EDGESTAR®

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SERVICE MANUAL

CWB1760FD

EdgeStar 24 Inch Built-In Wine and Beverage Cooler with French Doors

CWB8420DZ

EdgeStar 24 Inch Built-In Wine and Beverage Cooler

CAUTION: READ ALL SAFETY PRECAUTIONS IN THIS MANUAL BEFORE SERVICING THE UNIT

Contents

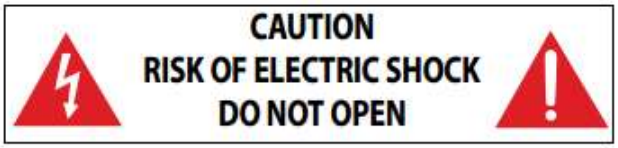
↯ WARNING ↯

Before servicing, make sure to unplug the appliance.
After servicing replace all parts before operating the appliance.
Failure to do so could result in death, electrical shock or personal injury.
All servicing must be carried out by qualified technicians. Repairs done incorrectly may cause considerable risk to the user.
For units with R600a refrigerant make sure to release all the refrigerant before servicing otherwise fires or explosion can result.
Personal Injury Hazard - To prevent unnecessary risk of fire, electrical shock or personal injury, all wiring and grounding must be done in accordance with National Electrical Code and local codes and ordinances.

1. Safety Warnings

1.1 Warnings and Safety Instructions

Important Safety Instructions



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

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

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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 Instructions for R600a Refrigerant

⚠ WARNING Explosion Hazard.

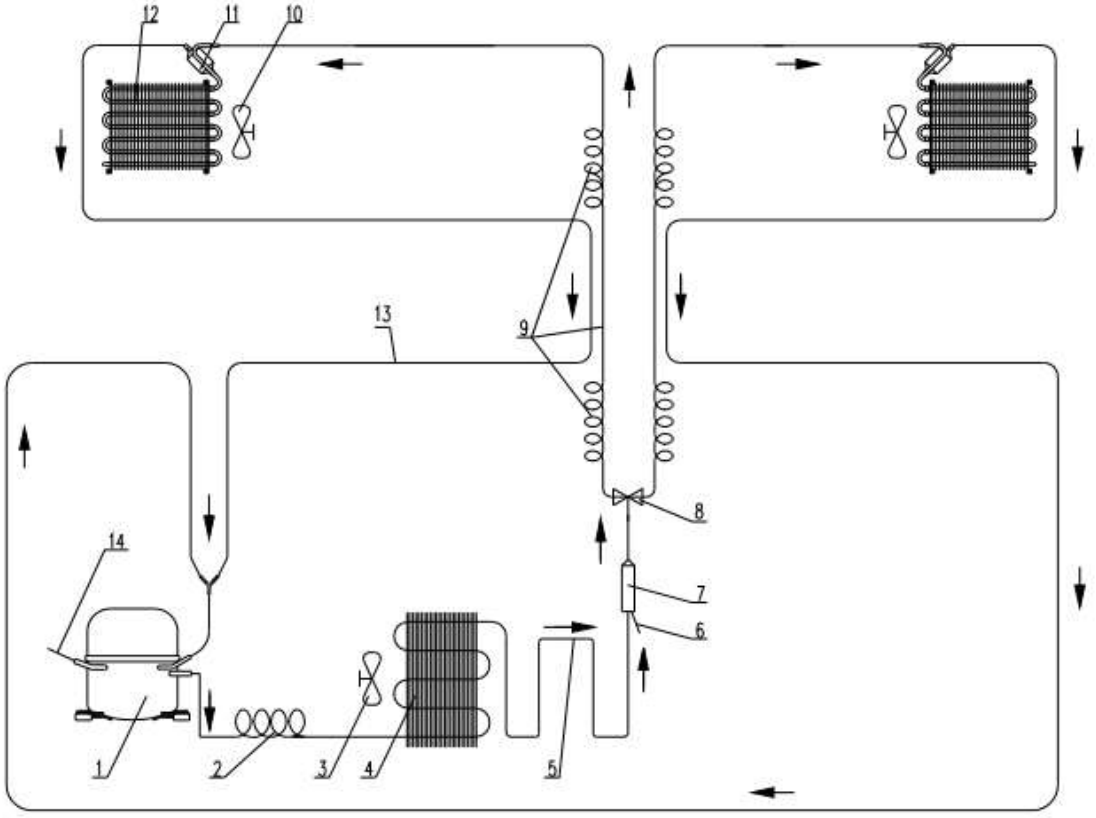
Keep flammable materials and vapors, such as gasoline, away from freezer. Failure to do so can result in fire, explosion, or death.

DANGER—Risk of Fire or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Use Mechanical Devices. Do Not Puncture Refrigerant Tubing.
CAUTION—Risk of Fire or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.
CAUTION—Risk of Fire or Explosion. Dispose of Properly In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.
CAUTION—Risk of Fire or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

2. Refrigeration System

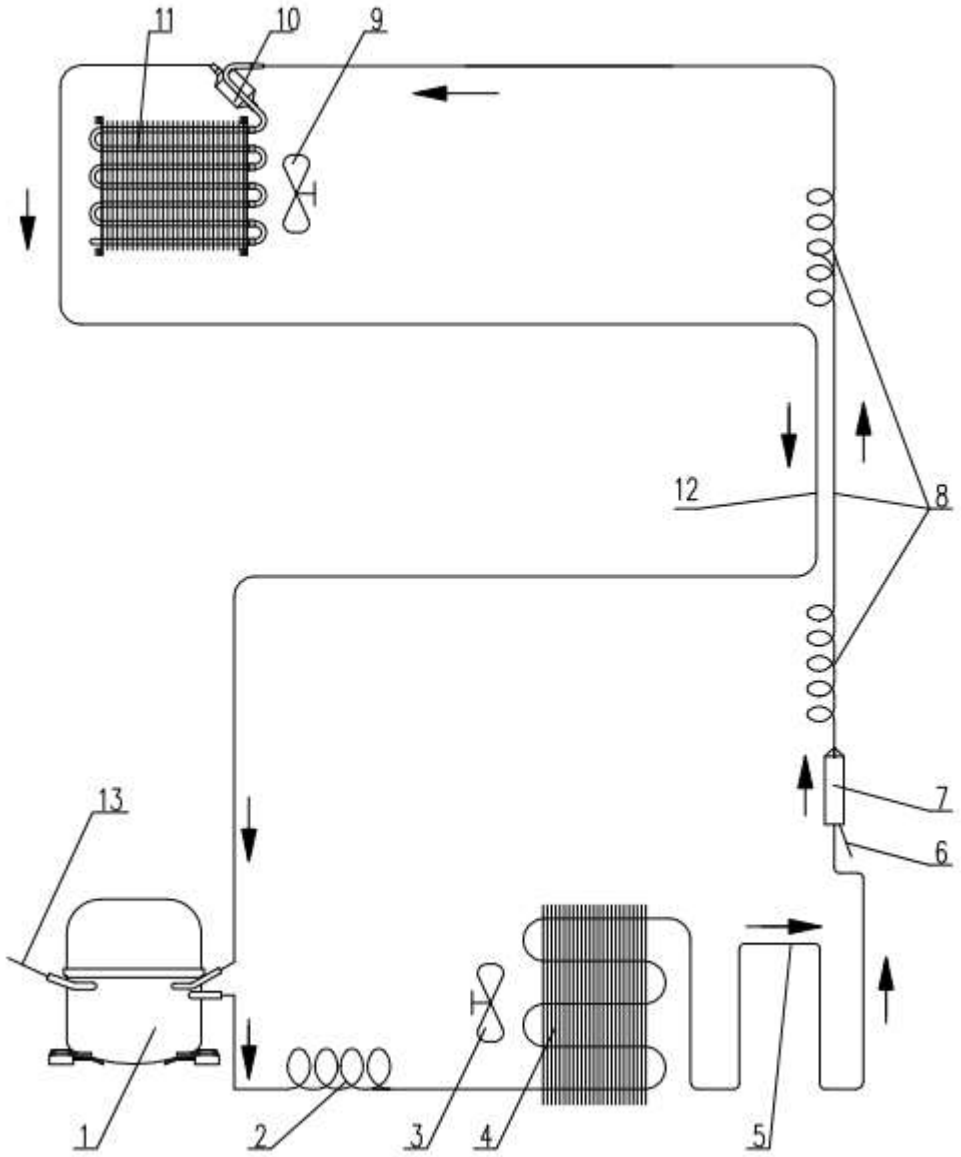
2.1 Refrigerant Cycle Diagrams

CWB1760FD



1. **Compressor**
2. **Spiral Tube**
3. **Condenser Fan**
4. **Condenser**
5. **Hot Pipe**
6. **Process Tube**
7. **Filter Dryer**
8. **Solenoid Valve**
9. **Capillary**
10. **Evaporator Fan**
11. **Accumulator**
12. **Evaporator**
13. **Suction Tube**
14. **Process Tube**

CWB8420DZ



1. **Compressor**
2. **Spiral Tube**
3. **Condenser Fan**
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6. **Process Tube**
7. **Filter Dryer**
8. **Capillary Tube**
9. **Evaporator Fan**
10. **Accumulator**
11. **Evaporator**
12. **Suction Tube**
13. **Process Tube**

2.2 Refrigeration Process

All refrigeration units cool by removing heat from the cabinet rather than pumping in cool air. In a conventional refrigeration unit, liquid refrigerant enters the evaporator and vaporizes due to the low pressure, creating a very cold surface which removes heat from inside the cabinet. This causes the refrigerant to boil into a vapor state and be drawn into the compressor. The compressor pressurizes the vapor and pumps it into the condenser. The hot vapor in the condenser gives off the heat into the room. As the vapor cools, it condenses back into a liquid and returns to the evaporator to start the process over again. The system continually soaks up the heat inside the refrigerator and deposits the heat back into the room.

- The compressor of the refrigeration system serves two purposes: it ensures movement of the refrigerant throughout the system and it increases the pressure and temperature of the vapor received from the suction line and pumps the refrigerant into the discharge line. The condenser receives this high temperature, high pressure refrigerant and allows the heat to be released into the cooler surroundings. This heat removal "condenses" the refrigerant vapor into a liquid.

- The hot pipe is the first part of the condenser routed around the cabinet to help prevent moisture formation.

- The filter dryer is installed at the end of the condenser to capture moisture which may be present in the system.

- The capillary tube meters the flow of refrigerant and creates a pressure drop. Size and length of the capillary is critical to the efficiency of the system.

- As the refrigerant leaves the capillary tube and enters the larger tubing of the evaporator, the sudden increase in tubing diameter, and the pumping action of the compressor, form a low pressure area. The temperature of the refrigerant drops rapidly as it changes to a mixture of liquid and vapor. In the process of passing through the evaporator, the refrigerant absorbs heat from the storage area and is gradually changed from a liquid and vapor mixture (saturated refrigerant) into a vapor.

- The suction line returns this low pressure vapor from the evaporator back to the compressor, and the cycle starts again.

- Part of the capillary tube is soldered to the suction line which forms a heat exchanger. Heat from the capillary tube is thus transferred to the suction line to superheat the refrigerant there and at the same time this further cools the liquid in the capillary tube. This cools the refrigerant before it enters the evaporator and also heats the refrigerant before it enters the compressor to ensure a vapor state.

2.3 Refrigeration System Components

Compressor

The compressor is the "heart" of the refrigeration unit, consisting of an electrical motor and a "pump" sealed inside a steel case. The compressor used on R134A refrigerant systems is virtually the same in external appearance as the compressor used with R600a refrigerants. However, due to changes in lubricants and other internal differences, the compressors are not to be interchanged, otherwise system failure will result. If a new compressor is to be installed, pull one of the plugs to ensure that it is properly pressurized. If no pressure is observed, do not use the compressor. If unit is pressurized, reinstall the plug and keep the compressor sealed until it is installed and ready for solder connections. Whenever the compressor is replaced, the sealed system must be flushed especially for R134a system.

Condenser

The condenser is a long folded tube with steel wires which receives the hot, high pressure vapor from the compressor. While the most common problem is keeping the condenser clean from lint and dirt buildup which prevents proper airflow and the required transfer of the heat to the surroundings, it is possible that due to an un-repairable leak or a non-removable restriction, the condenser could require replacement. Do not remove the plugs on the condenser inlet and outlet tubes until the new condenser is mounted in place and made ready for brazing. The inlet side will connect to the hot pipe and the outlet to the filter dryer for built-in models and for built-in models the condenser can be replaceable. But for free-standing models the inlet side will connect to the discharge pipe of compressor and the outlet to filter dryer, it is non-replaceable.

Evaporator

The evaporator is a fin tube type within the rear side of cabinet and can be replaced. If a leak is present in the evaporator, it is not repairable and must be replaced. After mounting the evaporator in place, connect the capillary tube to the replacement filter drier. Again, whenever the evaporator assembly is replaced the sealed system should be flushed.

Filter Dryer

Whenever the sealed system is entered, the filter dryer must be replaced. The filter dryer is stamped with an arrow which indicates the direction of refrigerant flow. The dryer inlet has two lines. One connects to the condenser and the other will be used as a process tube through which the system sweep and final charge will be made. The dryer outlet will be connected to the capillary tube. Care should be taken to ensure that the capillary is not inserted too far into the filter dryer to make contact with its internal screen, yet in far enough to prevent restricting the small diameter capillary tube opening with the solder alloy.

Hot Pipe

The hot pipe is a **non-replaceable** component of the sealed system routed within the walls of the cabinet. To diagnose the hot pipe, the tubing must be isolated from the sealed system. If the hot pipe fails to hold the vacuum, a heater repair assembly is to be installed and the hot pipe bypassed by connecting the condenser outlet tube directly to the inlet of filter drier.

Capillary

The capillary tube meters the flow of refrigerant and creates a pressure drop. Size and length of the capillary is critical to the efficiency of the system.

2.4 Service Precautions for R600A Refrigerant

Features of R600a refrigerant

Achromatic and odorless gas.
Flammable gas with ignition (explosion) at 494°C.
Upper/lower explosion limit: 1.8%~8.4%/Vol.

Features of the R600a refrigeration unit

Charging of around 60% refrigerant compared with a R134a model
The suction pressure is below 1bar (abs) during the operation.
Because of its low suction pressure, the external air may flow in the cycle system when the refrigerant leaks, and will cause a malfunction in the compressor.
The displacement of compressor using R600a must be at least 1.7 times larger than that of R134a.
Any type of dryer is applicable (XH-5, 7, 9).
The EVAPORATOR or any other cycle part that has welding joint is hidden in the foam. (If not hidden inside, the whole electric parts must be tested with the LEAKAGE TEST according to the IEC Standard.)
The compressor has label of the refrigerant R600a.
Only a qualified technician should access the system.

Installation place

Must be well ventilated.
Must be 20 cubic meters or larger.
Must be no-smoking area.
No ignitable factors may be present.

Tools needed

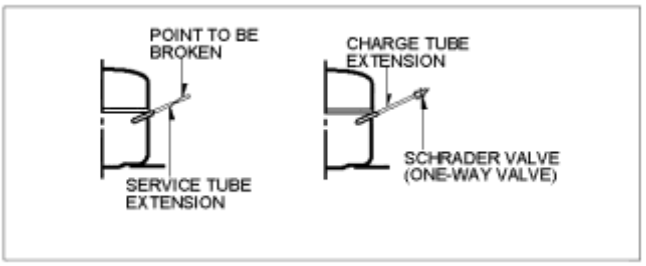
Refrigerant cylinder (MAX NET 300g)
Manometer
Vacuum pump (600L/min)
Piercing Clamp
Quick coupler • Hoses (5m-1EA, 1m-3EA)
LOKRING
Portable Leakage detector (3g/year)
Nitrogen cylinder (for leakage test)
Concentration gauge

Make sure before servicing

Confirm Refrigerant by checking Name Plate and the label on the compressor.
With R600a you must not weld or apply a heat source until refrigerant has been vented.

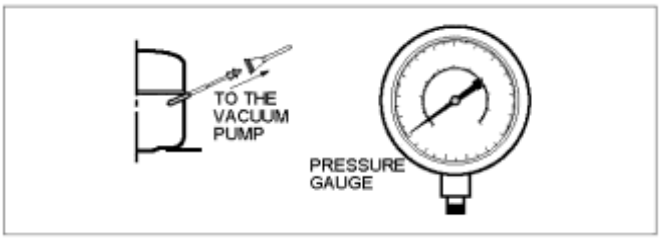
Recharging the Compressor

Before refilling the refrigerant, you must perform the test according to “TROUBLESHOOTING GUIDE”. When the defects are found, you must discharge the residual refrigerant (R600a) in the outdoors. For discharging the refrigerant R600a, break the narrow portion of tube extension by hand or with a pipe cutter. Leave it for 30min in outside to stabilize the pressure. Then, check the pressure by piercing the filter dryer part with piercing pliers. If the refrigerant is not completely discharged, let the refrigerator stand for 30 more min outside.



Attach a service tube installed with a Schrader valve (one-way valve). Then, connect the Schrader valve (one-way valve) to the pump that is connected to the discharging hose leading to the outside. When discharging the residual refrigerant, repeat 3 cycles that includes 3min of the pump running->pump off->30sec of the compressor running.

After the refrigerant (R600a) is completely discharged, repair any defective parts and replace the filter dryer. Connect the Schrader valve to pump with the coupler then turn the vacuum pump on. Let the pump run until the low-pressure gauge indicates the vacuum (gauge pressure 0, absolute pressure -1atm or -760mmHg). Recommended vacuum time is 30 min. Charge the N2 gas in order to check for leakage from welding points. If leakages are found, repair the defects and repeat the vacuum process.



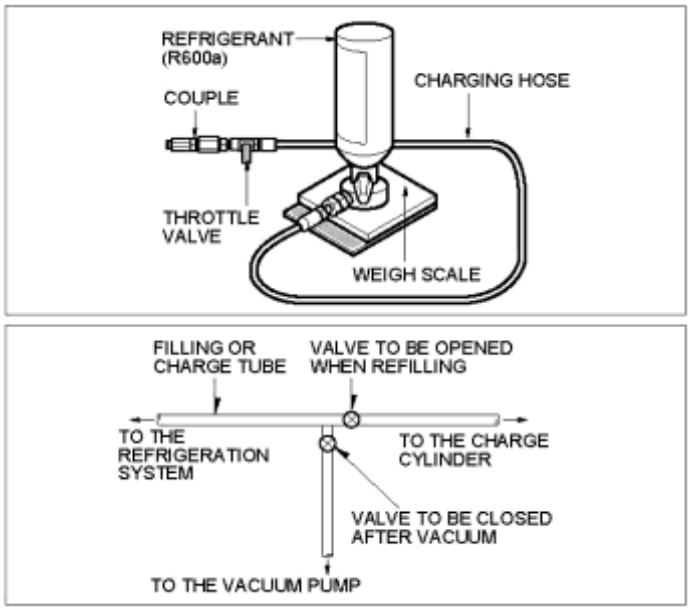
After the system is completely vacuumed, fill it with R600a up to what has been specified on your unit Rating Label. The amount of refrigerant must be precisely measured within the error of ±2g by an electron scale.

If you use the manifold connected with both the R600a cylinder and the vacuum pump simultaneously, make sure the pump valve is closed.

Connect the charging hose that is connected to the refrigerant cylinder to the Schrader valve installed on the service tube. Then, charge the refrigerant by controlling the throttle valve. When you do so, do not fully open the Throttle valve because it may make damage to the compressor. Gradually charge the R600a by opening and closing the throttle valve (5g each time). The charging hose must use a one-way valve to prevent the refrigerant from flowing back. Close the Schrader valve cap after the refrigerant (R600a) is completely recharged.

After you completely recharge the refrigerant (R600a), perform the leak test by using a portable leak detector or soap suds. Test the low pressure (suction) parts when compressor is off and high pressure parts when compressor is on. If leaks are found, restart from the refrigerant discharging process and repair any leaks.

After the leak test, check the temperature of each part. Check (by touch) if the CONDENSER and Hot Pipe are warm. Confirm that frost is uniformly distributed on the surface of the EVAPORATOR.



2.5 Performance Checks

The following general information explains several methods for checking the performance of the refrigeration system. The correct operation of a refrigeration system is dependent upon the proper function of each of the parts comprising the system. If the system does not operate properly (long run periods, warmer than normal temperatures), the trouble may be caused by one of the following conditions:

Restricted Capillary Tube

The opening of a capillary tube is about the same diameter as the period at the end of this sentence. Because of this, it is easy to restrict the tube. Extra precautions should be taken when any service procedure involves moving or touching the capillary tube. The slightest kink can cause a complete tube restriction.

Restrictions of the capillary tube may be caused by: (1) moisture freeze-up (2) foreign particles lodged in the tube or (3) a bend or kink.

If the capillary tube is restricted, there will be a noticeable lack of frost on all cooling surfaces. The compressor may operate for a short period of time and cycle on the overload. When moisture freeze-up causes a restriction it usually occurs at the outlet end of the capillary tube. Normally, frost buildup can be detected in this area.

At the discharge end of the capillary, apply heat by using the hairdryer. If there is enough head pressure, and if the restriction is caused by moisture freeze-up, you will be able to hear a gurgling noise as the heat releases the refrigerant through the tubing. It is possible that this moisture will be absorbed by the filter drier and remedy the trouble. However, if the freeze-up reoccurs, you must replace the filter drier.

A kink in the capillary tube will have the same symptoms as a moisture freeze-up, except for the

accumulation of frost. Where possible, check the capillary tube and straighten any kinks to relieve the restrictions. Check the unit's performance. If the condition persists, replace the defective part. If the freeze-up condition does not exist and there is not a kink, you can assume that a foreign particle is causing the restriction. The only remedy in this case is to replace the restricted part.

Partial Restriction In Low Side Tubing
Bent tubing, foreign matter, or moisture in the system may cause a partial restriction in the low side tubing. This is usually indicated by frost-free tubing between the restriction and the capillary tube and by frost-covered tubing between the restriction and the suction line. The restriction acts like a second capillary tube, increasing the pressure ahead of it (warming) and decreasing the pressure beyond it (cooling). To confirm the existence of a restriction in the low side tubing, perform operational pressure checks.

Slow Leak In System
On compressor systems, long run time will be noticed during the early stages of a leak. As the refrigerant continues to escape, the compartment will gradually warm up and the compressor will run continuously.

Incorrect Refrigerant Charge
The sealed unit may have too much refrigerant (overcharged system) or too little refrigerant (undercharged system). The troubleshooting guide will inform you on how to recognize a system with these defects.

An overcharged system may have a frost back condition appearing on the suction line. When the compressor stops, the frost melts and drips on the floor. A heat exchanger separation will also cause this symptom.

An undercharged system, depending on the degree of undercharge, will operate with temperatures above normal and the compressor run time will be increased. The more undercharged, the higher the temperature will be and the longer the run time. An undercharged system must be purged, evacuated, and recharged with the proper amount of refrigerant. Before recharging, test for refrigerant leaks.

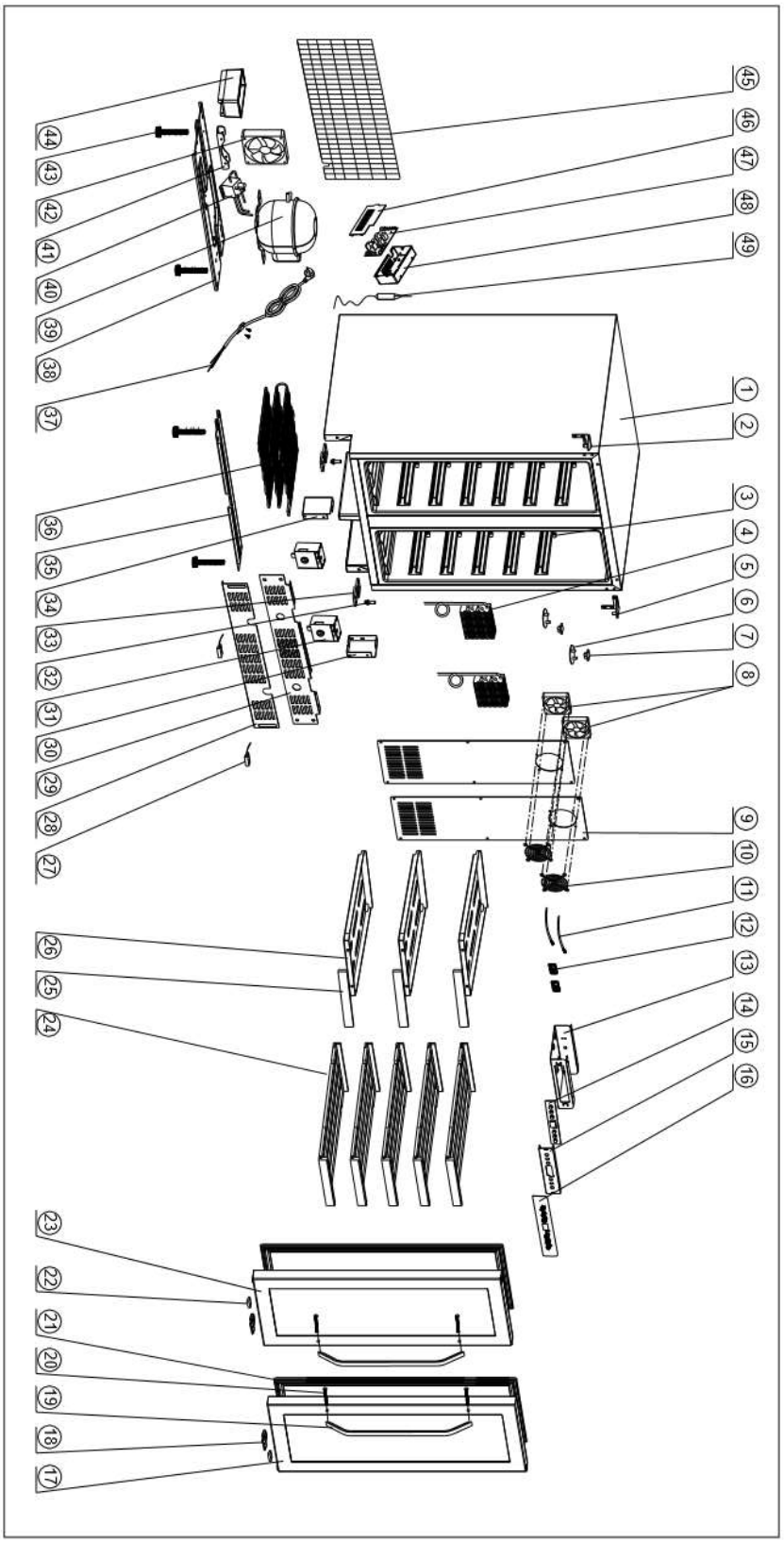
2.6 Leak Testing

Once it has been determined through proper diagnosis that a leak is present in the sealed system, attempt to find the leak before opening the system if possible. To check the high side for leaks, be sure that the compressor is running. During run time the high side pressure is greater. To increase the pressure slightly, stop the condenser fan blade or block the air flow through the condenser. To check the low side for leaks, stop the compressor. During off times, the low side pressure will increase to equalize with the high side. By warming the evaporator, this pressure will increase. If too much refrigerant has leaked out to create enough pressure to locate the leak, add 2 ounces of the proper refrigerant to the system and proceed with the test procedure.

The presence of oil around a tubing joint usually indicates a leak. Care must still be taken to pinpoint the exact location. Remember to use a leak detector compatible with R600a. A sealed system component, such as the evaporator or hot pipe, should not be condemned unless a non-repairable leak is confirmed. This should be determined by either locating the actual leak or by isolating the component from the rest of the system and determining if it holds pressure or a vacuum.

3. Exploded Diagrams and Part Lists

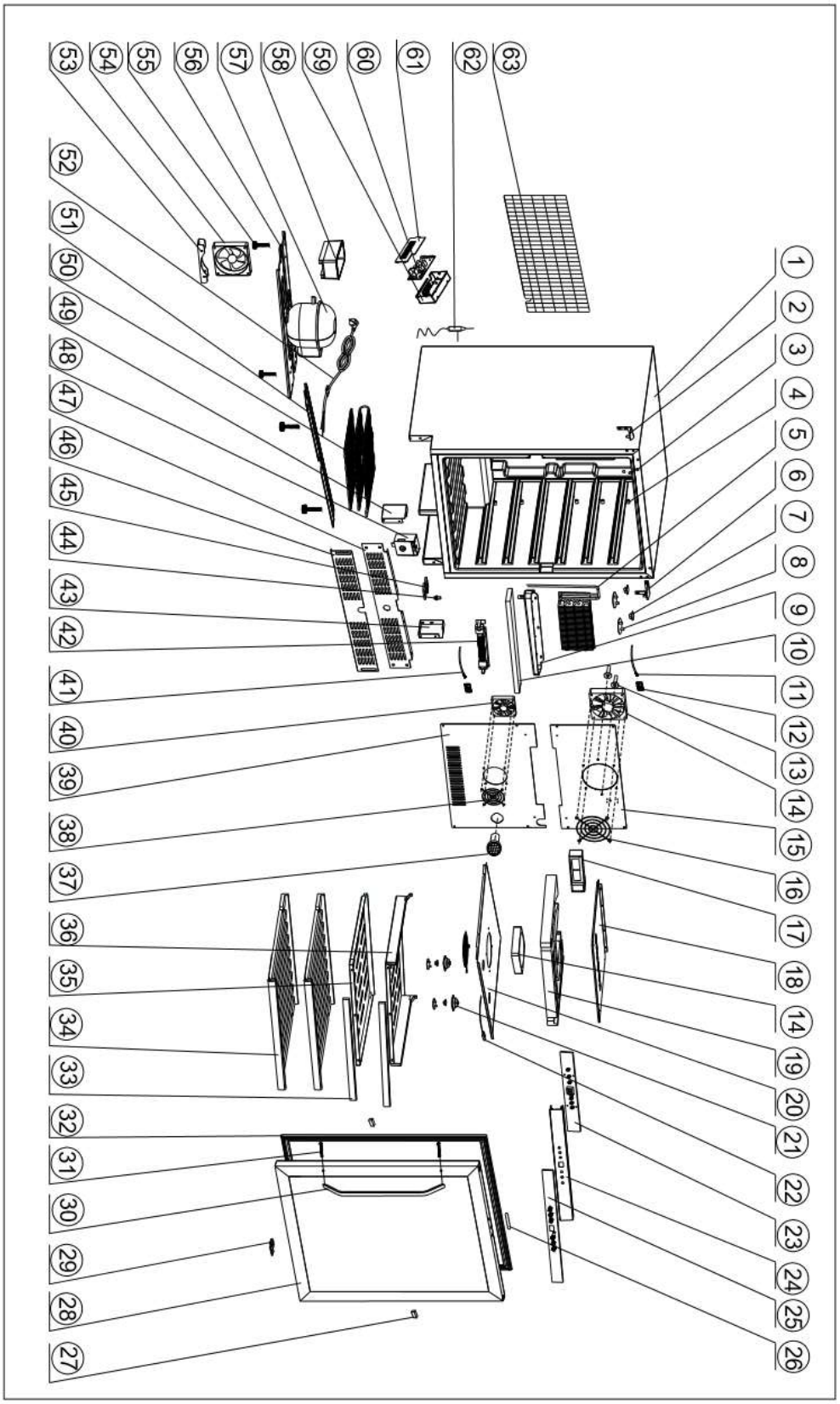
3.1 CWB1760FD Exploded Diagram



3.2 CWB1760FD Parts List

No.	Description	Qty.	No.	Description	Qty.
1.	Cabinet	1	26.	Metal Rack	3
2.	Left Top Hinge	1	27.	Door Switch	2
3.	Plastic Post	22	28.	Extended Ventilation Grill	1
4.	Evaporator Assembly	2	29.	Ventilation Grill	1
5.	Right Top Hinge	1	30.	Right Bracket	1
6.	Light Cover	2	31.	Lock Assembly	2
7.	LED Light	2	32.	Door Axle	2
8.	Fan Motor	2	33.	Bottom Hinge Plate	2
9.	Air Channel Cover	2	34.	Left Bracket	1
10.	Fan Guard	2	35.	Bottom Bracket	1
11.	Thermistor	2	36.	Condenser	1
12.	Thermistor Supporter	2	37.	Power Cord	1
13.	PCB Box	1	38.	Compressor Base	1
14.	Control PCB	1	39.	Compressor	1
15.	PCB Supporter	1	40.	Solenoid Valve	1
16.	Control Panel Film	1	41.	Fan Motor Supporter	1
17.	Glass Door (Right)	1	42.	Fan Motor	1
18.	Lock Bracket	2	43.	Leveling Leg	4
19.	Handle	2	44.	Water Tray	1
20.	Screw	4	45.	Rear Grille	1
21.	Door Gasket	2	46.	Electrical Box Cover	1
22.	Door Switch	2	47.	Power PCB	1
23.	Glass Door (Left)	1	48.	Electrical Box Base	1
24.	Full Shelf	5	49.	Filter Dryer	1
25.	Shelf Front	3			

3.3 CWB8420DZ Exploded Diagram



3.4 CWB8420DZ Parts List

No.	Description	Qty.	No.	Description	Qty.
1.	Cabinet	1	33.	Wooden Front	2
2.	Left Top Hinge	1	34.	Full Shelf	2
3.	Decoration Plug	3	35.	Metal Rack 2	1
4.	Plastic Post	10	36.	Metal Rack 1	1
5.	Evaporator Assembly	1	37.	Active Charcoal Filter	1
6.	Right Top Hinge	1	38.	Fan Guard	1
7.	LED Light	4	39.	Lower Air Channel Cover	1
8.	Light Cover	4	40.	Fan Motor	1
9.	Interior Water Drip Tray	1	41.	Thermistor	1
10.	Isolating Foam	1	42.	Heater	1
11.	Thermistor	1	43.	Right Bracket	1
12.	Thermistor Cover	2	44.	Door Axle	1
13.	Plastic Supporter	2	45.	Bottom Hinge Plate	1
14.	Fan Motor	2	46.	Extended Ventilation Grille	1
15.	Upper Air Channel Cover	1	47.	Ventilation Grille	1
16.	Fan Guard	2	48.	Lock Assembly	1
17.	Air Door Assembly	1	49.	Left Bracket	1
18.	Top Plate of Middle Divider	1	50.	Condenser	1
19.	Foam for Divider	1	51.	Reinforced Plate	1
20.	Bottom Plate of Middle Divider	1	52.	Power Cord	1
21.	Light Base	4	53.	Fan Supporter	1
22.	Door Switch	1	54.	Fan Motor	1
23.	Control PCB	1	55.	Leveling Leg	4
24.	PCB Supporter	1	56.	Compressor Base	1
25.	Control Panel Film	1	57.	Compressor	1
26.	Crystal Cover	1	58.	Water Tank	1
27.	Door Switch	2	59.	Electrical Box Base	1
28.	Glass Door	1	60.	Power PCB	1
29.	Lock Bracket	1	61.	Electrical Box Cover	1
30.	Handle	1	62.	Filter Dryer	1
31.	Screw	2	63.	Grille Cover	1
32.	Door Gasket	1			

4. Electronic Controls

4.1. Modes

Cooling mode:
When the set temperature is lower than the cabinet temperature, the unit operates in cooling mode.

Heating mode:
When the set temperature is higher than the cabinet temperature, the unit operates in heating mode.

Dynamic Climate/Silent modes:
In the Dynamic Climate mode the interior fan cycles on 20 seconds and off 30 seconds to circulate the inside air even if the set temperature has been reached. Dynamic Climate mode is **NOT** the factory preset mode because it adds noise and increases energy consumption. To change to Dynamic Climate mode, touch and hold the **DOWN** key for approximately five seconds. The cooler will beep five times to confirm Dynamic Climate mode is on. To change back to the default Silent mode (energy saving mode), touch and hold the **UP** key for approximately five seconds. The cooler will beep three times to confirm Silent mode is on.

Sabbath Mode:
Sabbath mode is available for the observance of certain religious holidays. This mode turns off the displays, interior light and audible alarms and prevents them from turning on again. Normal cooling operations will still take place. To initiate Sabbath mode, press the **POWER** and **LIGHT** keys at the same time for at least 5 seconds. The indicator light will flash four times and confirm the Sabbath mode is ON. Sabbath mode can be exited by repeating the above process. The Sabbath Mode will automatically exit after 96 hours.

4.2 Alarms

Temperature Display
During normal operation, the temperature displays on the control panel and shows the temperatures inside the appliance. The temperature display will flash if:

– A different temperature is being set.
– The temperature in one of the zones deviates by more than 5°C from the set temperature.

The temperature display flashing ensures that the temperature will not rise or fall unnoticed and impair the wine.

To view the “set” temperature at any time, touch the “**UP**” or “**DOWN**” button. The set temperature will temporarily flash on the LED display for 5 seconds. If the LED displays “**--**" and flashes it indicates the temperature is out of range (-9 to 37ºC for Celsius and 16 to 99ºF for Fahrenheit.)

Temperature Alarm
An alarm will sound if the temperature in one of the zones rises or falls outside the temperature range. The relevant temperature display will flash at the same time. The temperature the appliance is set to determines the temperature the appliance recognizes as being too warm or too cool.

The alarm will sound and the temperature display will flash:

- When you switch the appliance on, if the temperature inside the appliance is very different from the temperature set.
- When there has been a lengthy interruption to the power supply.
- When too many items have been put into the unit at one time.
- When the door is not been closed tightly.

Door Alarm
If the door has been left open for more than 60 seconds, the alarm will sound.

Once the set temperature has been reached in the appliance, the alarm stops and the relevant temperature display stops flashing. However, if the noise disturbs you, you can switch the alarm off before this if you wish by pressing the **POWER** key once. The alarm will stop. The relevant temperature display continues to flash until the set temperature has been reached. The display then lights up constantly, and the alarm system is fully active again.

4.3 Other Functions

Temperature Memory Function
In the event of a power interruption (power surge, breaker switch, etc.), the unit remembers the previous temperature settings, and when the power recovers, the unit will operate with the last temperature set-point.

Interior Light
The interior light makes it easy to view your wine labels and enhances the display of your collection. Touching the LIGHT mark toggles between 2 modes of operation for the internal lights: functional (default) mode and showcase mode. If you are in functional (default) mode, the lights will turn on only when the door is open. If you are in showcase mode, the lights will stay on whether or not the door is open.

Defrosting
1. The defrosting is performed each time when the total running time of the compressor reaches 10 hours.
2. During the defrosting cycle, the compressor is OFF and the fans will operate continuously.
3. After 30 minutes, the defrosting cycle will end.
4. During the defrosting cycle, the storage temperature may vary by 3 or 4 degrees. That is normal.
5. However, the frost may be accumulated on the evaporator if the unit is repeatedly opened in a high heat or high humidity conditions. If this frost pattern does not clear within 24 hours, your unit will require manual defrosting.

ºF/ºC Selector
The temperature can be displayed in Fahrenheit or Celsius. To change the temperature from Fahrenheit to Celsius or from Celsius to Fahrenheit, press and hold the **LIGHT** key for 5 seconds.

4.4 Fan Operation

Cabinet (Internal) Fans
When the set temperature is lower than the cabinet temperature the internal fans will operate. The rest of the time the fans will be off unless the unit is in dynamic climate mode in which case the fan will cycle on 20 seconds and off 30 seconds to circulate air inside the cabinet.

Divider Fan (CWB8420DZ)
The fan motor positioned in the middle divider. When the set temperature of the lower zone is lower than the cabinet temperature the fan will operate. The rest of the time the fan will be OFF.

Condenser Fan
The condenser fan runs when the compressor is on. The rest of the time the fan will be OFF.

4.5 Control System Self-Check

The Display/Control PCB has a self-check function. Press and hold the "**LIGHT**" and "**DOWN**" keys at the same time for 5 seconds, the indicator light will flash once to confirm the input and the unit will activate the self-check program. The following tests will be seen, otherwise replace the PCBs:

LED indicators will be ON one by one.
LED light will be ON.
Temperature reader LED will display from 00 to 99.
Fan motor, compressor and heater will be ON.

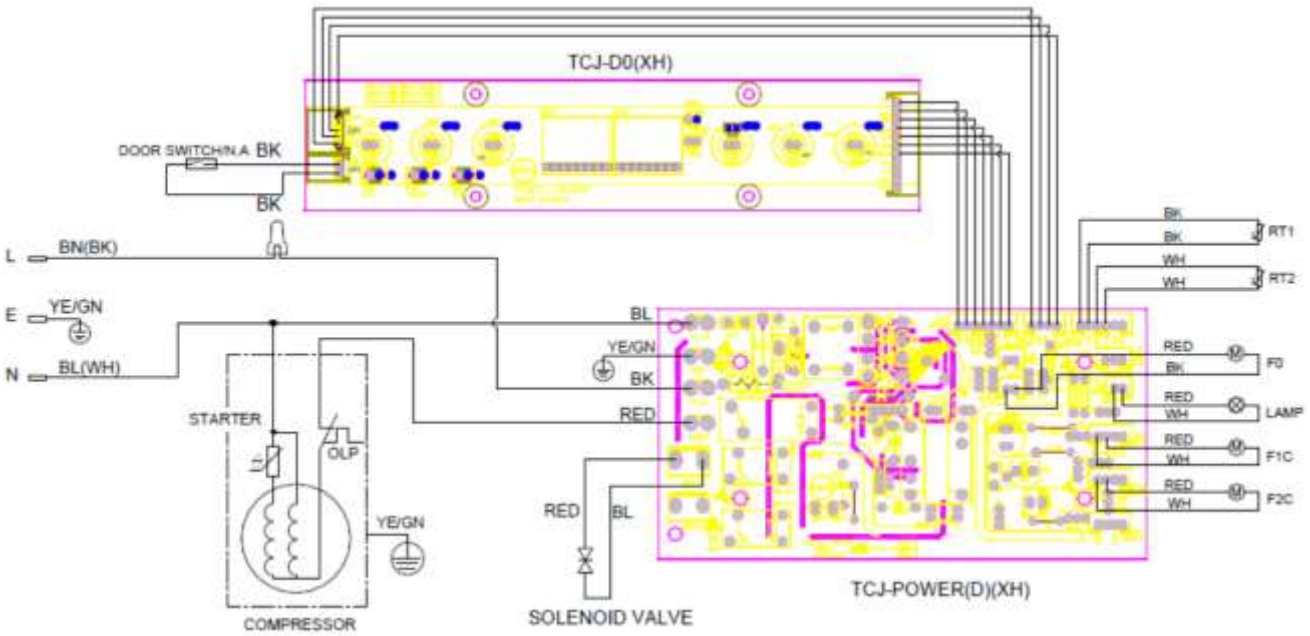
After the self-check program has finished the unit will automatically go back to normal operation.

4.6 Test Mode

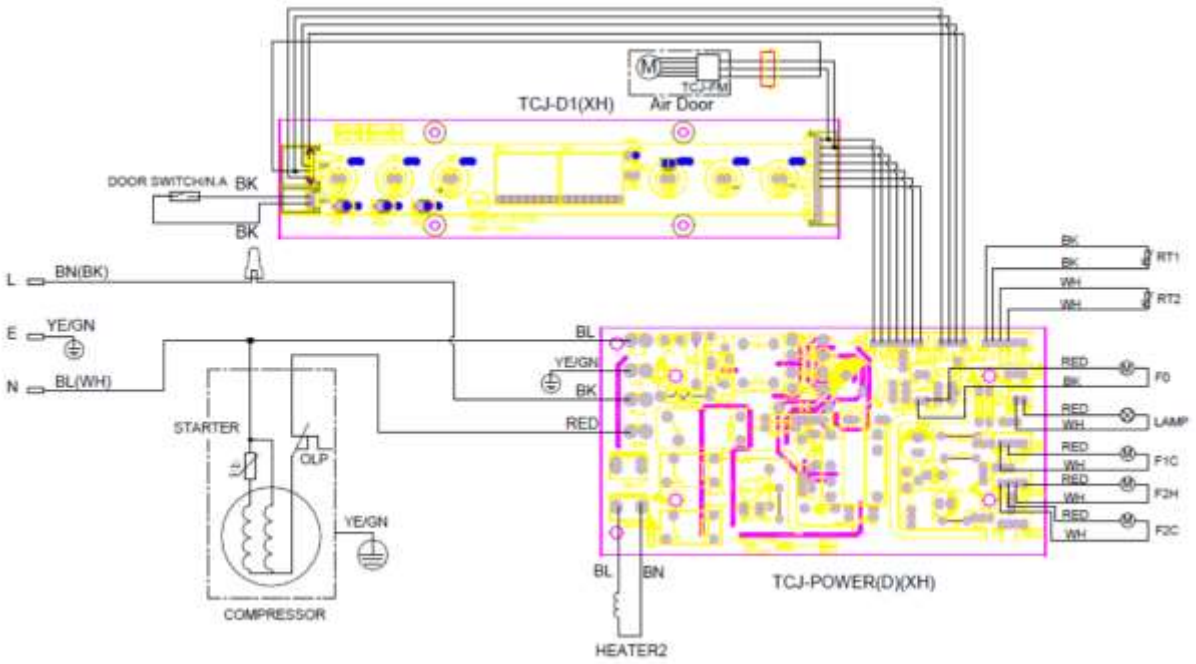
Press and hold the "**LIGHT**" and "**UP**" keys at the same time for 5 seconds with power ON, the indicator light will flash twice to confirm the input and the unit will run in the TEST MODE. The compressor and all fan motors will operate continuously & independent from the SET temperature. At the same time the display shows "**--**". The TEST Mode will automatically exit after 30 minutes or you can stop the TEST mode by disconnecting the unit from its power source.

5. Schematic Diagrams

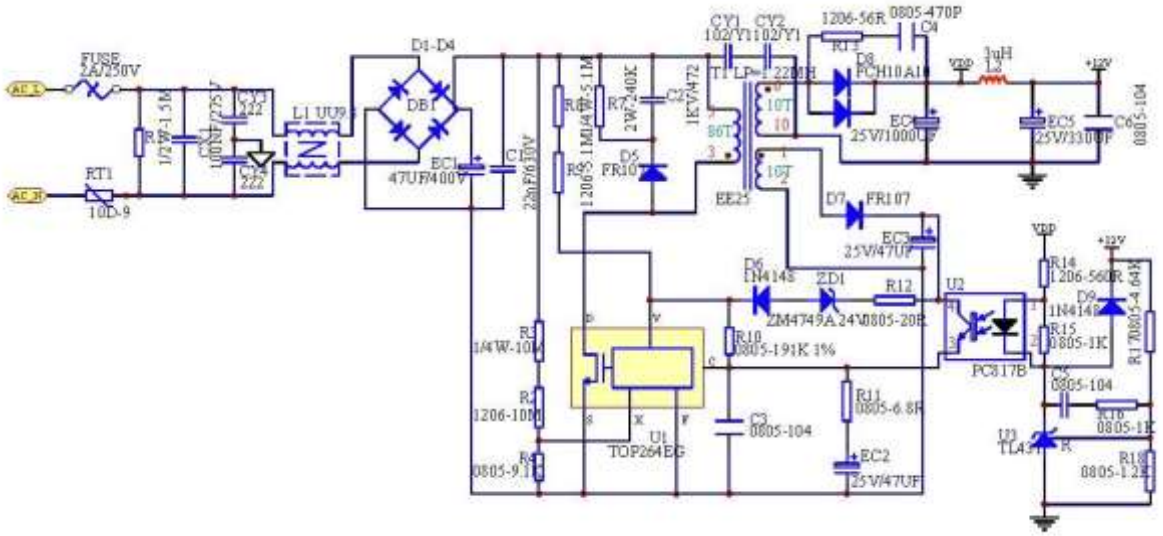
5.1 CWB1760FD Wiring Diagram



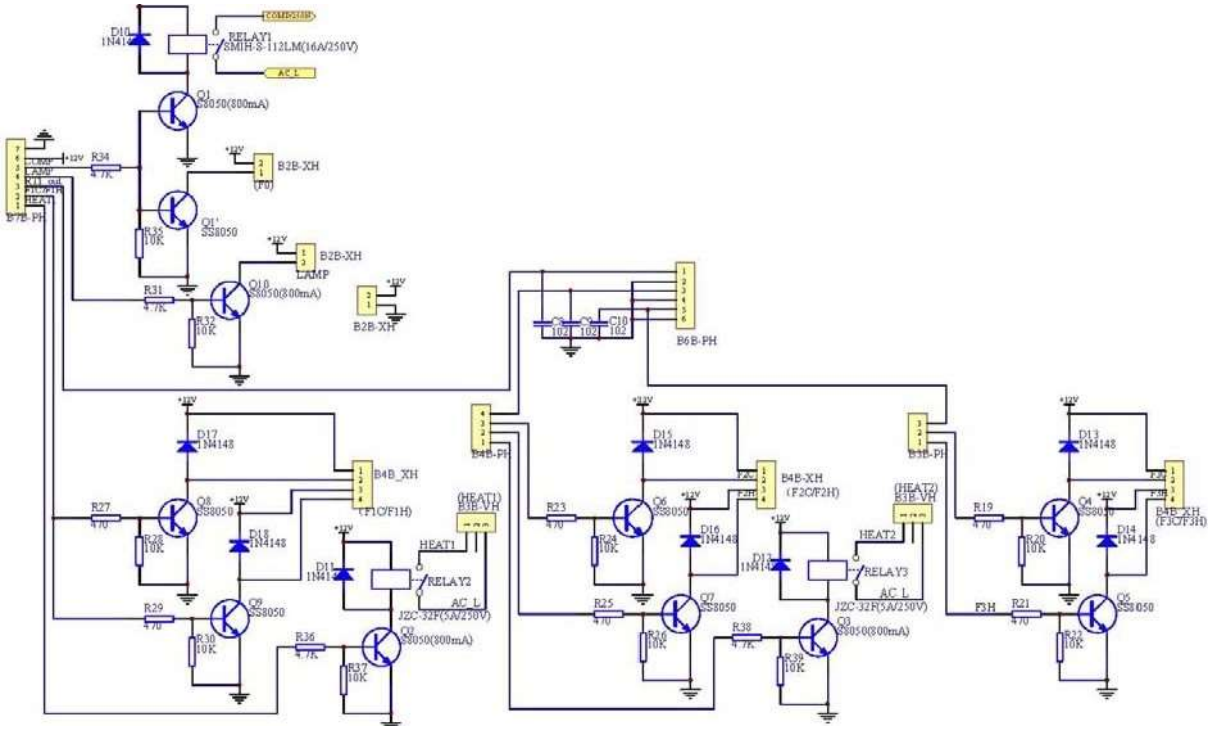
5.2 CWB8420DZ Wiring Diagram



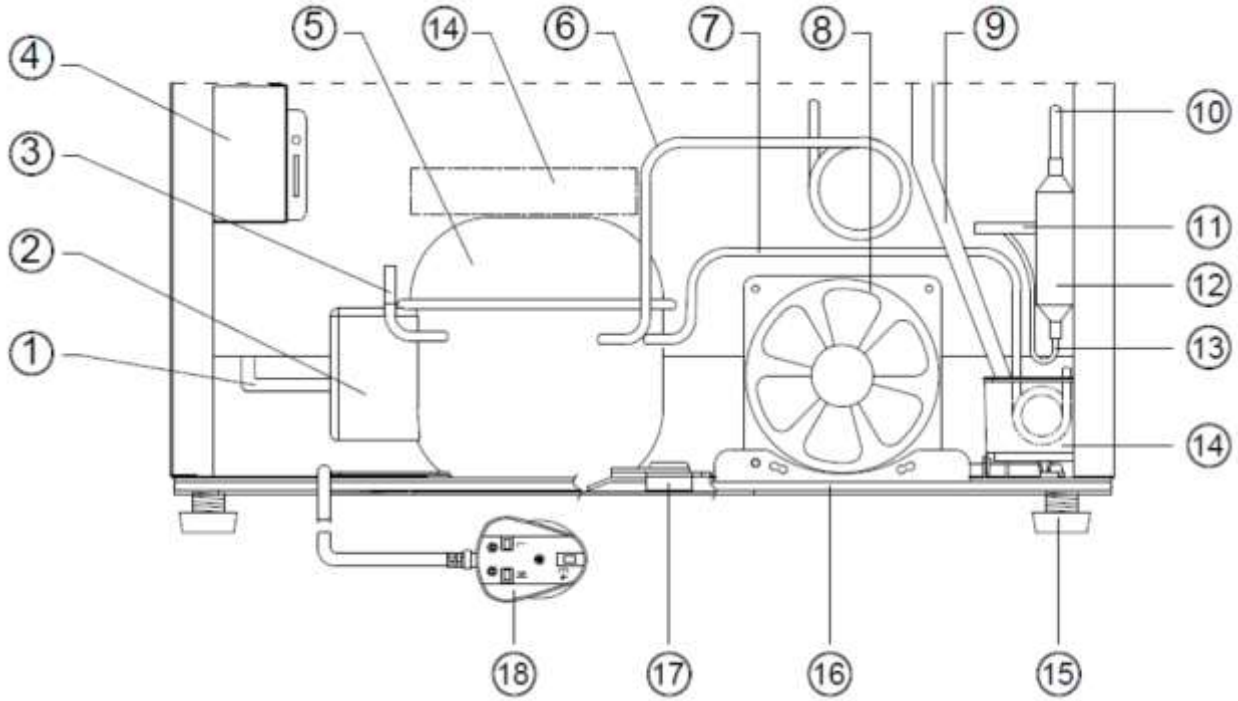
5.3 Power PCB



5.4 Control PCB



6. Compressor Compartment Components

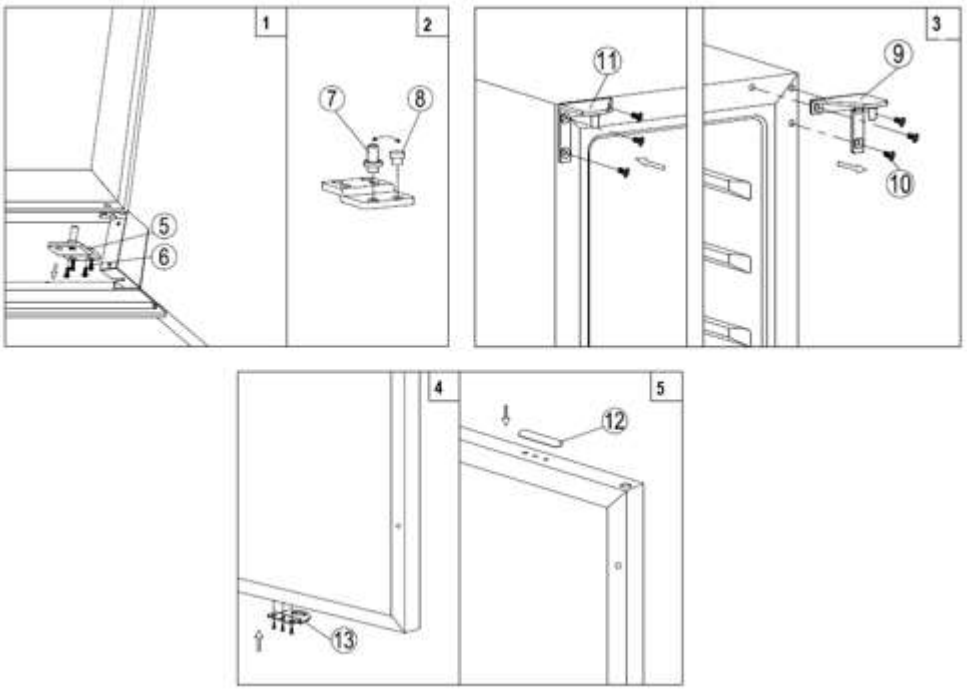


1. **Joint of Condenser Outlet Tube and Hot Pipe Inlet Tube**
2. **Compressor Terminal Cover (Relay and OLP inside)**
3. **Process Pipe**
4. **Electrical Box (Power PCB inside)**
5. **Compressor**
6. **Suction Pipe**
7. **Discharge Pipe**
8. **Condenser Fan Motor**
9. **Drainage Hose**
10. **Outlet Tube of Hot Pipe**
11. **Process Pipe**
12. **Filter Dryer**
13. **Capillary Tube**
14. **Water Drip Tray**
15. **Leveling Leg**
16. **Compressor Base**
17. **Compressor Leg**
18. **Power Supply Cord**

7. Reversing the Door Swing (CWB8420DZ)

The door of this unit can be mounted so it swings open from either the left or right side. It is delivered with the door opening from the left side. Follow these instructions to reverse the door swing.

Note: All removed parts must be saved to remount the door in its original position.



1. Lay unit on its back and remove the bottom hinge ⑤ by unscrewing the four lock screws ⑥ (Fig. 1). Gently remove the glass door from the top right hinge and place it on a padded surface to avoid damage.
2. Unscrew and transfer hinge pin ⑦ and door stopper ⑧ to opposite sides of bottom hinge (Fig. 2).
3. Remove the top right hinge ⑨ by removing the three screws ⑩ . Pop out the three caps covering the screw holes on the left side of the cabinet and move them to the right side. Screw the left top hinge ⑪ (included with the unit) on the left hand side of the cabinet.
4. Unscrew and transfer the lock bracket ⑬ to the opposite side of glass door (Fig. 4). Also remove the cap ⑫ covering the three screw holes and transfer it to the opposite side of door (Fig. 5).
5. Rotate the door 180° and install it on the opposite side of cabinet. Replace the bottom hinge assembly on the left side of the cabinet by reinstalling the four lock screws.

8. Replacing Main Components

8.1 Replacing the Control PCB (CWB1760FD)

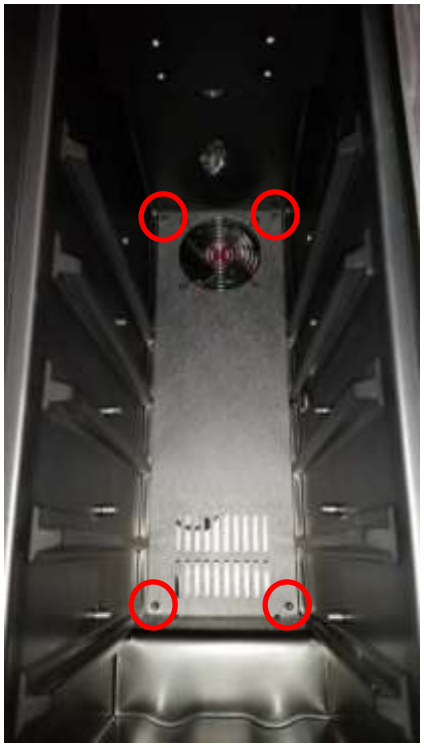
1. Remove all shelves and lay the unit on its back.
2. Remove the four screws that secure the PCB box to the top of cabinet.

3. Carefully pull down the PCB box and disconnect the wires from the control PCB.

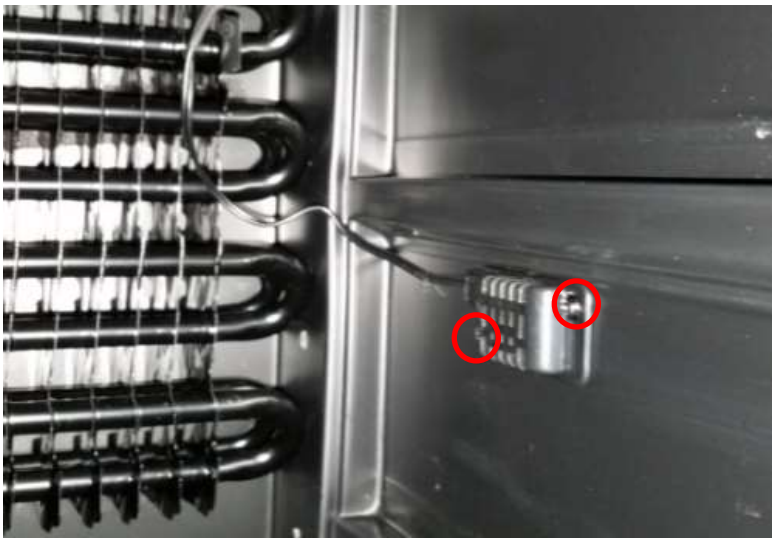
4. Carefully remove the PCB from its box and replace it. Reassemble in reverse order.

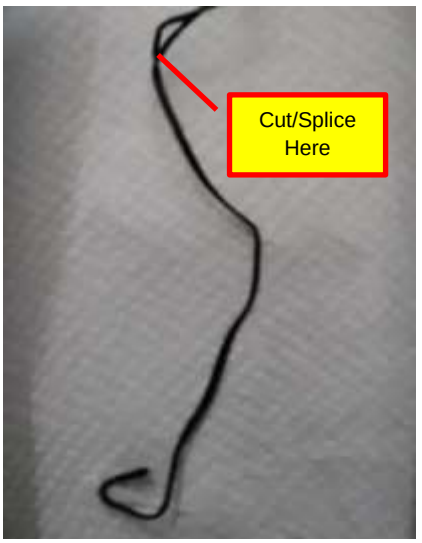
8.2 Replacing the Evaporator Fan and Temperature Sensor (CWB1760FD)

1. Remove the back panel from either side of the cabinet by removing the four screws (in red) holding it in place.
2. Move the panel to the side to access the wire connector for the fan and the wiring to the temperature sensor.
3. Disconnect fan from wire connector (in yellow) and then remove fan by pulling it from the rubber plugs holding it to the panel. Replace fan by following these steps in reverse order.



4. Remove the sensor housing from side of cabinet by removing the two screws. Remove temperature sensor from housing and cut the wires to test it or splice in new sensor. Be sure and cover any bare wire with electrical tape or heat shrink tubing or condensation from the evaporator will corrode the wire. Replace the sensor by following these steps in reverse order. To test a temperature sensor use table 8.2.1 on the next page.





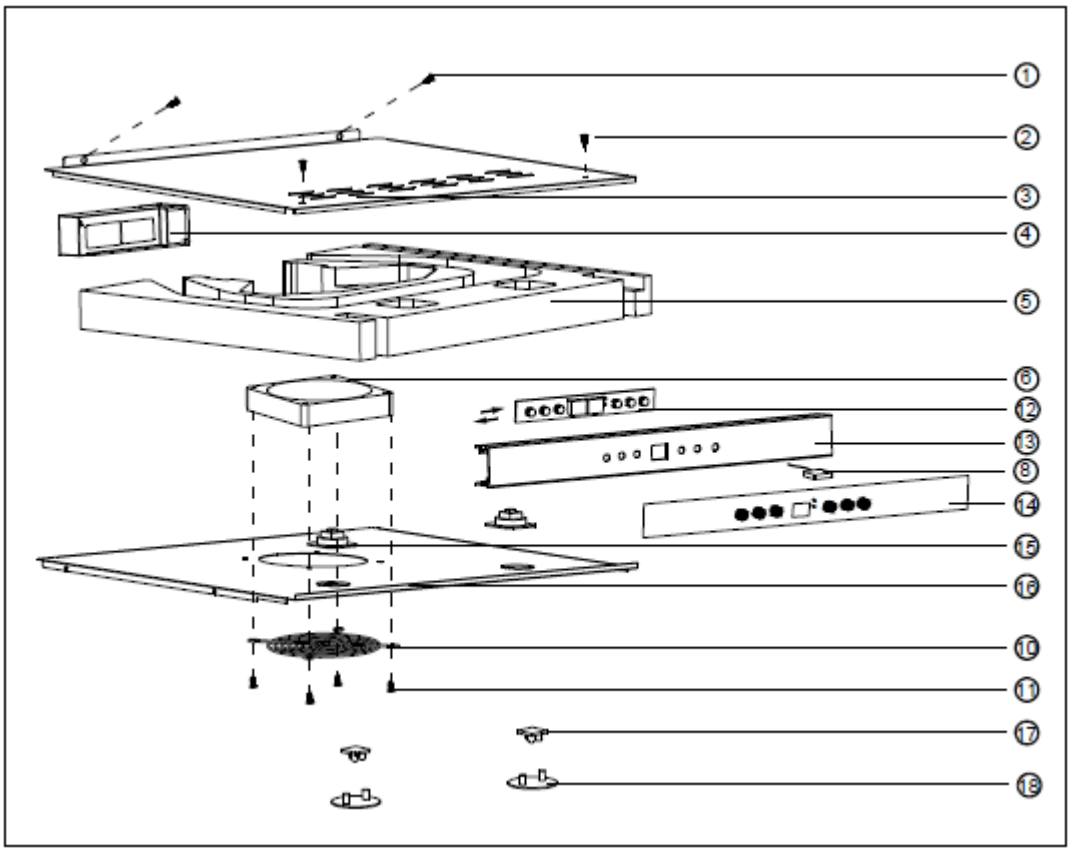
8.2.1 Sensor Test Resistance Table

No.	MEASURED TEMPERATURE (°C)	RESISTANCE OF SENSOR (kΩ)
1	**-30**	**116.55**
2	**-28**	**104.97**
3	**-26**	**94.67**
4	**-24**	**85.49**
5	**-22**	**77.30**
6	**-20**	**69.99**
7	**-18**	**63.44**
8	**-16**	**57.58**
9	**-14**	**53.32**
10	**-12**	**47.60**
11	**-10**	**43.35**
12	**-8**	**39.53**
13	**-6**	**36.08**
14	**-4**	**32.97**
15	**-2**	**30.16**
16	**0**	**27.62**
17	**2**	**25.32**
18	**4**	**23.24**
19	**6**	**21.35**
20	**8**	**19.63**
21	**10**	**18.07**
22	**12**	**16.65**
23	**14**	**15.35**
24	**16**	**14.17**
25	**18**	**13.10**
26	**20**	**12.11**
27	**22**	**11.21**
28	**24**	**10.39**
29	**25**	**10.00**
30	**26**	**9.63**
31	**28**	**8.94**
32	**30**	**8.30**
33	**32**	**7.72**
34	**34**	**7.18**
35	**36**	**6.69**
36	**38**	**6.23**
37	**40**	**5.81**
38	**42**	**5.42**
39	**44**	**5.06**
40	**46**	**4.73**
41	**48**	**4.43**
42	**50**	**4.15**

• The tolerance of sensor resistance is ±5%
• Be sure to measure the sensor resistance after keeping it for at least 3 minutes at a constant temperature (It needs this delay due to sensor speed.)

8.3 Replacing Components In and Around the Middle Divider (CWB8420DZ)

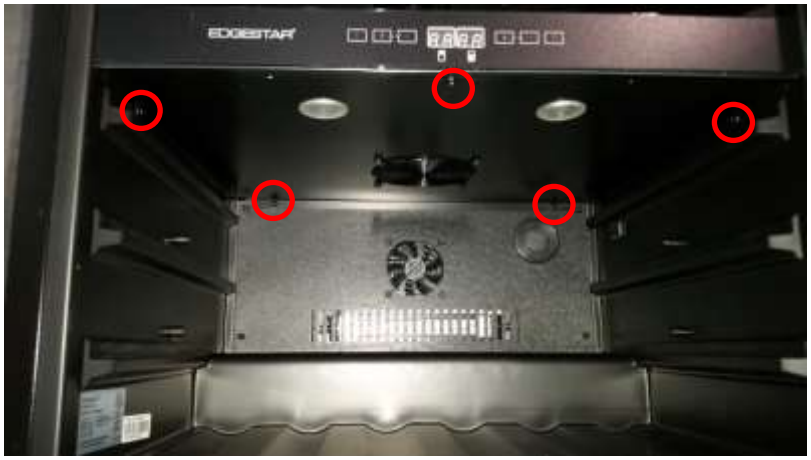
Exploded Diagram of Middle Divider



1. Screw
2. Flat head screw
3. Top plate of middle divider
4. Air duct assembly
5. Foam support of middle divider
6. Fan motor
8. Control PCB wiring connector
10. Fan cover
11. Rubber plug
12. Control PCB
13. Display housing
14. Display cover
15. LED housing
16. Bottom plate of middle divider
17. LED light
18. LED light cover

8.3.1 Replacing the Fan and Control PCB in the Middle Divider (CWB8420DZ)

1. Remove all shelves.
2. Remove the five screws holding the bottom plate to the middle divider.

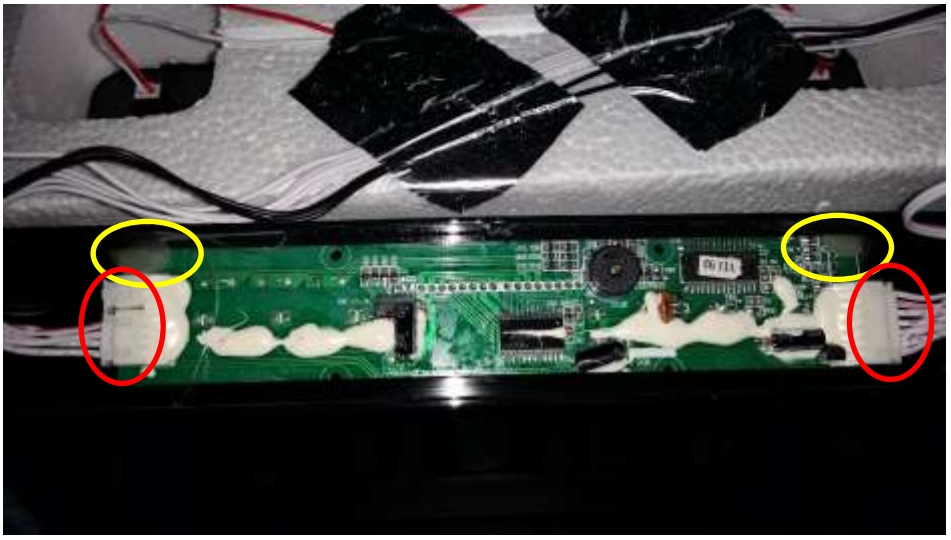


3. Remove the four screws holding the top plate to the middle divider.

4. Remove the top plate from the cabinet and slide the middle divider forward to access its components. Carefully remove and save silver tape if necessary to access wiring. Replace tape when finished.

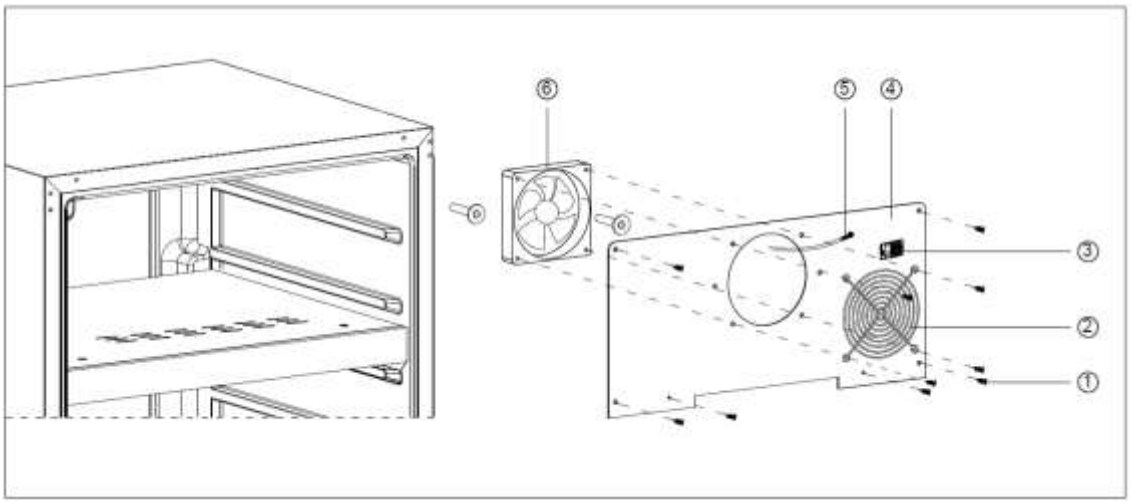
5. To replace the fan motor pull it free from the four rubber plugs holding it in place then disconnect its wiring connector (in red.) Install new fan in reverse order.

6. To replace the control PCB carefully remove any bonding glue (in yellow), disconnect the wire connectors (in red) and slide the PCB to the left or right to remove it from the display housing. Install the new PCB by following these steps in reverse order. Small amounts of hot glue may be used to hold the new PCB securely in place.



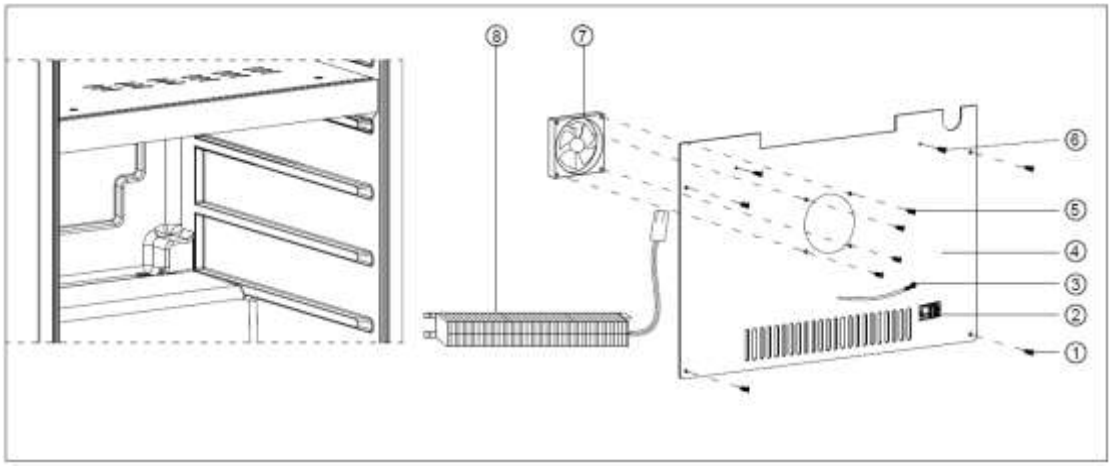
8.3.2 Replacing the Evaporator Fan and Temperature Sensor in the Upper Zone (CWB8420DZ)

1. Remove all shelves.
2. Remove the screws ① that secure the upper air channel cover ④ to the cabinet.
3. Disconnect the fan motor wiring connector. Then pull out the upper air channel cover.
4. Unscrew the thermistor supporter ③ and now you can replace the temperature sensor ⑤ in the upper zone. To test the temperature sensor use table 8.2.1.
5. Remove/Disassemble the four screws that secure the fan motor ⑥ to the upper air channel cover and then you can replace the evaporator fan motor.



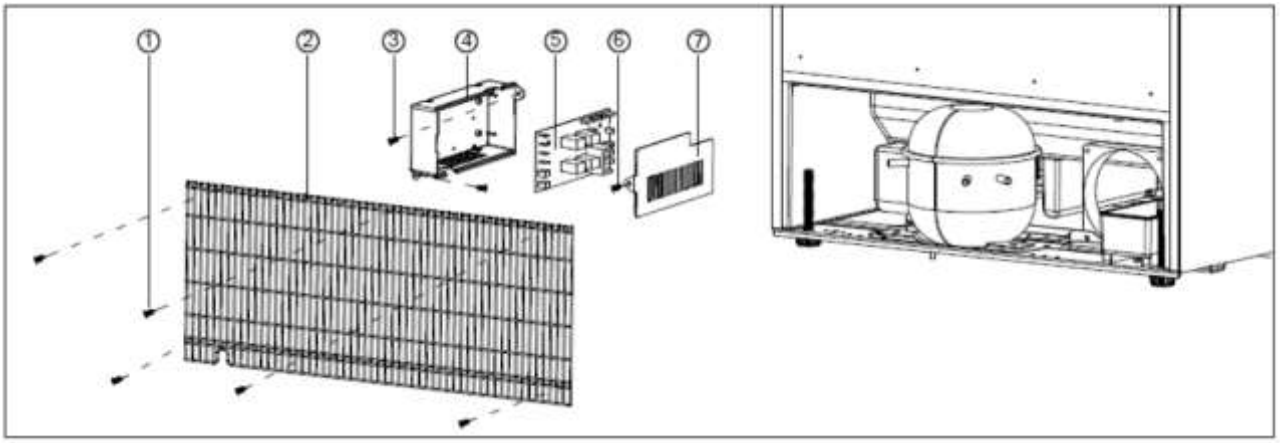
8.3.3 Replacing the PTC Heater, Fan and Temperature Sensor in the Lower Zone (CWB8420DZ)

1. Remove all shelves.
2. Remove the screws ① that secure the lower air channel cover ④ to the cabinet.
3. Disconnect the fan motor wires. Then pull out the lower air channel cover.
4. Now you can see the PTC heater ⑧ for replacing.
5. Unscrew the thermistor supporter ② and now you can replace the temperature sensor ③ in the lower zone. To test the temperature sensor use table 8.2.1.
6. Remove/disassemble the four screws ⑤ that secure the fan motor ⑦ to the lower air channel cover and then you can replace the evaporator fan motor.



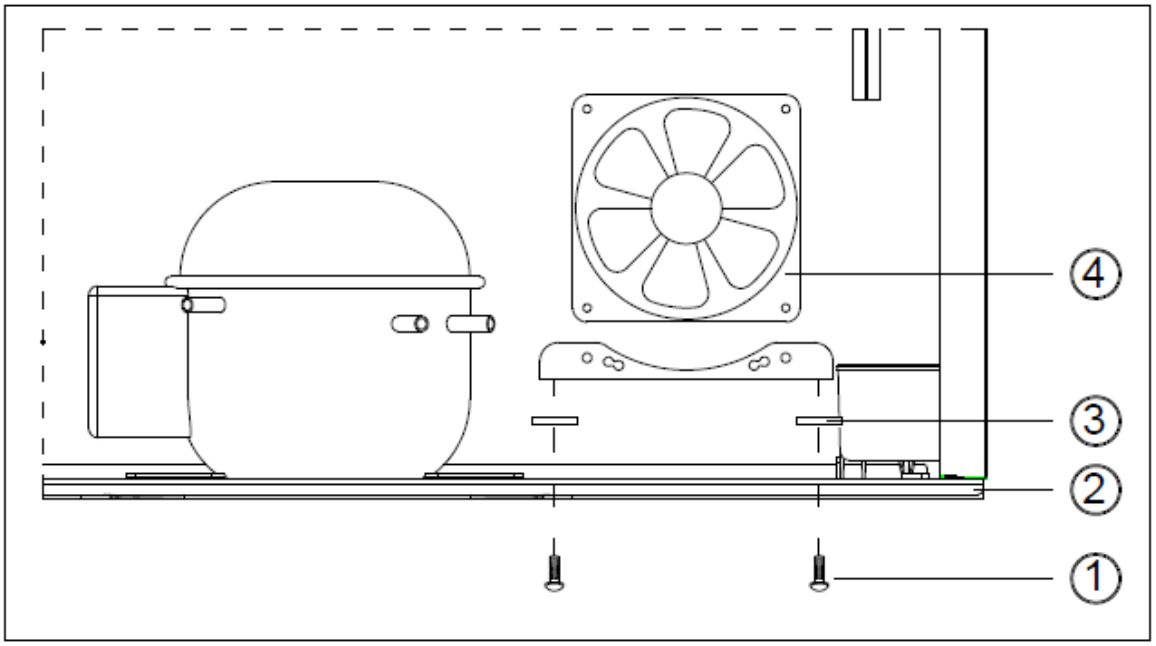
8.4 Replacing the Power PCB (CWB1760FD and CWB8420DZ)

1. Remove the five screws ① that fix the rear grill ② to the cabinet.
2. Remove the screws ③ and ⑥ that hold the electrical box to the side of the cabinet.
3. Pull out the electrical box base ④ and cover ⑦ and Power PCB ⑤.
4. Disconnect the cables from the Power PCB and replace it.



8.5 Replacing the Condenser Fan (CWB1760FD and CWB8420DZ)

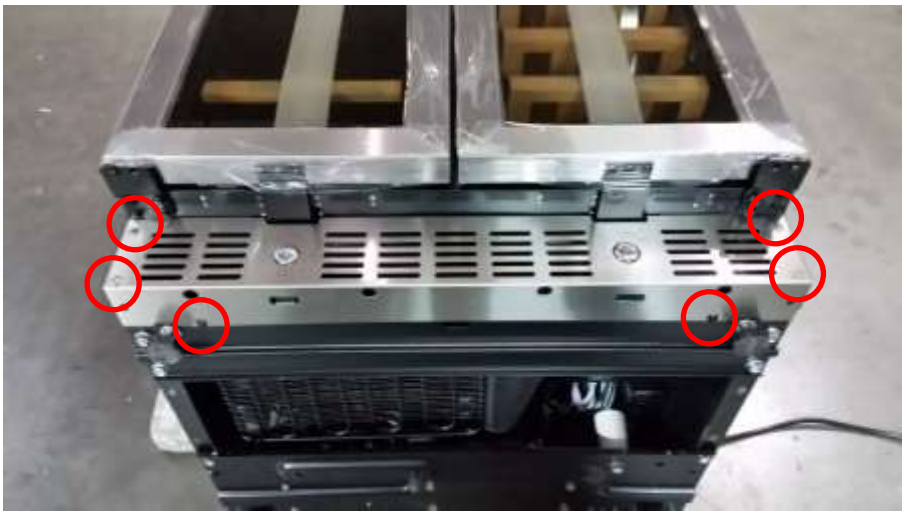
1. Disconnect the condenser fan motor lead connector from the cable or power PCB inside the electrical box.
2. Remove the two screws ① that mount the fan motor ④ to the compressor base ②.
3. Take out the condenser fan motor, remove it from its bracket and replace it. Make sure to refit the bracket and the rubber washers ③ in their original positions.



8.6 Replacing Kick Plates

8.6.1 Kick Plate on CWB1760FD

1. Lay the unit on its back and remove the four screws on the front of the kick plate and the two screws on the bottom.

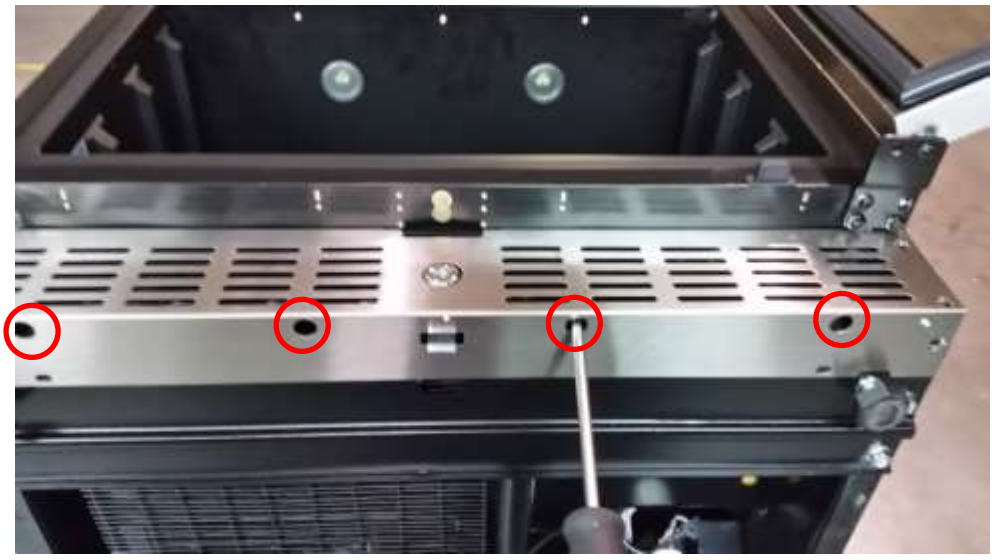


2. Remove the four hidden screws holding the top of the kick plate to the bottom of the cabinet by inserting a Phillips screwdriver into the holes on the bottom of the kick plate. Install the new kick plate by following these steps in reverse order.

8.6.2 Kick Plate on CWB8420DZ

1. Lay the unit on its back and remove the four silver screws on the front of the kick plate and the two screws on the bottom.

2. Remove the four hidden screws holding the top of the kick plate to the bottom of the cabinet by inserting a Phillips screwdriver into the holes on the bottom of the kick plate. Install the new kick plate by following these steps in reverse order.



8.7 Replacing LED Lights (CWB1760FD & CWB8420DZ)

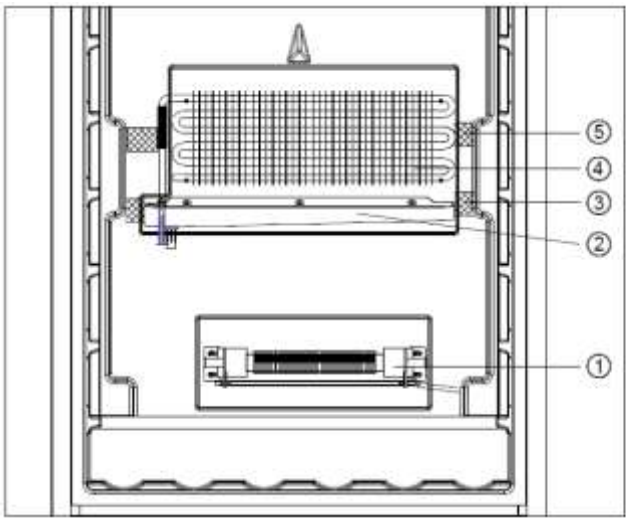
1. Remove all shelves.
2. Carefully remove the LED light cover with a small blade or your fingernail.

3. Carefully pull down to remove the LED light and replace it with a new one.

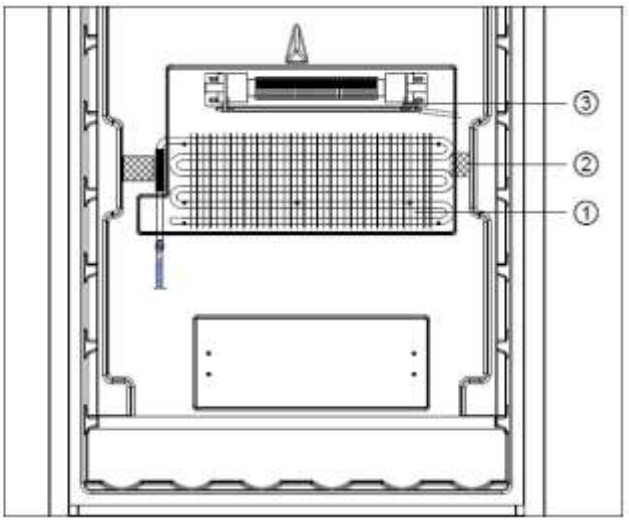
8.8 Replacing the Evaporator Assembly

NOTE: Before replacing any component of the refrigeration system, make sure to read the instructions “Service Precautions for R600a System”.

1. Disconnect unit from its power source.
2. Remove all R600a from the unit in a well ventilated area.
3. Clean and desolder the filter dryer from the system.
4. Remove all shelves.
5. Remove the panel(s) from the back of the cabinet.
6. Remove the two brackets that fix the evaporator assembly to the cabinet.
7. Remove the evaporator assembly from the cabinet and install the new one.
8. After replacing the evaporator assembly, make sure to reinstall the four foam blocks
9. ③ and ⑤ to their original positions for the CWB8420DZ. For the CWB1760FD make sure that the foam blocks ② are reinstalled. **This is very important.**
10. 12. Replace the filter dryer with a new one.
11. 13. Solder all joints. Silver solder and proper flux should be used on copper to steel or steel to steel joints. Excess flux should be wiped off all tubing.



(CWB8420DZ)



(CWB1760FD)

8.9 Replacing the Compressor, Compressor PTC Starter and Overload Protector

NOTE: Before replacing any component of the refrigeration system, make sure to read the instructions “Service Precautions for R600A System”.

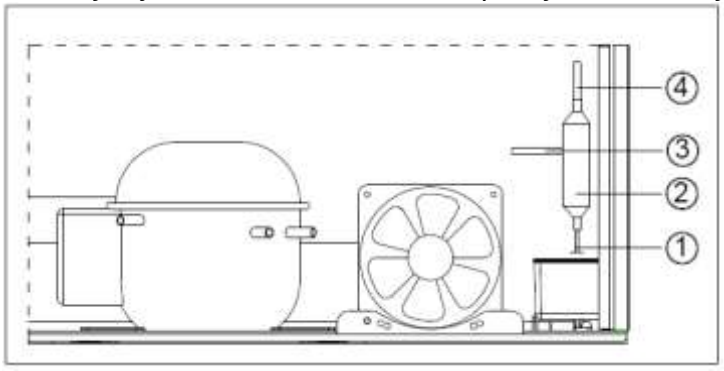
All replacement compressors are charged with the correct amount of oil and a holding charge of dry nitrogen. The holding charge assures that the compressor is dry and ready to install. If you receive a replacement compressor that shows no evidence of holding charge when you center the lines or remove the plugs, return it.

1. Disconnect the unit from its power source.
2. Remove all R600a from the unit in a well ventilated area.
3. Clean and desolder (or cut) the refrigerant lines as close as possible to the compressor stubs, leaving enough length to install the replacement compressor.
4. Disconnect the PTC Starter and Overload Protector from compressor terminals.
5. Remove the bolts from the compressor mounts. Remove defective compressor from cabinet and install rubber grommets on replacement compressor.
6. Clean the compressor stubs with an abrasive cloth. Do not open the compressor stubs yet.
7. Install the replacement compressor using the bolts previously removed.
8. Solder a short piece of tubing to the process tube (approximately 150mm / 6 inches long).
9. Reconnect the refrigerant tubing to the compressor stubs after removing the rubber plugs.
10. Recharge and leak test the system.
11. Replace the PTC Starter and Overload Protector. Reconnect the compressor leads.
12. Run the unit to test.

8.10 Replacing the Filter Dryer

NOTE: A new filter dryer must be installed each time any component of the refrigeration system is opened or replaced.

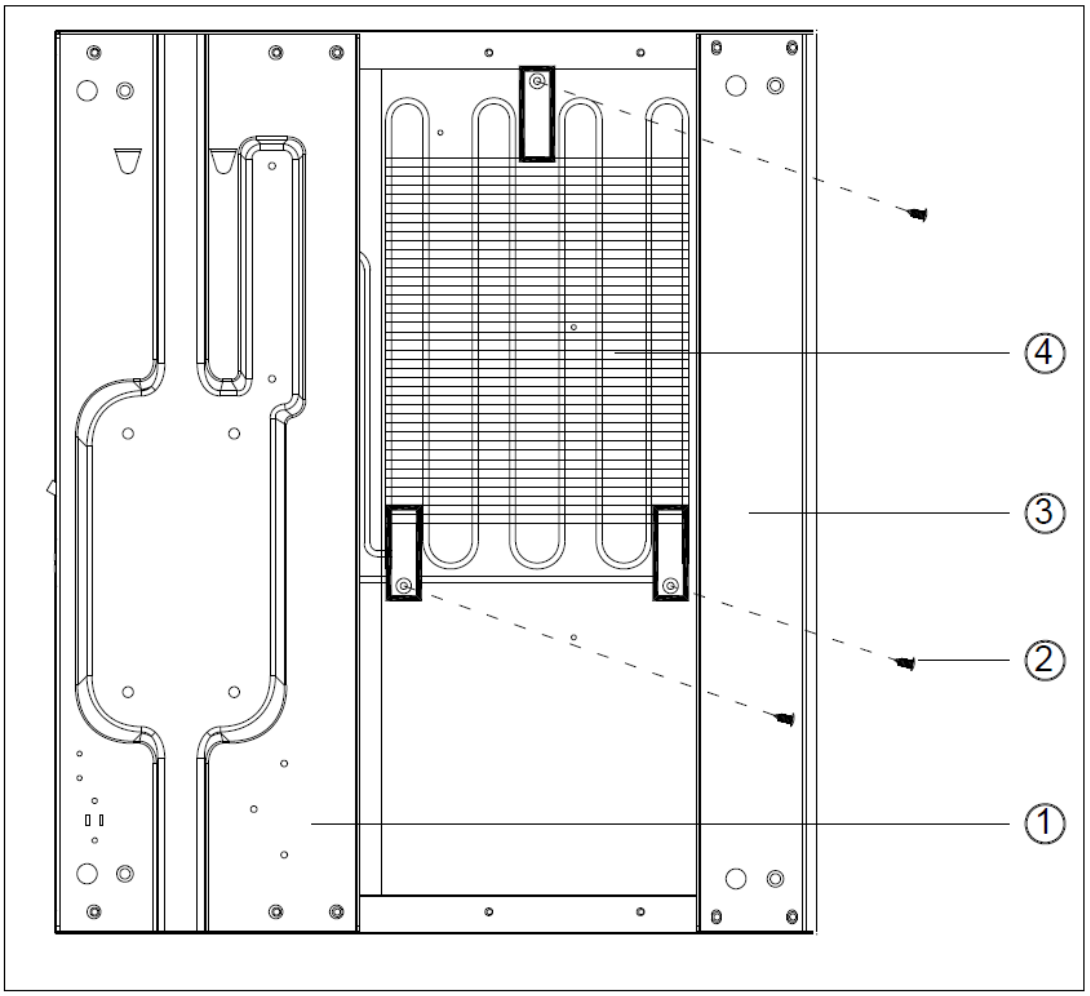
1. Disconnect the unit from its power source.
2. Remove all R600a from the unit in a well ventilated area.
3. Carefully desolder the old filter dryer ② out of the compressor compartment.
4. Use fine sandpaper to clean the capillary tube ① 3 inches from the original joint, and filter dryer input tubing ④ (the condenser outlet tube) 3 inches from the original joint.
5. Use a knife or file to score the capillary tube and the input tubing to the old filter dryer 1 inch from the original joints. Then break the connections cleanly.
6. Use fine sandpaper to clean both ends of the new filter dryer.
7. Offset 1/2" the end of the capillary tube to prevent it from penetrating too far into the dryer.
8. Connect the capillary tube to the replacement filter dryer.
9. Connect condenser outlet tube to the replacement filter dryer
10. Solder in the new filter dryer using silver solder with the proper flux to the condenser outlet/ filter dryer joint. Use Sil-Fos at the capillary tube/filter dryer joint.



8.11 Replacing the Condenser

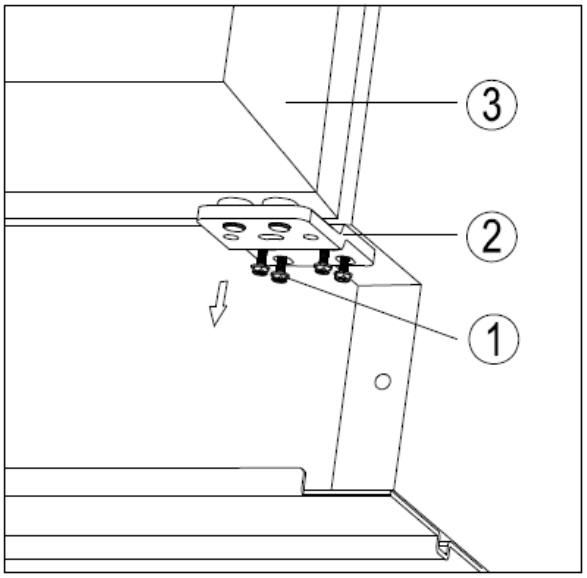
NOTE: Before replacing any component of the refrigeration system, make sure to read the instructions “Service Precautions for R600A System”.

1. Disconnect the unit from its power source.
2. Remove all R600a from the unit in a well ventilated area.
3. Lay the unit on its back and remove the screws ② which secure the condenser to the cabinet.
4. Loosen/remove the base plates ① and ③ to gain better access to the condenser if needed.
5. Clean and then desolder the inlet and the outlet tube from the old condenser ④.
6. Install the new condenser to the cabinet by the screws.
7. Clean then connect the hot pipe to the outlet tubing. Clean and connect the inlet tubing of the condenser to the spiral pipe.
8. Solder all joints. Silver solder and proper flux should be used on copper to steel or steel to steel joints. Excess flux should be wiped off all tubing.



8.12 Leveling the Door(s) and Hinge Adjustments

1. Lay the unit on its back and loosen the screws ①.
2. Adjust the glass door ③ to make sure the door top is parallel with the cabinet top then tighten the screws.
3. Hinge adjustments are necessary when:
   - The door gasket is not sealed along the hinge side of the door.
   - The door gasket is compressed more than 1/16" on the hinge side (causing a poor seal elsewhere around the top.)
   - The distance between the door and cabinet is greater at the top than at the bottom, or vice versa.
4. If one or more of these conditions exist, adjust the hinges to correct the problem. Raising the hinge side may correct a door sag.



8.13 Replacing the Door Gasket

1. Open the door and detach the old door gasket② from the door frame① by pulling off the gasket.
2. Attach the new door gasket to the door frame. Be careful not to damage the door and the new door gasket.

9. Troubleshooting

9.1 Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	SOLUTION
Appliance does not turn on.	Appliance is not connected to a power supply. The appliance is turned off. Circuit breaker tripped or blown fuse.	Connect the appliance to power. Switch on the appliance. Switch on circuit breaker or replace fuse.
Appliance is not cold enough.	The temperature is not set correctly. The ambient temperature could require a higher temperature setting. The door gets opened too often. The door was not closed completely. Door is not hermetically-sealed. The condenser is too dirty. The ventilation opening is blocked or dirty.	Check the set temperature. Set a higher temperature. Do not open the door more than necessary. Close door properly. Check the door seal and clean or replace. Clean the condenser. Clear the obstructions and clean vent.
Appliance turns itself on and off frequently.	The room temperature is higher than average. A large amount of bottles has been added to the unit. The door is open too often. The door is not closed completely. The door gasket does not seal properly.	Put the appliance in a cooler place. Let the appliance work for a while until the set temperature has been reached. Do not open the door more than necessary. Close door properly. Check the door seal and clean or replace.
The light does not work.	Appliance is not connected to a power supply. Circuit breaker tripped or blown fuse. The light is switched off on the control panel.	Connect the appliance to power. Switch on circuit breaker or replace fuse. Switch on the light.
Vibrations.	The appliance is not properly leveled.	Level the appliance with its adjustable feet.
The appliance seems to make too much noise.	The rattling noise may come from the flow of the refrigerant, which is normal. As each cycle ends, you may hear gurgling sounds caused by the flow of refrigerant in your appliance. If temperature fluctuations occur, the contraction and expansion of the inner walls may cause popping and cracking noises.	
	The appliance is not properly leveled.	Level the appliance with its adjustable feet.
The door will not close properly.	The appliance is not properly leveled. The door swing was reversed and not properly installed. The door seal is dirty. The shelves are out of position.	Level the appliance with the adjustable feet. Check the door hinge and reassemble correctly. Clean the door seal. Check the shelves and refit correctly.

Display “E0”, “E1”, “E2”, “E3”, “E4”, “E5” , “E6” or “E7”.	· “E0” indicates the communication error for 3 zone models. · “E1” indicates that the temperature sensor is open circuit. · “E2” indicates that the temperature sensor is short circuit. · “E3” indicates that the defrost sensor in the evaporator is short circuit. · “E4” indicates that the defrost sensor in the evaporator is open circuit. · “E5” indicates the defrost heater failure. · “E6” indicates the solenoid valve failure. · E7” indicates the door switch failure.	Call for service.
The alarm sounds and the temperature display flashes.	Has the appliance door been open for longer than 60 seconds? If not, then the temperature has risen higher or fallen lower than the temperature that has been set. This could be due to: The appliance door being opened too often. The ventilation opening being covered or dirty. A lengthy interruption to the power. A large amount of bottles was added to the unit.	If yes, close the door. Do not open the door more than necessary. Clear the obstructions and clean the dust. Let the appliance work for a while until the set temperature has been reached.
The icon “--” is lit up and flashing on the temperature display.	The display temperature is out of range.	· Only temperatures within the range of 0~99°F/-9~37°C can be displayed. If the temperature is not within this range “--” will be displayed instead. This is normal.

9.2 Diagnostic Guide

Remember, before entering the sealed system, all other systems must be tested and properly repaired. These include the electrical, control and air flow systems. Before "turning a screwdriver", many checks can be made simply by using your senses:

LISTEN:

- What is the customer complaint?
- Are the fans operating?
- Is the compressor operating?

LOOK:

- Does the light button turn the light on and off?
- What is displayed on the control panel?
- Are the controls set properly?
- Do door gaskets seal properly?

TOUCH:

- Is air circulating though the bottom grille?
- Is air circulating in the compartments?
- Is the suction line to the compressor cool?
- Is the discharge line from the compressor hot?
- Is the condenser hot?
- Is the hot pipe hot?

SYMPTOM	DIAGNOSIS
For models - Dual zone with single door (CWB8420DZ)	
The displayed temperature is higher than the set temperature in the upper zone.	1. Is the ambient temperature too high (more than 35°C)? 2. Is the ventilation blocked? 3. Is the evaporate fan motor in the upper zone defective? 4. Is the condenser fan motor defective? 5. Is the temperature sensor defective? 6. Is the cooling system defective?
The displayed temperature is lower than the set temperature in the upper zone.	1. Is the lower zone temperature normal? Otherwise check the PTC heater and fan motor in the lower zone. 2. Is the fan motor in the middle partition defective? 3. Is the temperature sensor defective? 4. Is the Main PCB or Display PCB defective? 5. Is the ambient temperature too low (less than 0°C)?
The displayed temperature is higher than the set temperature in the lower zone.	1. Is the upper zone temperature normal? Otherwise check the upper zone problem first. 2. Is the fan motor in the middle partition defective? 3. Is the temperature sensor defective? 4. Is the ambient temperature too high (more than 35°C)?
The displayed temperature is lower than the set temperature in the lower zone.	1. Is fan motor defective? 2. Is the PTC heater defective? 3. Is the temperature sensor defective? 4. Is the Main PCB or Display PCB defective? 5. Is the ambient temperature too low (less than 0°C)?

The temperature in the upper zone is normal but the displayed temperature in the lower zone is lower than the set temperature.	1. Is the fan motor in the lower zone is defective? 2. Is the PTC heater defective? 3. Is there leaking between the upper zone and lower zone?
For models - Dual zone with two doors (CWB1760FD)	
The displayed temperature is higher than the set temperature.	1. Is the ambient temperature too high (more than 35°C)? 2. Is he ventilation blocked? 3. Are the fan motors defective? 4. Are the temperature sensors defective? 5. Is the cooling system defective? If the temperature of one zone is normal and the second zone is abnormal, check the solenoid
The displayed temperature is lower than the set temperature.	1. Is the ambient temperature lower than the set temperature? This is normal.

9.3 Troubleshooting the Refrigerant System

Once it has been determined that the other systems are working properly, a sealed system problem can be confirmed using the table when the unit is not cooling or not cooling enough.

No.	Symptom	Cause	Action
1	The evaporator cools down and warms again. The condenser warms in proportion as the evaporator cools. The process repeats again.	Moisture in the refrigerant.	Replace the refrigerant.
2	The condenser is cold. The evaporator is not cold. The temperature of compressor is high.	Foreign matter hampers the cooling.	Locate the troubled section and make repairs.
3	No difference in temperature between suction pipe and discharge pipe of compressor. The temperature of compressor is kept at room temperature. The evaporator does not cool down.	Failed compressor.	Replace the compressor.
4	Frost on the suction pipe. The condenser is overheated. The refrigeration of evaporator is not efficient. The compressor amperage is higher than normal.	Overcharged.	Discharge the refrigerant. Charge refrigerant to the designated volume. Check for leaks.
5	The condenser is cold. The compressor surface temperature is high. The unit is not cold enough.	Low on refrigerant. Find the leak. Note: If you find oil, it is likely where the leak is.	Discharge the refrigerant. Charge refrigerant to the designated volume. Check for leaks.

9.4 Special Detailed Diagnosis

9.4.1 Testing the Power PCB & Display/Control PCB

1. The control system including the POWER PCB and DISPLAY/CONTROL PCB operates when the unit is powered on. If the unit is receiving power and is switched ON but is not operating check the control system including the power PCB, display/control PCB and connecting wires.
2. To Check The Main PCB,
   Disconnect the unit from the power source.
   Remove the electrical box from the compressor compartment and take out the power PCB.
   Disconnect the connectors for all fan motors and the compressor.
   Carefully situate the PCB so that it is insulated from other parts and from grounding.
   Connect the unit to the power source.
   Check the output voltage of all fan motors and compressor connectors on the main PCB.
   The correct output voltage of all fan motors connectors should be 12V DC. The correct output voltage of compressor connector should be same as the power source. If not, the PCB must be replaced.
3. Replace the Display/Control PCB for the following symptoms after you confirm that the power PCB is normal.
   No LED temperature display or indicator illuminated on the control panel.
   Some LEDs do not light.
   No response when touching the control buttons. For this symptom, check to see if there any response after disconnecting and reconnecting the power before replacing the Display/Control PCB.
   The unit does not run correctly in the TEST MODE. In order to run in TEST MODE, Touch and hold the "**LIGHT**" and "**UP**" marks at the same time for 5 seconds.
5. If you can't find the failure from these symptoms, replace the Power PCB and Display/Control PCB separately to see which one is defective and replace it.

9.4.2 Testing the Condenser Fan

1. The condenser fan motor operates in parallel with the compressor. If the compressor runs but the motor doesn't, the motor is either defective or disconnected. If neither operates, check the Power PCB and the cabinet wiring.
2. To Check The Condenser Fan Motor:
   Disconnect the unit from the power source.
   Disconnect the condenser fan motor lead connector from the cable.
   Connect the condenser fan to a 12V DC power source. If the motor fails to operate, it is defective and must be replaced.

9.4.3 Testing the Evaporator Fan

1. The evaporator fan motor operates when the compressor operates and the rest of the time cycles ON and OFF to circulate the interior air. If the compressor runs but the fan doesn't, the motor is either defective or disconnected. If neither operates, check the Power PCB and the cabinet wiring.

2. To Check The Evaporator Fan Motor:
   Disconnect the unit from the power source.
   Remove the cabinet back panel.
   Disconnect the evaporator fan motor connector from the cable.
   Connect the fan motor to a 12V DC power source. If the fan fails to operate, it is defective and must be replaced.

9.4.4 Testing the Fan in the Middle Divider (CWB8420DZ)

1. This fan motor operates independent from the compressor. When the set temperature of lower zone is not met and is lower than the actual storage temperature the fan runs. The rest of the time it does not run. If the set temperature of lower zone is not met and lower than the actual storage temperature but the fan motor doesn't operate, the motor is either defective or disconnected. If neither operates, check the Power PCB and the cabinet wiring.
2. To Check The Fan Motor in Middle Divider:
   Disconnect the unit from the power source.
   Remove the top panel of the middle divider.
   Disconnect the fan motor connector from the cable.
   Connect the motor to a 12V DC power source. If the motor fails to operate, it is defective and must be replaced.

9.4.5 Testing the Heater Fan (CWB8420DZ)

1. The heater fan motor operates when the PTC heater operates and at the rest time it cycles ON and OFF to circulate the interior air. If the PTC heater runs but the fan motor doesn't, the motor is either defective or disconnected. If neither operates, check the Power PCB and the cabinet wiring.
2. To Check The Heater Fan Motor,
   Disconnect the unit from the power source.
   Remove the bottom zone back panel.
   Disconnect the heater fan motor connector from the cable.
   Connect the motor to a 12V DC power source. If the motor fails to operate, it is defective and must be replaced.

9.4.6 Testing the PTC Heater (CWB8420DZ)

1. The PTC heater operates when the set temperature is not met and is higher than the actual lower cabinet temperature. If not, the PTC heater is either defective or disconnected. Always check the Power PCB and the cabinet wiring.
2. To Check The PTC Heater,
   Disconnect the unit from the power source.
   Remove the bottom zone back panel.
   Disconnect the PTC connector from the cable.
   Connect the PTC heater to the rated power source on the rating label. If the PTC heater fails to operate, it is defective and must be replaced.

9.4.7 Overload Protector

The overload protector prevents the compressor from burning out its electrical windings in the event the compressor becomes overheated or draws too much current. The overload trips, opening the circuit to the compressor. If it does this repeatedly, the compressor is said to be cycling on the overload. Cycling on the overload may be caused by:

1. Insufficient air circulation around the compressor and condenser.
2. Pull-down on the compressor, caused by a large quantity of warm food or beverages placed in the refrigerator.
3. Compressor stalling due to lack of pressure unloading.
4. Low line voltage.
5. Defective start relay.
6. Defective winding in the compressor or shorted windings.

Testing the Overload Protector

Disconnect the unit from power. To test the overload protector (OLP), remove the compressor terminal cover. Examine the bottom of the OLP for signs of arcing. If signs of arcing are present, either check for continuity or connect a jumper wire across the terminals. If using a jumper wire, plug in the line cord and set the temperature control to a cold setting. If the compressor starts, the OLP is defective and must be replaced. If the compressor fails to start, check for a defective start relay or compressor.

1. Remove the PTC starter and OLP from the compressor.
2. Connect one ohmmeter probe to the compressor shell. Make sure the probe makes good contact with bare metal. One at a time, connect the other ohm-meter probe to each of the three compressor terminals.
3. If the meter shows no continuity to ground, install PTC and overload protector to the compressor's terminals. If the meter indicates the compressor terminals are grounded, replace the compressor.
4. Attach a jumper wire across the OLP terminals.
5. Make sure the jumper wire does not short to ground.
6. Reconnect the unit to power source. If the compressor starts, the overload protector is defective and must be re-placed.

9.4.8 PTC Starter

The PTC solid state starting device is a push-on component mounted to the start and run terminals of the compressor. This device is connected in parallel with the run capacitor and is in series with the compressor start windings. This will produce a short circuit across the run capacitor during the compressor starting sequence and full current is applied to the start and main windings. Since the PTC device is temperature sensitive, a variance in its temperature causes a change in its resistance. When current is first applied to the compressor, the PTC device's low resistance shorts out the run capacitor producing adequate motor starting torque. As the compressor motor approaches running speed, the current through the PTC device causes the temperature and resistance of the PTC device to increase to where it appears to be an open circuit. The compressor continues to operate on the run winding in parallel with the series combination of the run capacitor and start winding.

Checking the PTC Device

1. Disconnect the unit from the power source.
2. Discharge the capacitor and remove the wires from the PTC device terminals.
3. Allow the PTC to cool to room temperature.
4. Remove the PTC device.
5. Using an ohmmeter, check the resistance between the PTC device terminals. The ohmmeter should register between 3 and 20 ohms. An extreme variance outside of 3 and 20 ohms indicates a defective PTC device which must be replaced.

9.4.9 Run Capacitor

The run capacitor is mounted adjacent to the compressor. It is electrically connected to the compressor circuit to provide the required phase difference between the start and run windings for running the compressor.

Capacitor Failures May Be Caused By:

(1) A Short Circuit - Will cause the start windings to be energized continuously in the start mode. The compressor could start, but the overload protector will trip, and eventually trip continuously.

(2) An Open Circuit - Should, under normal conditions, allow the compressor to start. Under a heavy running load, however, the compressor will trip on the overload.

(3) A Capacitor Low in Capacitance – A capacitor may lose capacitance by a loss of its electrolytic properties. The compressor would run under a light load, but would trip on the overload in high ambient conditions.

Testing the Capacitor

We recommend using a capacitor analyzer when testing. A solid state unit that measures capacitance and power of any capacitor, and has an automatic means of discharging the capacitor through resistance is preferred.

Alternate Method Using Ohmmeter

1. Disconnect the unit from the power source.
2. Disconnect the capacitor lead wires.
3. Short across the terminals using a resistor with a minimum resistance of 1,000 ohms. This ensures that no charge remains to damage the ohmmeter.
4. Set the ohmmeter selector switch to the 10,000 ohm scale (R x 10K).
5. Connect the ohmmeter leads to the capacitor terminals and observe the meter point low end.

   If the pointer deflects to the lower end and remains there, the capacitor is shorted and must be replaced.

   If there is no deflection of the pointer, the capacitor is open and must be replaced.

   If the pointer deflects toward the high end of the scale and then slowly returns to the low end, the capacitor is good.

9.4.10 Abnormal Vs. Normal Noise

- **Compressor Noise**

  The working of the electrical motor and the pump inside the compressor will cause noise during its run time. The noise should be stable and not exceed 42 dB(A). If the noise is excessive, the compressor is defective and should be replaced.

  Aging rubber legs or incorrect leg mounting (Too loose or too tight) also generates an abnormal noise. If so, please correct the leg mounting or replace the legs.

- **Fan Noise**

  A working fan motor will cause noise during its run time. The noise should be stable and not exceed 40 dB(A). If the noise is excessive, checking the following:

  If the bearings of the fan motor are defective, replace the fan motor.

  If the fan blade interferes with the wiring, fix the wiring.

- **Refrigerant Flow Noise**

  If the end of the capillary tube was inserted too far into the inlet pipe of evaporator or there are burrs at the end of the capillary tube.

  The anti-vibration grommet mounted to the joint of the capillary and inlet tubing of evaporator is lost.

  The capillary tube is interfering with the other parts or refrigeration lines.

  The compressor oil has flowed to the refrigeration tubing during transportation. Perform a system flush and recharge.

- **Normal Noise**

  All models incorporate rigid foam insulated cabinets to provide high thermal efficiency and maximum sound reduction for its internal working components. In spite of this technology, your model may make sounds that are unfamiliar. Normal operating sounds may be more noticeable because of the unit's environment. Hard surfaces such as cabinets, wood/vinyl/tiled floors and paneled walls have a tendency to reflect normal appliance operating noises. Some common refrigeration components, and a brief description of the normal operating sounds they make are listed below:

  Compressor: The compressor makes a hum or pulsing sound that may be heard when it operates.

  Evaporator/Capillary: Refrigerant flowing through an evaporator may sound like boiling liquid.

  Condenser/Evaporator Fan: Air moving through a fan can be heard.

  Automatic Defrost/Drain Pan: Water may be heard dripping or running into the drain pan when the unit is in the defrost cycle.

  At the end of each cycle, you might hear a bubbly noise coming from the fluid circulating in the pipes.

  The interior walls contracting and expanding may also cause clicking or cracking sounds.

9.4.11 Evaporator Freezing

The evaporator will freeze because of the following reasons:

The evaporator fan motor has failed. Check the door switch and if it has failed replace the door switch. If the fan motor is defective, replace the fan motor.

Frequent power outages.

The door is open for too long a time.

Faulty seal between the door gasket and cabinet front. Use a hairdryer to heat the portion of the gasket that is not sealing correctly and then pull the gasket to make it contact the cabinet front. If this does not work replace the door gasket.

The foam blocks at the two sides of evaporator are lost or damaged. Replace the foam.
The temperature sensor has failed.
The compressor operates continuously & independent from the set temperature.
At the same time the condenser fan motor does not operate. The POWER PCB has failed and must be replaced.
NOTE: *Before starting the services as above, please unplug the appliance and open the door for more than 24 hours to let the ice on the evaporator melt completely.*

9.4.12 Solenoid Valve (CWB1760FD)

If the left zone is too low a temperature or freezing and the right zone is not cooling test the solenoid valve:

- Remove the power leads from the solenoid.
- Connect the solenoid valve directly to external power – a clicking sound should come from the valve as you disconnect and reconnect power. If not, the valve is defective.
- If the right zone of the unit starts cooling it means the solenoid valve is OK. Replace the Power PCB. Otherwise replace the solenoid valve.

9.5 Display Error Codes

9.5.1 "E1"

"E1" indicates the corresponding air temperature sensor is an open circuit. It may be caused by the following reasons:

- The temperature sensor is defective – Replace the thermistor.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.
- The connecting wire is defective (e.g. screw has made the wires short circuit) – Reroute a new wire.
- The temperature sensor wire is loose or out of the terminal on the Power PCB. – Reconnect wire.
- The sensor wire is not connected with the internal wire. – Reconnect wire.

9.5.2 "E2"

"E2" indicates the corresponding air temperature sensor is a short circuit. It may be caused by the following reasons:

- The temperature sensor is defective – Replace the thermistor.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.
- The connecting wire is defective (e.g. screw has made the wires short circuit) – Reroute a new wire.

9.5.3 "E3"

"E3" indicates the defrost sensor in the evaporator is an open circuit. It may be caused by the following reasons:

- The temperature sensor is defective – Replace the thermistor.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.
- The connecting wire is defective (e.g. screw has made the wires short circuit) –

Reroute a new wire.

9.5.4 “E4”

“E4” indicates the defrosting sensor in the evaporator is a short circuit. It may be caused by the following reasons:

- The temperature sensor is defective – Replace the thermistor.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.
- The connecting wire is defective (e.g. screw has made the wires short circuit) – Reroute a new wire.

9.5.5 “E5”

“E5” indicates the defrosting heater is defective. It may be caused by the following reasons:

- The defrosting heater is defective – Replace the defrosting heater.
- The connecting wire from defrosting heater to Power PCB is loose – Reconnect the wire.
- The connecting wire (Heater 1) from Control PCB to Power is loose – Reconnect the wire.
- The temperature sensor is defective – Replace the thermistor.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.

9.5.6 “E6”

“E6” indicates the solenoid valve is defective. It may be caused by the following reasons:

- The solenoid valve is defective. Please see 9.4.12 – Replace the solenoid valve.
- The connecting wire from Solenoid valve to Power PCB is loose – Reconnect the wire.
- The connecting wire (Heater 1) from Control PCB to Power PCB is loose – Reconnect the wire.
- The Power PCB is defective – Replace the Power PCB.
- The Control PCB is defective – Replace the Control PCB.
- Wrong connection of capillary for left zone and right zone.
- Wrong connection of thermistor for left zone and right zone.

9.5.7 “E7”

“E7” indicates the door switch has failed. It may be caused by the following reasons:

- The door is not closed properly - Open and close the door with a little more force.
- The door switch is defective – Replace door switch.
- The plastic piece on the door that contacts the door switch has fallen off or is not in the correct position – Replace plastic piece.

10. FAQs

10.1 What are the main concerns with storage conditions to collectors and consumers of fine wine?
Light, humidity, temperature and vibration.

10.2 What is the ideal temperature for wine?
The ideal temperature to store wines is between 52ºF and 57ºF (11ºC~14ºC). However, any temperature between 41º~72ºF (5º~22ºC) will suffice as long as it remains constant.

10.3 What is the ideal humidity for wine?
Humidity between 60%-70% is a superlative range in which to store wine. High humidity levels keep moisture inside the bottle thus preventing evaporation through the cork. Humidity levels that are too high often cause micro-organisms to grow which can age your wine prematurely or even spoil your wine.

10.4 The storage temperature seems to vary by 3 or 4 degrees frequently.
This is normal: small differences in temperature are necessary for the unit to work properly. When the cellar starts a defrost cycle, the temperature rises slightly. When the cooling system resumes working, the temperature drops. Such changes happen over a short time and their influence is too minimal to affect wine preservation. Liquid tends to keep an average temperature by physical law. For example, if a swimming pool's temperature is 25°C and, one night, outside temperature drops to 18°C, the water's temperature will not drop as much. In the morning, it may only be 22°C.

10.5 Water has accumulated on the floor or appeared at the back of the appliance.
Make sure the drainage hose to the water drip tray from inside the unit is properly in place. If so, during humid times, you may need to remove excess water with a sponge.

10.6 Water has appeared in the inside wall of the appliance.
During highly humid times, especially during summer, this can happen when opening the door too often.

10.7 The appliance never seems to stop running - the unit is always on.
Make sure the door is closed properly. Add a separate thermometer inside the cabinet to see if the unit's thermostat indicates the same temperature. If the results are different, replace the thermistor, Control PCB or Main PCB.

10.8 Mist/Condensation has appeared on the glass door.
During highly humid times, especially during summer, this can happen.

10.9 Interior fan motors cycle on and off even when the set temperature has been reached
In order to circulate the air and maintain the set temperature inside the cabinet the inside fans must cycle on and off when the compressor is off in **Dynamic Cooling Mode**. The fans will cycle ON and OFF approximately every 20 seconds. This cycle is normal and meant both to circulate the air as well as ensure the continued operational status of the fans. If the fan stops completely and does not complete this cycle the fan is non-operational.
Dynamic Cooling Mode is the factory preset. If the user wants to reduce noise, they can switch to **Silent Mode** by pressing and holding the UP key for at least 5 seconds. You will hear three beeps to confirm silent mode is on.

10.10 Cannot get the upper and lower temperatures to set separately - they both adjust at the same rate (if you set one higher the other goes higher etc).
This is normal. The temperature set for the LOWER ZONE must always be the same or higher than that in the UPPER ZONE. So when the user is adjusting the temperature for one zone, if the above condition can't be met, the temperature of the second zone will change automatically to meet the condition.

10.11 The control panel doesn’t seem to work.
This unit’s control panel has an auto lock feature that prevents tampering with temperature or power settings. This feature activates automatically 2 minutes after the last touch of a key on the control panel. To unlock the control panel, press and hold the UP and DOWN keys for 5 seconds.

10.12 The fans are running constantly.
In order to circulate the air and maintain the set temperature inside the cabinet the inside fans must cycle on and off when the compressor is off in Dynamic Cooling mode. The fans will cycle ON and OFF approximately every 20 seconds. This cycle is normal and meant both to circulate the air as well as ensure the continued operational status of the fans. If the fan stops completely and does not complete this cycle the fan is non-operational.

10.13 Digital display functions. But the unit does not cool.
Check to see if the unit is in “Eco Demo mode”. Press and hold the “**UP**”, “**DOWN**” and “**LIGHT**” keys at the same time for at least 5 seconds to exit Eco Demo mode.

10.14 Digital display, light and sound do not work but the unit is cooling well.
The unit maybe in Sabbath mode.

DATE	REVISION NOTES
4/10/2018	INITIAL DOCUMENT

EdgeStar, 8606 Wall St, Suite 1800, Austin, TX 78754
support.edgestar.com • service@edgestar.com • edgestar.com

**Warranty service should be performed by an authorized service representative only.*