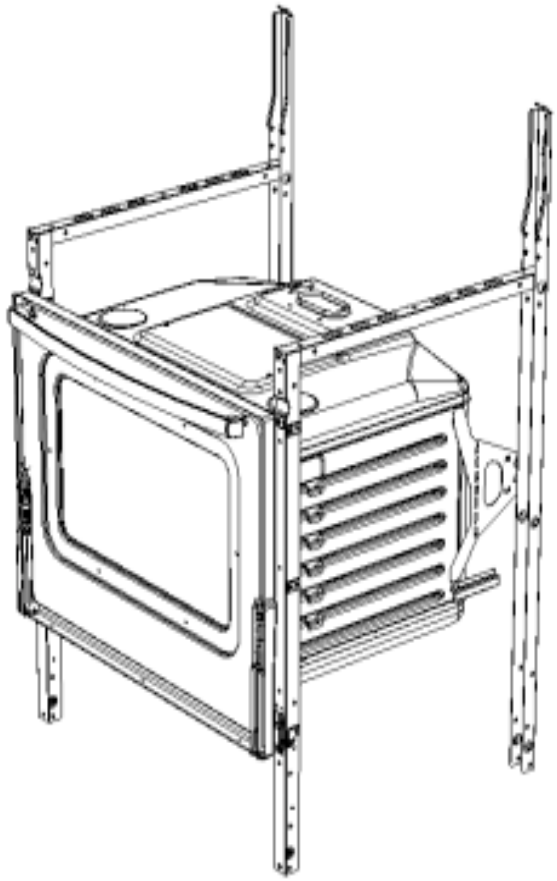
Chart shows which elements are on in each of the cooking modes

Product Description - - Oven Cavity

- 25” extra-wide oven cavity (4.6 cu. Ft.)
- Six rack positions
- Telescopic Rack…allows users to check and view food without having to pull the cookware out of the oven. Holds up to 50lbs.
- Automatic Temperature Probe.
- Concealed Bake Element. Electronic Thermostat.
- Electronically controlled oven lighting via door opening or touch control-2 x 40 watt incandescent bulbs, staggered for better viewing

Oven Chassis

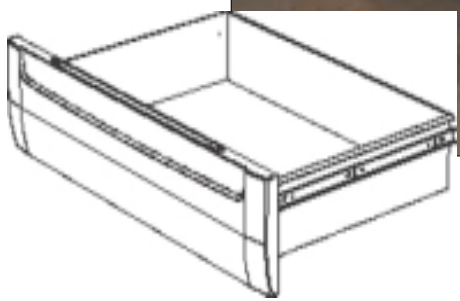
The oven can is built onto a chassis for sturdy construction, and is built to last. This means fewer gaps and a professional engineered fit.



Product Description --

Warming Drawer

- Electronically controlled temperature via sensor
- Extra wide
- 400 watt element mounted under drawer, safe for take out containers
- High, medium and low settings
- Full extension ball bearing glides.
- Stainless steel mirror finish
- 1.3 cu.ft.



Duel Fuel & All Gas Range Top

Product Description

- Pro-Style continuous grates
- Low-profile to countertop
- Power-Sim Burner (Diffuser Burner)
- Sealed burners
- Optimized burner spacing
- Electronic ignition
- Precision Flame Control

Duel Fuel & All Gas Range Top -- Features

Burner Ratings:

RF Burner Power-Sim TM – 15,000 to a low of 1200 but with cap takes heat output down to 400 to 500 BTUs

RR Burner 800 – 5,500

LF Burner 1,200 – 9,100

LR Burner 1,400 – 12,500

All Gas Range Oven -- Features

- **Bake**…17,000 BTUs
- **Broil**…14,500BTUs
- Electronically controlled
- Flame diffuser
- Even heat distribution
- Glow-bar silicon carbide igniter
- Low profile cover for more usable cooking surface

Warranty

- **One full year** Parts & Labor from date of installation or occupancy
- **Additional four years** part only on the following cooktop section parts – electrical controls, heating elements and ceramic glass top.
- **Service must be performed** by an authorized service agency
- **Warranty Claim** must be submitted within 45 days of completion

Installation…All Electric Range

Electrical Connections:

Range requires a 50 Amp 120 / 240 VAC or 120 / 208 VAC dedicated circuit preferably with a four wire connection, however where local codes and ordinances permit grounding through the neutral and / or conversion to four wire is impractical, unit may be connected to the power supply via a three wire connection.

Connection can be made via a range cord or a flexible conduit. If a range cord is used it must meet the above rating requirements and be marked “For use with Ranges”

1

Installation…All Electric Range continued

Electrical Connections

Power Supply Connections

Three Wire Connection

The Four Wire Connection is preferred, but where local codes and ordinances permit grounding through neutral and/or conversion to four wire is impractical, unit may be connected to the power supply via a three wire connection.

1. Disconnect electrical power at breaker box.
2. Remove the terminal block cover to expose the junction box (See Figure A).
3. Remove top nut, star washer, and round washer from each post.

   Note: DO NOT remove last round washer, last nut or internal wiring leads.
4. Attach white wire, round washer, star washer and nut IN THIS ORDER on top of ground strap on center post.
5. Attach red wire, round washer, star washer and nut IN THIS ORDER to left post.
6. Attach black wire, round washer, star washer and nut IN THIS ORDER to right post (See Figure B).
7. Tighten all connections securely and replace terminal block cover (See Figure C).

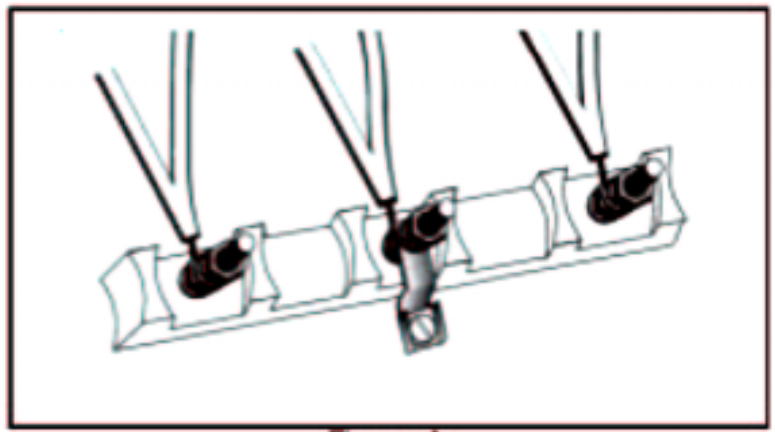


Figure A

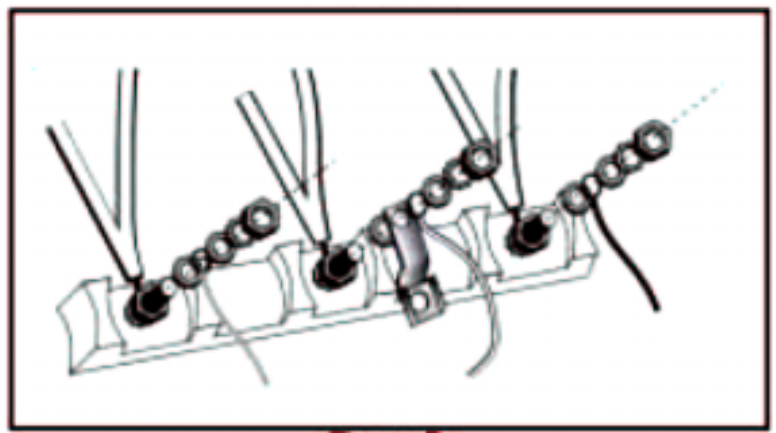


Figure B

2

Installation…All Electric Range

Four Wire Connection (Preferred Method)

1. Disconnect electrical power at breaker box.
2. Remove the terminal block cover to expose the junction box (See Figure A).
3. Remove top nut, star washer, and round washer from each post.

   Note: DO NOT remove last round washer, last nut or internal wiring leads.
4. Remove screw from bottom end of ground strap.
5. Remove ground strap from center post, rotate so that wide end is at top and attach wide end to range through hole below junction box. Attach green wire on top of ground strap. Tighten Screw (See Figure D).
6. Attach red wire, round washer, star washer and nut IN THIS ORDER to left post.
7. Attach white wire, round washer, star washer and nut IN THIS ORDER to center post.
8. Attach black wire, round washer, star washer and nut IN THIS ORDER to right post (See Figure E).
9. Tighten all connections securely and replace terminal block cover.

Figure B

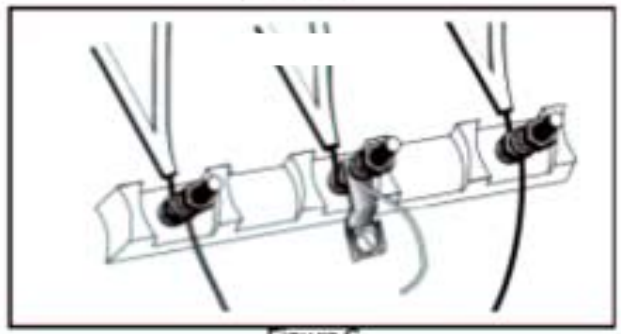


Figure C

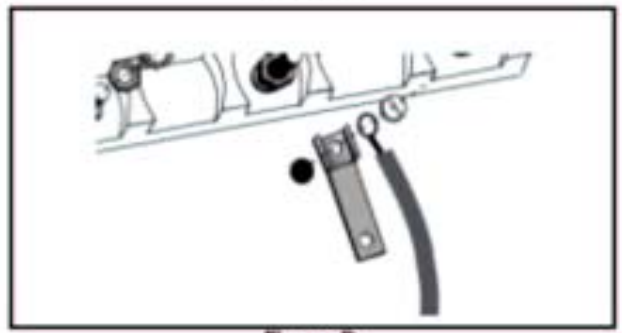


Figure D

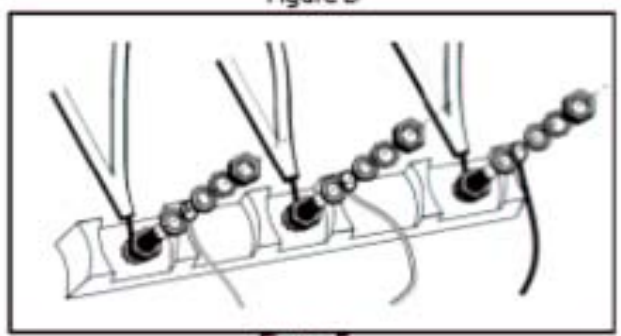


Figure E

3

Installation…Duel Fuel Range

The gas supply line and electrical outlet must be within the spaces indicated in Figure 2. The gas shut off valve must also be accessible without moving the range.

Instructions were determined using Standard American base cabinets measuring 36" high x 24" deep. If nonstandard cabinets are used, care should be taken to alter dimensions accordingly.

NOTICE: Some cabinet finishes cannot survive the temperatures allowed by U.L., particularly self-cleaning ovens; the cabinets may discolor or stain. This is most noticeable with laminated cabinets.

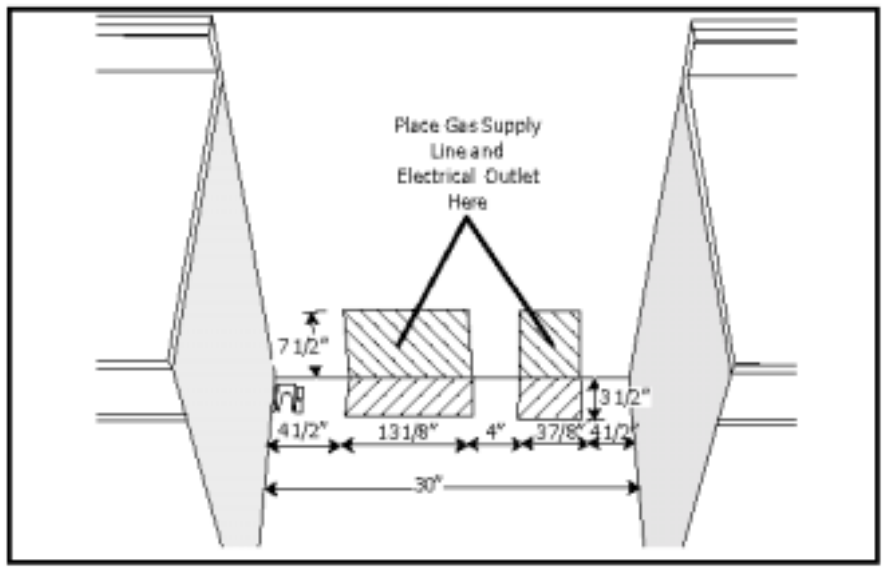


Figure 2: Gas Supply Line and Electrical Outlet Placement

4

Installation…Duel Fuel Range

4. Connect Electric

Ranges are dual rated for use on either 120/240 VAC or 120/208 VAC. See table for power ratings and circuit breaker sizes based upon the supply voltage for each mode (See chart below).

VOLTS A.C.	HZ	RATING KW	CIRCUIT BREAKER
120/240	60	12.1	30 AMPS
120/208	60	9.1	25 AMPS

CAUTION: make certain that gas shutoff valve and all burner controls are in OFF position before beginning.

TO PREVENT ELECTRICAL SHOCK, THE GROUNDING PRONG SHOULD NOT, UNDER ANY CIRCUMSTANCES, BE CUT OR REMOVED. IT MUST BE PLUGGED INTO A MATCHING GROUNDING TYPE RECEPTACLE AND CONNECTED TO A CORRECTLY POLARIZED 240-VOLT CIRCUIT. A separate circuit is recommended which is in compliance with the NEC.

If there is any doubt as to whether the wall receptacle is properly grounded, have it checked by a qualified electrician.

This appliance may be connected to the power supply by installing flexible conduit or a power cord set. The electrical rating of the power cord set (not supplied) must be 240 volt, 30 amperes. The power cord set shall be marked "For Use with Ranges."
The power supply shall be connected to the range terminal block compartment located near the bottom of the back panel (See Figure 4 , at right). It is accessible by removing the terminal block cover.

Place strain relief in knockout below terminal block (See Figure 4 below). Feed range cord through hole and strain relief up to terminal block. Allow for slack in the cord between the strain releif and terminal block. Once cord length/ slack has been adjusted, attach strain relief per instructions included with strain relief. Connect wiring as described below and on next page.

TIP

The knockout panel can be removed from the range to install the strain relief:
Remove panel from range, install strain relief in panel and re-attach.

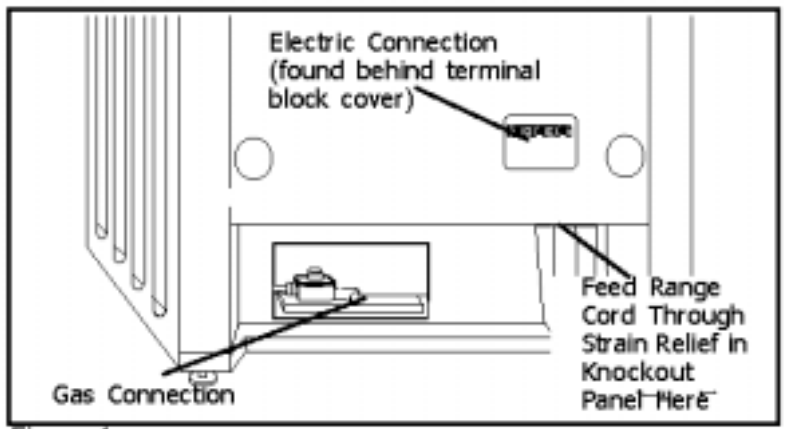


Figure 4

The strain relief provided with your range cord must be properly installed.

5

Installation…Duel Fuel Range

Note: The installer should inform the consumer of the location of the gas shut-off valve.

Flexible Connector Method (see Figure 11, this page)

1. Install male 1/2" flare adaptor at the 1/2" NPT internal thread of the range inlet. Use a backup wrench on the elbow fitting to avoid damage.
2. Install male 1/2" or 3/4" flare union adapter on the NPT internal thread of the manual shut-off valve.
3. Connect flexible metal appliance connector.
4. Make sure circuit breaker is off and then plug range cord in to electrical outlet.
5. Push range back into position insuring that range leg slides under the anti-tip bracket. The range will sit 3/4" away from the wall when properly installed. **Note:** Be careful not to crimp flexible connector!
6. Carefully tip range forward to insure that anti-tip bracket engages and prevents tip-over.

Rigid Pipe Method (see Figure 12, this page)

The configuration of the rigid pipe connection will vary depending on the location of the gas pipe stub. Refer to Figure 12 for details.

1. Make sure circuit breaker is off and then plug range cord in to electrical outlet.
2. Push range back into position insuring that range leg slides under the anti-tip bracket. The range will sit 3/4" away from the wall when properly installed.
3. Carefully tip range forward to insure that anti-tip bracket engages and prevents tip-over.
4. Connect pipe to range at union. Access the connection through the access panel behind the warming drawer.

Note: Be careful not to apply pressure to warming drawer element during rigid pipe installation.

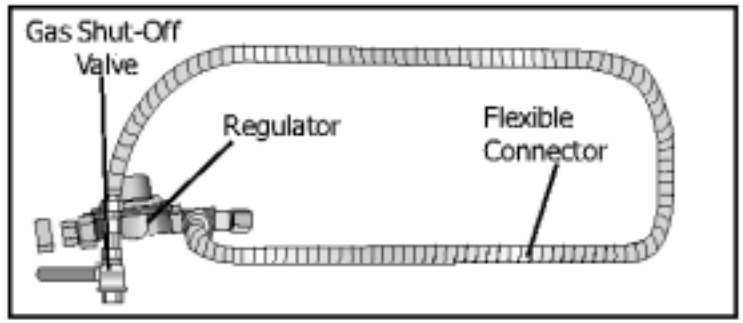


Figure 11: Flexible Connector Method

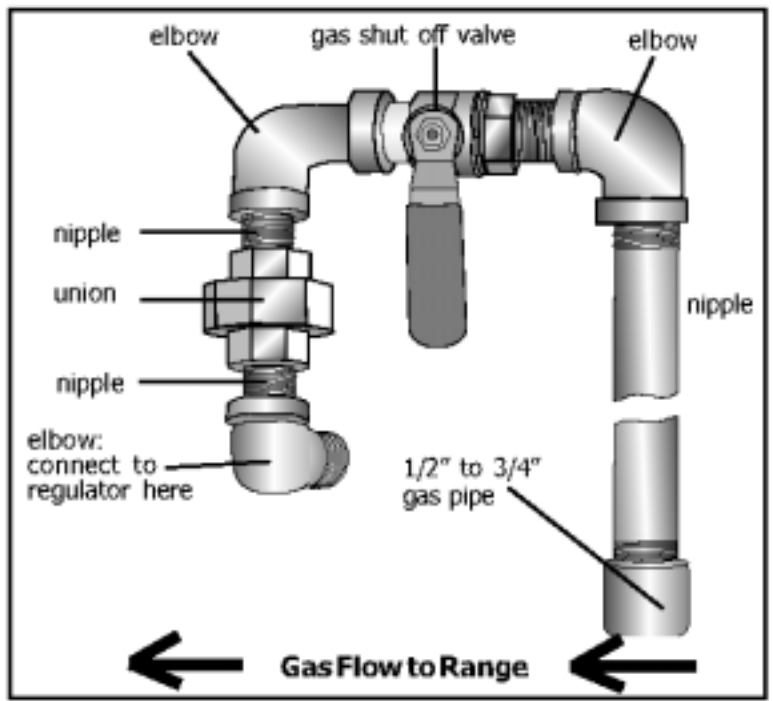


Figure 12: Rigid Pipe Method

6

Installation

Anti-Tip Bracket…. Anti-Tip bracket must be installed as shown below

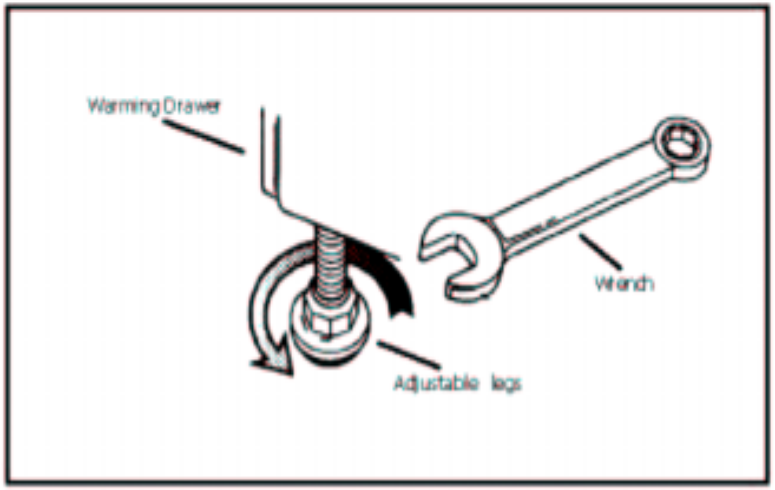


Figure 6

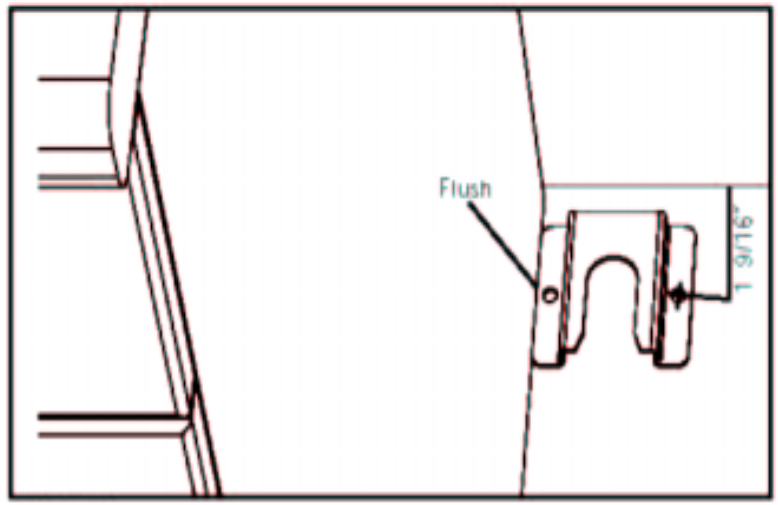


Figure 7

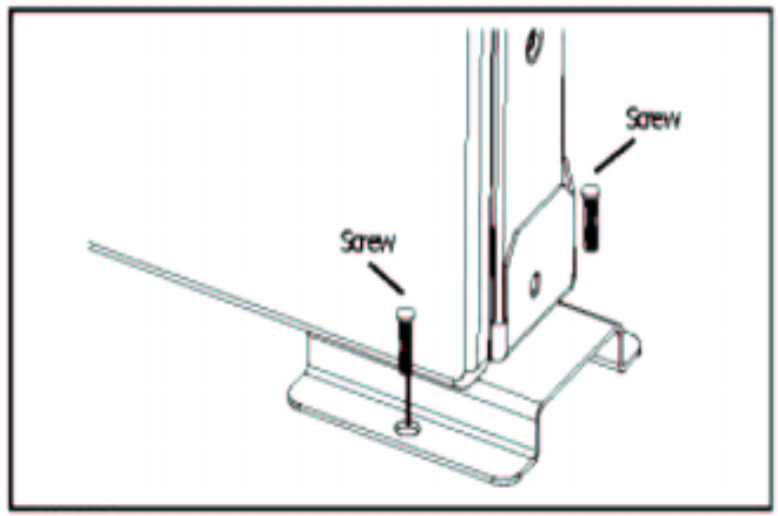


Figure 8

INSTALL ANTI-TIP BRACKET:

1. Adjust height of range and level by rotating the adjustable leg supports, (see Figure 6) using 1-1/4" wrench.
2. Measure to locate bracket position as shown in Figure 7. Secure bracket with 2 screws.

7

Installation

FINAL INSTALL:

1. Move range close enough to the opening to plug into the receptacle.
2. Slide range into position insuring that the left back leg slides under the anti-tip bracket. Range will sit 3/4" away from back wall when properly installed.
3. Carefully tip range forward to insure that the anti-tip bracket engages the range back brace and prevents tip-over.
4. Turn on electrical power. Check range for proper operation as described in Use and Care Manual.

Note: if LCD screen flashes and beeps, the wiring is incorrectly installed. Immediately disconnect power at breaker and return to step 3: CONNECT RANGE CORD.

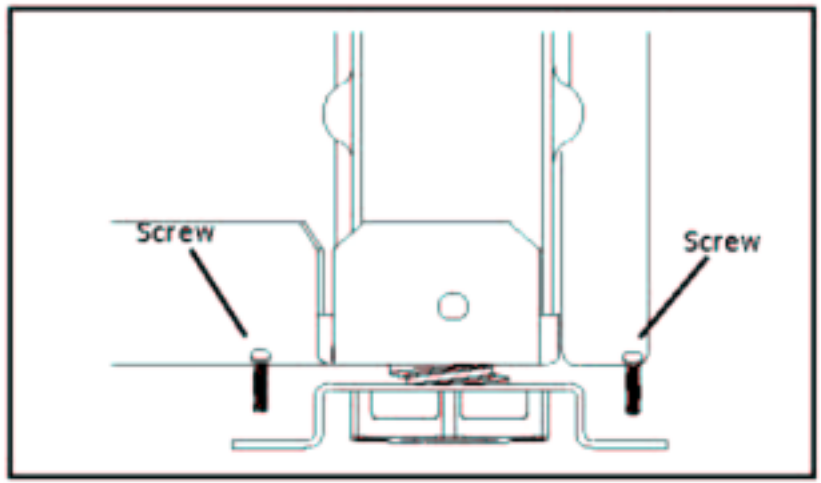


Figure 9

8

Conversion of Range to LP Gas -- Kit is supplied with the range

Conversion Instructions - Before you begin

1. ⚠ CAUTION: Turn off Gas and Electricity Before Proceeding with the conversion; shut off the gas supply to the appliance prior to disconnecting the electrical power.

Shut off the outside propane tank gas valve to the range. Remove range power cord from electrical outlet or turn breaker off at breaker box, and turn all control knobs to the "OFF" position.

2. Convert Pressure Regulator from 5" W.C. to 10" W.C.

1. Remove Warming Drawer; Pull drawer out until stop is reached. Push clip on right side up and clip on left side down. Pull drawer the rest of the way out.

2. Remove cover plate from interior back wall by removing single screw on left side of panel.

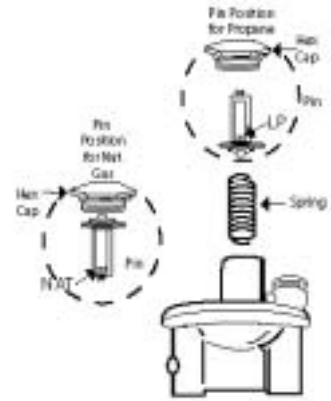
3. Remove the hexagon cap from the top of the regulator with an adjustable wrench.

4. Pop out the plastic stem in the cap and turn it over pressing it firmly in place so that the letters "LP" can now be seen upright in the stem, rather than "NAT".

5. Replace the cap and button assembly into the top of the regulator sealing it firmly. Make certain spring is still in place (See Fig. 1). DO NOT OVER TORQUE.

6. Install the FOIL CONVERSION STICKER on the back side of the cover plate so that it appears on the back side of range next to the regulator.

Figure 1
Convert Pressure Regulator



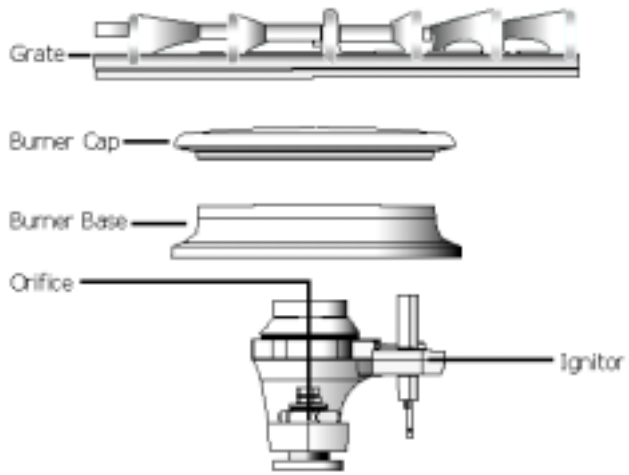
PRESSURE REGULATOR VIEW

Duel Fuel LP Kit
part # 438629

All Gas LP Kit
part # 437777

LP Conversion -- continued

Figure 2
Remove Grate, Cap and Base



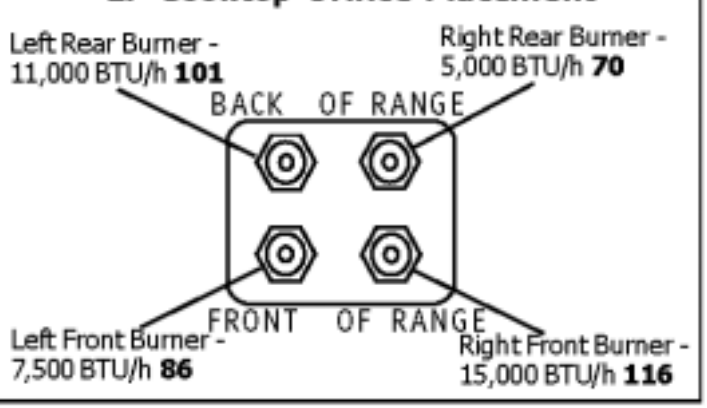
3. Replace Main Cooktop Orifices

Remove Grates, Burner Caps and Burner Bases. Remove burner grates and burner caps. Unscrew 2 T20 screws inside each base and remove burner bases (See Figure 2). Reinsert screws in jet holder to hold tubing assembly in place.

Remove Natural Gas Cooktop Orifices. Insert the socket driver with 3" minimum extension into the jet holders to remove existing orifices. Place the old orifices in the space provided on page 5 in case future conversion back to natural gas is necessary.

Assemble LP Cooktop Orifices. Place in cooktop exactly as layed out in the cover of this manual (also shown in Figure 3). If the orifices become separated from the cover, placement can be determined by matching the number stamped into the orifice with the placement specifications displayed in Figure 4. Place the new orifice into the socket then insert each orifice into its respective threaded hole in the jet holder. Tighten until rifice stops turning. DO NOT OVER TIGHTEN.

Figure 3
LP Cooktop Orifice Placement



LP Conversion -- continued

Replace burner base, burner cap and burner grate.
Note: Burner cap must be properly positioned on burner base for burner to light.

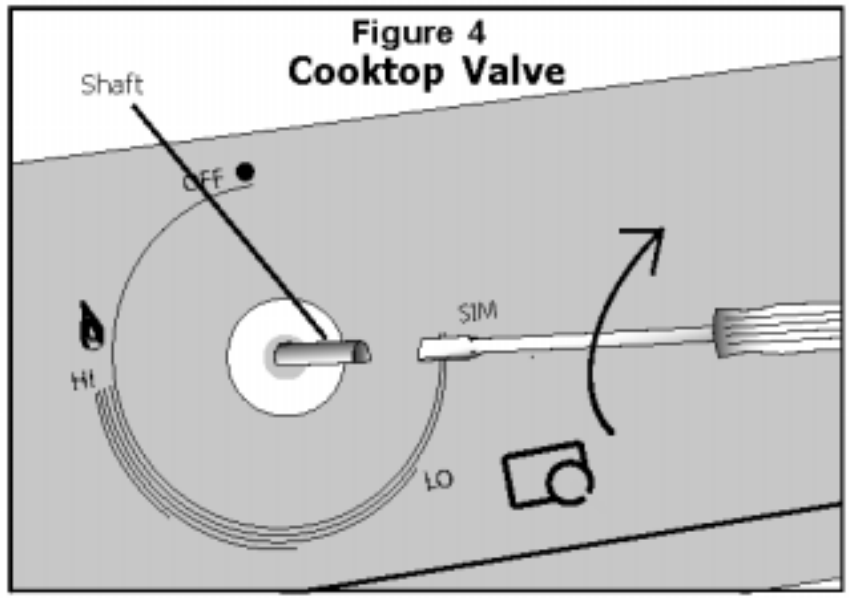
4. Convert Cooktop Valves for Propane Use

Adjust Bypass Jets on Valves.
1. Verify that all knobs are in the "Off" position.
2. Remove knobs, springs and bezels by pulling straight out.
3. Insert flat head screwdriver into shaft and turn bypass screw clockwise until it stops turning (See Figure 4). DO NOT OVER TIGHTEN. Replace knobs, springs and bezels.

If your range is **dual fuel** your conversion is complete. Replace the cover plate and warming drawer and proceed to step 9 to test your conversion.

For **gas range** conversions, continue to step 5.

Figure 4
Cooktop Valve



Burner	BTU/h - LP Gas
Cooktop - Left Rear	11,000
Cooktop - Right Rear	5,000
Cooktop - Left Front	7,500
Cooktop - Right Front	15,000
Oven - Broil (Gas Ranges Only)	14,500
Oven - Bake (Gas Ranges Only)	17,000

LP Conversion -- continued

5. Adjust Broil Burner Orifice

Remove oven door (see section "Removing Oven Door" in Installation Instructions).

Remove broil burner assembly. The broil burner assembly is attached to the top of the oven cavity with 7 screws. Remove screws and gently pull broil burner assembly straight out being careful not to detach electrical wires. Place broil burner against back wall of oven cavity.

Adjust Orifice. The orifice is located behind the broil burner in the back oven wall (See Figure 5). Use a 1/2" deep socket driver with 3" minimum extension to turn orifice clockwise until it stops (2- 2 1/2 times) . DO NOT OVERTIGHTEN.

Replace Broil Assembly. Replace broil assembly being careful to feed all wires through back wall of oven. Reinsert all 7 screws.

Note: The air shutter on the broil burner fits over the orifice when installed correctly.

6. Adjust Oven Burner Orifice

Tighten Orifice. The oven burner orifice is located below the air shutter (See Figure 6). Reach it through the access hole in the interior back panel of the warming drawer cavity. Use a 1/2" wrench to turn orifice clockwise until it stops (2 - 2 1/2 turns). DO NOT OVER TIGHTEN.

Figure 5
Oven Cavity - Side View

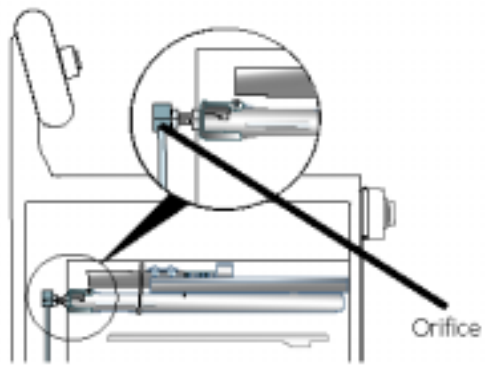
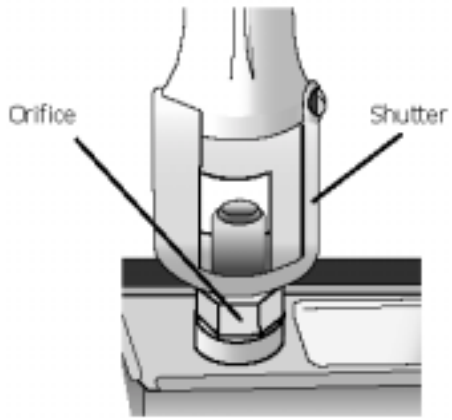


Figure 6
Oven Orifice and Air Shutter



LP Conversion -- continued

7. Test for Gas Leaks.

Leak testing is to be conducted by the installer according to the instructions given in this section.

Turn on supply line gas shut off valve. Apply a non-corrosive leak detection fluid to all joints and fittings in the gas connection between the supply line shut-off valve and the range. Include gas fittings and joints in the range if connections were disturbed during installation. **Bubbles appearing around fittings and connections indicate a leak.**

If a leak appears, turn off supply line gas shut-off valve and tighten connections. Retest for leaks by turning on the supply line gas shut-off valve. When leak check is complete (no bubbles appear), test is complete. Wipe off all detection fluid residue.

⚠ CAUTION

NEVER CHECK FOR LEAKS WITH A FLAME.

DO NOT CONTINUE TO THE NEXT STEP UNTIL ALL LEAKS ARE ELIMINATED.

8. Test Electric Ignition.

Test Cooktop Burner Ignition. Select a rangetop burner knob. Push down and turn to the flame symbol. If the ignitor/spark module is operating correctly, it will click. Once the air has been purged from the supply lines, the burner should light within four (4) seconds. After burner lights, turn knob to the off position.

Test each rangetop burner in this fashion.

Test Broil Burner Ignition. Set cooking mode to Hi Broil. The burner will ignite after 30-75 seconds.

Test Bake Burner Ignition. Set the oven to bake at 350° F. After 30-75 seconds, the burner will ignite. The burner will stay lit until the 350° F is reached and then shut off. From this point forward, the burner will cycle on and off to maintain the temperature.

Call Bosch Service (800-944-2904) if:

1. **Any of the burners do not light.**
2. **The broil burner or bake burner does not stay lit.**
3. **The bake burner does not cycle.**

LP Conversion -- continued

9. Test/Adjust Flame.

The combustion quality of the flame for each burner must be visually inspected. If your range is a gas range, the bake burner and broil burner flames must also be visually inspected. The flame should be blue with yellow tips. It should carry over, or surround, the entire burner and should not lift or blow off the burner.

To inspect, turn the burner on. See Figure 7 for appropriate flame characteristics. To view the bake burner, the oven bottom cover must be removed; remove two rear thumb screws, slide forward and out.

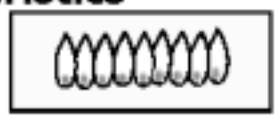
If the flame is completely or mostly yellow, the corresponding air shutter and/or the orifice must be adjusted. Verify that the orifice is all the way tightened. If the flame is still yellow, adjust the air shutter. After adjustment, retest.

Note: With LP use, some yellow tipping on outer cones is normal.

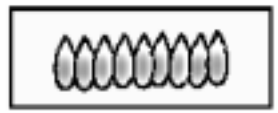
All burners must also be inspected for carryover. The flame should completely surround the burner. If the cooktop burners do not carry over, the bypass jet must be adjusted (See step 4, page 4). If the broil or bake burner does not carry over, adjust the corresponding air shutter (see steps 10 and 11, below and next page).

Figure 7
Flame Characteristics

Yellow Flames:
Further adjustment is required.



Yellow Tips on Outer Cones:
Normal for LP Gas.



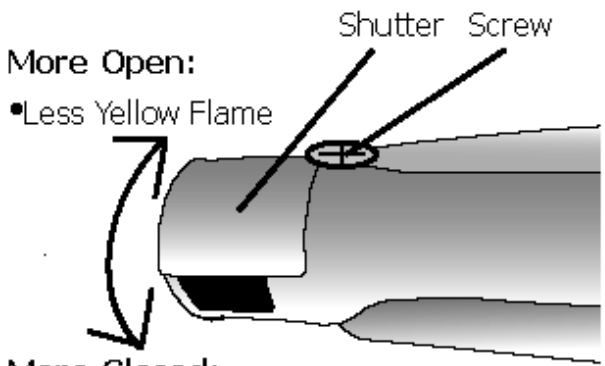
Soft Blue Flames:
Normal for Natural Gas.

LP Conversion -- continued

10. Adjust Broil Burner Air Shutter (if necessary)

Adjust Air Shutter. The air shutter is located on the back end of the broil burner. Loosen screw and turn shutter. Close the shutter if the flame is lifting or blowing or not carrying over; Open the shutter if it is too yellow. (See Figure 8). Tighten screw.

Figure 8
Broil Burner Air Shutter



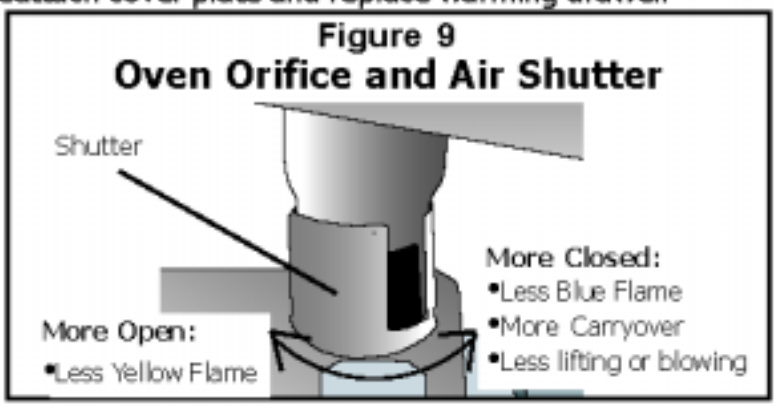
LP Conversion -- Continued

11. Adjust Oven Burner Air Shutter (if necessary)

Adjust Air Shutter. The oven burner air shutter is located to the left of the oven regulator. Reach it through the access hole in the interior back panel of the warming drawer. Loosen screw on shutter. Close the shutter if the flame is lifting or blowing or not carrying over; Open the shutter if it is too yellow. Tighten screw.(See Figure 9). Tighten screw.

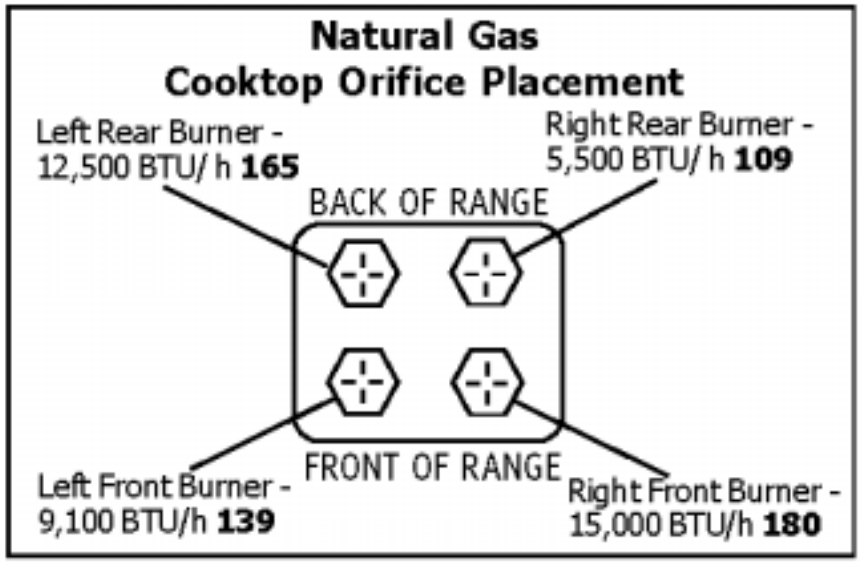
Reattach cover plate and replace warming drawer.

Figure 9
Oven Orifice and Air Shutter



Save natural gas orifices for future conversion by placing them in the appropriate space below.

Natural Gas
Cooktop Orifice Placement



Door Removal

Removing the Door

⚠ WARNING

- Make sure oven is cool and power to the oven has been turned off before removing the door. Failure to do so could result in electrical shock or burns.
- The oven door is heavy and fragile. Use both hands to remove the oven door. The door front is glass. Handle carefully to avoid breakage.
- Grasp only the sides of the oven door. Do not grasp the handle as it may swing in your hand and cause damage or injury.
- Failure to grasp the oven door firmly and properly could result in personal injury or product damage.

1. Be sure to read the above **WARNING** before attempting to remove oven door.
2. Open the door completely.
3. Flip lever on hinge toward you. (see Figure A).
4. Close the door to approximately halfway open.
5. Holding the door firmly on both sides using both hands, pull the door straight out of the hinge slots. Hold firmly, the dooris heavy (See Figure B).
6. Place the door in a convenient and stable location for cleaning.

Figure A

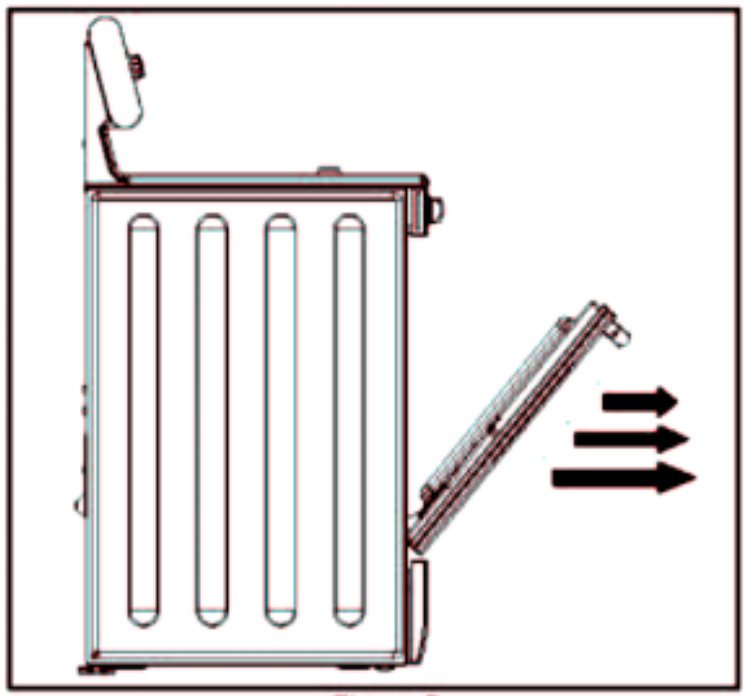
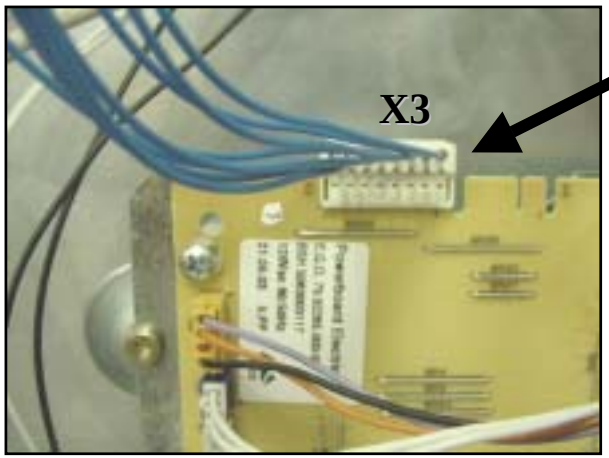


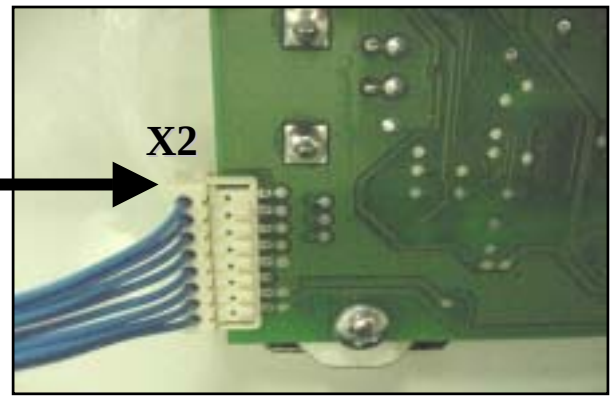
Figure B

Operation -- Oven Control



Connector to Power Relay Board from "Touch & Turn" User Interface Board (clock)

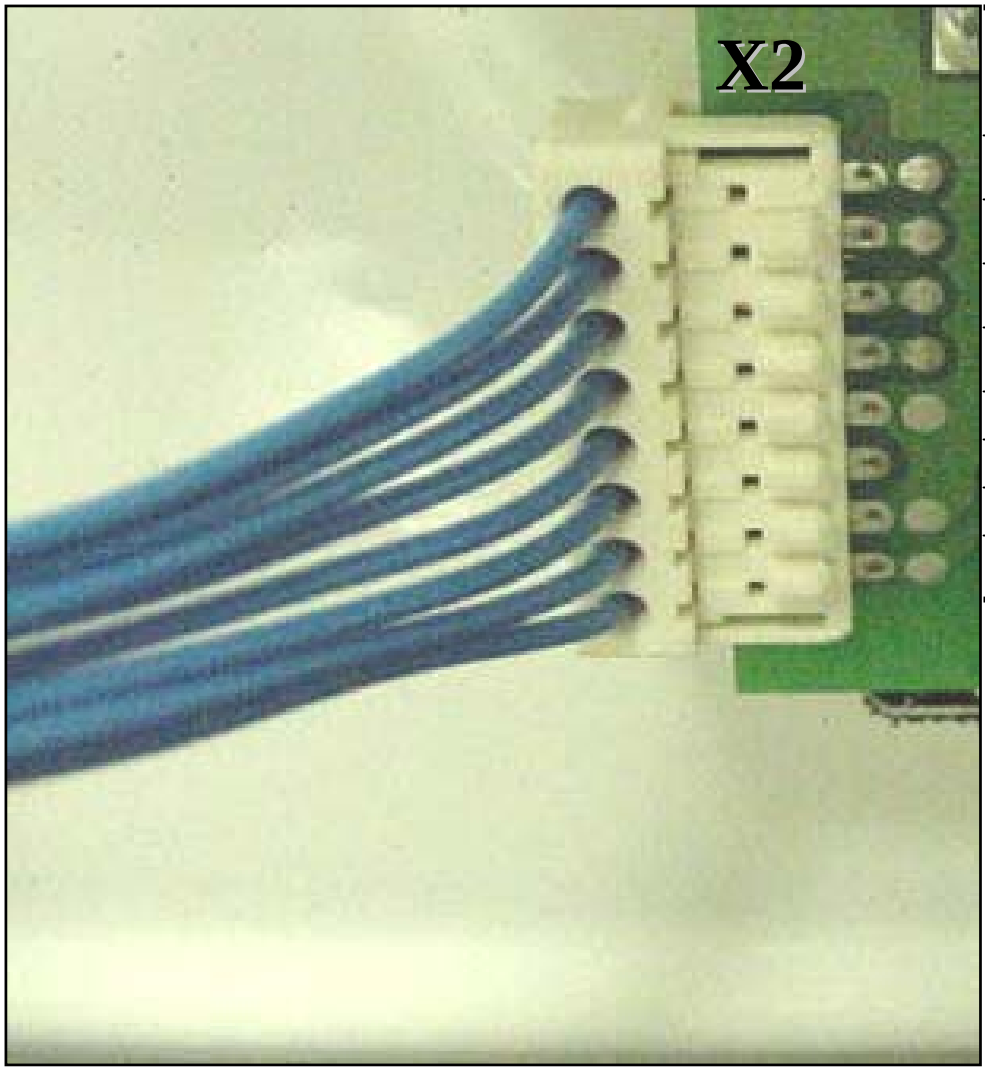
Connector to "Touch & Turn" User Interface Board (clock) from Power Relay Board



When the range is powered up, the interface board receives the voltages at X2 from the power relay board shown in the chart on the next page, and the clock illuminates.

This board controls all the functions of the oven and contains the program data

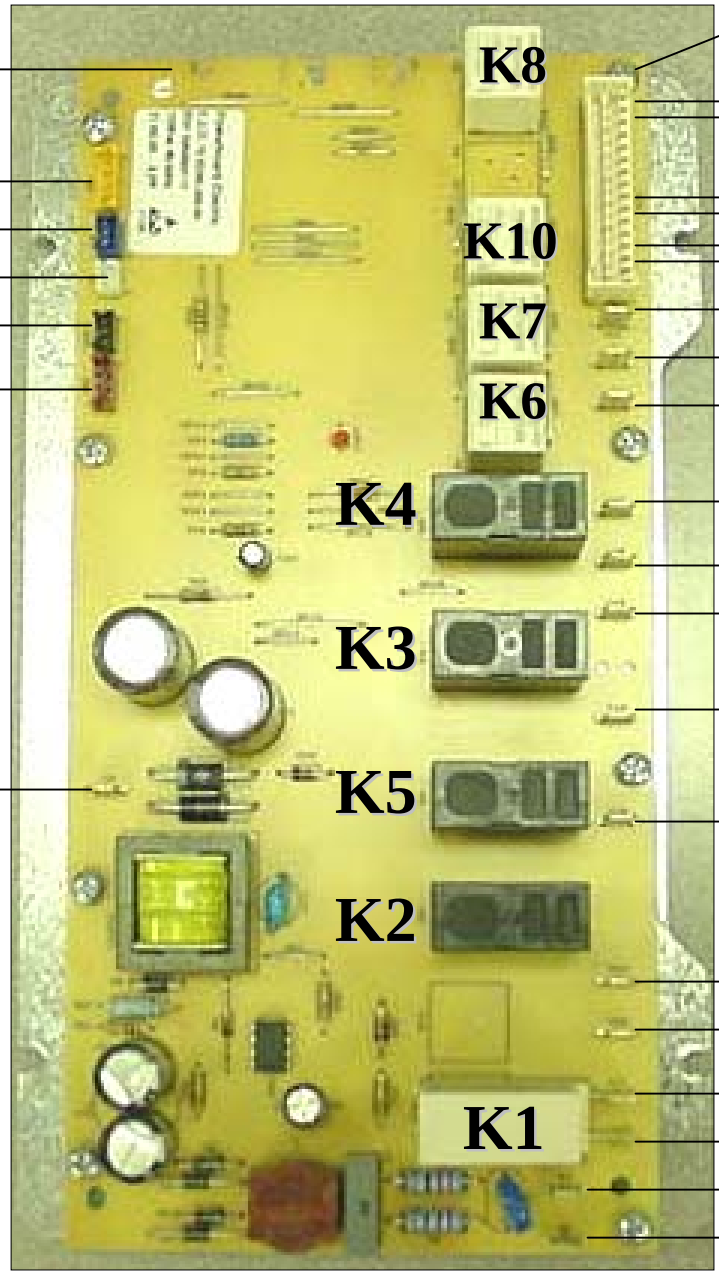
Voltage checks at the “Touch & Turn” interface board (clock)



Voltage readings at X2 NOTE pin connections are not marked
1) 1.5 VDC
2) 0 VDC
3) 0 VDC
4) 5 VDC
5) 0 VDC
6) 8 VDC
7) 0 VDC
8) 32 VDC

Remove connector from board , set scale to +50VDC, put one meter lead to ground and the other lead to pins 1, 4, 6 and 8 in turn.Voltage should read as indicated in the chart. If voltages are good and no display is present, replace the interface board.

Power Relay Board Connections Electric Oven



X3 Wiring Harness to Interface Board

X6 Latch Switches

X5 Door Switch

X7 Meat Probe

X25 Warm Drawer Sensor

X8 Oven Sensor

X4 Ground

X23

K8 Lamps

K10 Convection Motor

K7 Latch Motor

NEUTRAL

X21 Neutral

X22 K6 out to Warming Ele.

X24 L1 (Red) Input to K6, K7,K8 & K10

X17 L2 (Black) Input to K4

X16 K4 to Bake & Conv Elements

X15 K3 out to Bake Element

X18 L1 (Red) Input to K5 & K3

X19 K5 out to Conv. Element

X13 L2 (Black) Input to K2

X12 K2 out to Broil Element

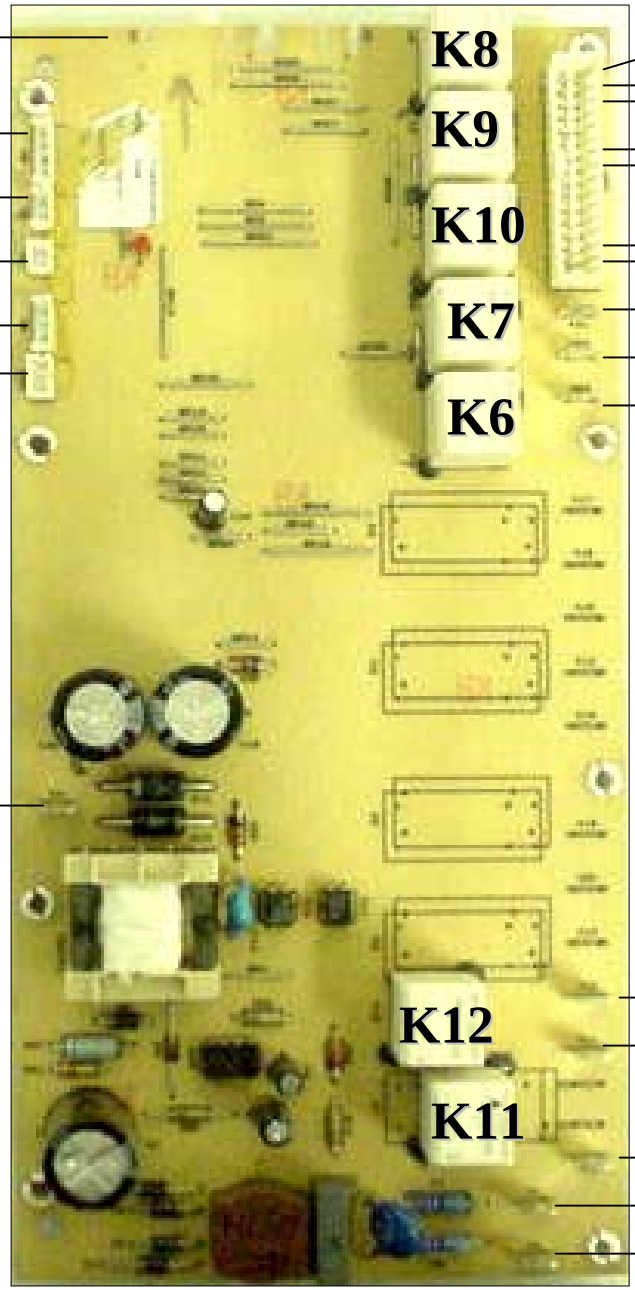
X11 K1 out to Broil Element

X10 L1 (Red) Input to K1

X1 L1 (Red) Input to Board

X2 Neutral (White) to Board

Power Relay Board Connections Gas Oven



X3 Wiring Harness to Interface Board

X6 Latch Switches

X5 Door Switch

X7 Meat Probe

X25 Warm Drawer Sensor

X8 Oven Sensor

X4 Ground

X23

K8 Lamps

K10 Convection Motor

K7 Latch Motor

NEUTRAL

X21 Neutral

X22 K6 Out to Warming Ele.

X24 L1 Input to K6, K7,K8 & K10

X12 From K12 to Broil Valve Coil

X11 L1 Input to K11 & K12

X10 From K11 to Bake Valve Coil

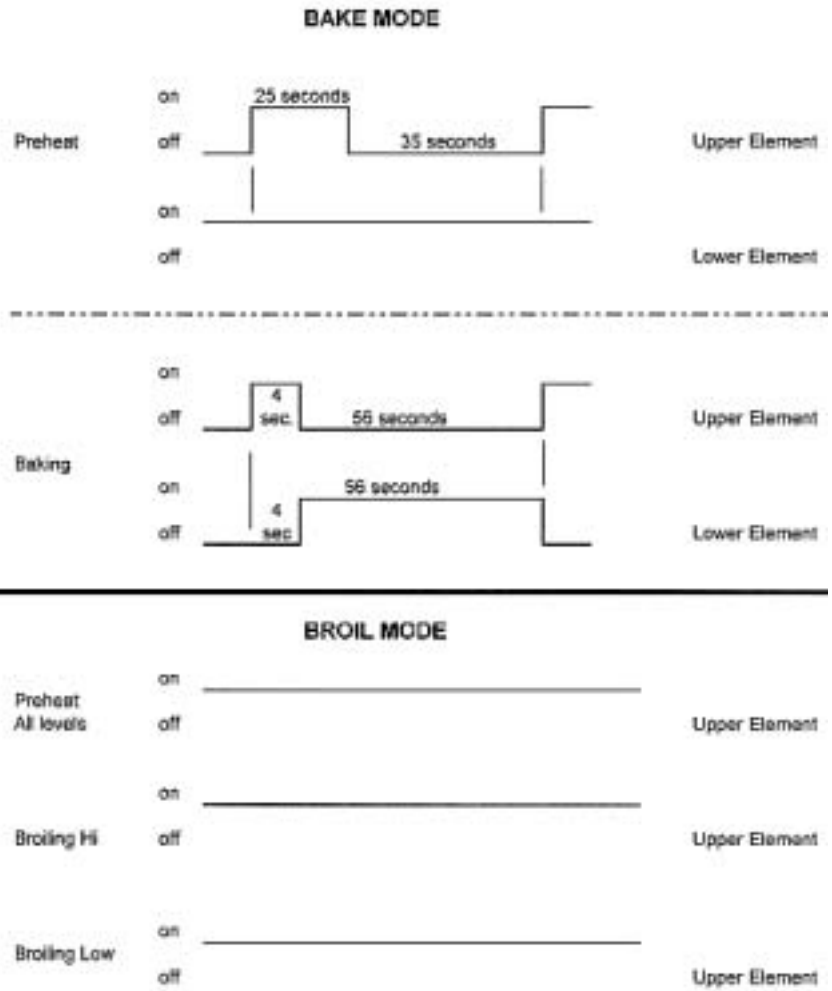
X1 L1 (Red) Input to Board

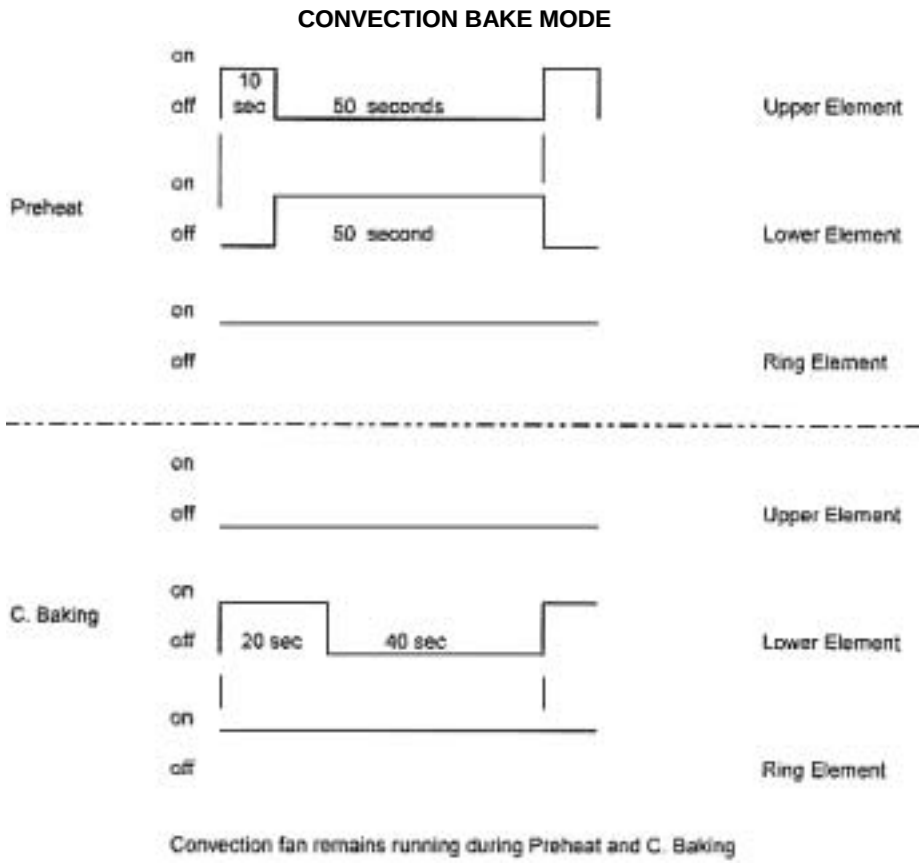
X2 Neutral (White) to Board

Operation of the Electric Oven

Touch Bake and set temperature at the control, relay board receives input and checks resistance of sensor. If heat is required then the following relays will close: K3 & K4 for the bake element and K1 & K2 for the broil element. The output voltages from the board should be as follows: X15-L1 to bake element, X16-L2 to bake element. X11-L1 to broil element, X12-L2 to broil element. This supplies 120volts from L1 & L2 giving each element 240 volts and oven heats. NOTE See charts on next page for element “On Times”.

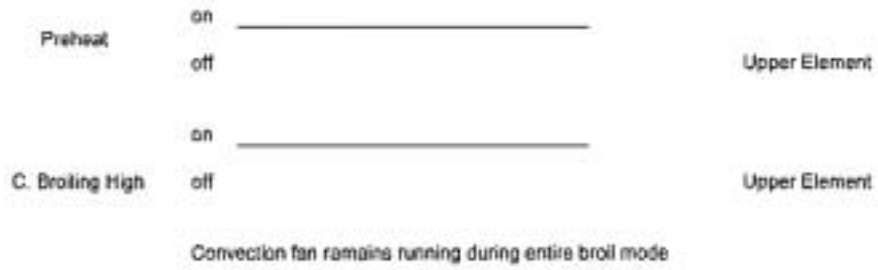
Element Cycle Charts





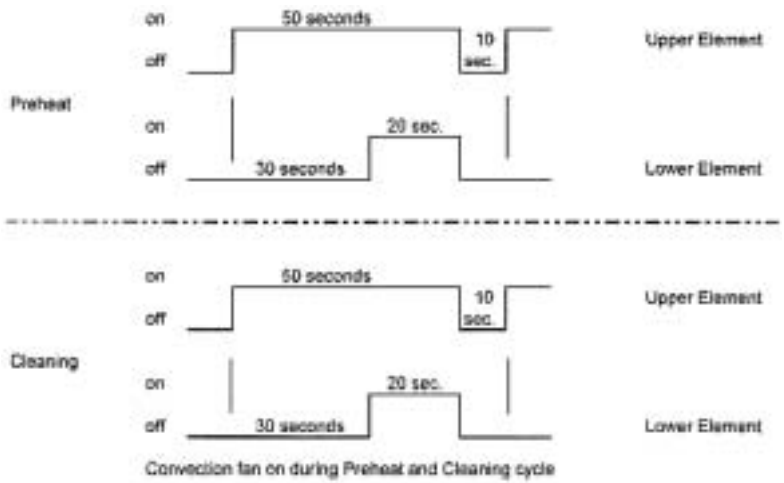
Element Cycle Charts

CONVECTION BROIL MODE



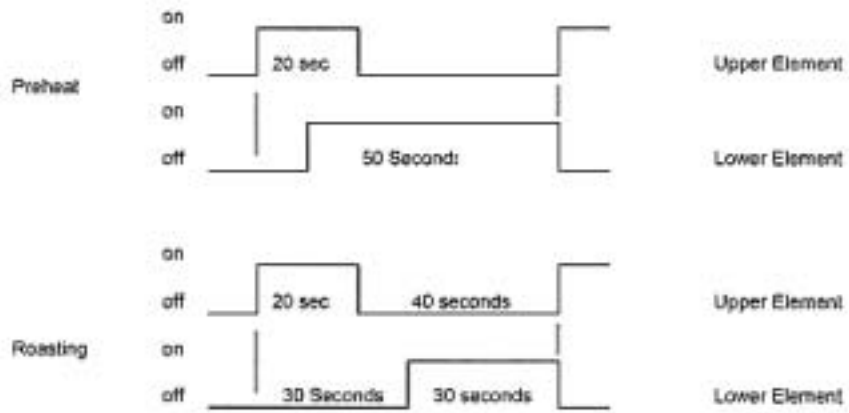
Convection fan remains running during entire broil mode

SELF CLEAN MODE



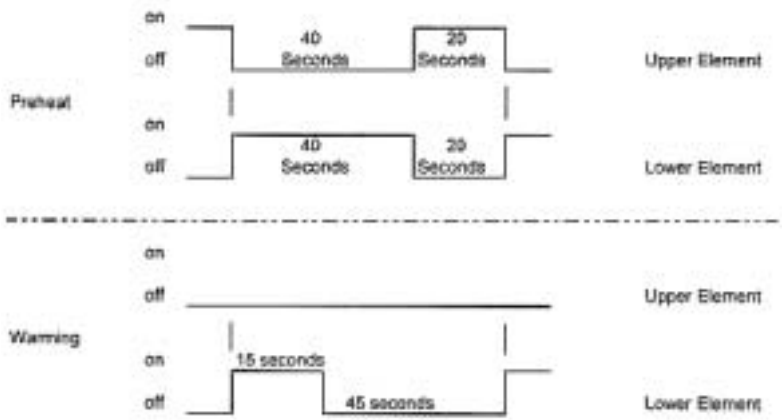
Convection fan on during Preheat and Cleaning cycle

CONVECTION ROAST MODE

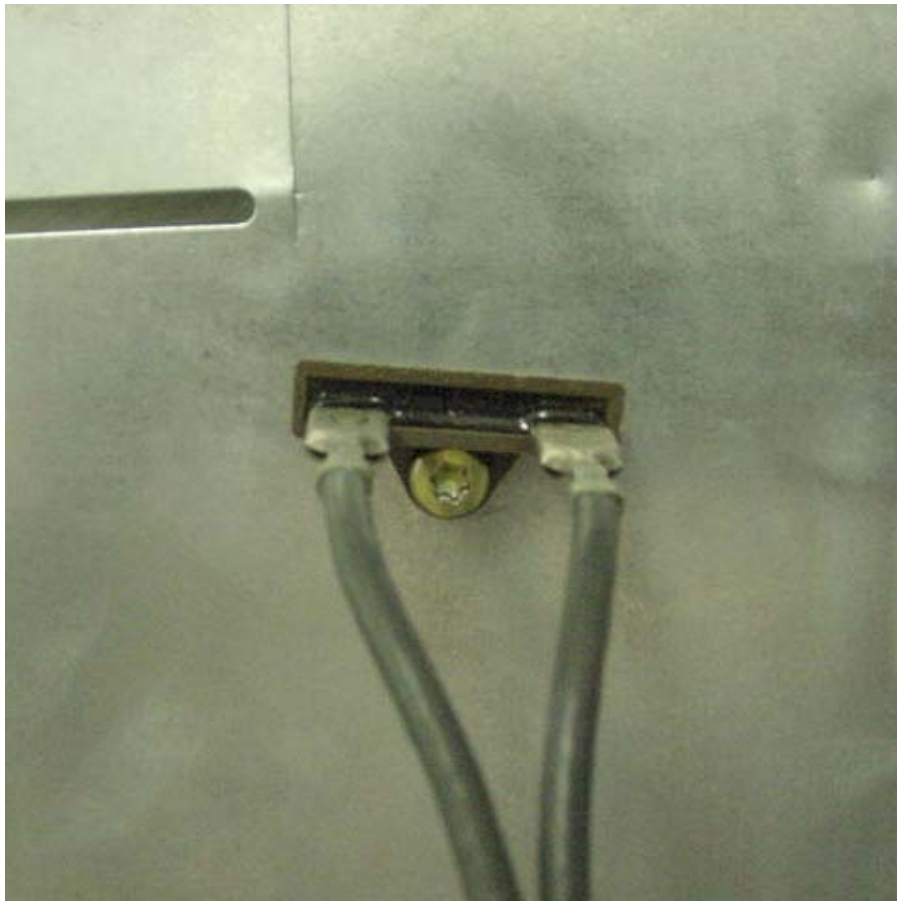


Convection fan remains running during Preheat and Roasting mode

OVEN WARMING

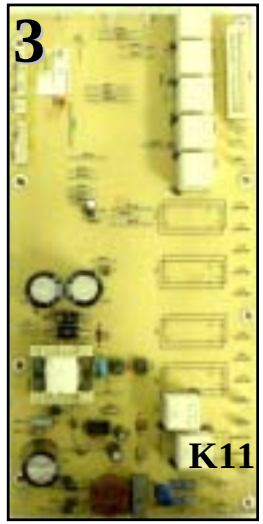


Operation of the Electric Oven

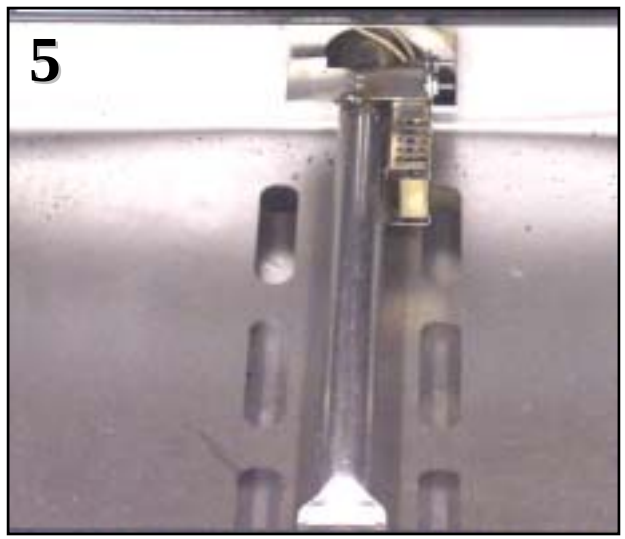


Note Some of the wiring diagrams show a high temperature safety thermostat between the terminal block and the power relay board. This HTC was not used on production units.

Operation of the Oven Gas Burner



Touch Bake and set temperature at the control, relay board receives input and checks resistance of sensor. If heat is required then Bake relay K11 is closed. 120VAC is sent to the gas safety valve. The glow igniter which is wired in series with the valve starts to heat up, as it does so the voltage drops across the valve. When the glow bar draws 3.2 amps and is glowing the valve opens sending gas to the burner and it ignites. Bake is 17,000 BTUs



Electric Top Operation -- Controls

To select heating level, touch desired element, then twist knob.

To turn off element, touch until “0” appears.

To size pots for dual or triple elements, press desired element, then press *pot sizing* key and then rotate knob to desired heating level.

To keep food warm, touch element key, then touch *keep warm* key.

If panel lock came on (if magnetic knob was removed for > 10 seconds), replace knob, then push and hold down *panel lock* touch key until *panel lock* light goes out.

Electric Top Operation -- Typical Displays

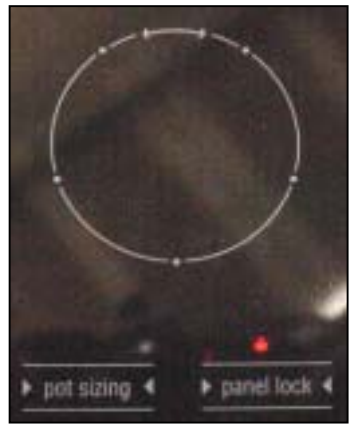
Residual Heat

Element On (showing heat level)

Low (keep warm)

Dual (Outer) Element On (showing heat level)

Element Off



Panel Lock On (when knob missing)

Electric Top -- How the Elements Heat

Each element or section of an element is controlled by a relay. Touch the glass to select element, turn knob to select the power level. For the element to heat the following relays must close:

Left Front & **Right Front** L2 from K10 measured at X30.

Left Front L1 from K1 900 watt measured at X5

L1 from K3 800 watt measured at X7 **triple element**

L1 from K4 800 watt measured at X8

Right Front L1 from K2 1200 watt measured at X6 **single element**

Right Rear & **Left Rear** L2 from K9 measured at X32.

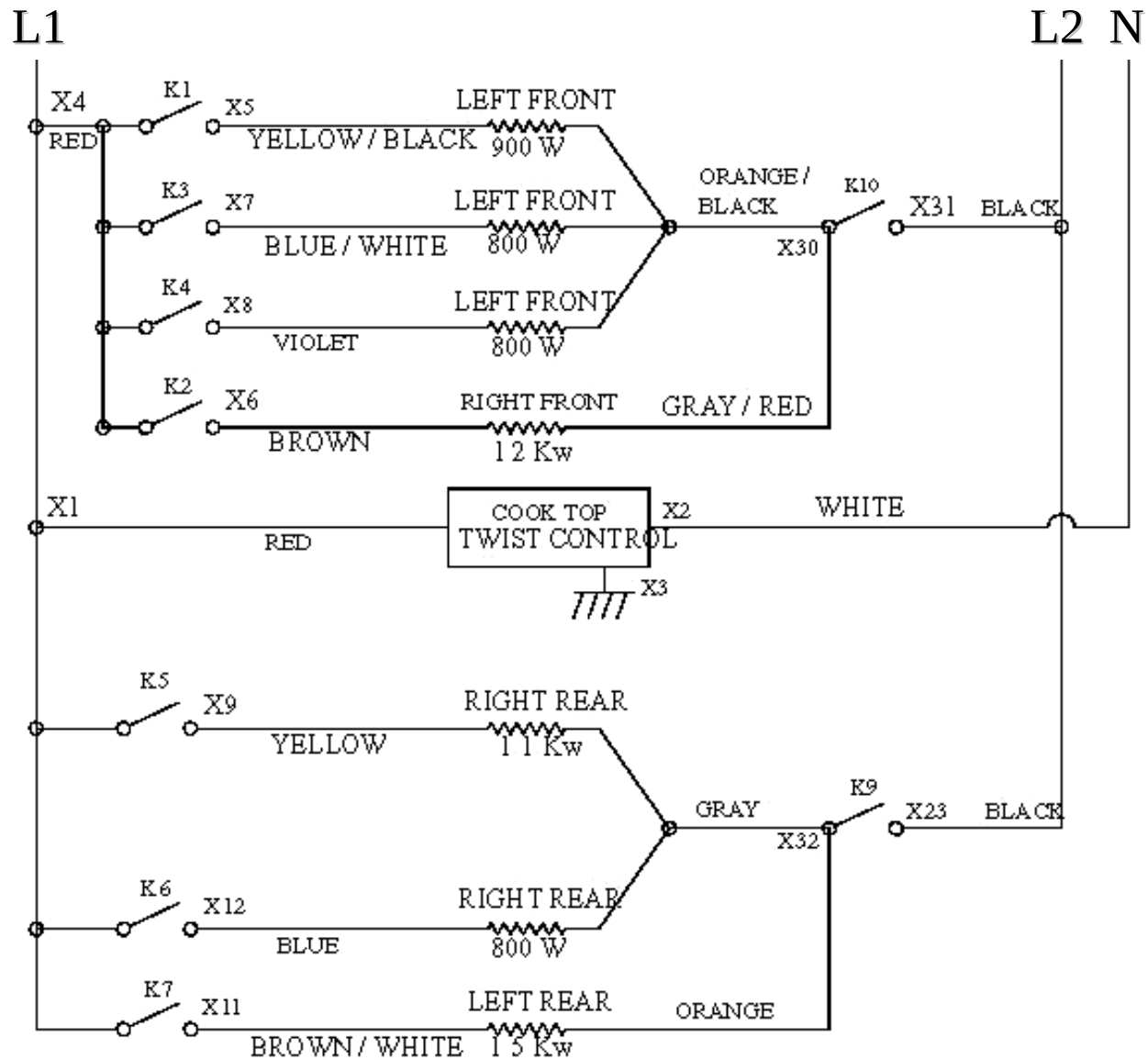
Right Rear L1 from K5 1100 watt measured at X9 **double element**

L1 from K6 800 watt measured at X12

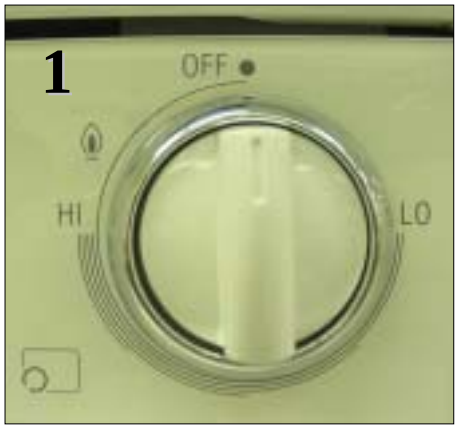
Left Rear L1 from K7 1500 watt measured at X1[illegible] **single element**

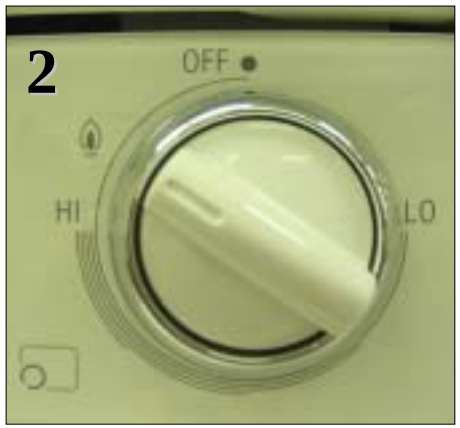
See next page for example schematic

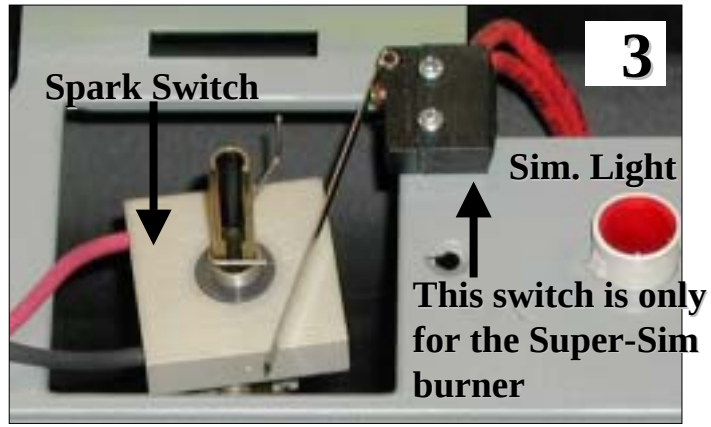
Electric Top -- How the Elements Heat



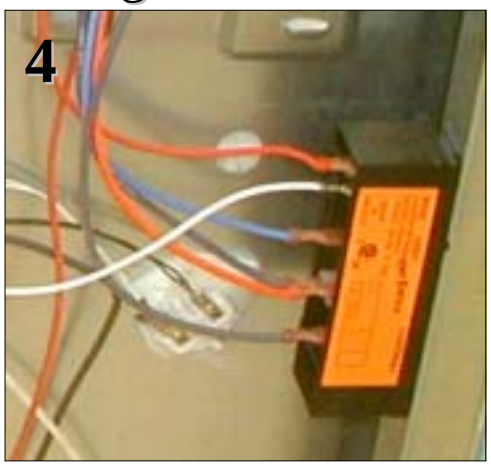
Gas Top Operation



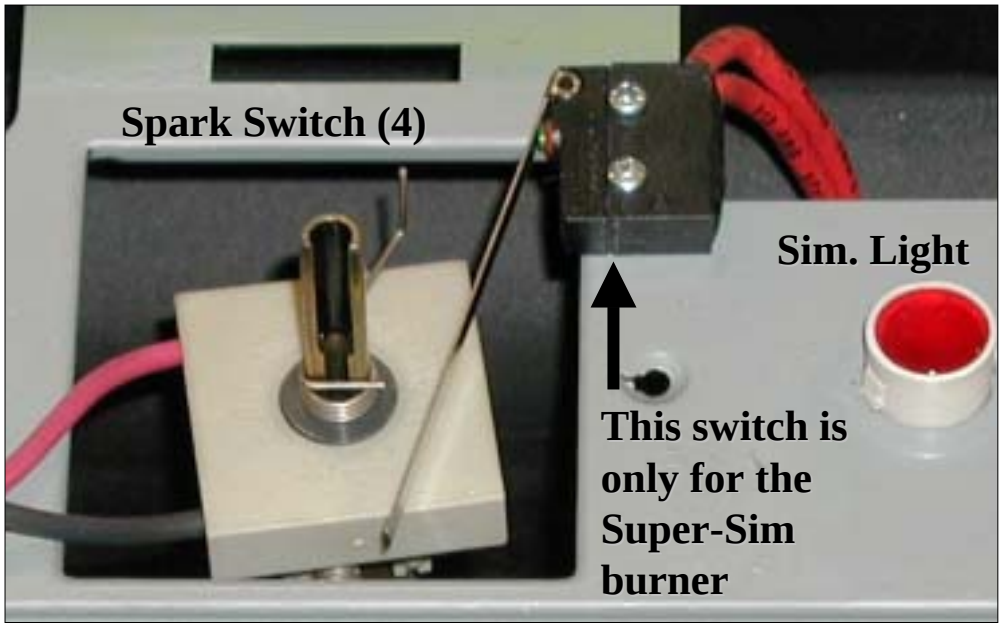


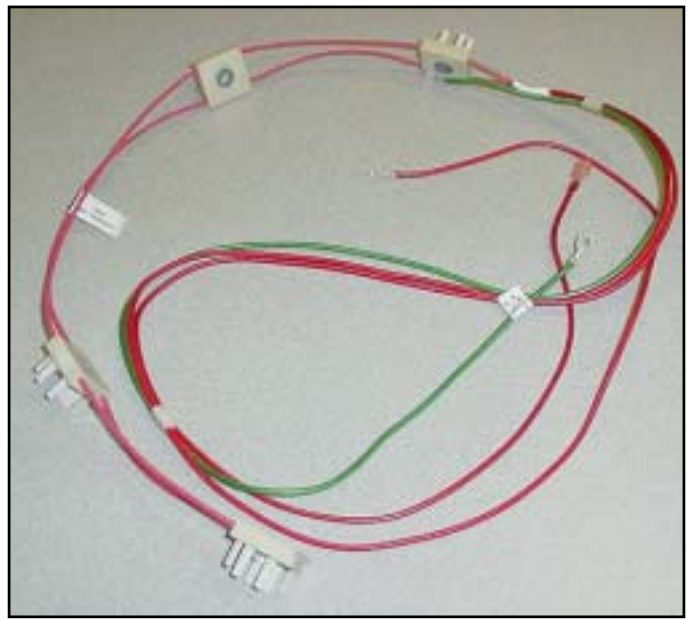


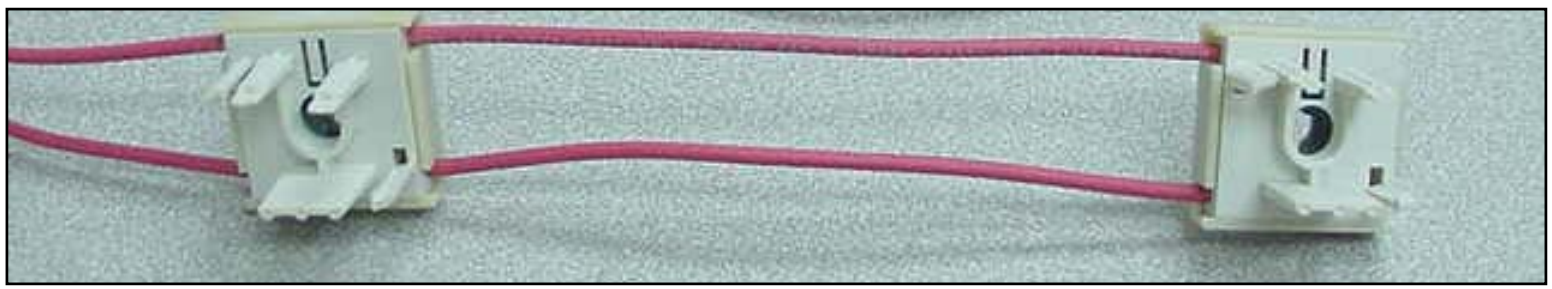
Turn the control knob to the lite position. The spark switch closes and sends 120VAC to the spark module. The spark module output sends 14,000VDC to the burner igniter creating a spark to the underside of the burner cap. The action of turning the knob to the lite position allows gas to flow to the burner and it ignites



Gas Top Operation







Note spark switches are supplied as an assembly of four complete with wiring harness part # 492439

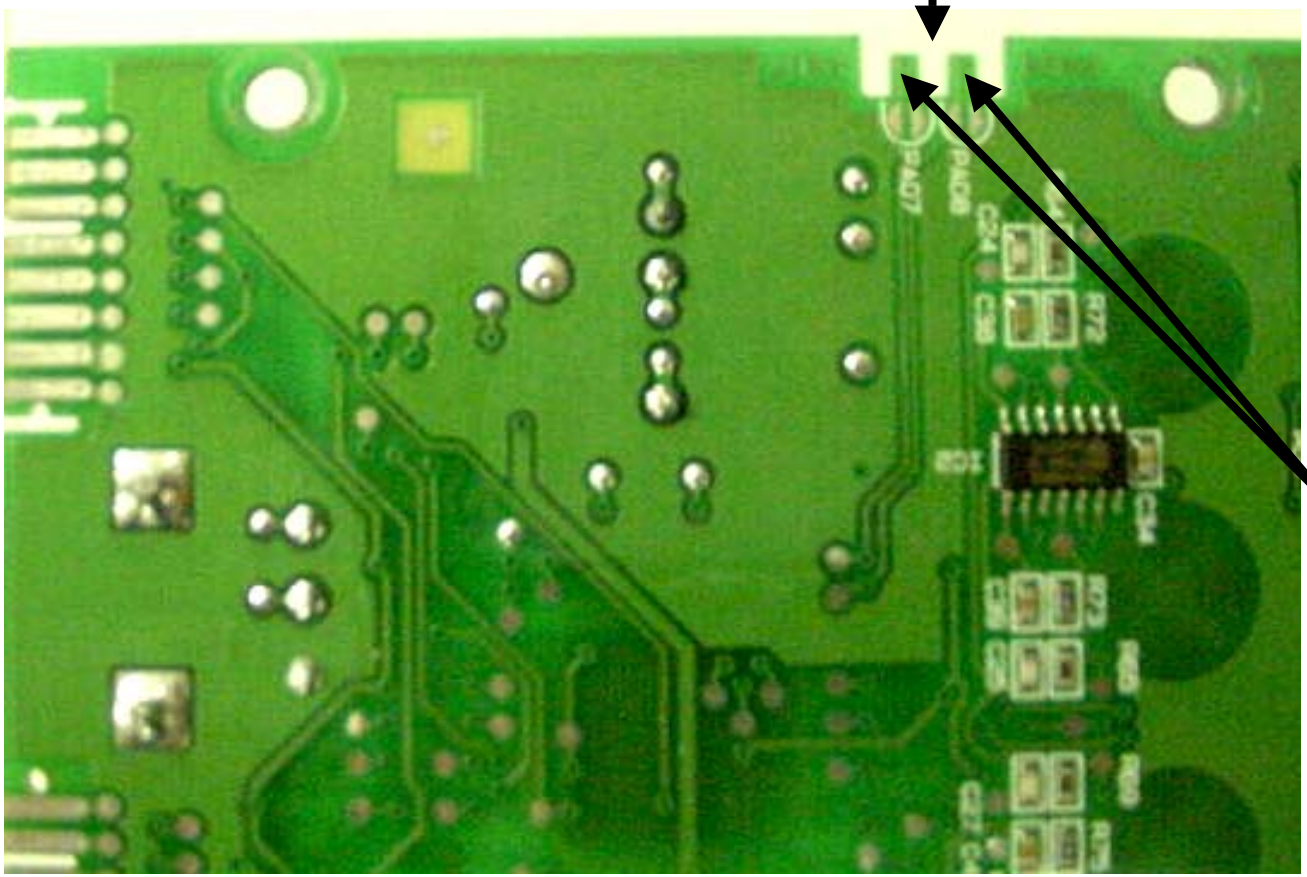
How to replace the “Touch & Turn” interface board (clock)

Remove the Knob: It is a tight fit, wrap some scotch tape around the knob & pull gently on the ends to remove.

Remove the locknut

Remove upper rear access panel, remove connector from board, remove the 6 screws holding the board. Reassemble new board in reverse order after checking the board configuration. See next page for instructions.

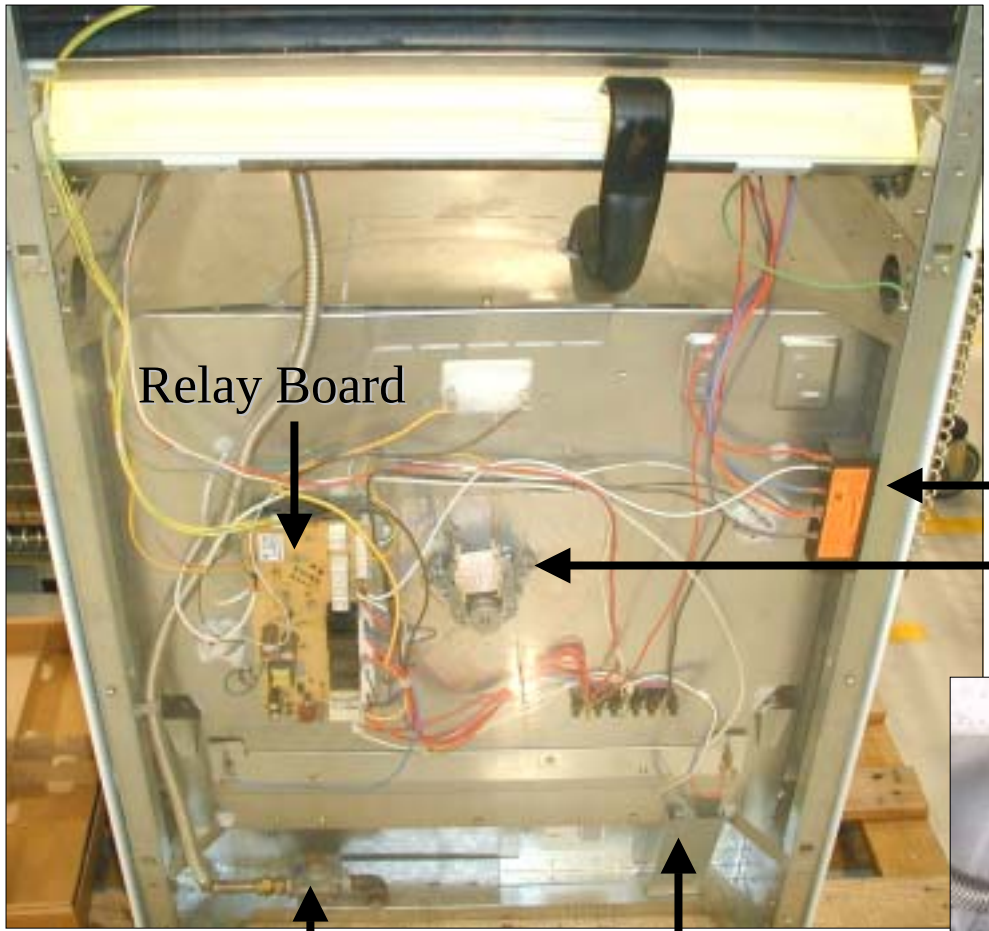
When a replacement board is ordered, all “Touch & Turn” interface boards are programed for the MEDIUM featured models for example HXS24XU: For the MOST featured model HXS25XU snap off either one of these tabs.



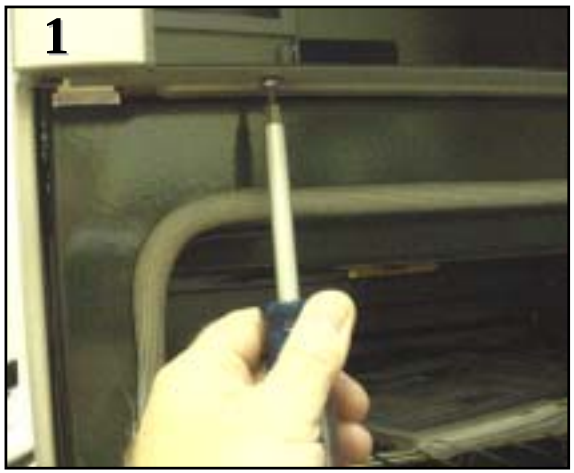
For the LEAST featured model example HXS23XU, snap off both tabs.

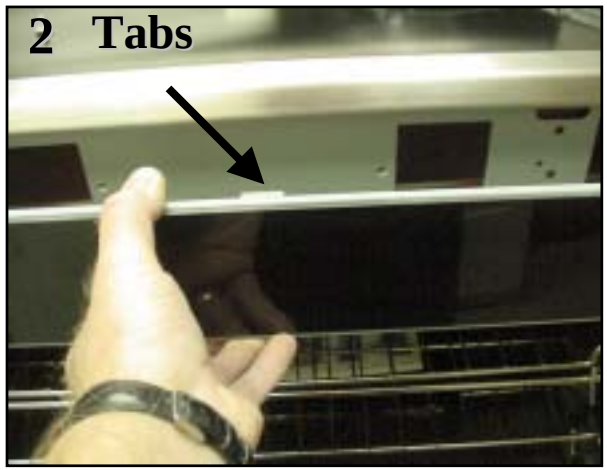
Note be sure to check the model # of the range and configure the board correctly before installing.

Location of components Duel Fuel & All Gas Range

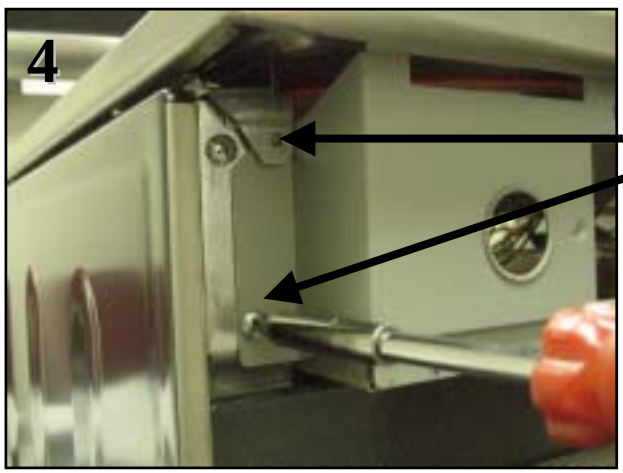


Disassembly….Access to maintop

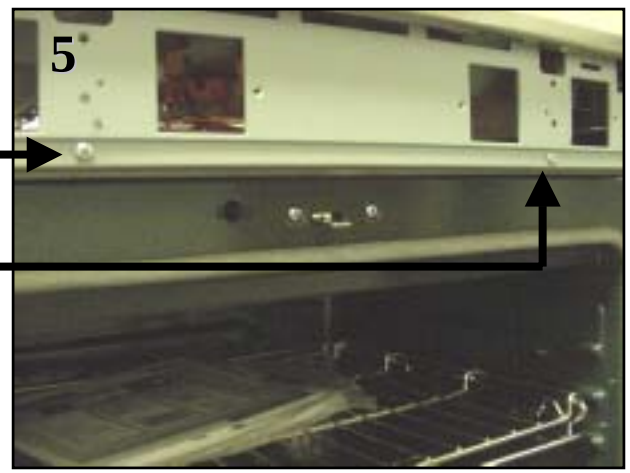




Remove knobs first if unit has mechanical controls or is a gas top. Remove the two screws under the front panel, support the panel as you take out the second screw so that it won't fall. Panel is also held in place with two support tabs which fit into slots on sub-panel

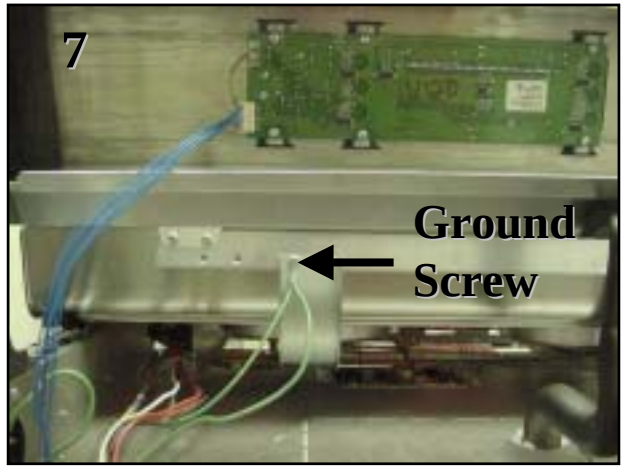


Remove these screws

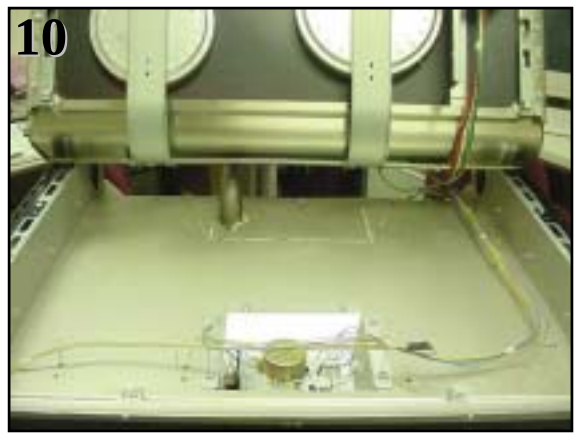


Disassembly….Access to maintop

Remove the 12 screws which hold the 2 rear panels and disconnect the ground screw from the maintop support

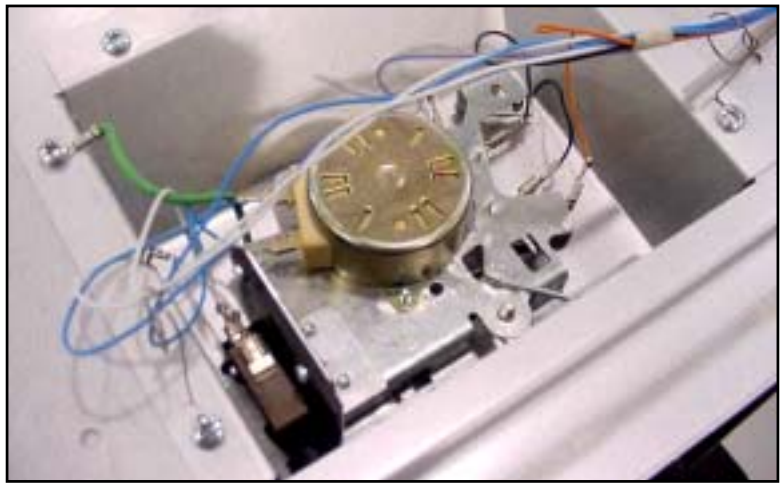


Lift the maintop a couple of inches to disengage the locking tabs and slide towards the front of the unit. Lift the front of the maintop and fold back against the control panel. (place towel or blanket over control panel to avoid scratching panel or maintop) The elements, control, and latch assembly can now be accessed.

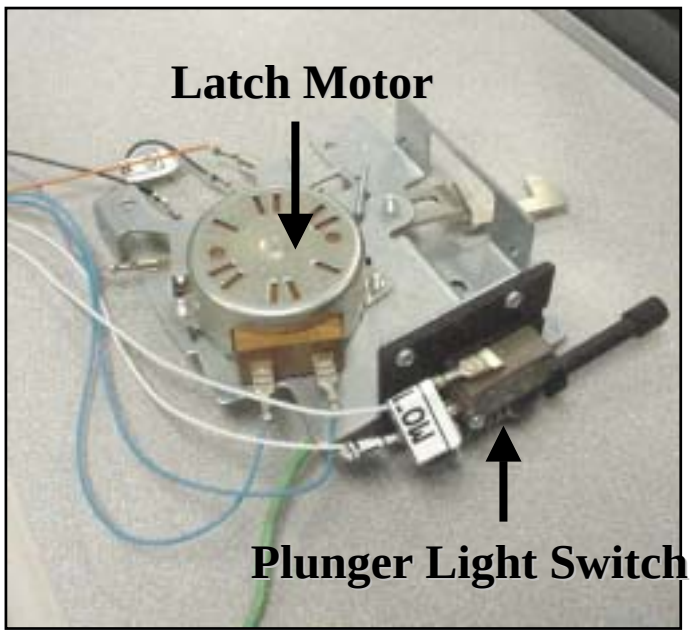


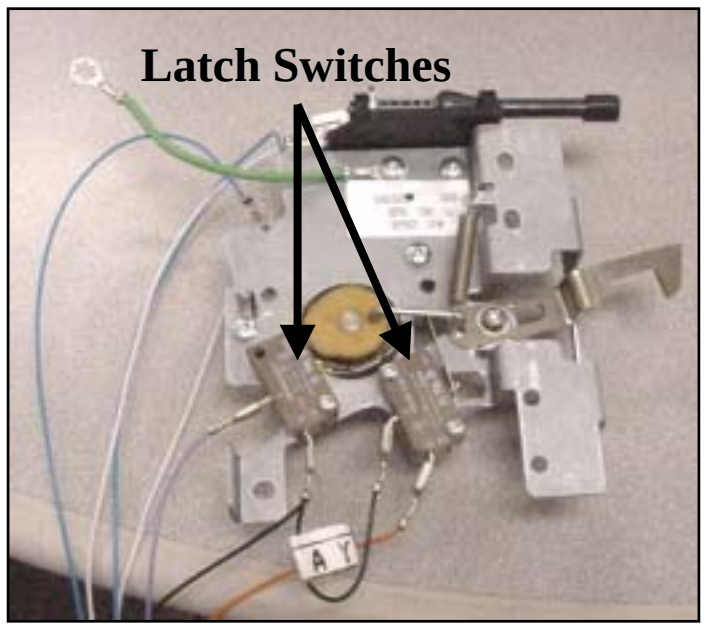
Motorized Latch Assembly & Door Switch

Remove 2 screws from front frame

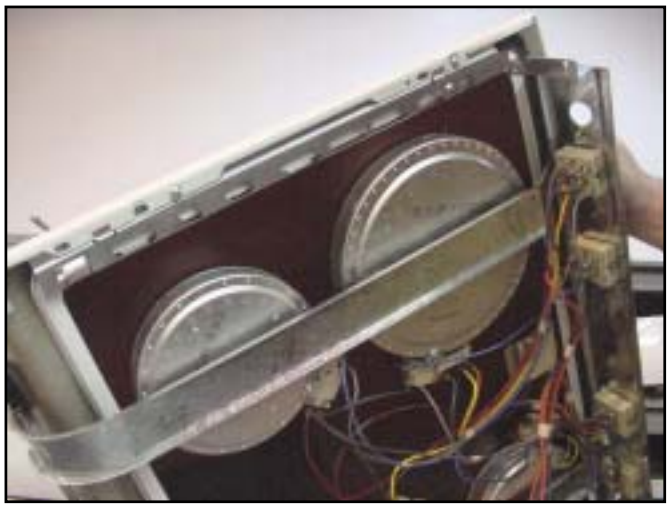


Latch can be accessed from under the cooktop



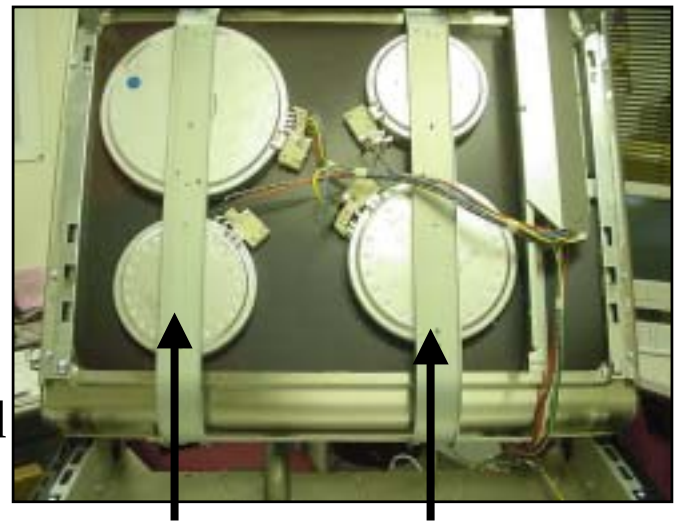


Disassembly -- Access to maintop

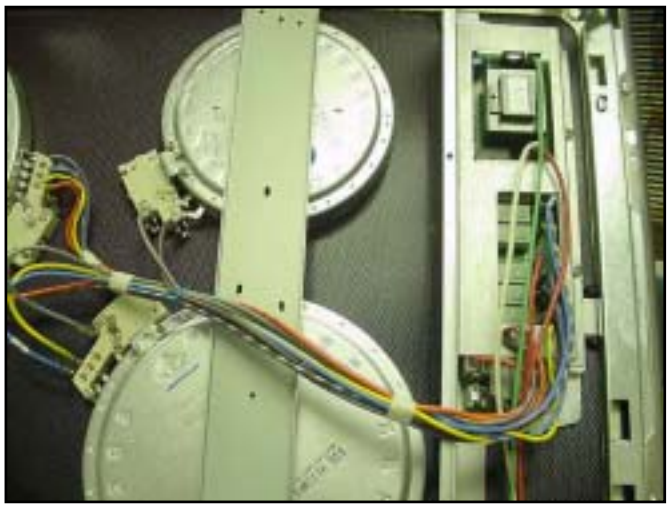


Mechanical version

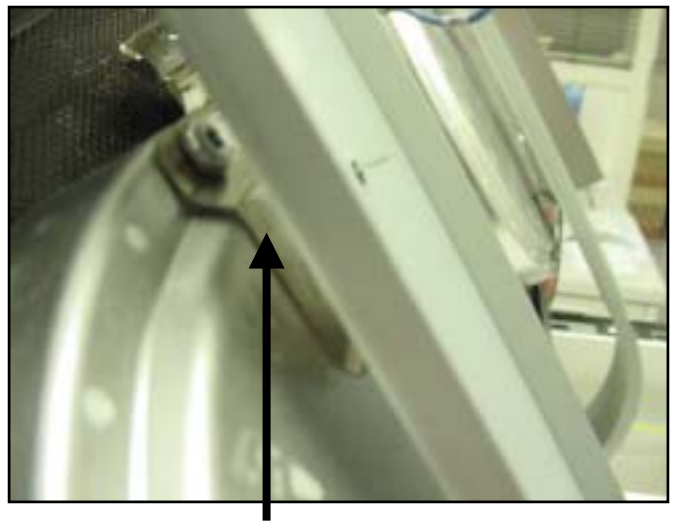
Each pair of elements are held in place by a single bracket & two tension clips per element



Retaining Brackets



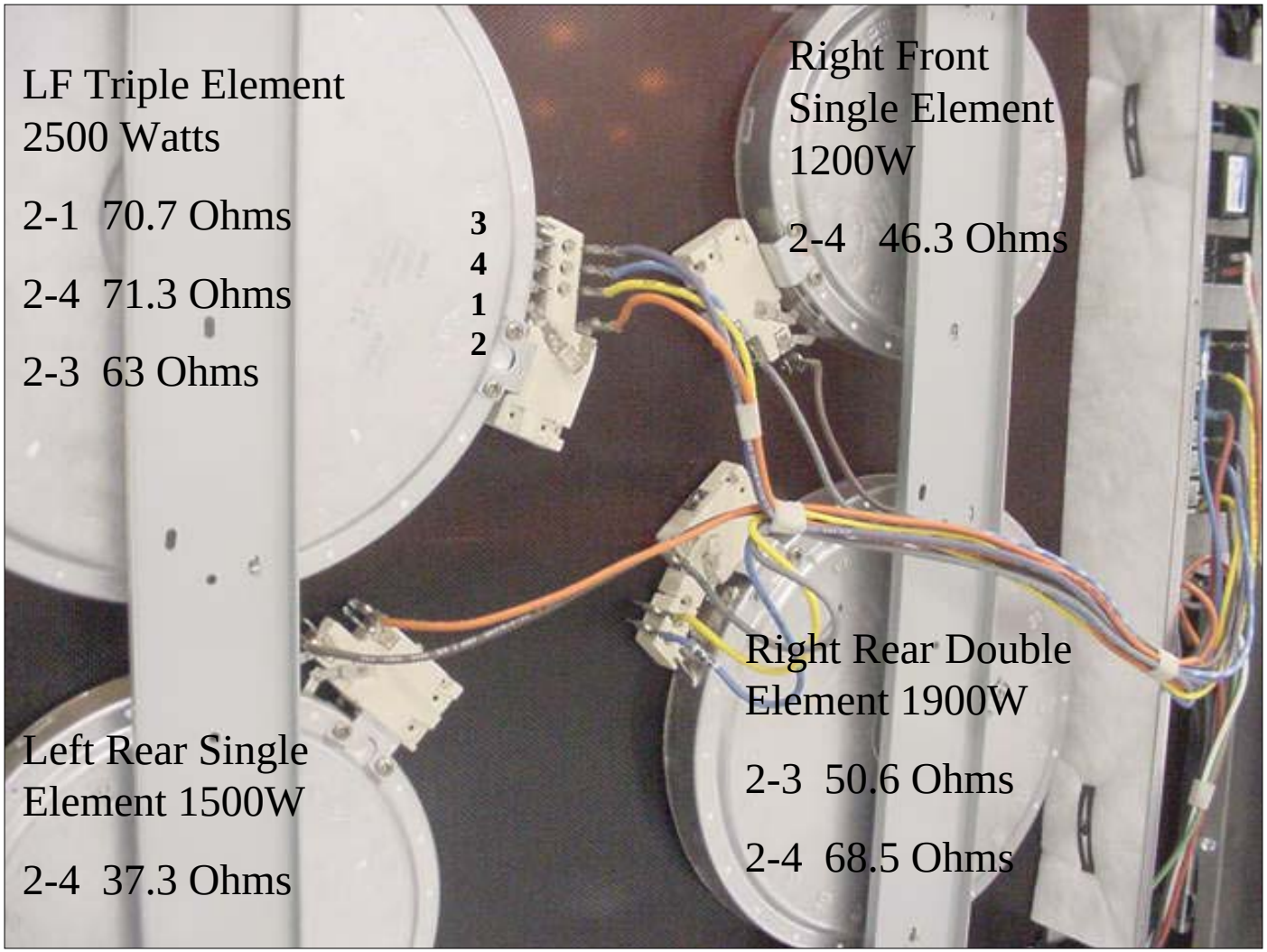
Touch & Turn control version



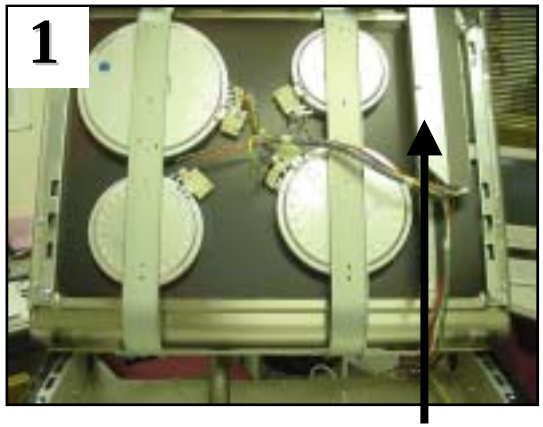
Tension Clips

Resistance checks can easily be made at the element terminals

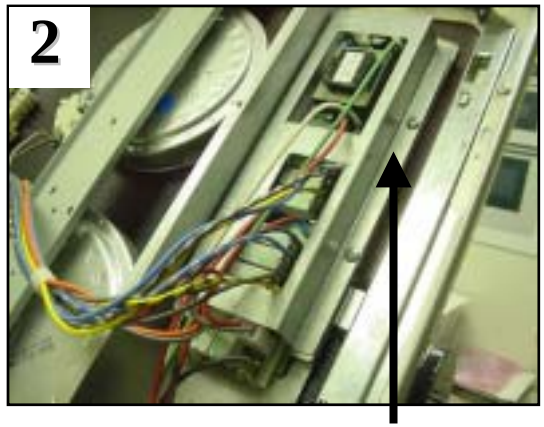
Turn off power before beginning resistance checks



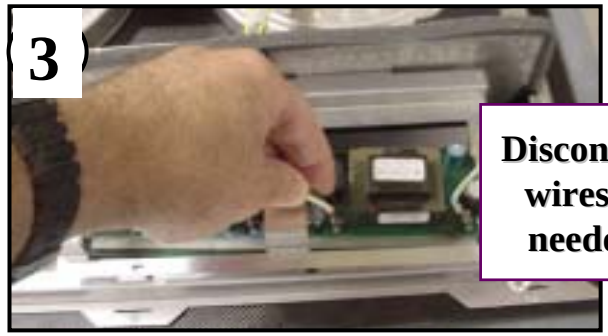
Disassembly – Touch & Turn control

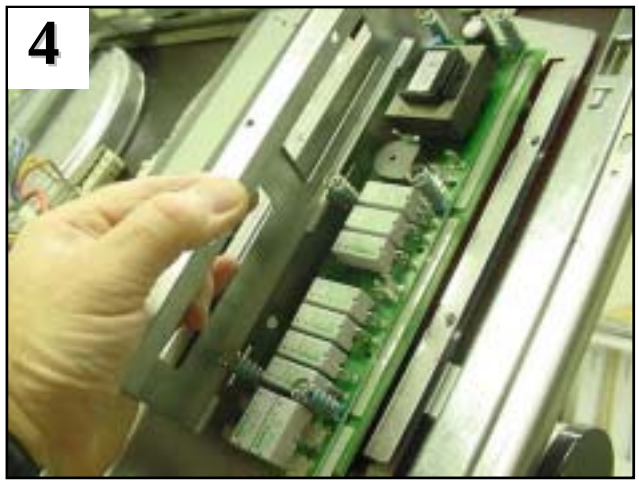


Remove 2 screws holding cover

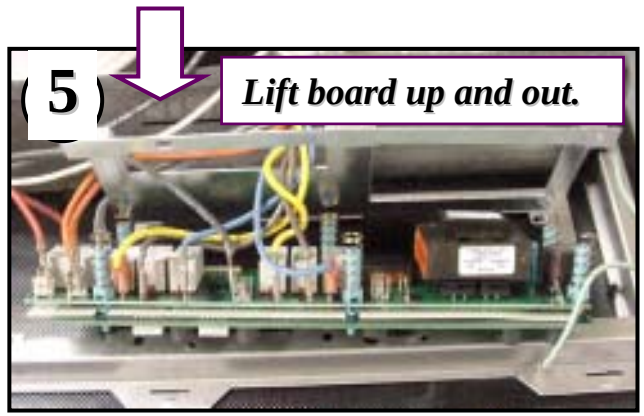


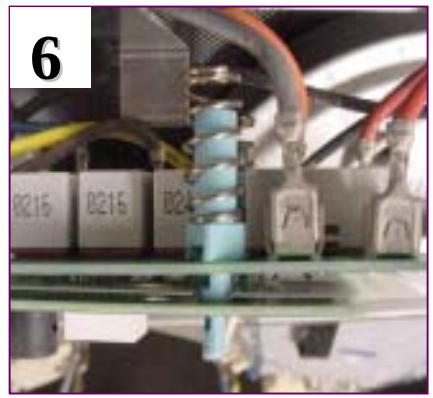
Support bracket is held with 2 screws





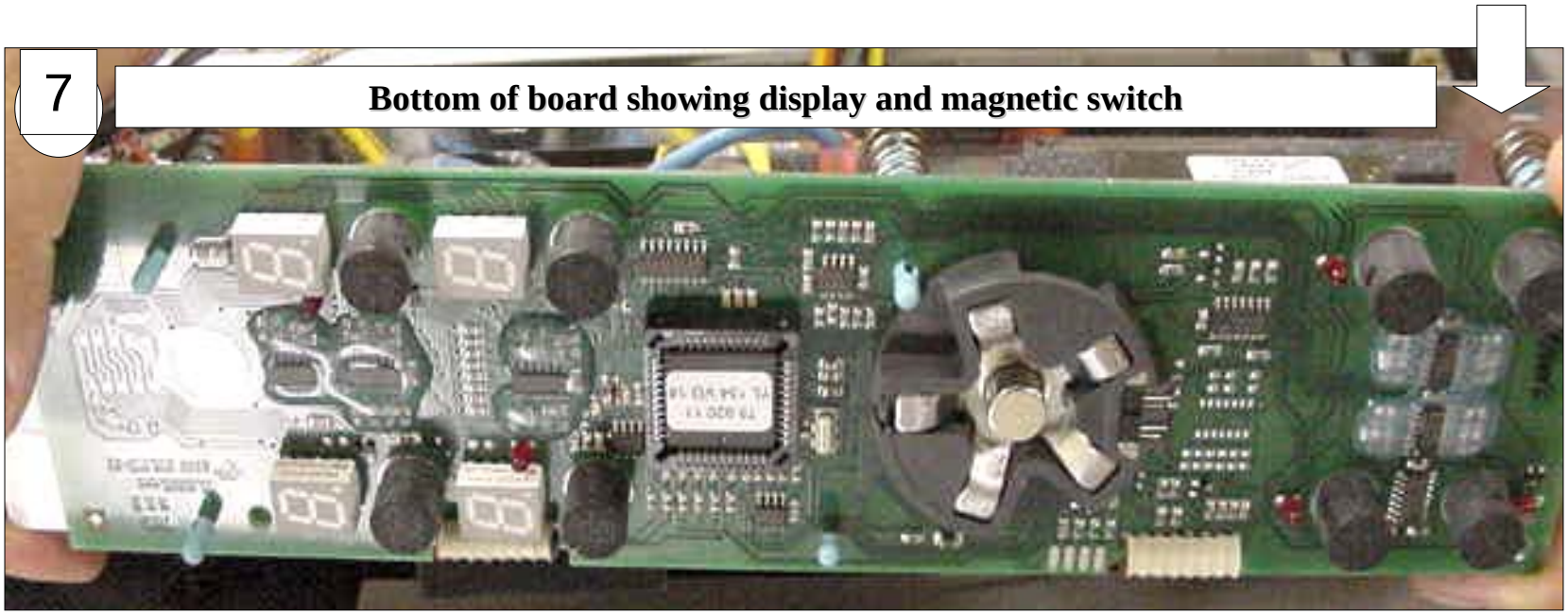
Remove the support bracket





CAUTION: Take care not to break the plastic board standoffs.

Disassembly – Touch & Turn control

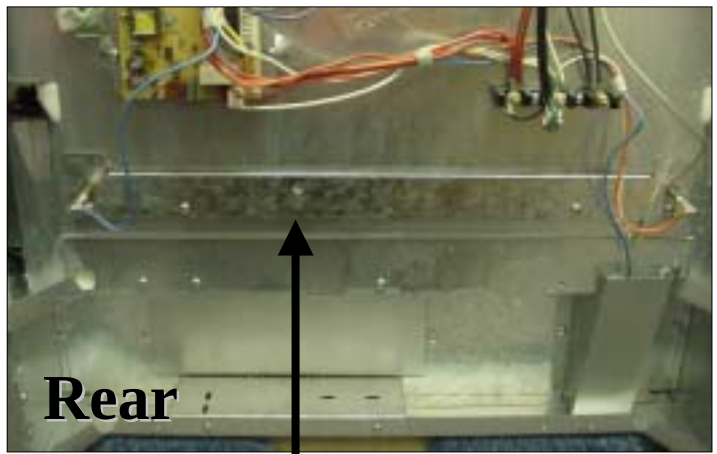


Underside of control showing touch pads and magnetic switch

Access to concealed bake element & warming element

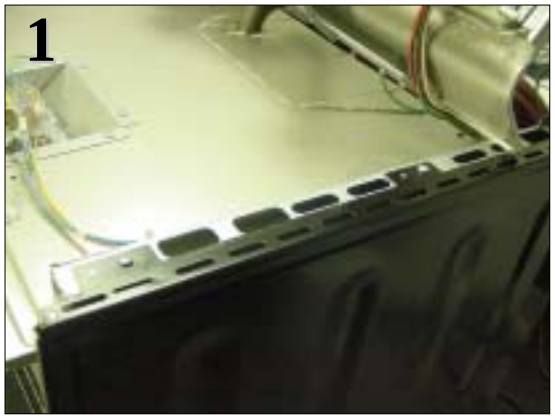
Warming element removed from front by removing the drawer

Remove this cover for access to the warming drawer element terminals

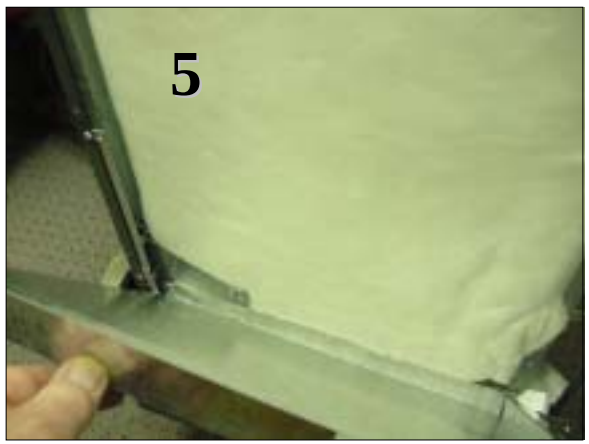


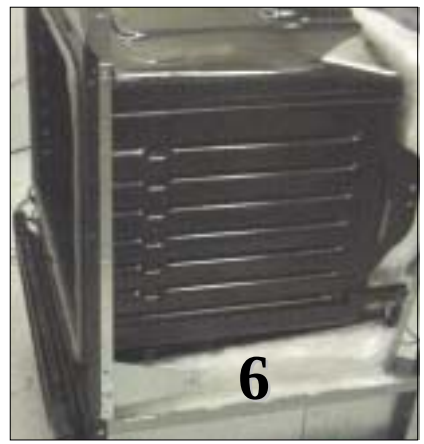
Remove this cover for access to the bake element

Access to Oven Can and Hinge Assembly

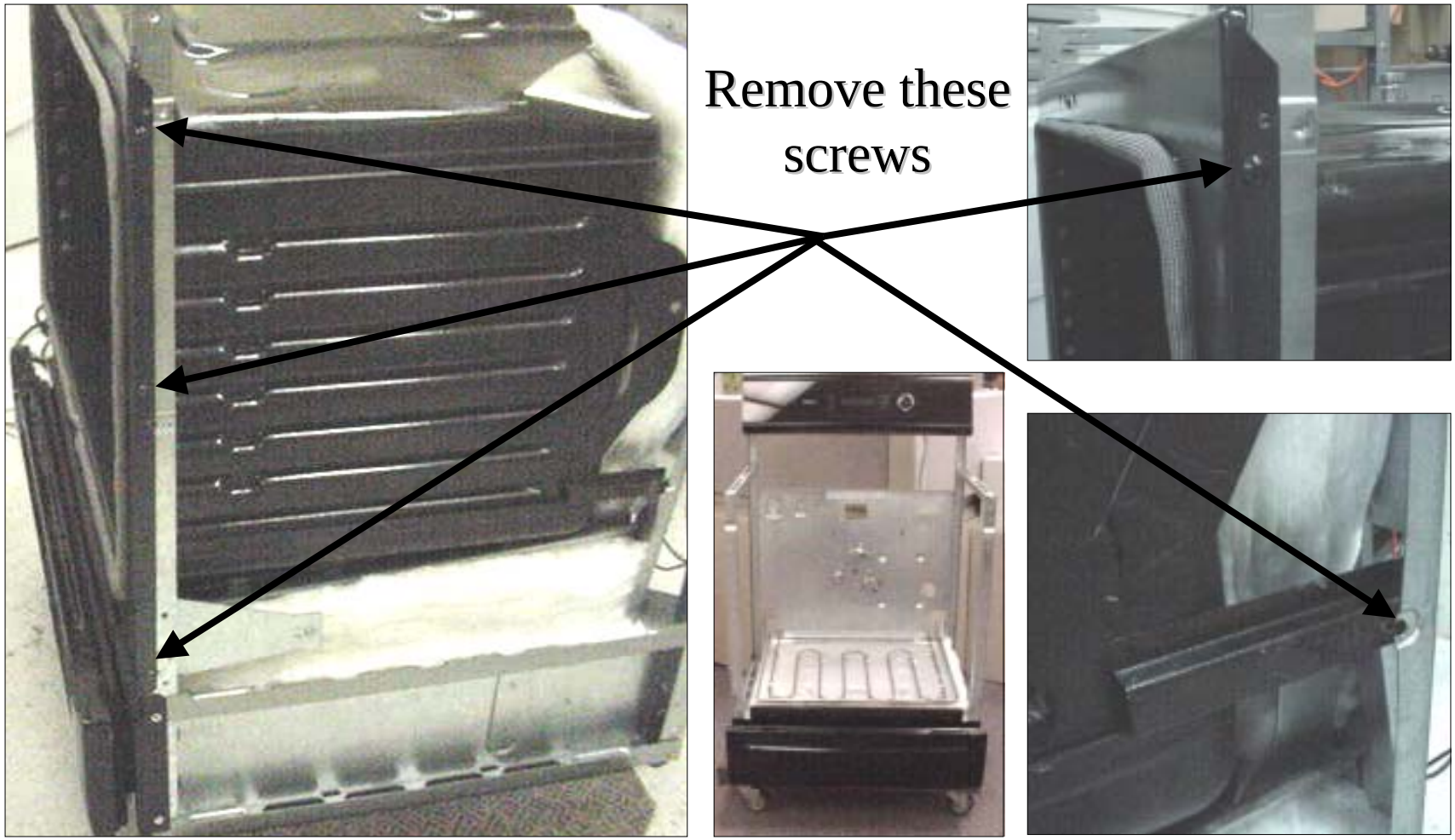


Remove latch assembly & top panels. Remove 3 screws on top of side panel, lift up & out to disengage tabs at the bottom. Remove screws holding outer & inner galvanized panels. Remove insulation (it is all in one piece) oven can is easily removed from chassis by removing front and rear chassis frame screws. (see instructions on next page).





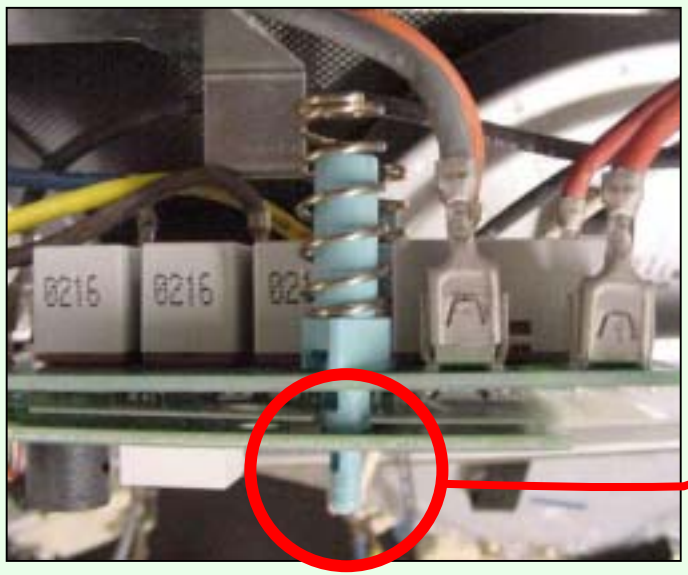
Access to Oven Can and Hinge Assembly -- continued



Reassembly -- Control board (1)

The control board must be reassembled so 4 of the 6 *light blue* standoffs ("pins") engage the 4 holes in the metal plate glued to the Ceran glass maintop. If not, the magnetic knob & digital displays won't line up.

NOTE: The other 2 standoffs don't engage any holes in the plate.

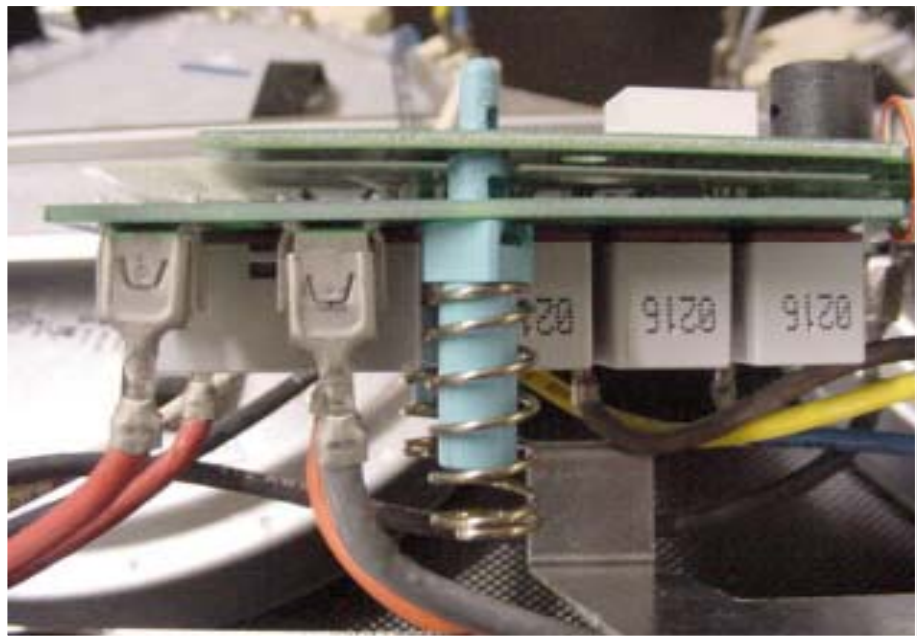


CAUTION: Don't force the standoffs in place (so they're not broken).

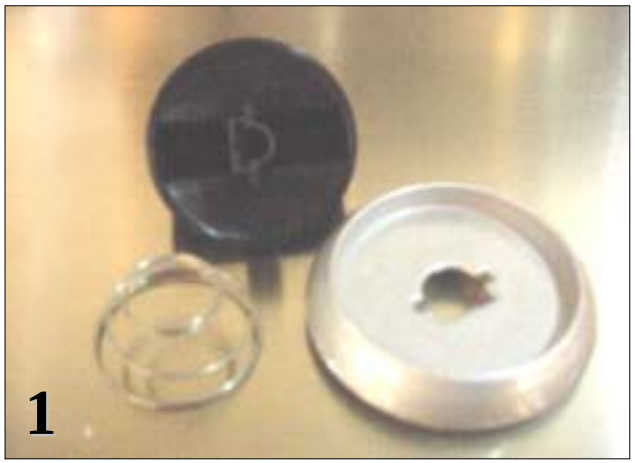
Reassembly -- Control Board (2)

Before mounting the control board, make sure each of the 6 ***light blue*** standoffs (“pins”) are inserted properly into the component boards. The two boards should be parallel.

In addition, make sure there is no debris between the touch pads and the glass, and that the pads are making good contact with the glass. If not it will not work and may show an error code.



Reassembly of cooktop control knob, spring & bezel



Assemble knob spring & bezel. Hold assembly together and install on shaft

How to calibrate the Thermostat (change the offset)

1

Touch cooking mode & keep your finger on there until “SELECT FUNCTION” appears (about 5 secs.)

2

Using control knob, scroll through menu until “OVEN TEMP OFFSET” appears. Touch start and a number will appear in the temperature window. If the oven has never been calibrated before it will be 0 degrees F

3

4

5

Using the control knob scroll through the temperature options. The temperature ranges from –25 degrees F to + 25 degrees F . Select the number of degrees that the temperature needs to be changed by and touch “START”. Display will show “SELECT FUNCTION”, touch “OFF” to complete the change.

6

7

Range Test / Service Program

The range control has a service program that can be accessed by the service technician to check component and /or function.

To enter the service program, do the following:

Place a finger on the cooking mode, temperature and start zones simultaneously for 5 seconds… the word **“TEST”** will display. Touch cooking mode and **“SERVICE”** will display.

Touch start and **“LIGHT”** will display, at this point the light function can be tested by touching start again, or use the rotary control knob to scroll through the different test functions. To check a particular function rotate to that function then touch start. To exit the program at any time touch **cancel.**

Note: During all functions the maximum oven temperature is 200 degrees F, if reached the display shows **“TOO HOT”** and any function in operation stops, except the **Cancel** (which allows exit from the program).The test can be resumed once the temperature falls below 200 degrees F.

Electric Oven

Function 1:

1. Display "**LIGHT**"
2. Press Start Zone to activate oven light relay.
3. Display " **LIGHT ON**"
4. Press Start Zone to de-active oven light relay.
5. Display "**LIGHT**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the light relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 2:

1. Display "**CONV FAN**"
2. Press Start Zone to activate Convection fan relay.
3. Display " **FAN ON**"
4. Press Start Zone to de-active Convection fan relay.
5. Display "**FAN**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Fan relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 3:

1. Display "**RING**" (if applicable for version)
2. Press Start Zone to activate Conv. fan relay and Ring element relay.
3. Display " **RING ON**"
4. Press Start Zone to de-active Conv. Fan relay and Ring element relay.
5. Display "**RING**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Ring and Fan relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 4:

1. Display "**BROIL**"
2. Press Start Zone to activate Broil element relay.
3. Display " **BROIL ON**"
4. Press Start Zone to de-active Broil element relay.
5. Display "**BROIL**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the fan relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 5:

1. Display "**BAKE**"
2. Press Start Zone to activate Bake element relay.
3. Display " **BAKE ON**"
4. Press Start Zone to de-active Baker element relay.
5. Display "**BAKE**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Bake relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 6:

1. Display "**WARMING DRAWER**" (if applicable for Version)
2. Press Start Zone to activate Warming Drawer element relay.
3. Display " **WARMING D ON**"
4. Press Start Zone to de-active Warming Drawer element relay.
5. Display "**WARMING DRAWER**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Warming Drawer relay (if on) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Function 7:

1. Display "**SENSOR CHECK**"
2. Press Start Zone to active control to automatically perform self check of:
3. Self check for Meat probe resistance (if applicable for version)
4. Self check for oven sensor resistance
5. Self check for warming drawer sensor resistance (if applicable for version)
   If self-check finds a failure during this sensor check, the alpha display shows which one with "**FAILURE PROBE**" or "**FAILURE OVEN**" or "**FAILURE W D**"
6. If no failure is found, the Display shows "**SENSORS OK**"
7. Rotating the selection knob will de-activate the Sensor check mode and scroll display to function select (Light, Conv Fan, Ring, etc.)

Function 8:

1. Display "**CHECK LATCH**"
2. Press Start zone. Control activates door latch. Control operates as if in normal self-clean mode, checking for switch logic and time out functions. Lock icon should operate as in normal operation. Once latch is locked, motor stops and icon is steady state. All errors should show if malfunction or non-locking is detected. Further pressing of the Start Zone will be ignored until the latch has locked or an error has been detected.
3. Press Start zone. Control de-activated door latch. Control operates as if in normal self-clean mode, with all checks, icon change (lock flashing then off) and error detection. Further pressing of the Start Zone will be ignored until the latch has un-locked or an error has been detected.
4. If an error is detected, the latch motor will stop and the display will show that code and beep.
5. Allow user to continue toggling.
6. Rotating the selection knob will de-activate the Check Latch mode and reset to home (if locked) and scroll display to function select (Light, Conv Fan, Ring, etc.).

Gas Oven

Function 1:

1. Display "**LIGHT**"
1. Press Start Zone to activate oven light relay.
2. Display " **LIGHT ON**"
3. Press Start Zone to de-active oven light relay.
4. Display "**LIGHT**"
5. Allow user to continue toggling.
6. Rotating the selection knob will de-activate the light relay (if on) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 2:

1. Display "**CONV FAN**"
2. Press Start Zone to activate Convection fan relay.
3. Display " **FAN ON**"
4. Press Start Zone to de-active Convection fan relay.
5. Display "**FAN**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Fan relay (if on) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 3:

1. Display "**WARMING DRAWER**" (if applicable for Version)
2. Press Start Zone to activate Warming Drawer element relay.
3. Display " **WARMING D ON**"
4. Press Start Zone to de-active Warming Drawer element relay.
5. Display "**WARMING DRAWER**"
6. Allow user to continue toggling.
7. Rotating the selection knob will de-activate the Warming Drawer relay (if on) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 4:

1. Display "**SENSOR CHECK**"
2. Press Start Zone to active control to automatically perform self check of:
3. Self check for Meat probe resistance (if applicable for version)
4. Self check for oven sensor resistance
5. Self check for warming drawer sensor resistance (if applicable for version)
   If self-check finds a failure during this sensor check, the alpha display shows which one with "**FAILURE PROBE**" or "**FAILURE OVEN**" or "**FAILURE W D**"
6. If no failure is found, the Display shows "**SENSORS OK**"
7. Rotating the selection knob will de-activate the Sensor check mode and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 5:

1. Display "**BROIL**"
2. Pressing Start Zone activates Broil relay for 120 seconds
3. Display "**BROIL ON**"
4. Pressing Start Zone De-activates Broil relay
5. Display "**BROIL**"
6. Allow user to continue toggling.
7. While Broil is on, Controller times for 120 seconds. If user does not turn off broil relay within the 120seconds, controller turns off automatically (also max temp of 200F is monitored).
8. Rotating the selection knob will de-activate the Check Latch mode and reset to home (if locked) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 6:

1. Display "**BAKE**"
2. 2. Pressing Start Zone activates Bake relay for 120 seconds
3. Display "**BAKE ON**"
4. Pressing Start Zone De-activates Bake relay
5. Display "**BAKE**"
6. Allow user to continue toggling.
7. While Bake relay is on, Controller times for 120 seconds. If user does not turn off broil relay within the 120seconds, controller turns off automatically (also max temp of 200F is monitored).
8. Rotating the selection knob will de-activate the Check Latch mode and reset to home (if locked) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Function 7:

1. Display "**CHECK LATCH**"
2. Press Start zone. Control activates door latch. Control operates as if in normal self-clean mode, checking for switch logic and time out functions. Lock icon should operate as in normal operation. Once latch is locked, motor stops and icon is steady state. All errors should show if malfunction or non-locking is detected. Further pressing of the Start Zone will be ignored until the latch has locked or an error has been detected.
3. Press Start zone. Control de-activated door latch. Control operates as if in normal self-clean mode, with all checks, icon change (lock flashing then off) and error detection. Further pressing of the Start Zone will be ignored until the latch has un-locked or an error has been detected.
4. If an error is detected, the latch motor will stop and the display will show that code and beep.
5. Allow user to continue toggling.
6. Rotating the selection knob will de-activate the Check Latch mode and reset to home (if locked) and scroll display to function select (Light, Conv Fan, Warming Drawer, etc.).

Range Error Codes

CODE	DESCRIPTION	WHEN CHECKED	FAULT LIMIT
F31	Oven temperature sensor failure	Cook or clean programmed	20 sec
F33	Warming Drawer Sensor Failure	When W. Drawer is active	20 sec
F41	Motorized latch will not lock	Latch should be locked	1 min
F43	Motorized latch will not unlock	Latch should be unlocked	1 min
F45	Motorized Latch both locked and unlocked	Always	1 min
F111	Runaway Oven temperature 585°F	Latch unlocked	5 sec
F113	Runaway Oven temperature 950°F	Latch locked	5 sec
F121	Stuck key in the membrane switch layer	Always	1 min
F125	Cancel key circuit problem	Always	1 min
F141	Slave micro not functioning	Always	1 min
F151	Eeprom failure or communication circuit failure	Cook or clean programmed	1 sec
F153	User Interface too hot	Always	1 sec
F154	Power Board too hot	Always	1 sec
F155	Cook profile corrupted in EPROM	Cook or clean programmed	1 sec
F170	Power Failure	Always	2 ms
F190	Power over voltage	At power on	
F200	Time out and stop function	During Production test mode	110 sec.
F210	Range exceeded safe test limits	During Service test mode	200°F

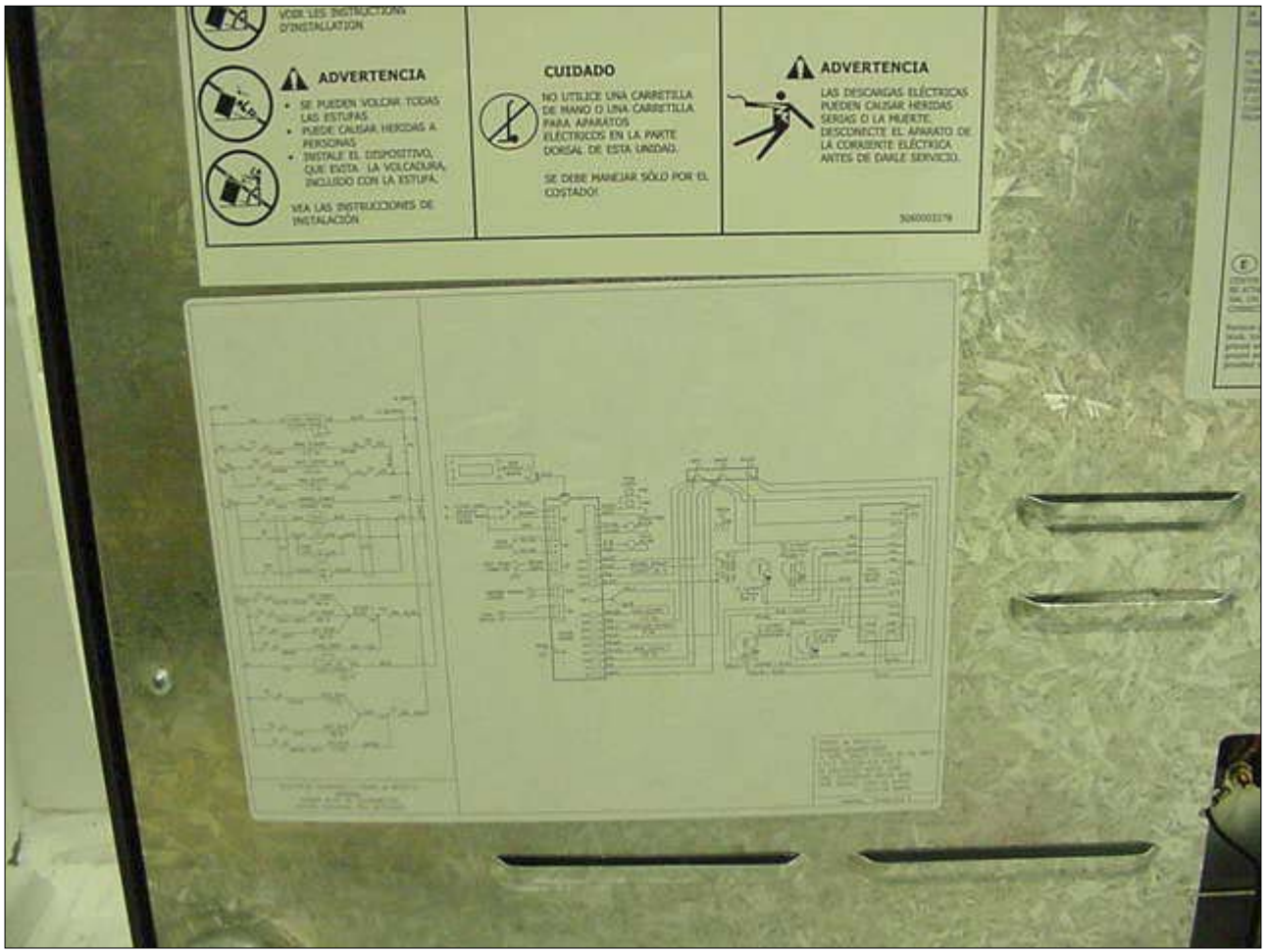
Range Error Codes -- Additional Information

CODE	DESCRIPTION	WHEN CHECKED
F1	Meat probe not there or incorrect	During test / use
F2	Oven sensor not correct	During test / use
F3	Warming sensor not correct	During test / use
DOOR LATCH ERROR	Door latch problem	During self-clean
ERROR	Temp. reaches 585 degrees F . Display shows “ CONTACT SERVICE” and beeps. The beep can be stopped with touching cancel zone, but display will stay up with program locked until main power is removed for a minimum of 5 seconds. If the temperature continues to rise (due to stuck relay) the latch will lock at 600 degrees F	During any cooking mode

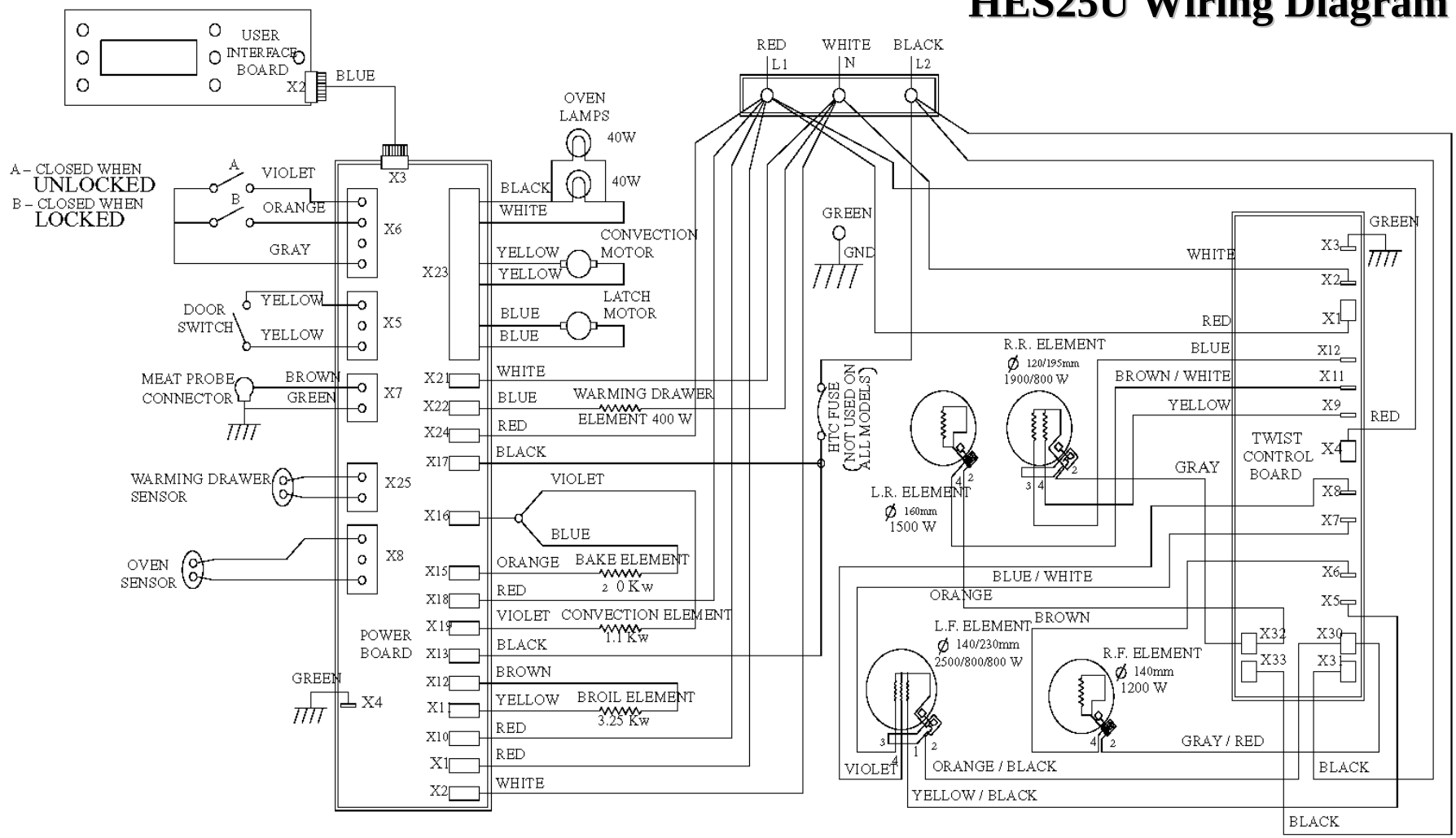
Note: Depending on model, program will only look for probes or sensors that it should have.

Wiring Diagrams & Schematics

There is a wiring diagram & schematic on the rear cover of each range

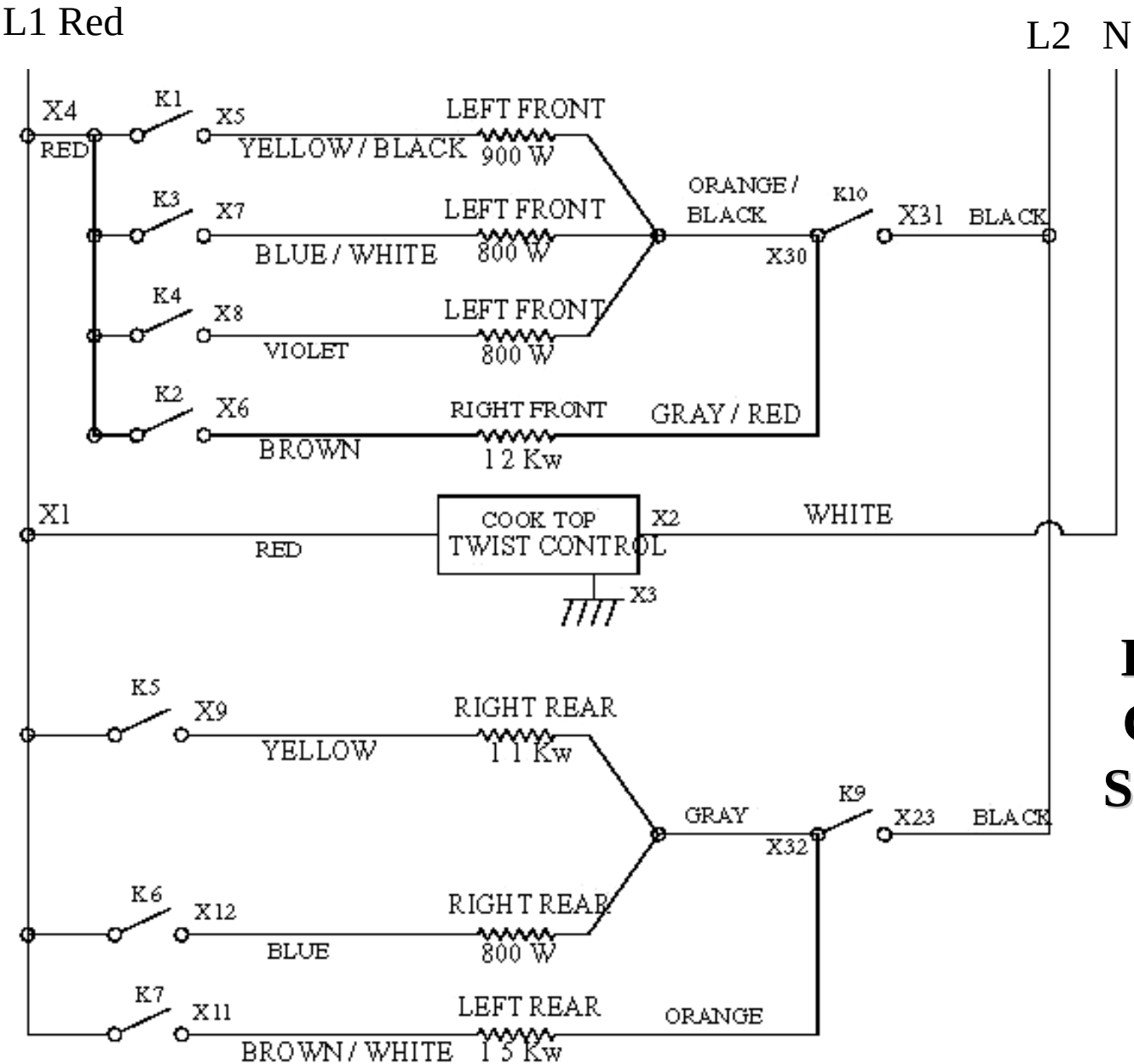


HES25U Wiring Diagram

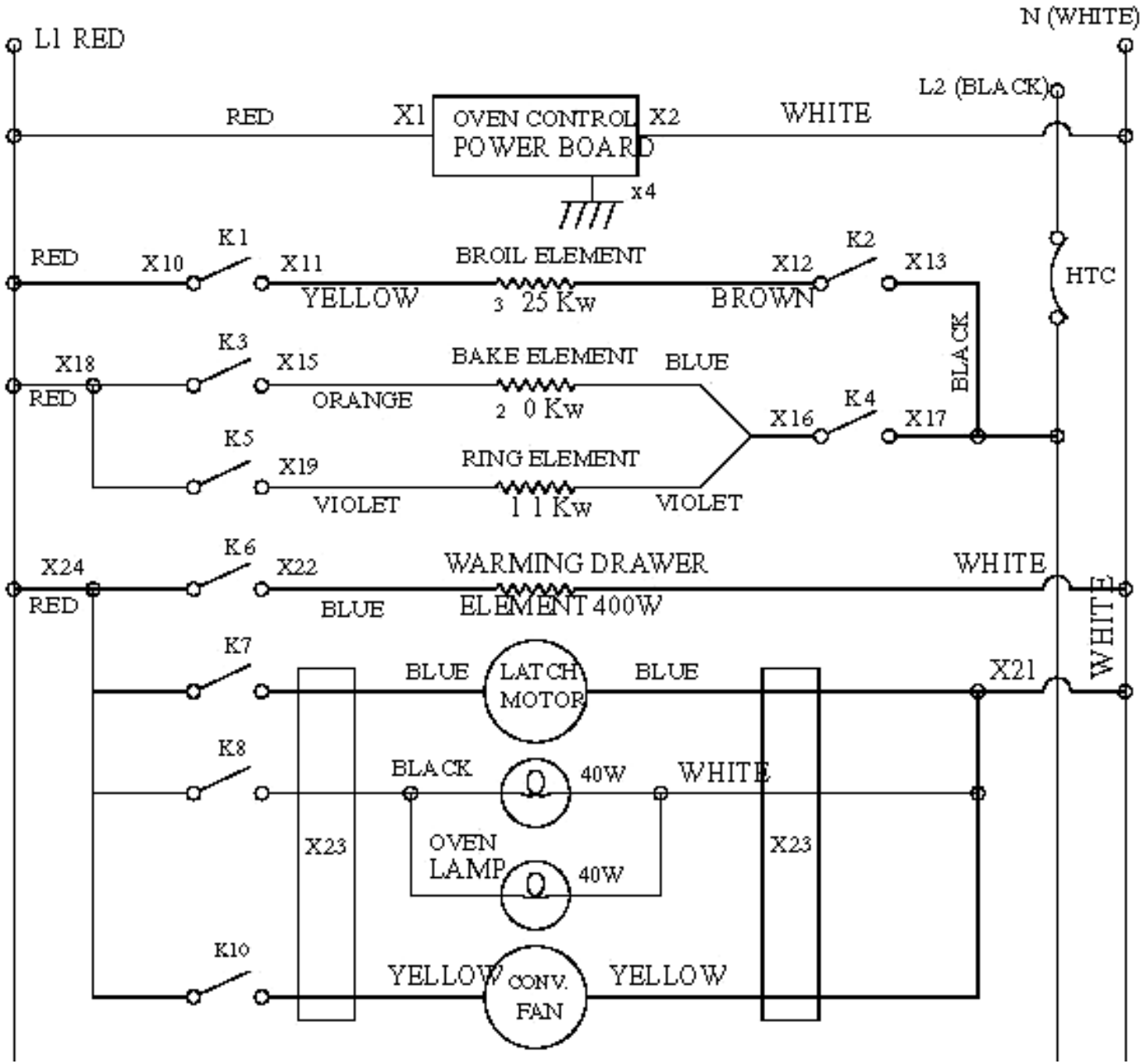


060009606 REVISION LEVEL A

GB	5060009606	7/22/2003
	HES25UW	Model #

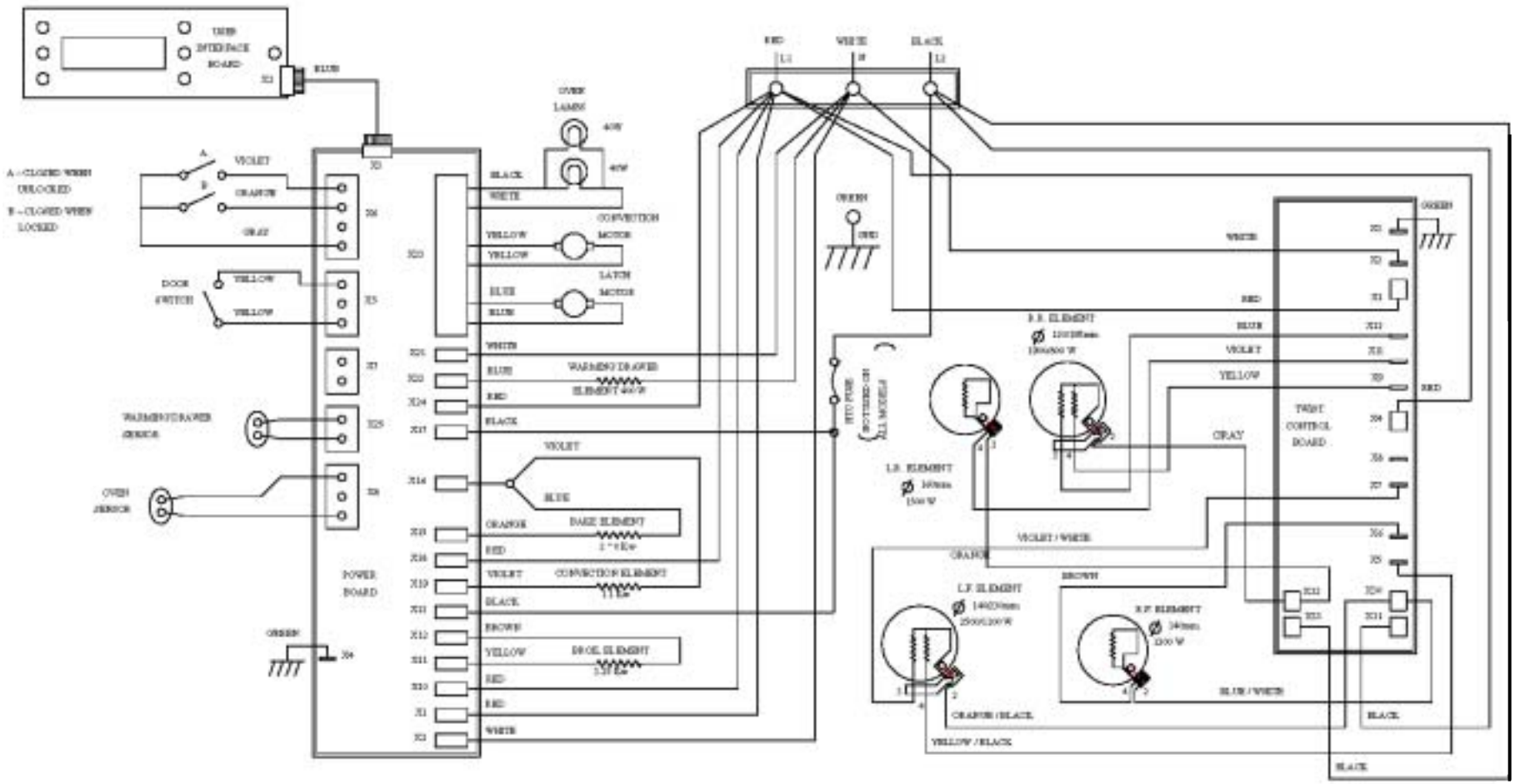


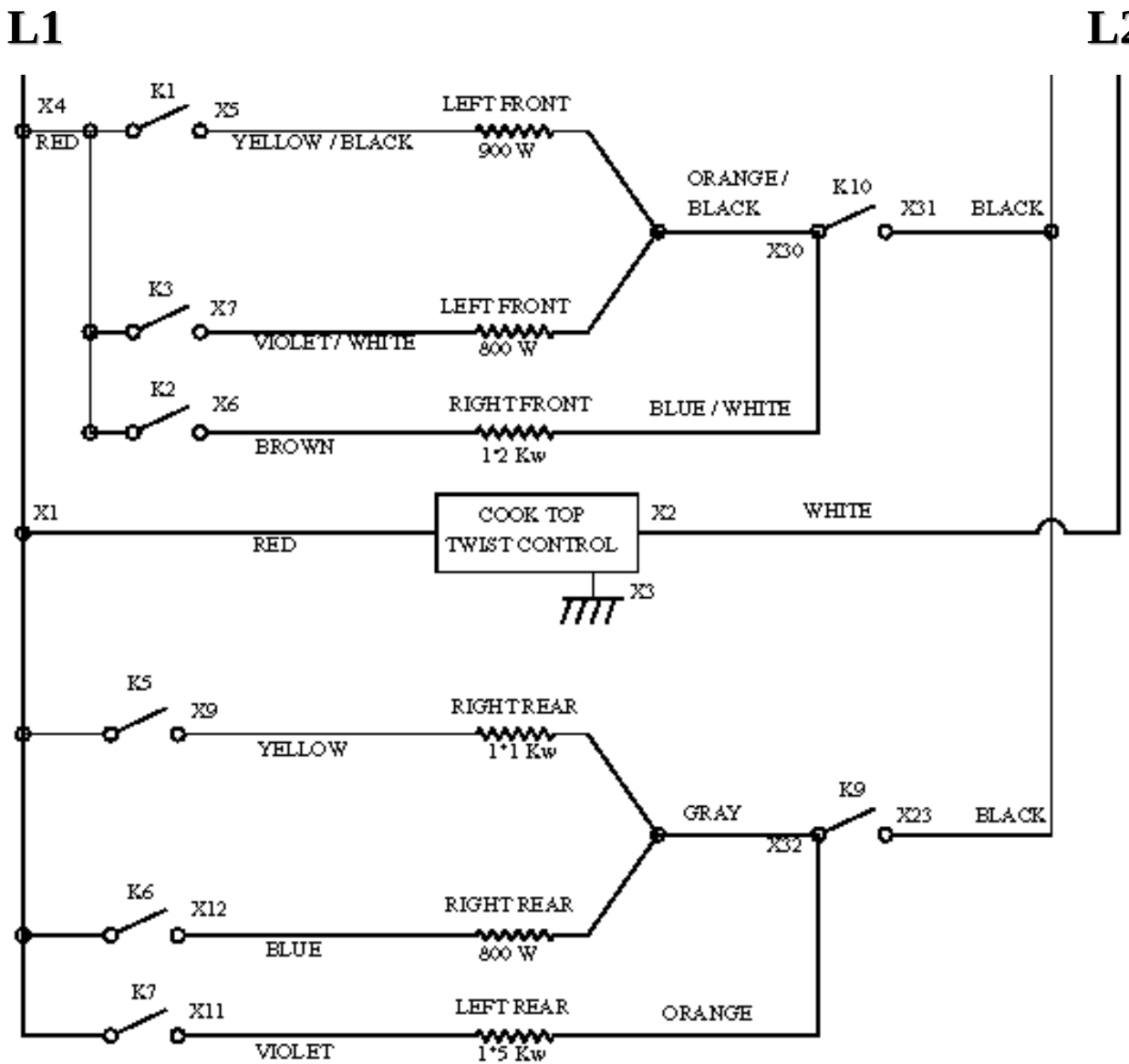
HES25U Cooktop Schematic



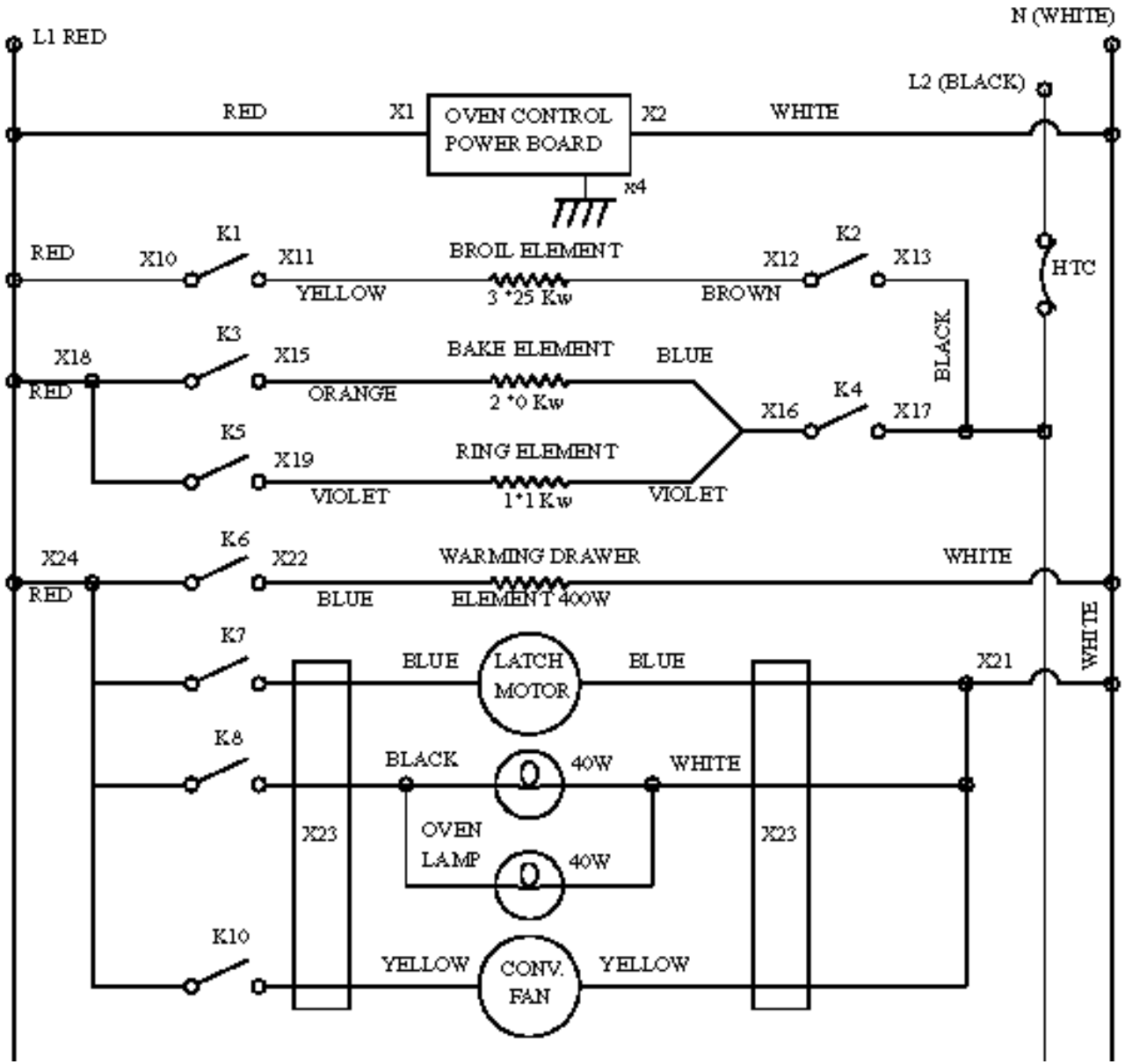
HES25U Oven Schematic

HES 24U Wiring Diagram



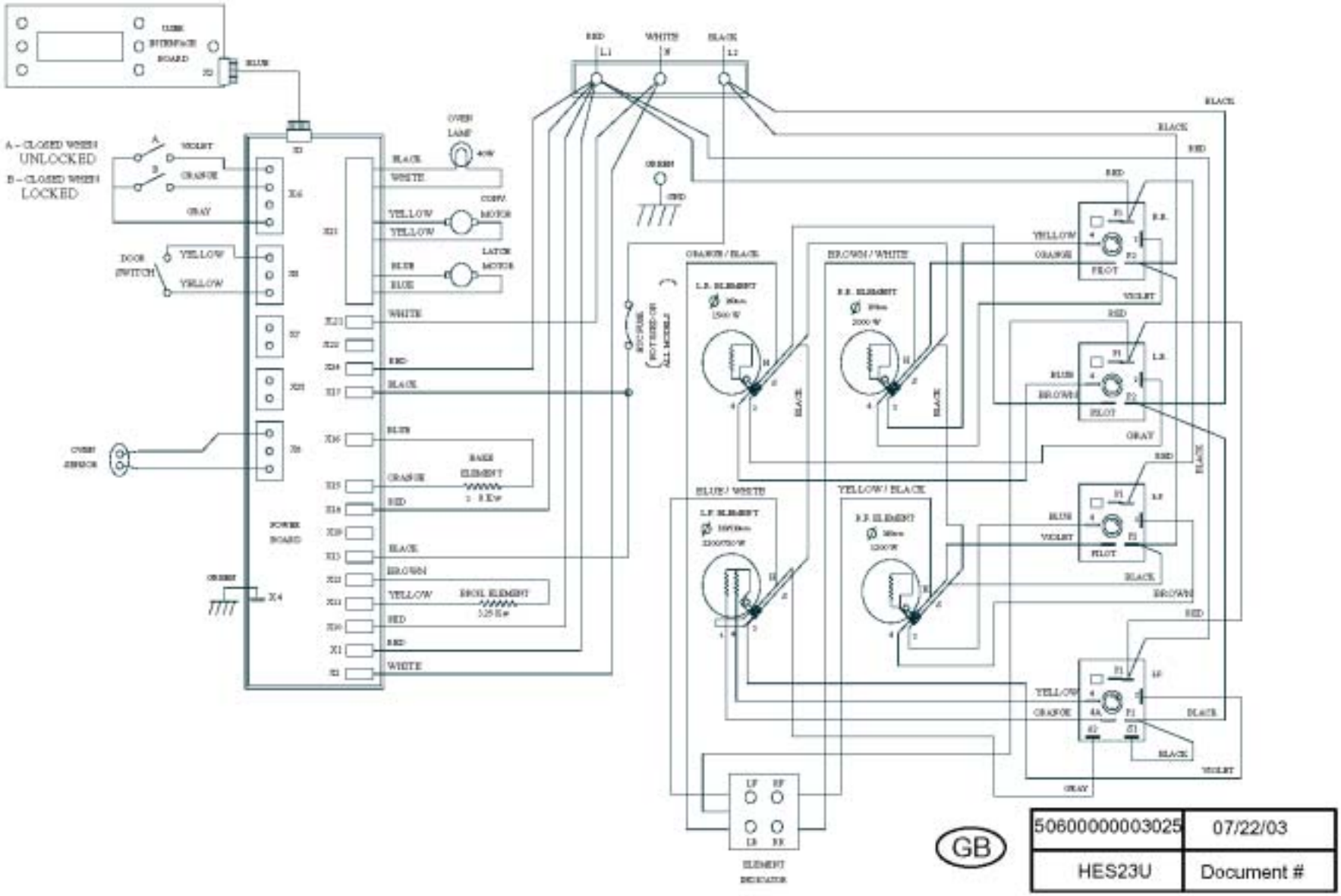


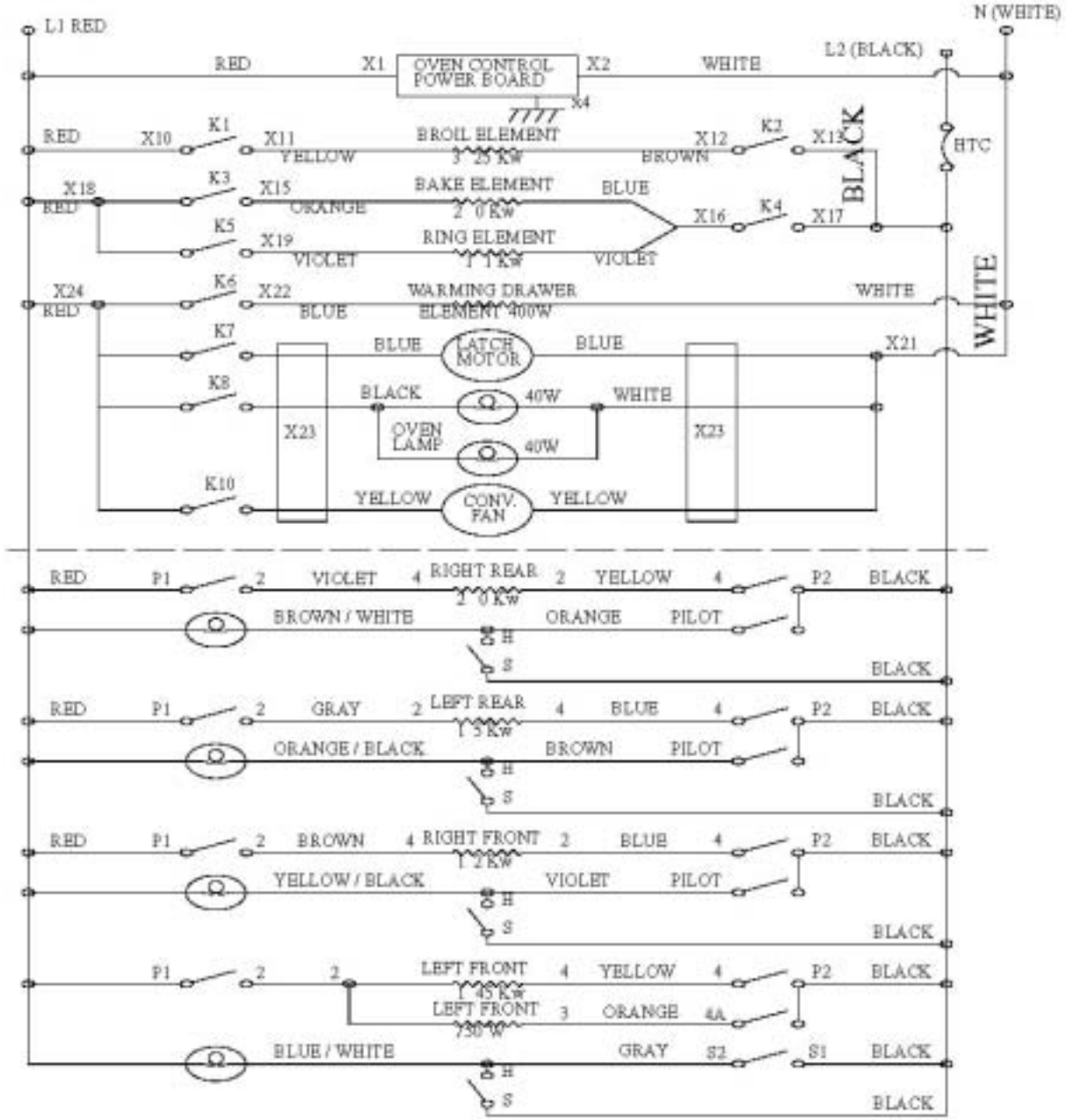
HES24U Cooktop Section Schematic



HES24U Oven Section Schematic

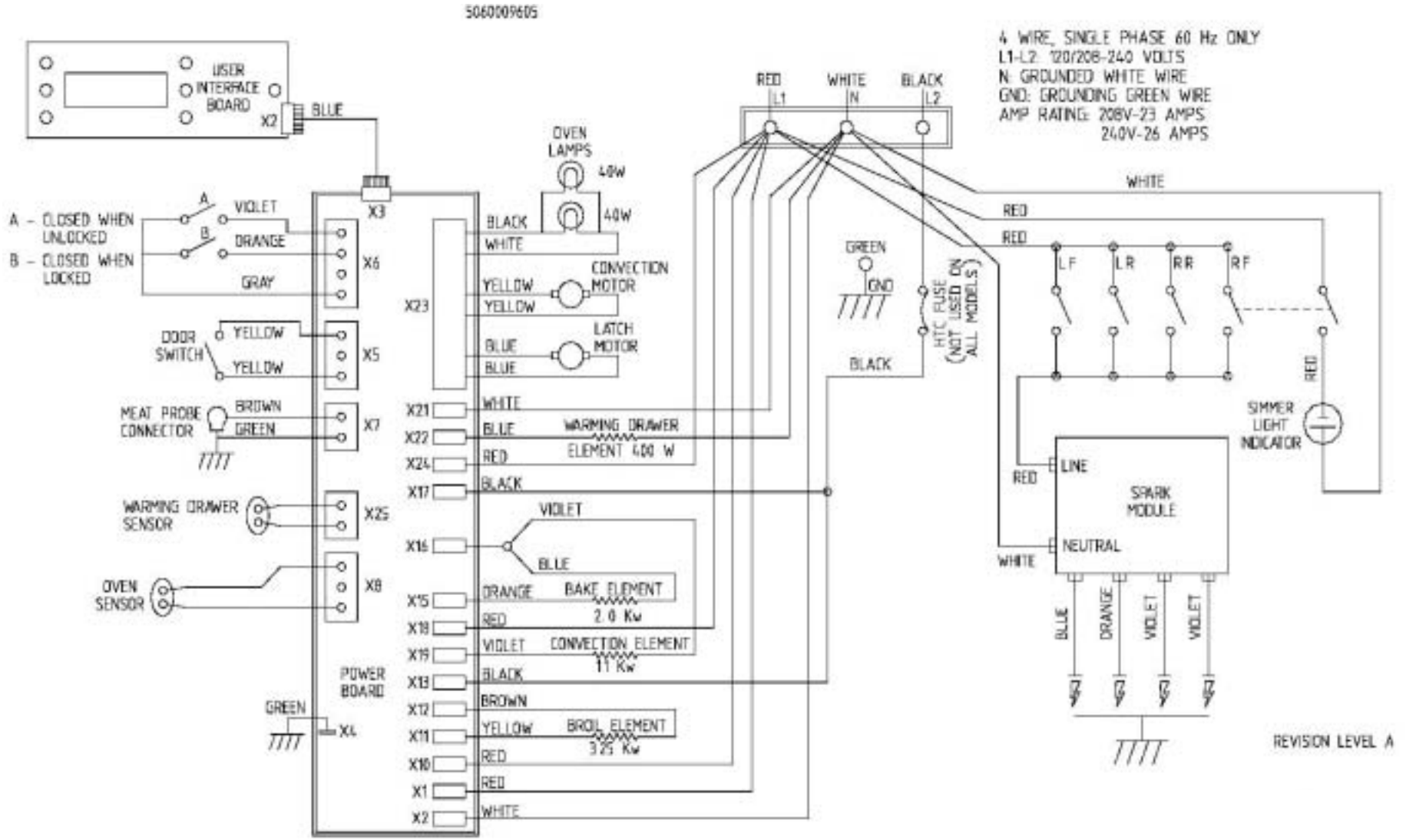
HES23U Wiring Diagram

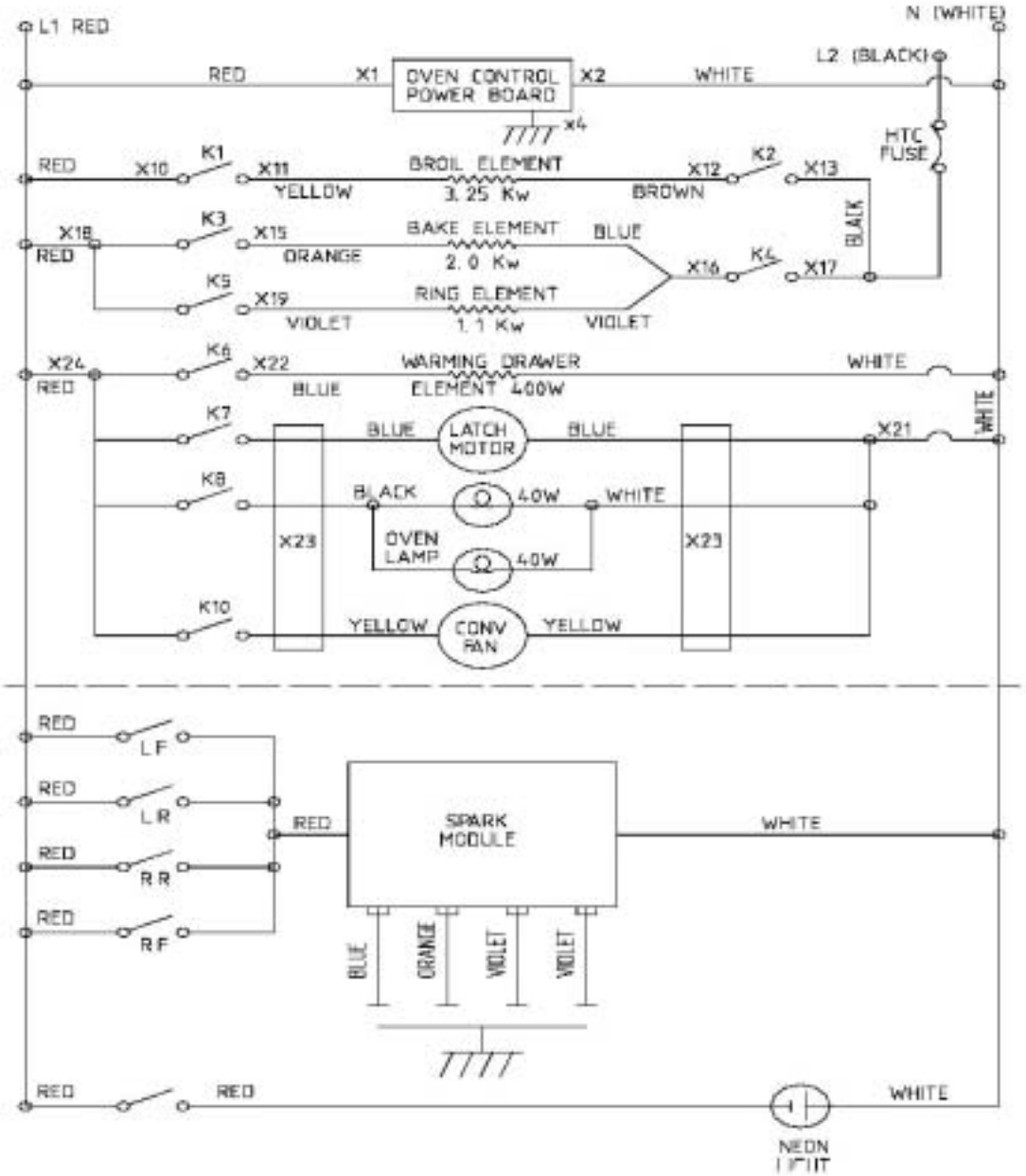




HES23UC
Schematic

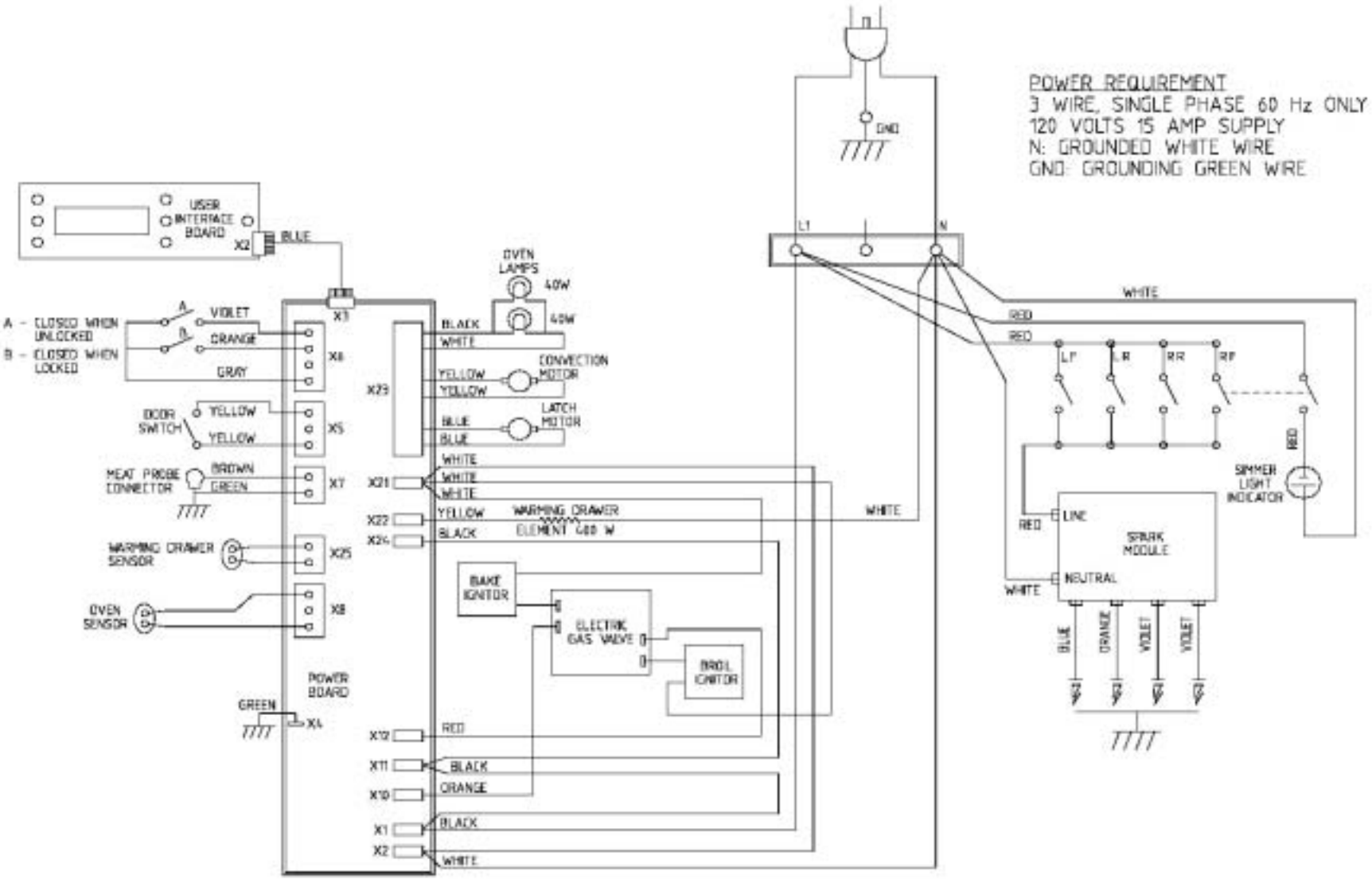
HDS25UC Wiring Diagram

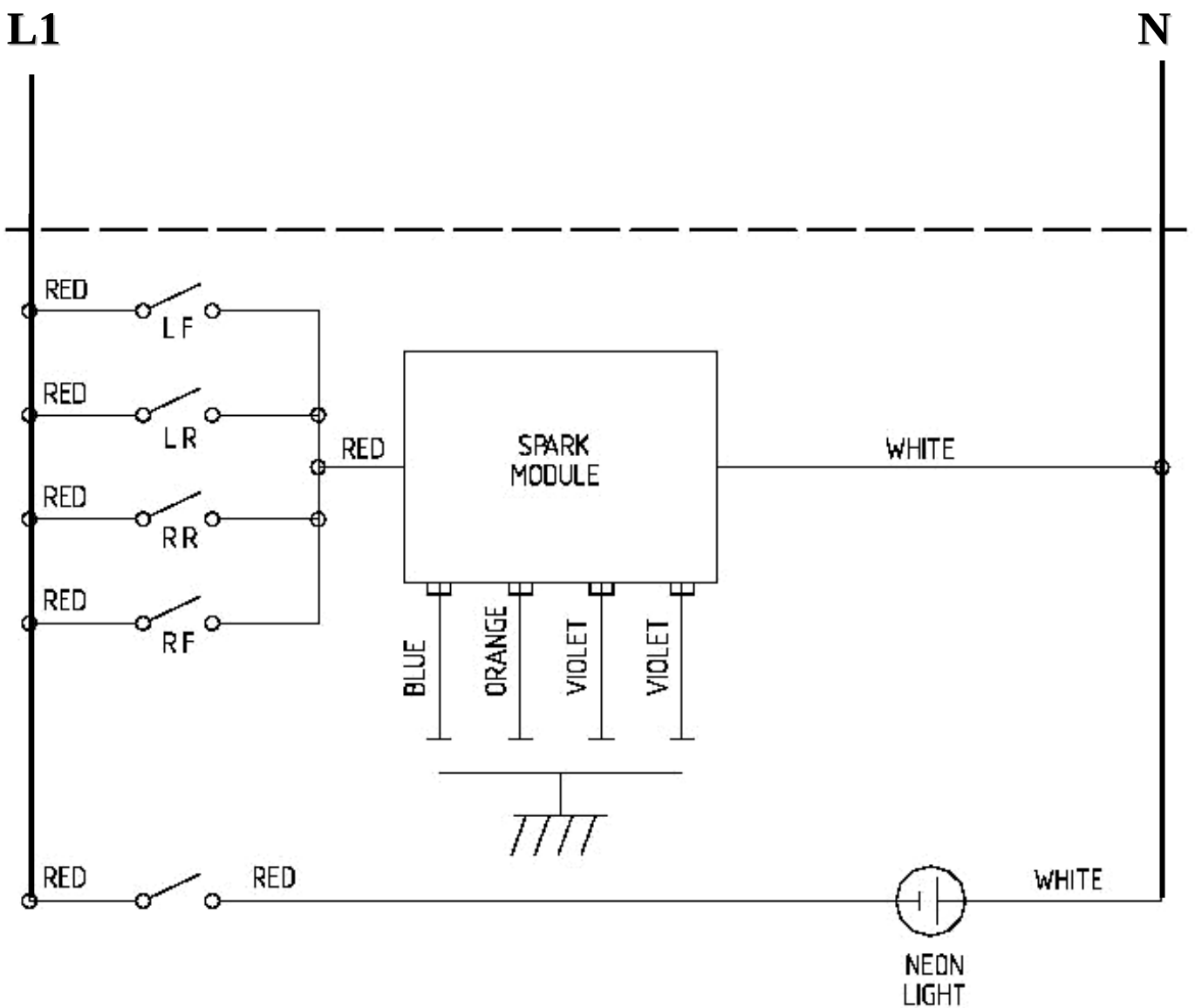




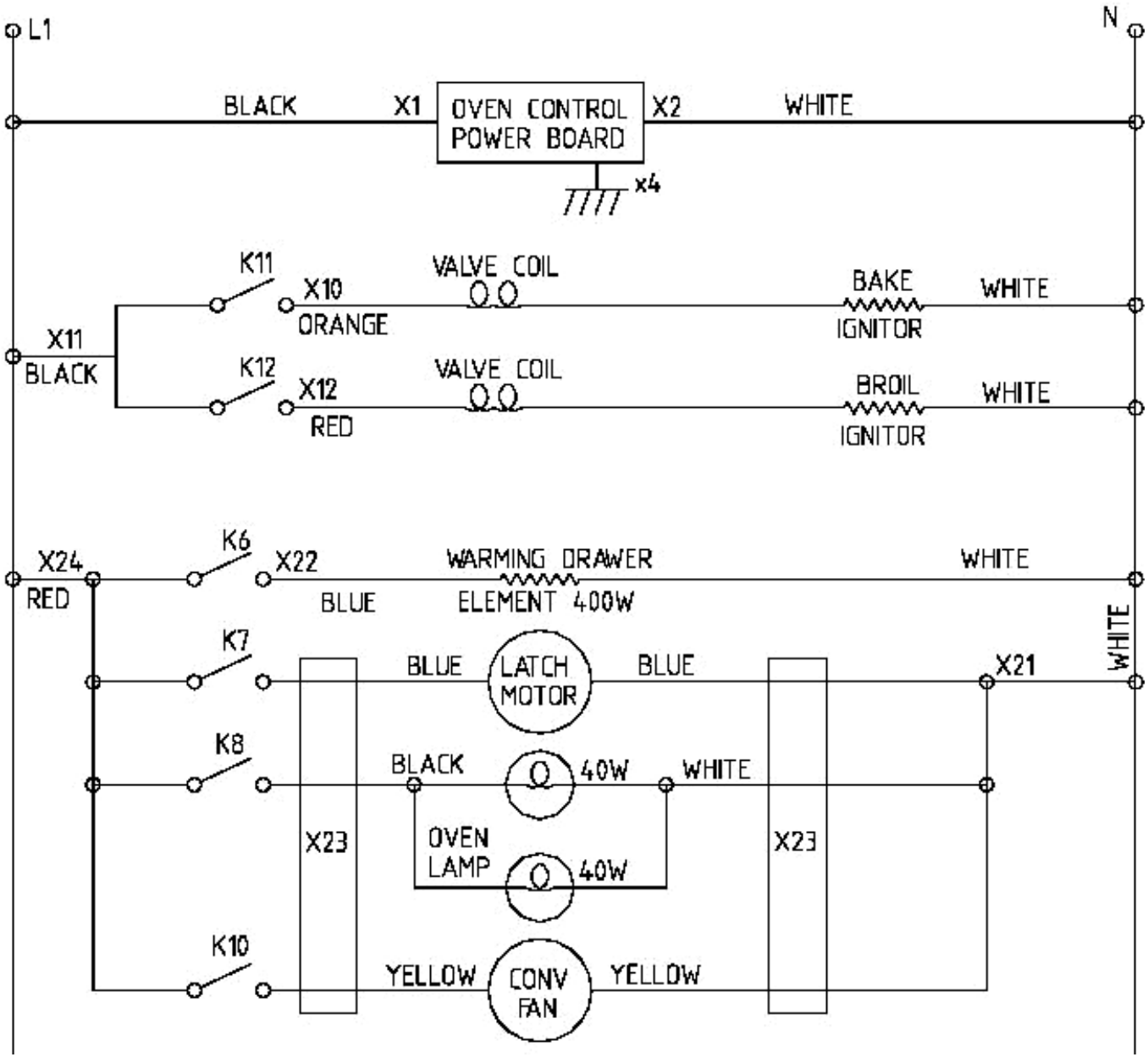
HDS25U
Schematic

HGS25UC Wiring Diagram



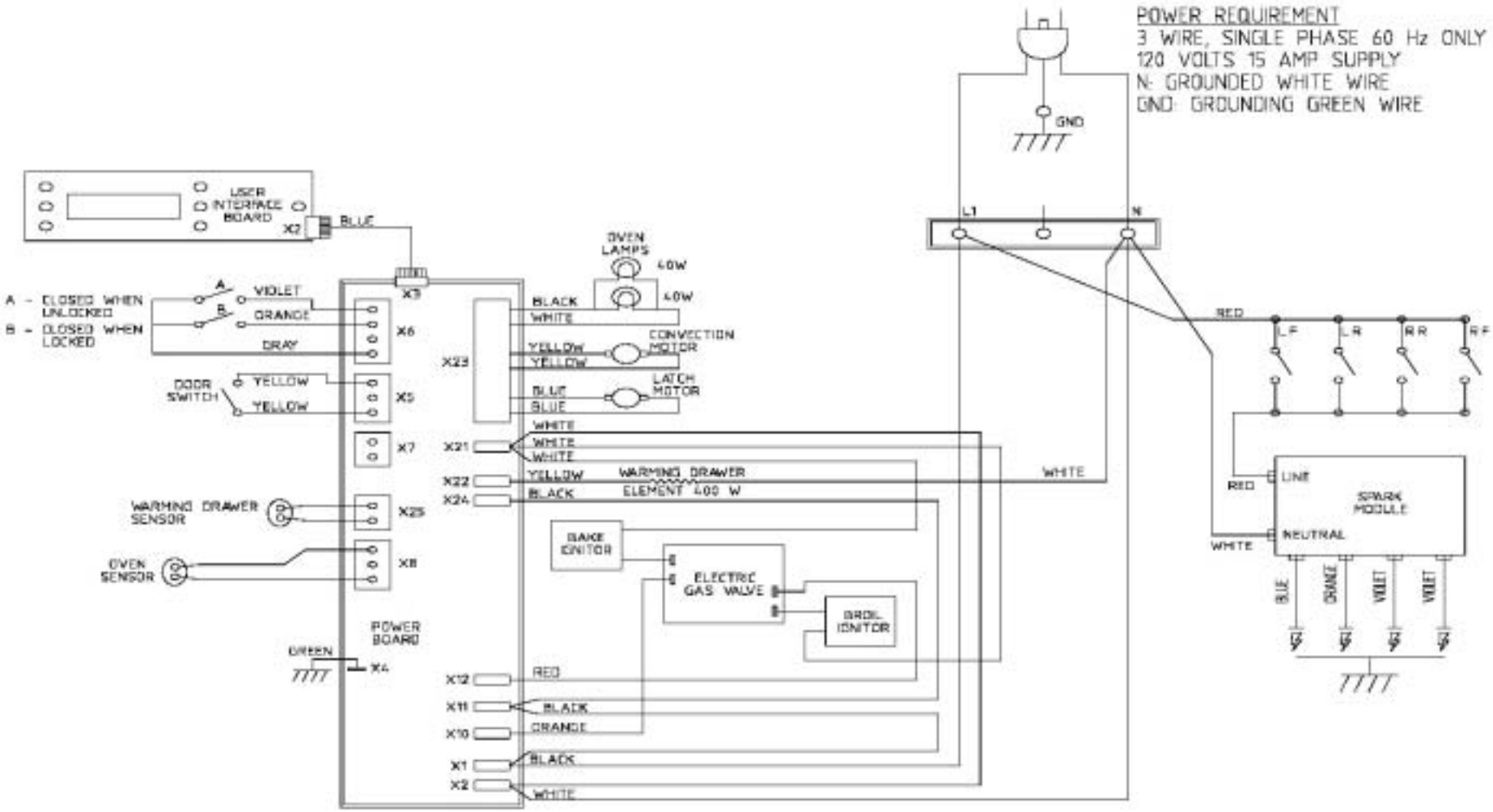


HGS25UC Cooktop Section



HGS25UC Oven Section

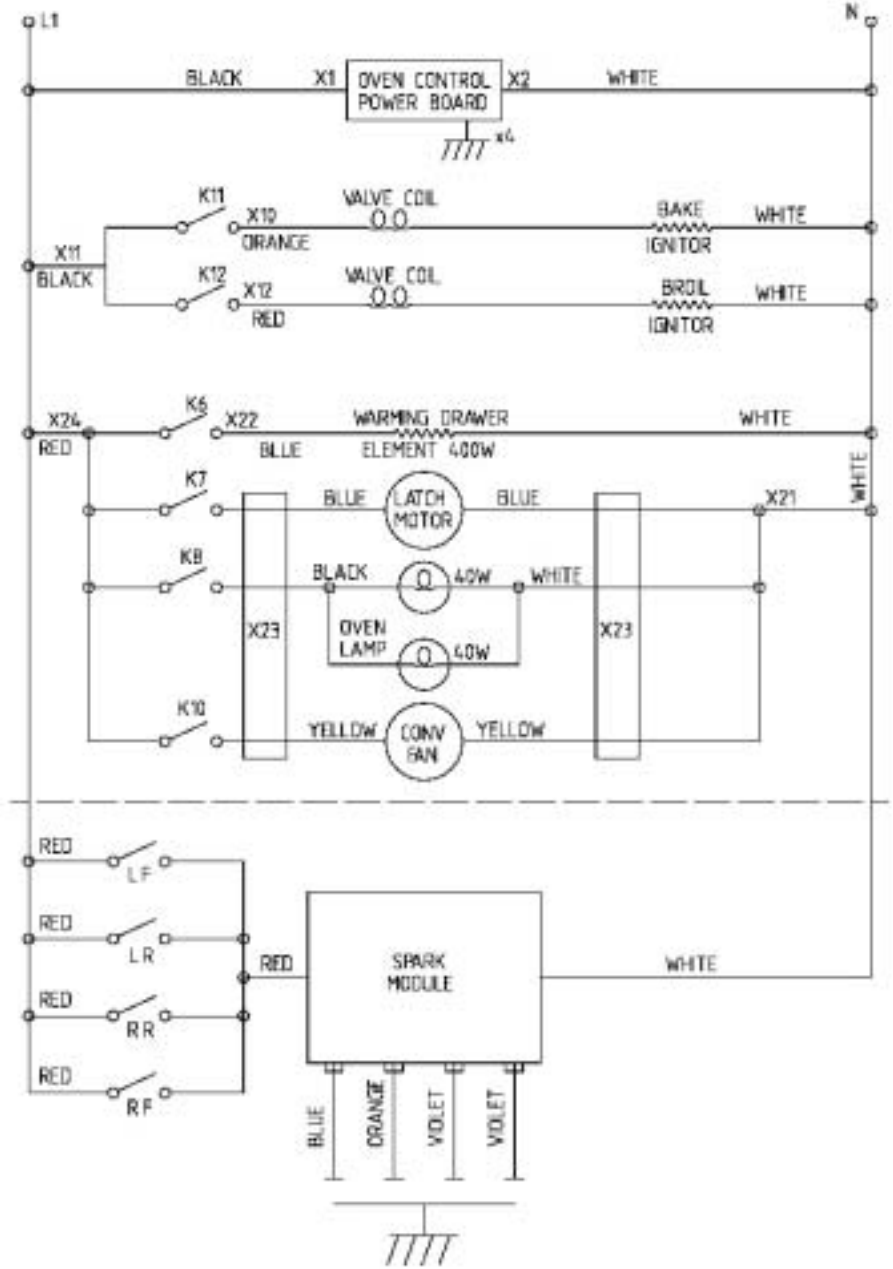
HGS24UC Wiring Diagram



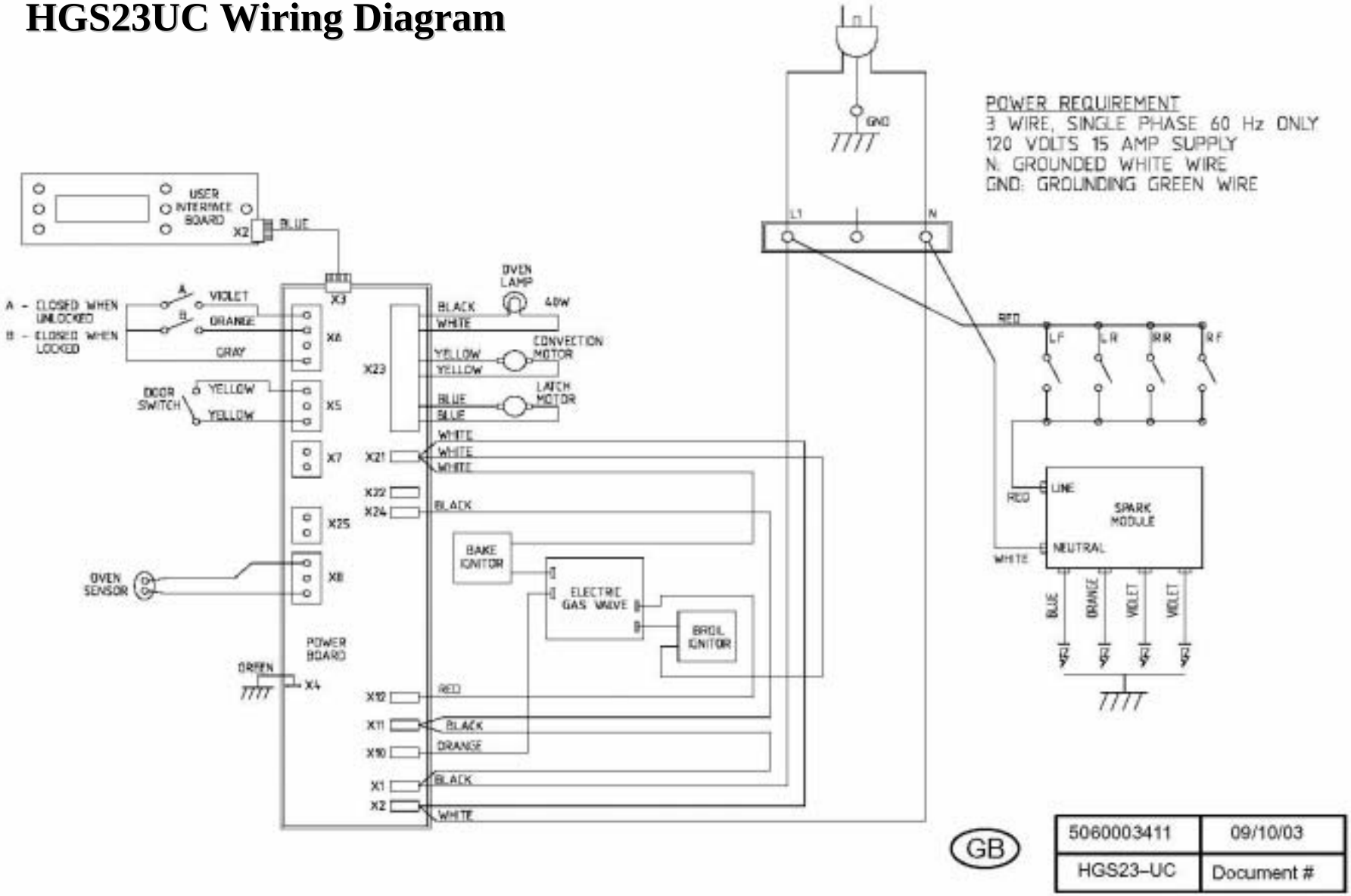
GB

5060003415	09/10/03
HGS24–UC	Document #

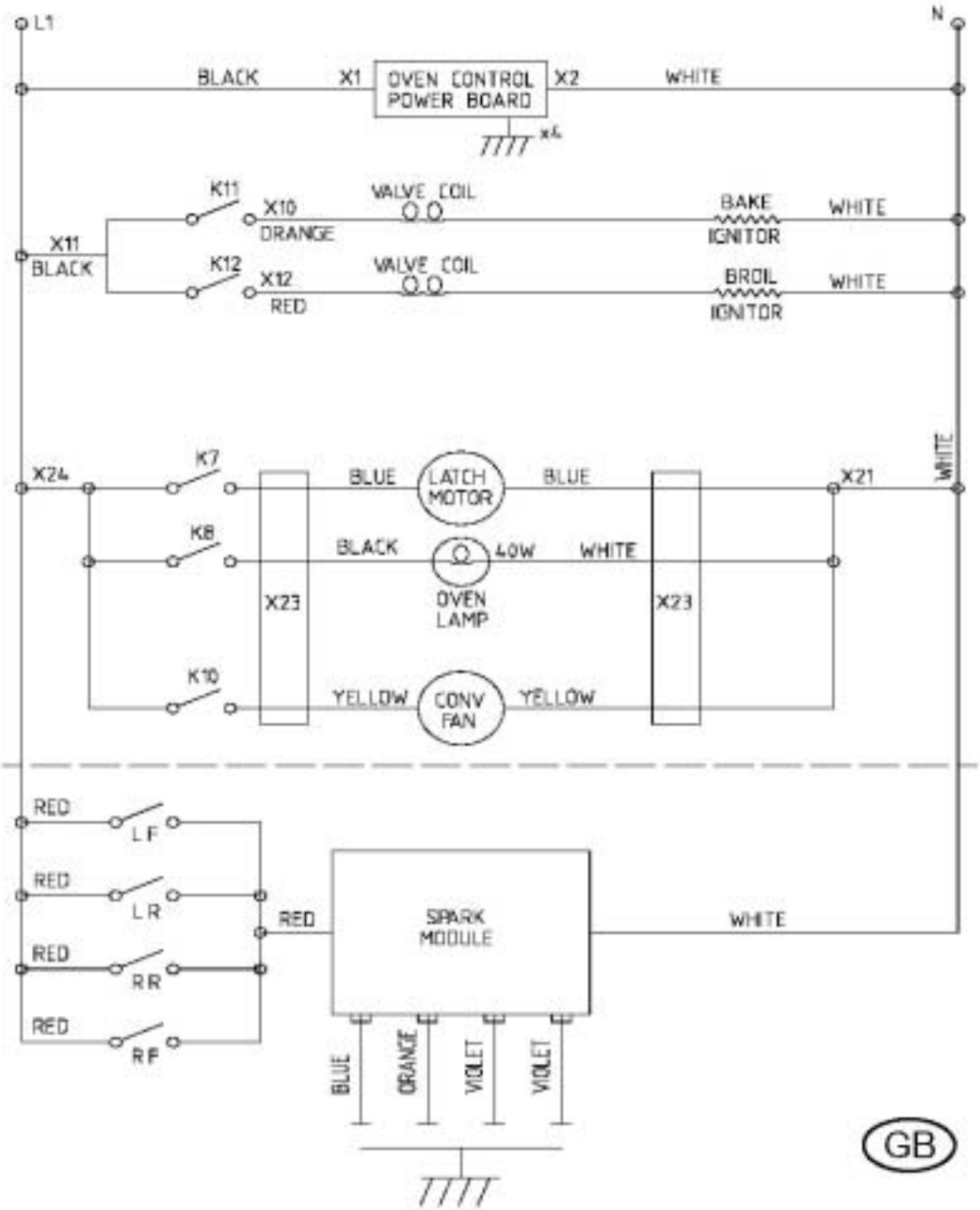
HGS24UC Schematic



HGS23UC Wiring Diagram



HGS23UC Schematic



WARNING
POWER MUST BE DISCONNECTED
BEFORE SERVICING THIS APPLIANCE

GB

Oven

5060003411	09/10/03
HGS23–UC	Document #

Electric Maintop Service Tips -- Troubleshooting

Symptom	*Problem*	*Solution*
Panel lock light is on.	Magnetic knob has been removed or panel lock key has been pressed.	Replace magnetic knob, then press and hold panel lock key until light goes out.
Cooktop won't run at all.	Power is off or control board has failed.	Check incoming power. If OK (240 VAC), then replace control board.
Element won't heat.	Element has failed.	Disconnect power and measure resistance at control board or element terminals (see resistance charts). Replace faulty element.
Element won't heat.	Wire harness is damaged or shorted.	Check wire harness for continuity and to ground (to check for shorts). Replace faulty wire harness.

WARNING! Disconnect cooktop before starting any repairs.