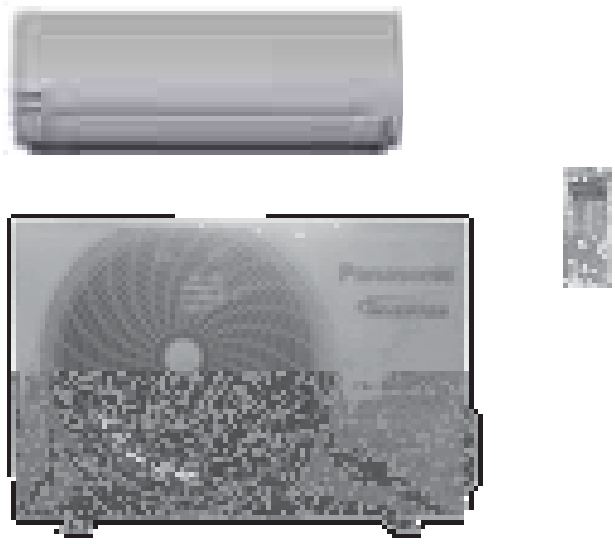
Order No: PAPAGZ121215CE

Service Manual

Air Conditioner



Indoor Unit	Outdoor Unit
CS-UE9PKE	CU-UE9PKE
CS-UE12PKE	CU-UE12PKE

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the products dealt with in this service information by anyone else could result in serious injury or death.

TABLE OF CONTENTS

1. Safety Precautions 3

2. Specification 5

3. Features 7

4. Location of Controls and Components 8

4.1 Indoor Unit 8
4.2 Outdoor Unit 8
4.3 Remote Control 8

5. Dimensions 9

5.1 Indoor Unit 9
5.2 Outdoor Unit 10

6. Refrigeration Cycle Diagram 11

7. Block Diagram 12

8. Wiring Diagram 13

9. Installation Instruction 14

9.1 Select the Best Location 14
9.2 Indoor Unit 15
9.3 Outdoor Unit 17

10. Service Mode 20

10.1 Auto OFF/ON Button 20
10.2 Select Remote Control Transmission Code 20
10.3 Operate and Display of Remote Control 21

11. Operation Control 23

11.1 Basic Function 23
11.2 Indoor Fan Motor Operation 25
11.3 Outdoor Fan Motor Operation 26

12. Protection control 28

12.1 Protection Control For All Operations 28
12.2 Protection Control For Cooling and Soft Dry Operation 30
12.3 Indoor Piping Air Temperature Control (Heating) 31

13. Troubleshooting Guide 33

13.1 Refrigeration cycle system 33

Panasonic®

13.2 Breakdown Self Diagnosis Function.....34
14. Disassembly and Assembly Instructions 36
15. Technical Data 39
15.1 Operation Characteristic.....39
16. Exploded View and Replacement Pars List...47
16.1 Indoor Unit 47
16.2 Outdoor Unit 49

1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before perform any servicing.
- Electrical work must be installed or serviced by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation or servicing due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury
⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to properties.

- The items to be followed are classified by the symbols:

	Symbol with white background denotes item that is PROHIBITED from doing.
	Symbol with dark background denotes item that must be carried out.

- Carry out test run to confirm that no abnormality occurs after the servicing. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ **WARNING**	
	1. Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.
	2. Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
	3. Do not tie up the power supply cord into a bundle by hand. Abnormal temperature rise on power supply cord may happen.
	4. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury. 
	5. Do not sit or step on the unit, you may fall down accidentally. 
	6. Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
	7. When install or relocate air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosio.
	8. Do not modify the machine, part, material during repairing service.
	9. • For R410A models, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials. • Thickness or copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm • It is desirable that the amount of residual oil is less than 40 mg/10 m.
	10. Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
	11. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
	12. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
	13. Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
	14. For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.

	15. Do not use joint cable for indoor/outdoor connection cable. Use the specified Indoor/Outdoor connection cable, refer to installation instructions CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor / outdoor connection. Clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.
	16. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.
	17. This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case equipment breakdown or insulation breakdown.
	18. During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
	19. During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
	20. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
	21. After completion of installation or service, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
	22. Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.
	23. Recommended installation height for indoor unit shall be at least 2.5 m.
	24. The appliance shall be installed in accordance with national wiring regulations.
	25. Indoor unit must be installed close against the wall.
	26. When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
	27. Must not use other parts except original parts describe in catalog and manual.
	28. This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case equipment breakdown or insulation breakdown.
	CAUTION
	1. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
	2. Do not release refrigerant. Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
	3. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
	4. Thermal fuse specification for indoor unit: 250V 3.15A T3.15AL; outdoor unit: 250V 3.15A T3.15AL.
	5. Do not touch the sharp aluminium fin, sharp parts may cause injury. 
	6. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
	7. Select an installation location which is easy for maintenance.
	8. Power supply connection to the air conditioner. Connect the power supply cord of the air conditioner to the mains using one of the following methods. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited. 1) Power supply connection to the receptacle using a power plug. Use an approved 15/16A power plug with earth pin for the connection to the receptacle. 2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
	9. Installation or servicing work. It may need two people to carry out the installation and service work.

2. Specification

Model			Indoor	CS-UE9PKE			CS-UE12PKE		
			Outdoor	CU-UE9PKE			CU-UE12PKE		
Power Supply			Phase, Hz	Single, 50			Single, 50		
			V	230			230		
				Min	Rate	Max	Min	Rate	Max
COOLING	Capacity		kW	0.90	2.50	3.00	0.90	3.50	3.90
			BTU/h	3070	8530	10230	3070	11940	13300
			kcal/h	770	2150	2580	770	3010	3350
	Running Current		A	-	3.30	-	-	4.70	-
	Input Power		W	190	700	1000	170	1010	1200
	EER		W/W	4.74	3.57	3.00	5.29	3.47	3.25
			BTU/hW	16.16	12.18	10.23	18.06	11.82	11.08
	Power Factor		%	92			93		
	Indoor Noise		dB-A(H / L / QLo)	Hi: 42 Lo: 27 QLo: 22			Hi: 42 Lo: 30 QLo: 22		
			Power Level	58			58		
	Outdoor Noise		dB-A (H / L)	Hi: 47 Lo: -			Hi: 48 Lo: -		
			Power Level	63			64		
HEATING	Capacity		kW	0.90	3.30	3.90	0.90	4.25	4.90
			BTU/h	3070	11250	13290	3070	14490	16700
			kcal/h	770	2840	3350	770	3660	4210
	Running Current		A	-	3.80	-	-	5.20	-
	Input Power		W	170	820	1150	150	1120	1460
	COP		W/W	5.29	4.02	3.39	6.00	3.79	3.35
			BTU/hW	18.06	13.71	11.55	20.47	12.94	11.43
	Power Factor		%	93			93		
	Indoor Noise		dB-A(H / L / QLo)	Hi: 42 Lo: 27 QLo: 25			Hi: 42 Lo: 33 QLo: 25		
			Power Level	58			58		
	Outdoor Noise		dB-A (H / L)	Hi: 48 Lo: -			Hi: 50 Lo: -		
			Power Level	64			66		
Max Current (A) / Max Input Power (W)				6.30 / 1.350k			8.40 / 1.600k		
Starting Current (A)				4.00			5.40		
Standby Power (W)				0.9			0.9		
Compressor	Type			Hermetic Motor compressor			Hermetic Motor compressor		
	Motor Type			BRUSHLESS (6 poles)			BRUSHLESS (6 poles)		
	Output Power		W	750			900		
Indoor Fan	Type			Cross-flow fan			Cross-flow fan		
	Material			AS(GF30%)			AS(GF30%)		
	Motor Type			DC (8 poles)			DC (8 poles)		
	Input Power		W	24.48			24.48		
	Output Power		W	30			30		
	Speed (COOLING)	Q-Lo	rpm	600			620		
		Lo	rpm	700			790		
		Me	rpm	920			970		
		Hi	rpm	1150			1150		
	Speed (HEATING)	Q-Lo	rpm	650			680		
		Lo	rpm	710			830		
		Me	rpm	830			950		
		Hi	rpm	1040			1150		
Outdoor Fan	Type			Propeller			Propeller		
	Material			PP			PP		
	Motor Type			DC (8 poles)			DC (8 poles)		
	Input Power		W	61.16			118.36		
	Output Power		W	40			40		
	Speed	Hi(C)	rpm	700			700		
		Hi(H)	rpm	800			830		
Moisture Removal			L/h (Pt/h)	1.4 (2.4)			2.0 (3.5)		
Indoor Airflow (COOLING)	Q-Lo		m^3/min (ft^3/m)	6.52(230)			6.74 (238)		
	Lo		m^3/min (ft^3/m)	7.61(268)			8.59 (303)		
	Me		m^3/min (ft^3/m)	10.0(353)			10.54 (372)		
	Hi		m^3/min (ft^3/m)	12.5 (441)			12.5 (441)		

Indoor Airflow (HEATING)	Q-Lo	m^3/min (ft^3/m)	6.94 (245)		7.39 (261)	
	Lo	m^3/min (ft^3/m)	7.58 (268)		9.02 (318)	
	Me	m^3/min (ft^3/m)	8.86 (313)		10.33 (364)	
	Hi	m^3/min (ft^3/m)	11.1 (392)		12.5 (441)	
Outdoor Airflow	Hi (Cooling)	m^3/min (ft^3/m)	31.7 (1119)		32.6 (1151)	
	Hi (Heating)	m^3/min (ft^3/m)	30.7 (1084)		31.6 (1116)	
Refrigeration Cycle	Control Device		Capillary Tube		Capillary Tube	
	Refrigerant Oil	cm^3	FV50S (280)		FV50S (320)	
	Refrigerant Type	g (oz)	R410A, 770 (27.2)		R410A, 860 (30.3)	
Dimension	Height(I/D / O/D)	mm (inch)	290 (11-15/32)	540 (21-1/4)	290 (11-15/32)	540 (21-1/4)
	Width (I/D / O/D)	mm (inch)	848 (33-13/32)	780 (30-45/64)	848 (33-13/32)	780 (30-45/64)
	Depth (I/D / O/D)	mm (inch)	213 (8-3/8)	289 (11-3/8)	213 (8-3/8)	289 (11-3/8)
Weight	Net (I/D / O/D)	kg (lb)	8.0 (18)	23 (51)	8.0 (18)	26 (57)
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 9.52 (3/8)		6.35 (1/4) / 9.52 (3/8)	
	Standard length	m (ft)	5 (16.4)		5 (16.4)	
	Length range (min – max)	m (ft)	3 (9.8) ~ 15 (49.2)		3 (9.8) ~ 15 (49.2)	
	I/D & O/D Height different	m (ft)	10 (32.8)		10.0 (32.8)	
	Additional Gas Amount	g/m (oz/ft)	20 (0.2)		20 (0.2)	
	Length for Additional Gas	m (ft)	7.0 (23.0)		7.0 (23.0)	
Drain Hose	Inner diameter	mm	16		16	
	Length	mm	500		500	
Indoor Heat Exchanger	Fin Material		Pre coated		Pre coated	
	Fin Type		Slit Fin		Slit Fin	
	Row x Stage x FPI		2 x 15 x 19		2 x 15 x 19	
	Size (W x H x L)	mm	610 x 315 x 25.4		610 x 315 x 25.4	
Outdoor Heat Exchanger	Fin Material		Pre coated		Pre coated	
	Fin Type		Slit Fin		Slit Fin	
	Row x Stage x FPI		2 x 24 x 19		2 x 24 x 19	
	Size (W x H x D)	mm	702.8(674.3) x 504 x 18.19		777.9(749.3) x 504 x 18.19	
Air Filter	Material		PP-12X13H2		PP-12x13H2	
	Type		One-touch		One-touch	
Power Supply			Indoor		Indoor	
Power Supply Cord		A	10A		10A	
Thermostat			-		-	
Protection Device			-		-	

TEMPERATURE (℃)		COOLING		HEATING		COOLING		HEATING	
		DB	WB	DB	WB	DB	WB	DB	WB
Indoor Operation Range	Maximum	32	23	30	-	32	23	30	-
	Minimum	16	11	16	-	16	11	16	-
Outdoor Operation Range	Maximum	43	26	24	18	43	26	24	18
	Minimum	16	11	-10	-6	16	11	-10	-6

1. Cooling capacities are based on indoor temperature of 27℃ Dry Bulb (80.6℉ Dry Bulb), 19℃ Wet Bu lb (66.2℉ Wet Bulb) and outdoor air temperature of 35℃ Dry B ulb (95.0℉ Dry Bulb), 24℃ Wet Bulb (75.2℉ Wet Bu lb).
2. Heating capacities are based on indoor temperature of 20℃ Dry Bulb (68℉ Dry Bulb) and outdoor ai r temperature of 7℃ Dry Bulb (44.6℉ Dry Bulb), 6℃ Wet Bulb (42.8℉ Wet Bulb).
3. Specifications are subjected to change without prior notice for further improvement.

3. Features

- Inverter Technology
  - Wider output power range
  - Energy saving
  - Quick Cooling
  - More precise temperature control

- Long Installation Piping
  - CS/CU-UE9/12PKE, long piping up to 15 meters.

- Easy to use remote control

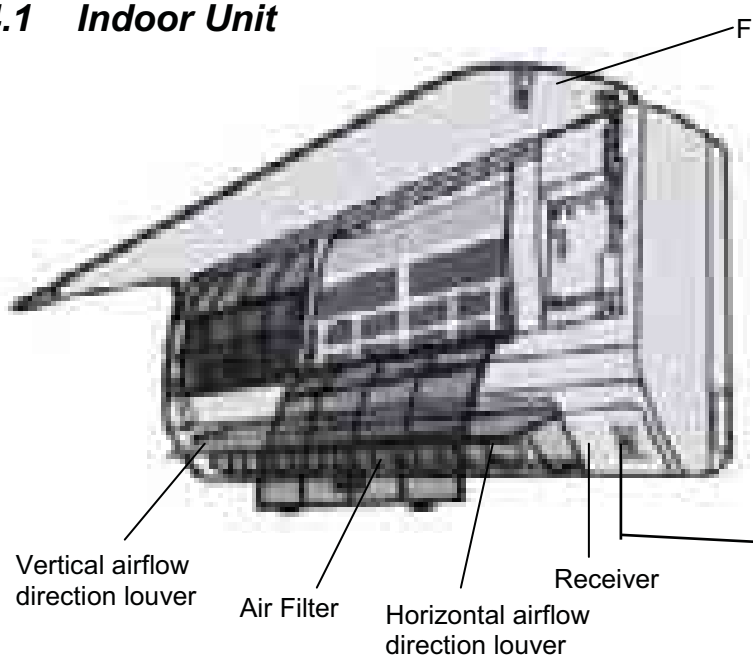
- Quality Improvement
  - Random auto restart after power failure for safety restart operation
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - Inner protector to protect compressor

- Operation Improvement
  - Quiet mode to reduce the indoor unit operating sound
  - Powerful mode to reach the desired room temperature quickly
  - 12-hour timer

- Serviceability Improvement
  - Breakdown Self Diagnosis Function.

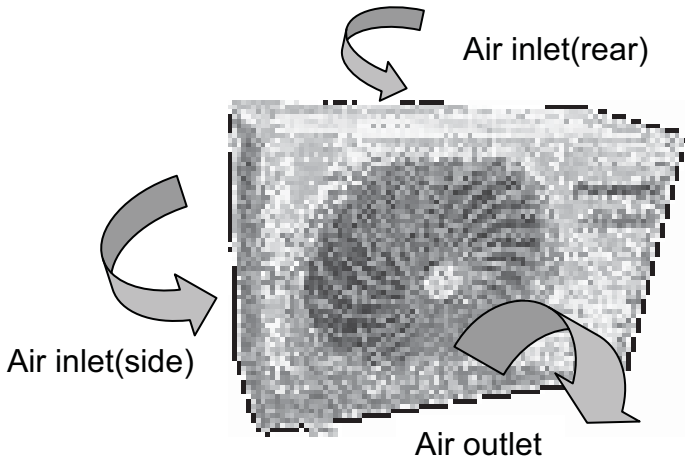
4. Location of Controls and Components

4.1 Indoor Unit

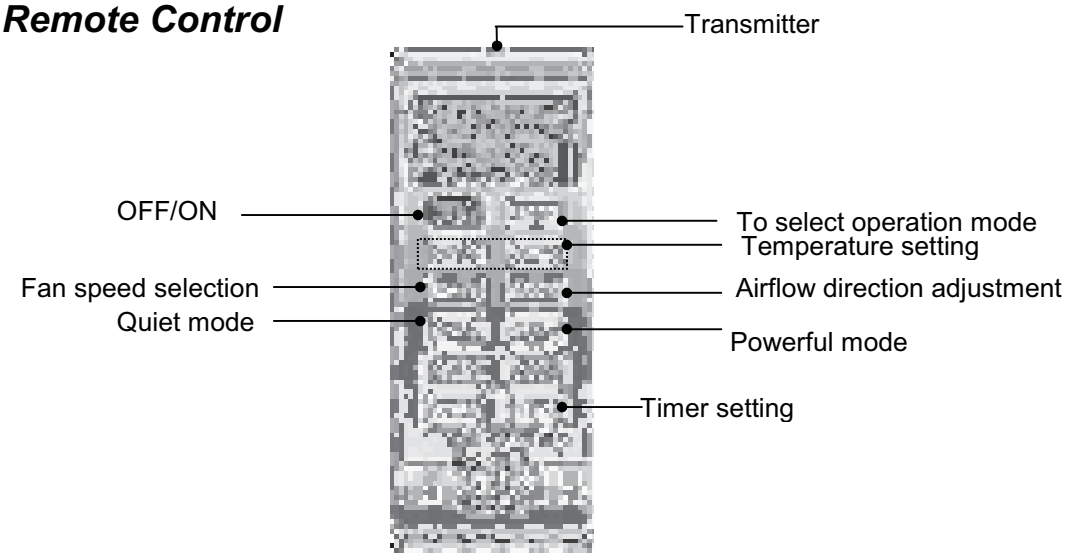


INDICATOR	POWER	GREEN
	TIMER	ORANGE
	QUIET	GREEN
	POWERFUL	RED

4.2 Outdoor Unit



4.3 Remote Control

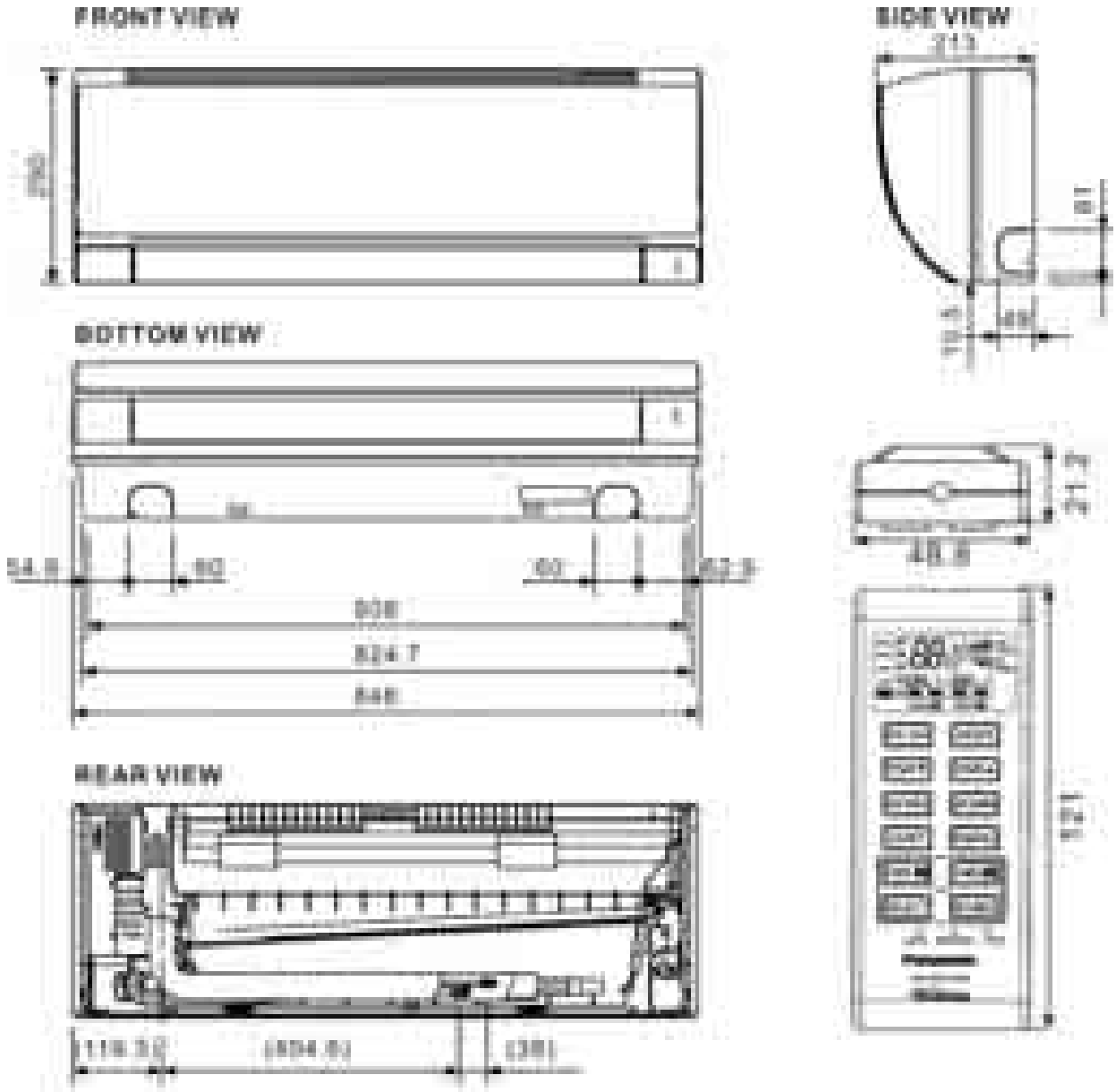


- For normal operation, ERROR RESET and CHECK button is not in use.
- Press RESET button to restore the remote control's default setting.

5. Dimensions

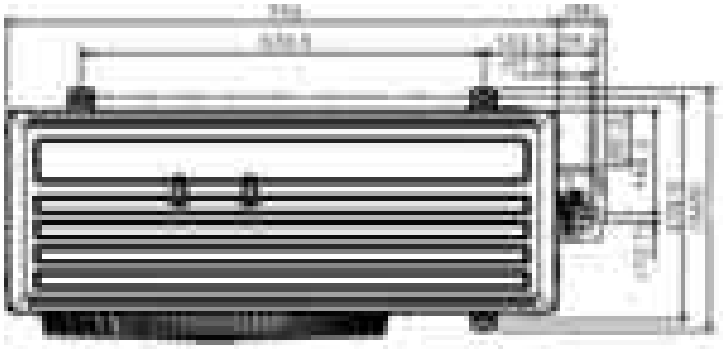
5.1 Indoor Unit

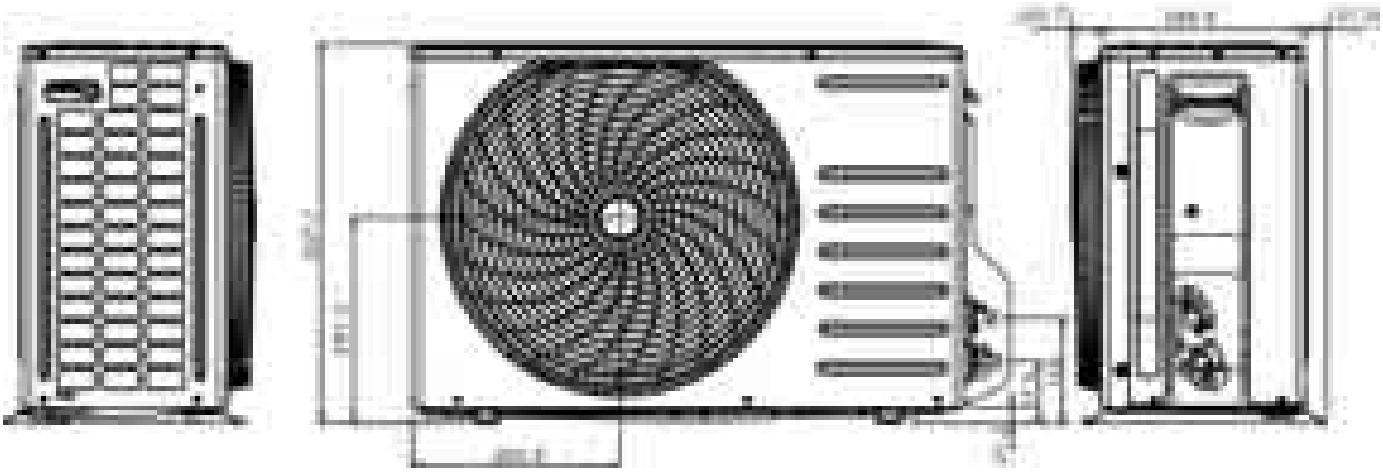
Unit：mm



5.2 Outdoor Unit

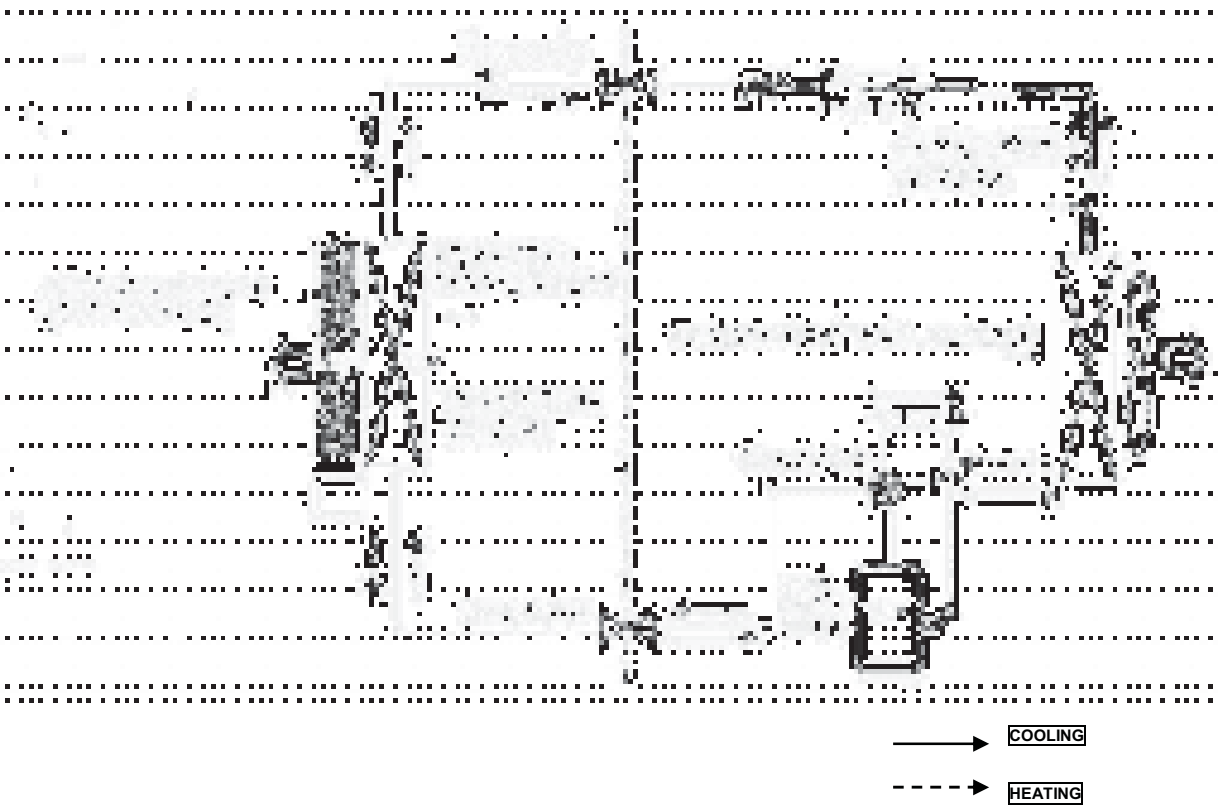
Unit: mm



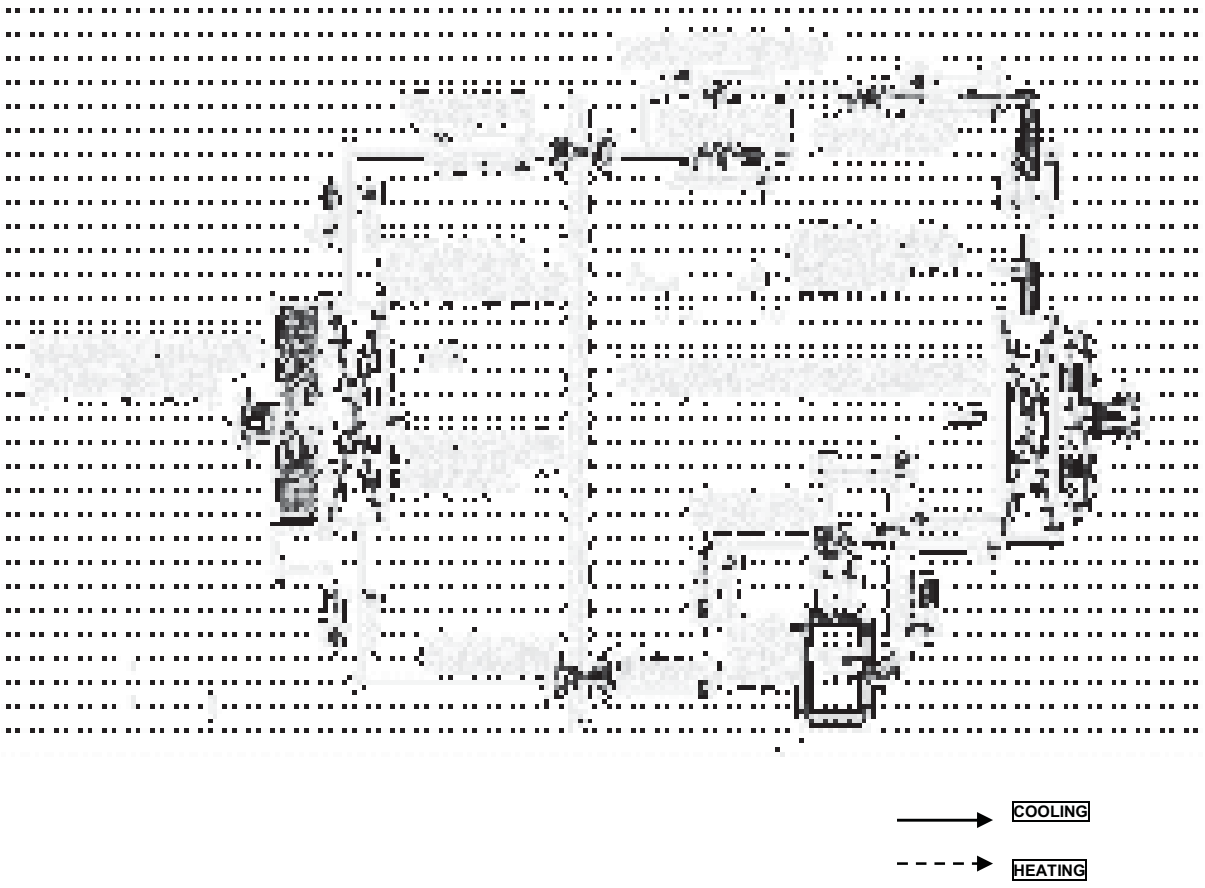


6. Refrigeration Cycle Diagram

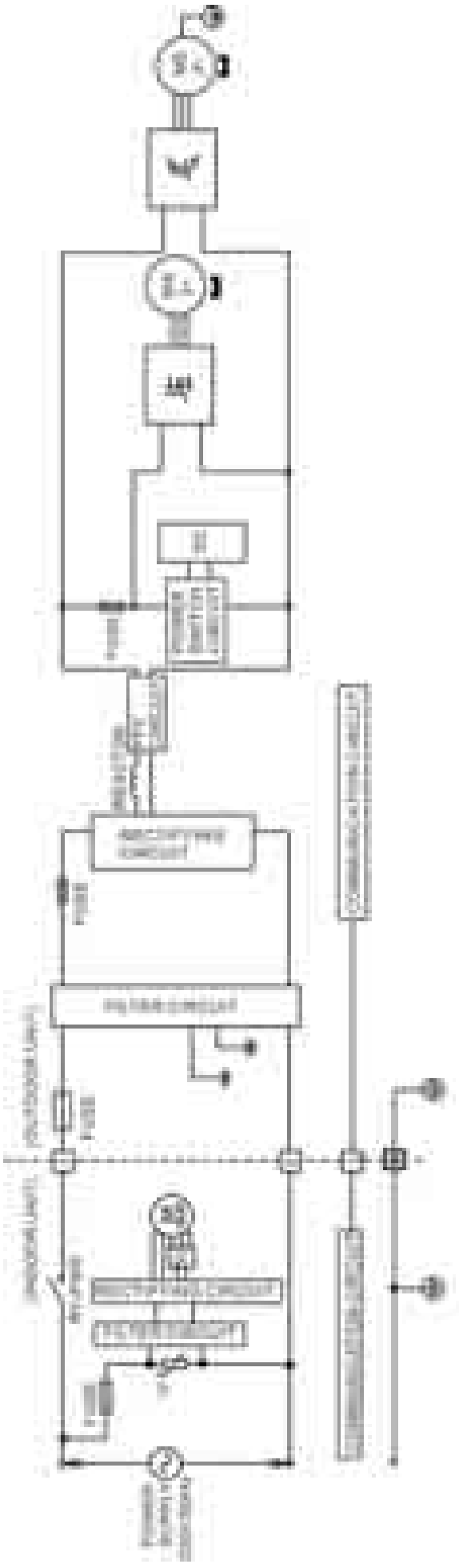
CS/CU-UE9PKE



CS/CU-UE12PKE

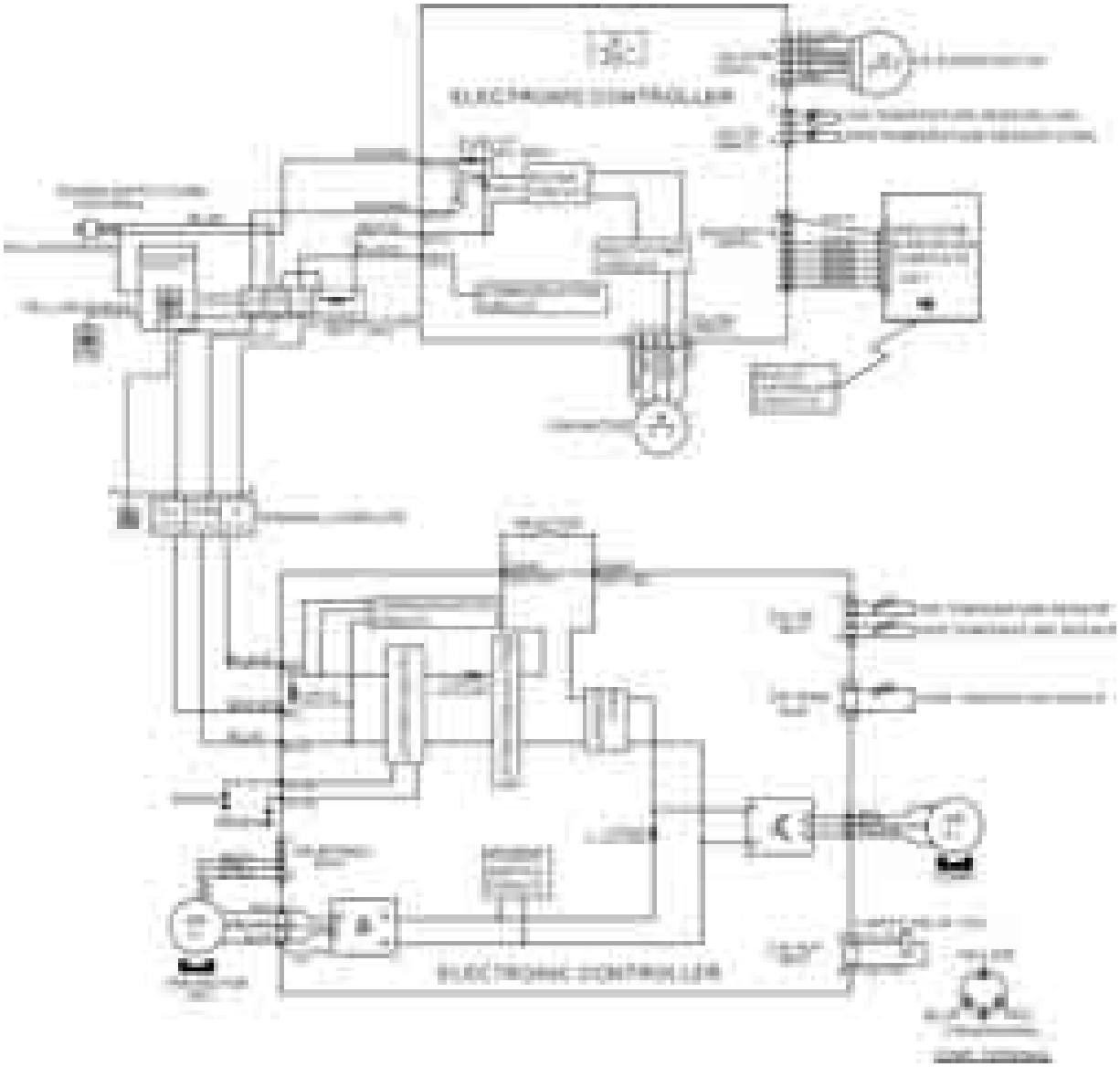


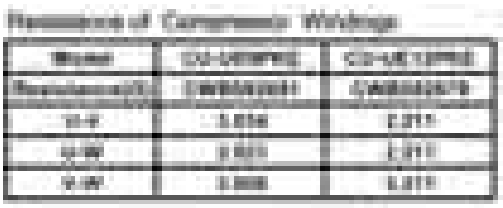
7. Block Diagram

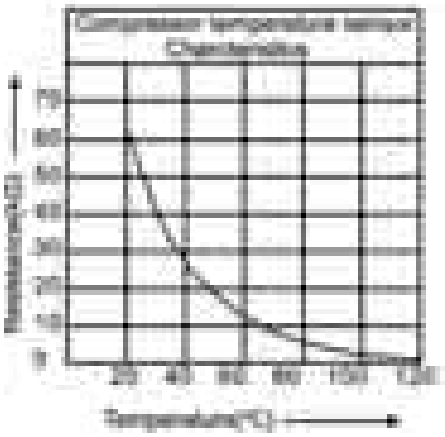


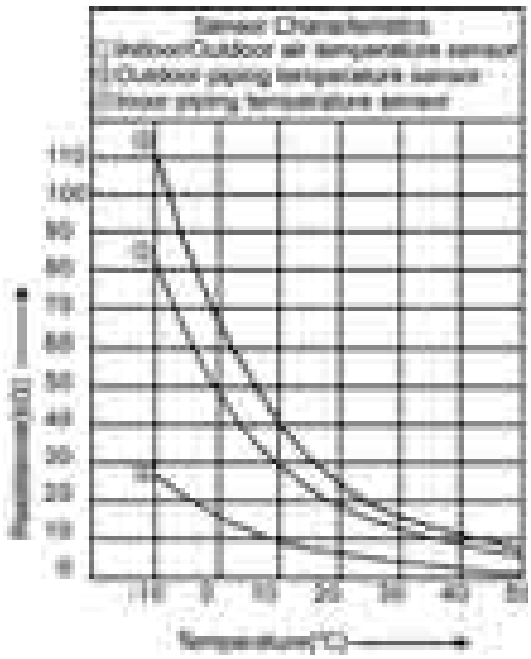
8. Wiring Diagram

CS/CU-UE9PKE CS/CU-UE12PKE









9. Installation Instruction

9.1 Select the Best Location

9.1.1 Indoor Unit

- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit shall be at least 2.5m.

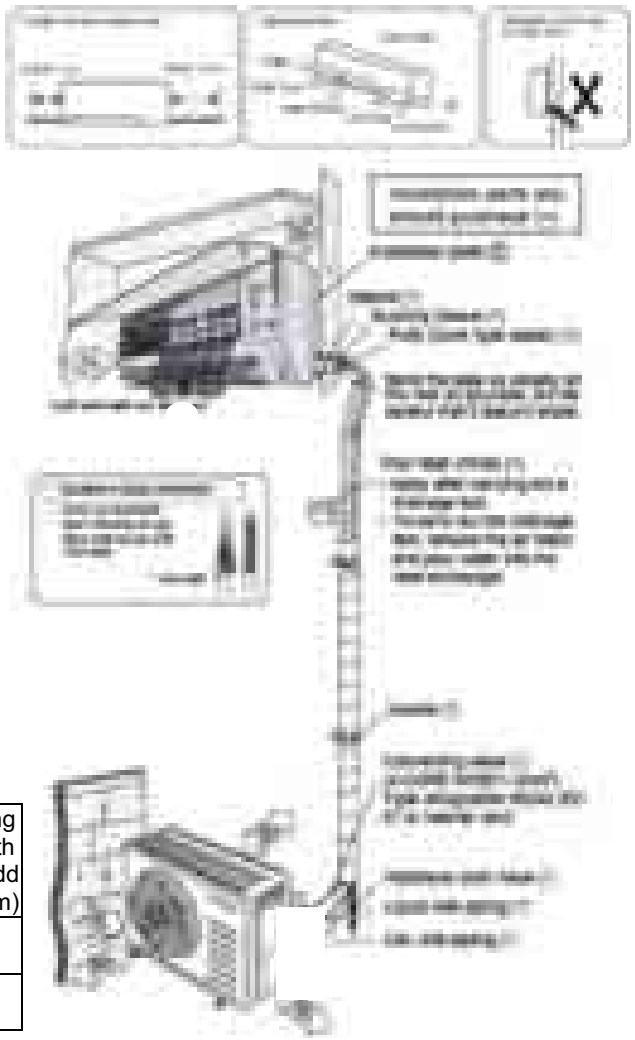
9.1.2 Outdoor Unit

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the rated length, additional refrigerant should be added as shown in the table below:

Model	Piping size		Rated Length (m)	Max Elevation (m)	Min Piping Length (m)	Max Piping Length (m)	Additional Refrigerant (g/m)	Piping length for add gas(m)
	Gas mm (inch)	Liquid mm (inch)						
UE9PKE	9.52 (3/8”)	6.35 (1/4")	5	10	3	15	20	7
UE12PKE	9.52 (3/8”)	6.35 (1/4”)	5	10	3	15	20	7

Example: If the unit is installed at a 10m distance, the quantity of additional refrigerant should be 60g……(10-7)m x 20g/m = 60g

9.1.3 Indoor/Outdoor Unit Installation Diagram



*This illustration is for explanation purposes only. The indoor unit will actually face a different way.

9.2 Indoor Unit

9.2.1 How to Fix Installation Plate

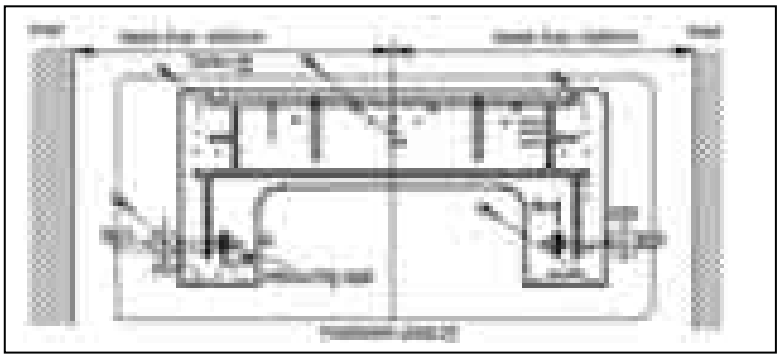
The mounting wall is strong and solid enough to prevent it from the vibration.

The centre of installation plate should be at more than 450 mm at right and left of the wall.

The distance from installation plate edge to ceiling should more than 175mm.

From installation plate left edge to unit's left side is 178 mm.

From installation plate right edge to unit's right side is 182 mm.



: For left side piping, piping connection for liquid should be about 136 mm from this line.
: For left side piping, piping connection for gas should be about 168 mm from this line.

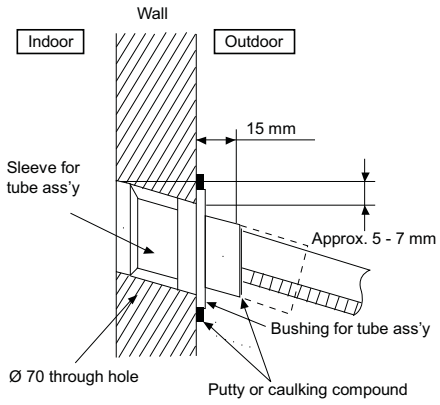
1 Mount the installation plate on the wall with 5 screws or more. (If mounting the unit on the wall, consider using anchor bolts.) Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
2 Drill the piping plate hole with ø70 mm hole-core drill.
   - Put measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 120 mm for left and right hole respectively.
   - Drill the piping plate hole at either the right or left and the hole should be slightly slanted to the outdoor side.

9.2.2 To Drill a Hole in the Wall and Install a Sleeve of Piping

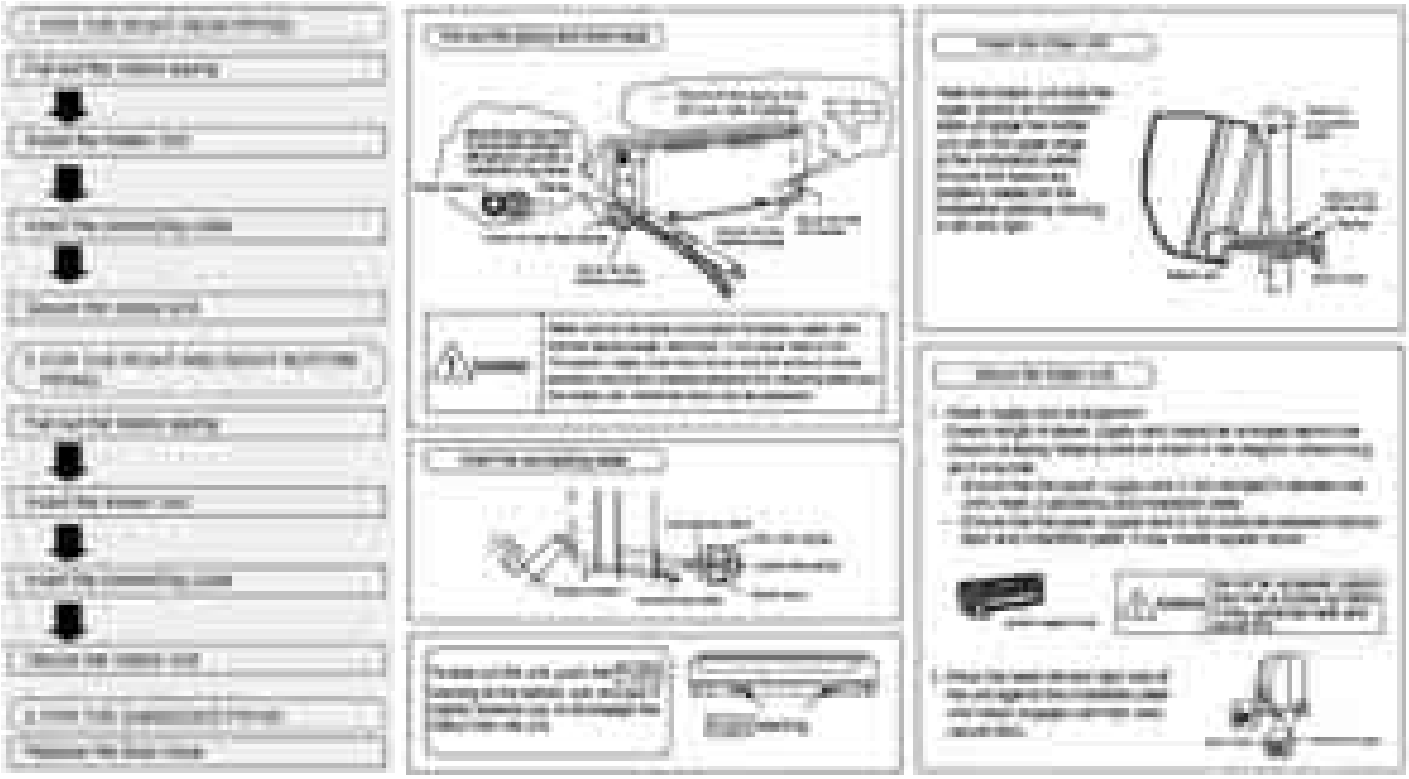
1 Insert the piping sleeve to the hole.
2 Fix the busing to the sleeve.
3 Cut the sleeve until it extrudes about 15mm from the wall

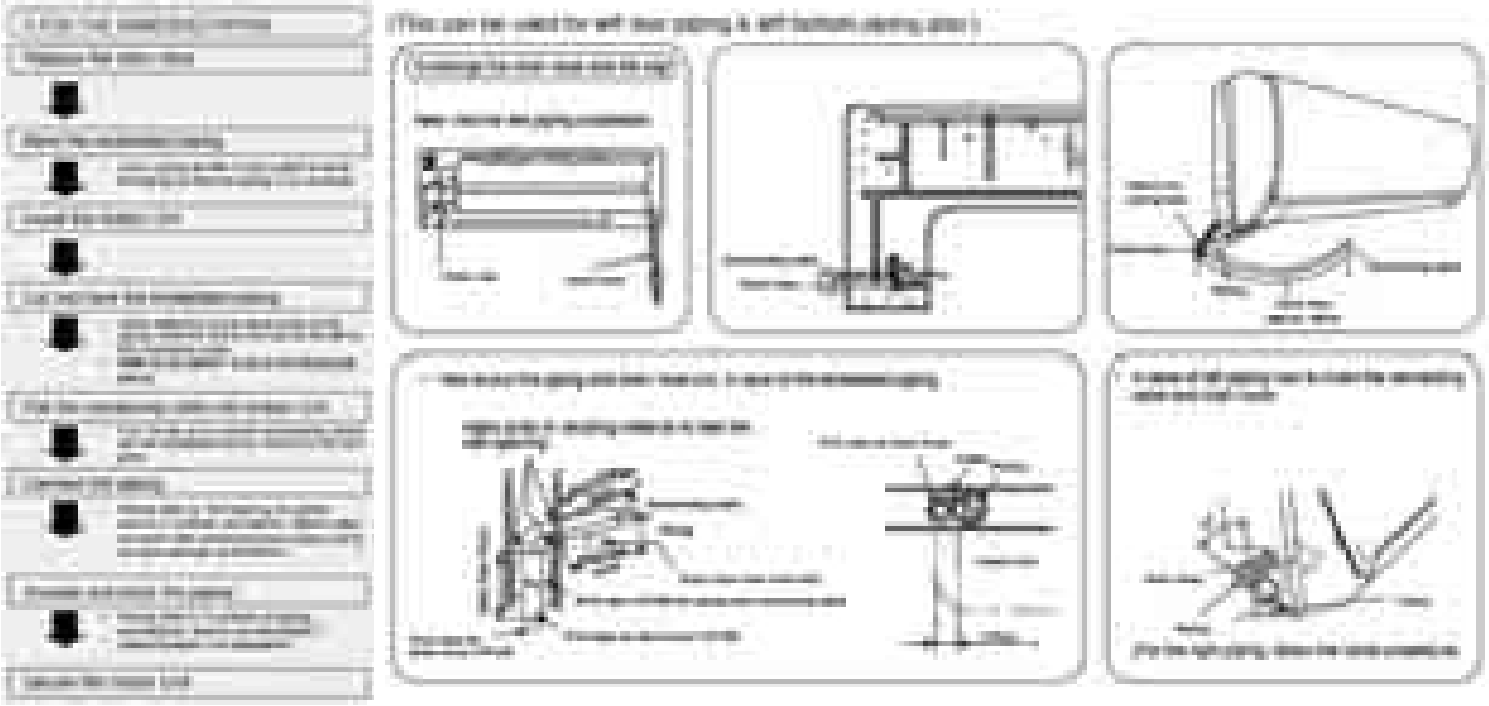
Caution
When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4 Finish by sealing the sleeve with putty or caulking compound at the final stage.



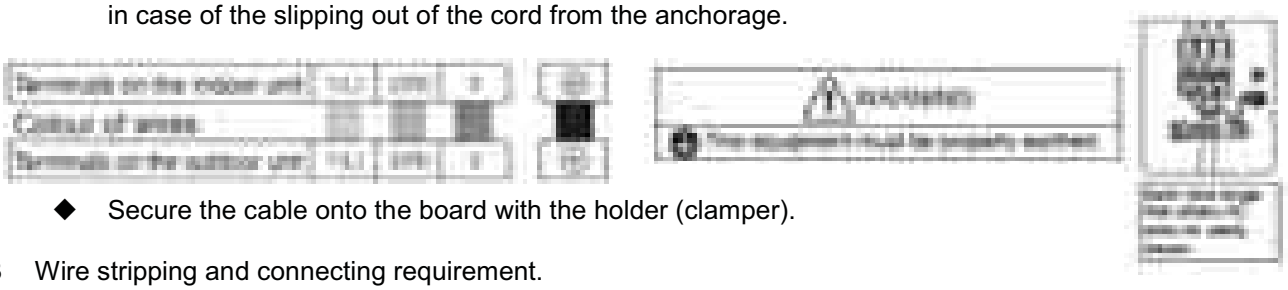
9.2.3 Indoor Unit Installation





9.2.4 Connect the Cable to the Indoor Unit

1 The inside and outside connecting cable can be connected without removing the front grille.
2 Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4x 1.5mm^2 flexible cords, type designation 245 IEC 57 or heavier cord.
- ◆ Ensure the color of wires of outdoor unit and the terminal numbers are the same to the indoor's respectively.
- ◆ Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.



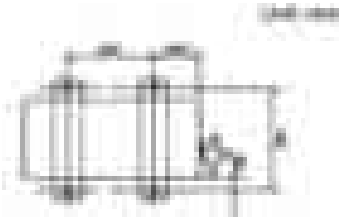
- ◆ Secure the cable onto the board with the holder (clamper).

3 Wire stripping and connecting requirement.

9.3 Outdoor Unit

9.3.1 Install the Outdoor Unit

- After selecting the best location, start installation according to indoor/outdoor unit installation diagram.
  1 Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
  2 When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.

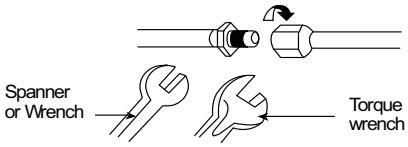


9.3.2 Connecting the Piping

9.3.2.1 Connecting the piping to indoor unit

Please make flare after inserting flare nut (locate at joint portion, of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping
- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



Caution: Do not over tighten. Over tightening cause gas leakage	
Piping size	Torque
6.35mm (1/4")	18 N• m (1.8kgf•m)
9.52mm (3/8")	42 N• m (4.2kgf•m)
12.70mm (1/2")	55 N• m (5.5kgf•m)

Connecting the piping to outdoor unit
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

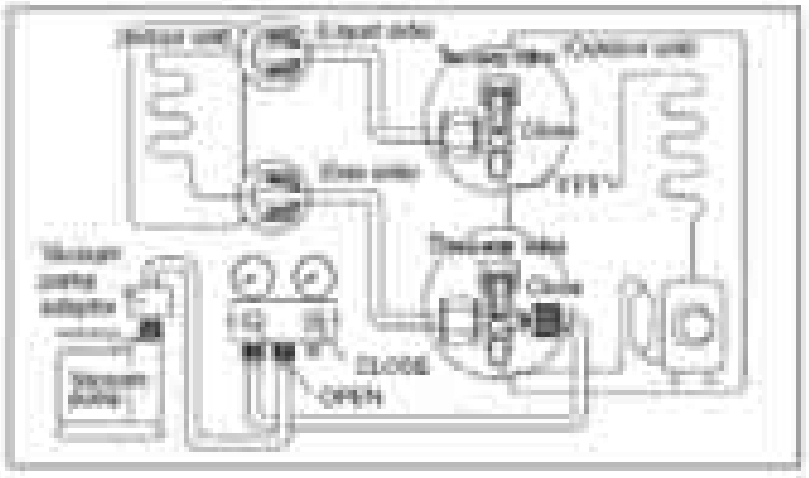
9.3.2.2 Cutting and flaring the piping

1 Please cut using pipe cutter and then remove the burrs.

2 Remove the burrs by using reamer. If burrs are not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3 Please make flare after inserting the flare nut onto the copper pipes.

9.3.3 Evacuation of the equipment

When installing an air conditioner, be sure to evacuate the air inside the indoor unit and pipes in the follwing procidure.



1 Connect a charging hose with a push pin to the low side of a charging set and the service port at the 3-way valve.
   - Be sure to connect the end of charging hose with the push pin to the service port.
2 Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump and vacuum pump adaptor.
3 Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 Mpa) to -76 cmHg (-0.1 Mpa). Then evacuate the air approximately ten minutes.
4 Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGEANT GAS LEAKAG
5 Disconnect the charging horse from the vacuum pump and from the service port of the 3-way valve.
6 Tighten the service port caps of the 3-way valve at a torque of 18 N.m with a torque wrench.
7 Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4mm).
8 Mount valve caps onto the 2-way and the 3-way valve.
   - Be sure to check for gas leakage.

CAUTION:

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation. Take care of the liquid refrigerant, it may cause frostbite.

9.3.4 Connect the cable to the Outdoor Unit

1 Remove the control board cover from the unit by loosening the screw.
2 Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4x 1.5mm^2 flexible cords, type designation 245 IEC 57 or heavier cord.

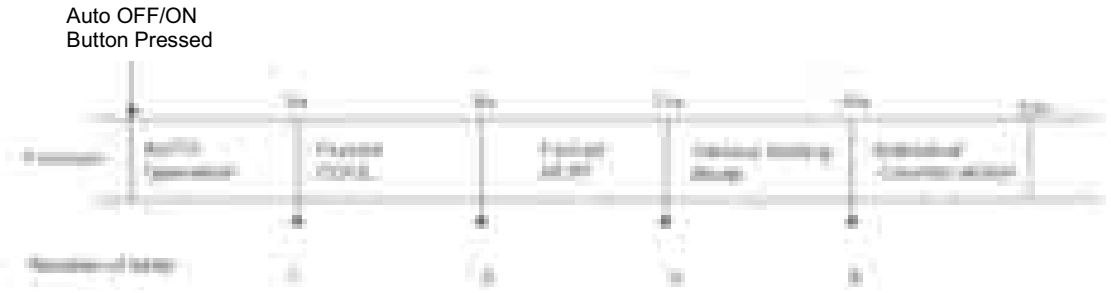
3 Secure the cable onto the control board with the holder (clamper).
4 Attach the control board cover back to the original position with the screw.
5 For wiring stripping and connection requirement, refer to instruction 9.2.4 of indoor unit.

9.3.5 Pipe Insulation

1 Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please warp the insulated piping end to prevent water from going inside the piping.
2 If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E-FOAM with thickness 6mm or above.

10. Service Mode

10.1 Auto OFF/ON Button



1. AUTO OPERATION MODE
   Once the Auto OFF/ON button is slightly pressed, the unit will immediately operate in Auto operation. This operation can be used to operate air conditioner with limited function if remote control is misplaced or malfunction.

2. TEST RUN OPERATION(FOR PUMP DOWN/ SERVICING PURPOSE)
   Press the button continuously for approximate 5 seconds and then release. A “beep” sound will be heard to identify the starting of TEST RUN OPERATION.

3. HEATING OPERATION
   There are two methods to enter heating mode.
   A) Press and hold the button until 1 beep is heard, then release. And press again until 2 beeps are heard, the unit will operate in heating mode.
   B) Pressed the button continuously for approximate 8 seconds, 2 “beep” sounds will be heard and then release. Gently press the “ERROR RESET” button on the remote control, one “beep” sound is heard. The unit enters heating mode.

4. DIFFERENT CONTROLLING SETTING.
   Press the button continuously for approximate 11 seconds until 3 “beep” sounds are heard and together with the signal from remote controller, the unit can be changed to different controlling setting.
   For transmission code selection method, please refer to “Select Remote Control Transmission Code”

5. INDIVIDUAL COUNTER-ACTION
   When the switch is continuously pressed between 16 to 21 seconds, either H14 error detection selection mode or remote controller’s signal receiving sound can be cancelled or turned on.

10.2 Select Remote Control Transmission Code

✧ There are 4 types of remote control transmission code could be selected and stored in EEPROM of indoor PCB. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal interference when there are 2 or more indoor units installed near by together.

✧ To Change the code of remote controller, following table I to join or cut jumper wire on the remote controller and setting with "Forced operation button". Four codes (A, B, C, D) can be selected. Taking code "B" for example, the process below should be follow.
   1. Press the "Auto OFF/ON” button on the indoor unit for approximate 11 seconds until 3 "Beep” signal receiving sounds are heard.
   2. Within 5 minutes, gently press the "ERROR RESET" button on the remote control towards the indoor unit. One "Beep" sound is heard.
   3. Within 60 seconds, press any button on the remote control, the frequency of which was set as "B". Setting is completed after a "Beep" sound is heard. The corresponding signal sent by remote control "B" will be received by this indoor unit.
   4. Press the “AUTO OFF/ON” button on indoor unit to confirm the setting.

Table 1

Remote control	J1	J2
A(STANDARD)	OPEN	OPEN
B	OPEN	SHORT
C	SHORT	OPENT
D	SHORT	SHORT

10.3 Operate and Display of Remote Control

10.3.1 Original setting

10.3.2 Mode selecting button

AUTO, HEAT, COOL, DRY can be selected by pressing “MODE” button. Initial display of LCD is as follow

*Keeping the button depressed continuously, the operation mode will change in the following order in turn
AUTO—HEAT—COOL—DRY--AUTO

10.3.3 Temperature adjusting button

Temperature adjusting range is between 16 ℃~30 ℃

10.3.4 FAN SPEED button

There are 5 speed levels can be selected. The display on the remote controller changes as follows by pressing the FAN SPEED button.

10.3.5 AIR SWING button

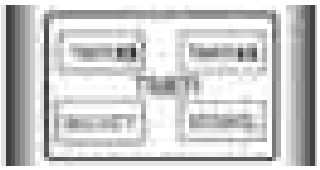
To adjust vertical airflow directions by pressing AIR SWING button (5 options)

10.3.6 QUIET AND POWERFULL button

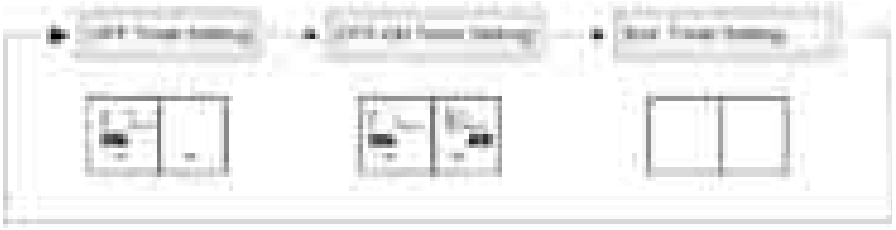
Start Quiet operation: Press QUIET button on remote control and then QUIET displays on remote control display. QUIET indicator on indoor unit lights up to identify Quiet mode has been activated.
Start Powerful operation: Press POWERFUL button on remote control and then POWERUL displays on remote control display. POWERFUL indicator on indoor unit lights up to indentify Powerful mode has been activated.
Switch Quiet/Powerful operation to normal operation: Press QUIET button or POWERFUL button on remote control and then QUIET or POWERFUL disappear on remote control display, QUIET or POWERFUL indicator blacks out, which identifies the unit returns to normal operation.
Note: QUIET and POWERFUL operation can not be active simultaneously.

10.3.7 Timer setting button

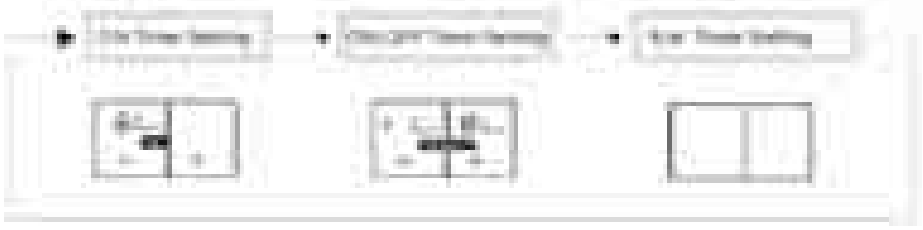
There are 4 types of timer setting by pressing Timer setting button: ON-TIMER, OFF-TIMER, ON-OFF TIMER, OFF-ON TIMER.



1) SELECT button
   - ✧ When the air conditioner is ON, OFF-TIMER or OFF-ON TIMER can be selected by pressing SELECT button.



   - ✧ When the air conditioner is turned off, ON-TIMER or ON-OFF-TIMER can be selected by pressing SELECT button.



2) TIMER A and TIMER B

Pressing TIMER A can change the time for ON-TIMER and OFF-TIMER, off time for OFF-ON Timer, on time for ON-OFF Timer; Pressing TIMER B can change the on time for OFF-ON Timer and off time for ON-OFF Timer setting.

3) SET/CANCEL button.

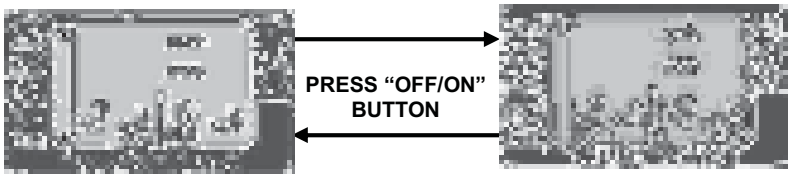
Pressing the button to set or cancel the set timer. After the timer setting is determined, “ON” or “OFF” will stop flashing. If the timer setting is cancelled, “ON” or “OFF” will disappear on the remote control display.

NOTE:

- ✧ OFF Timer and OFF- ON Timer can only be set during the operation;
- ✧ Timer setting can operate only once.
- ✧ If the OFF/ON button on the remote control or the AUTO Switch on the indoor unit is pressed, the timer setting will be cancelled.
- ✧ If Auto Restart Control occurs, timer setting will be cancelled.
- ✧ During the operation, if the ON Timer or ON-OFF Timer is set, the operation will be stopped.

10.3.8 About Cursor Key Which Points To “OFF” On Remote Control

When the ON/OFF button on the remote control is pressed, the cursor key which points to “OFF” will appear or disappear to indicate the ON/OFF status of the air conditioner.



For some reason (Ex. The signal of the remote control does not reach the signal receiver of the indoor unit.), the display of the remote control will not correspond with the actual ON/OFF status of the indoor unit:

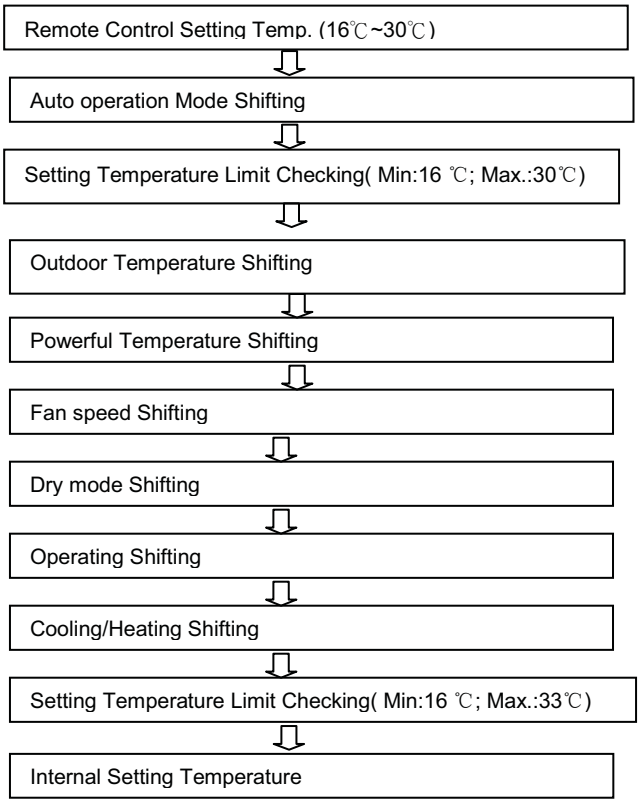
1. The air conditioner is running but the cursor key which points to “OFF” appears. The air conditioner can be stopped with any button (Except for “ON/OFF”, “TIMER A”, ”TIMER B”, ”SELECT”, ”SET/CANCEL”) pressed.
2. The air conditioner is on standby, but the cursor key which points to “OFF” disappears. The air conditioner can be started with any button (Except for “ON/OFF”, “TIMER A”, ”TIMER B”, ”SELECT”, ”SET/CANCEL”) pressed.

11. Operation Control

11.1 Basic Function

11.1.1 Internal Setting Temperature

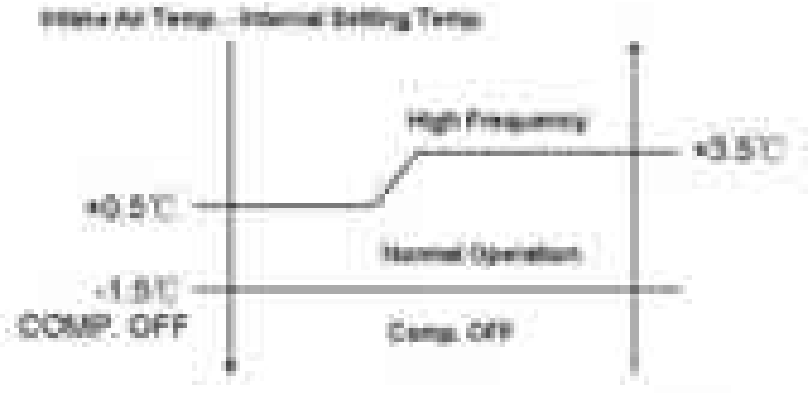
Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.



11.1.2 Cooling Operation

11.1.2.1 Thermostat control

- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -1.5℃
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point +0.5K.

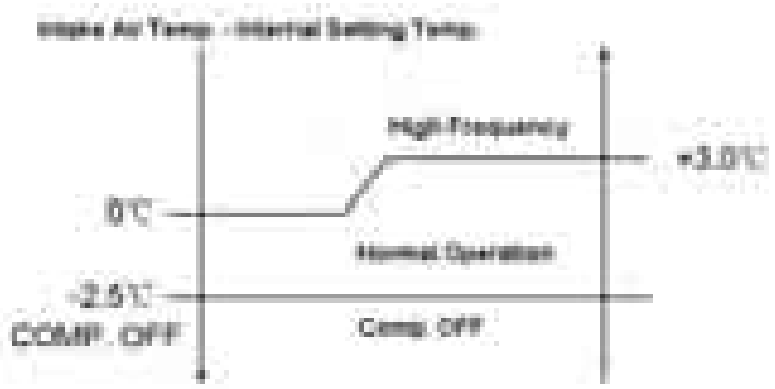


11.1.3 Soft Dry Operation

11.1.3.1 Thermostat control

- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -2.5℃

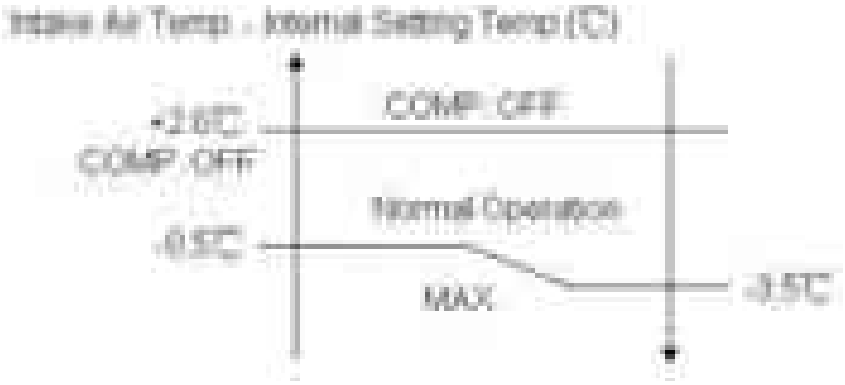
• Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point +0.5K.



11.1.4 Heating operation

11.1.4.1 Thermostat control

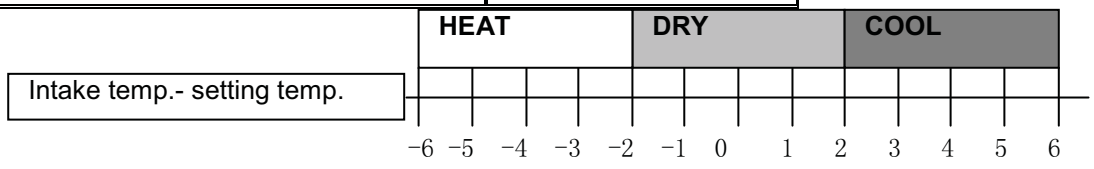
• Compressor is OFF when Intake Air Temperature - Internal Setting Temperature > +2.0℃
• Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature< Compressor OFF point +0.5K.



11.1.5 Automatic Operation

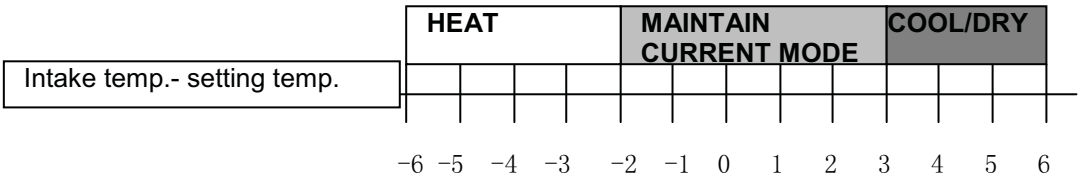
• Once AUTO mode is selected, operation mode is determined by set temperature of remote control and indoor intake temperature.
1st judgment

JUDGE CONDITION	REFERANCE MODE
If indoor intake temp – Remote control temp setting ≥ +2	Cool mode
If -2 ≤ indoor intake temp. – Remote control Temp. setting ≤ +2	Dry mode
If indoor intake temp. – Remote control temp. setting < -2	Heat mode



2nd & following judgment (every 10 minutes after 1st judgment)

JUDGE CONDITION	REFERANCE MODE
If indoor intake temp – Remote control temp setting ⩾ +3	➢ Cool mode if previously is Cool / Heat mode ➢ Dry mode if previously is Dry mode
If -2 ⩽ indoor intake temp. – Remote control Temp. setting < +3	Maintain current mode
If indoor intake temp. – Remote control temp. setting < -2	Heat mode



Note:

- When auto judgment has been made to operate in Cool mode, the unit will enter different states according to outdoor temperature conditions:-

Outdoor Temp. Condition	Air Conditioner Status
If outdoor temperature ≥ 14℃	Cooling operation
If outdoor temperature < 14℃	Compressor OFF and standby.

- During sampling and making judgment, POWER LED will blink.
- When judgment has been made, POWER LED will stop blinking and ON.

During AUTO mode operation, horizontal louver direction and FAN speed can be selected by remote control

11.2 Indoor Fan Motor Operation

A . Basic Rotation Speed

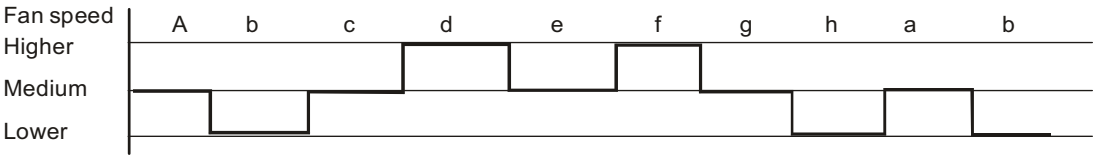
i. Manual Fan speed

Fan motor's number of rotation is determined according to remote control setting.

Model	Remote control Tab	O Hi	O Me+	O Me	O Me-	O Lo	QUIET QLo
CS-UE9PKE	COOLING(rpm)	1150	1030	920	810	700	600
	HEATING(rpm)	1010	890	830	770	710	650
CS-UE12PKE	COOLING(rpm)	1150	1060	970	880	790	620
	HEATING(rpm)	1150	1010	950	890	830	680

ii. Auto Fan Speed (Cooling, Soft Dry Mode)

According to room temperature and setting temperature, indoor fan speed is determined automatically. The indoor fan will operate according to pattern below.



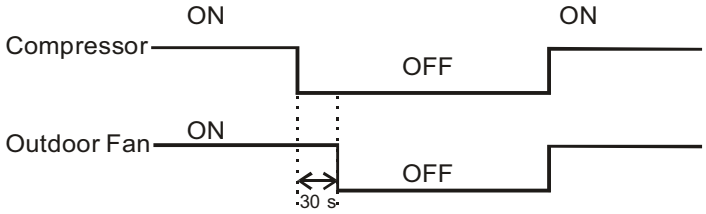
B. Feedback control

• Immediately after the fan motor started, feedback control is performed once every 0.5second.

• During fan motor on, if fan motor feedback 2550 rpm or < 50 rpm continue for 10 seconds, then fan motor error counter increases, fan motor then stops and restarts. If the fan motor counter becomes 7 times, then H19 - fan motor error is detected. Operation stops and cannot on back.

11.3 Outdoor Fan Motor Operation

- The outdoor fan motor starts when compressor start operating and stops 30 seconds after compressor ceases. .



11.3.1 Vertical Airflow

OPERATION MODE							
Cooling	Manual		10°	21°	31°	40°	50°
	Auto	Normal	10°~50°				
		Powerful	6°, 35°(Beginning of POWERFUL mode)				
Soft dry	Manual		10°	21°	31°	40°	50°
	Auto	Normal	12°				
		Powerful	12°				
Heating	Manual	Normal	7°	22°	35°	50°	60°
		Powerful	31°	40°	48°	58°	68°
	Auto	Normal	7°, 8°, 36°				
		Powerful	7°, 8°, 33°, 36°, 45°(Beginning of POWERFUL mode)				

Airflow Direction

1. Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the range as stated above; The angle may be various according to inner program. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature. When the air conditioner is stopped using remote control, the vane will shift to close position.
2. Manual vertical airflow direction can be set using remote control. The angels of the vane are as stated above. When the air conditioner is stopped using remote control, the vane will shift to close position.

* Above angle data is for reference only.

11.3.2 Horizontal Airflow

The horizontal airflow direction louvers can be adjusted manually by hand.

11.3.3 Quiet operation

● To provide quiet operation comparing to normal operation. The Quiet operation can be active or stop by pressing QUIET button on remote control.

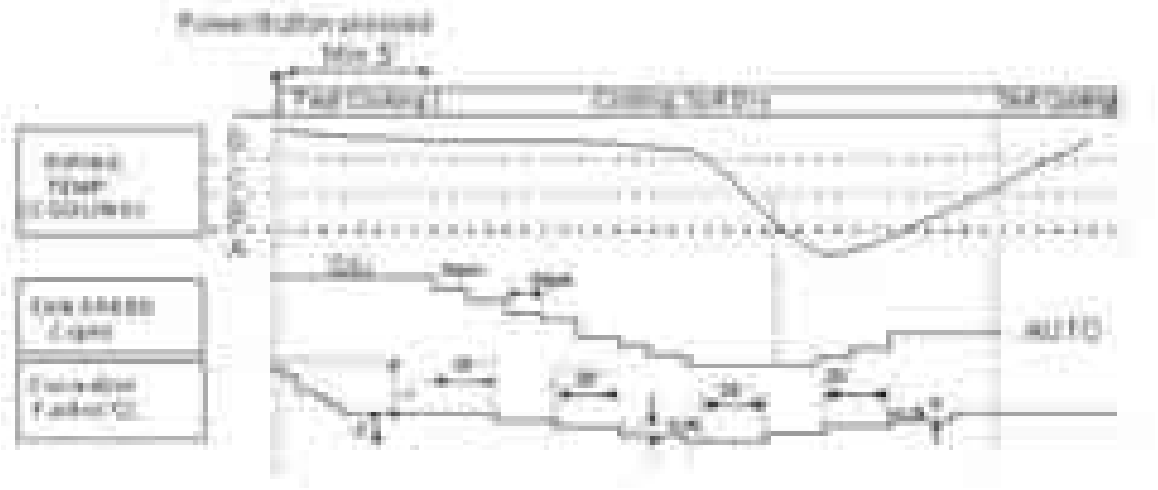
● Once Quiet mode is active, the unit will continuously operate in QUIET Mode until cancel the mode by pressing QUIET button on remote control.

11.3.4 Powerful operation

● To cooling or heating the room faster comparing to normal operation. The Powerful operation can be active or stop by pressing POWERFUL button on remote control.

● When powerful operation is active, the unit will continuously operate in POWERFUL mode until cancel the mode by pressing POWERFUL button on remote control. Operation details are as the fig. below.

1. For cooling, soft Dry mode



2. For Heating mode:

Note: The value of A, B, C, D will change according to the indoor temperature.

11.3.5 Automatic Restart Control

When the power supply is cut off during the operation of air conditioner, the compressor will re-operate within three to four minutes after power supply resumes.

11.3.6 Indication Panel

LED	POWER	TIMER	QUIET	POWERFUL
Color	Green	Orange	GREEN	RED
Light ON	Operation ON	Timer setting ON	Quiet mode ON	Powerful mode ON
Light OFF	Operation OFF	Timer setting OFF	Quiet mode OFF	Powerful mode OFF

Note:

- If POWER LED blinks, the possible operation of the unit is operating mode judgment, or ON timer sampling.
- If Timer LED blinks, there is an abnormal operation occurs.

11.3.7 Timer control

Delay ON Timer can be set using remote controller, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time. Seventy minutes before the set time for ON Timer or ON-OFF Timer setting, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation mode. From the above judgment, the decided operation will start operate earlier than the set time as shown below.

Timer Signal Receiving sound During Operation.

Timer Signal Receiving Sound When the Air Conditioner Stops.

12. Protection control

12.1 Protection Control For All Operations

12.1.1 Time Delay Safety Control

● The Compressor will not turn on within 3 minutes from the moment operation stops, although the unit is turned on again by pressing OFF/ON button at remote control within this period.
● This control is not applicable if the power supply is cut off and on again.
● This phenomenon is to balance the pressure inside the refrigerant cycle.

12.1.2 30 Seconds Forced Control

● Once the air conditioner is turned on, the compressor will not stop within 30 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, force stop by pressing the OFF/ON button at the remote control is permitted or the Auto OFF/ON button at indoor unit.
● The reason for the compressor to force operation for minimum 30 seconds is to allow the refrigerant oil run in a full cycle and return back to the outdoor unit.

12.1.3 Total running current control

1. If the outdoor unit total running current is detected exceeding I_1(A), the frequency instructed for compressor operation will be decreased.
2. If the running current does not exceed I_1(A) for 5 seconds, the frequency instructed will be increased.

Operation mode	UE9PKE	UE12PKE
	I_1(A)	I_1(A)
Cooling/ Soft Dry /Fan A*	6.02	6.90
Cooling/ Soft Dry /Fan B	5.88	6.83
Cooling/Soft Dry/ Fan C	5.03	6.08
Heating	5.60	6.90

*The first 30 minutes of cooling operation, A will be applied.

12.1.4 IPM (Power transistor) Prevention Control

1. DC Peak Current Control
   - When electric current to IPM exceeds set value of 8.11A(for UE9PKE) or 17.4A(for UE12PKE), the compressor will stop. It will restart after three minutes.
   - If the set value is exceeded again within 30 seconds, the operation will restart after one minute.
   - If this condition repeats continuously for seven times, all indoor and outdoor relays will be cut off.
   - Error code [F99] will be displayed.

12.1.5 Compressor Overheating Prevention Control

Instructed frequency for compressor operation will be regulated compressor by discharge temperature. The change of frequency is as below.

12.1.6 Low Operation Frequency Protection Control

● When the compressor operation frequency is lower than 24Hz and continuing for 240 minutes, the operation frequency will be changed to 23Hz for 2 minutes. This is to prevent the compressor in too low frequency for long time.

● If all following conditions fulfilled, the compressor will run in the frequency of 30 Hz.

Models	UE9PKE, UE12PKE	
Intake Air Temp.	≥30 ℃ or ＜14 ℃	≥28 ℃ or ＜14 ℃
Outdoor Temp.	≥38 ℃ or ＜13 ℃	≥24 ℃ or ＜4 ℃
Indoor Piping Temp.	＜30 ℃	≥0 ℃
Operation Mode	Cool / Dry	Heat

12.1.7 Low Pressure Prevention Control (Gas Leakage Detection)

a. Control start conditions
- For 5 minutes, the compressor continuously operates and outdoor total current is between 0.83A and 1.05A.
- During Cooling and Soft Dry operations:
  Indoor suction temperature - indoor piping temperature is below 4℃.

Indoor temperature and outdoor temperature is 30±5℃.
Remote Control setting 16℃ and Hi Fan Speed.

• During Heating operations:
Indoor piping temperature - indoor suction is under 5℃.
Indoor temperature and outdoor temperature is 20 ± 2℃.
Remote control setting 30℃ and Hi Fan Speed.

b. Control contents
• Compressor stops (and restart after 3 minutes)
• If the conditions above happen 2 times within 20 minutes, the unit will:
- Stop operation
- Timer LED blinks and “F91” indicated

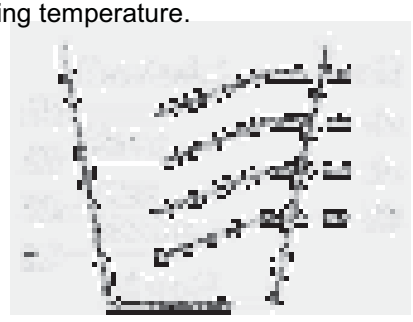
12.2 Protection Control For Cooling and Soft Dry Operation

12.2.1 Outdoor Air Temperature Control

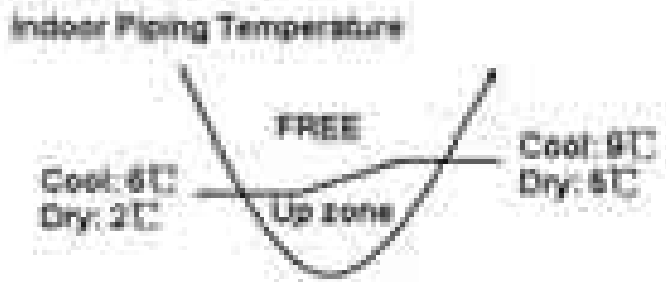
• The compressor operating frequency is regulated in accordance to the outdoor air temperature as shown in the diagram below.
• This control will begin 1 minute after the compressor starts.
• Compressor frequency will adjust base on outdoor air temperature.

12.2.2 Freeze Prevention Control

1 .Frequency of the compressor
For prevention of freezing of the indoor evaporator, the frequency of the compressor will be changed according to the indoor piping temperature.



2 .Indoor Fan Control
Indoor fan speed changes according to the indoor piping temperature. In up zone shown below, the fan speed increases by +50r/min until the indoor piping temperature reaches 9℃(cooling)/5℃(dry) or above for 5 minutes. However, the control is unavailable within 4 minutes after compress stars up.



12.2.3 Dew Prevention Control

• To prevent dew formation at indoor unit discharge area.
• This control starts if all conditions continue for 20 minutes:
  - Operated with Cooling or Soft Dry Mode.
  - Outdoor air temperature is less than 34℃.
• This control stopped if anyone of the following conditions is achieved:
  - Outdoor air temperature is over 34℃.
  - Intake air temperature is less than 24℃.
  - Operation without Cooling or Soft Dry Mode.

12.2.4 Overload Protection For Cooling Operation

Frequency of the compressor will change according to the outdoor piping temperature.

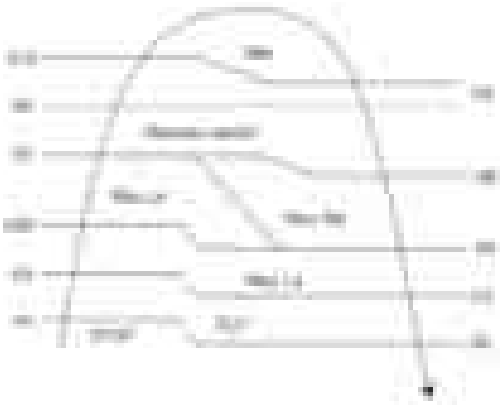
12.3 Indoor Piping Air Temperature Control (Heating)

12.3.1 Indoor Fan Control

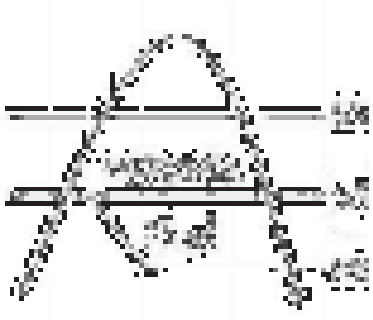
1. Indoor fan is controlled by the indoor piping temperature.
   ● Manual Fan Speed

Piping Temperature(℃)

K0	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11
16	19	24	32	32	36	36	39	54	54	57	-



● Auto Fan Speed



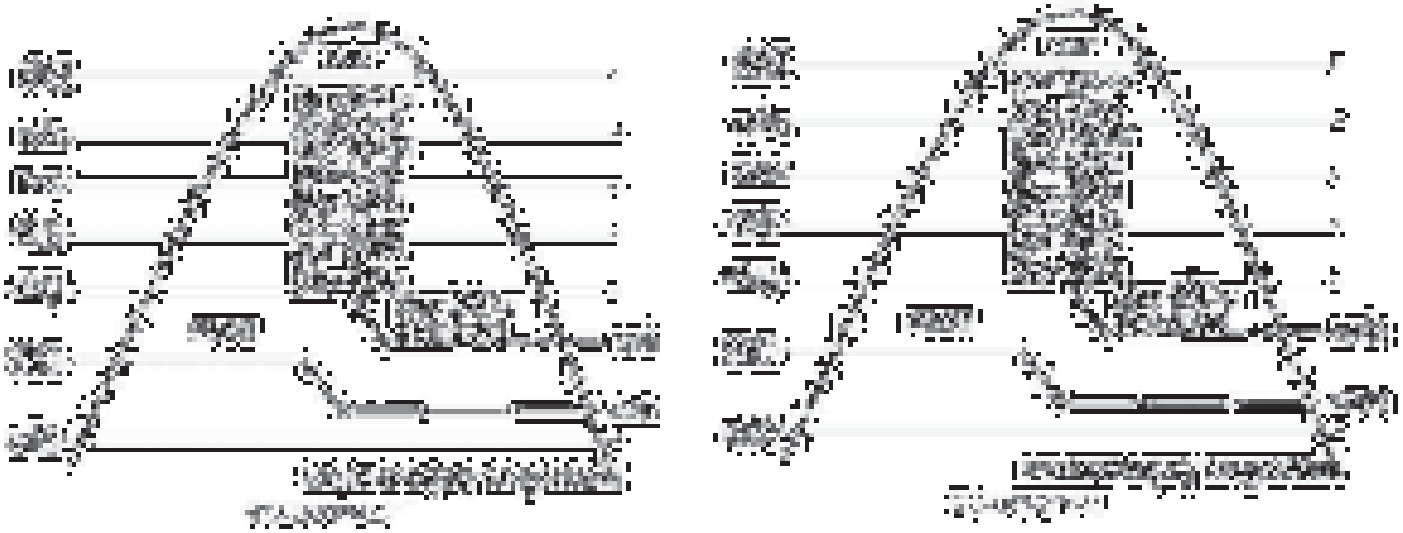
2. During heating operation, the indoor fan will run at the following speed when the compressor stops.

Comp	1	2	3	4	5	6	7	8
	ON		OFF					
Fan Speed (rpm)	Control by piping temperature	UE9PKE	540	460	540	460	540	460
		UE12PKE	420	400	420	400	420	400
Time (Second)	—		20	100	20	100	20	100

3. Hot Start
When the heating operation starts, the indoor fan stops and the compressor runs with a certain frequency.
This is to prevent the cold airflow from blowing.
If the piping temperature rises to 19 ℃, and the indoor fan speed varies with the indoor piping temperature, the hot start control is stopped.

12.3.2 Overload Protection Control

Frequency of the compressor is determined by indoor piping temperature.



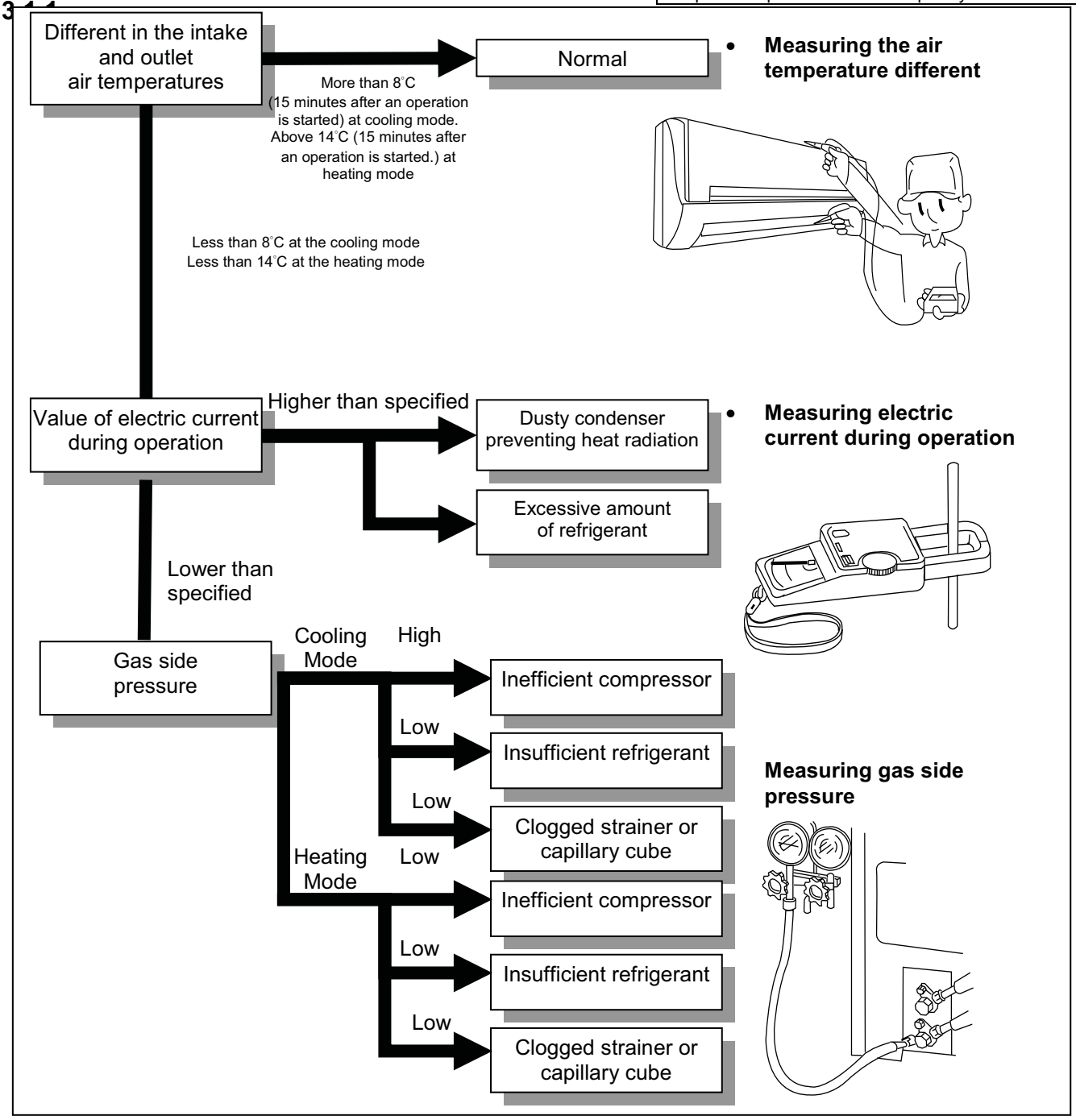
13. Troubleshooting Guide

13.1 Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan. The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)		
	Gas Pressure Mpa (kg/cm^2G)	Outlet air Temperature (℃)
Cooling Mode	0.9~1.2 (9~12)	12~16
Heating Mode	2.3 ~2.9 (23~29)	36~45
Condition: Indoor fan speed = High Outdoor temperature = 35℃ at cooling mode and 7° C at heating mode. Compressor operates at rated frequency		

13.1.1



13.1.2 Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or strainer	↘	↘	↘	↗	↗	↗
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘
• Carry out the measurement of pressure, electric current, and temperature fifteen minutes after an operation is started.						

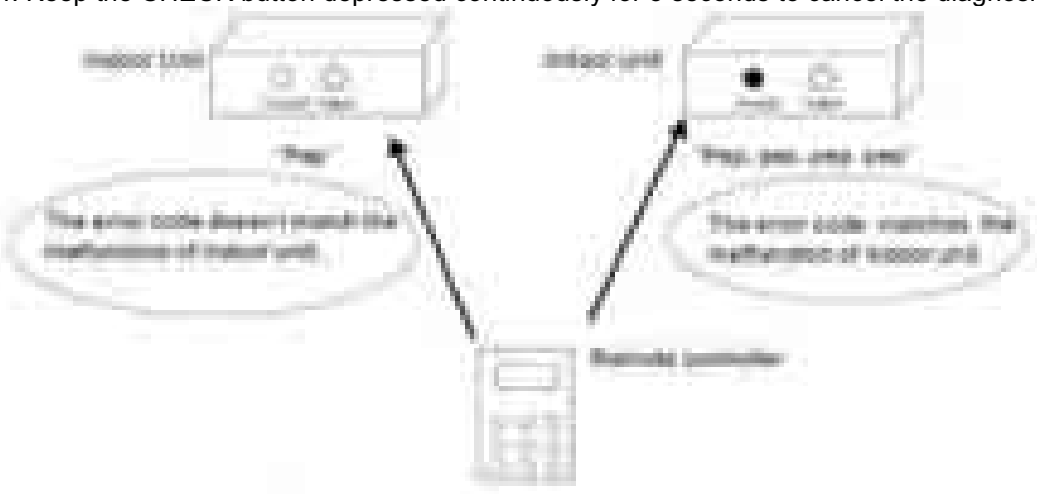
13.2 Breakdown Self Diagnosis Function

13.2.1 About Self Diagnosis

When the air-conditioner is stopped due to malfunction detected by itself, the operation can be restarted using AUTO Switch on the indoor unit. In forced operation, the frequency for compressor and fan speed can not be changed and the signal receiving sound is different.
Normal Operation ON: “pep”
Forced Operation ON: “pep”, “pep”, “pep”, “pep”
Stop: “pep”
Note: Refer to the Diagnosis Code Table for the malfunction when forced operation is not available.

13.2.2 Display of Error Code

1. Keeping the CHECK button on the remote controller depressed for 5 seconds, error code ranging from H11 to H99 can be displayed on the remote controller.
2. The error code is changed and diagnosis signal is transmitted to the indoor unit by pressing the Temp Up button on the remote control.
3. When the malfunction of the air-conditioner matches the error code on the remote control, four beeps can be heard from the indoor unit and the operation indicator will light up.
4. Keep the CHECK button depressed continuously for 5 seconds to cancel the diagnosis function.



13.2.3 Error Codes Table

Code	Abnormality/Protection	Judgment	Check	Emergency Operation
H00	Normal			
H11	Indoor/Outdoor abnormal communication	>1 minute after starting operation	Connecting cable, Indoor/outdoor PCB	○
H14	Indoor intake air temp sensor abnormality	-	Intake air temperature sensor(defected or disconnected)	×
H15	Outdoor compressor tempearture sensor abnormality	Continue for 5 sec.	Compressor tempeature sensor(defected or disconnected)	×
H16	Outdoor Current Transformer open circuit	-	Outdoor PCB, IPM module	×
H19	Indoor fan motor mechanism lock	-	Indoor PCB, fan motor	×
H23	Indoor heat exchanger temperature A sensor abnormality	Continue for 5 sec.	Heat exchanger temperature sensor(defected or disconnected)	○
H27	Outdoor air temperature sensor abnormality	Continue for 5 sec.	Outdoor temperature sensor(defected or disconnected)	○
H28	Outdoor heat exchanger temperature sensor abnormality	Continue for 5 sec.	Outdoor heat exchanger sensor(defected disconnected)	○
H30	Discharge temperature sensor abnormality	Continue for 5 sec.	Discharge temperature sensor(defected or disconnected)	×
H33	Incorrect connection of Indoor/Outdoor cable	-	Indoor/outdoor supply voltage	×
H97	Outdoor fan motor lock	Twice within 30 minutes	Outdoor fan motor	×
H98	Indoor high pressure protection	-	Air filter dirty Air circulation short circuit	-
H99	Indoor heat exchanger anti-freezing protection	Indoor heat exchanger freezing	Insufficient refrigerant Air filter dirty	-
F11	Cooling/Heating cycle changeover abnormality	4 times occurrence within 30 minutes	4-way valve V-coil	×
F90	PFC control	4 times occurrence within 20 minutes	Voltage at PFC	×
F91	Refrigeration cycle abnormality	2 times occurrence within 20 minutes	No refrigerant(3-way valve is closed)	×
F93	Compressor abnormality	4 times occurrence within 20 minutes	Compressor	×
F95	Cool high pressure protection	4 times occurrence within 20 minutes	Outdoor refrigeration cycle	×
F96	IPM overheating protection	-	Excessive refrigerant Improper heat radiation IPM	×
F97	Outdoor compressor overheating protection	4 times occurrence within 20 minutes	Insufficient refrigerant Compressor	×
F98	Total running current protection	3 times occurrence within 20 minutes	Excess refrigerant Improper radiation	×
F99	Outdoor Peak Current Protection Control	4 times occurrcnce continuously within 30 minutes	Outdoor PCB IPM Compressor	×

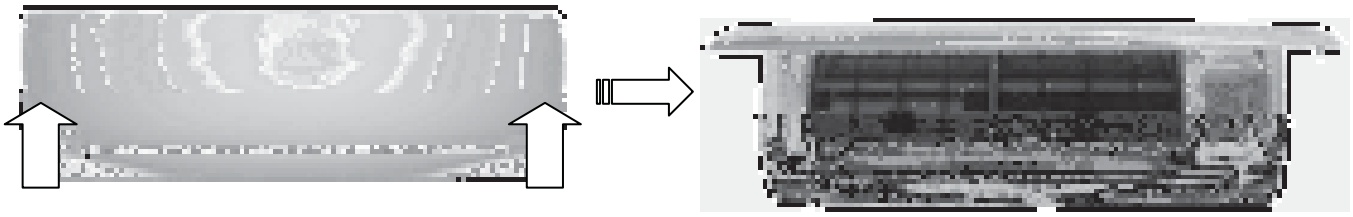
14. Disassembly and Assembly Instructions

WARNING

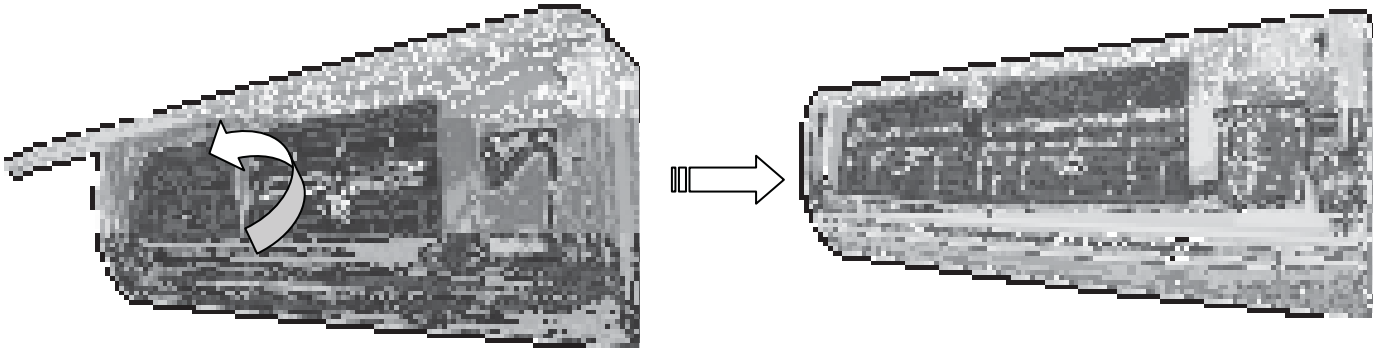
High Voltage is generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

Removal Procedure for Intake Grille

1. Open the intake grille and pull it to the horizontal position.

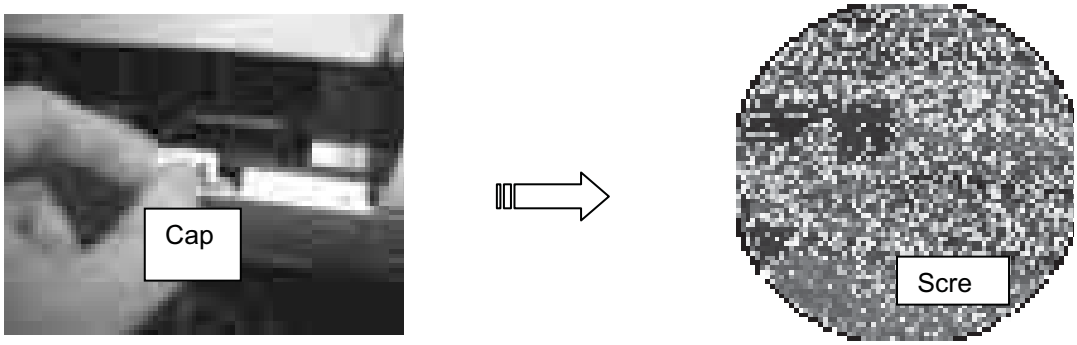


2. Pull up the intake grille until it falls off.

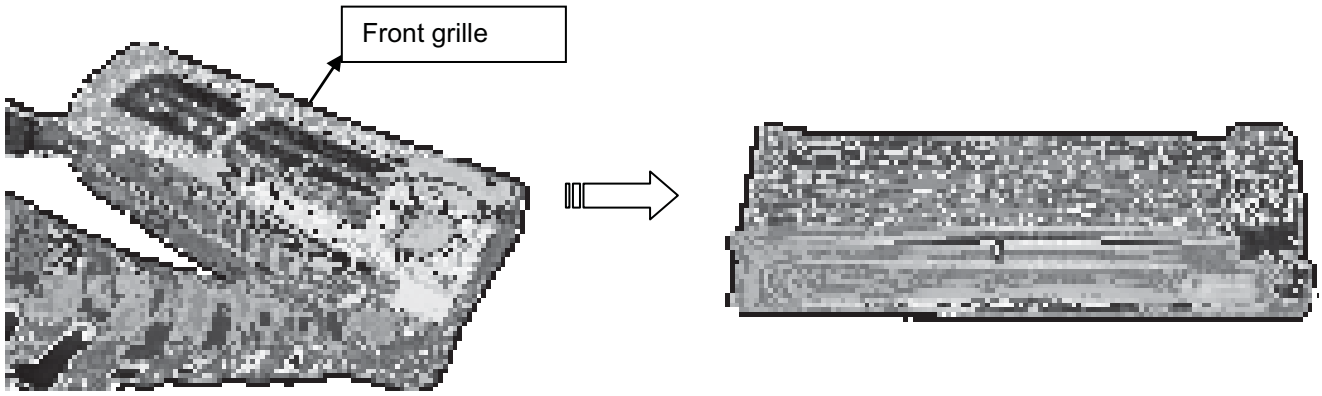


Removal Procedure for Front Grille

1. Remove the two caps at the discharge port (right and left) and then release the two screws on both sides.

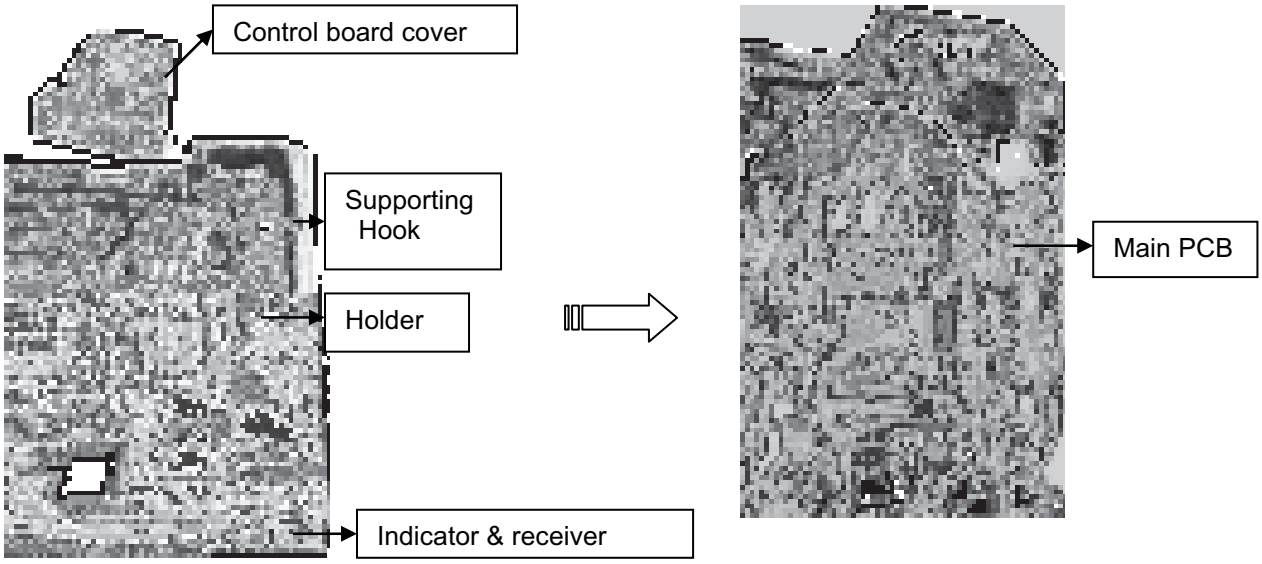


2. Pull out the front grille form the unit body.

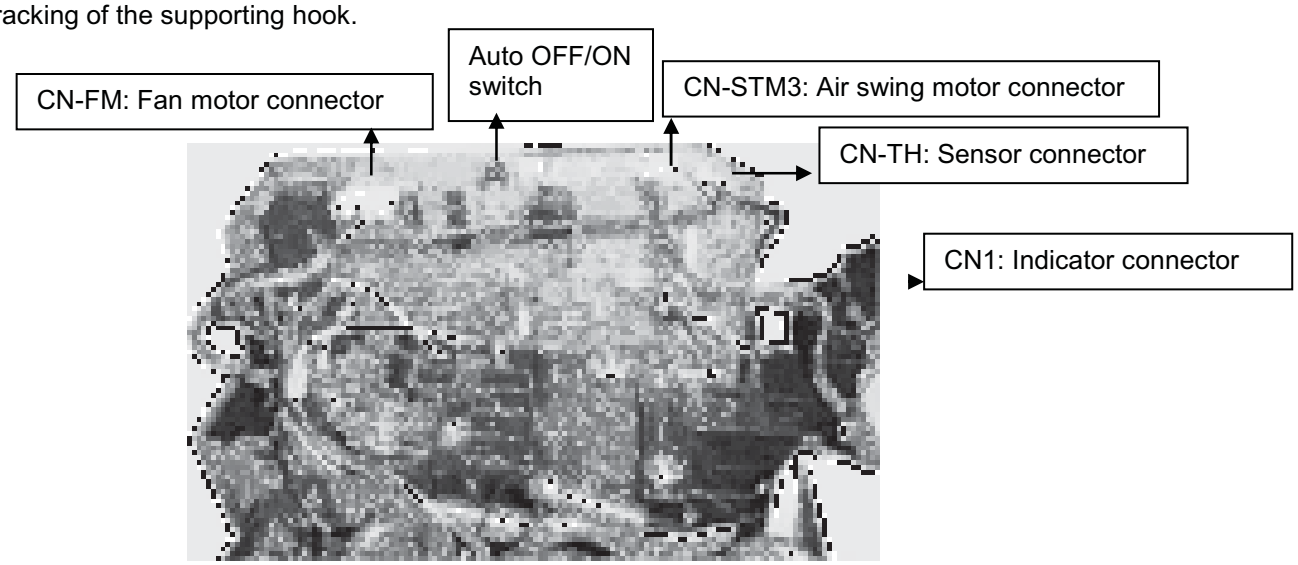


Removal Procedure for Main Electronic Controller

1. After front grille is taking off, remove the cover of control board and holder, then the Main PCB can be seen.



2. Drag out the supporting hook to the right side and pull up a bit the main PCB. Then release the lead wire connecting to CN-FM, CN-STM3, earth wire (Yellow/Green) on main PCB, take out the sensor from the holder on evaporator, release the CN1 connector on indicator PCB, pull out the whole electronic controller. Be sure to avoid cracking of the supporting hook.

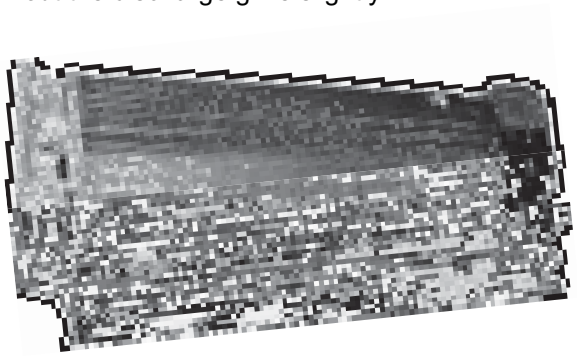


3. Remove the control board complete
   Loose the screws of control board complete, then the whole control board can be pulled out.

Removal Procedure for Main Electronic Controller

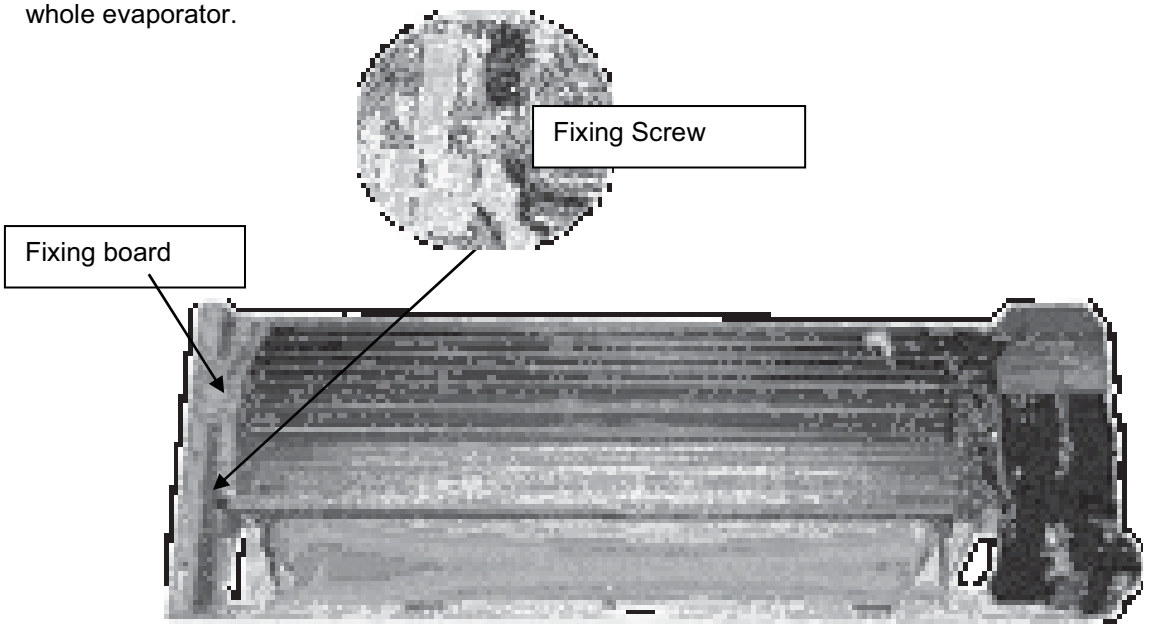
1. Separate the drain hose and the drain plate.

2. Pull out the discharge grille slightly.

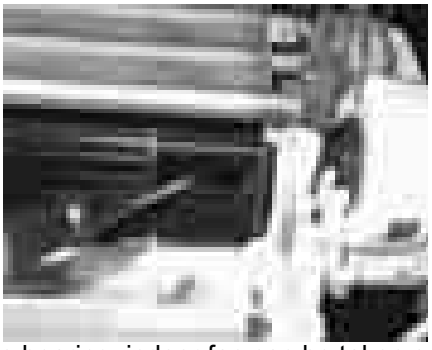


Removal Procedure for Cross Flow Fan

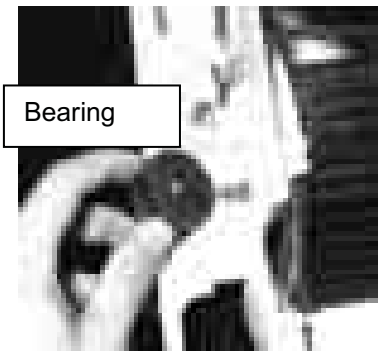
1. Release fixing screws on both side, disassembly the fixing board from evaporator on the left side and pull out the whole evaporator.



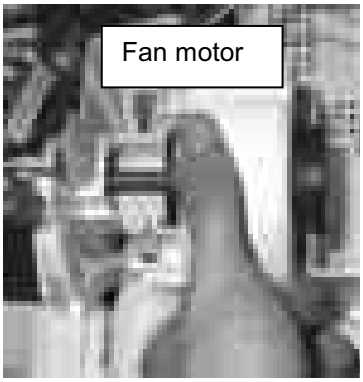
2. Loose the fixing screw of the cross flow fan.



3. After removing the bearing, indoor fan can be taken out from the left side



4. Lift up the indoor fan slightly, and then pull the fan motor out.

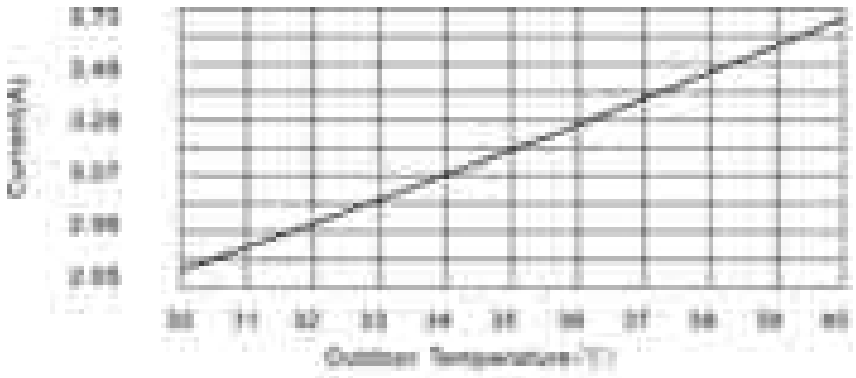


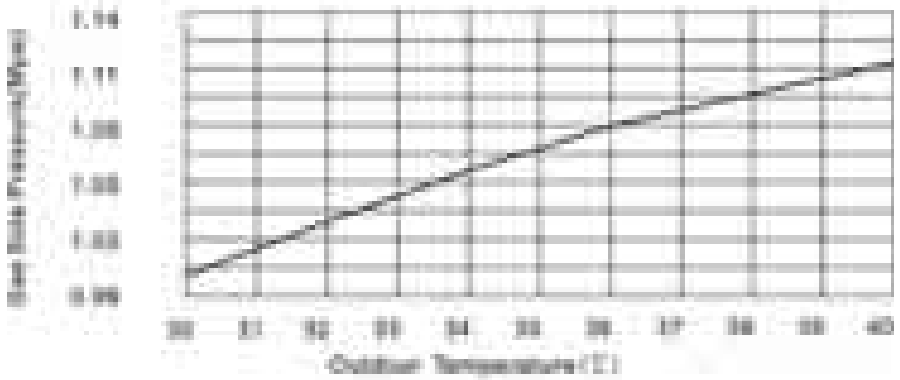
15. Technical Data

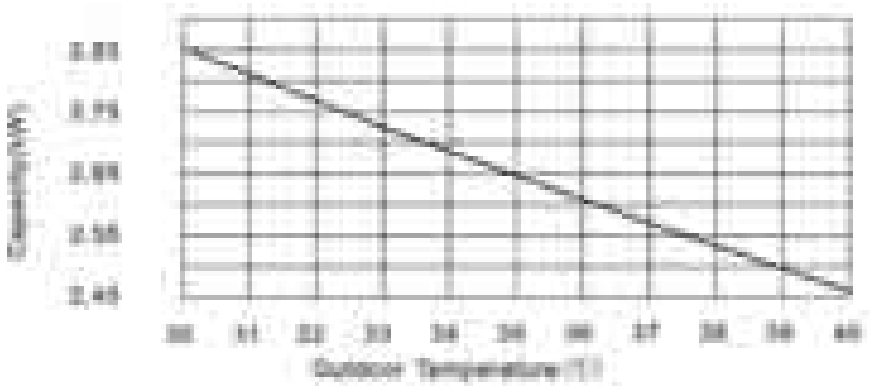
15.1 Operation Characteristic

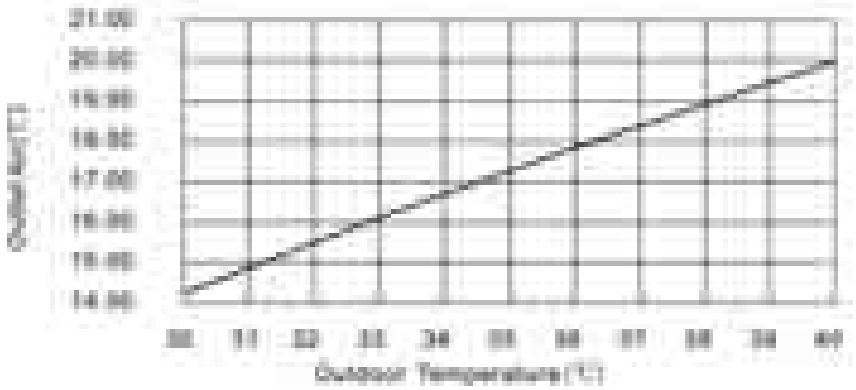
15.1.1 CS-UE9PKE CU-UE9PKE

Cooling Characteristic at Different Outdoor Air Temperature

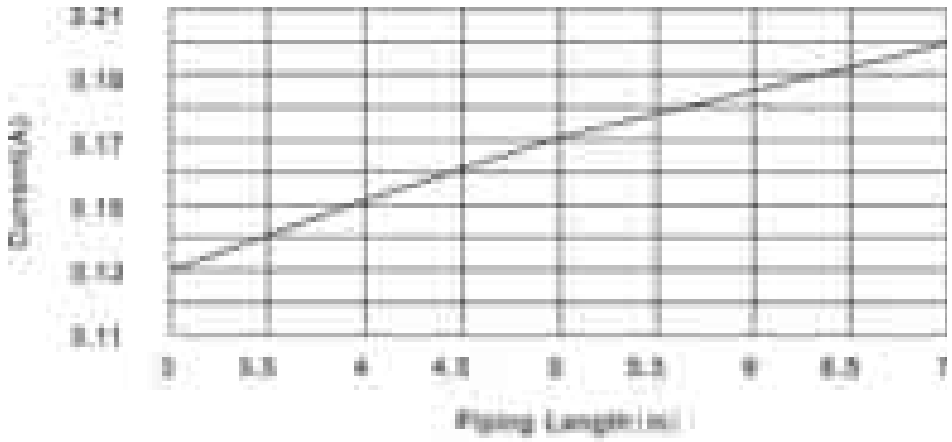


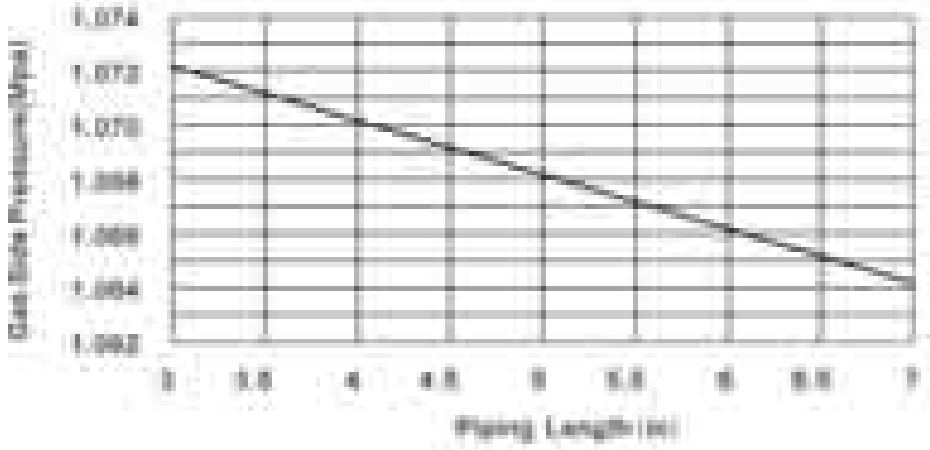


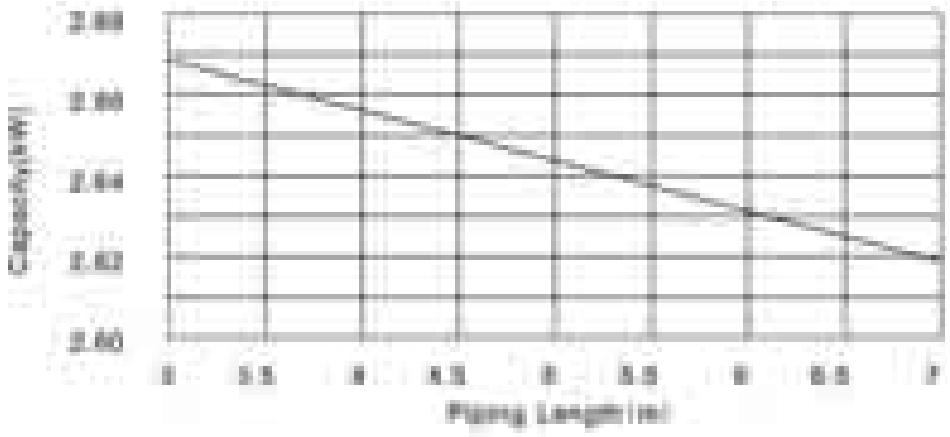


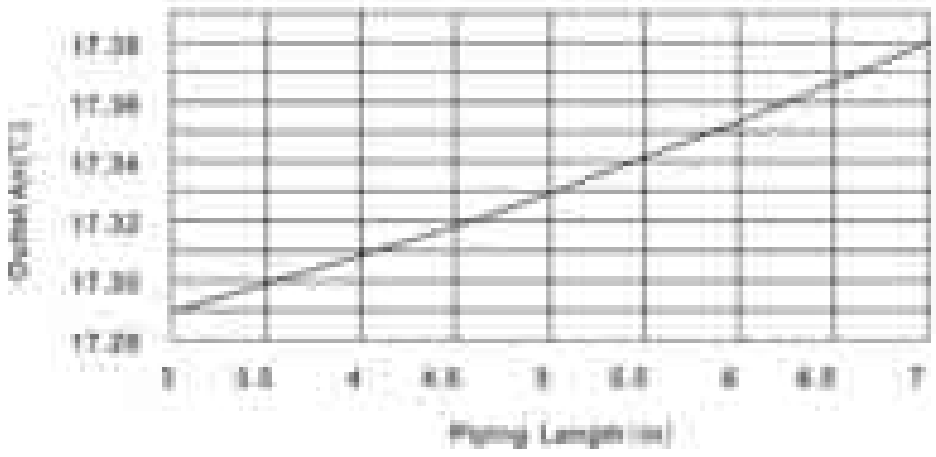


Cooling Characteristic at Different Piping Length

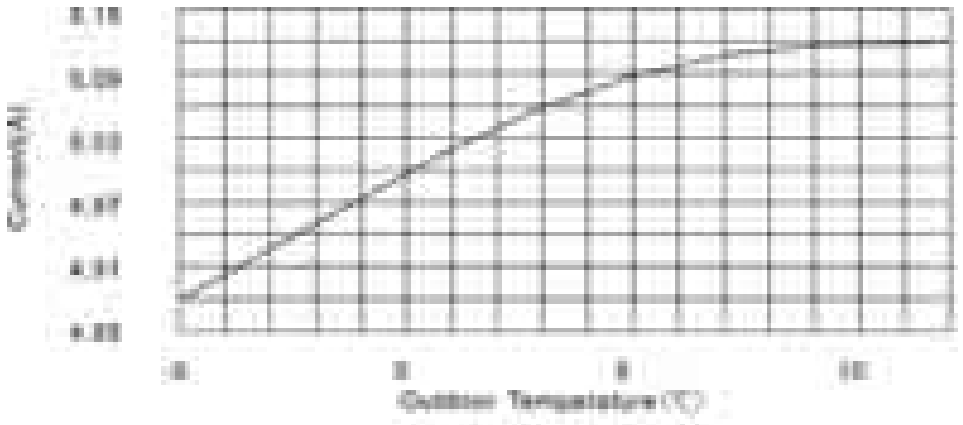


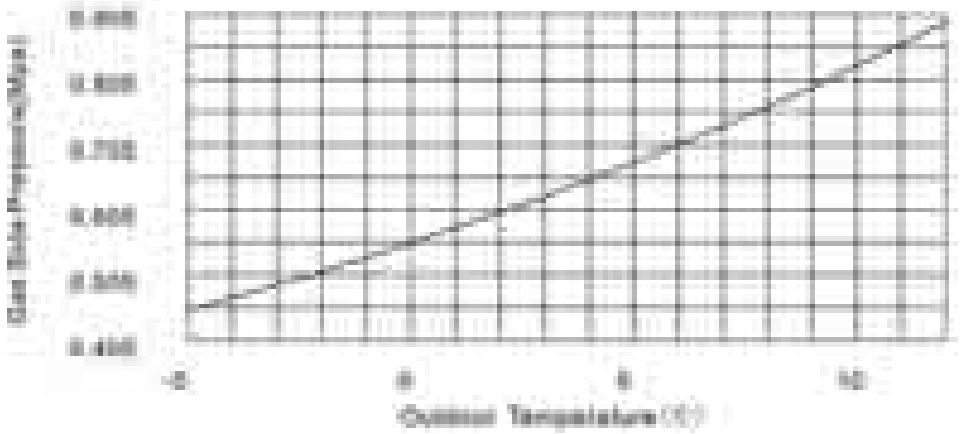


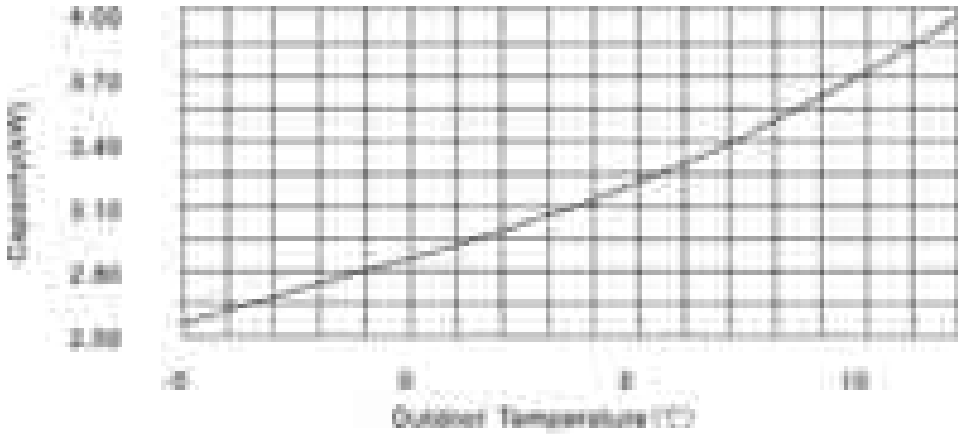


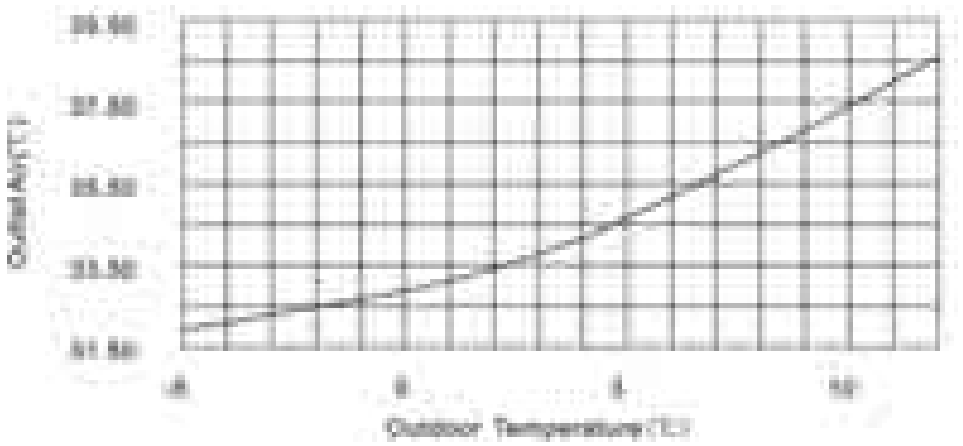


Heating Characteristic at Different Outdoor Air Temperature

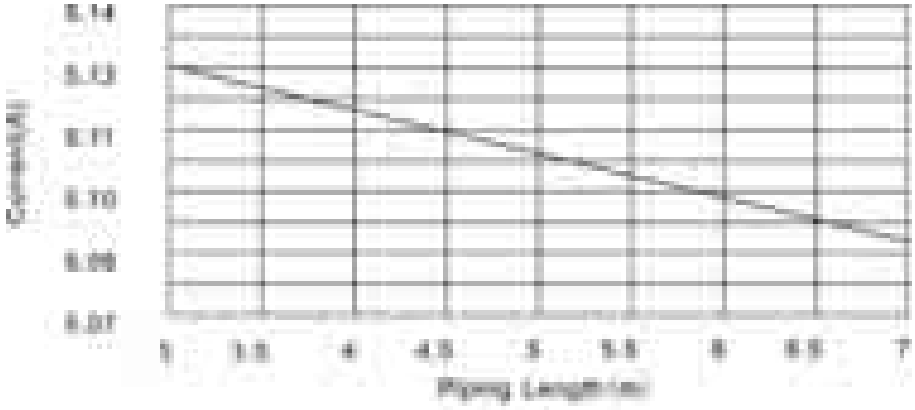


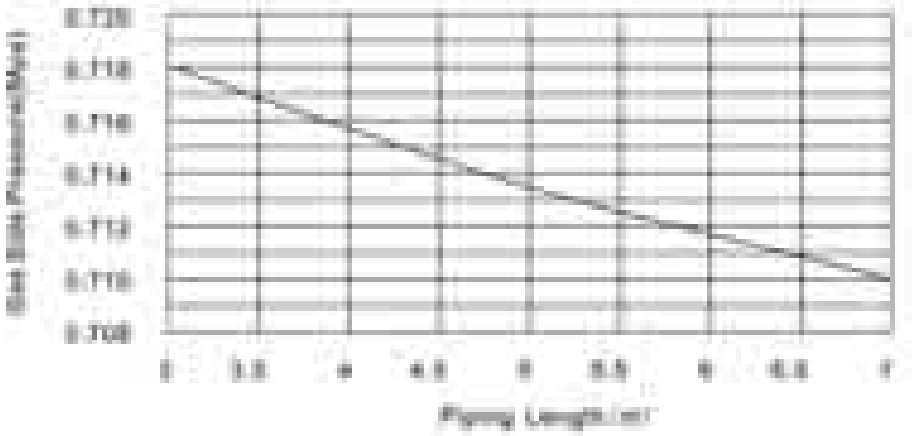


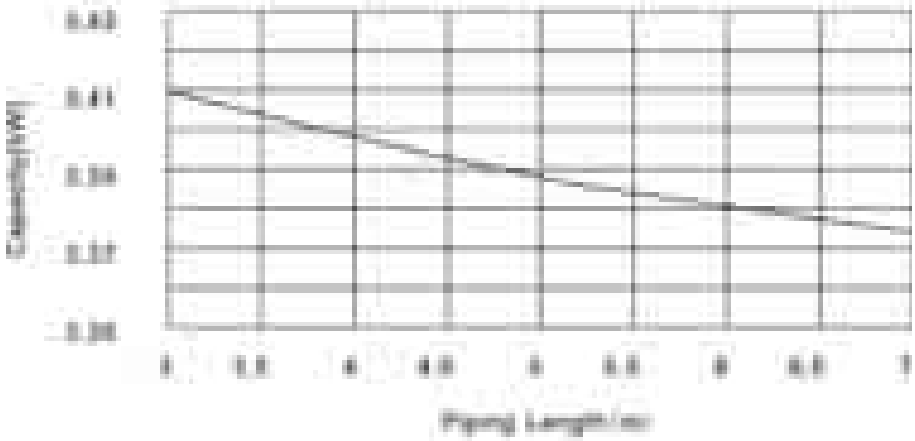


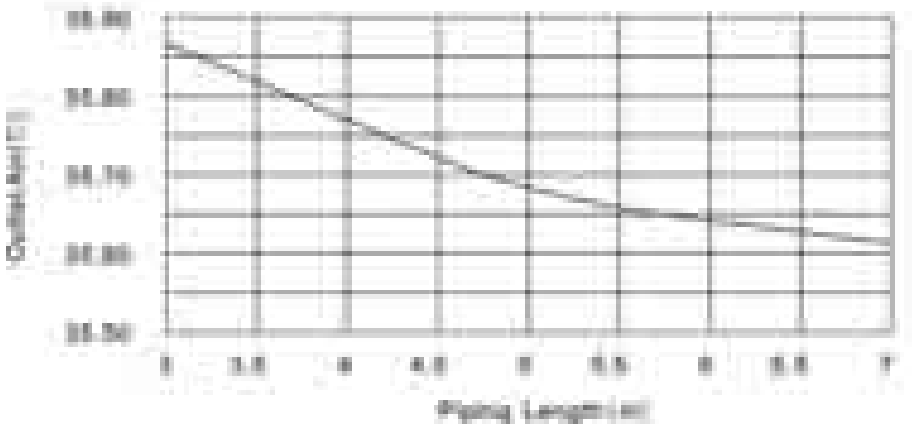


Heating Characteristic at Different Piping Length



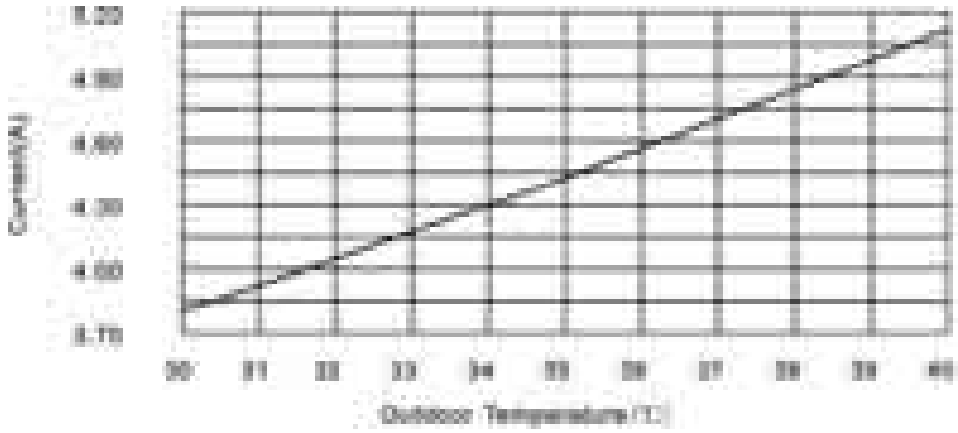


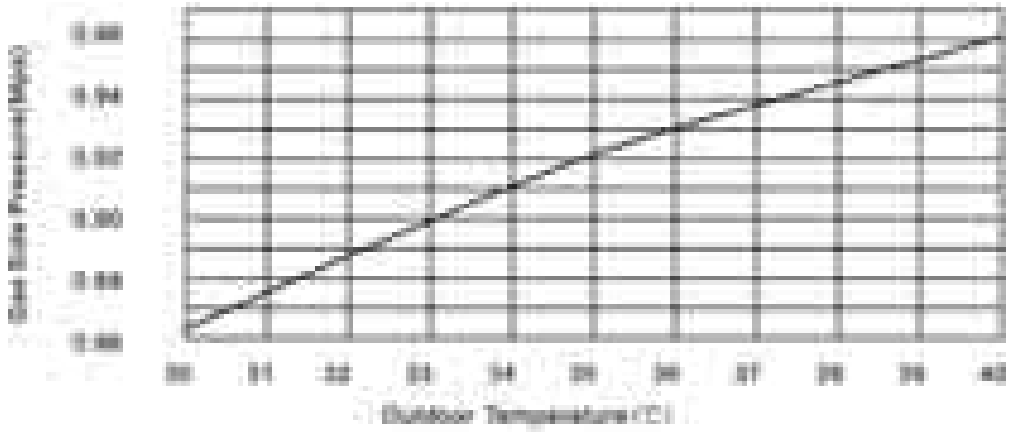


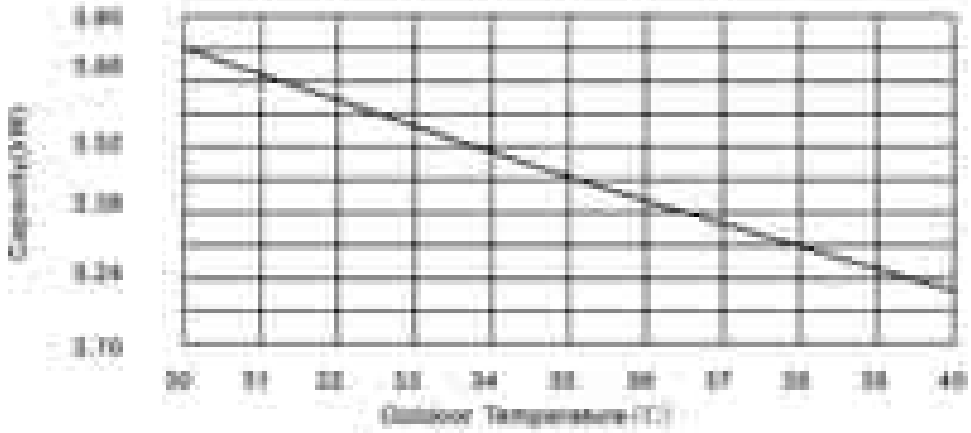


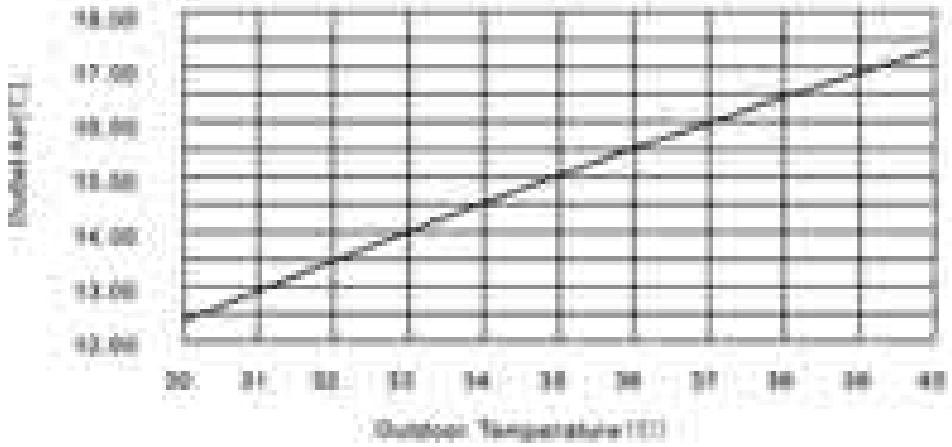
15.1.2 CS-UE12PKE CU-UE12PKE

Cooling Characteristic at Different Outdoor Air Temperature

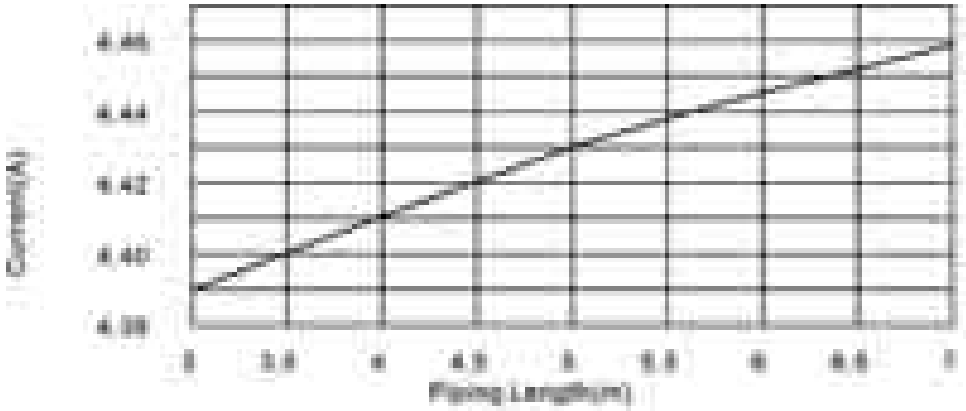


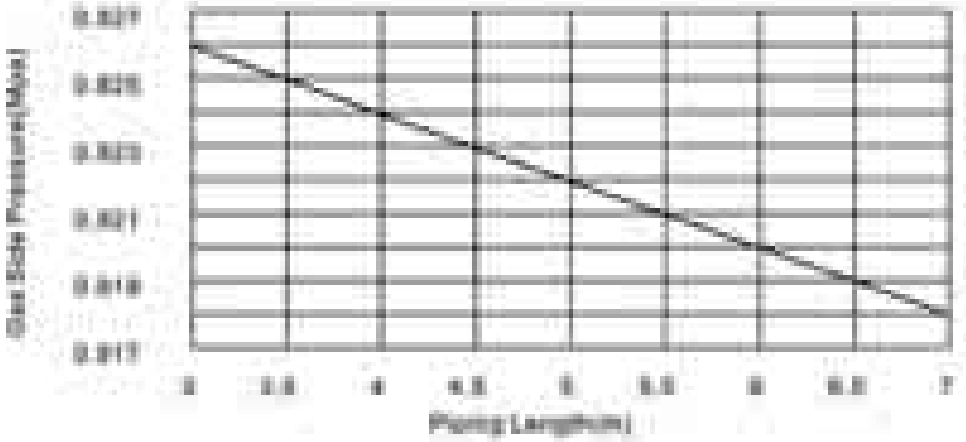


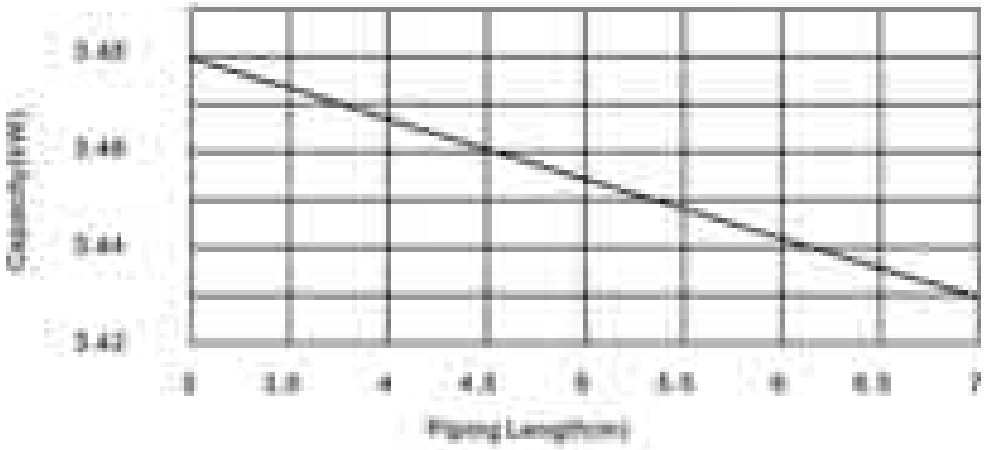


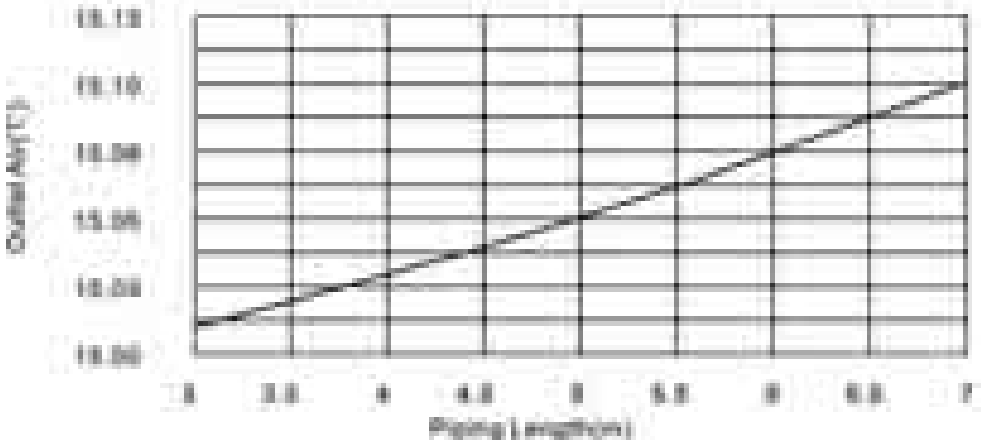


Cooling Characteristic at Different Piping Length

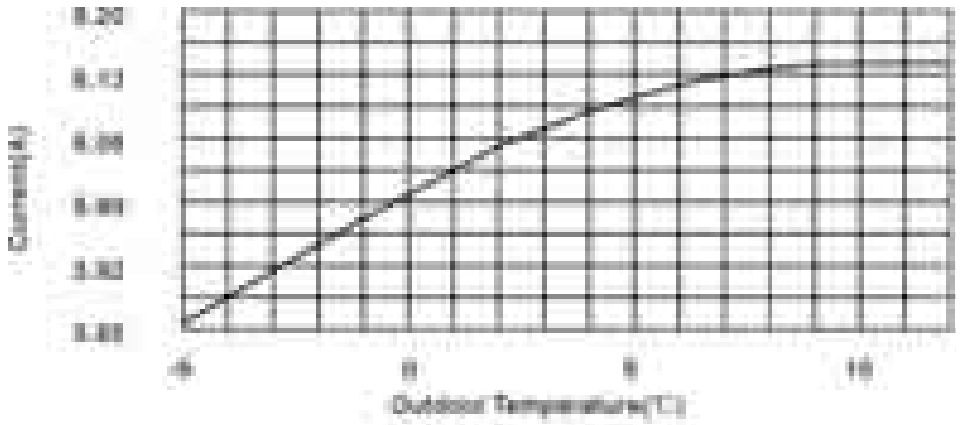


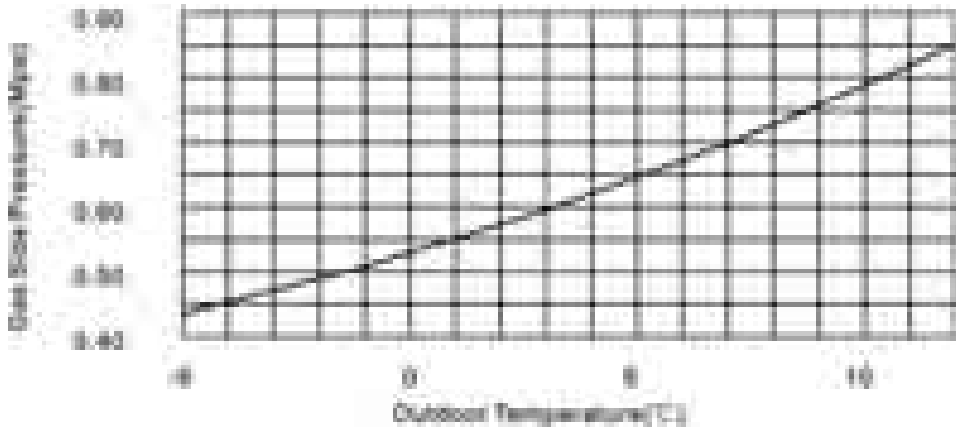


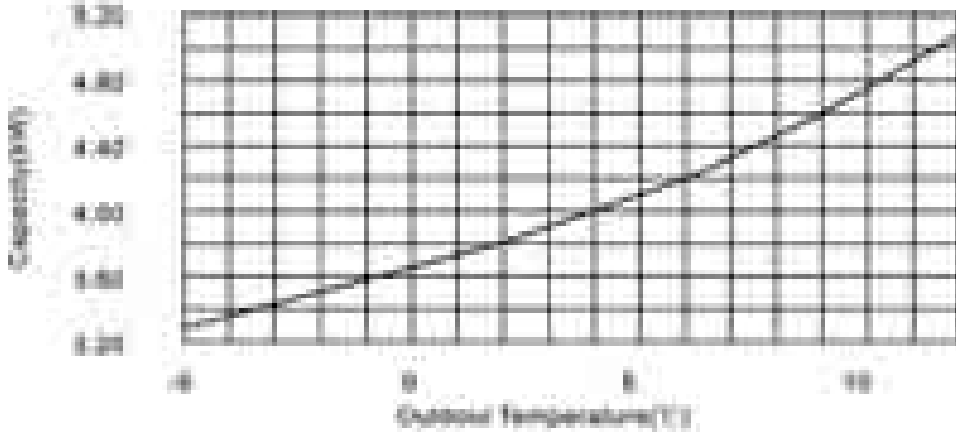


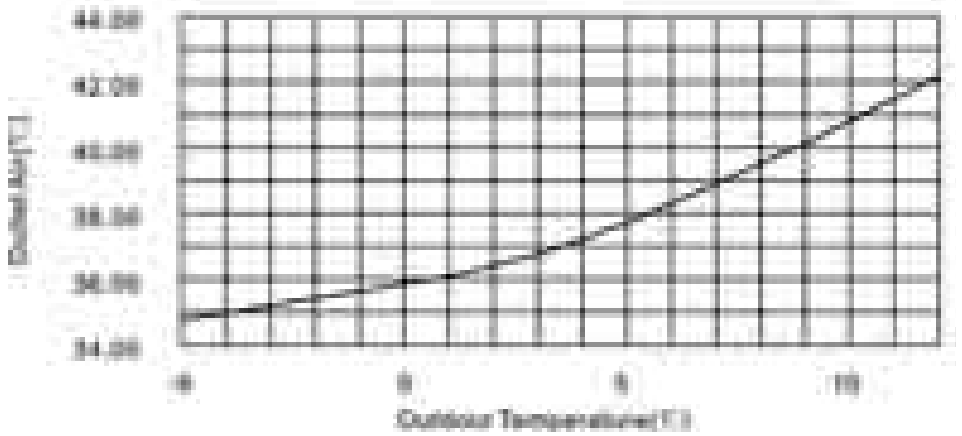


Heating Characteristic at Different Outdoor Air Temperature

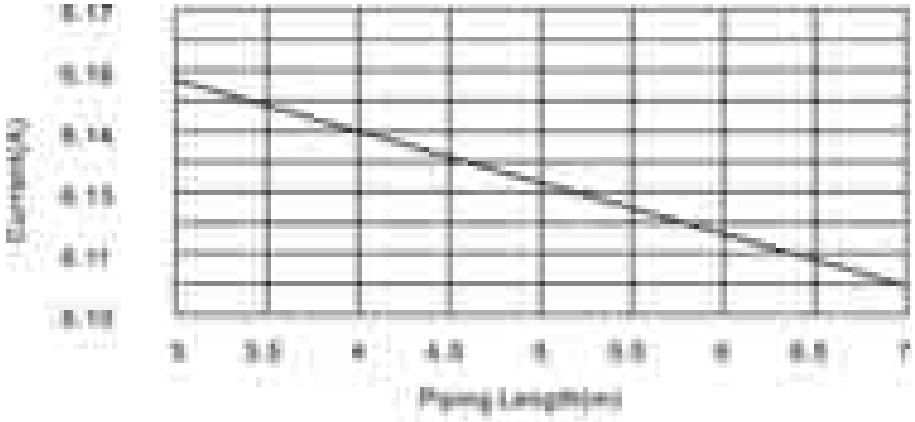


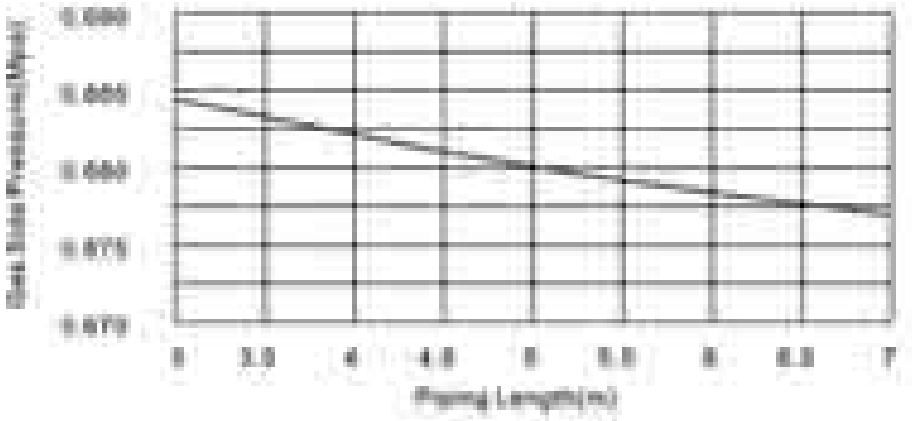


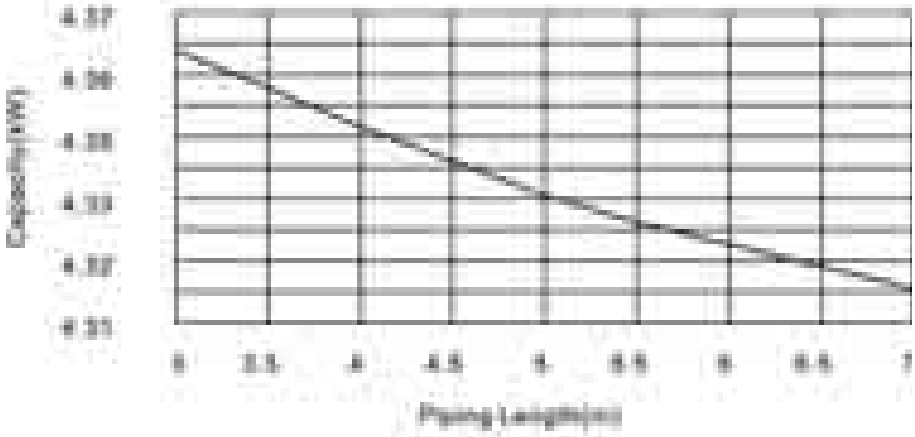


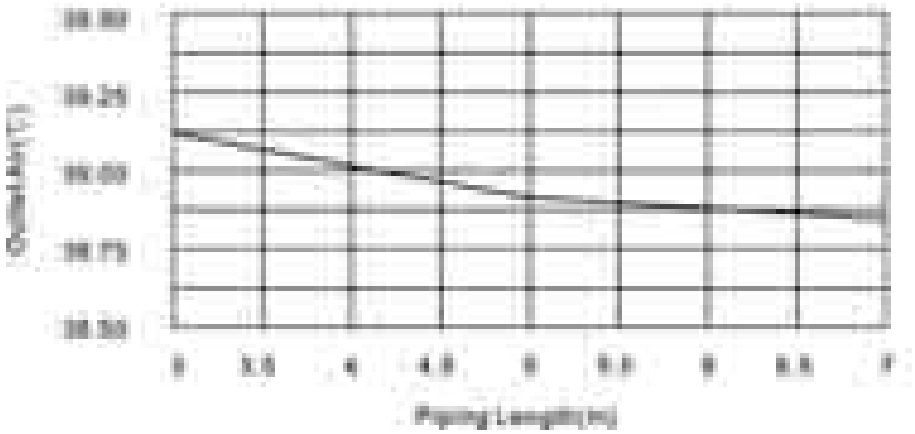


Heating Characteristic at Different Piping Length





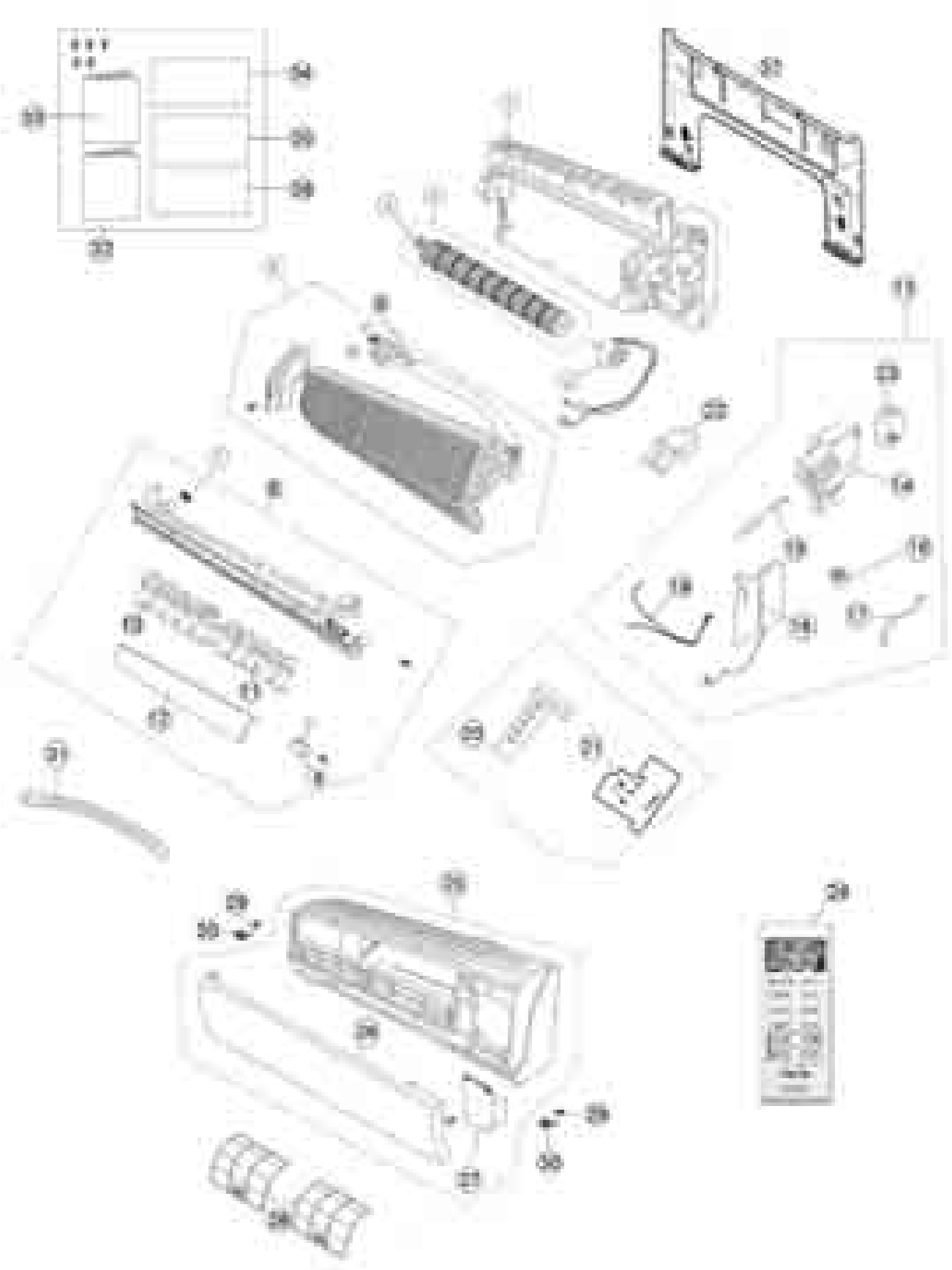




16. Exploded View and Replacement Pars List

16.1 Indoor Unit

CS-UE9PKE, CS-UE12PKE



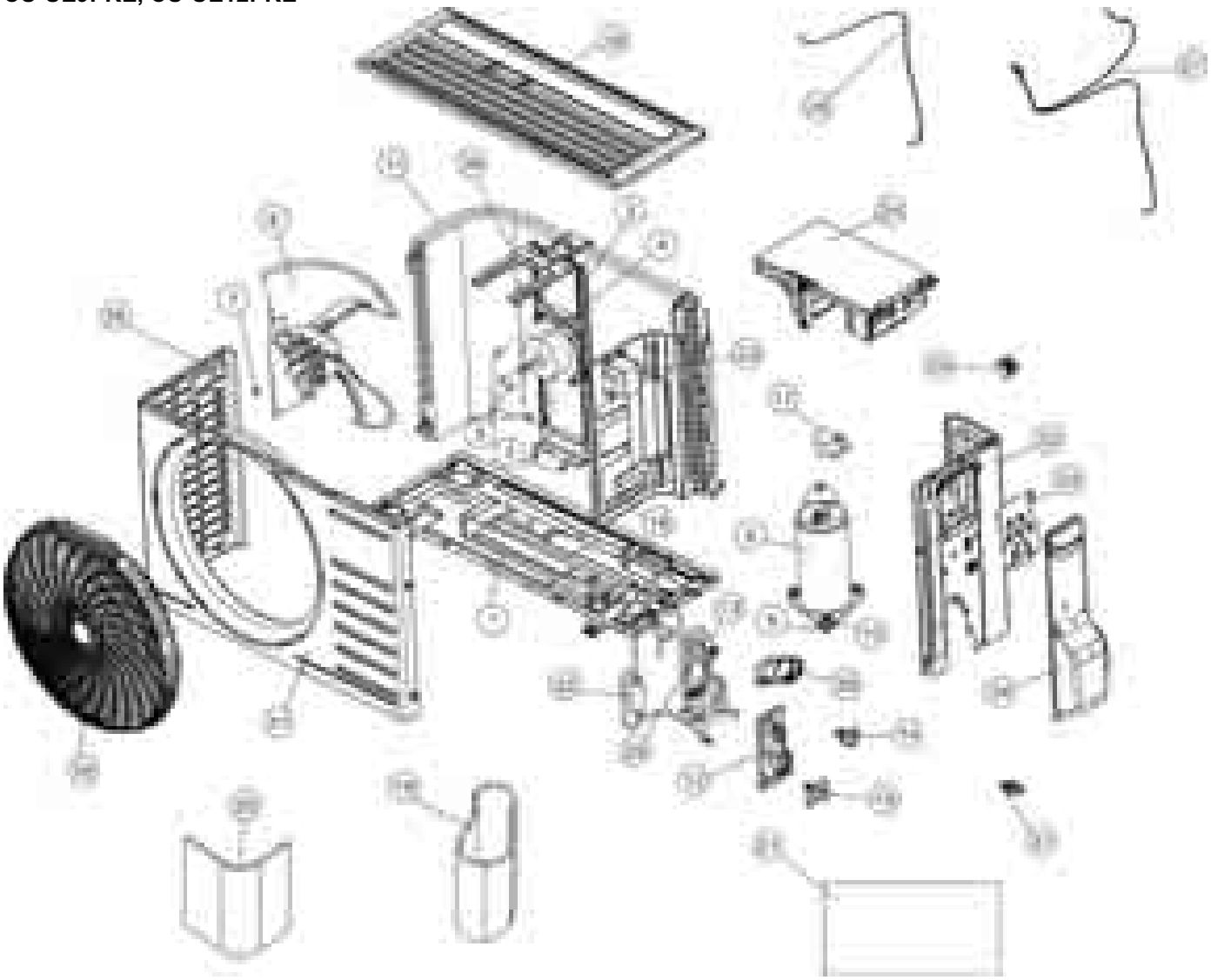
REF. NO.	DESCRIPTION & NAME	QTY.	CS-UE9PKE	CS-UE12PKE
1	CHASSIS COMPLETE	1	CWD50C1760	CWD50C1760
2	FAN MOTOR(DC,310V,30W)	1	ARW7674AC	ARW7674AC
3	CROSS FLOW FAN COMPLETE	1	CWH02C1145	CWH02C1145
4	BEARING ASS'Y	1	CWH64K1008	CWH64K1008
5	EVAPORATOR	1	CWB30C4338	CWB30C4338
6	AUXILIARY TUBE ASS'Y	1	CWT01C5455	CWT01C5455
7	DRAIN PLUG	1	CWH521096	CWH521096
8	DISCHARGE GRILLE COMPLETE	1	CWE20C3391	CWE20C3391
9	AIR SWING MOTOR(DC,12V,200OHM)	1	CWA981292	CWA981292
10	HORIZONTAL AIR FLOW VANE (L)	1	CWE24C1291	CWE24C1291
11	HORIZONTAL AIR FLOW VANE (R)	1	CWE24C1292	CWE24C1292
12	VERTICAL AIR FLOW VANE	1	CWE241395	CWE241395
13	CONTROL BOX COMPLETE	1	CWH14C9892	CWH14C9887
14	CONTROL BOARD CASING	1	CWH102487	CWH102487
15	PARTICULAR PIECE	1	CWD933089	CWD933089
16	TERMINAL BOARD COMPLETE	1	CWA28C2546	CWA28C2547
17	POWER SUPPLY CORD COMPLETE	1	CWA20C3090	CWA20C3090
18	MAIN PCB	1	CWA73C6895	CWA73C6896
19	SENSOR	1	CWA50C2883	CWA50C2883
20	INDICATOR HOLDER-FRONT	1	CWD933546	CWD933546
21	INDICATOR PCB	1	CWA746860	CWA746860
22	CONTROL BOARD TOP COVER	1	CWH131523	CWH131523
23	CONTROL BOARD BACK COVER	1	CWH131526	CWH131526
24	REMOTE CONTROL	1	CWA75C4165	CWA75C4165
25	FRONT GRILLE COMPLETE	1	CWE11C5512	CWE11C5512
26	INTAKE GRILLE	1	CWE22K1627	CWE22K1627
27	GRILLE DOOR	1	CWE14C1092	CWE14C1092
28	AIR FILTER	2	CWD001339	CWD001339
29	SCREW-FRONT GRILLE	2	XTT4+16CFJ	XTT4+16CFJ
30	CAP-FRONT GRILLE	2	CWH521236A	CWH521236A
31	DRAIN HOSE	1	CWH851136	CWH851136
32	OPERATING INSTRUTIONS	1	CWF568882	CWF568882
33	OPERATING INSTRUTIONS	1	CWF568942	CWF568942
34	INSTALLATION INSTRUCTION	1	CWF615608	CWF615608
35	INSTALLATION INSTRUCTION	1	CWF615609	CWF615609
36	INSTALLATION INSTRUCTION	1	CWF615610	CWF615610
37	INSTALLATION PLATE	1	CWH361136	CWH361136

(Note)

- All parts are supplied from PAPAGZ, China

16.2 Outdoor Unit

CU-UE9PKE, CU-UE12PKE



REF. NO.	DESCRIPTION & NAME	QTY.	CU-UE9PKE	CU-UE12PKE
1	CHASSIS ASS'Y	1	CWD52K1326A	CWD52K1325A
2	FAN MOTOR BRACKET	1	CWD541225	CWD541225
3	SCREW-FAN MOTOR BRACKET	2	CWH551148A	CWH551148A
4	FAN MOTOR(DC,280-340V,40W)	1	L6CAYYYL0027	L6CAYYYL0027
5	SCREW-FAN MOTOR MOUNT	4	CWH551148A	CWH551148A
6	PROPELLER FAN ASS'Y	1	CWH03K1059	CWH03K1059
7	NUT-PROPELLER FAN	1	CWH561098	CWH561098
8	COMPRESSOR	1	CWB092691	CWB092679
9	ANTI-VIBRATION BUSHING	3	CWH501022	CWH501022
10	NUT-COMPRESSOR MOUNT	3	CWH561096	CWH561096
11	CONDENSER	1	CWB32C3620A	CWB32C3621A
12	HOLDER COUPLING ASS'Y	1	CWH351094	CWH351094
13	4-WAY VALVE	1	CWB001070	CWB001070
14	2-WAY VALVE	1	CWB021531	CWB021531
15	3-WAY VALVE	1	CWB011763	CWB011763
17	TERMINAL COVER	1	CWH171041	CWH171048
18	SOUND PROOF BOARD	1	CWH15K1072	CWH15K1071
19	SOUND PROOF MATERIAL	1	CWG302809	CWG302815
20	SOUND PROOF MATERIAL	1	CWG302732	CWG302732
21	SOUND PROOF MATERIAL	1	-	CWG302791
22	TUBE (NOISE SUPPRESSOR)	1	CWB141023	CWB141023
23	REACTOR	1	G0C103J00031	G0C103J00039
24	CONTROL BOX COMPLETE	1	CWH14C9874	CWH14C9872
25	TERMINAL BOARD ASS'Y	1	CWA28K1248	CWA28K1248
26	SENSOR COMPLETE(COMP.)	1	CWA50C2834	CWA50C2834
27	SENSOR COMPLETE(PIPING)	1	CWA50C2882	CWA50C2882
28	TUBE ASS'Y(CAPILLARY)	1	CWT01C6247	CWT01C6238
29	V-COIL COMPLETE	1	CWA43C2575	CWA43C2575
30	TOP PLATE	1	CWE031188A	CWE031188A
31	CABINET FRONT PLATE	1	CWE06C1337	CWE06C1337
32	CABINET SIDE PLATE	1	CWE04C1444	CWE04C1445
33	CONTROL BOARD COVER(INNER)	1	CWH131585	CWH131585
34	CONTROL BOARD COVER(OUTER)	1	CWH13C1295	CWH13C1295
35	DISCHARGE GRILLE	1	CWE201195	CWE201195
36	HANDLE	1	CWE16037C	CWE16037C
37	DRAIN ELBOW	1	CWT201212	CWT201212
38	PARTICULAR PIECE	1	CWD933700	CWD933700

(Note)

- All parts are supplied from PAPAGZ, China.

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