# Service Manual

<table>
<thead>
<tr>
<th>Applicable models</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE-BD70CM-SQ</td>
<td>22031010000028</td>
</tr>
</tbody>
</table>

(The picture is only for reference, and specific appearance and configuration are subject to the real product)
Important Safety Notice

The Maintenance Manual is only for the use of maintenance personnel with certain experience and background in electrical, electronic and mechanical field.

Any attempt to repair main devices may lead to personal injury and property loss. Manufacturers or distributors are not responsible for the content of the Manual and interpretation thereof.
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1. Safety Warning Code

1.1 Warning for operation safety

**Important Safety Instructions**

---

**CAUTION**

**RISK OF ELECTRIC SHOCK**

**DO NOT OPEN**

---

This symbol indicates that dangerous voltage constituting a risk of electric shock is present within your freezer.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying your freezer.

---

**WARNING**

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this appliance near water.
6. Clean only with a damp cloth.
7. Do not block any ventilation openings.
8. Install in accordance with the manufacturer's instructions.
9. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus that produce heat.
10. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
11. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the appliance.
12. Do not attempt to modify or extend the power cord of this appliance.
13. Unplug this appliance during lightning storms or when it will not be used for long periods of time.
14. Make sure that the available AC power matches the voltage requirements of this appliance.
15 Do not handle the plug with wet hands. This could result in an electric shock.

16 Unplug the power cord by holding the plug, never by pulling the cord.

17 Do not turn the appliance on or off by plugging or unplugging the power cord.

18 Refer all servicing to qualified service personnel. Servicing is required when the appliance has been damaged in any way, such as the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the appliance, the appliance has been exposed to rain or moisture, does not operate normally, or has been dropped.

19 To reduce the risk of fire or electric shock, do not expose this appliance to rain, moisture, dripping, or splashing, and no objects filled with liquids should be placed on top of it.

20 Do not use extension cords or ungrounded (two prong) adapters.

21 This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

22 Children should be supervised to ensure that they do not play with the appliance.

23 If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified person, in order to avoid a hazard.

24 Take off the doors and leave the shelves in place so that children may not easily climb inside.

**WARNING**

Electric Shock Hazard

Failure to follow these instructions can result in electric shock, fire, or death.

1 **WARNING**—Keep ventilation openings, in both the freezer and the built-in structure, clear of obstruction.

2 **WARNING**—Do not touch the interior of the freezer with wet hands. This could result in frost bite.

3 **WARNING**—Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

4 **WARNING**—Do not damage the refrigerant circuit.
5 **WARNING**—Do not damage the refrigerant tubing when handling, moving, or using the freezer.

6 **WARNING—DANGER**—Never allow children to play with, operate, or crawl inside the freezer.
   Risk of child entrapment. Before you throw away your old freezer:
   1) Take off the doors
   2) Leave the shelves in place so that children may not easily climb inside

7 Unplug the freezer before carrying out user maintenance on it.

8 This freezer can be used by children age eight years and older and persons with reduced physical or mental capabilities or lack of experience and knowledge if they are given supervision or instruction concerning the use of the freezer in a safe way and understand the hazards involved. Children should not play with the freezer. Cleaning and maintenance should not be performed by children without supervision.

5 **WARNING**—Do not damage the refrigerant tubing when handling, moving, or using the freezer.

6 **WARNING—DANGER**—Never allow children to play with, operate, or crawl inside the freezer.
   Risk of child entrapment. Before you throw away your old freezer:
   1) Take off the doors
   2) Leave the shelves in place so that children may not easily climb inside

7 Unplug the freezer before carrying out user maintenance on it.

8 This freezer can be used by children age eight years and older and persons with reduced physical or mental capabilities or lack of experience and knowledge if they are given supervision or instruction concerning the use of the freezer in a safe way and understand the hazards involved. Children should not play with the freezer. Cleaning and maintenance should not be performed by children without supervision.

9 If a component part is damaged, it must be replaced by the manufacturer, its service agent, or similar qualified persons in order to avoid a hazard.

10 Please dispose of the freezer according to local regulations as the freezer contains flammable gas and refrigerant.

11 Follow local regulations regarding disposal of the freezer due to flammable refrigerant and gas. All refrigeration products contain refrigerants, which under the guidelines of federal law must be removed before disposal. It is the consumer's responsibility to comply with federal and local regulations when disposing of this product.
12 This freezer is intended to be used in household and similar environments.

13 Do not store or use gasoline or any flammable liquids inside or in the vicinity of this freezer.

14 Do not use extension cords or ungrounded (two-prong) adapters with this freezer. If the power cord is too short, have a qualified electrician install an outlet near the freezer. Use of an extension cord can negatively affect the freezer’s performance.

Grounding requirement

This freezer must be grounded. This freezer is equipped with a cord having a grounding wire with a grounding plug. The plug must be inserted into an outlet that is properly installed and grounded.

Improper use of the grounding plug can result in a risk of electric shock. Consult a qualified electrician or service person if the grounding instructions are not completely understood, or if doubt exists as to whether the freezer is properly grounded.

1.2 Safety instruction for refrigerant

[Warning sign]

Keep flammable materials and vapors, such as gasoline, away from freezer. Failure to do so can result in fire, explosion, or death.
2. Description for product features

This product is provided with following features:

1) Mechanical temperature control
2) Freezer room around the wire tube evaporator, cooling evenly and quickly;
3) Large drawers design, increase storage space
4) Change the door opening direction

(The picture is only for reference, and specific appearance and configuration are subject to the real product)
3. Installation and commissioning

3.1 Handling

1) Protect the refrigerator in moving it. Same as shown in the left photo, please move it by handcart with cushion
2) Remove all packing materials and bottom cushion, then move into the house for placement
3) After moving it to an appropriate location, wait for 2 hours before powering on.

3.2 Disassembly (None)

The refrigerator door needs to be dismantled if it cannot enter the room in the whole.

3.3 Installation location

Location that is easy for ventilation shall be chosen to facilitate heat dissipation, enhance its performance and reduce the energy consumption.
3.4 Leveling of the refrigerator

If the refrigerator cannot be placed steadily, adjust the footing to level it.

3.5 Change the door opening direction

1) Unscrew the top cover screws

2) Remove the top cover

3) Remove the hinge cover.
   Unscrew screws.
   Remove the upper hinge.

4) Remove the door.
   Unscrew screws and levelling feet.
   Remove the lower hinge adjust feet assembly.

5) Fix the levelling feet, lower hinge adjust feet assembly and screws in the opposite side.
6) Place the door stopper and axle sleeve in the opposite side.

7) Place the F door.
   Place and fix the upper hinge. Fix the hinge cover.

8) Place the top cover.
3.6 Installation of handle (None)
3.7 Installation of door lock (None)
3.8 Adjustment to level the door (None)
3.9 Adjustment to shelves (None)

4. Terms

4.1 Definition of model (None)
4.2 Location of nameplate

(The picture is only for reference, and specific appearance and configuration are subject to the real product)

5. Product specification

5.1 Typespecification (None)
5.2 Electrical parameters

<table>
<thead>
<tr>
<th>Product Name</th>
<th>CE-BD70CM-SQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Code</td>
<td>2203101000028</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Item</th>
<th>Type</th>
<th>Specification</th>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5.3 Refrigerating temperature

Temperature tolerance ≤ 2°C

<table>
<thead>
<tr>
<th>Compartment</th>
<th>The highest (°C)</th>
<th>Lowest (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freezing</td>
<td>-18</td>
<td>/</td>
</tr>
<tr>
<td>Refrigerating</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Variable temperature</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>

### 5.4 Defrosting parts

<table>
<thead>
<tr>
<th>Defrosting period</th>
<th>Initial defrosting period</th>
<th>Normal defrosting period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrosting sensor</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Defrosting temperature controller</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Thermal fuse</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Defrosting heater in freezing chamber</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>
5.5 Circuit diagram
6. Internal view and dimension

6.1 Main parts and their names

(The picture is only for reference, and specific appearance and configuration are subject to the real product)

<table>
<thead>
<tr>
<th>Freezer chamber</th>
<th>Refrigerator chamber</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screen printing knob</td>
<td>None</td>
</tr>
<tr>
<td>2. Temperature control panel</td>
<td></td>
</tr>
<tr>
<td>3. F upper drawer</td>
<td></td>
</tr>
<tr>
<td>4. F bottom drawer</td>
<td></td>
</tr>
<tr>
<td>5. Freezer door assembly</td>
<td></td>
</tr>
</tbody>
</table>

6.2 External dimension

<table>
<thead>
<tr>
<th>Front view</th>
<th>Side view</th>
</tr>
</thead>
</table>
(The picture is only for reference, and specific appearance and configuration are subject to the real product)
7. Refrigerating piping system and circulating route of cooling air

7.1 Refrigerating piping system

<table>
<thead>
<tr>
<th>1 Compressor</th>
<th>2 Left condenser</th>
<th>3 Anti-condensation tube</th>
<th>4 Right condenser</th>
<th>5 Dry filter</th>
<th>6 Capillary tube</th>
<th>7 Evaporator</th>
<th>8 Return pipe</th>
</tr>
</thead>
</table>

(The picture is only for reference, and specific appearance and configuration are subject to the real product)

7.2 Circulating route of cooling air (None)
8. Dismantling of parts

8.1 Parts on the door

<table>
<thead>
<tr>
<th>Door seal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Door seal is installed into door liner groove.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>1) Open the refrigerator door;</td>
<td></td>
</tr>
<tr>
<td>2) Take the door seal ① out of door liner;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Door tray</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guardrail</td>
<td>None</td>
</tr>
</tbody>
</table>

8.2 Parts inside the refrigerator

<table>
<thead>
<tr>
<th>Shelves</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawer</td>
<td>None</td>
</tr>
<tr>
<td>1) Pull the drawer out completely;</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>2) Lift it up slightly and take it out from the refrigerator.</td>
<td></td>
</tr>
</tbody>
</table>

8.3 Light system

<table>
<thead>
<tr>
<th>Light</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light switch</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pilots light</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh light</td>
<td>None</td>
</tr>
</tbody>
</table>

8.4 Air duct components refrigerating chamber

<table>
<thead>
<tr>
<th>Air duct components refrigerating chamber</th>
<th>None</th>
</tr>
</thead>
</table>

8.5 Air duct components in freezing chamber and fan motor

<table>
<thead>
<tr>
<th>Disassembly and installation of Air duct</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan motor of air duct</td>
<td>None</td>
</tr>
</tbody>
</table>

8.6 Evaporator and temperature sensing system

<table>
<thead>
<tr>
<th>Evaporator in freezing chamber</th>
<th>not replace</th>
</tr>
</thead>
</table>

Components on the evaporator

<table>
<thead>
<tr>
<th>Defrost thermostat</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost sensor</td>
<td>None</td>
</tr>
<tr>
<td>Defrost heater</td>
<td>None</td>
</tr>
<tr>
<td>Evaporator in refrigerating chamber</td>
<td>None</td>
</tr>
<tr>
<td>Components on the evaporator</td>
<td>None</td>
</tr>
</tbody>
</table>

Sensor

<table>
<thead>
<tr>
<th>Sensor in freezing chamber</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor in refrigerating chamber</td>
<td>None</td>
</tr>
<tr>
<td>Sensor in Variable temperature chamber</td>
<td>None</td>
</tr>
<tr>
<td>Ambient temperature sensor</td>
<td>None</td>
</tr>
</tbody>
</table>

Thermostat

1. Remove the screws on the temperature-control box cover
2. Remove the screen knob
3. Remove the connector and replace the thermostat.
### 8.6 Compressor case

#### Piping system in the compressor case

<table>
<thead>
<tr>
<th>1. left condenser</th>
<th>5. compressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. anti-dew tube assembly</td>
<td>6. suction transition tube</td>
</tr>
<tr>
<td>3. right condenser</td>
<td>7. dry filter</td>
</tr>
<tr>
<td>4. processing tubes</td>
<td></td>
</tr>
</tbody>
</table>

**Starter and protector of the compressor**

1. **Remove the screws**
   1) Two screws outside
   2) One screw inside

2. **Remove the clipping strip**
   Slowly pull it out

3. **Remove the protective cover**
   1) Pry the protective cover slowly from the upper part,
   2) Pull it out and remove it.
4. **Remove the starter and protector**
Unplug the starter and protector (you can use a screwdriver to pry it slowly)

5. **The reverse process can complete installation.**

---

8.7 **Display and main control panel (None)**

<table>
<thead>
<tr>
<th>Display control board</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main control board</td>
<td>None</td>
</tr>
</tbody>
</table>

8.8 **Bar counter (None)**

| Disassembly and installation of bar counter | None |
| Disassembly and installation bar door seal | None |

8.9 **Water dispenser (None)**

| Disassembly and installation of water valve | None |
| Disassembly and installation of water tank | None |

8.10 **Ice maker (None)**

| Disassembly and installation of ice maker | None |
| Disassembly and installation of water system | None |
| Disassembly and installation ice machine sensor | None |
9. Function and operation

9.1 Operation panel

Direct cooling mechanical refrigerator, through the thermostat knob to adjust the stalls.

![Thermostat Knob](image)

9.2 Temperature control

If the ambient temperature is too high or the case of summer, according to actual needs, the thermostat adjusted to Max.

If the ambient temperature is too high or the case of summer, according to actual needs, the thermostat adjusted to Min.

9.3 Give an alarm (None)

9.4 Failure code and solutions (None)

9.5 Defrost function

Manual defrost

9.6 Compressor fan control (None)
10. Circuit description

10.1 Power Supply (None)

10.2 Test circuit for door switch (None)

10.3 Temperature test circuit (None)

10.4 Freezer chamber fan motor circuit (None)

10.5 Refrigerating chamber fan motor circuit (None)

10.6 Condensation fan circuit (None)

10.5 Fan motor circuit of the ventilation door (None)

10.6 Resistance value of the sensor (R/T) (None)

11. Troubleshooting Method

11.1 Not cooling

No cooling

- Check the power supply
- Re-plug /Replacement
- Light on/screen display?
- Thermostat OK?
- Compressor accessories OK?
- Compressor winding OK?
- Leakage and blockage of piping?
- Find leak, replace filter
External visible leak point-maintenance
Internal leakage off foam layer-scrapped

Common phenomenon of no cooling:
- The connector has a leak or the terminals are loose.
- Defective protector or starter.
- The connector is reversed, the timer is connected to the wrong line, or the timer is not reset.
- The leakage of the refrigeration system, welding plugs, the capillary depth of the dryer is not enough lead to solder plug.
11.2 Not working of compressor

No working of compressor

Start

Is Box lamp on?

Yes

Check the power supply, reinsert/replacement

No

Compressor power off for 5 min?

Yes

Recheck after 5 min

No

Thermostat OK?

Yes

Reinsert/replace

No

Compressor accessories OK?

Yes

Reinsert/replace

No

Compressor winding OK?

Yes

Replace the compressor

No
11.3 - Thermostat malfunction - Undercooling

Thermostat malfunction - Undercooling

1. Button of thermostat knob in the maximum gear
   - Yes
   - No: Switch to the middle or little file

2. Throttle opened?
   - Yes
   - No: Thermostat function OK?

3. Thermostat function OK?
   - Yes
   - No: Adjust screw of thermostat OK?

4. Adjust screw of thermostat OK?
   - Yes: Replace the thermostat
   - No: A clockwise circle, rise 3°C

11.4 Light is not on

Light is not on

1. Start
2. Cooling OK?
   - No: Check power
   - Yes: Inside filament disconnected?

3. Inside filament disconnected?
   - Yes: Replace
   - No: Insertion of wiring harness OK?

4. Insertion of wiring harness OK?
   - No: Reinsert
   - Yes: Door switch contact normally?

5. Door switch contact normally?
   - Yes: Replace/maintenance
   - No: Continue with other checks.
11.5 Noise

![Flowchart of Noise Resolution]

12. Figures and details of repair parts (Documents are provided separately)

12.1 Figures

12.2 List of parts and components

13. Appendix:

13.1 Electrical Schematic Diagram (None)

(Model: ***)

13.2 Refrigerator maintenance tooling and equipment and material

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Photo</th>
<th>Main Usage</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>Tool</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Phillips screwdriver</td>
<td>screw assemble and disassemble</td>
</tr>
<tr>
<td>2</td>
<td>slotted screwdriver/scraper</td>
<td>screw and rivet assemble and disassemble</td>
</tr>
<tr>
<td>3</td>
<td>Socket spanner 5/16&quot;</td>
<td>hinge and compressor screw assemble and disassemble</td>
</tr>
<tr>
<td>4</td>
<td>Sucker</td>
<td>display panel and air duct cover disassemble</td>
</tr>
<tr>
<td>5</td>
<td>Allen wrench (2.8~4mm)</td>
<td>handle assemble and disassemble</td>
</tr>
<tr>
<td>6</td>
<td>Vise grip pliers</td>
<td>sealing process tube</td>
</tr>
<tr>
<td>7</td>
<td>Pipe cutter</td>
<td>pipe cutting</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Photo</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>8</td>
<td>Knife</td>
<td><img src="image" alt="Knife" /></td>
</tr>
<tr>
<td>9</td>
<td>Nipper pliers</td>
<td><img src="image" alt="Nipper Pliers" /></td>
</tr>
<tr>
<td>10</td>
<td>Capillary tube scissors</td>
<td><img src="image" alt="Capillary Tube Scissors" /></td>
</tr>
</tbody>
</table>

### Equipment

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Photo</th>
<th>Main Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vacuum pump</td>
<td><img src="image" alt="Vacuum Pump" /></td>
<td>vacuum pumping</td>
</tr>
<tr>
<td>2</td>
<td>Electronic scale</td>
<td><img src="image" alt="Electronic Scale" /></td>
<td>weighing refrigerant/gas</td>
</tr>
<tr>
<td>3</td>
<td>High pressure nitrogen with piezometer</td>
<td><img src="image" alt="High Pressure Nitrogen" /></td>
<td>pipe and cooling system(condenser, evaporator, etc) impurities clean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4</td>
<td>Soldering gun</td>
<td></td>
<td>heating and welding</td>
</tr>
<tr>
<td>5</td>
<td>Quick coupling</td>
<td></td>
<td>connection process pipeline vacuum or charge refrigerant ant will be used.</td>
</tr>
<tr>
<td>6</td>
<td>hand leak detector</td>
<td></td>
<td>welding point leakage detect, if no, use soap-suds</td>
</tr>
</tbody>
</table>

---

### Material

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Photo</th>
<th>Main Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Process pipeline</td>
<td>![photo]</td>
<td>Charge the refrigerant</td>
</tr>
<tr>
<td>2</td>
<td>Dry filter</td>
<td>![photo]</td>
<td>Involving a system failure to be replaced</td>
</tr>
<tr>
<td>3</td>
<td>Copper welding rod</td>
<td>![photo]</td>
<td>Tube welding</td>
</tr>
<tr>
<td>4</td>
<td>Refrigerant/gas</td>
<td>![photo]</td>
<td>Add refrigerant to the system</td>
</tr>
<tr>
<td></td>
<td>Sealing tape</td>
<td>door fixing for reversible door option</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

5 | Sealing tape | door fixing for reversible door option |