FOR SERVICE TECHNICIAN'S USE ONLY

NOTE: This sheet contains important Technical Service Data

Tech Sheet **Do Not Remove Or Destroy**

⚠ 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.**

No-Load Performance, Controls in Normal Position

	Kw/24 hr/± 0.4			Percent Run Time ± 10%			Cycles/24 hr/± 10			Refrigerator Compartment Average Food Temperature ± 4°F			Freezer Compartment Average Food Temperature ± 4°F		
Ambient °F	70°	90°	110°	70°	90°	110°	70°	90°	110°	70°	90°	110°	70°	90°	110°
	1.15	1.54	-	36	51	-	28	26	-	39	36	-	-2	-1	-

Temperature Relationship Test Chart

	Evaporator Outlet ± 3°F		Evaporator Inlet ± 3°F		Suction Line ± 10°F		Average Total Wattage ± 20%		Suction Pressure ± 3 PSIG		Head Pressure ± 5 PSIG	
Ambient °F	70°	90°	70°	90°	70°	90°	70°	90°	70°	90°	70°	90°
	-12	-10	-13	-11	62	82.5	85	104	-6.1	-5.7	41.3	62.9

Component Specifications

Component	Specifications all parts 115 VAC/60Hz unless noted	
Compressor	BTUH	604/EMD55CLT
	Watt	60 Hz/95 W
	Current lock rotor	11.3 A
	Current full load	2.31 A ± 5%
	Resistance run windings	4.26 Ω ± 8%
	Resistance start windings	5.41 Ω ± 8%@77°F
Relay	TSD2	
Electric Damper Control*	Maximum closing time	8 seconds
	Temperature rating	20°F - 110°F
	RPM	5
Thermistor	Temperature	Resistance
	77°F	10,000 Ω ± 1.8%
	36°F	29,500 Ω ± 1.0%
	0°F	86,300 Ω ± 1.8%
Condenser Motor	Rotation (facing end opposite shaft)	Clockwise
	RPM	1120 RPM
	Watt	3.4 ± 15% W @ 115 VAC
	Current	0.085 A ± @ 115 VAC
Overload/Relay	Ult. trip A @ 158°F (70°C)	2.74 A ± 15%
	Close temperature	142°F ± 16°
	Open temperature	248°F ± 9°
	Short time trip (seconds)	10 seconds ± 5
	Short time trip (A @77°F (25°C))	12 A ± 2 A
Thermostat (Defrost)	Volt	120/240 VAC
	Watt	495 W
	Current	5.8/3.8 A
	Resistance across terminals:	56 K Ω
	Above 42°F ± 5°	Open
	Below 12°F ± 7°	Closed
Evaporator Heater (19 Cu. Ft)	Volt	115 VAC
	Wattage	325 ± 5% W @ 115 VAC
	Resistance	42.9 ± 5% Ω
Evaporator Heater (22 Cu. Ft)	Volt	115 VAC
	Wattage	365 ± 5% W @ 115 VAC
	Resistance	38.2 ± 5% Ω
Evaporator Heater (20, 25 Cu. Ft)	Volt	115 VAC
	Wattage	400 ± 5% W @ 115 VAC
	Resistance	35 ± 5% Ω
Control Board	Volt	120 VAC, 60Hz
	See control board for diagnostics.	
Water Valve, dual (if equipped)	Volt	120 VAC
	Wattage	35 W (Red Coil) 20 W (Yellow Coil)
Light Switch*	Type	SPDT NC
	Volt	125/250 VAC
	Current	8/4 A
Light Switch/Interlock*	Type	SPDT NO/NC
	Volt	125/250 VAC
	Current	8/4 A

*IEC 60079-15 certified for use in explosive atmosphere.

Programming Mode:

NOTE: The Program Code is located on the Serial Plate on this unit after the word Code.

1. Open the Fresh Food door and hold the Fresh Food door light switches closed while pushing the Freezer Temperature DOWN /- Key pad 3 times consecutively.
   NOTE: The 3 keystrokes must be done consecutively and within 10 seconds.
2. Release the Fresh Food door light switch.
3. The control will display P - E to confirm entry into the programming mode.
4. Entry is confirmed by pressing the Freezer Temperature DOWN /- key once more.
   NOTE: All control functions will be turned off (Compressor, Defrost, Evaporator Fan, the damper will remain in its current position).
5. The control will display the current Program Code. This value should be validated with the Program Code printed on the unit serial plate.
   NOTE: If the Program Code is correct, the Programming Mode is exited by closing the Refrigerator door(s).
6. To set the desired Program Code number press the Freezer and Refrigerator UP /+ keys. The corresponding digit will be advanced with each key press.
7. Once the desired Program Code is displayed, press the Freezer Temperature DOWN /- Key until the Program Code begins flashing indicating it has been saved.
   NOTE: If you attempt to enter an invalid Program Code the control will not save the new code, but will flash the old code and this will be displayed. (The unit will NOT run with a Program Code of OO).
8. Once the Program Code has been saved the Programming Mode is exited by closing the Refrigerator door(s). If the new code is incorrect this process should be repeated after closing the Refrigerator door(s).

The Programming mode can be exited at any time by closing the Refrigerator Door(s).

Defrost Operation:

The Control Board adapts the compressor run time between defrosts to achieve optimum defrost intervals by monitoring the length of time the defrost heater is on.

After initial power up, defrost interval is 8 hours compressor run time. Defrost occurs immediately after the 8 hours.

NOTE: Once unit is ready to defrost there is a 4 minute wait time prior to the beginning of the defrost cycle. Optimum defrost is

15 minutes. Each additional minute the defrost thermostat remains closed, 1 hr. is subtracted from the previous defrost interval. Each minute the thermostat opens prior to optimum defrost, it extends the next defrost interval 1 hr. When defrost thermostat opens there is a 4-6 minute drip time before compressor restarts or Control Board will terminate defrost at

25 minutes if defrost thermostat has not opened and will reset the defrost interval to the 8 hr. minimum setting.

4 hours of continuous compressor run resets the next defrost interval to 8 hours and will initiate a defrost, if 8 hours of compressor run time has also occurred.

Forced Defrost Mode:

The forced defrost function is performed using the refrigerator display and keypad. Enter the Forced Defrost Mode by performing the following sequence of events:

1. Hold the refrigerator door light switch closed.
2. Press the Refrigerator Temperature DOWN /- keypad 3 times consecutively.
   NOTE: The 3 keystrokes must be consecutively and within 10 seconds.
3. Release the refrigerator door light switch.
4. The control will display F- d to confirm entry into the Forced Defrost Mode.
5. Entry is confirmed by pressing the Refrigerator Temperature DOWN /- key once more. The unit is off and in the Defrost Mode.
   NOTE: All control functions will be turned off (Compressor, Defrost, Evaporator Fan, the damper will remain in its current position).
6. The control will default to the short run period test.
   NOTE: You can toggle between the **S** Short and **L** Long test mode by pressing the Refrigerator Temperature UP /+ Key. Long Test mode is used for factory test and should not be used in the field.
7. Once the desired mode is displayed, confirm the forced defrost by pressing the Refrigerator Temperature DOWN /- Key once. The defrost will begin immediately and the display will return to a normal operating display with set point values.
8. Close the Refrigerator door(s). You are in the defrost mode.

NOTE: Forced Defrost mode can be exited at any time prior to step 7 by closing the Refrigerator Door(s).

Service Test Mode:

The service test functions are performed using the Refrigerator Temperature Display and Keypad. Enter the Service Test Mode by performing the following sequence of events:

1. Hold the refrigerator door light switch closed.
2. Press the Refrigerator Temperature UP /+ keypad 3 times consecutively.
   NOTE: The 3 keystrokes must be done consecutively and within 10 seconds.
3. Release the refrigerator door light switch.
4. The control will display **S - E** to confirm entry into the service mode.
5. Entry to the Service Menu is confirmed by pressing the Refrigerator UP /+ key once more.
6. The control will display its software version for 3 seconds.
7. Following the software revision display the freezer display will read the first test number in the diagnostic tree. The refrigerator display will be blank.
   NOTE: All control functions will be turned off (Compressor, Defrost, Evaporator Fan, the damper will remain in its current position).
8. You are now in the SERVICES TEST operational mode and may use the diagnostic tests.

The Service Test Mode can be exited at any time by closing the Refrigerator Door(s).

The Freezer Temperature UP /+ DOWN /- keys allow selection of the test to be performed.

Service Test 1 - Defrost Thermostat & Defrost Circuit Test

When selected this test will display the state of the defrost thermostat. In order to perform this test the defrost heater will be energized. The test is activated and deactivated using the Refrigerator Temperature UP /+ key. Once activated, this test must be deactivated to move to another test number.

This test also allows observation and measurement of proper defrost function. You can observe defrost heat and voltages while the test is activated. For Defrost Thermostat (Open), freezer displays 1 and refrigerator displays **O.**

For Defrost Thermostat Shorted (Closed), freezer displays 1 and refrigerator displays **S.**

Service Test 2 - Compressor/Condenser Fan Test

When selected and activated this test will operate the Compressor/Condenser Fan circuit. You should evaluate proper operation of the compressor and condenser fan. The Refrigerator Temperature UP /+ key will toggle between **O / F** (ON & OFF) the compressor drive circuit. The test must be “deactivated” or in the OFF position to move to another test selection. Observe Compresser and Condenser Fan Function, Freezer displays **2** Refrigerator displays 0 (ON) or freezer displays **2** and refrigerator displays **F (OFF)**.

Service Test 3 - Evaporator/Freezer Fan Test

When selected and activated this test will operate the freezer fan. The Refrigerator Temperature UP /+ key will toggle between

O / F (ON & OFF) the fan drive circuit. You will have to inspect the fan for proper function. The test must be “deactivated” or in the OFF position to move to another test selection. Observe Fan Operation, Freezer displays 3 - Refrigerator displays **O** or **F.**

Service Test 4 - Fresh Food Thermistor Test

When selected the refrigerator displays **P**=Pass, **O**=Open, **S**=Short result for a test on the Fresh Food Thermistor circuit. The test is activated and de-activated via the Refrigerator Temperature UP /+ key, and must be de-activated to move to another selection. Freezer displays 4 - Refrigerator will be **P**, **O** or **S**.

Service Test 5 - Freezer Thermistor Test
When selected the refrigerator displays **P**=Pass, **O**=Open, **S**=Short result for a test on the Freezer Thermistor circuit. The test is activated and deactivated via the Refrigerator Temperature UP /+ key, and must be deactivated to move to another test selection. Freezer displays 5 - Refrigerator will be **P, O** or **S**.

Service Test 6 - Open Damper Test
When selected and activated this test will indicate the current position **O / C** (OPEN / CLOSED) of the refrigerator damper. The Refrigerator Temperature UP /+ key will toggle the damper open and closed. You must allow 1 minute for each attempt to change the damper position. You should observe proper damper function. Freezer displays 6 - Refrigerator will be **O** or **C**.

NOTE: Adjustments of Service Test 7 or Service Test 8 will alter the performance of the unit.

Service Test 7 - FF Performance Adjustment

This test will allow adjustment of the control performance points. Each step will incrementally change the Refrigerator performance warmer 1° towards 1 or colder 1° towards 9 as adjusted. The default value is 5. The Refrigerator Temperature UP /+ and DOWN /- keys are used to adjust the Performance Offset value.
WARMER <(1 2 3 4 (5) 6 7 8 9)> COLDER
The last FF Performance Offset value displayed before leaving test 7 will be saved when the refrigerator door(s) is closed.

Service Test 8 - FZ Performance Adjustment

This test will allow the adjustment of the control performance points. Each step will incrementally change the Freezer performance **1° warmer towards (1) or 1° colder towards (9)**. The default value is 5. The Refrigerator Temperature UP /+ and DOWN /- keys are used to adjust the Performance Offset value.

WARMER <(1 2 3 4 (5) 6 7 8 9)> COLDER

The last FZ Performance Offset value displayed before leaving test 8 will be saved when the refrigerator door(s) is closed.

Service Test 9 - Defrost Adjustment

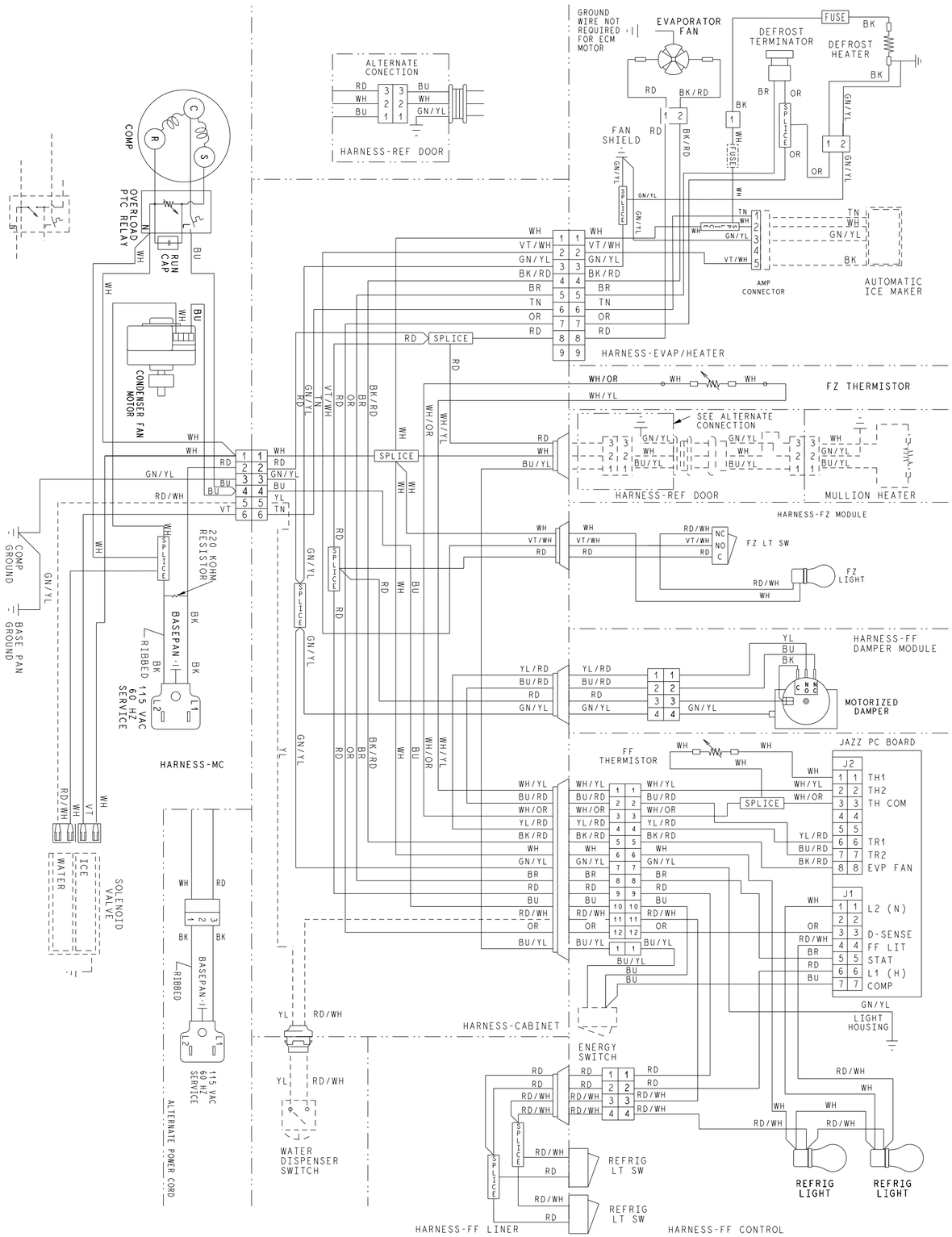
This test will allow the adjustment of the defrost interval from adaptive defrost time to a fixed defrost time. The Refrigerator Temperature UP/+ key will toggle from **(A) Adaptive** to **(F) Fixed**, 6 hour defrost time. Default setting is Freezer displays **9** - Refrigerator displays **A**. For Fixed Defrost Freezer displays **9** - Refrigerator displays **F**.

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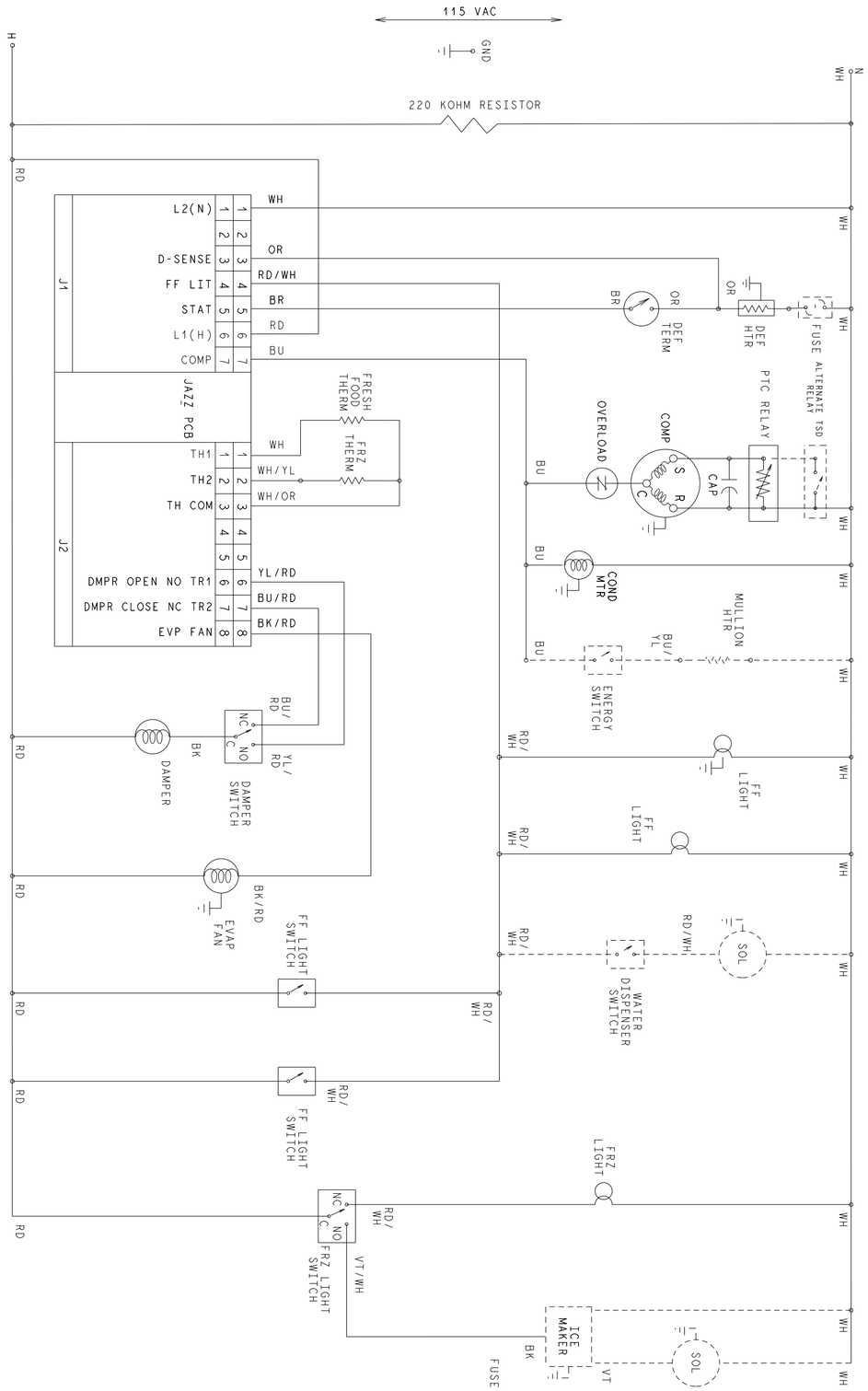
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W11448653C
Assembly : W11312473B

Wiring Diagram



Schematic



W11448653C
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