FOR SERVICE TECHNICIAN'S USE ONLY

Tech Sheet **Do not discard**

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

- **Verify the controls are in the off position so that the appliance does not start when energized.**
- **Allow enough space to perform the voltage measurements without obstructions.**
- **Keep other people a safe distance away from the appliance to prevent potential injury.**
- **Always use the proper testing equipment.**
- **After voltage measurements, always disconnect power before servicing.**

Temperature Adjustment (All MRC Controls)

NOTE: On models with a numeric keypad on the control, press the "3" key instead of the "up" arrow or "+" (plus) keypad. Press the "6" key instead of the "down" arrow or "-" (minus) keypad. On some models, press the OFF keypad if there is not a CANCEL keypad.

Step	Function	Keypad Pressed	Notes
1	Temperature adjustment	Press OVEN LIGHT for 5 seconds	The current offset is shown in the display, or 0° if there is no offset.
2	Temperature adjustment options	(Depending on model) Temp/Time or Temp/Hour Press "MORE" or "LESS" arrow keys or Press "+" (plus) or "-" (minus) keypads	Adjust temperature in 5°F (3°C) increments. The range can be set between 30°F (18°C) and -30°F (-18°C). Bake temperature adjustment cannot result in operating temperatures higher than 550°F (288°C) or lower than 170°F (77°C), as measured at the oven center. The broil temperature is automatically offset the same as the bake temperature.
3	Activate temperature adjustment	Press START	Desired temperature adjustment is activated. If "Start" is not pressed within 1 minute, adjustment is ignored.

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Diagnostics Mode for MRC Control

IMPORTANT: You must run an Auto Test before performing any other diagnostics. Refer to steps 1 through 4 in the following chart to run Auto Test. Press CANCEL at any time to exit.

NOTE: On models with a numeric keypad on the control, press the "3" key instead of the "up" arrow or "+" (plus) keypad. Press the "6" key instead of the "down" arrow or "-" (minus) keypad. On some models, press the OFF keypad if there is not a CANCEL keypad.

Step	Key Press	Control Display
1	CANCEL > CANCEL > START	"TEST ON" with cavity temperature and door position, "UO" = Oven door closed or "UI" = Oven door open
2	Press the "up" arrow, the "+" (plus) key or the "3" key to scroll through the service modes to Auto Test.	"AUTO TEST"
3	Follow the display prompts to run Auto Test to observe the following results:	
	Result #1 - Do not replace the control.	"Control is GOOD, no faults found"
	Result #2 - Tests completed with failure/fault codes.	Failure/Fault codes are listed in scrolling text. **NOTE:** Failures are problems within the control. Faults are problems beyond the control (for example, "0 Failures and 2 Faults found - Control is good." There is a problem with a wiring harness, wiring connection or component outside the control).
4	Press CANCEL to exit. Refer to the "Failure/Error Display Codes" section to correct.	

Service Modes for MRC Control

Press CANCEL>CANCEL>START to enter Service Mode.

NOTE: On models with a numeric keypad on the control, press the "3" key instead of the "up" arrow or "+" (plus) keypad. Press the "6" key instead of the "down" arrow or "-" (minus) keypad. On some models, press the OFF keypad if there is not a CANCEL keypad.

Step	Service Mode	Service Mode Description
Upon entry	TEST ON	Perform relay checks. See the "Relay Checks for MRC Control" section. Press the key that is listed in the "Key Press" column for the desired function and display. Display shows oven temperature from oven temperature sensor and door position (0-closed, 1-open).
1	USAGE	Displays the usage time in hours for several range functions.
2	ENG MODE	Press START to enter, and then press the "+" keypad. Press START again, and the display will show the temperature of the oven sensor. Press the TIMER SET/OFF keypad to scroll between the oven sensor temperature, the warming drawer sensor temperature and the control board sensor temperature. Press CANCEL twice at any time to exit.
3	TEST MODE	Perform relay checks. See the "Relay Checks for MRC Control" section. Press the key that is listed in the "Key Press" column for the desired function.
4	VERSION	Displays software version.
5	DISPLAY	Displays all MRC control LEDs.
6	CONTROL RESET	DO NOT USE this Service Mode - for Engineering Use Only.
7	FAULTS	Displays the most recent fault code. The last 10 faults are stored and may be cleared by following the prompts. Clear faults as directed by pressing START TIME or DELAY START.
8	RELAY USAGE	Displays the usage time in hours for several range functions.
9	AUTO TEST	Automatic diagnostics mode that must be run before performing any other diagnostic or before replacing the control.

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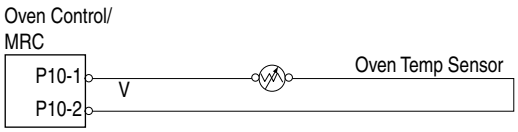
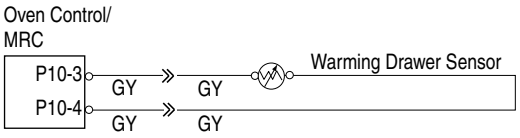
Relay Checks for MRC Control

NOTE: Relays are activated from the TEST ON service mode. Press CANCEL at any time to exit. Some of the functions listed below may not be on your range.

Function	Key Press	Description	Display
Bake relay	BAKE	Turns Bake element ON. Press again to turn Bake element OFF.	b
Broil relay	BROIL	Turns Broil element ON. Press again to turn Broil element OFF.	r
Convect relay	CONVECT or CONVECT BAKE	Turns convection element ON. Press again to turn convection element OFF.	c
Warming drawer relay	WARM DRAWER (on some models)	Turns warming drawer element ON. Press again to turn warming drawer element OFF.	d
Oven light relay	OVEN LIGHT	Turns oven light ON. Press again to turn oven light OFF.	0
Convection fan relay	RAPID PREHEAT, CONVECTION ROAST or COOK TIME	Turns convection fan ON. Press again to turn convection fan OFF.	H
Warming zone relay	WARM ZONE ON or WARMING CENTER ON	Turns warming zone element ON. Press again to turn warming zone element OFF.	WZ

- All elements (depending on which cycle is being used) will operate with the oven door open.
- On electric models, the DLB (double line break) will engage on entering the Diagnostics Mode and disengage on exit.

Failure/Error Display Codes

Display Codes		Likely Failure Condition	Suggested Corrective Action Procedure
F1	**E0**	EEPROM comm error	**1.** Press CANCEL>CANCEL>START to enter the Diagnostics Mode and verify the error code. **2.** If an F1 error code is displayed, unplug range or disconnect power. Replace the oven control and then go to Step 4. **3.** If an F2 error code is displayed, unplug range or disconnect power. Replace the user interface (keypad membrane) and then go to Step 4. **4.** Replace all parts and panels before operating. **5.** Plug in range or reconnect power. **6.** Verify operation is normal. Go to the Diagnostics Mode and scroll to the Faults display to clear faults.
	E5	Sensor out of range	
	E7	PCB thermistor open or shorted	
F2	**E0**	Keypad disconnected	
	E1	Stuck key	
	E2	Cancel key error	
F3	**E0**	Main sensor open or shorted 	**1.** Press CANCEL>CANCEL>START to enter the Diagnostics Mode. At the first screen, verify the main oven sensor temperature readout. If it is available, verify the warming drawer sensor temperature readout. **2.** Continue in the Diagnostic Mode to verify the error code. **3.** If an F3E0 error code is displayed and the main oven sensor temperature reading is near room temperature, unplug range or disconnect power. Replace the main oven sensor, as a failure at high temperature may be the cause of the fault. Then go to Step 9. If the sensor does not read room temperature, go to Step 5. **4.** If an F3E2 error code is displayed and the warming drawer sensor temperature reading is near room temperature, unplug range or disconnect power. Replace the warming drawer sensor, as a failure at high temperature may be the cause of the fault. Then go to Step 9. If the sensor does not read room temperature, go to Step 5. **5.** Check all sensor connections on the harness and board. **6.** Disconnect sensor from the harness. **7.** Measure the oven sensor resistance (between connector pins). It should read between 1,000 Ω and 1,200 Ω. Measure the resistance from the sensor connector pins to the sensor casing for a possible short. If the resistance measurement is out of range, or if a short is found, replace the sensor. **8.** Inspect the wire and connectors from the control to the sensor. If any damage is noted, replace the harness. **9.** Replace all parts and panels before operating. **10.** Plug in range or reconnect power. **11.** Verify operation is normal for longer than 1 minute. Go to the Diagnostics Mode and scroll to the Faults display to clear faults.
F3	**E2**	Warming drawer sensor open or shorted 	

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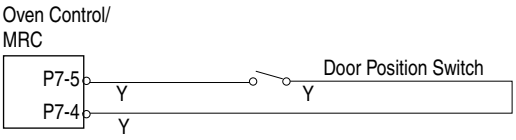
Display Codes		Likely Failure Condition	Suggested Corrective Action Procedure
F5	**E0**	Door and switches do not agree (Clean mode - on some models) 	**1.** Press CANCEL>CANCEL>START to enter the Diagnostics Mode and verify the error code. **2.** Press the CANCEL/OFF key. Press CANCEL>CANCEL>START to re-enter the Diagnostics Mode. With "TEST ON" displayed, open the oven door and fully engage the door switch. If the display does not change from "UI" to "UO," go to Step 4. If the display does change, go to Step 3. **3.** Inspect door and frame for warping or misalignment keeping the door from fully engaging the door switch. Make any necessary repairs then go to Step 7. **4.** Unplug range or disconnect power. **5.** Verify the actuating rod connection from the front frame to the door switch. **6.** If there is damage to wires or connectors, replace the harness. If there is no damage to wires or connectors, replace the door switch. **7.** Replace all parts and panels before operating. **8.** Plug in range or reconnect power. **9.** Press CANCEL/OFF key. Select and start the SELF-CLEAN or PRECISE CLEAN function. Observe for at least 1 minute to ensure that operation is normal. **10.** Go to the Diagnostics Mode and scroll to the Faults display to clear faults.
F6	**E1** **E2** **E3**	Over temp cook Over temp clean Over temp (warming drawer)	**1.** Press CANCEL>CANCEL>START to enter the Diagnostics Mode and verify the error code. **2.** Unplug range or disconnect power. **3.** Replace control. **4.** Replace all parts and panels before operating. **5.** Plug in range or reconnect power. **6.** Verify operation is normal.

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Component Testing Chart - Electric MRC Models with AquaLift™ Technology

NOTE: This Component Testing Chart covers different models. The range may have some or all of the components listed in the following chart.

Do not continue with the diagnosis of the appliance if a fuse is blown, a circuit breaker is tripped, or if there is less than 240+10%/-15% V power supply at the wall outlet.

When checking for proper voltage, complete the following steps:

1. Unplug range or disconnect power.
2. Connect voltage measurement equipment.
3. Plug in range or reconnect power and confirm voltage reading.
4. Unplug range or disconnect power after performing voltage measurements.

Component	From	To	Resistance: Measure Without Power Applied	Notes	Nominal Voltage
Door position switch	P7-4	P7-5	Door open = open circuit Door closed = closed circuit		2 VDC with door open 0 VDC with door closed
Oven light	P5-4	W (Neutral) P6-3	0 - 40 Ω nominal	Measure resistance with oven light switch open and door closed. Measure voltage with oven light switch closed or door open.	N/A 120 VAC
Thermo fuse	P1-3	P2-4	Closed circuit (normal) Open circuit if temperatures at the back of the oven exceed 360°F (184°C)	Thermo fuse will open if it exceeds temperature. Measure for a closed circuit (0 resistance).	N/A
Oven sensor	P10-1	P10-2	1000 - 1200 Ω at room temperature	Disconnect connector P10 from control before measuring sensor. Measure only resistance, not voltage.	N/A
Bake element	P1-4	P3-1/P3-2	10 - 40 Ω nominal. Check both P3-1 and P3-2 terminals - one open circuit and one closed circuit.	For voltage measurements in Bake mode, Bake cycle must be operating.	240 VAC when energized
Broil element	P1-1	P3-1/P2-1	10 - 40 Ω nominal. Check both P3-1 and P3-2 terminals - one open circuit and one closed circuit.	For voltage measurements in Broil mode, Broil cycle must be operating.	240 VAC when energized
Warming drawer sensor	P10-3	P10-4	1000 - 1200 Ω at room temperature	Disconnect connector P10 from control before measuring warming drawer temperature sensor.	N/A
Warming drawer element	P4-2	W (Neutral) P6-3	15 - 20 Ω nominal	Measure voltage with Warm Drawer on.	120 VAC
Convection fan motor	P5-2	W (Neutral) P6-3	85 - 90 Ω	Convection fan runs in Convection Bake mode.	120 VAC
Convection element	P2-3	W (Neutral) P6-3	16 Ω nominal	Convection element will cycle on and off. Convection Bake cycle must be operating.	120 VAC
Limiter switches	Term 2B or S	Term 1B or H	Normally open switch closes at 150°F (65.6°C) to turn on hot surface indicator light.		Normal = Infinite resistance
	Term Single - 1A', Dual - 4/4A or 3/1, Triple - P1	Term 2A or 2	Normally closed switch opens at 1050°F (566°C).		Normal = 0 resistance

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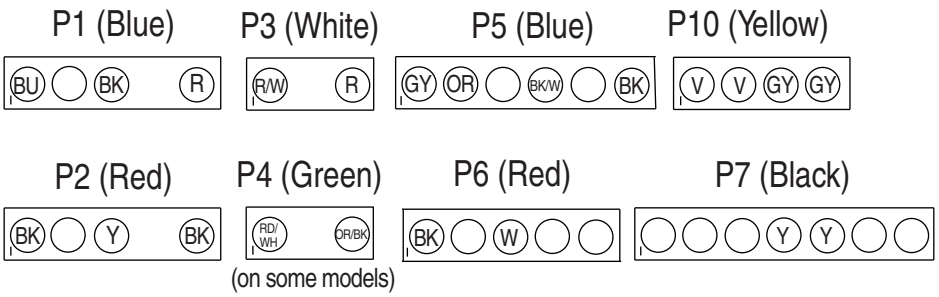
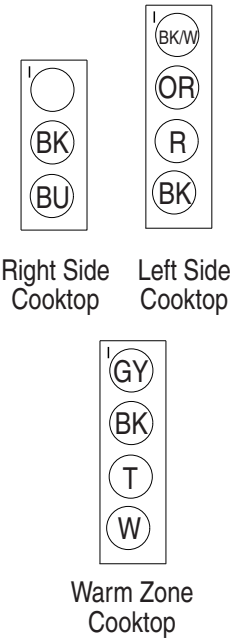
Quick Connect Plugs

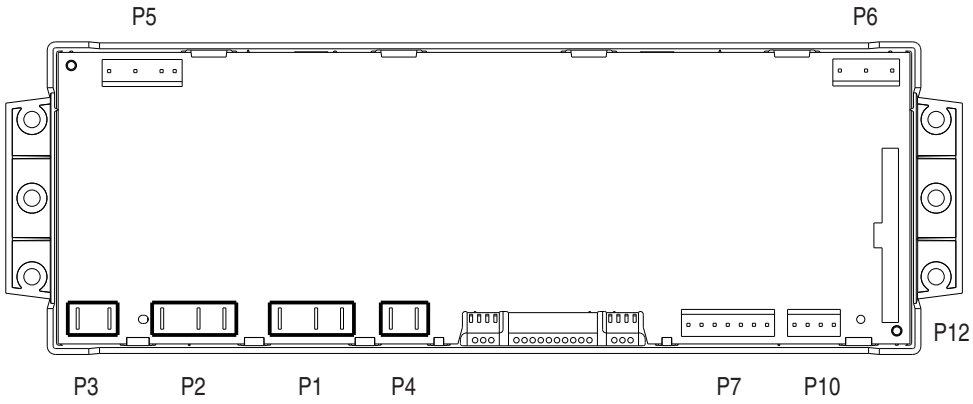
For controls



For cooktop



MRC Control (Electric Models)



Rear View

Conn	Pin	Function
P1 (Blue)	1	Broil
	3	Bake L1 input
	4	Bake
P2 (Red)	1	Convection element - L1 input
	3	Convection element
	4	L1 input - broil
P4 (Green) (on some models)	1	Warming drawer - L1 input
	2	Warming drawer
P5 (Blue)	1	Warming center element
	2	Convection fan
	4	Oven light
	6	L1 input

Conn	Pin	Function
P6 (Red)	1	Control L1 input
	3	Control neutral
P7 (Black)	4	Door switch common
	5	Door position switch
P10 (Yellow)	1	Oven temp sensor
	2	Oven temp sensor
	3	Warm drawer temp sensor
	4	Warm drawer temp sensor (3 and 4 on some models)

Notes

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For patent information, please see Pat. www.patent-listing.com

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NOTE: This sheet contains important Technical Service Data.
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