# KELVINATOR COMMERCIAL

# COMMERCIAL FREEZER/REFRIGERATOR REACH-IN REFRIGERATOR AND FREEZER

Refrigerator Model: KCBM23R, KCBM48R, KCBM72R

Freezer Model: KCBM23F, KCBM48F

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## READ AND SAVE THESE INSTRUCTIONS 242230200 (January 2012)

# **Product Registration**



These instructions include information which is intended to assure the operator of correct installation, operation and service. Before attempting installation, adjustment or maintenance, be certain of the following:

- That you have read and fully understand the instructions.
- That you have all the tools required and are trained to use them.
- That you have met all installation and usage restrictions and are familiar with the functions and operations of the unit.
- ✤ That you follow all instructions exactly as given.

All the fittings, measurements, recommendations and procedures are significant. Substitutions and approximations must be avoided. Improper handling, maintenance, installation and adjustment, or service attempted by anyone other than a qualified technician, may void the future warranty claims and cause damage to the unit and/or result in injury to the operator and/or bystanders.

#### **Record your Model and Serial Numbers**

Record the model number and serial number of this appliance in the space provided below (the serial plate is located inside the cabinet compartment).

Model No.	
Serial No.	
Installation Date	
Invoice Date	
Start-up Date	(=1
relephone for Service	<u></u>

### Register Your Product

The self-addressed **PRODUCT REGISTRATION CARD** (shown above) should be filled in completely, signed and returned to the address provided.

# **SAFETY / WARNING**

Please pay close attention to the safety notices in this section. Disregarding these notices may lead to serious injury and/or damage to the unit.

# ATTENTION

- To minimize shock and fire hazards, be sure not to overload outlet. Please designate one outlet for your unit.
- Do not use extension cords.
- Do not put your hands under the unit when the unit is required to be moved.
- When the unit is not in use for a long period of time, please unplug the unit from the outlet.
- After unplugging the unit, wait at least 10 minutes before re-plugging it. Failure to do so could cause damage to the compressor.

# UNPLUG CORD

- To minimize shock and fire hazards, please do not plug or unplug the cord with wet hands.
- During maintenance and cleaning, please unplug the unit.

## PROPER GROUNDONG REQUIRED

 To minimize shock and fire hazards, make sure that the unit is properly grounded.



# PROHIBTION

- Do not attempt to remove or repair any component unless instructed by factory.
- Make sure that the unit is not resting on or against the electrical cord and the plug.
- Do not store any flammable and explosive gas or liquids inside the unit.
- Do not attempt to alter or tamper with the electrical cord.

# INSTALLATION

# IMPORTANT!!! PLEASE READ BEFORE INSTALLATION

- The refrigeration system operates most efficiently when installed in an area with cool, dry air circulation.
- There must be at least 6 inches of clearance on both sides and the back of the cabinet.
- Select a location away from the heat and moisture generating equipment such as stoves, ovens, etc.

- ✤ Avoid direct sun rays.
- Make sure all accessories are installed (i.e shelves, shelf clips, casters) before plugging the unit in.
- Please read through the manual in its entirety.

# **CABINET LOCATION GUIDELINES**

- Install the unit on strong and leveled surfaces
  - Unit may make unpleasant noises if surface is uneven
  - Unit may malfunction if surface is uneven
- Install the unit in an indoor, well-ventilated area
  - Unit performs more efficiently in a wellventilated area
  - For best performance, please maintain clearance of 4" on the back of the unit.
  - Outdoor use may cause decreased efficiency and damage to the unit.
- Avoid installation in a high humidity and/or dusty area
  - Humidity could cause unit to rust and decrease efficiency of the unit
  - Dust collected on the condenser coil will cause unit to malfunction. Clean the condenser at least once a month with a brush or a clean cloth.
- Select a location away from heat and moisture-generating equipment
  - High ambient temperatures will cause the compressor to overwork, leading to higher energy bills and gradual breakdown of the unit

# ELECTRICAL

Please ensure that the required voltage of the compressor is being supplied at all times. Low or high voltage can detrimentally affect the refrigeration unit. All units should be plugged into a grounded and properly sized electrical outlet with appropriate overcurrent protection. Please refer to the electrical requirement on the nameplate. Please make sure that your unit has its own dedicated outlet. Do not use an extension cord.

The temperature controls are preset at the factory to maintain an average temperature of 38 F in refrigerators. To maintain a different temperature, simply adjust the control knob located inside the unit. Temperature ranges from 7 (coldest) to 1 (warmest). Setting the temperature control to the coldest setting may cause the evaporator coil to freeze and ice up. This will eventually make the cabinet become warm, which is not recommended.

# **Appliance Start-up**

Once the appliance has been located in its permanent location and the proper power and grounding has been provided, the following items must be checked or completed:

#### **Cool Down Period**

For safe food storage, allow 24 hours for the appliance to cool down completely before loading with food. The appliance will run continuously for the first several hours. Do not place any food in the appliance until after the first 24 hours of operation.

#### **Thermostat Setting**

The appliance is shipped from the factory with the thermostat set at about the midpoint of the operating range. Adjustments colder or warmer can be made after the appliance has been running for at least 8 hours. Allow at least 8 hours for temperature stabilization before readjusting the thermostat.

#### **Defrost Setting**

The appliance is designed to defrost automatically every 12 hours. To set the time of defrost, wait until the desired time to defrost. With the notch on the timer knob aligned with the line on the bracket (Fig. A), turn the defrost timer knob clockwise slowly. The timer will click several times, then once loudly, at which point the defrost cycle begins. The timer knob will advance through the defrost cycle, then click loudly at the end of the cycle (Fig. B). The appliance will defrost automatically every 12 hours after the first defrost cycle.

# **Routine Maintenance**

#### **Cleaning the Interior**

Be sure to turn the temperature control to "OFF" and unplug the electrical cord. Wash the inside surface of the storage area with warm water and baking soda solution (about one tablespoon of baking soda per quart of warm water). Rinse thoroughly with clean, warm water and wipe dry.

#### **Cleaning the Exterior**

Wipe the cabinet exterior occasionally with a cloth dampened in mild detergent and water. Rinse and wipe dry with a soft cloth. Do not use razor blades or other sharp instruments that can scratch the appliance surface when removing adhesive labels. Any glue left from the tape can be removed with a mixture of warm water and mild detergent or touch the residue with the sticky side of tape already removed. **DO NOT REMOVE THE SERIAL PLATE**.

#### **Condensate Pan**

Some models have a condensate pan in a fixed position located behind the toe grill. This must not be removed from under the cabinet. If the pan is removed, condensate will drop onto the floor.

#### **POWER FAILURE**

**DO NOT open the appliance lid unnecessarily if the appliance is off for several hours.** If a power failure occurs, pack seven or eight pounds of dry ice into the appliance every 24 hours. Look in the Yellow Pages under "Dry Ice", "Dairies", or "Ice Cream Manufacturers" for local dry ice suppliers. Always wear gloves and use caution when handling dry ice.

# Operation

- Run the unit for at least 24 hours before loading.
- When loading the unit:
  - Be careful not to block the air duct located at the back and the fan on the ceiling of the unit with contents.
  - Blocking the air flow may cause decrease in performance.

- For the best performance, maintain at least 4 inches of clearance in between the contents and the air duct.
- Set the shelves that come with the unit to fit your needs.
- Temperature controller:
  - The controller is located at the right, front corner of the ceiling.
  - Temperature is set as "4" at default.
- Do not leave the unit door open for a long period of time. For the most efficient operation, close the door immediately after use.

# **Energy Conservation Measures**

This appliance is designed for efficiency with heavy foam insulation. However, there are things that the user can do to maintain the appliance in operating condition.

- Do not operate the appliance any colder than necessary to maintain safe, product storage temperatures.
- Make sure the appliance is located to prevent direct exposure to sunlight, air ducts, etc.
- Keep the door closed except for normal use.
   Inspect the door often to see that it self-closes and the gaskets are in good condition.
- Do not overstock the product in the cabinet because it will block the normal air flow.
- Have at least annual inspections by a qualified service company to see that the refrigerant charge is correct.

This appliance operates more efficiently in a cooler ambient than in a hot ambient. Try to maintain an ambient below 80°F (27°C) and 65% RH (Relative Humidity) for maximum efficiency.

## Periods of Non-use and Moving Tips

Leave the appliance operating during periods of non-use of less than three (3) weeks.

## Long Periods of Non-use

If the appliance will not be used for several months:

- Remove all food and unplug the power cord.
- Clean and dry the interior thoroughly.
- Leave the appliance door open slightly, blocking it open if necessary, to prevent odor and mold growth.

## Moving

When moving the appliance, follow these guidelines to prevent damage:

- Disconnect the power cord plug from the wall outlet.
- Remove foods, then defrost, and clean the appliance.
- Secure all loose items such as base panel, baskets, and shelves by taping them securely in place to prevent damage.
- In the moving vehicle, secure appliance in an upright position to prevent movement. Also, protect outside of appliance with a blanket or similar item.

# **Temperature Controller Manual**



## **Feature of Function**

This temperature controller adopt world wellknown brand SCM. It is reliable and durable. The relay is exclusively used for compressor loads which make it safer. The way of controlling temperature is return type and easy to operate.

Mine-sized and integrated intelligent control, it is applicable to the compressor of one H.P. Suit for a ventilated freezer.

## **Main functions**

- Temperature display (Celsius/Fahrenheit degrees)
- Temperature control
- Evaporator fan control (parallel with compressor or continuous running changes)
- Manual, automatic defrost by electric heater
- Time or temperature setting to end defrost
- The cold-room sensor temperature can lock during defrost
- Parameter locking
- The factor default resumption
- Offset on sensor temperature
- Self testing

## Specification

- Power supple: 12V ~, 50/60Hz; Power consumption: < 5W</li>
- Range of temperature displayed:- 45~45°C (-40~120°F)
- Range of set temperature: -45~45°C (-40~120°F)
- Temperature sensor: NTC, double sensor.

- Output contact capacity for compressor: N.O. 20A/250V~; 50/60Hz. The inrush current for compressor control may be 20A instead of 8A during the period of 1s at start. (applicable to 1 H.P. compressor if more connected to AC contactor)
- Output contact capacity for Evap. Fan: N.O. 20a/250V~; 50/60Hz.
- Main controller panel dimension 78x35x76mm. Mounting dimension: 71:29mm

## Indicator

- Refrigerant: When the refrigerant LED is on, the compressor is working.
- Constant temperature: When the refrigerant LED is off, the compressor has stopped.
- Delay: When the refrigerant LED flashes, the compressor stops.
- Defrost: When the defrost LED is on, the compressor and fan stop and the heater works.
- Evaporator fan: When the fan LED is on, the fan is working.

## **Front Panel Operation**

- Set temperature: Press I button, the set temperature is displayed; Press or button to modify and store the displayed value, press I button to exit the adjustment and display the cold-room temperature.
- Manual start/stop defrost: Press 
   button and hold for 6 seconds to defrost or stop defrost.
- Display the evaporator temperature: Press button and hold for 6 seconds. The evaporator temperature will be displayed. After 10 seconds, the cold-room temperature is resumed to be displayed.

## **Parameter Setup**

 Indication for setting parameter: The parameter can be adjusted only after correct PA has been entered. All parameters can only be checked, not adjusted; however, it is available for temperature controlling.

- Setting Parameter: Press Infor 6 seconds. Start parameter menu and PA (menu password) flashing. Enter the password by pressing △ or ○. Press Information again to choose the parameter. Press △ or then the parameter can be displayed and adjusted. After the adjustment, if no button has been pressed after 30 seconds, the system will restore the new parameter and go back to normal operations.
- Changing menu password (CPA): The CPA can be checked or changed only after the correct menu password has been entered. When it shows CPA, press △ or ☑ then the present password is displayed and can be changed to a new password. Press to confirm the new password. (Please memorize the new password or you can never adjust other parameters.)
- The factory default resumption: Press ☑ button for 1 second and then press △ button simultaneously for 6 seconds. The indicator will flash and then all parameters will be restored to back to the factory defaults. After 10 seconds, it will return to normal operation.

### **Parameter details**

- Temperature controlling: After turning on for the delay time (e4), the compressor starts operating when cold-room temperature ≥ (set temperature +hysteresis), and will off when cold-room temperature ≤ set temperature. To protect the compressor it can be re-started, unless the time when the compressor stops every time is longer than the delay time (E4).
- Evaporator fan operating function:
  F5 is set "00", parallel with compressor.
  F5 is set "01", continuous running (except defrost).
- Electric heater defrost: evaporator sensor temperature < defrost termination temperature</li>

(F3), the heater will switch on and the defrost will start.

After a defrost interval, it begins the automatic defrost function. e.g.: When the evaporator sensor temperature < defrost termination temperature (F3), the defrost LED will turn on, the compressor and fan will stop, and the heater will start. When the evaporator sensor temperature  $\geq$  defrost termination temperature or defrost duration (F1) ends, the heater and defrost will stop after the draining time (F6). The cold-room temperature  $\geq$ (set temperature + hysteresis), the compressor will starts and go back to refrigeration status. When the defrost interval time (f2) is set"00", the function of the automatics defrost will be cancelled. Temperature displayed when defrost: If F4 is set "01", it displays the temperature when the defrost starts. After defrost, It will continue to display this temp for 20 min and the defrost LED will begin flashing. It will then come back to normal temperature.

 Controlling the evaporator fan after defrost: Controlling by time: When F7 is set "00" after defrost, the compressor works for F8 and then the fan restarts. After defrost and the first working mode, the fan will follow the mode of F5.

Controlling by temperature: When F7 is set "01" after defrost, when the evaporator temperature reaches F9, the fan restarts. After defrost and the first working mode, the fan will follow the mode of F5.

 Sensor failure work mode: If the cold-room sensor is short circuited or overheated, "HH" will be displayed. If the cold-room sensor is in an open circuit or the temperature is too low then "LL" is displayed. At that time the compressor will automatically go to a cycle of 45 min on and 15 min off. When the evaporator sensor fails or surpasses the displayed range, the defrost termination will be just controlled by the defrost duration.



Note:

- Conductor of at least 0.75mm<sup>2</sup> shall be used for wiring of defrost and evaporator fan control load.
- Conductor of at least 1.0mm<sup>2</sup> shall be used for wiring of compressor control load.
- The inrush current for compressor may be 20A instead of 8A during the 1 second period at the start.

## Notes for Installation

- Before wiring, please read the instructions carefully and be sure to understand the function of every contact so that you can make correct wire connections. Control loads cannot exceed the ratings.
- The temperature controller cannot be installed in an area where water flows, a dirty area, an area of high moisture, or in an area with high temperatures. Please pay attention to EMC problems and prevent the

temperature controller from collisions with other objects.

- The sensor cable leads must be kept away from the main supply in order to avoid high frequency noise. 0.75-1.5mm<sup>2</sup> flexible cords should be used for wiring control load terminals.
- The evaporator sensor must be installed between the fins of the evaporator in the area where ice is the thickest. Do not place the evaporator sensor near the electric heater.
- If the temperature controller is disturbed, please cut off the power supply and reset. The software of this product belongs to grade A, and it does not apply to safe control.
- Please don't dismantle the controller. If you need repairing or you have any problems in using the controller, please do not hesitate to contact our company.

TROUBLESHOOTING GUIDE	Before calling for service, review this list. It may save you time and expense. This list includes common occurrences that are not the result of defective workmanship or materials in this appliance.		
PROBLEM	CAUSE	CORRECTION	
APPLIANCE OPERATION			
Appliance does not run.	* Appliance is plugged into a circuit that has a ground fault	* Use another circuit. If you are unsure about the outlet, have it checked by a certified technician.	
	* Temperature control is in the "OFF" position.	* See Thermostat Setting.	
	* Appliance may not be plugged in, or plug may be loose.	* Ensure plug is tightly pushed into outlet.	
	* House fuse blown or tripped circuit breaker.	* Check/replace fuse with a 15 amp time delay fuse. Reset circuit breaker.	
	* Power outage	* Check house lights. Call local Electric Company.	
Appliance runs too much or too long.	* Room or outside weather is hot.	* It's normal for the appliance to work harder under these conditions.	
	* Appliance has recently been disconnected for a period of time.	* It takes 24 hours for the appliance to cool down completely.	
	* Large amount of warm or hot food have been stored recently.	* Warm food will cause appliance to run more until the desired temperature is reached.	
	* Door is opened too frequently or kept open too long.	* Warm air entering the appliance causes it to run more. Open the door less often.	
	* Appliance door may be slightly	* See "Door Problems".	
	* Temperature control is set too low.	* Turn control knob to a warmer setting. Allow several hours for the temperature to stabilize.	
	* Appliance gaskets are dirty, worn, cracked or poorly fitted.	* Clean or change gasket. Leaks in the lid seal will cause appliance to run longer in order to maintain desired temperature.	
Interior appliance temperature is too cold.	* Temperature control is set too low.	* Turn control knob to a warmer setting. Allow several hours for the temperature to stabilize.	
Interior appliance temperature is too warm.	* Temperature control is set too warm.	* Turn control knob to a colder setting. Allow several hours for the temperature to stabilize.	
	* Door is opened too frequently or kept open too long.	* Warm air entering the appliance causes it to run more. Open the door less often.	
	* Appliance door may be slightly	* See "Door Problems".	
	* Large amount of warm or hot food have been stored recently.	* Wait until the appliance has had a chance to reach its selected temperature.	
	* Appliance has recently been disconnected for a period of time.	* Appliance requires 24 hours to cool down completely.	
Appliance external surface temperature is warm.	* The external appliance walls can be as much as 30°F warmer than room temperature.	* This is normal while the compressor works to transfer heat from inside the appliance cabinet.	
SOUND AND NOISE			
Louder sound levels whenever appliance is on.	* Modern appliances have increased storage capacity and more stable temperatures. They require heavy duty compressors.	* This is normal. When the surrounding noise level is low, you might hear the compressor running while it cools the interior.	
Louder sound levels when compressor comes on.	* Appliance operates at higher pressures during the start of the ON cycle.	* This is normal. Sound will level off or disappear as appliance continues to run.	
Popping or cracking sound when compressor comes on.	* Metal parts undergo expansion and contraction, as in hot water pipes.	* This is normal. Sound will level off or disappear as appliance continues to run.	

PROBLEM	CAUSE	CORRECTION		
SOUND AND NOISE (Cont.)				
Bubbling or gurgling sound	* Refrigerant (used to cool appliance) is circulating	* This is normal.		
Vibrating or rattling noise.	* Appliance is not level. It rocks on the floor when it is moved	* Level the appliance by putting wood or metal shims under part of the appliance.		
	* Floor is uneven or weak.	* Ensure floor can adequately support appliance. Level the appliance by putting wood or metal shims under part of the appliance.		
	* Appliance is touching the wall.	* Re-level appliance or move appliance slightly.		
WATER / MOISTURE / FROST INSIDE APPLIANCE				
Moisture forms on inside appliance walls.	* Weather is hot and humid, which increases internal rate of frost build-up.	* This is normal.		
	* Door is slightly open.	* See "Door Problems".		
	* Door is kept open too long or is opened too frequently.	* Open the door less often.		
ODOR IN APPLIANCE				
Odors in appliance.	* Interior needs to be cleaned.	* Clean interior with sponge, warm water, and baking soda.		
	* Foods with strong odors are in the appliance.	* Cover the food tightly.		
DOOR PROBLEMS				
Door will not close.	* Appliance is not level. It rocks on the floor when it is moved slightly.	* Level the appliance by putting wood or metal shims under part of the appliance.		
	* Floor is uneven or weak.	* Ensure floor can adequately support appliance. Level the appliance by putting wood or metal shims under part of the appliance.		
LIGHTING PROBLEMS				
Light bulb is not on.	* The fluorescent lamp or light bulb is burned out.	* See "Fluorescent Lamp" or "Interior Light" on Features Section.		
	* No electric current is reaching the appliance.	* See "appliance Does Not Run".		

# **Kelvinator Commercial Appliance Warranty Information**

Your appliance is covered by a two (2) year limited warranty. For two (2) years from your original date of purchase, Electrolux will pay all costs, except as set forth below, for repairing or replacing any parts of this appliance that prove to be defective in materials or workmanship when such appliance is installed, used, and maintained in accordance with the provided instructions. For appliances that are manufactured with a compressor, an additional three (3) year part warranty is provided for the compressor only.

#### Exclusions

#### This warranty does not cover the following:

- 1. Products where the original serial number has been removed, altered or cannot be readily determined.
- 2. Normal wear and tear and gradual deterioration.
- 3. Product that has been transferred from its original owner to another party or moved outside the USA or Canada.
- 4. Rust on the interior or exterior of the unit.
- 5. Products purchased "as-is".
- 6. Food loss due to any refrigerator or freezer failures.
- 7. Damage caused at any time during shipment.
- 8. Service calls which do not involve malfunction or defects in materials or workmanship, or for appliances used other than in accordance with the provided instructions.
- 9. Service calls to correct the installation of your appliance or to instruct you how to use your appliance.
- 10. Expenses for making the appliance accessible for servicing, such as removal of trim, cupboards, shelves, etc., which are not a part of the appliance when it is shipped from the factory.
- 11. Service calls to replace appliance light bulbs, air filters, water filters, and other consumables, or knobs, handles, and other cosmetic parts.
- 12. Surcharges including, but not limited to, any after hours, weekend, or holiday service calls, tolls, ferry trip charges, or mileage expense for service calls to remote areas, including the state of Alaska.
- 13. Damages to the finish of the appliance and/or the appliance location that are incurred during installation, including but not limited to floors, cabinets, walls, etc.
- 14. Damages caused by: services performed by unauthorized service companies; use of parts other than genuine Electrolux parts or parts obtained from persons other than authorized service companies; or external causes such as abuse, misuse, inadequate power supply, accidents, fires, or acts of God.
- 15. For appliances operated by a concessionaire or vendor in a trailer or other motorized vehicle, or at varying locations, your appliance is covered by a one (1) year, limited parts and labor warranty. For appliances that are manufactured with a compressor, an additional four (4) year part warranty is provided for the compressor only.

#### DISCLAIMER OF IMPLIED WARRANTIES; LIMITATION OF REMEDIES

CUSTOMER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY SHALL BE PRODUCT REPAIR OR REPLACEMENT AS PROVIDED HEREIN. CLAIMS BASED ON IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MER-CHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE (1) YEAR OR THE SHORTEST PERIOD ALLOWED BY LAW, BUT NOT LESS THAN ONE (1) YEAR. ELECTROLUX SHALL NOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SUCH AS PROPERTY DAMAGE AND INCIDENTAL EXPENSES RESULTING FROM ANY BREACH OF THIS WRITTEN LIMITED WARRANTY OR ANY IMPLIED WARRANTY. SOME STATES AND PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, SO THESE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WRITTEN WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

If You Need Service Keep your receipt, delivery slip, or some other appropriate payment record to establish the warranty period should service be required. If service is performed, it is in your best interest to obtain and keep all receipts. Service under this warranty must be obtained by contacting Electrolux at the addresses or phone numbers below.

This warranty only applies in the USA and Canada. In the USA, your appliance is warranted by Electrolux Major Appliances North America, a division of Electrolux Home Products, Inc. In Canada, your appliance is warranted by Electrolux Canada Corp. Electrolux authorizes no person to change or add to any obligations under this warranty. Obligations for service and parts under this warranty must be performed by Electrolux or an authorized service company. Product features or specifications as described or illustrated are subject to change without notice.

297396100 (June 2011)

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