COMPRESSOR WINE COOLER

SERVICE MANUAL

Dual Zones Model

BWC 646

BWC 694

BWC 6166

Before Repairing the Unit

WARNING: Unplug the appliance before cleaning, maintenance or servicing. Failure to do so can result in electrical shock or death

Tools you will need

1. Combination Plier
2. Phillips/Slotted Screwdriver
3. Multi-meter
4. Clamp Meter (5A)
5. Soldering Iron
6. Wire Strippers
7. Pinch Off Plier8 Hairdryer
8. Mill File

Material you will need

1. Processing Tube (Φ6mm)
2. Shock Absorbing Clay

Device you will need

1. Vacuum Pump
2. Welding Machine
3. Gas Meter
4. Temp. Meter

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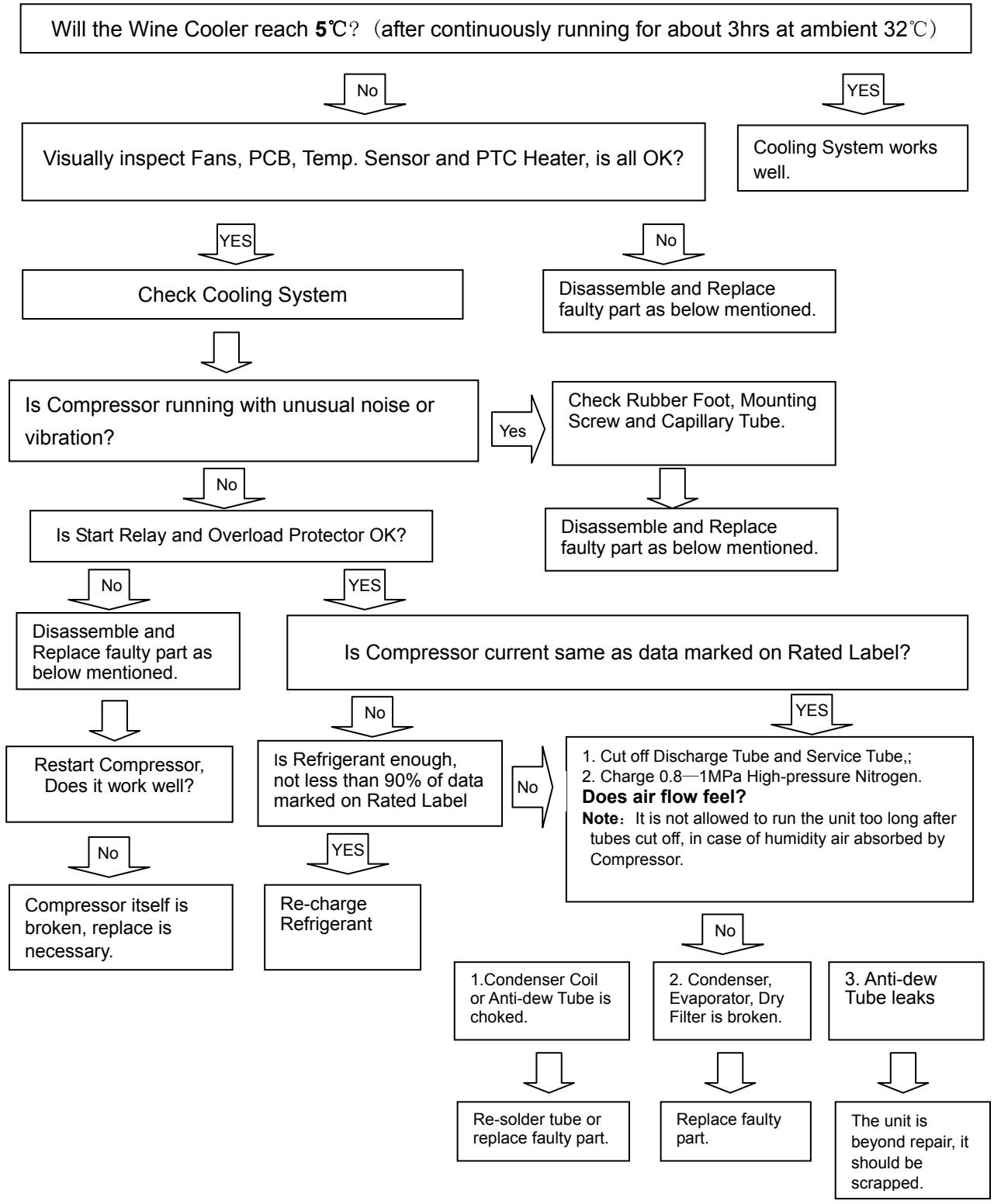
Cooling System Fault

■ Troubleshooting



■ How to Re-perfuse the Refrigerant:

DANGER WARNING: All the following operations can only be done under an open area with good ventilation to avoid any explosion of the refrigerant.

Please refer to **Figure 17 & 18** for all the location of tubes and the solder joints.

Step 1 Cut off the two Processing Tubes to discharge the flammable refrigerant clearly.

Step 2. Melt and take out the rest part of the Processing Tubes & the Dry Filter with a welding torch. Make sure the Capillary Tube is carefully cut well.

Step3 . Solder with new Process Tubes and Dry Filter. Perfuse with Hi-purity Nitrogen (N2, not less than 1.5Mpa) to ensure 100% leak tightness (should no N2 leak out).

Step 4 Vacuum the compressor and the whole sealed system with a vacuum pump. Make the vacuum degree not lower than 100Pa. It takes about 20 minutes to vacuum well in this procedure.

Step 5. Perfuse into the sealed system with the Rated Refrigerant (marked on the Rating Label of the unit), and close off the two ends of sealed system (on the two Process Tubes) with a welding torch and soldering iron.

■ Test after Repairing:

After repairing, let the unit run for 3 hours with 32℃ ambient. The cooling system can be confirmed in the order if

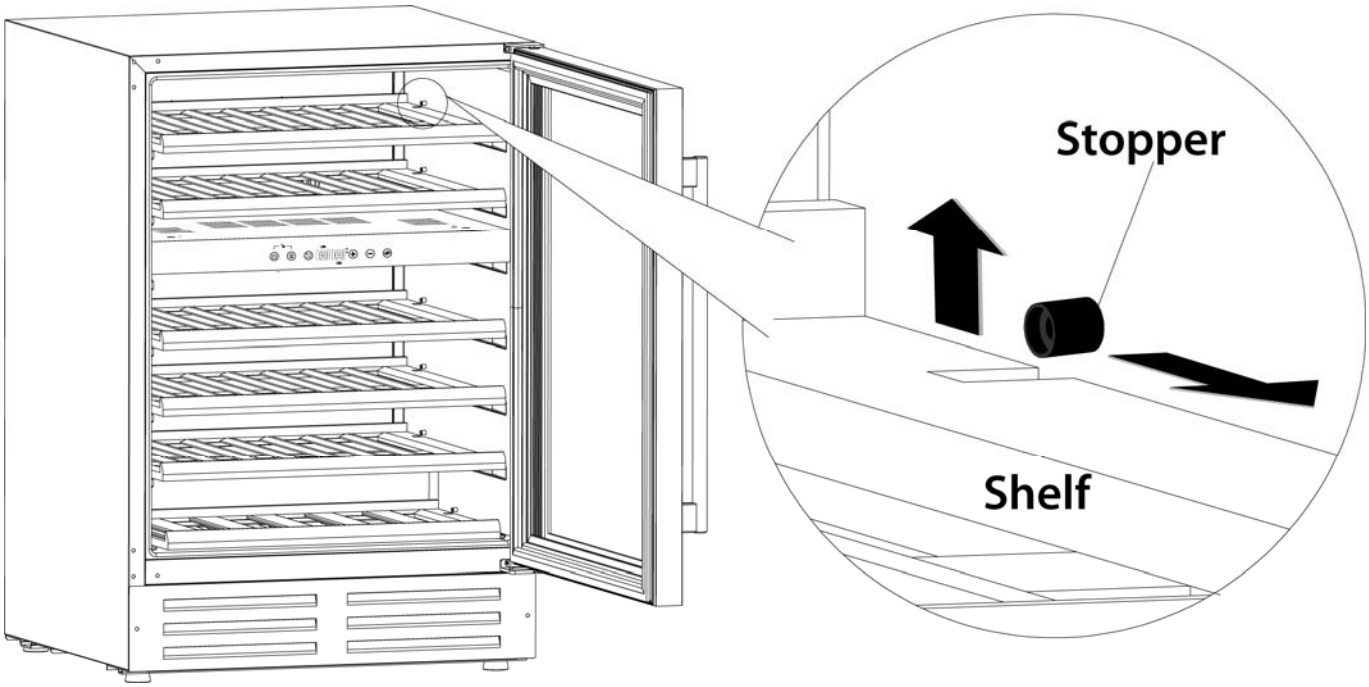
1. the unit can reach the set temp. and
2. the compressor stops running when the unit reaches a temp. of 2.5℃ lower than the set temp., and
3. the compressor restarts running when the unit reaches a temp. of 2.5℃ higher than the set temp.,

■ Separator Board and Baffle Board Disassembly

Step 1: Take out the Shelves

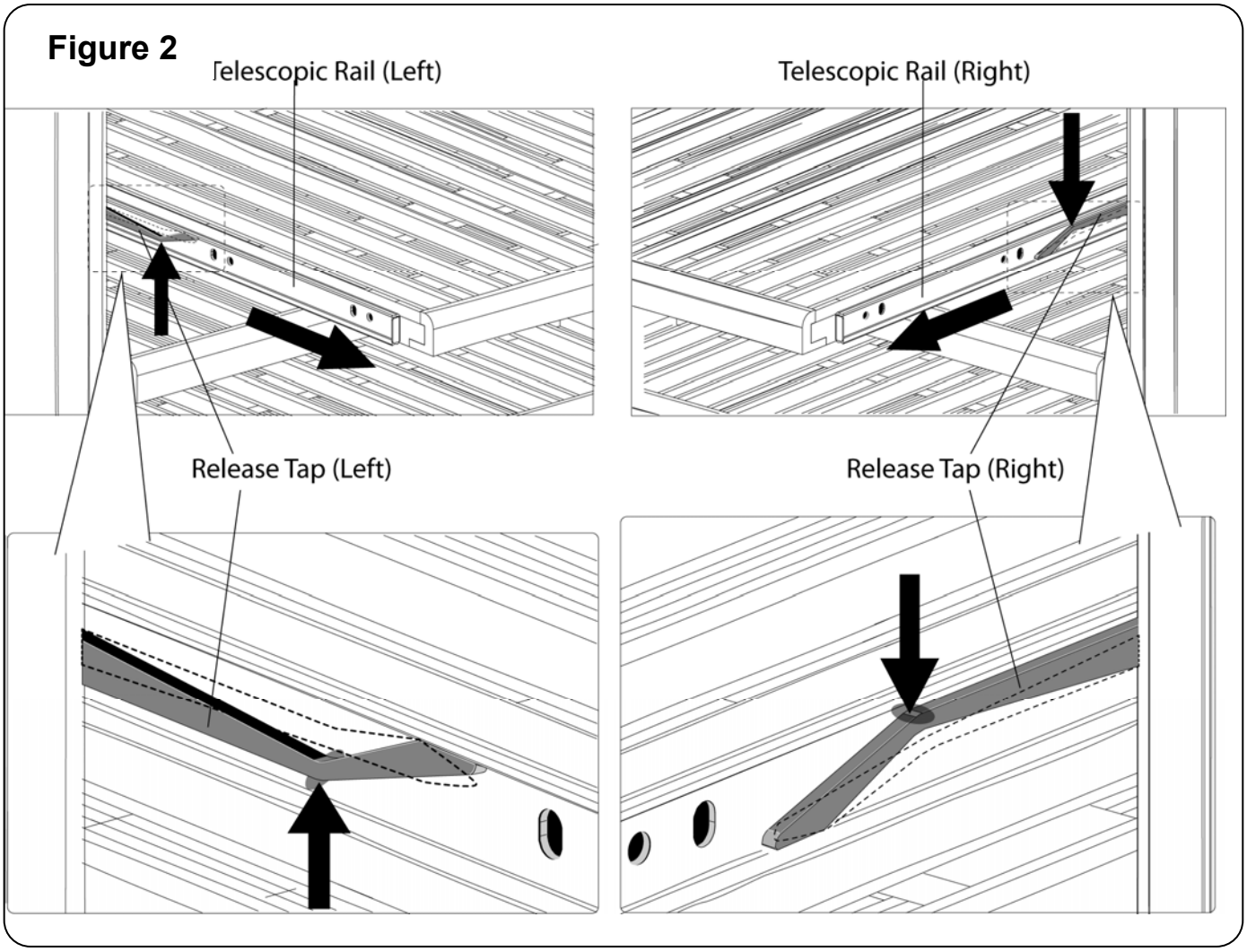
- For a shelf **w/o Telescopic Rails,** just pull outward the shelf and lift it up through the Stopper**(Figure 1)**;

Figure 1



- For a shelf **w/ Telescopic Rails**,
  - Pull the shelf to the fully opened position ;
  - Press up the left side **Release Tap** and press down the right side **Release Tap** on the shelf at the same time to release the rails **(Figure 2);**
  - Pull out the whole shelf completely.

Figure 2



Step 2: Separator Board and Baffle Board Disassembly

- **For BU-145D**
  - Unscrew the 4 screws on Separator Board Cover one by one **(Figure 3);**
  - Unplug Connectors of Fan, LED Light and Control PCB carefully, which are fixed on Separator **(Figure 4)**;
  - Unscrew the 8 screws (No.1-8) on Separator Base one by one **(Figure 5);**
  - Separator Board after disassembled **(Figure 6);**
  - Unscrew the 10 screws (No.1-6) on Upper Baffle Board and 4 (No.7-10) screws on Lower Baffle Board one by one **(Figure 7)**;
  - Unplug Fan Connector carefully which is hided back of Fan, Take out Baffle Board slightly **(Figure 8).** Figure 15 is inside view after Baffle Board took out.

Figure 3

----Unscrew the 4 screws on Separator Board Cover one

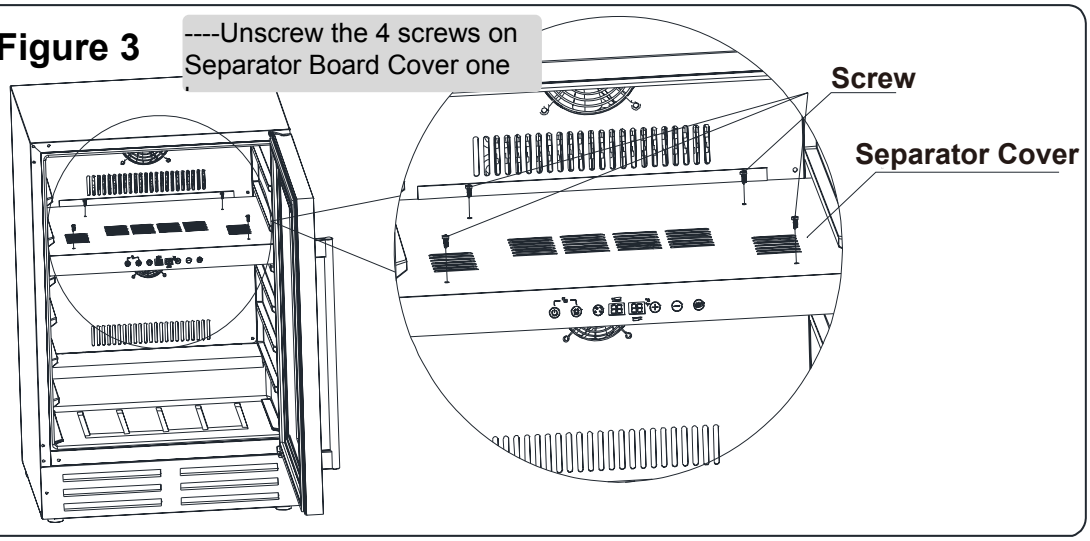


Figure 4

----Unplug Connectors of Fan, LED Light and Control PCB carefully, which are fixed on Separator

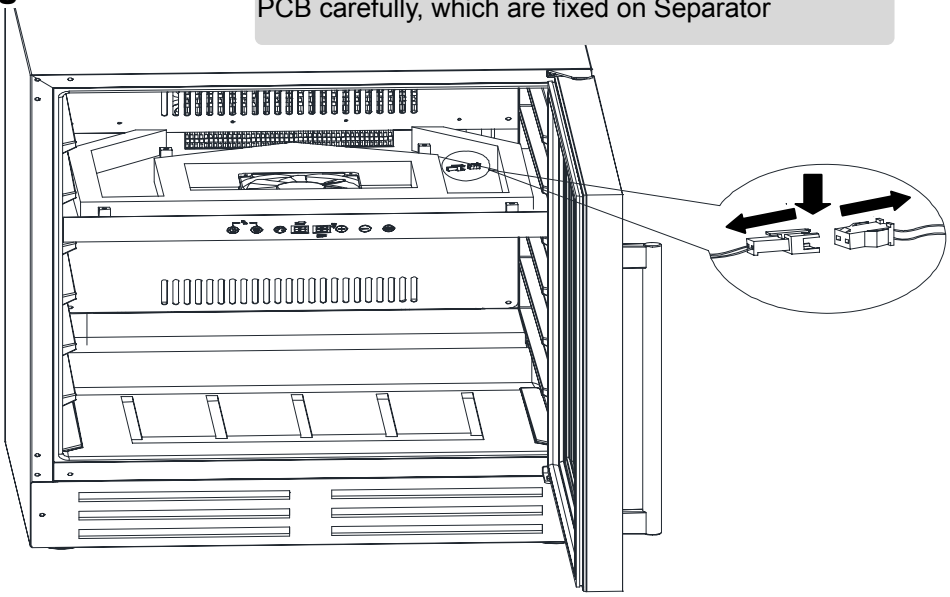


Figure 5

----Unscrew the 4 screws on both side of Separator Base one by one

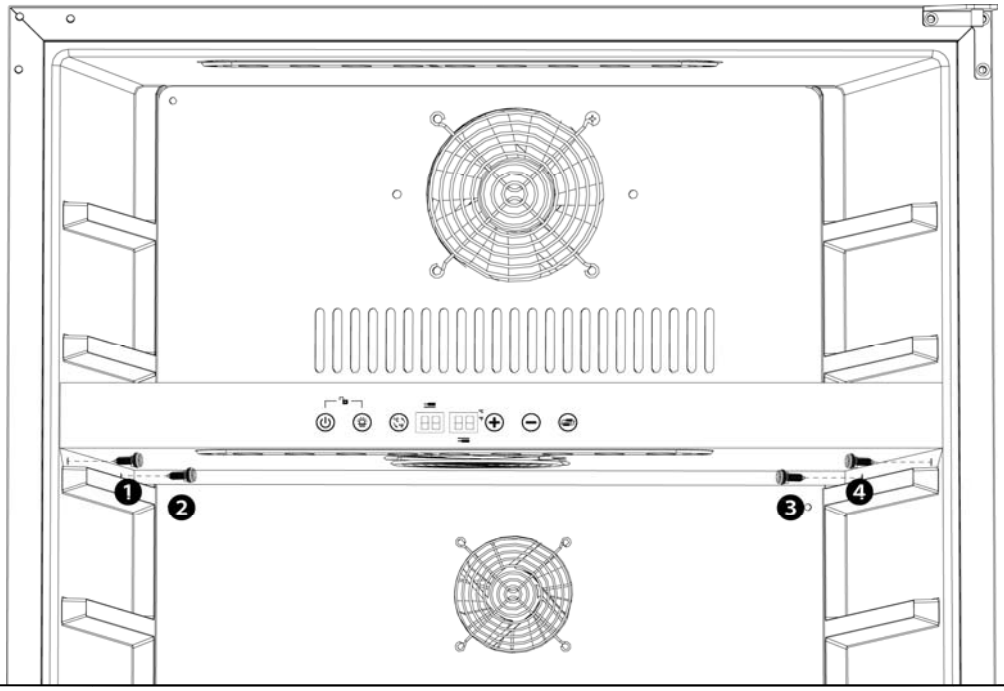


Figure 6 ----Separator Board after disassembled;

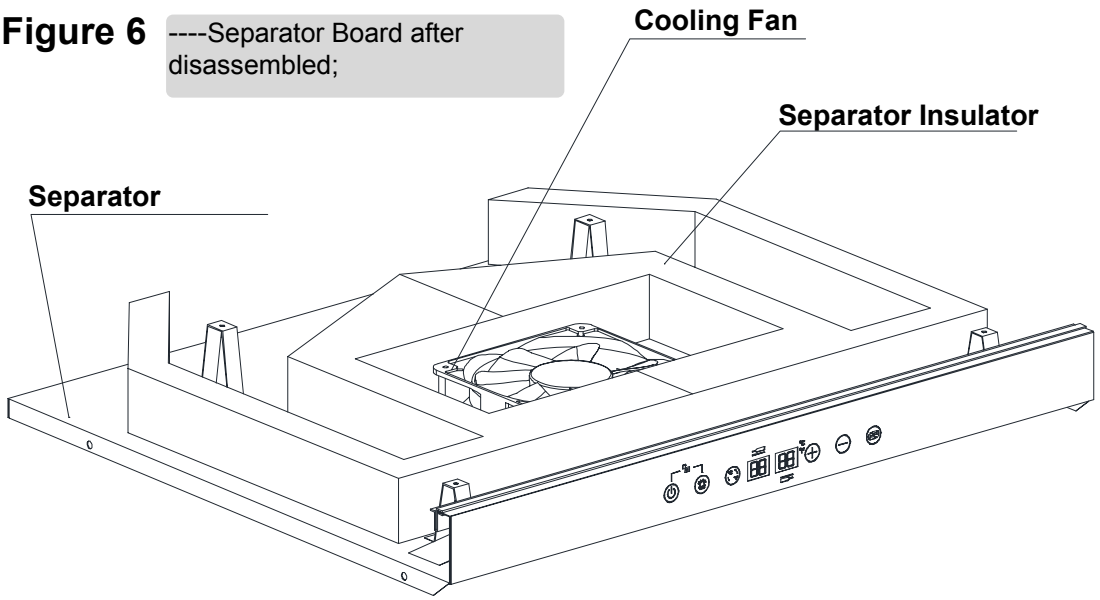


Figure 7 ----Unscrew the 10 screws (No.1-6) on Upper Baffle Board and 4 (No.7-10) screws on Lower Baffle Board one by one

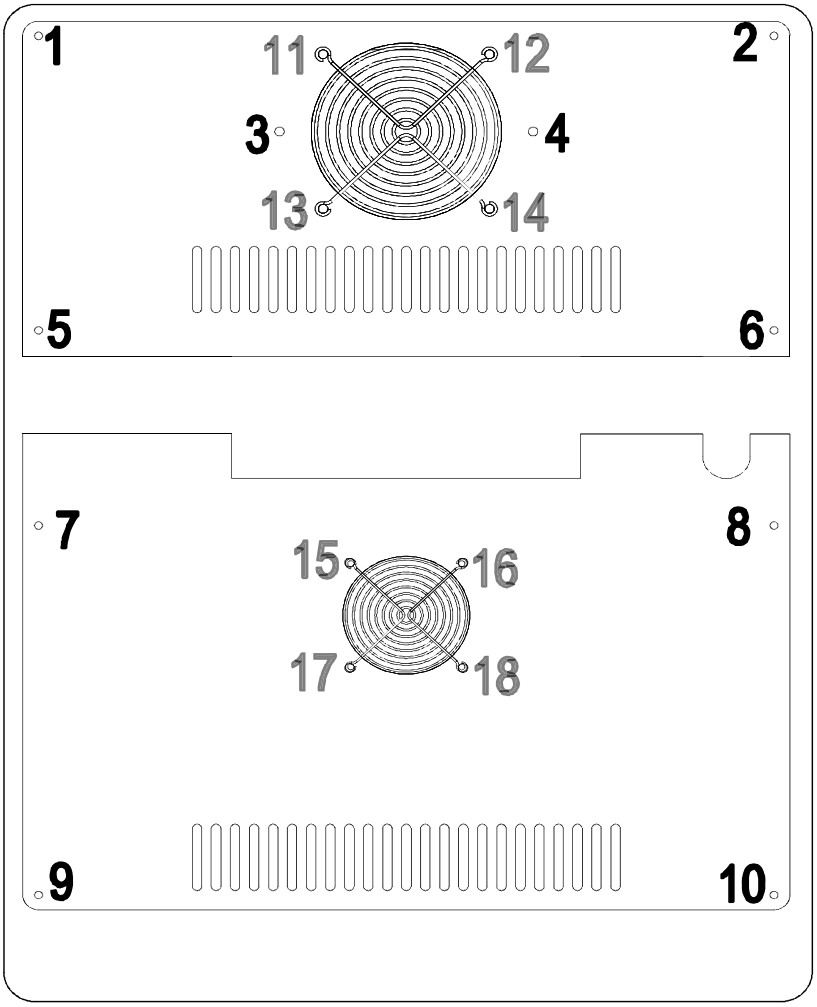
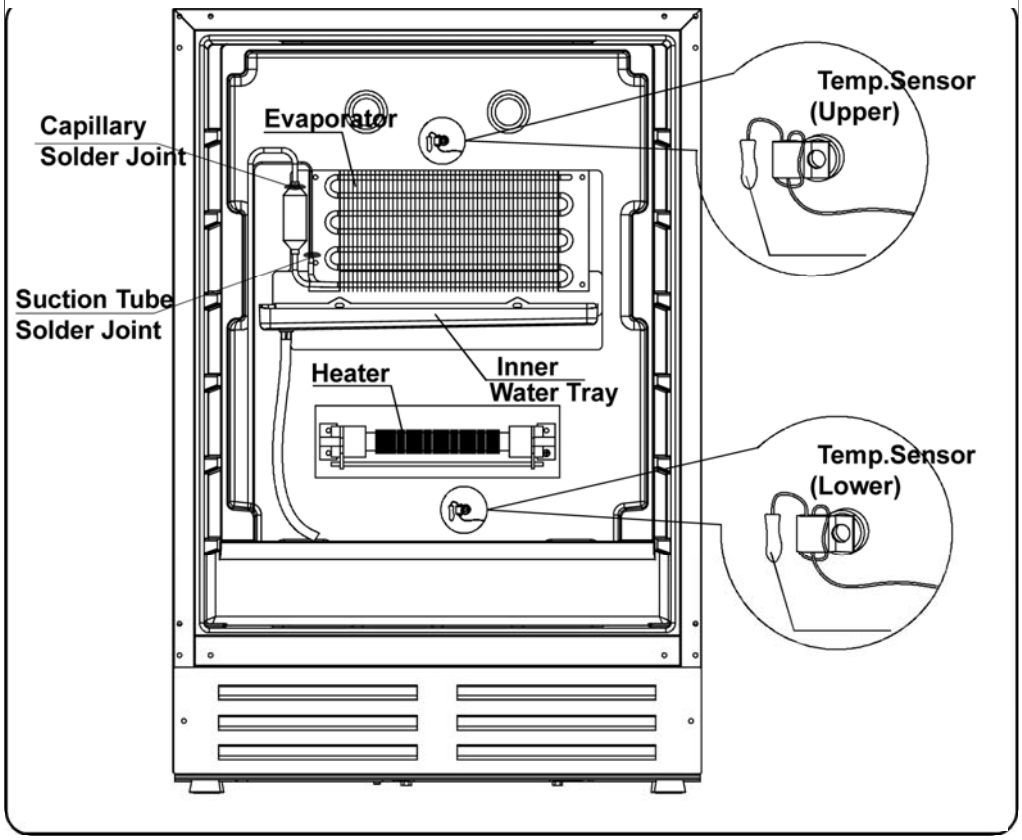


Figure 8 ---- Unplug Fan Connector carefully which is hided back of Fan, Take out Baffle Board slightly, The above Figure is inside view after Baffle Board took out.



- **For BU-270D/BU-428D/BU-490D**
  - Unscrew the 4 screws of Cooling Fan, which is fixed on Separator Board Cover one by one **(Figure 9);**
  - Unplug Connectors of Cooling Fan carefully **(Figure 9)**;
  - Cooling Fan after disassembled **(Figure 10);**
  - Unscrew the 6 screws on Separator Cover one by one **(Figure 11);**
  - Unscrew the 8 screws on Separator Base one by one **(Figure 12;**
  - Separator Board after disassembled **(Figure 13);**
  - Unscrew the 14 (No.1-14) screws on Lower Baffle Board one by one **(Figure 14)**;
  - Unplug Fan Connector carefully which is hided back of Fan, Take out Baffle Board slightly **(Figure 15).** Figure 15 is inside view after Baffle Board took out.

Figure 9 ----Unscrew the 4 screws of Cooling Fan, which is fixed on Separator Board Cover one by one;
----Unplug Connectors of Cooling Fan carefully;

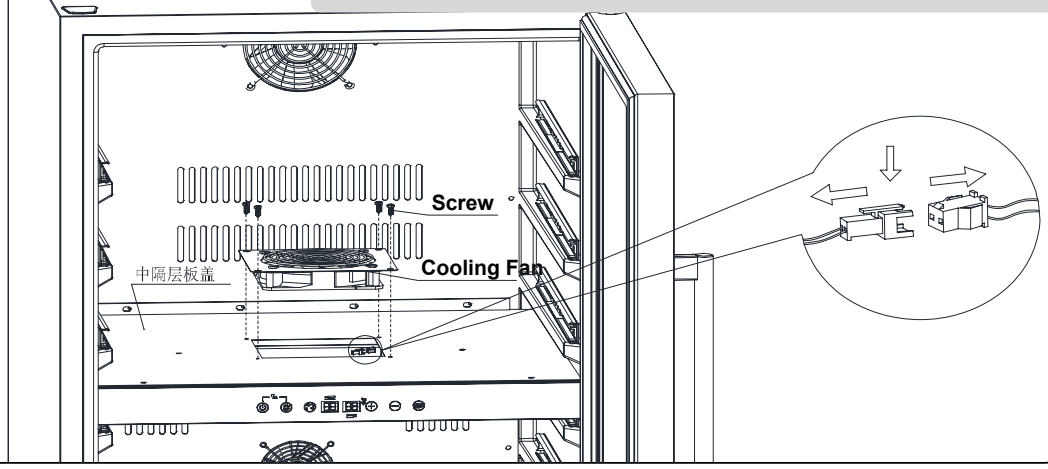


Figure 10

---- Cooling Fan after disassembled;

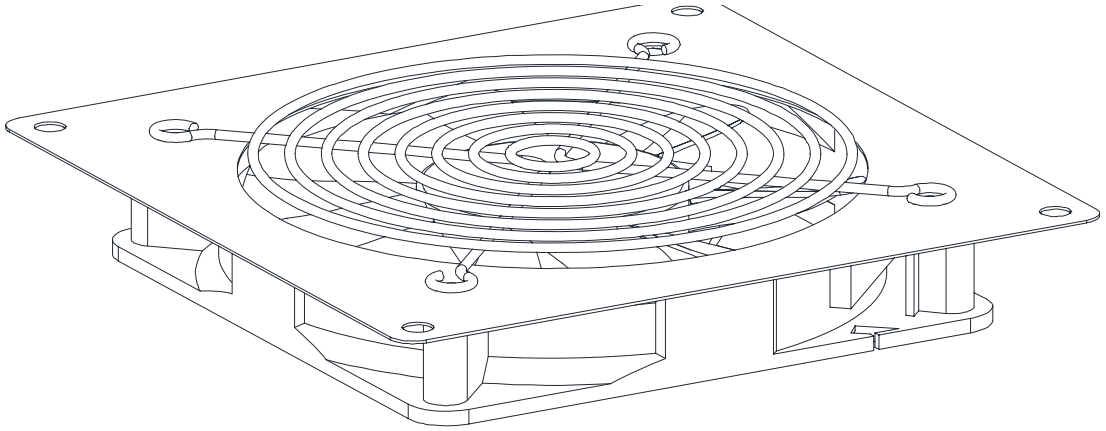


Figure 11

----Unscrew the 8 screws on Separator Board Cover one by one;

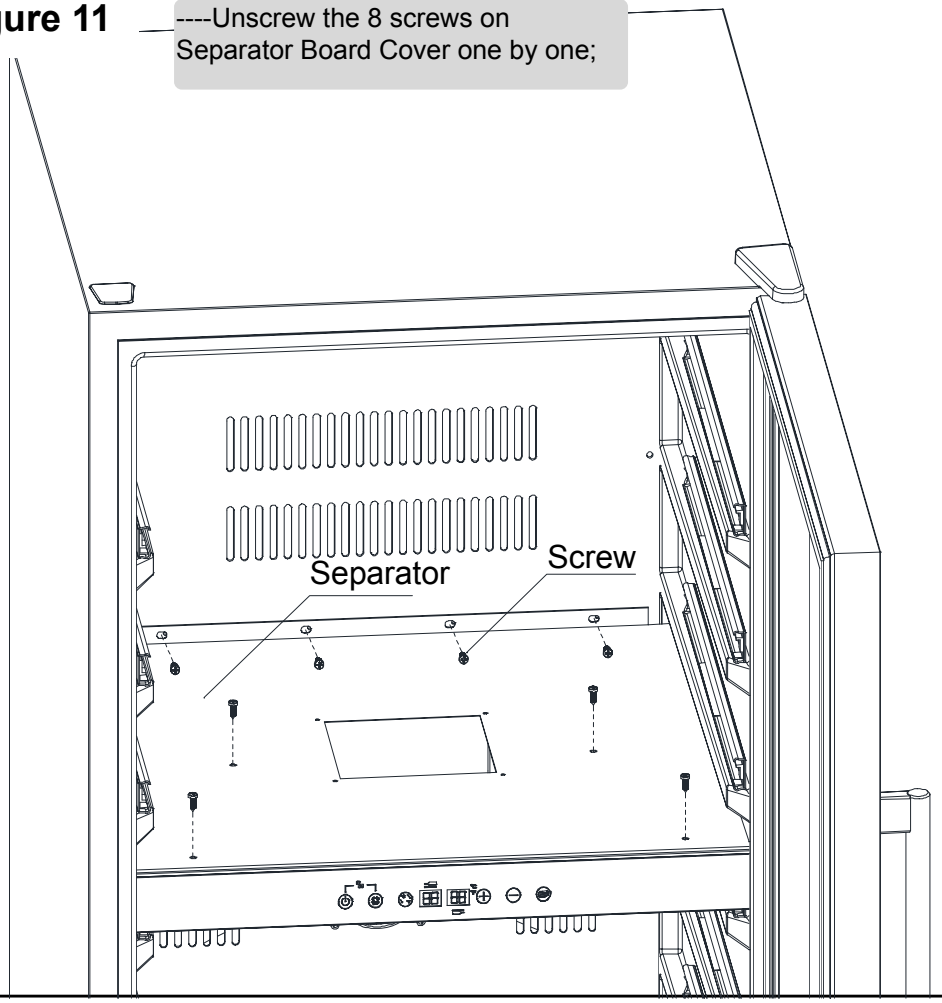


Figure 12

----Unscrew the 8 screws on Separator Board Base one by one;

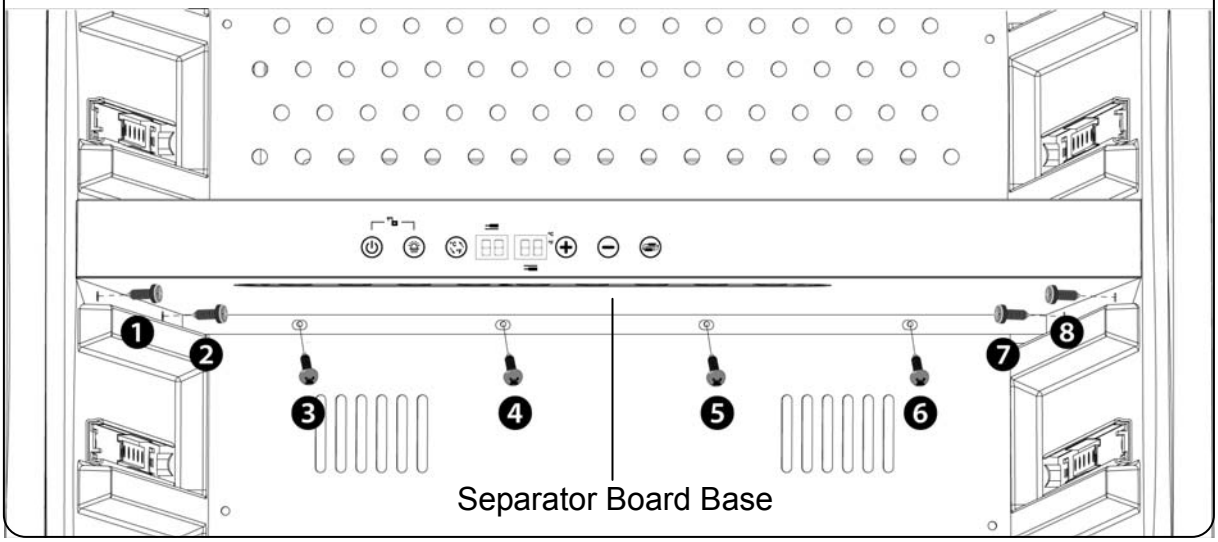


Figure 13

----Separator Board after disassembled;

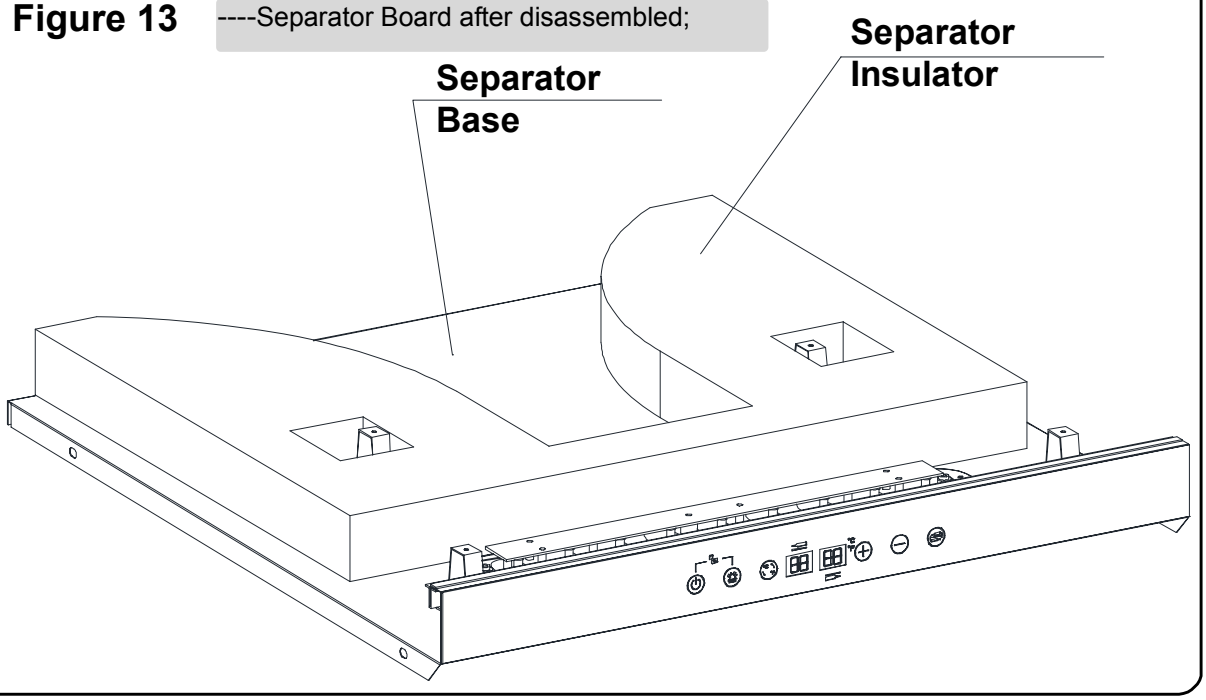
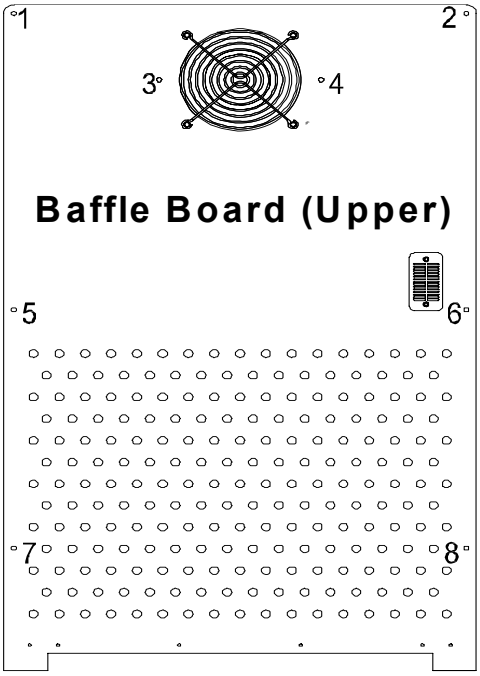


Figure 14

----Unscrew the 14 (No.1-14) screws on Upper and Lower Baffle Board one by one



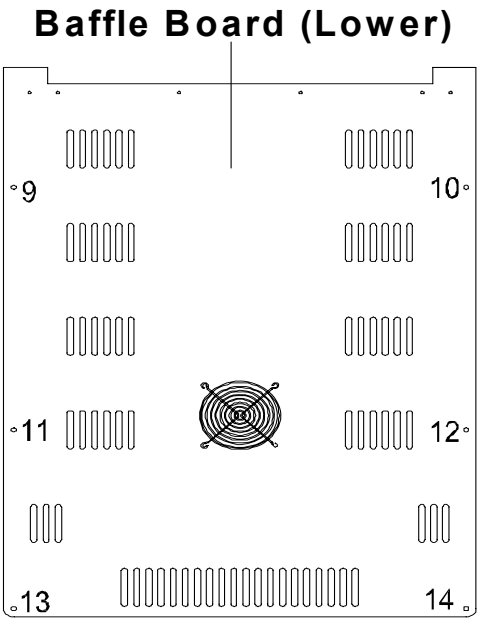
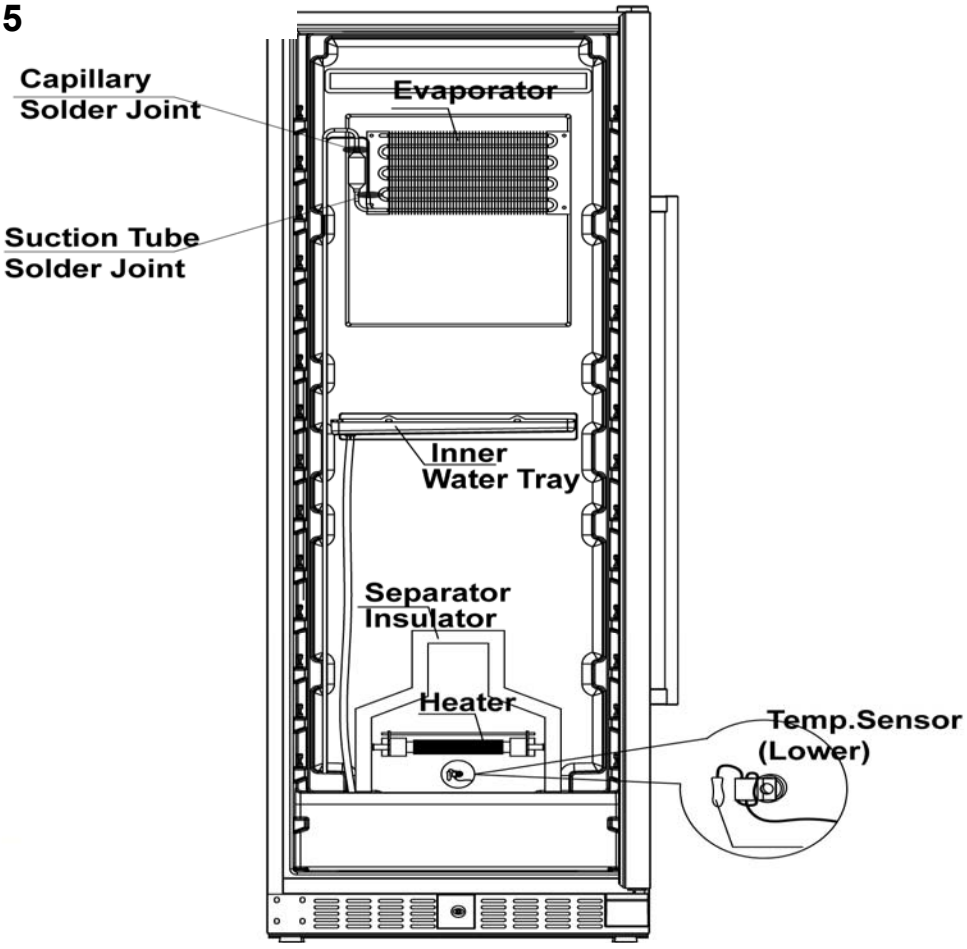


Figure 15



-- Unplug Fan Connector carefully which is hided back of Fan, Take out Baffle Board slightly. The Figure 15 is inside view after Baffle Board took out.

■ Solder Joints Position

A- for Discharge Exit & Discharge Tube

B- for Suction Exit & Suction Tube

C- for Vacuum-Perfusion Exit & Service Tube

D- for Condenser Inlet & Discharge Tube

E- for Condenser Outlet & Defrosting Tube

F- for Defrosting Tube & Dry Filter Inlet

G- for Dry Filter Outlet & Capillary Tube

H- for Capillary Tube & Evaporator Inlet

I- for Evaporator Outlet & Suction Tube

J- Processing Tubes

Figure 16: BU-145D

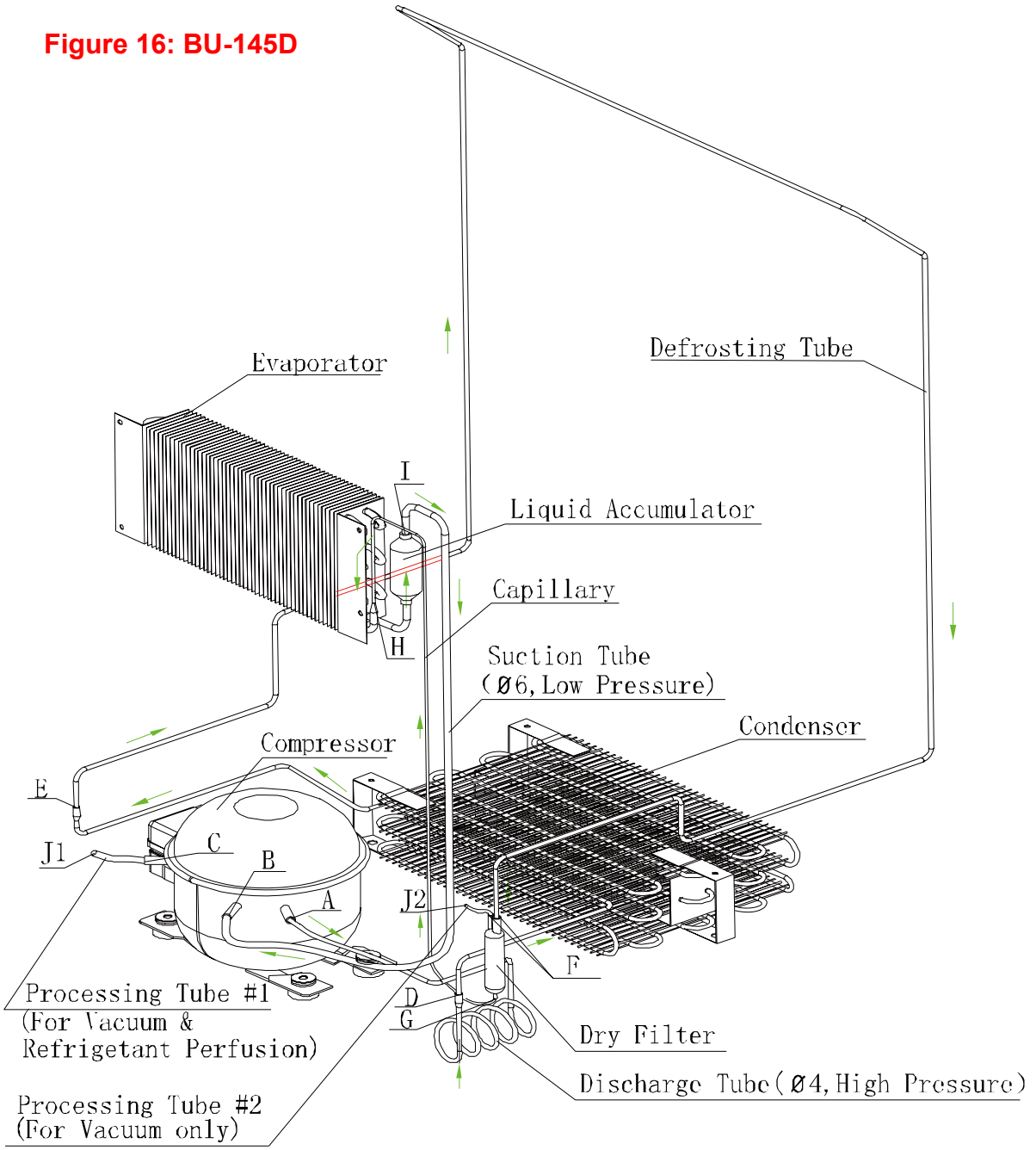
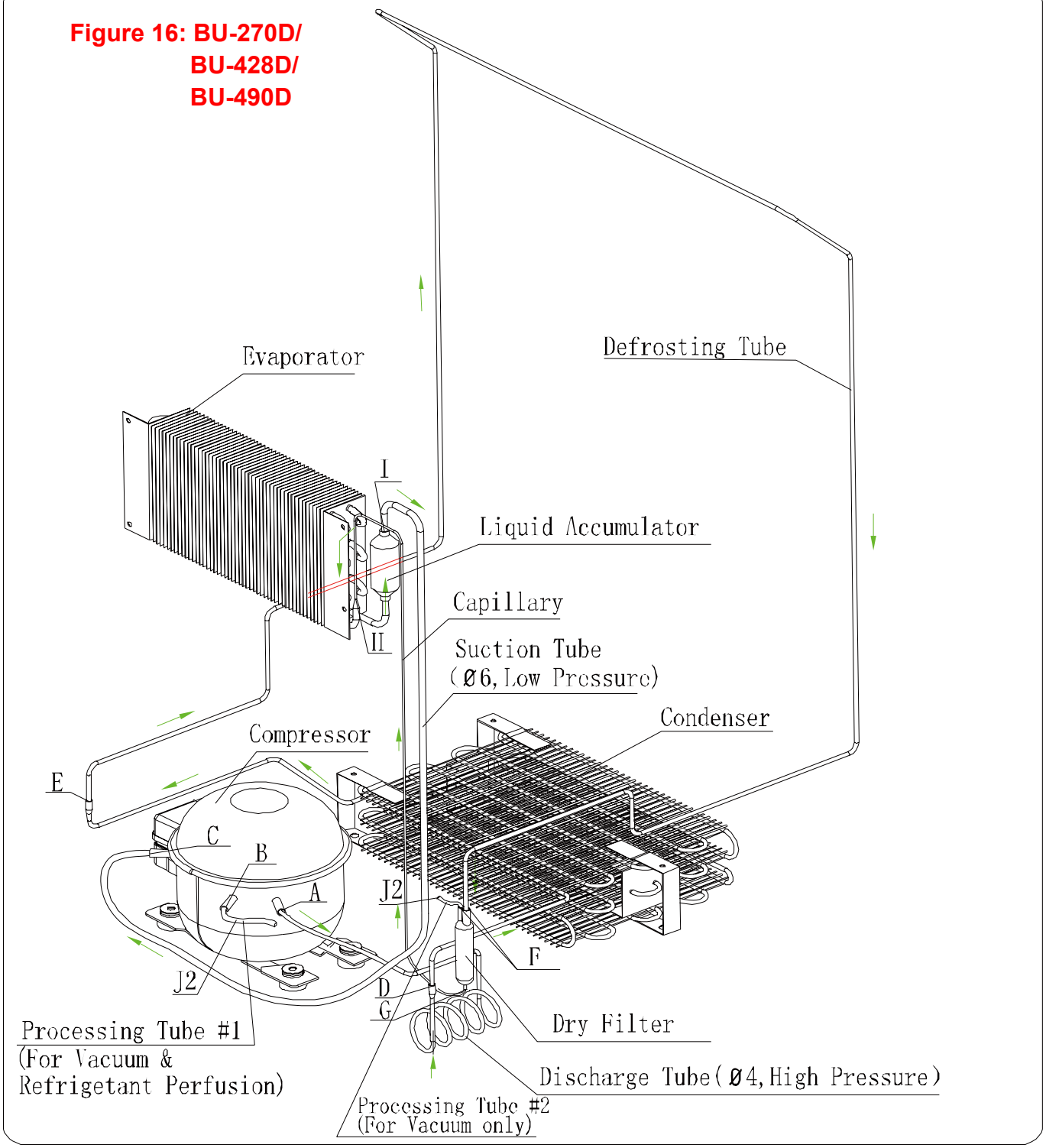


Figure 16: BU-270D/ BU-428D/ BU-490D



Flow Direction & State of the Refrigerant

1- The refrigerant is in gas state with high temperature and pressure after it comes from the Compressor, and flows to the Condenser through Joints A & D.
2- The refrigerant is in liquid state with high temperature and pressure after it comes from the Condenser, and flows to the Capillary Tube through Joints E & F and the Dry Filter.
3- The refrigerant is in liquid state with low temperature and pressure after it comes from the Capillary Tube, and flows to the Evaporator through Joint H.
4- The refrigerant is in gas state with low temperature and pressure after it comes from the Evaporator, and flows to the Compressor through the Liquid Accumulator and Joints I & B.
5- By compressed, the refrigerant is changed from low temperature and pressure to high temperature and pressure in the compressor.

Noise Problem

■ Compressor Noise

Remarks: It is normal for compressor running under 42dB.

Problem: If it sounds like loud grinding, clicking and ticking, etc., it may indicate a fault happened, a proper repair or replacement is necessary.

Solutions:

1. Check Shock Absorbing Rubber Foot, which will become too hard and brittle over time, replace it with new one.
2. Check Mounting Screw, too tight or loose will cause noise, adjust it to a right condition.

■ Fan Noise

Remarks: It is normal for compressor running under 32dB.

Problem: If it sounds too loud, it may indicate a fault happened caused by following reasons:

a. Fan Shaft is broken;

b. Fan running unstable due to part abased badly over time..

Solutions:

Replace faulty Fan as following steps:

● **Cooling Fan replace (Figure 18,19)**

1. Take out all Shelves；
2. Remove Baffle Board；
3. Unscrew all Fan screws and replace broken Fan with new one.

Figure 18: BU-145D

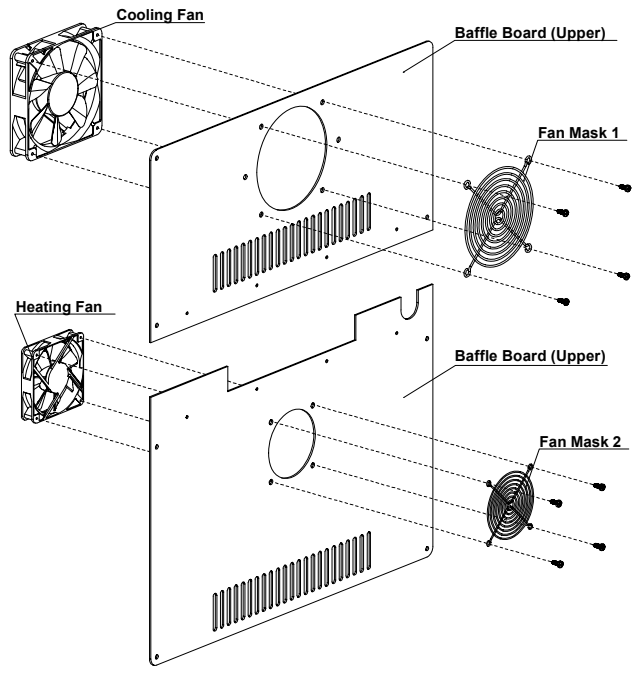
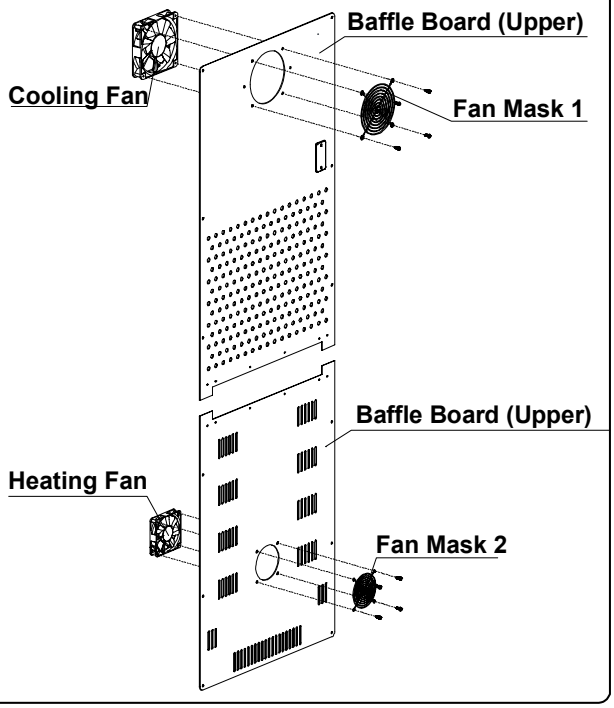


Figure 19: BU-270D/BU-428D/BU-490D



● **Middle Cooling Fan replace (Figure 20, 21)**

1. Take out all Shelves；
2. Remove Baffle Board；
3. Unscrew all Fan screws and replace broken Fan with new one.

Figure 20: BU-145D

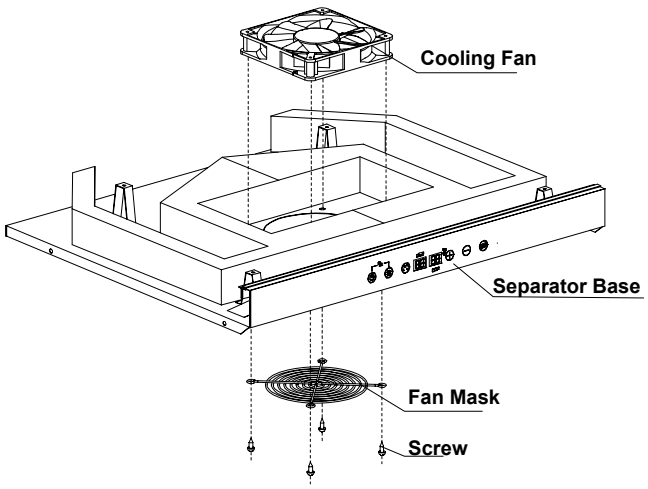
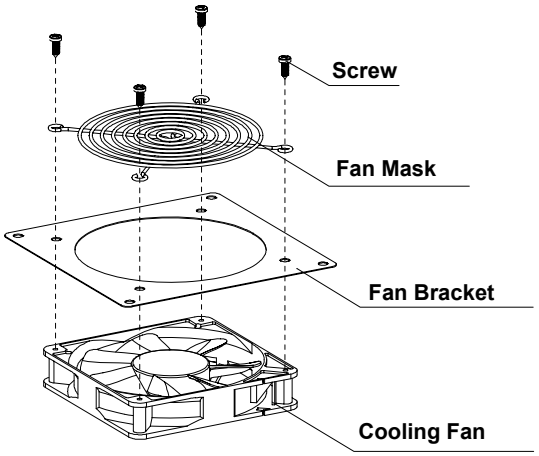


Figure 21: BU-270D/BU-428D/BU-490D



● Condenser Cooling Fan replace for BU-145D/BU-270D/BU-428D/BU-490D

1. Unplug Connector of Cooling Fan **(Figure 22)**;
2. Unscrew 2 screws and replace broken Fan with new one **(Figure 23).**

Figure 22

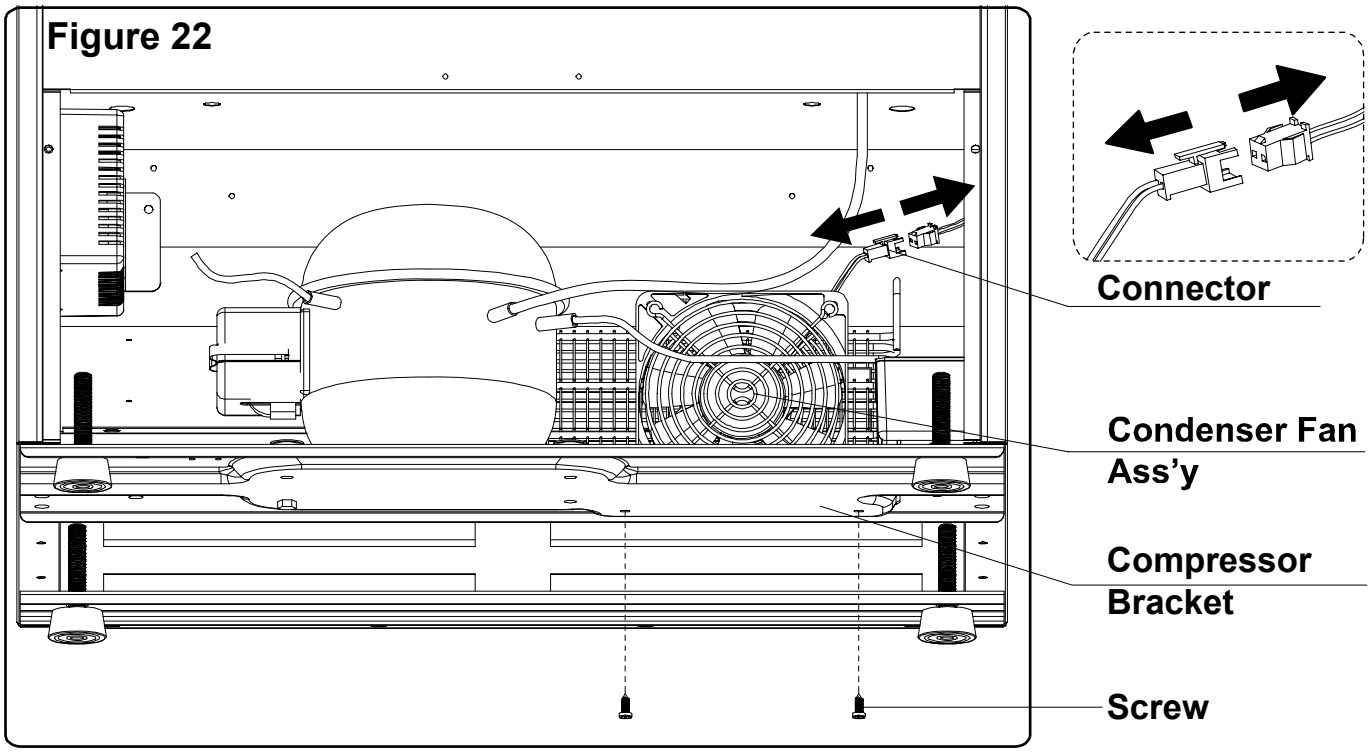
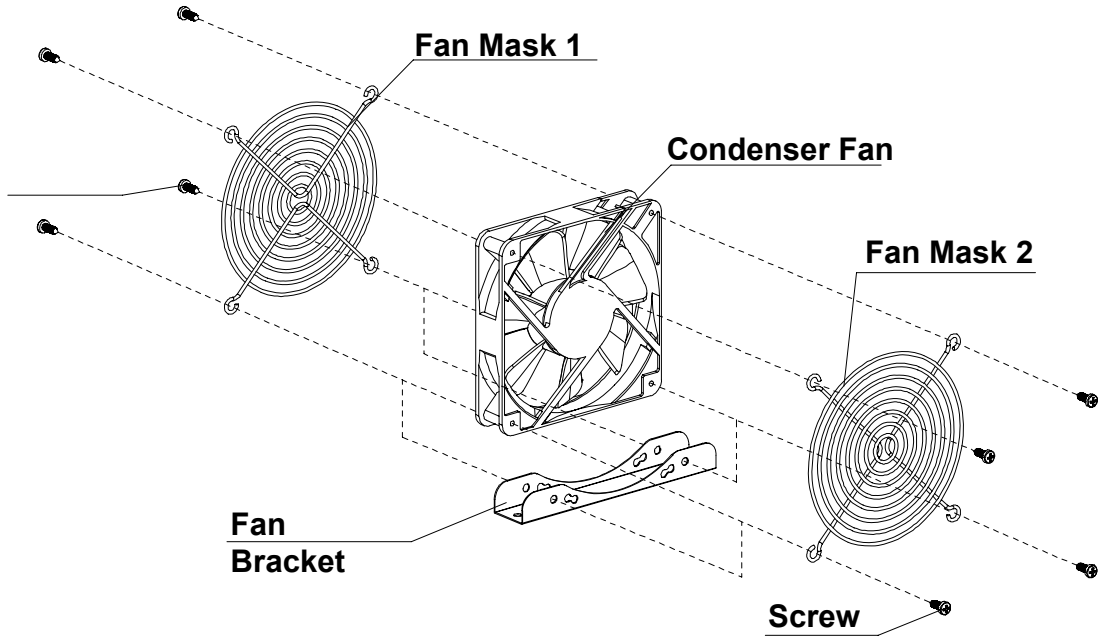


Figure 23



■ Noise from Capillary Tube

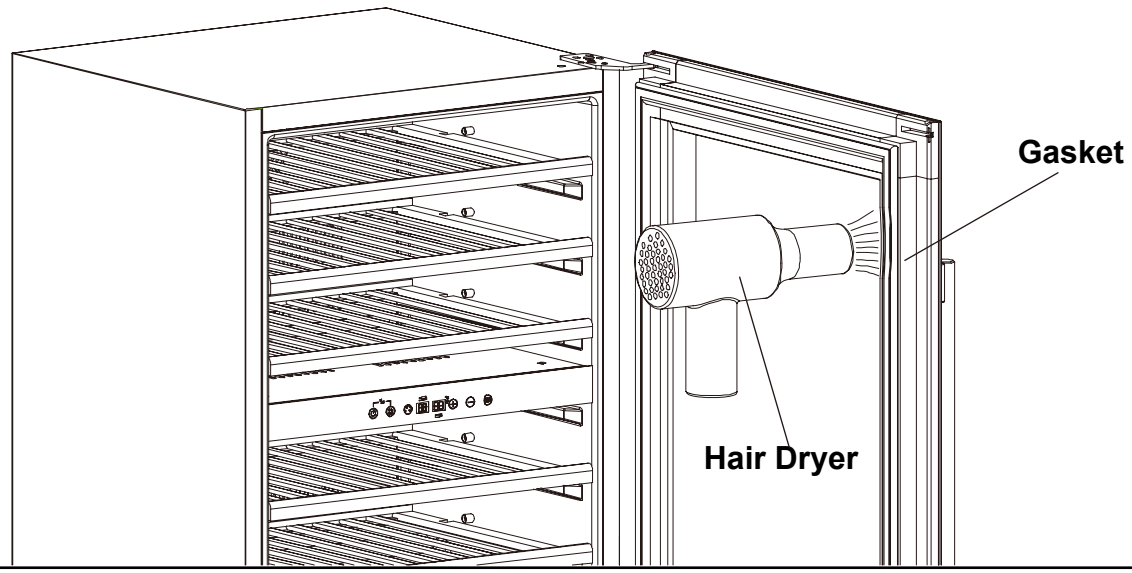
Remarks: **When the refrigerant flows in Capillary Tube, it will bring to the tube a slight vibration and make a very small noise. This is a normal phenomenon, except the following problems happen:**

Problem	Possible Cause	Solutions
1. A hissing noise sounds like water-spraying.	1. Capillary Tube has sharp burrs around opening edge.	1. Use a oxygen welding machine to heat up **Capillary Solder Joint (Figure 16 "H", Figure 17 "H")**. , and remove Capillary Tube from Evaporator. 2. Use a small Mill File to smooth all burrs around opening edge. **Caution: Do not allow any metal particles dropped into Capillary Tube.**
	2. Capillary Tube was inserted into Evaporator too far.	1. Re-Insert **Capillary Tube (Figure 8, 16)** into Evaporator with depth less than 15mm, Re-solder it and wrap it with Shock-absorbing Clay. 2. Re-do vacuum extraction and re-charge Refrigerant. (**Page 2**)
2. A loud noise sounds like vibrating and clicking.	Capillary touched Baffle Board and other parts	1. Adjust position of Capillary to keep a proper distance from Baffle Board or other parts 2. Wrap tube with Shock-absorbing Clay.
3. A low and deep noise sounds like gurgling	The unit was not upright during moving, loading/unloading, transportation, which causes compressor oil flows into the tubes and jams the tube.	1. Clean tubes; 2. Re-do vacuum extraction 3. Re-charge Refrigerant. **(Page 2)**

Evaporator Ice-up

Problem	Possible Cause	Solutions
1.Ice is built-up on evaporator	1.Door is damaged or left open too long, too much warmer/cooler air rushes into inner cabinet from outside;	1. If Door is damaged, replace it with new one; 2. Always close door tightly immediately after opened;
	1.Gasket is damaged or distorted a little, too much warmer/cooler air rushes into inner cabinet from outside;	1. If Gasket is damaged, replace it with new one; 2. If Gasket is just a little distorted, Pls. use a Hair dryer to heat distorted area up gently until all gaps disappeared. **(Fig.24)**
2. Fan will be blocked, even broken if Ice too much.	Ice too much inside.	Replace Fan with new one **(Figure18,19,20,21)**

Figure 24



Temperature Unstable

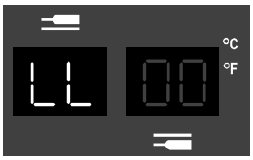
Problem	Possible Cause	Solutions
Temperature Unstable	Cooling Fan does not work, it is damaged or broken	Replace Fan with new one **(Figure19,20,21,22,23,24)**

Control System Faults

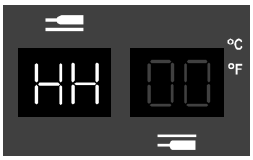
■ Temp. Sensor Fault

● After plugged, pls. check if temperature displayed is same as actual temperature detected in inner cabinet, if not, pls. disassemble Sensor **(Figure 8,16)**, and check if Sensor Connector is loose, If not, it indicates Sensor is broken, pls. replace it with new one.

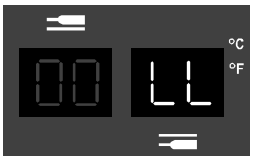
● If fault Code "**LL**" shown on Upper Display Window, it indicates open circuit happened, pls. replace the Upper Sensor with new one.



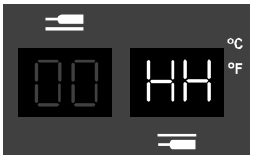
● If fault Code "**HH**" shown on Upper Display Window, it indicates short circuit happened , pls. replace the Upper Sensor with new one.



● If fault code "**LL**" shown on Lower Display Window, it indicates open circuit happened, pls. replace the Lower Sensor with new one.



● If fault code "**HH**" shown on Lower Display Window, it indicates short circuit happened , pls. replace the Lower Sensor with new one.



■ Temp. Sensor Replace

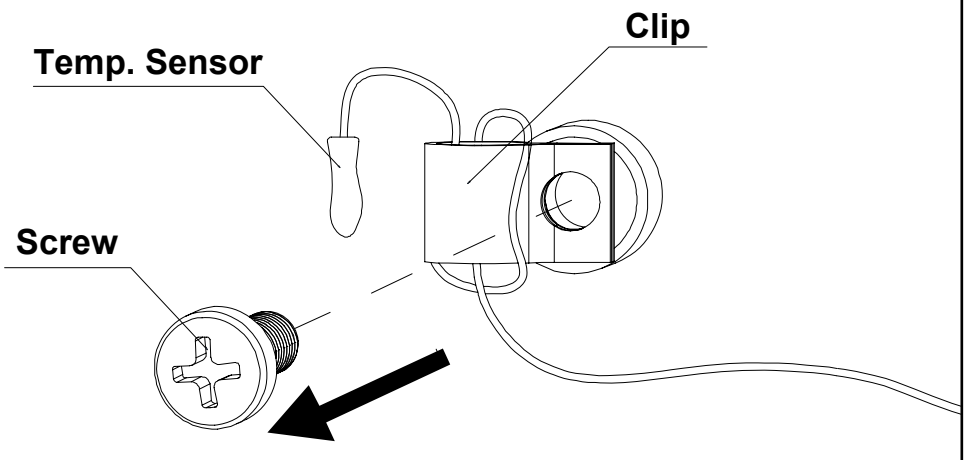
● For BU-145D/BU-270D/BU-428D/BU-490D (Lower Temp. Senor)

Step 1: Take out all shelves **(Figure 1 & Figure 2)**;

Step 2: Take out Baffle Board and unplug all Connectors of Fan and Temp. Sensor **(Figure 8,15)**;

Step 3: Unscrew Sensor screw, remove Temp. Sensor and replace it with new one **(Figure 25);**

Figure 25

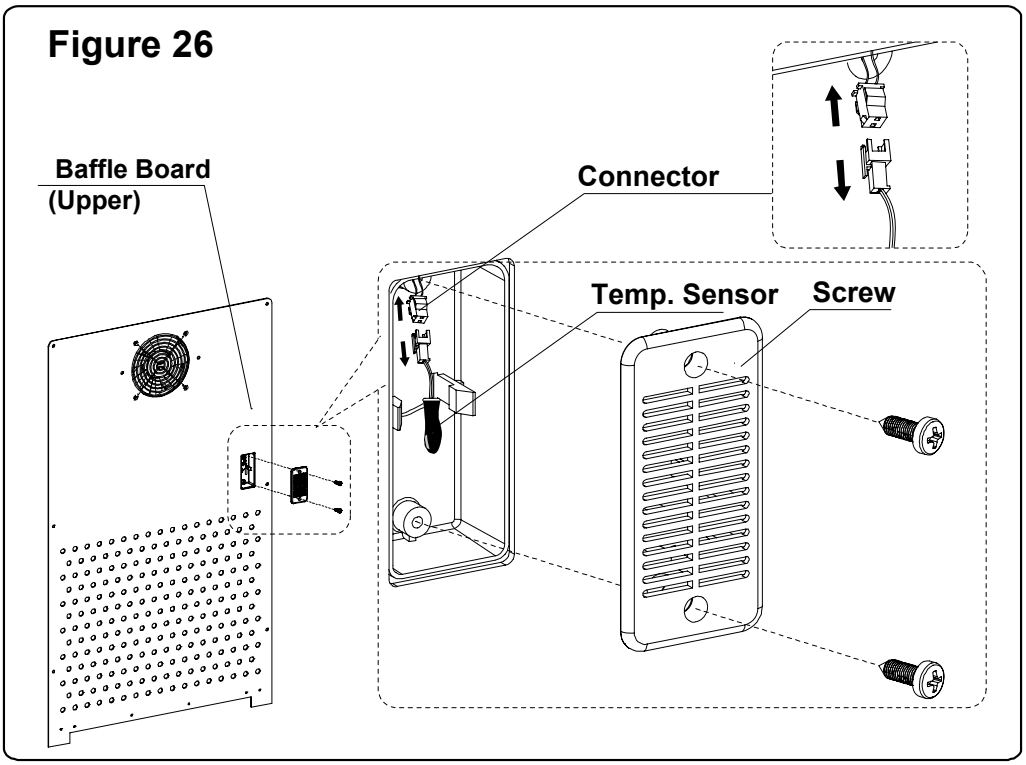


● **For BU-270D/BU-428D/BU-490D (Upper Temp. Senor)**

Step 1: Disassemble Upper Baffle Board and unplug all Connectors of Cooling Fan and Temp. Sensor'

Step 2: Unscrew Sensor screw, remove Temp. Sensor and replace it with new one **(Figure 26);**

Figure 26



■ Display Error of LED Light

It is caused by Control PCB fault. Remove it and replace with a new one.

■ Control PCB Replace

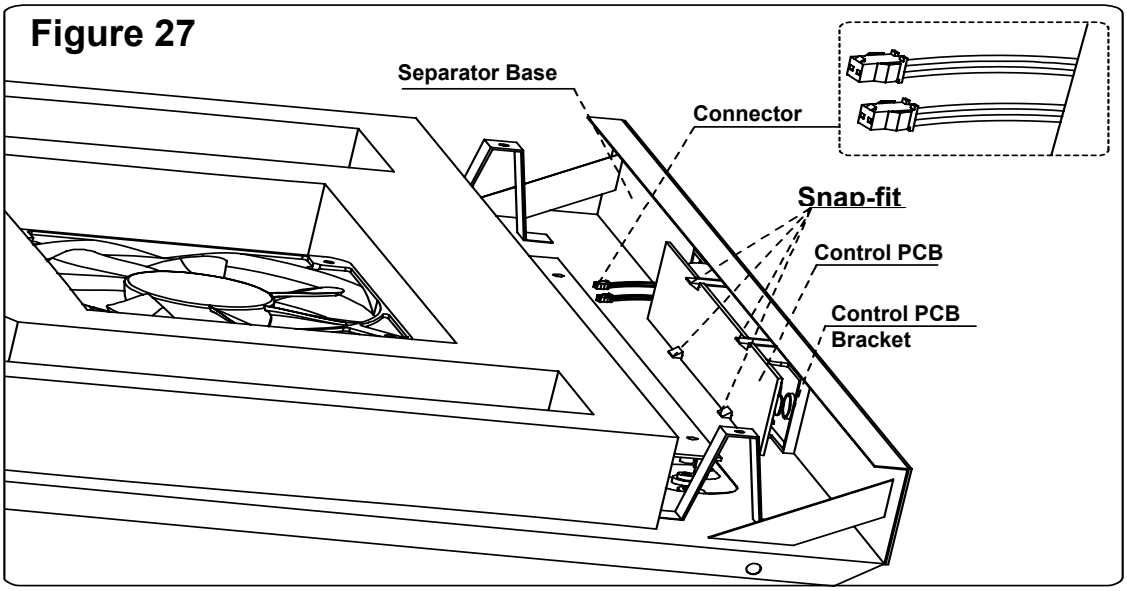
● **For BU-145D/BU-270D/BU-428D/BU-490D (Control In-cabinet) Figure 27**

Step 1: Power off the unit, disassemble Separator Board and unplug all PCB Connectors;

Step 2: Remove Snap-fit by hand ;

Step 3: Remove Control PCB and Replace it with new one

Figure 27



● For BU-145D/BU-270D/BU-428D/BU-490D (Control On-door)

Step 1: Power off the unit, open the door;

Step 2: Inserting a Slotted Screwdriver blade into groove of Control PCB Cover (right side) and pry it up **(Figure 28);**,

Step 3: Pull the cover out **(Figure 29);**

Step 4: Unplug Connector, Pry outwards Control PCB with a Slotted Screwdriver, and Replace it with new one **(Figure 30).**

Figure 28

---- Inserting a Slotted Screwdriver blade into groove of Control PCB Cover(right side) and pry it up;

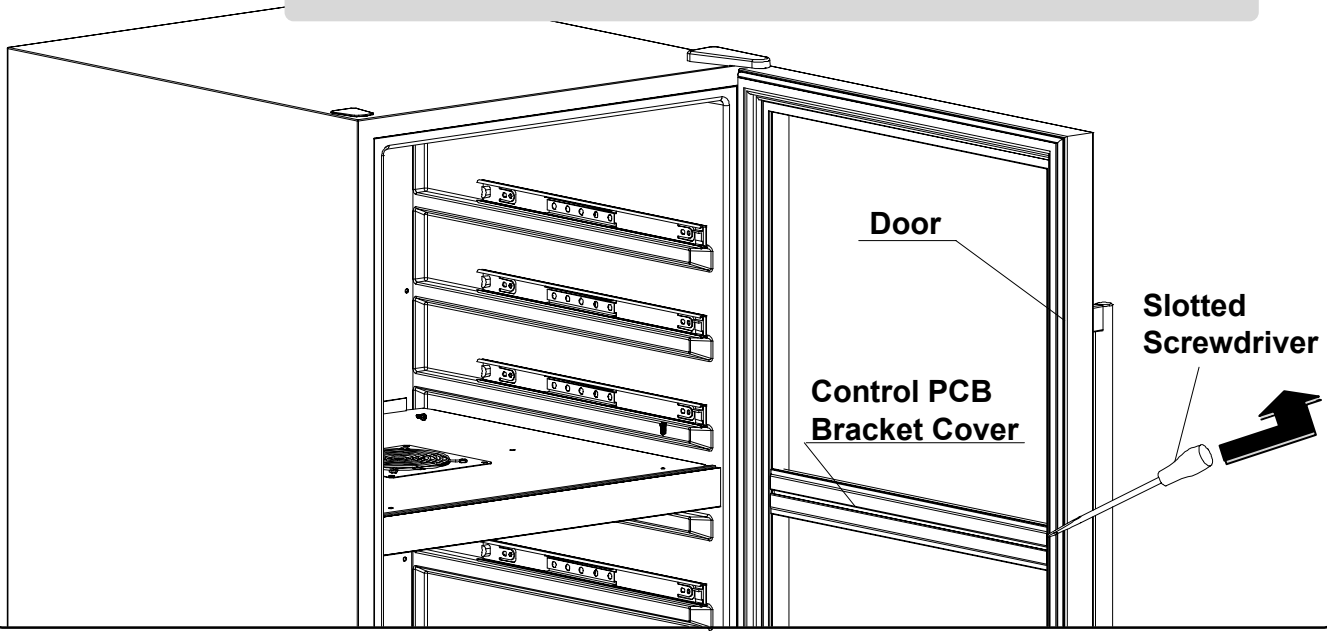


Figure 29

--- Pull the cover out;

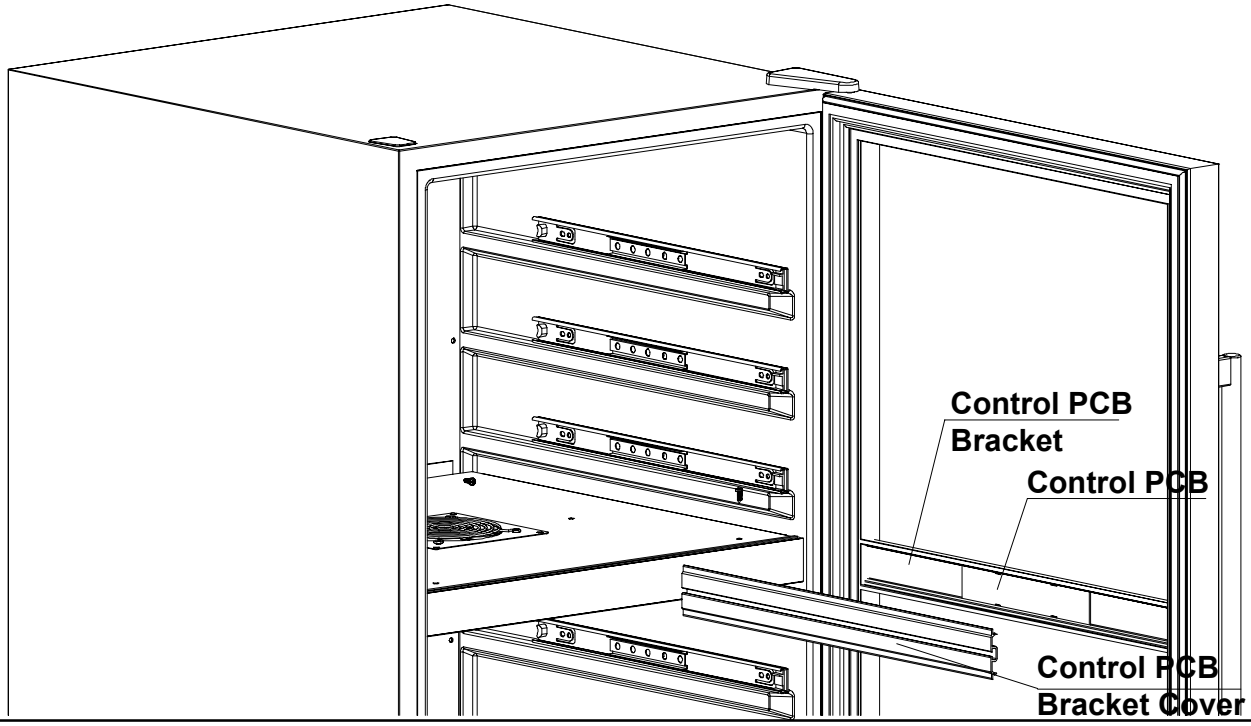
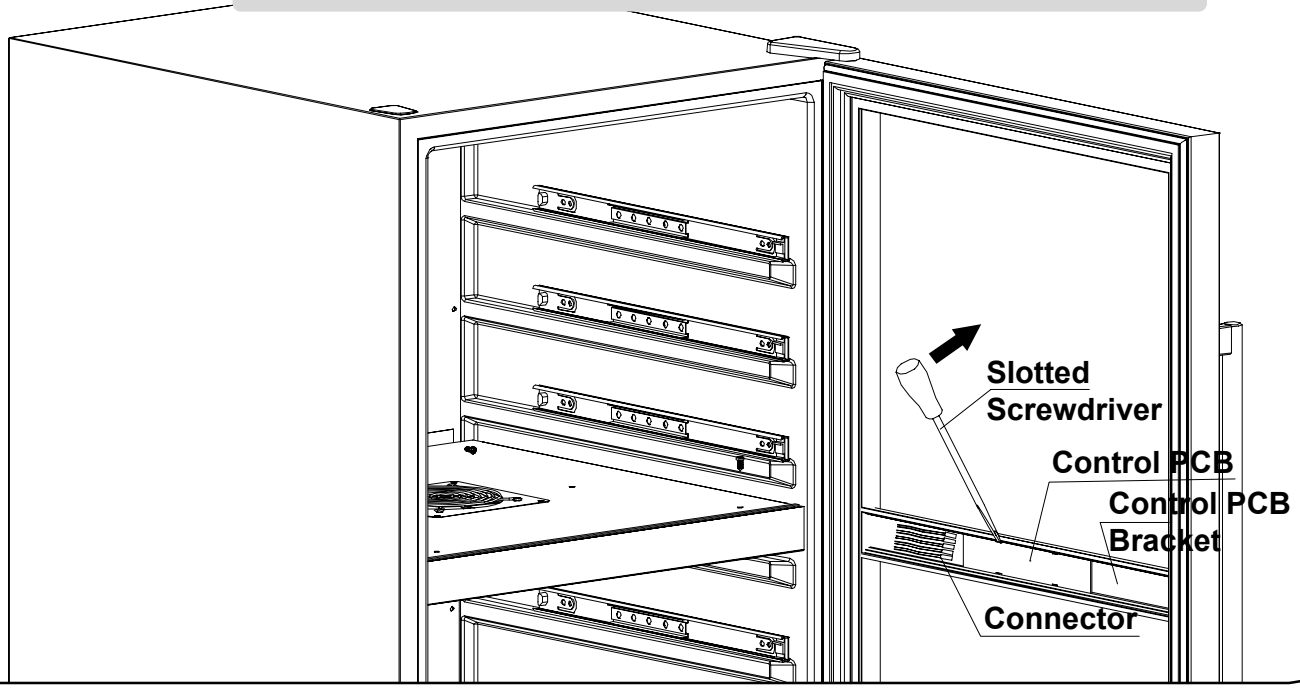


Figure 30

---- Unplug Connector, Pry outwards Control PCB with a Slotted Screwdriver, and Replace it with new one



■ Power PCB Replace

● For BU-145D/BU-270D/BU-428D/BU-490D

Step 1: Power off the unit;

Step 2: Unscrew the 3 screws , take Power PCB Cover out **(Figure 31);**,

Step 3: Unplug Connector, take the Power PCB Bracket Ass'y out **(Figure 32);**

Step 4: Remove the Power PCB by a Slotted Screwdriver, Replace Power PCB with new one **(Figure33).**

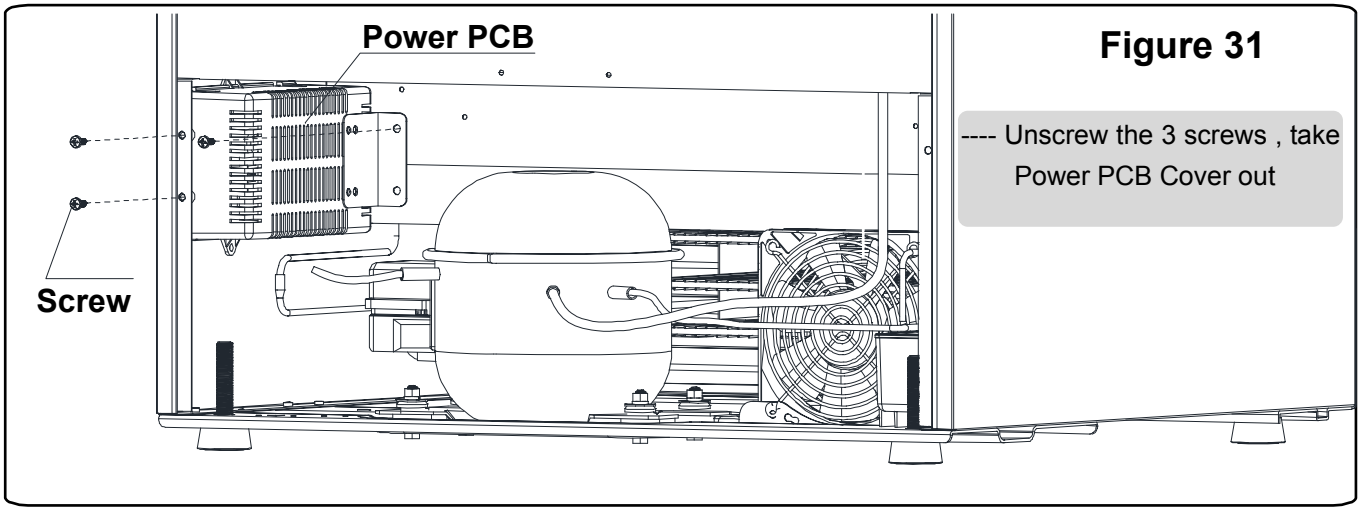


Figure 31

---- Unscrew the 3 screws , take Power PCB Cover out

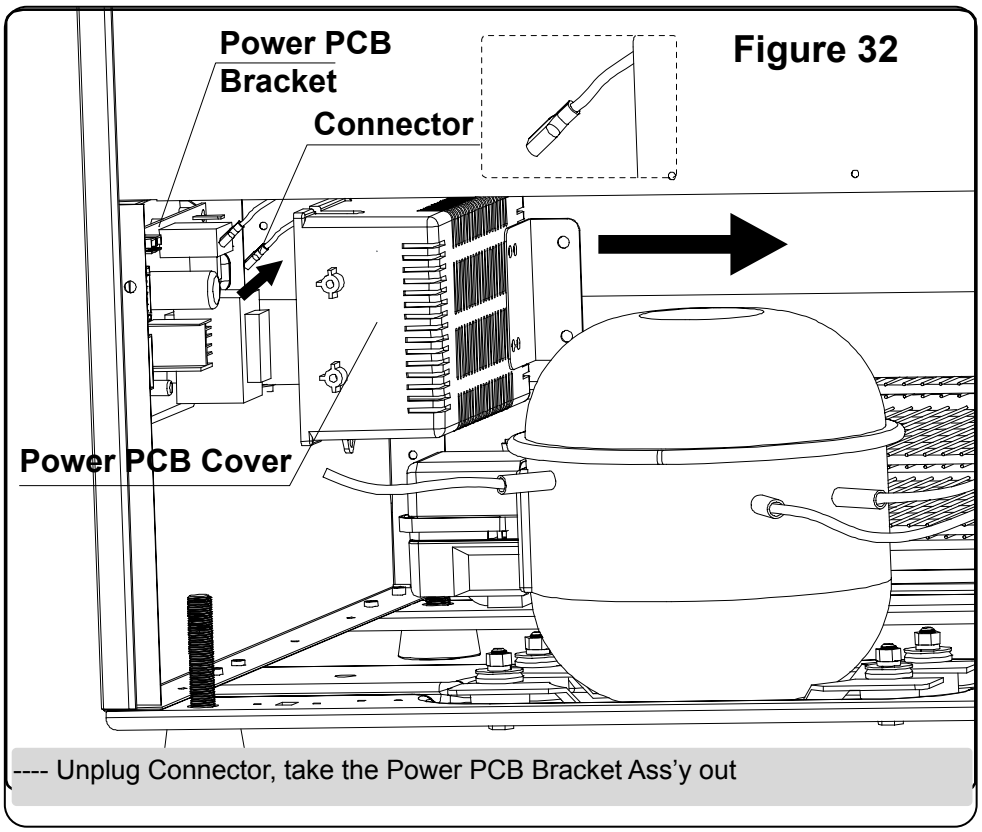
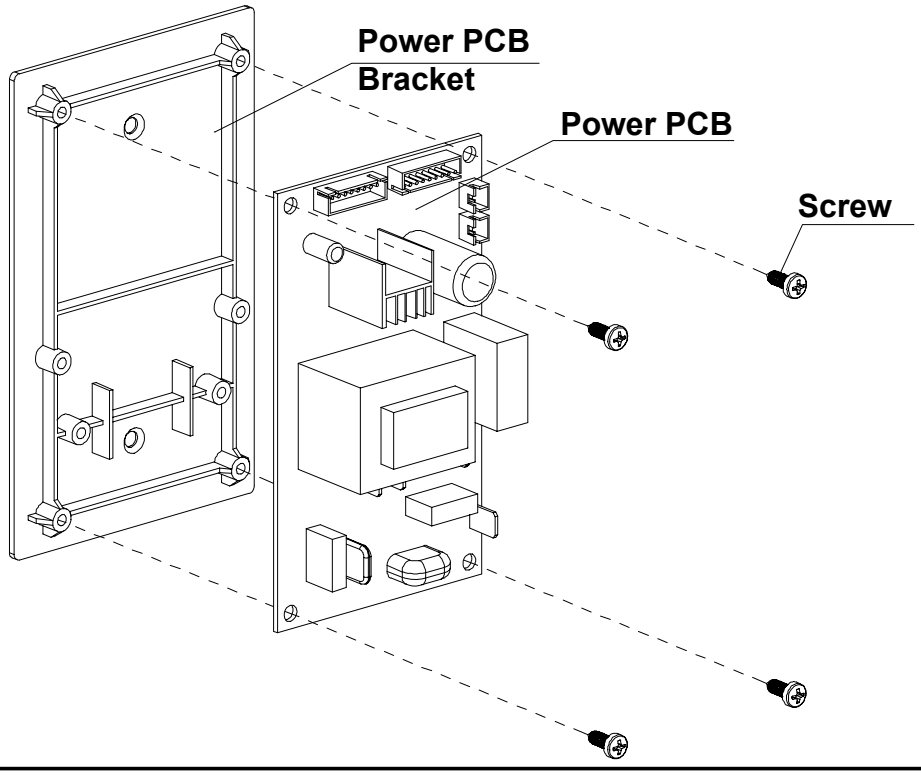


Figure 32

---- Unplug Connector, take the Power PCB Bracket Ass'y out

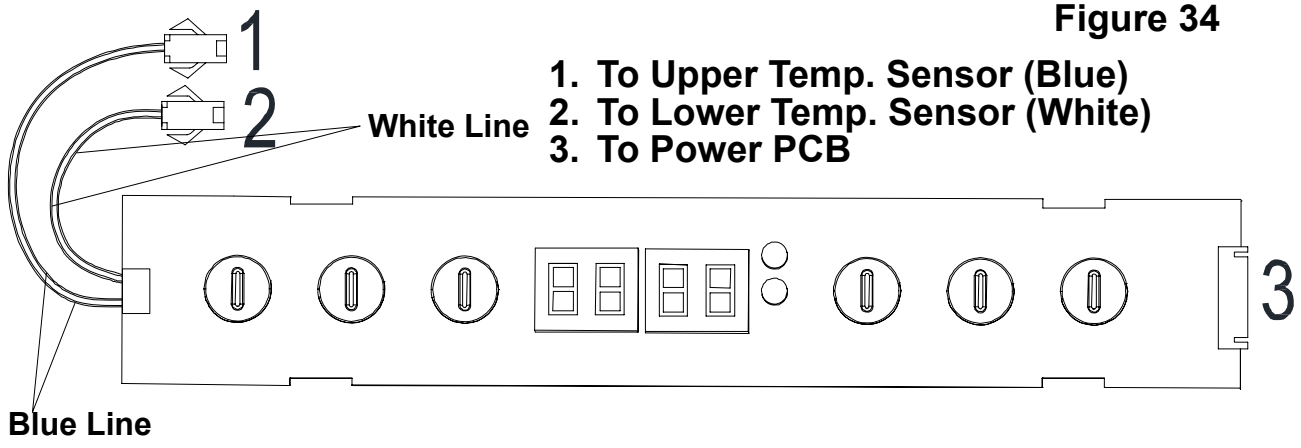
Figure 33 ---- Remove the Power PCB by a Slotted Screwdriver, Replace Power PCB with new one



■ Control PCB Connection

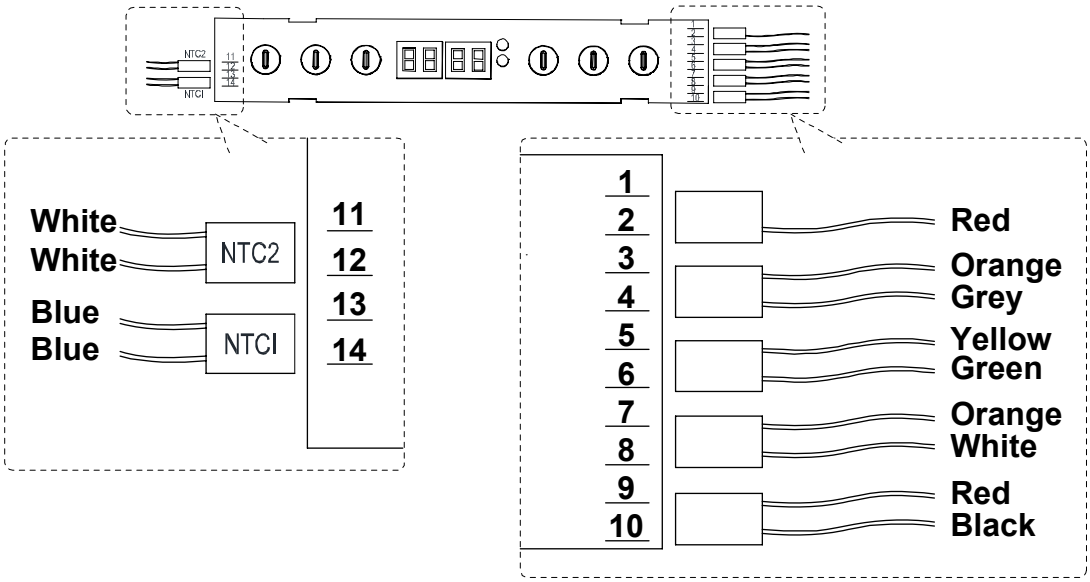
● For BU-145D/BU-270D/BU-428D/BU-490D (Control In-cabinet) (Figure 34)

Figure 34



● For BU-145D/BU-270D/BU-428D/BU-490D (Control On-door) (Figure 35)

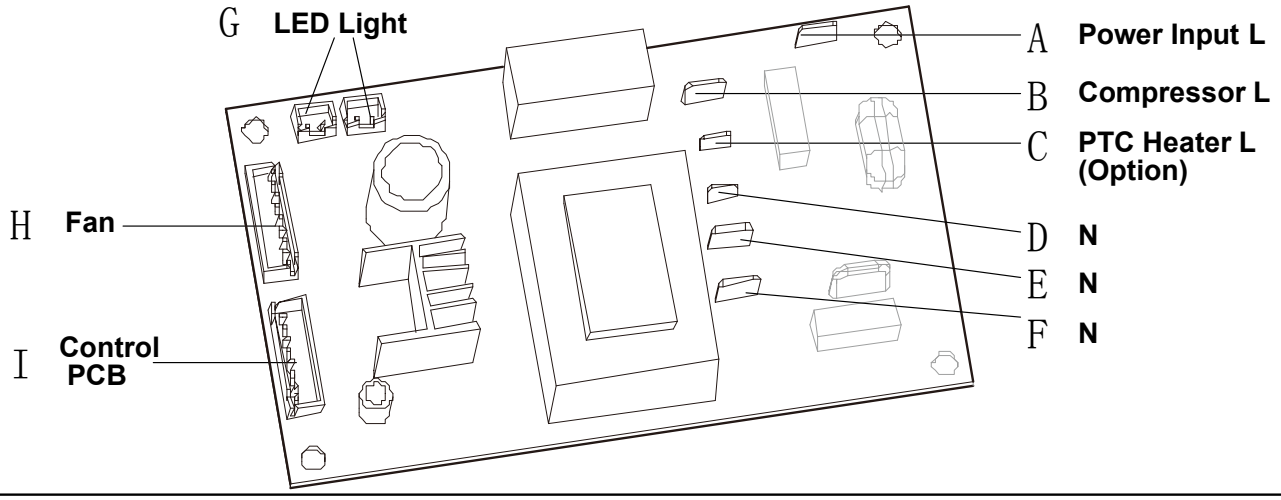
Figure 35



1. N/A
2. To FAN4 (Red)
3. To Heat (Orange)
4.To FAN 3 (Grey)
5. To LED (Yellow)
6. To FAN2 (Green)
7. To FAN1 (Orange)
8.To COMP (White)
9. To 5VDC(Red)
10. To GND(Black)
11. To Lower Temp. Sensor (White)
12. To Lower Temp. Senor (White)
13. To Upper Temp. Sensor (Blue)
14. To Upper Temp. Senor (Blue)

■ Power PCB Connection (Figure 36)

Figure 36 **Connector Position (Power PCB)**



■ Compressor Start Relay and Overload Protector Replace

WARNING: Unplug the unit from power supply before replacement in case of electrical shock.

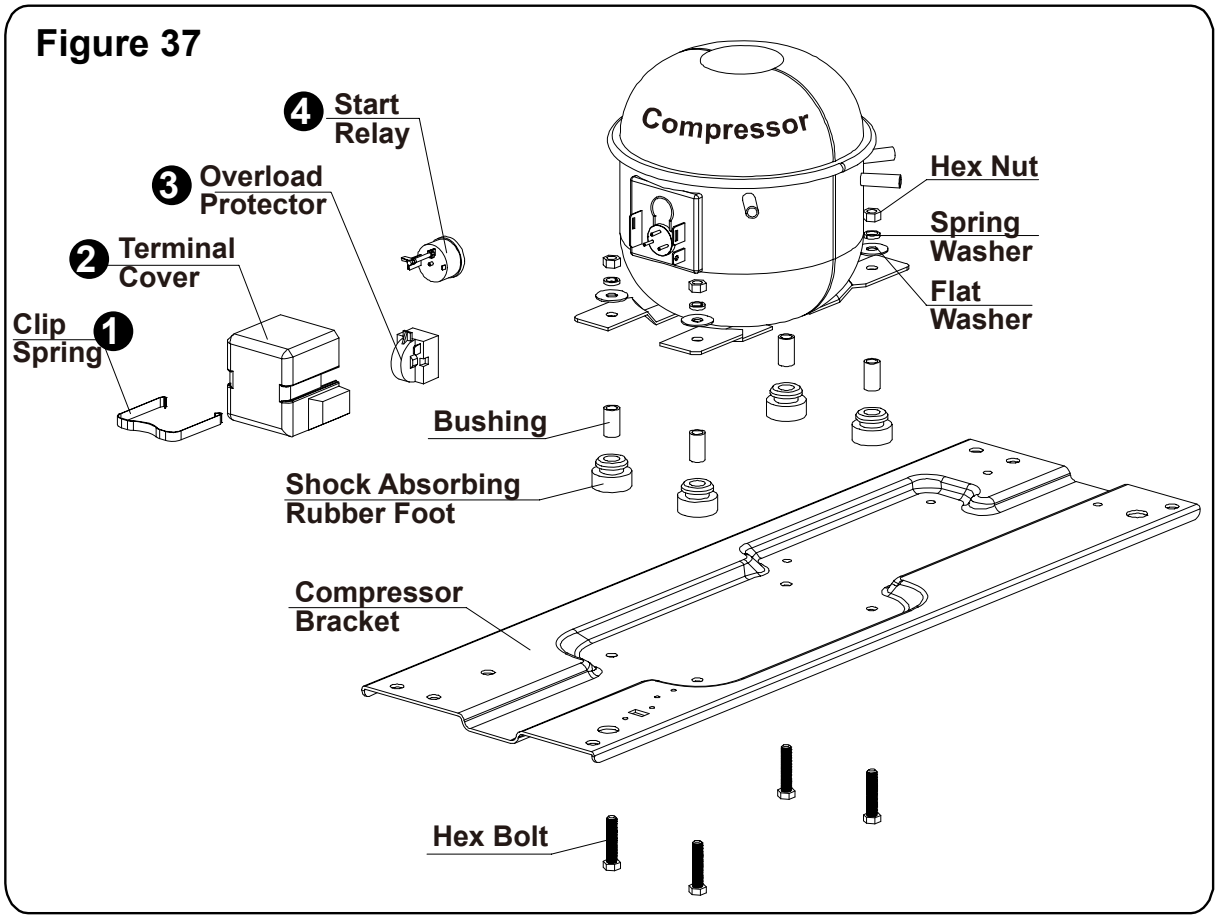
● For BU-145D -- Terminal Cover with Clip Spring (Figure 37)

Step 1: Press and Remove Clip Spring ❶, pull out Terminal Cover❷;

Step 2: Pull out Overload Protector❸ and/or Start Relay❹ ;

Step 3: Replace it with new one.

Figure 37



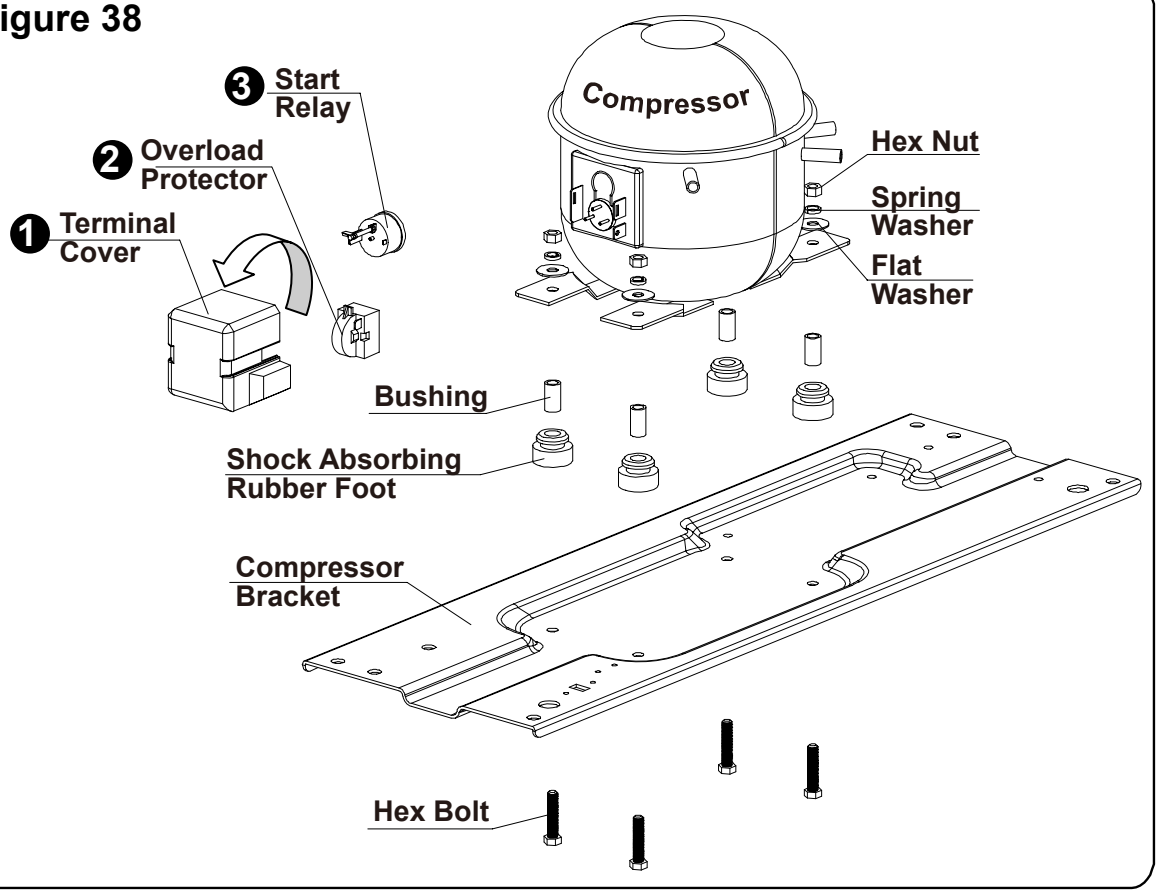
● **For BU-270D/BU-428D/BU-490D ----Terminal Cover Without Clip Spring (Figure 38)**

Step 1: Hold on Terminal Cover ❶ and press it upwards by hand to remove it ;

Step 2: Take out Overload Protector ❷ and/or Start Relay ❸ ;

Step 3: Replace it with new one;

Figure 38



■ PTC Heater Replace (Figure 39)

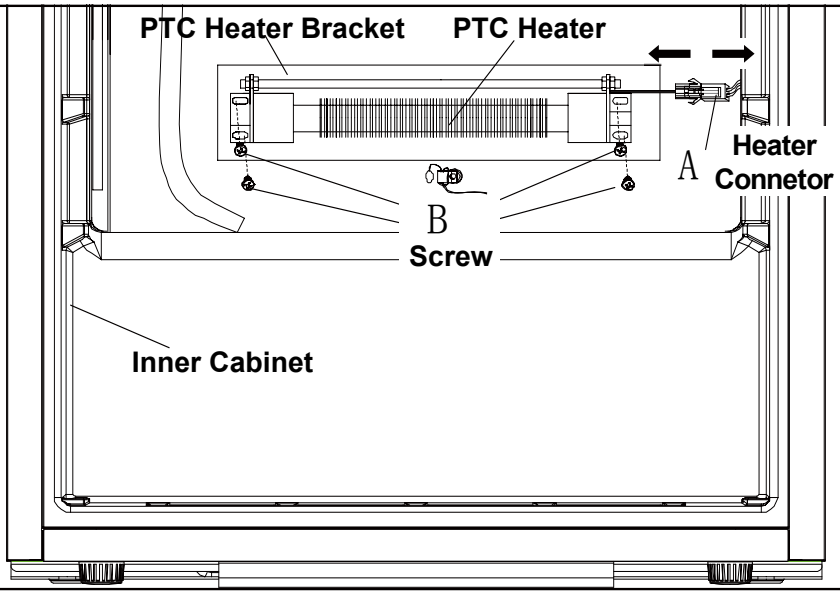
WARNING: Unplug the unit from power supply before replacement in case of electrical shock.

Step 1: Unplug Heater Connector ❶;

Step 2: Unscrew 4 Screws ❷ from PTC Heater Bracket ;

Step 3: Replace PTC Heater with new one.

Figure 39



■ LED Light Replace

WARNING: Unplug the unit from power supply before replacement in case of electrical shock.

Step 1: Take out all Shelves;

Step 2: Unscrew 3 screws ❶ from Light Cover;

Step 3: Unplug PCB Connector❷ (**Figure 40**);

Step 4: Unscrew 4 screws ❸ from Light PCB

(Figure 41-A for Upper LED Light, Figure 41-B for Lower LED Light).

Step 5: Replace Light PCB with new one.

Figure 40

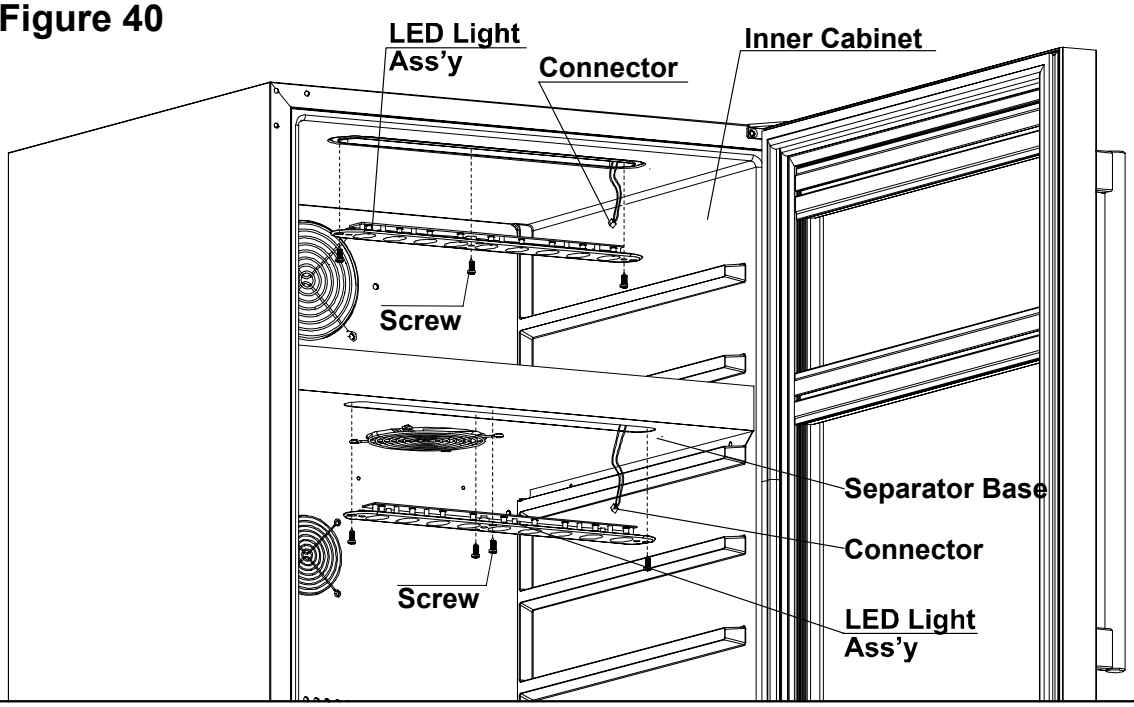


Figure 41-A

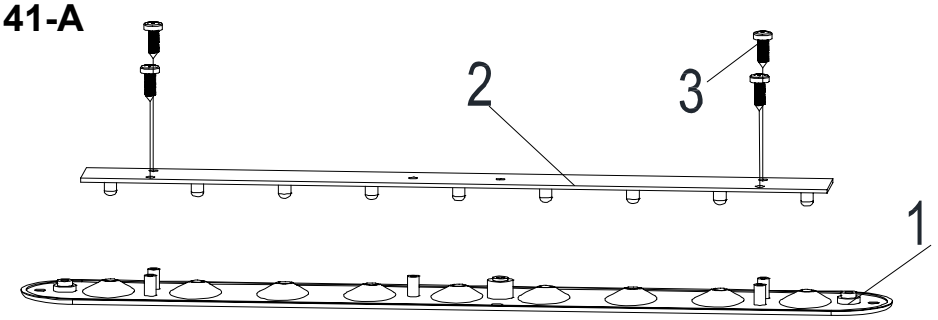
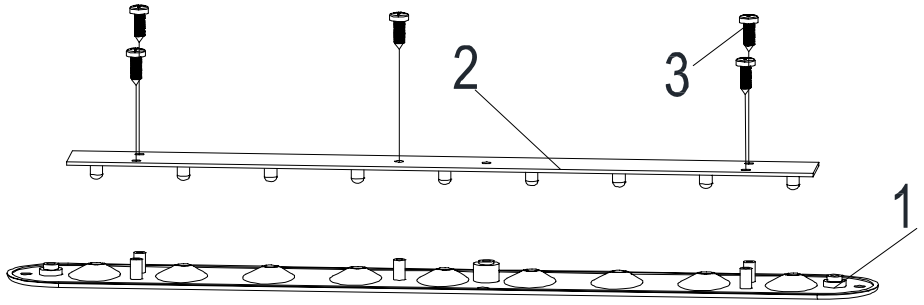


Figure 41-B



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