ECO Systems

Split Heat Pump Owner's Manual

Thank you for selecting an ECO heat pump split system.

To ensure many years satisfactory operation, this owner's manual should be read carefully before using the heat pump. After reading, store the manual in a safe place and refer to it for questions on use.

The ECO heat pump is intended for domestic and light commercial applications.

56208001-03

Contents

Preparation before use

Before using the air conditioner, be sure to check and pre-set the following:

- ***Remote controller pre-setting***

  See page 7 **to configure to heat pump operation**

Safety Precautions

Symbols used in this manual are as shown below:

Do not do this.

This is a feature, not a fault.

Pay attention to this situation.

This instruction must be followed.

Earthing (Grounding) is essential.

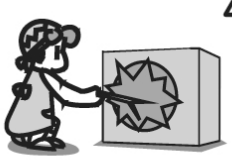
Warning: Incorrect handling could cause serious hazard or injury.

Power supply must be in accordance with the rating plate requirement. Failure to comply may result in serious faults, hazards or fire.
If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or other qualified personnel in order to avoid hazards.

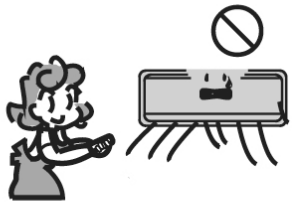
Keep the power supply MCB or fuse clean. Ensure connections to the MCB or fuse are secure; failure to do so may result in electric shock or fire.

Don't use the power supply circuit breaker to turn the unit off. Don't pull the plug out using the cable.

Do not tangle, pull or stress the power supply cord as damage may result in electric shock or fire.

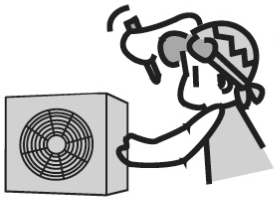


Never insert a stick or similar object into the unit. Such actions may lead to damage to the unit and injury.

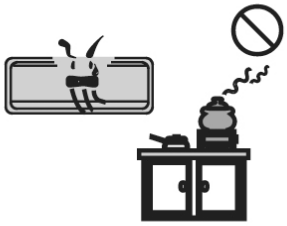


It may prove harmful to your health if subjected to cool air for long periods. It is advisable to direct the airflow away from occupants and cool the room as a whole.

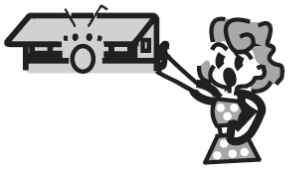
Always turn the air conditioner off via the remote controller before turning off the power.



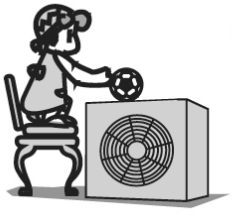
Should repairs become necessary, they should only be carried out by qualified personnel.



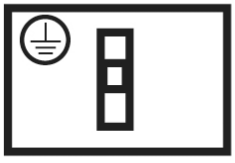
Ensure the airflow is directed away from gas burners and stoves.



Do not touch the operating buttons when your hands are wet.



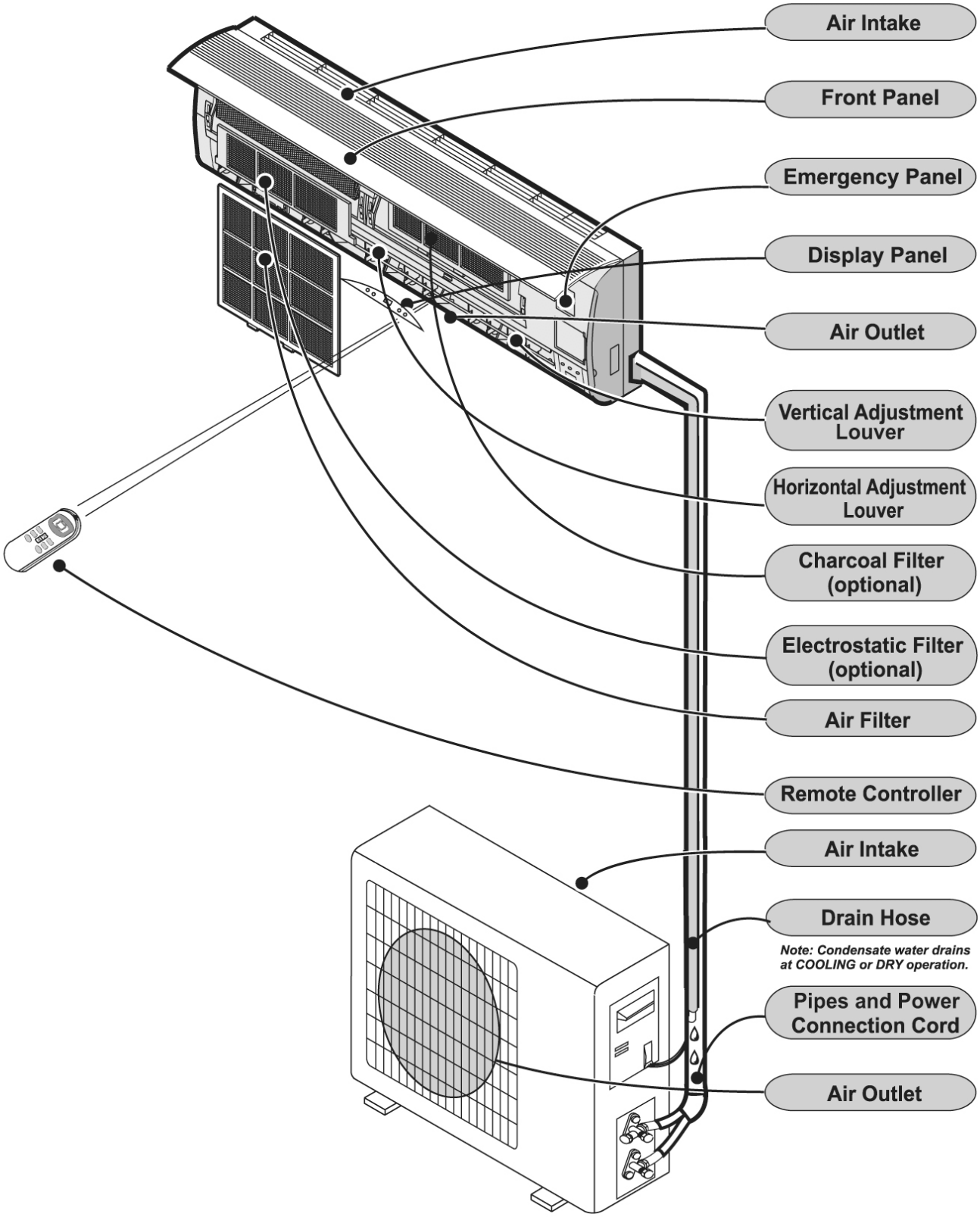
Do not put any objects on the outdoor unit or obstruct the airflow.

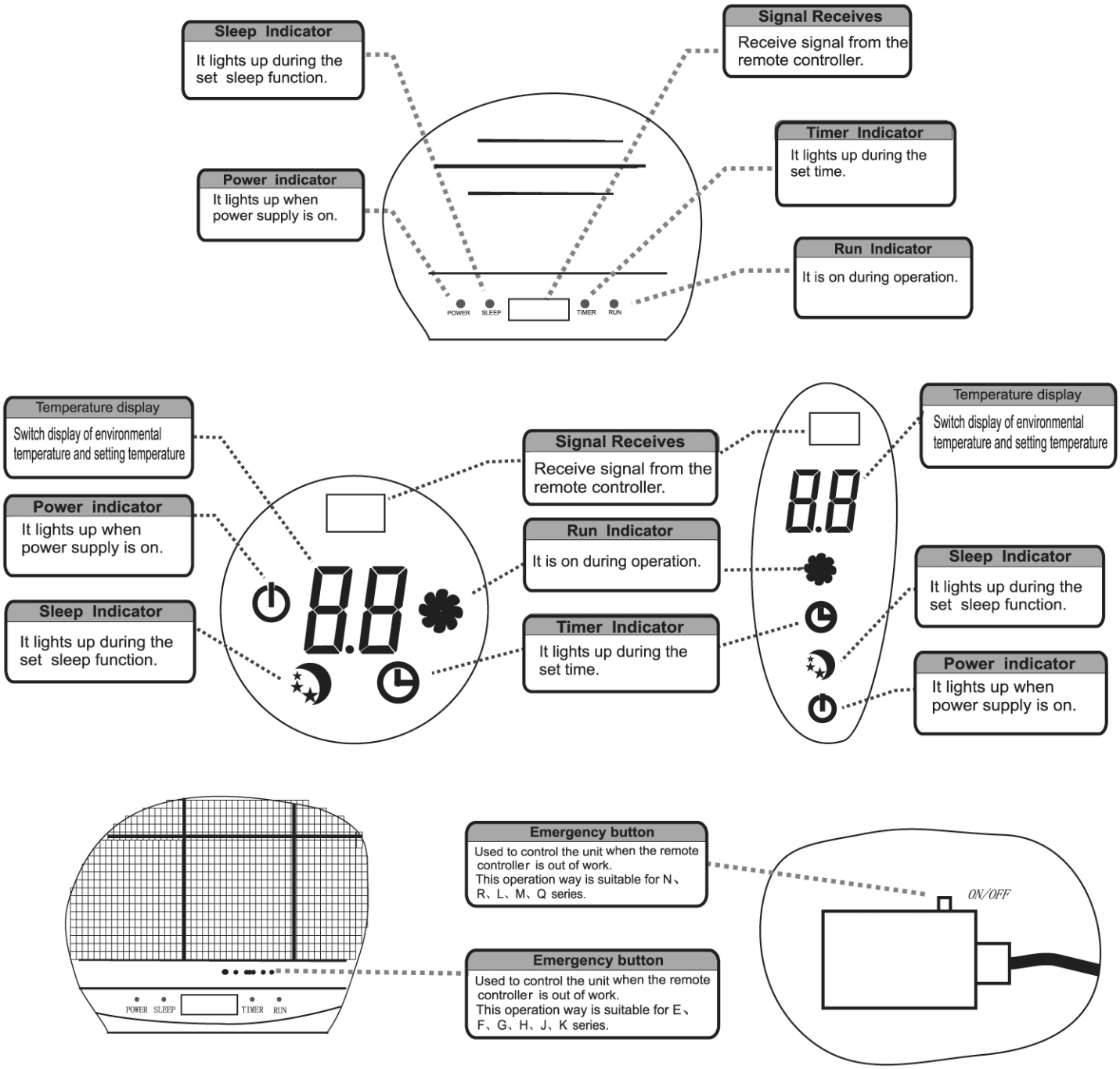


The equipment must be earthed (grounded) in accordance with local regulations. Qualified personnel only should carry out electrical wiring.

Notes: 1. For the purpose of innovation and improvement, these products are subject to change without prior notice.
2. The air conditioner is not a toy, please keep children away from equipment!

Identification of Parts




Sleep Indicator
It lights up during the set sleep function.
Signal Receives
Receive signal from the remote controller.
Timer Indicator
It lights up during the set time.
Power indicator
It lights up when power supply is on.
Run Indicator
It is on during operation.
POWER
SLEEP
TIMER
RUN
Temperature display
Switch display of environmental temperature and setting temperature
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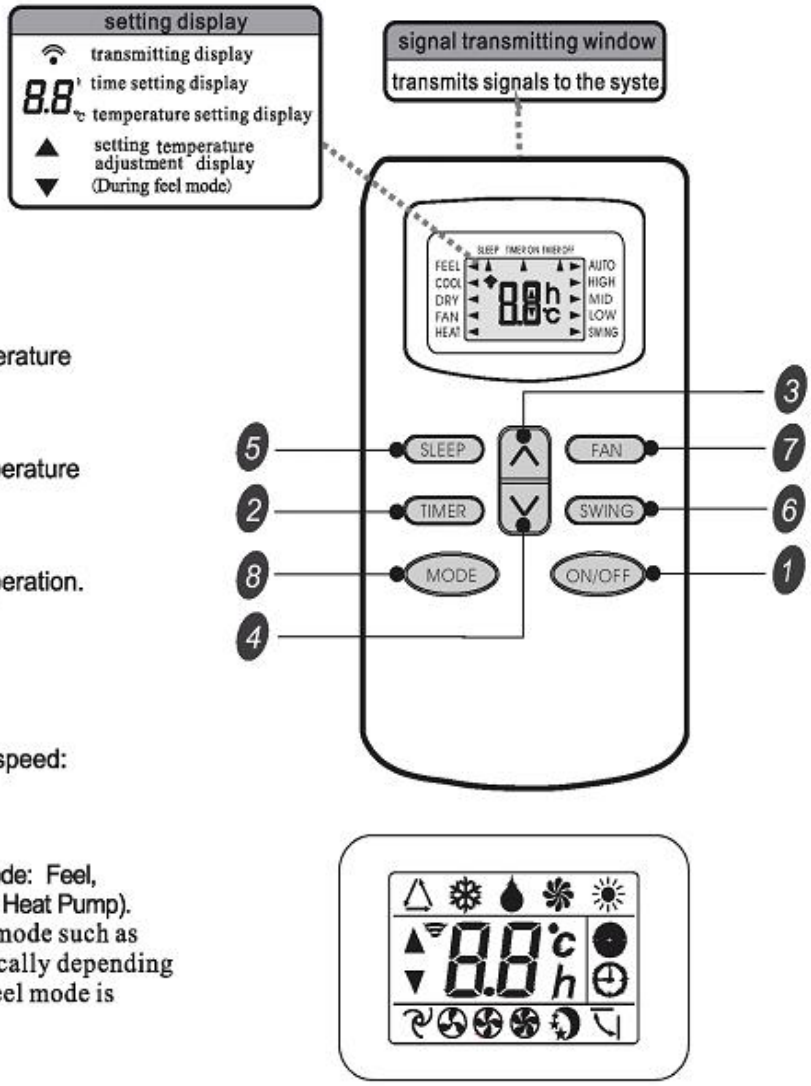
Emergency button
Used to control the unit when the remote controller is out of work.
This operation way is suitable for N、R、L、M、Q series.
Emergency button
Used to control the unit when the remote controller is out of work.
This operation way is suitable for E、F、G、H、J、K series.
ON/OFF

Remote Controller



1 ON/OFF button
Used to start and stop operation when pressed.

2 TIMER button
Used to select TIMER operation.

3 UP button
Used to increase the set room temperature and time.

4 DOWN button
Used to decrease the set room temperature and time.

5 SLEEP button
Used to set or cancel sleep mode operation.

6 SWING control button
Used to adjust airflow direction.

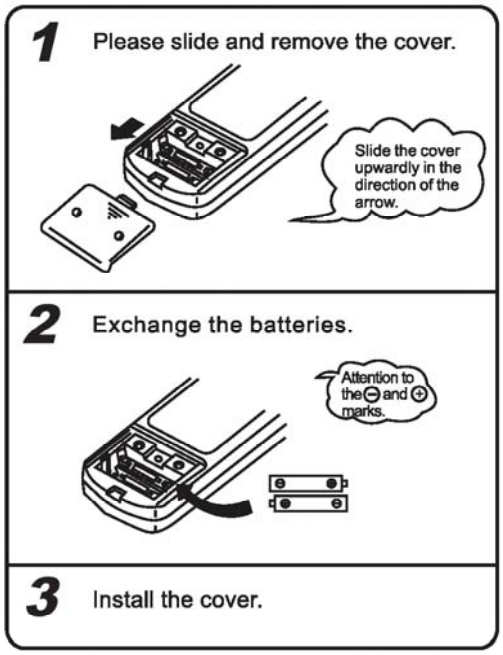
7 FAN SPEED control button
Used to select the indoor fan motor speed: Auto, High, Mid and Low.

8 MODE button
Used to select the type of operation mode: Feel, Cooling, Dry, Fan and Heating(Only for Heat Pump). Feel mode can select the operation mode such as COOL, DRY, FAN, HEAT automatically depending on the room temperature, and the feel mode is default setting at starting

(See page 7 for battery replacement).

Remote Controller

How to insert batteries



Remove the battery cover by sliding in the direction of the arrow.

Insert new batteries (2 x AAA) making sure the polarity is correct

The remote controller will default to Heat Pump mode if no buttons are pressed for 10 seconds, at which point the 'Heat'/'Cool' flashing will stop.

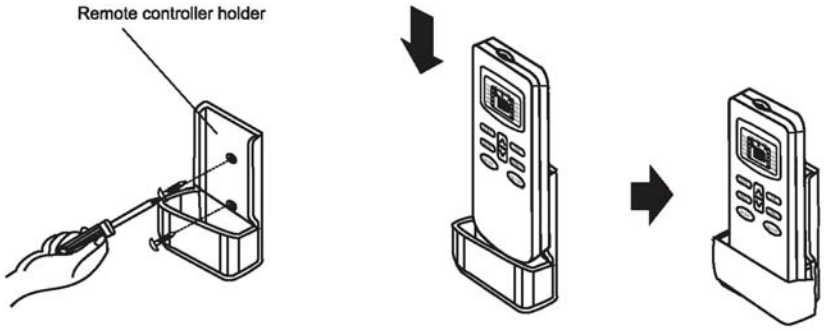
Alternatively:
Press any button on the remote controller while "Heat" is indicated to preset the controller for Heat Pump operation.

Notes:
If the remote controller is preset for cooling only, heating commands will not be possible.
Use 2 LR03 AAA (1.5volt) batteries. Do not use rechargeable batteries.
Replace batteries with new ones of the same type when the display becomes dim.

Re-attach the battery cover by sliding it back into position.

Storage tips for using the Remote Controller

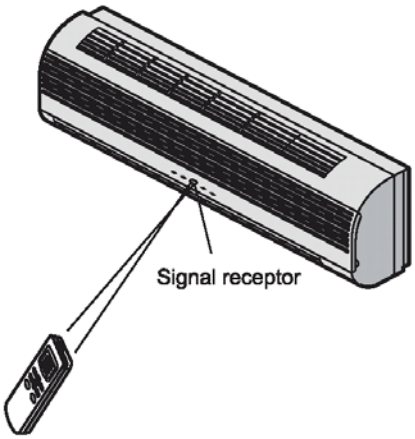
The remote controller may be stored on a wall with a holder.



Using the remote controller

To operate the Eco heat pump, point the controller at the receiver in the middle of the unit.

The controller will operate up to 7m away from the unit if pointed directly at the receiver.



Operating Instructions

FEEL mode operation procedure

With the remote controller pointing towards the air conditioner:

Turning on

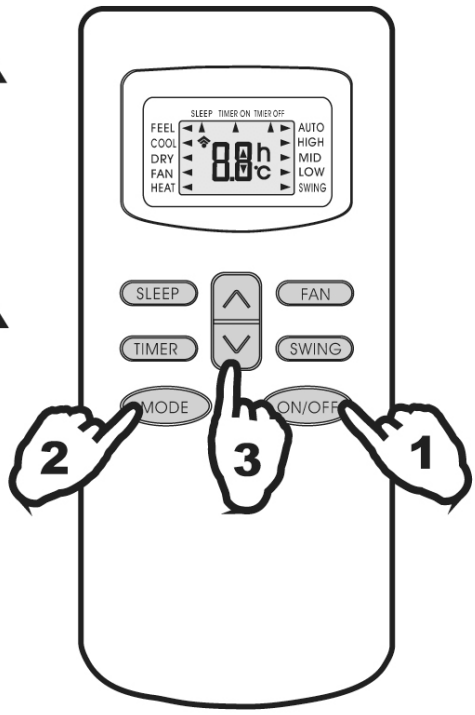
Press (ON/OFF) button, when the appliance receives the signal, the RUN indicator of the indoor unit lights up. 1

When the unit is not at FEEL mode.

Selecting FEEL mode

Press the MODE select button.

Move the MODE to the FEEL position. 2



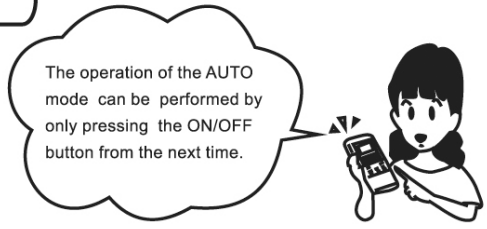
Operation mode and temperature are determined by indoor temperature

Indoor temperature	Operation mode	Target temperature
Less than 20℃	HEATING (FOR HEAT PUMP TYPE) FAN (FOR COOL ONLY TYPE)	23℃
20℃~26℃	DRY	18℃
Over 26℃	COOLING	23℃

Air temperature adjustment is possible even during FEEL operation. There are 6 levels of adjustment possible with the ^ button or the v button.

Setting temperature

Press the ^ button or the v button.
When the ^ button is pushed,the temperature will increase 1℃ .
After temperature will increase 2℃ ,the indicator will not change. 3
When the v button is pushed,the temperature will reduce 1℃ .
After temperature reduce 2 ℃ ,the indicator will not change.



Note:
There will be a delay when changing mode during unit operation.
The fan may stop during the changeover

- If you don't like FEEL mode, try changing to HEATING, DRY or COOLING instead.

Operating Instructions

TIMER mode

The timer may be set to start the system operation during your absence, to create comfortable conditions on your return.

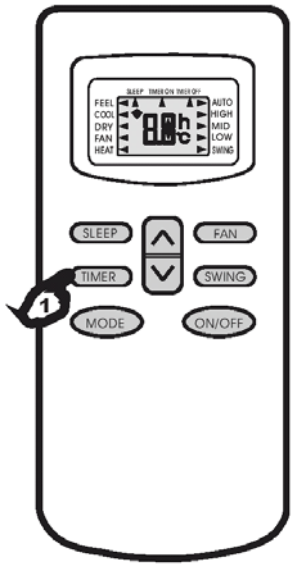
It can also be set to turn the system off after a programmed delay, eg when you go to bed.

Timer-setting

When the remote controller is off , press the TIMER button to set a switch-on timer, press again ,the setting will be cancel.

When the remote controller is on , press the TIMER button to set a switch-off timer, press again ,the setting will be cancel.

Press UP and DOWN button to set time.
Time setting is 30-minutes.

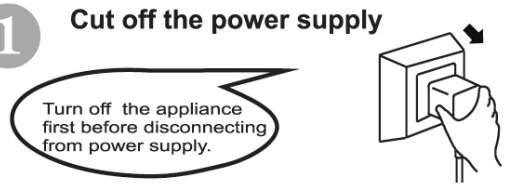


Note: After setting the timer, check that the TIMER INDICATION light is visible on the indoor unit.

Maintenance

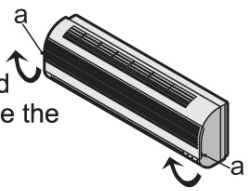
Front panel maintenance

1 Cut off the power supply



2

Grasp position "a" and pull outward to remove the front panel.

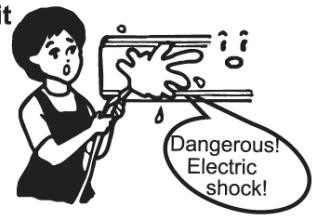


3 Wipe with a soft and dry cloth.

Use lukewarm water (below 40℃) to clean if the appliance is very dirty.

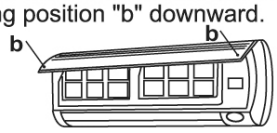
4 Never use volatile substance such as gasoline or polishing powder to clean the appliance.

5 Never sprinkle water onto the indoor unit



6 Reinstall and shut the front panel.

Reinstall and shut the front panel by pressing position "b" downward.

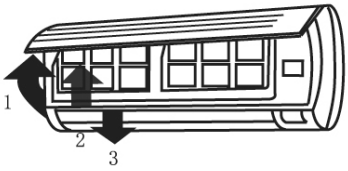


Air filter maintenance

It is necessary to clean the air filter after using it for about 100 hours.

Clean it as follows:

1 Stop the appliance and remove the air filter.



1.Open the front panel.
2.Press the handle of the filter gently from the front.
3. Grasp the handle and slide out the filter.

2 Clean and re-install the air filter.

If the dirt is conspicuous, wash it with a solution of detergent in lukewarm water. After cleaning, dry well in shade.

3 Close the front panel again.

☑ ***Clean the air filter every two weeks if the air conditioner operates in an extremely dusty environment.***

Protection

Operating condition

The protective device may trip and stop the appliance in the cases listed below.

HEATING	Outdoor air temperature is over 24°c
	Outdoor air temperature is below -7°c
	Room temperature is over 27°c
COOLING	Outdoor air temperature is over *43°c
	Room temperature is below 21°c
DRY	Room temperature is below 18°c

* ***For Tropical (T3) Climate condition models, the temperature point is 52℃ instead of 43℃.***

If the air conditioner runs in COOLING or DRY mode with door or window opened for a long time when relative humidity is above 80%,dew may drip down from the outlet.

Noise pollution

- Install the air conditioner at a place that can bear its weight in order to operate more quietly.
- Install the outdoor unit at a place where the air discharged and the operation noise would not annoy your neighbours.
- Do not place any obstacles in front of the air outlet of the outdoor unit lest it increases the noise level.

Features of protector

❶ **The protective device will work as follows.**

- Restarting the unit at once after operation stops or changing mode during operation, you need to wait 3 minutes.
- Connect to power supply and turn on the unit at once, it may start 20 seconds later.

❷

- If all operation has stopped, press **ON/OFF** button again to restart.
- Timer should be set again if it has been cancelled.

Inspection

After using for a long time, the air conditioner should be inspected on the following items.

- Overheat of the power supply cord and plug or even a burning smell.
- Abnormal operating sound or vibration.
- Water leakage from indoor unit.
- Metal cabinet electrified.

☑ ***Stop the air conditioner if above occurs. It is advisable to have a detail inspection after using it for 5 years even if none of the above occurs.***

Features of HEATING mode

Preheat

At the beginning of **HEATING** operation, the airflow from the indoor unit is discharged 2-5 minutes later.

Afterheat

After the finishing of **HEATING** operation, the airflow from the indoor unit is discharged 2-5 minutes.

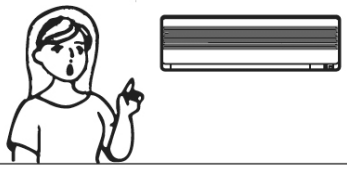
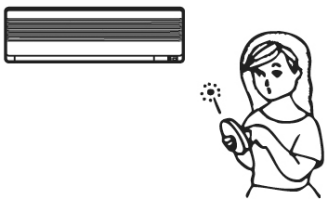
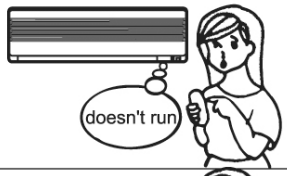
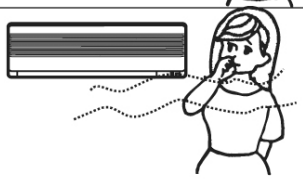
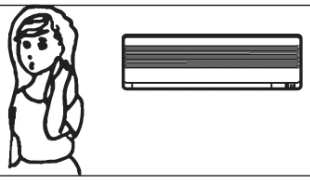
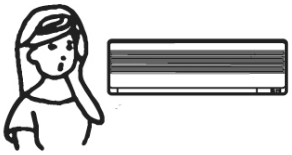
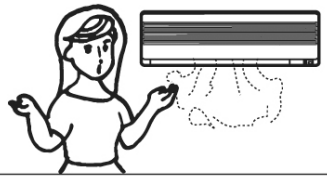
Defrost

In **HEATING** operation the appliance will defrost (de-ice) automatically to raise efficiency. This procedure usually lasts 2-10 minutes. During defrosting, fans stop operation. After defrosting completes, it returns to **HEATING** mode automatically.

Note: Heating is NOT available for cooling only air conditioner models.

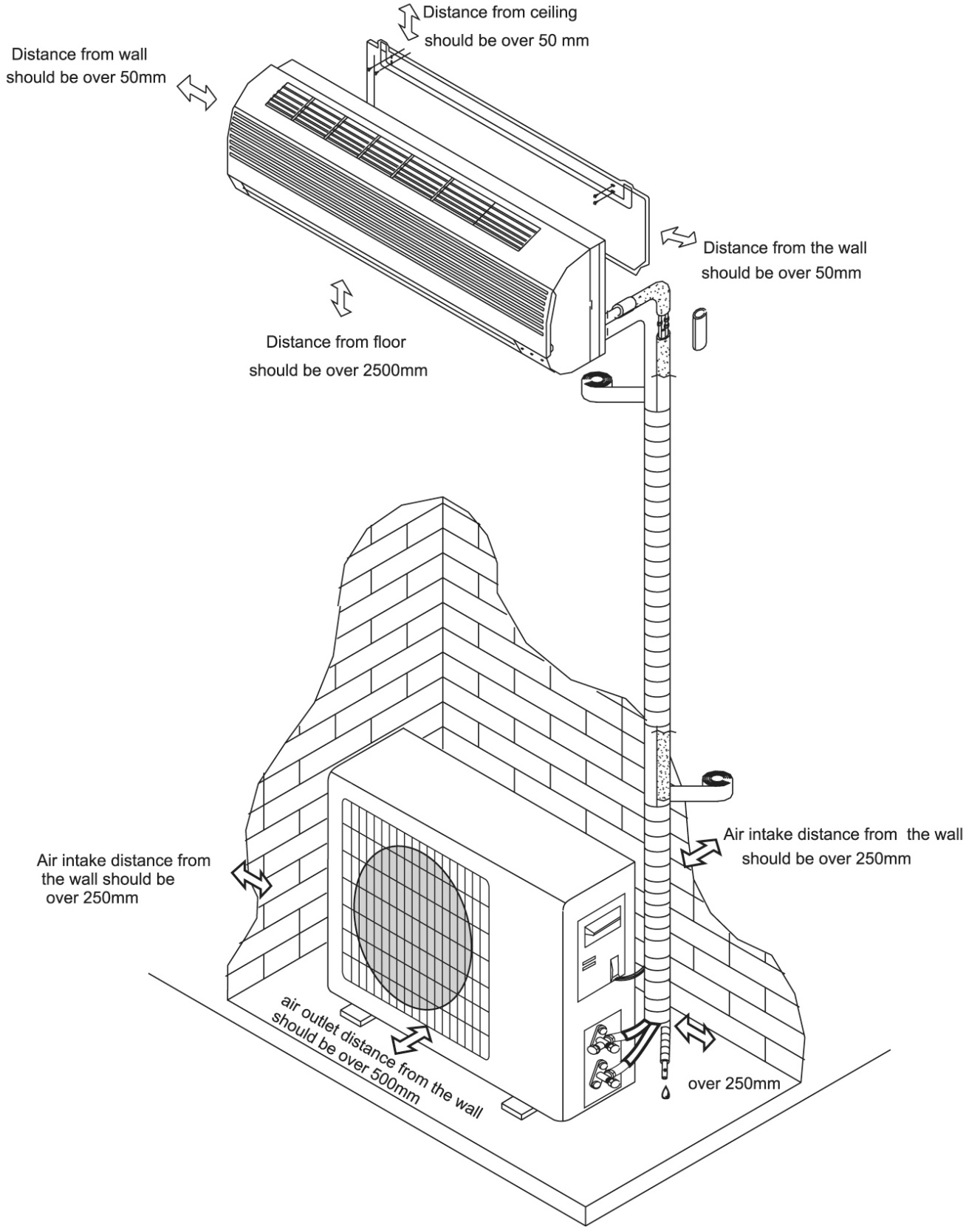
Troubleshooting

The following examples may not always be due to a malfunction; please check before calling an engineer.

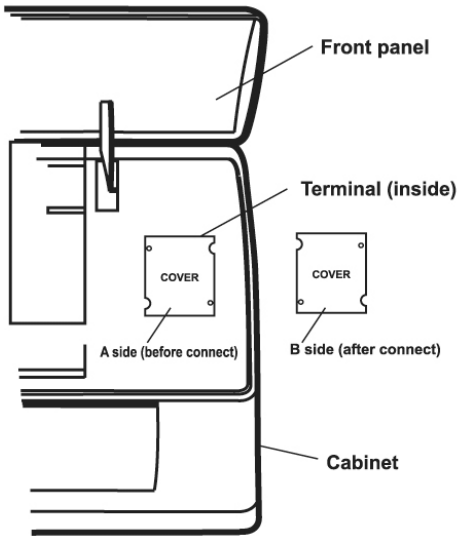
Trouble	Analysis
Does not run 	• If the plug is not properly plugged. • If batteries in the remote controller are exhausted. • If the protective device works to protect the appliance. • If the protector trip or fuse is blown.
No cooling or heating air 	• Are the intakes and outlets of the air conditioner blocked? • Is the temperature set properly? • Is the air filter dirty?
Ineffective control 	• If strong interference(from excessive static electricity discharge, power supply voltage abnormality)presents , operation will be abnormal. At this time, disconnect from the power supply and connect back 2-3 seconds later.
Does not operate immediately 	• Changing mode during operation, 3 minutes will delay.
Peculiar odour 	• This odour may come from another source such as furniture, cigarette etc, which is sucked into the unit and blows out with the air.
A sound of flowing water 	• Caused by the flow of refrigerant in the air conditioner, not a problem. • Defrosting sound in heating mode.
Cracking sound is heard 	• The sound may be generated by the expansion or contraction of the front panel due to change of temperature.
Spray mist from the outlet 	• Mist appears when the room air becomes very cold because of cool air discharged from the indoor unit during **COOLING** or **DRY** operation mode.
The compressor indicator(red) lights on constantly, and indoor fan stops.	• The unit is shifting from heating mode to defrost. The indicator lights will go off within ten minutes and unit will return to heating mode.

Installation instructions

Typical installation:



Installation instructions



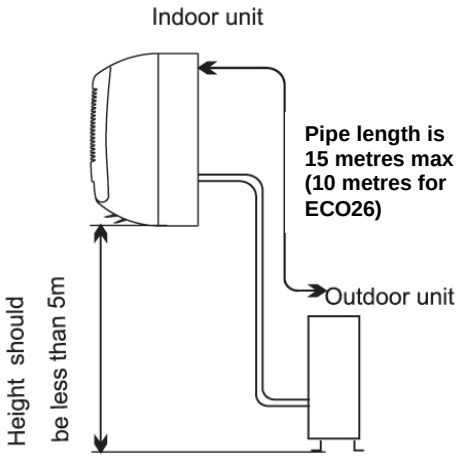
Connecting the cable

Wiring between the indoor and outdoor units.

- Remove the PCB cover from the indoor unit;
- Refer to the wiring diagram attached to the indoor unit when connecting the cables to the indoor unit terminals;
- Reinstall the PCB cover. Be sure that side B is facing towards the outside.

Selecting the best location

Installation Diagram

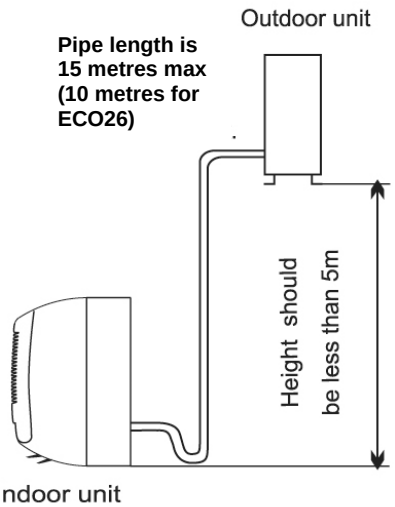


Indoor unit location.

- Ensure there is no obstruction to the air outlet and air can be directed to all areas of the room.
- Ensure adequate access for pipe work.
- Space between ceilings and walls to be as in the diagram on page 13.
- Ensure the air filter can be easily removed.
- Install more than 1m away from electronic equipment such as televisions.
- Keep as far away as possible from fluorescent light fittings.
- Do not obstruct the return air inlet.
- Ensure the wall is strong enough to support the weight of the unit.

Outdoor unit location.

- Install in a well-ventilated area with no obstructions to the air outlet.
- Ensure the distance from the rear of the unit to the wall is as per the diagram on Page 13.
- Install on a fixed base to prevent excessive vibration.

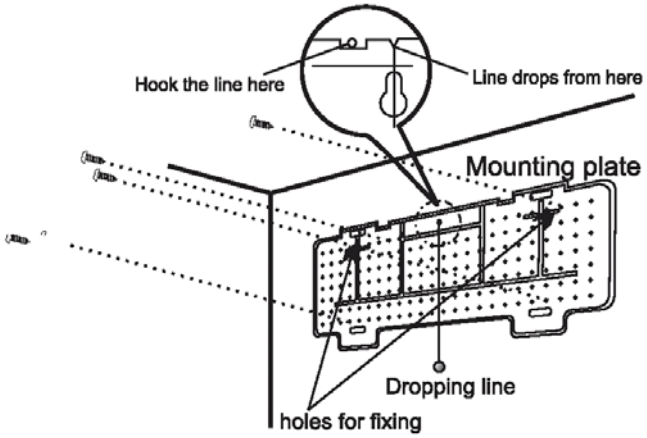


Installation instructions

Indoor unit installation

1. Installing the mounting plate

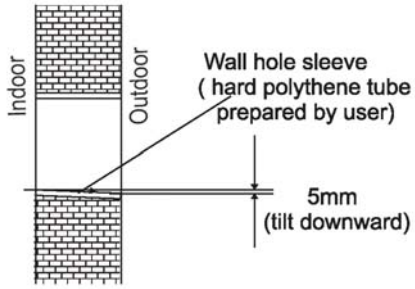
- Determine the location for the indoor unit.
- Place the mounting plate against the wall ensuring it is level.
- Mark the wall and drill holes to a depth of 32mm.
- Insert plastic plugs into the drilled holes and fix the mounting plate with screws.
- Ensure the mounting plate is securely fixed then drill a hole through the wall for the pipes.



(Note: The shape of the mounting plate may differ from that shown in the diagram but installation is similar).

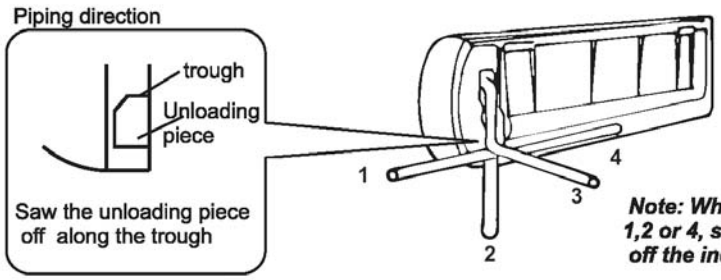
2. Drill a hole for the pipes

- Determine the position for the pipework hole according to the location of the mounting plate.
- Drill a hole through the wall Ø50-75mm. The hole should slope down from inside to outside.
- Install a sleeve through the hole to protect both the pipes and the wall.



3. Indoor unit pipework installation

- Run the pipework through the hole in the wall and connect to the indoor unit.
- If the pipework is to enter the indoor unit through the side, cut the unloading piece to suit as in the diagram below.



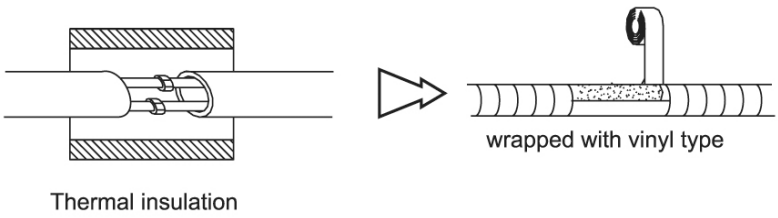
Note: When installing the pipe as per the directions 1,2 or 4, saw the corresponding unloading piece off the indoor unit base.

- After connecting the pipework, install and connect the drain hose, then connect the wiring.
- When all connections are made, wrap the pipes, cables and drain hose together with thermal insulation tape.

Installation instructions

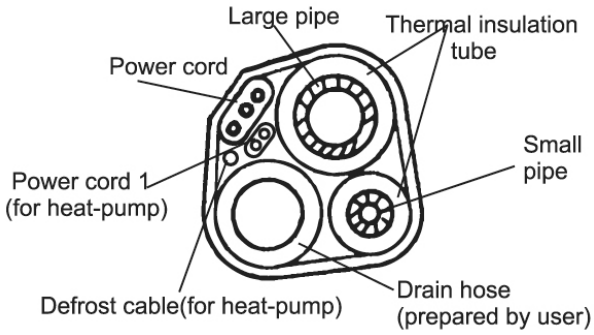
NOTE

- **Pipework joints - thermal Insulation:**
  Insulate the interconnecting pipework with thermal insulation and tape any joints.



- **Pipework - Thermal Insulation:**

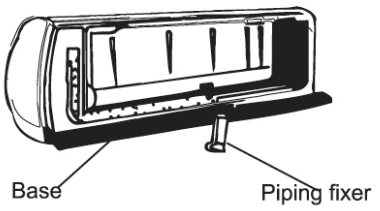
a. Run the drain hose under the pipework.
b. Insulate with at least 6mm thick insulation material.
Note: The drain hose is supplied by the installer

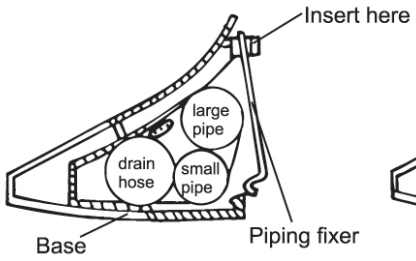


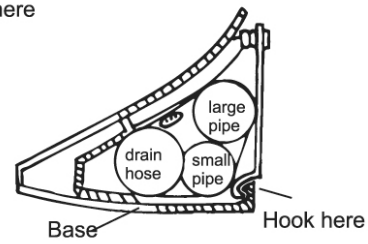
- The drain hose should be installed with a fall away from the unit.
  Ensure there are no kinks in the drain hose
  Terminate the drain hose where it cannot become immersed in water.

  Ensure any joints in the drain hose are well insulated.

- When the pipework is to be routed to leave the right hand side of the unit, pipes, drain hose and cables should be insulated as above and secured within the unit using the piping fixer.



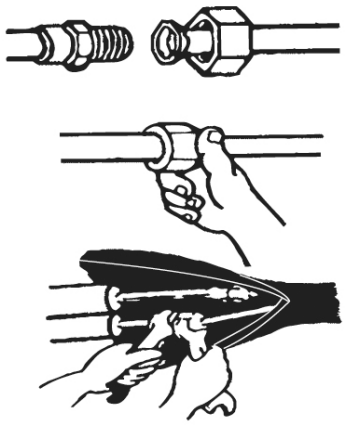




- **Pipework connection:**

  Finger-tighten indoor unit pipework, then use two spanners as table below.

  Pay special attention to the allowable torques (as shown in the table) to prevent the pipes, connectors and flare nuts from being deformed and damaged.



Model	Liquid line	Suction line
ECO 26	1/4”	3/8”
ECO 35	1/4”	1/2”
ECO 50	1/4”	1/2”
ECO 70	3/8”	5/8”

Torque (kg/m)		Nut A/F (mm)	
Liquid line	Suction line	Liquid line	Suction line
1.8	3.5	17	22
1.8	5.5	17	24
1.8	5.5	17	24
3.5	7.5	22	27

Installation instructions

4. Connecting the cable

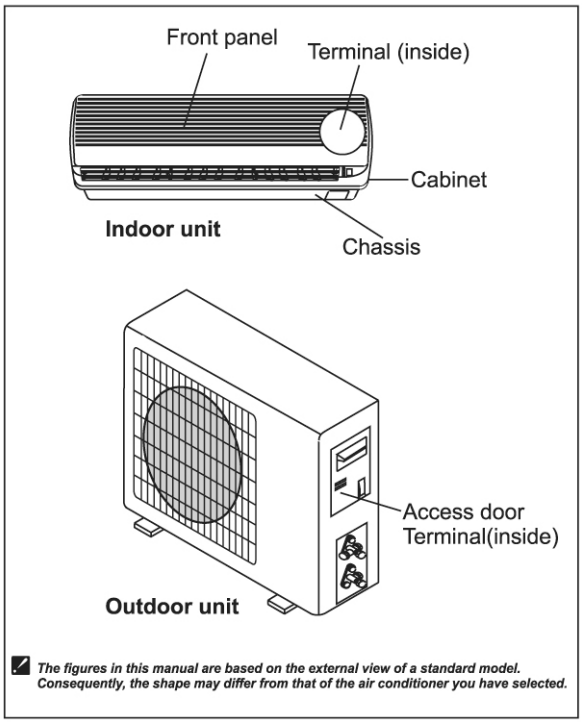
- **Indoor unit**

  Connect the power cable to the terminals on the control board on the indoor unit.

  Note: For some models it is necessary to remove the cabinet to connect to the indoor unit terminal.

- **Outdoor unit**

  1. Remove the access panel. Connect the cables to the control board terminals.
  2. Secure the power cable to the control board with the cable clamp.
  3. Refit the access panel.



Caution:

1. **Always provide a dedicated MCB or fuse.**
2. **Follow the wiring diagram on the inside of the access door.**
3. **Use the correct cable sizes, as table below.**
4. **Check all terminations are secure.**
5. **Use of an earth leakage circuit breaker is recommended.**

Cable specifications

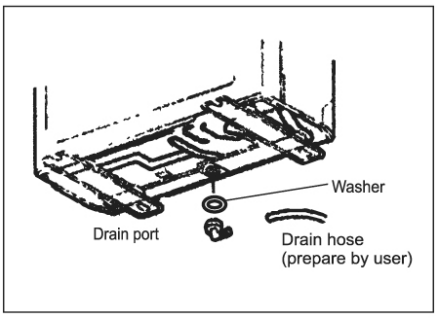
Model	**Power cable**	**Interconnecting power cable**	**Interconnecting signal cable**	**Defrost cable**
ECO 26	1.0mm² x 3core #	0.75mm² x 3core	0.75mm² x 2core	- - -
ECO 35	1.0mm² x 3core #	0.75mm² x 3core	0.75mm² x 2core	- - -
ECO 50	1.5mm² x 3core #	0.75mm² x 3core	0.75mm² x 2core	0.5mm² x 2core
ECO 70	2.5mm² x 3core **	- - -	0.75mm² x 6core	0.5mm² x 2core

Connected to indoor unit.
** Supplied loose – Connect to outdoor unit.

Installation instructions

Outdoor unit installation

1. **Install the drain port and drain hose.**
Condensate will drain from the outdoor unit when it operates in heating mode. In order to protect the environment and prevent hazardous conditions, install a drain port and hose to direct the condensate to a suitable drain.

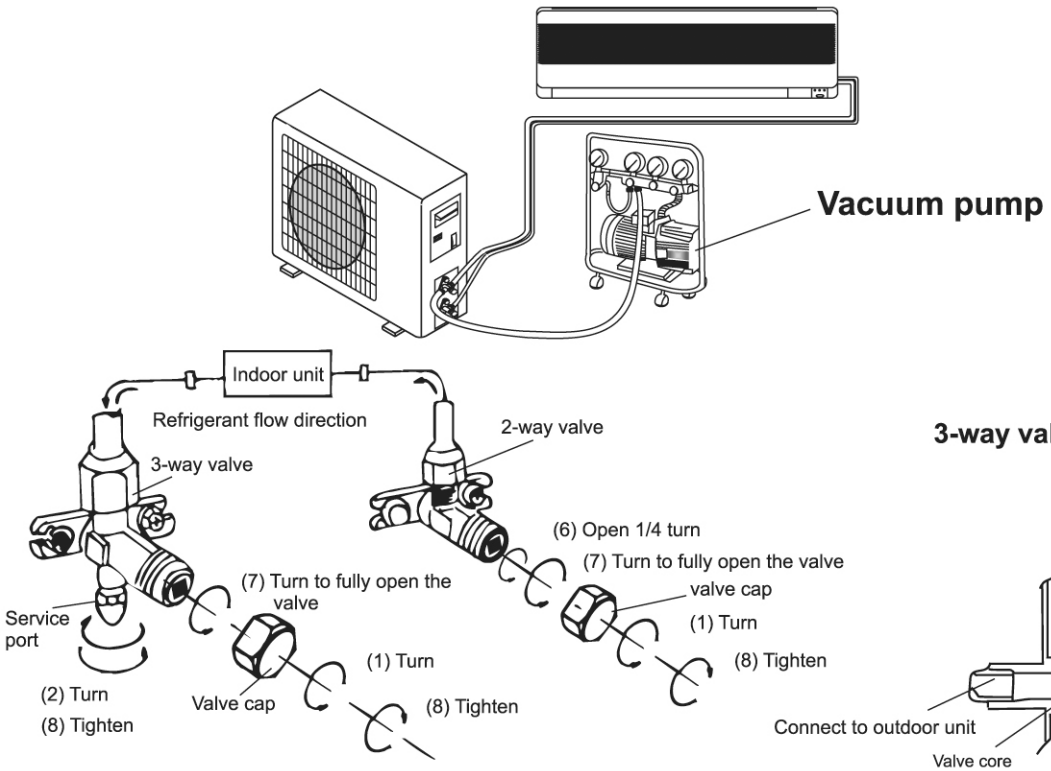


2. **Install and fix the outdoor unit.**
Fix with rawlbolts (or similar) to a flat surface that is strong enough to bear the weight of the unit. Alternatively use wall mounting brackets (55021100)

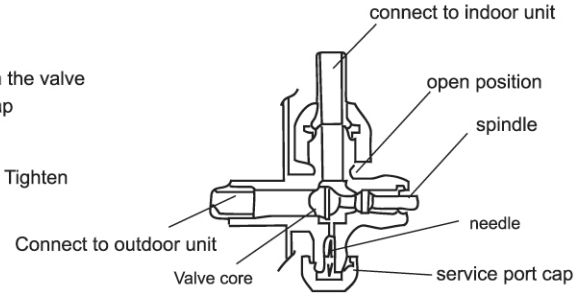
3. **Pipework connections.**
Remove the valve caps from the 2-way and 3-way valves.
Connect the pipes to the relevant valve and tighten to the correct torque. See page 16

Evacuation

The system must be evacuated prior to being operated.



3-way valve diagram



Installation instructions

How to evacuate the system:-

1. Unscrew and remove caps from 2 and 3 – way valves.
2. Unscrew and remove cap from service port.
3. Connect vacuum pump flexible hose to the service port.
4. Start vacuum pump and run until a vacuum of 10mm Hg absolute is reached.
5. With vacuum pump still running close the low-pressure valve on the gauge manifold. Then stop the vacuum pump.
6. Open the 2 – way valve ¼ turn then close it after 10 seconds. Check tightness of all joints using liquid soap or an electronic leak detector.
7. Turn 2 and 3 – way valves to the fully open position. Disconnect vacuum pump flexible hose.
8. Replace and tighten all valve caps.

NOTES

- Please read this manual before installing and using the ECO heat pump system.
- Do not let air enter the refrigeration system or discharge refrigerant when moving the equipment.
- Test run the system after finishing the installation, and record details of its operation.
- The type of fuse used on the indoor unit controllers is 50T, with rating 3.15A,T, 250V.
- The system fuse is to be provided by the user according to the current at maximum power input. Use of an alternative over-current protective device is acceptable.
- The electrical isolator must be accessible after the installation of the appliance, to allow easy isolation.
  If not possible, connect the supply via a double pole isolator with contact separation of at least 3mm, placed where it is accessible following completion of the installation.

562 series Eco units - technical specifications

Model			ECO 26	ECO 35	ECO 50	ECO 70
Indoor unit Part No.			**56200001**	**56200003**	**56200005**	**56200007**
Oudoor unit Part No.			**56200002**	**56200004**	**56200006**	**56200008**
Controller type			Remote			
Nominal cooling capacity		Btu/h (kW)	9000 (2.6)	12000 (3.5)	18000 (5.3)	24000 (7.0)
Nominal heating capacity		Btu/h (kW)	9500 (2.8)	12500 (3.7)	19000 (5.6)	26000 (7.6)
Moisture removal		L/h	1	1.3	2	2.6
Indoor noise level in cooling	High	dB(A)	36	38	42	49
	Med.	dB(A)	34	36	40	47
	Low	dB(A)	32	34	38	45
Outdoor noise level		dB(A)	54	55	58	58
Electrical Data						
Power supply			220-240V / 50Hz / 1Ph			
Voltage Range		V	198~264	198~264	198~264	198~264
Refrigerant circuit						
Refrigerant			R410A			
Charge		(g)	540g	730g	1400g	1720g
Compressor	Type		Rotary			
	Model		PA108X1C-4DZ or ASG108CV-B6DT	PA145X2C-4FT	ASH218SV-C8LU	PA290X3CS-4MU1
	LRA	A	18	26	40	61
Evaporator			Louvred fin,grooved tube (Ø7)			
Condenser			Louvred or corrugated fin, grooved tube (Ø7 or Ø9.52)			
Expansion device			Capillary tube			
Defrosting system			Microcomputer controlled reverse cycle			
Fans						
Indoor airflow (cooling)		m^3/s	0.12/0.11/0.09	0.15/0.13/0.11	0.22/0.20/0.17	0.31/0.28/0.24
Indoor fan type			Crossflow			
Indoor fan speed H/M/L	Cooling	rpm	1150/1050/950	1270/1170/1000	1060/970/880	1330/1230/1150
	Heating	rpm	1150/1050/950	1250/1150/1000	1060/970/880	1330/1230/1150
	Dry	rpm	950	1000	880	1150
	Sleep	rpm	950	1000	880	1150
Indoor fan motor output		W	12	12	22	35
Outdoor fan type			Propeller			
Outdoor fan speed		rpm	860	850	850	850
Outdoor fan motor output		W	31	45	45	76
Connections						
Connecting Pipe	Suction	Inches	3/8"	1/2"	1/2"	5/8"
	Liquid	Inches	1/4"	1/4"	1/4"	3/8"
Interconnecting wiring	Size x Core number		1.0 x3; 0.75 x2	1.5 x3; 0.75 x2	1.5 x3; 0.75 x2	0.75 x6
Condensate drain pipe O.D.		mm	16			
Other						
Typical area served		m^2	9~16	15~23	20~35	30~50
Unpacked dimensions	Indoor	mm	718 x 240 x 80	770 x 240 x 180	1033 x 313 x 202	1033 x 313 x 202
(W x H x D)	Outdoor	mm	700 x 552 x 256	760 x 552 x 256	760 x 552 x 256	860 x 660 x 307
Net weight	Indoor	kg	7	8	14	14
	Outdoor	kg	32	34	42	56
Packed dimensions	Indoor	mm	805 x 325 x 270	863 x 325 x 270	1103 x 395 x 292	1103 x 395 x 292
(W x H x D)	Outdoor	mm	803 x 598 x 380	863 x 620 x 376	863 x 620 x 376	990 x730 x 415
Gross weight	Indoor	kg	10	11	17	17
	Outdoor	kg	35	38	46	63
Colour	Indoor	RAL9003 Signal White or BS4800:00A01 (a very light grey)				
	Outdoor	Between RAL7035 (Pale Grey) and RAL9002 (Grey White)				

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