



Internal Use Only

<http://biz.lgservice.com>

Room Air Conditioner

SVC MANUAL(General)

MODEL : ABNW366KSA1	ABUW366KSA1
ABNW426KSA1	ABUW426KSA1
ABNW486KSA1	ABUW486KSA1
ABNW606LTA1	ABUW606LTA1
ABNW366KSA3	ABUW366KSA3
ABNW426KSA3	ABUW426KSA3

CAUTION

Before Servicing the unit, read the safety precautions in General SVC manual.
Only for authorized service personnel.

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Safety Precautions



To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

⚠ WARNING This symbol indicates the possibility of death or serious injury.

⚠ CAUTION This symbol indicates the possibility of injury or damage.

■ Meanings of symbols used in this manual are as shown below.

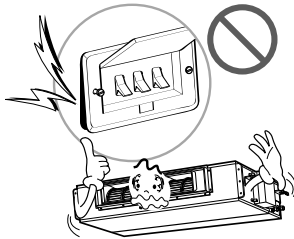
	Be sure not to do.
	Be sure to follow the instruction.

⚠ WARNING

■ Installation

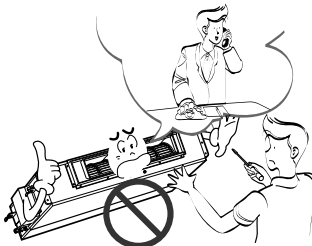
Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

• There is risk of fire or electric shock.



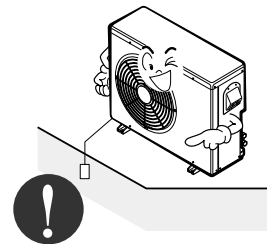
For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.

• Do not disassemble or repair the product. There is risk of fire or electric shock.



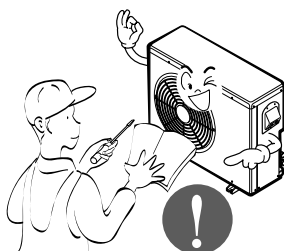
Always ground the product.

• There is risk of fire or electric shock.



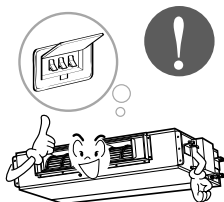
Install the panel and the cover of control box securely.

• There is risk of fire or electric shock.



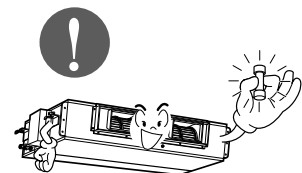
Always install a dedicated circuit and breaker.

• Improper wiring or installation may cause fire or electric shock



Use the correctly rated breaker or fuse.

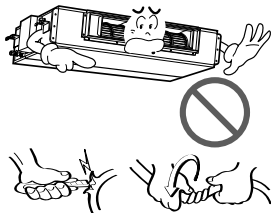
• There is risk of fire or electric shock.



Safety Precautions

Do not modify or extend the power cable.

- There is risk of fire or electric shock.



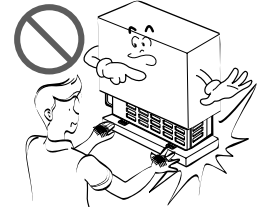
Do not install, remove, or re-install the unit by yourself (customer).

- There is risk of fire, electric shock, explosion, or injury.



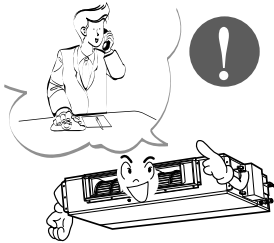
Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.



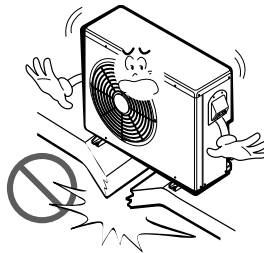
For installation, always contact the dealer or an Authorized Service Center.

- There is risk of fire, electric shock, explosion, or injury.



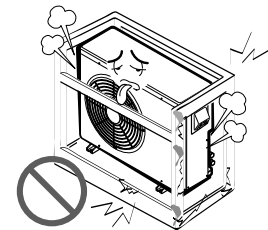
Do not install the product on a defective installation stand.

- It may cause injury, accident, or damage to the product.



Be sure the installation area does not deteriorate with age.

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



Operational

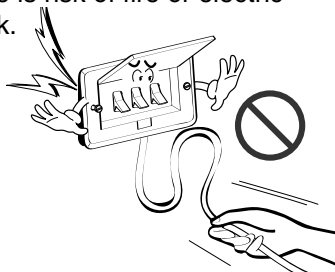
Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Moisture may condense and wet or damage furniture.



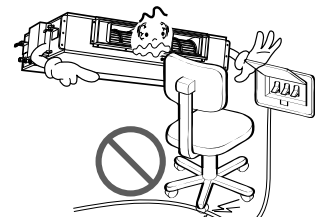
Take care to ensure that power cable could not be pulled out or damaged during operation.

- There is risk of fire or electric shock.



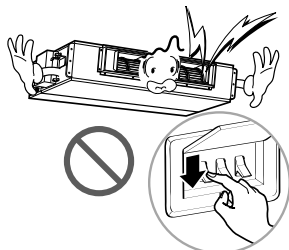
Do not place anything on the power cable.

- There is risk of fire or electric shock.



Do not plug or unplug the power supply plug during operation.

- There is risk of fire or electric shock.



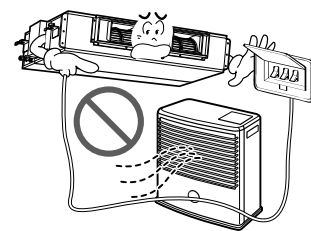
Do not touch (operate) the product with wet hands.

- There is risk of fire or electrical shock.



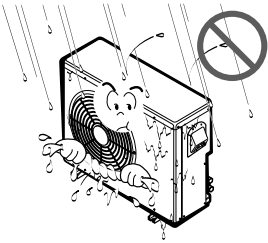
Do not place a heater or other appliances near the power cable.

- There is risk of fire and electric shock.



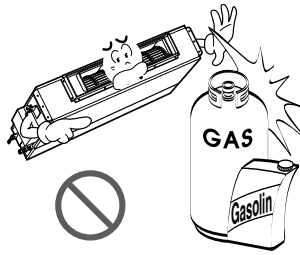
Do not allow water to run into electric parts.

- It may cause There is risk of fire, failure of the product, or electric shock.

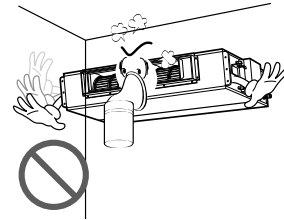


Do not store or use flammable gas or combustibles near the product.

- There is risk of fire or failure of product.
- Oxygen deficiency could occur.

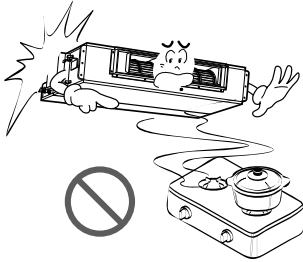


Do not use the product in a tightly closed space for a long time.



When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.

- Do not use the telephone or turn switches on or off. There is risk of explosion or fire



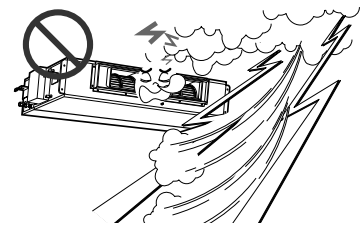
If strange sounds, or small or smoke comes from product. Turn the breaker off or disconnect the power supply cable.

- There is risk of electric shock or fire.



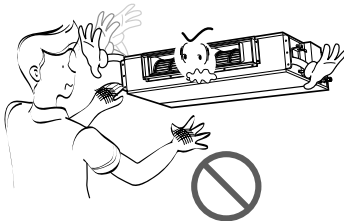
Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.

- There is risk of property damage, failure of product, or electric shock.



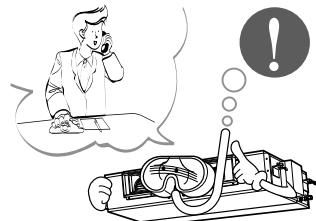
Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

- There is risk of physical injury, electric shock, or product failure.



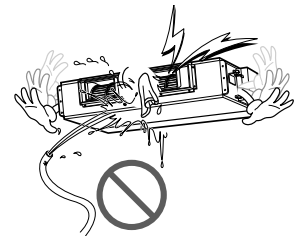
When the product is soaked (flooded or submerged), contact an Authorized Service Center.

- There is risk of fire or electric shock.



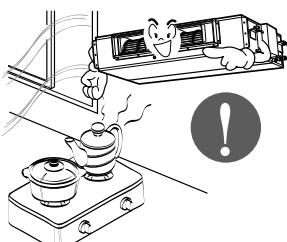
Be cautious that water could not enter the product.

- There is risk of fire, electric shock, or product damage.



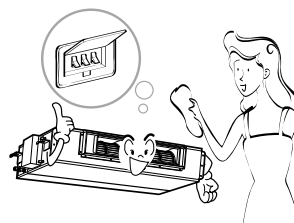
Ventilate the product from time to time when operating it together with a stove, etc.

- There is risk of fire or electric shock.



Turn the main power off when cleaning or maintaining the product.

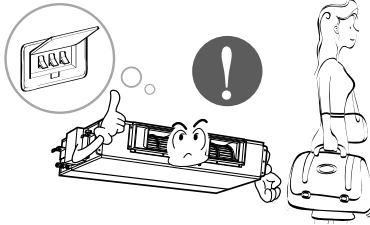
- There is risk of electric shock.



Safety Precautions

When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.

- There is risk of product damage or failure, or unintended operation.



Take care to ensure that nobody could step on or fall onto the outdoor unit.

- This could result in personal injury and product damage.

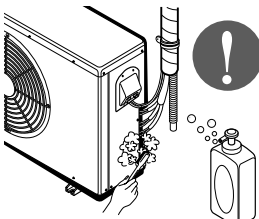


CAUTION

Installation

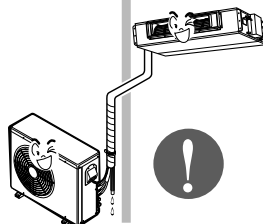
Always check for gas (refrigerant) leakage after installation or repair of product.

- Low refrigerant levels may cause failure of product.



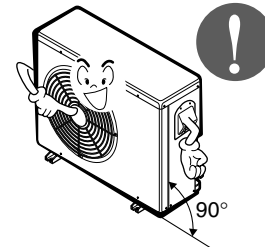
Install the drain hose to ensure that water is drained away properly.

- A bad connection may cause water leakage.



Keep level even when installing the product.

- To avoid vibration or water leakage.



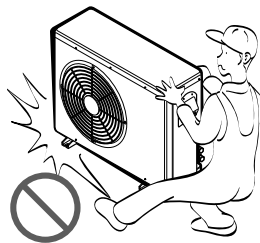
Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.

- It may cause a problem for your neighbors.



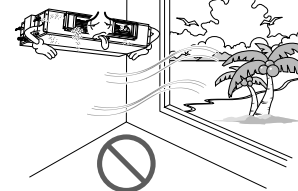
Use two or more people to lift and transport the product.

- Avoid personal injury.



Do not install the product where it will be exposed to sea wind (salt spray) directly.

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.



Operational

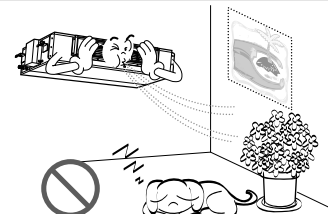
Do not expose the skin directly to cool air for long periods of time. (Don't sit in the draft.)

- This could harm to your health.



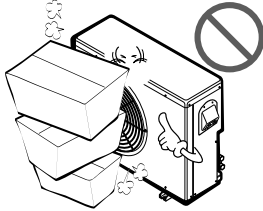
Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.

- There is risk of damage or loss of property.



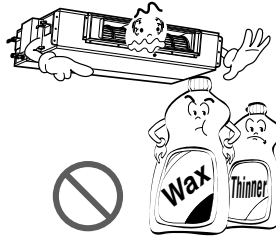
Do not block the inlet or outlet of air flow.

- It may cause product failure.



Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.

- There is risk of fire, electric shock, or damage to the plastic parts of the product.



Do not touch the metal parts of the product when removing the air filter. They are very sharp!

- There is risk of personal injury.



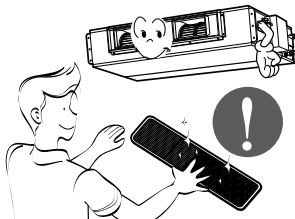
Do not step on or put anything on the product. (outdoor units)

- There is risk of personal injury and failure of product.



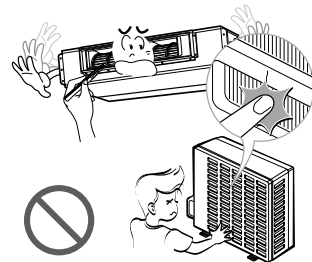
Always insert the filter securely. Clean the filter every two weeks or more often if necessary.

- A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.



Do not insert hands or other objects through the air inlet or outlet while the product is operated.

- There are sharp and moving parts that could cause personal injury.



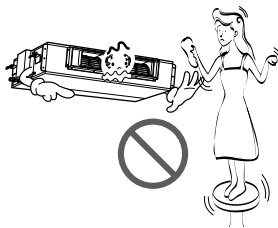
Do not drink the water drained from the product.

- It is not sanitary and could cause serious health issues.



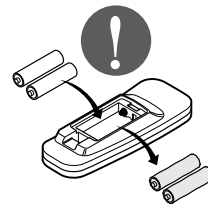
Use a firm stool or ladder when cleaning or maintaining the product.

- Be careful and avoid personal injury.



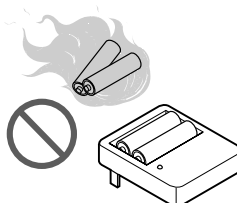
Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.

- There is risk of fire or explosion



Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.

- They may burn or explode.

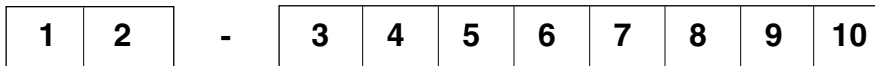


If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.

- The chemicals in batteries could cause burns or other health hazards.



Model Number Nomenclature



Code	Type	Code of Model	Meaning																																
1	Producing Center/ Refrigerant	A~Z	L: ChangWon R22, A: ChangWon R410A, C: ChangWon R407C																																
2	Type of Air conditioner	A~Z	B: Ceiling Duct Type Air conditioner																																
3	Cooling/Heating	A~Z	C: C/O, H: H/P, X: C/O + E/H, Z: H/P + E/H, W: Inverter + H/P																																
4,5	Capacity(Btu/h)	1~9	Cooling/Heating Capacity Ex. "48" → 48,000Btu/h																																
6	Electric Range	1~9	Electric Standard [V/Hz/Phase] 1 : 115/60/1 2 : 220/60/1 3 : 208-230/60/1 5 : 200-220/50/1 6 : 220-240/50/1 7 : 100/50(60)/1 8 : 380-415/50/3 9 : 380/60/3 A : 220/50/3 B : 208-230/60/3 C : 575/60/3 D : 440-460/60/3 E : 265/60/1 F : 200/50-60/1																																
7	Chassis	A~Z	Name of tool of unit																																
8	LG/OEM Brand	A~Z	L: LG Brand M: 1st OEM Brand G: 2nd LG Brand N: 2nd OEM Brand																																
9	Function	A~Z	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Basic</td><td style="text-align: center;">A</td></tr> <tr><td>Low Ambient</td><td style="text-align: center;">B</td></tr> <tr><td>Plasma Filter</td><td style="text-align: center;">C</td></tr> <tr><td>Plasma Filter + Drain Pump</td><td style="text-align: center;">D</td></tr> <tr><td> </td><td style="text-align: center;">E</td></tr> <tr><td>Low Ambient + Drain Pump</td><td style="text-align: center;">F</td></tr> <tr><td>Low Static Motor</td><td style="text-align: center;">G</td></tr> <tr><td>Plasma Filter + Low Ambient</td><td style="text-align: center;">H</td></tr> <tr><td>Plasma Filter + Low Ambient + Drain Pump</td><td style="text-align: center;">J</td></tr> <tr><td> </td><td style="text-align: center;">K</td></tr> <tr><td> </td><td style="text-align: center;">L</td></tr> <tr><td> </td><td style="text-align: center;">M</td></tr> <tr><td> </td><td style="text-align: center;">N</td></tr> <tr><td>Drain Pump</td><td style="text-align: center;">P</td></tr> <tr><td> </td><td style="text-align: center;">Q</td></tr> <tr><td> </td><td style="text-align: center;">R</td></tr> </table>	Basic	A	Low Ambient	B	Plasma Filter	C	Plasma Filter + Drain Pump	D		E	Low Ambient + Drain Pump	F	Low Static Motor	G	Plasma Filter + Low Ambient	H	Plasma Filter + Low Ambient + Drain Pump	J		K		L		M		N	Drain Pump	P		Q		R
Basic	A																																		
Low Ambient	B																																		
Plasma Filter	C																																		
Plasma Filter + Drain Pump	D																																		
	E																																		
Low Ambient + Drain Pump	F																																		
Low Static Motor	G																																		
Plasma Filter + Low Ambient	H																																		
Plasma Filter + Low Ambient + Drain Pump	J																																		
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10	Serial No.	0~9																																	

Product Specifications (cooling & Heating)

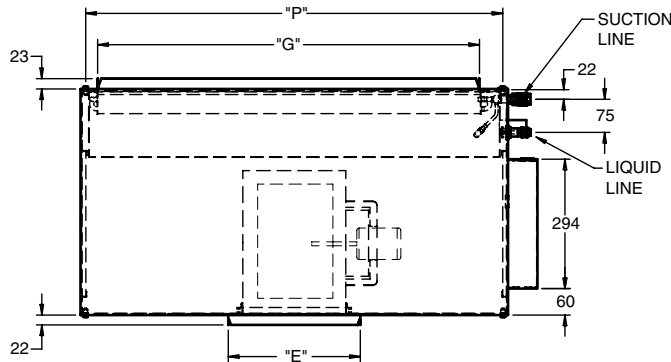
Model			AB-W366KSA1	AB-W366KSA3	AB-W426KSA1
Power Source		Ø, V, Hz	1, 220-240, 50	1, 220-240, 50	1, 220-240, 50
Cooling	Capacity	kcal/h(BTU/h)	8,568(34,000)	7,747(30,743)	10,080(40,000)
		W	9,964	9,010	11,723
	Input	W	4,100	3,870	4,700
Heating	Capacity	kcal/h(BTU/h)	9,324(37,000)	8,410(33,370)	12,096(48,000)
		W	10,844	9,780	14,067
	Input	W	3,500	3,450	4,400
Rated Load Amp.	Cooling	A	17.5	17.5	20
	Heating	A	15	18	19.5
Air Volumn	Cooling(H/M/L)	L/S	533/467/383	533/467/383	767/667/583
	Heating(H/M/L)		533/467/383	533/467/383	767/667/583
Refrigerant(R410A)		g	2,830	2,830	3,500
Drain Hose	In. Dia	mm	22.6	22.6	22.6
Main Cable		No. X mm ²	3*5.5	3*5.5	3*8.5
Connecting Cable			4*1.25	4*1.25	4*1.25
Remote Control Type			L.C.D Wired	L.C.D Wired	L.C.D Wired
Refrigerant Control Type			L.E.V	L.E.V	L.E.V
Fuction	Soft Dry		Yes	Yes	Yes
	Timer		24 Hours On/Off	24 Hours On/Off	24 Hours On/Off
	Self Diagnosis		Yes	Yes	Yes
	Deice Operation		Yes	Yes	Yes
	Hot Start		Yes	Yes	Yes
	Zone Control(Optional)		Optional	Optional	Optional
	Central Control(Optional)		Optional	Optional	Optional
	Group Control(Optional wiring)		Yes	Yes	Yes
	Radio Frequency Control(Optional)		Optional	Optional	Optional
	Weekly Programming		Yes	Yes	Yes
	Thermistor		Yes	Yes	Yes
	Drain Pump(Optional)		Optional	Optional	Optional
	Auto changeover(Auto Operation: CL)		Yes	Yes	Yes
	Stand-by Consumption 0		Yes	Yes	Yes
Connecting Pipe	Liquid	Inch (mm)	3/8(9.52)	3/8(9.52)	3/8(9.52)
	Gas		5/8(15.88)	5/8(15.88)	3/4(19.05)
Dimension	Indoor	mm (W x H x D)	1040*350*560	1040*350*560	1040*350*560
	Outdoor		870*1060*320	870*1060*320	900*1165*370
Net Weight	Indoor	Kg	37	37	37
	Outdoor		80	80	105

Product Specifications (cooling & Heating)

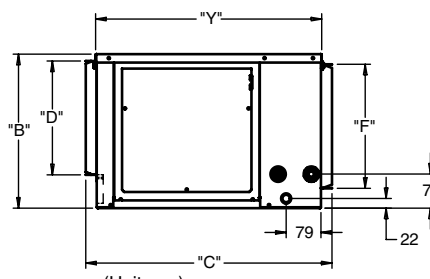
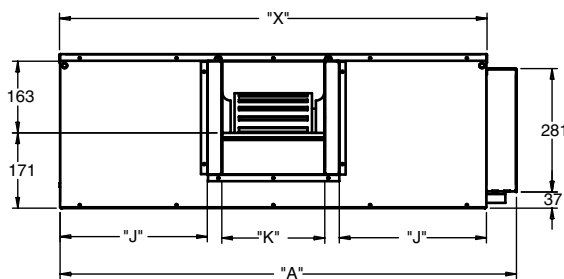
Model			AB-W426KSA3	AB-W486KSA1	AB-W606LTA1
Power Source		Ø, V, Hz	1, 220-240, 50	1, 220-240, 50	1, 220-240, 50
Cooling	Capacity	kcal/h(BTU/h)	9,106(36,135)	11,592(46,000)	13,840(55,000)
		W	10,590	13,481	16,100
	Input	W	4,590	5,200	6,500
Heating	Capacity	kcal/h(BTU/h)	10,920(43,334)	12,852(51,000)	15,100(60,000)
		W	12,700	14,946	17,600
	Input	W	4,400	4,700	5,800
Rated Load Amp.	Cooling	A	20	23	28
	Heating	A	19.5	20.5	26
Air Volumn	Cooling(H/M/L)	L/S	767/667/583	850/817/767	1083/967/850
	Heating(H/M/L)		767/667/583	850/817/767	1083/967/850
Refrigerant(R410A)		g	3500	3700	5800
Drain Hose	In. Dia	mm	22.6	22.6	22.6
Main Cable		No. X mm ²	3*8.5	3*8.5	3*8.5
Connecting Cable			4*1.25	4*1.25	4*1.25
Remote Control Type			L.C.D Wired	L.C.D Wired	L.C.D Wired
Refrigerant Control Type			L.E.V	L.E.V	L.E.V
Fuction	Soft Dry		Yes	Yes	Yes
	Timer		24 Hours On/Off	24 Hours On/Off	24 Hours On/Off
	Self Diagnosis		Yes	Yes	Yes
	Deice Operation		Yes	Yes	Yes
	Hot Start		Yes	Yes	Yes
	Zone Control(Optional)		Optional	Optional	Optional
	Central Control(Optional)		Optional	Optional	Optional
	Group Control(Optional wiring)		Yes	Yes	Yes
	Radio Frequency Control(Optional)		Optional	Optional	Optional
	Weekly Programing		Yes	Yes	Yes
	Thermistor		Yes	Yes	Yes
	Drain Pump(Optional)		Optional	Optional	Optional
	Auto changeover(Auto Operation: CL)		Yes	Yes	Yes
	Stand-by Consumption 0		Yes	Yes	Yes
Connecting Pipe	Liquid	Inch (mm)	3/8(9.52)	3/8(9.52)	3/8(9.52)
	Gas		3/4(19.05)	3/4(19.05)	3/4(19.05)
Dimension	Indoor	mm (W x H x D)	1040*350*560	1040*350*560	1120*400*580
	Outdoor		900*1165*370	900*1165*370	750*1517*650
Net Weight	Indoor	Kg	37	40	51
	Outdoor		105	105	120

Dimensions

Indoor

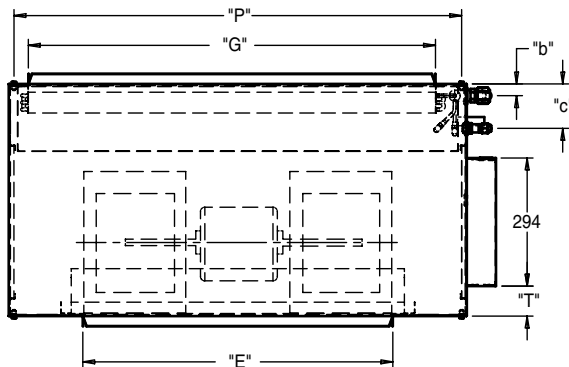


MODEL	CONN. TYPE	
	LIQUID LINE	SUCTION LINE
ABNW366KSA1	3/8" FLARE	5/8" FLARE
ABNW366KSA3	3/8" FLARE	5/8" FLARE

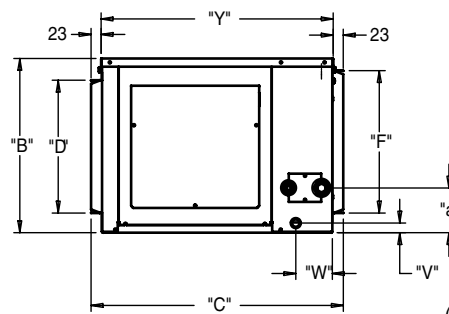
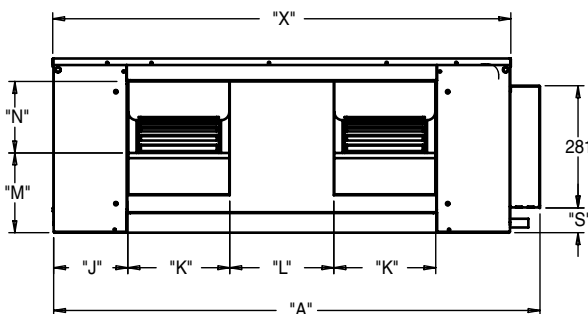


(Unit:mm)

MODEL NO	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"P"	"X"	"Y"
ABNW366KSA1	1040	350	560	259	300	282	868	335	234	948	972	514
ABNW366KSA3												



MODEL	CONN. TYPE			"a"	"b"	"c"
	LIQUID LINE	SUCTION LINE				
ABNW426KSA1	3/8" FLARE	3/4" FLARE	77	22	97	
ABNW426KSA3	3/8" FLARE	3/4" FLARE				
ABNW486KSA1	3/8" FLARE	3/4" FLARE	103	26	100	
ABNW606LTA1	3/8" FLARE	3/4" FLARE	103	26	100	

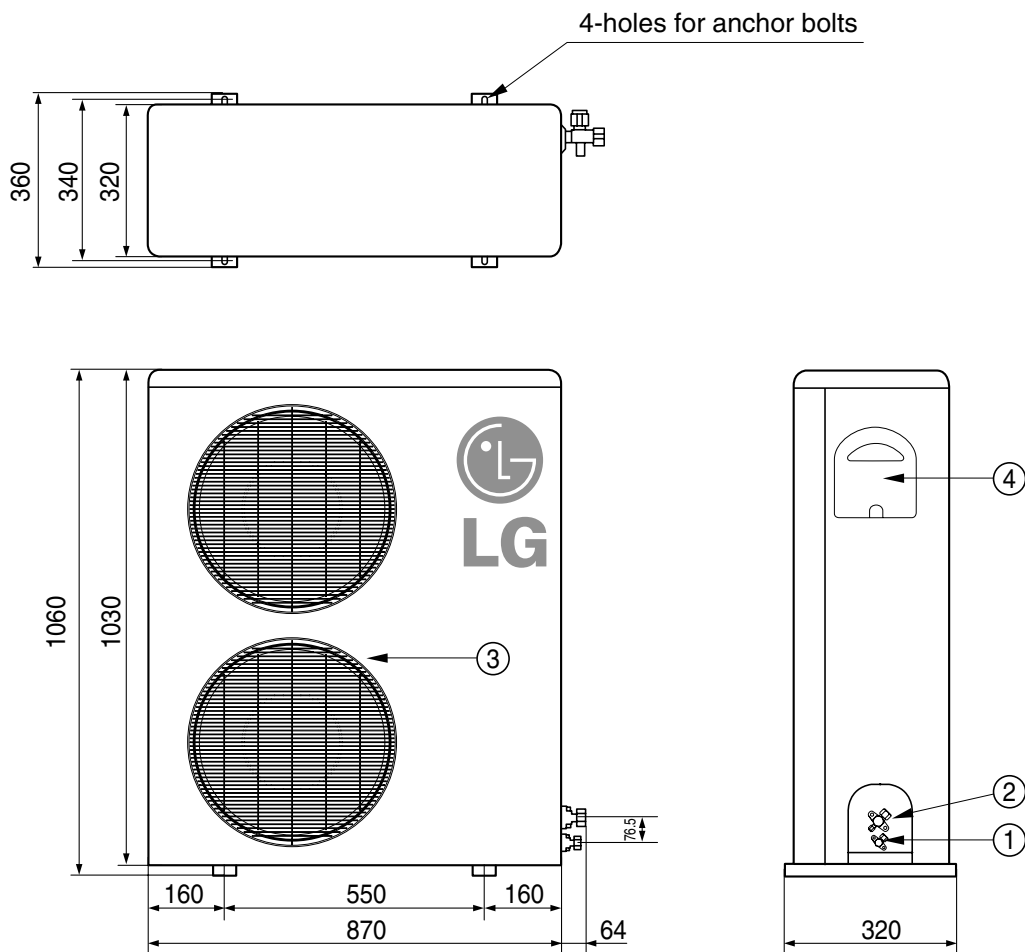


(Unit:mm)

MODEL NO	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"L"	"M"	"N"	"P"	"S"	"T"	"V"	"W"	"X"	"Y"
ABNW426KSA1	1040	350	560	282	712	282	868	131	250	210	170	161	934	37	60	22	79	972	514
ABNW426KSA3																			
ABNW486KSA1	1120	400	580	305	712	327	935	171	234	239	183	165	1014	57	69	22	84	052	533
ABNW606LTA1	1120	400	580	305	712	327	935	171	234	239	183	165	1014	57	69	22	84	1052	533

Outdoor Unit

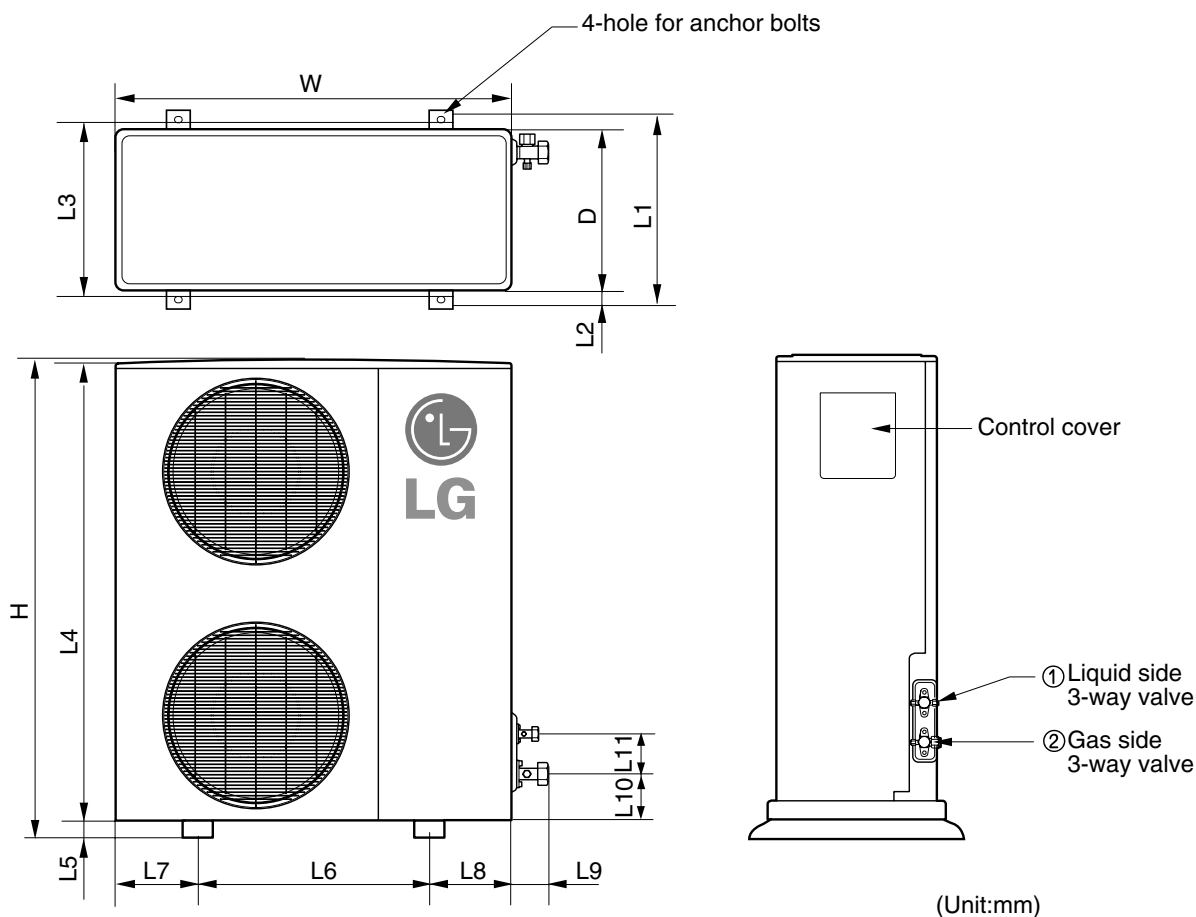
ABUW366KSA1 / ABUW366KSA3



(Unit: mm)

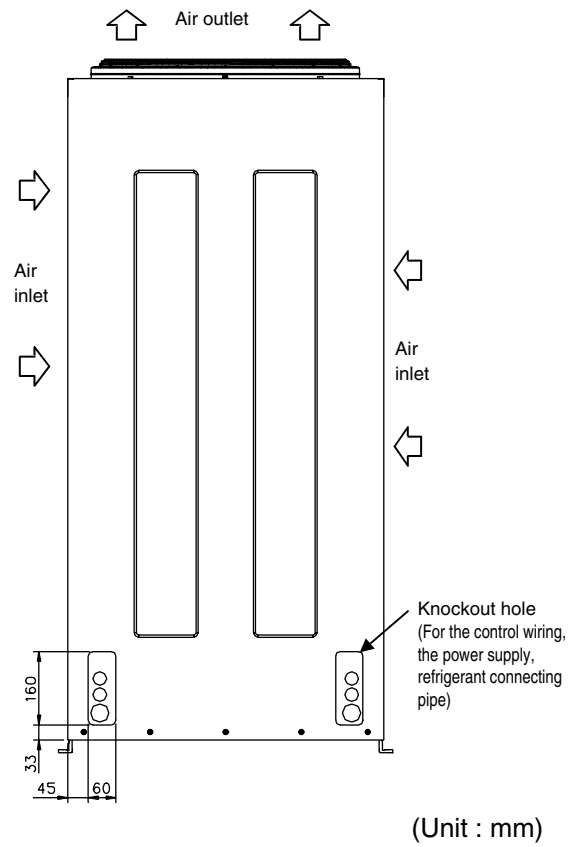
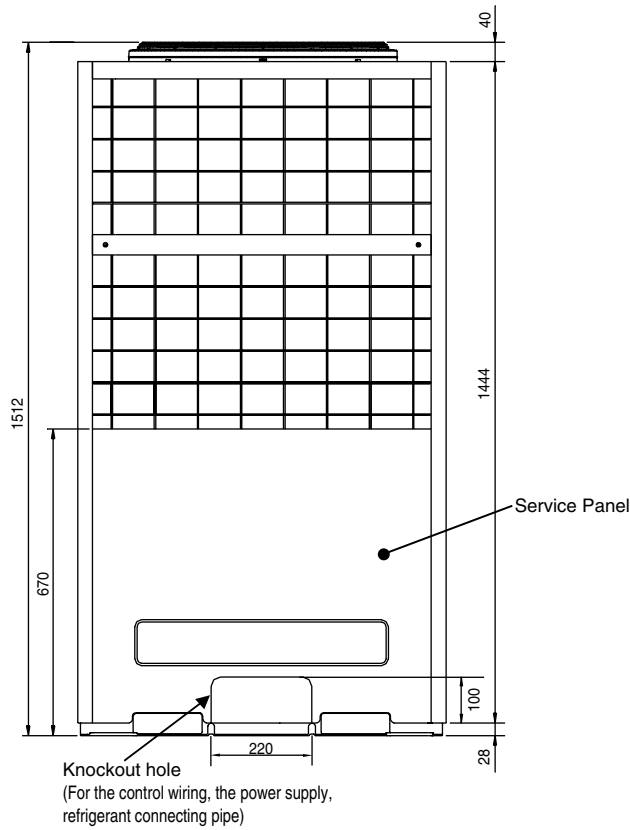
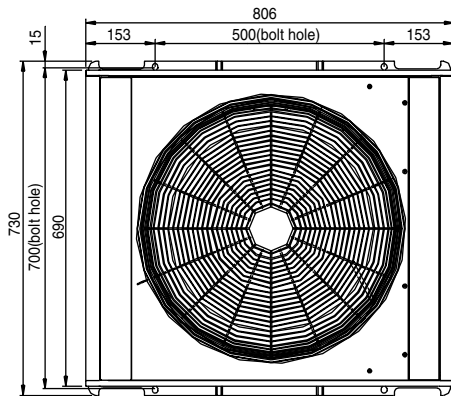
Number	Name	Description
1	Liquid side service valve(mm)	Ø9.52
2	Gas side service valve(mm)	Ø15.88
3	Air discharge grill	
4	Control Cover	

ABUW426KSA1 / ABUW426KSA3 / ABUW486KSA1 / ABUW486KSA1

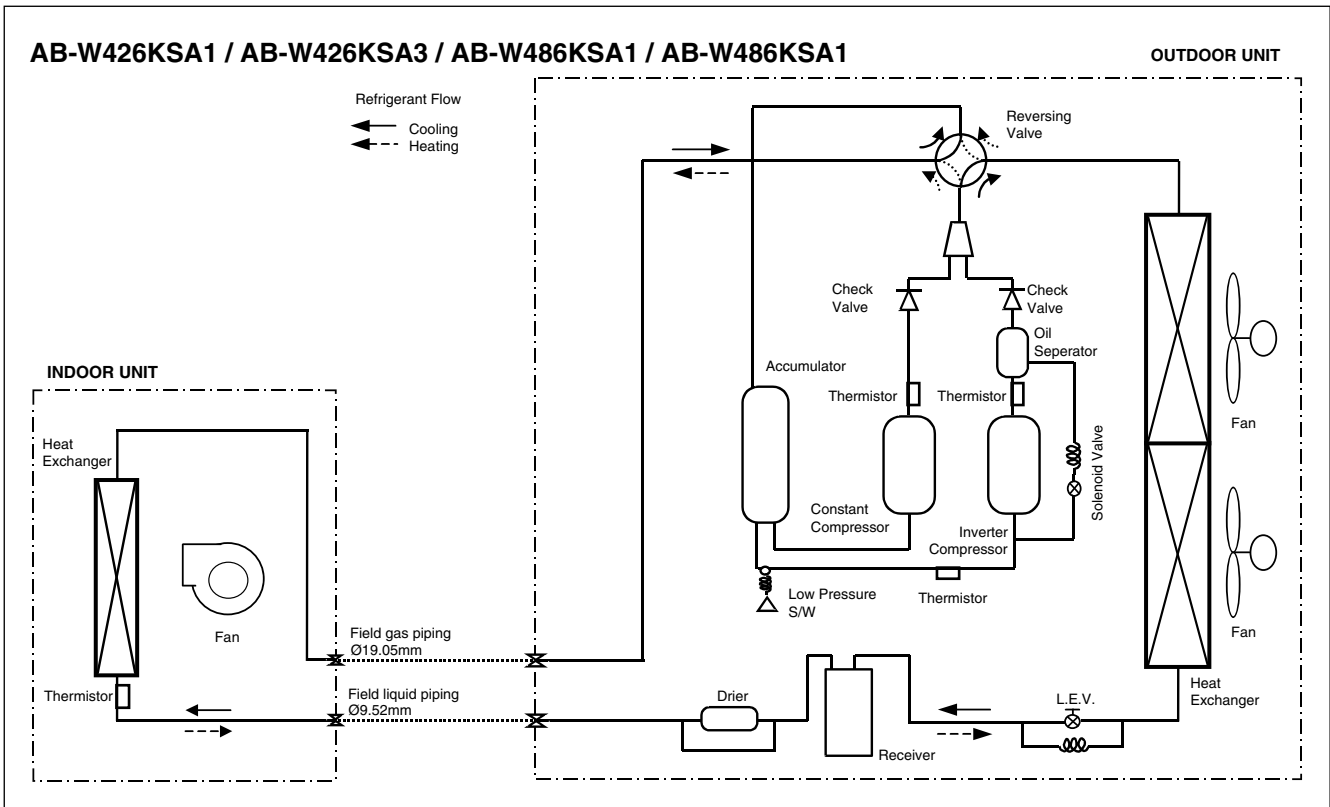
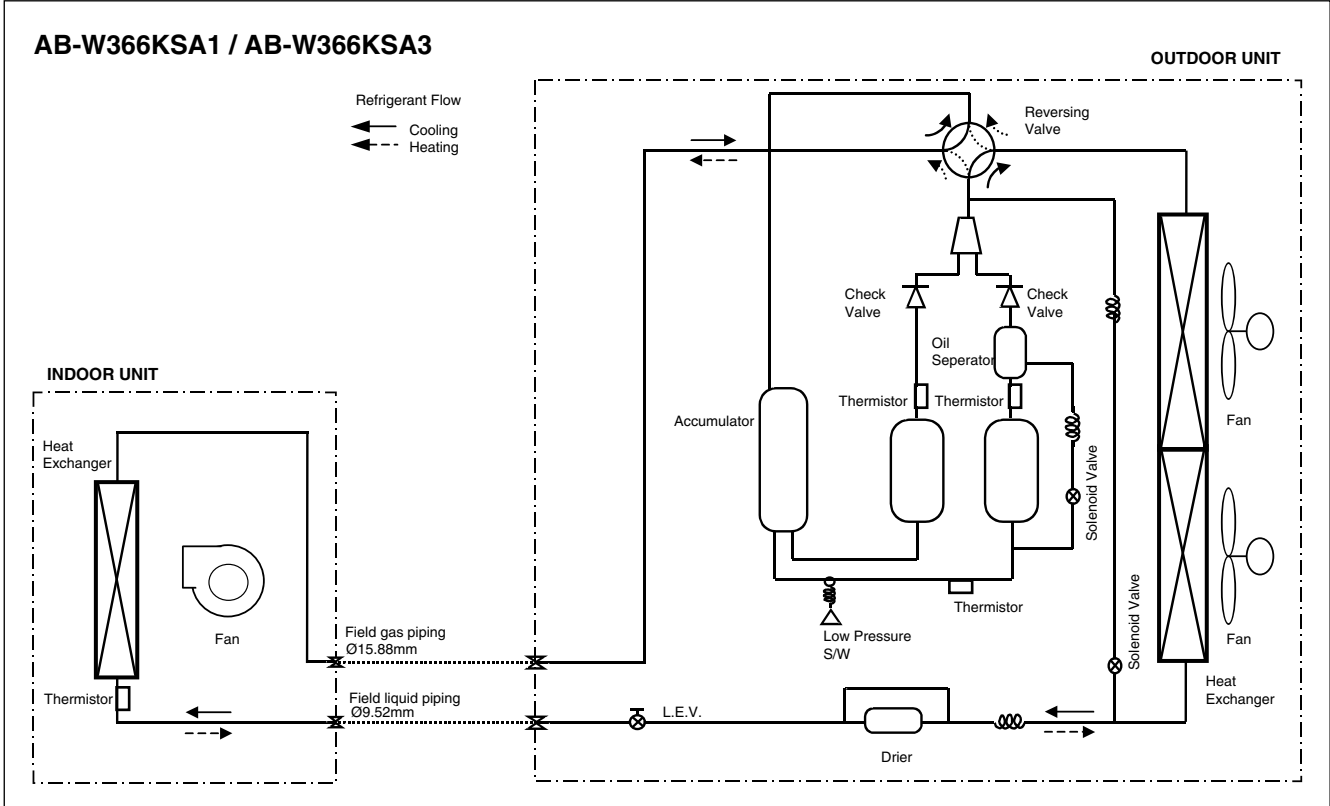


Model		ABUW426KSA1 / ABUW426KSA3 / ABUW486KSA1 / ABUW486KSA1
Dimensions		
W	mm	900
H	mm	1,165
D	mm	370
L1	mm	460
L2	mm	45
L3	mm	410
L4	mm	1,135
L5	mm	30
L6	mm	550
L7	mm	175
L8	mm	175
L9	mm	112
L10	mm	120
L11	mm	83
①	mm	Ø9.52
②	mm	Ø19.05

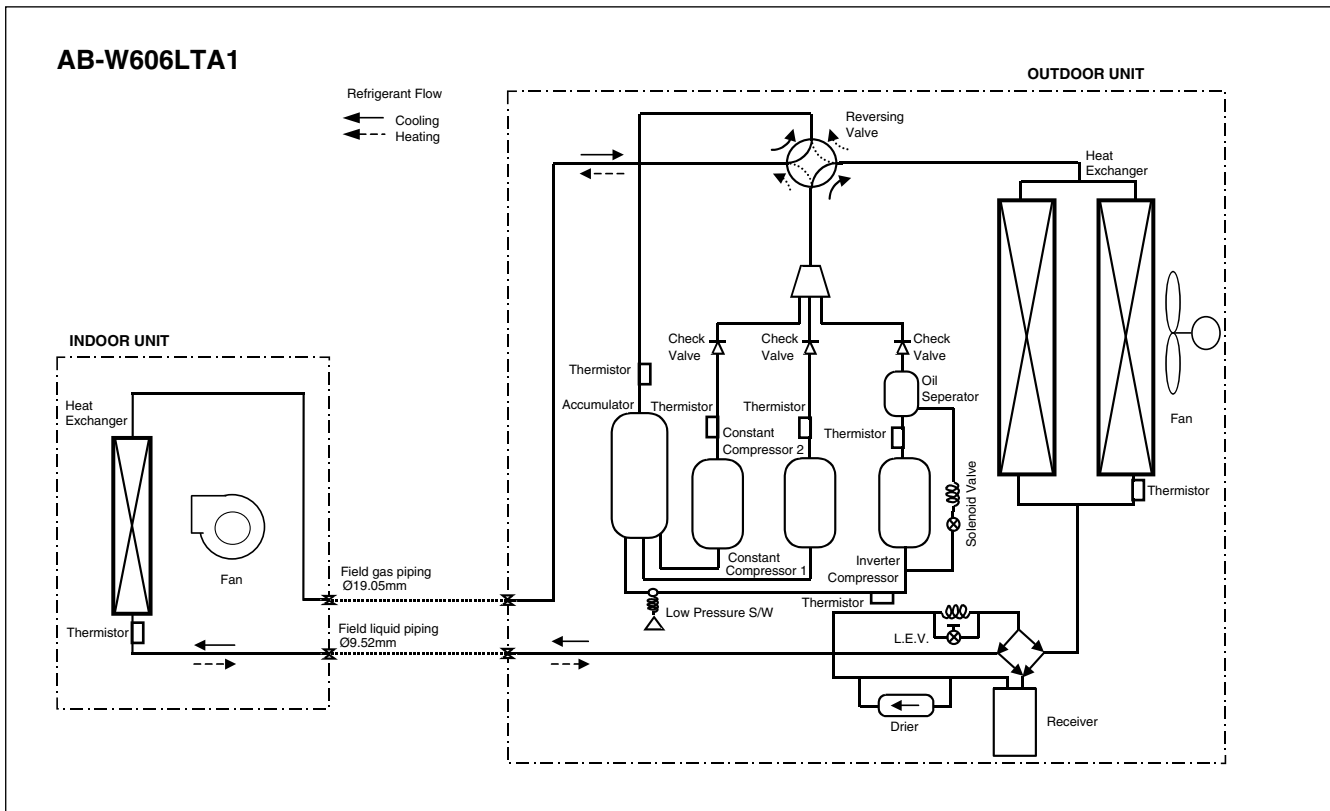
ABUW606LTA1



Refrigeration Cycle Diagram

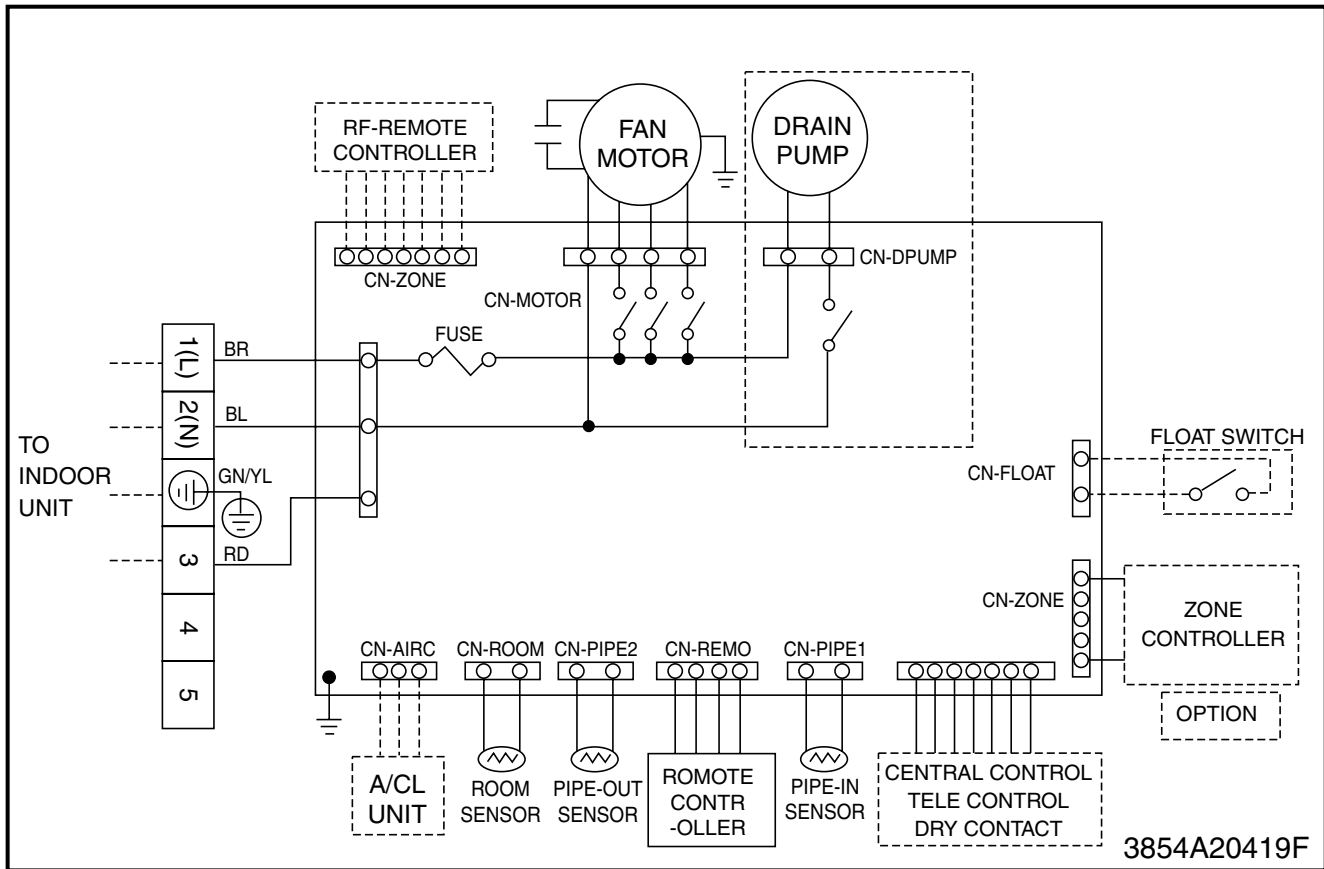


Refrigeration Cycle Diagram



Wiring Diagram

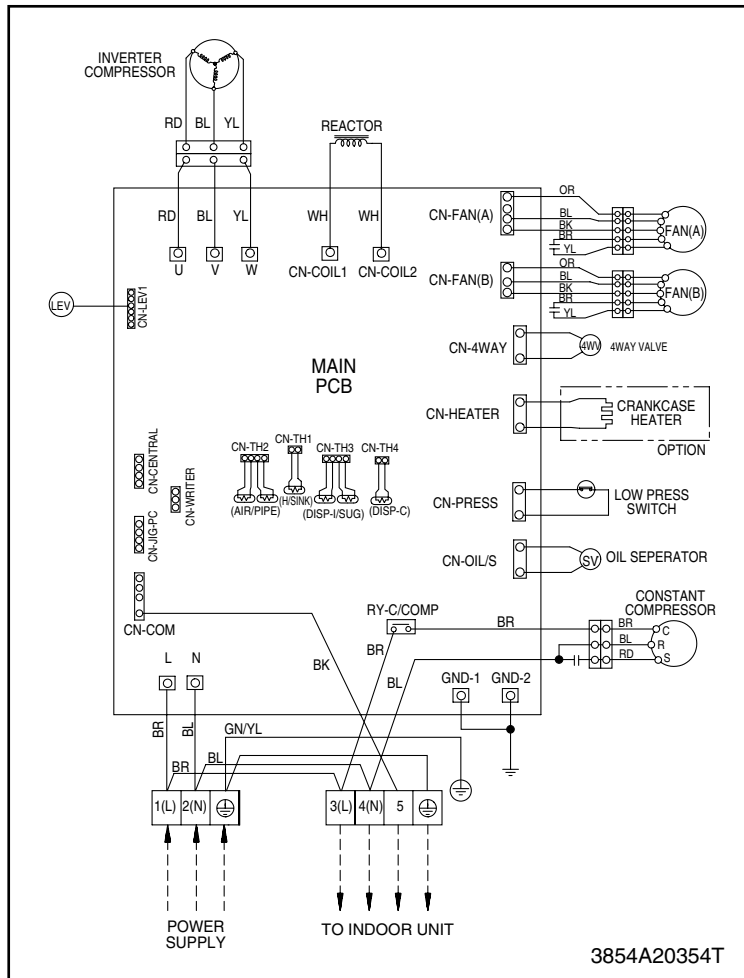
Indoor Unit



CONNECTOR NUMBER	LOCATION	CONNECTOR NUMBER	LOCATION
CN-POWER	AC POWER SUPPLY	CN-PIPE1	PIPE SENSOR
CN-MOTOR	FAN MOTOR OUTPUT	CN-PIPE2	DISCHAGE PIPE SENSOR
CN-D/PUMP	DRAIN PUMP OUTPUT	CN-REMO	REMOTE CONTROL
CN-DISP	RF-REMOTE CONTROL	CN-ROOM	ROOM SENSOR
CN-FLOAT	FLOAT SWITCH INUT	CN-AIRC	AIR CLEAN
CN-ZONE	ZONE CONTROL OUTPUT	CN-PTC	PTC HEATER
CN-CC	CENTRAL CONTROL OUTPUT		

Outdoor Unit

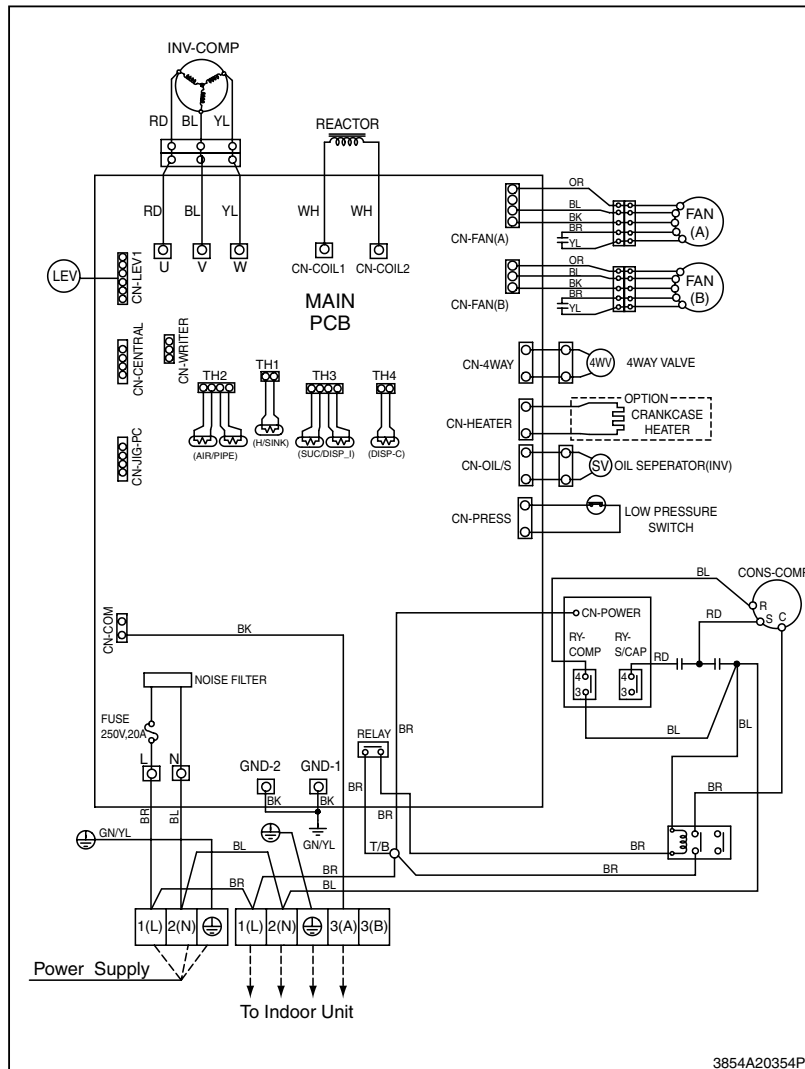
Model No.: ABUW366KSA1 / ABUW366KSA3



Notes:

BL	BLUE	BK	BLACK	BR	BROWN
RD	RED	OR	ORANGE	WH	WHITE
YL	YELLOW	GN/YL	GREEN/YELLOW	-----	FIELD WIRING

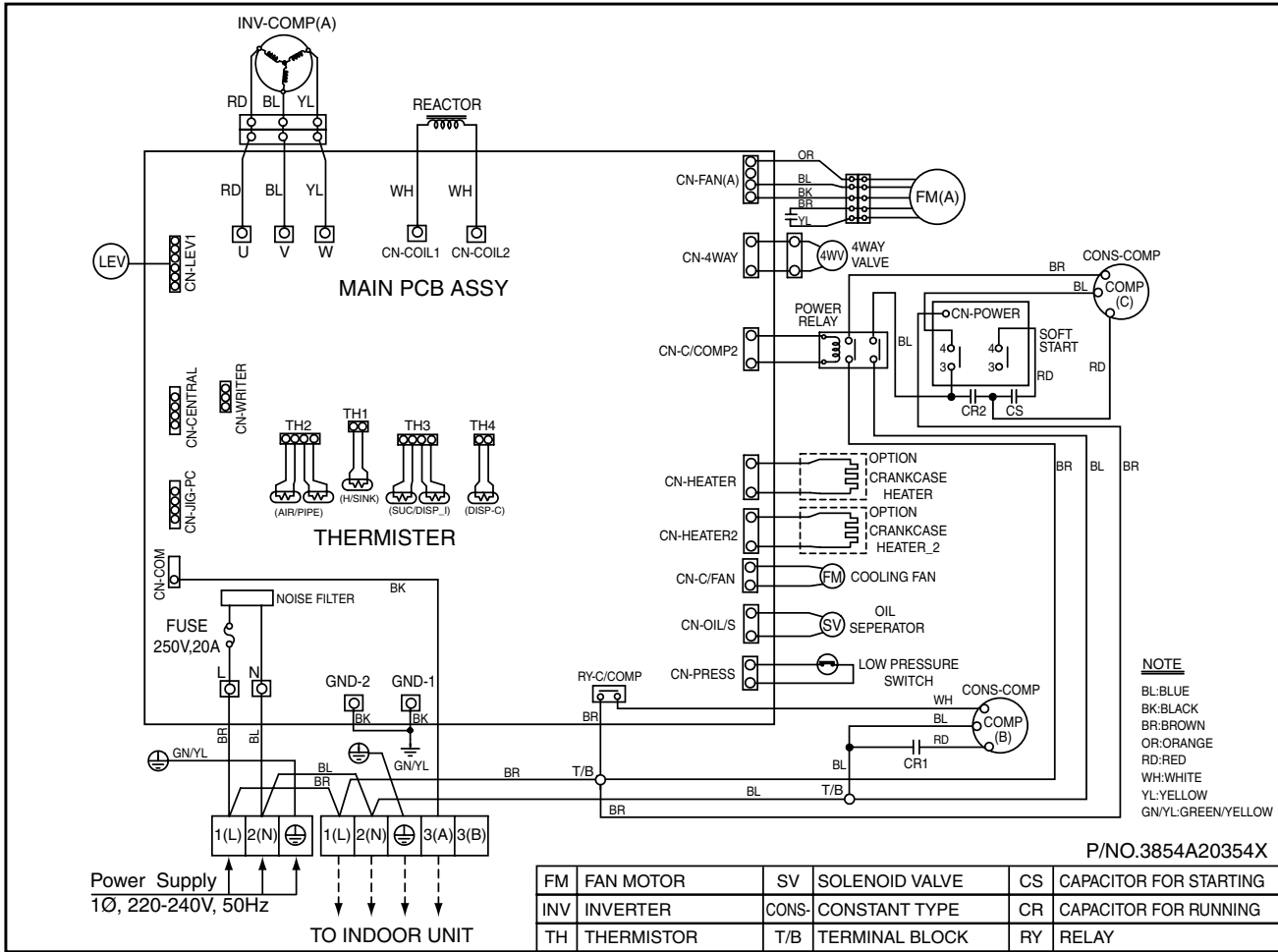
Model No.: ABUW426KSA1 / ABUW426KSA3 / ABUW486KSA1 / ABUW486KSA1



Notes:

BL	BLUE	BK	BLACK	BR	BROWN
RD	RED	OR	ORANGE	WH	WHITE
YL	YELLOW	GN/YL	GREEN/YELLOW	-----	FIELD WIRING

Model No.: ABUW606LTA1

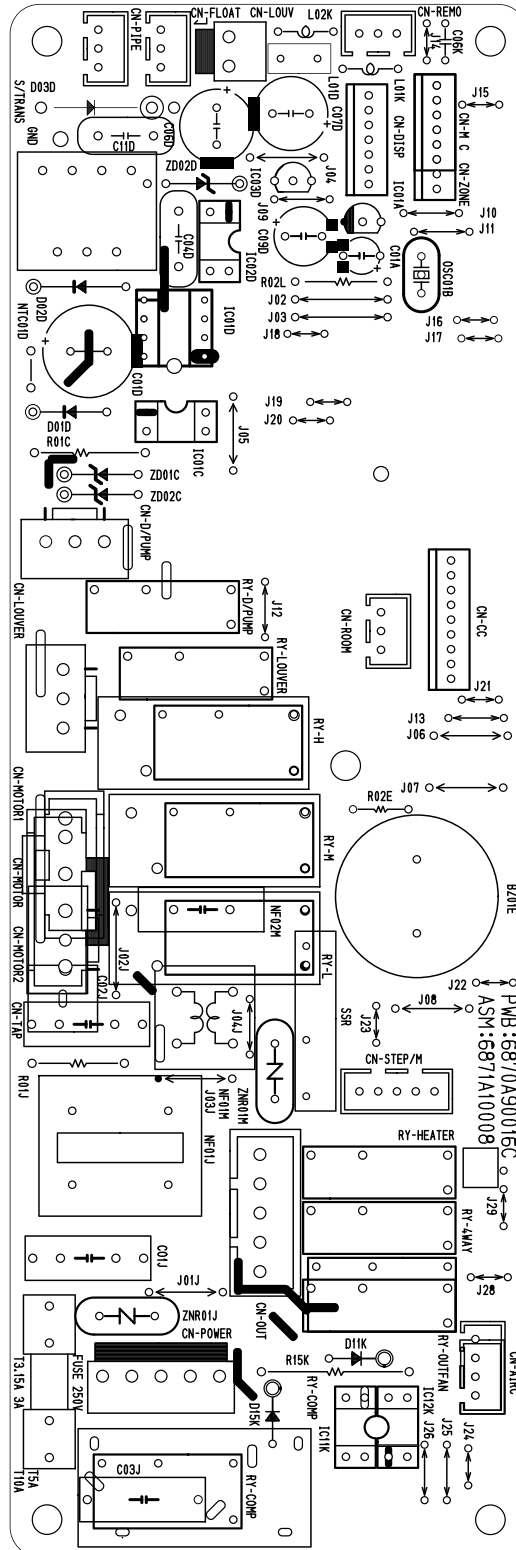


Notes:

BL	BLUE	BK	BLACK	BR	BROWN
RD	RED	OR	ORANGE	WH	WHITE
YL	YELLOW	GN/YL	GREEN/YELLOW	-----	FIELD WIRING

Electronic control device

MAIN P.C.B ASM



Functions

Indoor Unit

Operation ON/OFF by Remote controller

Sensing the Room Temperature

- Room temperature sensor. (Thermistor)

Room temperature control

- Maintains the room temperature in accordance with the Setting Temp.

Starting Current Control

- Indoor fan is delayed for 5 seconds at the starting.

Time Delay Safety Control

- Restarting is inhibited for approx. 3 minutes.

Indoor Fan Speed Control

- High, Med, Low

Soft Dry Operation Mode

- Intermittent operation of fan at low speed.

Auto Restart

- Although the air-conditioner is turned off by a power failure, it is restarted automatically previous operation mode after power supply.

Auto Operation(Auto Change Over)

- The setting temperature and desired operation mode are automatically set by fuzzy rule.

Deice (defrost) control (Heating)

- Both the indoor and outdoor fan stops during defrosting.
- Hot start after defrost ends.

Hot-start Control (Heating)

- The indoor fan stops until the evaporator piping temperature will be reached at 28°C.

High head height Drain pump(Optional)

- A standard drain-head height of up to 700mm is possible.

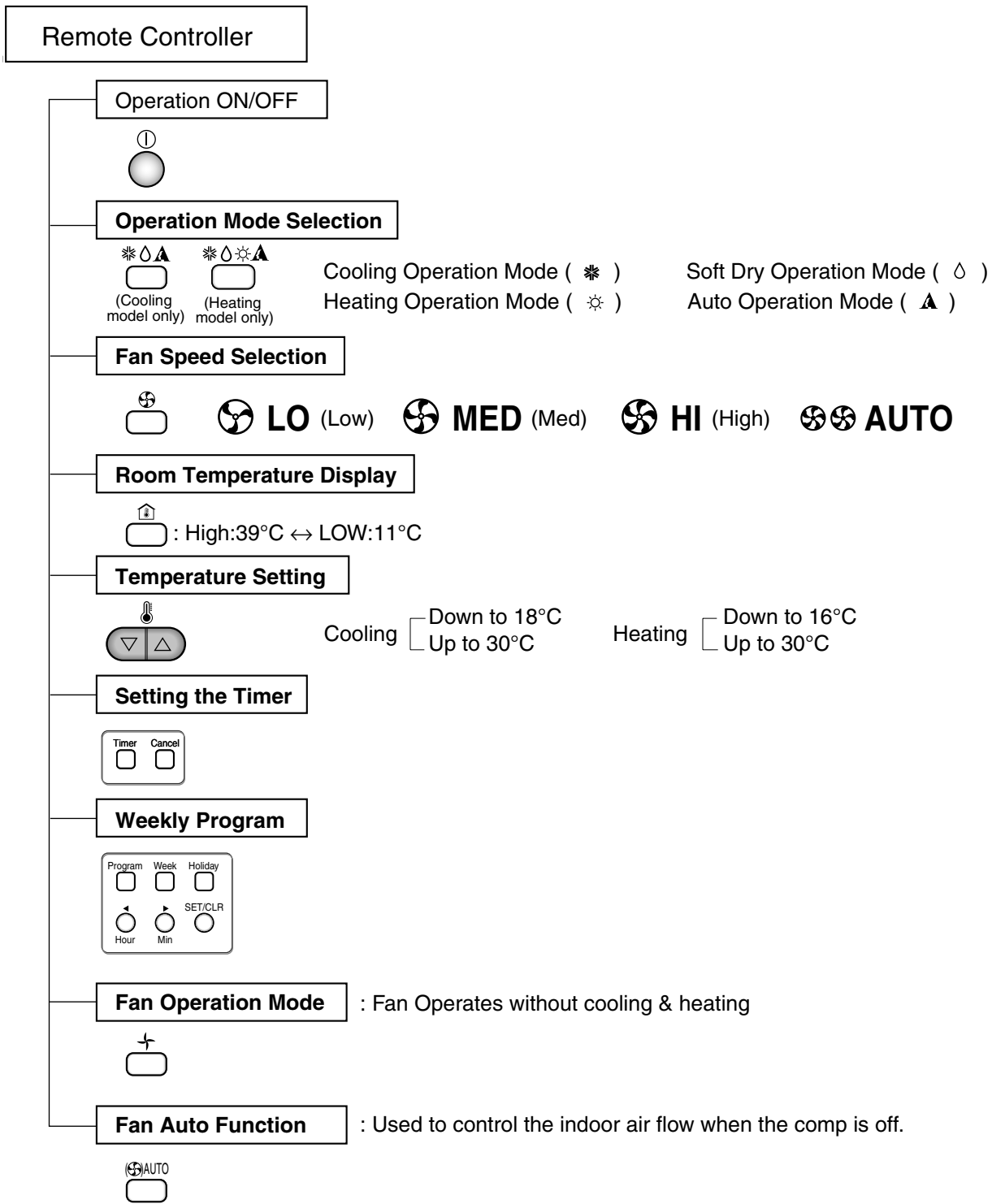
Central Control(Optional)

- It is operating individually or totally by central control function.

Group Control(Optional Wiring)

- Each controller can control 16 units and 8 controllers can connect.
- It operates maximum 16 units by only one wired remote controller and each unit starts random to prevent overcurrent.

Radio Frequency Control (Optional)



Operation Details

(1) The function of main control

1. Time Delay safety Control

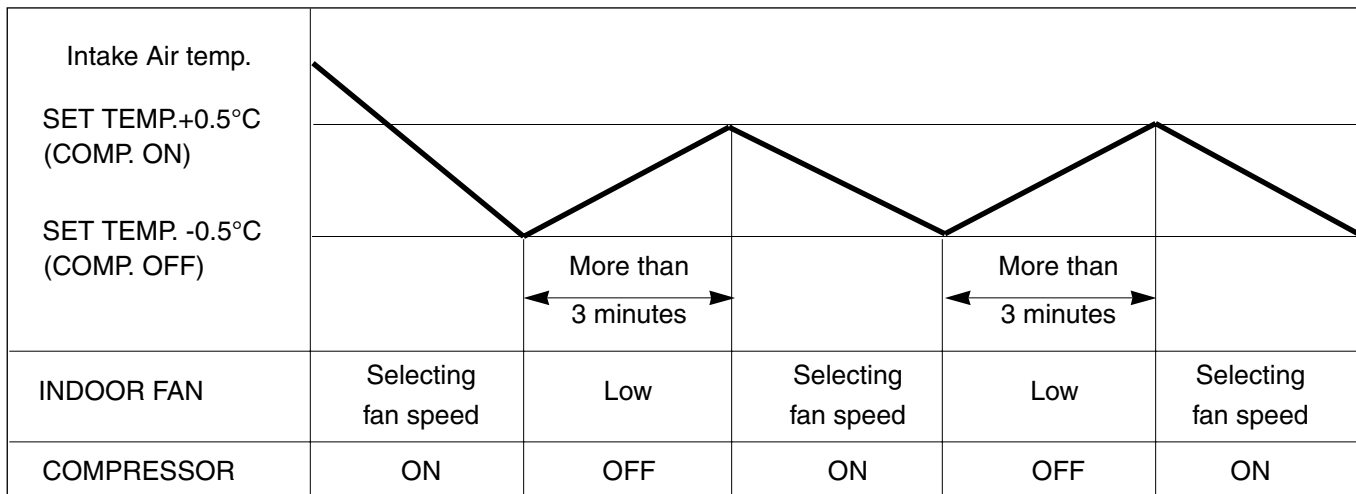
- 3min... The compressor is ceased for 3minutes to balance the pressure in the refrigeration cycle.
(Protection of compressor)
- 30sec... The 4-way valve is ceased for 30sec. to prevent the refrigerant-gas abnormal noise when the Heating operation is OFF or switched to the other operation mode while compress is off.
While compressor is running, it takes 3~5 seconds to switch.

2. Soft-Dry Operation

- The indoor fan speed is automatically set to the low, so the shift of the indoor fan speed is impossible because of already being set to the best speed for Dry Operation by Micom Control.

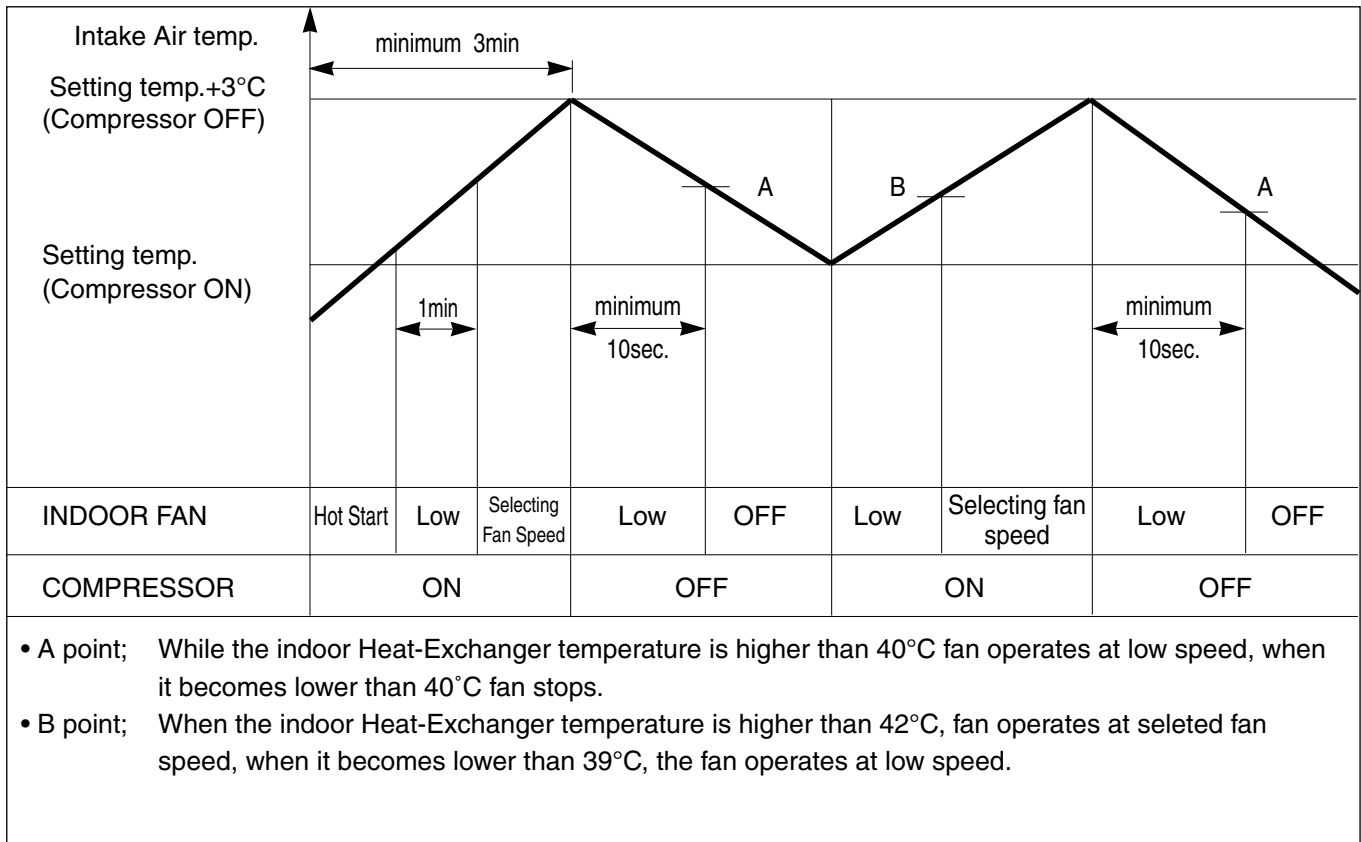
3. Cooling Mode Operation

- When selecting the Cooling(※) Mode Operation, the unit will operate according to the setting by the remote controller and the operation diagram is as following.



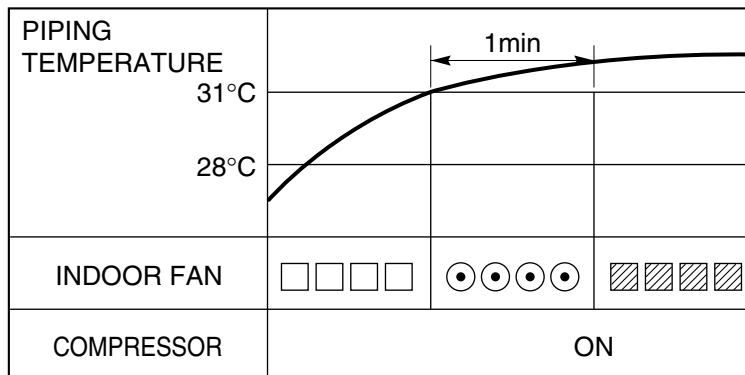
4. Heating Mode Operation (Except Cooling Model)

The unit will operate according to the setting by the remote controller and the operation diagram is shown as following.



5. Hot-Start Control

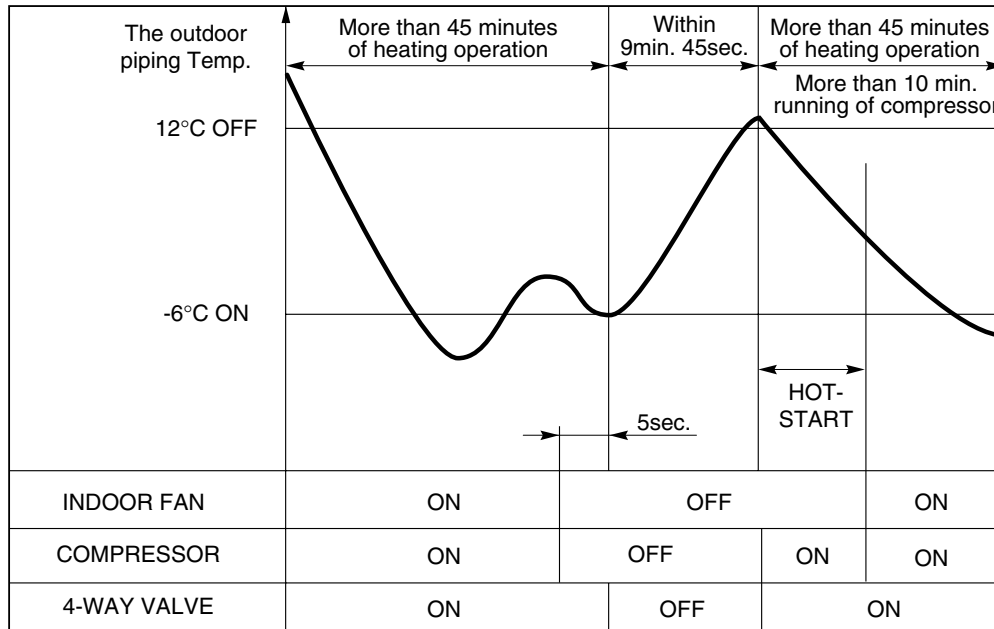
- The indoor fan stops until the evaporator piping temperature will be reached to 31°C.
- The operation diagram is as following.



▨ : Selected Fan ● : Low Fan □ : Fan Stop

6. Defrost Control

- Defrost control is available 45 minutes later since heating mode operation started, and it will not prolong over 10 minutes.
- Defrost control is carried out when the outdoor pipe temp. falls below -6°C for more than 3 minutes after 45 minutes passed from starting of heating operation.
- Defrost ends after 10 minutes passed from starting of defrost operation or when the outdoor pipe temp. rises over 12°C after 5 minutes passed from starting of defrost.



7. Self-diagnosis Function

- 'CHECK' will flash in the remote controller display when a problem occurs. Then please contact your dealer.
- Correct the accident point as shown in the table below before restarting operation.
- During the normal operation 'CHECK' won't be displayed in the remote controller.

Remote controller LCD	Accident Point
CH 01	Indoor room temperature thermistor error
CH 02	Indoor piping thermistor error
CH 03	Indoor main body / Remote controller unit communication error
CH 04 (Optional)	Water level float switch error

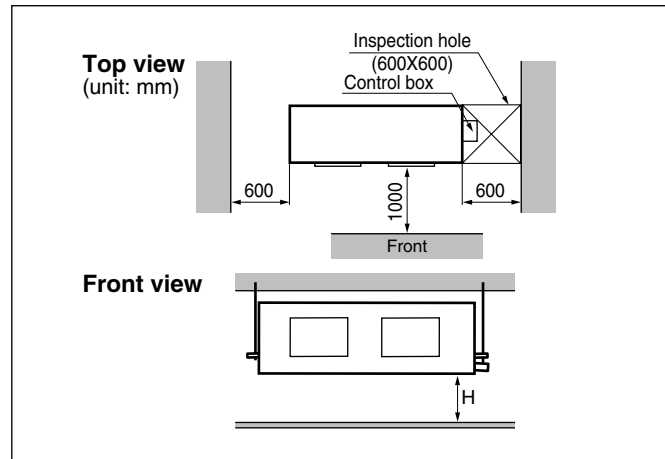
Installation of Indoor, Outdoor Unit

Selection of the best location

1) Indoor unit

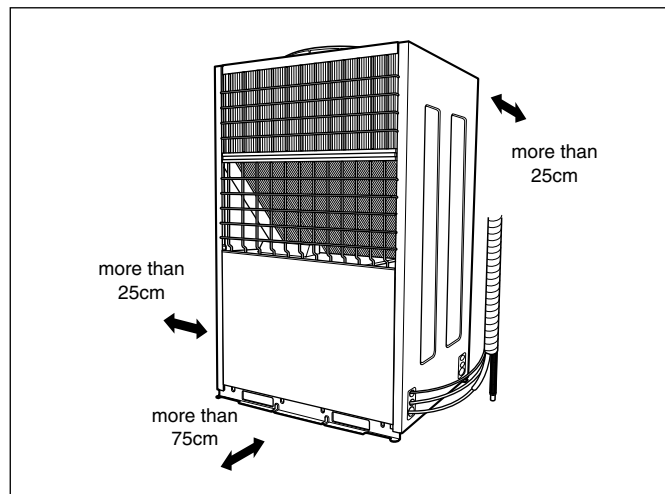
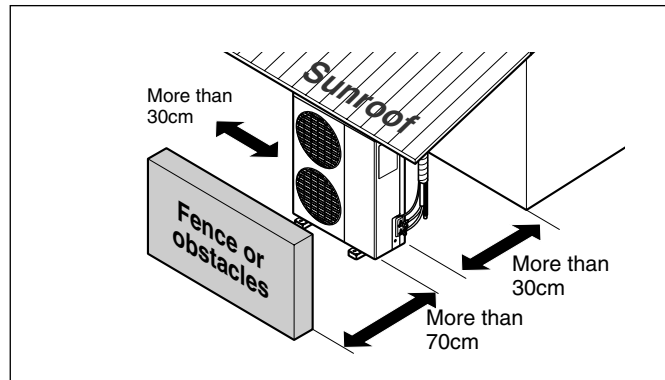
Install the air conditioner in the location that satisfies the following conditions.

- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good.
- There should not be any heat source or steam near the unit



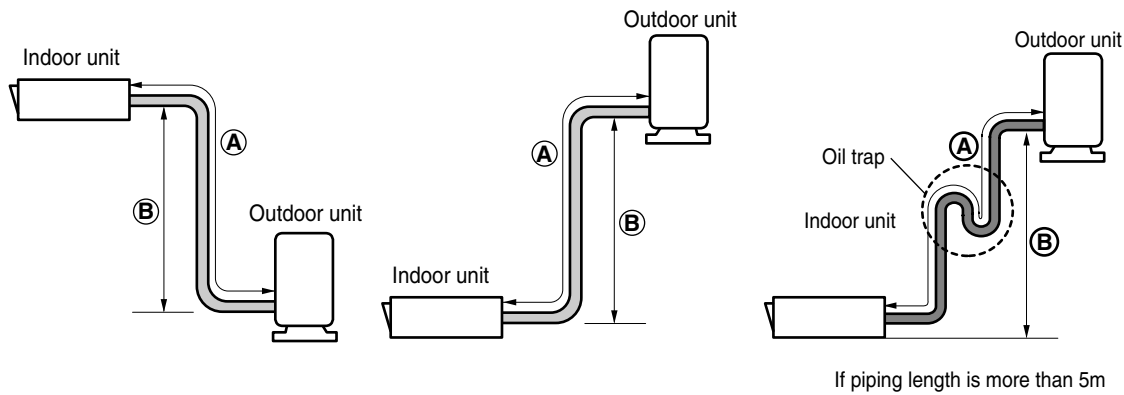
2) Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could be affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.



3) Piping length and the elevation

Capacity	Pipe Size (Diameter: Ø)		Length A(m)		Elevation B(m)		*Additional refrigerant (g/m)
	Gas	Liquid	Standard	Max.	Standard	Max.	
36k Btu/h	5/8"	3/8"	7.5	50	5	30	50
42k Btu/h	3/4"	3/8"	7.5	50	5	30	50
48k Btu/h	3/4"	3/8"	7.5	50	5	30	70
60k Btu/h	3/4"	3/8"	7.5	50	5	30	90



CAUTION

- If 36k Model is installed at a distance of 50m, 2,125g of refrigerant should be added $(50-7.5) \times 50g = 2,125g$
- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.
- Oil trap should be installed every 5~7 meters.

Indoor unit installation

Installation of Unit

Install the unit above the ceiling correctly.

CASE 1

POSITION OF SUSPENSION BOLT

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Apply a filter Accessory at air return hole.

(Unit:mm)

Dimension Model No.	E	F	G	P	Q	R	T
36K	712	284	868	934	937	548	120
42K	712	282	868	934	937	548	120
48K	712	327	935	1014	1014	567	130
60K	712	327	935	1014	1014	567	130

- Install the unit leaning to a drainage hole side as a figure for easy water drainage.

CASE 2

POSITION OF CONSOLE BOLT

- A place where the unit will be leveled and that can support the weight of the unit.
- A place where the unit can withstand its vibration.
- A place where service can be easily performed.

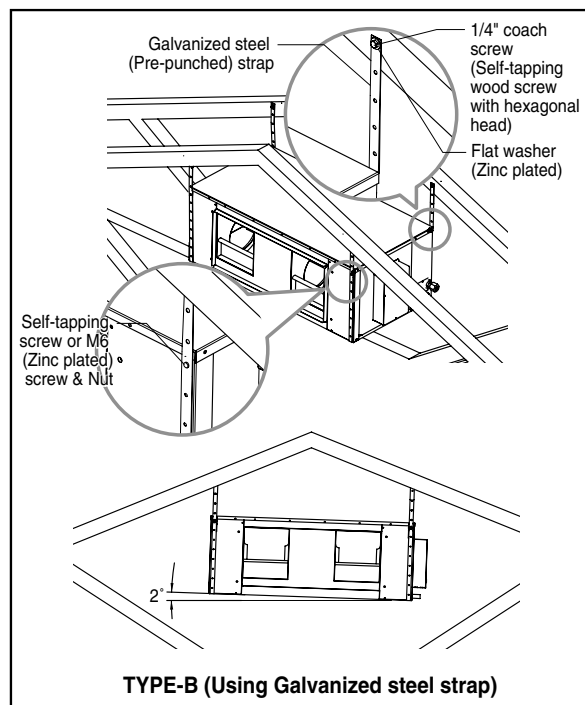
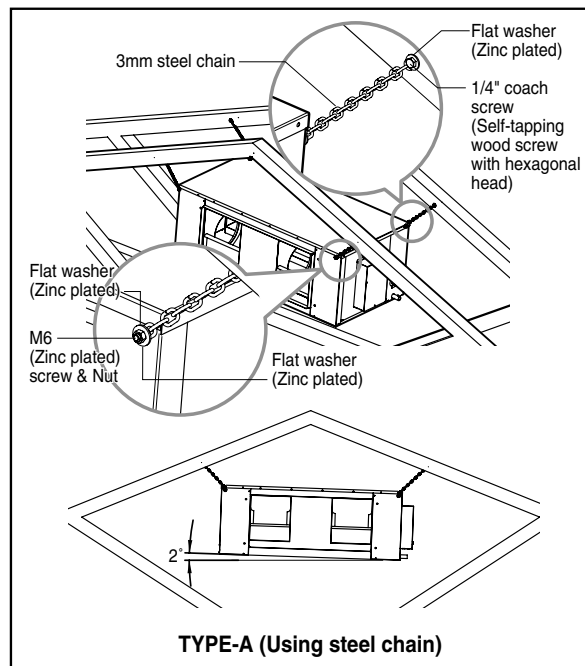
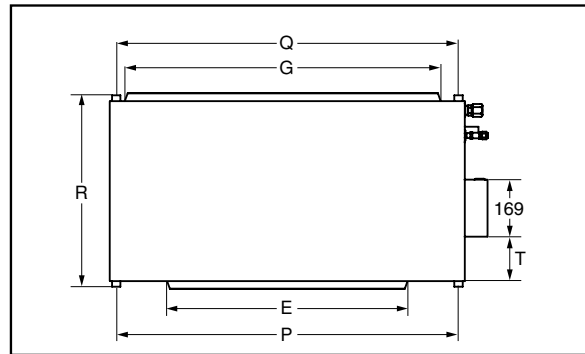
NOTICE

• Thoroughly study the following installation locations:

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the fan, the fin of the heat exchanger, resulting in heat exchange reduction, spraying, dispersing of water drops, etc.

In these cases, take the following actions:

- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
 - Make enough distance from a cooking room to install the air conditioner in such a place where it may not suck in oil steam.
2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
 3. Avoid places where inflammable gas is generated, flows in, is stored or vented.
 4. Avoid places where sulfurous acid gas or corrosive gas is generated.
 5. Avoid places near high frequency generators.

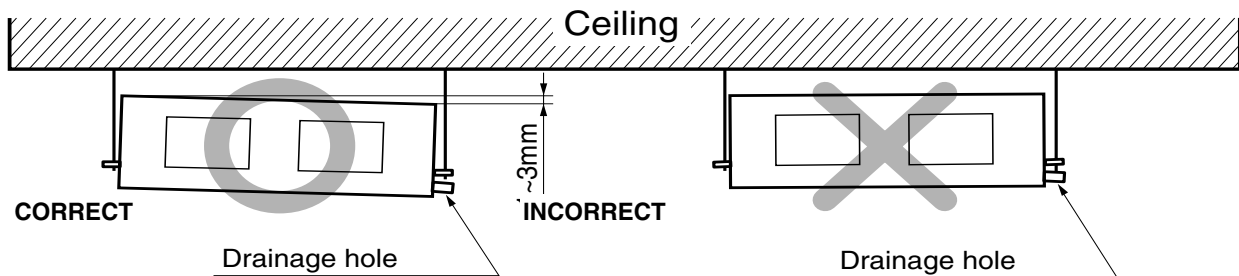


CAUTION

1. Install declination of the indoor unit is very important for the drain of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe shall be 5mm.

Front of view

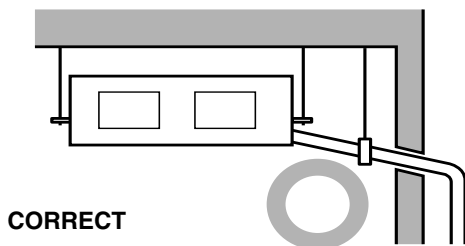
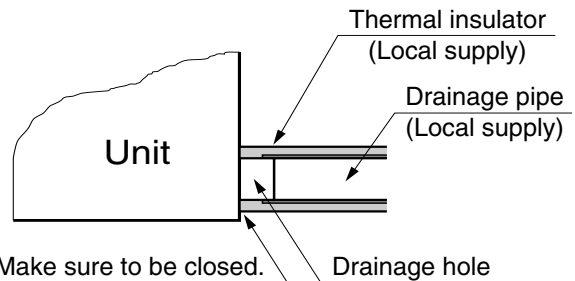
- The unit must be horizontal or declined to the drain hose connected when finished installation.



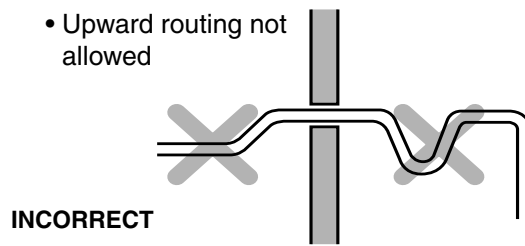
CAUTION FOR GRADIENT OF UNIT AND DRAIN PIPING

Lay the drain hose with a downward inclination so water will drain out.

- Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- 5mm or thicker formed thermal insulator shall always be provided for the drain pipe.



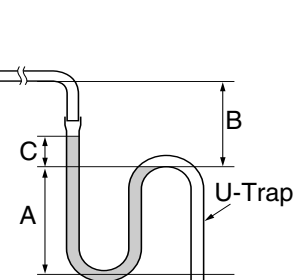
- Upward routing not allowed



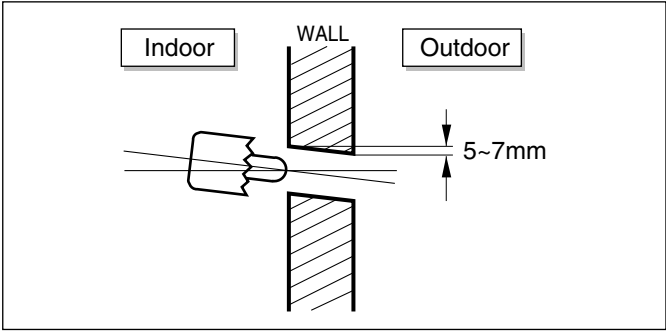
Applied U-Trap Dimension

- Install the P-Trap (or U-Trap) to prevent a water leakage caused by the blocking of intake air filter.

- A ≥ 70mm
- B ≥ 2C
- C ≥ 2 x SP
- SP = External Pressure (mmAq)
- Ex) External Pressure = 10mmAq
- A ≥ 70mm
- B ≥ 40mm
- C ≥ 20mm



- Drill the piping hole with 70mm dia, hole core drill.
- Piping hole should be slightly slant to the outdoor side.



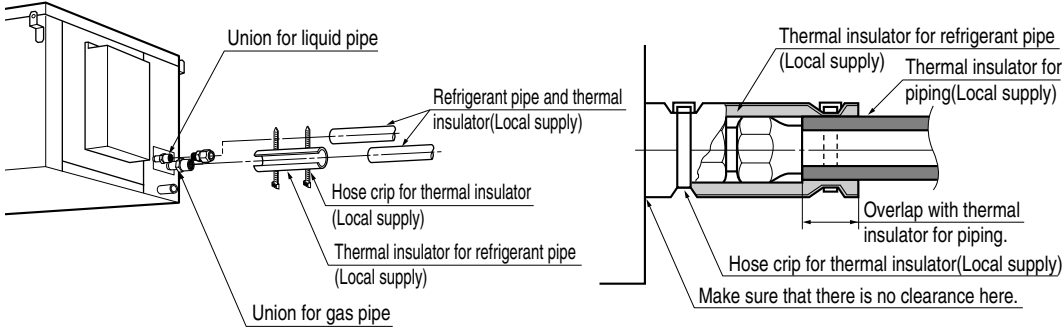
INSULATION, OTHERS

Insulate the joint and tubes completely.

THERMAL INSULATION

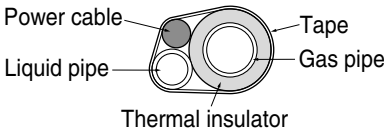
All thermal insulation must comply with local requirement.

INDOOR UNIT



REFRIGERANT PIPE

- Insulate and tape the gas piping.



TEST AND CHECK

■ **After all workings are finished, check the working and operation.**

- Air distribution ——— Is the air circulation good?
- Drain ——— Is the drainage smoothly and no sweating?
- Gas leakage ——— Is the piping connection correctly?
- Wiring ——— Is the wiring connection correctly?
- Lock-bolt ——— Is the lock-bolt of compressor loosened?

INSTALLATION OF REMOTE CONTROL BOX

Install the remote control box and cord correctly.

POINT OF REMOTE CONTROLLER INSTALLATION

- Although the room temperature sensor is in the indoor unit, the remote control box should be installed in such places away from direct sunlight and high humidity.

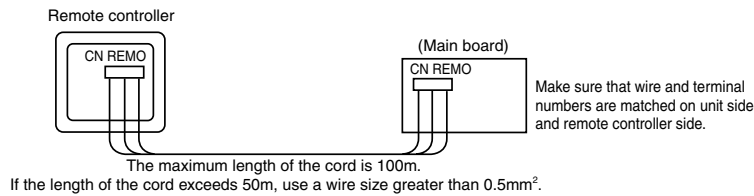
INSTALLATION OF THE REMOTE CONTROL BOX

- Select places that is not splashed by water.
- Select control position after receiving customer approval.
- The room temperature sensor of the thermostat for temperature control is built in the indoor unit.
- This remote controller equipped with liquid crystal display. If this position is higher or lower, display is difficult to see.
(The standard height is 1.2~1.5m high)

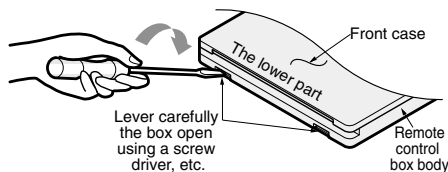
ROUTING OF THE REMOTE CONTROL CORD

- Keep the remote control cord away from the refrigerant piping and the drain piping.
- To protect the remote control cord from electrical noise, place the cord at least 5cm away from other power cables. (Audio equipment, Television set, etc)
- If the remote control cord is secured to a wall, provide a trap at the top of the cord to prevent water droplets from running.

ELECTRICAL WIRING TO THE INDOOR UNIT



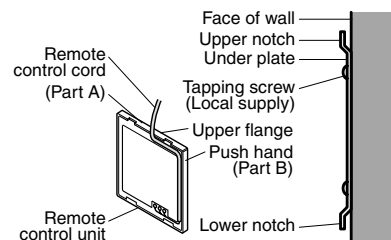
DISASSEMBLING OF THE REMOTE CONTROLLER



WHEN THE REMOTE CONTROL BOX IS INSTALLED WITH THE CORD EXPOSED.

PROCEDURE OF INSTALLATION

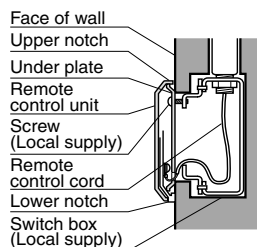
1. Fix the under plate on the wall by self tapping screws (accessory).
2. Make a slit (Part A) at the top side of the remote control box by nipper.
3. Rout the cord as shown in the following figure. In this case, push the cord into the around of case (Part B).
4. Hook the remote control unit on the under plate.



WHEN THE REMOTE CONTROL BOX IS INSTALLED WITH THE CORD BURIED.

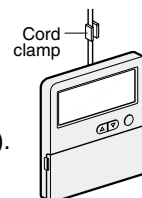
PROCEDURE OF INSTALLATION

1. Fix the under plate on the switch box by screws (Local supply). In this case, fit the under plate on the wall, and be careful of deformation.
2. Receive the remote control cord in the switch box.
3. Hook the remote control unit on the under plate.



FIXING OF REMOTE CONTROL CORD

1. Fix the cord clamps on the wall by $\phi 3$ tapping screws (Local supply).
2. Fix the remote control cord.



WIRED REMOTE CONTROLLER INSTALLATION

- Since the room temperature sensor is in the remote controller, the remote controller box should be installed in a place away from direct sunlight, high humidity and direct supply of cold air to maintain proper space temperature.

Install the remote controller about 5ft(1.5m) above the floor in an area with good air circulation at an average temperature.

Do not install the remote controller where it can be affected by:

- Drafts, or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from sun or appliances.
- Concealed pipes and chimneys.
- Uncontrolled areas such as an outside wall behind the remote controller.
- This remote controller is equipped with a seven segment LED. display. For proper display of the remote controller LED's, the remote controller should be installed properly as shown in Fig.1. (The standard height is 1.2~1.5 m from floor level.)

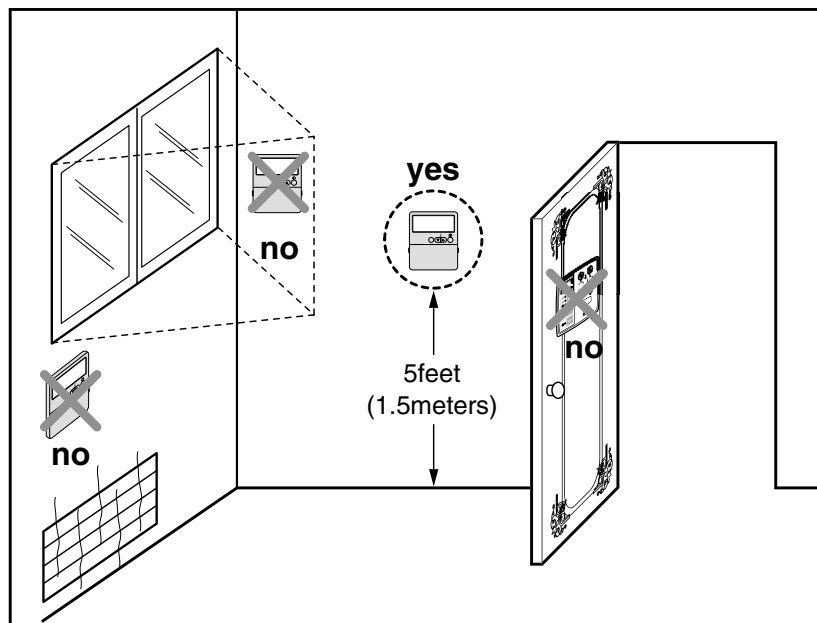
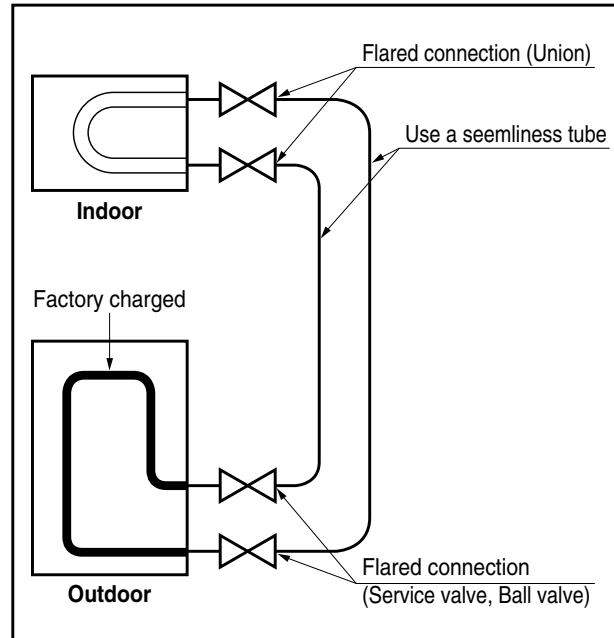


Fig.1 Typical locations for remote controller

REFRIGERANT PIPING

Perform the work according to the Service Manual or Installation Guide.

- Use two spanners when connecting the refrigerant pipe to the unit.
- Make a bend with a radius as large as possible.
- Perform air purge with R410A or vacuum drying.
- When piping work is finished, check all joints.



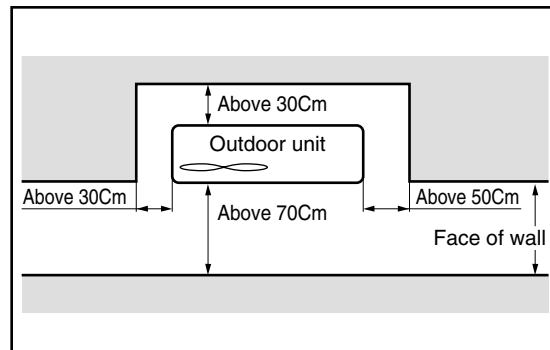
INSTALLATION OF OUT DOOR UNIT

Select a location that satisfies the following conditions. Install the unit firmly in place.

■ Select the following location

- A place where the air conditioner can get good ventilation.
- A place where it shall not annoy the neighbors.
- A place where the unit shall be leveled and that can support the weight of unit and withstand its vibrations.

■ Keep a maintenance space



ELECTRICAL WIRING

Perform the electrical wiring work according to the electrical wiring connection.

- All wiring must comply with local requirements.
- Select a power source that is capable of supplying the current required by the air conditioner.
- Use a recognized circuit breaker between the power source and the unit. A disconnection device to adequately disconnect all supply lines must be fitted.
- Capacity of circuit breaker recommended by authorized personnel only

Capacity	1 Phase
36k Btu/h	30A
42k Btu/h	40A
48k Btu/h	40A
60k Btu/h	40A

WIRING CONNECTION

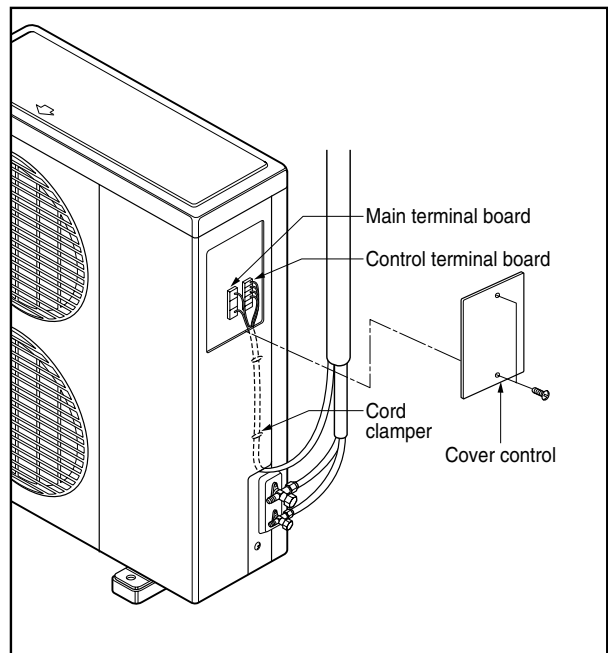
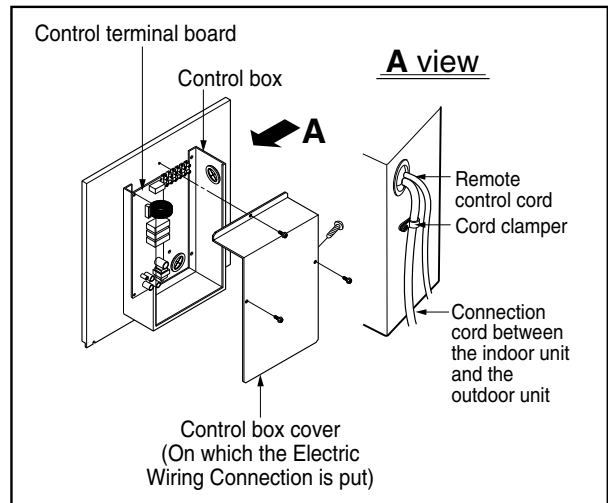
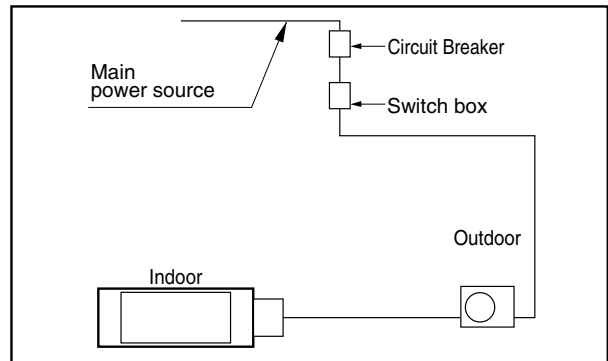
Indoor unit

- Remove the control box cover for electrical connection between the indoor and outdoor unit.
- Use the cord clumper to fix the cord.

Outdoor unit

- Remove the control cover for wiring connection.
- Use the cord clumper to fix the cord.
- Earthing work
Connect the cable of diameter 1.6mm² or more to the earthing terminal provided in the control box and do earthing.

※ **Please check !!**



Preparation of Piping

Main cause of gas leakage is defect in flaring work. Carry out correct flaring work in the following procedure.

Cut the pipes and the cable.

- Use the accessory piping kit or the pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than measured distance.
- Cut the cable 1.5m longer than the pipe length.

Burrs removal

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the tubing.

Putting nut on

- Remove flare nuts attached to indoor and outdoor units, than put them on pipe/tube having completed burr removal.
(Not possible to put them on after flaring work)

Flaring work

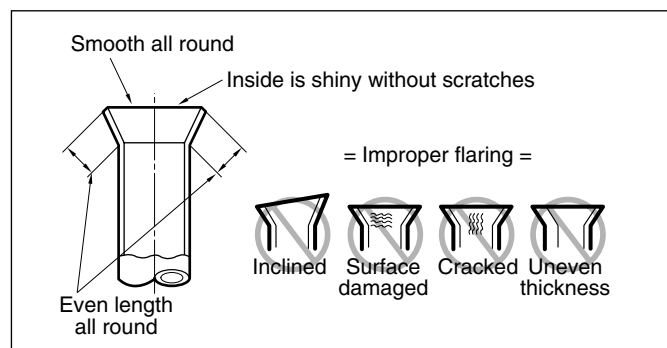
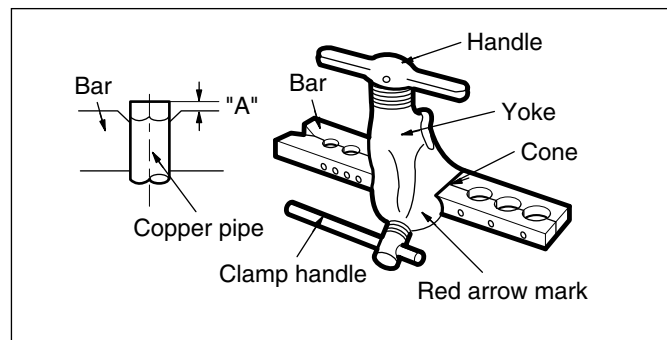
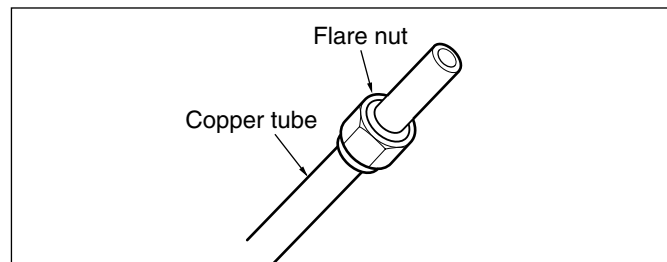
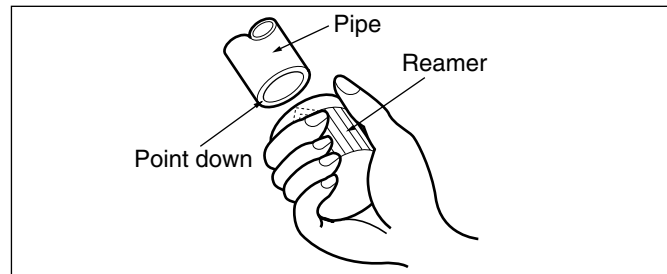
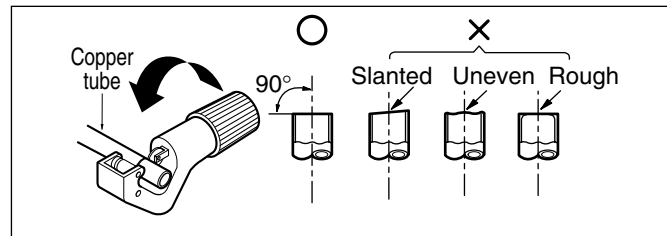
- Carry out flaring work using flaring tool as shown below.

Outside Diameter	"A"
1/4"	0~0.5
3/8"	0.5~0.8
1/2"	0.5~0.8
5/8"	0.8~1.0
3/4"	1.0~1.3

Firmly hold copper tube in a bar(or die) as indicated dimension in the table above.

Check

- Compare the flared work with figure.
- If flare is noted to be defective, cut off the flared section and do flaring work again.



Pipe bending

Annealed copper pipe with small diameter ($\phi 6.35$ or $\phi 9.52$) can be easily bent manually. In this case, secure large R(radius) for the bend section and gradually bend pipe. If annealed copper pipe is large in diameter ($\phi 15.88$ or $\phi 19.05$), bend pipe with bender. Use bender appropriate for the pipe diameter.

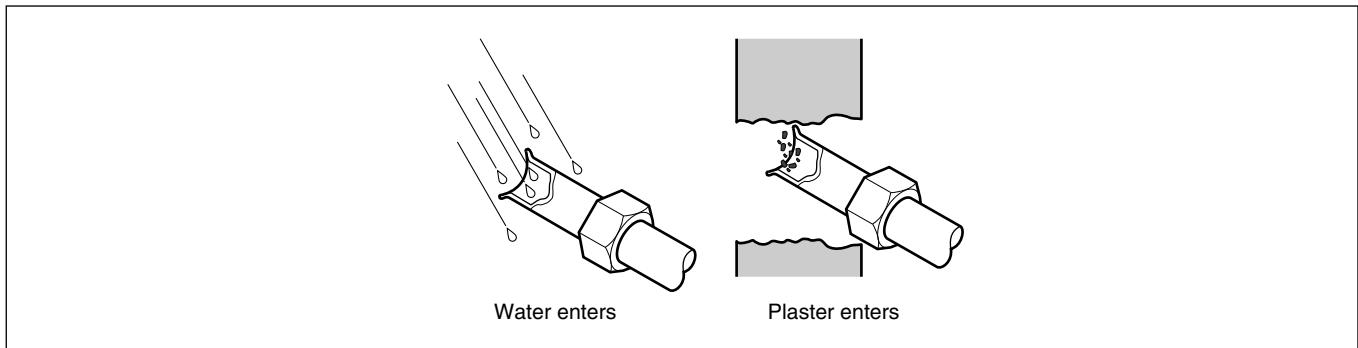
Brazing

In refrigerant piping, bending (in particular, acute bending) must be minimized to reduce piping resistance. Bending is, however, necessary in some places by virtue of the installation position of devices auxiliary to the packaged air conditioner, or of the building structure, piping distance or finishing appearance. If a more acute bend is required than that attainable by pipe bender, perform brazing using ready-made elbow. Aside from this function, brazing also serves to connect straight pipes, generally using ready-made sockets. While brazing, protect piping against heat with wet cloth to avoid damaging valve packing or burning thermal insulator with burner heat. While brazing, blow inert gas (nitrogen gas or carbonic gas) to prevent formation of oxidation film in copper piping; otherwise, the refrigerant circuit will clog. The blowing of nitrogen gas (or carbonic gas) through 3-way valves is described in the following:

Refrigerant piping(Flare piping)

When connecting piping, be sure to keep piping dry(keep piping away from water), clean (keep piping away from dust) and airtight (avoid refrigerant leakage).

When connecting piping on rainy days or making a through-hole in wall, take due care to prevent water or plaster from entering piping.



CAUTION

- This procedure is designed to prevent formation of oxidation film by filling piping with inert gas. Note that excessive gas pressure will generate pinholes at brazed points.
(Nitrogen gas: Supply pressure 0.05~0.1kg/cm²G)
- When supplying inert gas, be sure to open one end of piping.

Connecting Pipes to the Outdoor Unit

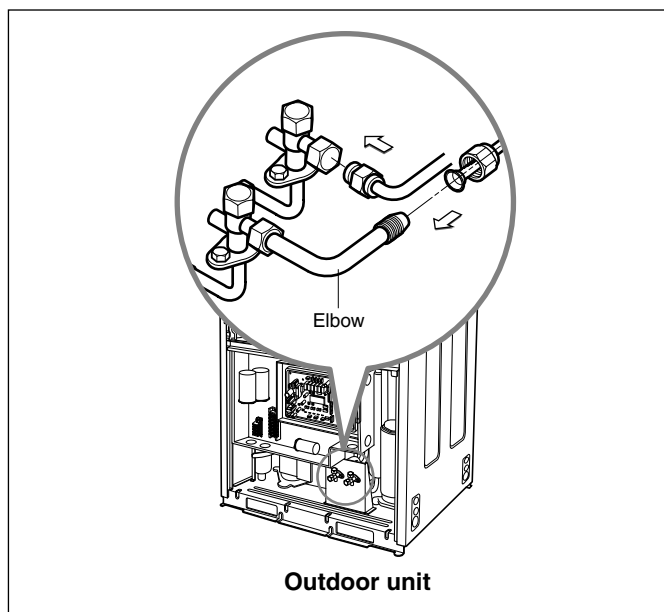
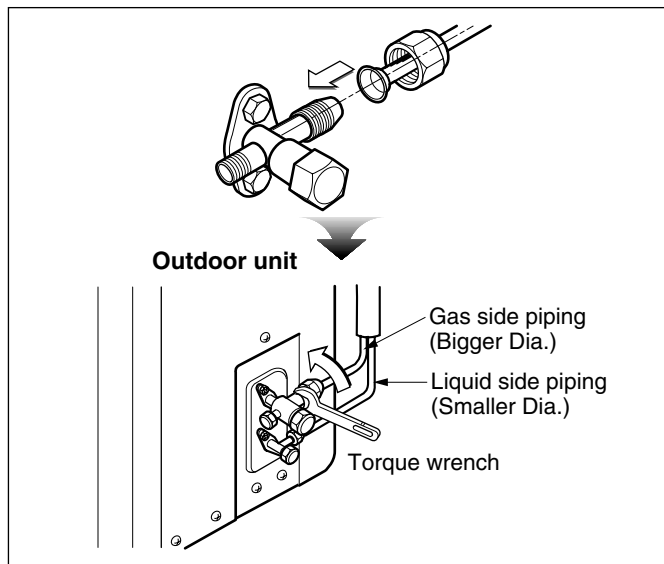
1) Connecting the pipes to the Outdoor unit

- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench until the wrench clicks.
 - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe size	Torque
1/4"	1.8kg.m
3/8"	4.2kg.m
1/2"	5.5kg.m
5/8"	6.6kg.m
3/4"	6.6kg.m

Align the center of the piping and sufficiently tighten the flare nut by hand.

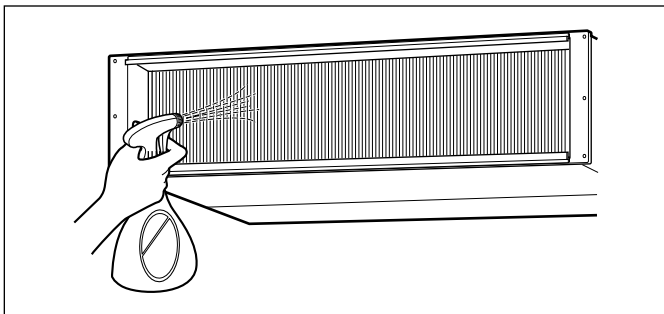
The provided elbow is possible for use in right and left.



Checking the Drainage

1) Checking the Drainage

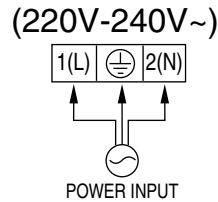
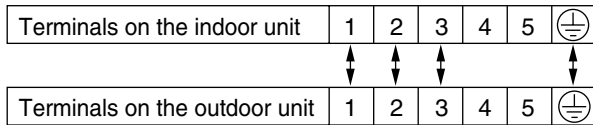
- Check the drainage.
 - Spray one or two glasses of water upon the evaporator.
 - Ensure that water flows drain hose of indoor unit without any leakage.



Connecting Cables between Indoor Unit and Outdoor Unit

Connecting cables to the Indoor Unit

- Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
 - Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively
- Cooling & Heating type



CAUTION

The power cord connected to the outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).

NORMAL CROSS-SECTIONAL AREA	
Capacity	1 Phase
36k Btu/h	5.5mm ²
42k Btu/h	
48k Btu/h	8.5mm ²
60k Btu/h	

CAUTION

The connecting cable connected to the indoor and outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).

NORMAL CROSS-SECTIONAL AREA : 1.25mm²

If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

CAUTION

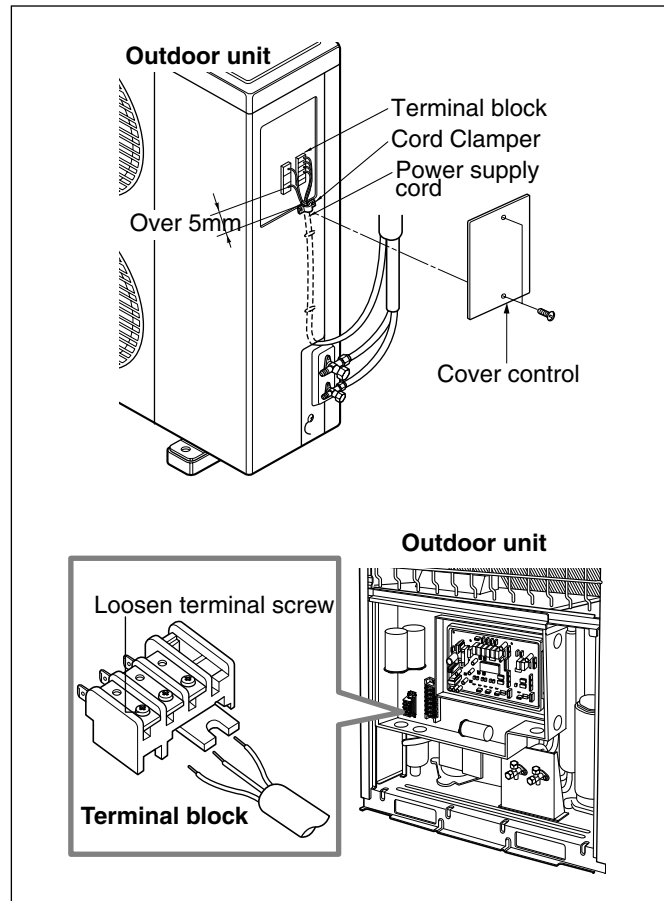
Make sure that the screws of the terminal fixed tightly.

Clamping of cables

- Arrange 2 power cables on the control panel.
- First, fasten the steel clamp with a screw to the inner boss of control panel.
- For the cooling model, fix the other side of the clamp with a screw strongly.
For the heat pump model, put the 1.25mm² cable(thinner cable) on the clamp and tighten it with a plastic clamp to the other boss of the control panel.
- In Australia, the length of power supply cord measured from the entry of the power supply cord to the middle of live pin on the power plug should be over 1.8m.

Connecting the cable to the Outdoor Unit

- Remove the Cover control from the unit by loosening a screw.
Connect the wires to the terminals on the control board individually as following.
- Secure the cable onto the control board with the holder (clammer).
- Refix the cover control to the original position with the screw.



CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

- 1) Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.
- 2) Provide a circuit breaker switch between power source and the unit.
- 3) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could give rise to burn-out of the wires.)
- 4) Specification of power source
- 5) Confirm that electrical capacity is sufficient.
- 6) Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 7) Confirm that the cable thickness is as specified in the power sources specification. (Particularly note the relation between cable length and thickness.)
- 8) Never fail to equip a leakage breaker where it is wet or moist.
- 9) The following troubles would be caused by voltage drop-down.
 - Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.
 - Proper starting power is not given to the compressor.

Forming the piping

Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tape.

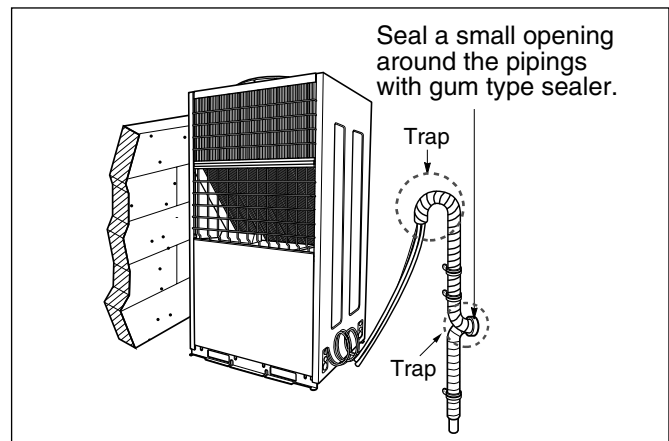
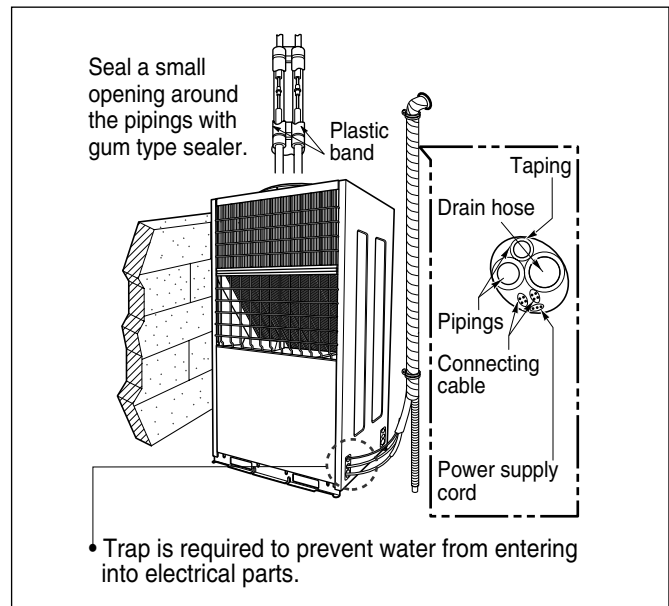
- If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

In cases where the outdoor unit is installed below the indoor unit perform the following.

1. Tape the piping, drain hose and connecting cable from down to up.
2. Secure the taped piping along the exterior wall using saddle or equivalent.

In cases where the Outdoor unit is installed above the Indoor unit perform the following.

1. Tape the piping and connecting cable from down to up.
2. Secure the taped piping along the exterior wall. Form a trap to prevent water entering the room.
3. Fix the piping onto the wall by saddle or equivalent.

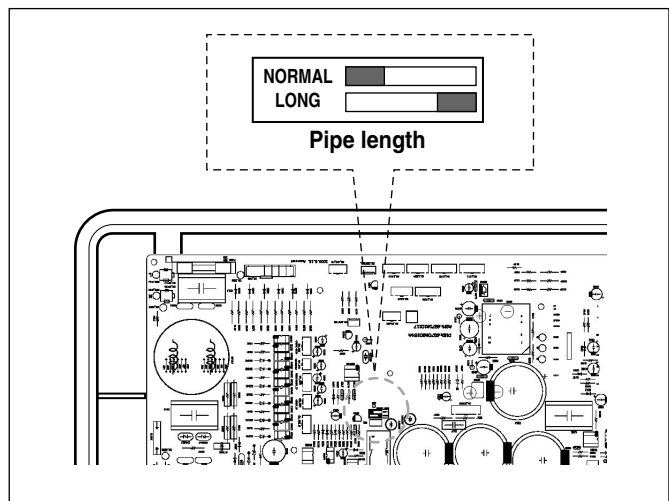


Long Pipe Setting (more than 30m)

1. Open the control cover of outdoor unit.
2. Select one of the two selectable modes as follows.
3. Move the Slide switch to "LONG" position.
4. Close the top cover and check whether the product works normally.

CAUTION

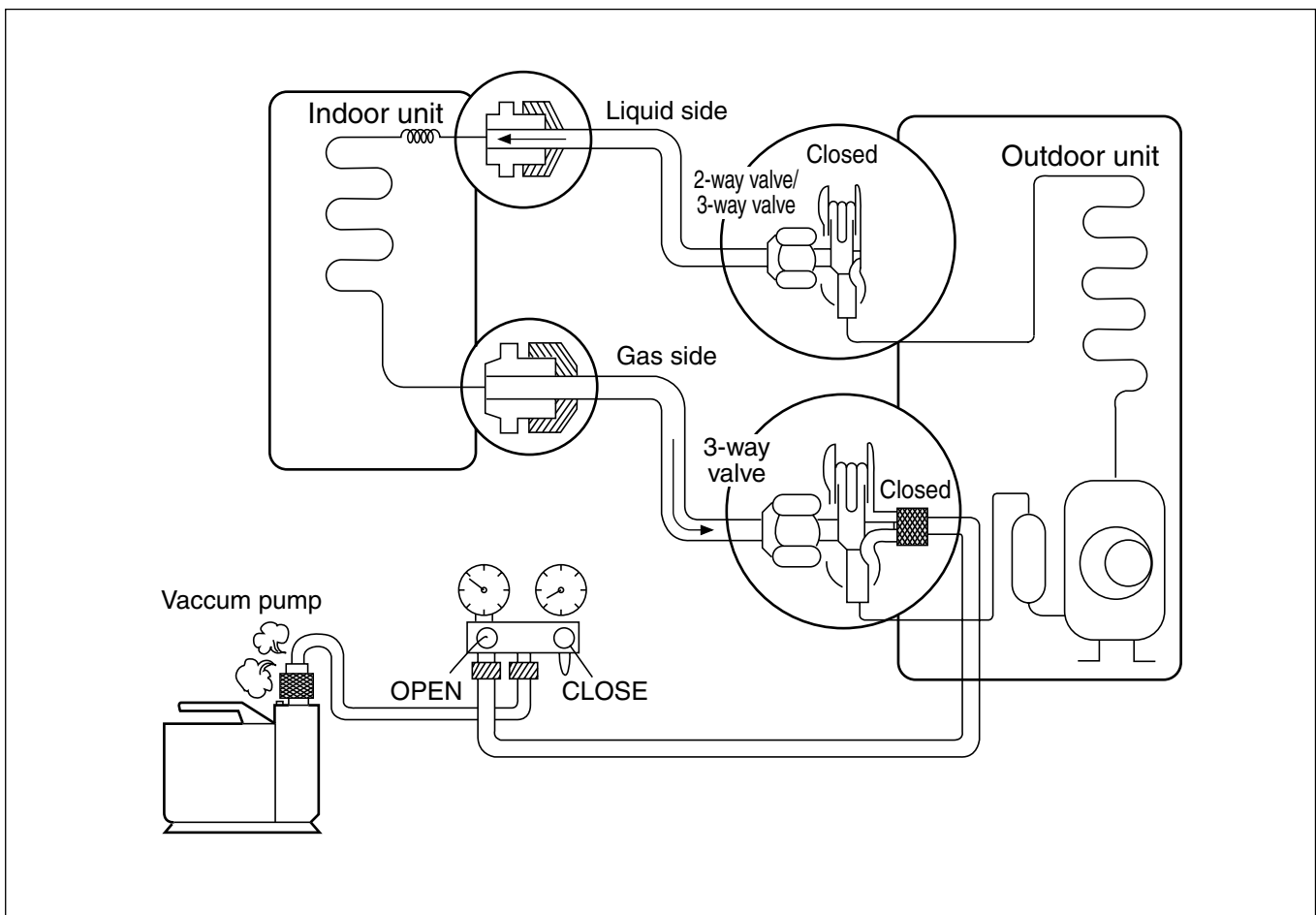
Do not open the control cover or Set the pipe length when operating the product.



Air Purging of the Connecting Pipes and the Indoor Unit

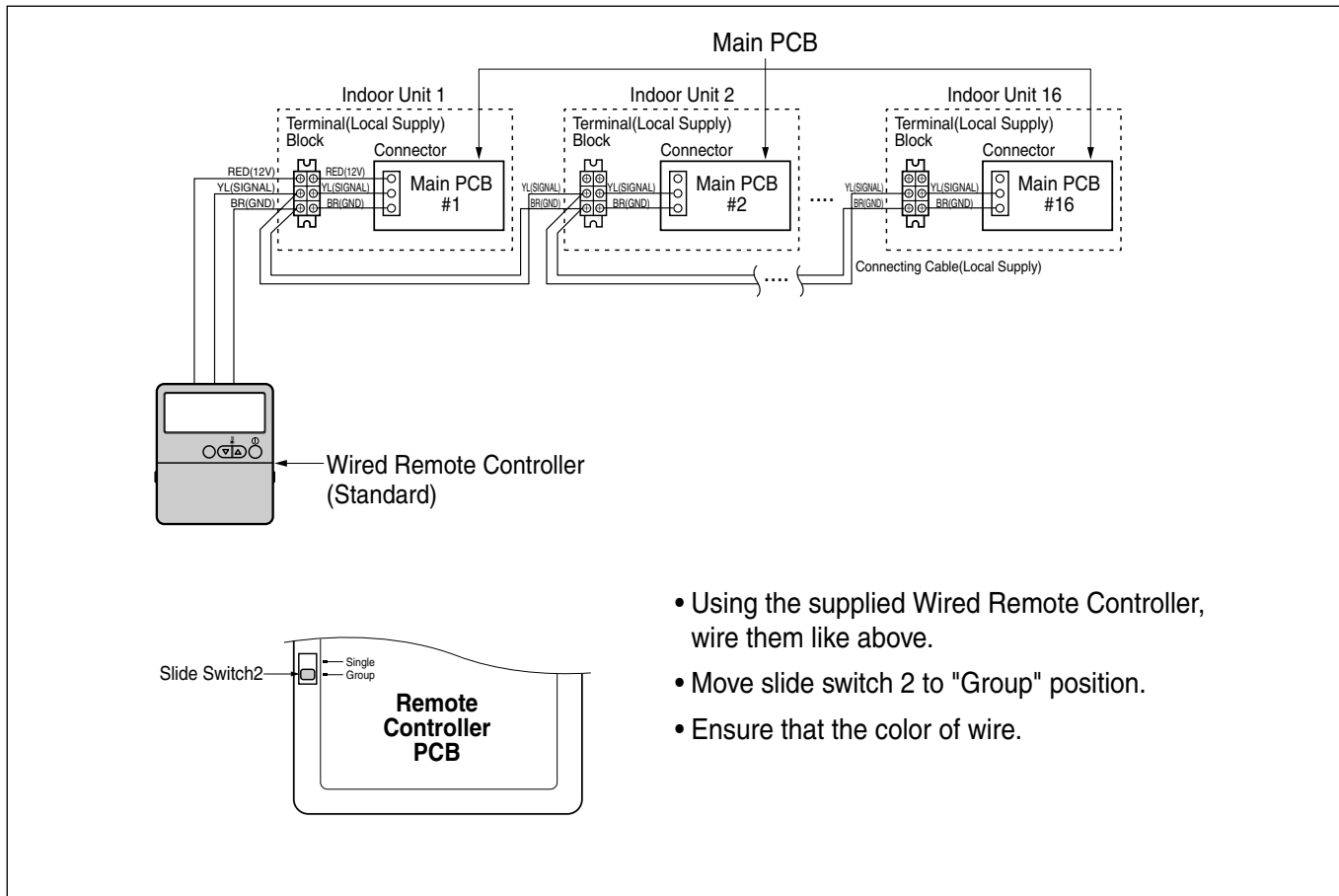
The air which contains moisture remaining in the refrigeration cycle may cause a malfunction on the compressor.

1. Confirm that both the liquid side valve and the gas side valve are set to the closed position.
2. After connecting the piping, check the joints for gas leakage with gas leak detector.
3. Remove the service port nut, and connect the gauge manifold and the vacuum pump to the service port by the charge hose.
4. Vacuum the indoor unit and the connecting pipes until the pressure in them lowers to below -76cmHg.
5. Remove the valve stem nuts, and fully open the stems of the 2-way and 3-way valves with a hexagon wrench.
6. Tighten the valve stem nuts of the 2-way valve and 3-way valve.
7. Disconnect the charge hose and fit the nut to the service port.
(Tightening torque: 1.8kg.m)



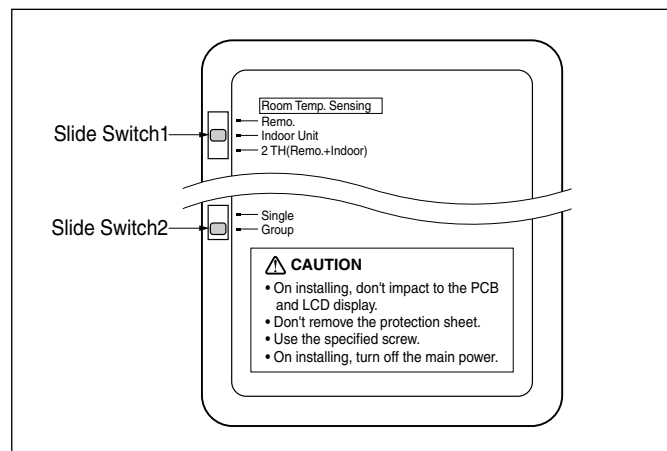
Group Control

It operates maximum 16 Units by only one Wired Remote Controller, and each Unit starts sequentially to prevent overcurrent.



Two Thermistor system

- Open the rear cover of Remote Controller to set up the mode.
- Selectable options are three as follows.
 - Remo: Sensing the room Temperature.
 - Indoor Unit: Sensing the intake air into indoor Unit.
 - 2 TH: Sensing the lower temperature of the two thermistors.
- To set up the mode, adjust the slide switch to desired mode position on installing.



Cycle Troubleshooting Guide

Self-diagnosis Function

■ Error Indicator

- The function is to self-diagnosis airconditioner and express the troubles identifiably if there is any trouble.
- Error mark is ON/OFF for the operation LED of evaporator body in the same manner as the following table.
- If more than two troubles occur simultaneously, primarily the highest trouble fo error code is expressed.
- After error occurrence, if error is released, error LED is also released simultaneously.
- To operate again on the occurrence of error code, be sure to turn off the power and then turn on.

Indoor Error

Error code	Description	INV TPS	Error Code	Indoor Status
00	No Error	●		ON
01	Indoor Room themistor error	●	CH01	OFF
02	Indoor in-piping sensor error	●	CH02	OFF
03	Remote controller error	●	CH03	OFF
04	Drain Pump/Float switch error	●	CH04	OFF
05	Communcation error between in and out	●	CH05	OFF
06	Indoor Out-Piping sensor error	●	CH06	OFF

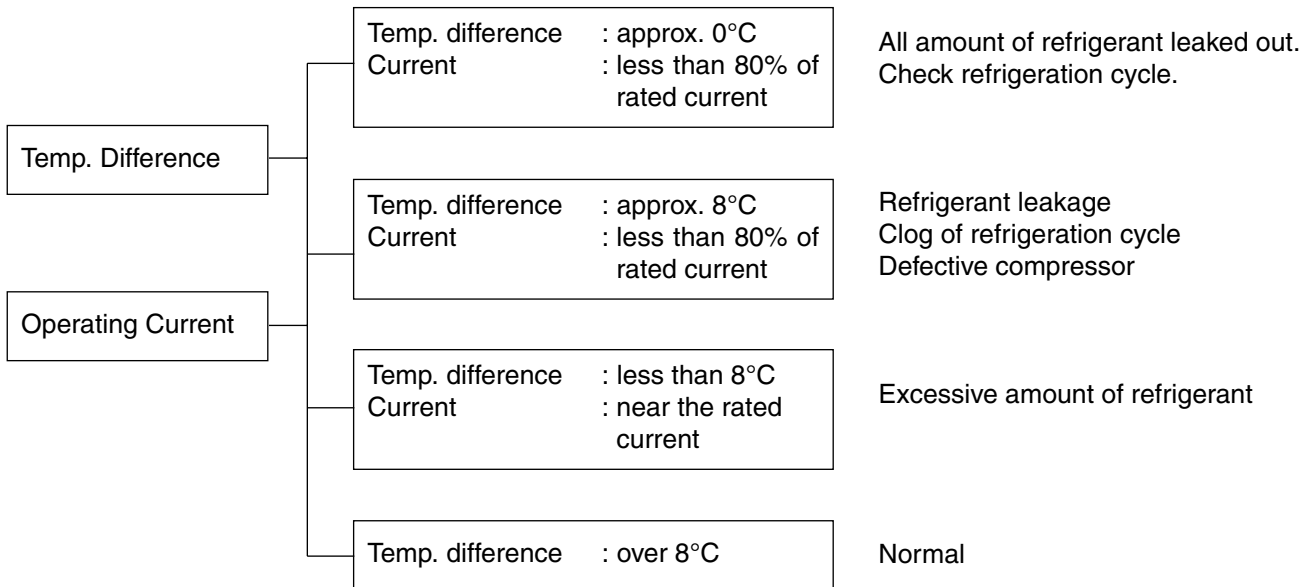
Outdoor Error

Error Code	Description	INV TPS	LED 1 (Red)	LED 2 (Green)	Indoor Status
21	DC Peak (IPM Fault)	●	2times ●	1time ●	OFF
22	CT 2(Max CT)	●	2times ●	2times ●	OFF
23	DC Link Low Volt.	●	2times ●	3times ●	OFF
24	L_P/Heater Sink	●	2times ●	4times ●	OFF
25	Low voltage / Over voltage	●	2times ●	5times ●	OFF
26	DC Comp Position Error	●	2times ●	6times ●	OFF
27	PSC Fault Error	●	2times ●	7times ●	OFF
28	DC Link High Volt	●	2times ●	8times ●	OFF
32	D-Pipe High (INV)	●	3times ●	2times ●	OFF
33	D-Pipe High (Normal)	●	3times ●	3times ●	OFF
40	CT Sensor (Open/Short)	●	4times ●	O	OFF
41	INV. D-PipeTh Error(Open/Short)	●	4times ●	1time ●	OFF
44	Outdoor air Th Error(Open/Short)	●	4times ●	4times ●	OFF
45	Cond. Pipe Th Error(Open/Short)	●	4times ●	5times ●	OFF
46	Suction Pipe Error(Open/Short)	●	4times ●	6times ●	OFF
47	Const D-pipe Th Error(Open/Short)	●	4times ●	7times ●	OFF
53	Signal error (Indoor ↔ Outdoor)	●	5times ●	3times ●	OFF
60	EEPROM Check Sum Error	●	6times ●	O	OFF
61	Cond. Pipe High	●	6times ●	1time ●	OFF
62	Heatsink High	●	6times ●	2times ●	OFF
63	Cond. Pipe Low	●	6times ●	3times ●	OFF
65	Heatsoml Th error (Open/Short)	●	6times ●	5times ●	OFF

Cycle Troubleshooting Guide

Trouble analysis

1. Check temperature difference between intake and discharge air, and operating current.



Notice:

Temperature difference between intake and discharge air depends on room air humidity. When the room air humidity is relatively higher, temperature difference is smaller. When the room air humidity is relatively lower temperature difference is larger.

2. Check temperature and pressure of refrigeration cycle.

Suction pressure (Compared with the normal value)	Temperature (Compared with the normal value)	Cause of Trouble	Description
Higher	High	Defective compressor	Current is low.
	Normal	Excessive amount of refrigerant	High pressure does not quickly rise at the beginning of operation.
Lower	Higher	Insufficient amount of refrigerant(Leakage) Clogging	Current is low.

Notice:

1. The suction pressure is usually 4.5~6.0 kg/cm²G at normal condition.
2. The temperature can be measured by attaching the thermometer to the low pressure tubing and wrap it with putty.

Electronic Parts Troubleshooting Guide

* Refer to electronic control device drawing & schematic diagram.

Trouble 1 The Product doesn't operate at all.

Turn off the main power and wait until LED on outdoor PCB is off.



Turn on the main power again.



Does not operate the outdoor unit?



Check the voltage of power(AC220V/AC240V, 50Hz).

- The voltage of main power.
- The voltage applied to the unit.
- The connecting method of Indoor/Outdoor connecting cable (each color)
- The P.W.B. Ass'y
(Fuse, Noise Filter, Power Transformer, IC01D, IC02D, etc.)



- Primarily, the operating condition of Micom is O.K.



- Check CN-DISP1

The operation check of the P.C.B. Ass'y

Procedure	Specification	Remedy
1) The input voltage of power transformer.	1) AC230V ± 30V : Check the rated voltage	1) Replace power transformer.
2) The output voltage of power transformer.	2) 14V ± 3V	2) Replace power transformer.
3) IC01D(7812)	3) DC12V	3) Replace IC01D.
4) IC02D(7805)	4) DC5V	4) Replace IC02D.
5) IC01A(KIA7036)	5) The voltage of micom pin 29 : DC4.5V↑	5) Replace IC01A.

Trouble 2 The Compressor/Outdoor Fan are don't operate

Turn on the main power.



Operate Cooling Mode by setting the disired temperature of the remote controller is less than one of the Indoor temperature by 1°C at least.



When in air circulation mode, compressor/outdoor fan is stopped.



Check the sensor for Indoor temperature is attached as close as to be effected by the temperature of Heat Exchange (EVA.)



When the sensor circuit for Indoor temperature and connector are in bad connection or are not engaged, Compressor/Outdoor fan is stopped.

- Check the related circuit of R02H(12.1K), R01H(1K), R04H(6.2K), R03H(1K), C01H(102), C02H(102), Micom(pin No. ⑪, ⑫).
- Check the Indoor temperature sensor is disconnected or not (about 10K at 25°C).



Check the Relay(RY-PWR, RY-START) for driving Compressor.

- Check the voltage between brown and blue cable of terminal to connect the Outdoor (About AC220V / 240V).
- Check the related circuit of relay in Outdoor PCB Ass'y.

Check Point	Comp. ON	Comp. OFF
Between Micom(No. 19) and GND	DC 5V	DC 0V
Between IC01M(No. 10) and GND	DC 1V↓	DC 12V

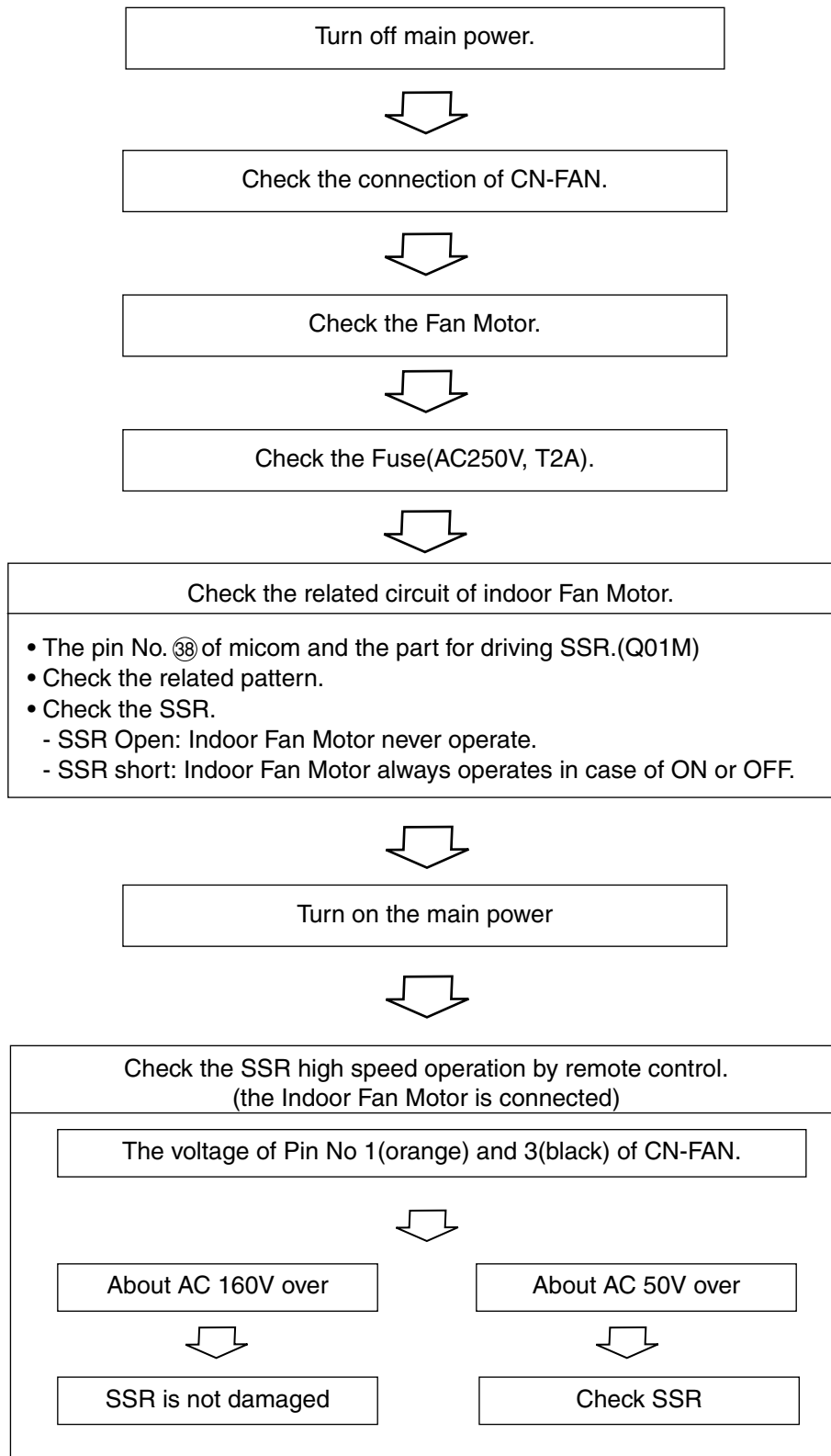


Turn off main power.



Check the electrical wiring diagram of Outdoor side.
Check the open or short of connecting wires between Indoor and Outdoor.

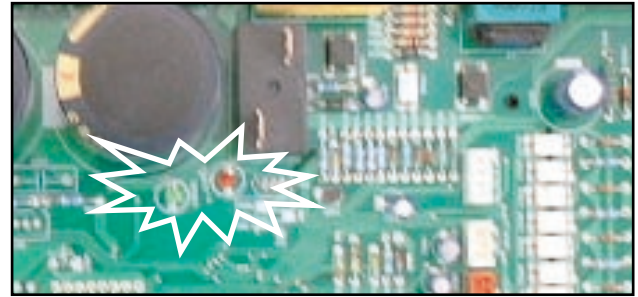
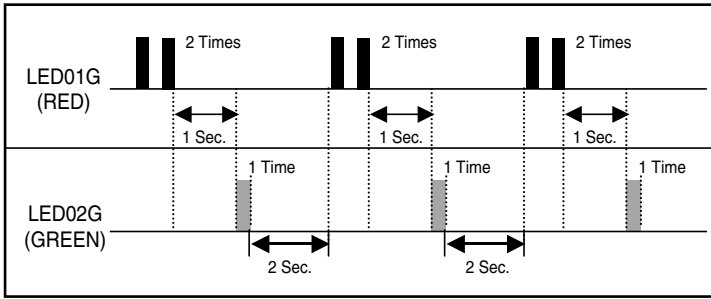
Trouble 3 When indoor Fan does not operate.



■ Error Indicator (Outdoor)

Outdoor Error

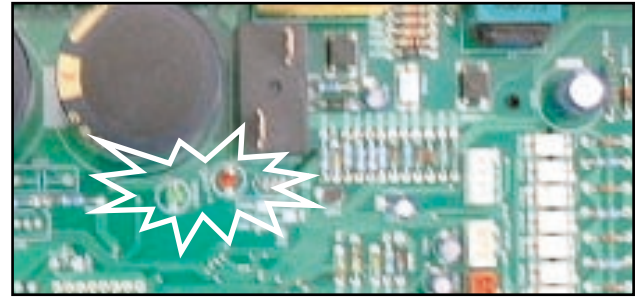
Ex) Error 21 (DC Peak)



Error code	Contents	LED01G (Red)	LED02G (Green)	Case of error	Outdoor Status
21	IPM Fault (Compressor Over current)	2 times ●	1 time ●	Compressor malfunction, IPM Fault	Off
22	CT 2(Max. Current)	2 times ●	2 times ●	Current is 14A ↑	Off
23	DC Link Low Volt.	2 times ●	3 times ●	DC Link volt. Is 140V ↓	Off
24	Low / High press	2 times ●	4 times ●	Low / High press switch OPEN	Off
25	AC Low / AC High Volt.	2 times ●	5 times ●	Abnormal AC volt. Input.	Off
26	DC Compressor Position	2 times ●	6 times ●		Off
27	PSC Fault	2 times ●	7 times ●		Off
28	DC Link High Volt	2 times ●	8 times ●	Off	Off
32	Discharge Pipe Temp. High (INV)	3 times ●	2 times ●	Off	Off
33	Discharge Pipe Temp. High (Cons.)	3 times ●	3 times ●	Off	Off

■ Error Indicator (Outdoor)

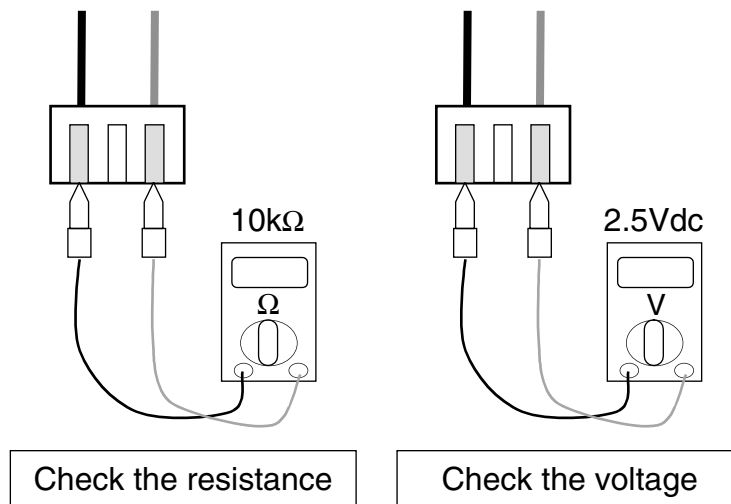
Outdoor Error



Error code	Contents	LED01G (Red)	LED02G (Green)	Case of error	Outdoor Status
40	CT Circuit	4 times ●	○	CT Circuit malfunction	Off
41	D-pipe sensor INV. (open/ short)	4 times ●	1 time ●	Open / Short	Off
44	Air sensor (open/ short)	4 times ●	4 times ●	Open / Short	Off
45	Cond. Pipe sensor (open/ short)	4 times ●	5 times ●	Open / Short	Off
46	Suction pipe sensor (open/ short)	4 times ●	6 times ●	Open / Short	Off
47	D-pipe sensor Cons. (open/ short)	4 times ●	7 times ●	Open / Short	Off
53	Communication (Indoor ↔ Outdoor)	5 times ●	3 times ●	Communication Poorly	Off
60	EEPROM check sum	6 times ●	○	Check sum mismatching	Off
61	Cond. Pipe sensor temp. high	6 times ●	1 time ●	Cond. Temp. high	Off
62	Heat sink sensor temp. high	6 times ●	2 times ●	Heat sink temp. high	Off
65	Heat sink sensor (open/ short)	6 times ●	5 times ●	Open / Short	Off

1) Troubleshooting CH01, CH02, CH06

Display code	Title	Cause of error	Check point & Normal condition
01	Indoor air sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	Normal resistor : 10KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)
02	Indoor inlet pipe sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	Normal resistor : 5KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)
06	Indoor outlet pipe sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	Normal resistor : 5KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)

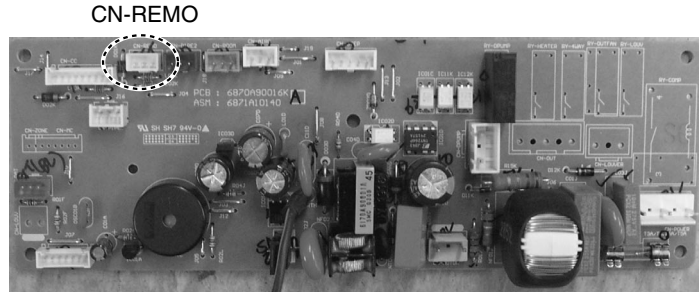
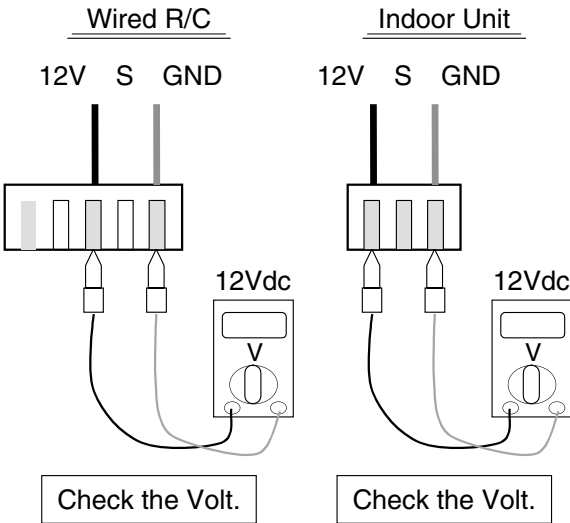


Check Point

1. Unplug the sensor on Indoor unit PCB.
2. Estimate the resistance of each sensor.
3. If the resistance of the sensor is 10KΩ/ 5KΩ at 25°C, then sensor is normal.
4. If the resistance of the sensor is 0 KΩ or ∞, then sensor is abnormal. → Change the sensor.
5. Plug the sensor on Indoor unit PCB and Power ON.
6. Estimate the voltage of each sensor.
7. If the voltage of the sensor is 2.5Vdc at 25°C, then sensor is normal.
8. If the resistance of the sensor is 0 or 5Vdc, then sensor is abnormal. → Repair or Change the PCB.

2) Troubleshooting CH03

Display code	Title	Cause of error	Check point & Normal condition
03	Communication Wired R/C	<ul style="list-style-type: none"> • Open / Short • Wrong connection 	<ul style="list-style-type: none"> • Connection of wire • Main PCB Volt. DC12V • Noise interference



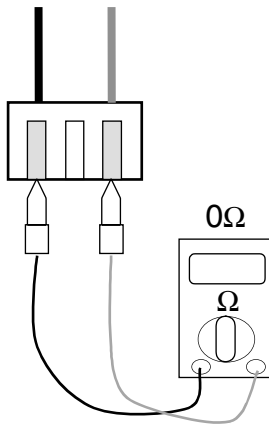
Check Point

1. Check the wire connection. (Open / Short) → Repair the connection
2. Check the soldering state of connector. (Soldered poorly) → Repair or Change the PCB.
3. Check the volt. Of main PCB power source. (DC 12V, DC 5V) → Repair or Change the main PCB.
4. Check the installation of wired remote controller. (Noise interference) → Adjust the state of installation

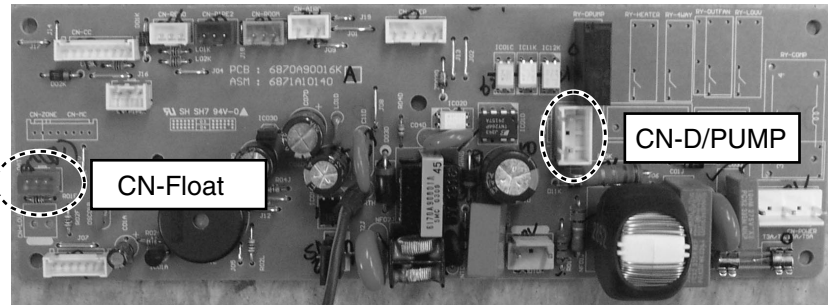
3) Troubleshooting CH04

Display code	Title	Cause of error	Check point & Normal condition
04	Drain pump / Float switch	<ul style="list-style-type: none"> • Float switch Open. (Normal : short) 	<ul style="list-style-type: none"> • The connection of wire(Drain pump/ Float switch) • Drain pump power input. (220V) • Drain tube installation. • Indoor unit installation. (Inclination)

CN Float



Check the resistance



Check Point

1. Check the wire connection. (Open, Soldered poorly) → Repair the connection or change the PCB.
2. Check the resistance of float switch (Abnormal : Open, Normal : short) → Check the float switch.
3. Check the level of water
4. Check the volt. Of Drain pump power supply. (AC 230V) → Repair or Change the main PCB.

4) Troubleshooting CH05, CH53

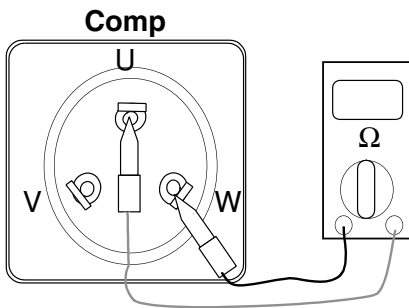
Display code	Title	Cause of error	Check point & Normal condition
04 / 53	Communication (Indoor → Outdoor)	<ul style="list-style-type: none"> • Communication poorly 	<ul style="list-style-type: none"> • Power input AC 220V. (Outdoor, Indoor) • The connector for transmission is disconnected. • The connecting wires are misconnected. • The GND1,2 is not connected at main GND. • The communication line is shorted at GND. • Transmission circuit of outdoor PCB is abnormal. • Transmission circuit of indoor PCB is abnormal.

Check Point

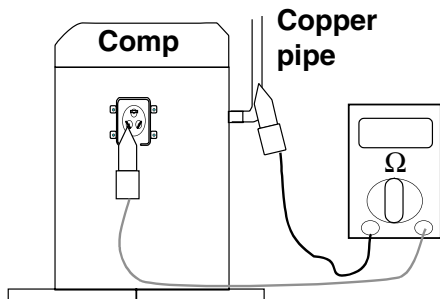
1. Check the input power AC230V. (Outdoor, Indoor unit)
2. Check the communication wires are correctly connected.
 - Adjust the connection of wire
 - Confirm the wire of "Live", "Neutral"
3. Check the resistance between communication line and GND. (Normal : Over 2MΩ)
4. Check the connector for communication is correctly connected.
5. Check the connection of GND1, GND2, and main GND.
6. If one indoor unit is operated normally, outdoor PCB is no problem.

5) Troubleshooting CH21

Display code	Title	Cause of error	Check point & Normal condition
21	DC Peak	<ul style="list-style-type: none"> • Instant over current • Over Rated current • Poor insulation of IPM 	<ul style="list-style-type: none"> • An instant over current in the U,V,W phase <ul style="list-style-type: none"> - Comp lock - The abnormal connection of U,V,W • Over load condition <ul style="list-style-type: none"> - Overcharging of refrigerant - Pipe length. • Poor insulation of compressor



Resistance(Ω) at 20°C		
Terminal	Inverter comp.	Constant comp.
U-V	0.64	0.8
V-W	0.64	0.8
W-U	0.64	0.8



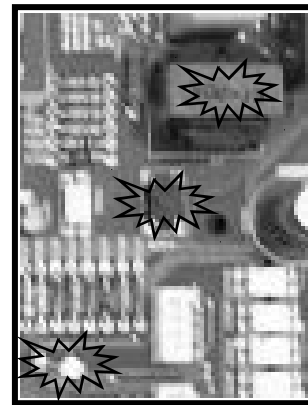
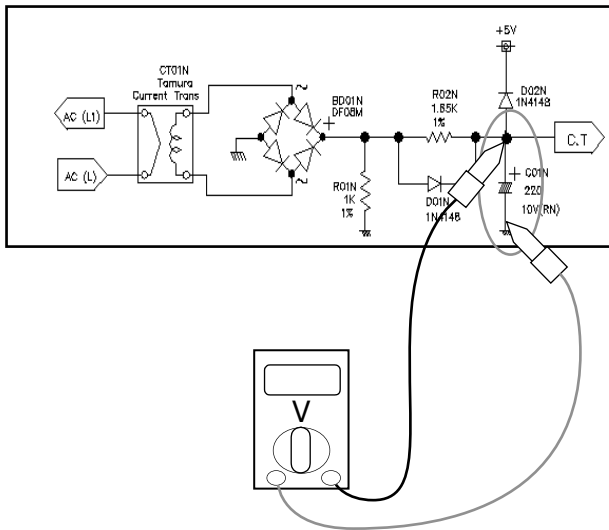
Resistance(Ω) at 20°C		
Terminal	Inverter comp.	Constant comp.
U-GND	2M Ω	2M Ω
V-GND	2M Ω	2M Ω
W-GND	2M Ω	2M Ω

Check Point

1. Check the wire connection. (U,V,W)
2. Check the load condition. (Refrigerant, Pipe length, ...) → Adjust the load condition
3. Check the electricity leakage of the compressor. → Normal : Over 2M Ω .
4. Check the resistance of compressor. → Normal : 0.65 Ω (INV), 0.8 Ω (Cons.) → No difference at each terminal.
5. Check the insulation from water at IPM part. → Check the trace of water.
6. Check the IPM circuit.

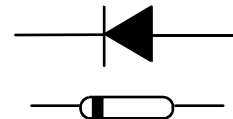
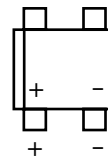
6) Troubleshooting CH22

Display code	Title	Cause of error	Check point & Normal condition
21	Max. C/T	Over current (14A ↑)	Malfunction of compressor Blocking of pipe Low voltage input Refrigerant, pipe length, blocked, ...
22	C/T Internal circuit	Initial current error	Malfunction of current detection circuit. (Open / Short) The voltage of "C01N" Is 4.0Vdc(25A) ↑.



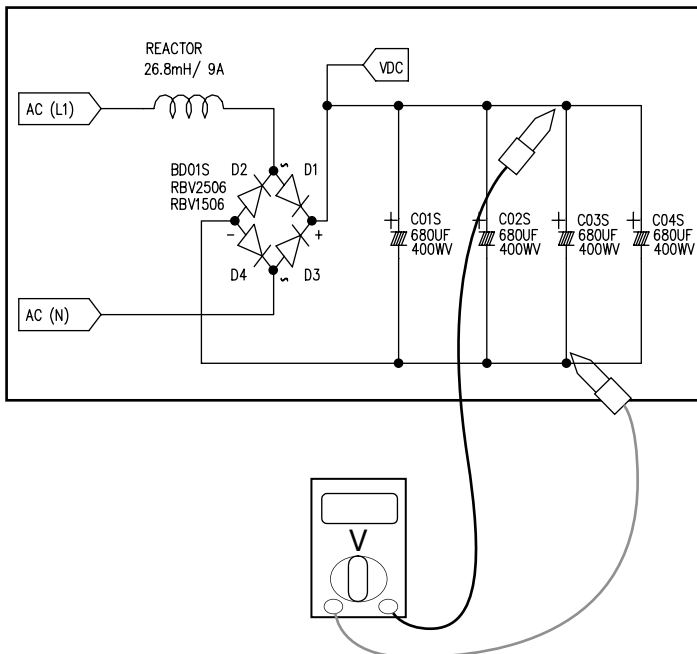
Check Point

1. Check the power source.
2. Check the fan operation is right.
3. Check the current.
4. Check the install condition.
5. Check the internal circuit. (C/T, Diode, Resistor)



7) Troubleshooting CH23, CH28

Display code	Title	Cause of error	Check point & Normal condition
23	DC Link Low voltage.	<ul style="list-style-type: none"> DC link volt. is 140Vdc ↓ . 	<ul style="list-style-type: none"> Check the power source. Check the components.
28	DC Link High voltage	<ul style="list-style-type: none"> DC link volt. is 420Vdc ↑ . 	<ul style="list-style-type: none"> Check the power source. Check the components.

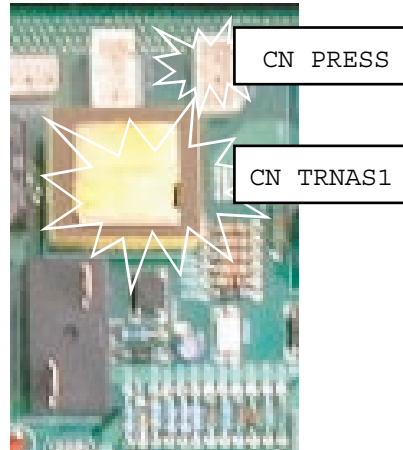
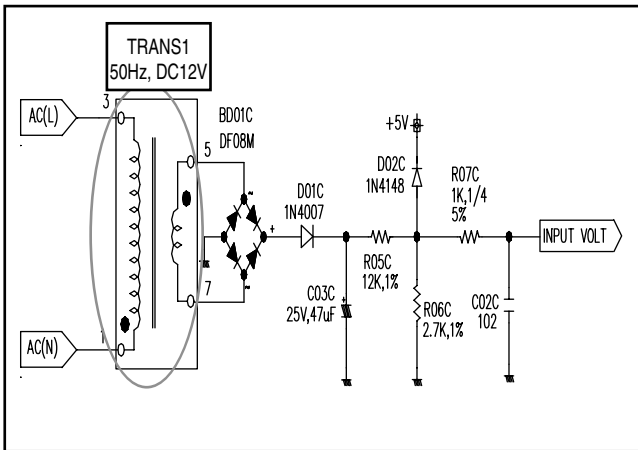


Check Point

1. Check the power source.
2. Check the components (B/Diode, Reactor, PSC Parts)

8) Troubleshooting CH24, CH25

Display code	Title	Cause of error	Check point & Normal condition
24	Press S/W Open	<ul style="list-style-type: none"> Low / High press S/W open. 	<ul style="list-style-type: none"> Check the connection of "CN_Press". Check the components.
25	Input voltage	<ul style="list-style-type: none"> Abnormal Input voltage (140Vac ↓, 300Vac ↑). 	<ul style="list-style-type: none"> Check the power source. Check the components.



Check Point

• CH 24

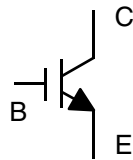
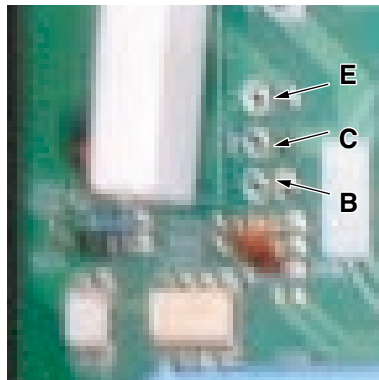
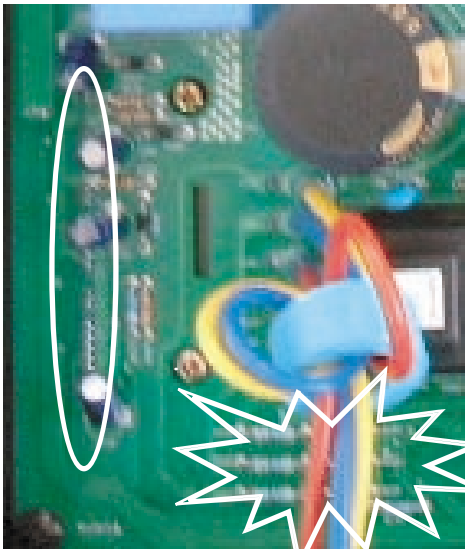
1. Check the connection of "CN_PRESS"
2. Check the install condition for over load.
3. Check the SVC V/V open.
4. Check the leakage of refrigerant.

• CH 25

1. Check the power source.
2. Check the components (Trans1, B/Diode, Diode, Resistance)

9) Troubleshooting CH26, CH27

Display code	Title	Cause of error	Check point & Normal condition
26	DC Compressor Position	<ul style="list-style-type: none"> Compressor position detect error 	<ul style="list-style-type: none"> Check the connection of comp wire "U,V,W" Malfunction of compressor Check the component of "IPM", detection parts.
27	PSC Fault	<ul style="list-style-type: none"> Over current at "IGBT" 	<ul style="list-style-type: none"> Check the component of "IGBT" . Check the components.



Check Point

• CH 26

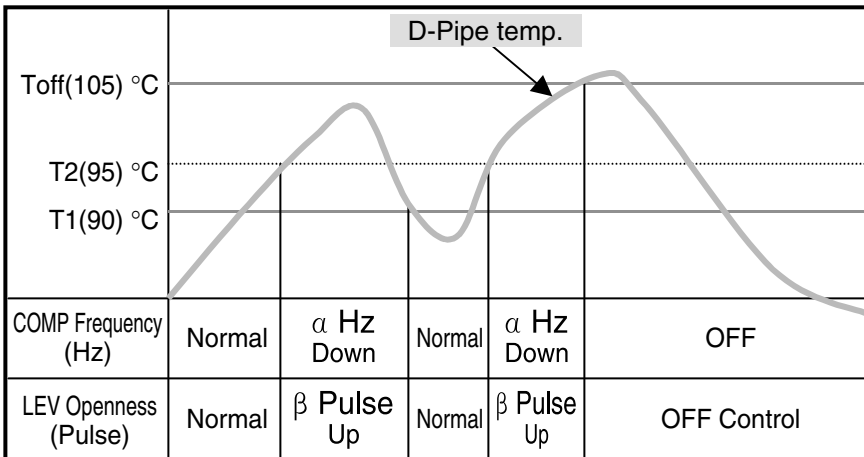
1. Check the connection of "U,V,W"
2. Check the insulation of IPM part.
3. Check the compressor. (same with CH21)

• CH 27

1. Check the component of "IGBT"
2. Check the components (IGBT, R04S, NF1, BD02S)

10) Troubleshooting CH32, CH33

Display code	Title	Cause of error	Check point & Normal condition
32	D-pipe (Inverter) temp. high (105°C ↑)	• Discharge sensor (Inverter) temp. high	<ul style="list-style-type: none"> • Check the discharge pipe sensor for INV. • Check the install condition for over load. • Check the leakage of refrigerant. • Check the SVC V/V open.
33	D-pipe (Constant) temp. high (105°C ↑)	• Discharge sensor (Cons.) temp. high	<ul style="list-style-type: none"> • Check the discharge pipe sensor for Cons. • Check the install condition for over load. • Check the leakage of refrigerant. • Check the SVC V/V open.



Check Point

• CH 32

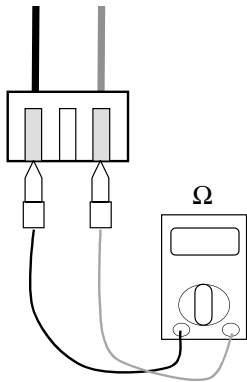
1. Check the install condition for over load.
2. Check the SVC V/V open.
3. Check the leakage of refrigerant.

• CH 33

1. Check the install condition for over load.
2. Check the SVC V/V open.
3. Check the leakage of refrigerant.
4. Check the constant compressor. (same with CH21)

11) Troubleshooting CH41, CH44, CH45, CH46, CH47, CH65

Display code	Title	Cause of error	Check point & Normal condition
41	D-pipe sensor (Inverter)	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 200KΩ / at 25°C (Unplugged) • Normal voltage : 4.5Vdc / at 25°C (plugged)
44	Air sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 10KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
45	Condenser Pipe sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 5KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
46	Suction Pipe sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 5KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
47	D-pipe sensor (Constant)	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 200KΩ / at 25°C (Unplugged) • Normal voltage : 4.5Vdc / at 25°C (plugged)
65	Heat sink sensor	<ul style="list-style-type: none"> • Open / Short • Soldered poorly • Internal circuit error 	<ul style="list-style-type: none"> • Normal resistor : 10KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)



Check Point

1. Estimate the resistance of each sensor.(Unplugged)
2. Estimate the voltage of each sensor.(Plugged)
3. If the resistance of the sensor is 0 k Ω or ∞ , then sensor is abnormal.
If the voltage of the sensor is 0 V or 5Vdc, then sensor is abnormal.

12) Troubleshooting CH51, CH60

Display code	Title	Cause of error	Check point & Normal condition
60	EEPROM Check sum	<ul style="list-style-type: none"> • Check sum error 	<ul style="list-style-type: none"> • Check the PCB ASM P/No. • Check the poor soldering.

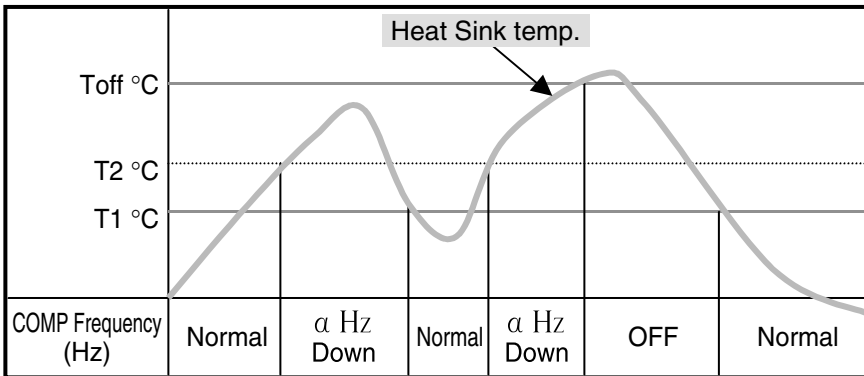
Check Point

• CH 60

1. Check the insertion condition of EEPROM.
2. Check the poor soldering

13) Troubleshooting CH61, CH62

Display code	Title	Cause of error	Check point & Normal condition
61	Condenser pipe sensor temp. high	<ul style="list-style-type: none"> Condenser pipe sensor detected high temp.(65°C) 	<ul style="list-style-type: none"> Check the load condition. Check the sensor of Condenser pipe sensor.
62	Heat sink sensor temp. high	<ul style="list-style-type: none"> Heat sink sensor detected high temp.(85°C) 	<ul style="list-style-type: none"> Check the fan is locked. Check the sensor of heat sink.



Check Point

• CH 61

1. Check the install condition for over load.
(Refrigerant, Pipe length, Blocked, ...)

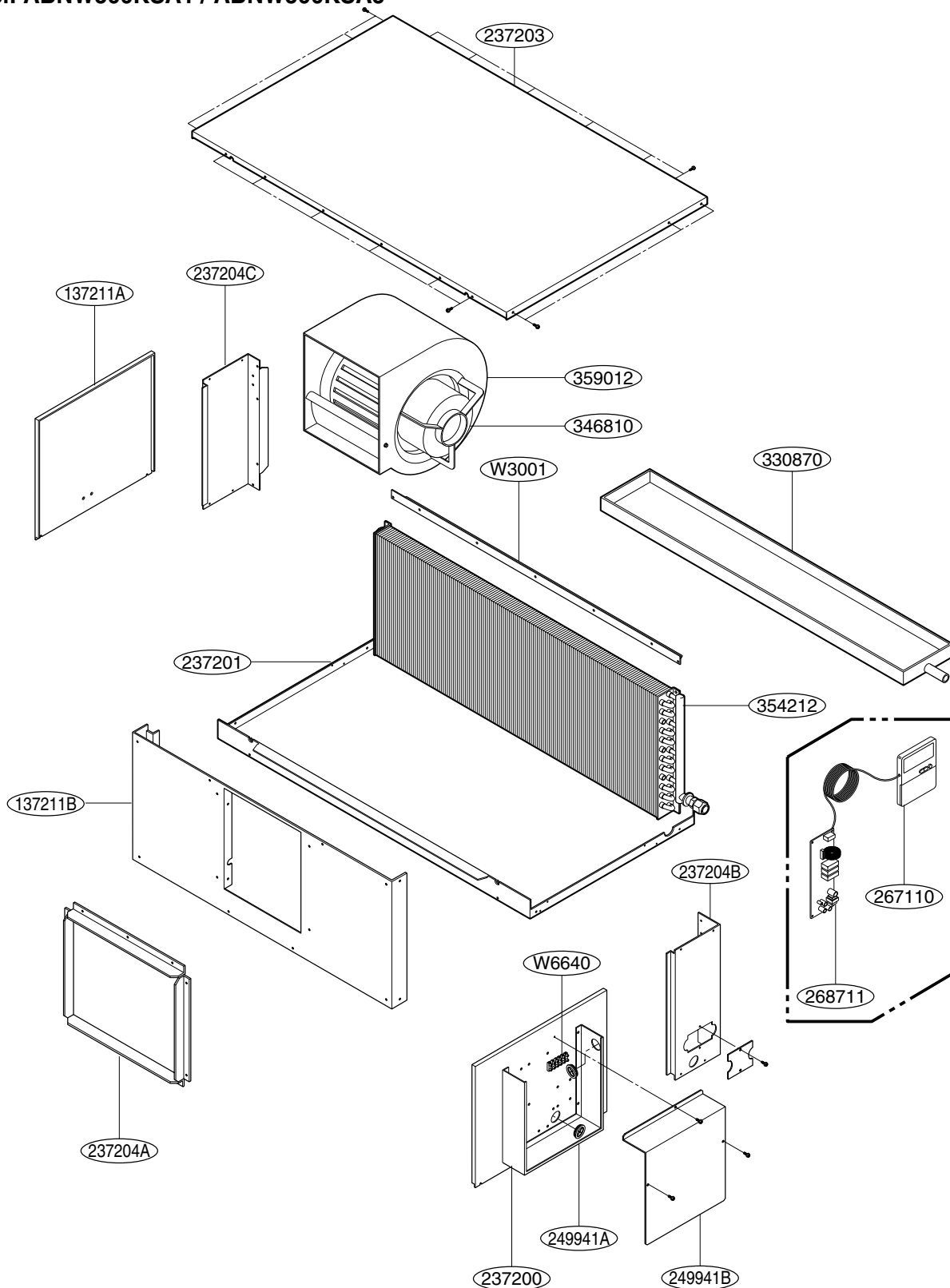
• CH 62

1. Check the fan is locked.
2. Check the Outdoor temp. is very high.

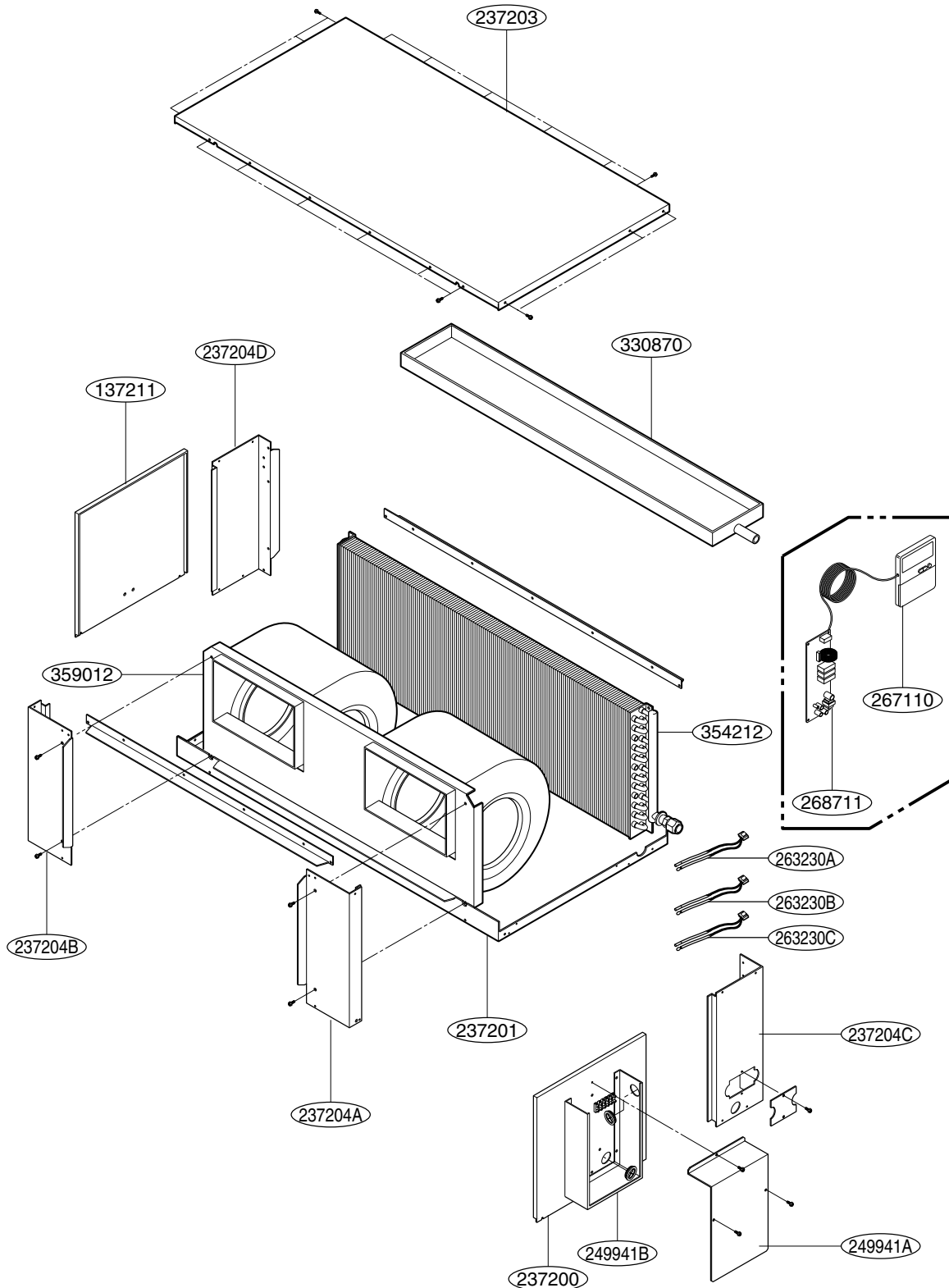
Exploded View

Indoor Unit

Model: ABNW366KSA1 / ABNW366KSA3

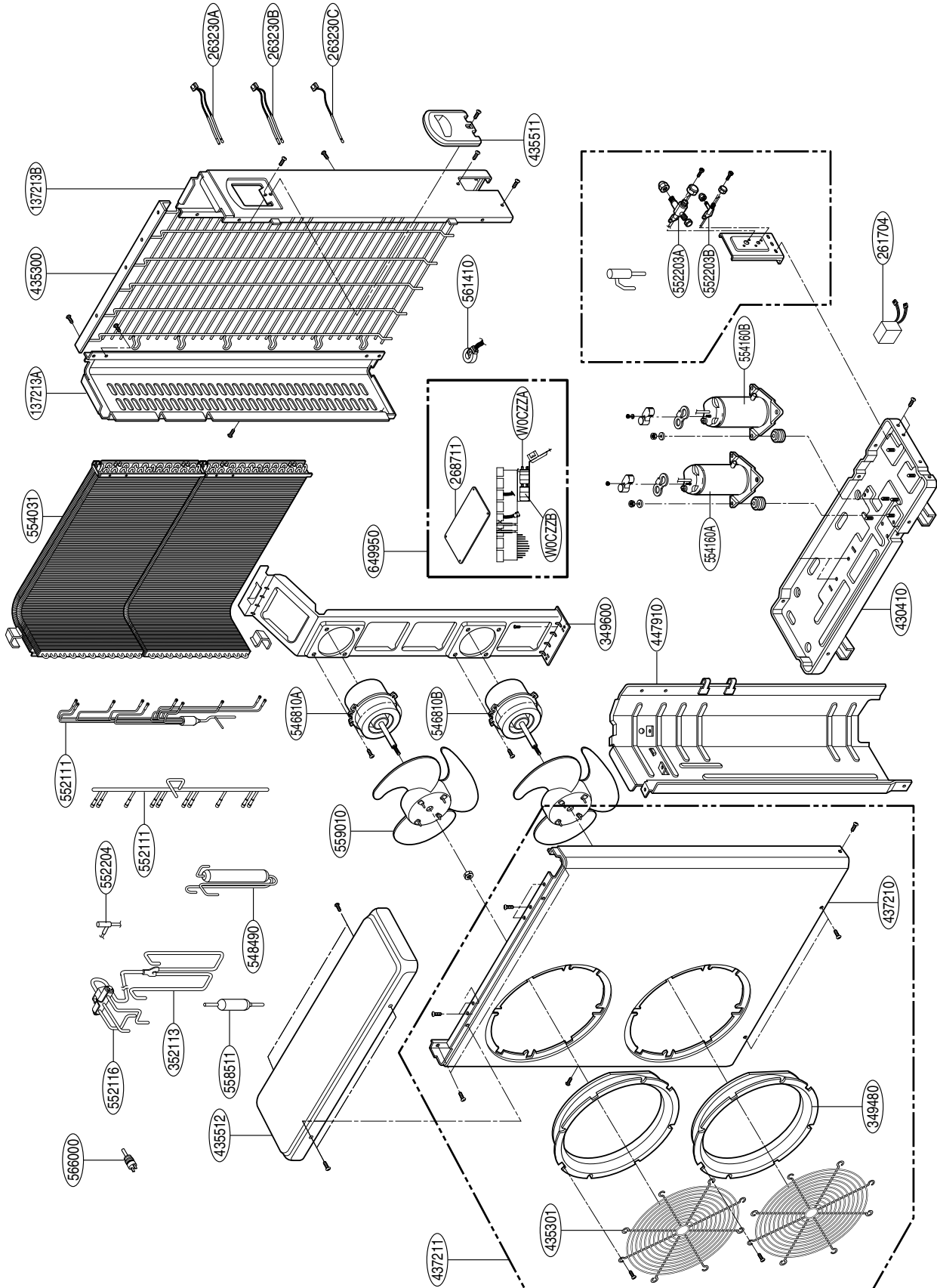


• Model: ABNW426KSA1 / ABNW426KSA3 / ABNW486KSA1 / ABNW606LTA1

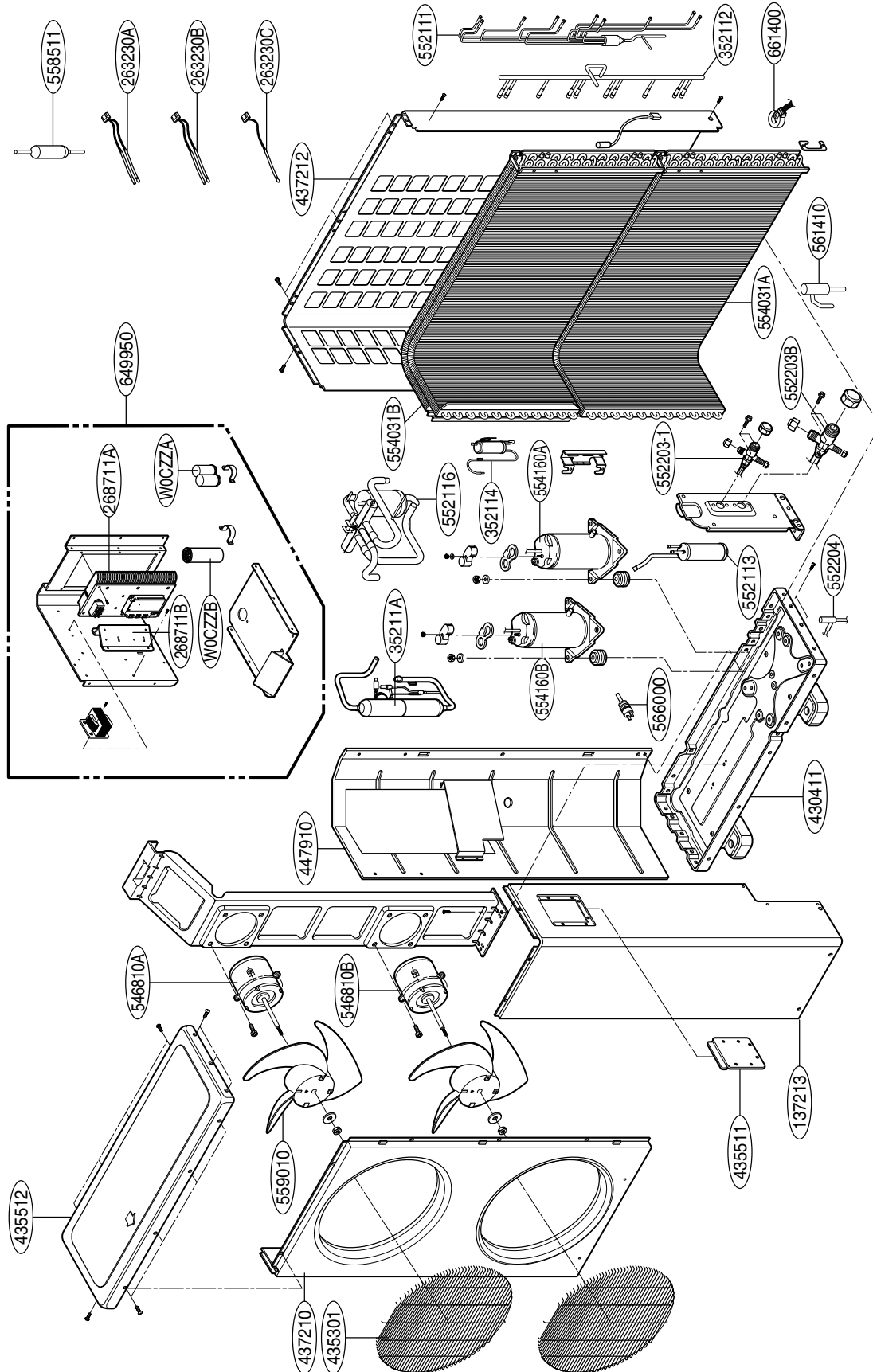


Outdoor Unit

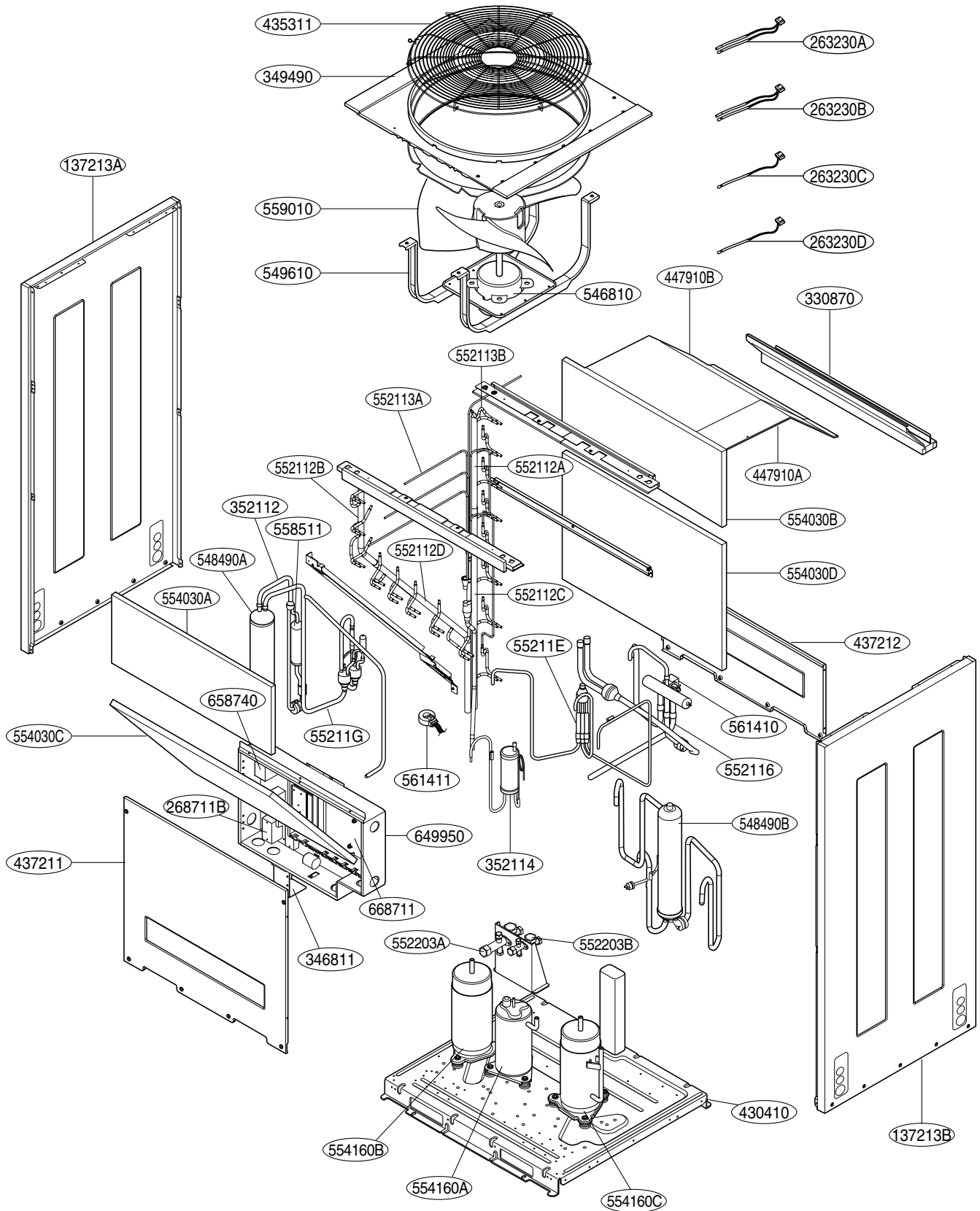
• Model: ABUW366KSA1 / ABUW366KSA3



• Model: ABUW426KSA1 / ABUW426KSA3 / ABUW486KSA1



ABUW606LTA1





P/NO : 3828A20464D

OCTOBER, 2008