10641 Highway 36
Covington, GA
30014

www.sunbeltbuilders.com

t 770.786.3031
f 770.786.3046

NEWTON COUNTY FLEET & PUBLIC WORKS

Covington Air Systems
P.O. Box 1526
Covington, GA 30015
ph: 770-385-0068
Byron Hopper
bhopper@covingtonairsystems.com

23-0000 HVAC O&M

LENNOX Powered by SAMSUNG

SYSTEM AIR CONDITIONER

SINGLE for North America (R32, Heat Pump)

INDOOR UNIT
3WMD036S6-1P

OUTDOOR UNIT
3WPD036S6S-1P

SERVICE Manual

AIR CONDITIONER



CONTENTS

1. Precautions

2. Product Specifications

3. Disassembly and Reassembly

4. Troubleshooting

5. PCB Diagram and Parts List

6. Wiring Diagram

7. Reference Sheet

Contents

1. Precautions 1-1

1-1. Precautions for the Service 1-1
1-2. Precautions for the Static Electricity and PL 1-1
1-3. Precautions for the Safety 1-1
1-4. Precautions for Handling Refrigerant for Air Conditioner 1-2
1-5. Precautions for Welding the Air Conditioner Pipe 1-2
1-6. Precautions for Additional Supplement of Air Conditioner Refrigerant 1-2
1-7. Other Precautions 1-2

2. Product Specifications 2-1

2-1. Features & Benefits 2-1
2-1-1. Wall Mount Type 2-1
2-2. Product Specifications 2-2
2-3. Specifications of optional items 2-3
2-3-1. Accessories 2-3

3. Disassembly and Reassembly 3-1

3-1. Indoor unit 3-2
3-2. Outdoor unit 3-10

4. Troubleshooting 4-1

4-1. Setting an indoor unit address and installation option 4-1
4-1-1. The procedure of setting option 4-1
4-1-2. The procedure of setting option 4-2
4-1-3. Order for Setting Options (Wired Remote Controller) 4-5
4-1-4. Setting an indoor unit installation option
(Suitable for the condition of each installation location) 4-9
4-1-5. Changing the addresses and options individually 4-13
4-1-6. Emergency Temperature Output (ETO) function 4-14
4-2. Model-specific option code 4-16
4-3. Diagnostic Checklist 4-17
4-3-1. Test operation mode and check mode 4-17
4-3-2. Error code [indoor] 4-23
4-4. Troubleshooting by symptoms 4-24
4-4-1. Indoor temperature sensor error (E121) 4-24
4-4-2. Indoor heat exchanger temperature sensor error (E122) 4-25
4-4-3. Indoor Fan error (E154) 4-26
4-4-4. EEPROM circuit failure (E162) 4-27
4-4-5. Communication error after finishing Tracking (E202) 4-28
4-4-6. The whistling noise from the indoor unit in low wind mode 4-29
4-4-7. When the outdoor unit power is not ON - Initial Diagnosis: 1-phase products 4-30
4-4-8. Indoor/outdoor communication error (2min.) (Error Code: E202) 4-32
4-4-9. Communication error between outdoor unit INV ↔ MAIN MICOM (1 min.)
(Error Code: E203) 4-34

Contents

4-4-10. Outdoor sensor error(Error Code: E221, E231, E251, E320) 4-35
4-4-11. Compressor down due to freezing control (Error Code: E403) 4-36
4-4-12. Pipe blockage error (Error Code: E422) 4-37
4-4-13. Outdoor unit Fan error (Error Code: E458, E475) 4-38
4-4-14. Compressor starting error / rotation error (Error Code: E461, E467) 4-39
4-4-15. Full current error / PFC over-current error (Error Code: E462, E484) 4-41
4-4-16. IPM (Over Current) error (Error Code: E464) 4-42
4-4-17. DC LINK over-current / low-voltage error (Error Code: E466)
H/W DC_Link Over Voltage Error (Error Code: E483)
AC Input Voltage Sensor Error (Error Code: E488) 4-45
4-4-18. Gas leakage error (Error Code: E554) 4-47
4-4-19. Others 4-49

5. PCB Diagram and Parts List 5-1
5-1. Indoor Unit Main PBA 5-1
5-2. Indoor Unit Display PBA 5-3
5-3. Indoor Unit Sub PBA 5-4
5-4. Outdoor Unit Main PBA 5-5
5-5. Outdoor Unit Inverter PBA 5-7
5-6. Outdoor Unit EMI PBA 5-8

6. Wiring Diagram 6-1
6-1. Indoor Unit 6-1
6-2. Outdoor unit 6-2

7. Reference Sheet 7-1
7-1. Index for Model Name 7-1
7-2. Refrigerating Cycle Diagram 7-2

1. Precautions

1-1. Precautions for the Service

- **Use the correct parts when changing the electric parts.**
  - Please check the labels and notices for the model name, proper voltage, and proper current for the electric parts.
- **Fully repair the connection for the types of harness when repairing the product after breakdown.**
  - A faulty connection can cause irregular noise and problems.
- **When disassembling or assembling, make sure that the product is laid down on a work cloth.**
  - Doing so will prevent scratching to the exterior of the rear side of the product.
- **Completely remove dust or foreign substances on the housing, connection, and inspection parts when performing repairs.**
  - This can prevent fire hazards for tracking, short, etc.
- **Please tighten the service valve of the outdoor unit and the valve cap of the charging valve as securely as possible by using an adjustable wrench.**
- **Check whether the parts are properly and securely assembled after performing repairs.**
  - These parts should be in the same condition as before the repair.

1-2. Static Electricity Precautions

- **Please carefully handle the PCB power terminal during repair and measurement when it is turned on since it is vulnerable to static electricity.**
  - Please wear insulation gloves before performing PCB repair and measurement.
- **Check if the place of installation is at least 6ft away from electronic appliances such as TV, video players, and stereos.**
  - This can cause irregular noise or degrade the picture quality.
- **Please make sure the customer does not directly repair the product.**
  - Arbitrary dismantling may result in electric shock or fire.

1-3. Safety Precautions

- **Do not pull or touch the power plug or the subsidiary power switch with wet hands.**
  - This may result in electric shock or fire.
- **If the power line or the power plug is damaged, then it must be changed since this is a hazard.**
- **Do not bend the wire too much or position it so that it can be damaged by a heavy object on top.**
  - This may result in electric shock or fire.
- **The use of multiple electric outlets should be prohibited.**
  - This may result in electric shock or fire.
- **Ground the connection if it is necessary.**
  - The connection must be grounded if there is any risk of electrical short due to water or moisture.
- **Unplug the power or turn off the subsidiary power switch when changing or repairing electrical parts.**
  - Doing so will prevent electric shock.
- **Explain to workers that the battery for the remote control needs to be separated for storage purposes when the product will not be used for a long time.**
  - This can cause a problem for the remote control since battery fluid may trickle out.

1-4. Refrigerant Handling Precautions

Environmental Cautions: Air pollution due to gas release

- **Safety Cautions**
  If liquid gas is released, then body parts that come into contact with it may experience frostbite/blister/numbness.
  If a large amount of gas is released, then suffocation may occur due to lack of oxygen.
  If the released gas is heated, then noxious gas may be produced by combustion.
- **Container Handling Cautions**
  Do not subject container to physical shock or overheating. (Flowage is possible while moving within the regulated pressure.)

1-5. Welding Precautions

- **Dangerous or flammable objects around the pipe must be removed before the welding.**
- **If the refrigerant is kept inside the product or the pipe, then remove the refrigerant prior to welding.**
  If the welding is carried out while the refrigerant is kept inside, the welding cannot be properly performed.
  This will also produce noxious gas that is a health hazard. This leakage will also explode with the refrigerant and oil due to an increase in the refrigerant pressure, posing a danger to workers.
- **Please remove the oxide produced inside the pipe during the welding with nitrogen gas.**
  Using another gas may cause harm to the product or others.

1-6. Adding Refrigerant Precautions

- **Precisely calculate the refrigerant by using a scale and S-net, and proceed with the test operation.**
  Excessive supplement can cause harm to the product since it can cause an inflow of the liquid refrigerant into the compressor.
- **Do not heat the refrigerant container for a forced injection.**
  This may cause harm to the product or others since the refrigerant container may burst.
- **Do not operate the product after removing the product safety pressure switch and sensor.**
  If the product is blocked inside, then this may cause harm to the product or others due to the excess pressure increase of the refrigerant gas.

1-7. Other Precautions

- **There should be no leakage of the pipes after installation. When withdrawing the refrigerant, the compressor should be stopped before removing the connecting pipe.**
  If the compressor is operating while the refrigerant pipe is not correctly connected and the service valve is opened, then air and other substances can enter the pipe. The interior of the refrigerant cycle may then build up excessive high pressure resulting in explosion and damage.
- **If the Wall Mounted type(Wind free) indoor unit is included in the installation combination, please contact us before changing the Capacity correction for heating function to 33kg/cm2g during Outdoor unit key function setting.**

2-2. Product Specifications

Item			IN	3WMD036S6-1P
			OUT	3WPD036S6S-1P
Design	Indoor Unit			
	Outdoor Unit			
	Remote Controller			
Performance	Cooling [Btu/h]			12000/33000/45000
	Heating [Btu/h]			10000/40000/54000
Power Consumption	Cooling [W]			740/2,750/3,850
	Heating [W]			560/4,500/6,800
EER/COP	Cooling [Btu/hW]			12.0
	Heating [W/W]			2.6
Voltage / Frequency [Φ, #, V, Hz]				1,2,280-230,60
Operating Current	Cooling [A]			3.8/12.3/17
	Heating [A]			3/20.1/29.9
Sound Pressure	Indoor Unit [dBA]			51 / 48 / 46 / 38
	Outdoor Unit (Cooling/Heating) [dBA]			50/52
Size	Net Dimension (WxHxD)	Indoor Unit [mm]		1280 x 253 x 345
		Outdoor Unit [mm]		940 x 1420 x 330
	Shipping Dimension (WxHxD)	Indoor Unit [mm]		1352 x 326 x 420
		Outdoor Unit [mm]		995 x 1598 x 426
Weight	Net	Indoor Unit [kg]		18.5
		Outdoor Unit [kg]		96.0
	Gross	Indoor Unit [kg]		22.0
		Outdoor Unit [kg]		106.0
Harness Specifications	Indoor Fan Motor			DB31-00332C
	Compressor			ATQ420D1UNT1
	Outdoor Fan Motor			DB31-00658J
Piping	High Pressure (Liquid)			Φ 9.52
	Low Pressure (Gas)			Φ 15.88
Refrigerant Type				R32
Factory Charging [g]				3.5
Additional Refrigerant (Over 7.5m, for every 1m) [g]				30
Basic Piping Length [m]				7.5
Max. Piping Length [m]				75
Max. Level Difference [m]				30
Option Code		Standard		0113FF-193593-206975-371700
		Installation1		020010-100000-200000-300000
		Cycle		030000-100000-200000-300000
		Installation2		050030-100700-200000-300000

2-3. Accessories

2-3-1. Accessories

■ 3WMD036S6-1P

Item	Description	Q'ty	Remark
	WIRELESS REMOTE CONTROLLER	1	Indoor Unit
	USER MANUAL	1	
	INSTALLATION MANUAL	1	
	WARRANTY CARD	1	

Accessories (cont.)

■ 3WPD036S6S-1P

Item	Description	Q'ty	Remark
	INSTALLATION MANUAL	1	Outdoor Unit
	RUBBER-LEG	4	

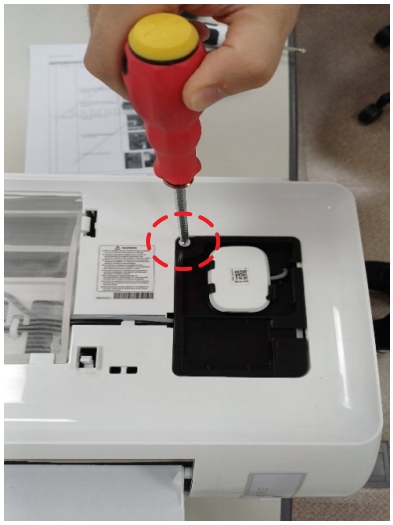
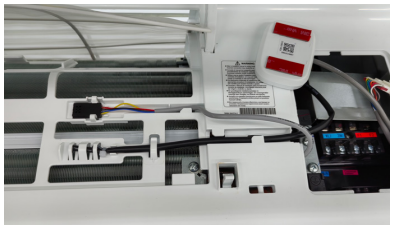
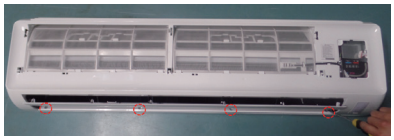
3. Disassembly and Reassembly

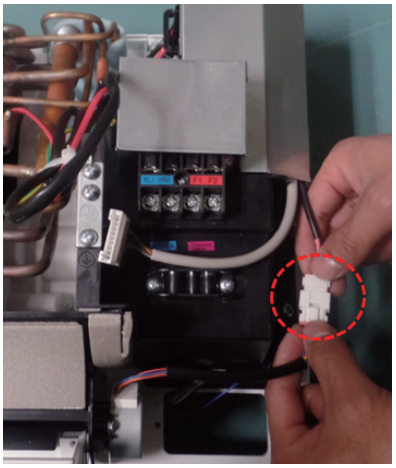
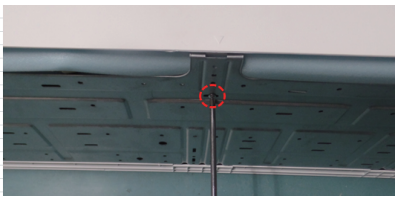
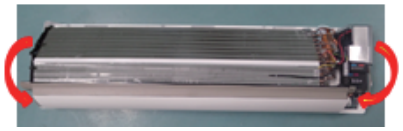
■ Necessary Tools

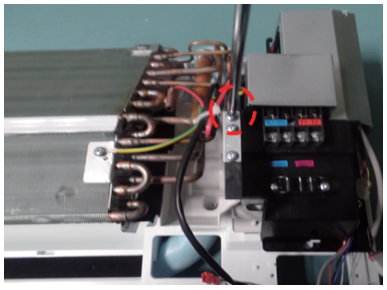
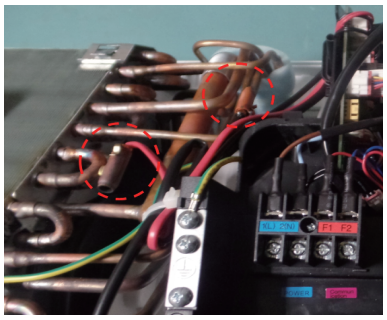
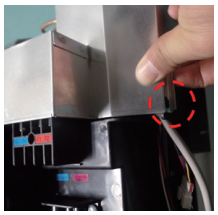
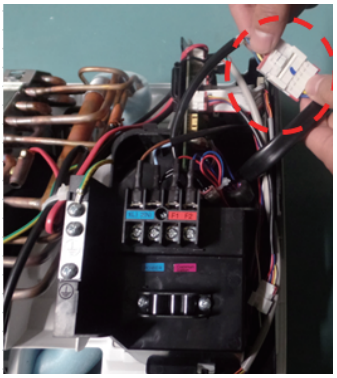
Item	Remarks
PPHILLIPS HEAD SCREWDRIVER	
Adjustable Wrench	
M6, M8 Hex Wrench	

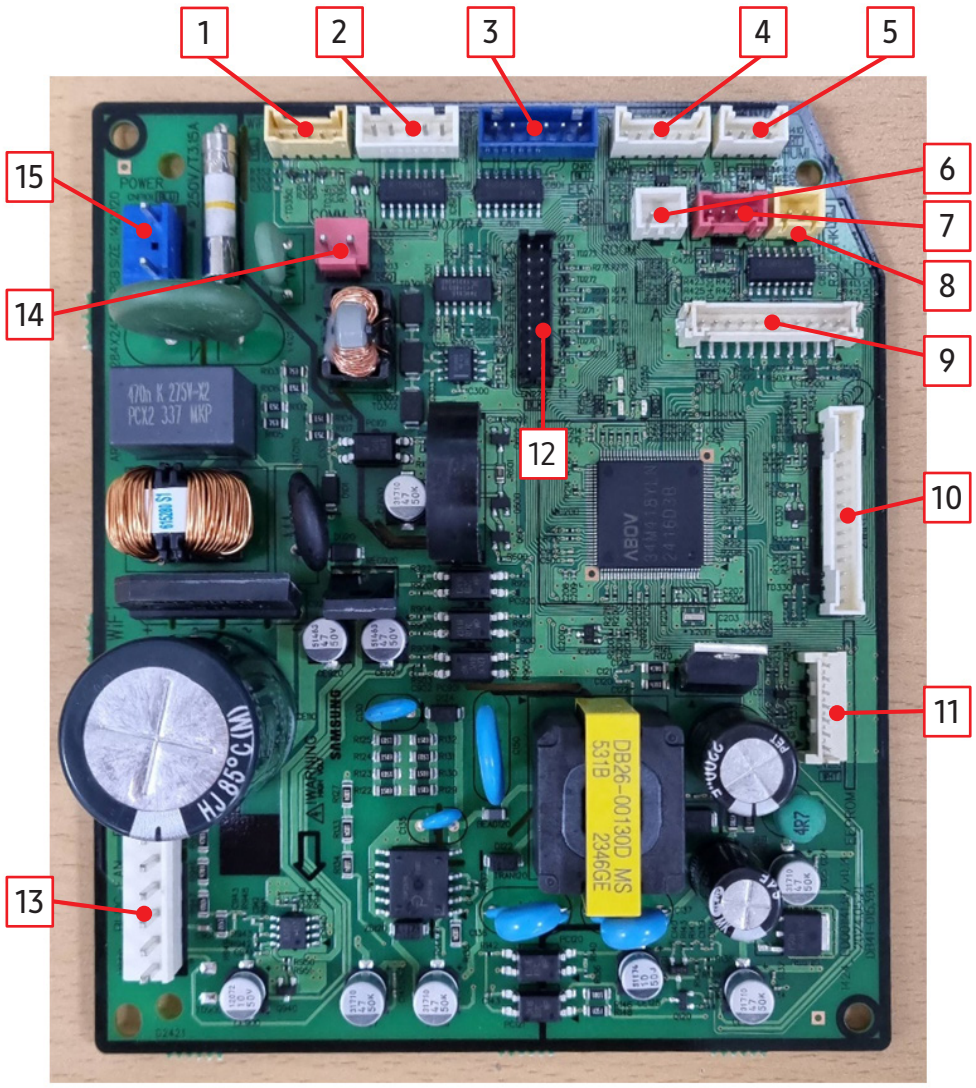
3-1. Indoor unit

■ RAC (MAX): 3WMD036S6-1P

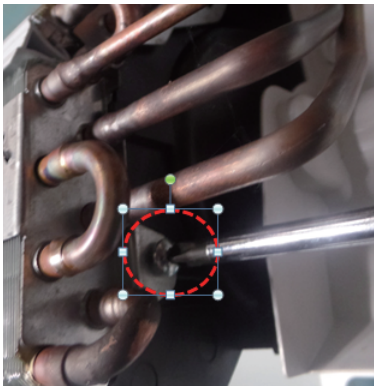
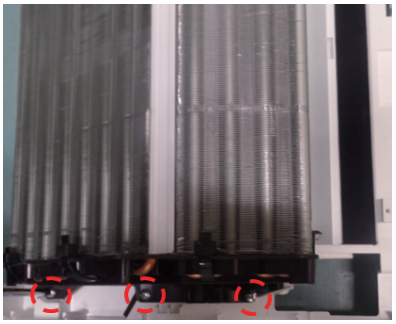
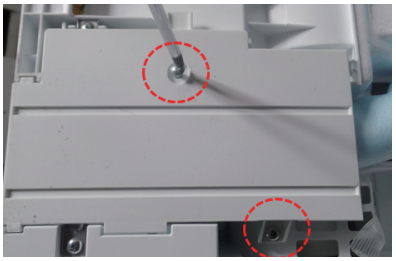
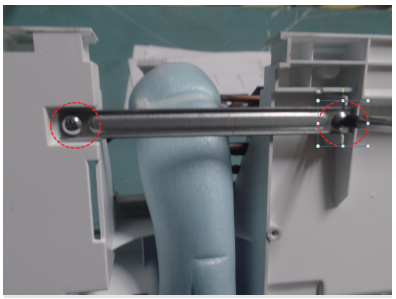
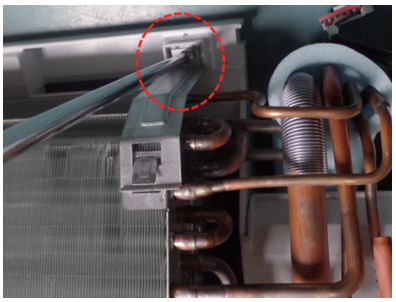
No	Parts	Procedure	Remark
1	Panel-Front	1) Turn off the air conditioner and disconnect the main power supply — ensure all electrical power to the unit is completely shut off before proceeding.	
		2) Open the Front-Grille and remove it from the Front-Panel. 3) Remove the Terminal-Cover from the Front-Panel using a Phillips (+) screwdriver.	
		4) Disconnect and remove the Wi-Fi module from the Terminal-Cover assembly. Carefully unplug the Wi-Fi connector(s) and lift the module straight out of the cover.	
		5) Loosen the white wire connector and unplug the humidity and temperature sensor leads. Press the connector's locking tab (if present) and carefully pull the connector apart to release the sensor wires.	
		6) Remove the two Phillips-head screws securing the bottom of the Front-Panel to the frame, then lift the panel off the unit.	
		7) Remove the front panel by lifting up at the bottom and tilting the panel out from the top. Lift the bottom of the FRONT-PANEL straight up to disengage it, then pull the panel forward to remove it.	

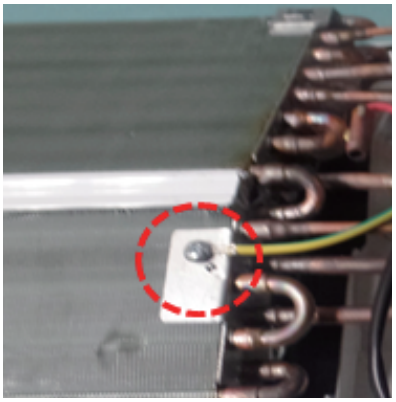
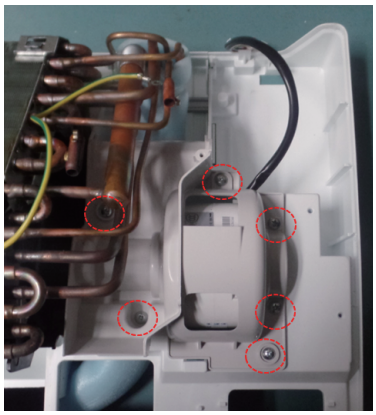
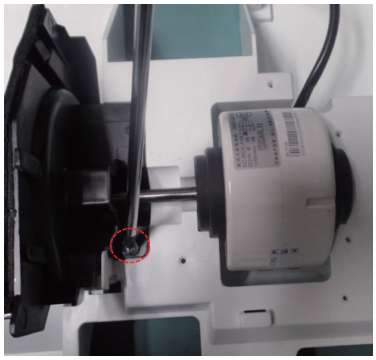
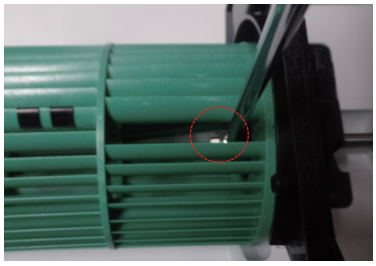
No	Parts	Procedure	Remark
2	TRAY DRAIN	1) Loosen the stepping motor harness and free it from the hook on the main frame. Gently press the connector's locking tab (if present) before unplugging, and unhook the wire from its frame clip or bracket.	
		2) Release the (R32) GAS sensor connector and unplug the sensor harness. **Caution** To remove the (R32) GAS sensor, unfasten the two screws using a Phillips (+) screwdriver.	
		3) To remove the TRAY-DRAIN from the main frame, grasp the bottom edge of the TRAY-DRAIN and pull it straight toward you. Lift slightly if needed to disengage any retaining clips or guides before fully removing it. Support the tray while pulling to avoid stressing adjacent components.	 

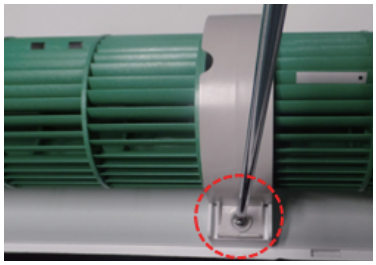
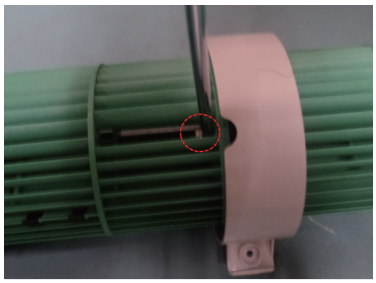
No	Parts	Procedure	Remark
3	CONTROL IN	1) Unfasten the earth (ground) screw using a Phillips (+) screwdriver.	
		2) Disconnect the indoor and outdoor temperature sensors (IN/OUT).	
		3) Detach the control box cover to gain access to the control components.	 
		4) Loosen the white motor wiring and disconnect the harness.	
		5) Remove the control case from the main frame using a Phillips (+) screwdriver.	

No	4
Parts	PBA
Remark	
Procedure	**1) Loosen all connector wires from PBA.** ① Wi-Fi (CN350) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ② Louver (CN802) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ③ EEV (CN802) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ④ EVA IN/OUT Temperature sensor (CN401) **Caution** When separating the connector, press the locking tab before pulling the connector apart.

Procedure	⑤ Humidity sensor (CN410) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑥ ROOM Temperature sensor (CN400) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑦ GAS sensor (R32) (CN420) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑧ R32 Check (CN803) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑨ DISPLAY PBA (CN500) **Caution** This terminal features a locking connector. Depress the lock button before pulling the connector halves apart. ⑩ 2WIRE SUB PBA (CN301) **Caution** When removing the PBA, do not touch the components. Hold the board by its edges only. ⑪ EEPROM SUB PBA (CN230) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑫ Download (CN270) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑬ FAN MOTOR (CN900) **Caution** When separating the connector, press the locking tab before pulling the connector apart. ⑭ IDU ↔ ODU COMMUNICAITON (CN303) **Caution** When removing the PBA, do not touch the components. Hold the board by its edges only. ⑮ AC POWER (CNP101) **Caution** When separating the connector, press the locking tab before pulling the connector apart.

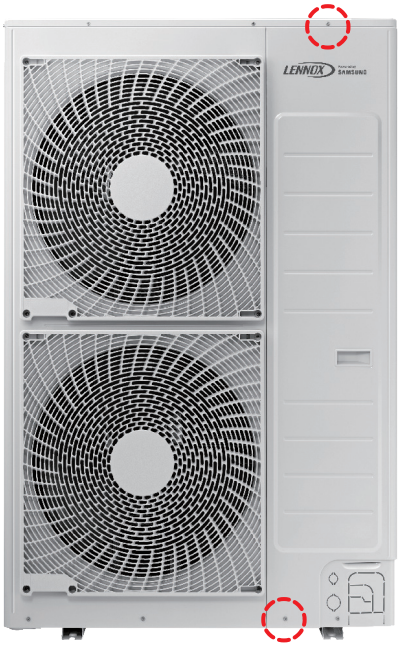
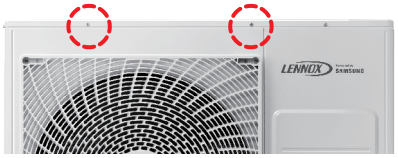
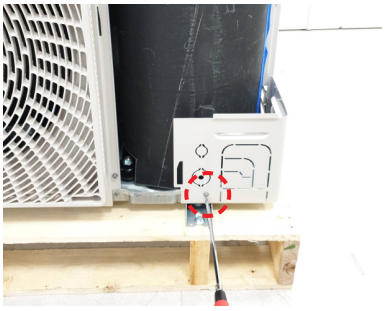
No	Parts	Procedure	Remark
5	EVAPORATOR	1) Unfasten the screw on the right side using a Phillips (+) screwdriver.	
		2) Unfasten the screw on the left side using a Phillips (+) screwdriver.	
		3) Remove the holder pipe using a Phillips (+) screwdriver.	
		4) Remove the evaporator bracket using a Phillips (+) screwdriver.	
		5) Remove the evaporator holder using a Phillips (+) screwdriver.	

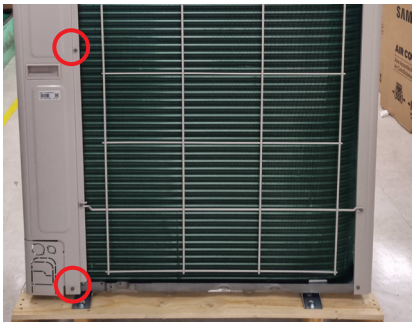
No	Parts	Procedure	Remark
		6) Loosen the right-side earth (ground) screw using a Phillips (+) screwdriver.	
6	FAN MOTOR & CROSS FAN	1) Loosen the six mounting screws securing the motor holder with a Phillips (+) screwdriver.	
		2) Loosen the screw partway using a Phillips (+) screwdriver	
		3) Loosen the screw partway with a Phillips (+) screwdriver, then slide the motor fan to the right to disengage it from its mount	

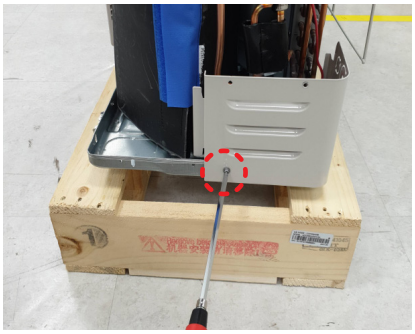
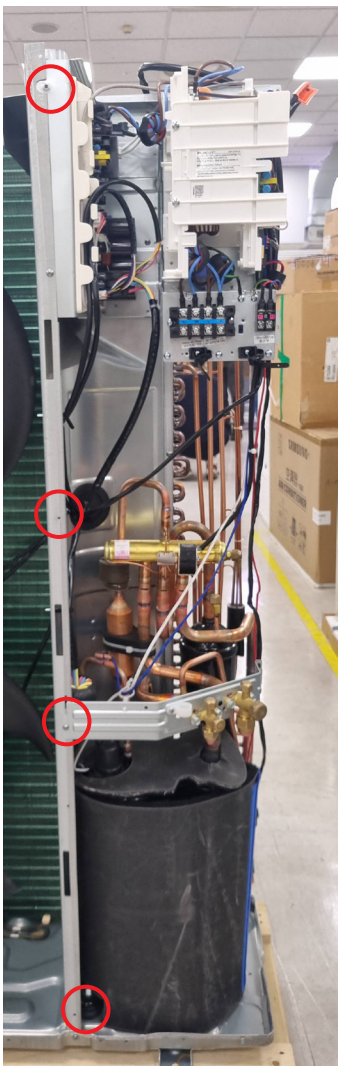
No	Parts	Procedure	Remark
6	FAN MOTOR & CROSS FAN	4) Loosen the single fixing screw on the fan holder using a Phillips (+) screwdriver.	
		5) Partially loosen the screw using a Phillips (+) screwdriver.	

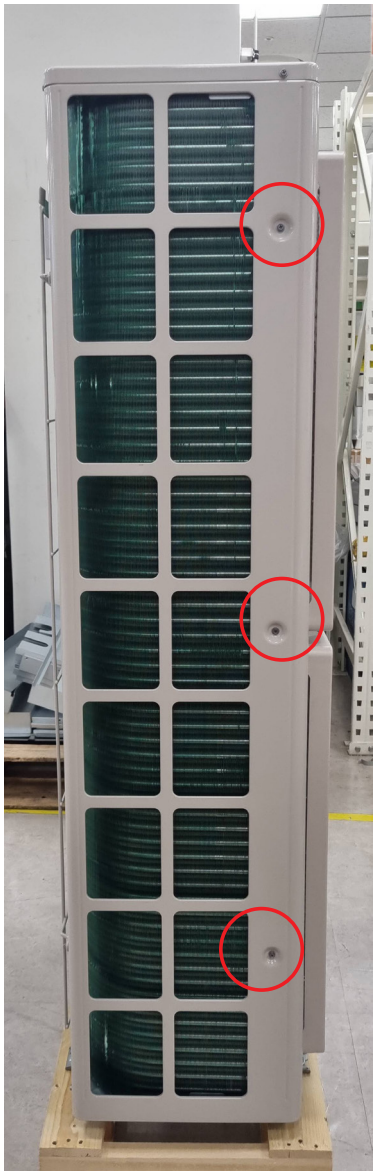
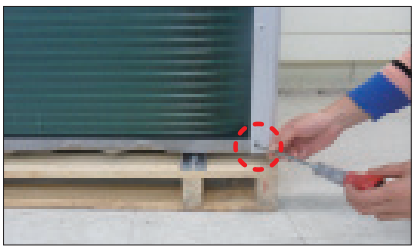
3-2. Outdoor unit

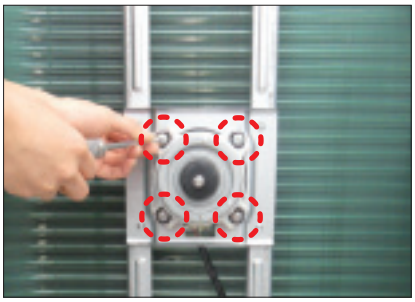
■ 3WPD036S6S-1P

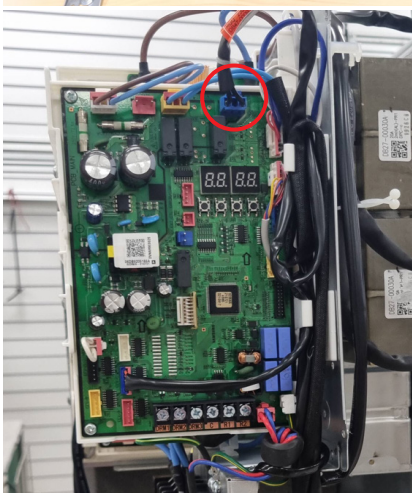
No.	Parts	Procedure	Remark
1	Cabinet Front RH	⚠ Turn off the power before disassembling. 1) Using a Phillips (+) screwdriver, remove the two screws from the right-hand side of the cabinet front, and then separate the panel from the unit.	
2	Cabinet Upper	1) Using a Phillips (+) screwdriver, remove the nine screws that secure the upper cabinet panels on each side, then detach the panels from the unit.	
3	Cabinet-Installation Front Part	1) Using a Phillips (+) screwdriver, remove the single screw securing the front installation cabinet, then detach the panel from the unit.	

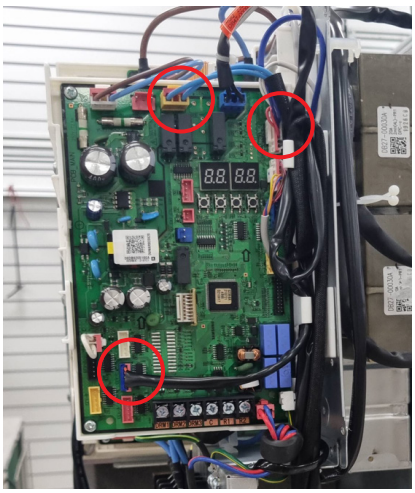
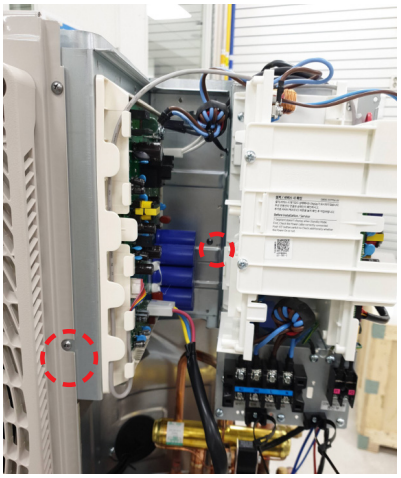
No.	Parts	Procedure	Remark
4	Outdoor Unit Guard	1) Remove the outdoor sensor from the coil guard by pulling it straight out of its holder, then separate it from the unit.	
		2) Using a Phillips (+) screwdriver, remove the four screws securing the outdoor unit guard, then detach the guard from the unit.	
5	Cabinet Rear RH	1) Pull the sensor out from the right-hand (RH) rear of the cabinet and detach it from its mount.	
		2) Using a Phillips (+) screwdriver, remove the four screws on each side of the rear right-hand cabinet, then detach the panel from the unit.	

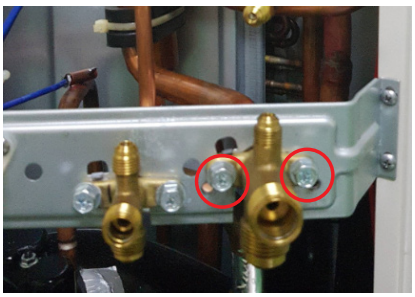
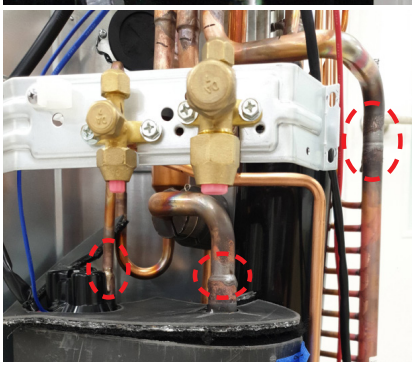
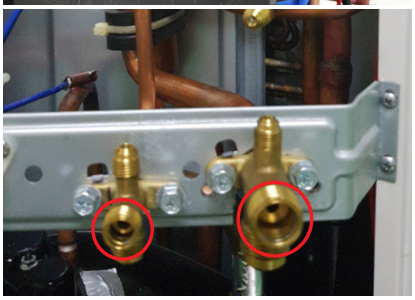
No.	Parts	Procedure	Remark
6	Cabinet-Installation Rear Part	1) Using a Phillips (+) screwdriver, remove the single screw securing the rear installation section of the cabinet, then detach the panel from the unit.	
7	Cabinet Front LF	1) Using a Phillips (+) screwdriver, remove the ten screws securing the front left-hand (LF) cabinet panel, then detach the panel from the unit.	 

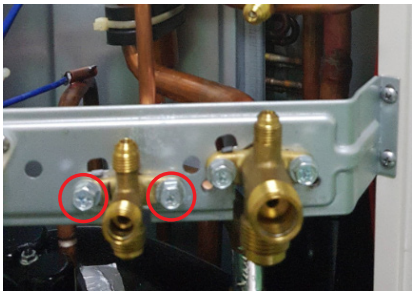
No.	Parts	Procedure	Remark
7	Cabinet Front LF		 

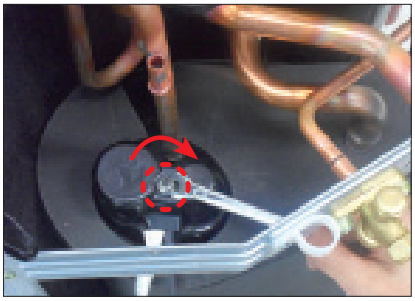
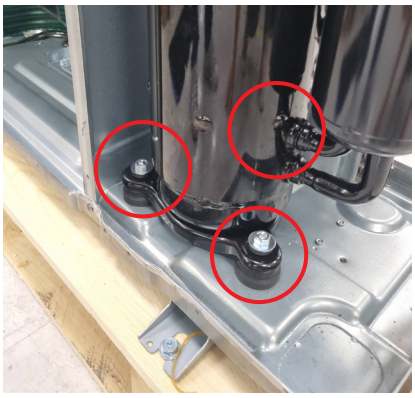
No.	Parts	Procedure	Remark
8	Fan	1) Using the appropriate tools (hexagon wrench, adjustable wrench/monkey spanner, or hexagon socket), remove the two fixing nuts shown in the illustration on the right.	
9	Motor	1) Separate the fan propeller from the motor assembly. 2) Using a Phillips (+) screwdriver, remove the eight screws securing the motor. 3) Disconnect the motor wire harness from the outdoor unit's control board.	 
10	Bracket Motor	1) Using a Phillips (+) screwdriver, remove the two screws securing the motor bracket, then detach the bracket from the assembly.	

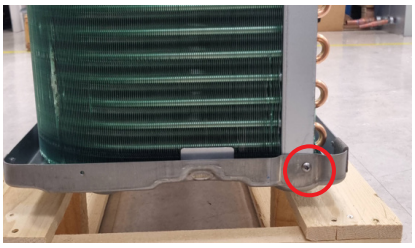
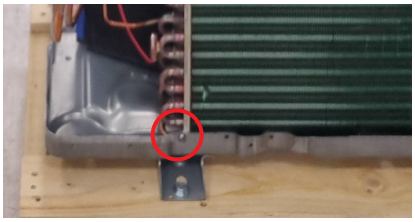
No.	Parts	Procedure	Remark
11	Base Heater	1) Using a Phillips (+) screwdriver, remove the four screws securing the base heater, then detach the heater assembly from the unit. 2) Disconnect the base heater wire connector from the outdoor unit's control board.	 

No.	Parts	Procedure	Remark
12	Control Part	1) Disconnect all four wiring connectors from the outdoor unit's control board. 2) Using a Phillips (+) screwdriver, remove the two screws securing the control board, then detach it from the assembly. 3) Detach the control assembly from the unit.	  

No.	Parts	Procedure	Remark
13	4 Way Valve	1) First, discharge the refrigerant. 2) Using a Phillips (+) screwdriver, remove the two screws that secure the service valve, then detach it from its mounting. 3) Separate the inlet and outlet refrigerant pipes with a welding torch. ⚠ Before separating the compressor, heat exchanger, or refrigerant pipes, fully recover the refrigerant from the compressor using approved recovery equipment, then separate the pipes with a welding torch.	  

No.	Parts	Procedure	Remark
14	EEV Valve	1) Using a Phillips (+) screwdriver, remove the two screws that secure the service valve, then detach the valve from its mounting. 2) Using an appropriate welding torch, cut the inlet and outlet refrigerant pipes to separate them.	 

No.	Parts	Procedure	Remark
15	Compressor	1) Using the appropriate tool (hexagon wrench, adjustable/monkey spanner, or hexagon socket), remove the single fixing nut at the end of the cover, then detach the cover from the unit.	
		2) Separate the felt pad or insulation from the compressor assembly.	
		3) Using the appropriate tool (hexagon wrench, adjustable/monkey spanner, or hexagon socket), remove the three bolts from the bottom of the compressor as shown in the illustration on the right, then detach the compressor from its mount.	

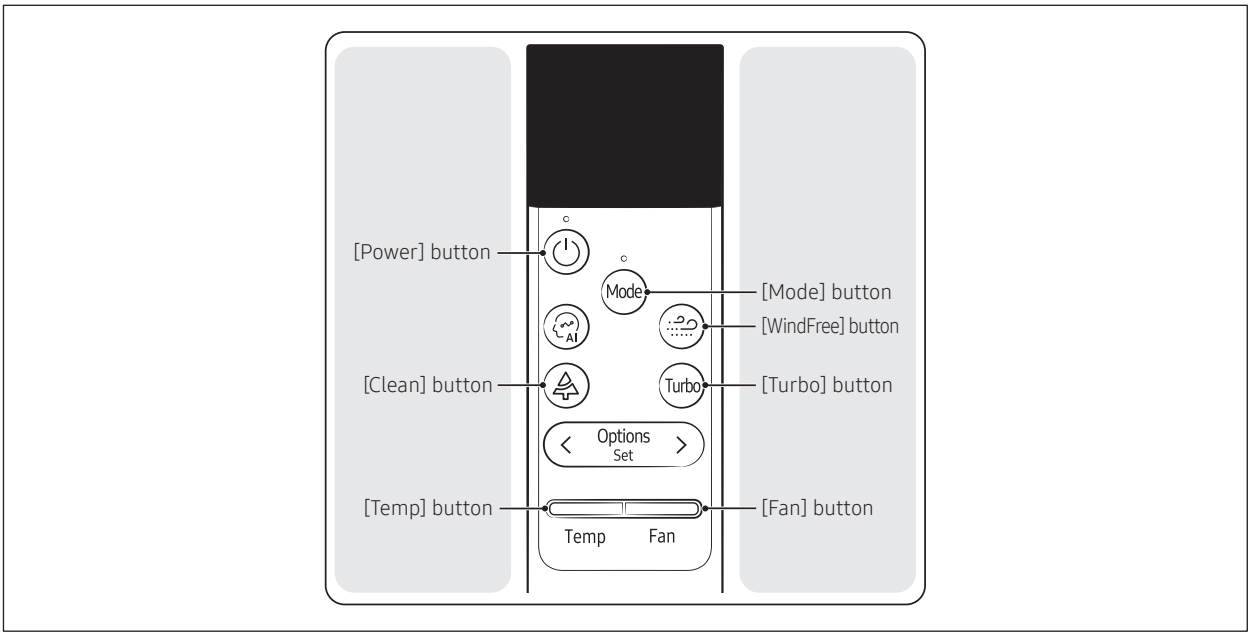
No.	Parts	Procedure	Remark
16	Condenser Connection Part	1) Using a Phillips (+) screwdriver, remove the three screws securing each side of the condenser connection part, then detach the connection assembly from the unit.	  

4. Troubleshooting

4-1. Setting an indoor unit address and installation option

▶Set the indoor unit address and installation option with remote controller option.
Set the each option separately since you cannot set the ADDRESS setting and indoor unit installation setting option at the same time.
You need to set twice when setting indoor unit address and installation option.

4-1-1. The procedure of setting option



Step 1 Entering mode for option setting.

1. Reset remote control: Temp button Down + Fan button Down + Mode Press for10 seconds
2. You can see "SW Reset" message and enter the following in 5 seconds.
3. Press button and Turbo button.
4. Make sure that you are entered to the mode for setting options.

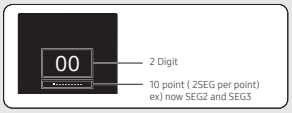
Step 2 Option setting procedure. (The option setting procedure is the same for other models.)

After entering the option setting status, select the option as listed below.

CAUTION

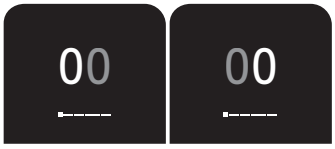
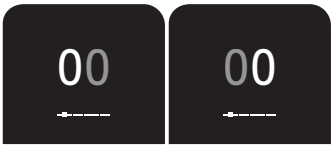
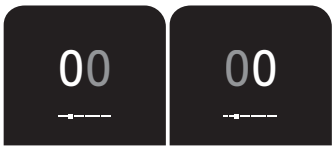
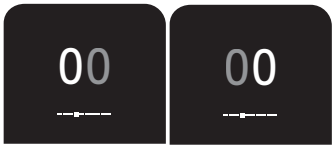
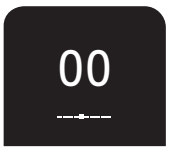
- Option setting is available from SEG1 to SEG 24.
- SEG1, SEG7, SEG13, SEG19 are not set as page option.

SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
0	X	X	X	X	X	1	X	X	X	X	X
SEG13	SEG14	SEG15	SEG16	SEG17	SEG18	SEG19	SEG20	SEG21	SEG22	SEG23	SEG24
2	X	X	X	X	X	3	X	X	X	X	X

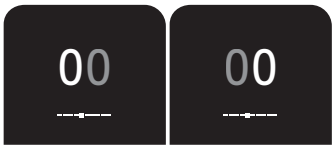
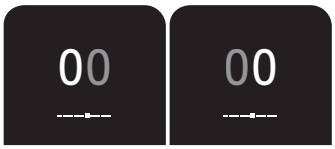
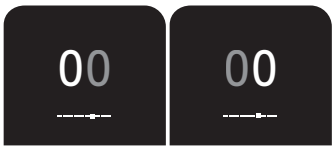
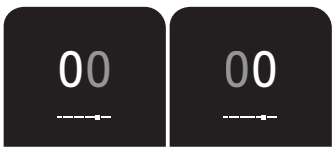
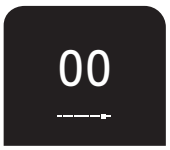


4-1-2. The procedure of setting option

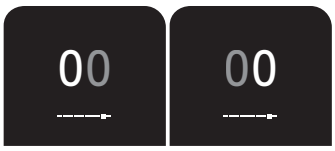
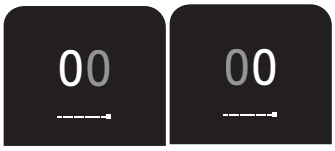
• Take the steps presented in the following table:

Steps	Remote control display
1. Set the SEG4 and SEG5 values: **a.** Set the SEG4 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG5 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG2 SEG3
2. Press the Mode button to move to next page.	
3. Set the SEG4 and SEG5 values: **a.** Set the SEG4 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG5 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG4 SEG5
4. Press the Mode button to move to next page.	
5. Set the SEG6 and SEG8 values: **a.** Set the SEG6 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG8 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG6 SEG8
6. Press the Mode button to move to next page.	
7. Set the SEG9 and SEG10 values: **a.** Set the SEG9 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG10 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG9 SEG10
8. Press the Mode button to move to next page.	

The procedure of setting option (cont.)

Steps	Remote control display
9. Set the SEG11 and SEG12 values: **a.** Set the SEG11 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG12 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG11 SEG12
10. Press the Mode button to move to next page.	
11. Set the SEG14 and SEG15 values: **a.** Set the SEG14 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG15 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG14 SEG15
12. Press the Mode button to move to next page.	
13. Set the SEG16 and SEG17 values: **a.** Set the SEG16 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG17 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG16 SEG17
14. Press the Mode button to move to next page.	
15. Set the SEG18 and SEG20 values: **a.** Set the SEG18 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG20 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG18 SEG20
16. Press the Mode button to move to next page.	

The procedure of setting option (Cont.)

Steps	Remote control display
17. Set the SEG21 and SEG22 values: **a.** Set the SEG21 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG22 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG21 SEG22
18. Press the Mode button to move to next page.	
19. Set the SEG23 and SEG24 values: **a.** Set the SEG23 value by pressing the Temp button repeatedly until the value you want to set appears on the remote control display. **b.** Set the SEG24 value by pressing the Fan button repeatedly until the value you want to set appears on the remote control display. When you press the Fan or Temp button, values appear in the following order: 0 → 1 → ··· E → F	 SEG23 SEG24

• Check the option you have set

After setting option, press Mode button to check whether the option code you input is correct or not.



Step 4 Input option

Press the operation button with the direction of remote control for set.
For the correct option setting, you must input the option twice.

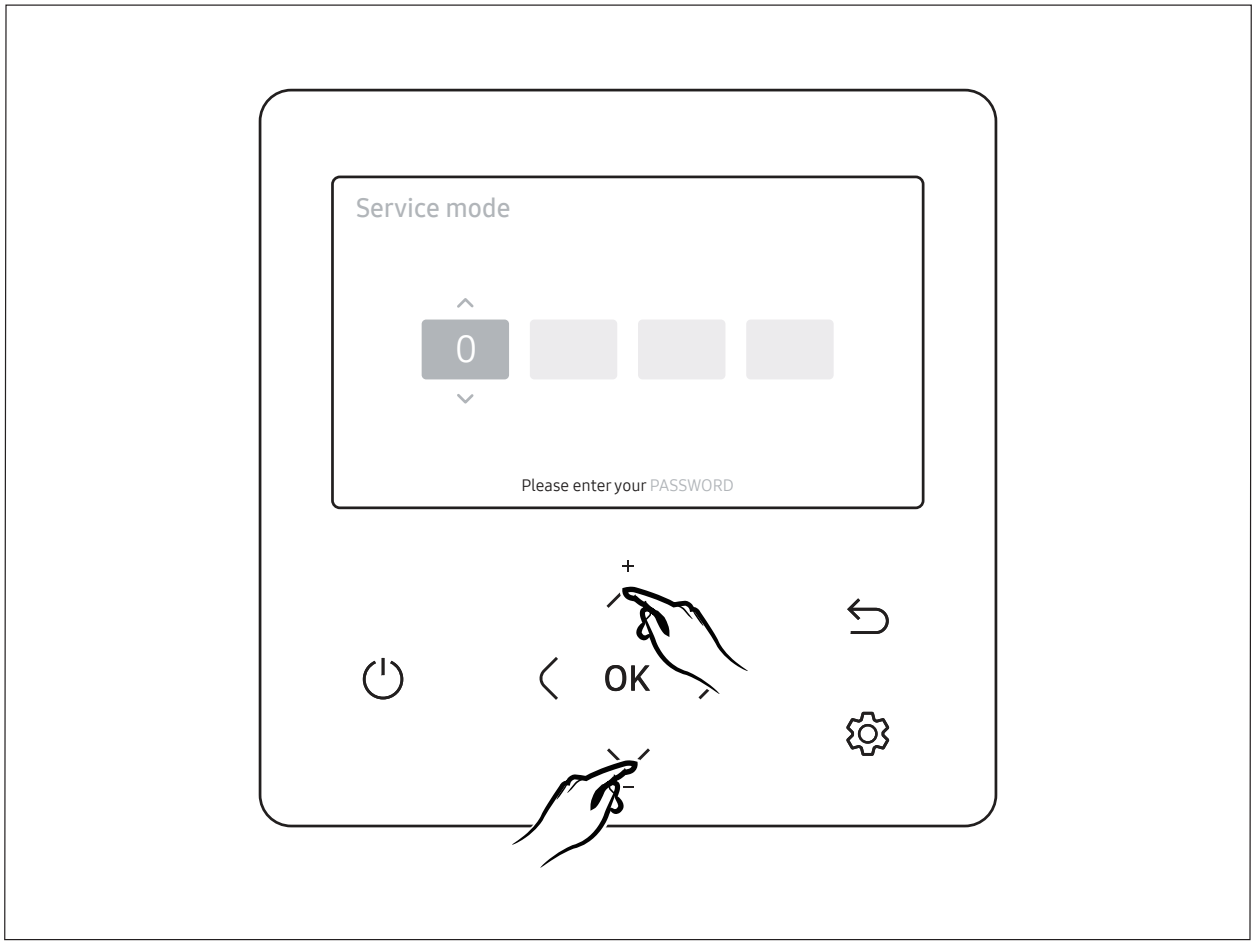
Step 5 Check operation

1. Reset the indoor or outdoor unit.
- Indoor Unit: Press button + button for 5 seconds
- Outdoor Unit: Press the K3 button

2. Reset remote control: Temp button Down + Fan button Down + Mode Press for10 seconds You can see the "SW Reset" message.

4-1-3. Order for Setting Options (Wired Remote Controller)

• Check the option you have set



1. **If you want to use the various additional functions for your Wired Remote Control, press the ∧ and ∨ buttons at the same time for more than 3 seconds.**
   • The password entry screen appears.

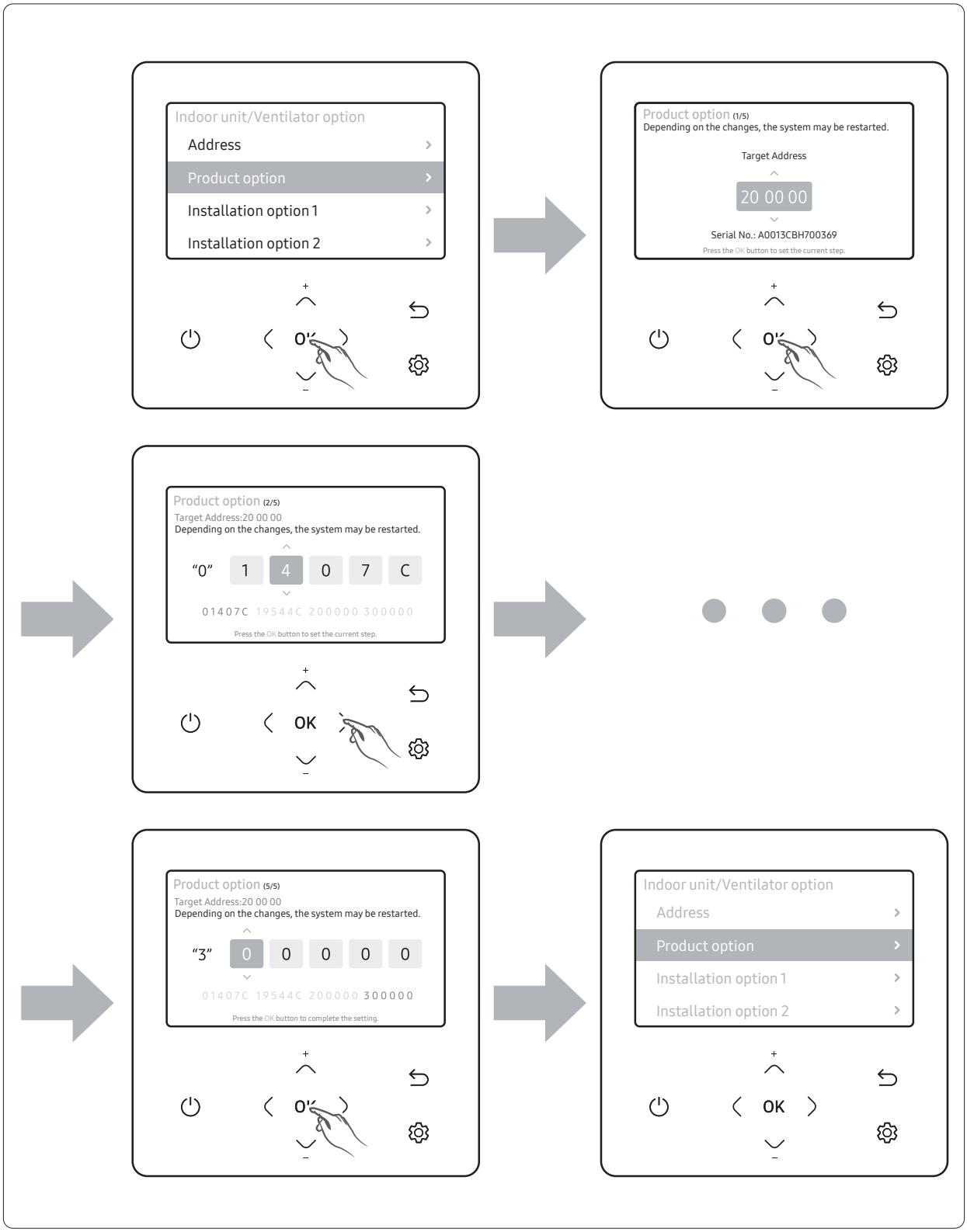
2. **Enter the password, "0202," and then press the OK button.**
   • The settings screen for installation/ service mode appears.

3. **See the list of additional functions for the Wired Remote Control on the next page, and then select the Product option menu.**
   • Once you have entered the settings screen, the current setting appears.
   • Refer to the chart for data setting.
   • Using the ∧ / ∨ buttons, change the settings and press the 〉button to move to the next setting.
   • Press the OK button to save the new setting.
   • Press the ⮌ button to move to the Home screen.

NOTE

• While setting the data, you can press the ⮌ button to move to the Home screen after checking the saving status at a popup screen.

Order for Setting Options (Wired Remote Controller) (Cont.)



Order for Setting Options (Wired Remote Controller) (Cont.)

Product Option (1/5)

Depending on the changes, the system may be restarted.

Target Address

20 00 01

Serial No. : **********

Press the OK button to set the current step.

[Product Option 2page]

Product Option(2/5)

Target Address: 20 00 01

Depending on the changes, the system may be restarted.

"0" 1 **0** 0 0 0

00000 00000 00000 00000

Press the OK button to set the current step.

[Product Option 3page]

Product Option(3/5)

Target Address: 20 00 01

Depending on the changes, the system may be restarted.

"1" **0** 0 0 0 0

00000 00000 00000 00000

Press the OK button to set the current step.

[Product Option 4page]

Product Option(4/5)

Target Address: 20 00 01

Depending on the changes, the system may be restarted.

"2" **0** 0 0 0 0

00000 00000 00000 00000

Press the OK button to set the current step.

[Product Option 5page]

Product Option(5/5)

Target Address: 20 00 01

Depending on the changes, the system may be restarted.

"3" **0** 0 0 0 0

00000 00000 00000 00000

Press the OK button to set the current step.

Order for Setting Options (Wired Remote Controller) (Cont.)

SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
0	*	*	*	*	*

Page number

SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
1	*	*	*	*	*

Page number

SEG13	SEG14	SEG15	SEG16	SEG17	SEG18
2	*	*	*	*	*

Page number

SEG19	SEG20	SEG21	SEG22	SEG23	SEG24
3	*	*	*	*	*

Page number

CAUTION

- Option code will not be applied if you don't press the OK button.
- Setting the indoor unit option code is only possible in the Main wired remote Control.
  You can only check the indoor unit option code in Sub wired remote Control.
- Setting an indoor unit option code is possible when one indoor unit is connected.
  If more than 2 indoor units are connected, you can only check the Main indoor unit option code.

4-1-4. Setting an indoor unit installation option (Suitable for the condition of each installation location)

1. Make sure that the power is supplied to the indoor unit.
   If the indoor unit is not plugged in, it must include a power supply.
2. Make sure that the panel is connected to the indoor unit so that it can receive options
3. Set the functional options of indoor units, by referring to the following table and by following the steps in Common steps for setting the addresses and options on page 4-1.
   - The SEG20 option, Individual control with remote control, allows you to control multiple indoor units individually by using the remote control.

■ 3WMD036S6-1P

• The installation options of indoor units are set to 020010-100000-200000-300000 by default.

02 series installation option (Detailed)

Option No. for an indoor unit: 02XXXX-1XXXXX-2XXXXX-3XXXXX

<table>
<tr><td>Option</td><td colspan="2">SEG1</td><td colspan="2">SEG2</td><td>SEG3</td><td colspan="4">SEG4</td><td colspan="2">SEG5</td><td>SEG6</td></tr>
<tr><td>Function</td><td colspan="2">Page</td><td colspan="2">Mode</td><td rowspan="14">Reserved</td><td colspan="4">Use of external room temperature sensor / Minimizing fan operation when thermostat is off [1)]</td><td colspan="2">Central control</td><td rowspan="14">Reserved</td></tr>
<tr><td rowspan="14">Indication and details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td rowspan="2">Indication</td><td colspan="2">Details</td><td>Indication</td><td>Details</td></tr>
<tr><td rowspan="13">0</td><td rowspan="13">2</td><td>Use of external room temperature sensor</td><td>Minimizing fan operation when thermostat is off</td><td rowspan="6">0</td><td rowspan="6">Disuse</td></tr>
<tr><td>0</td><td>Disuse</td><td>Disuse</td></tr>
<tr><td>1</td><td>Use</td><td>Disuse</td></tr>
<tr><td>2</td><td>Disuse</td><td>Use (Heating)</td></tr>
<tr><td>3</td><td>Use</td><td>Use (Heating)</td></tr>
<tr><td>4</td><td>Disuse</td><td>Use (Cooling)</td></tr>
<tr><td>5</td><td>Use</td><td>Use (Cooling)</td><td rowspan="8">1</td><td rowspan="8">Use</td></tr>
<tr><td>6</td><td>Disuse</td><td>Use (Cooling/Heating)</td></tr>
<tr><td>7</td><td>Use</td><td>Use (Cooling/Heating)</td></tr>
<tr><td>8</td><td>Disuse</td><td>Use (Cooling Ultra low speed)</td></tr>
<tr><td>9</td><td>Use</td><td>Use (Cooling Ultra low speed)</td></tr>
<tr><td>A</td><td>Disuse</td><td>Use (Heating/ Cooling Ultra low speed)</td></tr>
<tr><td>B</td><td>Use</td><td>Use (Heating/ Cooling Ultra low speed)</td></tr>
</table>

Option	SEG7		SEG8		SEG9	SEG10	SEG11	SEG12
Function	Page		Use of drain pump		Reserved	Reserved	Reserved	Reserved
Indication and details	Indication	Details	Indication	Details				
	1		0	Disuse				
			8	Use external drain pump				

<table>
<tr><td>Option</td><td colspan="2">SEG13</td><td colspan="3">SEG14</td><td colspan="2">SEG15</td><td>SEG16</td><td colspan="2">SEG17</td><td colspan="2">SEG18</td></tr>
<tr><td>Function</td><td colspan="2">Page</td><td colspan="3">Use of external control</td><td colspan="2">Setting the output of extermal control</td><td rowspan="16">Reserved</td><td colspan="2">Buzzer control</td><td colspan="2">Maximum filter usage time [2]</td></tr>
<tr><td rowspan="16">Indication and details</td><td>Indication</td><td>Details</td><td>Indication</td><td colspan="2">Details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td></tr>
<tr><td rowspan="15">2</td><td>0</td><td>Disuse</td><td rowspan="4">Sub, Existing control</td><td rowspan="2">0</td><td rowspan="2">Thermo on</td><td rowspan="15">0</td><td rowspan="15">Use of buzzer</td><td rowspan="15">2</td><td rowspan="15">1000 hours</td></tr>
<tr><td>1</td><td>On/Off</td></tr>
<tr><td>2</td><td>Off</td><td rowspan="2">1</td><td rowspan="2">Operation on</td></tr>
<tr><td>3</td><td>Window On/Off</td></tr>
<tr><td>4</td><td>Disuse</td><td rowspan="4">Main, Existing control</td><td rowspan="2">2</td><td rowspan="2">External heater use (Fan On when the heater is running) Emergency heater disuse</td></tr>
<tr><td>5</td><td>On/Off</td></tr>
<tr><td>6</td><td>Off</td><td rowspan="2">3</td><td rowspan="2">External heater use (Fan Off when the heater is running) Emergency heater disuse</td></tr>
<tr><td>7</td><td>Window On/Off</td></tr>
<tr><td>8</td><td>Disuse</td><td rowspan="4">Sub, Reverse control</td><td rowspan="2">4</td><td rowspan="2">External heater use (Fan On when the heater is running, Fan off only in case of Defrost) Emergency heater disuse</td><td rowspan="7">1</td><td rowspan="7">Disuse of buzzer</td><td rowspan="7">6</td><td rowspan="7">2000 hours</td></tr>
<tr><td>9</td><td>On/Off</td></tr>
<tr><td>A</td><td>Off</td><td rowspan="2">5</td><td rowspan="2">External heater use (Fan On when the heater is running) Emergency heater disuse</td></tr>
<tr><td>B</td><td>Window On/Off</td></tr>
<tr><td>C</td><td>Disuse</td><td rowspan="4">Main, Reverse control</td><td rowspan="2">6</td><td rowspan="2">External heater use (Fan OFF when the heater is running) Emergency heater disuse</td></tr>
<tr><td>D</td><td>On/Off</td></tr>
<tr><td>E</td><td>Off</td><td rowspan="2">7</td><td rowspan="2">External heater use (Fan On when the heater is running, Fan off only in case of Defrost) Emergency heater use</td></tr>
<tr><td>F</td><td>Window On/Off</td></tr>
<tr><td>Option</td><td colspan="2">SEG19</td><td colspan="2">SEG20</td><td colspan="2">SEG21</td><td colspan="2">SEG22</td><td colspan="2">SEG23</td><td>SEG24</td></tr>
<tr><td>Function</td><td colspan="2">Page</td><td colspan="2">Individual control with remote control [3]</td><td colspan="2">Heating setting compensation [4]</td><td colspan="2" rowspan="6">Reserved</td><td colspan="2" rowspan="6">Reserved</td><td rowspan="6">Reserved</td></tr>
<tr><td rowspan="5">Indication and details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td></tr>
<tr><td rowspan="4">3</td><td>0 or1</td><td>Indoor1</td><td>0</td><td>Default</td></tr>
<tr><td>2</td><td>Indoor2</td><td>1</td><td>3.6˚F (2˚C)</td></tr>
<tr><td>3</td><td>Indoor3</td><td rowspan="2">2</td><td rowspan="2">9˚F (5˚C)</td></tr>
<tr><td>4</td><td>Indoor4</td></tr>
</table>

- 1) SEG4: By SEG4 setting, Minimizing fan operation when thermostat is off.
  - Fan operates for 20 seconds at an interval of 5 minutes in heat mode.
  - Fan stops or operates Ultra low in Cooling when thermostat is off.
- 2) SEG18: I f you set the Maximum filter usage time option to a value other than 2 and 6, it is automatically set to 2 (1000 hours).
- 3) SEG20: If you set the Individual control with remote control option to a value other than 0 to 4, it is automatically set to 0 (Indoor1)
- 4) SEG21: Default value of Heating setting compensation is 9°F (5°C).

05 series installation option (Detailed)

Option No.: 05XXXX-1XXXXX-2XXXXX-3XXXXX

<table>
<tr><th colspan="2">SEG1</th><th colspan="2">SEG2</th><th colspan="2">SEG3</th><th colspan="3">SEG4</th><th>SEG5</th><th colspan="3">SEG6</th></tr>
<tr><td colspan="2">Page</td><td colspan="2">Mode</td><td colspan="2" rowspan="3">Reserved</td><td colspan="3" rowspan="3">Reserved</td><td rowspan="3">Reserved</td><td colspan="3">Auxiliary heater offset temp. and time delay</td></tr>
<tr><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td rowspan="2">Indication</td><td colspan="2">Details</td></tr>
<tr><td rowspan="2">0</td><td rowspan="2">5</td><td rowspan="2">Installabion Oprion 2</td><td>Set temperature for auxiliary heat on</td><td>Time delay for auxiliary heat on</td></tr>
<tr><td>0</td><td>No temperature offset</td><td>No delay</td></tr>
<tr><td colspan="2" rowspan="15"></td><td colspan="2" rowspan="15"></td><td colspan="2" rowspan="15"></td><td colspan="3" rowspan="15"></td><td>1</td><td>No temperature offset</td><td>10 minutes</td></tr>
<tr><td>2</td><td>No temperature offset</td><td>20 minutes</td></tr>
<tr><td>3</td><td>2.7°F (1.5°C)</td><td>No delay</td></tr>
<tr><td>4</td><td>2.7°F (1.5°C)</td><td>10 minutes</td></tr>
<tr><td>5</td><td>2.7°F (1.5°C)</td><td>20 minutes</td></tr>
<tr><td>6</td><td>5.4°F (3°C)</td><td>No delay</td></tr>
<tr><td>7</td><td>5.4°F (3°C)</td><td>10 minutes</td></tr>
<tr><td>8</td><td>5.4°F (3°C)</td><td>20 minutes</td></tr>
<tr><td>9</td><td>8.1°F (4.5°C)</td><td>No delay</td></tr>
<tr><td>A</td><td>8.1°F (4.5°C)</td><td>10 minutes</td></tr>
<tr><td>B</td><td>8.1°F (4.5°C)</td><td>20 minutes</td></tr>
<tr><td>C</td><td>10.8°F (6°C)</td><td>No delay</td></tr>
<tr><td>D</td><td>10.8°F (6°C)</td><td>10 minutes</td></tr>
<tr><td>E</td><td>10.8°F (6°C)</td><td>20 minutes</td></tr>
<tr><th colspan="2">SEG7</th><th colspan="2">SEG8</th><th colspan="2">SEG9</th><th colspan="3">SEG10</th><th>SEG11</th><th colspan="3">SEG12</th></tr>
<tr><td colspan="2">Page</td><td colspan="2">Heater lock out</td><td colspan="2">External heat compressor lockout temperature</td><td colspan="3">Bit 0: Allow Fan control in auto mode
Bit 1: Onboarding Type (AP / BLE)</td><td rowspan="18">0</td><td colspan="3" rowspan="18">Reserved</td></tr>
<tr><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td>Indication</td><td>Details</td><td>Indication</td><td colspan="2">Details</td></tr>
<tr><td rowspan="18">1</td><td rowspan="18"></td><td>0</td><td>Disuse</td><td>0</td><td>Disuse</td><td>0</td><td>Not allow</td><td>Ap Onboarding</td></tr>
<tr><td>1</td><td>65 °F (18.3 °C)</td><td>1</td><td>45 °F (7.2 °C)</td><td rowspan="2">1</td><td rowspan="2">allow</td><td rowspan="2">Ap Onboarding</td></tr>
<tr><td>2</td><td>60 °F (15.6 °C)</td><td>2</td><td>40 °F (4.4 °C)</td></tr>
<tr><td>3</td><td>55 °F (12.8 °C)</td><td>3</td><td>35 °F (1.7 °C)</td><td rowspan="2">2</td><td rowspan="2">Not allow</td><td rowspan="2">BLE Onboarding</td></tr>
<tr><td>4</td><td>50 °F (10.0 °C)</td><td>4</td><td>30 °F (-1.1 °C)</td></tr>
<tr><td>5</td><td>45 °F (7.2 °C)</td><td>5</td><td>25 °F (-3.9 °C)</td><td rowspan="2">3</td><td rowspan="2">allow</td><td rowspan="2">BLE Onboarding</td></tr>
<tr><td>6</td><td>40 °F (4.4 °C)</td><td>6</td><td>20 °F (-6.7 °C)</td></tr>
<tr><td>7</td><td>35 °F (1.7 °C)</td><td>7</td><td>15 °F (-9.4 °C)</td><td rowspan="2">4</td><td rowspan="2">Not allow</td><td rowspan="2">Ap Onboarding</td></tr>
<tr><td>8</td><td>30 °F (-1.1 °C)</td><td>8</td><td>10 °F (-12.2 °C)</td></tr>
<tr><td>9</td><td>25 °F (-3.9 °C)</td><td>9</td><td>5 °F (-15 °C)</td><td rowspan="2">5</td><td rowspan="2">allow</td><td rowspan="2">Ap Onboarding</td></tr>
<tr><td>A</td><td>20 °F (-6.7 °C)</td><td>A</td><td>0 °F (-17.8 °C)</td></tr>
<tr><td>B</td><td>15 °F (-9.4 °C)</td><td>B</td><td>-5 °F (-20.6 °C)</td><td rowspan="2">6</td><td rowspan="2">Not allow</td><td rowspan="2">BLE Onboarding</td></tr>
<tr><td>C</td><td>10 °F (-12.2 °C)</td><td>C</td><td>-10 °F (-23 °C)</td></tr>
<tr><td>D</td><td>5 °F (-15 °C)</td><td>D</td><td>-15 °F (-26 °C)</td><td rowspan="2">7</td><td rowspan="2">allow</td><td rowspan="2">BLE Onboarding</td></tr>
<tr><td>E</td><td>0 °F (-17.8 °C)</td><td>E</td><td>-20 °F (-29 °C)</td></tr>
<tr><th colspan="2">SEG13</th><th colspan="2">SEG14</th><th colspan="2">SEG15</th><th colspan="3">SEG16</th><th>SEG17</th><th colspan="3">SEG18</th></tr>
<tr><td colspan="2">Page</td><td colspan="2" rowspan="3">Reserved</td><td colspan="2" rowspan="3">Reserved</td><td colspan="3" rowspan="3">Reserved</td><td rowspan="3">Reserved</td><td colspan="3" rowspan="3">Reserved</td></tr>
<tr><td>Indication</td><td>Details</td></tr>
<tr><td colspan="2">2</td></tr>
<tr><th colspan="2">SEG19</th><th colspan="2">SEG20</th><th colspan="2">SEG21</th><th colspan="3">SEG22</th><th>SEG23</th><th colspan="3">SEG24</th></tr>
<tr><td colspan="2">Page</td><td colspan="2" rowspan="3">Reserved</td><td colspan="2" rowspan="3">Reserved</td><td colspan="3" rowspan="3">Reserved</td><td rowspan="3">Reserved</td><td colspan="3" rowspan="3">Reserved</td></tr>
<tr><td>Indication</td><td>Details</td></tr>
<tr><td colspan="2">3</td></tr>
</table>

4-1-5. Changing the addresses and options individually

When you want to change the value of a specific option, refer to the following table and follow the steps in Common steps for setting the addresses and options

Option	SEG1		SEG2		SEG3		SEG4		SEG5		SEG6	
Function	Page		Mode		Type of the option to change		Tens position of the option number		Units position of the option number		New value	
Indication and details	Indication	Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details
	0		D		Option type	0 to F	Tens position value	0 to 9	Units position value	0 to 9e	New value	0 to F

Example: Changing the Buzzer control (SEG17) option of the functional options to 1 disuse.

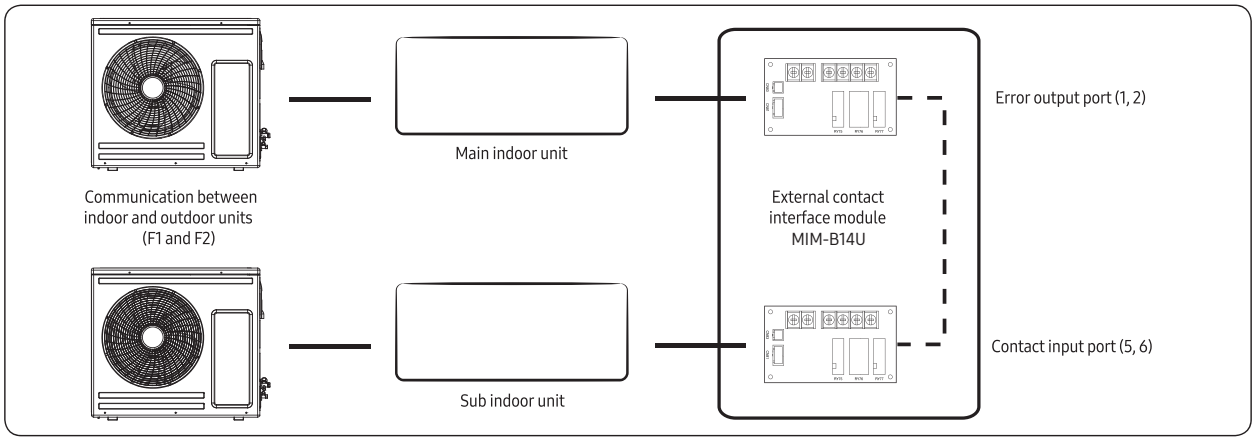
Option	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
Function	Page	Mode	Type of the option to change	Tens position of the option number	Units position of the option number	New value
Indication	0	D	2	1	7	1

4-1-6. Emergency Temperature Output (ETO) function

CAUTION

- In order to deploy the ETO function, the MIM-B14U, an external contact interface module, must be installed in each indoor unit.
- The ETO is a concept of emergency operation of indoor units. If the indoor unit 1 (main indoor unit) stops because of an error, the indoor unit 2 (sub indoor unit) starts to operate.
- Basically, the indoor unit 2 operates in the previous mode. [For the first time operation, it starts in 24 °C Auto mode.]
- To set more detailed operation conditions for the indoor unit 2, use the S-net Pro.

■ Setting up the ETO

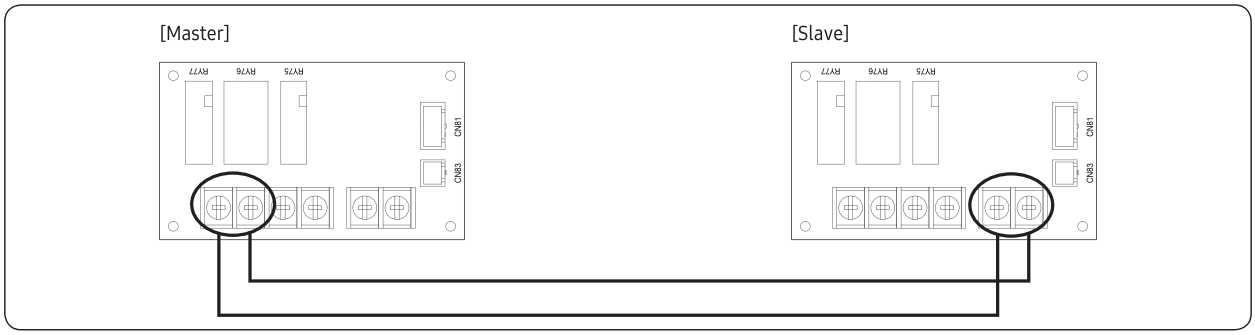


1 Main indoor unit

- Disable the external contact control (Default).
- Connect the S-net pro2 to F1 and F2.
- Enable the ETO function and set the temperature and time.

2 Sub indoor unit

- (Required) Enable the external contact control (with the installation option SEG14 - Reverse Control).
- Connect the S-net pro2 to F1 and F2.
- Enable the entrance control and set the mode, set temperature, and fan speed.



Emergency Temperature Output (ETO) function (Cont.)

■ ETO operation specifications

1 Main indoor unit

- Based on the external contact control settings, the main indoor unit decides whether to generate output when an error (indoor unit stop) occurs.
- Based on the ETO settings, the main indoor unit decides whether to generate output according to the temperature and time conditions.

2 Sub indoor unit

- Based on the entrance control settings, the sub indoor unit decides the mode, set temperature, and fan speed when contact inputs are given.

	Enable of ETO	Enable of external contact	Error port output
Main indoor unit	X	X	N/A
	X	O	Output due to an error
	O	X	Output by ETO entrance conditions (temperature / time / error occurrence)
	O	O	Output by ETO entrance conditions (temperature / time / error occurrence) * Ready to control the main contact input

	Enable of entrance control	Enable of external contact	Operation when outputting Main
Sub indoor unit	X	X	N/A
	X	O	On with the previous operation conditions
	O	O	On with the entrance control enabled

4-2. Model-specific Option Code

Item	Model	SEG												Static Pressure (mmAq)
		1	2	3	4	5	6	7	8	9	10	11	12	
CRAC	3WMD036S6-1P	0	1	1	3	F	F	1	9	3	5	9	3	
		SEG												
		13	14	15	16	17	18	19	20	21	22	23	24	
		2	0	6	9	7	5	3	7	1	7	0	0	

4-3. Diagnostic Checklist

4-3-1. Test operation mode and check mode

■ Display Options key

Key	Push type		Mode	Display			
				SEG 1	SEG 2	SEG 3	SEG 4
K1	Short	1st	Heating test mode	F	1	0	0
		2nd	Defrost test mode [1]	F	3	0	0
		3rd	End Key operation	0	0	0	0
K2	Short	1st	Cooling test mode	F	2	0	0
		2nd	Inverter check	F	4	0	0
		3rd	Pump down	F	6	0	0
		4th	Unuesal	F	8	0	0
		5th	Inverter Fault Detection (Comp#1) [2]	F	A	0	0
		6th	Auto trial operation	F	C	0	0
		7th	Auto check [3] (Installtion commissioning mode)	F	E	0	0
		8th	End Key operation	0	0	0	0
K3	Short	1st	Reset Release Eco mode	0	0	0	0

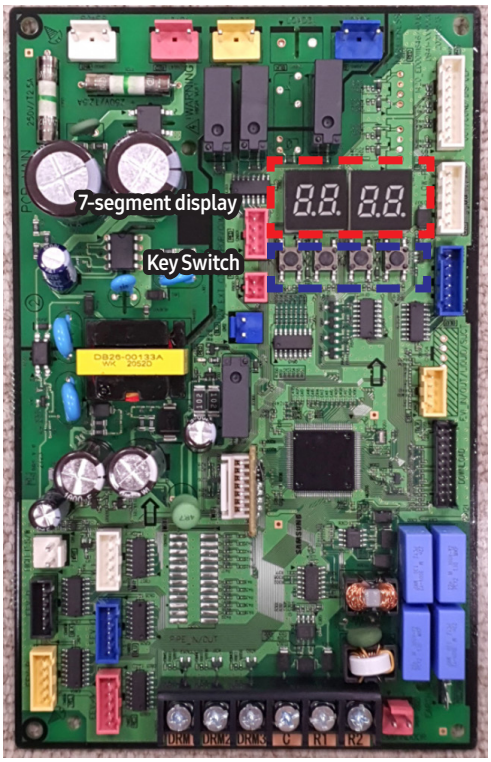
1) Defrost test mode
Condition 1: The outdoor temperature is below 10°C.
Condition 2: All the temperature conditions should meet the defrost conditions.

2) Indication on the display and action to take when an inverter fault is detected

	SEG1	SEG2	SEG3	SEG4	Action to take
Fault detection is in progress	7	1	-	-	-
OK	7	1	0	F	-
NG	7	1	n	G	PBA defect: Replace the PBA
Check	7	1	C	h	Manual inspection is required
Going into fault detection mode failed	7	1	F	L	Try fault detection again

3) Auto check (Installation commissioning mode)
To ensure normal operation of the product, first make sure to complete auto check.

‹3WPD036S6S-1P›



Test operation mode and check mode (Cont.)

■ View Mode

K4 short push	Display contents	SEG1	SEG2	SEG3	SEG4	Unit
1	Order frequency	1	Hundreds digit	Tens digit	Units digit	Hz
2	Current frequency	2	Hundreds digit	Tens digit	Units digit	Hz
3	The number of preset indoor units	3	Hundreds digit	Tens digit	Units digit	EA
4	Ambient temperature sensor	4	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
5	Compressor discharge sensor	5	Hundreds digit	Tens digit	Units digit	℃ or ℉ [2]
6	Eva-Mid sensor	6	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
7	Condensor sensor	7	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
8	Current	8	Tens digit	Units digit	The first place of decimals	A
9	Outdoor fan RPM	9	Thousands digit	Hundreds digit	Tens digit	rpm
10	Target discharge temperature	A	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
11	EEV	B	Hundreds digit	Tens digit	Units digit	step
12	The capacity sum of indoor units	C	Tens digit	Unit digit	The first place of decimals	kW or kBtu/h [3]
13	Protective control	D	0: Cooling 1: Heating	Protective control 0: No Protective control 1: Freezing 2: Non-stop defrosting 3: Over-load 4: Discharge 5: Total electric current	Frequency status 0: Normal 1: Hold 2: Down 3: Up_limit 4: Down_limit	-
14	IPM temperature	E	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
15	The number of connected indoor units	F	Hundreds digit	Tens digit	Units digit	EA
16	ESC EEV(CAM)	G	Hundreds digit	Tens digit	Units digit	step
17	ESC IN sensor	H	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
18	ESC OUT sensor	I	Hundreds digit or - [1]	Tens digit	Units digit	℃ or ℉ [2]
19	View mode end	BLANK	BLANK	BLANK	BLANK	

1) Sub-zero temperatures are expressed as a minus, instead of hundreds digit.

2) The temperature unit can be switched between Celsius and Fahrenheit through Setting outdoor unit option switches. (Default value is Celsius.)

3) If the temperature unit is set to Fahrenheit through Setting outdoor unit option switches, the value is expressed in the unit of kBtu/h.

Test operation mode and check mode (Cont.)

■ Version Check & Address Check

		Display contents	SEG1	SEG2	SEG3	SEG4
K4 long push	-	Main micom version	Year (Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 1	Inverter micom version	Year(Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 2	E2P version	Year(Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 3	Page 1 - AUTO Page 2 - (SEG1,2 - Indoor: "A","0") (SEG3,4 - Address: ex)00)				
	After short push 4	Page 1 - MANU Page 2 - (SEG1,2 - Indoor: "A","0") (SEG3,4 - Address: ex)00)				

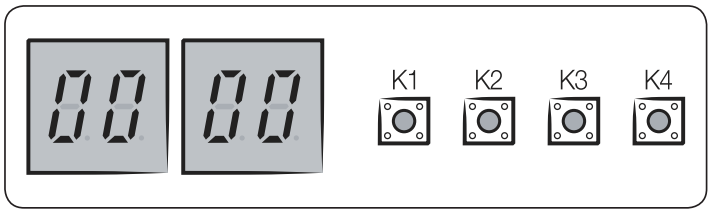
• Long push K4(Main micom ver.) → short push 1 more (Inv. micom ver.) → short push 1 more (E2P. ver.) → short push 1 more (Automatic address) → short push 1 more (Manual address) → short push 1 more (Main micom ver.) → ..... → Long push K4(veiw mode end)

Test operation mode and check mode (Cont.)

■ Setting outdoor unit option switch and address manually

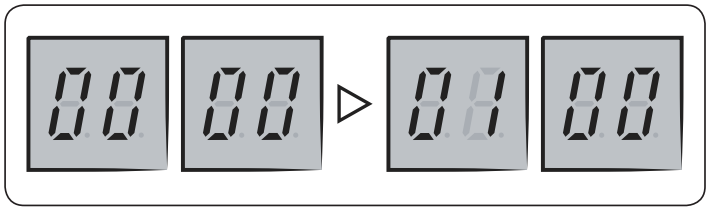
▶ Setting the option

- Press and hold K2 to enter the option setting. (Only available when the operation is stopped)
  – If you enter the option setting, display will show the following.



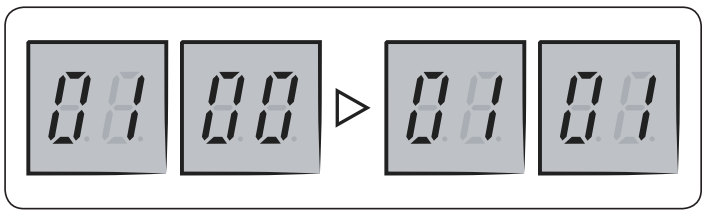
  – Seg 1 and Seg 2 will display the number for selected option.
  – Seg 3 and Seg 4 will display the number for set value of the selected option.
- If you have selected desired option, you can shortly press the K2 switch to adjust the value of the Seg 3, Seg 4 and change the function for the selected option

Example)



- If you have selected desired option, you can shortly press the K2 switch to adjust the value of the Seg 3, Seg 4 and change the function for the selected option.

Example)



- After selecting the function for options, press and hold the K2 switch for 2 seconds. Edited value of the option will be saved when entire segments blinks and tracking mode begins.

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	Function	
Channel address	Main	0	0	A	U	Automatic setting (Factory default)	
				00~15		Manual setting	
Snow accumulation prevention control	Main	0	1	0	0	Disabled (Factory default)	
				0	1	Enabled	
Step for Silence mode	Main	0	2	0	0	Disabled (Factory default)	
				0	1	Step1	
				0	2	Step2	
				0	3	Step3	
Type of Silence mode	Main	0	3	0	0	Automatic Silence mode (Factory default)	
				0	1	Manual Silence mode	
Temperature unit	Main	0	4	0	0	Celsius (default)	
				0	1	Fahrenheit	
Not applicable	Main	0	5	0	0	Not applicable	
				0	1	Not applicable	
Current restriction rate [1)]	Main	0	6	0	0	100% (Factory default)	
				0	1	95%	
				0	2	90%	
				0	3	85%	
				0	4	80%	
				0	5	75%	
				0	6	70%	
				0	7	65%	
				0	8	60%	
				0	9	55%	
				1	0	50%	
				1	1	100%	
Dedicated mode for cooling/ heating	Main	0	7	0	0	Cooling/ Heating operation (default)	
				0	1	Cooling operation only	
				0	2	Heating operation only	
Heating intermediate frequency boundary temperature off set	Main	0	8	0	0	Not applicable	default
				0	1	-5°	
				0	2	-10°	
				0	3	-15°	
				0	4	+5°	
				0	5	+10°	
				0	6	+15°	

• 1) Current restriction rate: When restriction option is set, cooling and heating performance may decrease.

Test operation mode and check mode (Cont.)

■ Auto check(Installation commissioning mode)

- This is a self-diagnosis function to determine the installation status and product integrity in the initial installation. (This model requires the Auto check to be implemented in the installation step before its normal operation is initiated.)
- Procedures of Auto check
  1. Check the product installation status.
     - Check the power supply, communication cables, service valve openings, and quantity of additional refrigerant.
     - In the initial power supply after installation, the warning of non-fulfilment of Auto check (UP) will be indicated on the outdoor unit and the system will not function properly.
  2. Enter the mode of Auto check.
     - Press the K2 button 7 times consecutively.
     - During the Auto check, the display will show " F ", " E " BLANK" "BLANK" and it will take about 10 to 30 minutes for completion.
  3. The mode of Auto check will then be completed.
     - Successful Auto check: After checking the blinking that indicates installation completion on the display (PASS), press the K1 or K2 button to turn the status to the standby mode for normal operation.
     - Failure of Auto check: An error code blinks on the display. Resolve the error by referring to the details on the Troubleshooting page about how to troubleshoot for each error code, and then perform the Auto check again.

NOTE

- If you intend to install more refrigerant piping prior to entering the mode of Auto check, make sure that the refrigerant to be added meets the related requirements. In this process, it is possible to test the cooling test mode (K2 switch: once) and heating test mode (K1 switch: once).
  (※ AC***DXSCCF models are cooling-only models and do not support heating test mode.)
- You may stop the mode of test operation for installation by pressing the K3 switch during the test operation. (After it stops, UP (the warning of incomplete Auto check) will be displayed)
- During the Auto check, it is possible to refer to the system status by pressing the K4 switch.
- In the case that there is an error during the Auto check, the Auto check will stop. In this case, take a measure for the error and then try the test operation again.
- If the test operation is not completed properly, the product will not function in the intended way. UP (no implementation of Auto check) will be displayed. Be sure to solve the trouble and complete the test operation for installation properly.
- UP indicates, not that the unit is out of order, but that the Auto check has yet to be implemented as an essential step of installation.
- If you have completed the Auto check function normally once(PASS) and run Auto check again,
  - **Successful Auto check:** After checking the blinking that indicates installation completion on the display (0000)
  - **Failure of Auto check:** An error code blinks on the display. Resolve the error by referring to the details on the Troubleshooting page about how to troubleshoot for each error code, and then perform the Auto check again.

4-3-2. Error code [indoor]

■ AR36DXFUMGMNCV

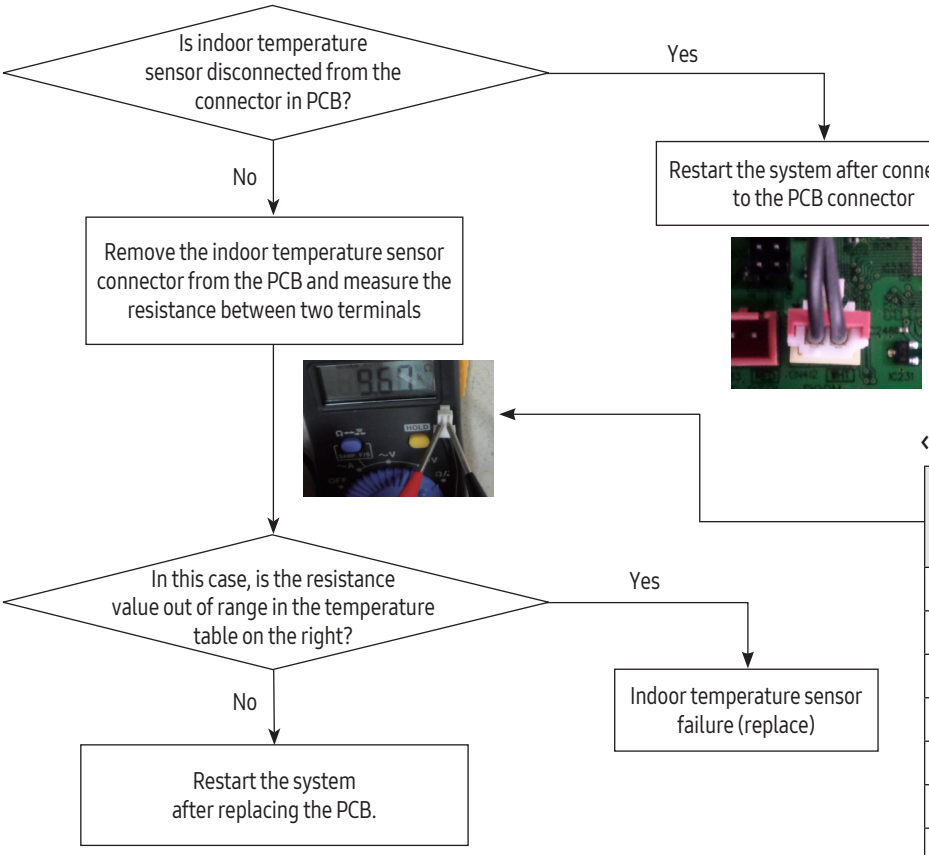
Abnormal condition	Error code	LED Display		
		⏻	🕘	ᯤ
Error on indoor temperature sensor (Short or Open)	E121	X	◑	X
1. Error on Eva-in sensor (Short or Open) 2. Error on Eva-out sensor (Short or Open) 3. Discharge sensor error (Short or Open)	E122 E123 E126	◑	◑	X
Indoor fan error	E154	X	X	◑
1. Error on outdoor temperature sensor (Short or Open) 2. Error on cond sensor 3. Error on discharge sensor Other outdoor unit sensor error that is not on the above list	E221 E237 E251	◑	X	◑
1. When there is no communication between the indoor·outdoor units for 2 minutes 2. Communication error received from the outdoor unit 3. 3 miniute tracking error on outdoor unit 4. Communication error after tracking due to unmatching number of installed units 5. Error due to repeated communication address 6. Communication address not confirmed Other outdoor unit communication error that is not on the above list	E101 E102 E202 E201 E108 E109	X	◑	◑
Self diagnosis error display 1. Error due to opened EEV (2nd detection) 2. Error due to closed EEV (2nd detection) 3. Eva in sensor is detached 4. Eva out sensor is detached 5. Thermal fuse error (Open)	E151 E152 E128 E129 E198	●	◑	◑
1. COND mid sensor is detached 2. Refrigerant leakage (2nd detection) 3. Abnomally high temperature on Cond (2nd detection) 4. Low pressure s/w (2nd detection) 5. Abnomally high temperature on discharged air on outdoor unit (2nd detection) 6. Indoor operation stop due to unconfirmed error on outdoor unit 7. Error due to reverse phase detection 8. Comp stop due to freeze detection (6th detection) 9. High pressure sensor is detached 10. Low pressure sensor is detached 11. Outdoor unit copression ration error 12. Outdoor sump down_1 prevetion control 13. Compressor down due to low pressure sensor prevention control_1 14. Simultaneous opening of cooling/heating MCU SOL valve (1st detection) 15. Simultaneous opening of cooling/heating MCU SOL valve (2nd detection) 16. External floating Switch error / Emergency Alarm system on (Emergency Stop) Other outdoor unit self-diagnosis error that is not on the above list	E241 E554 E450 E451 E416 E559 E425 E403 E301 E306 E428 E413 E410 E180 E181 E665	●	◑	◑
EEPROM error	E162			

●: On, ◑: Flickering, X: Off

4-4. Troubleshooting by symptoms

4-4-1. Indoor temperature sensor error (E121)

Display	⏻	🕒	ᯤ
	X	◑	X
Judgment method	Refer to checking method, as shown below.		
Symtom	If the indoor temperature sensor is open or short circuit.		

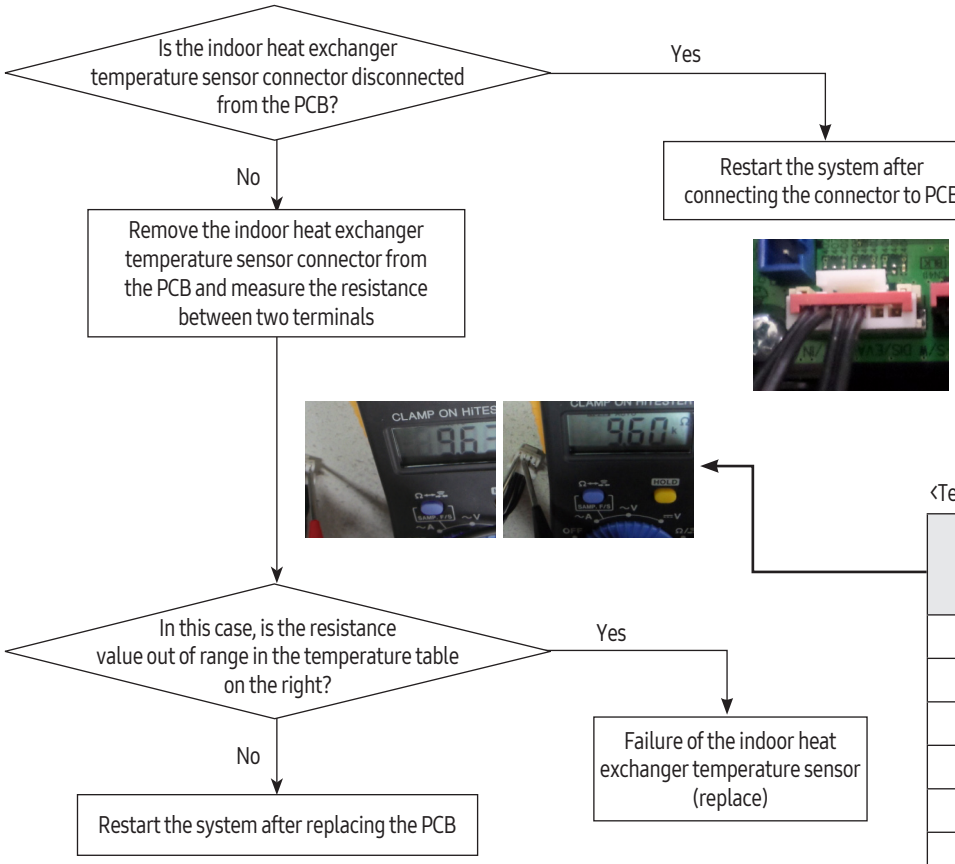


‹Temperature sensor resistance value›

Current temperature (°C)	Resistance (kΩ)
40	5.800
35	6.900
30	8.300
25	10.00
20	12.10
15	14.70
10	18.00
5	22.00
0	28.30
-5	33.90
-10	42.30

4-4-2. Indoor heat exchanger temperature sensor error (E122)

Display	⏻	⏲	ᯤ
	◑	◑	X
Judgment method	Refer to checking method, as shown below		
Symtom	If the short or open circuit of indoor heat exchanger temperature sensor.		

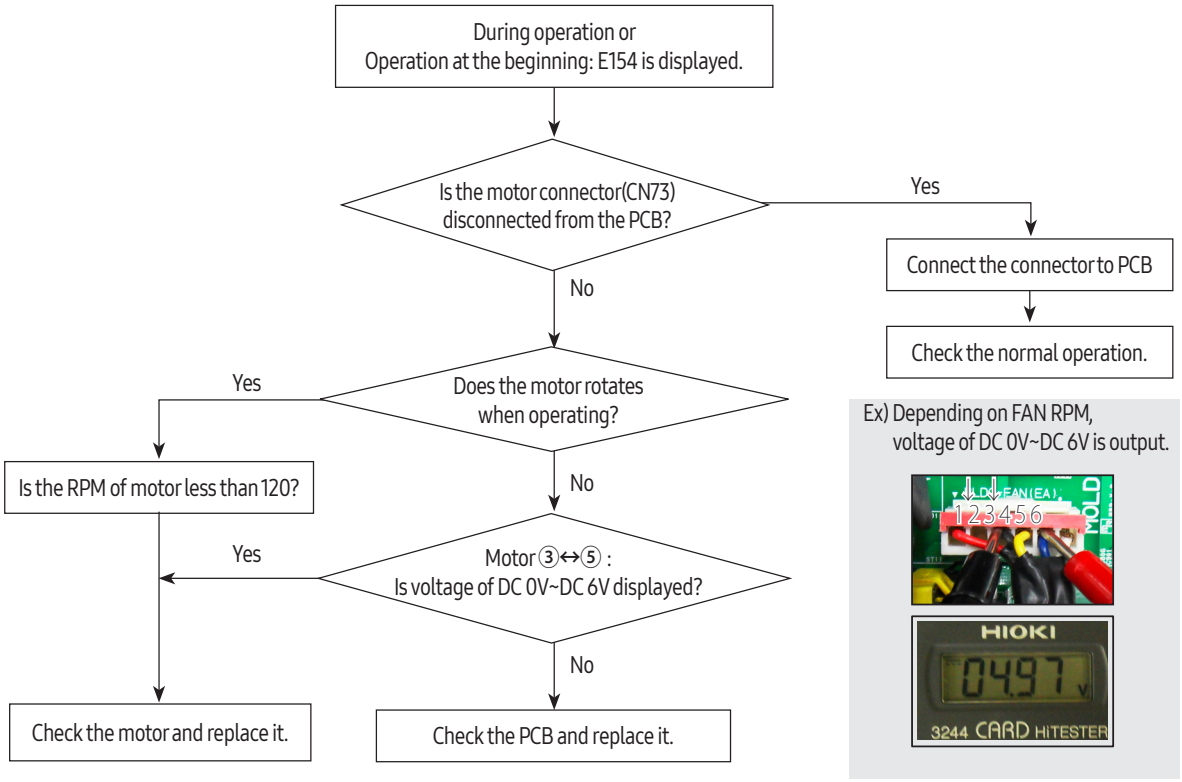


<Temperature sensor resistance value>

Current temperature (°C)	Resistance (kΩ)
40	5.800
35	6.900
30	8.300
25	10.00
20	12.10
15	14.70
10	18.00
5	22.00
0	28.30
-5	33.90
-10	42.30

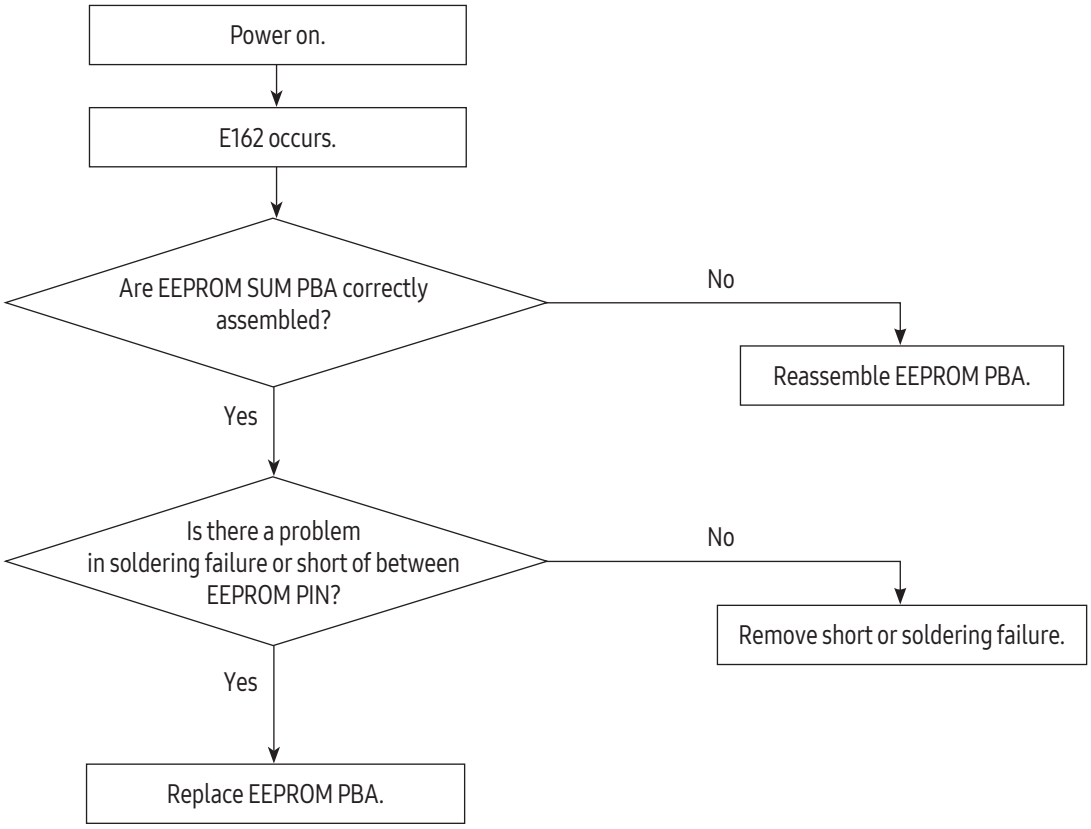
4-4-3. Indoor Fan error (E154)

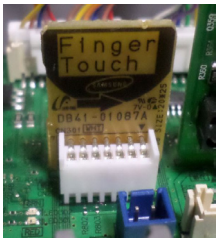
Display	⏻	🕒	ᯤ
	X	X	◑
Judgment method	Refer to checking method, as shown below		
Symtom	the motor connector break away / Indoor unit Fan does not operate by motor or PBA defectiveness.		



4-4-4. EEPROM circuit failure (E162)

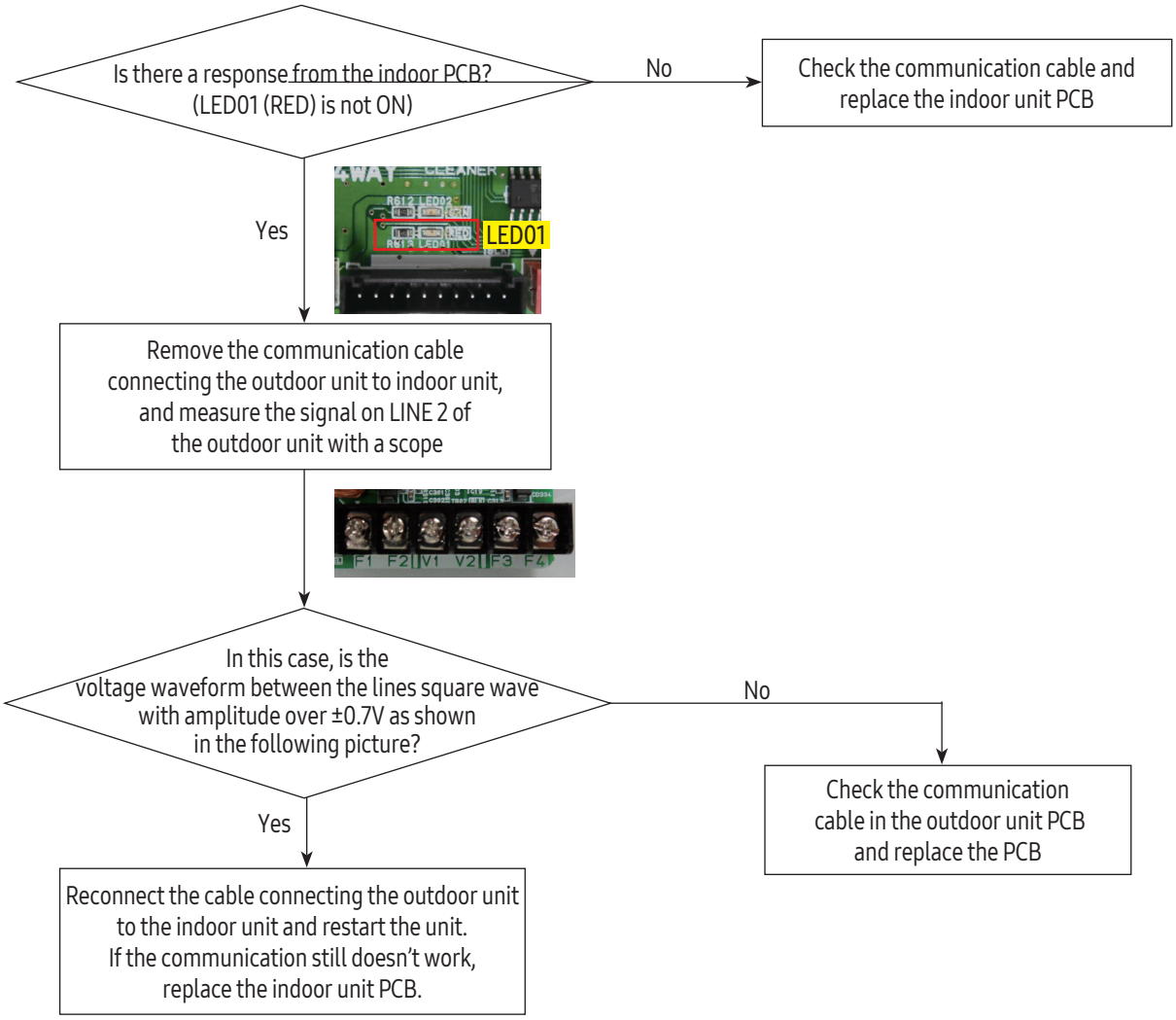
Display	⏻	🕒	ᯤ
	◑	◑	◑
Judgment method	Refer to checking method, as shown below		
Symtom	If the EEPROM component defective. (EEPROM circuit parts missing / damaged / soldering failure)		

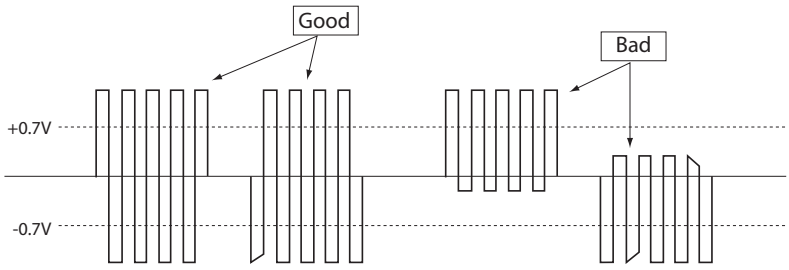




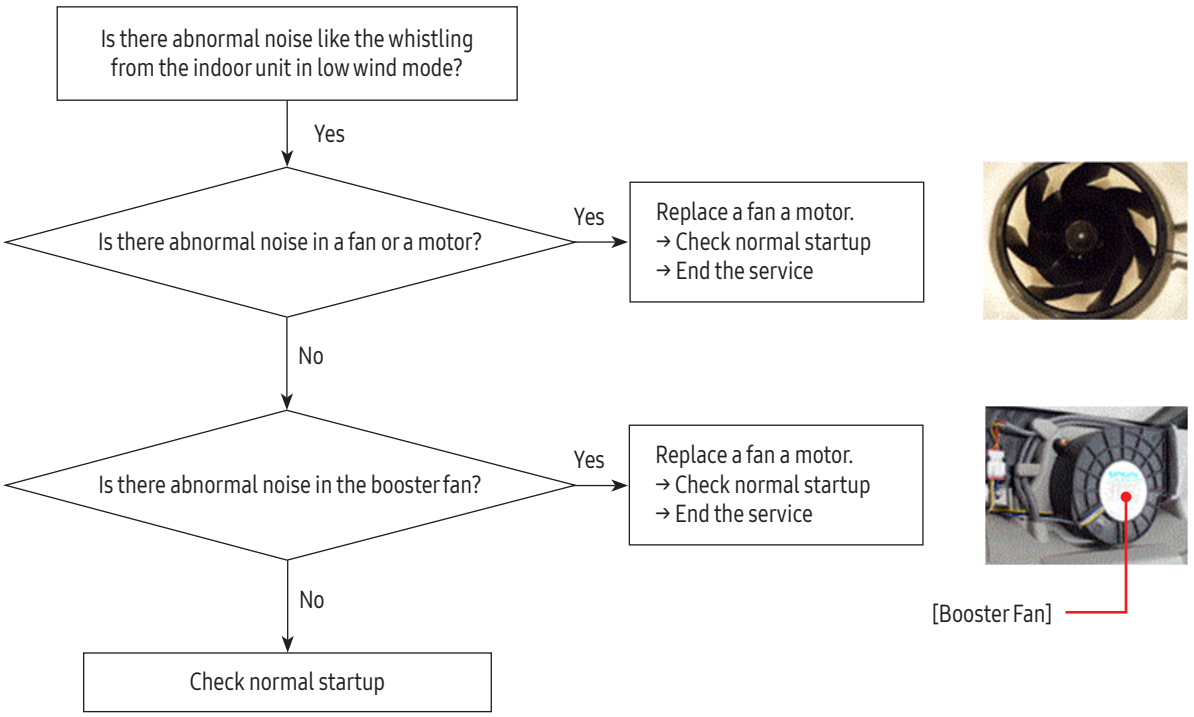
4-4-5. Communication error after finishing Tracking (E202)

Display	⏻	🕒	📶
	X	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom	Communication error between the indoor and outdoor unit for two minutes		





4-4-6. The whistling noise from the indoor unit in low wind mode

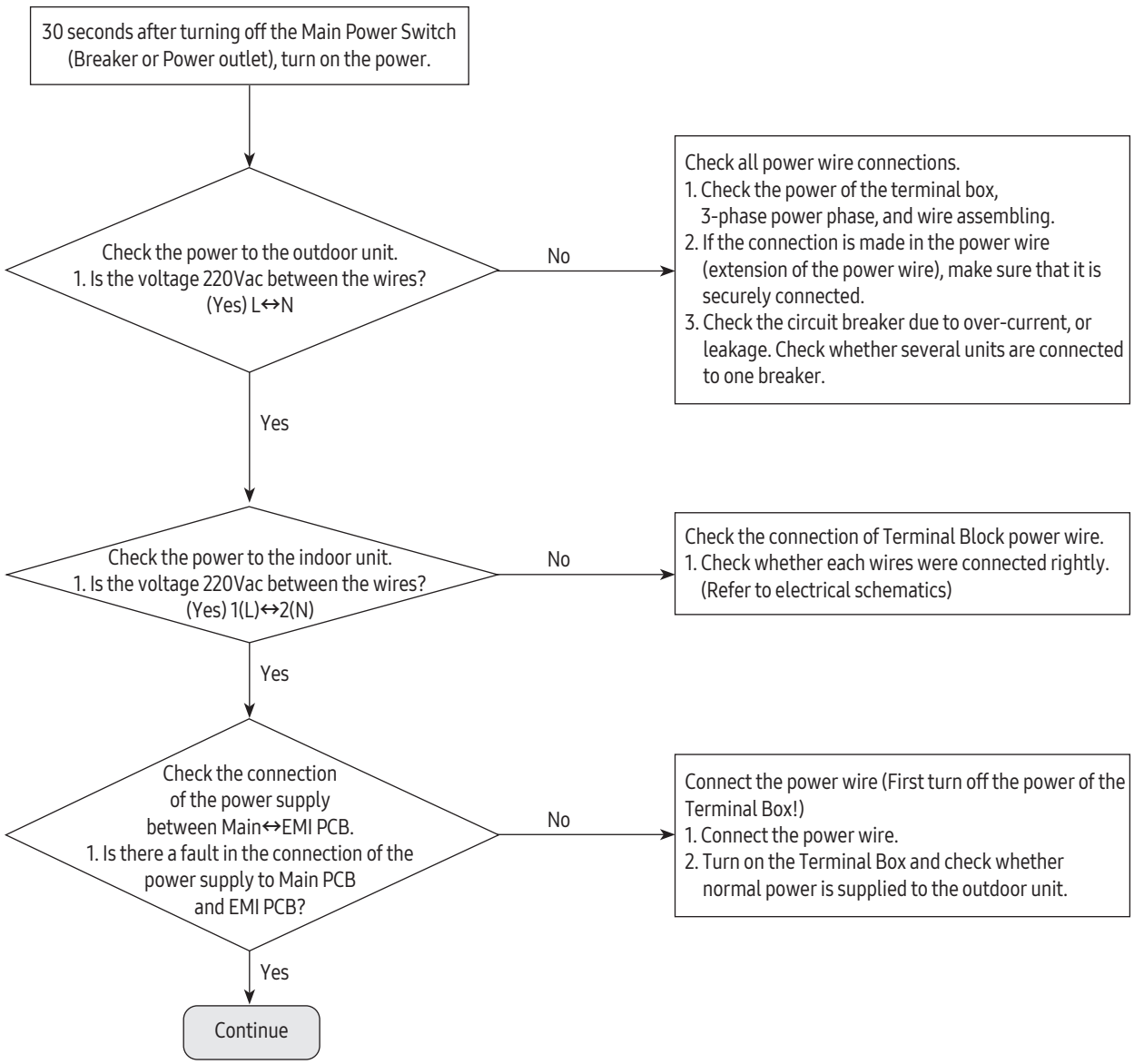


4-4-7. When the outdoor unit power is not ON - Initial Diagnosis: 1-phase products

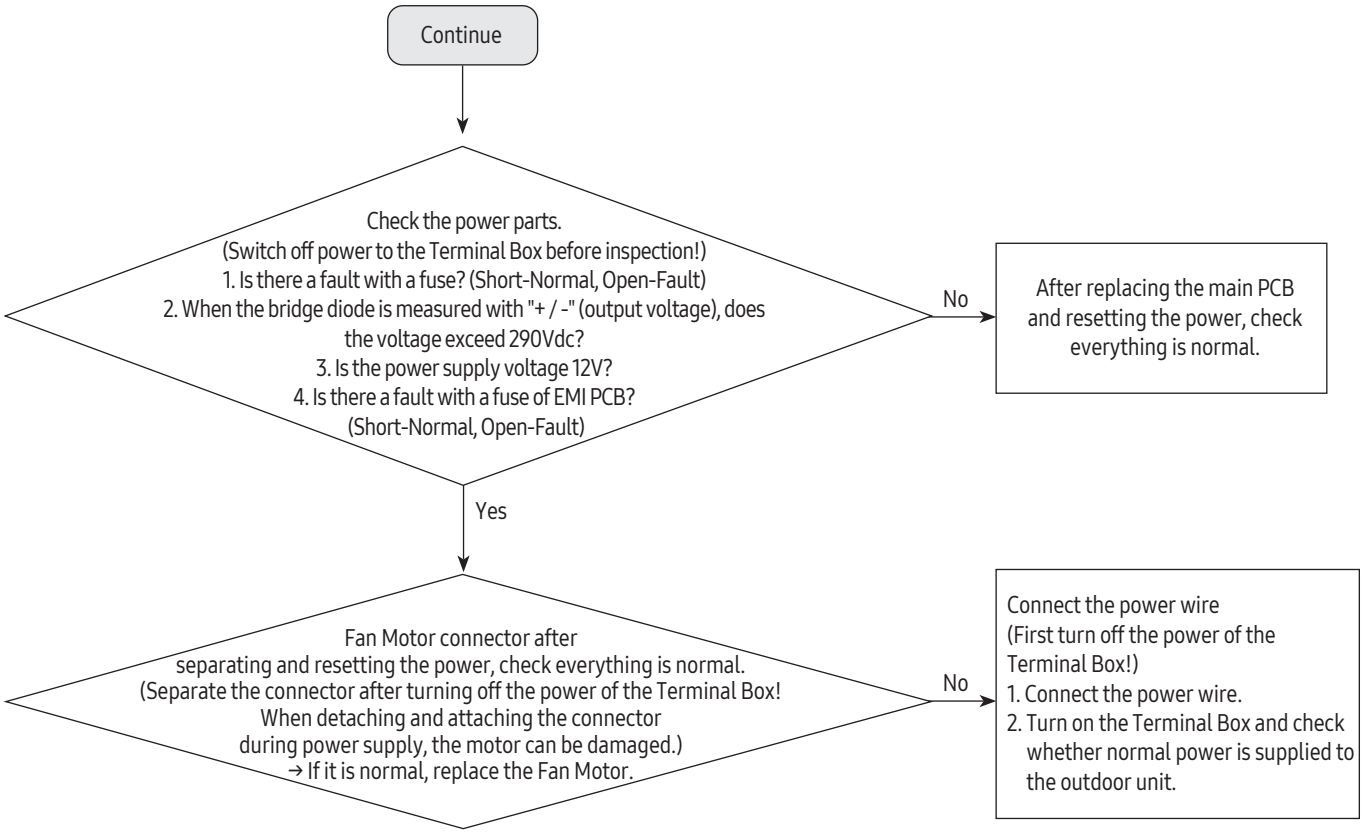
1. Test items
   1) Check the power connection of outdoor unit.
   2) Check the whole connection part of the power wire.
   3) Check the power on the indoor unit.
   4) Check the connection of the power wire of the Terminal Block.
   5) Check the connection of the power wire between the Main ↔ EMI PBA of the outdoor unit.
   6) Connect the power wire. (Never forget to turn off the power of the Terminal Box).
   7) Check the power supply parts. (Check after turning off the power of the Terminal Box!)
   8) Check everything is normal after separating the fan motor connector and resetting the power.
   (Separate the connector after turning off the power of the Terminal Box! When detaching and attaching the connector during power supply, the motor can be damaged.)

- 7-segment off.
- Conduct the following test if the mode is not Eco-mode (power saving mode).

2. Check procedure

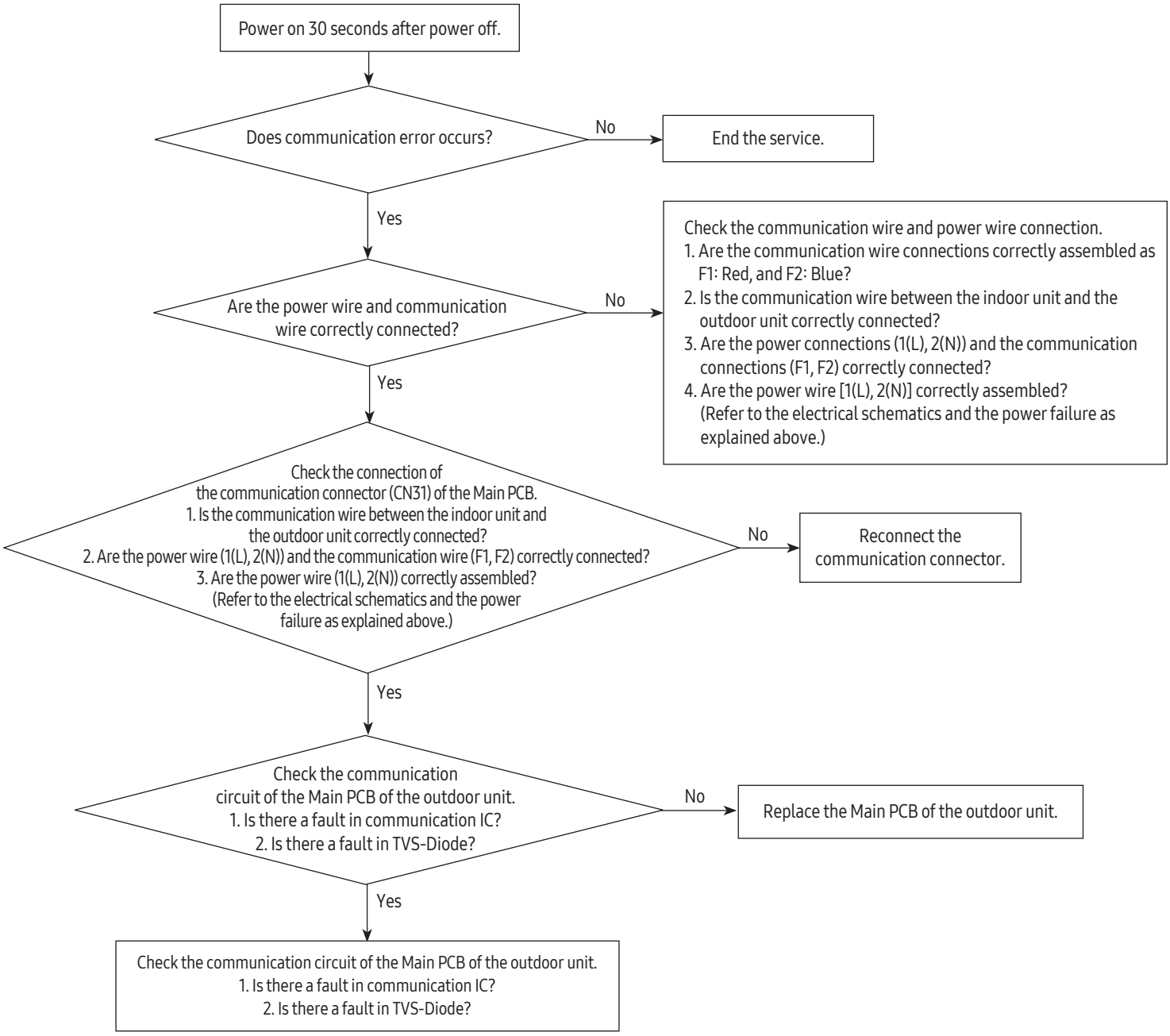


When the outdoor unit power is not ON - Initial Diagnosis: 1-phase products (Cont.)

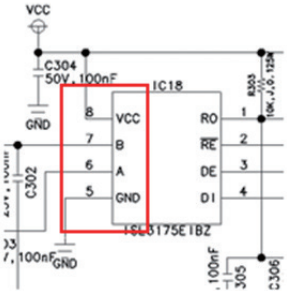
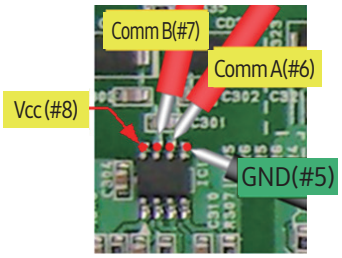
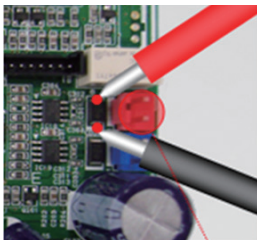


4-4-8. Indoor/outdoor communication error (2min.) (Error Code: E202)

Display	⏻	🕒	📶
	X	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom	Communication error between the indoor and outdoor unit for two minutes		



Indoor/outdoor communication error (2 min.) (Error Code: E202) (Cont.)

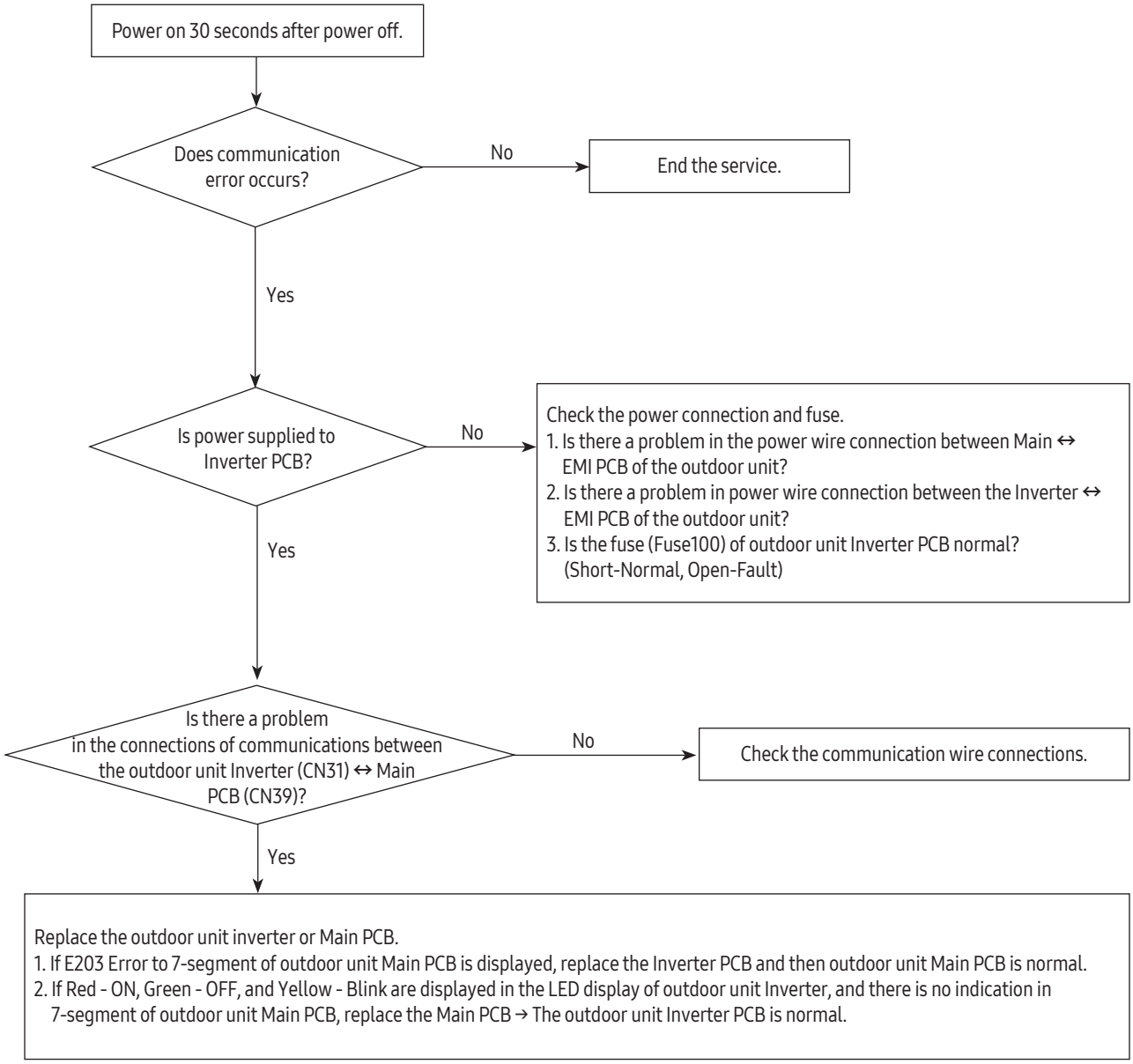
Measuring Part	Communication IC Measuring Part (Circuit Diagram)	Example of Measuring Communication IC	Example of Measuring TVS-Diode
Location			
Measuring Point	#5-GND, #6- Communication A, #7-Communication B, #8-Vcc		

Communication IC Measuring (Port)	Steady-state Measuring Value	Remark
	COM 1(RED)	
#6 - #5	0.9kΩ ~ 1.2kΩ	Measuring after separating the communicatio connection
#7 - #5	0.9kΩ ~ 1.2kΩ	
#8 - #5	4.7Vdc ~ 5.3Vdc	

TVS-Diode Measuring	Steady-state Measuring Value
Both ends of diode	1kΩ or above

4-4-9. Communication error between outdoor unit INV ↔ MAIN MICOM (1 min.) (Error Code: E203)

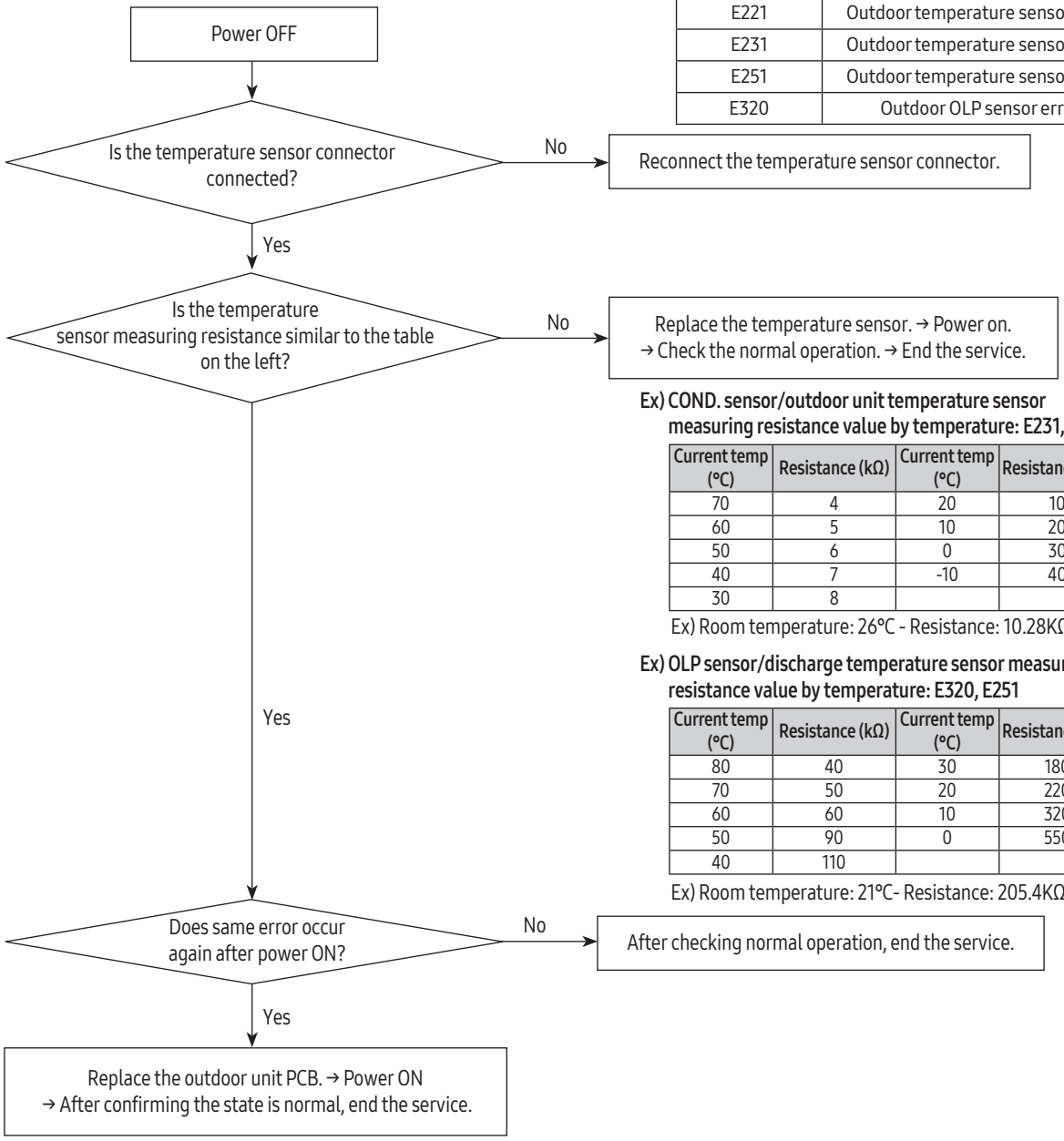
Display	⏻	🕒	ᯤ
	X	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom	Communication error between the outdoor unit INV and Main Micom for one minutes		



4-4-10. Outdoor sensor error(Error Code: E221, E231, E251, E320)

Display	⏻	⏲	ᯤ
	◑	X	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			

Error CODE	Description
E221	Outdoor temperature sensor error
E231	Outdoor temperature sensor error
E251	Outdoor temperature sensor error
E320	Outdoor OLP sensor error



Ex) COND. sensor/outdoor unit temperature sensor measuring resistance value by temperature: E231, E221

Current temp (°C)	Resistance (kΩ)	Current temp (°C)	Resistance (kΩ)
70	4	20	10
60	5	10	20
50	6	0	30
40	7	-10	40
30	8		

Ex) Room temperature: 26°C - Resistance: 10.28KΩ

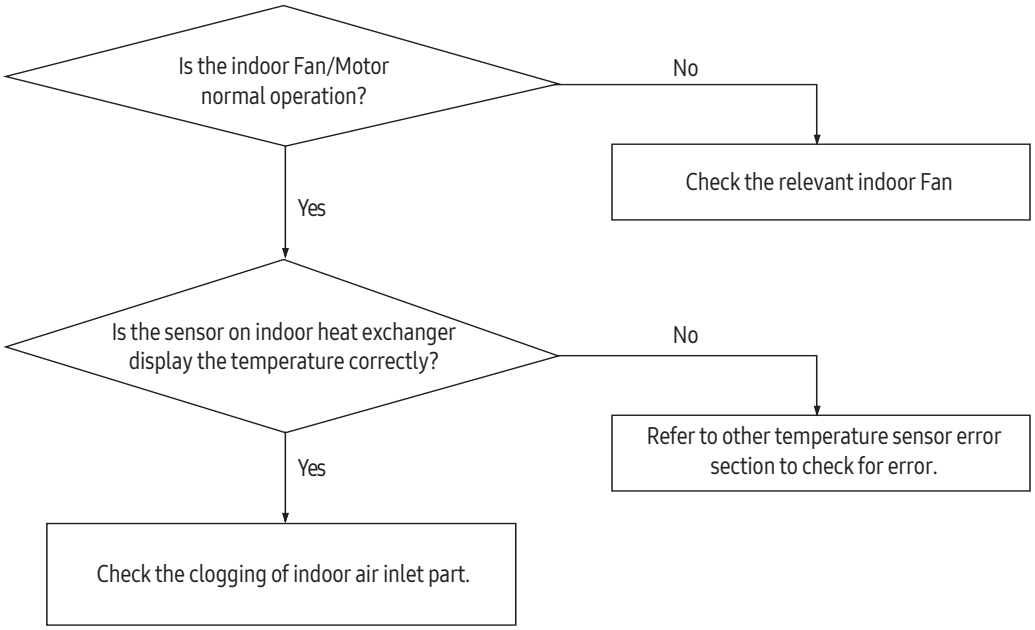
Ex) OLP sensor/discharge temperature sensor measuring resistance value by temperature: E320, E251

Current temp (°C)	Resistance (kΩ)	Current temp (°C)	Resistance (kΩ)
80	40	30	180
70	50	20	220
60	60	10	320
50	90	0	550
40	110		

Ex) Room temperature: 21°C- Resistance: 205.4KΩ

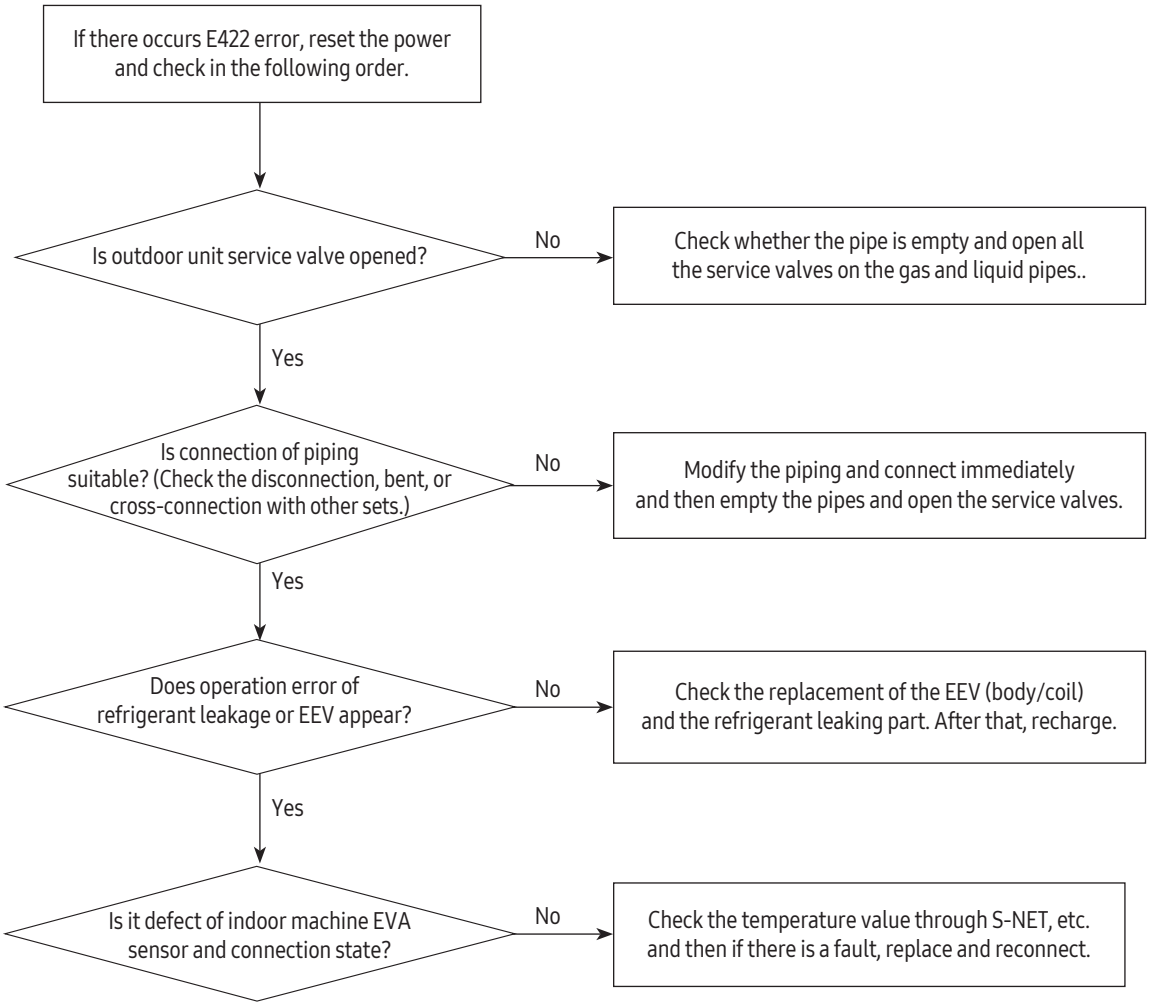
4-4-11. Compressor down due to freezing control (Error Code: E403)

Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			



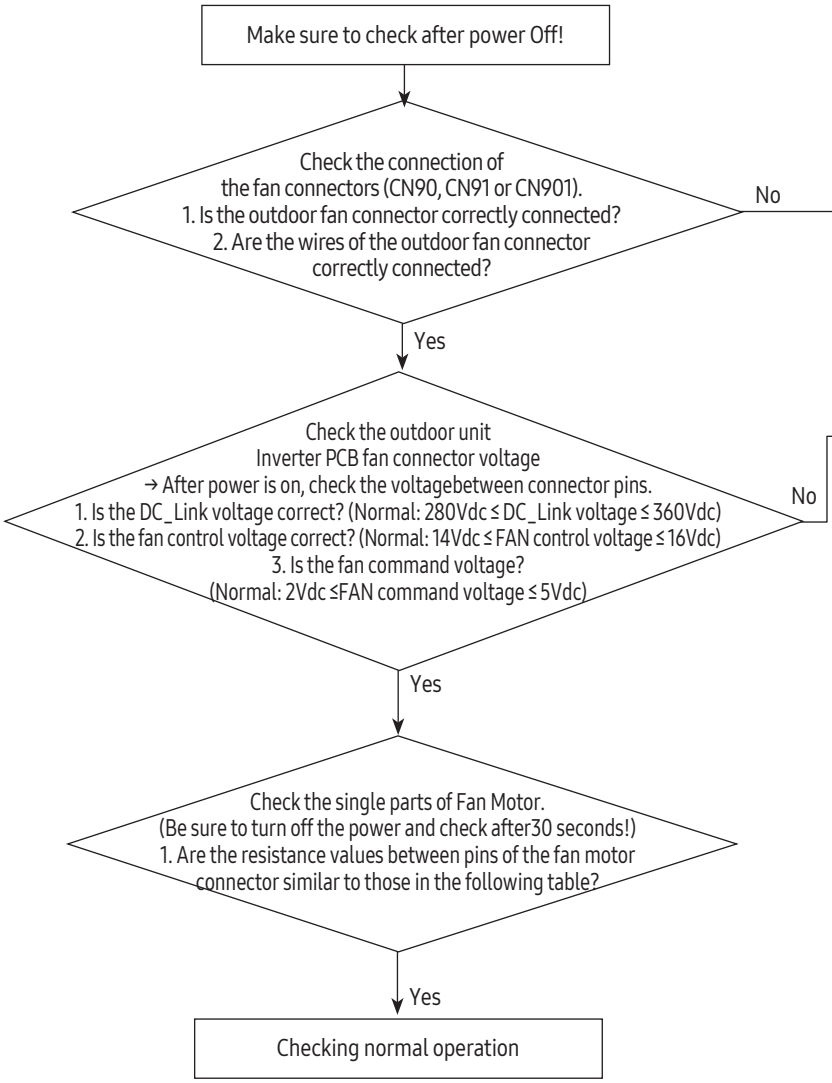
4-4-12. Pipe blockage error (Error Code: E422)

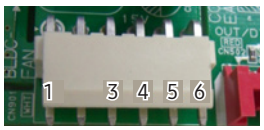
Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			



4-4-13. Outdoor unit Fan error (Error Code: E458, E475)

Display	⏻	🕒	((•))
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			





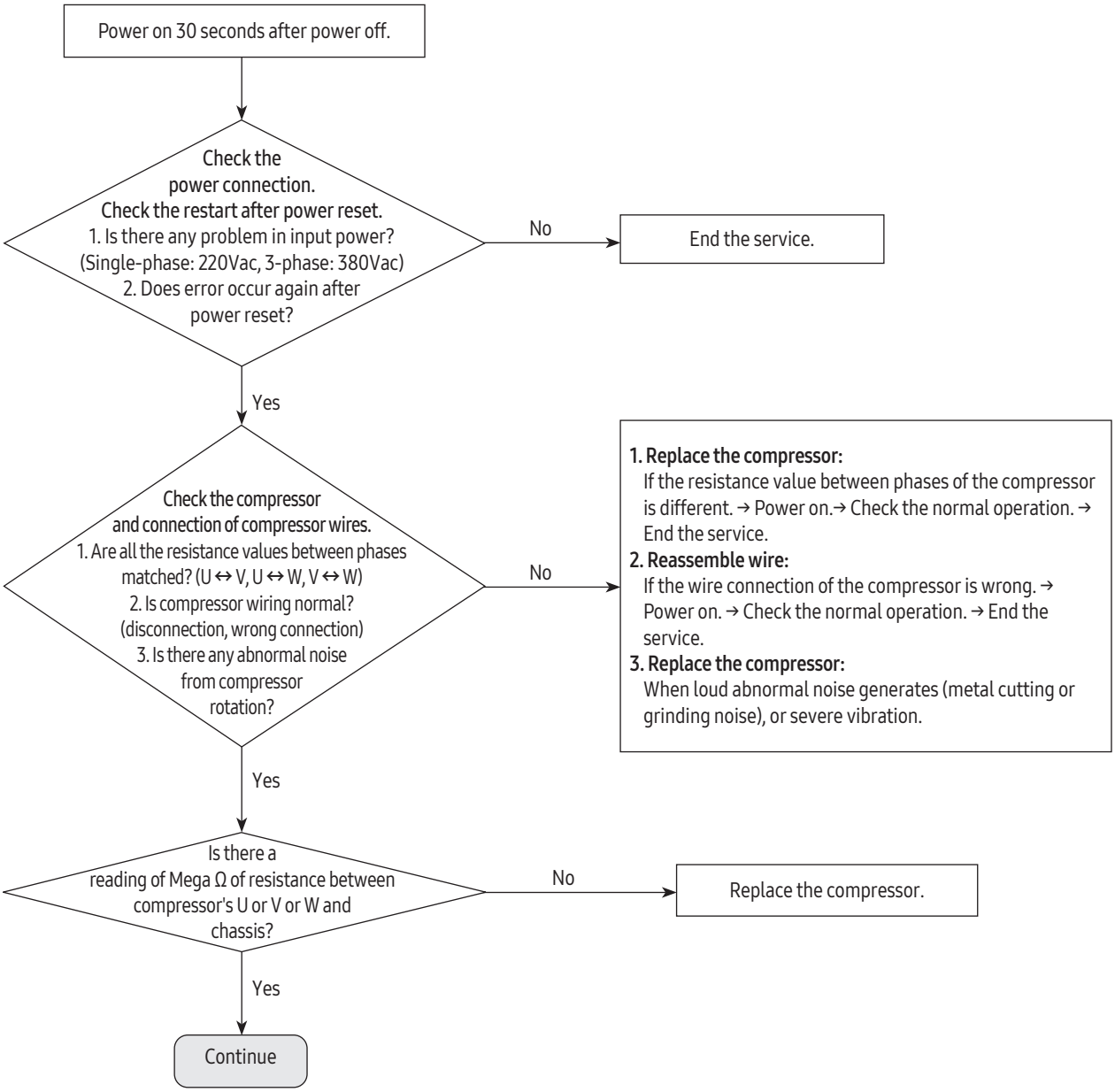
#1-#3 DC_Link Voltage (between DC_link and GND)	280Vdc ~ 360Vdc
#4-#3 DC_Link voltage (between DC15V and GND)	14Vdc ~ 16Vdc
#5-#3 FAN command voltage (between fan control and GND)	2Vdc ~ 5Vdc

Measuring Part	Diagnosing Part	Value of good product
 Motor Connector	#5(YEL)-#3(BLK) resistance (between fan control and GND)	Open (infinite resistance)
	#4(WHT)-#3(BLK) resistance (between DC15V and GND)	Approx. 1.0kΩ ~ 3kΩ
	#5(YEL)-#3(BLK) resistance (between fan control and GND)	Approx. 230kΩ ~ 280kΩ
	#6(BLU)-#3(BLK) resistance (between feedback and GND)	Some MΩ or more or open (infinite resistance value)

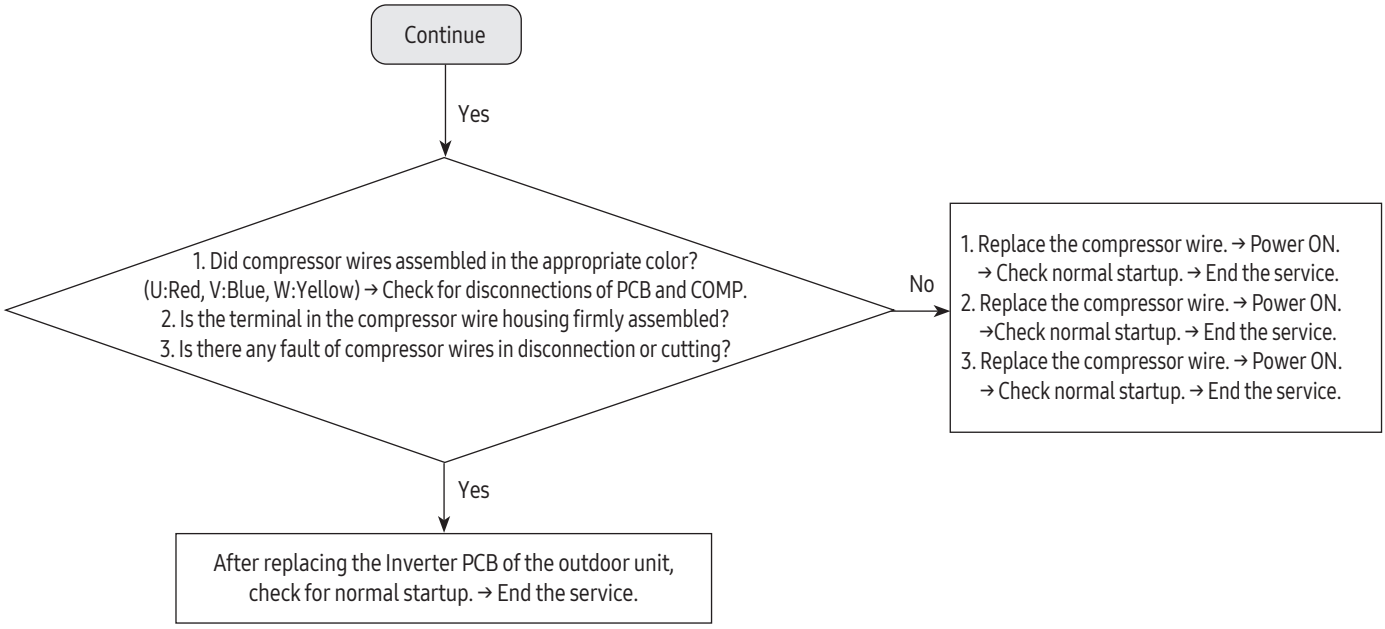
※ At least 30 seconds after power is OFF, attach/detach the fan motor connector!
→ Threatened to cause secondary damage to the motor and the PCB.
※ Check the Inverter PCB or Fan Motor single parts and only if there is a fault, replace!
※ Do not replace the Main PCB of the outdoor unit relating to the fault in the Fan Motor!
→ If the error is indicated on 7-segment of the Main PCB of the outdoor unit, the Main PCB of the outdoor unit has no fault.
→ In case of a control problem, it is possible to solve with S/W update.

4-4-14. Compressor starting error / rotation error (Error Code: E461, E467)

Display	⏻	🕒	📶
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			



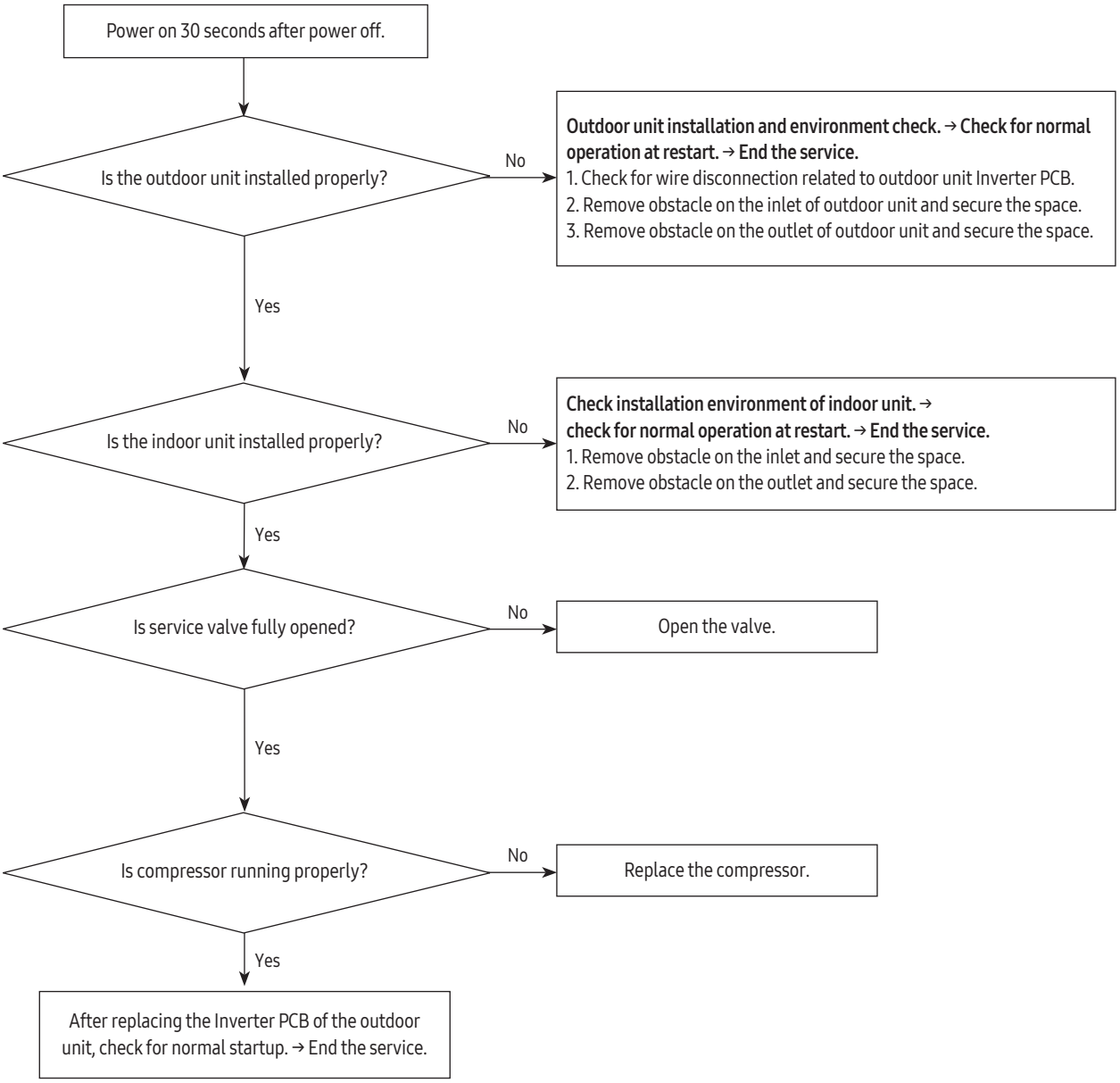
Compressor starting error / rotation error (Error Code: E461, E467) (Cont.)



※ E461, E467 Error-related, EMI / outdoor unit Main / Indoor unit Main PCB do not replace!
→ This error is related to the compressor and Inverter PCB. (Not related to the above PCB)
※ Ensure that the service valve is open!
→ When the service valve is closed, the defects may be caused by differential pressure when starting the compressor.

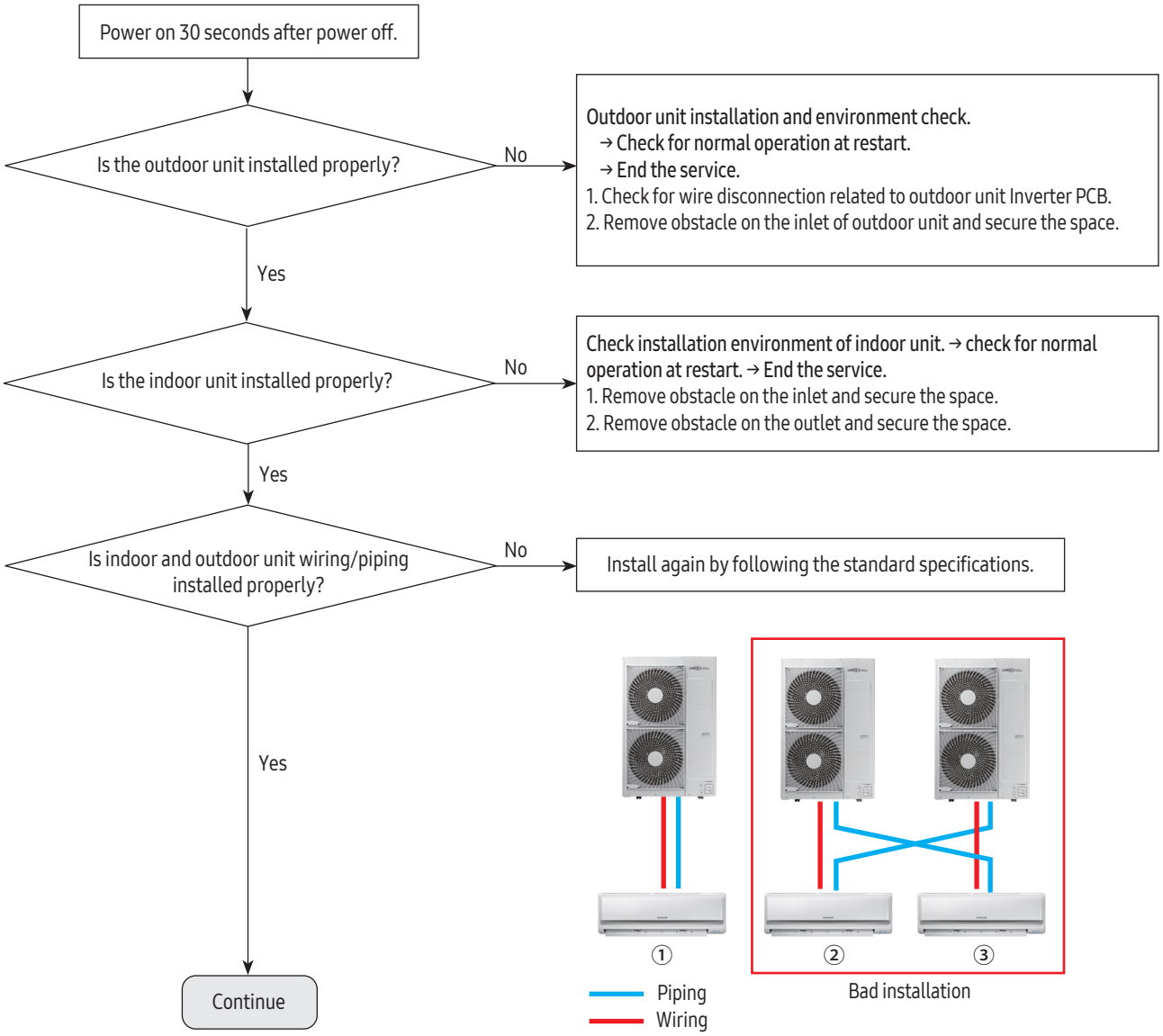
4-4-15. Full current error / PFC over-current error (Error Code: E462, E484)

Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			

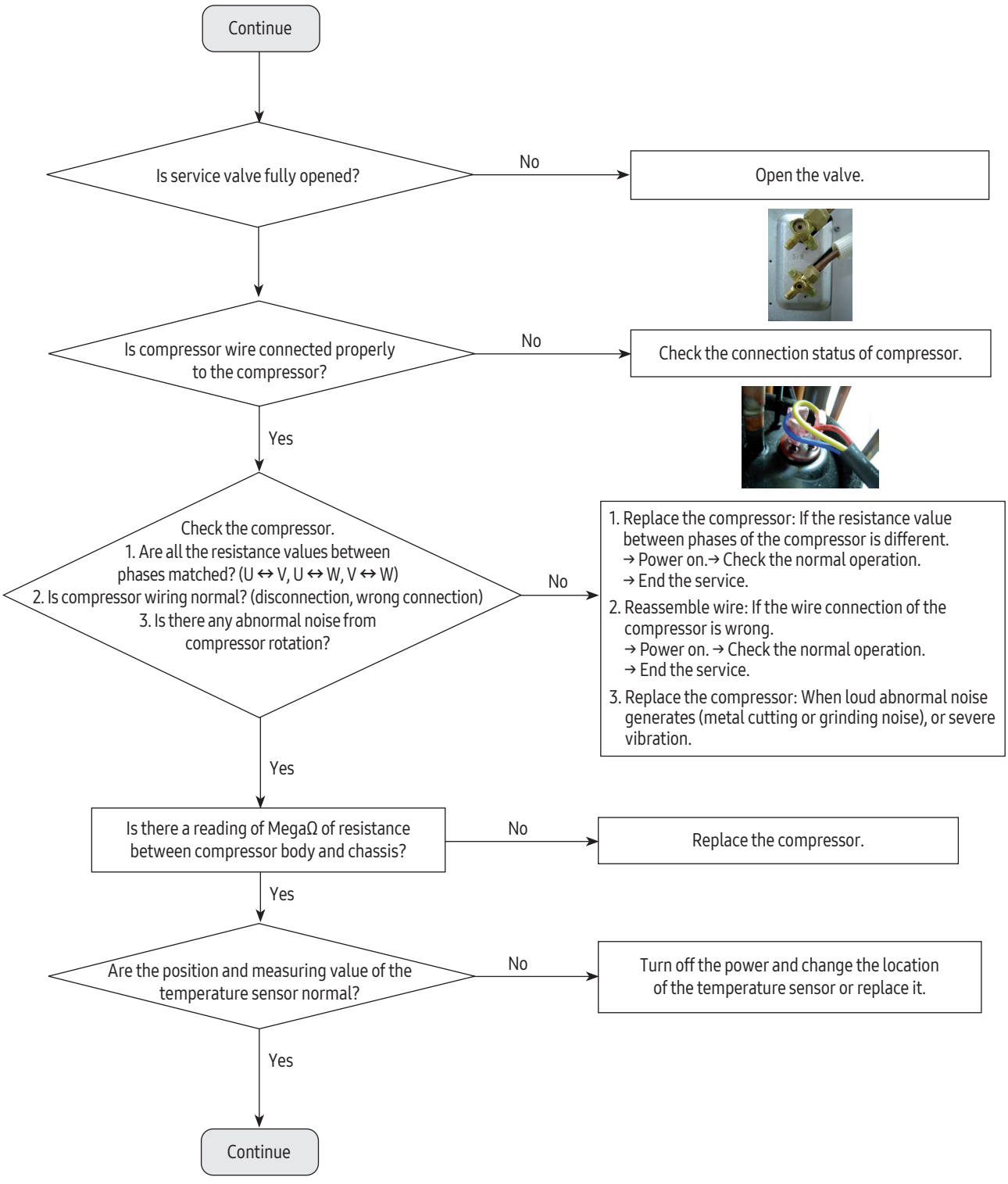


4-4-16. IPM (Over Current) error (Error Code: E464)

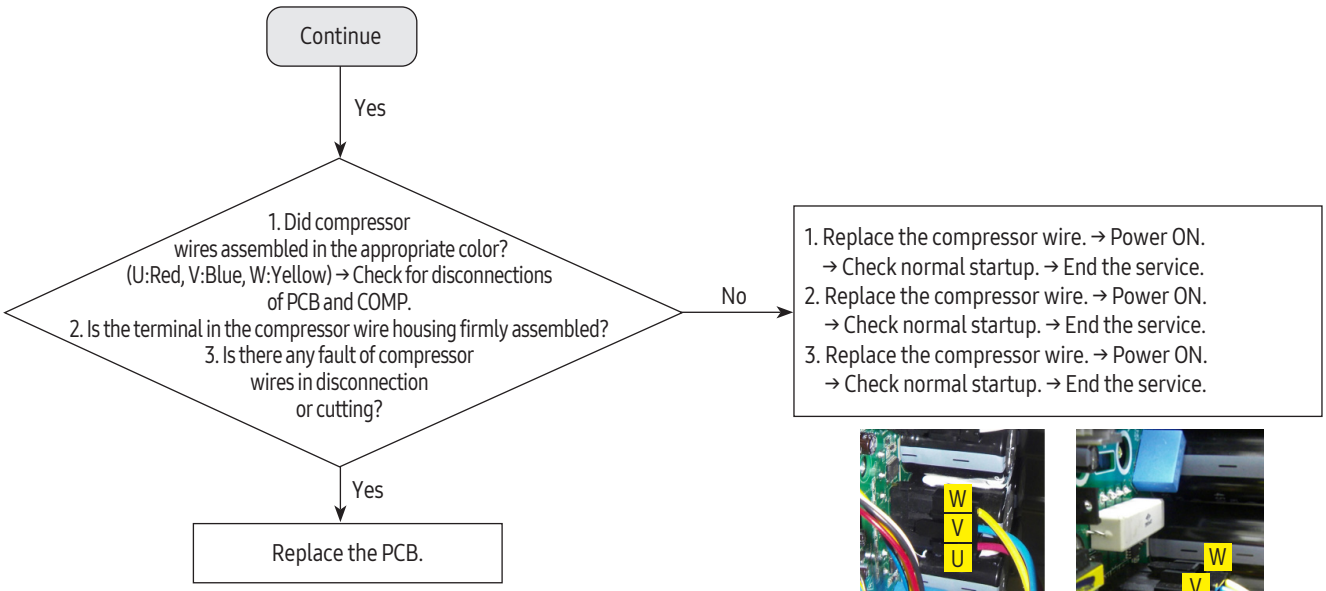
Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			



IPM (Over Current) error (Error Code: E464) (Cont.)

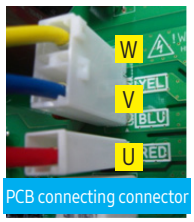


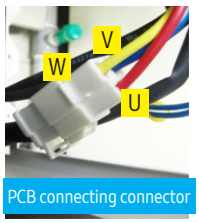
IPM (Over Current) error (Error Code: E464) (Cont.)



※ E46 Error-related, EMI / outdoor unit Main / Indoor unit Main PCB do not replace!
→ This error is related to the Inverter PCB. (Not related to the above PCB)

※ Ensure that the service valve is open!
→ When the service valve is closed, the defects may be caused by differential pressure when starting the compressor.





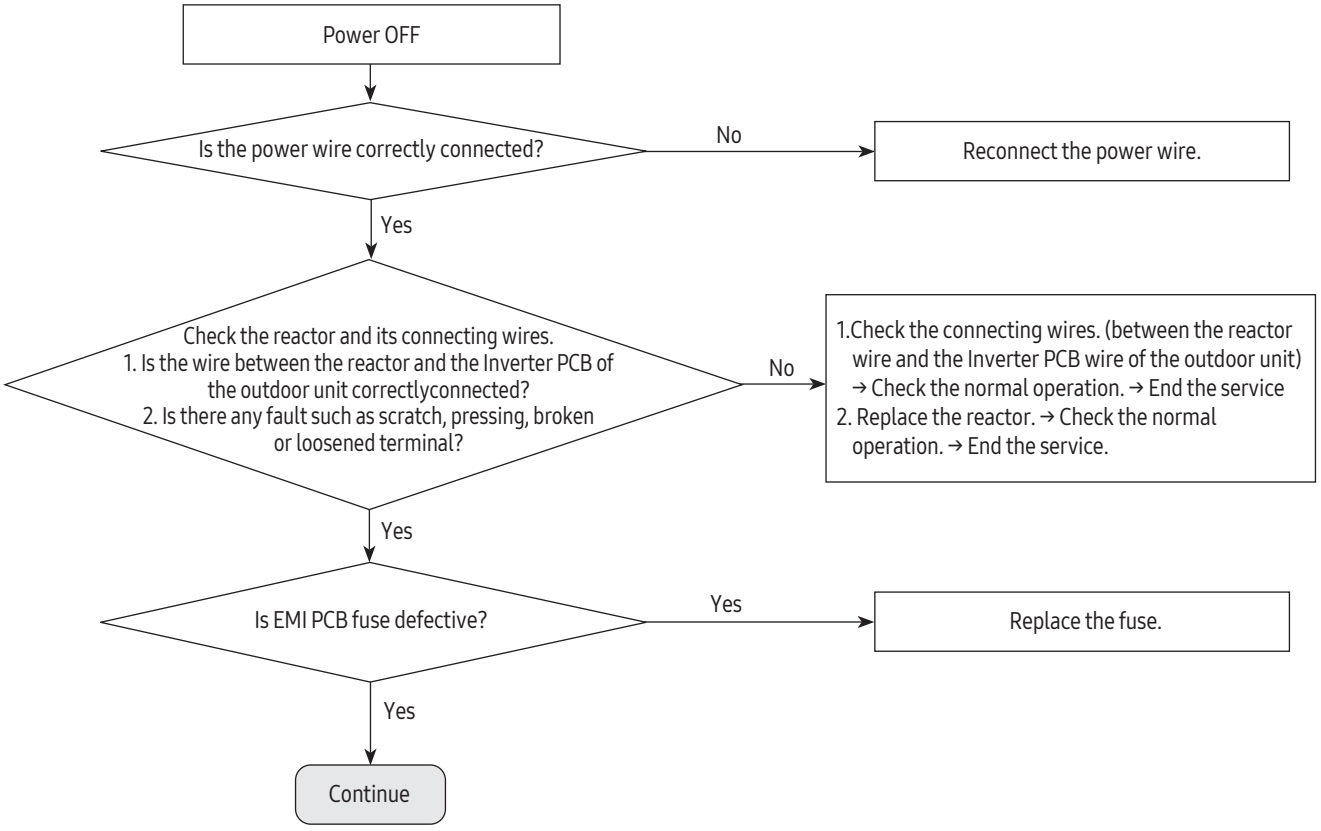
4-4-17. DC LINK over-current / low-voltage error (Error Code: E466)
H/W DC_Link Over Voltage Error (Error Code: E483)
AC Input Voltage Sensor Error (Error Code: E488)

Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method	Refer to checking method, as shown below.		
Symtom			

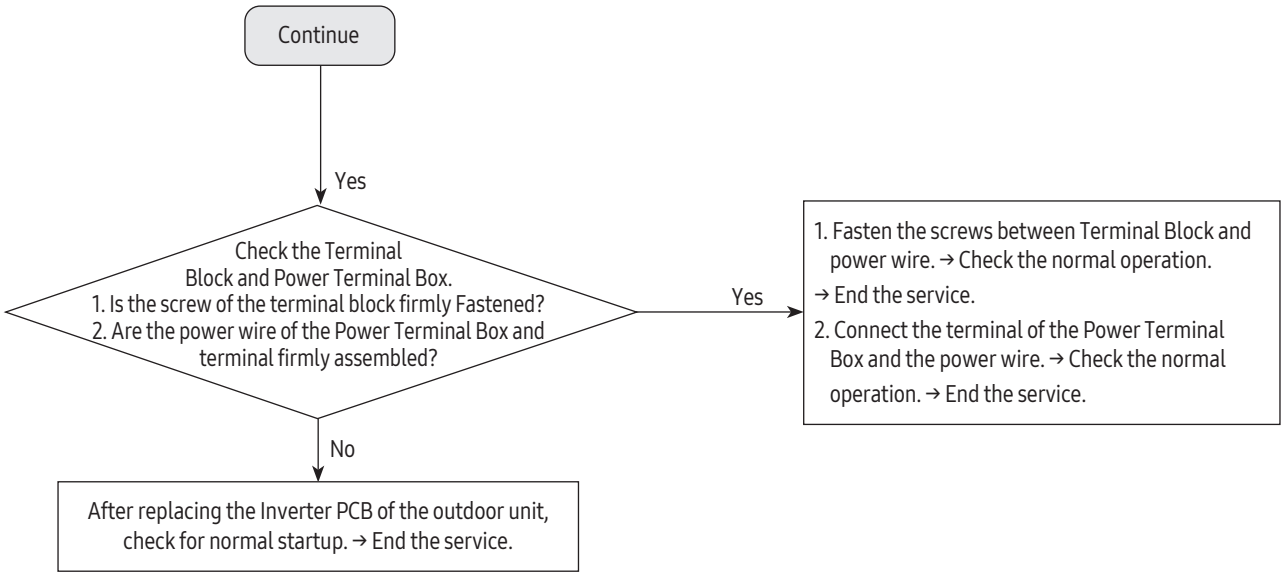
1. Test items

1) Check the power connection. / Check the restart after power reset.
   → Is there a fault in input power? (Single-phase: 220Vac, 3-phase: 380Vac)
   → Does error occur again at operation after power is reset?
2) Check the connection of the power, and check whether the jointed power connection exists.
   → After having installed several units, please check that communication wires are not interchanged with piping.
3) Check the reactor and its connecting wires.
4) Check the fuses of EMI PBA.
5) Check the Terminal Block and Power Terminal Box and the wire assembly.

2. Check procedure



DC LINK over-current / low-voltage error (Error Code: E466)
H/W DC_Link Over Voltage Error (Error Code: E483)
AC Input Voltage Sensor Error (Error Code: E488)(Cont.)

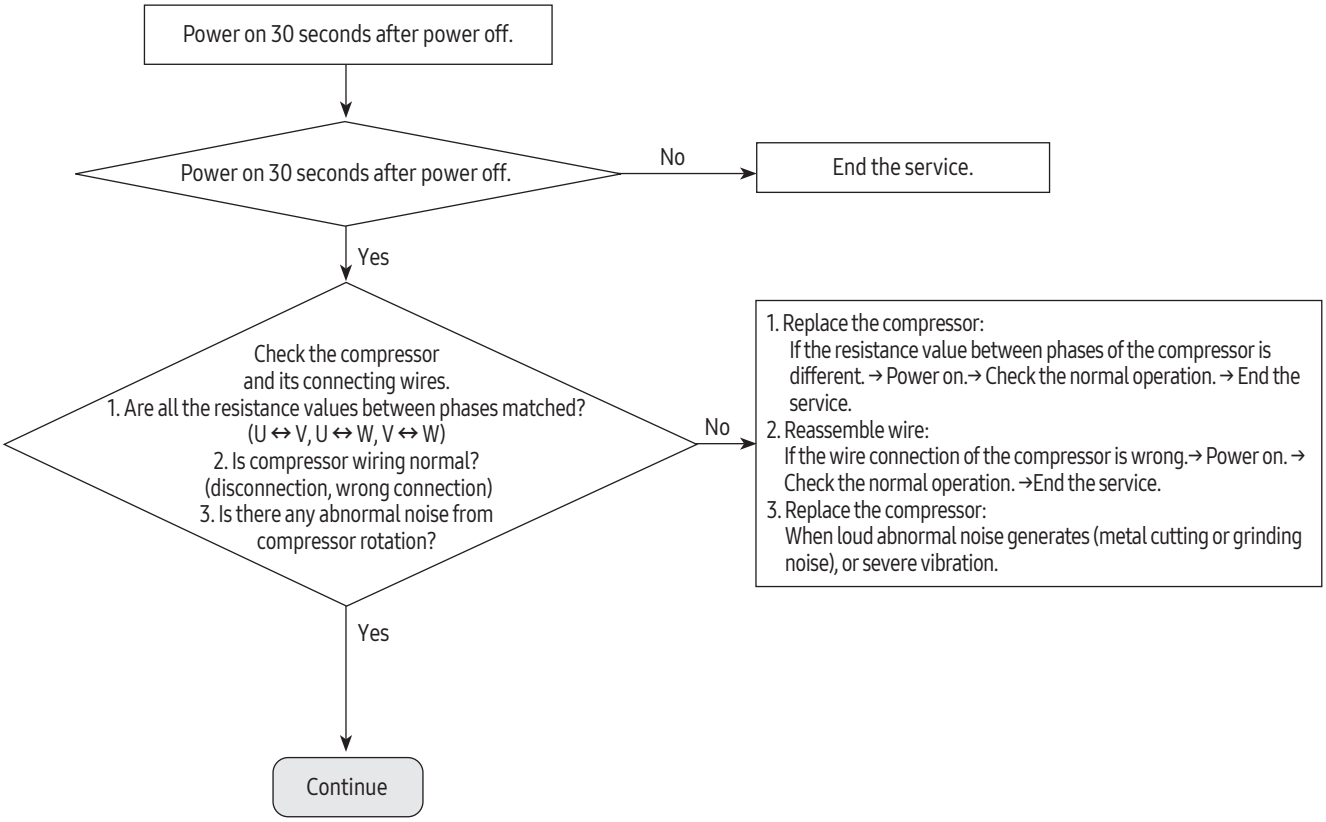


4-4-18. Gas leakage error (Error Code: E554)

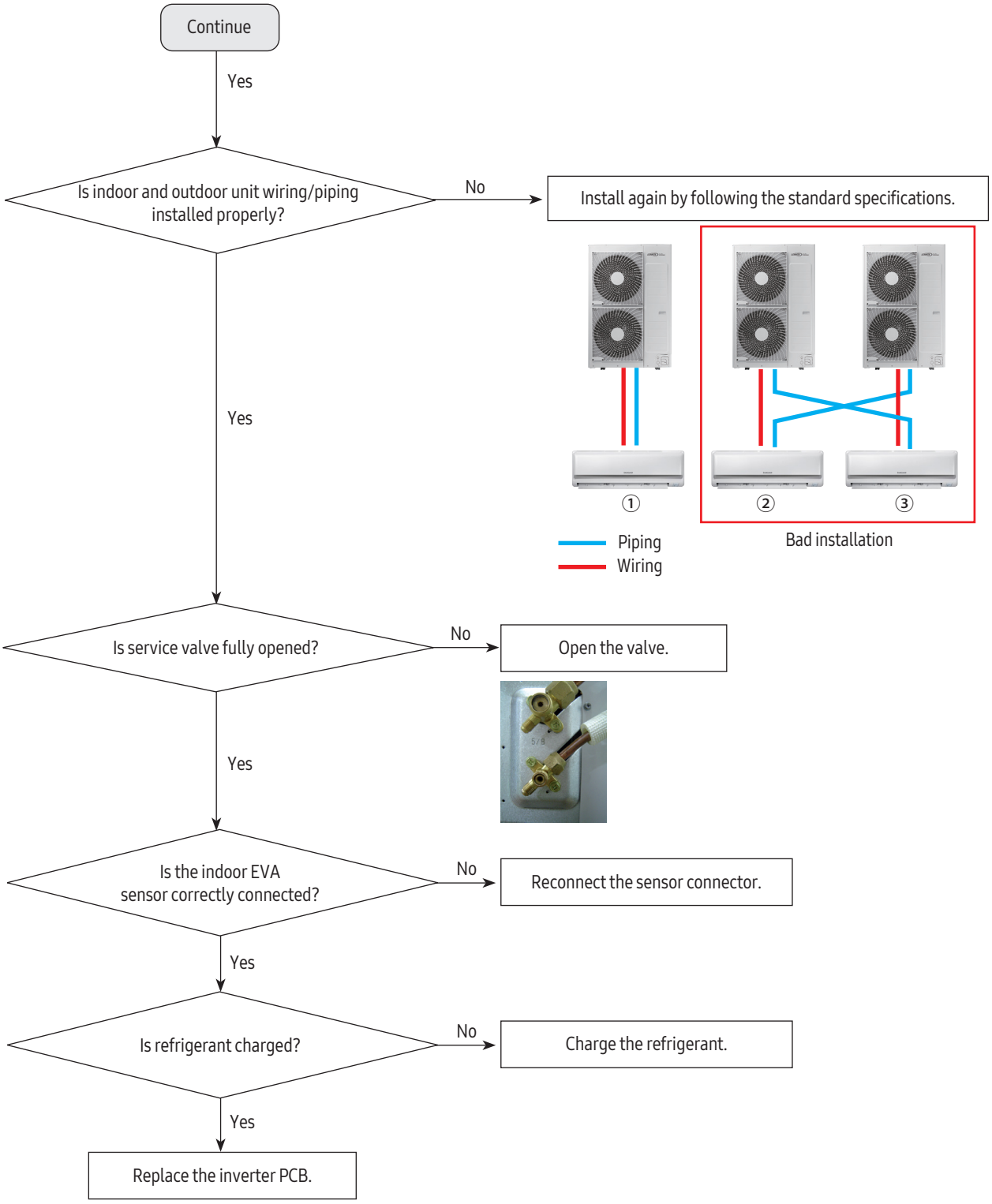
Display	⏻	🕒	ᯤ
	●	◑	◑
Judgment method			
Symtom			

1. Test items
   1) Check the power connection. / Check the restart after power reset.
      → Is there a fault in input power? (Single-phase: 220Vac, 3-phase: 380Vac)
      → Does error occur again at operation after power is reset?
   2) Check the compressor and the state of compressor wire assembling.
   3) Check the outdoor unit installation environment.
      → Check for disconnection of the wires regarding the Inverter PCB of the outdoor unit and check the installation environment.
      → At the site where several units were installed at the same time, check whether communication wire and pipes have been wrongly connected!

2. Check procedure



Gas leakage error (Error Code: E554) (Cont.)



4-4-19. Others

1. EEPROM option error (E163): Reset the options.

2. Temperature fuse error: E198
   - If the Terminal Box temperature rise fuse is disconnected, replace the PCB.
   - Check the wiring connector of temperature fuse.

3. Current sensor error: Upload EEPROM to the Main PCB of the outdoor unit.
   - After checking for normal operation of PCB, replace the inverter PCB.

4. INVERTER PBA Overheating error: E381
   - After visually checking the INVERTER PBA, replace it if there is any damage.

5. Compressor Vlimit error: E465
   - If the compressor is abnormally run, replace the compressor and then ensure that it works normally.
     → If the compressor is normally run, check the assembling between the heatproof plate and the Inverter PCB and then if there is no abnormality, replace the Inverter PCB.

6. DC link voltage sensor error: E469
   - Error occurs when DC LINK value is not normal (DC LINK VOLTAGE: 280~320V)
   - Check the value of DC link when error occurs and check the reactor disconnection

7. EEPROM read/write error: E470
   - Error occurs when there is no EEPROM data in the set.
   - Check the model name and insert EEPROM for corresponding model or load the EEPROM data.

8. Input current sensor error: E485
   - Detect the input sensor while the set is in stop status to check if there's any problem.
   - When error occurs, turn on/off the power for number of time and if same error occurs while the power is off, replace the Inverter PCB.

9. OTP error: E471
   - Upload EEPROM to the Main PCB of the outdoor unit.

10. Capacity inconsistence error: E556
    - Check the model name between the outdoor and indoor unit and re-enter the option code to the indoor unit.

11. 3-phase power wire disconnection: E424
    - Check for disconnection of the 3-phase (open) power wire, and check the disconnected EMI PBA fuse.

12. Outdoor unit freezing detection (at the stop of the compressor): E403
    Outdoor overload protection control (at the stop of the compressor): E404
    - Check whether the fan and the motor operate normally.
    - Check the operation of EEV.
    - Check the temperature sensor of the indoor unit heat exchanger.
    - Check the indoor unit inlet blockage.

13. Outdoor unit compressor discharging temperature protection control: E416
    - Check for lack of refrigerant.
    - Check the blockage of the solenoid valve.
    - Check the malfunction of the exhaust temperature sensor.
    - Check the EEV.

Others (Cont.)

14. Error of impossibility to operate Heating at outdoor temperature exceeding 30°C: E440
    Error of impossibility to operate cooling at outdoor temperature of -18°C under: E441
    - It is not the error code in the product and it is a specification to protect the product by limiting the temperature scope of use.
    - Use by referring to the temperature scope of use on the product manual, etc.

15. OLP overHeating and compressor stop: E463
    - Check the opening of the sub valve.
    - Check the amount of the cooling water.
    - Check the OLP sensor.

16. Current sensor error: E468
    - Check the EEPROM data.
    - Check the PCB operation.

17. IPM (IGBT Module) or PFCM temperature sensor error: E474
    IPM overheat error for outdoor unit inverter compressor: E500
    - Check whether IPM is correctly assembled on the heatproof plate.
    - Check whether the inlet is blockage.
    - If there is a defect, replace the IPM.

18. Emergency Alarm system on (Emergency Stop): E665
    - Check the emergency alarm sysltem

19. R32 gas leak detect error: E116, E695, E697, E698, E699, E700, E797
    - Call service center

Others (Cont.)

Type ②: If type ① is not defective, Booster Fan Wire 4 (Blue Wire), 3 (Black Wire) pin voltage:
When it is more than 2.7V, replace the PCB.



PIN No.1: VCC (YELLOW/+)
PIN No.2: SIGNAL (WHITE)
PIN No.3: GROUND (BLACK/-)
PIN No.4: PWM (BLUE)

2) In case of do not operate 3 Booster Fan (all Fan)
Action method: horizontally or intermediate or swing set up.

Type ①: Booster Fan Wire 1 (Yellow Wire), 3 (Black Wire) pin voltage:
When it is less than DC12V, replace the PCB.



PIN No.1: VCC (YELLOW/+)
PIN No.2: SIGNAL (WHITE)
PIN No.3: GROUND (BLACK/-)
PIN No.4: PWM (BLUE)

Type ②: If type ① is not defective, Booster Fan Wire 4 (Blue Wire), 3 (Black Wire) pin voltage:
When it is more than 2.7V, replace the PCB.



PIN No.1: VCC (YELLOW/+)
PIN No.2: SIGNAL (WHITE)
PIN No.3: GROUND (BLACK/-)
PIN No.4: PWM (BLUE)

Type ③: If type ② is not defective, Booster Fan Wire 2 (White Wire), 3 (Black Wire) pin voltage:
When it is approximately 5V, replace the PCB.

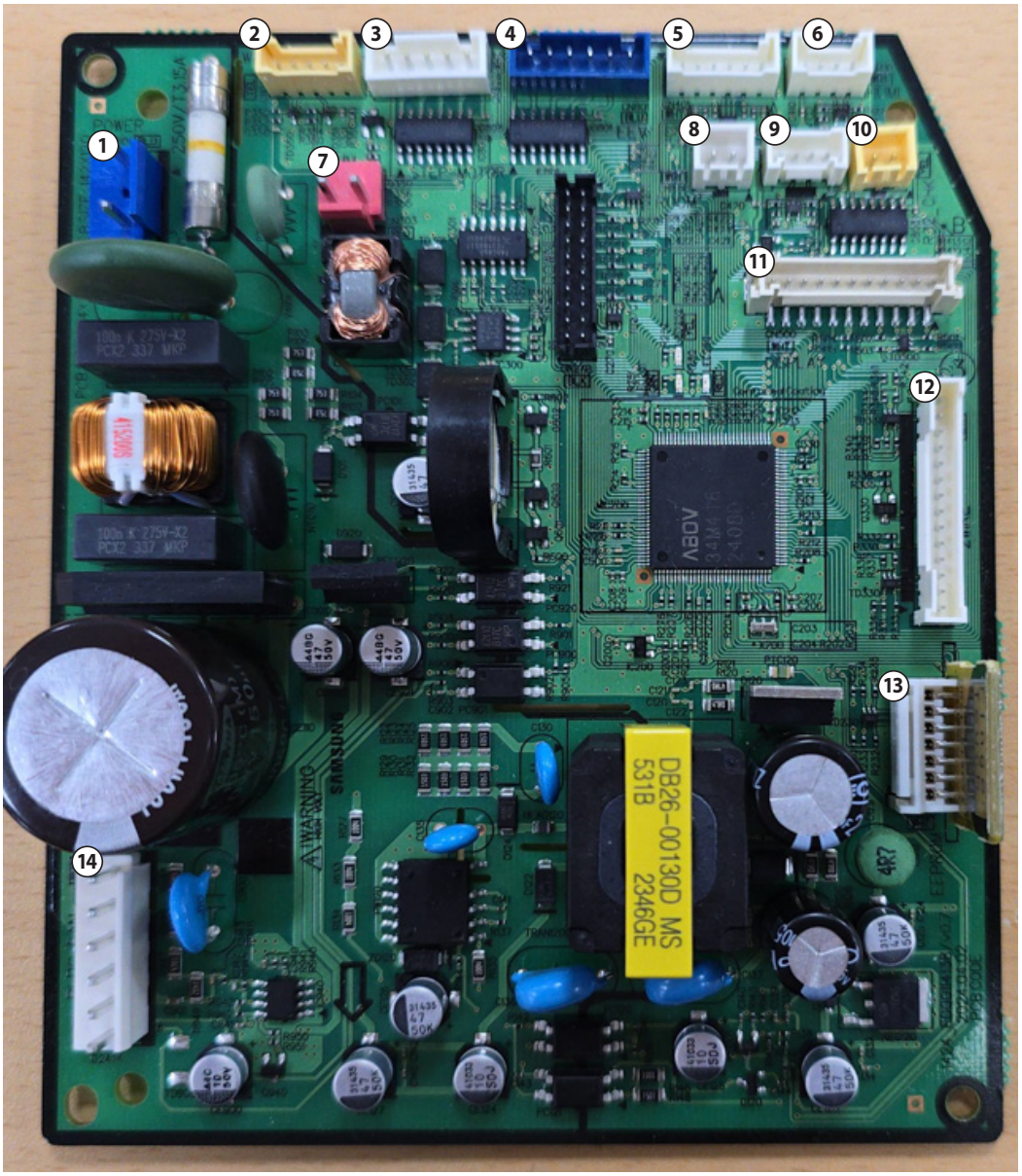


PIN No.1: VCC (YELLOW/+)
PIN No.2: SIGNAL (WHITE)
PIN No.3: GROUND (BLACK/-)
PIN No.4: PWM (BLUE)

5. PCB Diagram and Parts List

5-1. Indoor Unit Main PBA

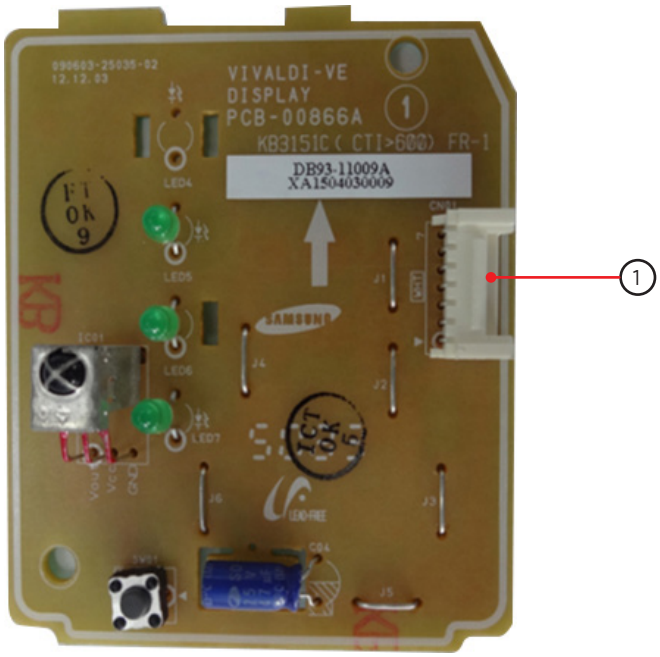
■ 3WMD036S6-1P



1. CNP101-AC INPUT	2. CN350-WiFi	3. CN802-STEP MOTOR	4. CN801-EEV (DVM)
#1: L_POWER #3: N_POWER	#1. TXD #2: RXD #3: DC5V #4: GND #5: DC12V	#1: DC12V #2~#5: LOUVER	#1: EEV B_Bar #2: EEV A_Bar #3: EEV #4: EEV A #5~#6: DC12V
5. CN401-EVA SENSOR	**6. CN410-HUMID SENSOR**	**7. CN303-COMMUNICATION**	**8. CN400-ROOM SENSOR**
#1: EVA-IN TEMPERATURE SENSOR #2: GND #3: EVA-OUT TEMPERATURE SENSOR #4: GND #5: DISCHARGE TEMPERATURE #6: GND	#1: DC5V #2: GND #4: HUMIDITY SENSOR	#1: COM1 (F1) #2: COM1 (F2) #3: V1 (DC12V) #4: V2 (GND) #5: COM2 (F3) #6: COM2 (F4)	#1: INDOOR TEMP #2: GND
9. CN420-R32 SENSOR	**10. CN803-R32 CHECK**	**11. CN500-DISPLAY**	**12. CN301-2WIRE**
#1: GND #2: R32 LIFE #3: R32 ALARM #4: DC 5V	#1: DC12V #2: R32 CHECK	#1~#3: LED #4: AUTO SW #5: GND #6: DC 5V #7: REMOCON INT	#1~#14: 2WIRE SUB_WIRE TYPE
13. CN230-EEPROM	**14. CN900-BLDC MOTOR**		
#1: GND #3: DC5V #4: EEPROM_SELECT #5: EEPROM_SO #6: EEPROM_SI #7: EEPROM_CLK	#1: DC310V #3: GND #4: DC15V #5: FAN RPM #6: RPM FEEDBACK		

5-2. Indoor Unit Display PBA

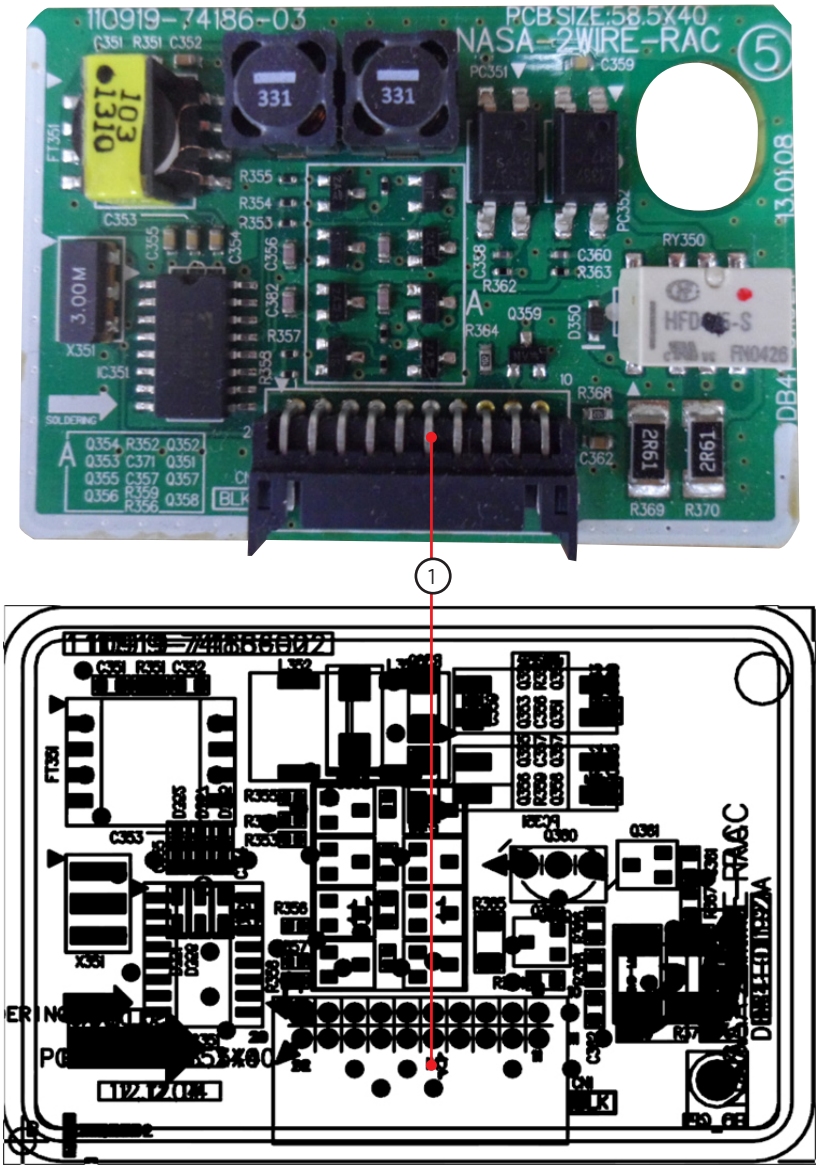
■ 3WMD036S6-1P



① CN101: DISPLAY
#1~3:LED
#4: ON/OFF SW
#5: GND
#6: DC 5V
#7: REMOCON SIGNAL IN

5-3. Indoor Unit Sub PBA

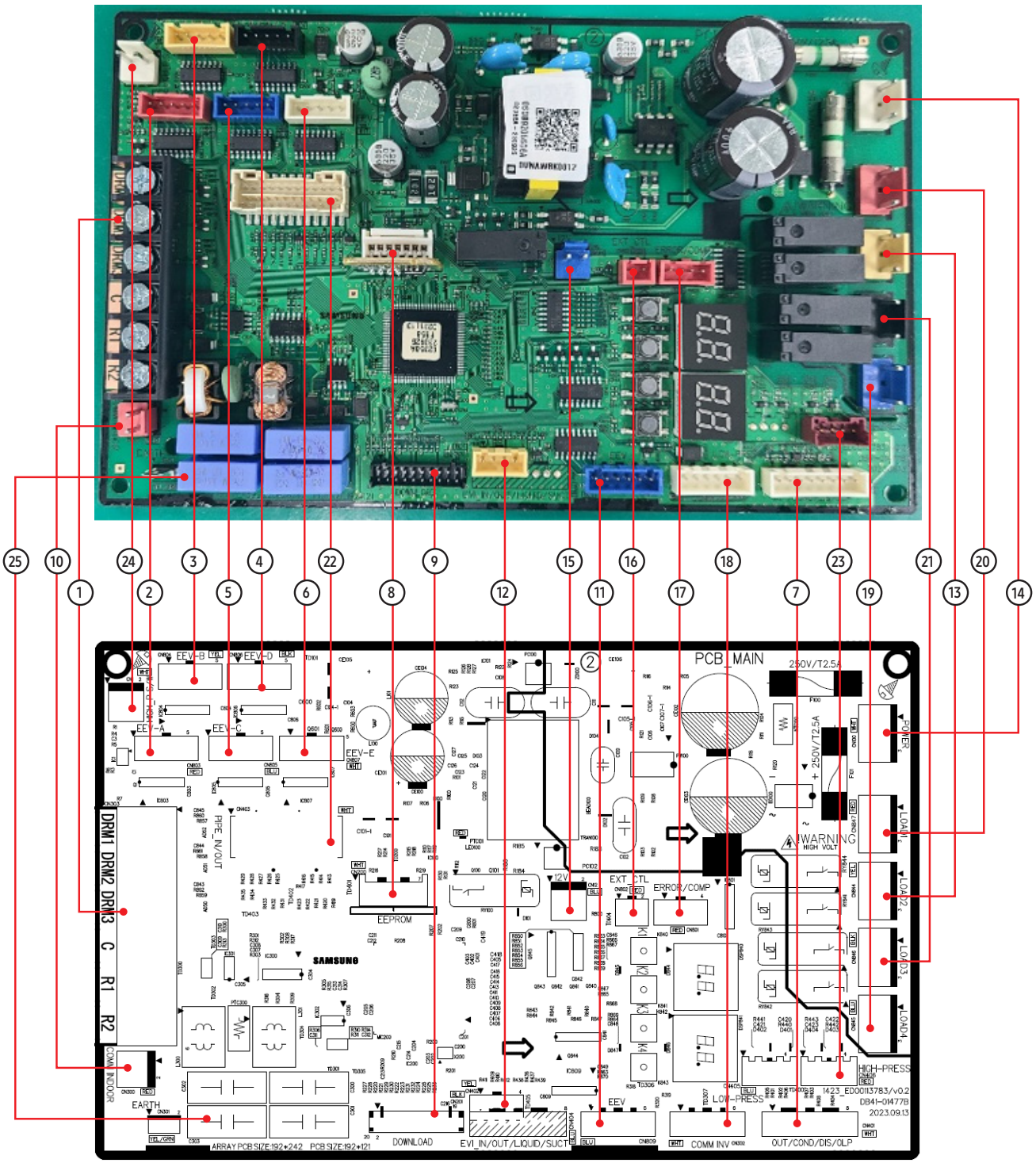
■ 2 wires communication PBA - 3WMD036S6-1P



① CN1-2WIRES COMM.
#1,#2,#19,#20:COMM. SIGNAL
#3,#18:EXTERNAL CONTROL
#4,#17:COMP CHECK
#5,#16:ERROR CHECK
#6:VCC(DC5V)
#7,#14:GND
#8,#13,#15:DC12V
#9~#12:COMM. SIGNAL

5-4. Outdoor Unit Main PBA

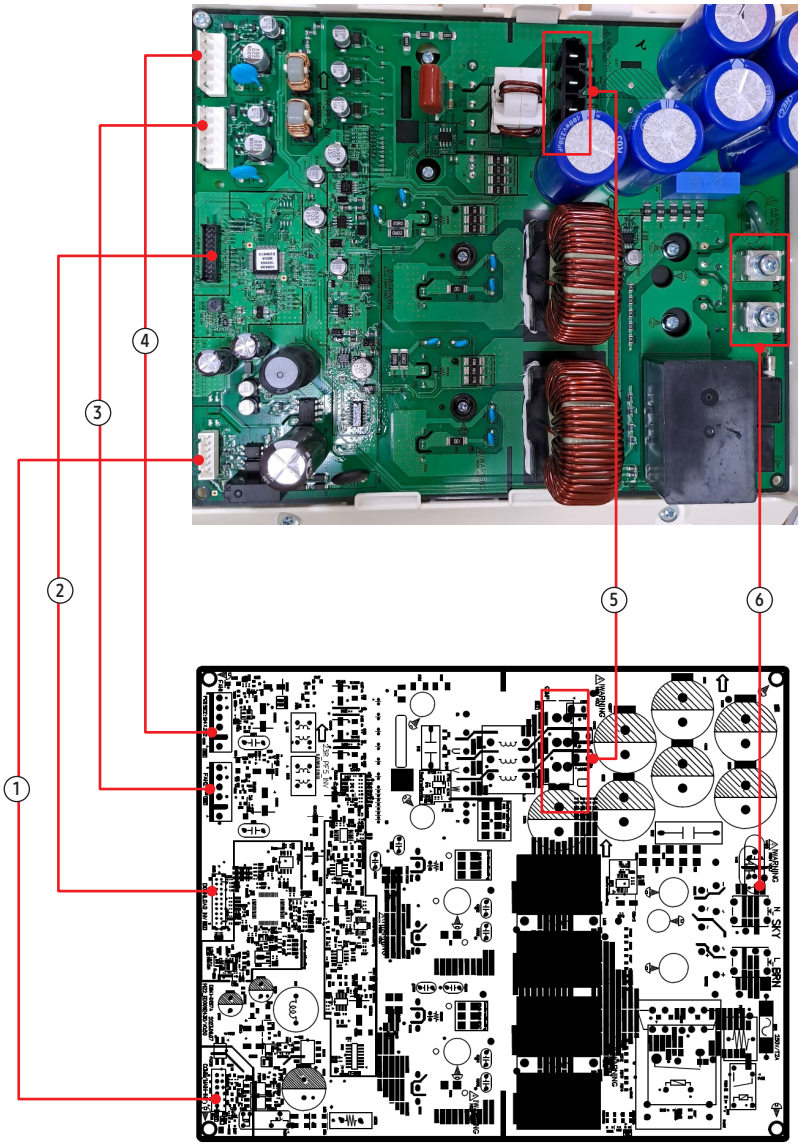
■ PF5: 3WPD036S6S-1P



① CN303 - DRED & UPPER CTRL #1: DRED SIGNAL (DRM1) #2: DRED SIGNAL (DRM2) #3: DRED SIGNAL (DRM3) #4: GND #5: R1 #6: R2	② CN803 - EEV A #1: EEV A SIGNAL #2: EEV A SIGNAL #3: EEV A SIGNAL #4: EEV A SIGNAL #5: GND	③ CN804 - EEV B #1: EEV B SIGNAL #2: EEV B SIGNAL #3: EEV B SIGNAL #4: EEV B SIGNAL #5: GND	④ CN806 - EEV D (FJM) #1: EEV D SIGNAL #2: EEV D SIGNAL #3: EEV D SIGNAL #4: EEV D SIGNAL #5: GND
⑤ CN805 - MAIN EEV #1: EEV C SIGNAL #2: EEV C SIGNAL #3: EEV C SIGNAL #4: EEV C SIGNAL #5: GND	⑥ CN807 - EEV E (FJM) #1: EEV E SIGNAL #2: EEV E SIGNAL #3: EEV E SIGNAL #4: EEV E SIGNAL #5: GND	⑦ CN401 - TEMPERATURE SENSOR #1: OUTDOOR TEMPERATURE SENSOR #3: DISCHARGE TEMPERATURE SENSOR #5: CONDENSOR TEMPERATURE SENSOR #7: OLP TEMPERATURE SENSOR #2,4,6,8: GND	⑧ CN200 - EEPROM #1: GND #2: - #3: 5V #4: EEPROM SIGNAL #5: EEPROM SIGNAL #6: EEPROM SIGNAL #7: EEPROM SIGNAL
⑨ CN201 - DOWNLOAD #1~20: DOWNLOAD SIGNAL	⑩ CN300 - ODU ↔ IDU COMMUNICAITON #1: F1 #2: F2	⑪ CN809 - MAIN EEV (EDM) #1: EEV SIGNAL #2: EEV SIGNAL #3: EEV SIGNAL #4: EEV SIGNAL #5: GND	⑫ CN402 - TEMPERATURE SENSOR #1: ESC IN TEMPERATURE SENSOR #3: ESC OUT TEMPERATURE SENSOR #2,4: GND
⑬ CN844 - 4WAY VALVE #1: L - RELAY CONTACT OUTPUT #2: - #3: N - NEUTRAL POWER OUTPUT	⑭ CN100 - AC POWER INPUT #1: L - LIVE POWER INPUT #2: - #3: N - NEUTRAL POWER INPUT	⑮ CN12 - DC12V #1: 12V #2: GND	⑯ CN802 - EXTERNAL CONTROL #1: GND #2: EXTERNAL CONTROL INPUT SIGNAL
⑰ CN801 - ERROR CHECK/COMP CHECK #1: DC 12V #2: ERROR CHECK #3: DC 12V #4: COMP CHECK	⑱ CN302 - MAIN ↔ INV COMMUNICAITON #1: TXD #2: RXD #3: GND #4: DC 5V #5: DC 12V #6: INV POWER CTRL	⑲ CN845 - BASE HEATER #1: L - RELAY CONTACT OUTPUT #2: - #3: N - NEUTRAL POWER OUTPUT	⑳ CN847 - AC-LOAD #1: L - RELAY CONTACT OUTPUT #2: - #3: N - NEUTRAL POWER OUTPUT
㉑ CN846 - EVI V/V #1: L - LIVE POWER INPUT #2: - #3: N - NEUTRAL POWER INPUT	㉒ CN403 - PIPE TEMPERTURE SENSOR (FJM) #1~#10: PIPE IN TEMPERATURE SENSOR #13~#22: PIPE OUT TEMPERATURE SENSOR	㉓ CN406 - HIGH PRESSURE SENSOR #1: HIGH PRESSURE SENSING #3: GND #4: 5V	㉔ CN1 - HIGH PRESSURE SWITCH #1: HIGH PRESSURE SENSING #2: GND
㉕ CN301 - EARTH #1: EARTH			

5-5. Outdoor Unit Inverter PBA

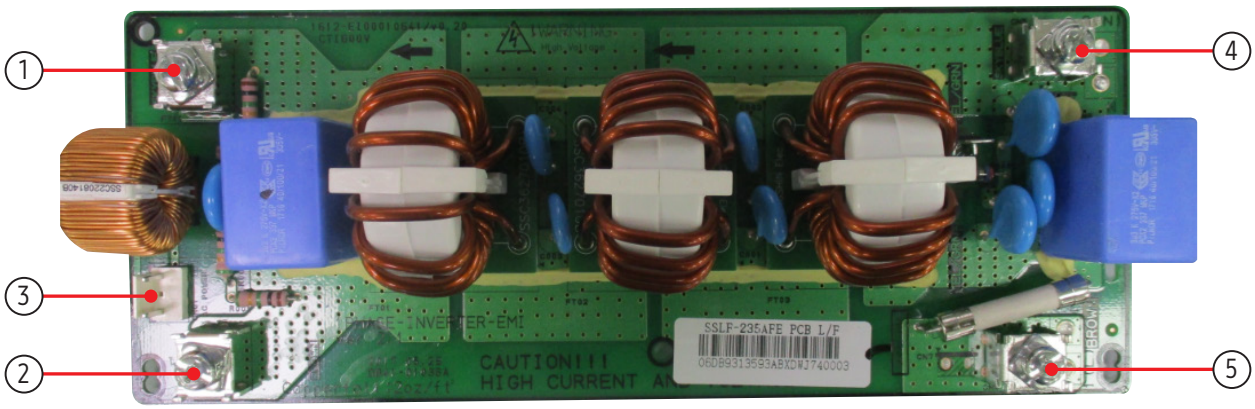
■ PF5: AR36DXFUMGMXCV



① CN351-COMM (MAIN-INV)	② CN551-DOWNLOAD INV	③ CN911-FAN2	④ CN901-FAN1
#1: RXD #2: TXD #3: GND #4: DC 5V #5: DC 12V #6: POWER_SAVE		#1: P_DC #3: GND #4: DC15V #5: PWM_FAN2 #6: FEEDBACK_FAN2	#1: P_DC #3: GND #4: DC15V #5: PWM_FAN1 #6: FEEDBACK_FAN1
⑤ CN404-COMP	⑥ L, N- AC POWER INPUT		
#1: COMP-U PHASE #2: COMP-V PHASE #3: COMP-W PHASE	#1: L - LIVE POWER INPUT / BRN #2: N - NEUTRAL POWER INPUT / SKY		

5-6. Outdoor Unit EMI PBA

■ AR36DXFUMGMXCV

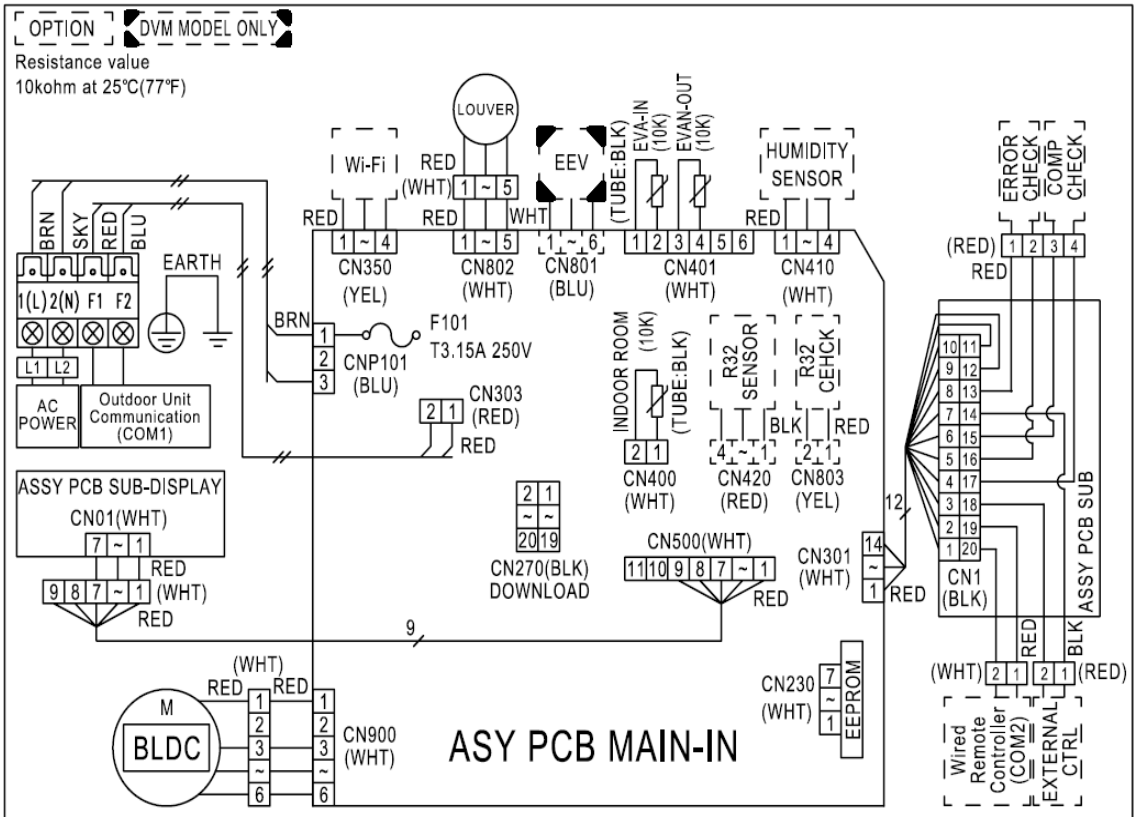


① N1: AC POWER(N) #1: AC POWER(N)	② L1: AC POWER(L) #1: AC POWER(L)	③ CN01: POWER #1: AC POWER(L) #3: AC POWER(N)	④ CN5: AC POWER(N) #1: AC POWER(N)
⑤ CN4: AC POWER(L) #1: AC POWER(L)			

6. Wiring Diagram

6-1. Indoor Unit

■ 3WMD036S6-1P

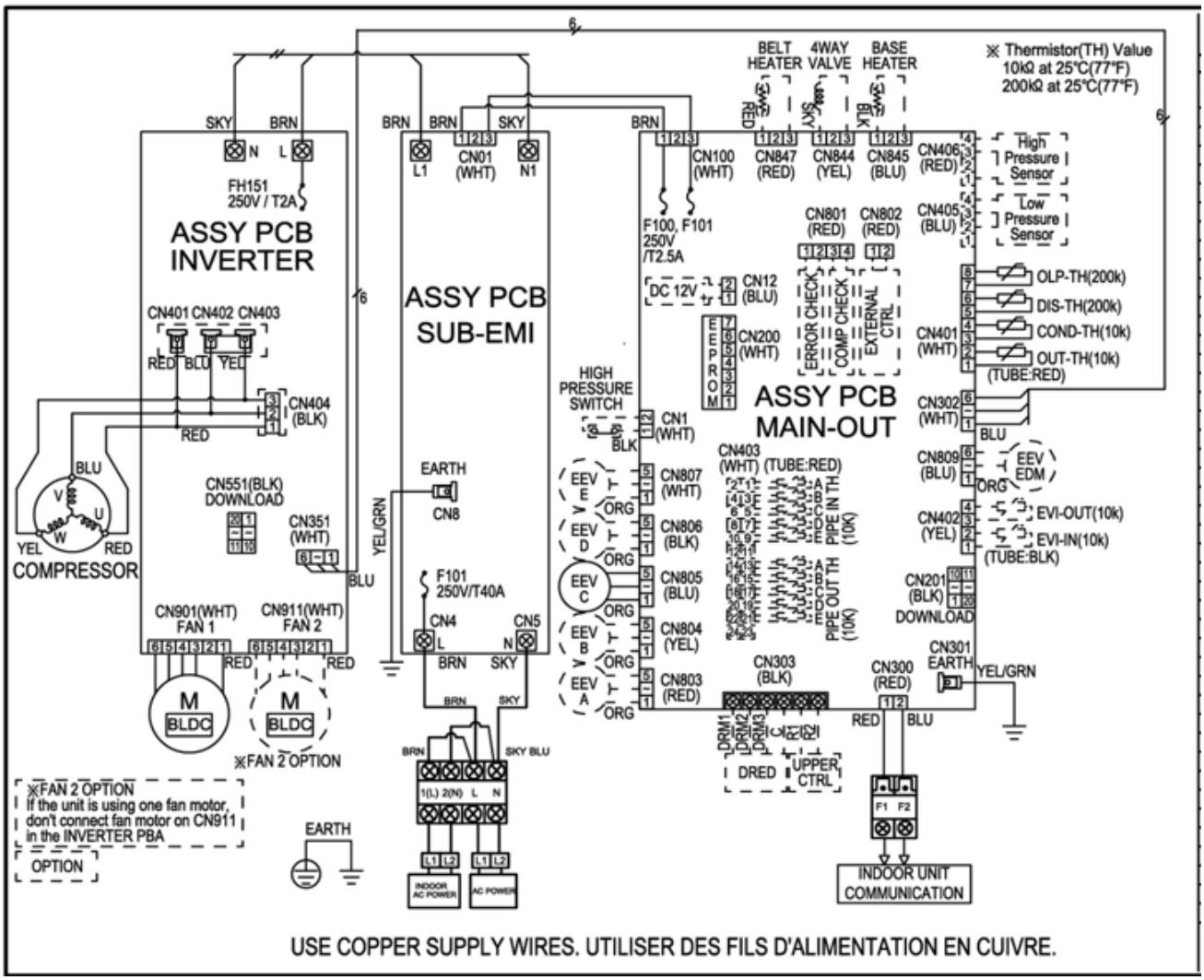


USE COPPER SUPPLY WIRES. UTILISER DES FILS D'ALIMENTATION EN CUIVRE.

LED LAMP DISPLAY			LED DISPLAY FOR ERROR DETECTION
OPERATION	TIMER	Wi-Fi	● ON ◑ FLICKERING × OFF
×	◑	×	Error of room temperature sensor in the indoor unit(open/short)
◑	◑	×	Error of eva-in, eva-out temperature sensor in the indoor unit(open/short)
×	×	◑	Error of fan motor in the indoor unit
◑	×	◑	Error of outdoor sensor(Outdoor temperature/cond/discharge)
×	◑	◑	No communication for 2 minutes between indoor and outdoor unit
●	◑	◑	Error of outdoor unit/Self-diagnosis (Check error code at outdoor unit's or solution display)
◑	◑	◑	EEPROM error/EEPROM option error
◑	●	◑	No match between outdoor and indoor unit

6-2. Outdoor unit

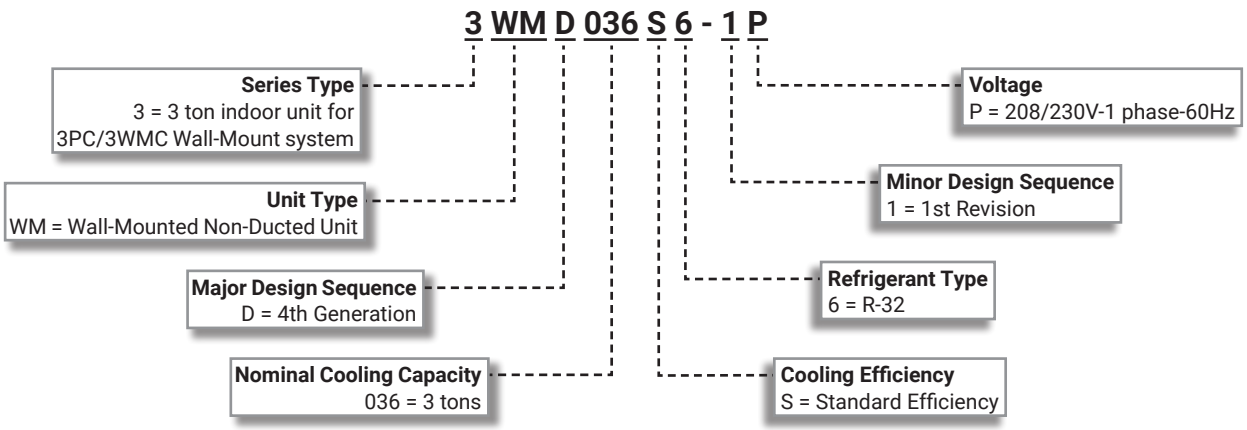
■ PF5: 3WPD036S6S-1P



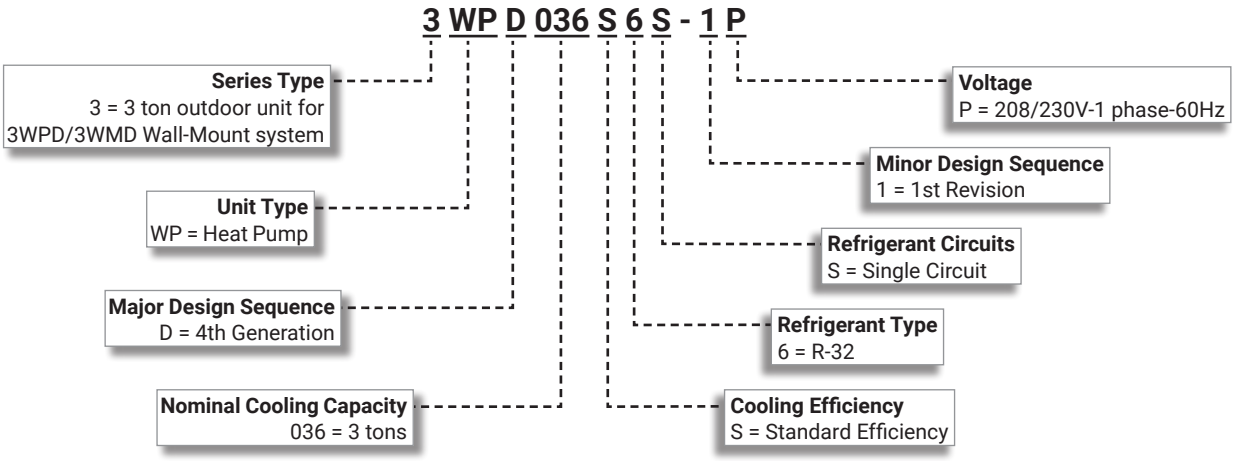
7. Reference Sheet

7-1. Index for Model Name

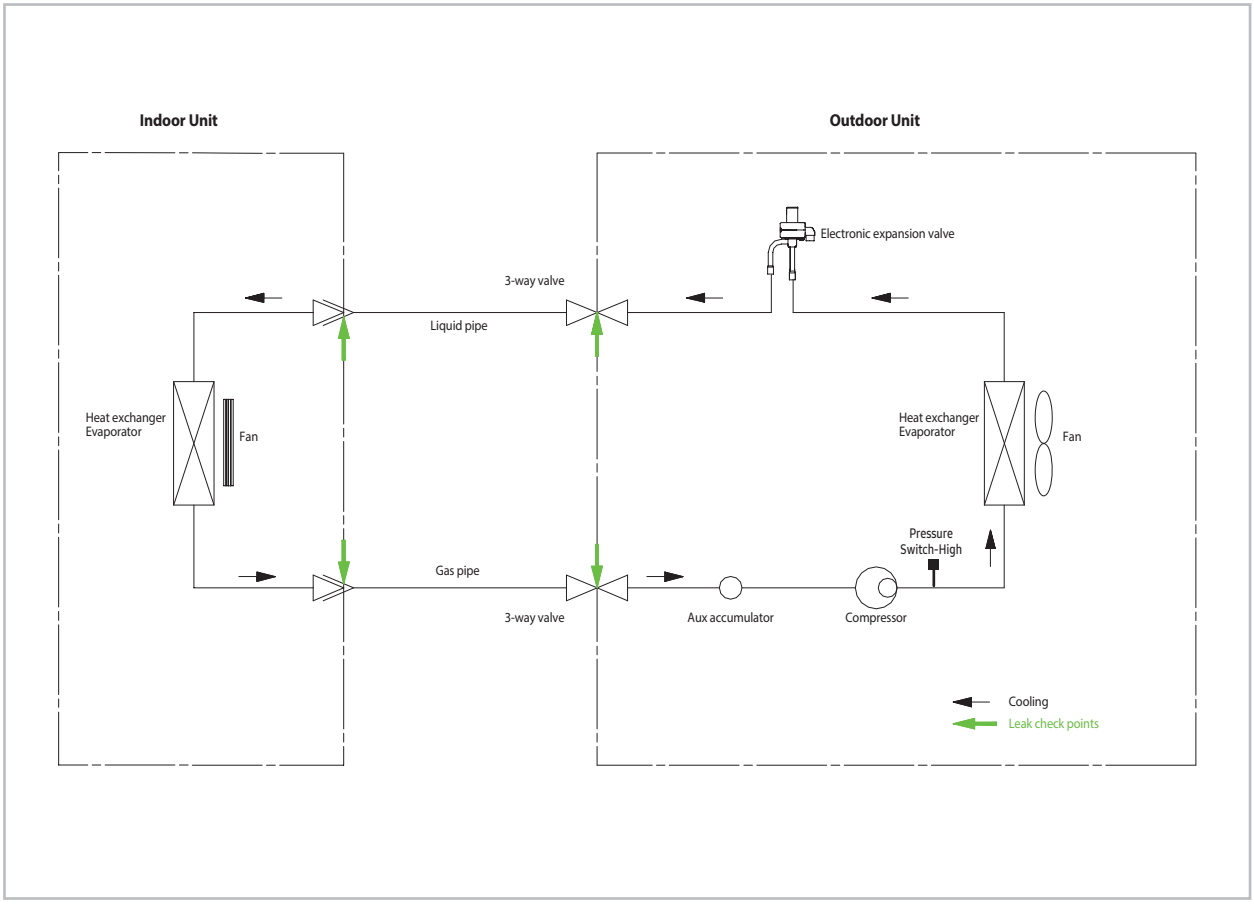
7-1-1. Indoor Unit



7-1-2. Outdoor Unit



7-2. Refrigerating Cycle Diagram



■ **CONDENSER**
High temperature and high pressure gas state refrigerant discharged from the compressor is converted to a liquid state as it is cooled down by the heat emission in the outdoor condenser unit, and sent to the evaporator.

■ **COMPRESSOR**
Low temperature and low pressure refrigerant is compressed and sent to the cycling system.

■ **EVAPORATOR**
Liquid refrigerant sucked in through the capillary tubes cools down the room by absorbing the surrounding heat as it evaporates (converting from liquid to gas). (Absorbing heat required for evaporation)

■ **SERVICE VALVE**
You can open the valve by turning the need valve counterclockwise using hex wrench, and it is used for vacuum, gas purging, refrigerant injection, refrigerant purging, and indoor-outdoor unit connection.

■ **ACCUMULATOR**
Accumulator prevents the flow of liquid-state refrigerant into the compressor.
(Liquid-state refrigerant flowing into the compressor will overload the compressor.)


LENNOX
Powered by
SAMSUNG

©2016 Lennox Industries Inc.
Dallas, Texas, USA

USER GUIDE

Heat Pump System Information
For Homeowner / User

HOMEOWNER INFORMATION

⚠ CAUTION

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

In order to ensure peak performance, your system must be properly maintained. Clogged filters and blocked airflow prevent your unit from operating at its most efficient level.

Heat Pump Operation

Your new Lennox heat pump has several characteristics that you should be aware of:

- Heat pumps satisfy heating demand by delivering large amounts of warm air into the living space. This is quite different from traditional gas, oil-fired and electric furnaces which deliver lower volumes of considerably hotter air to heat the space.
- Do not be alarmed if you notice frost on the outdoor coil in the winter months. Frost develops on the outdoor coil during the heating cycle when temperatures are below 45°F (7°C). An electronic control activates a defrost cycle lasting 5 to 15 minutes at preset intervals to clear the outdoor coil of the frost.
- During the defrost cycle, you may notice steam rising from the outdoor unit. This is a normal occurrence. The thermostat may engage auxiliary heat during the defrost cycle to satisfy a heating demand; however, the unit will return to normal operation at the conclusion of the defrost cycle.

Homeowner Maintenance

The following maintenance may be performed by the homeowner:

Indoor Unit

- Check the indoor unit filter each month and replace the filter, if necessary. Have your Lennox dealer show you where your indoor unit filter is located. It will be either at the indoor unit (installed internal or external to the cabinet) or behind a return air grille in the wall or ceiling. Check the filter monthly and clean or replace it as needed. Disposable filters should be replaced with a filter of the same type and size.
- The indoor coil is equipped with a drain pan and drain line to collect and eliminate condensate formed as your system removes humidity from the inside air. Have your dealer show you the location of the drain line and how to check for obstructions. Check the indoor unit drain line for obstructions monthly. (This would also apply to an auxiliary drain, if installed.)

Indoor Unit

- Check the outdoor unit monthly and remove any obstructions that may restrict airflow through the unit. This would include grass clippings, leaves, or papers that have been pulled against or into the cooling fins of the unit.
- Trim shrubbery away from the unit and periodically check for debris which may have collected around the unit.
- During the winter months, keep the snow level below the louvered panels.

NOTE - The indoor-unit filter and access panels must be in place any time the unit is in operation. If you are unsure about the filter required for your system, call your Lennox dealer for assistance.

IMPORTANT !

Sprinklers and soaker hoses should not be installed where they could cause prolonged exposure to the outdoor unit by treated water. Prolonged exposure of the unit to treated water (i.e., sprinkler systems, soakers, wastewater, etc.) will corrode the surface of steel and aluminum parts, diminish performance and affect longevity of the unit.

Thermostat Operation

See the thermostat homeowner manual for instructions on how to operate your thermostat.

Pre-Service Check

If your system fails to operate, check the following before calling for service:

- Verify room thermostat settings are correct.
- Verify that all electrical disconnect switches are ON.
- Check for any blown fuses or tripped circuit breakers.
- Verify unit access panels are in place.

0716
507657-01

- Verify air filter is clean.
- If service is needed, locate and write down the unit model number and have it handy before calling.

Extended Power Outage

The heat pump is equipped with a compressor crankcase heater which protects the compressor during cold weather operation.

If power to your unit has been interrupted for several hours or more, set the room thermostat selector to the EMERGENCY HEAT setting to obtain temporary heat without the risk of serious damage to the heat pump.

In EMERGENCY HEAT mode, all heating demand is satisfied by auxiliary heat and heat pump operation is locked out. After a six-hour compressor crankcase warm-up period, the thermostat can be switched to the HEAT setting and normal heat pump operation may resume.

Professional Maintenance

Your heating and air conditioning system should be inspected and maintained twice each year (before the start of the cooling and heating seasons) by a licensed professional HVAC technician.

LENNOX Service Literature

UNIT INFORMATION

100110

May 30, 2025

CBK45UHET

CBK45UHET (R454B) SERIES UNITS



⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

NOTICE

A thermostat is not included and must be ordered separately.

- A Lennox communicating thermostat must be used in communicating applications.
- In non-communicating applications, the Lennox ComfortSense® thermostat may be used, as well as other non-communicating thermostats.

In all cases, setup is critical to ensure proper system operation.

Field wiring for both communicating and non-communicating applications is illustrated in diagrams, which begin on page 29.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

Table of Contents

Unit Dimensions – Upflow 6
Unit Dimensions – Horizontal 7
Specifications and Electrical Data 8
Model Number Identification 9
Blower Data 10
Unit Components 12
ECB45 Electric Heat 13
Heat Section Installation 18
Configuration Modification 20
Brazing Connections 22
Installing the Condensate Drain 25
Electrical Connections 27
Inspecting and Replacing Filters 28
Wiring Diagrams 28
Professional Maintenance 30
Check-out Procedures 30
Sequence of Operation 31
Constant Torque Speed Blower Motor (ECM) (B3) 31
Decommissioning 33

General Information

This indoor unit **with all-aluminum coil** is designed for installation with optional field-installed electric heat and a matched outdoor unit that is charged with R454B refrigerant. These units, designed for indoor installation in multiple positions, are completely assembled for upflow and horizontal right-hand discharge before being shipped from the factory.

All CBK45UHET air handlers are equipped with a factory-installed, internally mounted check / expansion valve, which is suitable for use in R454B applications.

This air handler is compatible with the ComfortSense® non-communicating thermostat and any conventional non-communicating 24VAC thermostat.

***NOTE** - For downflow or horizontal left-hand air discharge, certain field modifications are required.*

IMPORTANT: Special procedures are required for cleaning the all-aluminum coil in this unit. See page 30 in this instruction for information.

⚠ WARNING

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.

⚠ CAUTION

Servicing shall be performed only as recommended by the manufacturer.

⚠ WARNING

Ducts connected to an appliance shall not contain a potential ignition source

⚠ WARNING

Every working procedure that affects safety means shall only be carried out by competent persons. This appliance is not to be used 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. Children should be supervised to ensure they do not play with the appliance.

⚠ IMPORTANT

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out.

⚠ IMPORTANT

Verify cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.

⚠ IMPORTANT

Pipe work, including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

⚠ CAUTION

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

⚠ CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

⚠ CAUTION

Leak Detection System installed. Unit must be powered except for service.

⚠ WARNING

PARTIAL UNITS shall only be connected to an appliance suitable for the same refrigerant.

⚠ WARNING

Maximum Altitude of application is 3200m above sea level.

NOTE *– This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of this Standard, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard, UL 60335-2-40/CSA C22.2 No. 60335-2-40, or UL 1995/CSA C22.2 No 236.*

⚠ IMPORTANT

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed and, since flammability is a consideration, procedures such as safely remove refrigerant following local and national regulations, purging the circuit with inert gas, evacuating (optional for A2L), purging with inert gas (optional for A2L), or opening the circuit by cutting or brazing be adhered to. The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants.

This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

⚠ IMPORTANT

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak tested on completion of charging, but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

⚠ IMPORTANT

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

⚠ IMPORTANT

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements;

– Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of .2 oz. per year of refrigerant or better, under pressure.

No leak shall be detected.

⚠ IMPORTANT

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

⚠ IMPORTANT

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

⚠ IMPORTANT

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

⚠ IMPORTANT

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

⚠ IMPORTANT

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO^2 fire extinguisher adjacent to the charging area.

⚠ IMPORTANT

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

⚠ WARNING

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700°C and electric switching devices.

⚠ IMPORTANT

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

– the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

– the ventilation machinery and outlets are operating adequately and are not obstructed;

– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

– refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

⚠ IMPORTANT

Sealed electrical components shall be replaced.

⚠ IMPORTANT

Intrinsically safe components must be replaced.

⚠ WARNING

If this appliance is conditioning a space with an area smaller than TAmin or stored in a space with an area smaller than Amin as defined by this instruction, then that space must be without continuously operating open flames (e.g. an operating gas appliance) or other potential ignition sources (e.g. an operating electric heater or similar hot surface). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest system.

⚠ WARNING

For appliances using A2L refrigerants connected via an air duct system to one or more rooms, only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

⚠ WARNING

For duct connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a REFRIGERANT DETECTION SYSTEM is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.

⚠ CAUTION

Any service personnel installing, decommissioning, or performing maintenance on the unit must be properly trained with A2L refrigerants

NOTE *– R-454B is an A2L refrigerant. The system installation must meet the following parameters based upon total refrigerant charge (line set included). TAmin (Total minimum conditioned area) is the minimum allowable conditioned area based upon the total system charge at sea level. Values must be multiplied by altitude adjustment factor at installed altitude.*

Qmin table refers to minimum airflow requirements during refrigerant leak mitigation by the refrigerant detection system, based upon total system charge.

See tables below.

TAmin Table

Charge (lb)	10.0	15.0	20.0	25.0	30.0
Charge (kg)	4.5	6.8	9.1	11.3	13.6
Minimum Conditioned Area (ft2)	149.9	224.9	299.9	374.8	449.8
Minimum Conditioned Area (m2)	13.9	20.9	27.9	34.8	41.8

NOTE *– Multiply values in TAmin table by the Altitude Adjustment Factors to correct TAmin based on installed altitude.*

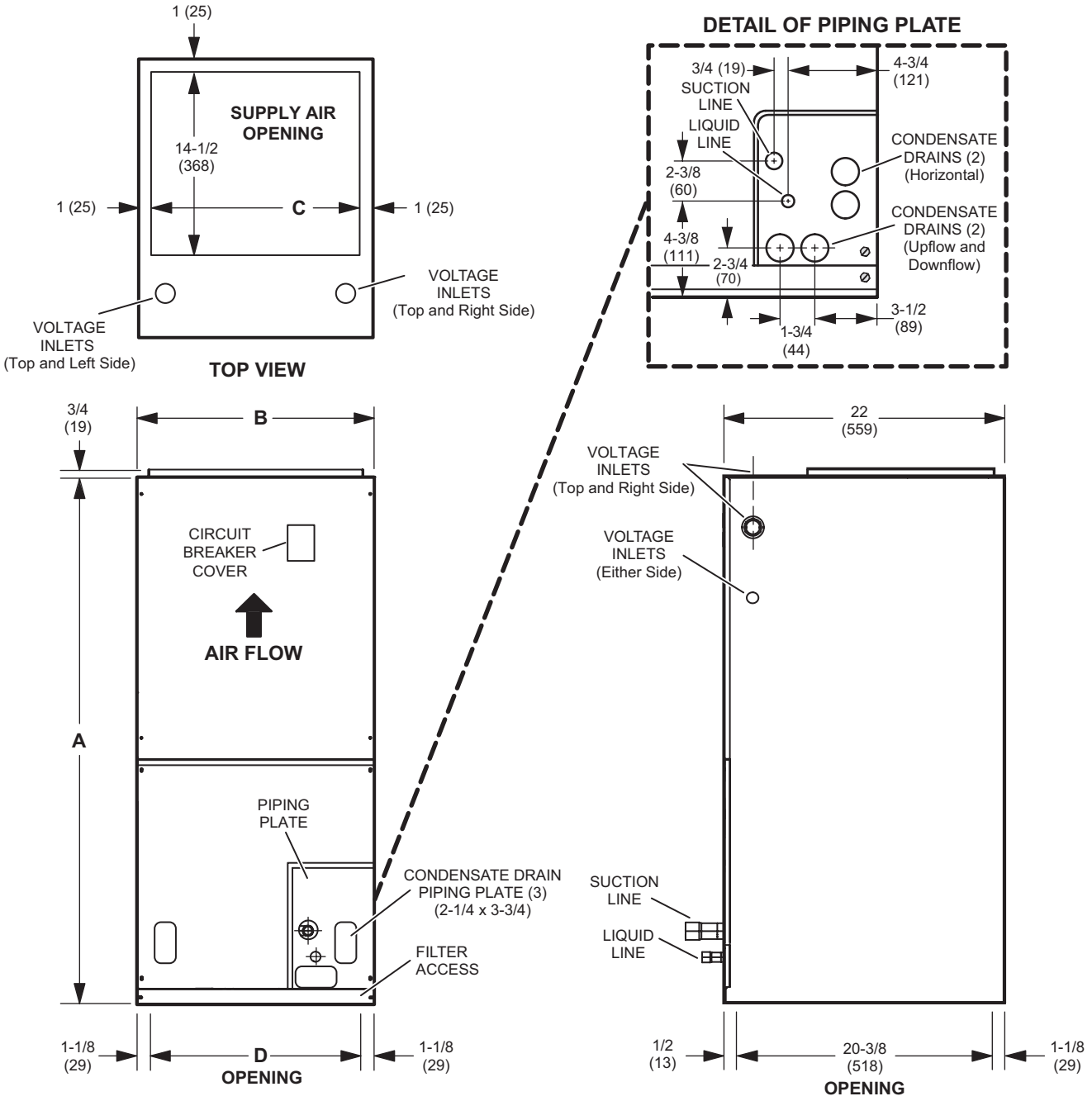
Altitude Adjustment Factor

Altitude (m)	0	200	400	600	800	1000	1200	1400	1600
Altitude (ft)	0	660	1310	1970	2620	3280	3940	4590	5250
Adj. Factor	1	1	1	1	1.02	1.05	1.04	1.1	1.12
Altitude (m)	1600	1800	2000	2200	2400	2600	2800	3000	3200
Altitude (ft)	5250	5910	6560	7220	7870	8530	9190	9840	10500
Adj. Factor	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.4

Qmin Table

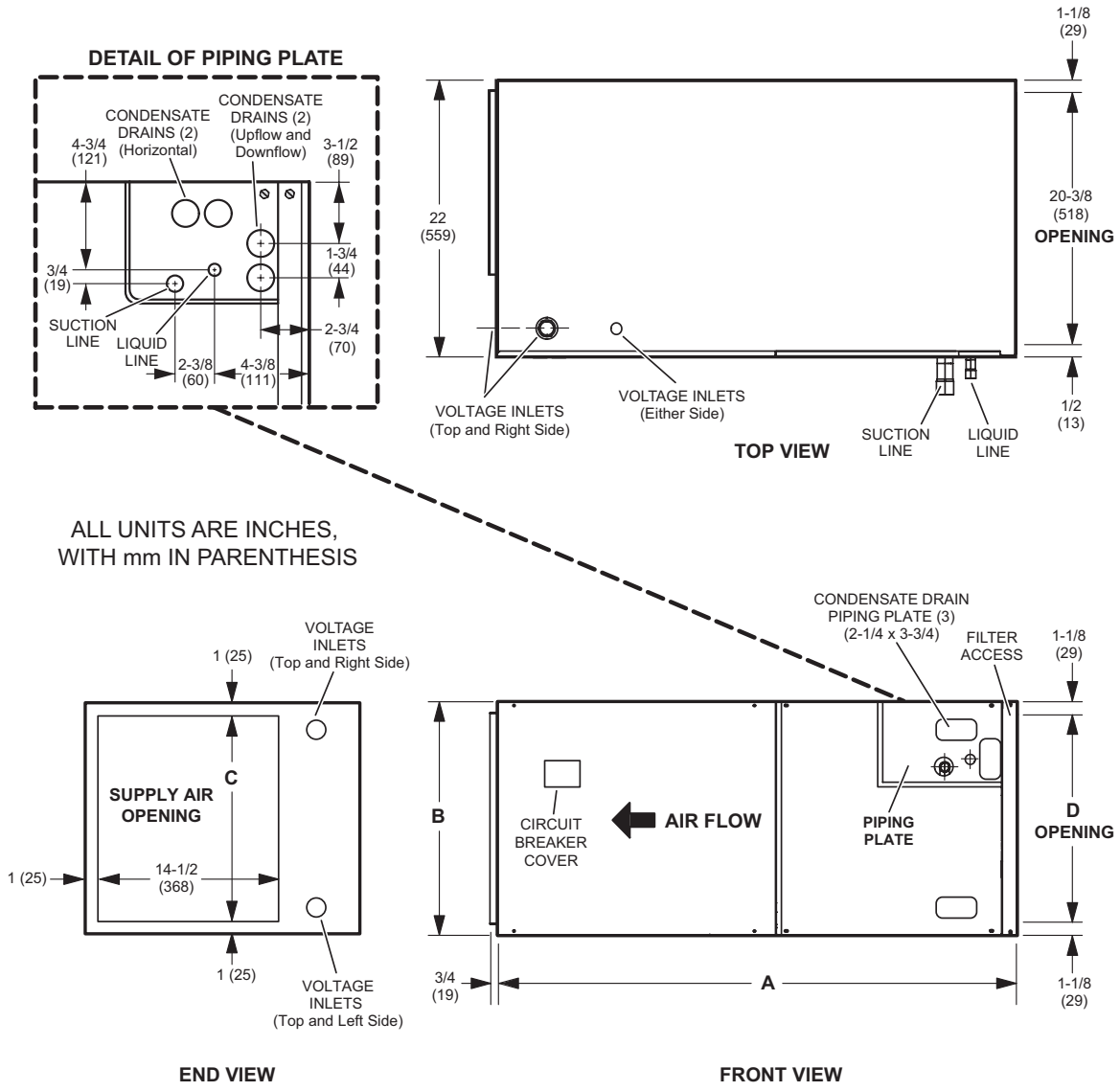
Refrigerant Charge lb (kg)	CFM Required	Refrigerant Charge lb (kg)	CFM Required
5 (2.3)	135	18 (8.1)	487
6 (2.7)	162	19 (8.6)	514
7 (3.2)	189	20 (9.1)	541
8 (3.6)	216	21 (9.5)	568
9 (4.1)	244	22 (10)	595
10 (4.5)	271	23 (10.4)	622
11 (5)	298	24 (10.9)	649
12 (5.4)	325	25 (11.3)	676
13 (5.9)	352	26 (11.7)	704
14 (6.4)	379	27 (12.2)	731
15 (6.8)	406	28 (12.7)	758
16 (7.3)	433	29 (13.2)	785
17 (7.7)	460	30 (13.6)	812

Unit Dimensions – Upflow



Dimensions	024		030		036, 042		048		060	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
A	45-1/2	1156	47	1194	53-5/8	1362	55	1397	59-3/4	1518
B	18-1/2	470	18-1/2	470	21-1/2	546	21-1/2	546	21-1/2	546
C	16-1/2	419	16-1/2	419	19-1/2	495	19-1/2	495	19-1/2	495
D	16-1/4	413	16-1/4	413	19-1/4	489	19-1/4	489	19-1/4	489

Unit Dimensions – Horizontal



Dimensions	024		030		036, 042		048		060	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
A	45-1/2	1156	47	1194	53-5/8	1362	55	1397	59-3/4	1518
B	18-1/2	470	18-1/2	470	21-1/2	546	21-1/2	546	21-1/2	546
C	16-1/2	419	16-1/2	419	19-1/2	495	19-1/2	495	19-1/2	495
D	16-1/4	413	16-1/4	413	19-1/4	489	19-1/4	489	19-1/4	489

Specifications and Electrical Data

Size		024	030	036
Nominal Tonnage		2	2.5	3
Refrigerant Type		R-454B	R-454B	R-454B
Factory Installed Expansion Valve (TXV)		**26Z70**	**26Z70**	**26Z70**
Connections	Liquid line (OD) sweat - in.	3/8	3/8	3/8
	Suction line (OD) sweat - in.	3/4	3/4	7/8
	Condensate drain (FPT) - in.	(2) 3/4	(2) 3/4	(2) 3/4
Indoor Coil	Net face area - ft.[2]	3.77	4.72	5.66
	Tube diameter - in.	3/8	3/8	3/8
	Rows	3	3	3
	Fins - in.	15	15	15
Blower	HP	1/2	1/2	1/2
	Wheel nominal diameter x width - in.	10 x 8	10 x 8	10 x 8
	Air volume range - cfm	203 - 1054	406 - 1341	422 - 1523
[1] **Filters**	Size - in.	15 x 20 x 1	15 x 20 x 1	18 x 20 x 1
Shipping Data - lbs.		127	133	169
ELECTRICAL DATA				
	Line voltage data (Volts-Phase-Hz)	208/230-1-60	208/230-1-60	208/230-1-60
[2] Maximum overcurrent protection (MOCP) amps (unit)		15	15	15
[3] Minimum circuit ampacity (MCA) (unit)		5.1	5.1	5.1
	Blower Motor Full Load Amps	4.1	4.1	4.1
SPECIFICATIONS				
Size		**042**	**048**	**060**
Nominal Tonnage		3.5	4	5
Refrigerant Type		R-454B	R-454B	R-454B
Factory Installed Expansion Valve (TXV)		**26Z71**	**26Z71**	**26Z72**
Connections	Liquid line (OD) sweat - in.	3/8	3/8	3/8
	Suction line (OD) sweat - in.	7/8	7/8	7/8
	Condensate drain (FPT) - in.	(2) 3/4	(2) 3/4	(2) 3/4
Indoor Coil	Net face area - ft.[2]	5.66	6.13	7.08
	Tube diameter - in.	3/8	3/8	3/8
	Rows	3	3	3
	Fins - in.	15	15	15
Blower	HP	3/4	1	1
	Wheel nominal diameter x width - in.	12 x 10	12 x 10	12 x 10
	Air volume range - cfm	568 - 1656	1110 - 1895	830 - 1980
[1] **Filters**	Size - in.	18 x 20 x 1	18 x 20 x 1	18 x 20 x 1
Shipping Data - lbs.		169	179	190
ELECTRICAL DATA				
	Line voltage data (Volts-Phase-Hz)	208/230-1-60	208/230-1-60	208/230-1-60
[2] Maximum overcurrent protection (MOCP) amps (unit)		15	15	15
[3] Minimum circuit ampacity (MCA) (unit)		8	9.5	9.5
	Blower Motor Full Load Amps	6	7.6	7.6

[1] 1 Disposable filter.

[2] 2 HACR type circuit breaker or fuse.

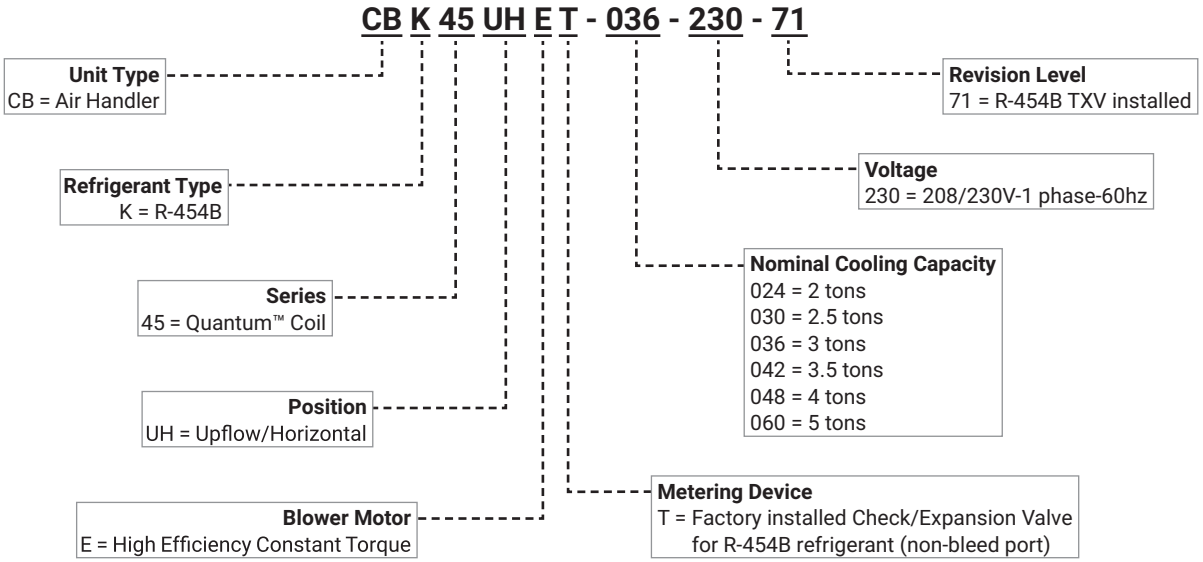
[3] 3 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

INSTALLATION CLEARANCES WITH ELECTRIC HEAT	
Cabinet	0 inch (0 mm)
To Plenum	0 inch (0 mm)
To Outlet Duct	0 inch (0 mm)
Floor	0 inch (0 mm)
Service / Maintenance	See Note #1

[1] 1 Front service access - 24 inches (610 mm) minimum.

NOTE - If cabinet depth is more than 24 inches (610 mm), allow a minimum of the cabinet depth plus 2 inches (51 mm).

Model Number Identification



Air Flow – Cooling Blower Speed

The cooling blower speed is factory configured to provide correct air flow for an outdoor unit that matches the cooling capacity rating of the air handler.

If the outdoor unit is smaller than the maximum cooling capacity rating for the air handler, the cooling blower speed may need to be changed. Refer to blower performance tables on pages 10 and 11.

⚠ WARNING



Electric shock hazard! - Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

ADJUSTING BLOWER SPEED

Motor Speed Taps

***NOTE** – Motor is programmed for a 45-second OFF delay on all speed taps except TAP #4 (electric heat 120-second OFF delay).*

These settings are for nominal tonnage match-ups with the units. When matched with other sizes, it is recommended that the CFM be adjusted to approximately 400 CFM per ton.

Tap	Operation	Remarks
1	Continuous fan	Continuous fan speed is energized (24 volt input to G).
2	Lower tonnage speed	Air flow set at 1/2 ton lower than nominal capacity (e.g. if 3-ton air handler is used with 2.5-ton outdoor unit).
3	A/C or heat pump - no electric heat	Air flow set at 400 SCFM per ton at minimum static allowed.
4*	A/C or Heat pump with electric heat	Air flow set at 400 SCFM per ton at .5 static. Energized when electric heat element has a call for heat.
5	High static applications	Air flow set at 400 cfm per ton at .8 static.
* Tap 4 is minimum setting for electric heat		

TABLE 1

Blower Data

CBK45UHET-024 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	676	64	820	107	1015	180	1015	180	1054	194
0.20	612	71	780	114	981	188	981	188	1020	203
0.30	514	77	752	120	953	195	953	195	987	212
0.40	448	83	712	126	922	204	922	204	958	219
0.50	400	86	678	133	899	210	899	210	940	226
0.60	337	92	598	142	865	219	865	219	902	235
0.70	270	100	535	147	831	224	831	224	881	241
0.80	203	103	495	153	799	237	799	237	833	248

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

CBK45UHET-030 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	775	87	999	160	1132	219	1132	219	1341	346
0.20	731	94	965	168	1099	229	1099	229	1309	357
0.30	690	100	936	175	1068	237	1068	237	1289	364
0.40	647	106	899	184	1041	245	1041	245	1259	376
0.50	565	115	870	191	1014	254	1014	254	1239	385
0.60	522	118	833	197	985	261	985	261	1197	389
0.70	474	125	797	208	957	269	957	269	1168	395
0.80	406	132	715	218	928	278	928	278	1139	403

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

CBK45UHET-036 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	865	94	1303	250	1415	312	1415	312	1523	386
0.20	812	104	1268	261	1381	325	1381	325	1492	399
0.30	747	113	1234	271	1352	336	1352	336	1462	411
0.40	674	119	1199	283	1316	348	1316	348	1434	423
0.50	620	125	1153	295	1285	360	1285	360	1403	434
0.60	565	131	1117	306	1238	377	1238	377	1363	452
0.70	484	138	1047	323	1202	386	1202	386	1315	456
0.80	422	144	1004	326	1134	396	1134	396	1281	467

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

CBK45UHET-042 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	982	132	1446	390	1560	473	1560	473	1656	569
0.20	923	140	1413	402	1526	488	1526	488	1624	581
0.30	866	148	1362	411	1500	498	1500	498	1594	591
0.40	812	153	1357	420	1469	510	1469	510	1563	602
0.50	745	162	1325	429	1437	520	1437	520	1543	613
0.60	686	169	1292	438	1413	530	1413	530	1505	615
0.70	642	176	1257	448	1345	543	1345	543	1456	613
0.80	568	185	1221	458	1335	544	1335	544	1417	612

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

CBK45UHET-048 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	1277	187	1524	279	1733	395	1773	426	1899	512
0.20	1234	197	1480	295	1697	410	1741	443	1867	530
0.30	1190	208	1442	307	1661	424	1704	460	1837	544
0.40	1145	217	1400	321	1629	437	1678	472	1806	559
0.50	1099	229	1348	332	1597	449	1645	486	1775	574
0.60	1011	243	1323	344	1552	466	1612	500	1745	588
0.70	934	252	1284	356	1519	478	1577	514	1710	604
0.80	896	258	1212	372	1482	491	1546	525	1680	616
0.90	845	272	1129	385	1451	502	1509	539	1644	632

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

CBK45UHET-060 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	1147	144	1673	387	1826	496	1903	553	2010	630
0.20	1085	155	1630	402	1791	512	1876	566	1976	642
0.30	1035	164	1596	415	1762	525	1843	583	1947	656
0.40	1006	171	1563	428	1732	538	1815	596	1912	672
0.50	954	180	1526	443	1704	551	1782	613	1883	683
0.60	825	194	1495	455	1669	567	1750	627	1851	701
0.70	783	199	1464	467	1637	582	1722	641	1821	715
0.80	739	208	1436	477	1602	597	1691	655	1776	717
0.90	687	219	1406	488	1583	604	1643	656	1745	722

NOTE - All air data measured external to unit with dry coil and 1 inch non-pleated air filter in place.
Electric heaters have no appreciable air resistance.

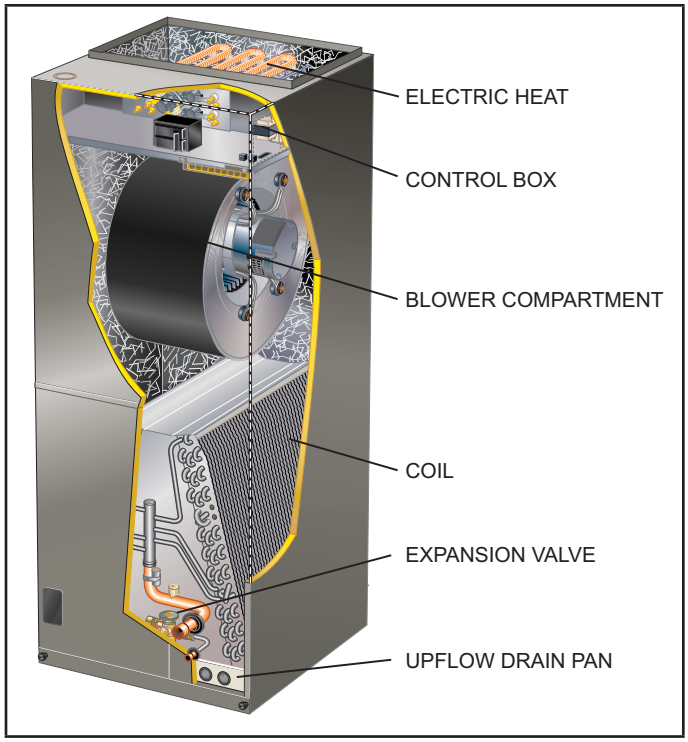


FIGURE 1. Typical Unit Parts Arrangement

Application

All major blower coil components must be matched according to Lennox recommendations for the unit to be covered under warranty. Refer to the Product Specification bulletin for approved system matchups. A misapplied system will cause erratic operation and can result in early unit failure.

The units come with factory installed check and expansion valve for all applications. The TXV valve has been installed internally for a cleaner installation and is accessible if required.

Unit Components

CONTROL BOX

The CBK45UHET control box is located above the blower section shown in figure 1. Line voltage and electric heat connections are made in the control box. Optional electric heat fits through an opening located in the center of the control box. When electric heat is not used, cover plates cover the opening. The electric heat control arrangement is detailed in the electric heat section of this manual.

TRANSFORMER

All CBK45UHET series units use a single line voltage to 24VAC transformer mounted in the control box. The transformer supplies power to the control circuits in the indoor and outdoor unit. Transformers are rated at 70VA. 208/240VAC single phase transformers use two primary voltage taps as shown in figure 2.

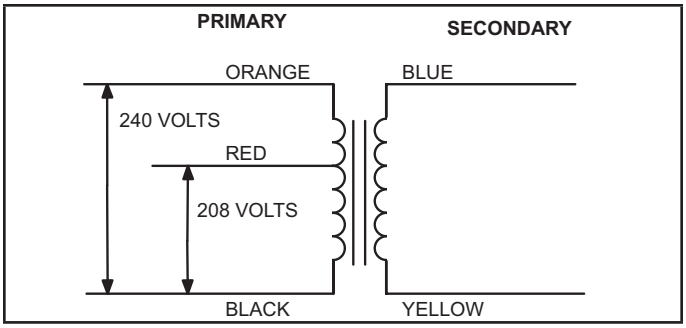


FIGURE 2. 208 / 240 Volt Transformer

BLOWER MOTOR (B3)

CBK45UHET units use single-phase direct drive constant torque blower motors. Figure 3 shows the parts arrangement. All motors have five speed taps. Typically, speed tap #3 is energized during normal operation.

All units are factory wired for heat pump and cooling applications with or without electric heat. The unit wiring diagrams will provide factory set blower speeds.

See motor detail section on page 33.

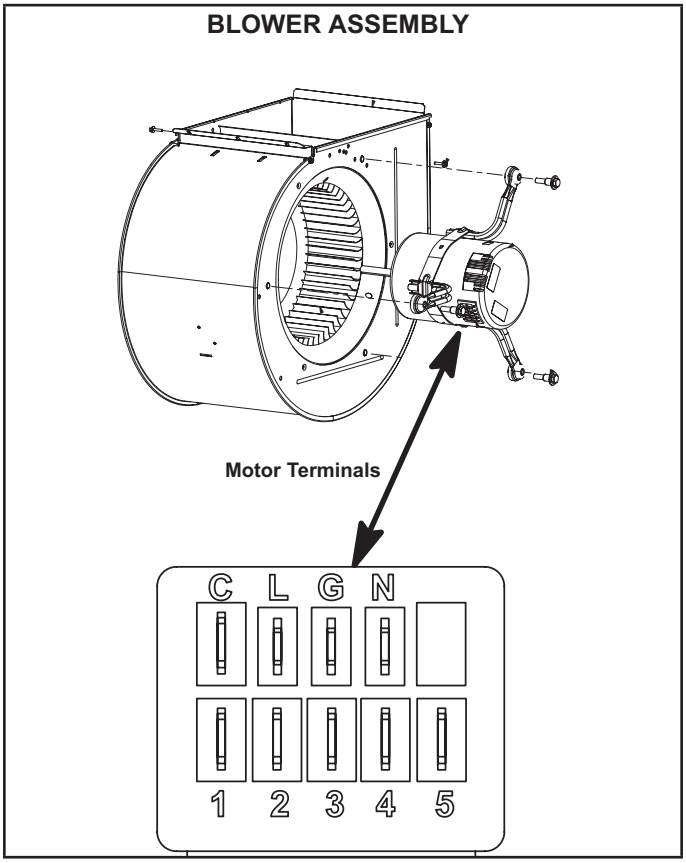


FIGURE 3. Blower Assembly

COIL

CBK45UHET units have dual slab coils arranged in an A configuration. Each coil has two or three rows of aluminum tubes fitted with ripple-edged aluminum fins. An expansion valve feeds multiple parallel circuits through the coils. The coil is designed to easily slide out of the unit cabinet.

PLASTIC DRAIN PANS

Drain pans are provided and installed on the CBK45UHET. The drain pans are made from fiberglass filled plastic.

ECB45 Electric Heat

ELECTRIC HEAT DATA — CBK45UHET-024 | SINGLE PHASE

	Electric Heat Model Number	Input			Blower Motor Full Load Amps	[2] Minimum Circuit Ampacity	[3] Maximum Overcurrent Protection
		Volt	kW	[1] Btuh			
4 kW	ECB45-4 (**27A08**) Terminal Block ECB45-4CB (**27A12**) 30A Circuit Breaker	208	3.0	10,250	4.1	23	[4] **25**
		220	3.4	11,450	4.1	24	[4] **25**
		230	3.7	12,550	4.1	25	[4] **25**
		240	4.0	13,650	4.1	26	30
5 kW	ECB45-5 (**27A09**) Terminal Block ECB45-5CB (**27A13**) 30A Circuit Breaker	208	3.6	12,300	4.1	27	30
		220	4.0	13,800	4.1	28	30
		230	4.4	15,000	4.1	29	30
		240	4.8	16,400	4.1	30	30
7.5 kW	ECB45-7.5 (**27A10**) Terminal Block ECB45-7.5CB (**27A14**) 45A Circuit Breaker	208	5.6	19,200	4.1	39	[4] **40**
		220	6.3	21,500	4.1	41	45
		230	6.9	23,500	4.1	43	45
		240	7.5	25,600	4.1	44	45
10 kW	ECB45-10 (**27A11**) Terminal Block ECB45-10CB (**27A15**) 60A Circuit Breaker	208	7.2	24,600	4.1	48	[4] **50**
		220	8.0	27,500	4.1	51	60
		230	8.8	30,000	4.1	53	60
		240	9.6	32,700	4.1	55	60

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

[1] 1 Electric heater capacity only - does not include additional blower motor heat capacity.

[2] 2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

[3] 3 HACR type breaker or fuse.

[4] **4 Bold indicates that the circuit breaker on "CB" circuit breaker models must be replaced with size shown. See table on page 10.**

ELECTRIC HEAT DATA — CBK45UHET-030 | SINGLE PHASE

	Electric Heat Model Number	Input			Blower Motor Full Load Amps	[2] Minimum Circuit Ampacity		[3] Maximum Overcurrent Protection		Single Point Power Source	
		Volt	kW	[1] Btuh		Ckt 1	Ckt 2	Ckt 1	Ckt 2	[2] Minimum Circuit Ampacity	[3] Maximum Overcurrent Protection
4 kW	ECB45-4 (**27A08**) Terminal Block ECB45-4CB (**27A12**) 30A Circuit Breaker	208	3.0	10,250	4.1	23	- - -	[4] **25**	- - -	- - -	- - -
		220	3.4	11,450	4.1	24	- - -	[4] **25**	- - -	- - -	- - -
		230	3.7	12,550	4.1	25	- - -	[4] **25**	- - -	- - -	- - -
		240	4.0	13,650	4.1	26	- - -	30	- - -	- - -	- - -
5 kW	ECB45-5 (**27A09**) Terminal Block ECB45-5CB (**27A13**) 30A Circuit Breaker	208	3.6	12,300	4.1	27	- - -	30	- - -	- - -	- - -
		220	4.0	13,800	4.1	28	- - -	30	- - -	- - -	- - -
		230	4.4	15,000	4.1	29	- - -	30	- - -	- - -	- - -
		240	4.8	16,400	4.1	30	- - -	30	- - -	- - -	- - -
7.5 kW	ECB45-7.5 (**27A10**) Terminal Block ECB45-7.5CB (**27A14**) 45A Circuit Breaker	208	5.6	19,200	4.1	39	- - -	[4] **40**	- - -	- - -	- - -
		220	6.3	21,500	4.1	41	- - -	45	- - -	- - -	- - -
		230	6.9	23,500	4.1	43	- - -	45	- - -	- - -	- - -
		240	7.5	25,600	4.1	44	- - -	45	- - -	- - -	- - -
10 kW	ECB45-10 (**27A11**) Terminal Block ECB45-10CB (**27A15**) 60A Circuit Breaker	208	7.2	24,600	4.1	48	- - -	[4] **50**	- - -	- - -	- - -
		220	8.0	27,500	4.1	51	- - -	60	- - -	- - -	- - -
		230	8.8	30,000	4.1	53	- - -	60	- - -	- - -	- - -
		240	9.6	32,700	4.1	55	- - -	60	- - -	- - -	- - -
12.5 kW	ECB45-12.5CB (**27A16**) (1) 50A and (1) 25A Circuit Breaker	208	9.4	32,000	4.1	43	19	[4] **45**	[4] **20**	62	70
		220	10.5	35,800	4.1	45	20	[4] **45**	[4] **20**	65	70
		230	11.5	39,200	4.1	47	21	50	25	68	70
		240	12.5	42,600	4.1	49	22	50	25	70	70
15 kW	ECB45-15CB (**27A17**) (1) 60A and (1) 25A Circuit Breaker	208	10.8	36,900	4.1	48	22	[4] **50**	25	70	70
		220	12.1	41,300	4.1	51	23	60	25	74	80
		230	13.2	45,100	4.1	53	24	60	25	77	80
		240	14.4	49,100	4.1	55	25	60	25	80	80

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

[1] 1 Electric heater capacity only - does not include additional blower motor heat capacity.

[2] 2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

[3] 3 HACR type breaker or fuse.

[4] **4 Bold indicates that the circuit breaker on "CB" circuit breaker models must be replaced with size shown. See table on page 10.**

ELECTRIC HEAT DATA — CBK45UHET-036 | SINGLE PHASE

	Electric Heat Model Number	Input			Blower Motor Full Load Amps	[2] Minimum Circuit Ampacity		[3] Maximum Overcurrent Protection		Single Point Power Source	
		Volt	kW	[1] Btuh		Ckt 1	Ckt 2	Ckt 1	Ckt 2	[2] Minimum Circuit Ampacity	[3] Maximum Overcurrent Protection
4 kW	ECB45-4 (**27A08**) Terminal Block ECB45-4CB (**27A12**) 30A Circuit Breaker	208	3.0	10,250	4.1	23	- - -	[4] **25**	- - -	- - -	- - -
		220	3.4	11,450	4.1	24	- - -	[4] **25**	- - -	- - -	- - -
		230	3.7	12,550	4.1	25	- - -	[4] **25**	- - -	- - -	- - -
		240	4.0	13,650	4.1	26	- - -	30	- - -	- - -	- - -
5 kW	ECB45-5 (**27A09**) Terminal Block ECB45-5CB (**27A13**) 30A Circuit Breaker	208	3.6	12,300	4.1	27	- - -	30	- - -	- - -	- - -
		220	4.0	13,800	4.1	28	- - -	30	- - -	- - -	- - -
		230	4.4	15,000	4.1	29	- - -	30	- - -	- - -	- - -
		240	4.8	16,400	4.1	30	- - -	30	- - -	- - -	- - -
7.5 kW	ECB45-7.5 (**27A10**) Terminal Block ECB45-7.5CB (**27A14**) 45A Circuit Breaker	208	5.6	19,200	4.1	39	- - -	[4] **40**	- - -	- - -	- - -
		220	6.3	21,500	4.1	41	- - -	45	- - -	- - -	- - -
		230	6.9	23,500	4.1	43	- - -	45	- - -	- - -	- - -
		240	7.5	25,600	4.1	44	- - -	45	- - -	- - -	- - -
10 kW	ECB45-10 (**27A11**) Terminal Block ECB45-10CB (**27A15**) 60A Circuit Breaker	208	7.2	24,600	4.1	48	- - -	[4] **50**	- - -	- - -	- - -
		220	8.0	27,500	4.1	51	- - -	60	- - -	- - -	- - -
		230	8.8	30,000	4.1	53	- - -	60	- - -	- - -	- - -
		240	9.6	32,700	4.1	55	- - -	60	- - -	- - -	- - -
12.5 kW	ECB45-12.5CB (**27A16**) (1) 50A and (1) 25A Circuit Breaker	208	9.4	32,000	4.1	43	19	[4] **45**	[4] **20**	62	70
		220	10.5	35,800	4.1	45	20	[4] **45**	[4] **20**	65	70
		230	11.5	39,200	4.1	47	21	50	25	68	70
		240	12.5	42,600	4.1	49	22	50	25	70	70
15 kW	ECB45-15CB (**27A17**) (1) 60A and (1) 25A Circuit Breaker	208	10.8	36,900	4.1	48	22	[4] **50**	25	70	70
		220	12.1	41,300	4.1	51	23	60	25	74	80
		230	13.2	45,100	4.1	53	24	60	25	77	80
		240	14.4	49,100	4.1	55	25	60	25	80	80

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

[1] 1 Electric heater capacity only - does not include additional blower motor heat capacity.

[2] 2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

[3] 3 HACR type breaker or fuse.

[4] **4 Bold indicates that the circuit breaker on "CB" circuit breaker models must be replaced with size shown. See table on page 10.**

ELECTRIC HEAT DATA — CBK45UHET-042 | SINGLE PHASE

Electric Heat Model Number		Input			Blower Motor Full Load Amps	[2] Minimum Circuit Ampacity		[3] Maximum Overcurrent Protection		Single Point Power Source	
		Volt	kW	[1] Btuh		Ckt 1	Ckt 2	Ckt 1	Ckt 2	[2] Minimum Circuit Ampacity	[3] Maximum Overcurrent Protection
4 kW	ECB45-4 (**27A08**) Terminal Block ECB45-4CB (**27A12**) 30A Circuit Breaker	208	3.0	10,250	6.0	26	- - -	30	- - -	- - -	- - -
		220	3.4	11,450	6.0	27	- - -	30	- - -	- - -	- - -
		230	3.7	12,550	6.0	27	- - -	30	- - -	- - -	- - -
		240	4.0	13,650	6.0	28	- - -	30	- - -	- - -	- - -
5 kW	ECB45-5 (**27A09**) Terminal Block ECB45-5CB (**27A13**) 30A Circuit Breaker	208	3.6	12,300	6.0	29	- - -	30	- - -	- - -	- - -
		220	4.0	13,800	6.0	30	- - -	30	- - -	- - -	- - -
		230	4.4	15,000	6.0	31	- - -	[4] **35**	- - -	- - -	- - -
		240	4.8	16,400	6.0	33	- - -	[4] **35**	- - -	- - -	- - -
7.5 kW	ECB45-7.5 (**27A10**) Terminal Block ECB45-7.5CB (**27A14**) 45A Circuit Breaker	208	5.6	19,200	6.0	41	- - -	45	- - -	- - -	- - -
		220	6.3	21,500	6.0	43	- - -	45	- - -	- - -	- - -
		230	6.9	23,500	6.0	45	- - -	45	- - -	- - -	- - -
		240	7.5	25,600	6.0	47	- - -	[4] **50**	- - -	- - -	- - -
10 kW	ECB45-10 (**27A11**) Terminal Block ECB45-10CB (**27A15**) 60A Circuit Breaker	208	7.2	24,600	6.0	51	- - -	60	- - -	- - -	- - -
		220	8.0	27,500	6.0	53	- - -	60	- - -	- - -	- - -
		230	8.8	30,000	6.0	55	- - -	60	- - -	- - -	- - -
		240	9.6	32,700	6.0	58	- - -	60	- - -	- - -	- - -
12.5 kW	ECB45-12.5CB (**27A16**) (1) 50A and (1) 25A Circuit Breaker	208	9.4	32,000	6.0	45	19	[4] **45**	[4] **20**	64	70
		220	10.5	35,800	6.0	47	20	50	[4] **20**	67	70
		230	11.5	39,200	6.0	49	21	50	25	70	70
		240	12.5	42,600	6.0	51	22	[4] **60**	25	73	80
15 kW	ECB45-15CB (**27A17**) (1) 60A and (1) 25A Circuit Breaker	208	10.8	36,900	6.0	51	22	60	25	73	80
		220	12.1	41,300	6.0	53	23	60	25	76	80
		230	13.2	45,100	6.0	55	24	60	25	79	80
		240	14.4	49,100	6.0	58	25	60	25	83	90

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

[1] 1 Electric heater capacity only - does not include additional blower motor heat capacity.

[2] 2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

[3] 3 HACR type breaker or fuse.

[4] **4 Bold indicates that the circuit breaker on "CB" circuit breaker models must be replaced with size shown. See table on page 10.**

ELECTRIC HEAT DATA — CBK45UHET-048 | CBK45UHET-060 | SINGLE PHASE

Electric Heat Model Number		Input			Blower Motor Full Load Amps	[2] Minimum Circuit Ampacity		[3] Maximum Overcurrent Protection		Single Point Power Source	
		Volt	kW	[1] Btuh		Ckt 1	Ckt 2	Ckt 1	Ckt 2	[2] Minimum Circuit Ampacity	[3] Maximum Overcurrent Protection
4 kW	ECB45-4 (**27A08**) Terminal Block ECB45-4CB (**27A12**) 30A Circuit Breaker	208	3.0	10,250	7.6	28	- - -	30	- - -	- - -	- - -
		220	3.4	11,450	7.6	29	- - -	30	- - -	- - -	- - -
		230	3.7	12,550	7.6	29	- - -	30	- - -	- - -	- - -
		240	4.0	13,650	7.6	30	- - -	30	- - -	- - -	- - -
5 kW	ECB45-5 (**27A09**) Terminal Block ECB45-5CB (**27A13**) 30A Circuit Breaker	208	3.6	12,300	7.6	31	- - -	[4] **35**	- - -	- - -	- - -
		220	4.0	13,800	7.6	32	- - -	[4] **35**	- - -	- - -	- - -
		230	4.4	15,000	7.6	33	- - -	[4] **35**	- - -	- - -	- - -
		240	4.8	16,400	7.6	35	- - -	[4] **35**	- - -	- - -	- - -
7.5 kW	ECB45-7.5 (**27A10**) Terminal Block ECB45-7.5CB (**27A14**) 45A Circuit Breaker	208	5.6	19,200	7.6	43	- - -	45	- - -	- - -	- - -
		220	6.3	21,500	7.6	45	- - -	45	- - -	- - -	- - -
		230	6.9	23,500	7.6	47	- - -	[4] **50**	- - -	- - -	- - -
		240	7.5	25,600	7.6	49	- - -	[4] **50**	- - -	- - -	- - -
10 kW	ECB45-10 (**27A11**) Terminal Block ECB45-10CB (**27A15**) 60A Circuit Breaker	208	7.2	24,600	7.6	53	- - -	60	- - -	- - -	- - -
		220	8.0	27,500	7.6	55	- - -	60	- - -	- - -	- - -
		230	8.8	30,000	7.6	57	- - -	60	- - -	- - -	- - -
		240	9.6	32,700	7.6	60	- - -	60	- - -	- - -	- - -
12.5 kW	ECB45-12.5CB (**27A16**) (1) 50A and (1) 25A Circuit Breaker	208	9.4	32,000	7.6	47	19	50	[4] **20**	66	70
		220	10.5	35,800	7.6	49	20	50	[4] **20**	69	70
		230	11.5	39,200	7.6	51	21	[4] **60**	25	72	80
		240	12.5	42,600	7.6	53	22	[4] **60**	25	75	80
15 kW	ECB45-15CB (**27A17**) (1) 60A and (1) 25A Circuit Breaker	208	10.8	36,900	7.6	53	22	60	25	75	80
		220	12.1	41,300	7.6	55	23	60	25	78	80
		230	13.2	45,100	7.6	57	24	60	25	81	90
		240	14.4	49,100	7.6	60	25	60	25	85	90
20 kW	ECB45-20CB (**27A18**) (1) 60A and (1) 50A Circuit Breaker	208	14.4	49,200	7.6	53	43	60	[4] **45**	96	100
		220	16.1	55,000	7.6	55	46	60	50	101	110
		230	17.6	60,100	7.6	57	48	60	50	105	110
		240	19.2	65,500	7.6	60	50	60	50	110	110

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

[1] 1 Electric heater capacity only - does not include additional blower motor heat capacity.

[2] 2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

[3] 3 HACR type breaker or fuse.

[4] **4 Bold indicates that the circuit breaker on "CB" circuit breaker models must be replaced with size shown. See table on page 10.**

Heat Section Installation

⚠ WARNING

Before installing or servicing unit, be sure ALL power to the unit is OFF. More than one disconnect switch may be present. *Electrical shock can cause personal injury or death!*

Before installing the unit, check information on the unit rating plate to ensure that the unit meets the job specification, proper electrical power is available, and that proper duct clearances are maintained.

***NOTE** – If installing heat sections at the same time as the air handler unit, install the electric heat section in the air handler unit before setting the air handler unit and attaching the plenum.*

1 - Shut off all power to the air handler unit. More than one disconnect may be required.

2 - Remove air handler access panel and keep the six screws to reattach access panel after installing heat elements.

3 - Disconnect any existing field supply wires and pull them out of the air handler. Disconnect and remove wiring harness and fastener (see figure 4). If not removed, these items will prevent the heat section's base from resting properly in the compartment.

4 - Remove the no-heat seal plate in the air handler frame (see figure 4).

***NOTE** – If a small heater is installed in the unit, the installer will need to remove the no-heat plate and break it apart at the perforations and reinstall the two pieces so the smaller heater can be installed into the unit.*

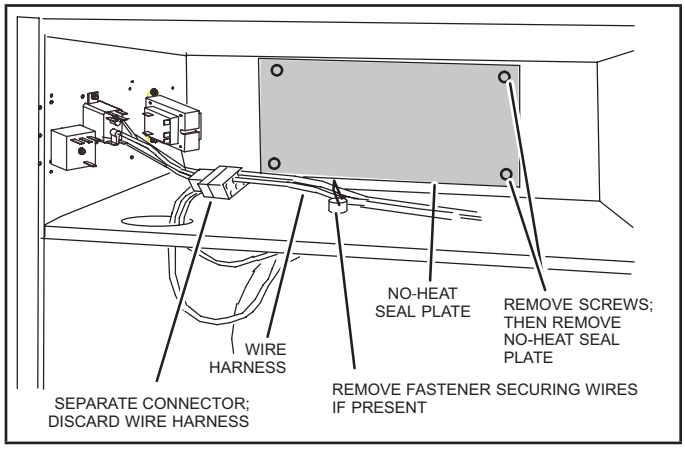


FIGURE 4. Prepare to Install Heat Element

5 - Slide the electric heat section into the air handler. Be careful that the heating elements do not rub against the sheet metal opening when they slide into the air handler. The mounting holes should then line up with holes in the air handler control box.

6 - Secure the electric heater assembly into place with the screws that were removed from the heat element panel. Install two field-provided #8 SDST screws in the front of the electric heater assembly (see figure 5).

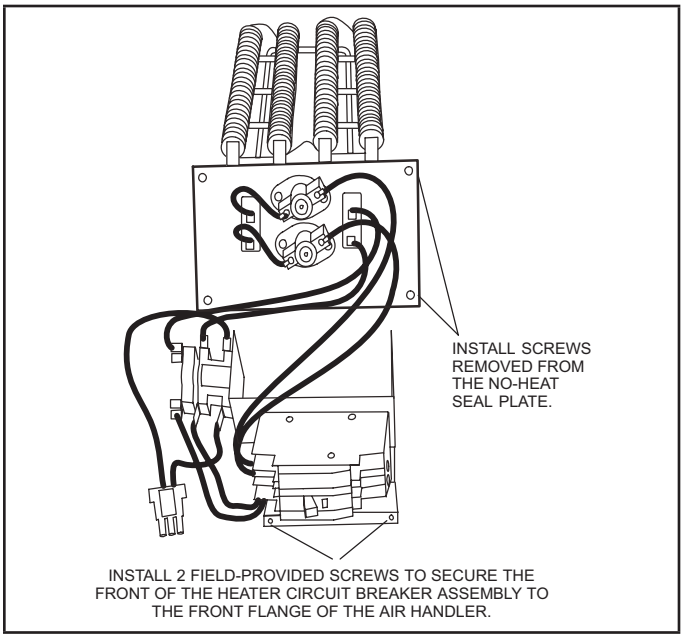


FIGURE 5. Installing the Heat Element Assembly

7 - The air handler's access panels have a cover plate that is fastened with a screw and will need to be positioned to fit either one breaker or two, but do not install the access panel until all electrical connections have been completed.

⚠ WARNING

Foil face insulation must be cut to eliminate the possibility for any frayed foil to come in contact with any main or low voltage connections. Insulation must be kept a minimum of 1/2" away from any electrical connection.

CHANGING CIRCUIT BREAKER ORIENTATION

The air handler comes from the factory ready for horizontal right hand discharge installation. Always rotate the breaker so up is the ON position in all orientations. The circuit breaker orientation change is required by UL60335-2-40.

1 - Locate the one clip located on the right side (see arrow) of each breaker (see figure 6). The clip secures the circuit breaker to the mounting bracket. Pull the clip to release the breaker from the mounting bracket and rotate the breaker to the proper postition.

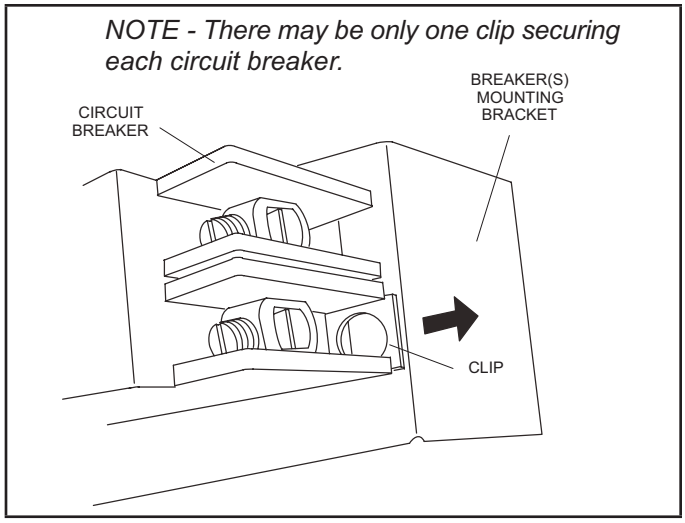


FIGURE 6. Circuit Breaker Clip

2 - Install the circuit breaker cover plate.

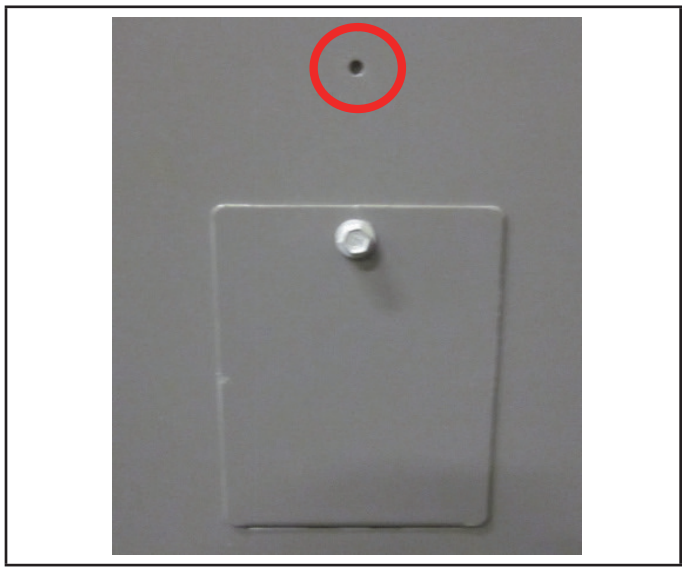


FIGURE 7. Circuit Breaker Cover Plate

NOTE *– If electric heat kit has only one circuit breaker, the breaker cover plate needs to be moved up and installed over the opening without the circuit breaker. Fasten the breaker cover plate to the access panel using the circled hole in figure 7. If the electric heat kit has two circuit breakers, the breaker cover plate is not required.*

Electrical Connections

⚠ WARNING

Electric shock hazard! - Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

⚠ IMPORTANT

USE COPPER CONDUCTORS ONLY

NOTE *– Refer to the nameplate on the air handler unit for minimum circuit ampacity and maximum overcurrent protection size*.

The air handler units are provided with openings to be used with 1-1/2 inch trade size (1-31/32 inch diameter) conduit.

If you want a single point power supply, refer to the nameplate on the single point power supply accessory for minimum circuit ampacity and maximum overcurrent protection size. Select the proper supply circuit conductors in accordance with tables 310-16 and 310-17 in the National Electric Code, ANSI/NFPA No. 70 or tables 1 through 4 in the Canadian Electric Code, Part I, CSA Standard C22.1.

Refer to figure 11 for typical low voltage field wiring for air handler/condensing unit and heat pump applications. Figure 8 is a diagram of the air handler connections and the heater high-voltage wiring.

1 - Make wiring connections as follows: **Heaters equipped with circuit breakers** – Connect field power supply wiring to circuit breaker(s). Figure 8 shows **L1**, **L2** and ground **(GND)** connections for a 2-breaker configuration.

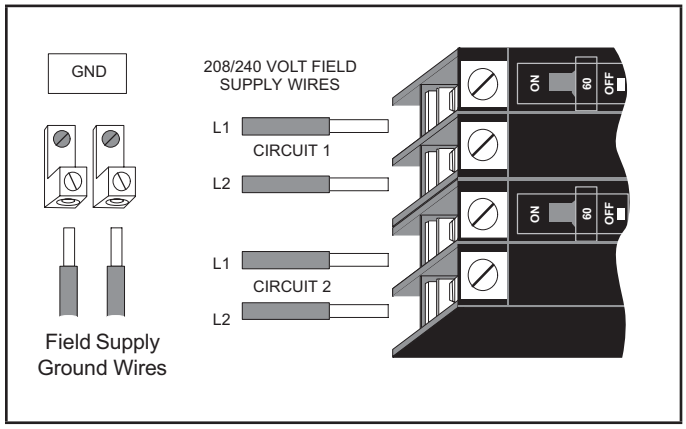


FIGURE 8. Field Power Supply Wiring

2 - Remove the interface harness from the air handler unit and connect the 6-pin connector on the heater assembly to the mating connector on the air handler unit.

3 - For applications using a two-stage room thermostat and/or an outdoor thermostat, connect wiring as shown in figure 8.

Circuit Breaker Cover Installation

1 - Remove any installed patch plates still present.

2 - Remove paper backing from the adhesive around the perimeter of the back side of the circuit breaker cover (figure 9).

3 - Position the breaker cover over the air handler circuit breaker opening.

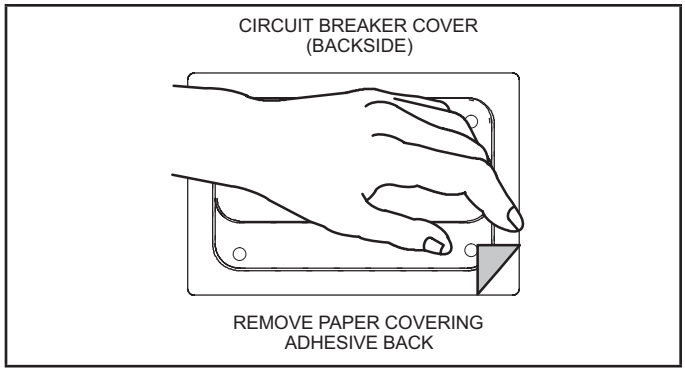


FIGURE 9. Remove Paper Cover

⚠ IMPORTANT

Confirm air tight seal between breaker cover and air handler access panel. Apply a thin silicone bead to the adhesive back seat to ensure air tight seal.

Failure to seal circuit breaker cover will allow warm moist air to be pulled into control panel which can create condensation to form on the circuit breaker and other electrical components within the control panel.

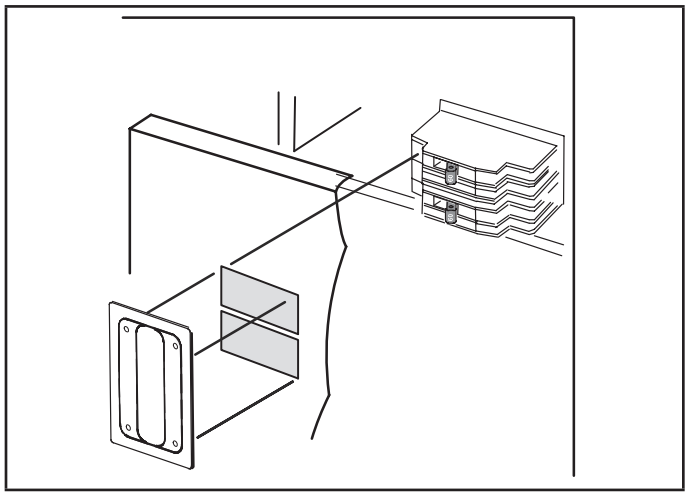


FIGURE 10. Typical Circuit Breaker Cover Installation

Air Handler Speed Connections

When using the electric heat sections with air handler units, you must adjust the air handler speed according to the size of electric heat and air handler unit. **Air handler speed tap for electric heat in upflow and horizontal position is medium. For downflow it is high speed.** See specific air handler installation instructions for air handler speed adjustment procedure and location.

1 - Set the thermostat above room temperature.

2 - Check the heat pump and the heat section for normal operation.

3 - Set the thermostat to desired setting.

4 - Affix the wiring diagram sticker to air handler scroll, aligned with circuit breaker unit wiring diagram sticker.

Configuration Modification

UPFLOW APPLICATION

1 - The air handler must be supported on the bottom only and set on solid floor or field-supplied support frame. Securely attach the air handler to the floor or support frame.

2 - If installing a unit in an upflow application, remove the horizontal drain pan. **IMPORTANT - The horizontal drain pan is not required in upflow air discharge installations; its removal provides the best efficiency and air flow.**

3 - Place the unit in the desired location and slope unit as previously mentioned. Connect return and supply air plenums as required using sheet metal screws.

4 - Install units that have no return air plenum on a stand that is at least 14" from the floor. This will allow proper air return.

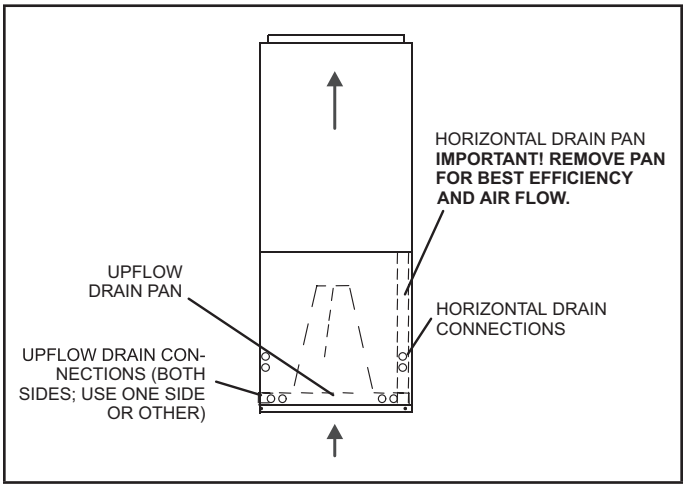


FIGURE 11. Upflow Configuration

HORIZONTAL APPLICATION

⚠ IMPORTANT

When removing the coil, there is possible danger of equipment damage and personal injury. Be careful when removing the coil assembly from a unit installed in right- or left-hand applications. The coil may tip into the drain pan once it is clear of the cabinet. Support the coil when removing it.

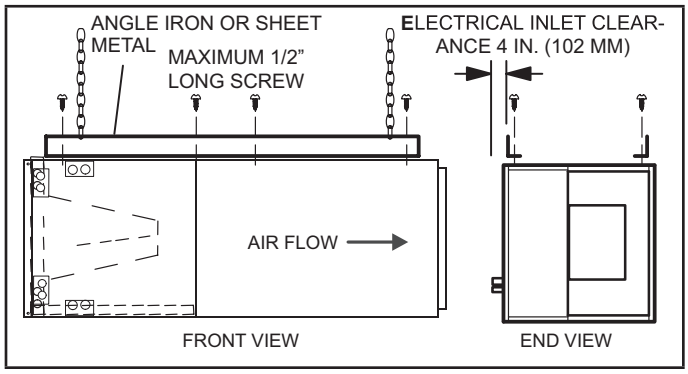


FIGURE 12. Suspend Horizontal Unit

NOTE *– When the unit is installed in horizontal applications, a secondary drain pan is recommended. Refer to local codes.*

NOTE – This unit may be installed in left- or right-hand air discharge horizontal applications. Adequate support must be provided to ensure cabinet integrity. Ensure that there is adequate room to remove service and access panels if installing in the horizontal position.

LEFT-HAND DISCHARGE

For horizontal left-hand air discharge, the following field modifications are required. Reference sticker is located on coil top plate.

1 - Remove access panels and the corrugated padding between the blower and coil assembly. Discard the corrugated padding.

2 - Pull the coil assembly from unit. Pull off the horizontal drain pan.

3 - Remove the drain plugs from back drain holes on horizontal drain pan and reinstall them on front holes.

⚠ IMPORTANT

After removal of drain pan plug(s), check drain hole(s) to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

4 - Rotate drain pan 180º front-to-back and install it on the opposite side of the coil.

5 - Remove screws from top cap.

6 - Remove plastic plug from left hole on coil front end seal and reinstall plug in back hole.

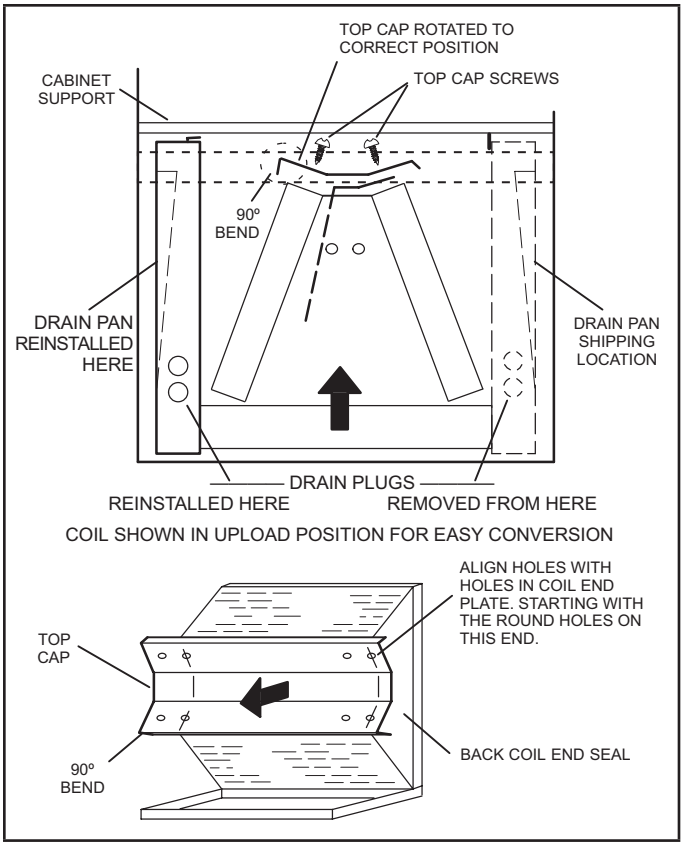


FIGURE 13. Field Modification for Left-Hand Discharge

7 - Rotate top cap 180º front-to-back and align with unused screw holes. Holes must align with front and back coil end plates. The top cap has a 45º bend on one side and a 90º bend on the other. **The 90º bend must be on the same side as the horizontal drain pan** as illustrated in figure 13.

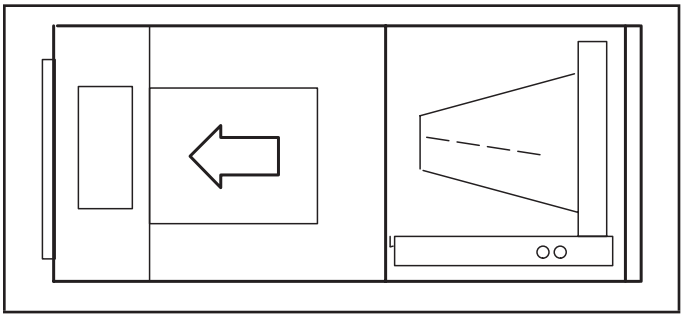


FIGURE 14. Left-Hand Discharge Configuration

NOTE – *Be very careful when reinstalling the screws into the coil end plate engaging holes. Misaligned screws may damage the coil.*

8 - From the upflow position, flip cabinet 90º to the left and set into place. Replace blower assembly. See figure 14 for orientation.

9 - Knock out drain seal plate from access door. Secure plate to cabinet front flange with screw provided.

10 - Flip access door and replace it on the unit.

11 - Set unit so that it is sloped toward the drain pan end of the unit. Connect return and supply air plenums as required using sheet metal screws.

12 - If suspending the unit, it must be supported along the entire length of the cabinet. If using chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) so that the full length of the cabinet is supported. Use securing screws no longer than 1/2" to avoid damage to coil or filter, as illustrated in figure 12. Connect return and supply air plenums as required using sheet metal screws.

RIGHT-HAND DISCHARGE

1 - Determine which plugs are required for drain line connections.

2 - With access door removed, remove drain line plugs to install drain lines.

3 - Set unit so that it is sloped toward the upflow drain pan end of the unit and level from front to back of unit.

4 - The horizontal configuration is shown in figure 14.

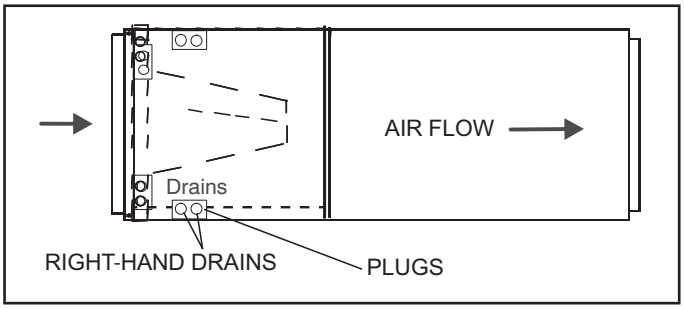


FIGURE 15. Right-Hand Discharge Configuration

5 - If the unit is suspended, the entire length of the cabinet must be supported. If you use a chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) to support the length of the cabinet. Use securing screws no longer than 1/2 inch to avoid damaging the coil or filter. See figure 12. Use sheet metal screws to connect the return and supply air plenums as required.

DOWNFLOW APPLICATION

NOTE *– If downflow application is required, separately order kit number Y9658 (-024 through -030) or Y9659 (-036 through -060) and install per kit instructions. Also use metal or class I supply and return air plenums. Figure 16 shows proper orientation.*

⚠ IMPORTANT

If electric heat section with circuit breakers (ECB45) is installed in a CBK45UHET unit in a downflow application, the circuit breakers must be rotated 180° to the UP position. See ECB45 installation instructions for more details.

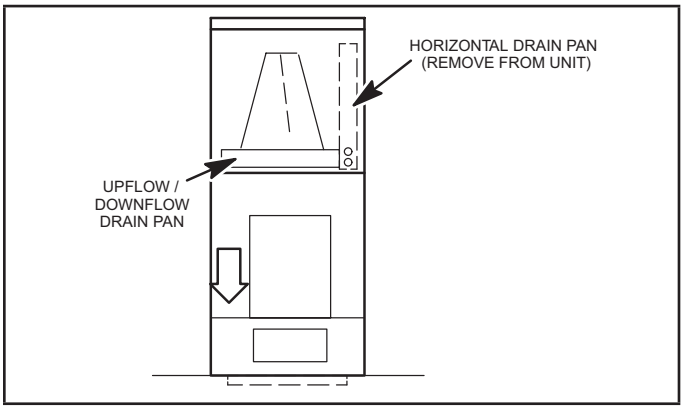


FIGURE 16. Downflow Discharge Position

Brazing Connections

⚠ WARNING

Polyol ester (POE) and Polyvinyl ether (PVE) oils used with R454B refrigerant absorb moisture very quickly. It is very important that the refrigerant system be kept closed as much as possible. DO NOT remove line set caps or service valve stub caps until you are ready to make connections.

⚠ WARNING



Danger of fire. Bleeding the refrigerant charge from only the high side may result in pressurization of the low side shell and suction tubing. Application of a brazing torch to a pressurized system may result in ignition of the refrigerant and oil mixture. Check the high and low pressures before applying heat.

⚠ IMPORTANT

To prevent the build-up of high levels of nitrogen when purging, it must be done in a well-ventilated area. Purge low-pressure nitrogen (1 to 2 psig) through the refrigerant piping during brazing. This will help to prevent oxidation and the introduction of moisture into the system.

⚠ WARNING



Danger of explosion!

Can cause equipment damage, injury, or death.

When using a high pressure gas such as nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

⚠ CAUTION

Brazing alloys and flux contain materials which are hazardous to your health.

Avoid breathing vapors or fumes from brazing operations. Perform operations only in well ventilated areas.

Wear gloves and protective goggles or face shield to protect against burns.

Wash hands with soap and water after handling brazing alloys and flux.

⚠ WARNING



When using a high pressure gas such as nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

TABLE 2. CBK45UHET Refrigerant Connections and Line Set Requirements

Model	Liquid Line	Vapor Line	L15 Line Sets
-018/ 024	3/8" (10mm)	3/4" (19mm)	L15 line set sizes are dependant on unit match-up. See Product Specifications (EHB) for outdoor unit to determine correct line set sizes
-030 -036	3/8" (10mm)	3/4" (19mm)	
-042 -048	3/8" (10mm)	7/8" (22mm)	
-060	3/8" (10mm)	7/8" (22mm)	Field fabricated
NOTE - Some applications may require a field-provided 7/8" to 1-1/8" adapter.			

Refrigerant system installations shall be installed and tested per ASHRAE Standard 15.2, Section 10.0 (latest edition).

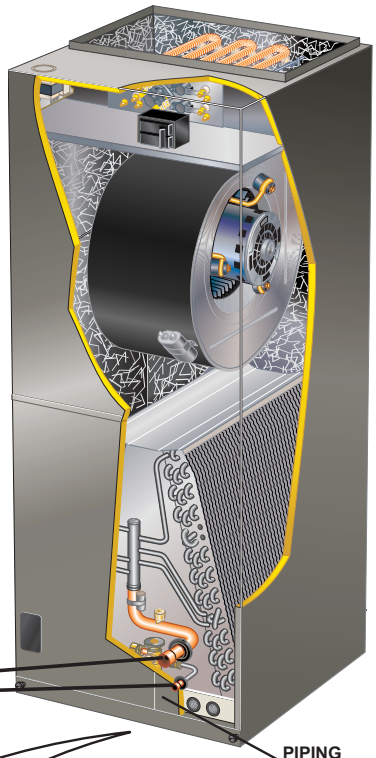
***NOTE** - When installing refrigerant lines longer than 50 feet, see the Lennox Refrigerant Piping Design and Fabrication Guidelines, CORP. 9351-L9, or contact Lennox Technical Support Product Applications for assistance.*

To obtain the correct information from Lennox, be sure to communicate the following information: Model and capacity.

PLEASE READ IMPORTANT ISSUES CONCERNING BRAZING OPERATIONS ON PREVIOUS PAGES BEFORE PROCEEDING.

NOTE - *REFER TO OUTDOOR UNIT INSTALLATION INSTRUCTIONS FOR REFRIGERANT PIPING SIZE REQUIREMENTS.*

NOTE - *Use silver alloy brazing rods with five or six percent minimum silver alloy for copper-to-copper brazing, 45 percent alloy for copper-to-brass and copper-to-steel brazing.*



A REMOVE ACCESS PANEL

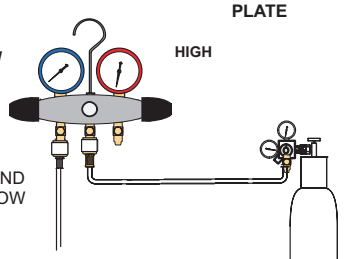
B REMOVE RUBBER PLUG FROM BOTH LIQUID AND SUCTION LINES

NOTE - *CBK45 SERIES UNITS USE NITROGEN OR DRY AIR AS A HOLDING CHARGE. IF THERE IS NO PRESSURE WHEN THE RUBBER PLUGS ARE REMOVED, CHECK THE COIL FOR LEAKS BEFORE INSTALLING.*

C EITHER REMOVE OR PUSH PIPE WRAPPING BACK THROUGH HOLE IN PIPING PLATE BEFORE LINE SET CONNECTION AND BRAZING.

D CONNECT PIPES

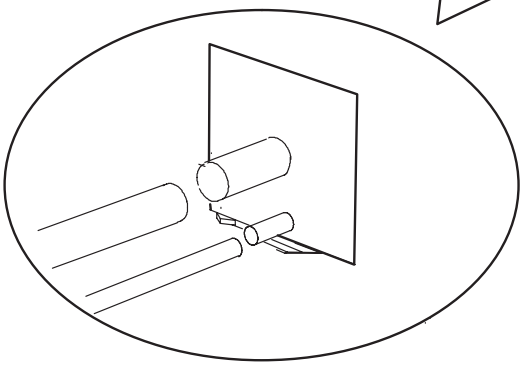
NOTE - *REFRIGERANT LINE SETS SHOULD BE ROUTED TO ALLOW FILTER ACCESSIBILITY.*

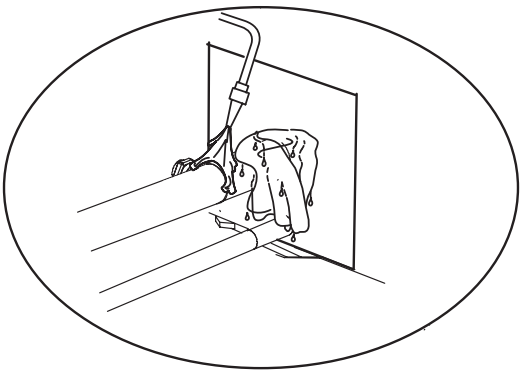


E CONNECT GAUGES AND START NITROGEN FLOW

FLOW REGULATED NITROGEN (AT 1 TO 2 PSIG) THROUGH THE REFRIGERATION GAUGE SET INTO THE VALVE STEM PORT CONNECTION ON THE OUTDOOR UNIT LIQUID LINE SERVICE VALVE AND OUT OF THE VALVE STEM PORT CONNECTION ON THE SUCTION SERVICE VALVE.

NITROGEN





F PLACE A WET RAG AGAINST PIPING PLATE AND AROUND THE SUCTION LINE CONNECTION.

G BRAZE CONNECTION. ALLOW PIPE TO COOL BEFORE REMOVING WET RAG FROM CTXV SENSING BULB AND PIPING PANEL AREA.

H REPEAT PREVIOUS PROCEDURE FOR LIQUID LINE.

REFER TO INSTRUCTIONS PROVIDED WITH OUTDOOR UNIT FOR LEAK TESTING, EVACUATING AND CHARGING PROCEDURES.
REFRIGERANT SYSTEM INSTALLATIONS SHALL BE INSTALLED AND TESTED PER ASHRAE STANDARD 15.2, SECTION 10.0 (LATEST EDITION).

FIGURE 17. Brazing Connections

Installing the Condensate Drain

⚠ IMPORTANT

On units of this type, where the blower “draws” rather than “blows” air through the coil, traps must be installed in the condensate drain lines (primary and auxiliary, if used). Traps prevent the blower from drawing air through the drain lines into the air supply.

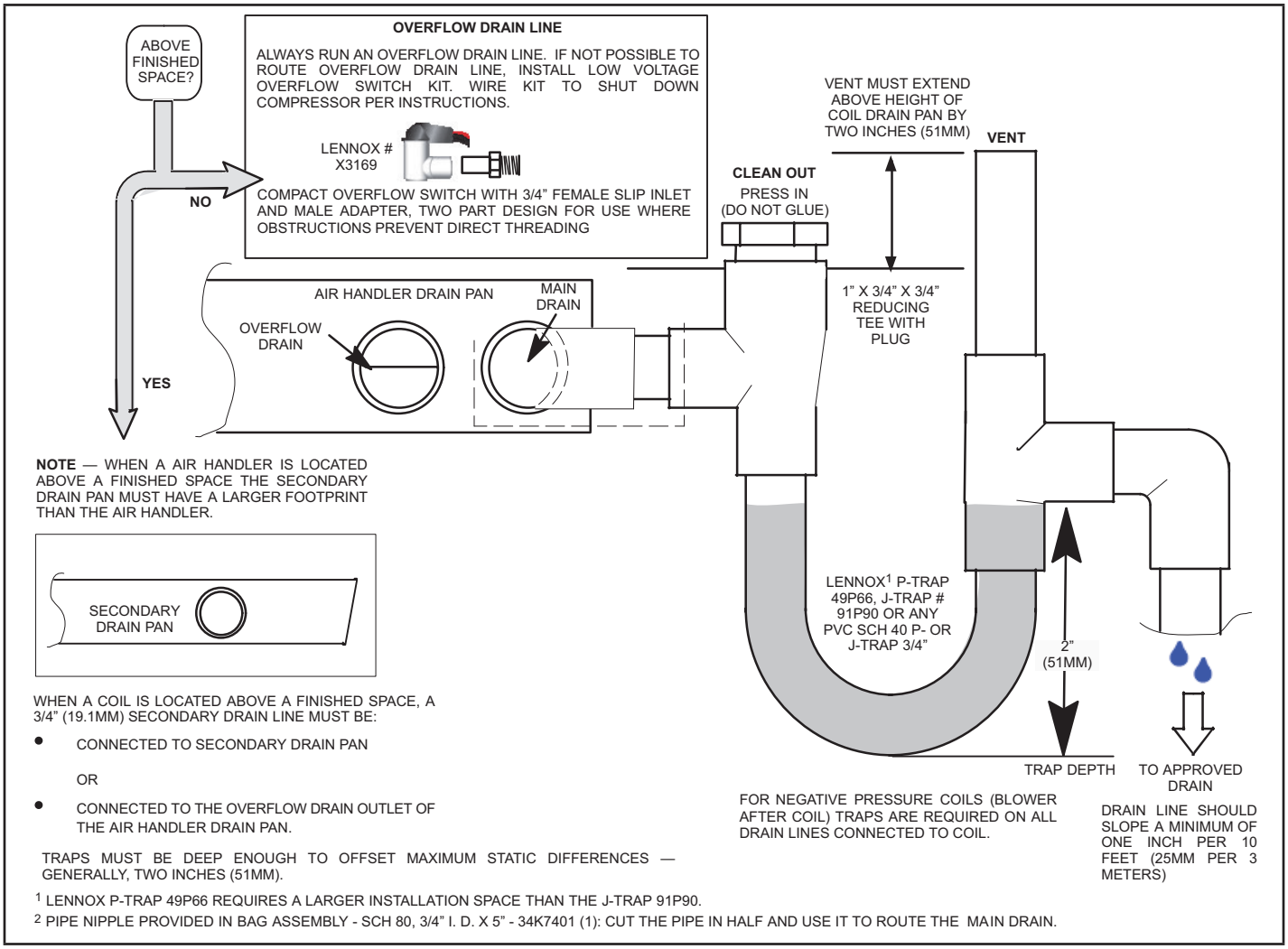


FIGURE 18. Typical Main and Overflow Drain Installations

⚠ IMPORTANT

After removal of drain pan plug(s), check drain hole(s) to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

1 - Remove the appropriate drain knockouts. If necessary, remove the indoor coil assembly from the cabinet.

2 - Connect primary drain line connection to the primary drain pan connection. The primary drain connection is flush with the bottom of the inside of the pan. Secondary connection is raised above the bottom of the inside of the pan.

***NOTE** – When making drain fitting connections to the drain pan, hand tighten the fitting and use a thread sealant. Over-tightening the fittings can split connections on the drain pan.*

3 - If the auxiliary drain line is to be used, remove the plug and route the drain line so that water draining from the outlet will be easily noticed by the homeowner. The auxiliary drain line does not require venting or a trap. Refer to local codes.

4 - After removal of drain pan plugs, check the drain port to see if holes have been drilled. If not drilled, use a 19/32” bit to drill out the primary drain hole; use a 3/8” drill bit for the secondary drain hole. Remove all drill shavings.

5 - Make sure drain ports and drain pan are free of all debris.

6 - Plug and check any unused drain pan openings for tightness. Torque plugs to 30 in. lb. to prevent water leaks or seepage from the drain pan.

7 - Install a 2” trap in the primary drain lines as close to the unit as practical (see figure 18). Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.

NOTE – Horizontal runs must have an anti-siphon air vent (standpipe) installed ahead of the horizontal run. An extremely long horizontal run may require an oversized drain line to eliminate air trapping.

NOTE – Do not operate air handler without a drain trap. The condensate drain is on the negative pressure side of the blower; therefore, air being pulled through the condensate line will prevent positive drainage without a proper trap.

8 - Route the drain line to the outside or to an appropriate drain. Drain lines must be installed so they do not block service access to the front of the air handler. A 24” clearance is required for filter, coil, or blower removal and service access.

NOTE – Check local codes before connecting the drain line to an existing drainage system.

Insulate the drain lines where sweating could cause water damage.

TEST CONDENSATE DRAIN

Test the drain pan and drain line after installation:

1 - Pour several quarts of water into drain pan, enough to fill drain trap and line.

2 - Check to make sure the drain pan is draining completely, no leaks are found in drain line fittings, and water is draining from the end of the primary drain line.

3 - Correct any leaks found.

BEST PRACTICES

The following best practices are recommended for the condensate removal process:

- Main and overflow drain lines should **NOT** be smaller than both drain connections at drain pan.
- Overflow drain line should run to an area where homeowner will notice drainage.
- It is recommended that the overflow drain line be vented and a trap installed. Refer to local codes.
- Condensate drain lines must be configured or provided with a cleanout to permit the clearing of blockages and for maintenance without requiring the drain line to be cut.

⚠ IMPORTANT

A field-fabricated secondary drain pan, with a drain pipe to the outside of the building, is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes may require a secondary drain pan for any horizontal installation.

DUCT SYSTEM

The air handler is provided with flanges for the connection of the plenum and ducts. The air handler is equipped with flanges that can form a filter rack for the installation of the air filter, or the filter may be installed as part of the return air duct system.

Supply and return duct system must be adequately sized to meet the system's air requirements and static pressure capabilities. The duct system should be insulated with a minimum of 1” thick insulation with a vapor barrier in conditioned areas or 2” minimum in unconditioned areas.

Supply plenum should be the same size as the flanged opening provided around the blower outlet and should extend at least 3 ft. from the air handler before turning or branching off plenum into duct runs. The plenum forms an extension of the blower housing and minimizes air expansion losses from the blower.

INSTALLING DUCT SYSTEM

Connect supply air duct to the flange on top of the air handler. If an isolation connector is used, it must be nonflammable.

A return air duct system is recommended. If the unit is installed in a confined space or closet, a return connection must be run, full size, to a location outside the closet.

CONNECTING REFRIGERANT LINES

Refrigerant lines must be connected by a qualified technician in accordance with established procedures.

⚠ IMPORTANT

Braze-free fittings must conform with UL207 or ISO14903 (latest edition).

⚠ IMPORTANT

Refrigerant lines must be clean, dehydrated, refrigerant-grade copper lines. Air handler coils should be installed only with specified line sizes for approved system combinations.

Handle the refrigerant lines gently during the installation process. Sharp bends or possible kinking in the lines will cause a restriction.

Do not remove the caps from the lines or system connection points until connections are ready to be completed.

1 - Route the suction and liquid lines from the fittings on the indoor coil to the fittings on the outdoor unit. Run the lines in as direct a path as possible avoiding unnecessary turns and bends.

2 - Make sure that the suction line is insulated over the entire exposed length and that neither suction nor liquid lines are in direct contact with floors, walls, duct system, floor joists, or other piping.

3 - Connect the suction and liquid lines to the evaporator coil.

4 - To avoid damaging the rubber grommets in the cabinet while brazing, slide the rubber grommets over the refrigerant lines until they are away from the heat source.

5 - Braze using an alloy of silver or copper and phosphorus with a melting point above 1,100°F (593°C).

NOTE – Do not use soft solder.

6 - Allow refrigerant pipes to cool to room temperature.

7 - Reinstall the rubber grommets after brazing is finished.

8 - Make sure outdoor unit has been put in place according to the Installation Instructions and is connected to the refrigerant lines.

⚠ IMPORTANT

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements;

– Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least a quarter of the maximum allowable pressure marked on unit nameplate.

No leak shall be detected.

SEALING THE UNIT

Seal the unit so that warm air is not allowed into the cabinet. Warm air introduces moisture, which results in water blow-off problems. This is especially important when the unit is installed in an unconditioned area.

If installed in an unconditioned space, sealant should be applied around the electrical wires, refrigerant tubing, and condensate lines where they enter the cabinet.

⚠ WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

Make sure the liquid line and suction line entry points are sealed with either the provided flexible elastomeric thermal insulation, or field provided material (e.g. Armaflex, Permagum or equivalent). Any of the previously mentioned materials may be used to seal around the main and auxiliary drains, and around open areas of electrical inlets.

Electrical Connections

⚠ WARNING



Electric Shock Hazard. Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.

Line voltage is present at all components when unit is not in operation on units with single-pole contactors. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power supplies.

⚠ WARNING

Electric Shock Hazard.

Can cause injury or death.

Foil-faced insulation has conductive characteristics similar to metal. Be sure there are no electrical connections within a ½" of the insulation. If the foil-faced insulation comes in contact with electrical voltage, the foil could provide a path for current to pass through to the outer metal cabinet. While the current produced may not be enough to trip existing electrical safety devices (e.g. fuses or circuit breakers), the current can be enough to cause an electric shock hazard that could cause personal injury or death.

- All field wiring must be done in accordance with National Electrical Code, applicable requirements of UL and local codes, where applicable.
- Electrical wiring, disconnect means and over-current protection are to be supplied by the installer. Refer to the air handler rating plate for maximum over-current protection, minimum circuit ampacity, as well as operating voltage.
- The power supply must be sized and protected according to the specifications supplied on the product.
- This air handler is factory-configured for 240 volt, single phase, 60 cycles. For 208-volt applications, see "208 Volt Conversion" later in this section.
- For optional field-installed electric heat applications, refer to the instructions provided with the accessory for proper installation.

⚠ IMPORTANT

USE COPPER CONDUCTORS ONLY

1 - Disconnect all power supplies.

2 - Remove the air handler access panel.

3 - Route the field supply wires to the air handler electrical connection box.

4 - Use UL-listed wire nuts to connect the field supply conductors to the unit black and yellow leads, and the ground wire to ground terminal marked GND.

5 - 5. Replace the air handler access panel.

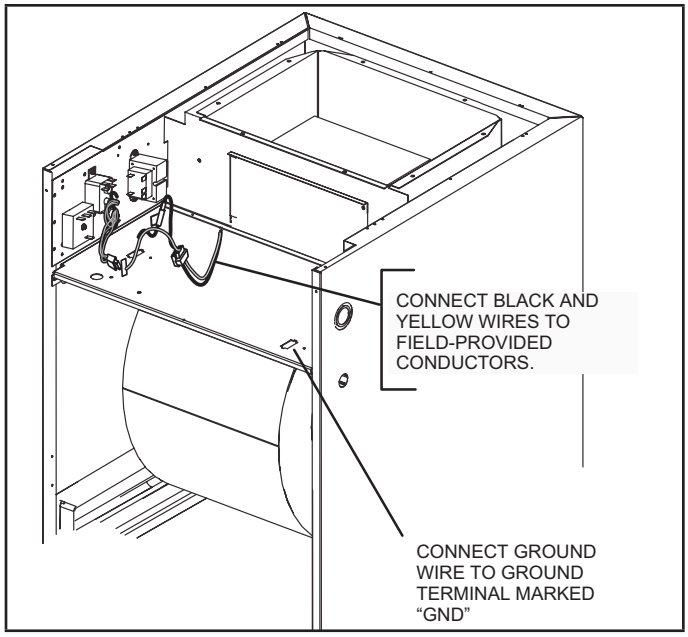


FIGURE 19. Making Electrical Connections

208 VOLT CONVERSION

1 - Disconnect all power supplies.

2 - Remove the air handler access panel.

3 - Using the wiring diagram located on the unit access panel as a reference, move the 2 connected black transformer leads from the 240 volt terminal on the transformer to the 208 volt terminal on the transformer.

⚠ WARNING

Electrically ground air handler. Connect ground wire to ground terminal marked "GND".

Failure to do so can result in death or electrical shock.

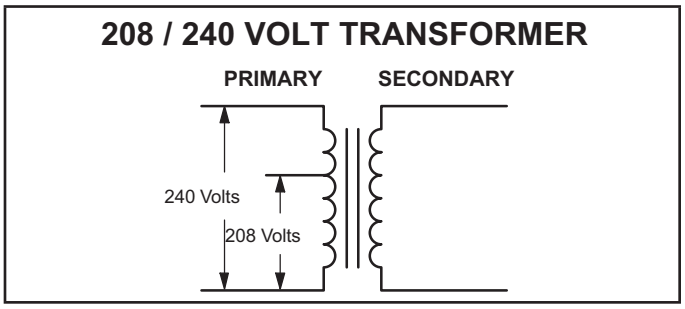


FIGURE 20. Converting Unit from 240VAC to 208VAC

Inspecting and Replacing Filters

⚠ IMPORTANT

Filter access door must be in place during unit operation. Excessive warm air entering the unit from unconditioned space may result in water blow-off problems.

Filters may be duct-mounted or installed in the cabinet. A filter is installed at the factory. Note that filter access door fits over access panel. Air will leak if the access panel is placed over the filter door.

Filters should be inspected monthly and must be cleaned or replaced when dirty to assure proper furnace operation.

To replace filter:

1 - Loosen the thumbscrews holding the filter panel in place.

2 - Slide the filter out of the guides on either side of cabinet.

3 - Insert new filter.

4 - Replace panel.

See table 3 for replacement filter sizes.

TABLE 3. Filter Dimensions

CBK45UHET	Filter Size – In. (mm)
-024, -030, -036	15 x 20 x 1 (381 x 508 x 25)
-042, -048, -060	18 x 20 x 1 (457 x 508 x 25)

Wiring Diagrams

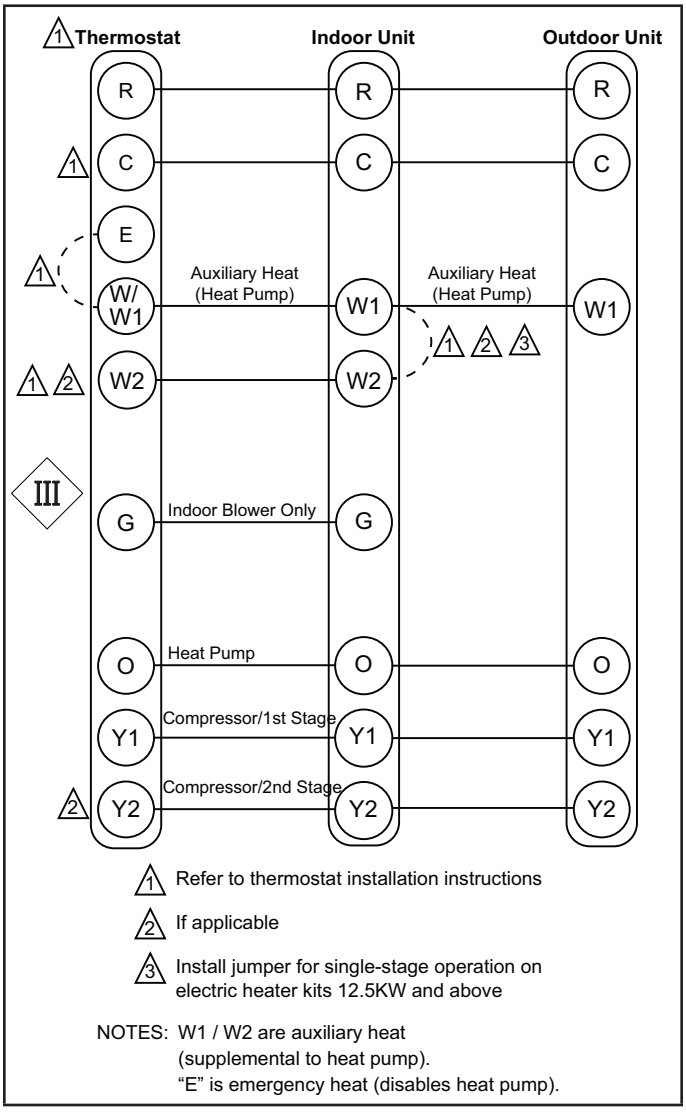


FIGURE 21. Thermostat Designations – Non-Communicating

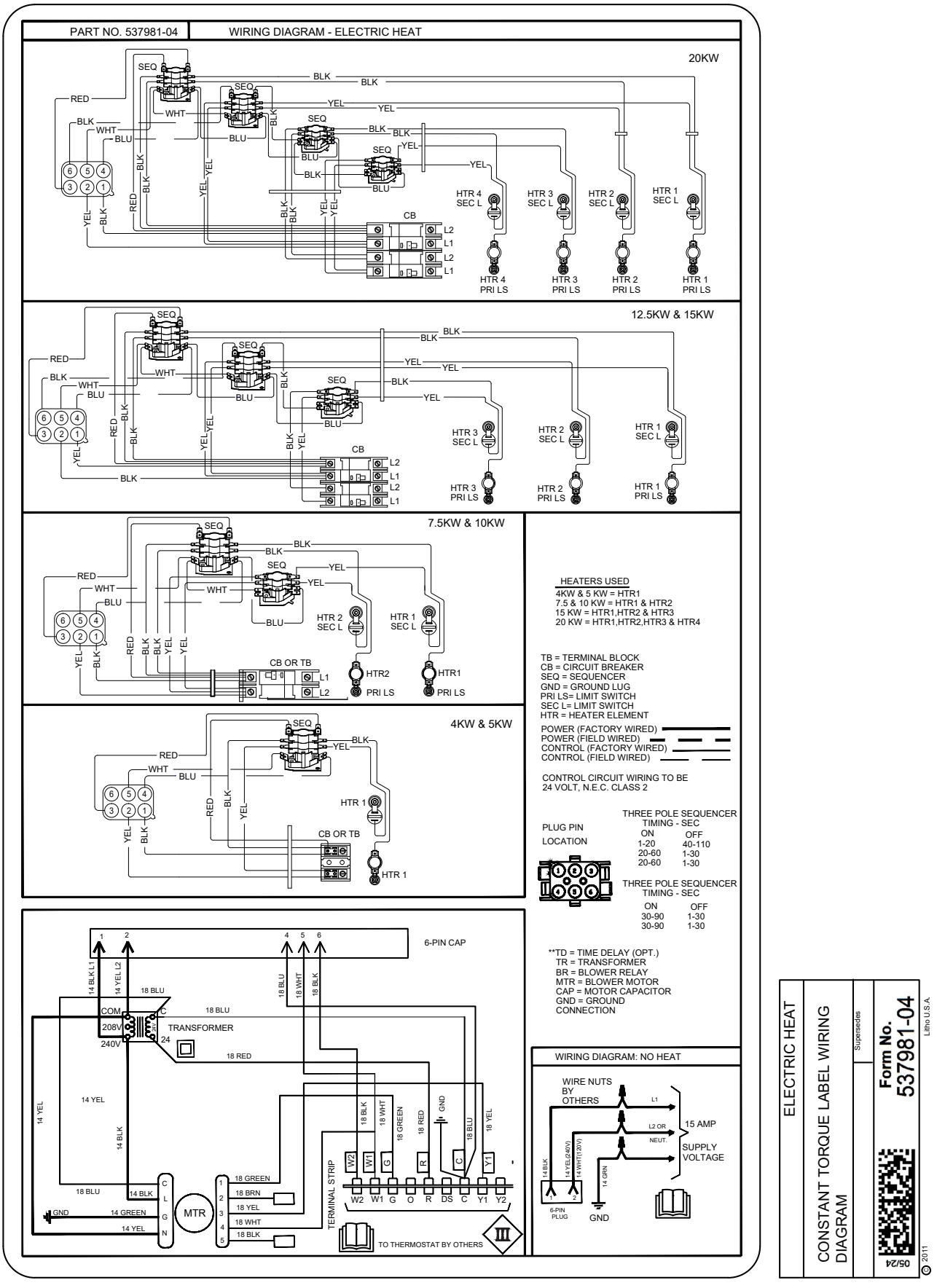


FIGURE 22. Unit Wiring Diagram – Electric Heat and Air Handler

Professional Maintenance

NOTICE !

Failure to follow instructions will cause damage to the unit.

This unit is equipped with an aluminum coil. Aluminum coils may be damaged by exposure to solutions with a pH below 5 or above 9. The aluminum coil should be cleaned using potable water at a moderate pressure (less than 50psi). If the coil cannot be cleaned using water alone, Lennox recommends use of a coil cleaner with a pH in the range of 5 to 9. The coil must be rinsed thoroughly after cleaning.

In coastal areas, the coil should be cleaned with potable water several times per year to avoid corrosive buildup (salt).

Check-out Procedures

⚠ IMPORTANT

During installation, service or maintenance, make sure that copper tubing does not rub against metal edges or other copper tubing. Care should also be taken to ensure that tubing does not become kinked. Use wire ties to secure tubing to prevent movement.

Do not secure electrical wires to tubing that carries hot refrigerant gas. Heat from the tubing may melt the wiring insulation, causing a short circuit.

NOTE – *Refer to outdoor unit installation instructions for system start-up instructions and refrigerant charging instructions.*

PRE-START-UP CHECKS

- Is the air handler properly and securely installed?
- If horizontally configured, is the unit sloped up to 1/4 inch toward drain lines?
- Will the unit be accessible for servicing?
- Has an auxiliary pan been provided under the unit with separate drain for units installed above a finished ceiling or in any installation where condensate overflow could cause damage?
- Have ALL unused drain pan ports been properly plugged?
- Has the condensate line been properly sized, run, trapped, pitched, and tested?
- Is the duct system correctly sized, run, sealed, and insulated?
- Have all cabinet openings and wiring been sealed?
- •Is the indoor coil factory-installed TXV properly sized for the outdoor unit being used?
- Have all unused parts and packaging been disposed of?
- Is the filter clean, in place, and of adequate size?
- Is the wiring neat, correct, and in accordance with the wiring diagram?
- Is the unit properly grounded and protected (fused)?
- Is the thermostat correctly wired and in a good location?
- Are all access panels in place and secure?

CHECK BLOWER OPERATION

- Set thermostat to FAN ON.
- The indoor blower should come on.

CHECK COOLING OPERATION

- Set thermostat to force a call for cooling (approximately 5ºF lower than the indoor ambient temperature).
- The outdoor unit should come on immediately and the indoor blower should start between 30 - 60 seconds later.
- Check the air flow from a register to confirm that the system is moving cooled air.
- Set the thermostat 5ºF higher than the indoor temperature. The indoor blower and outdoor unit should cycle off.

CHECK ELECTRIC HEAT (IF USED)

- Set thermostat to call for auxiliary heat (approximately 5°F above ambient temperature). The indoor blower and auxiliary heat should come on together. Allow a minimum of 3 minutes for all sequencers to cycle on.
- Set the thermostat so that it does not call for heat. Allow up to 5 minutes for all sequencers to cycle off.

Use of Air Handler During Construction

Lennox does not recommend the use of its air handler unit during any phase of construction. Very low return air temperatures, harmful vapors and operation of the unit with clogged or misplaced filters will damage the unit.

Air handler units may be used for heating (heat pumps) or cooling of buildings under construction, if the following conditions are met:

- A room thermostat must control the air handler. The use of fixed jumpers is not allowed.
- Air filter must be installed in the system and must be maintained during construction.
- Air filter must be replaced upon construction completion.
- The air handler evaporator coil, supply fan assembly and duct system must be thoroughly cleaned following final construction clean-up.
- All air handler operating conditions must be verified according to these installation instructions.

Sequence of Operation

Cooling (Cooling Only or Heat Pump)

On all models, the 24 volt line will go directly to the terminal board from the transformer. The normally open contacts close, causing the indoor blower motor to operate; depending on the indoor blower motor, there may be a delay. The circuit between R and Y is completed, closing the circuit to the contactor in the outdoor unit, starting the compressor and outdoor fan motor.

On heat pumps, circuit R and O energizes the reversing valve, switching the valve to the cooling position. (The reversing valve remains energized as long as the thermostat selector switch is in the COOL position.)

At the completion of the cooling demand, the indoor blower and outdoor unit should cycle off. Air handler should cycle off 45 seconds after the outdoor unit shuts off.

Heating (Electric Heat Only)

When the thermostat calls for heat, the circuit between R and W is completed, and the heat sequencer is energized. A time delay follows before the heating elements and the indoor blower motor come on. Units with a second heat sequencer can be connected with the first sequencer to W on the thermostat sub-base, or they may also be connected to a second stage on the sub-base.

Heating (Heat Pump)

On all models, the 24 volt line will go directly to the terminal board from the transformer. The normally open contacts close, causing the indoor blower motor to operate; depending on the indoor blower motor, there may be a delay. The circuit between R and Y is completed, closing the circuit to the contactor in the outdoor unit, starting the compressor and outdoor fan motor.

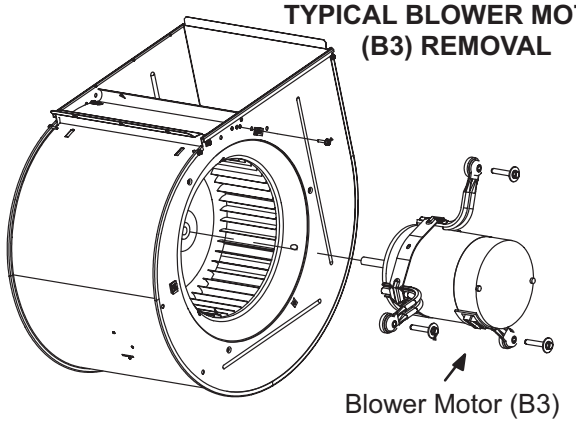
If the room temperature continues to decrease, the circuit between R and W1 is completed by the second-stage heat room thermostat. Circuit R-W1 energizes a heat sequencer. The completed circuit will energize supplemental electric heat (if applicable). Units with a second heat sequencer can be connected with the first sequencer to W1 on the thermostat. They may also be connected to a second heating stage W2 on the thermostat sub-base.

Emergency Heat (Heating Heat Pump)

If the selector switch on the thermostat is set to the emergency heat position, the heat pump will be locked out of the heating circuit, and all heating will be electric heat (if applicable). A jumper should be placed between W2 and E on the thermostat sub-base so that the electric heat control will transfer to the first-stage heat on the thermostat. This will allow the indoor blower to cycle on and off with the electric heat when the fan switch is in the AUTO position.

Constant Torque Speed Blower Motor (ECM) (B3)

TYPICAL BLOWER MOTOR (B3) REMOVAL



To Remove Blower From Unit: Remove wiring jack plug and three screws and slide blower out.

FIGURE 23

The constant torque ECM (electronically commutated motor) communicates with the air handler control via 24VAC inputs. It is programmed to provide a constant level of torque (current / power) to the motor. This is a multi-tap motor with the ability to have 1 to 5 programmed levels of torque (see table 4). Each value equals a specific amount of torque to create the proper amount of airflow for each system demand. This value is specific to model and size of system.

Each tap can have a unique amount of torque programmed for a specific purpose. For example, switching from Tap 1 to Tap 2 may increase the airflow, but not necessarily at a specific interval like changing from low to medium low speed on a PSC motor.

Internal components are shown in figure 23. The stator windings are split into three poles which are electrically connected to the controller. This arrangement allows motor windings to turn on and off in sequence by the controller.

BLOWER MOTOR COMPONENTS

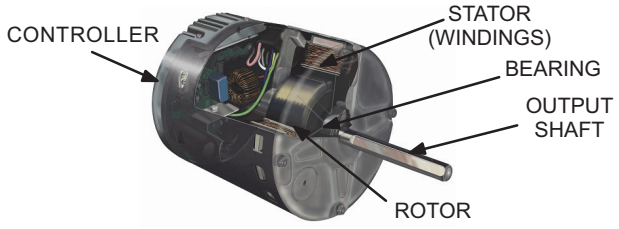


FIGURE 24

The controller uses sensing devices to sense what position the rotor is in at any given time. By sensing the position of the rotor and then switching the motor windings on and off in sequence, the rotor shaft turns the blower.

Operation

The 230VAC voltage connections to the motor are labeled **L**, **G** and **N**.

• 230VAC **L** = L1 115VAC, **G** = Ground, **N** = L2 115VAC

The 230VAC is connected to the motor at all times. This voltage operates the internal electronics and drives the motor. In addition, the motor requires a low voltage to operate. The low voltage to the motor is delivered to taps 1-5 and the (C) terminal from the control relay. The motor accepts a communication signal of 24VAC on these taps. Instead of energizing a motor speed (winding) on a PSC motor for each demand (heat cool, constant fan); the communication voltage directs the motor to operate at the torque value stored for each tap.

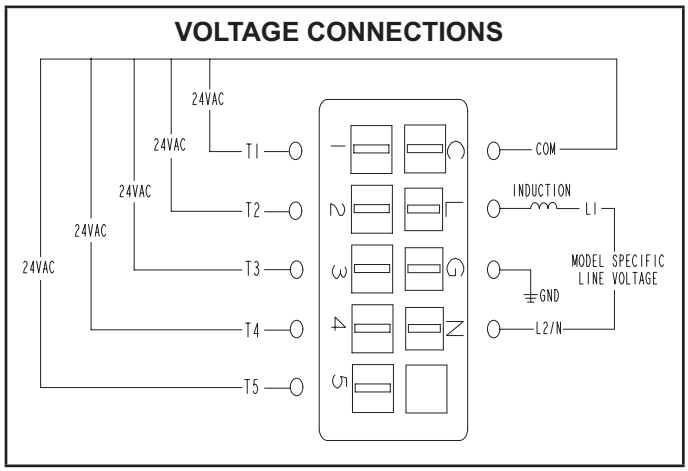


FIGURE 25

During each demand, the fan motor will maintain the selected torque during changes in the systems external static pressure (ESP) (constant torque). If ESP increases the motor will use more power (current) to maintain torque. The motor has a programmed limit of operation to protect itself from damage, due to the energy it must use to maintain torque at high external static pressures. If the systems maximum total ESP is exceeded, torque will not be maintained, however the motor will deliver as much torque as possible, without causing damage to itself.

Constant torque allows the fan motor to maintain the torque (current) delivered to the motor when ESP is higher than recommended and/or changes during system operation. ESP (the resistance to the movement of air) is increased when duct work is undersized, poorly constructed and/or full or dirt or debris. ESP can increase during system operation when dirt builds up on the air distribution systems components, especially the filter, and when customers close or block grilles and registers. When torque is maintained, airflow does not decrease as fast as it would on a PSC motor system. This decreases the effect ESP has on loss of airflow, providing better system performance and efficiency within the limits of the motor design.

The fan motor has no programmable (On) delays but multiple (Off) delays are programmed into the motor. The off delay is programmed into the motor and can not be adjusted.

Installation

It is recommended that the electrical connections on the ECM be facing down or between the 4 and 8 O-clock position, and a drip loop formed out of the wiring harness leaving the motor. This is to prevent any moisture or water that may get into the motor area from running into the connectors where it could cause damage to the control. See figure 25.

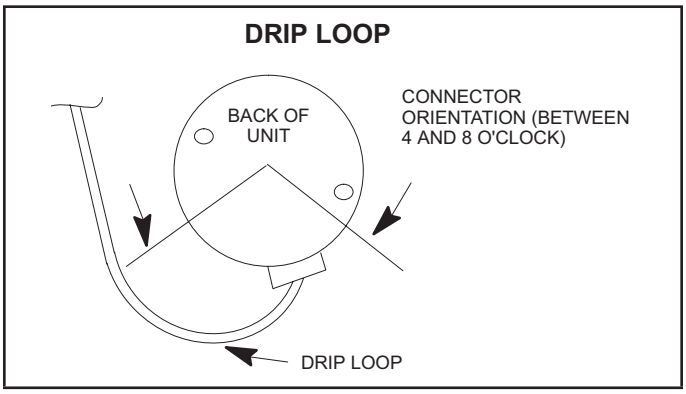


FIGURE 26

⚠ WARNING

Disconnect power from unit and wait at least five minutes to allow capacitors to discharge before attempting to service motor. Failure to wait may cause personal injury or death.

INDOOR BLOWER MOTOR (B3) CONTROL TROUBLESHOOTING

Before troubleshooting any HVAC system, it is a good practice to become familiar with the components and wiring diagram. On fan motor systems it is a good practice to check the tap selections and delay settings.

*If the **motor is running*** but the system is noisy, shutting down on its limits or safeties or the evaporator coil is freezing, there is a good chance the motor is good. The problem is most likely external to the motor.

- Check the tap selections using the HVAC OEM guide.
- Check the air distribution system components for dirt load and closed dampers, registers and grilles.
- Measure the total external static pressure. Make repair(s) if above the recommended maximum level and confirm airflow at the new total ESP with the air flow tables (beginning on page 6). Aftermarket filter sizing is a common issue.

If the motor is not running, the following checks will diagnose whether it is operational. **Always disconnect the power to the HVAC system before disconnecting or reconnecting any connectors to these motors.** There are two inputs needed to operate this motor, a high voltage constant power source, and the low voltage communication that selects the torque value in each tap per demand.

Checking 230VAC Voltage Input

First check the high voltage to terminals (L) and (N). There should be 230VAC on these two terminals whenever there is power to the system, regardless of a demand call. Applying incorrect high voltage to the motor may cause the motor to not operate, or even damage the motor.

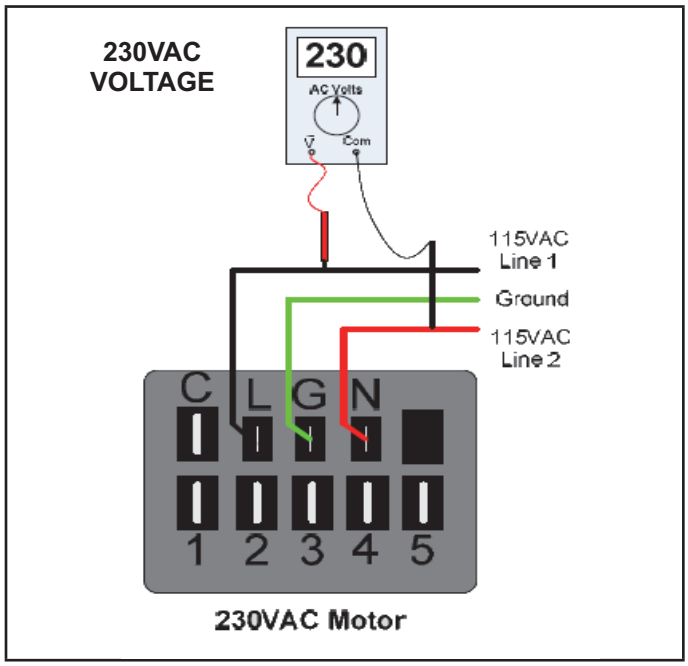


FIGURE 27

Checking the Low-Voltage Communication Input

If no low voltage communication (typically 24VAC) is measured at the motor on taps 1-5, check the HVAC system wiring, controls and demand call. Always check low voltage between terminals 1-5 and (C) at the motor, never ground. Once the problem is corrected, confirm that the low voltage communication is applied to a programmed tap. If proper low voltage communication is present at a programmed tap, with proper high voltage to the motor and it still does not operate, the motor is failed.

1 - Initiate a demand from the thermostat and check the voltage between the common and the appropriate motor terminal 1- 5. Confirm the meter is set to the 24VAC.

2 - If the low voltage communication is not present, check the demand from the thermostat.

3 - If the motor has proper high voltage as identified in the previous section, and proper low voltage to a programmed terminal, and motor is not operating, the motor has failed. Replace motor.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before starting decommissioning.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

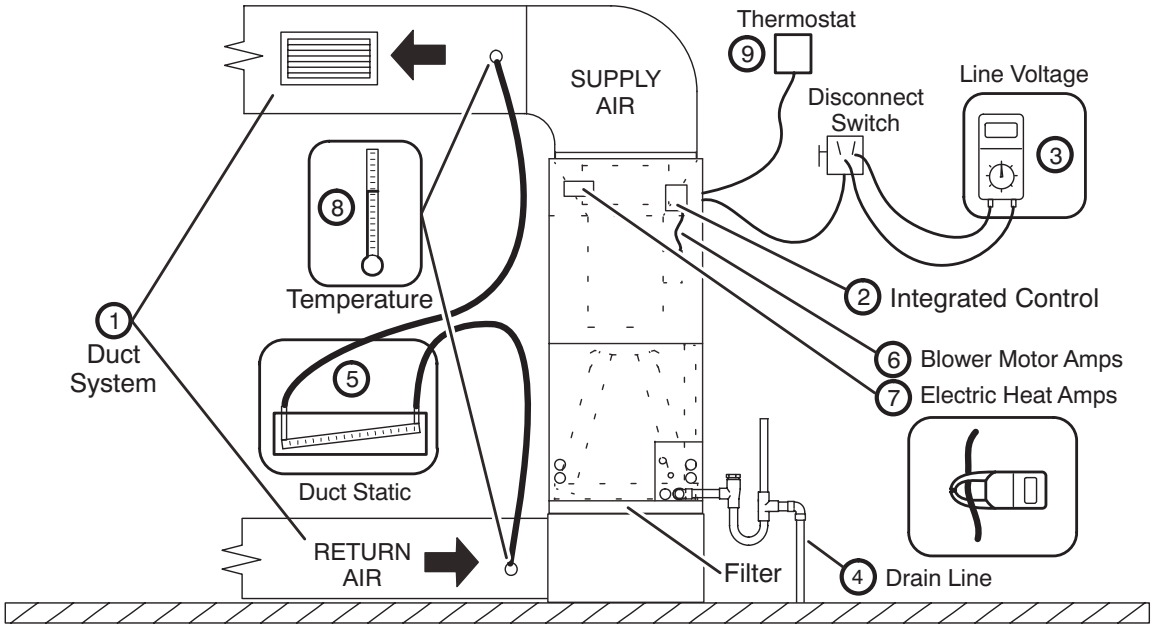
⚠ IMPORTANT

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be signed and dated. Ensure that there are labels on the equipment that state the flammability of the refrigerant used.

Installing Contractor's Name_____ Installing Date_____

Installing Contractor's Phone_____ Air Handler Model #_____

Job Address_____



1 DUCT SYSTEM

SUPPLY AIR DUCT

☐ Sealed

☐ Insulated (if necessary)

☐ Registers Open and Unobstructed

RETURN AIR DUCT

☐ Sealed

☐ Filter Installed and Clean

☐ Registers Open and Unobstructed

2 INTEGRATED CONTROL

☐ Jumpers Configured Correctly (if applicable)

☐ Appropriate Links in Place (if applicable)

3 VOLTAGE CHECK

☐ Supply Voltage _____

☐ Low Voltage _____

☐ Electrial Connections Tight

4 DRAIN LINE

☐ Leak Free

5 TOTAL EXTERNAL STATIC (dry coil)

	dry coil	wet coil
Supply External Static	_____	_____
Return External Static	_____	_____
Total External Static =	_____	_____

6 ELECTRIC HEAT AMPS_____

7 INDOOR BLOWER AMPS_____

INDOOR BLOWER CFM_____

8 TEMPERATURE DROP (Cooling Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Drop = _____

8 TEMPERATURE RISE (Heating Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Rise = _____

9 THERMOSTAT

☐ Adjusted and Programmed

☐ Operation Explained to Owner

☐ Explained Operation of System to Homeowner

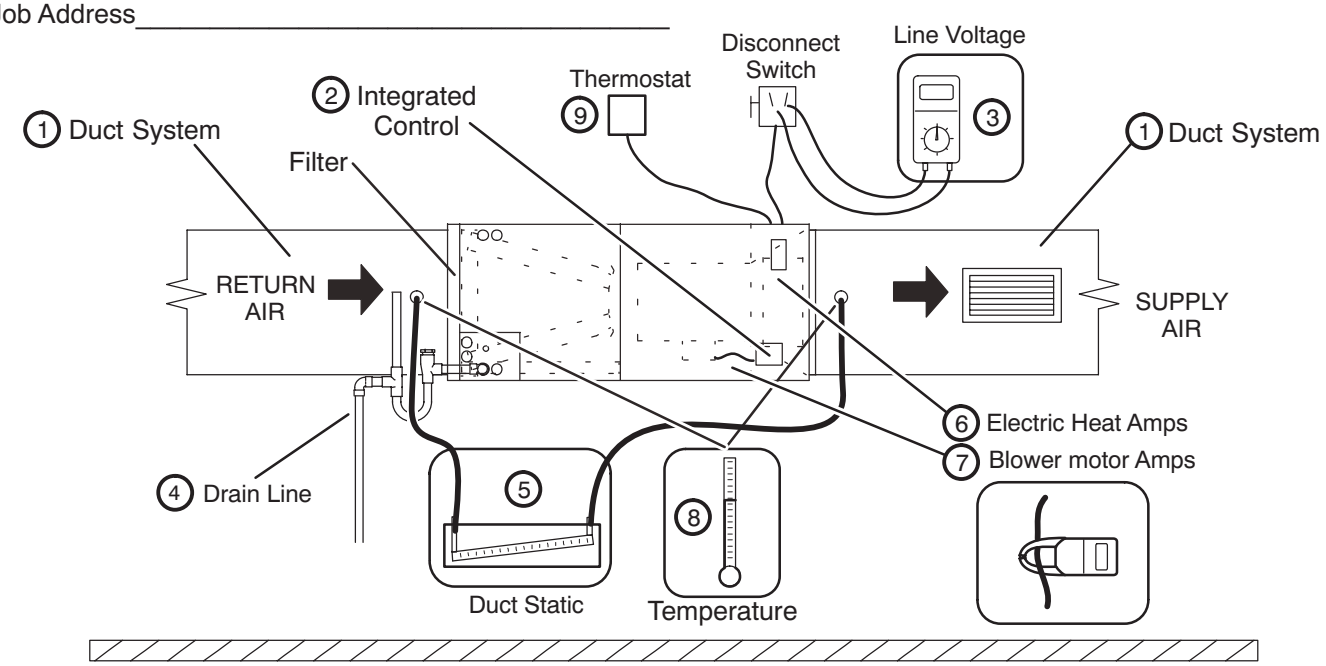
Technician's Name:_____Date Start–Up & Performance Check Completed_____

FIGURE 28. Start-up and Performance Checklist (Upflow Configuration)

Installing Contractor's Name_____ Installing Date_____

Installing Contractor's Phone_____ Air Handler Model #_____

Job Address_____



1 DUCT SYSTEM

SUPPLY AIR DUCT

☐ Sealed

☐ Insulated (if necessary)

☐ Registers Open and Unobstructed

RETURN AIR DUCT

☐ Sealed

☐ Filter Installed and Clean

☐ Registers Open and Unobstructed

2 INTEGRATED CONTROL

☐ Jumpers Configured Correctly (if applicable)

☐ Appropriate Links in Place (if applicable)

3 VOLTAGE CHECK

☐ Supply Voltage _____

☐ Low Voltage _____

☐ Electrial Connections Tight

4 DRAIN LINE

☐ Leak Free

5 TOTAL EXTERNAL STATIC (dry coil)

	dry coil	wet coil
Supply External Static	_____	_____
Return External Static	_____	_____
Total External Static =	_____	_____

6 ELECTRIC HEAT AMPS_____

7 INDOOR BLOWER AMPS_____

INDOOR BLOWER CFM_____

8 TEMPERATURE DROP (Cooling Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Drop = _____

8 TEMPERATURE RISE (Heating Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Rise = _____

9 THERMOSTAT

☐ Adjusted and Programmed

☐ Operation Explained to Owner

☐ Explained Operation of System to Homeowner

Technician's Name:_____Date Start–Up & Performance Check Completed_____

FIGURE 29. Start-Up and Performance Checklist (Horizontal Configuration)

LENNOX EQUIPMENT
BASIC LIMITED WARRANTY

APPLIES IN U.S.A. AND CANADA ONLY

PLEASE READ DISPUTE RESOLUTION SECTION CAREFULLY, AS IT AFFECTS YOUR LEGAL RIGHTS

Failure to maintain equipment will void this Basic Limited Warranty.

BASIC LIMITED WARRANTY

(Residential Applications only)

Subject to the terms herein, this Basic Limited Warranty covers Covered Components (defined below) within the following equipment (hereafter, referred to as the "Equipment"):

Equipment Type	Model Number
Gas Furnaces	ML180, ML180E,ML180EK, ML180V, ML180VK, ML193, ML193E, ML193EK, ML195, ML196E, ML196EK, ML296V, ML296VK
Unit Heaters/Duct Heaters	LF25 and LS25 (30,000 to 105,000 Btuh units)
Electric Heat Sections	ECB25, ECBA25
Air Handlers	CBA25UH, CBA25UHE, CBA25UHV, CBK43, CBK45
Air Conditioners (single phase)	13ACX, 16ACX, ML13KC1, ML14KC1, ML14XC1, ML17XC1, ML17KC2, ML18XC2
Heat Pumps (single phase)	16HPX, ML14KP1, ML14XP1, ML16XP1, ML17XP1

A "Residential Application" is a single or multi-family dwelling, which includes homes, townhomes, duplexes, apartments, and condominiums used primarily for personal, family, or household purposes. A "Non-Residential Application" refers to all premises that are not included in the definition of a Residential Application, including, but not limited to, all applications that are not primarily used for personal, family, or household purposes.

This Basic Limited Warranty only covers repair components contained within Equipment ("Covered Components"). It does NOT cover cabinets, cabinet pieces, unit accessories, driers, refrigerant, refrigerant line sets, belts, gaskets, wiring, fuses, oil nozzles, or consumable items/components that should be replaced as part of a regular maintenance program, such as lubricants and air filters.

NOTE: The installation of a Replacement Component *(defined below)* under this Basic Limited Warranty does not extend the Warranty Period *(defined below)* of the underlying Equipment in which such component is installed. Notwithstanding the foregoing, in the event the manufacturing defect arises within Equipment that by its nature Replacement Components are not offered but rather full replacement Equipment is required (e.g., standalone indoor evaporator coil), replacement of such Equipment will result in a new Warranty Period only for such new Equipment.

LIMITED WARRANTY PERIOD:

For Equipment installed and used in a Residential Application, this Basic Limited Warranty begins on the date the Equipment is originally installed and ends as set forth below (the "Warranty Period"). If the date of original installation cannot be verified, the Warranty Period begins six (6) months after the date of manufacture, unless otherwise prohibited by law. Notwithstanding the above, when Equipment is installed in a newly constructed home, the Warranty Period begins on the closing date of purchase from the builder. Proof of closing may be required at Lennox's sole discretion.

FIVE-YEAR LIMITED WARRANTY
(Residential Applications)

Covered Components (except for heat exchangers and compressors which are covered as outlined separately) are covered by this Basic Limited Warranty for a period of five (5) years from installation (existing homes) or closing date (new construction) when installed in a Residential Application.

ONE-YEAR LIMITED WARRANTY
(Non-Residential Applications)

Covered Components (except for heat exchangers and compressors which are covered as outlined separately) are warranted by Lennox for a period of one (1) year when installed in a Non-Residential Application.

LIMITED WARRANTY PERIOD
(for heat exchangers and compressors)

Notwithstanding the above, heat exchangers and compressors within the following Equipment are warranted by Lennox for the following periods:

Equipment Model Number	Warranty Period for Heat Exchanger Only
ML180, ML180E, ML180EK, ML180V, ML180VK, ML193, ML193E, ML193EK, ML195, ML196E, ML196EK, ML296V, ML296VK	Twenty (20) years -- Residential Applications; Ten (10) years -- Non-Residential Applications
LF25, LS25 with Aluminized Heat Exchanger	Ten (10) years -- All applications
LF24, LS25, TUA with Stainless Steel Heat Exchanger	Fifteen (15) years -- All applications

Equipment Model Number	Warranty Period for Compressor Only
13ACX, 16ACX, ML13KC1, ML14KC1, ML14KP1, ML14XC1, ML17XC1, ML17KC2, ML18XC2, 14HPX, 16HPX, ML14XP1, ML16XP1, ML17XP1	Five (5) years -- All Applications

LIMITED WARRANTY COVERAGE

Subject to the terms and conditions herein, if, during the Warranty Period, a Covered Component in the Equipment fails solely because of a manufacturing defect, Lennox will provide a replacement component (a "Replacement Component") to the Owner through a Lennox dealer or other licensed HVAC contractor. The Owner will be responsible for all shipping, freight, and handling charges, as well as all fees and costs arising out of or relating to the warranty service, including, but not limited to, all trip charges, labor costs, and other costs relating to diagnostic calls or to removing, repairing, servicing, or replacing any Covered Component. For a period of ninety(90) days after a warranty claim is filed under this Basic Limited Warranty, the Owner is responsible for surrendering the failed Covered Component(s) to Lennox upon request. Lennox's sole responsibility under this Basic Limited Warranty is to provide a Replacement Component as set forth above. In the event that any Covered Component is not available, Lennox will, at its option, provide a substitute component or allow the Owner to purchase equivalent Lennox equipment at a reduced price off the Lennox list price in effect on the date of the failure. To obtain new Equipment at a reduced price per the terms of this paragraph, such new Equipment must be purchased through and installed by an independent Lennox dealer listed at www.lennox.com. Lennox's offer to allow Owner to purchase new Equipment at a reduced price applies solely to the specific Equipment containing the Covered Component that is unavailable and does not extend to any other Equipment, Covered Components, or other parts thereof even if such Equipment, Covered Component, or part is needed because (i) it is a required accessory or (ii) incompatibility of the new Equipment with the existing Equipment, Covered components, or parts thereof.

Both Lennox and the Owner of the Equipment are bound by this Basic Limited Warranty.

MAKING A WARRANTY CLAIM

To make a warranty claim, the Owner must contact an independent Lennox dealer or a licensed HVAC contractor. An independent Lennox dealer may be located by accessing www.lennox.com, e-mailing Lennox at www.lennox.com/help/contact-us/warranty (click on "E-mail our Contact Center"), or by calling Lennox at 1-800-9-Lennox. **You must contact the Lennox dealer or HVAC contractor pursuant to this paragraph prior to the Warranty Period's expiration for the claim to be eligible for limited warranty coverage. All warranty claims must be submitted within forty-five (45) days of the applicable Covered Component's failure date. The failure to submit a warranty claim within such forty-five (45) day period will result in the denial of a claim. Lennox has no liability whatsoever in the event that Owner or Owner's dealer or HVAC contractor fails to timely and/or properly file a claim hereunder.**

When warranty coverage is requested, the Owner must provide, and the Lennox dealer or HVAC contractor must collect, the following:

1 - The Equipment model and serial number;

2 - The Owner's name and location of the Equipment;

3 - The date of original Equipment installation (existing homes) or closing date (new construction);

4 - An accurate description of the problem.

NOTE - Proof of prior maintenance and purchase may also be required at Lennox's sole discretion.

LIMITATION OF LIABILITIES, DISCLAIMER OF WARRANTIES AND RESPONSIBILITY FOR DAMAGES

EXCEPT AS EXPRESSLY PROVIDED IN THIS BASIC LIMITED WARRANTY, LENNOX MAKES NO WARRANTY, EXPRESS OR IMPLIED, TO ANYONE AS TO FITNESS FOR ANY PURPOSE, MERCHANTABILITY, DESIGN, CONDITION, CAPACITY, PERFORMANCE, OR ANY OTHER ASPECT OF THE EQUIPMENT OR ITS MATERIAL, COMPONENTS, OR WORKMANSHIP. LENNOX DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES TO THE FULL EXTENT PERMITTED BY LAW. ALL IMPLIED WARRANTIES WHICH MAY EXIST, NOTWITHSTANDING THIS DISCLAIMER, ARE LIMITED TO THE DURATION OF THIS BASIC LIMITED WARRANTY AS APPLICABLE TO EACH COVERED COMPONENT. THIS BASIC LIMITED WARRANTY IS MADE IN LIEU OF ALL OTHER GUARANTEES, WARRANTIES, REPRESENTATIONS, CONDITIONS, OBLIGATIONS, OR LIABILITIES, EXPRESS OR IMPLIED. OWNER ACKNOWLEDGES AND AGREES THAT IN DECIDING TO PURCHASE THE EQUIPMENT COVERED BY THIS LIMITED WARRANTY, IT (1) HAS NOT RELIED ON ANY STATEMENTS OR REPRESENTATIONS OF ANY KIND THAT ARE NOT CONTAINED WITHIN THIS BASIC LIMITED WARRANTY; AND (2) WAS UNDER NO COMPULSION AND HAD THE ABILITY TO PURCHASE EQUIPMENT FROM OTHER MANUFACTURERS.

TO THE FULLEST EXTENT PERMITTED BY LAW, LENNOX SHALL NOT BE LIABLE, IN CONTRACT OR TORT, (INCLUDING NEGLIGENCE), BY STATUTE OR REGULATION, OR OTHERWISE, FOR (I) ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES; (II) ANY LOSS, DAMAGE, OR INJURY TO PERSONS(INCLUDING DEATH); (III) ANY LOSS, DAMAGE OR INJURY TO PROPERTY, OR THINGS; OR (IV) FOR DAMAGES OF ANY KIND OR NATURE INCLUDING, BUT NOT LIMITED TO, BUSINESS INTERRUPTION, LOSS OF BUSINESS VALUE, INCONVENIENCE, OR LOSS OF ANTICIPATED PROFITS OR SAVINGS. THIS PARAGRAPH APPLIES TO ALL DISPUTES (AS DEFINED BELOW) AND ALL CLAIMS OF ANY KIND, INCLUDING, BUT NOT LIMITED TO NEGLIGENCE CLAIMS. FURTHER, THIS PARAGRAPH APPLIES TO BOTH LENNOX AND OWNER. LENNOX SHALL NOT BE LIABLE FOR THE COST OF ANY WORK DONE BY THE OWNER OR OTHERS TO THE EQUIPMENT.

THIS LIMITATION OF LIABILITY AND DISCLAIMER LIMITS, EXCLUDES AND WAIVES SPECIFIC LEGAL RIGHTS AND CLAIMS. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION, WAIVER, LIMITATION OF EXPRESS OR IMPLIED WARRANTIES OR OTHER LIMITATIONS, EXCLUSIONS, AND WAIVERS CONTAINED HEREIN (E.G., THE LIMITATION OF LIABILITY FOR GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT). IN SUCH JURISDICTIONS, THE LIMITATIONS DISCLAIMERS, WAIVERS, AND EXCLUSIONS THAT ARE NOT PERMITTED UNDER THE APPLICABLE JURISDICTION'S LAWS DO NOT APPLY TO OWNER'S WHO RE-

SIDE THEREIN, BUT ALL PERMISSIBLE LIMITATIONS, DISCLAIMERS, WAIVERS, AND EXCLUSIONS SHALL APPLY. THE OWNER MAY ALSO HAVE OTHER RIGHTS THAT MAY VARY BY JURISDICTION.

EXCLUSIONS

The following limitations and exclusions apply to this Basic Limited Warranty:

1 - Replacement Components will not be provided under this Basic Limited Warranty unless the Equipment containing the defective Covered Component is properly installed and maintained by a licensed professional HVAC installer or licensed HVAC contractor in accordance with Lennox's installation, operation, and maintenance instructions, which are provided with the Equipment or available by contacting Lennox.

2 - Replacement Components will not be provided under this Basic Limited Warranty if the Equipment containing the defective Covered Component is moved after its initial installation.

3 - Replacement Components will not be provided under this Basic Limited Warranty unless all repairs of the Equipment containing the defective Covered Component are made by a licensed professional HVAC installer or licensed HVAC contractor using manufacturer-specified service components.

4 - This Basic Limited Warranty does not cover Equipment that does not meet and/or is installed in violation of regional government standards or other government requirements.

5 - Replacement Components will not be provided under this Basic Limited Warranty for any systems that are not AHRI-matched systems.

6 - This Basic Limited Warranty does not cover damage or defect resulting, in whole or in part, from:

a - Any act of God, including, but not limited to, fire, floods, wind, lightning, hurricanes, tornadoes, or earthquakes;

b - Mold, animals, insects, or bodily fluids;

c - Installation or operation in a corrosive atmosphere, or otherwise in contact with corrosive materials (e.g., chlorine, fluorine, salt, recycled waste water, urine, fertilizers, or other damaging substances, body fluids, or chemicals);

d - Accident, misuse, neglect, abuse, vandalism, theft, or unreasonable use or operation of the Equipment or Covered Component, including, but not limited to, operation of electrical equipment at voltages other than in the range specified on the unit nameplate (includes damages caused by brownouts);

e - Service performed or repairs made by anyone other than a licensed professional HVAC installer or contractor or any modification, change, or alteration of the Equipment or Covered Component, except as directed in writing by Lennox;

f - Operation with system components (indoor unit, outdoor unit, and refrigerant control devices) that do not match or meet the specifications recommended by Lennox;

g - Use of accessories or additives that have not been approved by Lennox that are installed on or in the Equipment;

h - Operation of a system without the required filter drier. The filter drier must be replaced anytime the refrigerant circuit has been opened;

i - Use of contaminated or alternate refrigerant;

j - Operation of furnace with continuous return air temperature of less than 60ºF (or 55ºF when furnace is operated overnight in setback mode);

k - Damage caused by frozen or broken water pipes;

l - Operation of a furnace field-installed downstream from a cooling coil;

m - Transit, delivery, packing, unpacking, assembly, installation, or removal;

n - Using or operating Equipment or other components thereof in a manner that is inconsistent with either its design or the way the manufacturer intended it to be used.

7 - This Basic Limited Warranty does not apply to cosmetic defects or damages or failures of non-operational components that do not materially inhibit the Equipment's proper operation and performance.

8 - Replacement Components will not be provided under this Basic Limited Warranty for Equipment where the serial or model number plate is removed, defaced, or made illegible.

9 - This Basic Limited Warranty does not apply to any repairs, services, or alterations needed to meet compliance with or changes in federal, state, or local codes or regulations.

10 - This Basic Limited Warranty does not apply to, nor is any warranty offered by Lennox for, any Equipment or Covered Components that have been stolen or have been ordered over the Internet, by telephone, or other electronic means, unless the dealer or licensed HVAC installer selling the Equipment or Covered Components over the Internet, by telephone, or other electronic mean, is also the installing contractor or a Lennox authorized on-line reseller selling the Equipment or Covered Components over the Internet, by telephone, or other electronic means, sells to a licensed professional HVAC installer or licensed HVAC contractor.

11 - Lennox will not pay electricity or fuel costs, or increases in electricity or fuel costs, for any reason whatsoever, including additional or unusual use of supplemental electrical heat. This Basic Limited Warranty also does not cover lodging expenses.

12 - Lennox shall not be responsible for any default or delay in performance under this Basic Limited Warranty caused by any factor or contingency outside of its control.

This Basic Limited Warranty gives the Owner specific legal rights, as described herein, and the Owner may have other rights which vary by state.

DISPUTE RESOLUTION

NOTE - PLEASE READ THIS SECTION CAREFULLY AS IT AFFECTS YOUR RIGHTS AND THE RESOLUTION OF DISPUTES

Some jurisdictions do not allow mandatory arbitration provisions or class action waivers. In such jurisdictions, the provisions (or, as applicable, portions thereof) not permitted under the jurisdiction's laws do not apply, but all permissible provisions shall apply. The Owner may have other rights that may vary by jurisdiction.

INDIVIDUAL ARBITRATION NOTICE: BY PURCHASING EQUIPMENT, REGISTERING THE EQUIPMENT OR MAKING A CLAIM UNDER THIS BASIC LIMITED WARRANTY, THE OWNER IS AGREEING THAT ALL DISPUTES BETWEEN THE OWNER AND LENNOX SHALL BE RESOLVED BY BINDING, INDIVIDUAL ARBITRATION, AS MORE FULLY OUTLINED BELOW.

1 - **Contact Lennox:** Please report any Dispute (defined in items 1 and 2 on page 5) to:

Lennox Industries Inc.
ATTN: Consumer Affairs
P.O. Box 799900
Dallas, TX 75379-9900

2 - **Mandatory Arbitration: Both the Owner and Lennox agree that all Disputes must be resolved exclusively through final and binding arbitration, and not by a court or jury; however, the Owner or Lennox may assert claims in small claims court if (i) the claims qualify for small claims court, (ii) the matter remains in small claims court, and (iii) the matter proceeds only on an individual (not a class or representative) basis.**

Both the Owner and Lennox waive the right to a trial by jury and any right to have a Dispute heard in court. Instead, all Disputes must be resolved in arbitration by a neutral third-party arbitrator. In arbitration, Disputes are resolved by an arbitrator instead of a judge or jury, discovery is more limited than in court, and the arbitrator's decision is subject to limited review by courts. However, the arbitrator must follow the law and subject to the terms herein, can award the same damages as in court, including monetary damages, injunctive relief, declaratory relief, and other relief. The arbitrator's award can be confirmed in any court of competent jurisdiction.

A single arbitrator, with the American Arbitration Association ("AAA"), will conduct the arbitration, and the award may not exceed the type, scope, or amount of relief allowed by applicable law. The arbitration will be conducted in the county of the Owner's residence or other mutually agreed location. For claims of $50,000 or less, the AAA's Supplementary Procedures for consumer-related Disputes will apply. For claims over $50,000, the AAA's Commercial Arbitration Rules will apply. If either set of rules is not available, the AAA rules applicable to consumer Disputes apply. The AAA's rules and a form initiating arbitration proceedings are available at www.adr.org or by calling 1-800-778-7879.

This arbitration provision is subject to the Federal Arbitration Act ("FAA"), which governs its interpretation and enforcement. To the extent the FAA does not apply to any Dispute, the laws of the State of Texas, without regard to principles of conflicts of law, will apply. The arbitrator will decide all issues of interpretation and application of this Dispute Resolution section, the arbitration provision, and this Basic Limited Warranty, with the exception of deciding whether the Arbitration Class Action Waiver in Paragraph 2a is valid or enforceable. Except as expressly stated in Paragraph 2a, a court will resolve any question regarding the validity or enforceability of Paragraph 2a. This Dispute Resolution section will survive termination of this Basic Limited Warranty. The requirement to arbitrate shall be broadly interpreted.

a - **Arbitration Class Action Waiver (for all states other than California):** The Owner and Lennox agree that arbitration will proceed solely on an individual basis and no Dispute will be arbitrated as a class action, consolidated with the claims of any other party, or arbitrated on a consolidated, representative, or private attorney general basis. Unless the Owner and Lennox agree otherwise in writing, the arbitrator's authority to resolve and make awards is limited to Disputes between the Owner and Lennox. The arbitrator's award or decision will not affect issues or claims involved in any proceeding between Lennox and any person or entity who is not a party to the arbitration. The arbitrator may award monetary, declaratory, or injunctive relief only in favor of the individual party seeking relief and only to the extent necessary to provide relief warranted by that party's individual claim. The arbitrator's award, if any, will not apply to any person or entity that is not a party to the arbitration.

A court, not the arbitrator, will decide any questions regarding the enforceability of this Paragraph 2a. If a court deems any portion of this Paragraph 2a invalid or unenforceable, the entire arbitration provision in Paragraph 2 (other than this sentence) will be null and void and not apply. For the avoidance of doubt, in no event shall an arbitration occur on a class action or collective basis.

Arbitration Class Action Waiver (for California): The Owner and Lennox agree that arbitration will proceed solely on an individual basis and no Dispute will be arbitrated as a class action, consolidated with the claims of any other party, or arbitrated on a consolidated, representative, or private attorney general basis; provided, however, that the Owner shall be permitted to seek and obtain public injunctive relief in arbitration. Unless the Owner and Lennox agree otherwise in writing, the arbitrator's authority to resolve and make monetary damage awards is limited to Disputes between the Owner and Lennox. The arbitrator may award monetary relief only in favor of the individual party seeking relief and only to the extent necessary to provide relief warranted by that party's individual claim. The arbitrator's monetary award, if any, will not apply to any person or entity that is not a party to the arbitration. A court, not the arbitrator, will decide any questions or disputes regarding the enforceability of this Arbitration Class Action Waiver other than a dispute over whether this Arbitration Class Action Waiver is enforceable under McGill v. Citibank, N.A., 2 Cal 5th 945 (2017) and related case law (that question shall be determined by an arbitrator). If a court deems any portion of this Arbitration Class Action Waiver invalid or unenforceable, the entire arbitration provision (other than this sentence) will be null and void and not apply. If an arbitrator deciding the McGill issue finds that this Arbitration Class Action Waiver is

unenforceable, then the entire arbitration provision (other than this sentence and the preceding sentence) shall be null and void. For the avoidance of doubt, in no event shall an arbitration occur on a class action or collective basis.

b - **Agency Proceedings:** This arbitration agreement does not preclude the Owner from bringing issues to the attention of federal, state, or local agencies. Such agencies can, if the law allows, seek relief against Lennox on the Owner's behalf.

c - **Fees and Costs:** If the Owner's total damage claims in an arbitration are $25,000 or less, not including the Owner's attorney fees ("Small Arbitration Claim"), the arbitrator may, if the Owner prevails, award the Owner's reasonable attorney fees, expert fees, and costs (separate from Arbitration Costs as defined below), but may not grant Lennox its attorney fees, expert fees, or costs (separate from Arbitration Costs) unless the arbitrator determines that the Owner's claim was frivolous or brought in bad faith. In a Small Arbitration Claim case, Lennox will pay all arbitration filing, administrative, and arbitrator costs (together, "Arbitration Costs"). The Owner must submit any request for payment of Arbitration Costs to the AAA at the same time the Owner submits its Demand for Arbitration. However, if the Owner wants Lennox to advance the Arbitration Costs for a Small Arbitration Claim before filing, Lennox will do so at the Owner's written request which must be sent to Lennox at the address in paragraph 1. In a Small Arbitration Claim case, Lennox agrees that the Owner may choose to have the arbitration carried out based only on documents submitted to the arbitrator or by a telephonic hearing unless the arbitrator requires an in-person hearing. If the Owner's total damage claim in an arbitration exceeds $25,000, not including the Owner's attorney fees ("Large Arbitration Claim"), the arbitrator may award the prevailing party its reasonable attorneys' fees and costs, or it may apportion attorneys' fees and costs between the Owner and Lennox (such fees and costs being separate from Arbitration Costs). In a Large Arbitration Claim case, if the Owner is able to demonstrate that the Arbitration Costs will be prohibitive as compared to the costs of litigation, Lennox will pay as much of the Arbitration Costs as the arbitrator deems necessary to prevent the arbitration from being cost-prohibitive. In the event the laws of a specific jurisdiction do not permit the terms contained within this Paragraph 2(c), then this Paragraph 2(c) shall not apply to Owners who reside in that jurisdiction. Further, in the event that the laws of a jurisdiction require Lennox to be responsible for any arbitration fees, costs, or expenses, Lennox shall comply with such jurisdiction's laws.

d - **Mass Arbitration (for residents outside of California only):** A "Mass Arbitration" shall be defined as any one of the following: (i) the same lawyer or law firm, alone or with other lawyers or law firms, files or causes to be filed 30 or more Small Arbitration Claims and/or Large Arbitration Claims within a thirty-day period; (ii) the same lawyer or law firm, alone or with other lawyers or law firms, files or causes to be filed 50 or more Small Arbitration Claims and/or Large Arbitration Claims within a sixty-day period; (iii) the same lawyer or law firm, alone or with other lawyers or law firms, serves as counsel (regardless of whether the lawyer or law firm is counsel of record) for 30 or more persons who file a Small Arbitration Claim and/or Large Arbitration Claim within a thirty-day period; or (iv) the same lawyer or law firm, alone or with other lawyers or law firms, serves as counsel (regardless of whether the lawyer or law firm is counsel of record) for 50 or more persons who file a Small Arbitration Claim and/or Large Arbitration Claim within a sixty-day period. In the event of a Mass Arbitration, notwithstanding anything to the contrary in subpart (c) above, Lennox shall (i) not be required to advance or pay Arbitration Costs for any arbitration and (ii) may be awarded its reasonable attorney fees, expert fees, and costs if it prevails (without having to show that the Owner's claim was frivolous or in bad faith). The immediately preceding sentence shall apply only to only those arbitrations that are filed once the definition of Mass Arbitration is met. Thus, by way of example, if the same law firm files 35 Small Arbitration Claims within a thirty-day period, the first 29 Small Arbitration Claims shall be governed by subpart 2(c) and the last six Small Arbitration Claims (i.e., arbitration numbers 30 through 35) shall be governed by this subpart 2(d). Once a law firm or lawyer is deemed part of a Mass Arbitration, all Small Arbitration Claims and Large Arbitration claims he/she/it files, assists in filing, or causes to be filed shall be governed by this subpart (d) unless and until the law firm or lawyer does not file, assists in filing, or causes to be filed any Small Arbitration Claims or Large Arbitration Claims for a period of one year. In the event that a jurisdiction prohibits any of the terms contained in this Mass Arbitration provision, then this Mass Arbitration provision shall not apply to Owners who reside in that jurisdiction.

e - **OPT OUT: <u>BOTH AN ORIGINAL AND SUBSEQUENT OWNER MAY OPT OUT OF ARBITRATION PROVIDING WRITTEN NOTICE ("THE OPT-OUT NOTICE") TO LENNOX</u>** that is post-marked no later than 30 calendar days after the Owner's purchase of the equipment (in the case of the original owner) or purchase of the premises at which the equipment was originally installed (in the case of a subsequent owner). The Opt-Out Notice must be mailed to Lennox at:

Lennox Industries Inc.
ATTN: Consumer Affairs
P.O. Box 799900
Dallas, TX 75379-9900

The Opt–Out Notice must state (i) the Owner's name and address, and that the Owner opts out of arbitration, (ii) the date that the Owner purchased the Equipment (if the original owner) or the premises where the Equipment was originally installed (in the case of a subsequent owner), (iii) the Equipment's model name and number, (iv) the Equipment serial number (which can be found on the unit nameplate), and (v) that the Owner elects to opt out of arbitration. The Owner must sign the Opt-Out Notice personally and not through another person or entity, and the Opt-Out Notice will apply only to the person or entity that signs it. Neither the Owner nor any other person or entity can opt out of arbitration on behalf of anyone else. Providing a timely Opt-Out Notice is the only way to opt out of arbitration. Opting out of arbitration will not affect this Basic Limited Warranty, and the Owner will continue to enjoy the benefits of this Basic Limited Warranty if the Owner opts out of arbitration.

Any Opt-Out Notice received after the opt out deadline will not be valid.

3 - **Non-Arbitration Class Action and Jury Waiver:** If for any reason any Dispute proceeds in court rather than arbitration, the Owner and Lennox waive any right to a jury trial, and the Dispute will proceed solely on an individual, non-class, non-representative basis. Neither the Owner nor Lennox may be a class representative or class member or otherwise participate in any class, consolidated, private attorney general, or representative proceeding; provided, however, that in California an individual can seek and obtain public injunctive relief.

4 - **Severability:** If any provision of this Basic Limited Warranty shall be held by an arbitrator or a court of competent jurisdiction to be illegal, invalid, or unenforceable, the parties intend for that provision to be amended and construed in a manner designed to effectuate the purposes of that provision to the fullest extent permitted by law. If a provision cannot be so amended or construed, it will be severed, and the remaining provisions shall remain unimpaired, valid, and in full force and effect to the fullest extent permitted by law and shall be interpreted so as to best reasonably effect the intent of the parties. To the extent there is a conflict between this severability clause and the severability clause in paragraph 2(a), the clause in paragraph 2(a) shall govern. For the avoidance of doubt, the severability clause shall not be used in a manner that permits the Owner to bring a class or collective action.

5 - Survival: All terms under the (i) Limitation of Liability, Disclaimer of Warranties and Responsibility for Damages; (ii) Exclusions;, and (iii) Dispute Resolution sections shall survive the expiration and termination of this Basic Limited Warranty.

DEFINITIONS

In addition to the terms defined above, the following definitions will apply to this Basic Limited Warranty:

1 - The terms “Dispute” and “Disputes” will be broadly interpreted to include any claims, causes of action, disagreements, or controversies that the Owner and Lennox had, have, or may have against each other, whether based in contract or tort (including negligence) or on a statute or regulation or any other legal theory, including, without limitation, all claims, causes of action disagreements, or controversies related in any way to or arising in any way out of:

- a - the Equipment and Covered Components covered by this Basic Limited Warranty;
- b - any other Lennox equipment, component, or service;
- c - any Lennox advertising, representation, or marketing;
- d - any contract, warranty, or other agreement the Owner had or in the future has with Lennox;
- e - any Lennox billing or other policy or practice;
- f - any action or inaction by any Lennox officer, director, employee, agent, or other representative relating to any Lennox equipment, component, marketing, representation, or service;
- g - any claims the Owner brings against a third party (such as a distributor, dealer, or repair service) that are based on, relate to, or in any way arise out of any Lennox equipment, component, marketing, representation, or service;
- h - any claims Lennox brings against the Owner; and
- i - any aspect of the relationship between the Owner and Lennox.

2 - “Dispute” and “Disputes” includes claims, causes of action, disagreements, or controversies that arose at any time, including before this Basic Limited Warranty became operative and after this Basic Limited Warranty is terminated.

3 - “Lennox” refers to Lennox International Inc., and Lennox Industries Inc., as well as their parents, affiliated companies, related companies, subsidiaries, divisions, departments, business units, representatives, predecessors in interest, successors, and assigns.

4 - “Basic Limited Warranty” refers to this document.

5 - “Owner” refers to (i) the person or entity that originally purchased the Equipment from a Lennox dealer or other licensed professional HVAC contractor; and (ii) (excluding leased equipment) during the Warranty Period, the owner(s) and subsequent owner(s) of the premises where the Equipment is originally installed.

EQUIPMENT INFORMATION

NOTE TO CUSTOMER

Please complete information below and retain this warranty for records and future reference. As well, retain proof of commissioning documentation from the installer.

Unit Model Number:_____

Serial Number:_____

Installing Contractor: _____

Installation Date: _____ Phone: _____

P.O. Box 799900, Dallas, TX 75379-9900

©2026 Lennox Industries Inc. FORM W900000-02 4/1/2026
Supersedes W900000-02 8/1/2025

0426
W900000-02

LENNOX EQUIPMENT
BASIC LIMITED WARRANTY

APPLIES IN U.S.A. AND CANADA ONLY

PLEASE READ DISPUTE RESOLUTION SECTION CAREFULLY, AS IT AFFECTS YOUR LEGAL RIGHTS

Failure to maintain equipment will void this Basic Limited Warranty.

BASIC LIMITED WARRANTY

(Residential Applications only)

Subject to the terms herein, this Basic Limited Warranty covers Covered Components (defined below) within the following equipment (hereafter, referred to as the "Equipment"):

Lennox Mini-Splits:

Equipment Type	Model Number
Outdoor Units	3PB, 3PC, MCA*, MCB*, MHA*, MHB*, MLA, MLB, MPA, MPB, MPC
Indoor Units	3WMB, 3WMC, M22A, M33A, M33B, M33C, MCFA, MCFB, MFMA, MMA, MMDA, MMDB, MWCA*, MWCB*, MWHA*, MWHB*, MWMA, MWMB, MWMC
Electric Heat Sections	EAH*

**Does not qualify for extended warranty with registration.*

Lennox Powered by Samsung Mini-Splits:

Equipment Type	Model Number
Outdoor Units	MWLD, MWPD, MWHD, MMLD, MMPD, 3WPD
Indoor Units	MDDD, MMDD, M22D, M33D, MFMD, MMD, M1WD, MWMD, MWHD, 3WMD, MWZD
Electric Heat Sections	V1EHK*

**Does not qualify for extended warranty with registration.*

A "Residential Application" is a single or multi-family dwelling, which includes homes, townhomes, duplexes, apartments, and condominiums used primarily for personal, family, or household purposes. A "Non-Residential Application" refers to all premises that are not included in the definition of a Residential Application, including, but not limited to, all applications that are not primarily used for personal, family, or household purposes.

This Basic Limited Warranty only covers repair components contained within Equipment ("Covered Components"). It does NOT cover cabinets, cabinet pieces, unit accessories, driers, refrigerant, refrigerant line sets, belts, gaskets, wiring, fuses, oil nozzles, or consumable items/components that should be replaced as part of a regular maintenance program, such as lubricants and air filters.

NOTE: The installation of a Replacement Component *(defined below)* under this Basic Limited Warranty does not extend the Warranty Period *(defined below)* of the underlying Equipment in which such component is installed. Notwithstanding the foregoing, in the event the manufacturing defect arises within Equipment that by its nature Replacement Components are not offered but rather full replacement Equipment is required (e.g., standalone indoor evaporator coil), replacement of such Equipment will result in a new Warranty Period only for such new Equipment.

LIMITED WARRANTY PERIOD:

For Equipment installed and used in a Residential Application, this Basic Limited Warranty begins on the date the Equipment is originally installed and ends as set forth below (the "Warranty Period"). If the date of original installation cannot be verified, the Warranty Period begins six (6) months after the date of manufacture, unless otherwise prohibited by law. Notwithstanding the above, when Equipment is installed in a newly constructed home, the Warranty Period begins on the closing date of purchase from the builder. Proof of closing may be required at Lennox's sole discretion.

FIVE-YEAR LIMITED WARRANTY
Indoor and Outdoor Units, and Electric Heat Sections — All Applications

Covered Components (except for compressors which are warranted as outlined separately) are warranted by this Basic Limited Warranty for a period of five (5) years from installation (existing homes) or closing date (new construction) when installed in all applications.

NOTE - Five-year coverage applies to all listed Equipment, with the exception of accessories and controls (as outlined separately).

ONE-YEAR LIMITED WARRANTY
Accessories and Controls — All Applications

Lennox branded and Lennox Powered by Samsung branded mini-split unit accessories and controls are warranted by Lennox for a period of one (1) year when installed in all applications.

SEVEN-YEAR LIMITED WARRANTY
Compressors — All Applications

Notwithstanding the above, compressors within the following Equipment are warranted by Lennox for the following periods:

Lennox Mini-Splits:

Equipment Model Number	Warranty Period for Compressor Only
3PB, 3PC, MCA, MCB, MHA, MHB, MLA, MLB, MPA, MPB, MPC	Seven (7) years

Lennox Powered by Samsung Mini-Splits:

Equipment Model Number	Warranty Period for Compressor Only
MWLD, MWPD, MWHD, MMLD, MMPD, 3WPD	Seven (7) years

LIMITED WARRANTY COVERAGE

Subject to the terms and conditions herein, if, during the Warranty Period, a Covered Component in the Equipment fails solely because of a manufacturing defect, Lennox will provide a replacement component (a "Replacement Component") to the Owner through a Lennox dealer or other licensed HVAC contractor. The Owner will be responsible for all shipping, freight, and handling charges, as well as all fees and costs arising out of or relating to the warranty service, including, but not limited to, all trip charges, labor costs, and other costs relating to diagnostic calls or to removing, repairing, servicing, or replacing any Covered Component. For a period of ninety(90) days after a warranty claim is filed under this Basic Limited Warranty, the Owner is responsible for surrendering the failed Covered Component(s) to Lennox upon request. Lennox's sole responsibility under this Basic Limited Warranty is to provide a Replacement Component as set forth above. In the event that any Covered Component is not available, Lennox will, at its option, (a) provide a substitute component; (b) allow the Owner to purchase equivalent Lennox equipment at a reduced price off the Lennox list price in effect on the date of the failure; or (c) provide a refund to the Owner in the amount of the original cost of the underlying Equipment (excluding labor). To obtain new Equipment at a reduced price per the terms of this paragraph, such new Equipment must be purchased through and installed by an independent Lennox dealer listed at www.lennox.com. Lennox's offer to allow Owner to purchase new Equipment at a reduced price applies solely to the specific Equipment containing the Covered Component that is unavailable and does not extend to any other Equipment, Covered Components, or other parts thereof even if such Equipment, Covered Component, or part is needed because (i) it is a required accessory or (ii) incompatibility of the new replacement Covered Component with the existing Equipment, Covered components, or parts thereof.

Both Lennox and the Owner of the Equipment are bound by this Basic Limited Warranty.

MAKING A WARRANTY CLAIM

To make a warranty claim, the Owner must contact an independent Lennox dealer or a licensed HVAC contractor. An independent Lennox dealer may be located by accessing www.lennox.com, e-mailing Lennox at www.lennox.com/help/contact-us/warranty (click on "E-mail our Contact Center"), or by calling Lennox at 1-800-9-Lennox. **You must contact the Lennox dealer or HVAC contractor pursuant to this paragraph prior to the Warranty Period's expiration for the claim to be eligible for limited warranty coverage. All warranty claims must be submitted within forty-five (45) days of the applicable Covered Component's failure date. The failure to submit a warranty claim within such forty-five (45) day period will result in the denial of a claim. Lennox has no liability whatsoever in the event that Owner or Owner's dealer or HVAC contractor fails to timely and/or properly file a claim hereunder.**

When warranty coverage is requested, the Owner must provide, and the Lennox dealer or HVAC contractor must collect, the following:

1 - The Equipment model and serial number;

2 - The Owner's name and location of the Equipment;

3 - The date of original Equipment installation (existing homes) or closing date (new construction);

4 - An accurate description of the problem.

NOTE - Proof of prior maintenance and purchase may also be required at Lennox's sole discretion.

LIMITATION OF LIABILITIES, DISCLAIMER OF WARRANTIES AND RESPONSIBILITY FOR DAMAGES

EXCEPT AS EXPRESSLY PROVIDED IN THIS BASIC LIMITED WARRANTY, LENNOX MAKES NO WARRANTY, EXPRESS OR IMPLIED, TO ANYONE AS TO FITNESS FOR ANY PURPOSE, MERCHANTABILITY, DESIGN, CONDITION, CAPACITY, PERFORMANCE, OR ANY OTHER ASPECT OF THE EQUIPMENT OR ITS MATERIAL, COMPONENTS, OR WORKMANSHIP. LENNOX DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES TO THE FULL EXTENT PERMITTED BY LAW. ALL IMPLIED WARRANTIES WHICH MAY EXIST, NOTWITHSTANDING THIS DISCLAIMER, ARE LIMITED TO THE DURATION OF THIS BASIC LIMITED WARRANTY AS APPLICABLE TO EACH COVERED COMPONENT. THIS BASIC LIMITED WARRANTY IS MADE IN LIEU OF ALL OTHER GUARANTEES, WARRANTIES, REPRESENTATIONS, CONDITIONS, OBLIGATIONS, OR LIABILITIES, EXPRESS OR IMPLIED. OWNER ACKNOWLEDGES AND AGREES THAT IN DECIDING TO PURCHASE THE EQUIPMENT COVERED BY THIS LIMITED WARRANTY, IT (1) HAS NOT RELIED ON ANY STATEMENTS OR REPRESENTATIONS OF ANY KIND THAT ARE NOT CONTAINED WITHIN THIS BASIC LIMITED WARRANTY; AND (2) WAS UNDER NO COMPULSION AND HAD THE ABILITY TO PURCHASE EQUIPMENT FROM OTHER MANUFACTURERS.

TO THE FULLEST EXTENT PERMITTED BY LAW, LENNOX SHALL NOT BE LIABLE, IN CONTRACT OR TORT, (INCLUDING NEGLIGENCE), BY STATUTE OR REGULATION, OR OTHERWISE, FOR (I) ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES; (II) ANY LOSS, DAMAGE, OR INJURY TO PERSONS(INCLUDING DEATH); (III) ANY LOSS, DAMAGE OR INJURY TO PROPERTY, OR THINGS; OR (IV) FOR DAMAGES OF ANY KIND OR NATURE INCLUDING, BUT NOT LIMITED TO, BUSINESS INTERRUPTION, LOSS OF BUSINESS VALUE, INCONVENIENCE, OR LOSS OF ANTICIPATED PROFITS OR SAVINGS. THIS PARAGRAPH APPLIES TO ALL DISPUTES (AS DEFINED BELOW) AND ALL CLAIMS OF ANY KIND, INCLUDING, BUT NOT LIMITED TO NEGLIGENCE CLAIMS. FURTHER, THIS PARAGRAPH APPLIES TO BOTH LENNOX AND OWNER. LENNOX SHALL NOT BE LIABLE FOR THE COST OF ANY WORK DONE BY THE OWNER OR OTHERS TO THE EQUIPMENT.

THIS LIMITATION OF LIABILITY AND DISCLAIMER LIMITS, EXCLUDES AND WAIVES SPECIFIC LEGAL RIGHTS AND CLAIMS. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION, WAIVER, LIMITATION OF EXPRESS OR IMPLIED WARRANTIES OR OTHER LIMITATIONS, EXCLUSIONS, AND WAIVERS CONTAINED HEREIN (E.G., THE LIMITATION OF LIABILITY FOR GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT). IN SUCH JURISDICTIONS, THE LIMITATIONS DISCLAIMERS, WAIVERS, AND EXCLUSIONS THAT ARE NOT PERMITTED UNDER THE APPLICABLE JURISDICTION'S LAWS DO NOT APPLY TO OWNER'S WHO RESIDE THEREIN, BUT ALL PERMISSIBLE LIMITATIONS, DISCLAIMERS, WAIVERS, AND EXCLUSIONS SHALL APPLY. THE OWNER MAY ALSO HAVE OTHER RIGHTS THAT MAY VARY BY JURISDICTION.

EXCLUSIONS

The following limitations and exclusions apply to this Basic Limited Warranty:

1 - Replacement Components will not be provided under this Basic Limited Warranty unless the Equipment containing the defective Covered Component is properly installed and maintained by a licensed professional HVAC installer or licensed HVAC contractor in accordance with Lennox's installation, operation, and maintenance instructions, which are provided with the Equipment or available by contacting Lennox.

2 - Replacement Components will not be provided under this Basic Limited Warranty if the Equipment containing the defective Covered Component is moved after its initial installation.

3 - Replacement Components will not be provided under this Basic Limited Warranty unless all repairs of the Equipment containing the defective Covered Component are made by a licensed professional HVAC installer or licensed HVAC contractor using manufacturer-specified service components.

4 - This Basic Limited Warranty does not cover Equipment that does not meet and/or is installed in violation of regional government standards or other government requirements.

5 - Replacement Components will not be provided under this Basic Limited Warranty for any systems that are not AHRI-matched systems.

6 - This Basic Limited Warranty does not cover damage or defect resulting, in whole or in part, from:

a - Any act of God, including, but not limited to, fire, floods, wind, lightning, hurricanes, tornadoes, or earthquakes;

b - Mold, animals, insects, or bodily fluids;

c - Installation or operation in a corrosive atmosphere, or otherwise in contact with corrosive materials (e.g., chlorine, fluorine, salt, recycled waste water, urine, fertilizers, or other damaging substances, body fluids, or chemicals);

d - Accident, misuse, neglect, abuse, vandalism, theft, or unreasonable use or operation of the Equipment or Covered Component, including, but not limited to, operation of electrical equipment at voltages other than in the range specified on the unit nameplate (includes damages caused by brownouts);

e - Service performed or repairs made by anyone other than a licensed professional HVAC installer or contractor or any modification, change, or alteration of the Equipment or Covered Component, except as directed in writing by Lennox;

f - Operation with system components (indoor unit, outdoor unit, and refrigerant control devices) that do not match or meet the specifications recommended by Lennox;

g - Use of accessories or additives that have not been approved by Lennox that are installed on or in the Equipment;

h - Operation of a system without the required filter drier. The filter drier must be replaced anytime the refrigerant circuit has been opened;

i - Use of contaminated or alternate refrigerant;

j - Operation of furnace with continuous return air temperature of less than 60ºF (or 55ºF when furnace is operated overnight in setback mode);

k - Damage caused by frozen or broken water pipes;

l - Operation of a furnace field-installed downstream from a cooling coil;

m - Transit, delivery, packing, unpacking, assembly, installation, or removal;

n - Using or operating Equipment or other components thereof in a manner that is inconsistent with either its design or the way Lennox intended it to be used.

7 - This Basic Limited Warranty does not apply to cosmetic defects or damages or failures of non-operational components that do not materially inhibit the Equipment's proper operation and performance.

8 - Replacement Components will not be provided under this Basic Limited Warranty for Equipment where the serial or model number plate is removed, defaced, or made illegible.

9 - This Basic Limited Warranty does not apply to any repairs, services, or alterations needed to meet compliance with or changes in federal, state, or local codes or regulations.

10 - This Basic Limited Warranty does not apply to, nor is any warranty offered by Lennox for, any Equipment or Covered Components that have been stolen or have been ordered over the Internet, by telephone, or other electronic means, unless the dealer or licensed HVAC installer selling the Equipment or Covered Components over the Internet, by telephone, or other electronic mean, is also the installing contractor or a Lennox authorized on-line reseller selling the Equipment or Covered Components over the Internet, by telephone, or other electronic means, sells to a licensed professional HVAC installer or licensed HVAC contractor.

11 - Lennox will not pay electricity or fuel costs, or increases in electricity or fuel costs, for any reason whatsoever, including additional or unusual use of supplemental electrical heat. This Basic Limited Warranty also does not cover lodging expenses.

12 - Lennox shall not be responsible for any default or delay in performance under this Basic Limited Warranty caused by any factor or contingency outside of its control.

This Basic Limited Warranty gives the Owner specific legal rights, as described herein, and the Owner may have other rights which vary by state.

DISPUTE RESOLUTION

NOTE - PLEASE READ THIS SECTION CAREFULLY AS IT AFFECTS YOUR RIGHTS AND THE RESOLUTION OF DISPUTES

Some jurisdictions do not allow mandatory arbitration provisions or class action waivers. In such jurisdictions, the provisions (or, as applicable, portions thereof) not permitted under the jurisdiction's laws do not apply, but all permissible provisions shall apply. The Owner may have other rights that may vary by jurisdiction.

INDIVIDUAL ARBITRATION NOTICE: BY PURCHASING EQUIPMENT, REGISTERING THE EQUIPMENT OR MAKING A CLAIM UNDER THIS BASIC LIMITED WARRANTY, THE OWNER IS AGREEING THAT ALL DISPUTES BETWEEN THE OWNER AND LENNOX SHALL BE RESOLVED BY BINDING, INDIVIDUAL ARBITRATION, AS MORE FULLY OUTLINED BELOW.

1 - **Contact Lennox:** Please report any Dispute (defined in items 1 and 2 on page 5) to:

Lennox Industries Inc.
ATTN: Consumer Affairs
P.O. Box 799900
Dallas, TX 75379-9900

2 - **Mandatory Arbitration: Both the Owner and Lennox agree that all Disputes must be resolved exclusively through final and binding arbitration, and not by a court or jury; however, the Owner or Lennox may assert claims in small claims court if (i) the claims qualify for small claims court, (ii) the matter remains in small claims court, and (iii) the matter proceeds only on an individual (not a class or representative) basis.**

Both the Owner and Lennox waive the right to a trial by jury and any right to have a Dispute heard in court. Instead, all Disputes must be resolved in arbitration by a neutral third-party arbitrator. In arbitration, Disputes are resolved by an arbitrator instead of a judge or jury, discovery is more limited than in court, and the arbitrator's decision is subject to limited review by courts. However, the arbitrator must follow the law and subject to the terms herein, can award the same damages as in court, including monetary damages, injunctive relief, declaratory relief, and other relief. The arbitrator's award can be confirmed in any court of competent jurisdiction.

A single arbitrator, with the American Arbitration Association ("AAA"), will conduct the arbitration, and the award may not exceed the type, scope, or amount of relief allowed by applicable law. The arbitration will be conducted in the county of the Owner's residence or other mutually agreed location. For claims of $50,000 or less, the AAA's Supplementary Procedures for consumer-related Disputes will apply. For claims over $50,000, the AAA's Commercial Arbitration Rules will apply. If either set of rules is not available, the AAA rules applicable to consumer Disputes apply. The AAA's rules and a form initiating arbitration proceedings are available at www.adr.org or by calling 1-800-778-7879.

This arbitration provision is subject to the Federal Arbitration Act ("FAA"), which governs its interpretation and enforcement. To the extent the FAA does not apply to any Dispute, the laws of the State of Texas, without regard to principles of conflicts of law, will apply. The arbitrator will decide all issues of interpretation and application of this Dispute Resolution section, the arbitration provision, and this Basic Limited Warranty, with the exception of deciding whether the Arbitration Class Action Waiver in Paragraph 2a is valid or enforceable. Except as expressly stated in Paragraph 2a, a court will resolve any question regarding the validity or enforceability of Paragraph 2a. This Dispute Resolution section will survive termination of this Basic Limited Warranty. The requirement to arbitrate shall be broadly interpreted.

a - **Arbitration Class Action Waiver (for all states other than California):** The Owner and Lennox agree that arbitration will proceed solely on an individual basis and no Dispute will be arbitrated as a class action, consolidated with the claims of any other party, or arbitrated on a consolidated, representative, or private attorney general basis. Unless the Owner and Lennox agree otherwise in writing, the arbitrator's authority to resolve and make awards is limited to Disputes between the Owner and Lennox. The arbitrator's award or decision will not affect issues or claims involved in any proceeding between Lennox and any person or entity who is not a party to the arbitration. The arbitrator may award monetary, declaratory, or injunctive relief only in favor of the individual party seeking relief and only to the extent necessary to provide relief warranted by that party's individual claim. The arbitrator's award, if any, will not apply to any person or entity that is not a party to the arbitration.

A court, not the arbitrator, will decide any questions regarding the enforceability of this Paragraph 2a. If a court deems any portion of this Paragraph 2a invalid or unenforceable, the entire arbitration provision in Paragraph 2 (other than this sentence) will be null and void and not apply. For the avoidance of doubt, in no event shall an arbitration occur on a class action or collective basis.

Arbitration Class Action Waiver (for California): The Owner and Lennox agree that arbitration will proceed solely on an individual basis and no Dispute will be arbitrated as a class action, consolidated with the claims of any other party, or arbitrated on a consolidated, representative, or private attorney general basis; provided, however, that the Owner shall be permitted to seek and obtain public injunctive relief in arbitration. Unless the Owner and Lennox agree otherwise in writing, the arbitrator's authority to resolve and make monetary damage awards is limited to Disputes between the Owner and Lennox. The arbitrator may award monetary relief only in favor of the individual party seeking relief and only to the extent necessary to provide relief warranted by that party's individual claim. The arbitrator's monetary award, if any, will not apply to any person or entity that is not a party to the arbitration. A court, not the arbitrator, will decide any questions or disputes regarding the enforceability of this Arbitration Class Action Waiver other than a dispute over whether this Arbitration Class Action Waiver is enforceable under McGill v. Citibank, N.A., 2 Cal 5th 945 (2017) and related case law (that question shall be determined by an arbitrator). If a court deems any portion of this Arbitration Class Action Waiver invalid or unenforceable, the entire arbitration provision (other than this sentence) will be null and void and not apply. If an arbitrator deciding the McGill issue finds that this Arbitration Class Action Waiver is

unenforceable, then the entire arbitration provision (other than this sentence and the preceding sentence) shall be null and void. For the avoidance of doubt, in no event shall an arbitration occur on a class action or collective basis.

b - **Agency Proceedings:** This arbitration agreement does not preclude the Owner from bringing issues to the attention of federal, state, or local agencies. Such agencies can, if the law allows, seek relief against Lennox on the Owner's behalf.

c - **Fees and Costs:** If the Owner's total damage claims in an arbitration are $25,000 or less, not including the Owner's attorney fees ("Small Arbitration Claim"), the arbitrator may, if the Owner prevails, award the Owner's reasonable attorney fees, expert fees, and costs (separate from Arbitration Costs as defined below), but may not grant Lennox its attorney fees, expert fees, or costs (separate from Arbitration Costs) unless the arbitrator determines that the Owner's claim was frivolous or brought in bad faith. In a Small Arbitration Claim case, Lennox will pay all arbitration filing, administrative, and arbitrator costs (together, "Arbitration Costs"). The Owner must submit any request for payment of Arbitration Costs to the AAA at the same time the Owner submits its Demand for Arbitration. However, if the Owner wants Lennox to advance the Arbitration Costs for a Small Arbitration Claim before filing, Lennox will do so at the Owner's written request which must be sent to Lennox at the address in paragraph 1. In a Small Arbitration Claim case, Lennox agrees that the Owner may choose to have the arbitration carried out based only on documents submitted to the arbitrator or by a telephonic hearing unless the arbitrator requires an in-person hearing. If the Owner's total damage claim in an arbitration exceeds $25,000, not including the Owner's attorney fees ("Large Arbitration Claim"), the arbitrator may award the prevailing party its reasonable attorneys' fees and costs, or it may apportion attorneys' fees and costs between the Owner and Lennox (such fees and costs being separate from Arbitration Costs). In a Large Arbitration Claim case, if the Owner is able to demonstrate that the Arbitration Costs will be prohibitive as compared to the costs of litigation, Lennox will pay as much of the Arbitration Costs as the arbitrator deems necessary to prevent the arbitration from being cost-prohibitive. In the event the laws of a specific jurisdiction do not permit the terms contained within this Paragraph 2(c), then this Paragraph 2(c) shall not apply to Owners who reside in that jurisdiction. Further, in the event that the laws of a jurisdiction require Lennox to be responsible for any arbitration fees, costs, or expenses, Lennox shall comply with such jurisdiction's laws.

d - **Mass Arbitration (for residents outside of California only):** A "Mass Arbitration" shall be defined as any one of the following: (i) the same lawyer or law firm, alone or with other lawyers or law firms, files or causes to be filed 30 or more Small Arbitration Claims and/or Large Arbitration Claims within a thirty-day period; (ii) the same lawyer or law firm, alone or with other lawyers or law firms, files or causes to be filed 50 or more Small Arbitration Claims and/or Large Arbitration Claims within a sixty-day period; (iii) the same lawyer or law firm, alone or with other lawyers or law firms, serves as counsel (regardless of whether the lawyer or law firm is counsel of record) for 30 or more persons who file a Small Arbitration Claim and/or Large Arbitration Claim within a thirty-day period; or (iv) the same lawyer or law firm, alone or with other lawyers or law firms, serves as counsel (regardless of whether the lawyer or law firm is counsel of record) for 50 or more persons who file a Small Arbitration Claim and/or Large Arbitration Claim within a sixty-day period. In the event of a Mass Arbitration, notwithstanding anything to the contrary in subpart (c) above, Lennox shall (i) not be required to advance or pay Arbitration Costs for any arbitration and (ii) may be awarded its reasonable attorney fees, expert fees, and costs if it prevails (without having to show that the Owner's claim was frivolous or in bad faith). The immediately preceding sentence shall apply only to only those arbitrations that are filed once the definition of Mass Arbitration is met. Thus, by way of example, if the same law firm files 35 Small Arbitration Claims within a thirty-day period, the first 29 Small Arbitration Claims shall be governed by subpart 2(c) and the last six Small Arbitration Claims (i.e., arbitration numbers 30 through 35) shall be governed by this subpart 2(d). Once a law firm or lawyer is deemed part of a Mass Arbitration, all Small Arbitration Claims and Large Arbitration claims he/she/it files, assists in filing, or causes to be filed shall be governed by this subpart (d) unless and until the law firm or lawyer does not file, assists in filing, or causes to be filed any Small Arbitration Claims or Large Arbitration Claims for a period of one year. In the event that a jurisdiction prohibits any of the terms contained in this Mass Arbitration provision, then this Mass Arbitration provision shall not apply to Owners who reside in that jurisdiction.

e - **OPT OUT: <u>BOTH AN ORIGINAL AND SUBSEQUENT OWNER MAY OPT OUT OF ARBITRATION PROVIDING WRITTEN NOTICE ("THE OPT-OUT NOTICE") TO LENNOX</u>** that is post-marked no later than 30 calendar days after the Owner's purchase of the equipment (in the case of the original owner) or purchase of the premises at which the equipment was originally installed (in the case of a subsequent owner). The Opt-Out Notice must be mailed to Lennox at:

Lennox Industries Inc.
ATTN: Consumer Affairs
P.O. Box 799900
Dallas, TX 75379-9900

The Opt–Out Notice must state (i) the Owner's name and address, and that the Owner opts out of arbitration, (ii) the date that the Owner purchased the Equipment (if the original owner) or the premises where the Equipment was originally installed (in the case of a subsequent owner), (iii) the Equipment's model name and number, (iv) the Equipment serial number (which can be found on the unit nameplate), and (v) that the Owner elects to opt out of arbitration. The Owner must sign the Opt-Out Notice personally and not through another person or entity, and the Opt-Out Notice will apply only to the person or entity that signs it. Neither the Owner nor any other person or entity can opt out of arbitration on behalf of anyone else. Providing a timely Opt-Out Notice is the only way to opt out of arbitration. Opting out of arbitration will not affect this Basic Limited Warranty, and the Owner will continue to enjoy the benefits of this Basic Limited Warranty if the Owner opts out of arbitration.

Any Opt-Out Notice received after the opt out deadline will not be valid.

3 - **Non-Arbitration Class Action and Jury Waiver:** If for any reason any Dispute proceeds in court rather than arbitration, the Owner and Lennox waive any right to a jury trial, and the Dispute will proceed solely on an individual, non-class, non-representative basis. Neither the Owner nor Lennox may be a class representative or class member or otherwise participate in any class, consolidated, private attorney general, or representative proceeding; provided, however, that in California an individual can seek and obtain public injunctive relief.

4 - **Severability:** If any provision of this Basic Limited Warranty shall be held by an arbitrator or a court of competent jurisdiction to be illegal, invalid, or unenforceable, the parties intend for that provision to be amended and construed in a manner designed to effectuate the purposes of that provision to the fullest extent permitted by law. If a provision cannot be so amended or construed, it will be severed, and the remaining provisions shall remain unimpaired, valid, and in full force and effect to the fullest extent permitted by law and shall be interpreted so as to best reasonably effect the intent of the parties. To the extent there is a conflict between this severability clause and the severability clause in paragraph 2(a), the clause in paragraph 2(a) shall govern. For the avoidance of doubt, the severability clause shall not be used in a manner that permits the Owner to bring a class or collective action.

5 - Survival: All terms under the (i) Limitation of Liability, Disclaimer of Warranties and Responsibility for Damages; (ii) Exclusions;, and (iii) Dispute Resolution sections shall survive the expiration and termination of this Basic Limited Warranty.

DEFINITIONS

In addition to the terms defined above, the following definitions will apply to this Basic Limited Warranty:

1 - The terms “Dispute” and “Disputes” will be broadly interpreted to include any claims, causes of action, disagreements, or controversies that the Owner and Lennox had, have, or may have against each other, whether based in contract or tort (including negligence) or on a statute or regulation or any other legal theory, including, without limitation, all claims, causes of action disagreements, or controversies related in any way to or arising in any way out of:

- a - the Equipment and Covered Components covered by this Basic Limited Warranty;
- b - any other Lennox equipment, component, or service;
- c - any Lennox advertising, representation, or marketing;
- d - any contract, warranty, or other agreement the Owner had or in the future has with Lennox;
- e - any Lennox billing or other policy or practice;
- f - any action or inaction by any Lennox officer, director, employee, agent, or other representative relating to any Lennox equipment, component, marketing, representation, or service;
- g - any claims the Owner brings against a third party (such as a distributor, dealer, or repair service) that are based on, relate to, or in any way arise out of any Lennox equipment, component, marketing, representation, or service;
- h - any claims Lennox brings against the Owner; and
- i - any aspect of the relationship between the Owner and Lennox.

2 - “Dispute” and “Disputes” includes claims, causes of action, disagreements, or controversies that arose at any time, including before this Basic Limited Warranty became operative and after this Basic Limited Warranty is terminated.

3 - “Lennox” refers to Lennox International Inc., and Lennox Industries Inc., as well as their parents, affiliated companies, related companies, subsidiaries, divisions, departments, business units, representatives, predecessors in interest, successors, and assigns.

4 - “Basic Limited Warranty” refers to this document.

5 - “Owner” refers to (i) the person or entity that originally purchased the Equipment from a Lennox dealer or other licensed professional HVAC contractor; and (ii) (excluding leased equipment) during the Warranty Period, the owner(s) and subsequent owner(s) of the premises where the Equipment is originally installed.

EQUIPMENT INFORMATION

NOTE TO CUSTOMER

Please complete information below and retain this warranty for records and future reference. As well, retain proof of commissioning documentation from the installer.

Unit Model Number:_____

Serial Number:_____

Installing Contractor: _____

Installation Date: _____ Phone: _____

P.O. Box 799900, Dallas, TX 75379-9900

©2025 Lennox Industries Inc. FORM W900004-02 11/11/2025

Supersedes W900004-02 5/1/2025

1125

W900004-02