

# SHIVAKI

WALL MOUNTED SPLIT-TYPE AIR CONDITIONERS

## SERVICE MANUAL

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No.TE121023

### Models

**SSH-I074BE**

**SSH-I094BE**

**SSH-I124BE**

**SSH-I184BE**

**SSH-I244BE**

**SSH-L094DC**

**SSH-L124DC**

## **IMPORTANT NOTICE**

This service manual is intended for use by individuals possessing adequate backgrounds of electrical, electronic and mechanical experience. Any attempt to repair the appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

The information, specifications and parameter are subject to change due to technical modification or improvement without any prior notice. The accurate specifications are presented on the nameplate label.

### **How to order spare parts**

To have your order filled promptly and correctly, please furnish the following information:

1. Model No. with Indoor or Outdoor
2. No. in the Explosion View
3. Part Name
4. The quantity you ordered

## Summary and features



Panel Z



Panel BM-W



Panel BM-S



For fixed type



For DC inverter

7K/9K Outdoor Unit



18K Outdoor Unit

12K Outdoor Unit



24K Outdoor Unit



Models	Remarks
I: SSH-I074BE O: SRH-I074BE	Fixed type (220~240V/50Hz)
I: SSH-I094BE O: SRH-I094BE	
I: SSH-I124BE O: SRH-I124BE	
I: SSH-I184BE O: SRH-I184BE	
I: SSH-I244BE O: SRH-I244BE	
I: SSH-L094DC-W O: SRH-L094DC-W	DC inverter (220~240V/50Hz)
I: SSH-L124DC-W O: SRH-L124DC-W	
I: SSH-L094DC-S O: SRH-L094DC-S	
I: SSH-L124DC-S O: SRH-L124DC-S	

## Technical specifications

Model		SSH-I074BE/I	SRH-I074BE/O
Product Code			
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		2200	2250
Power Input (W)		685	623
Rated Input (W)			
Rated Current (A)		3,2	2,9
Air Flow Volume (m3/h)		430	430
Dehumidifying Volume (l/h)		1.0	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-I074BE	
	Fan Motor Speed (r/min) (SH/H/M/L)	1300/1200/1100	1250/1150/1050
	Output of Fan Motor (W)	12	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.16	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ88.8×545	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	1-1.5	
	Coil length (l) X height (H) Xcoil width (L)	544*231*12.7	
	Swing Motor Model	GBJDJ-01	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)		
	Sound Power Level dB (A) (H/M/L)	28	
	Dimension (W/H/D) ( mm)	718*240*180	
	Dimension of Package (L/W/H) ( mm)	805×305×255	
	Net Weight /Gross Weight (kg)	6 , 2 /7.8	

Outdoorunit	Model of Outdoor Unit		SRH-I074BE
	Product Code		/
	Compressor Manufacturer/trademark		QING'AN
	Compressor Model		YZG-E22RY2
	Compressor Type		Rotary
	L.R.A. (A)		19
	Compressor RLA(A)		3.8
	Compressor Power Input(W)		780±5%
	Overload Protector		B145-140-141E
	Throttling Method		Capillary
	Starting Method		Capacitor
	Working Temp Range (°C)		18-43
	Condenser		Hydrophilic aluminum fin-copper tube
	Pipe Diameter (mm)		Φ7
	Rows-Fin Gap(mm)		1-1.8
	Coil length (l) X height (H)Xcoil width (L)		621*462*12.7
	Fan Motor Speed (rpm)		895
	Output of Fan Motor (W)		25
	Fan Motor RLA(A)		0.37
	Fan Motor Capacitor (μF)		2
	Air Flow Volume of Outdoor Unit(m3/h)		1415
	Fan Type		Axial fan
	Fan Diameter (mm)		Φ324×119
	Defrosting Method		Auto defrost
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side(MPa)		2.8
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		0.65
	Sound Pressure Level dB (A) (H/M/L)		50
	Sound Power Level dB (A) (H/M/L)		42
	Dimension (W/H/D) ( mm)		655x500x232
	Dimension of Package (L/W/H)( mm)		745x550x353
	Net Weight /Gross Weight (kg)		23.3/25.3
	Refrigerant Charge (kg)		440
Connection Pipe	Length (m)		5
	Gas additional charge(g/m)		20
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")
		Gas Pipe (mm)	Φ9.52(3/8)
	Max Distance	Height (m)	5
		Length (m)	15

Model		SSH-I094BE/I / SRH-I094BE/O	
Product Code			
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		2700	2780
Power Input (W)		835	768
Rated Input (W)			
Rated Current (A)		3,9	3,6
Air Flow Volume (m3/h)		430	430
Dehumidifying Volume (l/h)		1.0	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-I094BE	
	Fan Motor Speed (r/min) (SH/H/M/L)	1150/1050/950	1150/1050/950
	Output of Fan Motor (W)	12	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.16	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ88.8×545	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	1-1.5	
	Coil length (l) X height (H) Xcoil width (L)	544*231*12.7	
	Swing Motor Model	GBJDJ-01	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	36/34/32	
	Sound Power Level dB (A) (H/M/L)	29	
	Dimension (W/H/D) ( mm)	718x240x180	
	Dimension of Package (L/W/H) ( mm)	805×305×255	
	Net Weight /Gross Weight (kg)	6.2/7.8	

Outdoorunit	Model of Outdoor Unit		SRH-I094BE
	Product Code		/
	Compressor Manufacturer/trademark		RECHI
	Compressor Model		44A233AJ-FEKC
	Compressor Type		Rotary
	L.R.A. (A)		21
	Compressor RLA(A)		4.3
	Compressor Power Input(W)		930±5%
	Overload Protector		B175-145B-141C
	Throttling Method		Capillary
	Starting Method		Capacitor
	Working Temp Range (°C)		18-43
	Condenser		Hydrophilic aluminum fin-copper tube
	Pipe Diameter (mm)		Φ7
	Rows-Fin Gap(mm)		1-1.8
	Coil length (l) X height (H)Xcoil width (L)		621*462*12.7
	Fan Motor Speed (rpm)		895
	Output of Fan Motor (W)		25
	Fan Motor RLA(A)		0.37
	Fan Motor Capacitor (μF)		2
	Air Flow Volume of Outdoor Unit(m3/h)		1415
	Fan Type		Axial fan
	Fan Diameter (mm)		φ324×119
	Defrosting Method		Auto defrost
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		2.8
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		0.65
	Sound Pressure Level dB (A) (H/M/L)		52
	Sound Power Level dB (A) (H/M/L)		44
	Dimension (W/H/D) ( mm)		600x500x232
	Dimension of Package (L/W/H)( mm)		745x550x353
	Net Weight /Gross Weight (kg)		23.4/25.5
	Refrigerant Charge (kg)		470
Connection Pipe	Length (m)		5
	Gas additional charge(g/m)		20
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")
		Gas Pipe (mm)	Φ9.52(3/8)
	Max Distance	Height (m)	5
		Length (m)	15

Model		SSH-I124BE/I / SRH-I124BE/O	
Product Code			
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		3520	3660
Power Input (W)		1090	1008
Rated Input (W)			
Rated Current (A)		5,1	4,7
Air Flow Volume (m3/h)		530	530
Dehumidifying Volume (l/h)		1.0	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-I124BE	
	Fan Motor Speed (r/min) (SH/H/M/L)	1270/1170/1000	1250/1150/1000
	Output of Fan Motor (W)	12	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.16	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ90.8×602	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	2-1.8	
	Coil length (l) X height (H) Xcoil width (L)	604*231*25.4	
	Swing Motor Model	GBJDJ-01	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	39/36/34	
	Sound Power Level dB (A) (H/M/L)	31	
	Dimension (W/H/D) ( mm)	770x240x180	
	Dimension of Package (L/W/H) ( mm)	855×305×255	
	Net Weight /Gross Weight (kg)	7/8.7	



Outdoorunit	Model of Outdoor Unit		SRH-I124BE
	Product Code		/
	Compressor Manufacturer/trademark		RECHI
	Compressor Model		48A313PM-55KF
	Compressor Type		Rotary
	L.R.A. (A)		30
	Compressor RLA(A)		5.8
	Compressor Power Input(W)		1245±5%
	Overload Protector		B290-150B-241E
	Throttling Method		Capillary
	Starting Method		Capacitor
	Working Temp Range (°C)		18-43
	Condenser		Hydrophilic aluminum fin-copper tube
	Pipe Diameter (mm)		Φ7
	Rows-Fin Gap(mm)		1-1.5
	Coil length (l) X height (H)Xcoil width (L)		711*504*12.7
	Fan Motor Speed (rpm)		860
	Output of Fan Motor (W)		31
	Fan Motor RLA(A)		0.45
	Fan Motor Capacitor (μF)		2.5
	Air Flow Volume of Outdoor Unit(m3/h)		2040
	Fan Type		Axial fan
	Fan Diameter (mm)		φ401×119
	Defrosting Method		Auto defrost
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		2.9
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		0.7
	Sound Pressure Level dB (A) (H/M/L)		55
	Sound Power Level dB (A) (H/M/L)		46
	Dimension (W/H/D) ( mm)		755x552x256
	Dimension of Package (L/W/H)( mm)		803*590*361
	Net Weight /Gross Weight (kg)		29.7/32.8
	Refrigerant Charge (kg)		670
Connection Pipe	Length (m)		5
	Gas additional charge(g/m)		20
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")
		Gas Pipe (mm)	Φ9.52(3/8)
	Max Distance	Height (m)	5
		Length (m)	15

Model		SSH-I184BE/I	SRH-I184BE/O
Product Code		/	
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		5280	5420
Power Input (W)		1640	1500
Rated Input (W)			
Rated Current (A)		7,6	7
Air Flow Volume (m3/h)		780	780
Dehumidifying Volume (l/h)		1.15	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-I184BE	
	Fan Motor Speed (r/min) (SH/H/M/L)	1300/1220/1150	1250/1150/1050
	Output of Fan Motor (W)	23	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.30	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ94×709	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	2-1.6	
	Coil length (l) X height (H) Xcoil width (L)	705*315*25.4	
	Swing Motor Model	GBJDJ-01 (L)	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	48/46/44	
	Sound Power Level dB (A) (H/M/L)	35	
	Dimension (W/H/D) ( mm)	898x280x202	
	Dimension of Package (L/W/H) ( mm)	985x365x298	
	Net Weight /Gross Weight (kg)	9.3/11.8	

Outdoorunit	Model of Outdoor Unit		SRH-I184BE
	Product Code		/
	Compressor Manufacturer/trademark		HIGHLY
	Compressor Model		ASH201SV-C8LU
	Compressor Type		Rotary
	L.R.A. (A)		40
	Compressor RLA(A)		7.7
	Compressor Power Input(W)		1650
	Overload Protector		IOL
	Throttling Method		Capillary
	Starting Method		Capacitor
	Working Temp Range (°C)		18-43
	Condenser		Hydrophilic aluminum fin-copper tube
	Pipe Diameter (mm)		Φ9.52
	Rows-Fin Gap(mm)		1-1.5
	Coil length (l) X height (H)Xcoil width (L)		768*510*19.05
	Fan Motor Speed (rpm)		850
	Output of Fan Motor (W)		45
	Fan Motor RLA(A)		0.47
	Fan Motor Capacitor (μF)		3
	Air Flow Volume of Outdoor Unit(m3/h)		2340
	Fan Type		Axial fan
	Fan Diameter (mm)		φ409×132
	Defrosting Method		Auto defrost
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		29
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		0.75
	Sound Pressure Level dB (A) (H/M/L)		58
	Sound Power Level dB (A) (H/M/L)		52
	Dimension (W/H/D) ( mm)		823x552x256
	Dimension of Package (L/W/H)( mm)		863*590*361
	Net Weight /Gross Weight (kg)		36.5/39.6
	Refrigerant Charge (kg)		1050
Connection Pipe	Length (m)		5
	Gas additional charge(g/m)		30
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")
		Gas Pipe (mm)	Φ12(1/2")
	Max Distance	Height (m)	5
		Length (m)	15

Model		SSH-I244BE/I / SRH-I244BE/O	
Product Code			
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		7030	7180
Power Input (W)		2175	1980
Rated Input (W)			
Rated Current (A)		10,1	9,2
Air Flow Volume (m3/h)		780	780
Dehumidifying Volume (l/h)		1.15	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-I244BE	
	Fan Motor Speed (r/min) (SH/H/M/L)	1350/1250/1150	1350/1250/1150
	Output of Fan Motor (W)	23	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.30	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ94×709	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	2-1.4	
	Coil length (l) X height (H) Xcoil width (L)	705*315*25.4	
	Swing Motor Model	GBJDJ-01 (L)	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	48/46/44	
	Sound Power Level dB (A) (H/M/L)	39	
	Dimension (W/H/D) ( mm)	898x280x202	
	Dimension of Package (L/W/H) ( mm)	985x365x298	
	Net Weight /Gross Weight (kg)	9.3/12.2	

Outdoorunit	Model of Outdoor Unit		SRH-I244BE
	Product Code		/
	Compressor Manufacturer/trademark		HIGHLY
	Compressor Model		ASH264SV-C8LU
	Compressor Type		Rotary
	L.R.A. (A)		60
	Compressor RLA(A)		10.3
	Compressor Power Input(W)		2215
	Overload Protector		IOL
	Throttling Method		Capillary
	Starting Method		Capacitor
	Working Temp Range (°C)		18-43
	Condenser		Hydrophilic aluminum fin-copper tube
	Pipe Diameter (mm)		Φ9.52
	Rows-Fin Gap(mm)		1-1.5
	Coil length (l) X height (H)Xcoil width (L)		901*609*19.05
	Fan Motor Speed (rpm)		850
	Output of Fan Motor (W)		95
	Fan Motor RLA(A)		0.92
	Fan Motor Capacitor (μF)		4
	Air Flow Volume of Outdoor Unit(m3/h)		3350
	Fan Type		Axial fan
	Fan Diameter (mm)		φ470×173
	Defrosting Method		Auto defrost
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		30
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		0.8
	Sound Pressure Level dB (A) (H/M/L)		60
	Sound Power Level dB (A) (H/M/L)		55
	Dimension (W/H/D) ( mm)		902x650x307
	Dimension of Package (L/W/H)( mm)		1037x705x433
	Net Weight /Gross Weight (kg)		50.2/54.3
	Refrigerant Charge (kg)		1380
Connection Pipe	Length (m)		5
	Gas additional charge(g/m)		40
	Outer Diameter	Liquid Pipe (mm)	Φ9.52(3/8")
		Gas Pipe (mm)	Φ15.88(5/8")
	Max Distance	Height (m)	5
		Length (m)	15

Model		SSH-L094DC / SRH-L094DC	
Product Code			
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		2703 (1110-3080)	2724 (1230-3810)
Power Input (W)		726 (300-1050)	702 (300-1220)
Rated Input (W)			
Rated Current (A)		4.8	5.6
Air Flow Volume (m3/h)		600	600
Dehumidifying Volume (l/h)		0.9	
EER / C.O.P (W/W)			
Energy Class		A/A	
Indoorunit	Model of Indoor Unit	SSH-L094DC	SRH-L094DC
	Fan Motor Speed (r/min) (SH/H/M/L)	1200/1050/900	1200/1050/900
	Output of Fan Motor (W)	18	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.23	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ98×622	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	2-1.5	
	Coil length (l) X height (H) Xcoil width (L)	657x315x25.4	
	Swing Motor Model	GBJDJ-01	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	38/36/34	
	Sound Power Level dB (A) (H/M/L)	26	
	Dimension (W/H/D) ( mm)	800*280*185	
	Dimension of Package (L/W/H) ( mm)	885*366*278	
	Net Weight /Gross Weight (kg)	8/10	

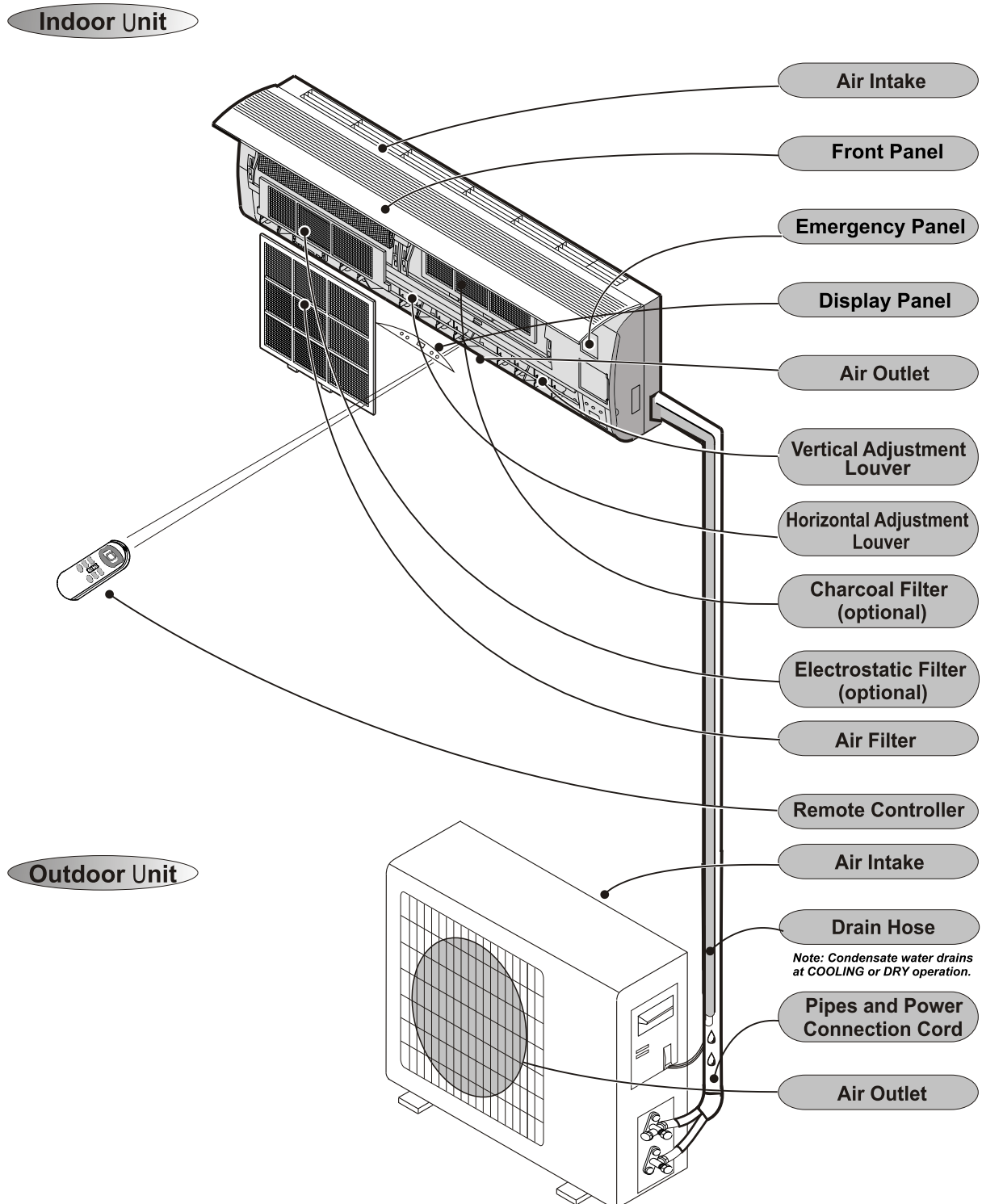
Outdoorunit	Model of Outdoor Unit		SRH-L094DC-W	SRH-L094DC-S
	Product Code		/	
	Compressor Manufacturer/trademark		GMCC	
	Compressor Model		DA89X1C-20FZ3	
	Compressor Type		Rotary	
	L.R.A. (A)		N.A	
	Compressor RLA(A)		4.75±5%	
	Compressor Power Input(W)		705±5%	
	Overload Protector		INT01L-4639	
	Throttling Method		Capillary	
	Starting Method		Capacitor	
	Working Temp Range (°C)		18-44	
	Condenser		Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)		Φ7	
	Rows-Fin Gap(mm)		2-1.5	
	Coil length (l) X height (H)Xcoil width (L)		756x510x25.4	
	Fan Motor Speed (rpm)		860	
	Output of Fan Motor (W)		31	
	Fan Motor RLA(A)		0.45	
	Fan Motor Capacitor (μF)		2.5	
	Air Flow Volume of Outdoor Unit(m3/h)		2340	
	Fan Type		Axial fan	
	Fan Diameter (mm)		φ408×132	
	Defrosting Method		Auto defrost	
	Climate Type		T1	
	Isolation		I	
	Moisture Protection		IP25	
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		4.5	
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		1.9	
	Sound Pressure Level dB (A) (H/M/L)		52	
	Sound Power Level dB (A) (H/M/L)		37	
	Dimension (W/H/D) (mm)		826x552x256	
	Dimension of Package (L/W/H)( mm)		863x590x361	
	Net Weight /Gross Weight (kg)		32/36	
	Refrigerant Charge (kg)		1002	
Connection Pipe	Length (m)		5	
	Gas additional charge(g/m)		20	
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")	
		Gas Pipe (mm)	Φ9.52(3/8)	
	Max Distance	Height (m)	5	
		Length (m)	15	

Model		SSH-L124DC	SRH-L124DC
Product Code		/	
Function		COOLING	HEATING
Rated Voltage		220-240V	
Rated Frequency		50Hz	
Total Capacity (W)		3503 (1520-3960)	4323 (1610-4840)
Power Input (W)		1078(400-1350)	1310(400-1700)
Rated Input (W)		1350	1700
Rated Current (A)		5	6,1
Air Flow Volume (m3/h)		650	650
Dehumidifying Volume (l/h)		0,9	
EER / C.O.P (W/W)			
Energy Class		A/C	
Indoorunit	Model of Indoor Unit	SSH-L124DC-W	SSH-L124DC-S
	Fan Motor Speed (r/min) (SH/H/M/L)	1280/1100/900	1250/1080/900
	Output of Fan Motor (W)	18	
	Input of Heater (W)	/	
	Fan Motor Capacitor (μF)	1.5	
	Fan Motor RLA(A)	0.23	
	Fan Type	Cross flow fan	
	Diameter-Length (mm)	φ98×622	
	Evaporator	Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7	
	Row-Fin Gap(mm)	2-1.5	
	Coil length (l) X height (H) Xcoil width (L)	657x315x25.4	
	Swing Motor Model	GBJDJ-01	
	Output of Swing Motor (W)	<1	
	Fuse (A)	PCB 3.15A	
	Sound Pressure Level dB (A) (H/M/L)	40/38/36	
	Sound Power Level dB (A) (H/M/L)	29	
	Dimension (W/H/D) ( mm)	800*280*185	
	Dimension of Package (L/W/H) ( mm)	885*366*278	
	Net Weight /Gross Weight (kg)	8/10	



Outdoorunit	Model of Outdoor Unit		SRH-L124DC-W	SRH-L124DC-S
	Product Code		/	
	Compressor Manufacturer/trademark		GMCC	
	Compressor Model		DA108M1C-81EZ8	
	Compressor Type		Rotary	
	L.R.A. (A)		N.A	
	Compressor RLA(A)		4.6±5%	
	Compressor Power Input(W)		865±5%	
	Overload Protector		IOL	
	Throttling Method		Capillary	
	Starting Method		Capacitor	
	Working Temp Range (°C)		18-45	
	Condenser		Hydrophilic aluminum fin-copper tube	
	Pipe Diameter (mm)		Φ7	
	Rows-Fin Gap(mm)		2-1.5	
	Coil length (l) X height (H)Xcoil width (L)		756x510x25.4	
	Fan Motor Speed (rpm)		900 /770/670	
	Output of Fan Motor (W)		30	
	Fan Motor RLA(A)		0.45	
	Fan Motor Capacitor (μF)		2.5	
	Air Flow Volume of Outdoor Unit(m3/h)		2340	
	Fan Type		Axial fan	
	Fan Diameter (mm)		φ408×132	
	Defrosting Method		Auto defrost	
	Climate Type		T3	
	Isolation		I	
	Moisture Protection		IP26	
	Permissible Excessive Operating Pressure for theDischarge Side(MPa)		4.5	
	Permissible Excessive Operating Pressure for theSuction Side(MPa)		1.9	
	Sound Pressure Level dB (A) (H/M/L)		55	
	Sound Power Level dB (A) (H/M/L)		38	
	Dimension (W/H/D) ( mm)		760x552x256	
	Dimension of Package (L/W/H)( mm)		863x590x361	
	Net Weight /Gross Weight (kg)		32/36	
	Refrigerant Charge (kg)		1000	
Connection Pipe	Length (m)		5	
	Gas additional charge(g/m)		20	
	Outer Diameter	Liquid Pipe (mm)	Φ6(1/4")	
		Gas Pipe (mm)	Φ12(1/2")	
	Max Distance	Height (m)	5	
		Length (m)	15	

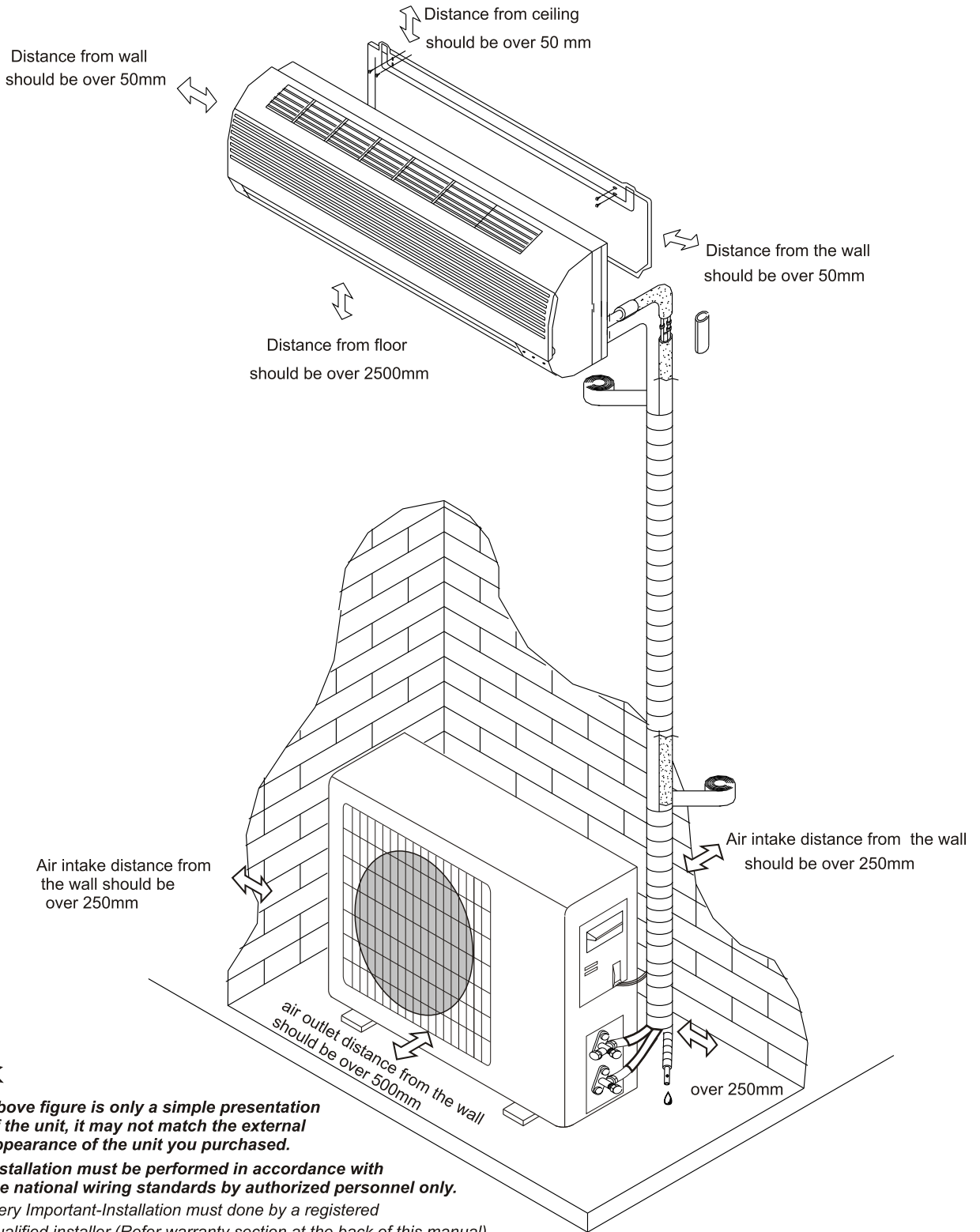
## Identification of Parts



☑ The figures in this manual are based on the external view of a standard model.  
Consequently, the shape may differ from that of the air conditioner you have selected.

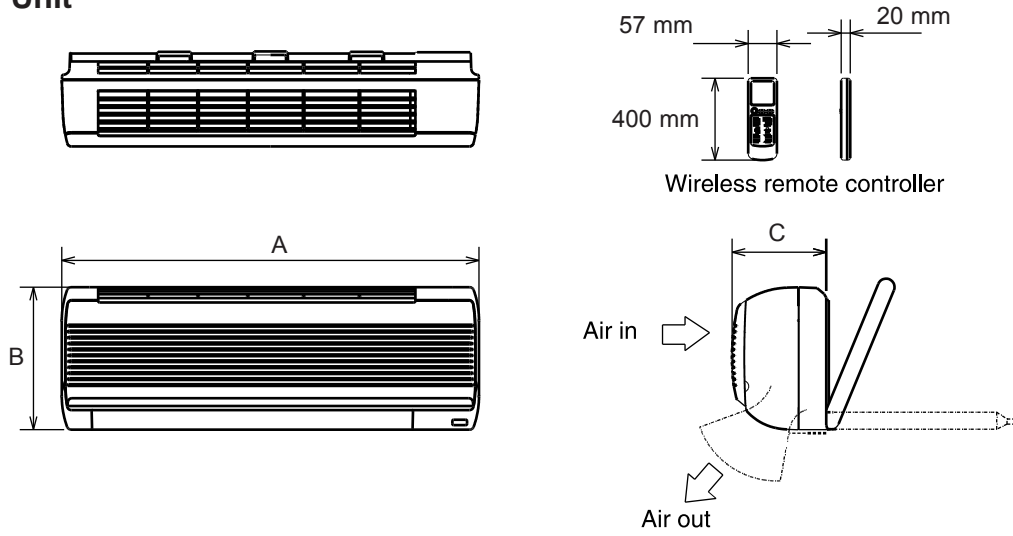
# Installation Instructions

## Installation Diagram

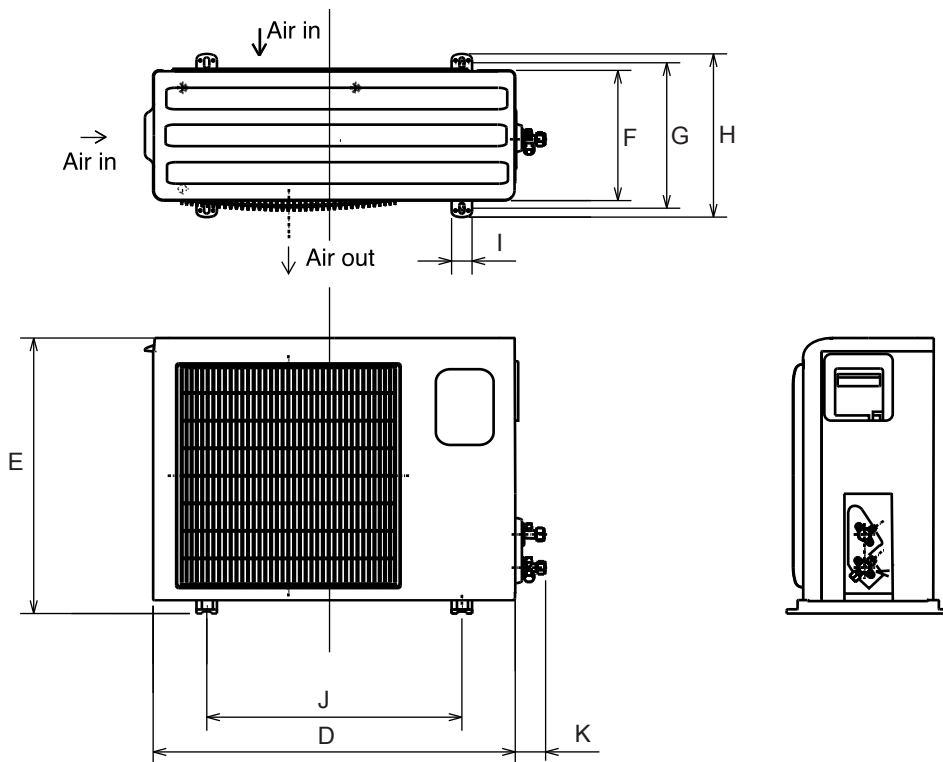


# Product Dimensions

## Indoor Unit



## Outdoor Unit



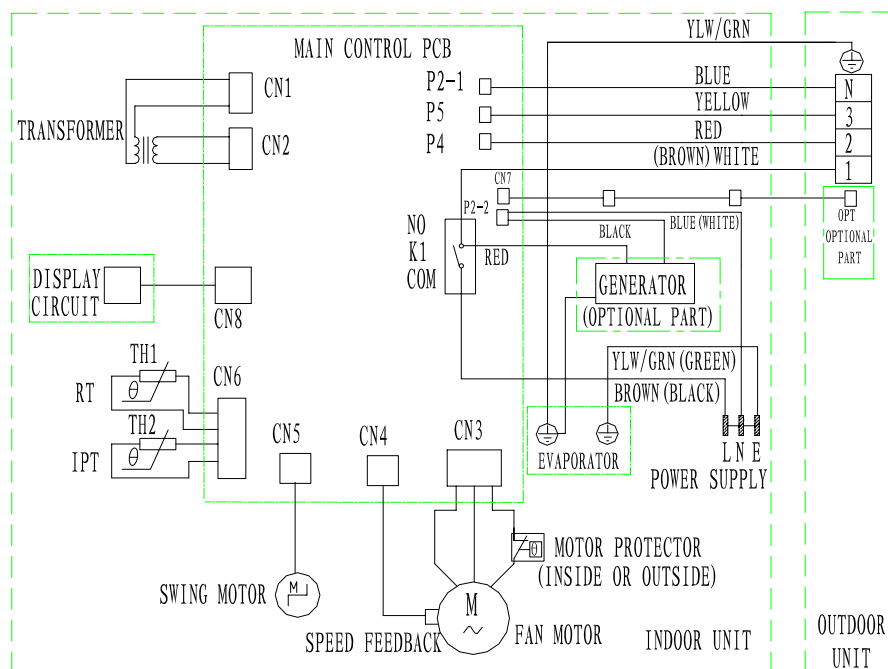
Unit: mm

Capacity	A	B	C	D	E	F	G	H	I	J	K
7K&9K	718	240	180	600	500	230	271	296	52	376	55
12K	770	240	180	700	552	256	290	328	48	439.2	55
18K	898	280	202	760	552	256	290	328	48	507.8	63
24K	898	280	202	902	650	307	349	399	65	753.5	63

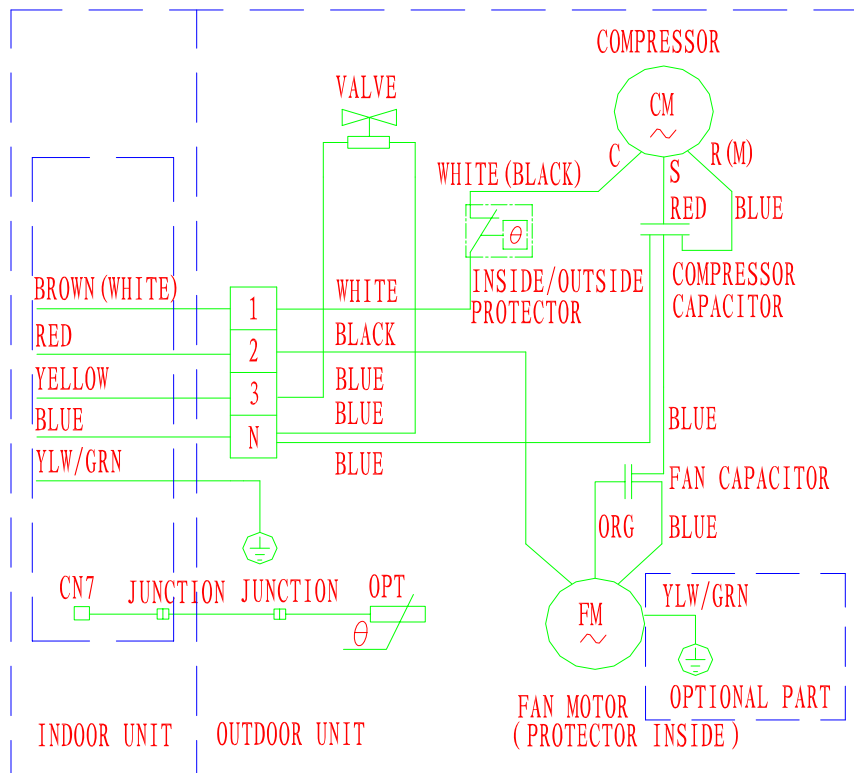
## WIRING DIAGRAM

MODEL:SSH-I074BE,SSH-I094BE,SSH-I124BE □□

INDOOR UNIT:



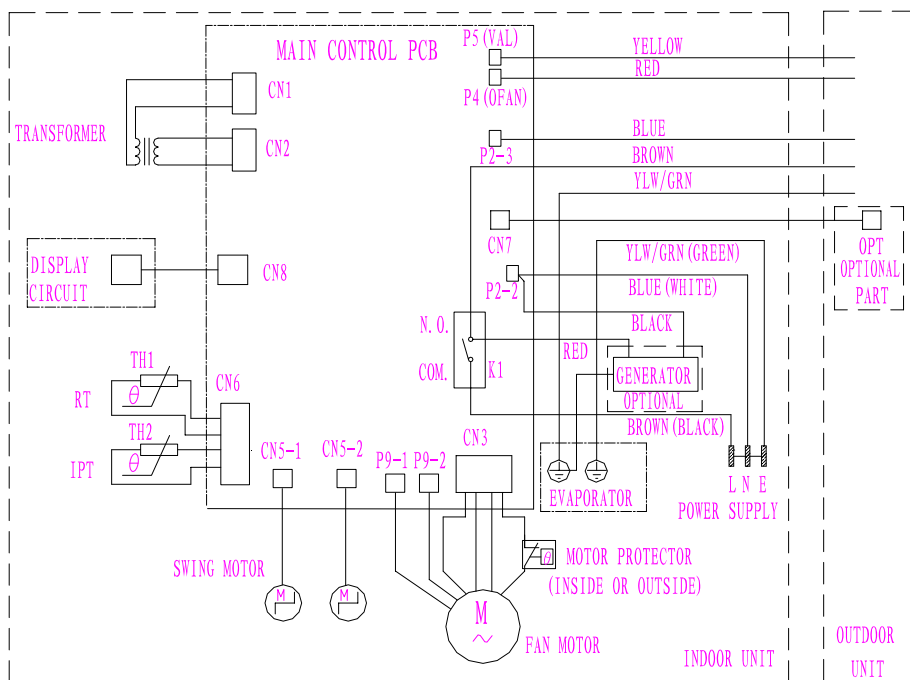
OUTDOOR UNIT



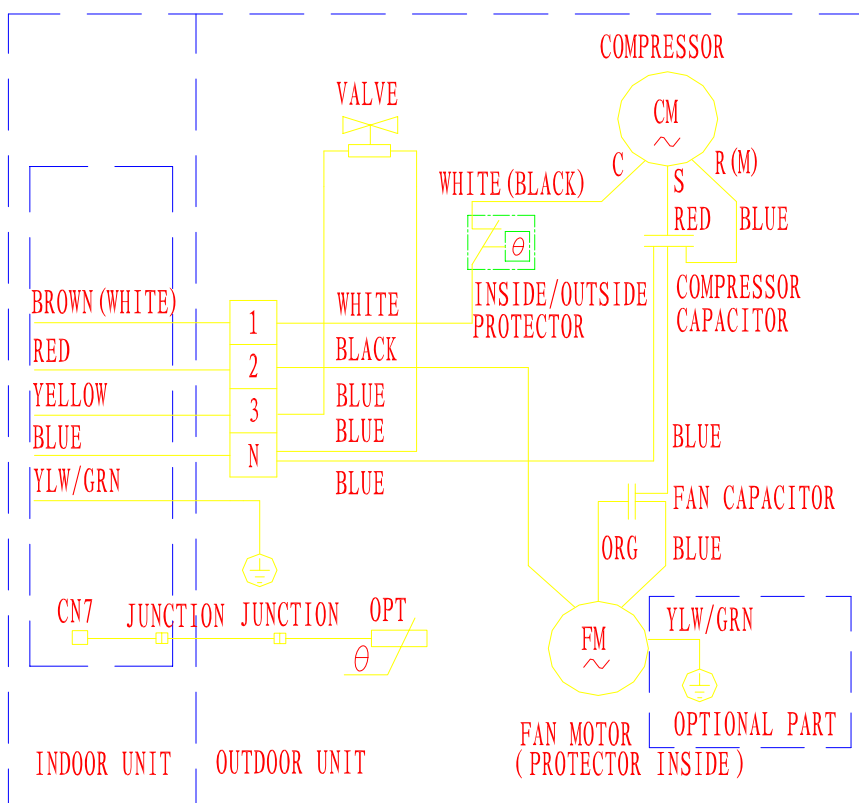
# WIRING DIAGRAM

MODEL:SSH-I184BE INDOOR

UNIT:



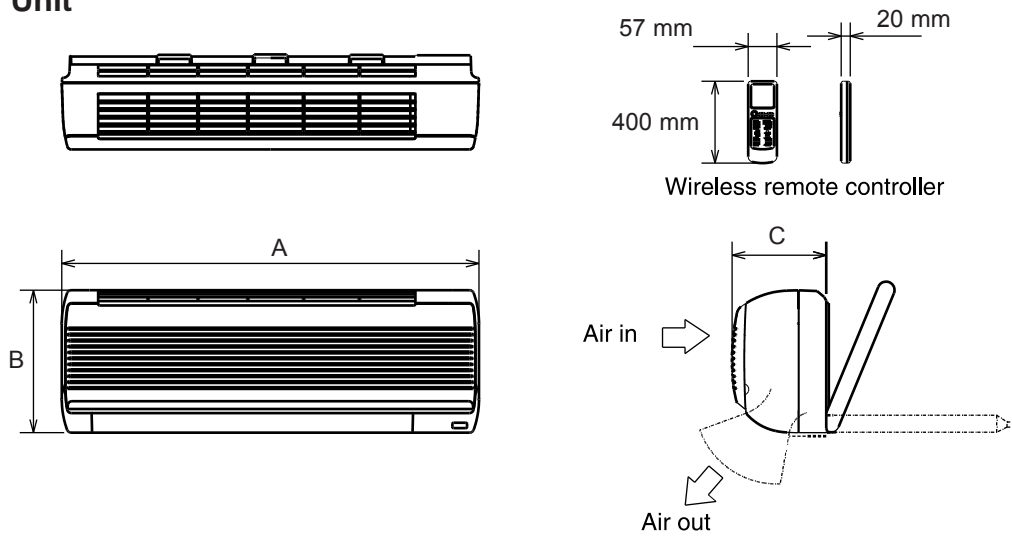
## OUTDOOR UNIT



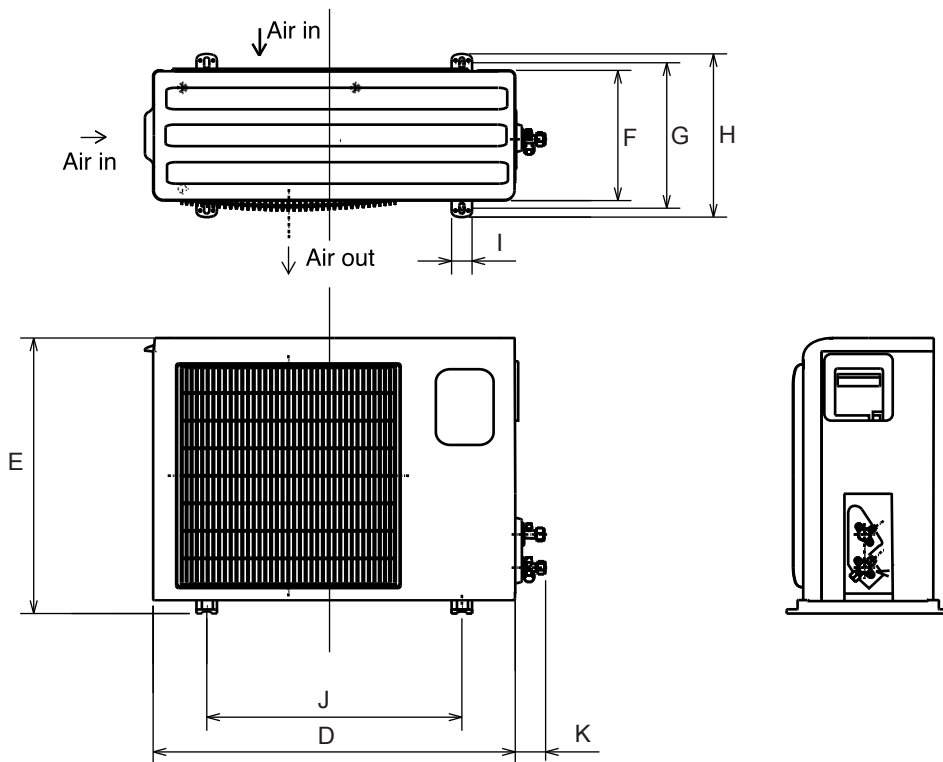


# Product Dimensions

## Indoor Unit



## Outdoor Unit



Unit: mm

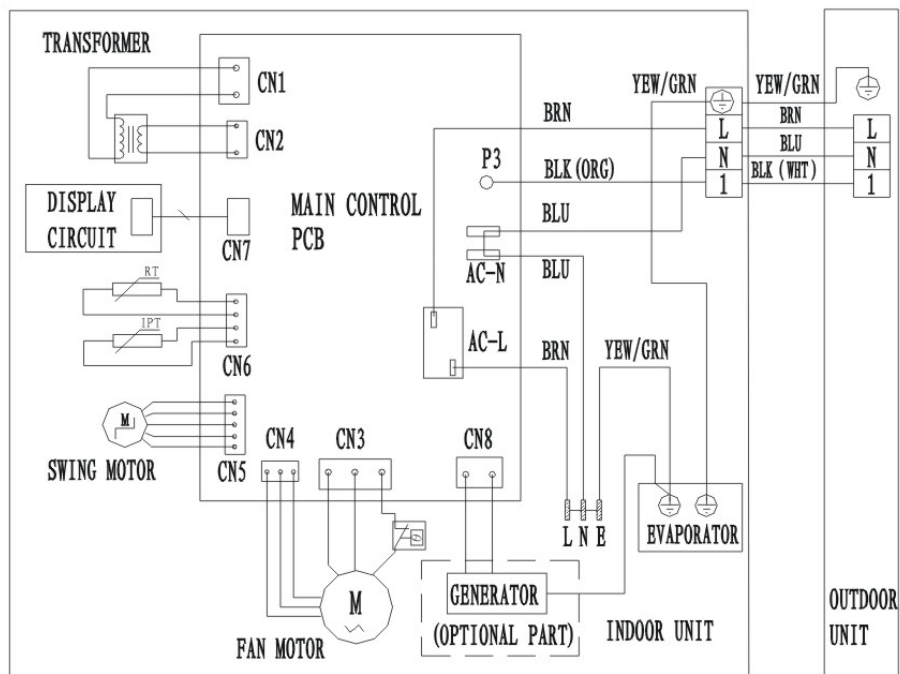
Capacity	A	B	C	D	E	F	G	H	I	J	K
9K&12K	800	280	185	760	552	256	290	328	48	507.8	63



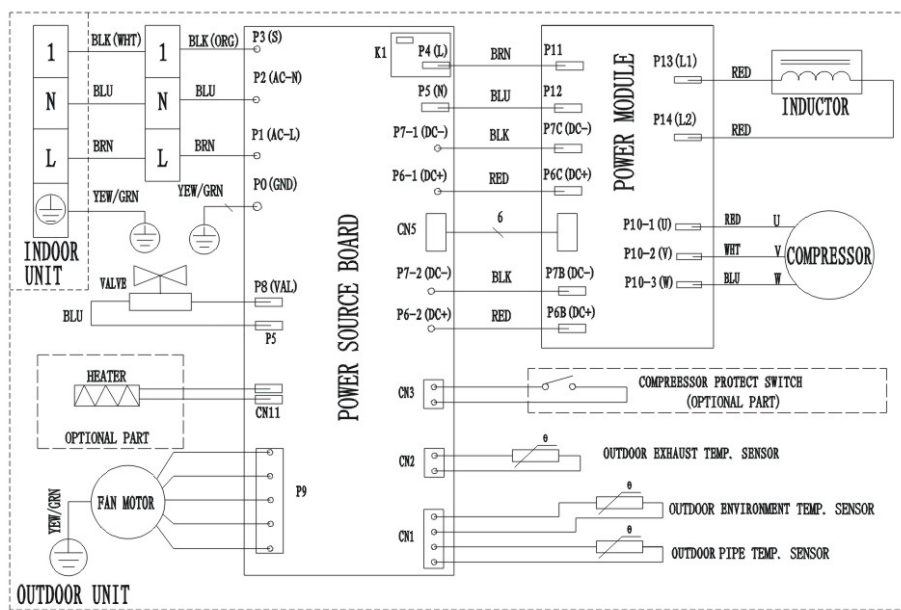
## WIRING DIAGRAM

MODEL: SSH-L094DC-W, SSH-L094DC-S

INDOOR UNIT:



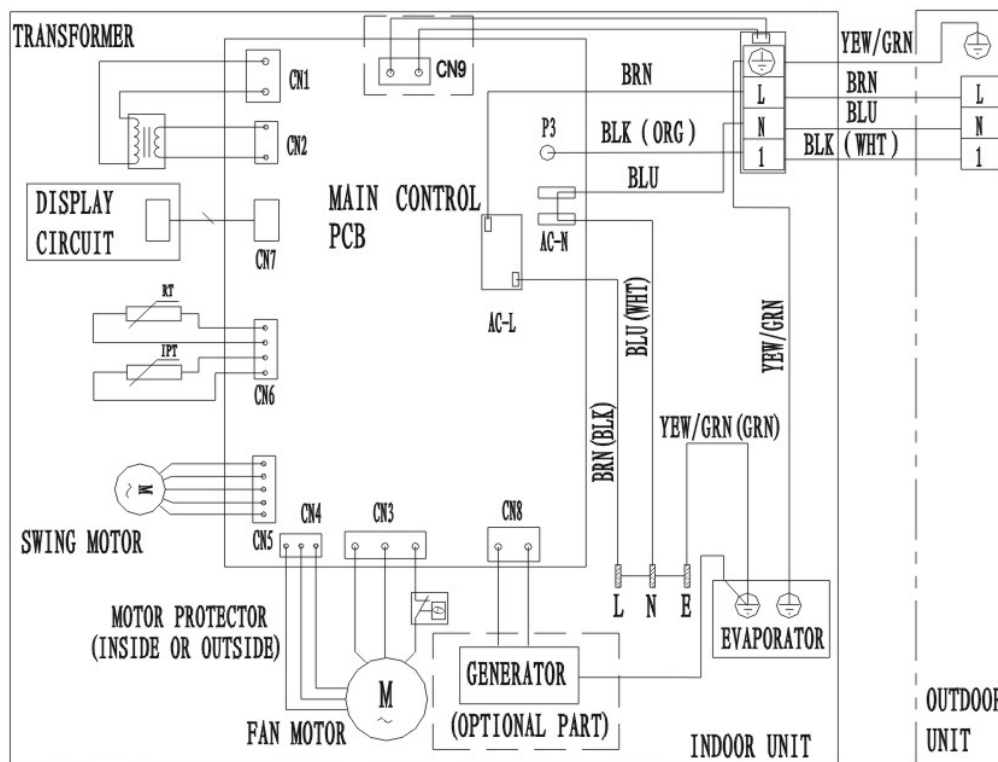
OUTDOOR UNIT



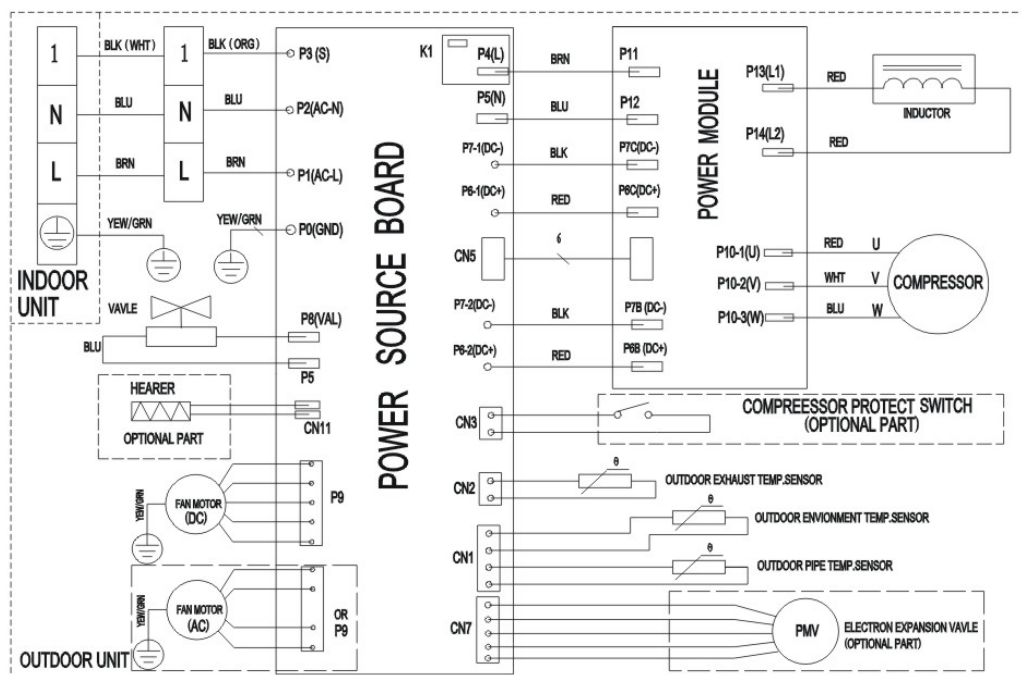
## WIRING DIAGRAM

MODEL: SSH-L124DC-W, SSH-L124DC-S

INDOOR UNIT:

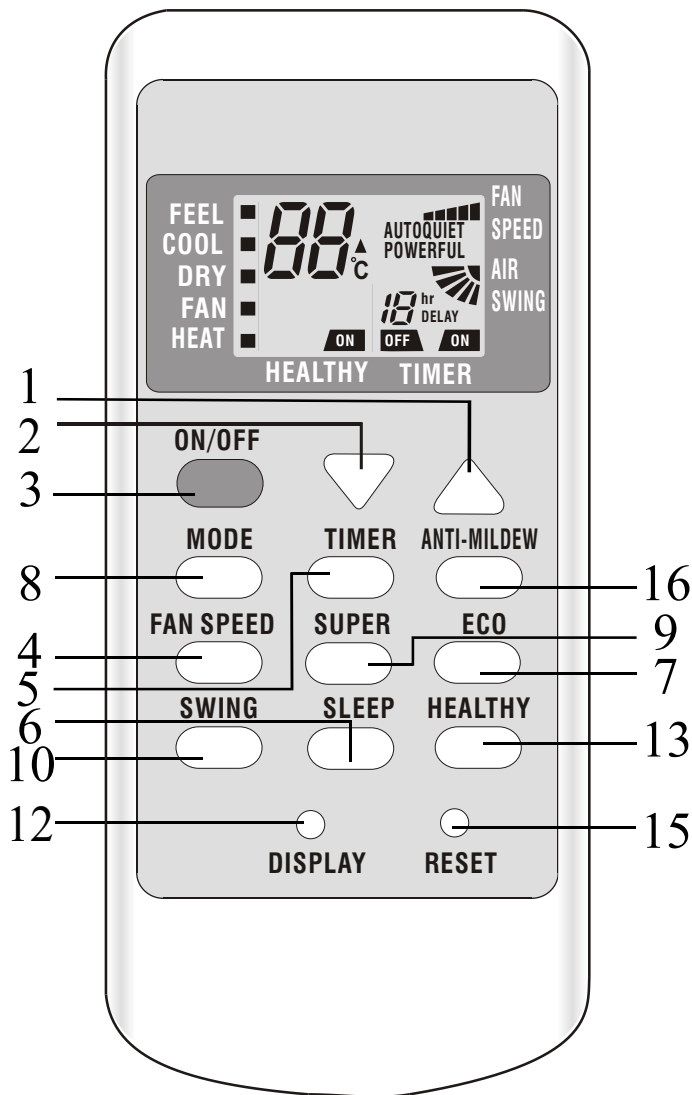


OUTDOOR UNIT



## Operation Details

### Remote controller



- 1 TEMP UP button**  
Increase the temperature or time by 1 unit.
- 2 TEMP DOWN button**  
Decrease the temperature or time by 1 unit.
- 3 ON/OFF button**  
To switch the conditioner on and off.
- 4 FAN SPEED button**  
To select the fan speed of auto/low/mid/high.
- 5 TIMER button**  
To set automatic switching-on/off.
- 6 SLEEP button**  
To activate the function "SLEEP".
- 7 ECO button**  
In cooling mode, press this button, the temperature will increase 2°C on the base of setting temperature. In heating mode, press this button, the temperature will decrease 2°C on the base of setting temperature.
- 8 MODE button**  
To select the mode of operation.
- 9 SUPER button**  
In cooling mode, press this button, the unit will give the maximum cooling temperature with 16°C. In heating mode, press this button, the unit will give the maximum heating temperature with 31°C.
- 10 SWING button**  
To activate or deactivate of the movement of the "DEFLECTORS".
- 12 DISPLAY button**  
To switch on/off the LED display (if present).
- 13 HEALTHY button**  
To switch - on /off HEALTHY function. It is a button which controls the ionizer or plasma generator only for inverter type.
- 15 RESET button**  
To restart REMOTE CONTROL.

**Note:** Each mode and relevant function will be further specified in following pages.

#### Remote Control

The remote controller is not presetting as Cooling Only Air Conditioner or Heat Pump by manufacturer. Each time after the remote controller replace batteries or is energized, the arrowhead will flashes on the front of "Heat" or "Cool" on LCD of the remote controller.

User can preset the remote controller type depending on the air conditioner type you have purchased as follows:

Press any button when the arrowhead flashes on the front of "Cool", Cooling Only is set.

Press any button when the arrowhead flashes on the front of "Heat", Heat Pump is set.

If you don't press any button within 10 seconds, the remote controller is preset as Heat Pump automatically.

#### Note :

If the air conditioner you purchased is a Cooling Only one, but you preset the remote controller as Heat Pump, it doesn't bring any matter. But if the air conditioner you purchased is a Heat Pump one, and you preset the remote controller as Cooling Only, then you CAN NOT preset the Heating operation with the remote controller.

**Electronic controller:****1. Automatic mode**

1) Initial RT determines the working mode and ST, the mode is determined effective only once unless A/C shut-down then re-started. If from other modes switches to autoamatic mode (including mode conversion after shutdown), it should be that the compress stop more than 3 min then temperature judgement and automatic mode are conducted (it can conduct immediately from fan mode switched to automatic, the indoor fan stops, three minutes later the response is made and start up). Within 3 min, the output as: Showing the room temperature, indoor fans starts (or anti-cold airflow), the outdoor fan stops;

2) With memory controller, once being turned off or in case of an accidently power cut, the A/C is able to retain and restore the original mode when being turned on or the power supply is resumed, if the auto restart function activated. power-down after power-on; while if the auto restart fundction isn't activated, the A/C enters standby state.

Heat pump

Mode	Initial RT	Initial ST
Cooling	$RT \geq 26^{\circ}\text{C}$	$23^{\circ}\text{C}$
Dehumifying	$26^{\circ}\text{C} > RT \geq 20^{\circ}\text{C}$	$18^{\circ}\text{C}$
Heating	$RT < 20^{\circ}\text{C}$	$23^{\circ}\text{C}$

Cooling-only

Mode	Initial RT	Initial ST
Cooling	$RT \geq 26^{\circ}\text{C}$	$23^{\circ}\text{C}$
Dehumifying	$26^{\circ}\text{C} > RT \geq 20^{\circ}\text{C}$	$18^{\circ}\text{C}$
Ventilating	$RT < 20^{\circ}\text{C}$	—

Under automatic mode (including from automatic converted into dehumidifying Dry mode), when the temperature up and down signals from the remote controller is received, the setting temperature ST adjusts correspondingly to the current room temperature plus or minus  $1^{\circ}\text{C}$ , the automatic regulating temperature range is  $\pm 2^{\circ}\text{C}$ .

**2. Cooling mode**

1) The control of the compressor

- When  $RT - ST \geq 1^{\circ}\text{C}$ , the compressor is running.
- When  $RT - ST < -1^{\circ}\text{C}$ , the compressor is off.
- When  $-1^{\circ}\text{C} \leq RT - ST < 1^{\circ}\text{C}$ , the compressor keeps its original state.

2) Outdoor fan motor and the compressor run simultaneously (except for defrosting).

3) The control of indoor fan motor:

- Indoor fan motor can operate by automatic, low, middle, and high airflow speed circularly.
- Indoor fan motor's the automatic airflow speed control Indoor fan motor can operate by automatic, as shown in Figure 1:

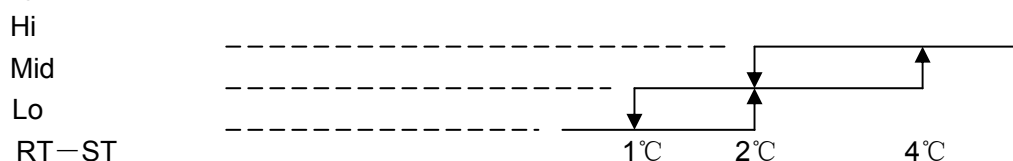


Figure 1 Cooling automatic airflow

When the temperature changes lead to changes in airflow speed, the switch can only be made orderly, and every grade of air flow speed runs 1 minute at least.

### 3, Dry mode

running into this mode, the Air cond. firstly operates for 3 minutes according to cooling mode (set temperature is  $7^{\circ}\text{C}$ ), and then takes the detected backflow air temperature minus  $2^{\circ}\text{C}$  as a new set temperature (the minimum value of  $5^{\circ}\text{C}$ ) and runs according to cooling mode, indoor fan operates at low-speed, at this moment the setting operation of Fan speed is invalid but Swing is adjustable.

### 4. Heating mode

On the Heating mode, the room temperature is repaired. After repaired, the room temperature display on the LED CRT= $\text{RT}-3^{\circ}\text{C}$ .

#### 1) The control of the compressor

a. When  $\text{ST}-\text{CRT}\geq 1^{\circ}\text{C}$ , the compressor is running.

b. When  $\text{ST}-\text{CRT}<-1^{\circ}\text{C}$ , the compressor is off.

c. When  $-1^{\circ}\text{C}\leq\text{ST}-\text{CRT}<1^{\circ}\text{C}$ , the compressor keeps its original state

#### 2) Outdoor fan motor and the compressor run simultaneously (except for defrosting)

#### 3) The control of indoor fan motor:

a. Indoor fan motor can operate by automatic, low, middle, and high airflow speed circularly.

b. indoor fan motor's the automatic airflow speed control Indoor fan motor can operate by automatic, as shown in Figure 2:

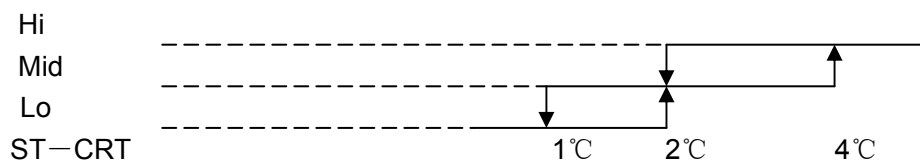


Figure 2 Heating automatic airflow

When the temperature changes lead to changes in airflow speed, the switch can only be made orderly, and every grade of air flow speed runs 1 minute at least.

#### 4) Vane motor control: run as set state.

#### 5) 4-way valve control:

a. Under heating mode, the four-way valve maintains well-connected status (including the compressor stops on set condition, but except for the defrosting process)

b. When the mode switches into the heating mode or start-up, four-way valves will open 5 Seconds before the compressor starts; while the mode exits from the heating mode or turn off, the four-way valve will close 2min after after the shut-down the compressor.

#### 6) Defrosting function:

During defrosting, once mode switch, temperature setting signals received, and the buzzer and display make response immediately, but the other operations won't implemented until defrosting finished;

During defrosting, the signals of on-off, timing, sleep, airflow speed and swing will be responded, but the airflow speed and swing should be in accordance with anti-cold air rules.

Except the above signal processing during defrosting, no other signals will be dealt with, but only a loud buzz.

During defrosting, electrical heating stops compulsively.

Defrosting enter and exit program:

Option 1: with jumper JC

The condition of enter defrosting: run into defrosting once any of condition 1, 2, and 3 met.

Condition 1: As shown in figure 3

Defination:

The followings are all required to meet:

- $IPT1 = IPT_{max} - \Delta IPT$  ( $8^{\circ}\text{C}$ )
- $t5 \geq 50\text{min}$  (running time  $t5 \geq 50\text{min}$  (the compressor runs cumulatively) ,  $t5$  is removable, and could be less than  $t1$ )
- $IPT < 40^{\circ}\text{C}$  , and lasts 2min.

Running into defrosting on condition 1, the first running time of set defrosting is F (8min); after running a defrosting cycle, the defrosting time should be determined and adjusted.

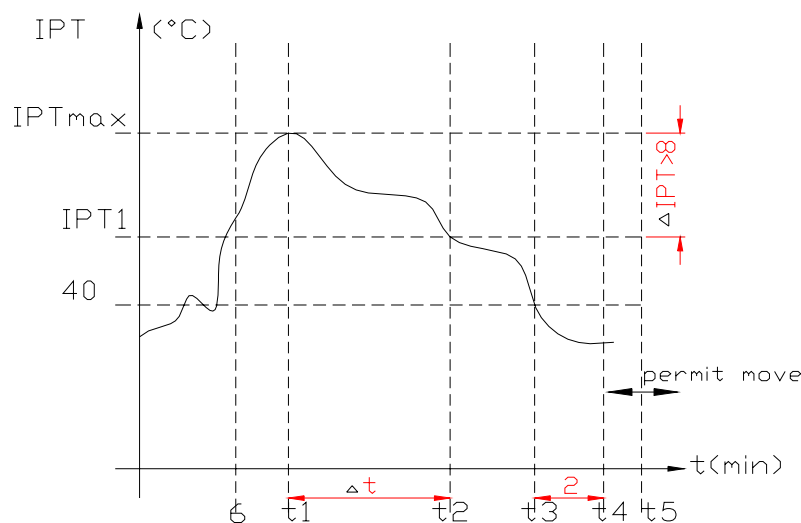


Figure 3

Condition 2: When running time is more than or equal to 120 min (compressor is running accumulatively), the indoor temperature is less than  $35^{\circ}\text{C}$  for 2 min sustained. Running into defrosting under condition 2, defrosting time set is 8 min.

Condition 3: after the compressor is operating for 20min continuously, the indoor temperature is less than  $23^{\circ}\text{C}$  which is anti-cold wind temperature when the fan stops running(including temperature dropping when compressor operating, not including the compressor's starting course), and the machine runs into defrosting according to any one condiciton as below) Running into defrosting under condition 3, defrosting time set is 10 min.

- Running into the first defrosting in 20 min after start-up.
- The interval from last defrosting equivalent to or more than 50 min (stopping the compressor or the machine in standby is allowed in the meantime).

Option 2: No Jumper JC, and no OPT outdoor sensor

when the compressor runs for 45 min, if the indoor coil temperature is less than  $40^{\circ}\text{C}$  for 2 min, the machine runs into defrosting, and lasts for 3min, otherwise when the compressor runs for 120 min, the machine runs into defrosting automatically and last for 10 min.

Option 3: No jumper JC, but with OPT outdoor sensor

When heating, when the temperature of outdoor unit under heat-exchange is lower than  $E^{\circ}\text{C}$  ( $-4^{\circ}\text{C}$ ), and the compressor runs for 45 min, then the machine runs into defrosting and last for 10 min.

Option 4. When heating, when the outdoor fan motor stopped but the compressor not stopped

accumulative total 30min, then the machine runs into defrosting and last for 8 min. if the accumulative total less than 30min, but accord with one of the condition option 1-3 them the machine runs into defrosting at the option 1-3 and the accumulative total time restarts from 0.

Conditions for quitting defrosting

(1) The quitting conditions for option 1 and option 2, the machine quits from defrosting if any one below condition met.

a. Defrosting time is over.

b. When it runs in defrosting for three minutes, the IPT indoor coil temperature rises 15 ° C or above from the bottom point.

(2) The quitting conditions for option 3.

When  $OPT \geq 20^{\circ}\text{C}$  or defrosting for more than 10 min, then quit from defrosting.

(3) Defrosting process shown in Figure 4

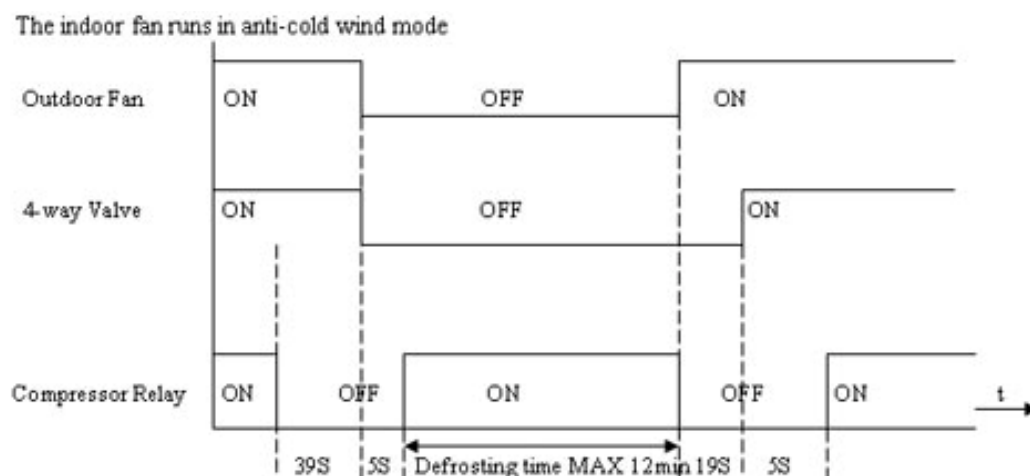


Figure 4 Defrosting process

7) Auxiliary Electric heating function

(1) The default condition is automatic on/off the electric heating function.

(2) The conditions of auxiliary electric heating(all the following conditions must be met)

a. the compressor runs for more than 3min;

b. indoor fan runs normally;

c. not in defrosting state;

d. auxiliary electric heating is turned off for more than 30s.

e.  $ST-RT \geq 3^{\circ}\text{C}$ ;

f.  $RT < 22^{\circ}\text{C}$ ;

g.  $IPT \leq 43^{\circ}\text{C}$ ;

(3) The conditions of stopping auxiliary electric heating(any one of the following conditions met, the state stops)

a. the compressor stops

b.  $RT \geq 24^{\circ}\text{C}$ ;

c.  $IPT \geq 48^{\circ}\text{C}$

d. indoor fan stops.

e. running into sleeping function

## 5. Fan mode

1) Indoor fan motor control:

indoor fan motor is running at setting speed (the speed is same as that of heating).

2) Vane motor control: running according to the setting.

3) The outdoor unit is not working under fan mode.

#### **6. Sleeping mode**

1) Under sleep mode, the indoor fan motor is running at a low-airflow speed, except that the power light and sleep light are on, timer light is on/off according to the setting state, running light is off. LED is off after displaying 5min.

2) Temperature control:

(1) From cool mode to sleep mode, one hour later, the operates  $\text{Temp.}=\text{ST}+1$ , another one hour later, the operates  $\text{Temp.}=\text{ST}+2$ , after then unchanged.

(2) From heating mode to sleep mode, one hour later, the operates  $\text{Temp.}=\text{ST}-1$ , another one hour later, the operates  $\text{Temp.}=\text{ST}-2$ , after then unchanged.

3) the machine will automatically shut up after running 8 hours under sleep mode.

Timer on start-up and sleep mode are implemented at the same time, and the sleep mode can not be functioned.

#### **7. Timing fuction**

The timing scale is between 1h to 12h, the displayed time is shown by 1 hour as the unit.

#### **8. Emergency switch (ON/OFF)**

1) When stand-by, to operate by pressing the emergency switch as follows:

To Press the emergency switch in three seconds, the buzzer rings once, and to release, the machine runs into cooling mode; if to holding on, the buzzer rings twice, then the machine runs into heating mode, while when the machine is on, to press the emergency Switch, the buzzer rings once and then the machine shut down.

2) The machine is running mandatorily as the selected mode within 30min after emergency operation, indoor fan motor is running in high-speed, and vane board is swinging. The machine runs into automatic mode 30min later, the selected mode unchanged, the set temperature is  $23^{\circ}\text{C}$ , the rotate speed of indoor fan motor is automatic, and vane board is swinging too.

3) To press the emergency button when the machine operating, then the machine runs into stand-by state.

4) Under emergency operation, the Compressor's time-lapse protection, anti-frosting protection in cooling, Overheating protection in heating and sensor fault protection and defrost operate are effective.

5) Under emergency operation, once effective signal from remote controller is received, then the machine exits form the emergency mode, and operate according to the setting from remote controller.

#### **9. Auto-restart function**

1) The PCB retains the setting parameters in case of power off. When the power supply is resumed, the machine, which has been started up the power-off memory function, is able to restore into the original running state automatically.

2) To press the emergency button and power on, and hold on 10 seconds, exit from the power-off memory function, buzzer rings four tomes.(default: no this function)

#### **10. Protection/ Troubleshooting functions**

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## 1) Compressor's protection function:

- a. The PCB which has Power-off memory function, once this function is started up, the compressor goes along 3min delay protection when power on. If the PCB hasn't been started up this function, even when the PCB is power-on, the compressor doesn't process 3 min delay function.
- b. Compressor's 3 min interval protection: the compressor can't start-up until 3 min later(except for defrosting process).
- c. After the compressor started, the compressor's state isn't subject to the changes on ST,RT in 3min.

## 2) Anti-frosting protection of indoor evaporator:

If  $IPT \leq 0^{\circ}\text{C}$  detected in consecutive 5 min, compressor and outdoor motor stoped, indoor fan motor runs at high-speed forcibly;  $IPT \geq 5^{\circ}\text{C}$  detected 3min later, then outdoor fan is activated. And the compressor, indoor fan motor restores the original state.

## 3) Overheating protection:

$IPT \geq 55^{\circ}\text{C}$ , the outdoor fan stops,  $IPT \geq 65^{\circ}\text{C}$ , the compressor stops, indoor fan motor runs at high-speed forcibly. When  $IPT \leq 48^{\circ}\text{C}$ , outdoor fan motor and the compressor open, indoor fan motor restores the original state.

## 4) Anti-cold wind control in heating:

- a. When runing into the heating mode, once the compressor fails to comply with the start-up conditions, the wind speed is regulated according to the coil temperature in 2 min(including stopping the indoor fan motor), 2 min later the indoor fan motor stops.If the compressor starts up within 2 min, then operating by Figure 5.

Under heating process, to close the compressor (including the downtime protection ), the wind speed is regulated according to the coil temperature in 1min(including stopping the indoor fan), 1min later the fan is stoped forcibly.

- b. When the indoor fan motor running at a low-speed wind and in anti-cold wind operation, once electric heating opens, the vane immediately withdraws from the anti-cold windy location and turn back to normal vane angle. When electric heating closes, indoor fan motor go on to run at low-speed wind, accordingly, the vane turns to anti-cold windy location.

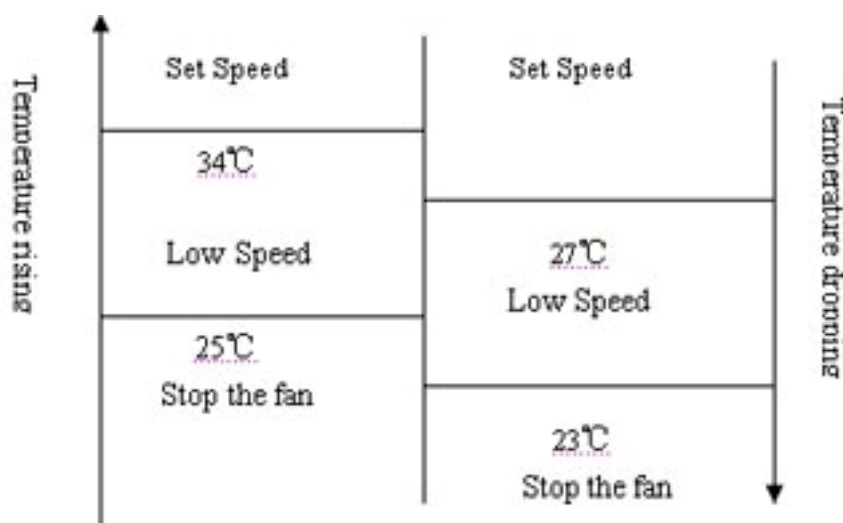


Figure 5 Anti-cold Wind

- 2) The following table shows the fault protections. When failures happens, the PCB alarms and buzzer rings three times. Failure code appears, and the PCB operates protection procedures.

Failure code: For the machine has LED, the code displays on LED, for no LED machine, the code reflects by the running light.

Failure	Running Light Flash	LED Display
RT Sensor Failure	Once / Period	E1
IPT Sensor Failure	Twice / Period	E2
Indoor Fan Motor Failure	6 times / Period	E6

When there is LED displaying failure code, the code is displayed statically, if there are several failure codes should be reported at the same time, then failure codes appears one by one every eight seconds correspondingly.

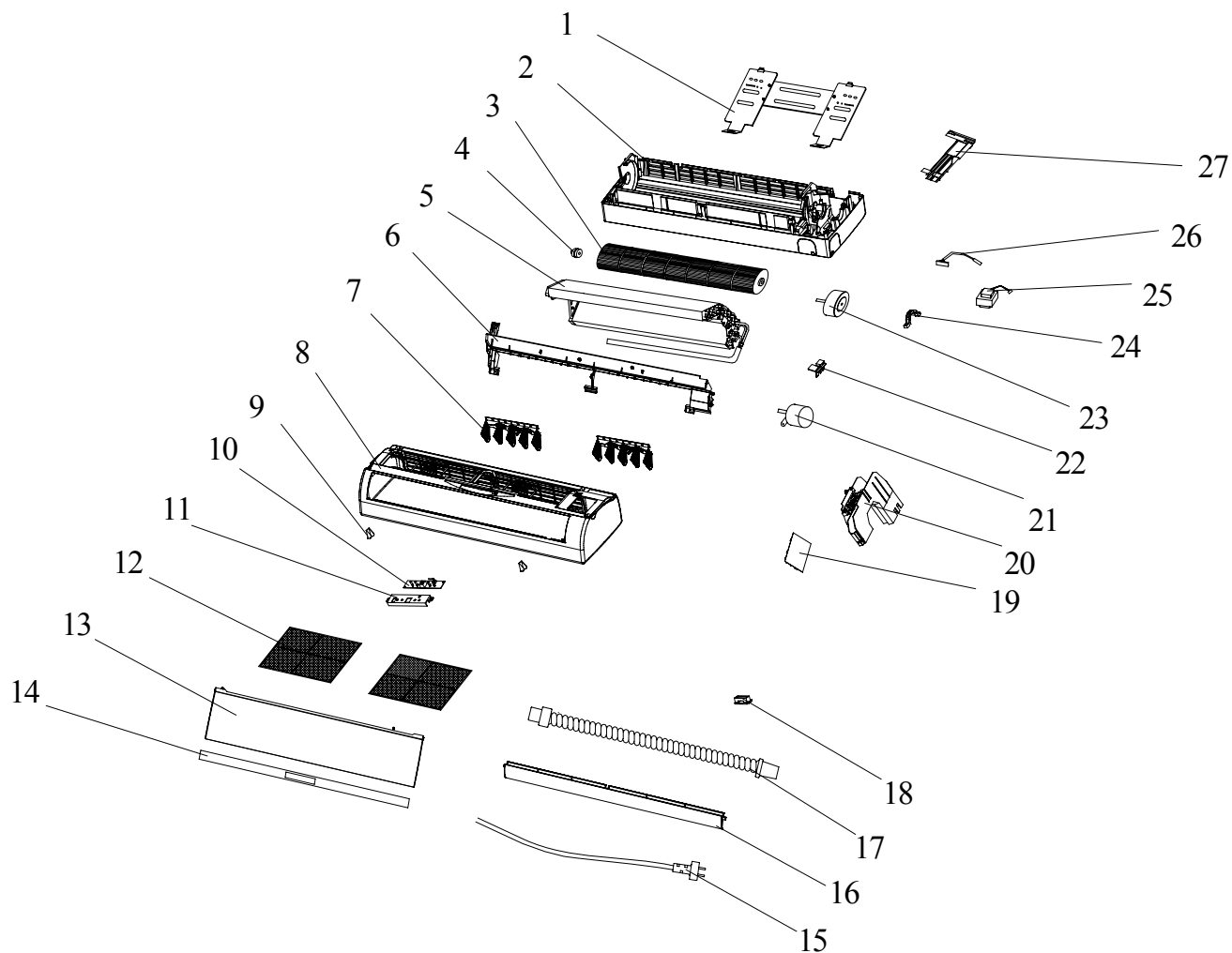
a. Sensor's failure protection: when the sensor's temperature is out of the range  $-50 \leq T \leq 110$  °C, then sensor failure is determined. Once RT, IPT sensor failures appear, the compressor stops and indoor and outdoor fan motors shut off. Remote controller doesn't response to any signal except for shutdown. During failure the machine can run in fan mode. After the failure is settled, the PCB restores to standby status.

b. Failure protection of Indoor PG fan motor: If there is no feedback signal of rotate speed within 5, the indoor fan motor stops, at the same time, the compressor, outdoor fan motor, four-way valve and auxiliary electric heater etc cut down. 10 seconds later, the indoor fan motor restarts, once there is no feedback signal of rotate speed within 5 seconds either, then the machine stops and goes into indoor fan motor failure protection, buzzer rings three times, and running light flashes at 6 times per 8 seconds. When the failure is confirmed, once there is feedback signal, the failure is relieved automatic.

## EXPLOSION VIEW

MODEL: SSH-I074BE,SSH-I094BE,SSH-I124BE,SSH-I184BE

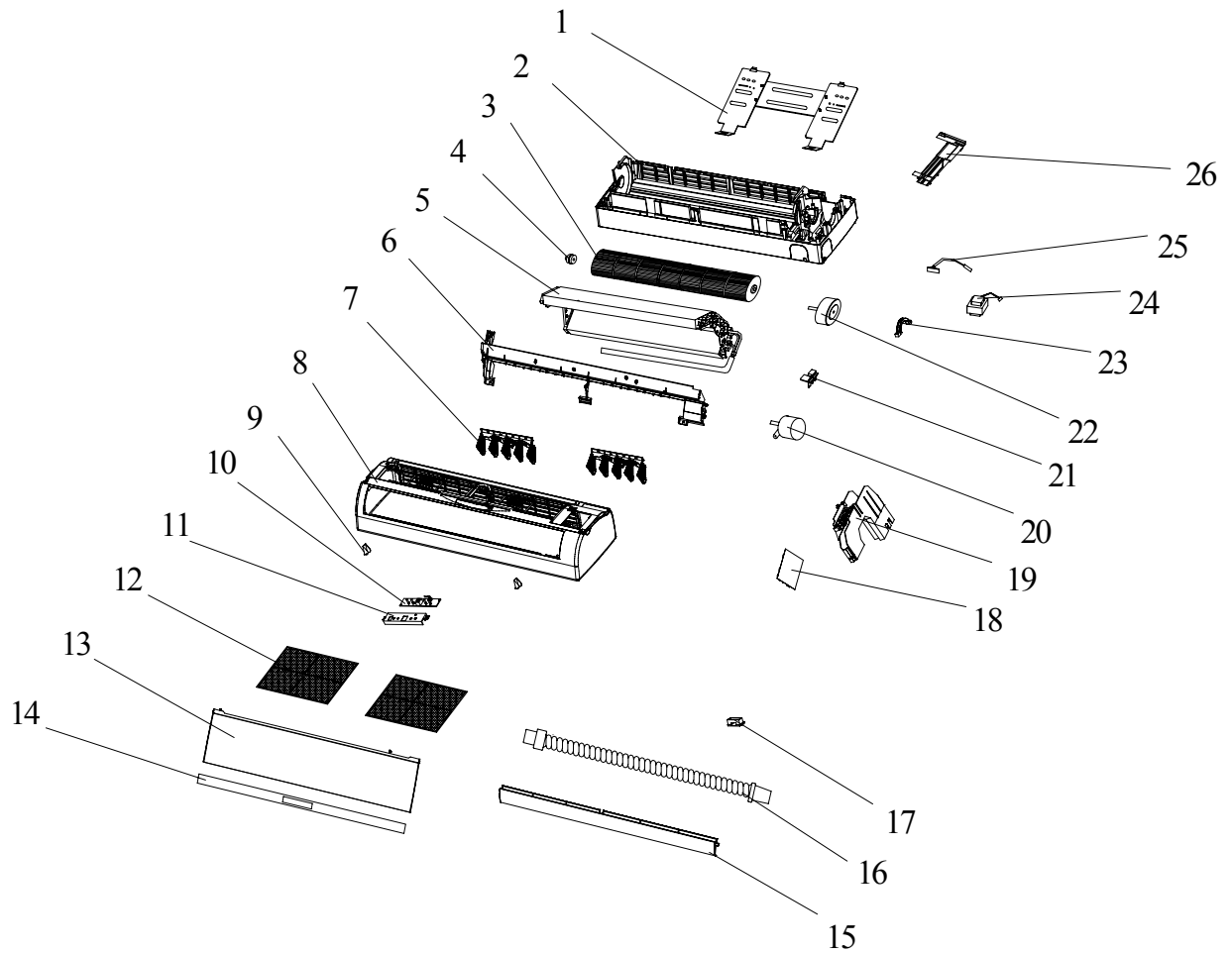
INDOOR UNIT:



## EXPLOSION VIEW

Model: SRH-I244BE

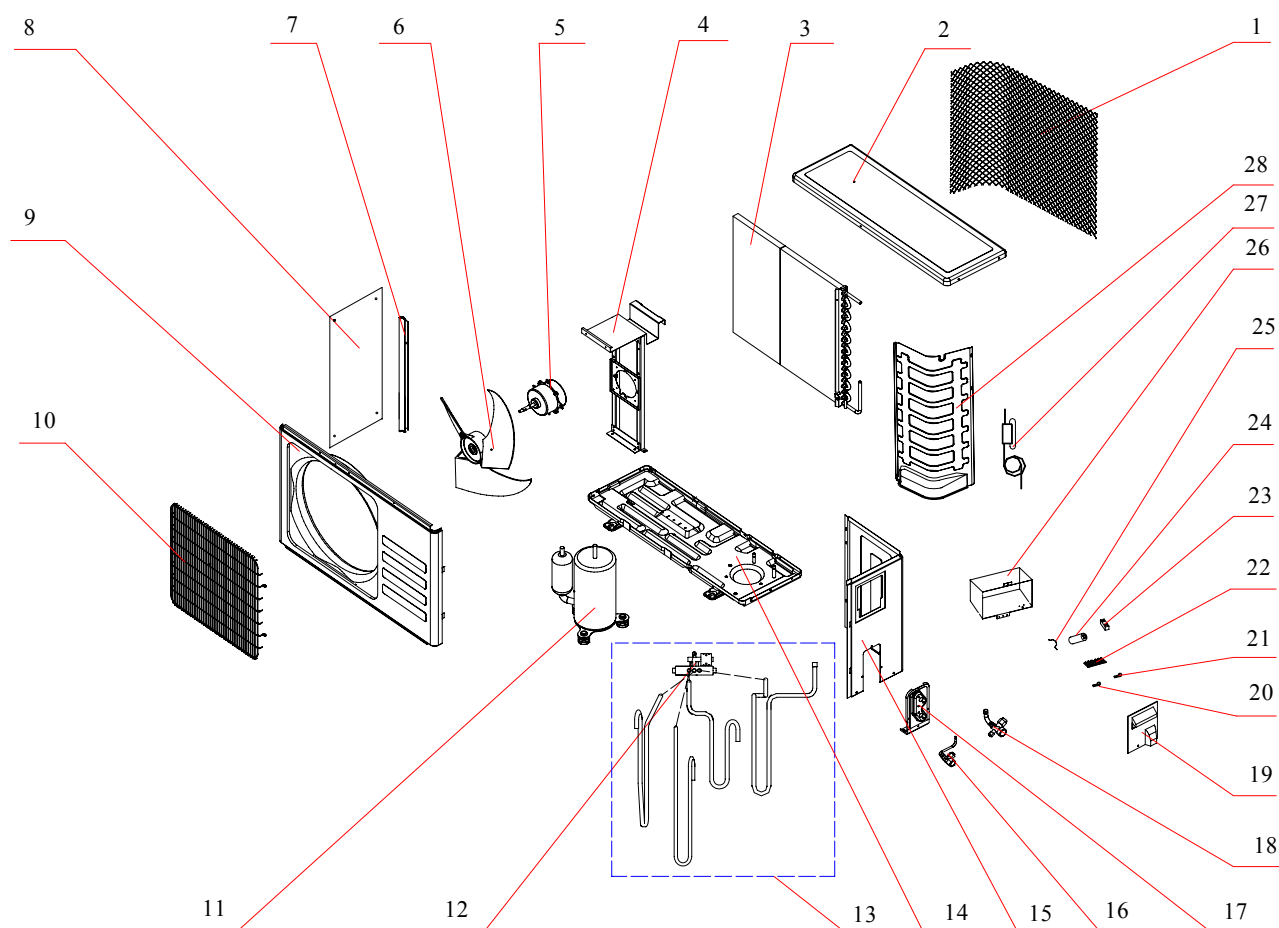
INDOOR UNIT



# EXPLOSION VIEW

Mode: SSH-I074BE

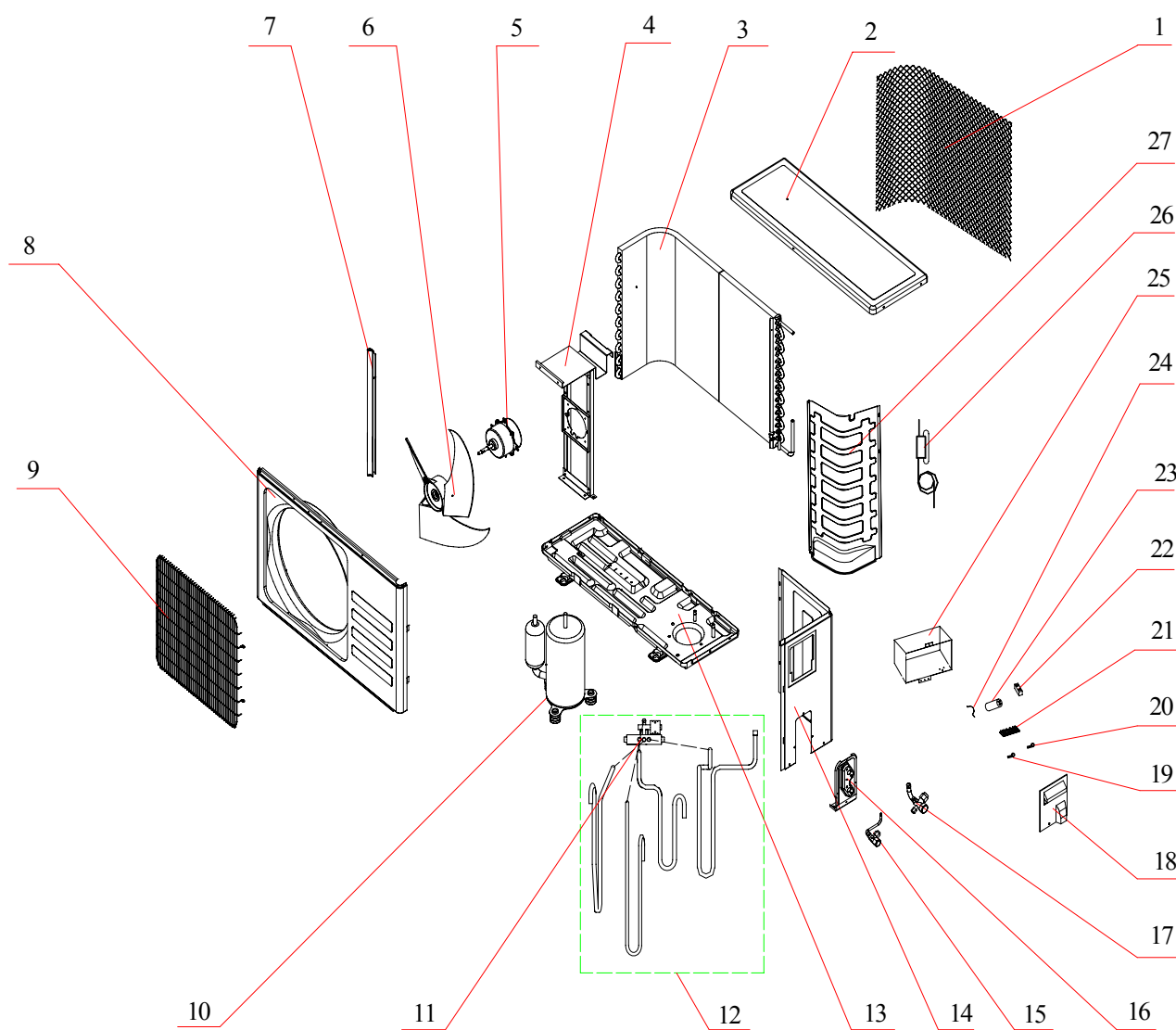
OUTDOOR UNIT:



# EXPLOSION VIEW

MODEL: SSH-I0934E,SSH-I184BE

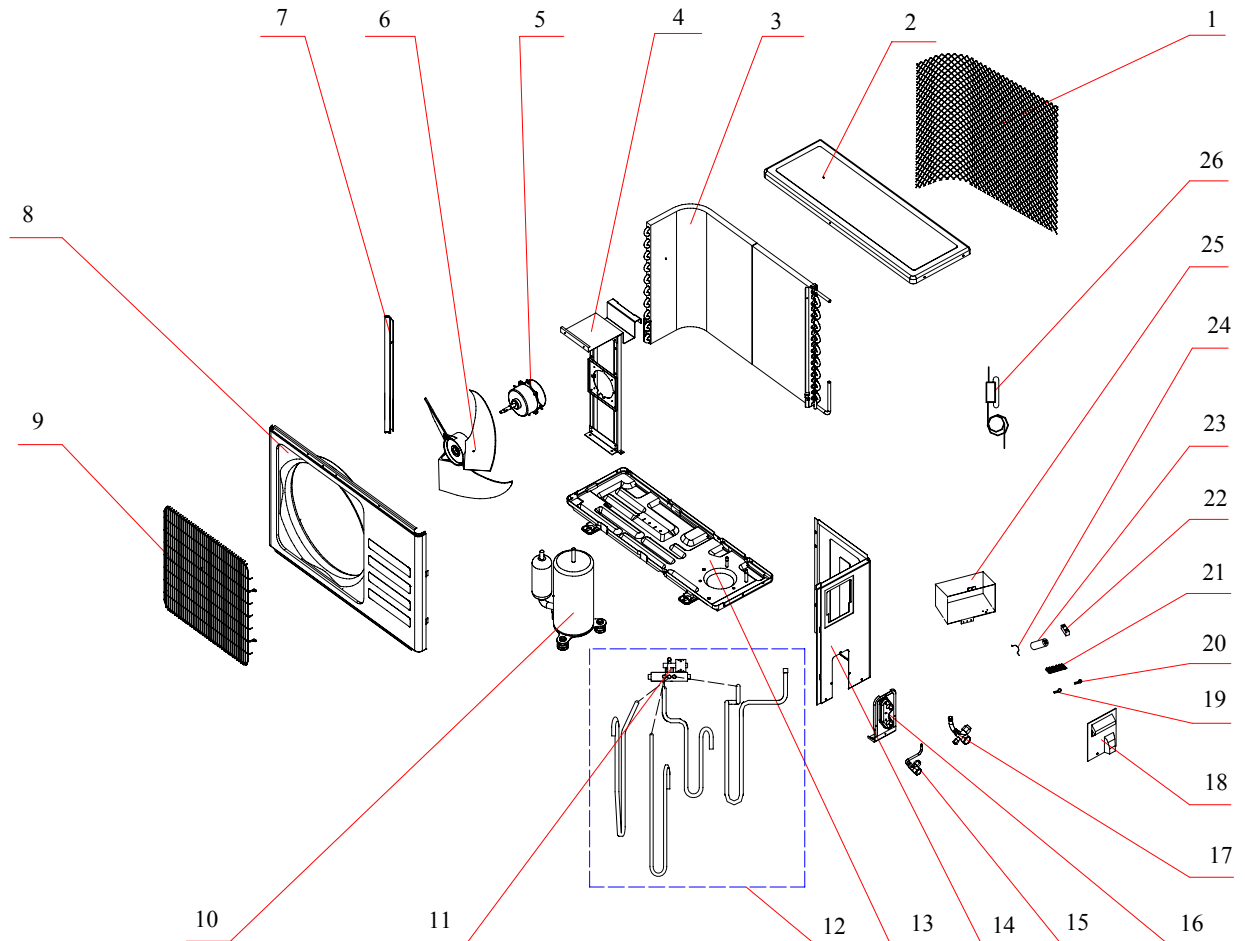
OUTDOOR UNIT:



## EXPLOSION VIEW

Model: SRH-I124BE

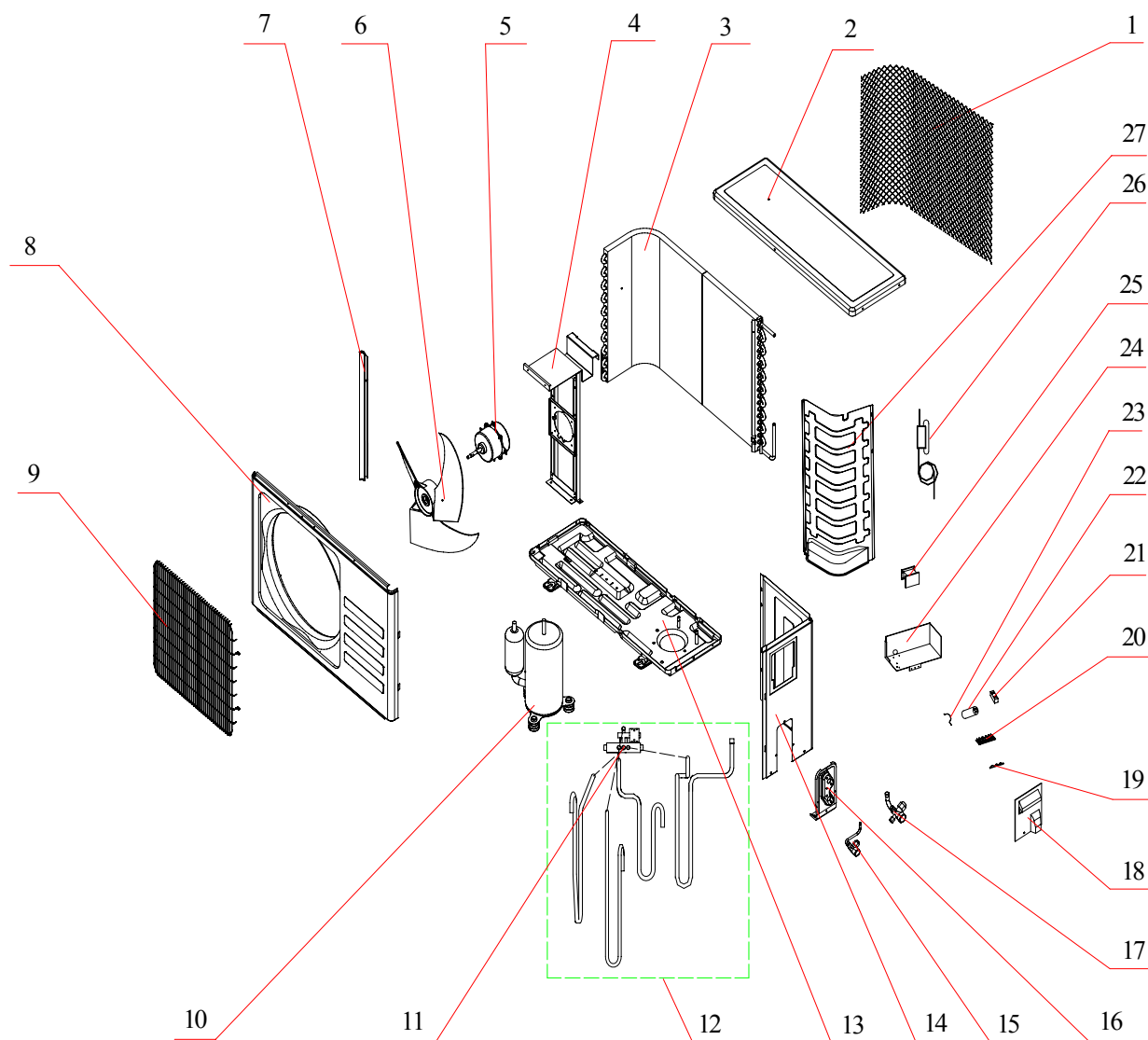
OUTDOOR UNIT



# EXPLOSION VIEW

MODEL: SSH-I244BE

OUTDOOR UNIT:





**Indoor Unit- SSH-I074BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030003	Installation Plate	1	
2	1210250103	Base	1	
3	1070020017	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	1210231201	Evaporator	1	
6	1070250016	Water Drainage Assembly	1	
7	1070320440	Vertical Vane Assembly	2	
8	1070250419	Face Frame	1	
9	1070320112	Screw Cover	2	
10	1090251109	Display PCB	1	
11	1070250425	Display PCB Box	1	
12	1070250106	Air Filter	2	
13	214102320	Front Panel	1	
14	1070251069	Display PCB Cover	1	
15	1170120044	Power Supply Cord	1	
16	1070250416	Vane	1	
17	1070110011	Drainage Hose	1	
18	1070040004	Cable Clamp	1	
19	1090200112	Main PCB	1	
20	1070320113	Electrical Box	1	
21	1170020011	Vane Motor	1	
22	1073030201	Sensor Holder	1	
23	1170030047	Indoor Motor	1	
24	1070320111	Indoor Motor Cover	1	
25	1170240001	Transformer	1	
26	1170230001	Indoor Sensor Assembly	1	
27	1070320101	In And Out Pipe Fixer	1	
28	1090050298AN	Remote Controller	1	Not shown in Explosion view
29	1070060003	Remote Controller Supporter	1	
30	1190060827ED	Indoor Carton	1	
31	1191990104	Left Foaming	1	
32	1191990105	Right Foaming	1	

**Indoor Unit- SSH-I094BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030003	Installation Plate	1	
2	1210250103	Base	1	
3	1070020017	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	1210231201	Evaporator	1	
6	1070250016	Water Drainage Assembly	1	
7	1070320440	Vertical Vane Assembly	2	
8	1070250419	Face Frame	1	
9	1070320112	Screw Cover	2	
10	1090251109	Display PCB	1	
11	1070250425	Display PCB Box	1	
12	1070250106	Air Filter	2	
13	214102320	Front Panel	1	
14	1070251069	Display PCB Cover	1	
15	1170120044	Power Supply Cord	1	
16	1070250416	Vane	1	
17	1070110011	Drainage Hose	1	
18	1070040004	Cable Clamp	1	
19	1080250433	Main PCB	1	
20	1070320113	Electrical Box	1	
21	1170020011	Vane Motor	1	
22	1073030201	Sensor Holder	1	
23	1170030047	Indoor Motor	1	
24	1070320111	Indoor Motor Cover	1	
25	1170240001	Transformer	1	
26	1170230001	Indoor Sensor Assembly	1	
27	1070320101	In And Out Pipe Fixer	1	
28	1090050298AN	Remote Controller	1	Not shown in Explosion view
29	1070060003	Remote Controller Supporter	1	
30	1190060827EE	Indoor Carton	1	
31	1191990104	Left Foaming	1	
32	1191990105	Right Foaming	1	

**Indoor Unit- SSH-I124BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030008	Installation Plate	1	
2	1210320107	Base	1	
3	1070020026AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	1110050067	Evaporator	1	
6	1070320011	Water Drainage Assembly	1	
7	1070320440	Vertical Vane Assembly	2	
8	1070320445	Face Frame	1	
9	1070320112	Screw Cover	2	
10	1090251109	Display PCB	1	
11	1070250425	Display PCB Box	1	
12	1070320109	Air Filter	2	
13	210701429	Front Panel	1	
14	1070321073	Display PCB Cover	1	
15	1170120045	Power Supply Cord	1	
16	1070320439	Vane	1	
17	1070110011	Drainage Hose	1	
18	1070320114	Cable Clamp	1	
19	1090320619	Main PCB	1	
20	1070320113	Electrical Box	1	
21	1170020011	Vane Motor	1	
22	1073030201	Sensor Holder	1	
23	1170030047	Indoor Motor	1	
24	1070320111	Indoor Motor Cover	1	
25	1170240001	Transformer	1	
26	1170230001	Indoor Sensor Assembly	1	
27	1070320101	In And Out Pipe Fixer	1	
28	1090050298AN	Remote Controller	1	Not shown in Explosion view
29	1070060003	Remote Controller Supporter	1	
30	1190060828HG	Indoor Carton	1	
31	1191990104	Left Foaming	1	
32	1191990105	Right Foaming	1	

**Indoor Unit- SSH-I184BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030021	Installation Plate	1	
2	1070350872	Base	1	
3	1070020024AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	1110050268	Evaporator	1	
6	1070350221	Water Drainage Assembly	1	
7	1070350141	Vertical Vane Assembly	1	
8	1070500250	Face Frame	1	
9	1070350135	Screw Cover	3	
10	1090500118	Display PCB	1	
11	1070250425	Display PCB Box	1	
12	1070310003	Left Air Filter	1	
	1070310004	Right Air Filter	1	
13	210701428	Front Panel	1	
14	1070450199	Display PCB cover	1	
15	1170120045	Power Supply Cord	1	
16	1070350140	Vane	1	
17	1070110011	Drainage Hose	1	
18	1070040004	Cable Clamp	1	
19	1090500220	Main PCB	1	
20	1070451080	Electrical Box	1	
21	1170020041	Vane Motor	2	
22	1073030201	Sensor Holder	1	
23	1170030065	Indoor Motor	1	
24	1070350152	Indoor Motor Cover	1	
25	1170240001	Transformer	1	
26	1170230001	Indoor Sensor Assembly	1	
27	1070350245	In And Out Pipe Fixer	1	
28	1090050298AN	Remote Controller	1	Not shown in Explosion view
29	1070060003	Remote Controller Supporter	1	
30	1190470001FA	Indoor Carton	1	
31	1190060054	Left Foaming	1	
32	1190060055	Right Foaming	1	
33	1190060057	Middle Pasteboard Supporter	1	
34	1190060056	Base Foaming Supporter	1	

**Indoor Unit- SSH-I244BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030021	Installation Plate	1	
2	1070350872	Base	1	
3	1070020024AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	1110050717	Evaporator	1	
6	1070350221	Water Drainage Assembly	1	
7	1070350141	Vertical Vane Assembly	1	
8	1070500250	Face Frame	1	
9	1070350135	Screw Cover	3	
10	1090500118	Display PCB	1	
11	1070250425	Display PCB Box	1	
12	1070310003	Left Air Filter	1	
	1070310004	Right Air Filter	1	
13	210701428	Front Panel	1	
14	1070450199	Display PCB cover	1	
15	1070350140	Vane	1	
16	1070110011	Drainage Hose	1	
17	1070040004	Cable Clamp	1	
18	1090640002	Main PCB	1	
19	1070451080	Electrical Box	1	
20	1170020041	Vane Motor	2	
21	1073030201	Sensor Holder	1	
22	1170030065	Indoor Motor	1	
23	1070350152	Indoor Motor Cover	1	
24	1170240001	Transformer	1	
25	1170230001	Indoor Sensor Assembly	1	
26	1070350245	In And Out Pipe Fixer	1	
27	1090050298AN	Remote Controller	1	Not shown in Explosion view
28	1070060003	Remote Controller Supporter	1	
29	1190470001FB	Indoor Carton	1	
30	1190060054	Left Foaming	1	
31	1190060055	Right Foaming	1	
32	1190060057	Middle Pasteboard Supporter	1	
33	1190060056	Base Foaming Supporter	1	

**Outdoor Unit- SRH-I074BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1071990064	Grille	1	Optional
2	1081990014	Top Cover	1	
3	1110061064	Condenser	1	
4	1081990018	Outdoor Motor Supporter	1	
5	1170040062	Outdoor Motor	1	
6	1070030006AA	Propeller Fan	1	
7	1081990011	Left Grille Supporter	1	
8	1080320147	Left airproof plate	1	
9	1081990016	Front Plate	1	
10	1071990044	Fan Guard	1	
11	1100120015	Compressor And It Accessories	1	
12	1120110016	4-way Valve	1	
13	1120251540	4-way Valve Assembly	1	
14	1091990046	Base	1	
15	1081990012	Right Plate	1	
16	1120120025	Two-way Valve	1	
17	1081990013	Valve Supporter	1	
18	1120130039	Three-way Valve	1	
19	1073521301	Electrical Box Cover	1	
20	1070040001	Cable Clamp( $\phi$ 6)	1	
21	1070040002	Cable Clamp( $\phi$ 7)	1	
22	1170500131	Terminal	1	
23	1170100031	Fan Motor Capacitor	1	
24	1170100014	Compressor Capacitor	1	
25	1080010002	Capacitor Strip	1	
26	1081990010	Electrical Parts Box	1	
27	1120200361	Capillary Assembly	1	
28	1081990019	Partition plate	1	Not shown in the Explosion view.
29	1174561802	Outdoor Sensor	1	
30	1190070014	Base Carton	1	
31	1190070008EC	Cabinet Carton	1	
32	1190070016	Base Foaming	1	
33	1190070015	Cover Forming	1	

**Outdoor Unit- SRH-I094BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1071990038	Grille	1	Optional
2	1081990014	Top Cover	1	
3	1110061049	Condenser	1	
4	1081990018	Outdoor Motor Supporter	1	
5	1170040062	Outdoor Motor	1	
6	1070030006AA	Propeller Fan	1	
7	1081990011	Left Grille Supporter	1	
8	1081990016	Front Plate	1	
9	1071990044	Fan Guard	1	
10	1100170041	Compressor And It Accessories	1	
11	1120110002	4-way Valve	1	
12	1120251551	4-way Valve Assembly	1	
13	1091990046	Base	1	
14	1081990012	Right Plate	1	
15	1120120025	Two-way Valve	1	
16	1081990013	Valve Supporter	1	
17	1120130039	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1070040001	Cable Clamp( $\phi$ 6)	1	
20	1070040002	Cable Clamp( $\phi$ 7)	1	
21	1170500131	Terminal	1	
22	1170100031	Fan Motor Capacitor	1	
23	1170100026	Compressor Capacitor	1	
24	1080010006	Capacitor Strip	1	
25	1081990010	Electrical Parts Box	1	
26	1120251548	Capillary Assembly	1	
27	1081990019	Partition plate	1	
28	1174561802	Outdoor Sensor	1	Not shown in the Explosion view.
29	1190070014	Base Carton	1	
30	1190070008ED	Cabinet Carton	1	
31	1190070016	Base Foaming	1	
32	1190070015	Cover Forming	1	

**Outdoor Unit- SRH-I124BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1071990039	Grille	1	Optional
2	1080320105	Top Cover	1	
3	1110060953	Condenser	1	
4	1080050004	Outdoor Motor Supporter	1	
5	1170040058	Outdoor Motor	1	
6	1070030051AA	Propeller Fan	1	
7	1080050001	Left Grille Supporter	1	
8	1080320113	Front Plate	1	
9	1080320112	Fan Guard	1	
10	1100110016	Compressor And It Accessories	1	
11	1120110016	4-way Valve	1	
12	1120351014	4-way Valve Assembly	1	
13	1210320103	Base	1	
14	1080050002	Right Plate	1	
15	1120120021	Two-way Valve	1	
16	1080050003	Valve Supporter	1	
17	1121990040	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1070040001	Cable Clamp( $\phi$ 6)	1	
20	1070040003	Cable Clamp( $\phi$ 8)	1	
21	1170500131	Terminal	1	
22	1170100010	Fan Motor Capacitor	1	
23	1170100003	Compressor Capacitor	1	
24	1080010006	Capacitor Strip	1	
25	1080020001	Electrical Parts Box	1	
26	1120351011	Capillary Assembly	1	
27	1174561802	Outdoor Sensor	1	Not shown in the Explosion view.
28	1190030010	Base Carton	1	
29	1190070001	Cabinet Carton	1	
30	1151990014	Base Foaming	1	
31	1190070695	Cover Forming	1	



## Outdoor Unit- SRH-I184BE

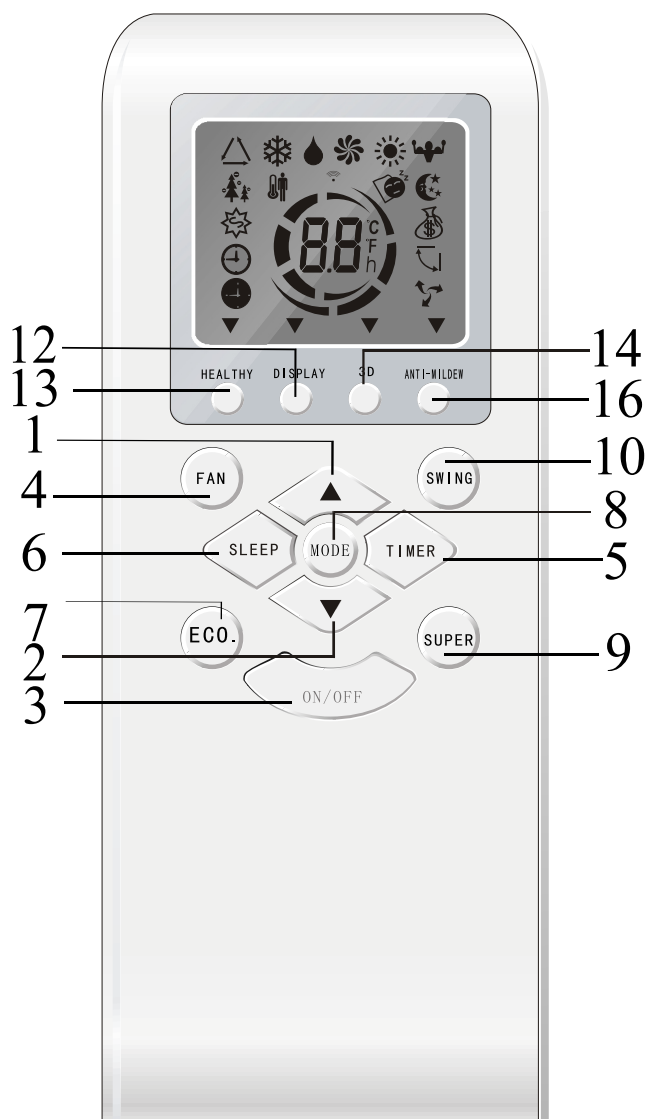
No.	Part No.	Part Name	Q'ty	Remark
1	1071990040	Grille	1	Optional
2	1080050011	Top Cover	1	
3	1110060851	Condenser	1	
4	1080050004	Outdoor Motor Supporter	1	
5	1170040059	Outdoor Motor	1	
6	1070030038AA	Propeller Fan	1	
7	1080050001	Left Grille Supporter	1	
8	1080050009	Front Plate	1	
9	1080320112	Fan Guard	1	
10	1100020033	Compressor And It Accessories	1	
11	1120500226	4-way Valve	1	
12	1120501359	4-way Valve Assembly	1	
13	1210500106	Base	1	
14	1080050002	Right Plate	1	
15	1120120021	Two-way Valve	1	
16	1080050003	Valve Supporter	1	
17	1120130032	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1070040001	Cable Clamp( $\phi$ 6)	1	
20	1070040003	Cable Clamp( $\phi$ 8)	1	
21	1170500131	Terminal	1	
22	1170100027	Fan Motor Capacitor	1	
23	1170100025	Compressor Capacitor	1	
24	1080010006	Capacitor Strip	1	
25	1081990010	Electrical Parts Box	1	
26	1120501358	Capillary Assembly	1	
27	1081990316	Partition plate	1	
28	1174561802	Outdoor sensor	1	Not shown in the Explosion view.
29	1191990181	Base Carton	1	
30	1190040087LH	Cabinet Carton	1	
31	1150300003	Base Foaming	1	
32	211301929	Cover Forming	1	

**Outdoor Unit- SRH-I244BE**

No.	Part No.	Part Name	Q'ty	Remark
1	1071990041	Grille	1	Optional
2	1081990038	Top Cover	1	
3	1110061045	Condenser	1	
4	1081990042	Outdoor Motor Supporter	1	
5	1170040105	Outdoor Motor	1	
6	1170120146AA	Propeller Fan	1	
7	1081990040	Left Grille Supporter	1	
8	1081990047	Front Plate	1	
9	1071990045	Fan Guard	1	
10	1100020032	Compressor And It Accessories	1	
11	1120110017	4-way Valve	1	
12	1120701001	4-way Valve Assembly	1	
13	1081990077	Base	1	
14	1081990039	Right Plate	1	
15	1120120024	Two-way Valve	1	
16	1081990041	Valve Supporter	1	
17	1120130037	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1074060118	Cable Clamp	1	
20	1170200054	Terminal	1	
21	1170100030	Fan Motor Capacitor	1	
22	1170100007	Compressor Capacitor	1	
23	1080010004	Capacitor Strip	1	
24	1081990049	Electrical Parts Box	1	
25	1174561801	AC Contactor	1	
26	1120701000	Capillary Assembly	1	
27	1081990050	Partition plate	1	Not show in the explosion
28	1174561802	Outdoor Sensor	1	
29	1190500707CW	Cabinet Carton	1	
30	1190070052	Upper Carton	1	
31	1190060190	Base Foaming	1	
32	1190060191	Base Carton	1	

## Operation Details

### Remote controller



- 1 TEMP UP button**  
Increase the temperature or time by 1 unit.
- 2 TEMP DOWN button**  
Decrease the temperature or time by 1 unit.
- 3 ON/OFF button**  
To switch the conditioner on and off.
- 4 FAN SPEED button**  
To select the fan speed of auto/low/mid/high.
- 5 TIMER button**  
To set automatic switching-on/off.
- 6 SLEEP button**  
To activate the function "SLEEP".
- 7 ECO button**  
In cooling mode, press this button, the temperature will increase 2°C on the base of setting temperature: In heating mode, press this button, the temperature will decrease 2°C on the base of setting temperature.
- 8 MODE button**  
To select the mode of operation.
- 9 SUPER button**  
In cooling mode, press this button, the unit will give the maximum cooling temperature with 16°C. In heating mode, press this button, the unit will give the maximum heating temperature with 31°C.
- 10 SWING button**  
To activate or deactivate of the movement of the "DEFLECTORS".
- 12 DISPLAY button**  
To switch on/off the LED display (if present).
- 13 HEALTHY button**  
To switch - on /off HEALTHY function. It is a button which controls the ionizer or plasma generator only for inverter type.
- 14 RESET button**  
This button is useless for wall-mounted type. When you press "3D", the horizontal and vertical vanes will swing together at the same time.
- 16 ANTI MILDEW button**  
To activate the function ANTI-MILDEW.

**Note:** Each mode and relevant function will be further specified in following pages.

#### Remote Control

The remote controller is not presetting as Cooling Only Air Conditioner or Heat Pump by manufacturer. Each time after the remote controller replace batteries or is energized, the arrowhead will flashes on the front of "Heat" or "Cool" on LCD of the remote controller.

User can preset the remote controller type depending on the air conditioner type you have purchased as follows:

Press any button when the arrowhead flashes on the front of "Cool", Cooling Only is set.

Press any button when the arrowhead flashes on the front of "Heat", Heat Pump is set.

If you don't press any button within 10 seconds, the remote controller is preset as Heat Pump automatically.

#### Note :

If the air conditioner you purchased is a Cooling Only one, but you preset the remote controller as Heat Pump, it doesn't bring any matter. But if the air conditioner you purchased is a Heat Pump one, and you preset the remote controller as Cooling Only, then you CAN NOT preset the Heating operation with the remote controller.

## Electronic Controller

### 1. Safety Protection

#### (1) Time Delay for Safety protection

- 3 minutes delay for compressor ---The compressor is ceased for 3minutes before restarting to balance the pressure in the refrigeration cycle in order to protect the compressor.
- 2 minutes delay for 4-way valve---The 4-way valve will be ceased for 2 minutes late after compressor to prevent the refrigerant-gas abnormal noise when the HEATING operation is OFF or switch to the other operation mode.

#### (2) Discharge temperature protection

There is a temperature sensor on top of compressor, when temperature on top of compressor exceeded the limit, system control will shut down the compressor and the display board will show the error code.

#### (3) lower voltage protection

When AC voltage  $\leq 158V$  and keep it for 10 seconds, unit will be shut down for protection.

#### (4) Over voltage protection

When AC voltage  $\geq 260V$ , unit will be shut down and recover while  $AC \leq 255V$ .

#### (5) Over current protection

When the current of outdoor unit is overload, controller shut down the unit immediately and show error code.

#### (6) Compressor abnormality protection

When compressor start on or in the process of running, if there is no feedback to controller or load of compressor is abnormality, the air conditioner will shut down, and show error code.

#### (7) IPM module protection

IPM module has high temperature & over current protection itself, if there is signal feedback to IPM, the outdoor unit will shut down, LED on outdoor PCB will show the error code.

### 2. "I Feel" Mode Operation

- (1) When the "I Feel" mode is selected, the operation mode and initial temperature set are determined by the initial room temperature at start-up of the operation except to turn off the air conditioner and operates it again.
- (2) If the mode is change to "I Feel" from other mode, the "I Feel" mode doesn't operate until compressor stop for more than 3 minutes.

Mode	Initial Room Temperature	Initial Set Temperature
COOLING	$RT \geq 26^{\circ}C$	$23^{\circ}C$
DRY	$26^{\circ}C > RT \geq 20^{\circ}C$	$RT - 2^{\circ}C$
HEATING for Heat Pump FAN for Cooling Only	$RT < 20^{\circ}C$	-

- In the "I Feel" mode, when the controller receives the up or down signal of temperature, the set temperature can adjust by  $1^{\circ}C$  upper or lower. The biggest you can adjust by  $2^{\circ}C$  upper or lower.

### 3. "COOLING" Mode Operation

## (1) Compressor frequency control

According to difference room temperature and set temperature ( $\delta t = RT - ST$ ), running frequency of compressor is controlled by electronic controller. When room temperature is much higher than set temperature, compressor will start at a high frequency, and as room temperature goes down, compressor running frequency will go down. When room temperature is lower than set temperature, compressor will run at very low frequency. In general, unit will change its running frequency according to  $\delta t$  to make room temperature closing to set temperature.

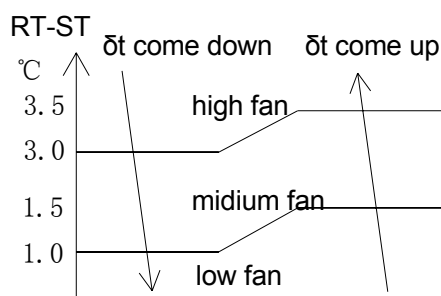
## (2) Outdoor temperature affects running frequency of compressor

Outdoor temperature affect compressor's running frequency. Difference inlet temperature of outdoor unit is adapted by difference compressor running frequency. While outdoor temperature is about 30°C, the compressor will run in high frequency.

If unit run in "cooling" mode and outdoor temperature is less than -1°C, controller will shut down compressor and show error code, while the ambient temperature is over 0°C, the compressor will run automatically.

## (3) Auto fan control in cooling mode

In cooling mode (include cooling in "I feel" mode), fan speed is determined by  $\delta t$ , as the following diagram:



## 4. "DRY" Mode Operation

- (1) The system for DRY operation used the same refrigerant circle as the cooling one.
- (2) When the system operates in DRY mode, at first it operates in cooling mode at 16°C or 18°C for 3 minutes. After that, the system will operate in cooling mode with lowest fan speed, meanwhile the set temperature (ST) is "RT-2°C" which means that the ST is room temperature at then minus 2. During the course of this mode, the fan speed set operation and room temperature set are restricted, except the vane motor adjusting.

## 5. "HEATING" Mode Operation (available for Heat Pump only)

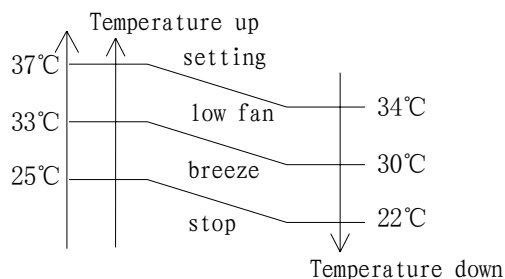
## (1) Frequency control

The same as the frequency control in cooling mode, running frequency of compressor is controlled by controller. Unit change its running frequency according to  $\delta t$  to make room temperature closing to the set temperature.

## (2) Indoor fan motor control

## 1. Cold Air Prevention Control

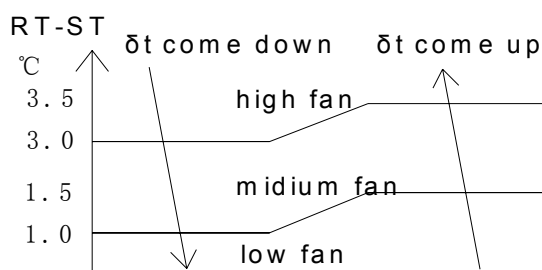
- The function is intended to prevent cold air from being discharged when the heating operation starts or when defrosting.
- The indoor fan speed will be controlled as following.



- In the heating operation, if the air conditioner is turned off, the indoor fan motor will run most for 30 seconds since the stop of compressor.

## 2. Auto fan control (heating)

In heating mode(include in "I feel" mode) , fan speed is determined by  $\delta t$ , as the following:



## (3) 4-way valve control

In heating mode, 4-way valve will power on ahead of compressor for 5 seconds, and cut off for 2 minutes later than compressor's stop. 4-way valve will not power off unless the machine is switched off, mode changed or on the process of defrosting.

## (4) Defrosting

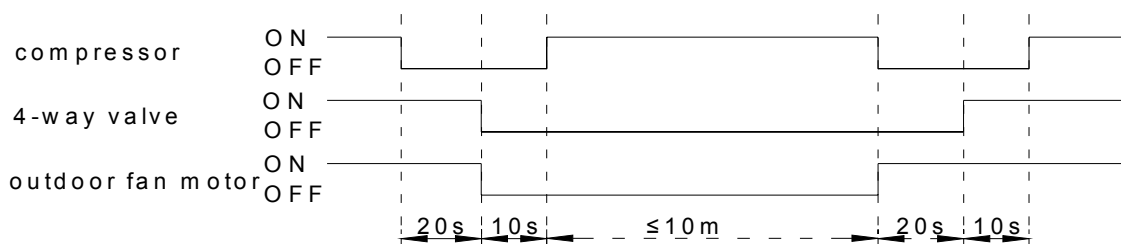
Defrosting is controlled by the microprocessor.

When one of the following conditions is satisfied, unit will come into defrosting:

- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C while the unit runs for more than 40 minutes, and OPT is keeping under -6°C for more than 3 minutes.
- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C meanwhile the unit runs for more than 80 minutes, and OPT is keeping under -4°C for more than 3 minutes.
- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C while the unit runs for more than 120 minutes, and OPT is keeping below -2°C for more than 3 minutes.

Before the air con come into defrosting, compressor running frequency drop down to a lower frequency firstly, then the compressor shuts down.

In defrosting, the max. frequency of compressor is F9 (a little less than the highest frequency). In this period all protection function are available.



In defrosting, LED showing by winking.

Come into or out of defrosting, indoor fan motor speed is the same as Cold Air Prevention Control.

One of the following conditions is satisfied, unit come out of defrosting and shift to heating mode:

- Outdoor coil Temperature (OPT)  $\geq 15^{\circ}\text{C}$
- Defrost time keep time for more than 10 minutes.

#### (5) Indoor exchanger overheat protection

When Indoor exchanger Temperature(IPT) is higher than  $55^{\circ}\text{C}$ , unit come into indoor exchanger overheat protection. Compressor drop its frequency toward to F1 level until  $\text{IPT} \leq 52^{\circ}\text{C}$ ; If  $\text{IPT} \leq 52^{\circ}\text{C}$  and keep for 5 minutes, control system don't limit running frequency.

If  $\text{IPT} > 62^{\circ}\text{C}$ , control system shut down compressor, and recover when IPT drop less than  $50^{\circ}\text{C}$ .

### 6. "SLEEP" mode

When the SLEEP button is pressed, the SLEEP mode is selected as following:

- The indoor fan speed is set at low speed, the power lamp and the sleep lamp is on, the display of temperature will be close after 5 minutes.
- When selecting COOLING/DRY operation with SLEEP mode, the set temperature will be raised by  $1^{\circ}\text{C}$  1 hour later and by  $2^{\circ}\text{C}$  2 hour later.
- When selecting HEATING operation with SLEEP mode, the set temperature will be dropped by  $1^{\circ}\text{C}$  1 hour later and  $2^{\circ}\text{C}$  2hour later.
- After the System operates in SLEEP mode for 8 hours, it will stop automatically.

### 7. EMERGENCY Operation

When the EMERGENCY Operation switch is pressed once, COOLING mode is selected and if in 3 seconds the EMERGENCY Operation switch is pressed again, mode is selected. Then pressed once again, the unit is switch off.

When the remote controller is missing, has failed or the batteries run down, press the EMERGENCY Operation switch on the front of the indoor unit. The unit will start.

The first 30 minutes of operation will be the test run operation. The operation is for servicing. The indoor fan runs at high speed and the system is in continuous operation. The thermostat is ON and the timer is reset to normal.

After 30 minutes of test run operation the system shifts to AUTO COOLING/HEATING mode, and the indoor fan runs in automatic speed. The operation continues unit the EMERGENCY operation switch is pressed or a button on the remote controller is pressed, the normal operation will start.

NOTE: Do not press the EMERGEMCY Operation switch during normal operation.

### 8. AUTO-RESTART Function (Option)

- When air conditioner is operating in one mode, all of its operation data, such as working mode and temperature of setup would be memorized into IC by main PCB. If power cuts due to

some reason, when power supply come back again, the AUTO-RESTART function will set synchronously and automatically to work. So the air conditioner would work at the same mode before.

#### **Auto-restart Pre-setting (optional):**

If Auto-restart function is needed, follow the steps below to activate this function:

- 1) Pulling the air-con's plug out of socket.
- 2) Pressing and holding the Emergency button (ON/OFF) on the indoor, then insert the plug into the socket again.
- 3) Keep pressing the Emergency button for more than 10 seconds until three short beeps are heard. The **Auto-restart** function has been started.

### **9. Protection and Failure Display**

- When protection display is available, controller will show error code, digital LED shows error code and setting temperature by turns.
- If there is more than one failure, it will show at first that in front of the error list.
- Protection display function can be selected in hardware, and the default don't display;
- To insure of in and out communist is credibility, the failures relate to outdoor unit will remain failure state for 2 minutes max after recovered.
- In all failures, only sensor failures don't have to repower to cancel.
- **Error list**

Failure type	LED CODE	DIGITAL LED CODE
In and out communication failure	RUN、TIMER –both winking	E0
Outdoor communication failure	RUN、TIMER –both winking	EC
Outdoor sensor	RUN-1 time/8s	E1
Indoor coil temperature sensor	RUN-2 times /8s	E2
Outdoor coil temperature sensor	RUN-3 times /8s	E3
System abnormity	RUN-4 times /8s	E4
Type mismatch	RUN-5 times /8s	E5
Indoor fan motor	RUN-6 times /8s	E6
Outdoor temperature sensor	RUN-7 times /8s	E7
Discharge temperature sensor	RUN-8 times /8s	E8
Invert module abnormity	RUN-9 times /8s	E9
Outdoor fan motor (DC)	RUN-10 times /8s	EF
Current sensor	RUN— 11 times /8s	EA
EEPROM failure	RUN-12 times /8s	EE
Top of compressor temperature switch	RUN-13 times /8s	EP
Voltage sensor	RUN-14 times /8s	EU



**Protection display code list:**

Protection type	LED CODE	DIGITAL LED CODE
higher or lower voltage	RUN-winking,TIMER-1 time/8s	P1
Over current	RUN- winking,TIMER-2 times /8s	P2
Discharge temperature	RUN- winking,TIMER-4 times /8s	P4
Over cooling in cooling mode	RUN-light,TIMER-5 times /8s	P5
Over heating in cooling mode	RUN- light,TIMER-6 times /8s	P6
Over heating in heating mode	RUN- light,TIMER-7 times /8s	P7
Outdoor temperature too high or low	RUN- light,TIMER-8 times /8s	P8
Drive protection(Overload)	RUN- winking,TIMER-9 times/8s	P9
Module self protection	RUN- winking,TIMER-10 times/8s	P0

- Outdoor failure display

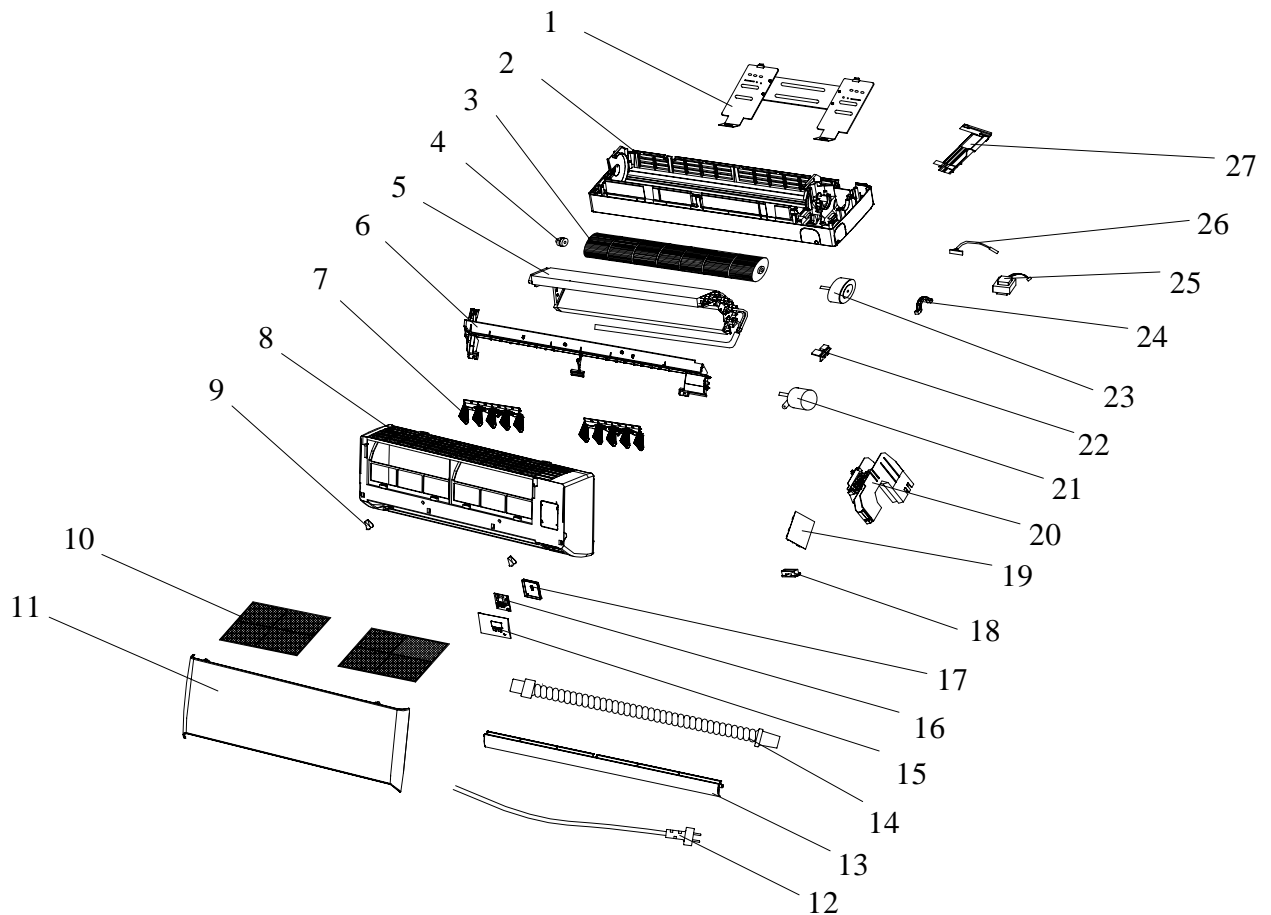
There is a LED on outdoor power board, when compressor is running; it is normally light; when no feedback of signal to power board from compressor, it will wink by lighting 1s and going out 1s. If failures happened, it will light 0.5s, go out 0.5s, winking several times and go out 3s for a cycle to indicate failures. The failure list is the follow:

Wink time	Failure
1	IPM protection
2	higher or lower voltage
3	Over current
4	Discharge temperature too high
5	Outdoor coil temperature too high
6	Drive abnormality
7	Communication abnormality with indoor unit
8	Compressor over heat ( switch on top of compressor )
9	Outdoor air temperature sensor failure
10	Outdoor coil temperature sensor failure
11	Outdoor discharge pipe temperature sensor failure
12	Voltage sensor failure
13	Current sensor failure
14	IPM abnormality
15	Outdoor communication abnormality
16	DC fan motor no feedback
17	defrosting

## EXPLOSION VIEW

Mode: SSH-L094DC-W,SSH-L124DC-S

INDOOR UNIT:



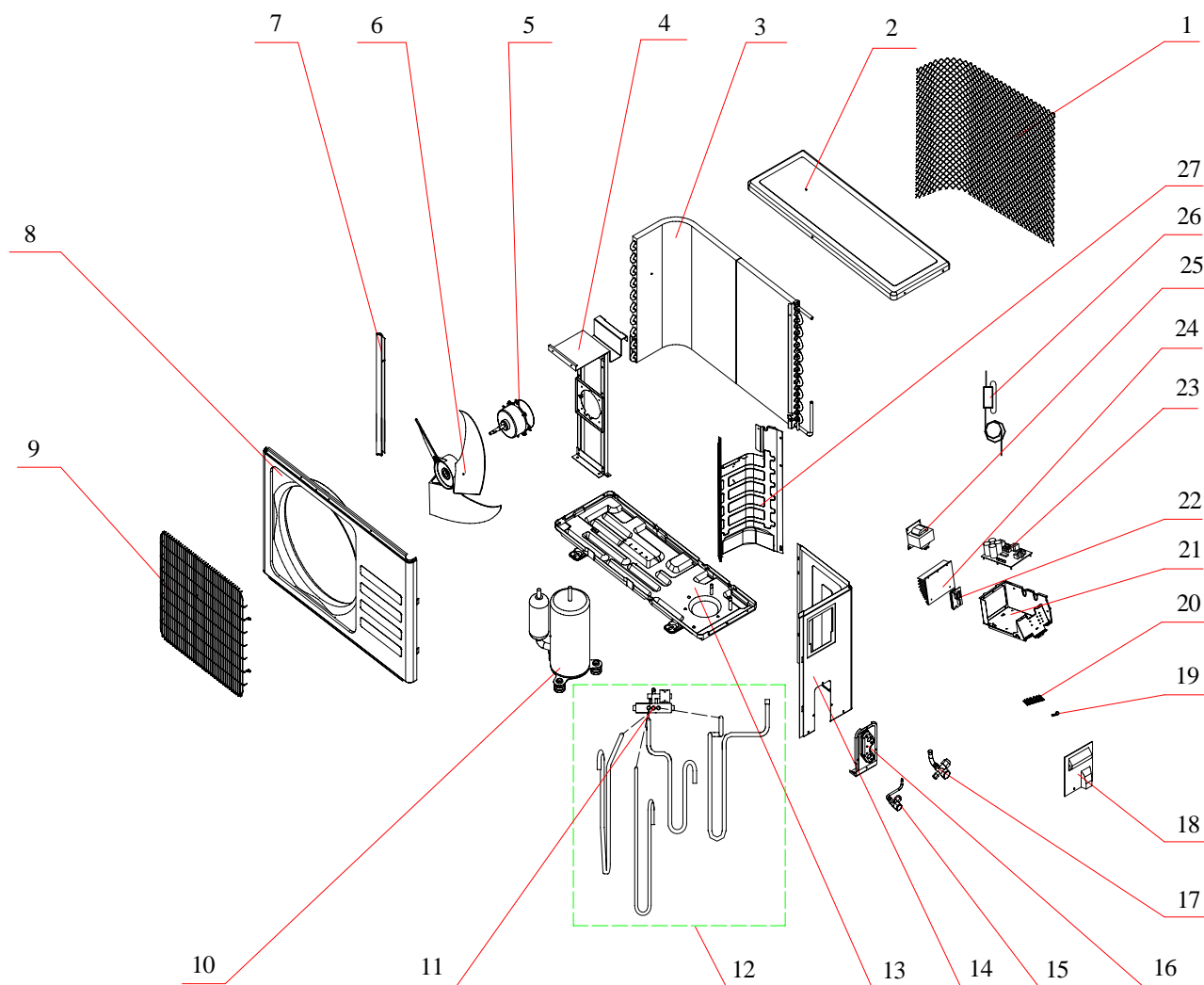
**Indoor Unit- SSH-L094DC-W,SSH-L094DC-S**

No.	Part No.	Part Name	Q'ty	Remark
1		Installation Plate	1	
2		Base	1	
3		Cross Fan	1	
4		Bearing Mount	1	
5		Evaporator	1	
6		Water Drainage Assembly	1	
7		Vertical Vane Assembly	1	
8		Face Frame	1	
9		Screw Cover	3	
10		Display PCB (digital)	1	
11		Display PCB Box	1	
12		Left Air Filter	1	
		Right Air Filter	1	
13		Front Panel	1	
14		Power Supply Cord	1	
15		Vane	1	
16		Drainage Hose	1	
17		Cable Clamp	1	
18		Terminal	1	
19		Terminal fixing board	1	
20		Main PCB(digital)	1	
21		Electrical Box	1	
22		Vane Motor	2	
23		Sensor Holder	1	
24		Indoor Motor	1	
25		Indoor Motor Cover	1	
26		Transformer	1	
27		Indoor Sensor Assembly	1	
28		In and out fixer	1	
29		Remote Controller	1	Not shown in Explosion view
30		Remote Controller Supporter	1	
31		Indoor Carton	1	
32		Left Foaming	1	
33		Right Foaming	1	
34		Middle Pasteboard Supporter	1	
35		Base Foaming	1	

# EXPLOSION VIEW

MODEL: SSH-L094DC-W,SSH-L094DC-S

OUTDOOR UNIT:



## OUTDOOR UNIT

Model: SSH-L094DC-W, SSH-L094DC-S

No.	Part No.	Part Name	Q'ty	Remark
1		Grille	1	
2		Top cover	1	
3		Condenser	1	
4		Outdoor motor supporter	1	
5		Outdoor motor	1	
6		Propeller fan	1	
7		Left grille supporter	2	
8		Front plate	2	
9		Fan guard	1	
10		Compressor and accessories	1	
11		4-way valve	1	
12		4-way valve assembly	1	
13		Base	1	
14		Right plate	1	
15		Two-way valve	1	
16		Valve supporter	1	
17		Three-way valve	1	
18		Electrical Box Cover	1	
19		Cable clamp	1	
20		Terminal	1	
21		Electrical box	1	
22		Inverter module	1	
23		Power source board	1	
24		Radiator	1	
25		Inductor	1	
26		Capillary assembly	1	
27		Partition plate	1	
28		Pipe Temp. sensor and outdoor Temp. sensor	1	Not shown in explosion view
29		Discharge Temp. sensor	1	
30		Base carton	1	
31		Cabinet carton	1	
32		Base foaming	1	
33		Cover foaming	1	

# **ANNEX 1 TROUBLE SHOOTING**

## **INDEX**

- 1. Electric parts**
- 2. Refrigerant system**
- 3. Troubleshooting**
- 4. Installation Fundamentals**

## 1. Electric parts

It is compressor and motor fan that finally drives after power is supplied. And it is necessary to check the internal factors like switches, protectors, or lead wires that are needed to reach the compressor and motor fan to see if their connections are normal and the external factors to see if voltage is normally supplied.

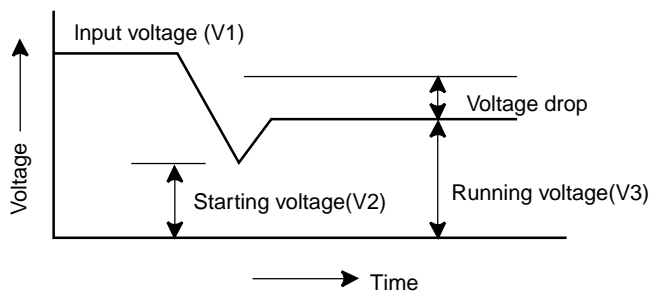
### 1.1 External factors check

#### 1) Working power and voltage drop

The rated voltage for airconditioner is specified in a workable range.

In order to operate airconditioner normally, it is desirable for the working voltage and minimum. starting voltage to be within the following chart range.

Especially, just the fact that the voltage when airconditioner is not at work is within the working voltage range is insufficient, and the voltage is sure to be within the working voltage range by measuring in a operating condition.



\* Usable voltage = Product rating  $\pm 10\%$

#### 2) Electric wire capacity

The electric wire for airconditioner should have an allowable current more than the load current of the circuit and be able to control the voltage drop by the load current within 2%.

And it should be a thickness capable of keeping the voltage drop by a starting current within -10%, and especially for an airconditioner of single phase, the voltage drop (Flicker voltage) by the starting current be within about 5%.

A =  $V1 - V2$  : Voltage drop by the starting current of airconditioner (Flicker voltage)

B =  $V1 - V3$  : Voltage drop by the normal running current of airconditioner

$$\frac{V1 - V3}{V1} \times 100 \leq 2\% \text{ (B case)}$$

$$\frac{V1 - V2}{V1} \times 100 \leq 5\% \text{ (A case)}$$

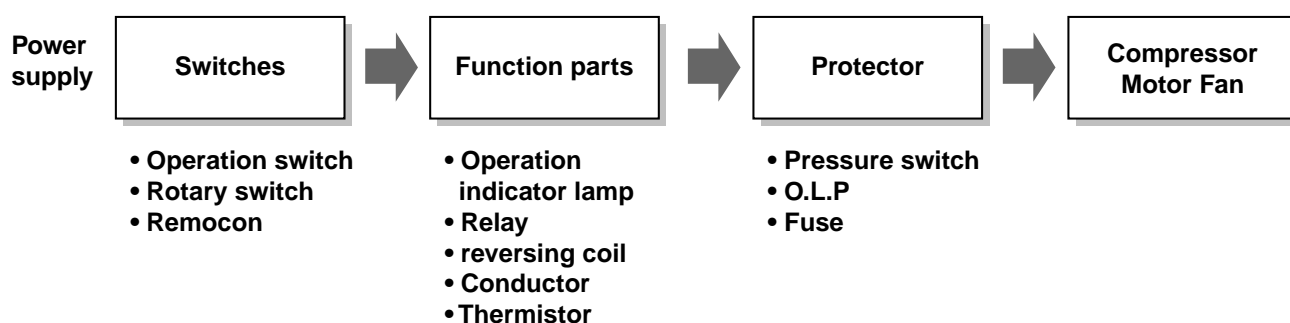
In case of using an airconditioner in a low voltage area where power supply voltage is low, especially, the Flicker voltage due to inadequate wires may cause the fluorescent light to be off or may affect the other electric products. So, care should be taken to the wiring work.

### 3) Wire thickness required

Rated current appliance(A)	Nominal cross-sectional area(mm <sup>2</sup> )
Up to and including 6	0.75
Over 6 up to and including 10	1.0
Over 10 up to and including 16	1.5
Over 16 up to and including 25	2.5
Over 25 up to and including 32	4.0
Over 32 up to and including 40	6.0
Over 40 up to and including 63	10.0

For rated currents up to 3A, a nominal cross-sectional area of 0.5mm<sup>2</sup> is only allowed if the length of the cord does not exceed 2m.

## 1.2 Internal factors check



### 1.2.1 Insulation resistance

Measure the insulation resistance between live part and dead metal part by 500V insulation resistor to check if the insulation resistance is more than 10MΩ.

### 1.2.2 Insulation resistance measurement of compressor

Measure the insulation resistance of compressor between compressor terminal and dead metal part by insulation resistor, and the insulation resistance should be above 10MΩ.

Compressor may change the insulation resistance while running. Accordingly, measure the insulation resistance just after running as needed.

- **Note:** For R-22 used in airconditioner, the dielectric rate on liquid state is high. If a contaminant is mixed into R-22, the electric resistance is extremely low and the poor insulation is occurred. Accordingly, be sure to prevent contaminants from mixing into refrigerant system.



### 1.2.3 Running capacitor

1) Earth inspection between terminal and body

As shown in Figure 1, connect a resistor between one side terminal and body of condenser to check for continuity.

2) Capacity inspection

(1) Remove the lead wire from both terminals of condenser to be checked.

(2) Contact both terminals of lead wire for 2-3 sec., and discharge.

(Be sure to perform to prevent the tester damage before measuring.)

(3) After discharging, contact both terminals of tester with the terminal of condenser to see the dial vibrating direction of resistor. (See Figure 2.)

There are three kinds of dial vibrating direction in tester, and each vibrating direction and symptom is as follows.

A: Normal : Dial shakes instantaneously and returns to the original state immediately.

B: Short : Dial remains moved.

C: Capacity consumed up : Dial does not move at all.

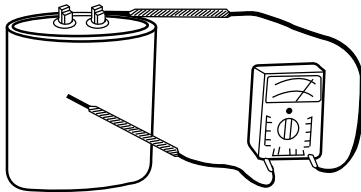


Figure 1.

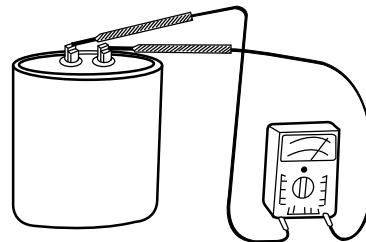


Figure 2.

### 1.2.4 Motor fan

1) Power off, remove motor fan, and test independently.

2) Measure the resistance of main coil, sub coil and control coil in motor.

3) Use a good quality of capacitor in testing.

4) Diagnose the following troubles by the independent test, and replace motor.

a) Motor is not started.

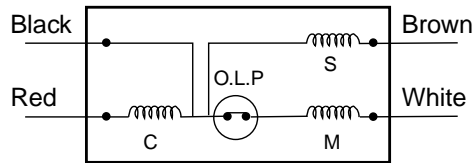
b) Motor rotation rises very slowly.

c) Bearing failure : The shaft does not move.

d) Arc occurs in the motor inside.

e) Smoke emits from motor inside.

f) Excessive noise



Measuring main coil resistance : White ↔ Black

Measuring sub coil resistance : Brown ↔ Black

Measuring control coil resistance : Red ↔ Black

### 1.2.5 Thermostat

There are 3 kinds of thermostat malfunction.

- 1) Leak of gas charged in sensor part
- 2) Short of contact point
- 3) Wrong wiring

Switch off at room temperature 18-30°C, turn carefully the knob of thermostat from 1 to 10 (the number may be different or a figure be used according to model) or reversely, and click sounds.

After the sound is heard, turn reversely to check again the click sounds.

If click sounds, the thermostat is in normal. If room temperature exceeds 30°C, test should be done after cooling by putting the sensor part of thermostat into a cold water container because the contact point is not opened.

If knob is turned but click does not sound, remove the thermostat cover and examine the contact point.

The fused contact point should be replaced with a new thermostat.

If contact point is not closed despite of the sensor temperature being sufficiently high, the gas at the sensor part may be leaked. In this case, replace the thermostat.

When replacing thermostat, be sure to conduct after performing carefully as the above content.

### 1.2.6 Thermistor

Pull out the lead wire of thermistor terminal to test continuity.

Connect a tester to the terminal of thermistor and measure the resistance. The resistance value varies according to the measuring condition and temperature, so in order to vary temperature forcibly, put water in a cup, cool the sensor part of thermistor, and then measure the resistance, and also measure in a condition that the sensor part of thermistor becomes warm by hands.

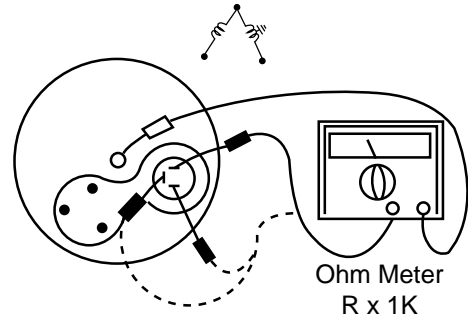
## 1.3 Compressor trouble diagnosis

### 1.3.1 Electrical troubles

#### 1) Ground test

Test single phase and three phase in the same manner.

- (1) Shut off the power supply to product.
- (2) Remove the wires connected to the compressor terminal.
- (3) Clean the compressor terminal and discharge (suction) pipe.
- (4) Measure the resistance of discharge (suction) pipe and each terminal by using a R x 1K scale of Ohm meter.
- (5) If dial moves remarkably, the terminal is in ground state. So, replace the compressor.



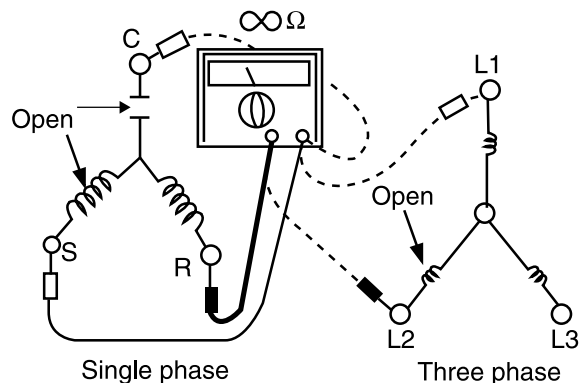
#### 2) Wrong wiring check of compressor terminal

Examine the wiring diagram of compressor terminal or the electric circuit diagram of product on the cover of compressor terminal to check if there is wrong wiring.

#### 3) Checking of wire disconnection or overload protector (O.L.P) operating condition

This check is to see the wire terminal condition of motor inside, and for a single phase compressor with O.L.P built-in, it identifies the O.L.P operating condition and wire disconnection.

- (1) Shut off the power supply to product.
- (2) Remove the wires connected to the compressor terminal.
- (3) After checking the ground state, cool the compressor sufficiently.  
(at room temperature)  
<For single-phase compressor>
- (4) Measure the resistance of each terminal by Ohm meter R x 1K scale, and if dial does not move, compressor is in opened condition.  
<For three-phase compressor>
- (5) Measure the resistance of each terminal by Ohm meter R x 1K scale, and if dial does not move, the wire between two terminals is disconnected.  
-> Action: Replace the compressor.



\* OLP may be operated by the following causes, so be sure to find and remove the cause.

- (1) Operation at low voltage
- (2) Defects of operation or starting device
- (3) Overheat of compressor motor due to the condensing coil closing, condensing motor defects, liquid line close, or injection capillary close.

### 1.3.2 Mechanical troubles

#### 1) Not starting

- (1) Phenomenon : Compressor is not started but the starting current continues to flow.
- (2) Checking
  - a) Check capacitor. (for a type where a capacitor for compressor starting or operating is used)
  - b) If there is no trouble, it is judged as lock due to the wear of compressor inside or the damage of lubricating device. Replace the compressor.

#### 2) Poor compression

- (1) Phenomenon : Compressor is at work, but the cooling capacity is weak, the pressure of high pressure side is low and the pressure of low pressure side is high.
- (2) Cause : Damage of valve in compressor inside, damage of connecting rod or crank shaft, or other internal leak
- (3) Checking
  - a) Stop and then start the condenser fan, and if the pressure of high pressure side does not increase, the compressor is bad.
  - b) Measure the temperature of discharge pipe in compressor, and if it is abnormally low temperature (50°C or less), the compressor is bad.
  - c) Conduct the pump down test of system to check the compression capacity.
    - Power off the product.
    - Close the service valve of liquid line. (Rotate the valve rod clockwise to close the valve rod.)
    - Start product and observe the suction pressure.
    - If compressor is normal by pumping down the system, pressure is kept 0-5 psiG (0-0.35kg/cm<sup>2</sup>.G), and if the suction pressure increases, the compressor is bad due to the internal leak or valve damage.
- (4) The compressor to be assumed as bad compression should be replaced.
  - If running for a long time in a bad compression condition, abnormal superheat may occur and the compressor motor is burnt.
  - Clean the cycle.

#### 3) Overcurrent flowing while running

Check the working pressure, and if there is no trouble, it is assumed as the compressor bearing damage. Replace the compressor.

(Excessive refrigerant charging may cause the overcurrent.)

## 2. Refrigerant system

### 2.1 Refrigerant system troubleshooting

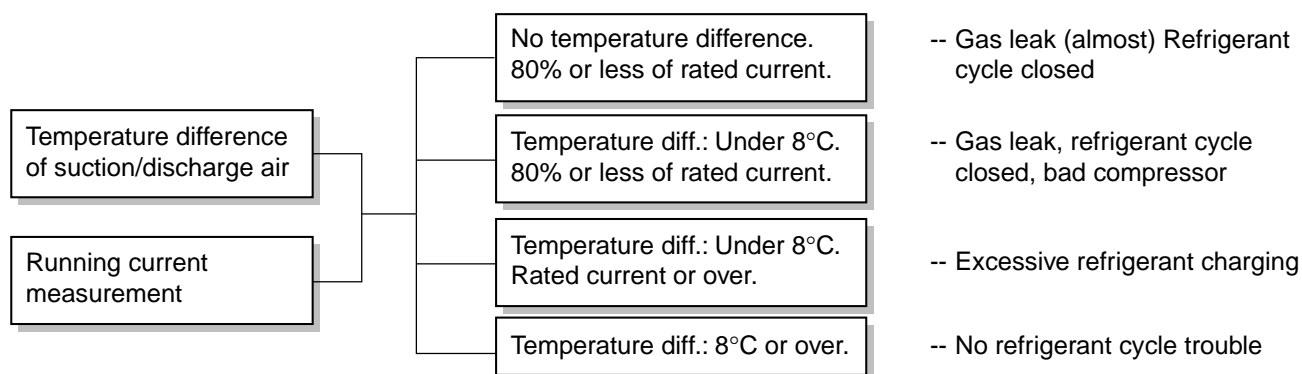
Check the following items when troubleshooting the refrigerant system.

- 1) The thermostat setting or remocon temperature setting is not wrong?
- 2) Air filter is not cleaned?
- 3) Blower fan control switch is not at "low"?
- 4) Ventilation lever is not opened?
- 5) There is no obstacle in suction or discharge side of outdoor unit?
- 6) Dirty heat exchanger causes the heat exchanging efficiency to be down?  
(Thorough cleaning)
- 7) Cooling/heating load is not increased?
- 8) Too many persons are in room? (Cooling)
- 9) The insulation of window gap is not wrong?

If there is no trouble from the above checks and also if there is no trouble on the electric appliances of airconditioner body, it is assumed as refrigerant system failure.

- a) Set aircon to High cool, run cooling for 15 min. or more, and measure the temperature difference of suction/discharge air in indoor unit. (Adjust the wind direction so that wind is discharged to the front direction in the installed condition.)
- b) Measure the voltage and current in running condition.
- c) Measure the pressure of low pressure side in cooling condition.  
(If the temperature is low, convert into the test switch.)

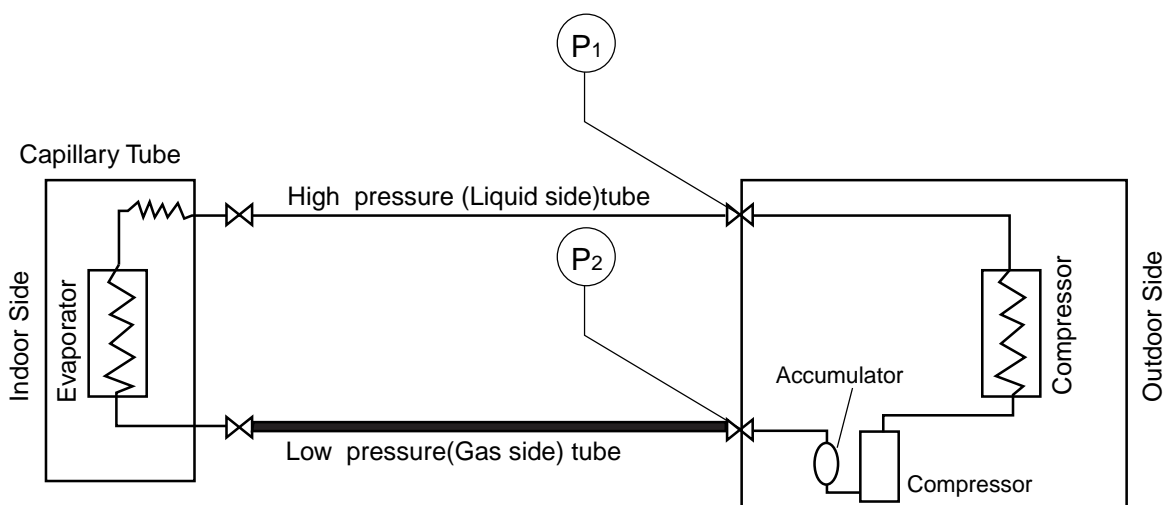
#### 2.1.1 Temperature difference and current of suction/discharge air in evaporator



#### • Temperature difference of suction-discharge air

Normally, the temperature difference is based at 10°C. Actually, the judgement criteria is 8°C, because when the room humidity is high, the temperature difference is small and when humidity is low, it becomes large.

## 2.1.2 Pressure and temperature of refrigerant



The pressure in normal condition shows the figure in the right side table, but the pressure (P1) of high pressure side tube is affected greatly by the temperature change and about 16kg/cm<sup>2</sup>.G in a low temperature condition (indoor/outdoor 21°C).

The pressure fluctuation is affected by the tube length or insulation as well as temperature change, so measure the pressure (P2) of low pressure side for the trouble shooting of refrigerant system.

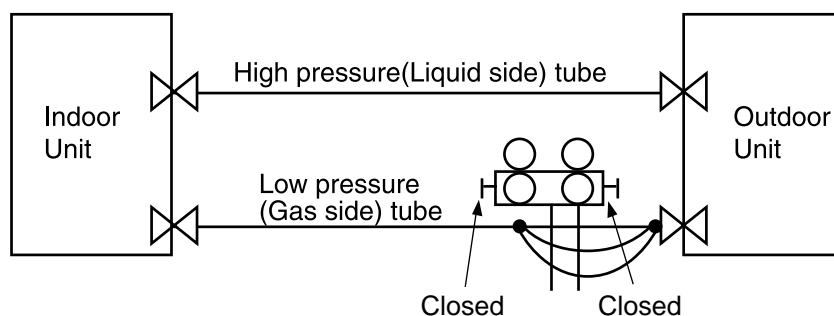
Measuring place	Pressure(kg/cm <sup>2</sup> G)
P1	About 19.5
P2	About 5.0

### <Trouble finding by pressure/temperature>

Pressure (than normal)	Temperature (than normal)	Cause	Explanation
Higher	Higher	Bad compression: Compressor failure, Bad reversing Valve	Current flows weakly.
	Normal	Cooling load is small.	Current flows weakly.
		Liquid refrigerant suction: Excessive refrigerant charging	High pressure is not increased rapidly in early running stage.
Lower	Higher	Gas short : Gas leak	Current is low.
		Closed : Pipe internal	Current is low.

**Note)** The high/low temperature is a figure converted into pressure.  
The low pressure is normally 4.5-6.0kg/cm<sup>2</sup>G.  
(Temperature is normally 3°C-10°C.)

### • Pressure measurement of low pressure side



As shown in Figure above, connect the manifold gauge to the low pressure (gas side) tube of condenser and measure the pressure.

### 2.1.3 Symptoms and actions

#### 1) Short of refrigerant

The short of refrigerant appears in a slightly different symptom as (1) no refrigerant or (2) short of refrigerant.

**(1) Symptoms** : The temperature difference of suction-discharge air is 8°C or less, the running current is less than the rated current, and the pressure of low pressure side is low. (These are symptoms changed by short of refrigerant.)

**(2) Judgement method** : Frost is formed from the capillary tube outlet to the evaporator inlet.  
The suction pipe of compressor is not cold. (The temperature of suction pipe is similar to the outdoor temperature.)  
The pressure of low pressure side in cooling is 4kg/cm<sup>2</sup>.G or less. (Surrounding temperature : 30°C or over)  
Refrigerant oil comes out from the evaporator-condenser connections and each welded portion. (Finding the gas leak place)

**(3) Actions:**

- ① Find the gas leak area. (Check at balance pressure of 5kg/cm<sup>2</sup>.G or over.)
- ② Charge refrigerant to the specified level.
- ③ Check for gas leak.

#### 2) Closing of refrigerant system

**(1) Symptoms** : If the refrigerant system of strainer or capillary tube is closed, pressure drops at the outlet of closed area, and refrigerant evaporates to form and attach dew or frost.  
The running current is less than the rated current, and the pressure of low pressure side is lower than the normal. If completely closed, the pressure of low pressure side is to be 0kg/cm<sup>2</sup>.G as time goes by.

**(2) Judgement method** : The same symptoms as the short of refrigerant appears, and the same phenomenon occurs even if refrigerant is sealed.  
It takes 3 min. or more for refrigerant to balance.  
If running in the condition, the temperature of discharge gas becomes higher, the refrigerant oil is deteriorated, and the life time may be affected.  
(Compressor motor may be burnt.)

### 3) Overcharge

#### (1) Symptoms

- The temperature difference of suction-discharge air is 8°C or less, the running current is higher than the specified current, the pressure of low pressure side is high, and the compressor and suction pipe are cold.  
If running in the condition, pressure switch activates at overload operation to make continuous operation impossible, compressor is difficult to start, and fuse or breaker is easy to be disconnected.

#### (2) Actions

- ① Discharge the refrigerant. (By 3-5kg/cm<sup>2</sup>G)
- ② Charge refrigerant to the specified level.
- ③ Check for gas leak.

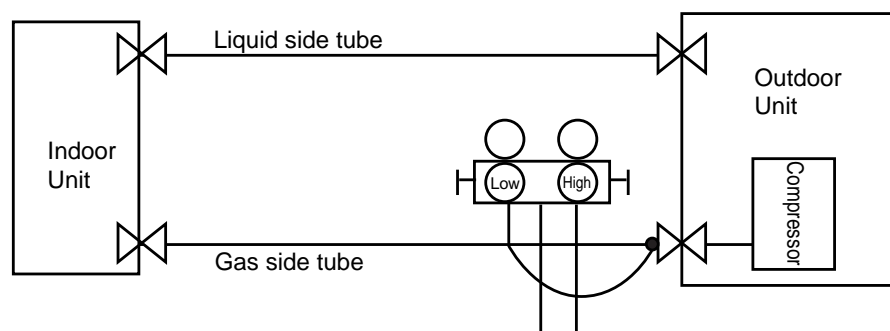
### 4) Bad compression

#### (1) Symptoms

- The temperature difference of suction-discharge air is little, the running current is less than the specified current, the pressure of high pressure side is low, and the pressure of low pressure is high.

#### (2) Judgement method

- Close service valve of high pressure side in condenser (front seat) and connect the manifold gauge to the service valve of low pressure side.  
(Close the valve.)
- If the dial of pressure gauge does not indicate 0kg/cm<sup>2</sup>G or less by cooling in the condition, the compressor is judged as bad.



**Note)** If pressure gauge is near 0kg/cm<sup>2</sup>G, immediately stop the cooling.

Otherwise, air flows into the refrigerating cycle or the compressor motor coating is taken off to cause the poor insulation. So, care should be taken.



### 2.1.4 Summary of check items by cause

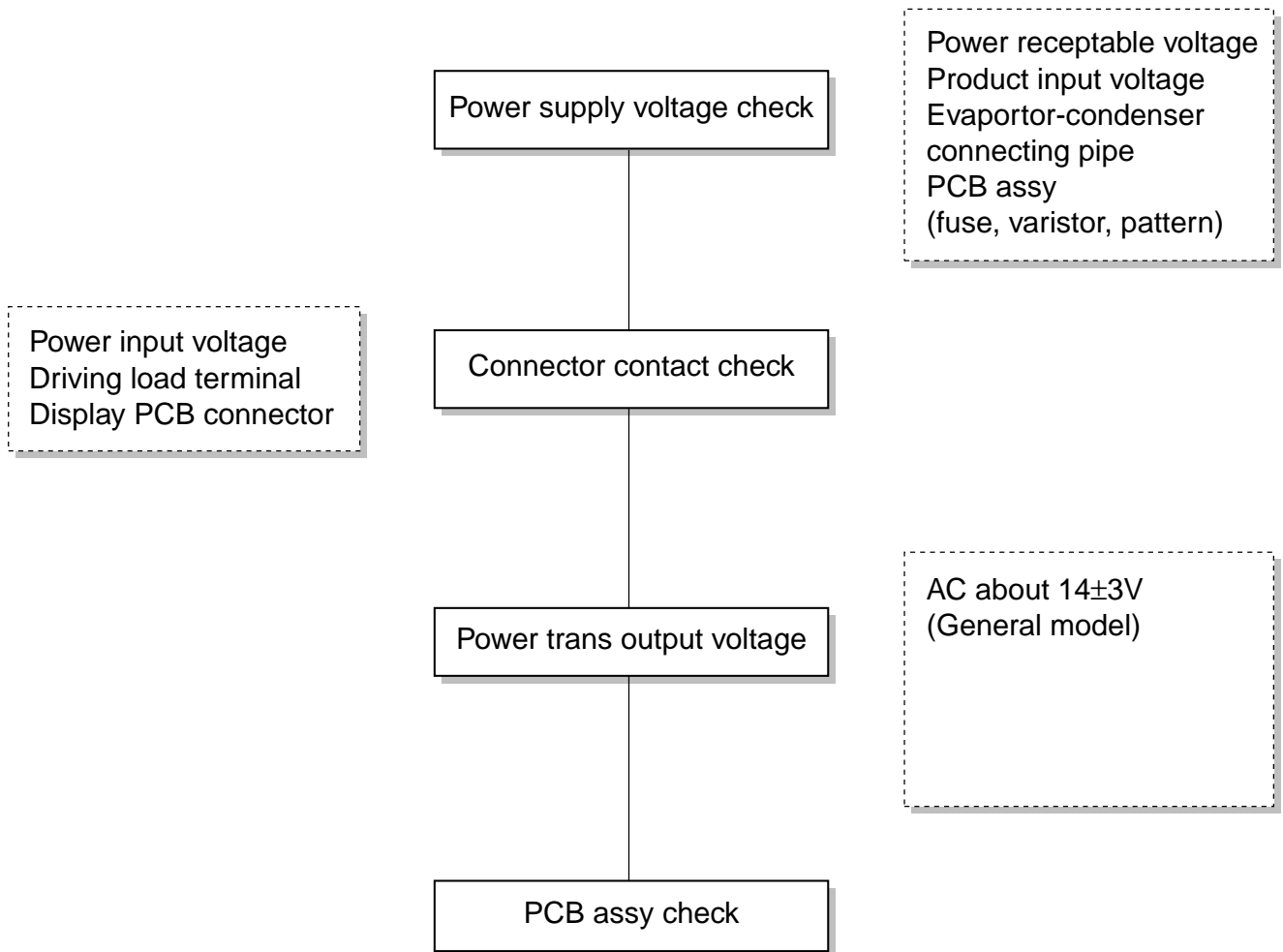
Cause \ Check item	Suction/discharge air temp.diff. of evaporator		Rated current		Low pressure		High pressure	
	Cooling 8°C	Heating 14°C	Cooling	Heating	Cooling	Heating	Cooling	Heating
Short of refrigerant	☺	☺	☺	☺	☺	☺	☺	☺
Capillary closing (a part)	☺	☺	☺	☺	☺	☺	☺	☺
Outdoor heat exchanger contaminated	☺	☺	☺	☺	☺	☺	☺	☺
Indoor heat exchanger contaminated	☺	☺	☺	☺	☺	☺	☺	☺
Bad compressor	☺	☺	☺	☺	☺	☺	☺	☺

### 2.2 Precautions on repair

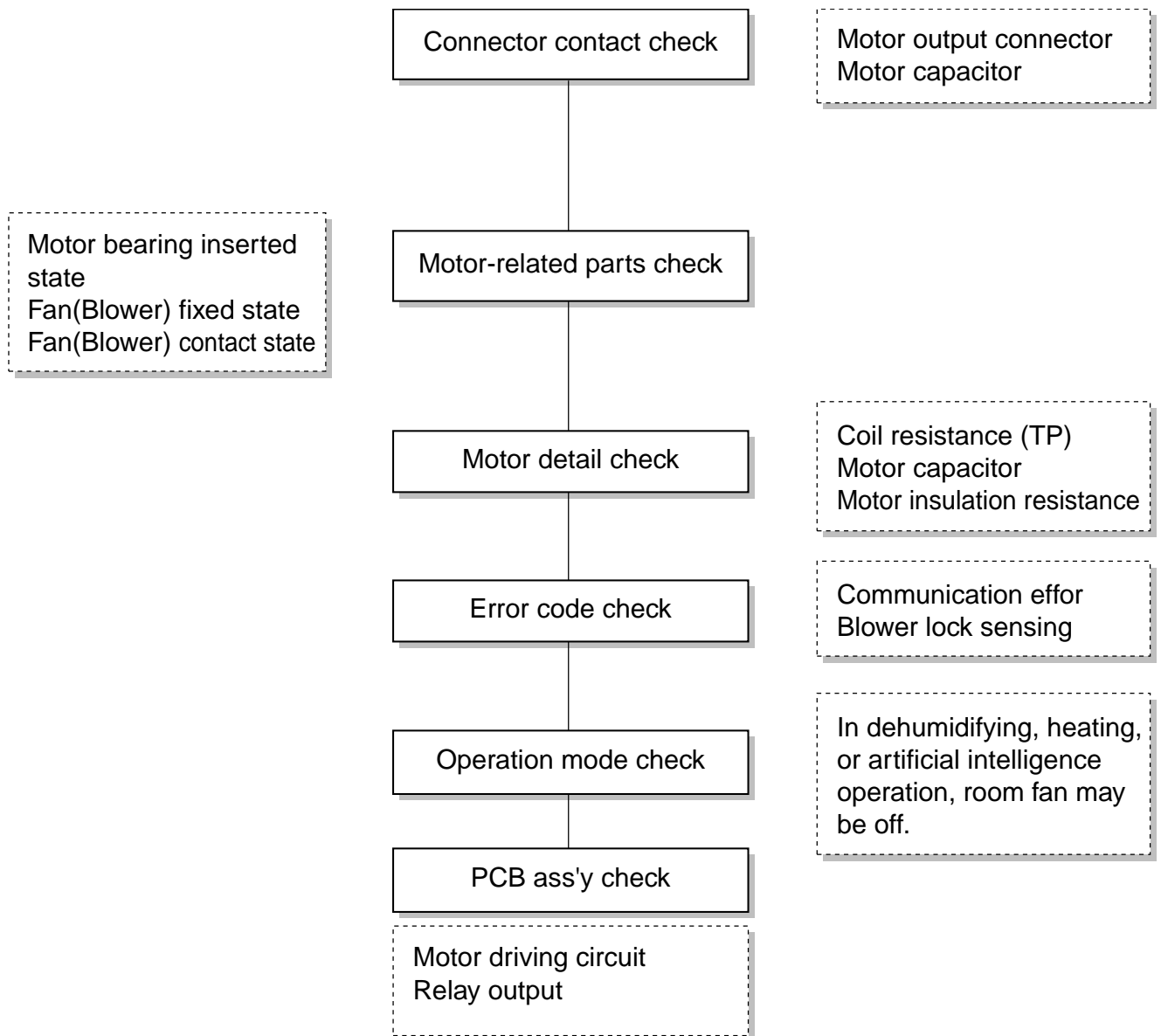
- 1) When discharging refrigerant (from pipe or body), the discharge outlet should direct the direction where nobody exists.
- 2) Do not work near fire or flame.
- 3) Work in a large space if possible and arrange the scaffold.
- 4) Especially for working on rooftop, prepare a place to keep tools and take care to prevent from falling.
- 5) While running (pump down work, test run), do not insert hands into fan.
- 6) Clean the Indoor-outdoor connecting pipes and the manifold gauge edges to be free from dust or moisture.
- 7) Be sure to fill refrigerant to the specified level. (If refrigerant is too much or short, the capacity is down and trouble may occur.)
- 8) Keep tools well, and check the measuring machine periodically.

### 3. Troubleshooting

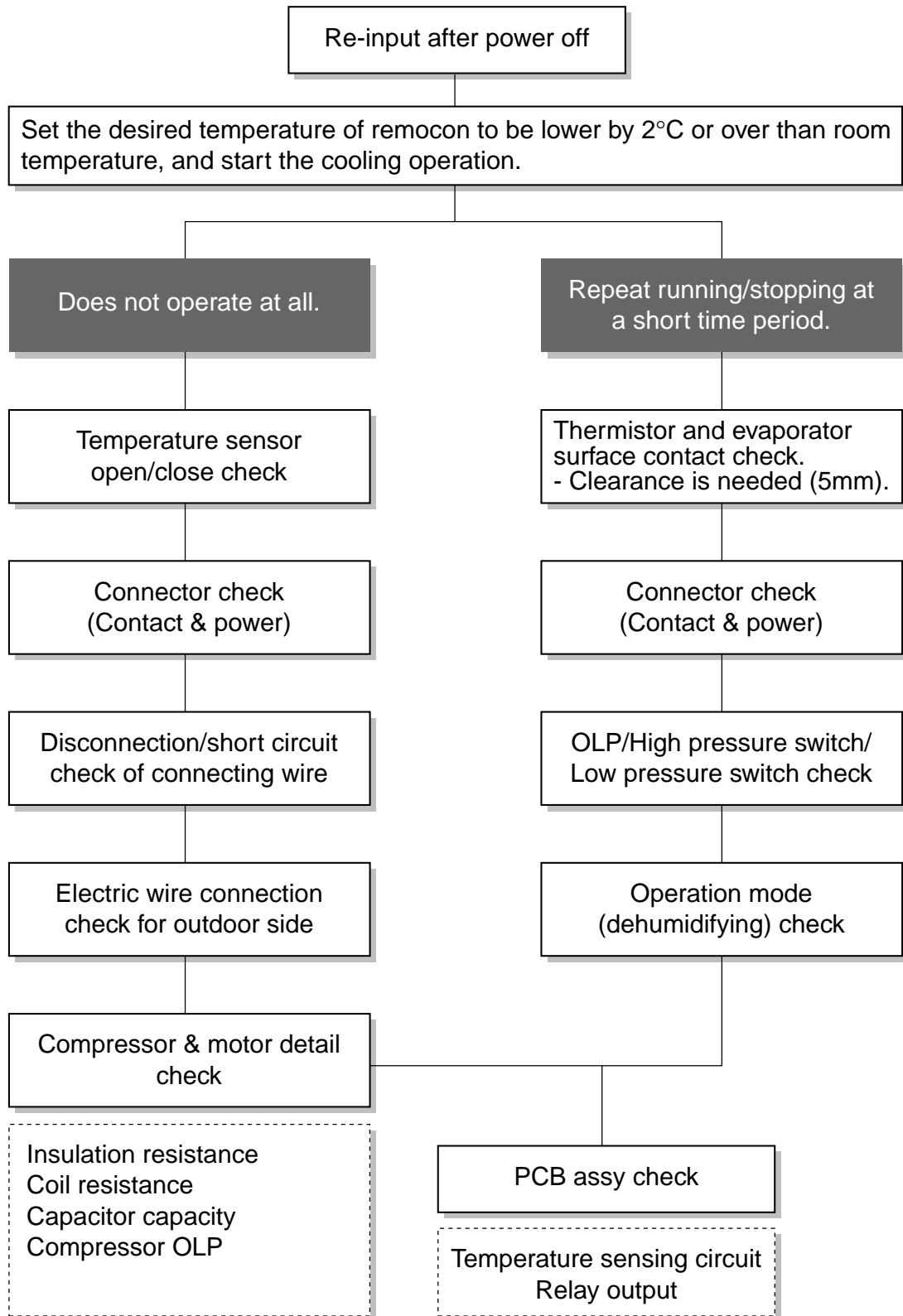
#### 3.1 Product does not operate at all.



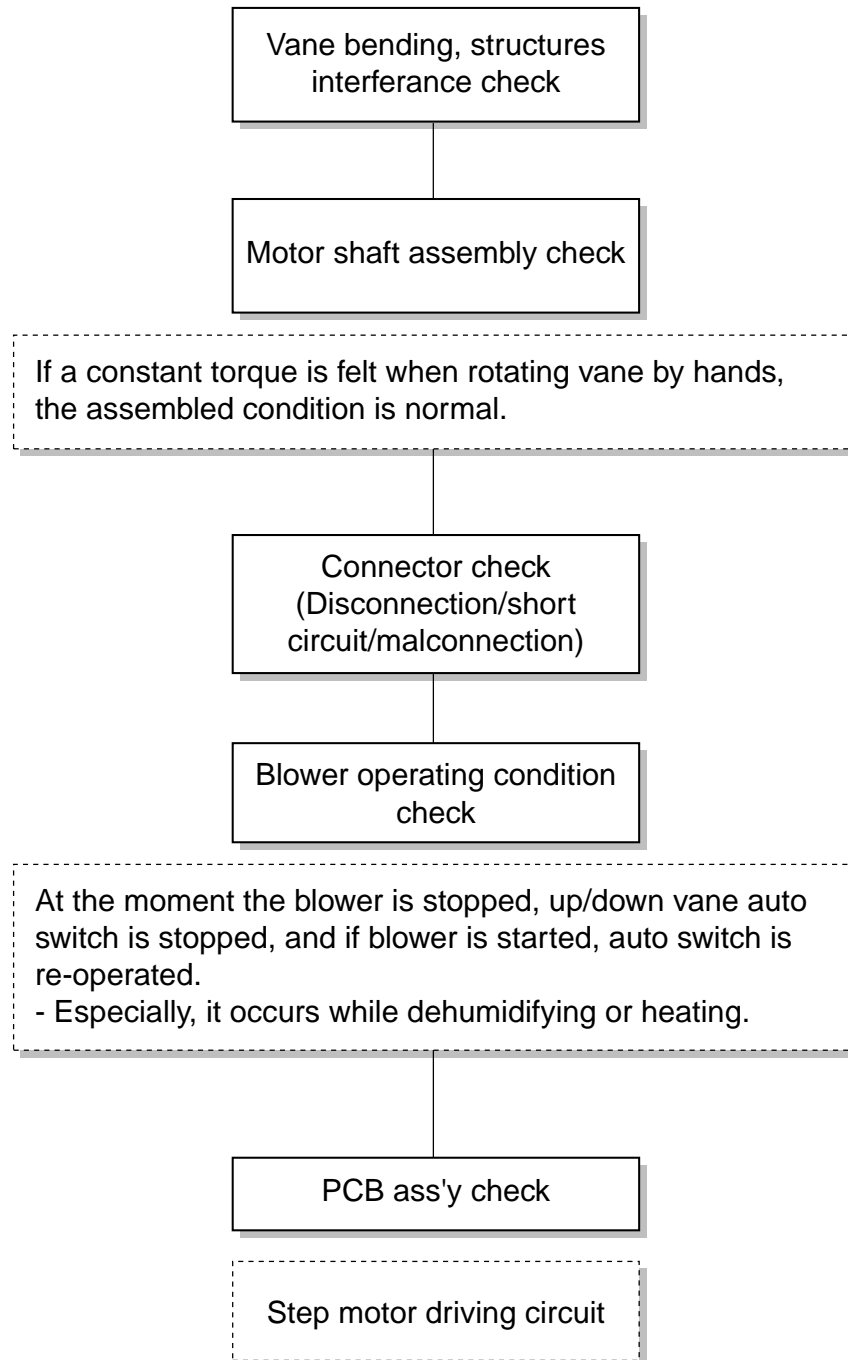
### 3.2 Room fan does not operate at all.



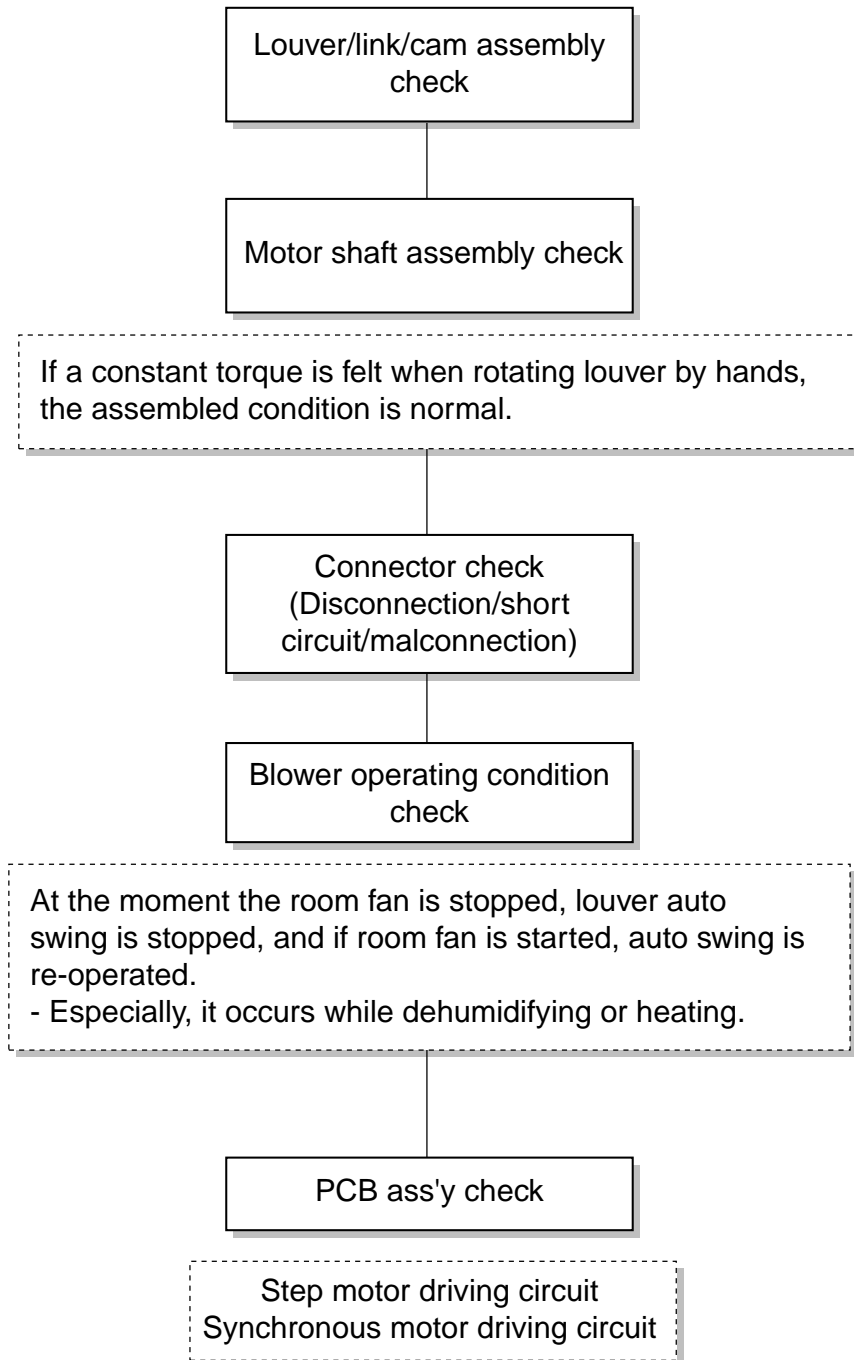
### 3.3 Compressor or outdoor fan does not operate at all.



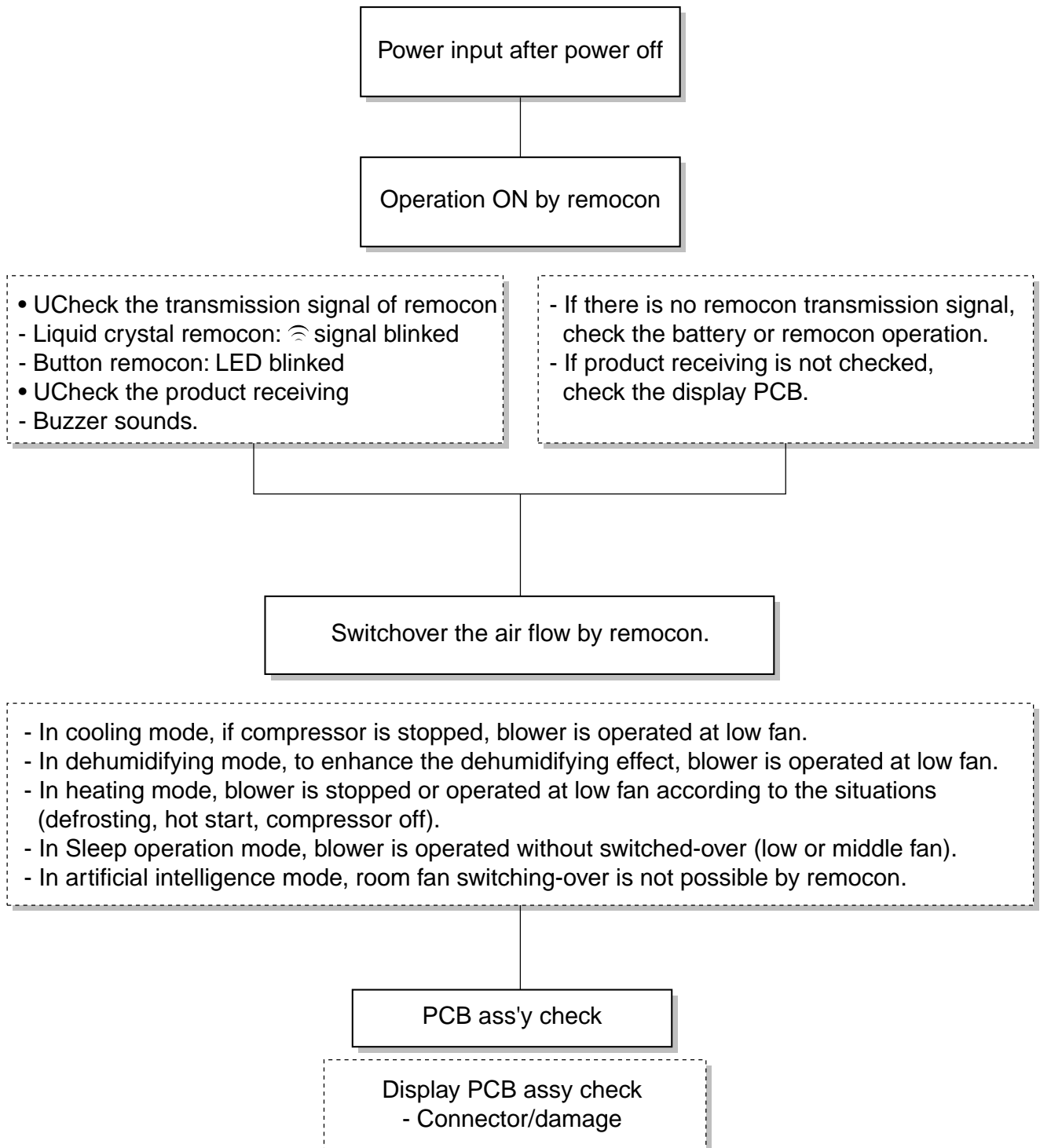
### 3.4 Up/down vane does not operate at all.



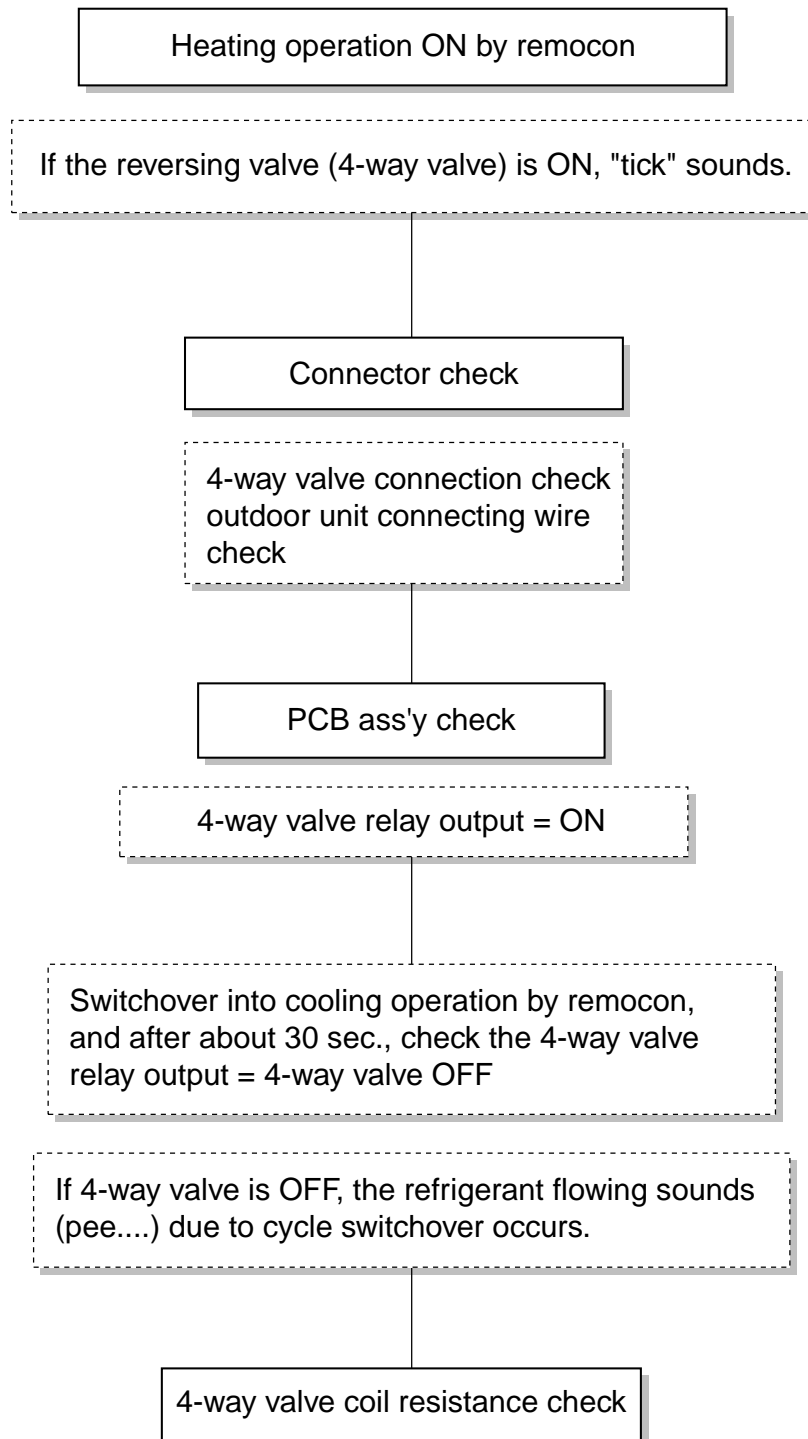
### 3.5 Left/right louver does not operate at all.



### 3.6 Function setting by remocon is disable.



### 3.7 Cooling/heating conversion is disable.





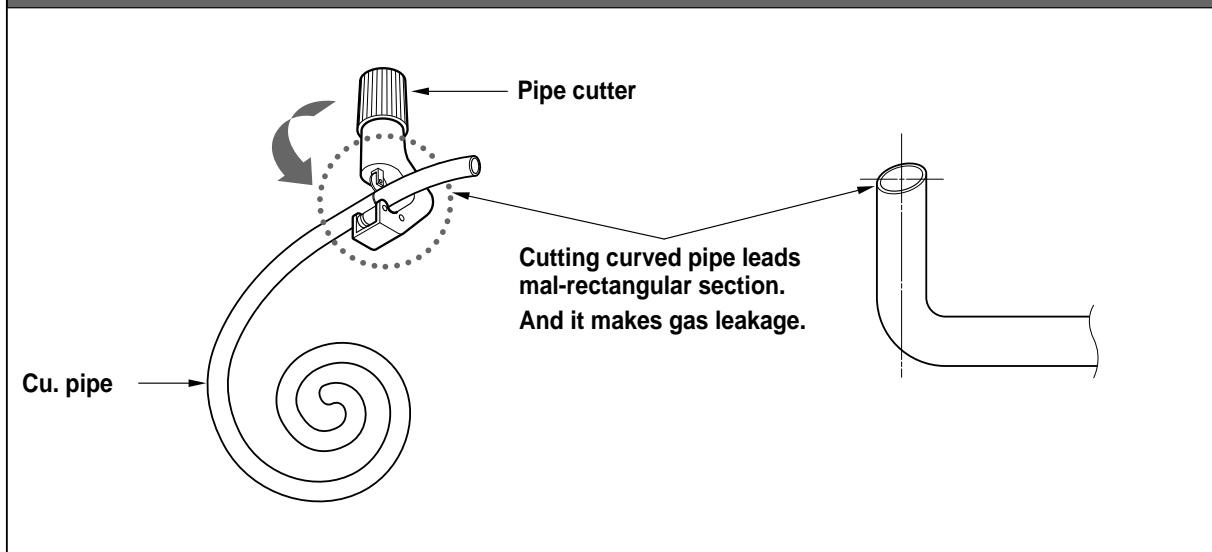
## 4. Installation Fundamentals

### Leakage /Freon - 1/4

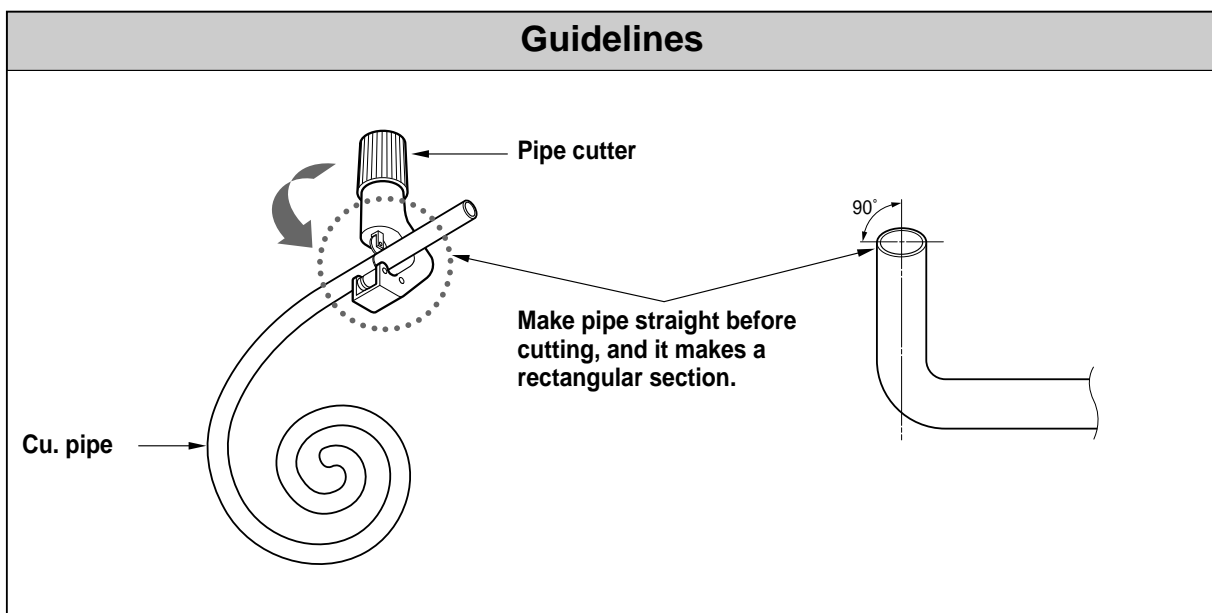
### Case-1

<b>Key Factor</b>	Pipe cutting
<b>Troubles &amp; Causes</b>	Gas leaks due to the mal-flared copper pipes with non-rectangular section.

#### Defect Details

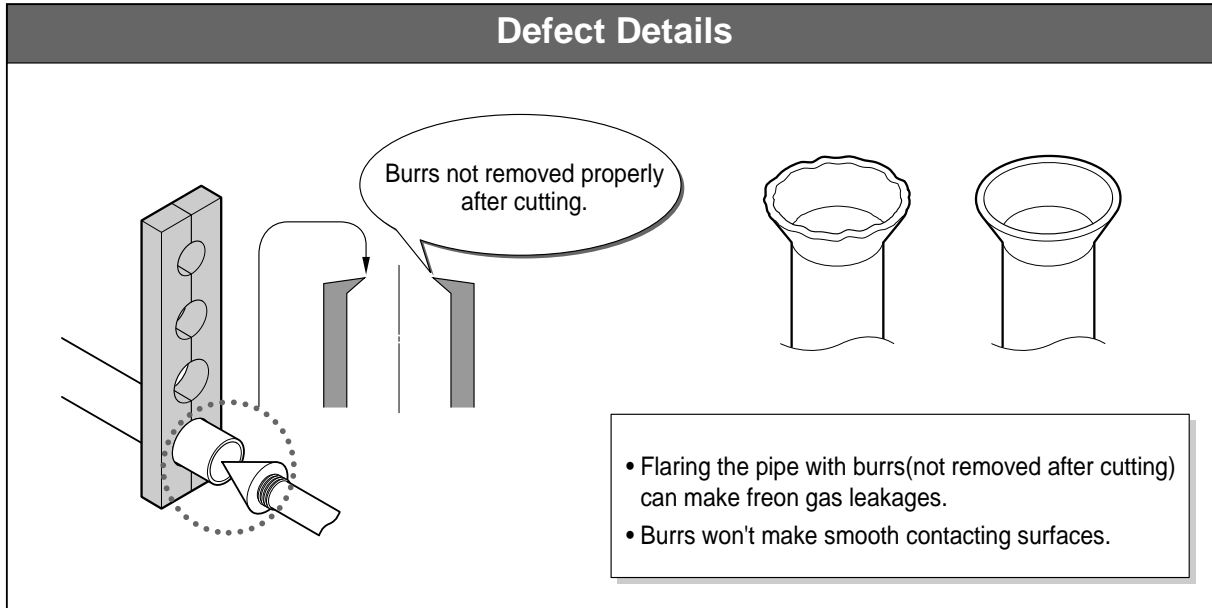
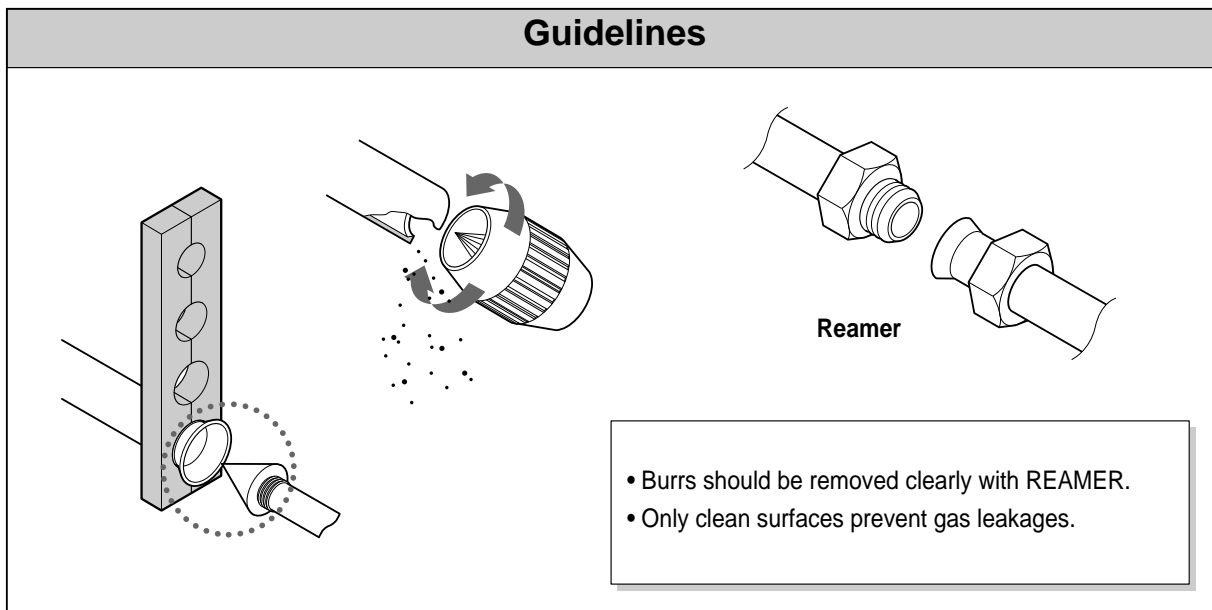


#### Guidelines



**Leakage /Freon - 2/4****Case-2**

<b>Key Factor</b>	Removing burrs of pipes.
<b>Troubles &amp; Causes</b>	Gas Leaks due to the burrs caused by cutting and not removing properly.

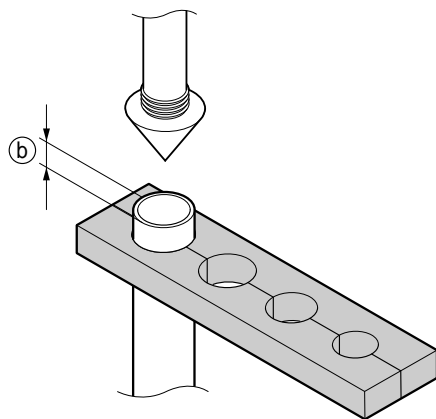
**Defect Details****Guidelines**

## Leakage /Freon - 3/4

## Case-3

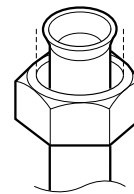
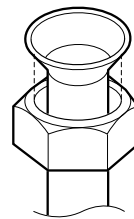
<b>Factor</b>	Flaring works
<b>Troubles &amp; Causes</b>	Gas leaks and connecting troubles on tubings caused by the inaccurate sizing during flaring works.

## Defect Details



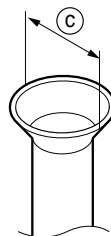
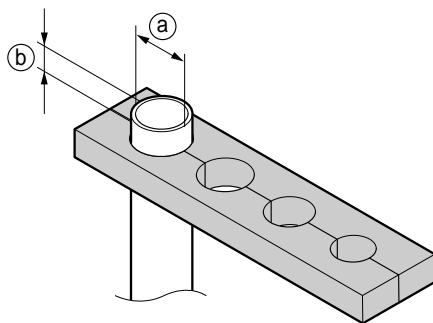
Pipe worked with large sized (b) won't be assembled into the nut.

Pipe worked with small sized (b) will make small contact with nut and gas leak against even a weak shock.



## Guidelines

Recommending sizes for several pipes which make proper connectings.



unit:mm

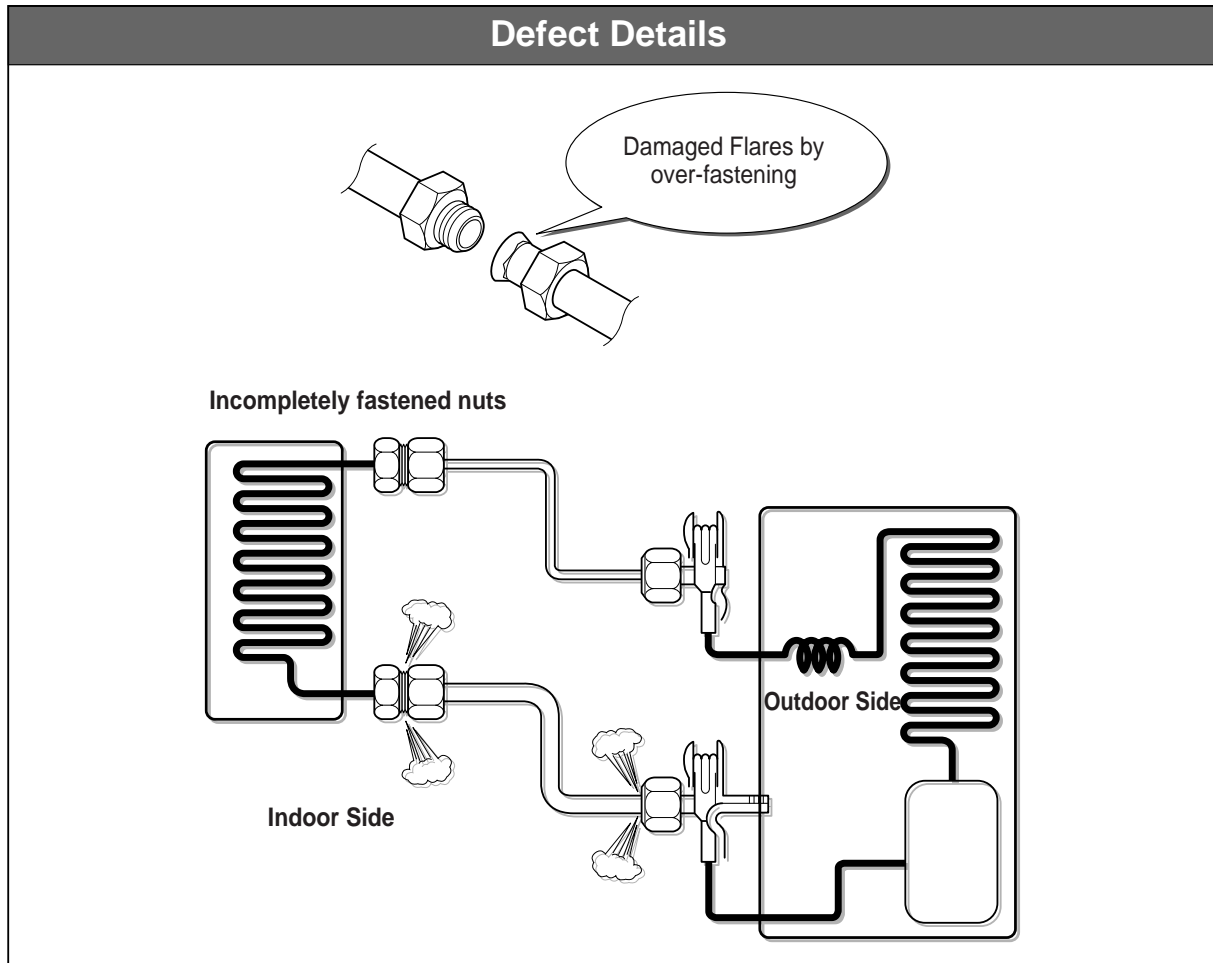
(a) Pipe dia.	(b) Hight	(c) Flared dia.
ø6.35	1.0~1.3	8.3~8.7
ø9.52	0.8~1.0	12.0~12.4
ø12.70	0.5~0.8	15.4~15.8
ø15.8	0.5~0.8	18.6~19.0
ø19.05	0~0.5	23.3~22.9

## Leakage /Freon - 4/4

## Case-4

<b>Factor</b>	Flare nut's fastening.
<b>Troubles &amp; Causes</b>	Damaged flares by over-fastening make gas leakages. And incompletely fastened nuts too.

## Defect Details



## Guidelines

## ■ Fastening Torques of Flare Nuts

Tube Dia.(mm)	Torques (Kg-Cm)
6.35	160~200
9.52	350~450
15.88	450~550
19.05	550~650

## ■ Torque-wrench is required for proper fastenings.

## ■ Check gas leakages of 4 fastened points and welded points with soap bubbles etc.

- High pressure points: amid compressor's running.
- Low pressure points: amid compressor's not running.

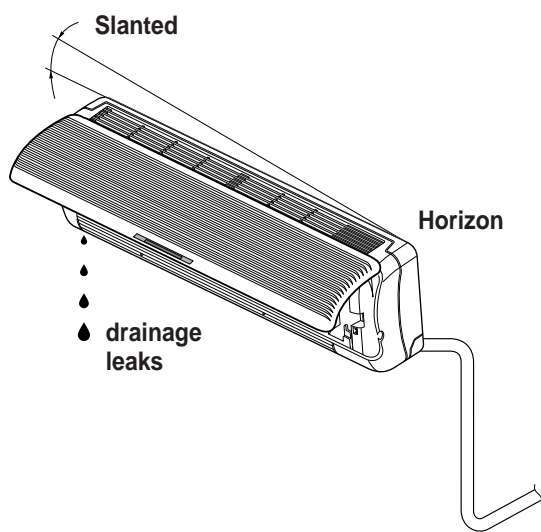
## Leakage / Drainage - 1/5

## Case-5

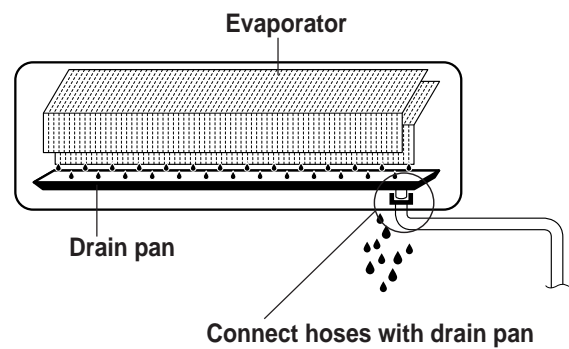
<b>Factor</b>	1. Indoors leveling 2. Drain hose connecting.
<b>Troubles &amp; Causes</b>	Water leaks caused by the inclined indoor unit and the drain hose's bad connecting.

## Defect Details

## 1. Non-leveled indoor



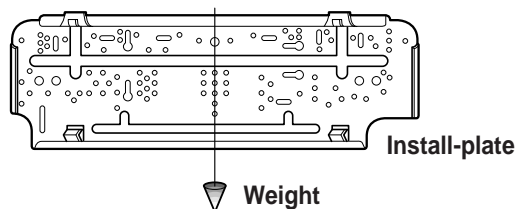
## 2. Mal-linked drain hose



## Guidelines

- Indoors need to be leveled.  
(For a better drain the install-plate may be tilted 2~3° to drain-pan's drain side)

- Confirm the water draining is good or not by poring water into the drain pan.
- Connecting parts of drain pan and hose should be well fixed with bond for waterproofing.



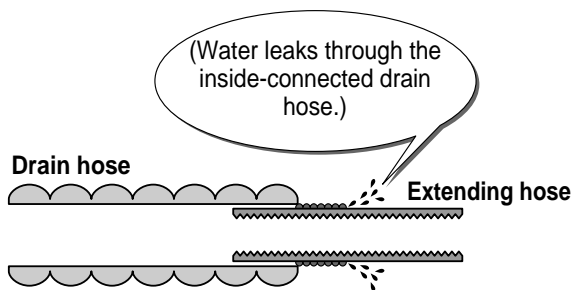
## Leakage / Drainage - 2/5

## Case-6

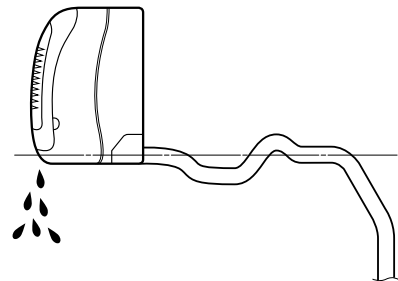
<b>Factor</b>	1. Drain hose extend(adding another hose). 2. Drain hose laying.
<b>Troubles &amp; Causes</b>	Water leaks came from the extending or laying work of drain hose.

## Defect Details

## 1. Improperly extended drain hose.



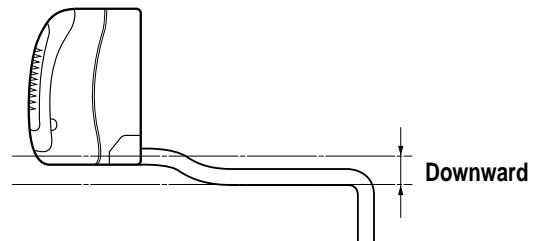
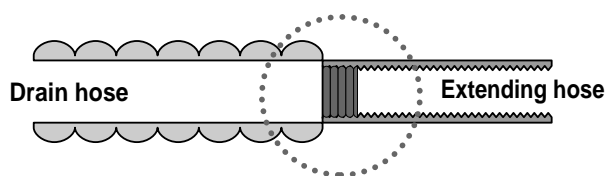
## 2. Curved or upward drain hose.



## Guidelines

- Connect the extending hose outside and seal with bond and finish by taping.

- Install the drain hose straightened and downward.



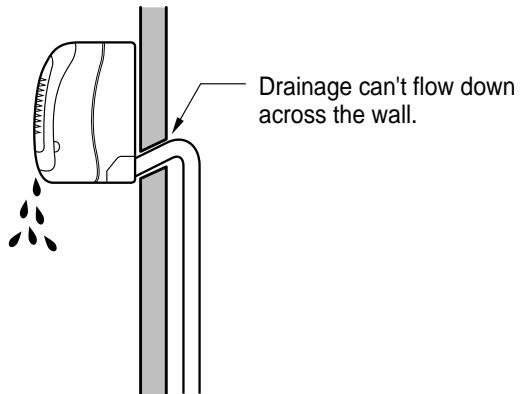
## Leakage / Drainage - 3/5

## Case-7

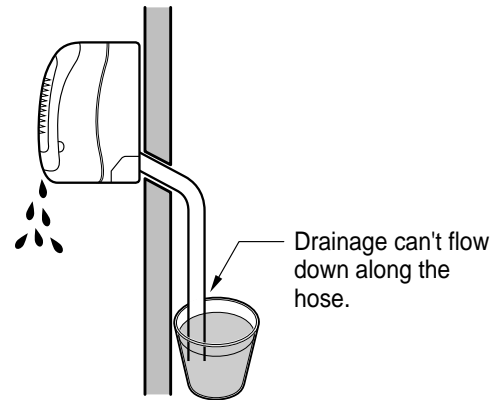
<b>Factor</b>	Drain piping and ending.
<b>Troubles &amp; Causes</b>	Water leaks caused by upwarded drain hose along the wall-through hole and clogged drain hose with water.

## Defect Details

1. Upwarded drain hose along the wall-through hole.



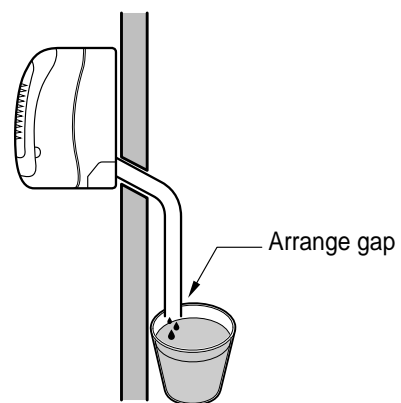
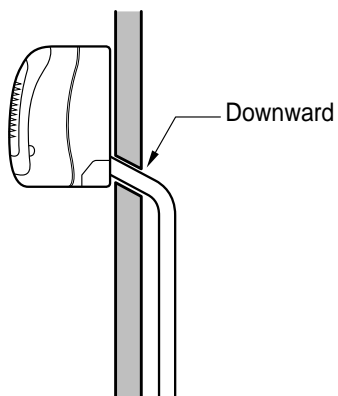
2. Clogged drain hose with water.



## Guidelines

■ The wall-through hole should be downward.

■ Don't make drain hose clogged with water.



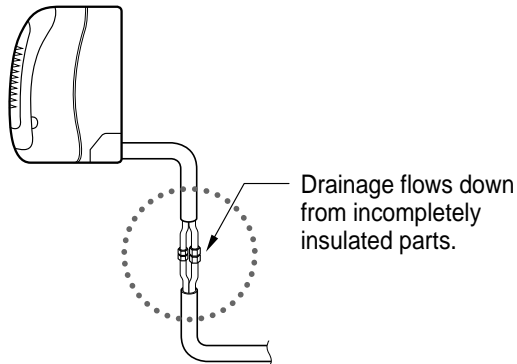
## Leakage / Drainage- 4/5

## Case-8

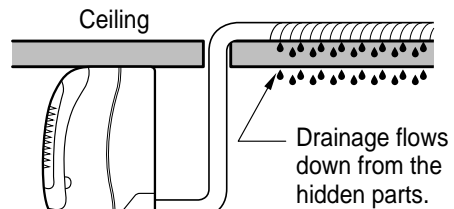
<b>Factor</b>	Insulation work on connecting parts and hidden parts of tubings.
<b>Troubles &amp; Causes</b>	Water leaks caused by wrong insulation works on tubing lines.

## Defect Details

1. Incomplete insulation works on tube connecting parts.

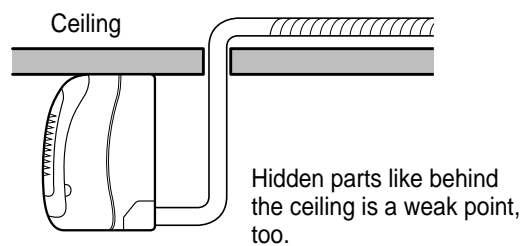
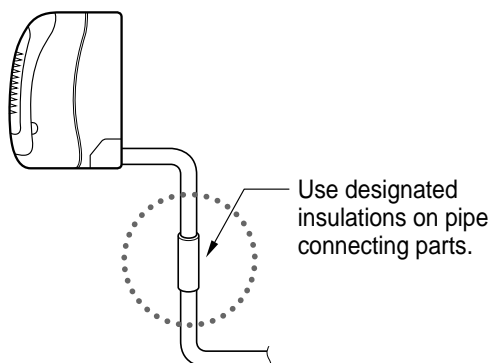


2. Un insulated hidden parts.



## Guidelines

■ Completely insulate weak points like pipe-connection and hidden parts.





## Leakage / Drainage -5/5

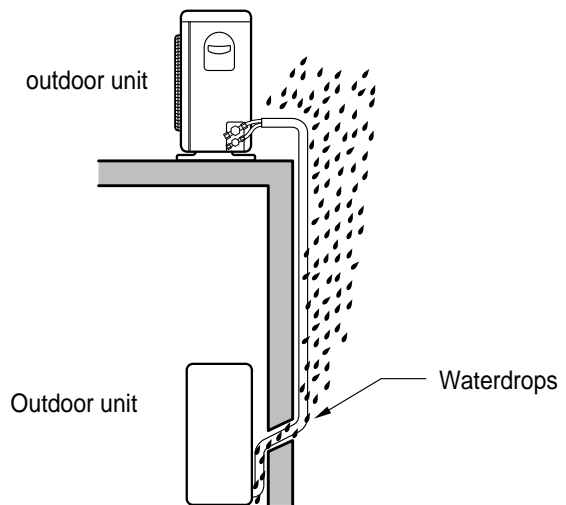
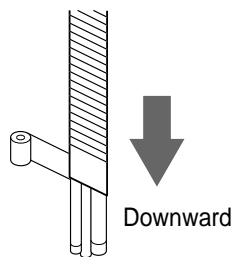
## Case-9

<b>Factor</b>	Tubing and taping works against the waterdrops.
<b>Troubles &amp; Causes</b>	Water leaks by the waterdrops led by wrong tubing and taping works.

## Defect Details

1. Pipe from upside lead waterdrops(rain, drainage etc.) into the room.

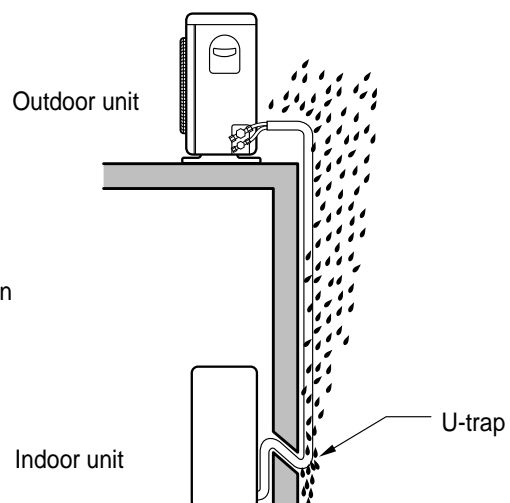
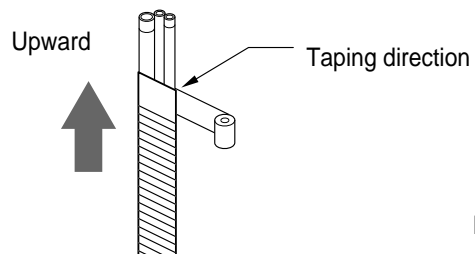
2. Wrong taping direction lead waterdrops into the room too.



## Guidelines

■ Make U-trap against the waterdrop inflow.

■ tapings should be upward form downside.



## Freon shortage

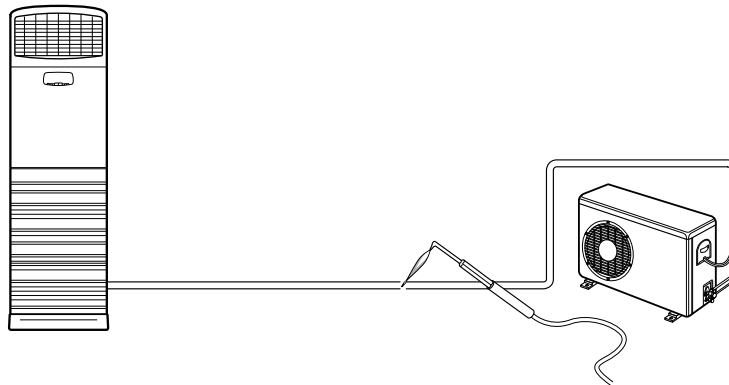
## Case-10

<b>Factor</b>	Tube Extending and freon adding.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by the freon shortage.

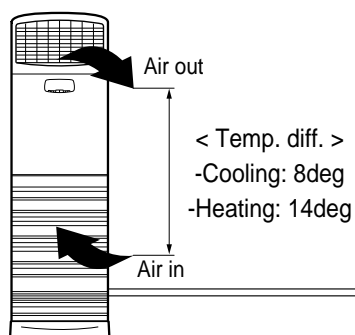
### Defect Details

1. Not adding freon for extended tubings.

2. Gas leakage on welded points for extending tubings.

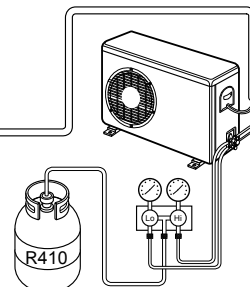


### Guidelines



■ Ensure to add freon after extending tubings.(For a simple check of proper freon quantity, compare the in-and-out air temperature after 15 m in from compressor's running.)

■ Detect the gas leakages before insulation tubing(confirm new welded points).



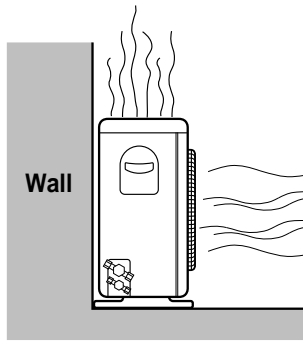
## Cooling capacity - 1/5

## Case-11

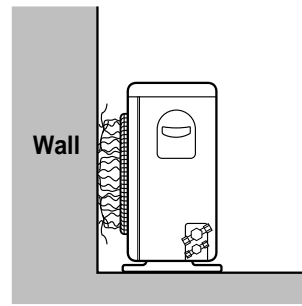
<b>Factor</b>	Spacing for the air flows in split type air conditioners.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by bad air flows.

## Defect Details

1. The space for air intake is too narrow.

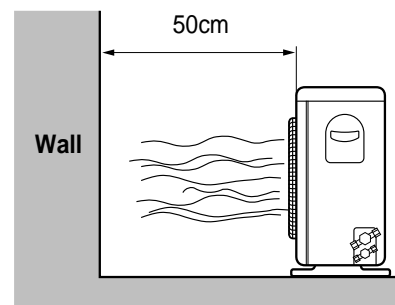
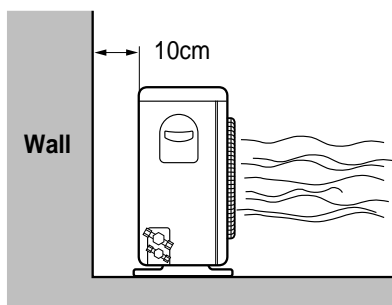


2. The space for air discharge is too narrow.



## Guidelines

■ Ensure the distance needed for air flows.



■ Bad air flows lead cooling capacity's drop.  
 (The product may not run normally as the accumulated heat make compressor stop by protecting device's work like PTC)

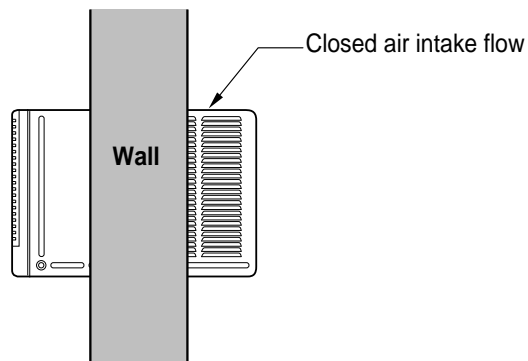
## Cooling capacity - 2/5

## Case-12

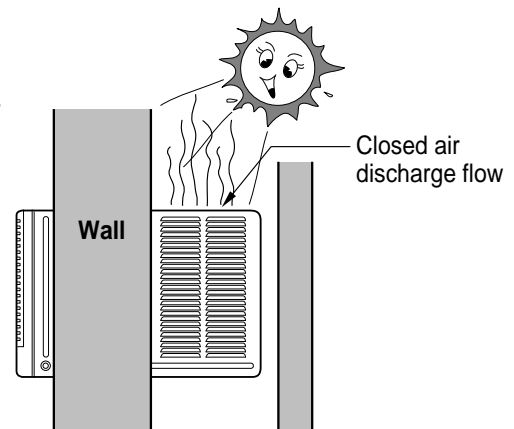
<b>Factor</b>	Spacing for the air flows in window type air conditioners.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by bad air flows.

## Defect Details

1. The space for air intake is too narrow.

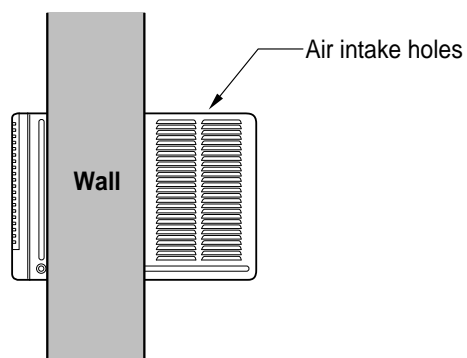


2. The space for air discharge is too narrow.

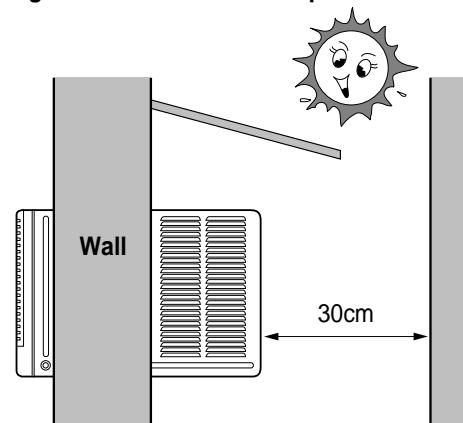


## Guidelines

■ Ensure not to disturb the air intake flows.



■ Ensure not to disturb the air discharge flows. The awning is recommended for a optimum cooling.



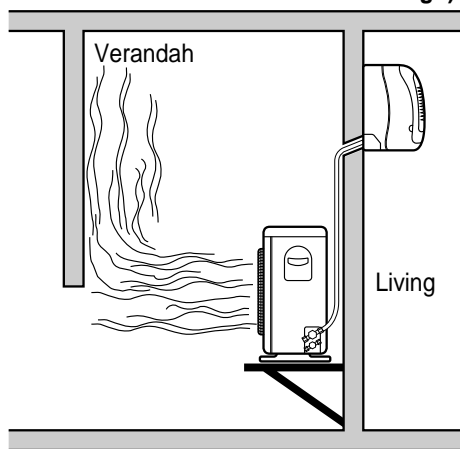
## Cooling capacity - 3/5

## Case-13

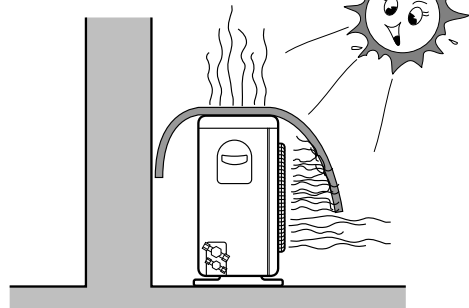
<b>Factor</b>	Improper installation and awning for outdoor unit.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by improper air flows and awning.

## Defect Details

1. The outdoor shut in a verandah does not work normally.  
(The air around the outdoor unit arise too high)

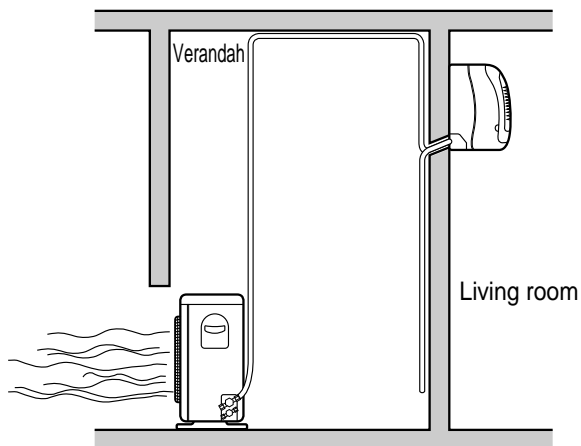


2. Improper awning

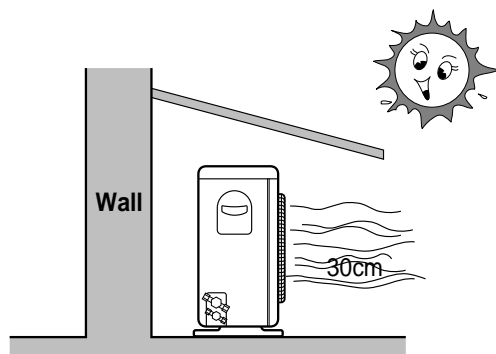


## Guidelines

- Discharged air should be outward and not disturbed.



- Establish a proper awning.

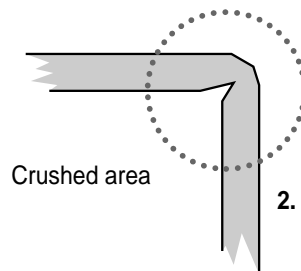


**Cooling capacity - 4/5****Case-14**

<b>Factor</b>	Using crushed tubes and changed tubes.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by the crushed tubes and changed tubes.

**Defect Details**

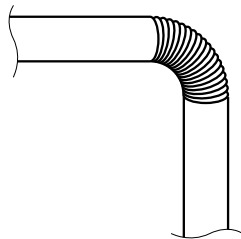
1. Crushed tube by improper bending works.



2. Changed tubing from specified tubes.  
(Not using proper tubes designed for each product.)

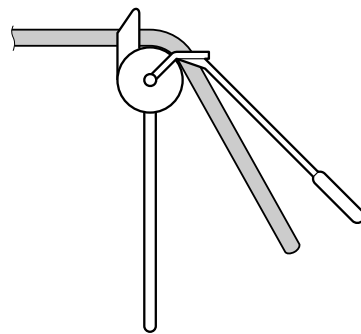
**Guidelines**

- To get a good shaped tube after bending, use specified spring or bending tools.



(Spring for bending)

- In changing air conditioning unit, the tubes too should be changed with proper ones.



(Bending tool)

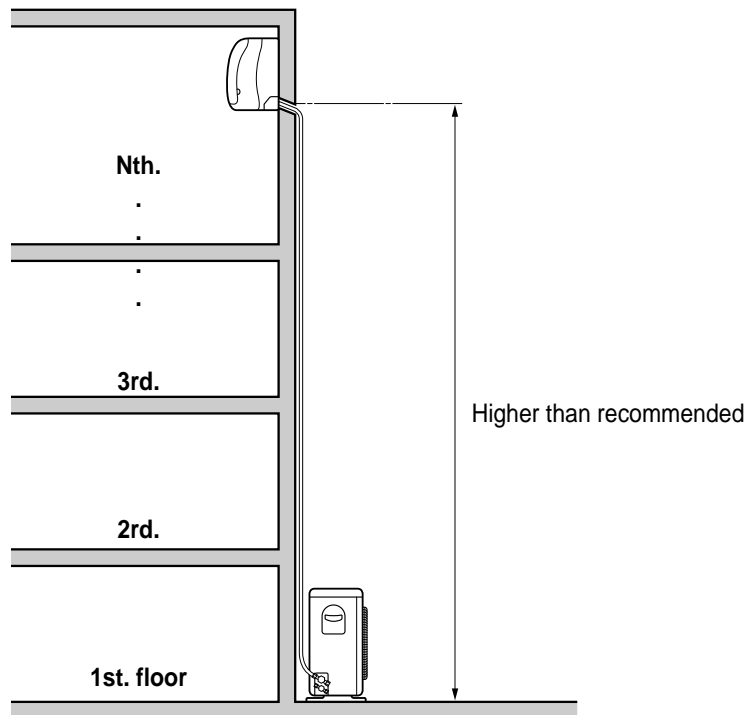
## Cooling capacity - 5/5

## Case-15

<b>Factor</b>	Long distance tubings.
<b>Troubles &amp; Causes</b>	Cooling capacity downs by long distance tubings.

## Defect Details

- Installed too high beyond recommended height difference between indoor and outdoor unit.



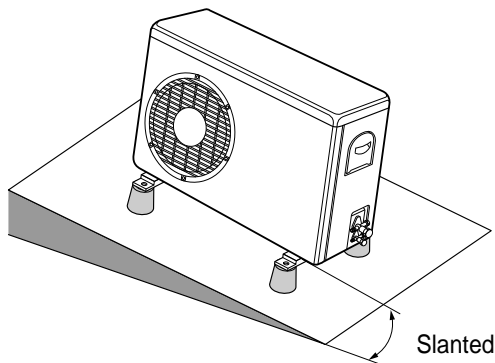
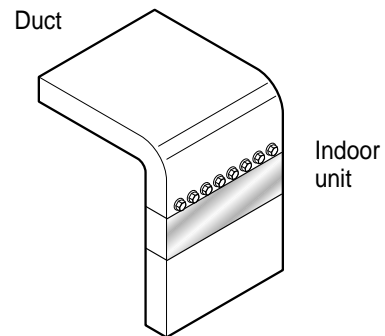
## Guidelines

- Recommending maximum distances between indoor and outdoor unit:

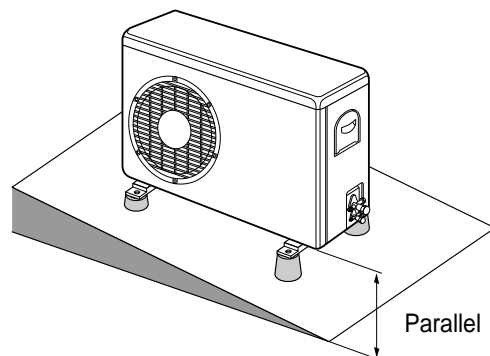
- RAC (Split): vertical=5m, horizontal =10m
- PAC (3.0 HP  $\varnothing$ ): vertical=5m, horizontal=10m
- PAC (3.5 Hp  $\varnothing$ ): vertical=5m, horizontal=20m

**Noise - 1/2****Case-16**

<b>Factor</b>	Unstable installing units.
<b>Troubles &amp; Causes</b>	Noise from the unstably installed parts and units.

**Defect Details****1. Unstable installed outdoor unit.****2. Released fittings and fasteners.****Guidelines**

- Install the unit balanced stably using specified legs etc.



- To prevent vibrations and noises, fasten tightly all the connecting parts for electric heater, steam line, air duct line etc.

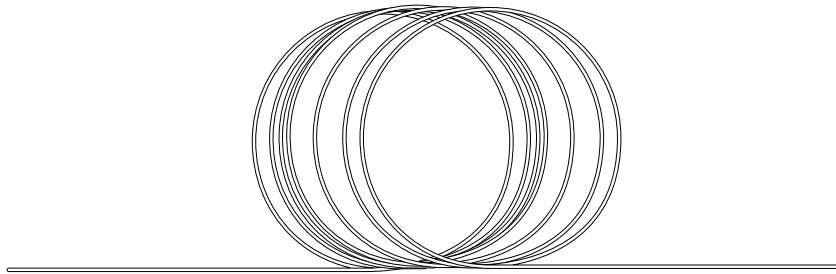


**Noise - 2/2****Case-17**

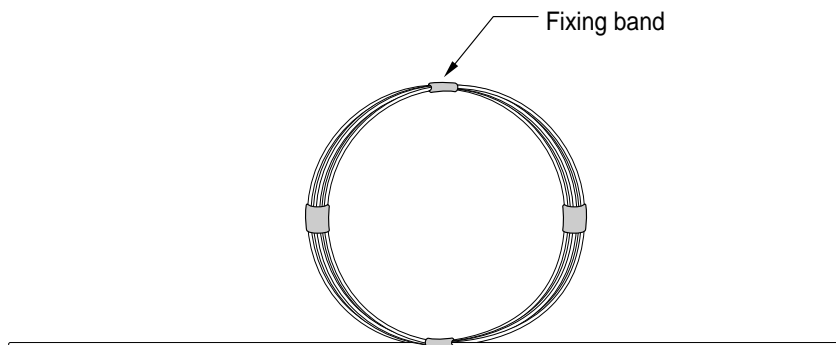
<b>Factor</b>	Unstably fixed tubings.
<b>Troubles &amp; Causes</b>	Noise and vibration form the tubings.

**Defect Details**

- Unstable fixing of surplus tubings will make vibrations and noises during the compressor's running.

**Guidelines**

- Cut away the surplus tubings.  
But if there are any surplus tubings left for some reasons, be sure to fix them stably with fixing bands.



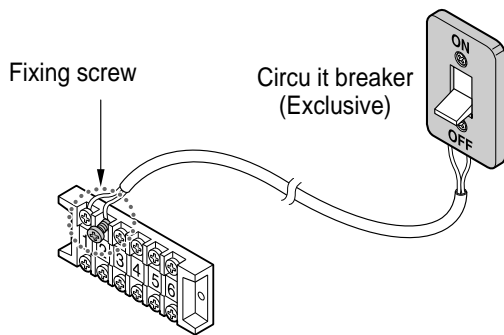
## Wiring mistake -1/2

## Case-18

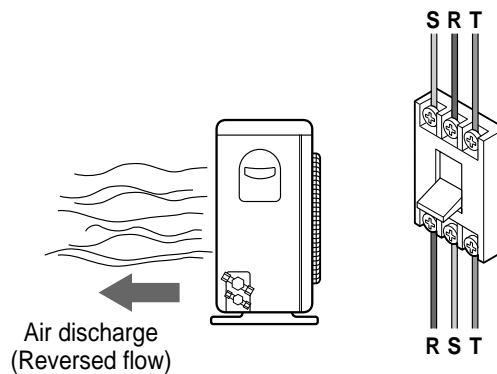
<b>Factor</b>	Wiring in 3 phase electric power lines.
<b>Troubles &amp; Causes</b>	Major electrical problems(not operating properly) by bad wirings.

## Defect Details

1. Not firmly fixed screws of electric power lines.(It can be led to critical accidents)

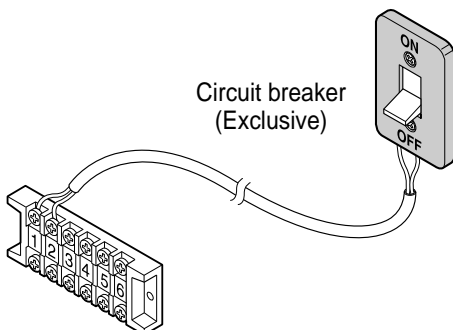


2. Wiring mistake of fan's electric power lines for outdoor.(Fan rotates reversely and the unit will be shutdown with overload.)



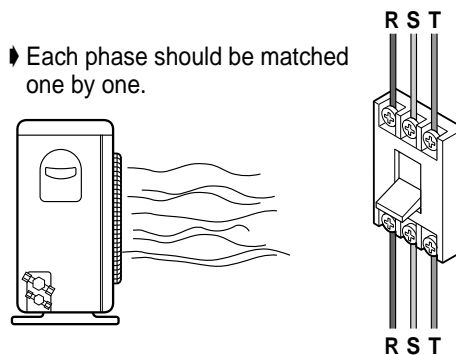
## Guidelines

■ Fix screws firmly.



■ Confirm the R-S-T phase lines respectively.

◆ Each phase should be matched one by one.



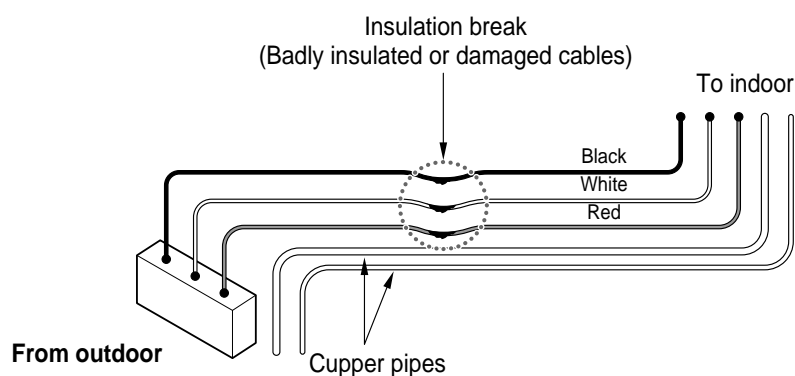
## Wiring mistake -2/2

## Case-19

<b>Factor</b>	Poor electric insulation.
<b>Troubles &amp; Causes</b>	Major electrical problems(not operating properly) by bad insulations of connecting cables.

## Defect Details

■ Poor electric insulations of connecting cables between indoor and outdoor.



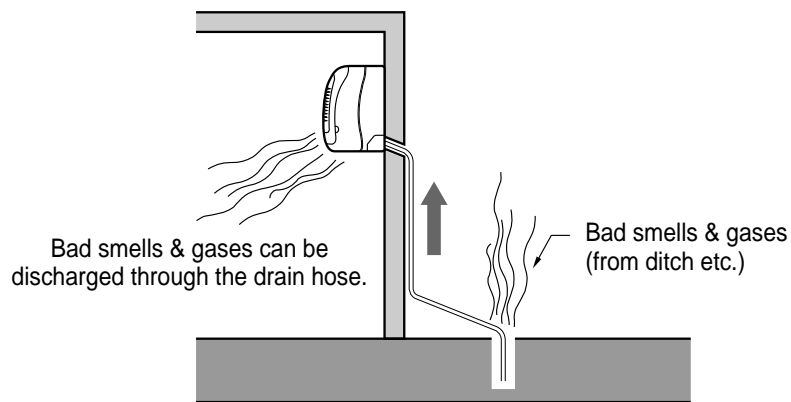
## Guidelines

**How to confirm the correct insulations of connecting cables.**  
**(for the troubles be insulation break)**

- Outdoor runs on main electric power's supply.  
☐ Short between white and red cables.
- Fuse melts on compressor's running.  
☐ Short between red cable and copper pipe.
- Fuse melts on main electric power's supply.  
☐ Short between black (or white) cable and copper pipe.
- Main electric braker operates on electric power's supply.  
☐ Short between black or white cables.
- Main electric braker operates after 10~20 min from electric power's supply.  
☐ Short between black or white cables.  
 (Occurs after drainage break into badly insulated parts)

**Bad smells & Gases****Case-20**

<b>Factor</b>	Bad smells and gases delivered by drain line.
<b>Troubles &amp; Causes</b>	Bad smells and gases from outside(Ex. ditch) are discharged from the system. (Be careful not to be confused as if it's from the system).

**Defect Details****■ Discharging bad smells & gases****Guidelines****■ Add trap on the drain line.**