

⚠ WARNING**Electrical Shock Hazard**

**Disconnect power before servicing.
Replace all panels before operating.
Failure to do so can result in death or electrical shock.**

DIAGNOSTICS

Before servicing, perform the following checks:

- The most common cause for control failure is corrosion on connectors. Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures.
- All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Check all connections before replacing components, looking for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.
- Voltage checks **must** be made with all connectors attached to the boards.
- Resistance checks **must** be made with power cord unplugged from outlet, and with wiring harness or connectors **disconnected**.
- Is oven in "Sabbath Mode"? If so "SAB" will appear in the digital display. Press and hold "6" key for 5 seconds to end Sabbath Mode.

PROBLEM: Bake Temperature Needs Adjustment

1. Press BAKE pad for 5 seconds. The default temp. 0° or a previously entered offset temp. will show in the Temp. Display.
 - Press the TEMP pad "up" arrow (⬆) to increase the temperature in 5° F or 3° C increments.
 - Press the TEMP pad "down" arrow (⬇) to decrease the temperature in 5° F or 3° C increments.

Maximum offset temperature adjustment is ±35° F or ±21° C.
2. Press the START pad to save the temp. adjustment.

IMPORTANT**Electrostatic Discharge (ESD)
Sensitive Electronics**

ESD problems are present everywhere. ESD may damage or weaken the electronic control assembly. The new control assembly may appear to work well after repair is finished, but failure may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance
-OR-
Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging failed electronic control assembly in anti-static bag, observe above instructions.

**Fahrenheit (° F) to Celsius (° C)
Conversion**

The default is Fahrenheit (° F).

1. Press the BROIL pad for 5 seconds. The temperature will be displayed in degrees Celsius indicated by the "C" in the temperature display.
2. To return the display to degrees Fahrenheit press the BROIL pad again for 5 seconds. "F" will show in the temperature display.

Programming the Cavity Size

When replacing the electronic control, be sure to program the cavity size within 60 seconds of power up by pressing the following keys:

BAKE (upper half of BAKE key),
CONVECTION BROIL (lower half of BROIL key),
STOP TIME, CONV FULL MEAL, digit #7, digit #9,
TIMER SET/START, START.

1. Size is shown in display - "ID 24".
2. Press CLOCK SET/START until correct size is displayed.
3. Press CANCEL key (do not press the OVEN START key).
4. Press and hold "1" key for 5 seconds to verify programming.

NOTES:

- Always disconnect power before touching internal parts of the oven!
- Upon replacement, immediately return old electronic oven control using the mailing label supplied with each new control.
- For double ovens, the failure code is displayed on the side of the display that corresponds to the oven with the faulty part (upper oven = left side of display).

FAILURE/ERROR DISPLAY CODES

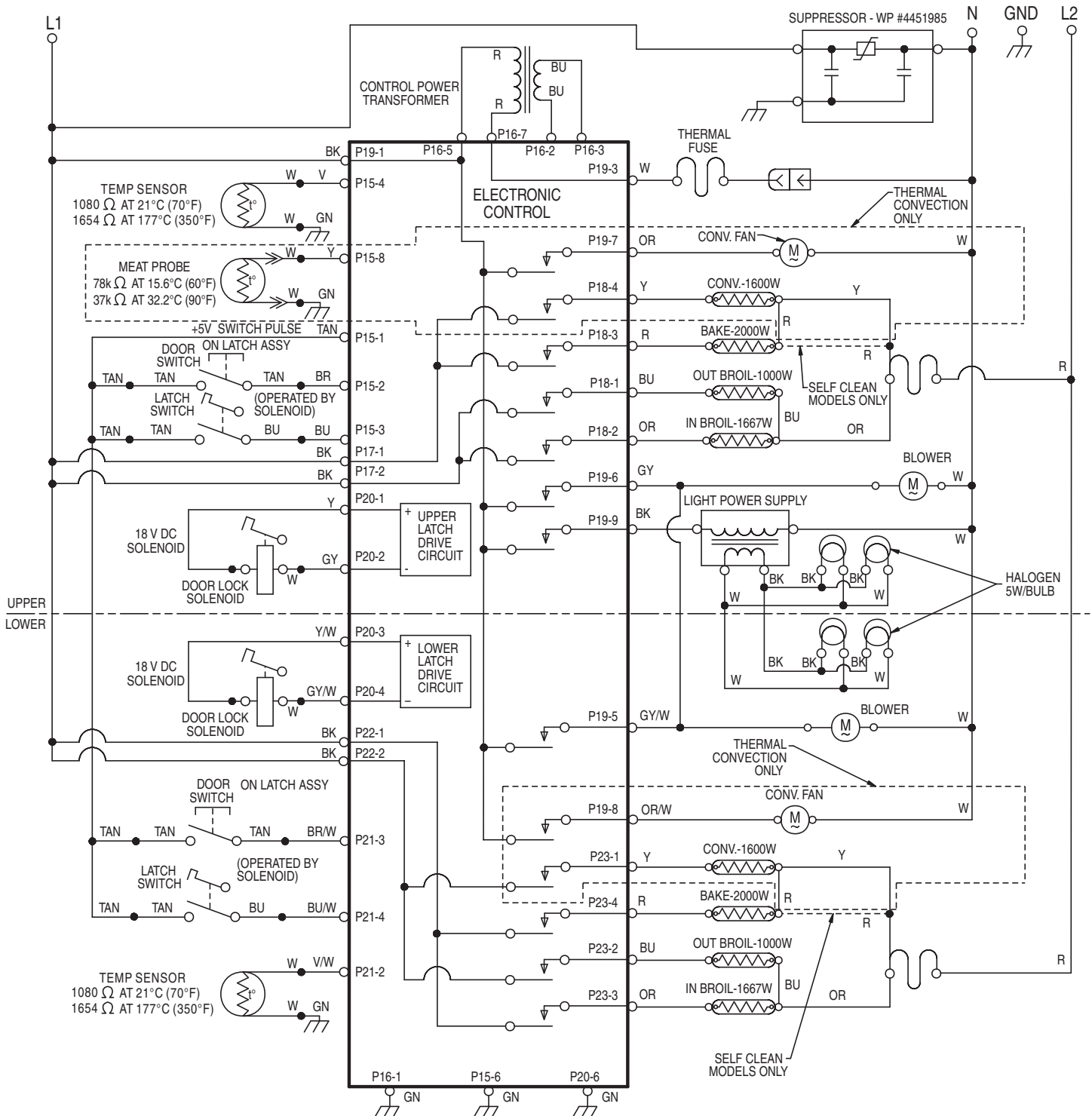
FAULT CODE	ERROR CODE	CODE EXPLANATION	RECOMMENDED REPAIR PROCEDURE
F0		Default F code - no failure	Will only be displayed if user presses and holds "0" key for 5 seconds and there are no pre-existing faults. Press CANCEL to clear display.
F1	All E Codes	Electronic control malfunction	Replace control.
F2	E0	Key held down too long, or key is shorted	<ol style="list-style-type: none"> 1. Check keypad connector for firm connection. 2. Press CANCEL. If error code returns after 60 sec., replace keypad. 3. Replace control.
	E1	Keypad keytail not connected	
	E5	Cancel key drive line open	
F3	E0	Temperature sensor opened	<ol style="list-style-type: none"> 1. Check sensor connection. 2. Measure sensor resistance (1080Ω at 21° C [70° F]. Add 2Ω per degree F.) 3. If resistance is not valid, replace sensor. 4. If sensor resistance and connections are good, then the oven cavity temperature must have exceeded a safe level. Check for welded-closed relays on the control.
	E1	Temperature sensor shorted	
	E2	Oven temp too high (over 301° C [575° F] in Cook mode)	
	E3	Oven temp too high (over 510° C [950° F] in Clean mode)	
F4	E1	Meat probe malfunction - shorted	<ol style="list-style-type: none"> 1. Disconnect meat probe and measure probe resistance (78kΩ at 15.6° C [60° F]; 37kΩ at 32.2° C [90° F]). 2. If resistance is not valid, replace probe. 3. Insert probe and check for a firm connection between probe and jack (in oven cavity). 4. Check connection between jack and harness (in rear of oven).
F5	E0	Door is open, but latch is locked (condition exists when door switch is closed indicating an open door and latch switch is closed indicating a locked door)	<ol style="list-style-type: none"> 1. Check the Latch Assembly: <ul style="list-style-type: none"> - Check latch arm pivot joint, arm/solenoid connection, solenoid spring, and spring washer. 2. Check the Latch Solenoid: <ul style="list-style-type: none"> - Check for firm electrical connections. - Disconnect the two wires from the solenoid and measure the resistance of the solenoid. A small resistance (approx. 175Ω) is normal. If the solenoid is open ($\infty\Omega$) or shorted (0Ω), it should be replaced. 3. Check the Latch Switch. Disconnect it and use a continuity tester: <ul style="list-style-type: none"> - Door latched = switch closed, continuity should read 0Ω. - Door unlatched = switch open, continuity should read $\infty\Omega$. 4. Check Door Open/Closed Switch. Disconnect it and use a continuity tester: <ul style="list-style-type: none"> - Door open = switch closed, continuity should read 0Ω. - Door closed = switch open, continuity should read $\infty\Omega$. 5. Check power and element connections.
	E1	Self clean latch will not lock	
	E5	Self clean temperature (288° C [550° F]) not reached within 45 minutes	
	E7	Self clean latch will not unlock	
F6	E0	Return line not connected	If switch pulse return line not connected, electronic control will display F6 within 60 seconds after power up. Replace control.

WIRE HARNESS SCHEMATIC

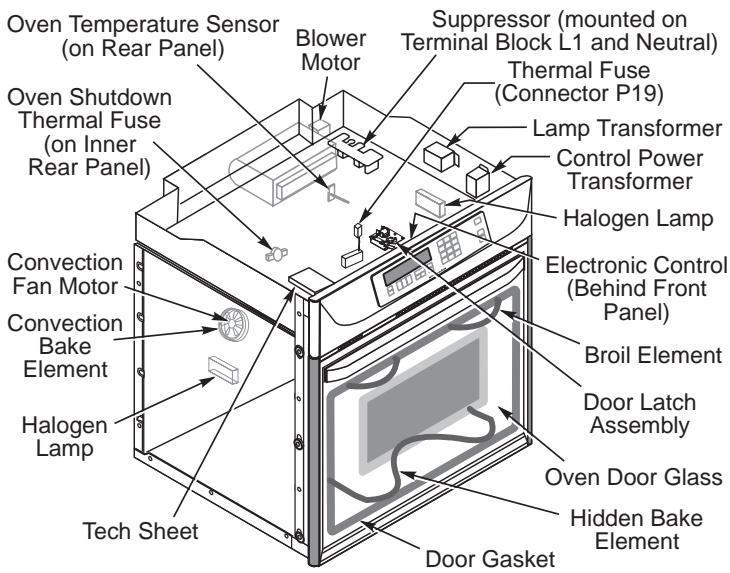
NOTES:

- When replacing the electronic control, be sure to program the cavity size. See "Programming the Cavity Size" on page 1.
- Dots indicate connections or splices.
- Circuit shown in STANDBY/OFF mode with oven door closed.

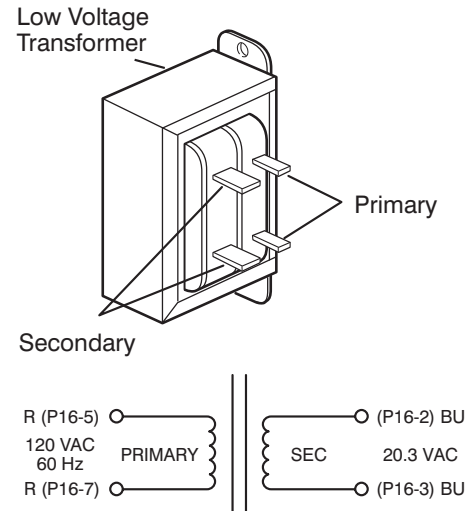
GROUND (CHASSIS)	AC DRIVE MOTOR	SOLENOID
PLUG WITH FEMALE CONNECTOR	RELAY COIL	ENCLOSED THERMISTOR
RECEPTACLE WITH MALE CONNECTOR	RELAY CONTACTS	OPERATED BY DOOR
LIGHT	HEATING ELEMENT	THERMAL FUSE/T.O.D.



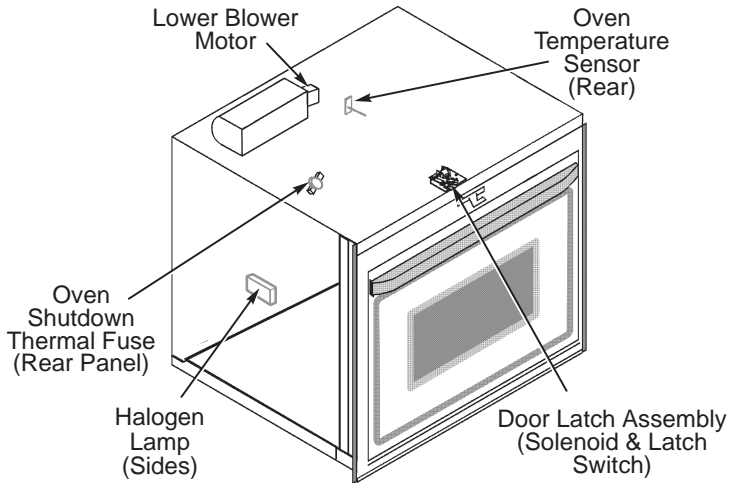
UPPER OVEN COMPONENTS



CONTROL POWER TRANSFORMER



LOWER OVEN COMPONENTS



ELECTRICAL COMPONENTS KEY

OVEN COMPONENT	FRONT / REAR SERVICEABLE
ELECTRONIC CONTROL	FRONT
MEMBRANE SWITCH	FRONT
DOOR SWITCHES	FRONT
LATCH SWITCHES	FRONT
LATCH SOLENOIDS	FRONT
MEAT PROBE SENSOR	PROBE - FRONT JACK - REAR
OVEN TEMPERATURE SENSOR	FRONT
CONSOLE BLOWERS	REAR
HALOGEN LIGHTS	LIGHT BULB - FRONT LIGHT ASSY. - REAR
CAVITY LIGHT TRANSFORMER	FRONT
CONVECTION FAN MOTORS	REAR
T.O.D.	REAR
BAKE ELEMENTS	REAR
OUTER BROIL ELEMENTS	FRONT
INNER BROIL ELEMENTS	FRONT
CONVECTION RING ELEMENTS	FRONT
THERMAL FUSE	FRONT
CONTROL POWER TRANSFORMER	FRONT
SUPPRESSOR	FRONT

ELECTRONIC CONTROL PINOUTS

PIN	FUNCTION	COLOR
P18-1	OUTER BROIL UPPER	BU
P18-2	INNER BROIL UPPER	OR
P18-3	BAKE UPPER	R
P18-4	CONVECTION RING UPPER	Y
P23-1	CONVECTION RING LOWER	Y
P23-2	OUTER BROIL LOWER	BU
P23-3	INNER BROIL LOWER	OR
P23-4	BAKE LOWER	R
P15-1	+5 SWITCH PULSE	TAN
P15-2	DOOR SWITCH UPPER	BR
P15-3	LATCH SWITCH UPPER	BU
P15-4	OVEN SENSOR UPPER	V
P15-6	EARTH GROUND	GN
P15-8	MEAT PROBE	Y
P16-1	EARTH GROUND	GN
P16-2	CONTROL POWER TRANSFORMER	BU
P16-3	CONTROL POWER TRANSFORMER	BU
P16-5	CONTROL POWER TRANSFORMER	R
P16-7	CONTROL POWER TRANSFORMER	R
P21-2	OVEN SENSOR LOWER	V/W
P21-3	DOOR SWITCH LOWER	BR/W
P21-4	LATCH SWITCH LOWER	BU/W
P19-1	L1	BK
P19-3	NEUTRAL	W
P19-5	COOLING FAN LOWER	GY/W
P19-6	COOLING FAN UPPER	GY
P19-7	CONVECTION FAN UPPER	OR
P19-8	CONVECTION FAN LOWER	OR/W
P19-9	LIGHTS	BK
P20-1	+ SOLENOID UPPER	Y
P20-2	- SOLENOID UPPER	GY
P20-3	+ SOLENOID LOWER	Y/W
P20-4	- SOLENOID LOWER	GY/W
P20-6	EARTH GROUND	GN
P17-1	L1	BK
P17-2	L1	BK
P22-1	L1	BK
P22-2	L1	BK

RELAY LOGIC UPPER AND LOWER OVEN

MODES	RELAYS	BAKE	IN BROIL	OUT BR	CONV ELEM	CONV FAN	OVEN LT	BLOWER
OFF	O	O	O	O	O	⊗	⊗	
■ PREHEAT-BAKE	+	+	+	O	O	⊗	X	
BAKE 24",30" ■	+	+	+	O	O	⊗	X	
BAKE 27" ■	+	+	+	O	O	⊗	X	
ECONO BROIL	O	X	O	O	O	⊗	X	
MAXI BROIL	O	X	X	O	O	⊗	X	
CONV BROIL	O	X	X	O	X	⊗	X	
● PREHEAT-CONV	+	+	+	O	X	⊗	X	
CONV ROAST 24"●	X	O	X	O	X	⊗	X	
CONV ROAST 27",30"●	X	+	X	O	X	⊗	X	
CONV BAKE 24"●	O	O	O	+	X	⊗	X	
CONV BAKE 27"●	O	O	O	X	X	⊗	X	
CONV BAKE 30"●	+	O	O	X	X	⊗	X	
▲ PREHEAT-CLEAN	+	+	+	O	O	O	X	
CLEAN ▲	X	+	+	O	O	O	X	
PREHEAT DEHYDRATE	O	O	O	+	X	⊗	X	
DEHYDRATE	O	O	O	X	X	⊗	X	
PREHEAT BREAD	O	O	O	+	X	⊗	X	
RAISING BREAD	O	O	O	+	X	⊗	X	

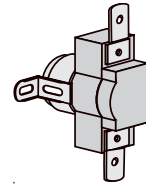
RELAY LOGIC KEY

- O - OFF
- X - ON
- +
- ⊗ - ON OR OFF

OVEN SHUTDOWN THERMAL FUSE

The oven shutdown thermal fuse is located at the back of the oven. It will shut down the elements if the temperature at the back of the oven exceeds component limits.

Verify that the Oven Shutdown Thermal Fuse is okay.



THE FOLLOWING COMPONENTS CAN BE TESTED AT THE CONTROL PANEL:

LOWER OVEN			
COMPONENTS	FRONT/REAR SERVICEABLE	CHECK POINTS	RESULTS
Door Switch	Front	P21-3 (BR/W) to P15-1 (TAN)	Door Open = Closed Circuit Door Closed = Open Circuit
Door Lock Solenoid (with Door Closed)	Front	P20-4 (GY/W) to P20-3 (Y/W)	50 Ω
Oven Temperature Sensor	Front	Sensor P21-2 (V/W) to Ground (GN)	1080 Ω @ 70°F
Blower	Rear	P19-5 (GY/W) to Neutral (W)	14 Ω to 18 Ω
Oven Light Transformer	Front	Primary Winding Secondary Winding	40 Ω to 45 Ω Less than 1 Ω
Oven Shutdown Thermal Fuse	Rear	P23-3 (W) to Red Wire at Terminal Block	Closed Circuit
Bake Element	Rear	P23-4 (R) to Red Wire at Terminal Block	25 Ω to 30 Ω
Inner Broil Element	Front	P23-3 (OR) to Red Wire at Terminal Block	45 Ω to 55 Ω
Outer Broil Element	Front	P23-2 (BU) to Red Wire at Terminal Block	45 Ω to 55 Ω
Convection Ring Element	Front	P23-1 (Y) to Red Wire at Terminal Block	28 Ω to 35 Ω
Convection Fan Motor	Rear	P19-8 (OR/W) to Neutral (W)	8 Ω to 12 Ω
Latch Switch	Front	P21-4 (BU/W) to P15-1 (TAN)	Door Unlocked = Open Circuit Door Locked = Closed Circuit

UPPER OVEN			
COMPONENTS	FRONT/REAR SERVICEABLE	CHECK POINTS	RESULTS
Door Switch	Front	P15-2 (BR) to P15-1 (TAN)	Door Open = Closed Circuit Door Closed = Open Circuit
Door Lock Solenoid (with Door Closed)	Front	P20-2 (GY) to P20-1 (Y)	50 Ω
Oven Temperature Sensor	Front	Sensor P15-4 (V) to Ground (GN)	1080 Ω @ 70°F
Blower	Rear	P19-6 (GY) to Neutral (W)	14 Ω to 18 Ω
Oven Light Transformer	Front	Primary Winding Secondary Winding	40 Ω to 45 Ω Less than 1 Ω
Oven Shutdown Thermal Fuse	Rear	P18-2 (OR) to Red Wire at Terminal Block	Closed Circuit
Bake Element	Rear	P18-3 (R) to Red Wire at Terminal Block	25 Ω to 30 Ω
Inner Broil Element	Front	P18-2 (OR) to Red Wire at Terminal Block	45 Ω to 55 Ω
Outer Broil Element	Front	P18-1 (BU) to Red Wire at Terminal Block	45 Ω to 55 Ω
Convection Ring Element	Front	P18-4 (Y) to Red Wire at Terminal Block	28 Ω to 35 Ω
Convection Fan Motor	Rear	P19-7 (OR) to Neutral (W)	8 Ω to 12 Ω
Meat Probe Jack	Rear	P15-8 (Y) to Ground (GN)	Probe into Jack- Check for 78 kΩ @ Room Temp.
Control Panel Thermal Fuse	Front	P19-3 to Neutral (W) Across Fuse	Closed Circuit
Latch Switch	Front	P15-3 (BU) to P15-1 (TAN)	Door Unlocked = Open Circuit Door Locked = Closed Circuit

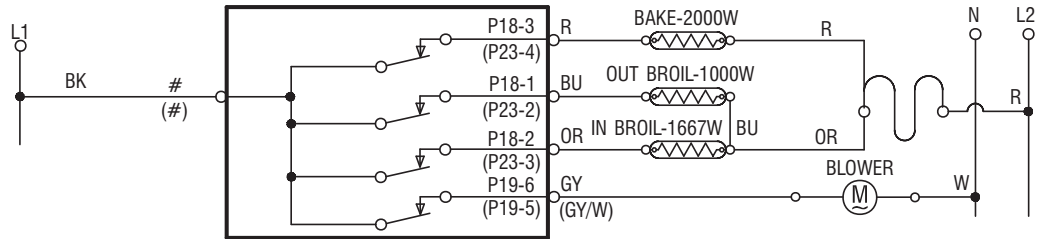
OVEN STRIP CIRCUITS

The following individual circuits are for use in diagnosis.
Before starting diagnosis, check the line voltage and for blown fuses.

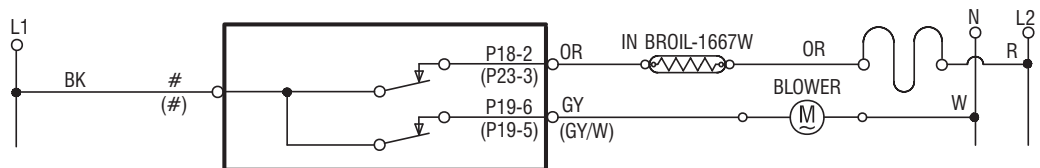
NOTES:

- Pin numbers and wire colors shown in parentheses () denote lower oven connections.
- Pins denoted as # see wire harness schematic on page 3 for routing configuration from relays to L1.

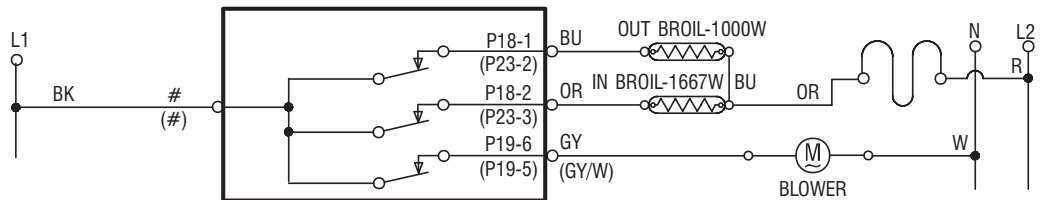
**PREHEAT-BAKE/
BAKE**



ECONO BROIL

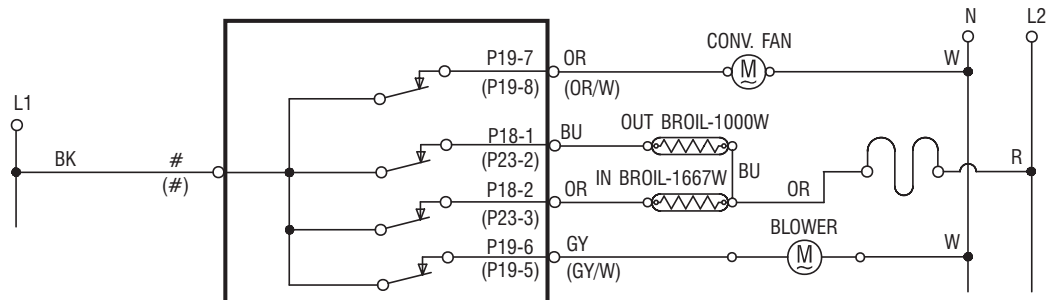


MAXI BROIL



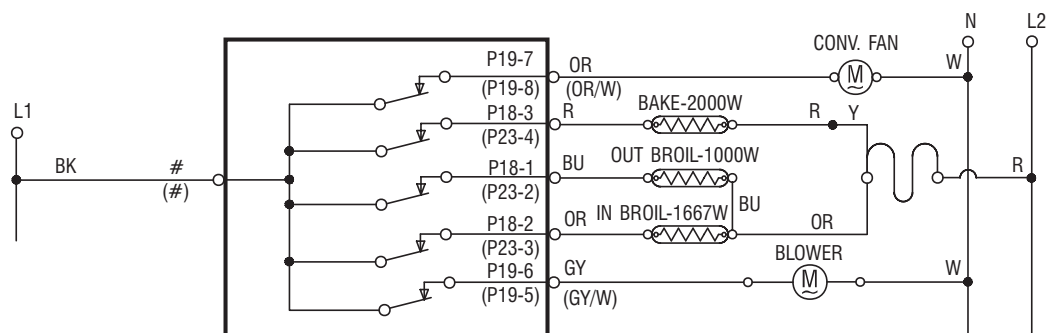
CONVECTION BROIL

(Thermal Convection Models Only)



**CONVECTION ROAST
AND PREHEAT-CONV
BAKE**

(Thermal Convection Models Only)



OVEN STRIP CIRCUITS

The following individual circuits are for use in diagnosis.
Before starting diagnosis, check the line voltage and for blown fuses.

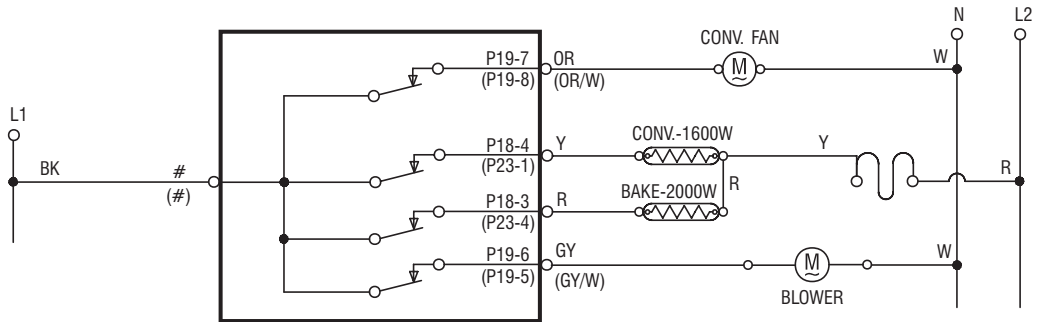
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NOTES:

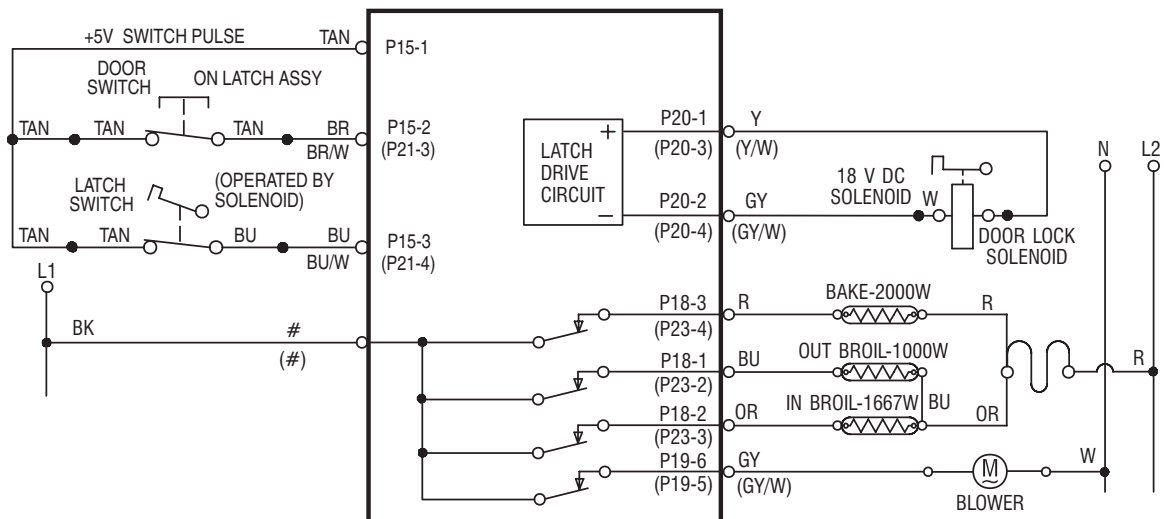
CONVECTION BAKE

(BAKE ELEMENT USED ONLY ON 30")

(Thermal Convection Models Only)



CLEAN AND PREHEAT CLEAN



PART NO. 4451879 REV. C

NOTE: This sheet contains important Technical Service Data

**FOR SERVICE TECHNICIAN ONLY
 DO NOT REMOVE OR DESTROY**

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING UNITED STATES PATENTS:

4,102,322 4,364,589 4,467,184

OTHER PATENTS PENDING