SERVICE SHEET

19-Jun-2007 11:16:34

2303923C

⚠ WARNING

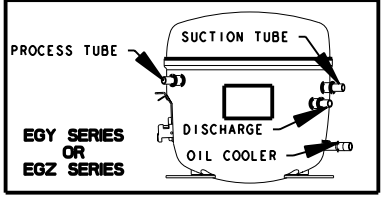
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

- Normal operating conditions are viewed when the air and temperature controls are at mid-sitting, freezer section 0 to -5°F and unit is cycling.

NOTE: Watt and pressure readings will vary and are influnced by the existing condition of the appliance, such as iced-up evaporator, condition of condenser, defrost cycle, pull-down time and customer use.

PERFORMANCE DATA (NORMAL OPERATING CONDITIONS)			
		SYSTEM PRESSURE (PSIG)	
AMB	WATTS	HIGH SIDE	LOW SIDE
70°	140 ± 20	95 ± 20	-7 TO 3
90°	150 ± 20	135 ± 20	-4 TO 3
110°	170 ± 20	185 ± 20	-2 TO 4

(OIL COOLER IS OPTIONAL)
EMBRACO



SERVICE INFORMATION (2303917 B)

1. COMPRESSOR SUCTION AND PROCESS STUBS MAY NOT BE INTERCHANGED.
2. REFRIGERANT CHARGE MUST BE APPLIED TO HIGH SIDE ONLY.
3. ICE MAKER AND WATER VALVE NOT ORIGINAL EQUIPTMENT ON ALL MODELS.
4. NOTE: ICE MAKER CYCLE MUST BE INITIATED ELECTRICALLY. DO NOT TRY TO MANUALLY START CYCLE.
5. SERVICE DEFROST BI-METALS -50°F OPEN
6. PART NUMBER CAN BE FOUND ON THE COMPONENT.

SERVICEABLE ELECTRICAL PARTS MATRIX (COMPONENTS BY CUBIC FOOT SIZE)

SERVICEABLE PARTS	25 CUBIC FT Kenmore 120 VOLT		WATTAGE 120V AC	RESISTANCE (Ω) 120V AC
COMPRESSOR	EGZ90	EGZS90		
	2255197	2320138		
RUN WINDINGS	*	*		1-5
START WINDINGS	*	*		3-11
START DEVICE, OVERLOAD	2255198	See Note 6		
RUN CAPACITOR (IF EQUIPPED)	See Note 6			
ELECTRIC AIR BAFFLE ASSY	2301101			
THERMISTOR	2188819, 2188820			2.7K AT 77°F (25°C)
USER INTERFACE CONTROL	2313176			
MAIN CONTROL	2313177			
DEFROST HEATER	2188175		550-650	27-21
DEFROST BI-METAL	See Note 6			
EVAPORATOR FAN MOTOR	See Note 6		2-9	
CONDENSER FAN MOTOR	See Note 6		3-12	

ELECTRONIC CONTROL FEATURES

The electronic control in this appliance controls the temperatures in the refrigerator and freezer compartments independently, delays the operation of the evaporator fan, pulses the defrost heater and monitors the water filter usage. The fan delay and pulsed defrost features are controlled in the following manner:

1. **Evaporator Fan Delay** - The electronic control delays the evaporator fan from coming on for 60 seconds after the compressor has turned on, and the evaporator fan stays on for 120 seconds after the compressor has turned off.
2. **Pulsed Defrost Heat** - During the defrost cycle the heater is energized continuously for the first 5 minutes. It is then cycled off for 60 seconds and on for 120 seconds. This on/off cycle is repeated until the bi-metal opens or the maximum defrost time (25 minutes) is reached.

SERVICE DIANOSTICS MODE

The Service Diagnostic Mode can be entered 13 seconds after the refrigerator is powered up. This mode tests the thermistor inputs and control board outputs. The results of the thermistor checks are displayed on the RC temp display as shown below. In steps 3 through 6, the component tested will be energized and should function if operational.

- Press the Control **On Button and the °C Button simultaneously** for 2 seconds.
- Diagnostics will begin at Step No. 1:
- **The freezer compartment (FC) temperature display will** show "1" to indicate the control is in Step No. 1 of the diagnostics routine.
- The table below shows the component tested at each step.
- Press the FC Temp Up Button to move to the next step in the sequence.
- **The FC display advances each time the the FC Temp Up Button is pressed (indicating the completion of the previous step).**
- The diagnostics mode ends automatically after the steps are complete or 20 minutes have passed (whichever comes first). The control will then resume normal cooling operation.

Service Tip: If the control does not respond it may be necessary to remove power from the entire appliance for a few seconds. Re-apply power and perform the service diagnostics routine to verify that the control is working correctly.

Step No.	Component Tested	Suggested Diagnostics Routine	RC Temp Display (Steps 1 and 2)
1	FC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	1 Pass
2	RC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	2 Fail
3	Evaporator fan motor	Verify 120V AC between line and neutral at motor. Verify 120V AC between Red/White and White wires.	
4	Compressor and Condenser fan motor	Line voltage switched to components from board, verify 120V AC between line and neutral at compressor and motor (red wire and white wires).	
5	Air baffle motor	Verify 120V AC between line and neutral at baffle (White and Yellow/Red wires).	
6	Defrost heater/Bi-metal	Line voltage switched to components from board, verify 120V AC between line and neutral at heater. Note: If Bi-metal is open, it will need to be by-passed for heater to operate. See Note below. Press the FC Temp Up Button to indicate the completion of this step and the service routine.	

ATTENTION: IF BI-METAL IS BY-PASSED FOR TESTING (IF APPLICABLE), DO NOT OVERHEAT EVAPORATOR AREA.

SERVICE AND WIRING SHEET NO. 2303923C

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SERVICE SHEET

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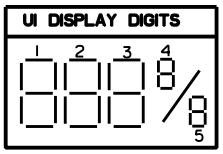

SERVICE INFORMATION (2303913 B)

ELECTRONIC DISPENSER CONTROL FEATURES

The electronic dispenser control in this appliance controls ice and water dispensing, directs icemaker water fills upon request from the icemaker system, monitors the water filter usage, and controls the operation of the dispenser cavity lighting and dispenser housing heater.

SERVICE DIAGNOSTICS MODE

The dispenser control system consists of three electronic controls: A Dispenser Core Control which is located behind the dispenser bezel assembly, a Dispenser UI Control which is attached to the back portion of the dispenser bezel assembly, and a Smart Valve which is located within the unit compartment.The Service Diagnostic Mode tests the functionality of the dispensing system. The dispenser control system automatically tests steps 0, 1, 3, 4, 7, 10, 11, 13, 15, 18, and 19. Steps 5, 6, 12, 14, and 20 require manual interaction with the technician.

How to Enter Service Diagnostic Mode:

- Unit must not be in Lockout prior to entering Service Diagnostic Mode.
- While depressing the **Ice** button, press and hold the **Light** button for about 3 seconds, then release both buttons after the unit beeps.
- Diagnostics will begin in Step 0. Each step displays the step number in the two right-most digits (Digits 4 and 5) of the UI dispenser display and the step result using the first three digits (Digits 1 to 3) as described in the Suggested Diagnostic Routine for each step.
- Each step must be manually advanced by pressing the **Lockout** button to move to the next step in the sequence or retreated to the previous step by pressing the **Water Filter Reset** button.
- All button and pad inputs shall be ignored and all outputs shall be off, except as described in the actions for each step.
- The table below shows the component tested of each step. Ignore steps for which the component tested is N/A.
- If communication is lost with the Dispenser Core Control, Steps 10 through 14 will display "- - -" on Digits 1 to 3
- If communication is lost with the Smart Valve Control, Steps 15 through 20 will display "- - -" on Digits 1 to 3
- The diagnostic mode ends automatically after the steps are complete or 20 minutes have passed (whichever comes first). Diagnostic mode can also be manually exited by pressing the **Light** button during any step or in the case that electrical power is cycled. Following the exit of diagnostic mode, the controls will then resume normal operation.

Step #	Component Tested	Suggested Diagnostics Routine	Component Status Indicator
0	All UI indicators	Verify that all LED indicators, UI display digits, and dispenser lighting turn on automatically	N/A
1	Dispenser UI Control SW Version	Displays the Dispenser UI Control software version on Digits 1 to 3 of the UI display	N/A
2	N/A	N/A	N/A
3	Water Filter Usage Rating	Displays the total water usage rating in gallons for the water filter on Digits 1 to 3 of the UI display	100
4	Water Filter Time Rating	Displays the total time rating in days for the water filter on Digits 1 to 3 of UI display	182
5	UI Pad and Button Test	Note: Do not use Lockout, Water Filter Reset and Light as these buttons are only used to control the Service Diagnostic Mode as previously described. Displays the status of both Water and Ice pads on Digit 1. Depress the pads in all combinations to verify the appropriate status indications as shown in the Component Status Indicator Column. Displays the UI Button matrix on Digits 2 and 3. Depress each UI button to verify the appropiate status indications as shown in the Component Status Indicator column.	Digit 1: Ice Pad "1" Water Pad "2" Ice & Water Pad "3" Digits 2 and 3: Up "13" Power Outage Reset "22" Units "23" Ice "24" Measured Fill "32" Down "33" Water "34"
6	Night Light Sensor	Displays the Night Light Sensor reading on Digits 1 to 3 of UI display. Cover the sensor to verify a decrease in the result.	N/A
7	Dispenser Lighting	Verify that the dispenser lighting cycles between Maximum and Minimum output levels.	N/A
8	Dispenser Housing Heater Status	Digit 3 must read "1". Press Ice to change.	Digit 3: Housing Heater Off "0" Housing Heater On "1"
9	N/A	N/A	N/A
10	Dispenser Core Control SW Version	Displays the Dispenser Core Control software version on Digits 1 to 3 of the UI display.	N/A
11	Power Outage Feature Enabled	Displays whether or not the Dispenser Core Control power outage feature is enabled on Digit 2 of UI display. Verify that Digit 2 Displays "1".	Digit 2: False "0" True "1"
12	FC Door Switch Input	Displays the FC Door status in realtime on Digit 3 of the UI display. Verify that the open and close status display correctly	FC Door Closed "0" FC Door Open "1"
13	Dispenser Core Control Battery Test	Displays whether or not the Dispenser Core Control battery is operational on Digit 3 of the UI display. Verify that Digit 3 displays "1".	False "0" True "1"
14	Ice Door Motor	Displays the Ice Door stepper motor state on Digit 3 of the UI display. Initiate ice dispense and verify that the mechanical operation of the Ice Door corresponds to the component status indicator. Note: Ice Door will close 10 sec. following release of Ice Pad. Ice will dispense upon Ice Pad depressing	Ice Door Closed "0" Ice Door Opening "1" Ice Door Open "2" Ice Door Closing "3"
15	Smart Valve SW Version	Displays the Smart Valve software version on Digits 1 to 3 of the UI display.	N/A
16	N/A	N/A	N/A
17	N/A	N/A	N/A
18	Water Filter Usage	Displays the current water filter status in gallons used since last reset on Digits 1 to 3	0 to 999
19	Water Filter Time	Displays the current water filter status in days since last reset on Digits 1 to 3	0 to 999
20	Water Dispensing and Icemaker Fill Test	Displays Icemaker status on Digit 1. Initiate icemaker fill and verify that display changes from "0" to "3". If a water dispense is in progress while the icemaker fill is initiated, the display will change to "1". Once the water dispense is complete, the icemaker fill will begin and the display will change to "3" as long as it is not interrupted by a water dispense. Displays water valve status on Digit 2 and flowsensor status on Digit 3. Initiate water dispense and verify Digit 2 changes to "1" and Digit 3 remains "0" during water dispense	Digit 1: Icemaker Off "0" Icemaker Fill Pending "1" Icemaker Filling "3" Digit 2: Water Dispenser Valve Off "0" Water Dispenser Valve On "1" Digit 3: Flowsensor Okay "0" Flowsensor Failed "1"

NOTES:

1. SMART VALVE SOLENOIDS GROUNDED THROUGH MOUNTING.
2. EVAP COVER GROUNDED THROUGH HEAT SHIELD.
3. THE DISPENSER CONTROL HAS A BUILT IN INVERTER BOARD WHICH CONVERTS THE AC VOLTAGE TO 120V DC. THE BR/WH AND RD/WH WIRES SWITCH POLARITY DEPENDING ON CRUSH/CUBE POSITION. SEE TABLE BELOW:

	BR/WH	RD/WH
CRUSH	-	+
CUBE	+	-

WIRING DIAGRAM

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WIRE COLOR CODE

WH/GN = WHITE/GREEN TRACER
OR/BK = ORANGE/BLACK TRACER
YL/RD = YELLOW/RED TRACER
BU/BK = BLUE/BLACK TRACER
WH/BU = WHITE/BLUE TRACER
BK/YL = BLACK/YELLOW TRACER
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GN/YL = GREEN/YELLOW TRACER
BK/WH = BLACK/WHITE TRACER
YL/BK = YELLOW/BLACK TRACER
PK/BK = PINK/BLACK TRACER
BR/WH = BROWN/WHITE TRACER
OR/BU = ORANGE/BLUE TRACER
RD/WH = RED/WHITE TRACER
LB/BK = LIGHT BLUE/BLACK TRACER
TN/WH = TAN/WHITE TRACER
TN/BK = TAN/BLACK TRACER
RD/YL = RED/YELLOW TRACER

WIRE COLOR CODE

V/WH = VIOLET/WHITE TRACER
BL/YL = BLUE/YELLOW TRACER
YL/BU = YELLOW/BLUE TRACER

WIRE COLOR CODE

BU = BLUE
BK = BLACK
RD = RED
WH = WHITE
YL = YELLOW
OR = ORANGE
BR = BROWN
GY = GRAY
PK = PINK
V = VIOLET
TN = TAN

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING UNITED STATES PATENTS

3,960,631 4,659,157 4,765,696 4,908,544 5,011,101
4,084,725 4,665,708 4,767,896 4,911,508 5,033,182
4,090,641 4,694,553 4,768,353 4,914,928 5,033,273
4,102,660 4,706,169 4,776,178 4,920,758 5,042,398
4,327,557 4,707,401 4,787,216 4,924,680 5,044,704
4,330,310 4,709,556 4,799,362 4,934,541 5,050,777
4,640,432 4,715,512 4,800,935 4,936,641 5,070,708
4,649,712 4,728,759 4,801,181 4,944,566 5,077,985
4,649,717 4,745,656 4,833,894 4,958,890 D309,461
4,649,718 4,745,775 4,862,577 4,996,848

OTHER PATENTS PENDING

SYMBOL CODE

: CONNECTOR - SCREW ON
: CONNECTOR - CLOSED END
: DISCONNECT TERMINAL
: PERMANENT CONNECTION
: PLUG CONNECTOR
: GROUND (CHASSIS)

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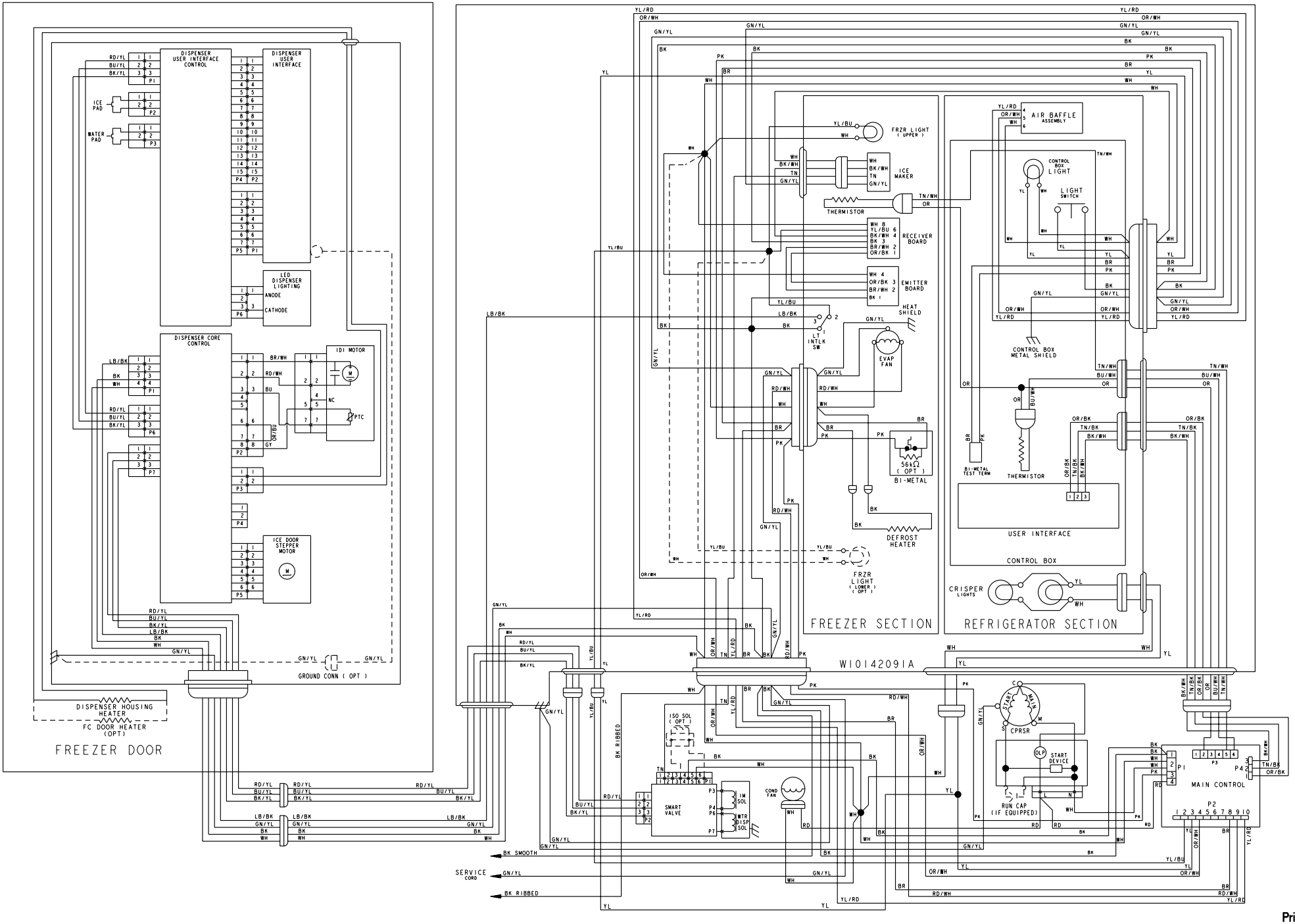

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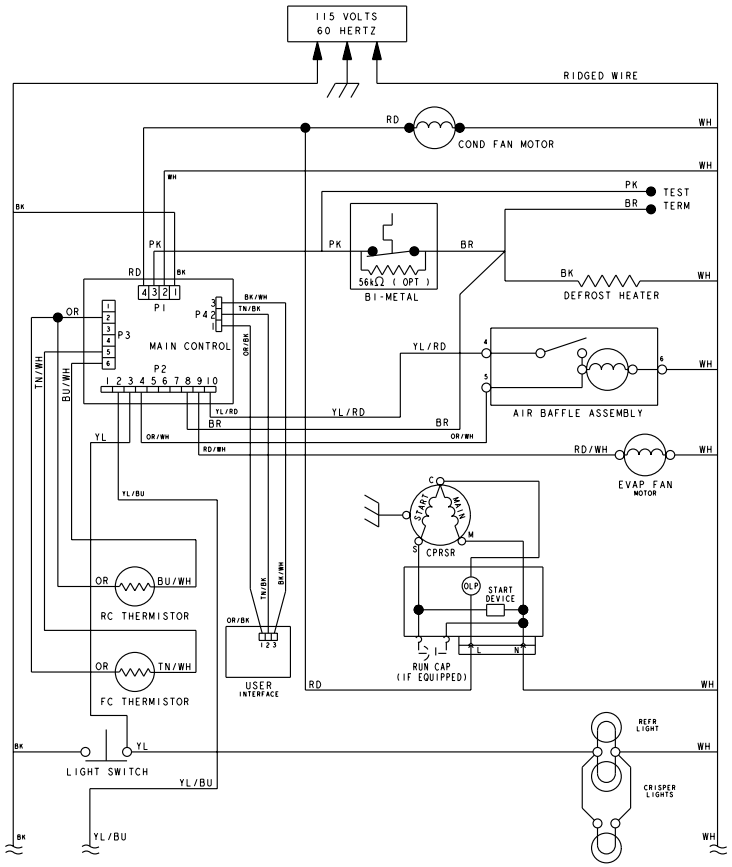

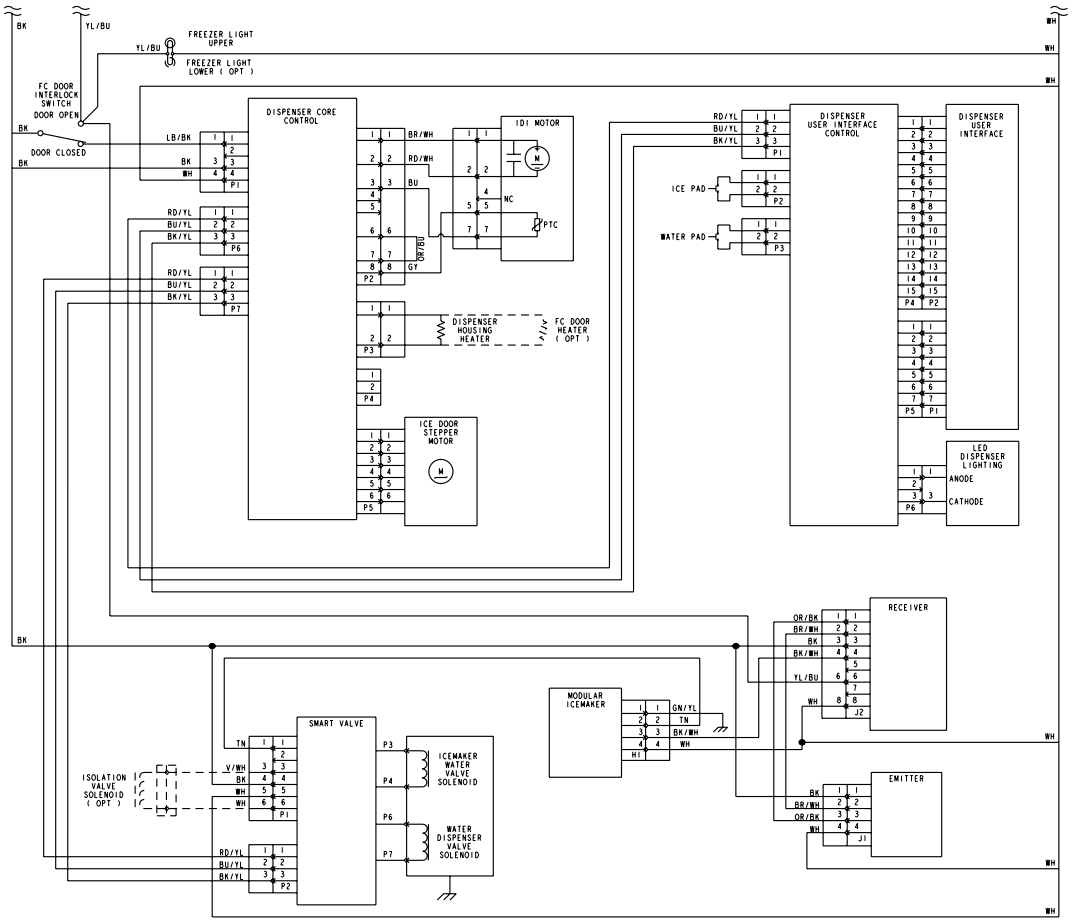

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4,327,557 4,707,401 4,787,216 4,924,680 5,044,704
4,330,310 4,709,556 4,799,362 4,934,541 5,050,777
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