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KE 640-3-2T Side-by-Side fridgefreezer combination



All safety information must be followed!

To avoid risk of electrical shock that can cause death or severe personal injury, disconnect unit from power before servicing unless testing is required. Discharge capacitors through a 10.000 ohm resistor before handling.

Wires removed during disassembly must be replaced on correct terminals to ensure proper grounding and polarization.

No-Load Performance, Controls in Normal Position

	kW/24 hours $\pm 0,4$			Percent Run Time % $\pm 10\%$			Cycles/24 hours $\pm 25\%$			Refrigerator Compartment Average Food Temperature $\pm 1.5^\circ\text{C}$			Freezer Compartment Average Food Temperature $\pm 1.5^\circ\text{C}$		
	21	32	43	21	32	43	21	32	43	21	32	43	21	32	43
Ambient $^\circ\text{C}$	21	32	43	21	32	43	21	32	43	21	32	43	21	32	43
623 litres	1.2	1.85	2.6	35	55	75	35	55	75	2.7	3.8	5.5	-17.8	-17.8	-19
736 litres	1.2	1.85	2.6	35	55	75	35	55	75	2.7	3.8	5.5	-17.8	-17.8	-19

Temperature Relationship Test Chart

	Evaporator Outlet $\pm 1.5^\circ\text{C}$		Evaporator Inlet $\pm 1.5^\circ\text{C}$		Suction Line $\pm 3^\circ\text{C}$		Average Total Wattage $\pm 10\%$		Suction Pressure ± 2 PSIG		Head Pressure ± 5 PSIG	
	21	32	21	32	21	32	21	32	21	32	21	32
Ambient $^\circ\text{C}$	21	32	21	32	21	32	21	32	21	32	21	32
623 litres	-26	-26	-27	-27	22	37	132	138	6"	0	87	137
736 litres	-26	-26	-27	-27	22	37	132	138	6"	0	87	137

1 Component Specifications

Component	Specifications all parts 220/240V/50Hz unless noted	
Compressor run capacitor	Volt Capacitance	220 VAC 15 μ fd \pm 10%
Compressor	Wattage Current lock rotor Current full load Resistance run windings Resistance start windings	165 watts / 50Hz 11.4 amps \pm 15% 0.75amps \pm 15% 10.21 Ω \pm 15% 17.11 Ω \pm 15%
Electric damper control	Maximum closing time Temperature rating RPM	40 seconds -7°C till -43°C 0.84
Thermistor	Temperature 25°C 2.2°C -17.8°C	Resistance 10 K Ω \pm 1.8% 29.5 K Ω \pm 1.8% 86.3 K Ω \pm 1.8%
Condenser motor	Rotation (facing end opposite shaft) RPM Wattage Current	Clockwise 1300 RPM 8.4 watts \pm 15% / 230watts 0.06 amps \pm 15% / 230watts
Evaporator fan motor	Rotation (facing end opposite shaft) RPM Wattage Note: Fan blade must be fully seated on shaft to achieve proper airflow.	Clockwise 2700 RPM 8.4 watts \pm 15% / 230watts
Overload/Relay	Ult. trip amps / 70°C • Close temperature • Open temperature Short time trip (seconds) Short time trip (amps \ 25°C)	2.67amps \pm 15% 61.1°C \pm 5°C 79.5°C \pm 5°C 10 seconds \pm 5 7.6amps \pm 2amps
Thermostat (Defrost)	Volt Wattage Current Resistance across terminals: Above 5.5°C \pm 1.5 Below -11.2°C \pm 3	2.67amps \pm 15% 475watts 5.8 / 2.9A Open Closed
Evaporator heater	Volt Wattage Resistance	230 VAC 435watts \pm 5% / 230VAC 121.6 \pm 7.5 Ω
Control board	Volt	230VAC, 50Hz (See control board trouble-shooting section)
Auger motor	Rotation (facing end opposite shaft) RPM	Power to blue and white is clockwise Power to orange and white is counterclockwise 17 \pm 3 RPM
Water valve (dual)	Wattage	Brown side 35watts Yellow side 20watts

Light switch	Type Volt Current	SPST NC 125 / 250VAC 8/4amps
Light switch / Interlock	Type Volt Current	SPDT NO/NC 125 / 250VAC 8/4amps
Solenoid (Ice Chute)	Resistance across leads	101 Ω \pm 10%

2 Control Board Troubleshooting



To avoid risk of electrical shock that can cause death or severe personal injury, disconnect unit from power before servicing unless testing is required. Discharge capacitors through a 10,000 ohm resistor before handling.

Wires removed during disassembly must be replaced on correct terminals to ensure proper grounding and polarization.

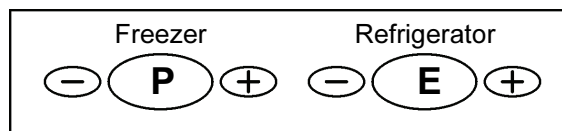
2-1 Programming Mode

Note! The program is located on the serial plate on this unit after the word **Code**.

1. Open the fresh food door and hold the door light switch closed while pushing the freezer temperature Minus key \ominus 3 times consecutively.

Note! The 3 keystrokes must be done consecutively and within 10 seconds.

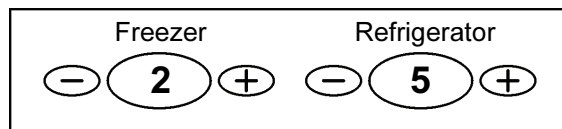
2. Release the fresh food door light switch.
3. The control will display P and E to confirm entry into the programming mode.



4. Entry is confirmed by pressing the freezer temperature Minus Key \ominus 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.

6. To set the desired program code number press the freezer and refrigerator Plus Keys \oplus . The corresponding digit will be advanced with each key press.
7. Once the desired program code is displayed, press the freezer temperature Minus Key \ominus 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 00).

8. Once the program code has been saved the programming mode is exited by closing the refrigerator door. If the new code is incorrect this process should be repeated after closing the refrigerator door.

The programming mode can be exited at any time by closing the refrigerator door.

2-2 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 4 hours compressor run time. Defrost occurs immediately after the 4 hours.

Note! Once the 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 hour. When defrost thermostat opens there is a 4-6 minute drip time before compressor restarts control board will terminate defrost at 25 minutes if defrost thermostat has not opened and will reset the defrost interval to the 8 hours 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.

2-3 Forced Defrost Mode

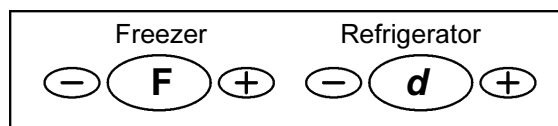
Power up. Refrigeration mode will occur unless both the cold control and defrost terminator are open, in that case the defrost mode will occur for 2 minutes.

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 Minus Key \ominus 3 times consecutively.

Note! The 3 keystrokes must be consecutive and within 10 seconds.

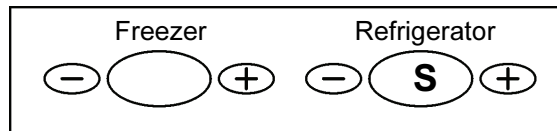
3. Release the refrigerator door light switch.
4. The control will display F and d to confirm entry into the forced defrost mode.



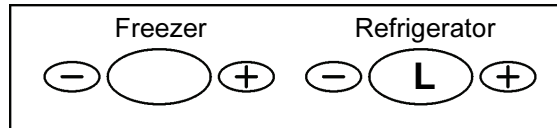
5. Entry is confirmed by pressing the refrigerator temperature Minus Key \ominus once more. The unit is off and in the defrost mode.

Note! All control functions will be turned off (compressor, defrost, evaporator fan, the damper will remain in its current position).

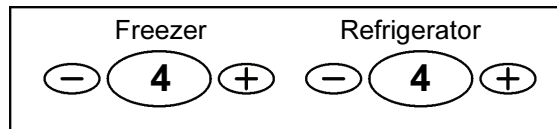
6. The control will default to the short run period test as shown here.



Note! You can toggle between the (S)hort and (L)ong test mode by pressing the refrigerator temperature Plus 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 Minus 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. You are in the defrost mode.

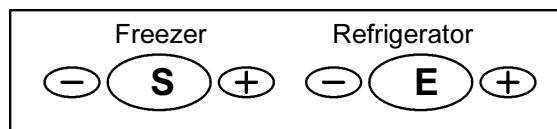
Note! Forced defrost mode can be exited at any time prior step 7 by closing the refrigerator door.

2-4 Service Test Mode

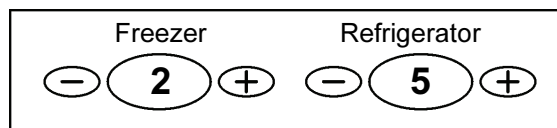
The service test functions are performed using the refrigerator display and keypad. Enter the service test mode by performing the following sequence of events:

1. Hold the refrigerator door light switch closed.
2. Press the refrigerator temperature Plus Key (+) 3 times consecutively.

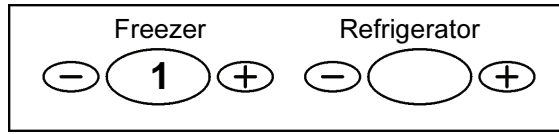
Note! The 3 keystrokes must be done consecutively and within 10 seconds.
3. Release the refrigerator door light switch.
4. The control will display S and E to confirm entry into the service mode.



5. Entry to the service menu is confirmed by pressing the refrigerator Plus Key (+) once more.
6. The control will display its software version for 3 seconds.



- 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 functions will be turned off (compressor, defrost, evaporator fan, the damper will remain its current position).

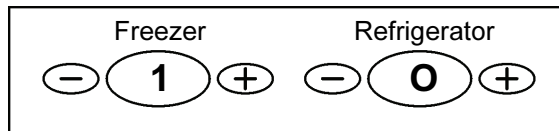
- You are now in the SERVICE TEST operational mode and may use the diagnostic test.

Note! The service test mode can be exited at any time by closing the refrigerator door.

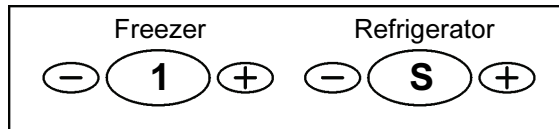
2-5 Test 1: Defrost Thermostat & Defrost Circuit Test

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 Plus Key (+). Once activated, this test must be de-activated to move another test number. The freezer temperature Plus Key (+) / Minus Key (-) allow selection of the test to be performed.

- This test also allows observation and measurement of proper defrost function. You can observe defrost heat and voltages while the test is activated.



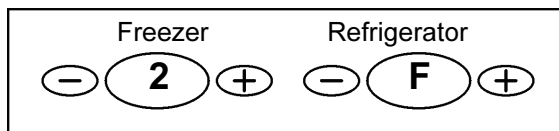
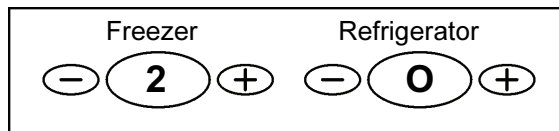
DEFROST THERMOSTAT OPEN



DEFROST THERMOSTAT SHORTED (CLOSED)

2-6 Test 2: Compressor / Condensor Fan test

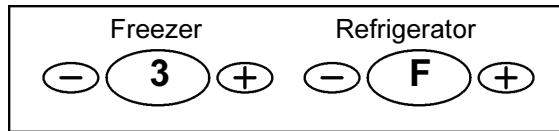
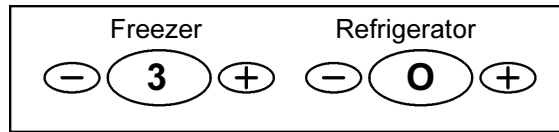
When selected and activated this test will operate the compressor/condenser fan circuit. You should evaluate proper operation of the compressor and condenser fan. The refrigerator temperature Plus Key (+) will toggle between "O" / "F" (ON/OFF) the compressor drive circuit. The test must be "deactivated" or in the OFF position to move another test selection.



OBSERVE COMPRESSOR & CONDENSER FAN FUNCTION

2-7 Test 3: Evaporator/Freezer Fan Test

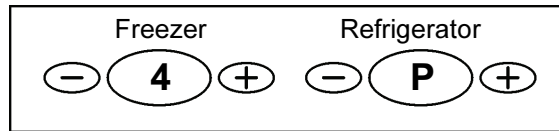
When selected and activated this test will operate the freezer fan. The refrigerator Plus Key (+) will toggle between "O" / "F" (ON/OFF) the fan drive circuit. You will have to inspect the fan for proper function. the test must be "deactivated" or in the OFF position to move to another test section.



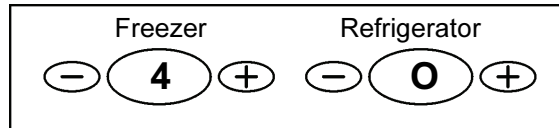
OBSERVE FAN OPERATION

2-8 Test 4: Fresh Food Thermistor Test

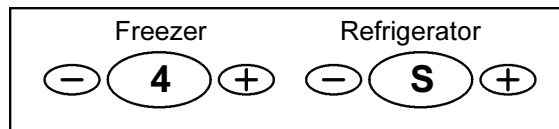
When selected and activated this test will display pass, open, short result for a test on the fresh food thermistor circuit as show below. The test is activated and de-activated via the refrigerator temperature Plus Key (+), and must be deactivated to move to another test selection.



PASS RESULT



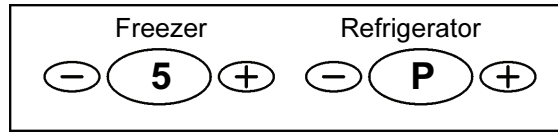
OPEN RESULT



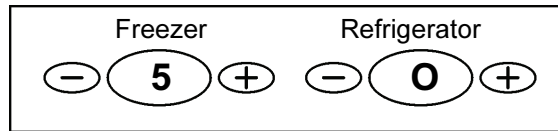
SHORT RESULT

2-9 Test 5: Freezer Thermistor Test

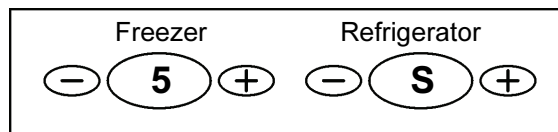
When selected this test will display pass, open, short result for a test on the freezer thermistor circuit as show below. The test is activated and deactivated via refrigerator temperature Plus Key \oplus , and must be deactivated to move to another test selection.



PASS RESULT



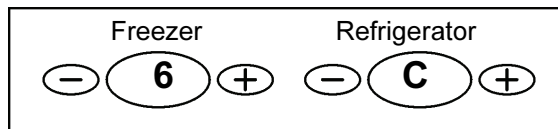
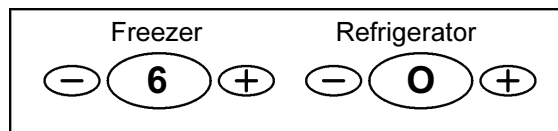
OPEN RESULT



SHORT RESULT

2-10 Test 6: Open Damper Test

When selected this test will indicate the current position "O" / "C" (OPEN/ CLOSED) of the refrigerator damper. The Refrigerator temperature Plus Key \oplus 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.



OBSERVE DAMPER FUNCTION



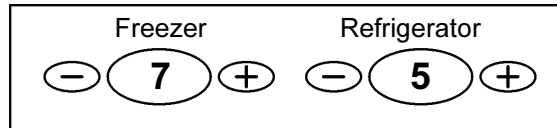
CAUTION!

Adjustments of service test 7 or 8 will alter the performance of the unit.

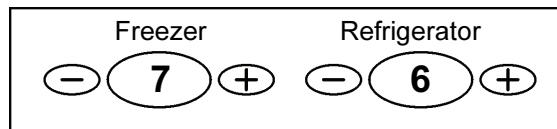
2-11 Test 7: Adjustment of refrigerating set

This test will allow adjustment of the control performance points. Each step will incrementally change the refrigerator performance warmer (towards 1) or colder (towards 9) as adjusted. The default value is 5. The refrigerator temperature keys (+) and (-) are used to adjust the performance offset value.

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



DEFAULT



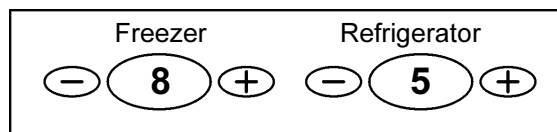
COLDER

The last performance offset value displayed before leaving test 7 will be saved when the refrigerator door is closed.

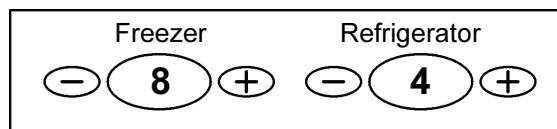
2-12 Test 8: Adjustment of freezing set

This test will allow the adjustment of the control performance points. Each step will incrementally change the freezer performance warmer (towards 1) or colder (towards 9) as adjusted. The default value is 5. The refrigerator keys (+) and (-) are used to adjust the performance offset value.

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



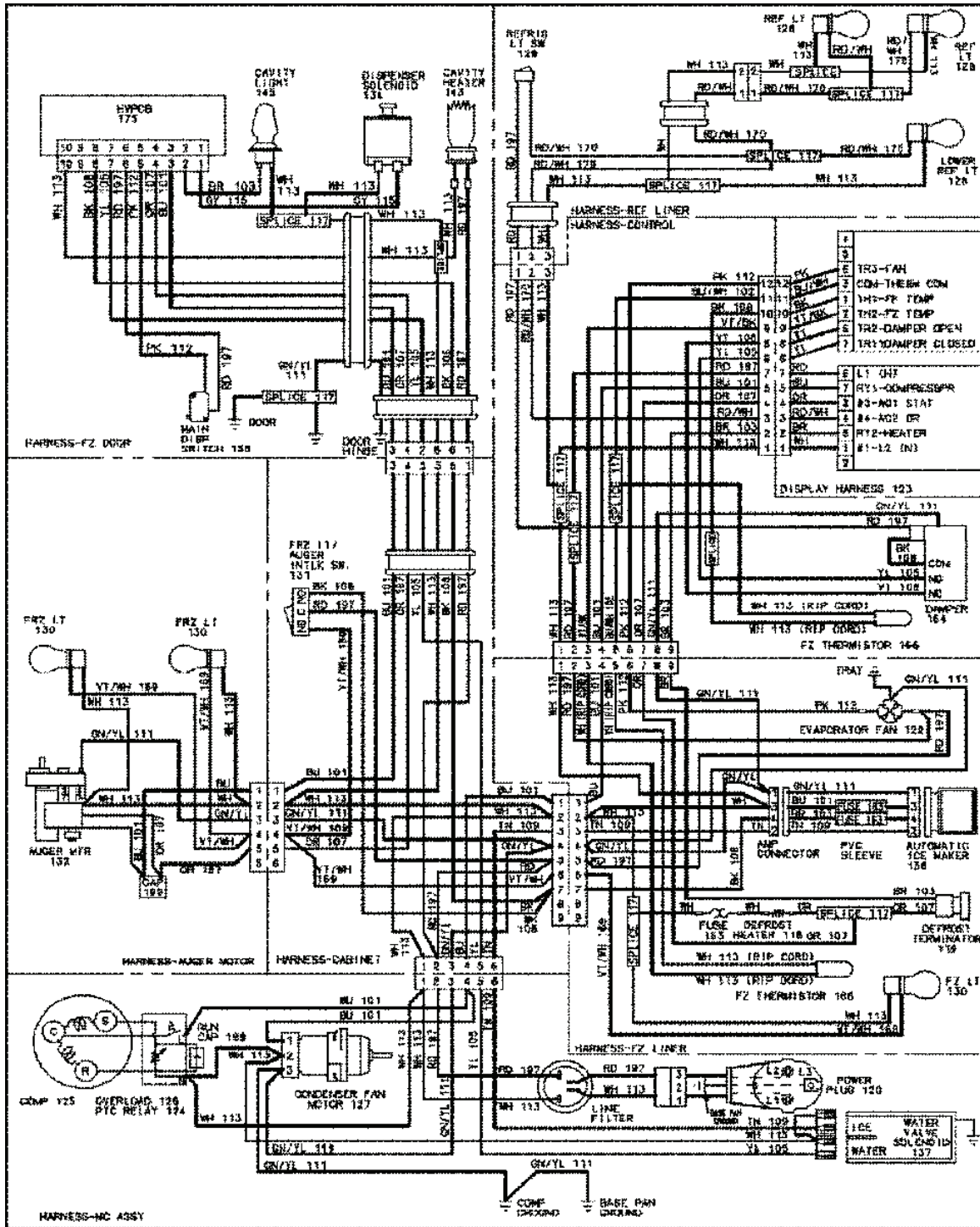
DEFAULT



WARMER

The last performance offset value displayed before leaving test 8 will be saved when the refrigerator door is closed.

3 Circuit diagram



4 Wiring diagram

