

USER'S MANUAL

DUCT SERIES

**ASD-09A, ASD-12A, ASD-18A, ASD-24A
ASD-36A, ASD-41A, ASD-60A**



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Safety Considerations

Please read this manual carefully before use and operate correctly as instructed in the manual.

1. You are specially warned to note the two symbols below.:



WARNING! : A symbol indicating that improper operation might cause human death or severe injuries.



WARNING! :A symbol indicating that improper operation might cause human injury or property damage.



WARNING!

- This unit shall be used in offices, restaurants, residences or similar places.
- Please seek an authorized repair station for installation work. Improper installation might cause water leakage, electric shock or fire.
- Please install at a place strong enough to support the weight of air conditioner unit. If not, the air conditioner unit might fall down and cause human injury or death.
- To ensure proper drainage, the drainage pipe shall be correctly installed according to installation instructions. Take proper measures for heat preservation to prevent condensing. Improper installation of pipes might cause leakage and wet the articles in the room.
- Do not use or store flammable, explosive, poisonous or other dangerous substances beside the air conditioner.
- In case of trouble (e.g. burnt smell), please immediately cut off the main power of air conditioner unit.
- Keep air flow to avoid shortage of oxygen in the room.
- Never insert your finger or any objects into air outlet and inlet grill.
- Never plug or unplug the power cable directly to start or stop the air-conditioning unit.
- Please take constant care to check if the mounting rack is damaged after long use.
- Never modify the air conditioner. Please contact the dealer or professional installation workers for repair or relocation of the air conditioner.
- The appliance shall not be installed in the laundry.



WARNING!:

- Before installation, please check the power supply for compliance with the ratings on nameplate. Check the power safety as well.
- Before use, please check and confirm if the cables, drainage pipes and pipelines are correctly connected, hence to eliminate the risk of water leakage, refrigerant leakage, electric shock or fire.
- Main power must be securely earthed to ensure effective grounding of air conditioner unit and avoid the risk of electric shock. Please do not connect the earthing cable to coal gas pipe, water pipe, lightning rod or telephone line.
- Once started, the air conditioner shall not be stopped at least after 5 minutes or longer; otherwise the oil return to compressor may be affected.
- Do not let the child to operate the air conditioner unit.
- Do not operate the air conditioner unit with wet hands.
- Please disconnect the main power before cleaning the air conditioner or replacing the air filter.
- Please disconnect the main power if to put the air conditioner unit out of use for a long period.
- Please do not expose the air conditioner unit directly under corrosive environment with water or moisture.
- Please do not foot on or place any goods on air conditioner unit.
- After electrical installation, the air conditioner unit shall be energized for electrical leakage test.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard .
- An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- The appliance shall be installed in accordance with national wiring regulations.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

Wire Controller (Standard Fitting)



WARNING!

- Never install the wire controller in a place where there is water leakage.
- Avoid bumping, throwing, tossing or frequently opening the wire controller.

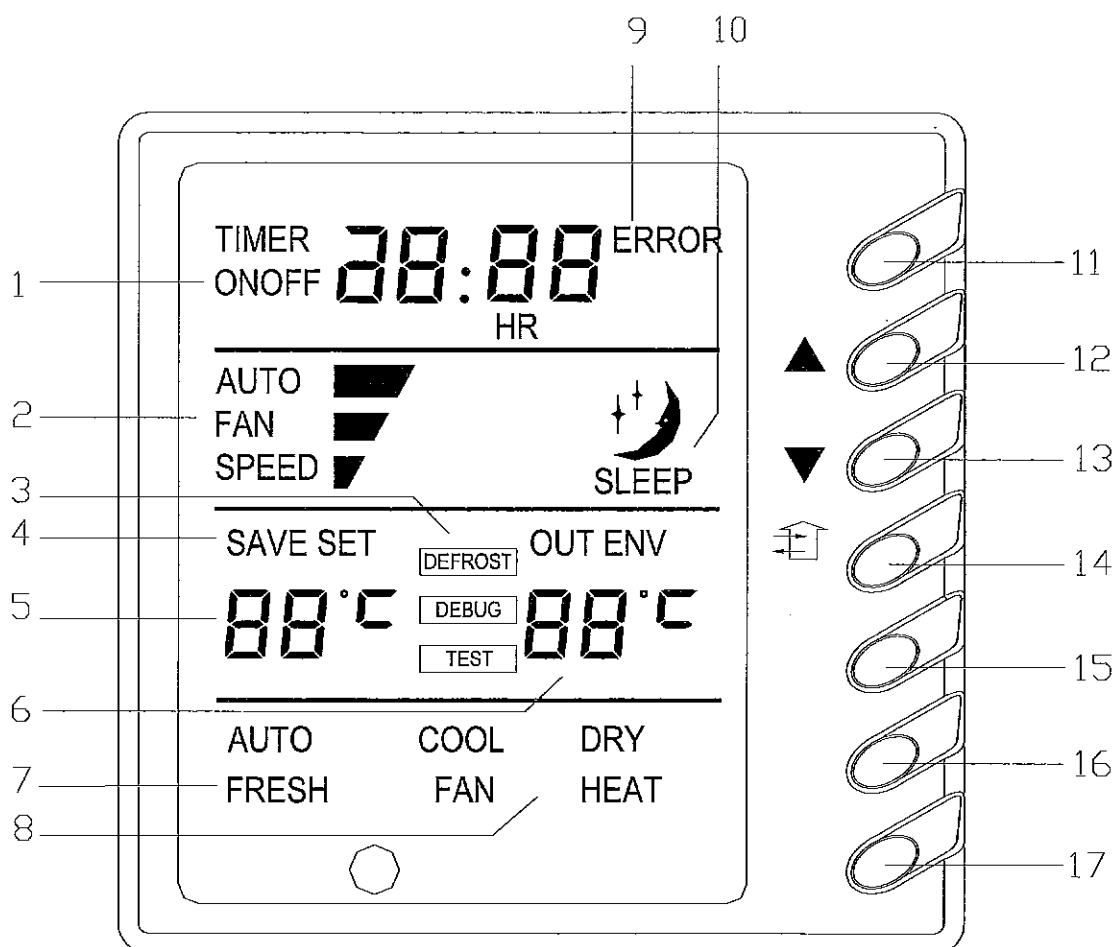


Fig 1

Composition of Wire Controller			
1	Timing Display	10	Sleep Status Display
2	Fan Speed Display (Auto, High Speed, Medium Speed, Low Speed)	11	Mode Key
3	Defrosting Status Display	12	Set Temperature Increase Key
4	Energy Saving Status Display	13	Set Temperature Decrease Key
5	Set Temperature Display	14	Fan Speed Key (Fresh Air Setting)
6	Ambient Temperature Display	15	Sleep Key (Outdoor Environment Temperature Check)
7	Fresh Air Status Display	16	Timing Key
8	Mode (Cooling, Dehumidifying, Fan, Heating, Auto)	17	ON/OFF Key
9	Failure Status Display		

Operating Instructions of Wire Controller

1) Turning On/Off Unit (Figure 2)

Press the ON/OFF key, then the unit shall start up. Press the ON/OFF key again, then the unit shall shut off.

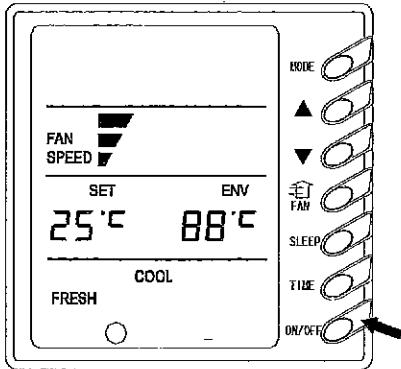


Fig 2

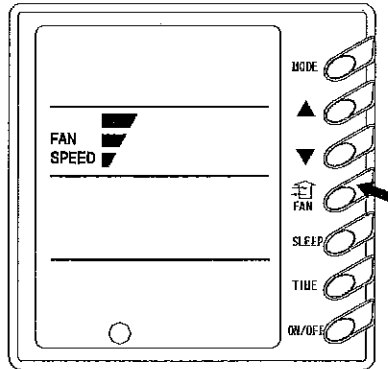


Fig 3

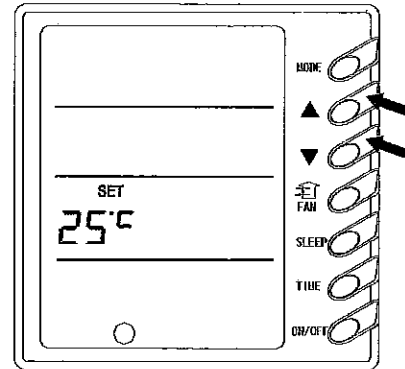


Fig 4

2) Fan Control (Figure 3)(The figures show the relevant display areas. The relevant figures hereafter also show the display areas)

If the fan control key is pressed consecutively, the fan speed shall changes as per the following sequence:

→Low Speed→Medium Speed→High Speed→Auto→

In the dehumidifying mode: The fan speed shall be automatically set as low.

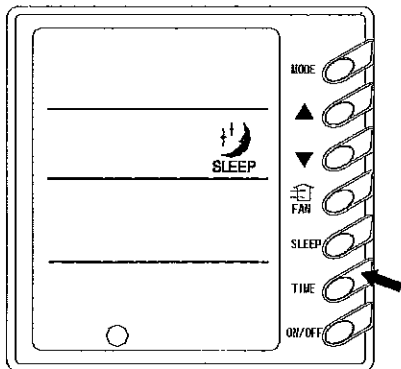


Fig 5

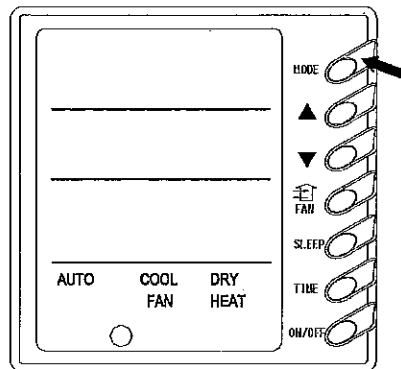


Fig 6

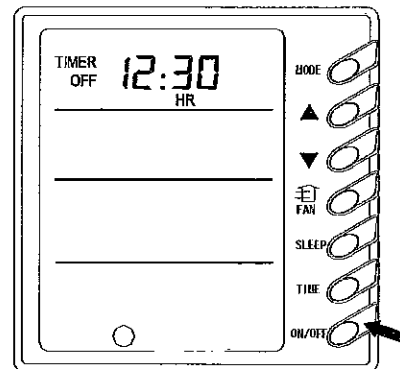


Fig 7

3) Temperature Setting (Figure 4):

Press the temperature setting key ▲: To increase the set temperature; Press the temperature setting key ▼: To decrease the set temperature.

(When pressing the keys once, the temperature shall increase or decrease by 1 °C)

Note: Key Lock Function: When the “▲” and “▼” keys are pressed simultaneously for 5 seconds, the set temperature indicating area shall display “EE” and all keys' response shall be shut off; Press the two keys simultaneously for 5 seconds again, the key lock function shall be released.

When the wire controller is locked by remote monitor or centralized controller, the keys of the wire controller and the signal of the remote controller are all locked and invalidated, and then the set temperature indicating area shall display “CC”.

Range of Temperature Setting under various modes:

Heating ----- 16 °C ~ 30 °C

Cooling ----- 16 °C ~ 30 °C

Operating Instructions of Wire Controller

Dehumidifying ----- 16℃~30℃ Auto ----- 16℃~30℃
Fan ----- No temperature setting function.

4) Sleep Function Setting (Figure 5)

When the controller functions under cooling or dehumidifying mode and if the unit runs for one hour after the sleep key is pressed, the set temperature shall increase by 1℃, and the set temperature shall increase by another 1℃ after 2 hours and the unit shall run as per the increased set temperature.

When the controller functions under heating mode and if the unit runs for one hour after the sleep key is pressed, the set temperature shall decrease by 1℃, and the set temperature shall decrease by another 1℃ after 2 hours and the unit shall run as per the decreased set temperature. Fan mode does not have sleep function.

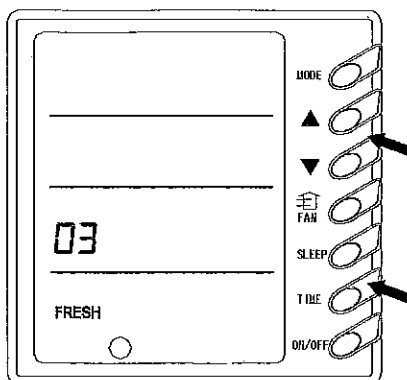


Fig 8

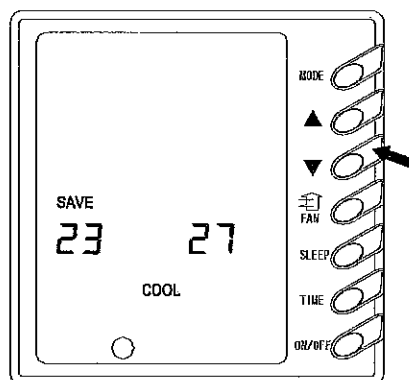


Fig 9

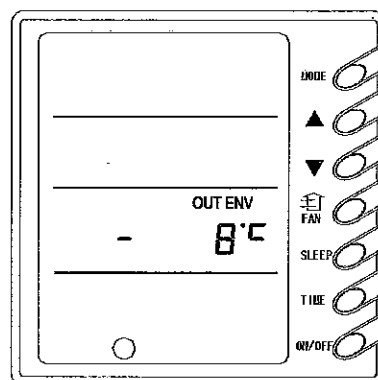


Fig 10

5) Operating Mode Setting (Figure 6) (Note: The Auto mode of this air-conditioning unit can only be controlled by the wire controller but not the remote controller).

If this key is pressed consecutively, the operating mode shall change as per the following sequence:

→Cooling→Dehumidifying→Fan→Heating→Auto→

When the unit operates under "Cooling" mode, "COOL" shall be displayed. Now the set temperature must be lower than the ambient temperature. Now if the set temperature is higher than the ambient temperature, the unit shall not produce cooling effect but shall only operate under Fan mode.

When the unit operates under "Dehumidifying" mode, "DRY" shall be displayed. Now the interior fan shall operate in the manner of low speed air supply within a certain range of temperatures. The dehumidifying effect of this mode is better than that of the Cooling mode and saves more energy.

When the unit operates under "Heating" mode, "HEAT" shall be displayed. Now the set temperature must be higher than the ambient temperature; Now if the set temperature is lower than the ambient temperature, the heating function shall not be started.

When the unit operates under "Fan" mode, "FAN" shall be displayed. When the unit operates under "Auto" mode, "AUTO" shall be displayed and the unit shall adjust its operating mode automatically according to the ambient temperature.

When the unit operates under Heating mode and the outdoor temperature is low and the humidity is high, frost shall produce at the outdoor unit. Now the heating efficiency shall be decreased. When frosting happens, the controller shall automatically start to defrost, and "DEFROST" shall be displayed.

Note: Cooling only type unit does not have heating mode and when energy saving is set the Auto mode shall be invalidated.

6) Timing Setting (Figure 7)

When the unit is shut off, timing start can be set; After the unit is started up, timing shutoff can be set. After the "TIME" key is pressed, the unit enters the timing set status and the word "TIME" flashes on the display. Now user can press "▲" or "▼"key to increase or decrease the set time. Press the "TIME" key again and then the timing shall go into effect. Now the unit starts to count the time passed. When the unit is under timing status, you can cancel timing set by pressing the "TIME" key.

Operating Instructions of Wire Controller

The range of set time is between 0.5 to 24 hours.

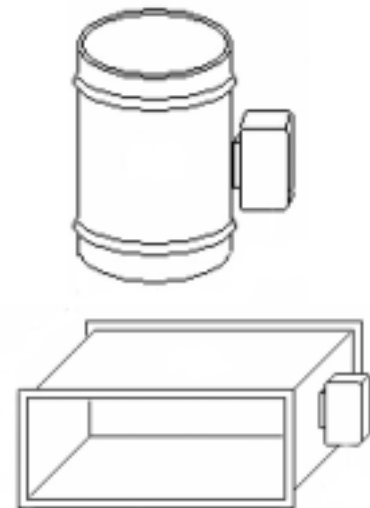
7) Fresh Air Valve Setting (Figure 8)

When the unit is shut off, you can enter the fresh air setting by pressing and holding the “FAN” key for 5 consecutive seconds. Now the word “FRESH” flashes on the LCD and the set temperature area shall display the current fresh air setting. User can change the fresh air setting by pressing the “ ” key or the “ ” key.

Definitions of digits:

- 00 - — Always shut off.
- 01 The unit operates continually for 60 minutes and the fresh air valve opens for 6 minutes.
- 02 The unit operates continually for 60 minutes and the fresh air valve opens for 12 minutes.
- 03 The unit operates continually for 60 minutes and the fresh air valve opens for 18 minutes.
- 04 The unit operates continually for 60 minutes and the fresh air valve opens for 24 minutes.
- 05 The unit operates continually for 60 minutes and the fresh air valve opens for 30 minutes
- 06 The unit operates continually for 60 minutes and the fresh air valve opens for 36 minutes
- 07 The unit operates continually for 60 minutes and the fresh air valve opens for 42 minutes
- 08 The unit operates continually for 60 minutes and the fresh air valve opens for 48 minutes
- 09 The unit operates continually for 60 minutes and the fresh air valve opens for 52 minutes
- 10 Fully open

Fresh Air Valve



After fresh air setting is completed, press the “ON/OFF” key to confirm the setting. The unit shall store the set value and the unit shall operate according to the new fresh air setting. The default setting of the system is “0” when the unit is shipped out from manufacturer, so the fresh air value is shut off. Now if you start up the unit, the LCD does not display the word “FRESH”.

If user sets one type of fresh air operation, the LCD shall always display the word “FRESH” regardless of the operating mode after the unit is start up.

The fresh air setting shall not be cleared after the unit is energized again.

8) Energy Saving Setting (Figure 9)

When the unit is shut off, press the “FAN” key and the “ ” simultaneously for 5 consecutive seconds to activate the energy saving setting menu. Now “SAVE SET” and “COOL” are displayed (In case it is the first time to set energy saving, the initial valve shall be displayed: 26 . The lower limit of temperature shall be displayed on the set temperature and the temperature value under setting shall flash. Set the lower limit of cooling temperature using the “ ” key or the “ ” key (the lower limit temperature can be selected from the range between 16-30). Press the “ON/OFF” key to confirm the setting; Also use the “ ” key or the “ ” key to set the upper limit of temperature and the temperature value shall flash on the ambient temperature area (OUT ENV area) (the upper limit temperature can be selected from the range between 16-30). Press the “ON/OFF” key to confirm the setting.

Please pay attention that the upper limit temperature must be higher than the set lower limit temperature; Otherwise the system shall regard the higher temperature as the upper limit temperature and the lower one as the lower limit temperature. Press the “MODE” key to complete the energy saving setting for the

Operating Instructions of Wire Controller

modes of cooling and dehumidifying and turn to the energy saving setting for the heating mode (Cooling only unit does not have this function). Now the LCD displays "SAVE SET" and "HEAT". After setting is completed, press the "FAN" key and the " " key simultaneously for 5 consecutive seconds to exit the setting of energy saving. After the energy saving setting interface is activated, the system shall exit the interface if there is no any operation within 20 minutes after the last key input, and the normal shutoff status interface shall be displayed.

After the above settings are completed, the system shall display "SAVE". Now the set temperature shall not exceed the temperature range of the energy saving setting before. For example, the lower cooling limit is set as 23 °C and the upper cooling limit is set as 27°C for the energy saving temperature setting in Figure 9, so the cooling temperature can only be selected from the range of 23 °C to 27°C by using the remote controller or the wire controller later.

If the upper limit temperature is the same as the lower limit temperature, the system can only operate at such temperature under relevant modes.

Remove of energy saving setting: To remove the energy saving setting after it takes into effect, you can press the "FAN" and the " " key simultaneously for 5 consecutive seconds when the unit is shut off. But the value set before will not be cleared but as the initial set temperature for the next energy saving setting.

After the unit is disconnected to power supply, the energy saving setting shall be stored. The setting still functions when the unit is connected to power supply again.

If the energy saving mode is set, the sleep mode and the auto mode shall be invalidated.

Operating Instructions of Wire Controller

9) Display of Outdoor Ambient Temperature (Figure 10)(The function is unavailable for some units)

Under normal conditions, the "OUT ENV" column shall only display the indoor temperature. Press the "SLEEP" key for 5 consecutive seconds when the unit is shut off or start up, the LCD shall display "OUT ENV". After the outdoor temperature is displayed for 10 seconds, the system shall return to the display interface of indoor temperature. Note: If not equipped with an outdoor ambient sensor, the unit shall not have this function.

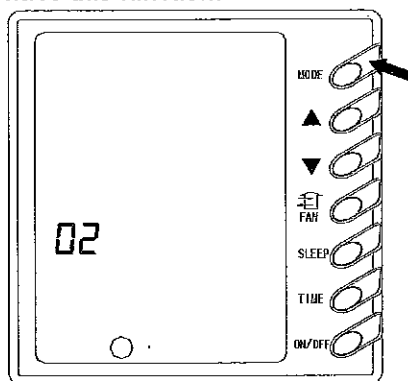


Fig 11

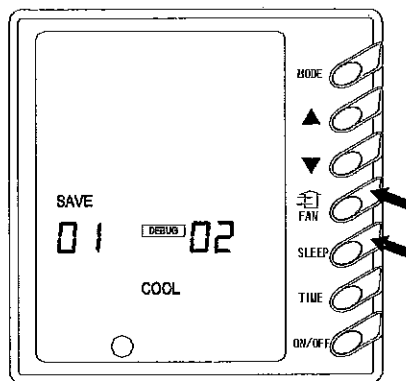


Fig12

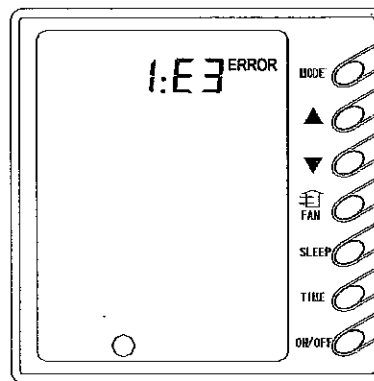


Fig 13

10) Power-fail Memory Function Setting (Figure 11)

Press and hold the "MODE" key for 10 seconds when the unit is shut off to switch set values so as to decide if the unit operating status or shutoff status shall be memorized after a power fail. If the set temperature area displays 01, it means the unit operating status or shutoff status shall be memorized after a power fail; 02 means the operating status or shutoff status shall not be memorized. Press the "ON/OFF" key to store the set value and exit the setting.

11) Debug Function(Figure 12)

When the unit is shut off, press the "FAN" key and the "SLEEP" key simultaneously to activate the debug menu. Now the LCD displays "DEBUG". Press the "MODE" key to select setting item and use the "▲" key or the "▼" key to set actual value.

Setting of Ambient Temp. Sensor

Under the debug mode, press the "MODE" key so as to display "01" on the set temperature area (at the left of "DEBUG"). The OUT ENV area (at the right of "DEBUG") displays setting status. Now use the "▲" key or the "▼" key to select from the following two settings:

- ①The indoor room temperature is measured at the air intake (Now the OUT ENV area displays 01).
- ②The indoor room temperature is measured at the wire controller (Now the OUT ENV area displays 02).

The default room temp. sensor is located at the air intake.

Operating Instructions of Wire Controller

12) Failure Display (Figure 13)

When there is failure in the unit operation, "ERROR" will flash on the LCD of the wire controller and the code of failure will also be displayed. When there are multiple failures at the same time, the codes of failures will be displayed one after one on the wire controller. The first digit of the code denotes the system number. When there is only one system, the system number is not displayed. The last two digits denote the detailed failure code. For example, the code in Figure 13 means low pressure protection of compressor.

The Codes of Failure Definitions are as Follows:

Fault code	Fault	Fault code	Fault
E0	Pump Failure	F0	Failure of Indoor Room Sensor at Air Intake
E1	Compressor High Pressure Protection	F1	Failure of Evaporator Temp. Sensor
E2	Indoor Frost-Proof Protection	F2	Failure of Condenser Temp. Sensor
E3	Compressor Low Pressure Protection	F3	Failure of Outdoor Ambient Sensor
E4	Compressor Exhaust High Temperature Protection	F4	Failure of Exhaust Temp. Sensor
E5	Compressor Overload Protection	F5	Failure of Indoor Room Sensor at Wire Controller
E6	Communications Failure	EH	Failure of Auxiliary Heater
E8	Indoor Fan Protection	EE	Keys are locked (not failure)
E9	Full Water Protection	CC	The unit is remotely monitored or controlled by centralized controller and the wire controller's functions are invalidated (not failure)
FF	Connexed control communications Failure		



Warning!

The "EH" failure is displayed, cut off the power supply of the unit immediately, and only ask professional serviceman to repair the unit!

Operation of Remote Controller

Names and Functions of Remote Controller Keys

Precautions:

- This remote controller is a general-purpose remote controller, which can be used in various types (functions) air conditioner. The keys not applicable to this air conditioner are not explained here.
- Ensure there is no obstacle between the remote controller and the signal receiving window of the air conditioner.
- The distance able to receive the signal of the remote controller can be as far as 8 meters.
- Never drop or throw at will the remote controller.
- Never let any liquid enter the remote controller. Avoid direct sunshine over the remote controller. Do not place the remote controller in an extremely hot place.

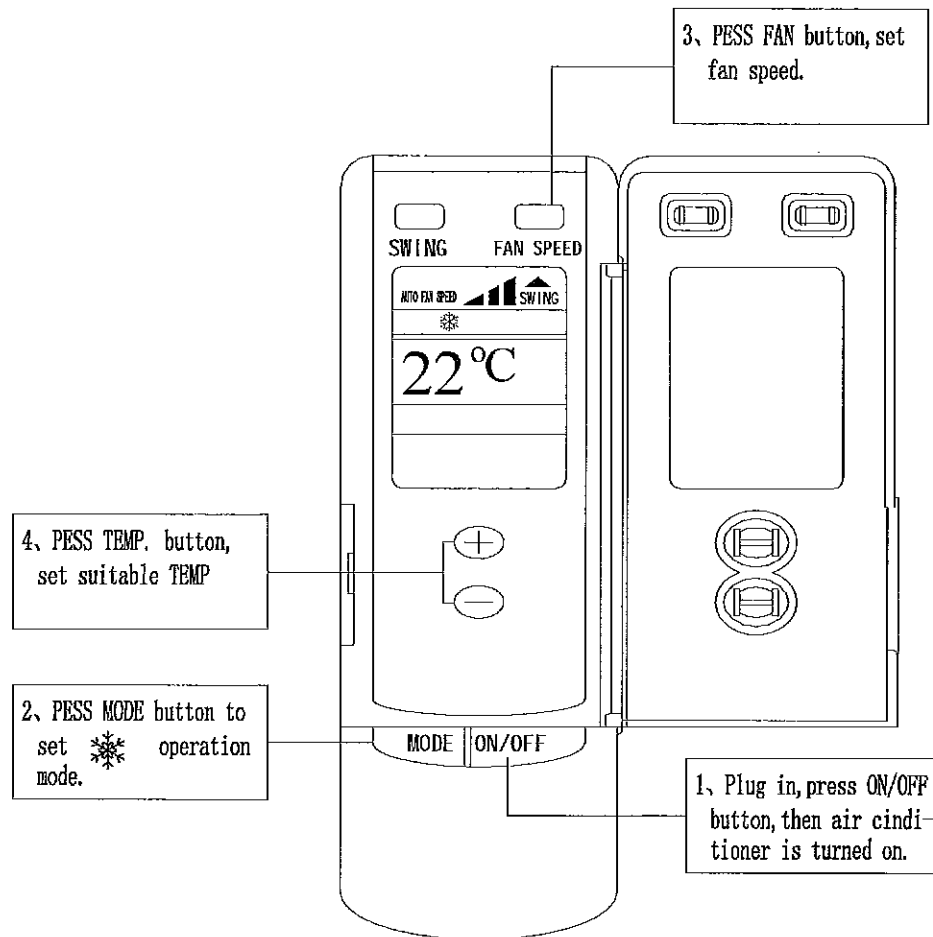


Fig. 14 Remote Controller

Cooling Mode Operation

Connect the unit to power supply. Press the "ON/OFF" key. Press the "MODE" key to select "Cooling" mode. Use the "Temperature" key to adjust the set temperature for the room. Refer to Figure 15.

Heating Mode Operation

Connect the unit to power supply. Press the "ON/OFF" key. Press the "MODE" key to select "Heating" mode. Use the "Temperature" key to adjust the set temperature for the room. Refer to Figure 16.

Under the heating mode, the unit has the functions of preventing cold air supply and supplying remaining heat. After the startup of the compressor, the indoor fan shall start operation when the evaporator temperature is larger or equals 35°C, or after the unit has been started for 45 seconds, so as to avoid supply of cold air shortly after the unit is started. After the stop of the compressor, the indoor fan shall stop operation after supplying air for 120 seconds.

Operation of Remote Controller

DRY (Dehumidifying) Mode Operations

Connect the unit to power supply. Press the “ON/OFF” key. Press the “MODE” key to select “DRY (Dehumidifying)” mode. Use the “Temperature” key to adjust the set temperature for the room. Refer to Figure 17.

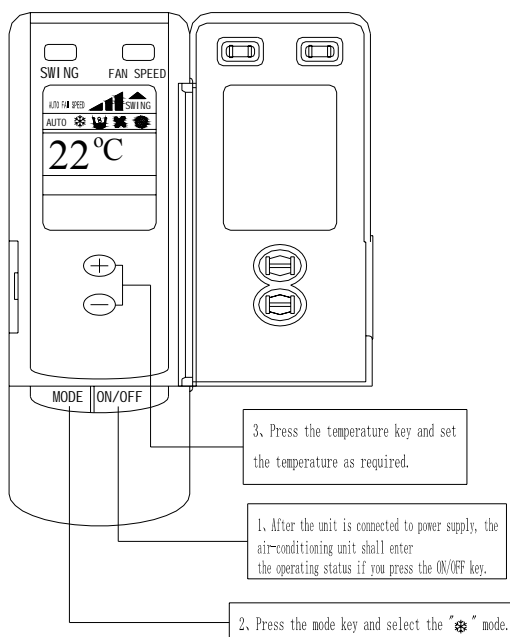


Figure 15 Cooling Mode Operation

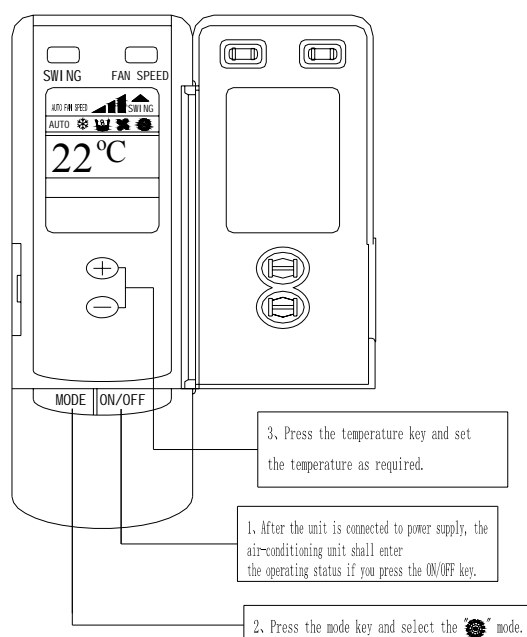


Figure 16 Heating Mode Operation

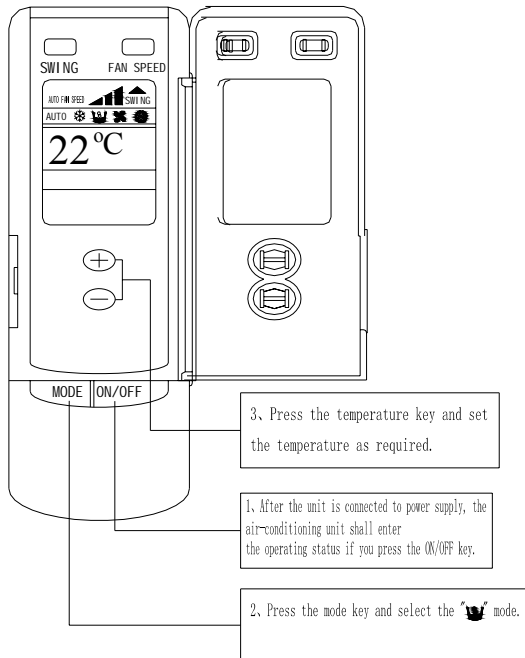


Figure 17 Dehumidifying Mode Operation

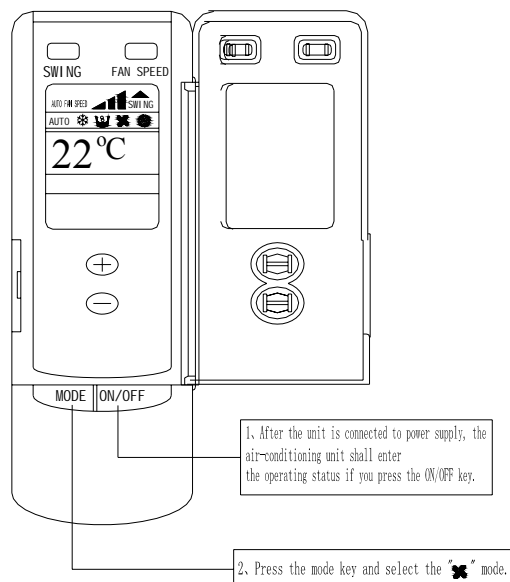
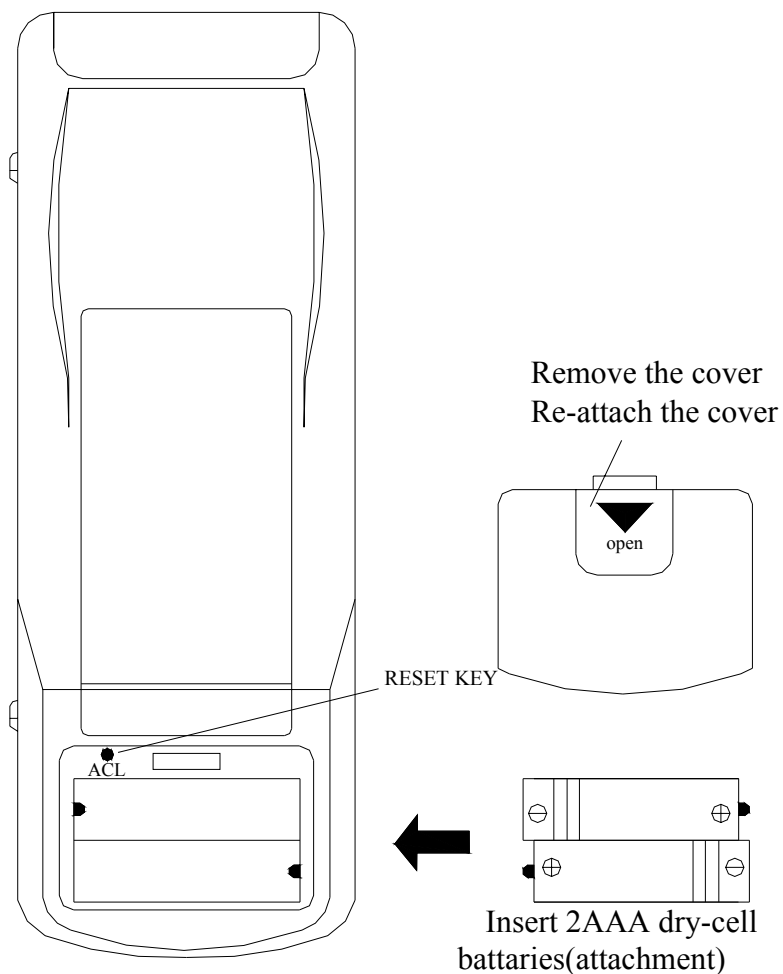


Figure 18 Fan Mode Operation

Fan Mode Operation

Connect the unit to power supply. Press the “ON/OFF”key. Press the “MODE” key to select “FAN” mode. The unit shall operate under “FAN” mode. Press the “FAN” key to select from high, medium and low speed. Refer to Figure 18.

Operation of Remote Controller



1. All the prints and code no. will be showed on the displayer after the insert of batteries. The remote control can be operated after 10sec.
2. The lifetime of the batteries is about one year.
3. Don't confuse the new and worn or different types of batteries.
4. Remove batteries when the remote control is not in use for a longtime to avoid malfunction caused by liquid leakage.
5. The remote control should be placed about 1m or more from the TV set or any other electric appliances.
6. The remote control should be used in the receivable range (the reception range is 10m)
7. When the remote control can not be controlled in the situation of inserted batteries, please remove the back cover and press "ACL" button to make it normal.

Figure 19 Replacing Batteries for Remote

Loading Batteries Into Remote Controller

Refer to Figure 19 for the methods and steps of installing batteries into the remote controller.

1. Week Timing Controller (With Centralized Control Function)

Centralized Control and Week Timer Functions: The centralized controller and the weekly timer are integrated in the same wire controller. The system has both the centralized control and the week timing functions. Up to 16 sets of units can be controlled simultaneously by the centralized controller (weekly timer). The weekly timer has the function of invalidating the lower unit. The weekly timing function is able to realized four timing ON/OFF periods for any unit every day, so as to achieve fully automatic operation. No timing control can be set for holidays.

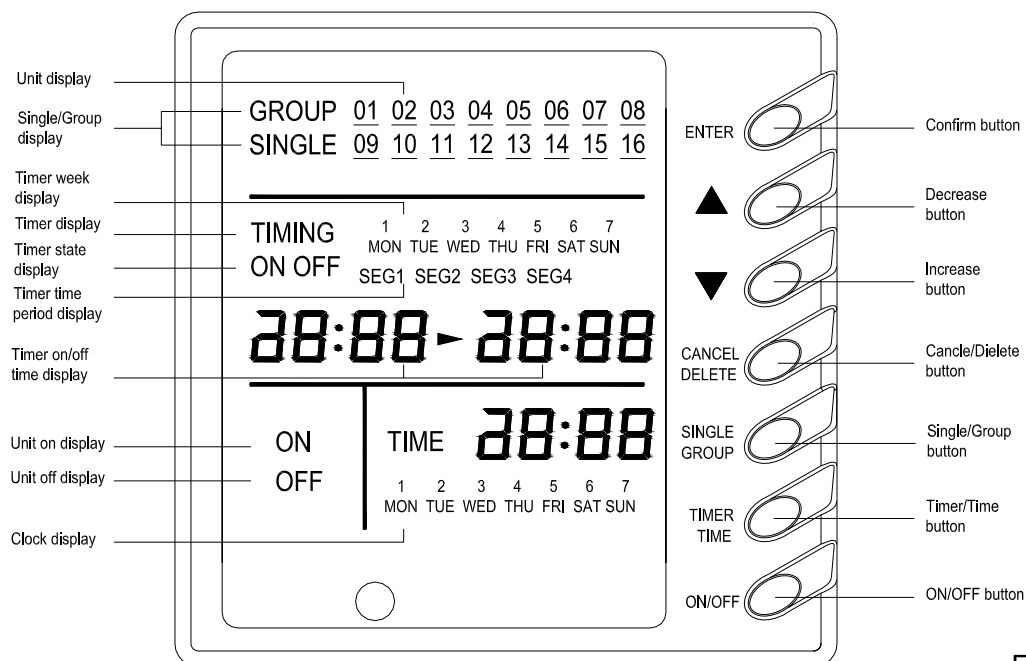


Fig.20

This WEEKLY TIMER adopts 485 mode to communicate with manual control of every duct type unit, and it can control up to 16 units. Adopting 2-core twisted-pair wire, the longest communication distance of this TIMER is 1200m. After connected to power, the WEEKLY TIMER can display all connected units (sequence of unit is determined by code switch of manual control of every duct type unit). On and off of every duct type unit can be done through the Timer On / Off of this WEEKLY TIMER, and the button shield operation of manual control can be done through shield setting on WEEKLY TIMER. Mode selection and temperature adjustment and other operations are done through the manual control at every unit.

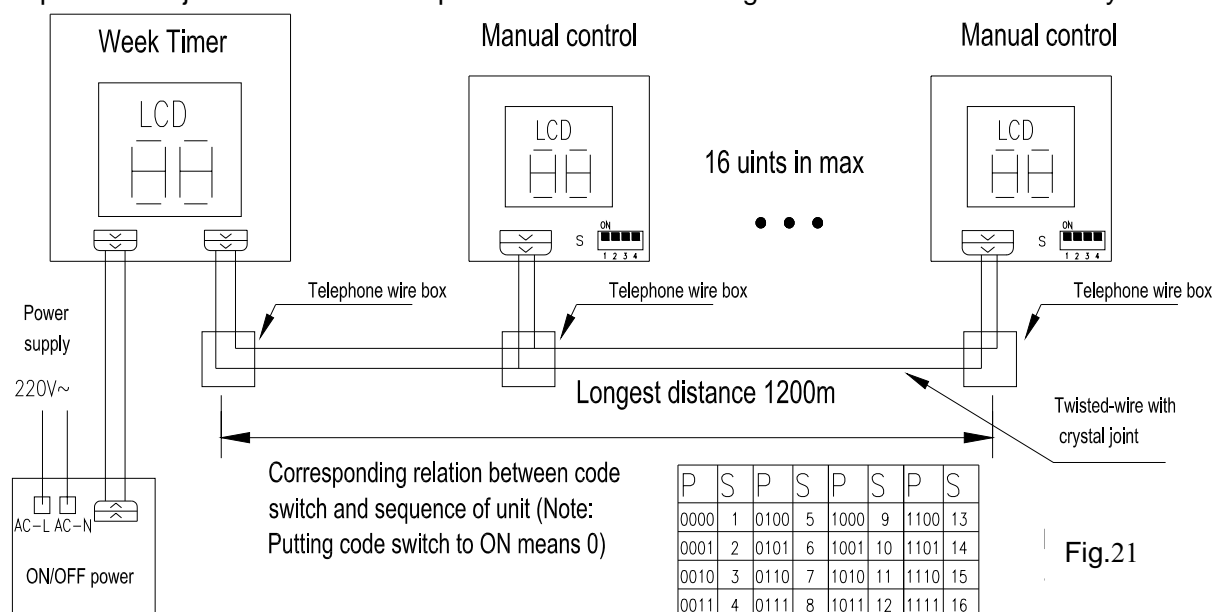


Fig.21

Unit Function

Setting of Indoor Room Sensor and Checking of Outdoor Ambient Temperature

Note:

1. For upper unit checks 16 lower units consecutively, there will be no more than 16 seconds delay when setting works till unit responds.
2. Please let us know your requirement before your placing the order, for this WEEKLY TIMER will only be prepared when customer orders (communication joint with WEEKLY TIMER on manual control had been prepared).
3. Press or to select the unit that needed to be control. It is available to control several units by Group Control (1~16), or control single unit by Single Control.
4. When selected a certain or several units by Single Control or Group Control, Timer setting and On/off setting can be set. Timer setting can set 4 on/off times in a day in one week; and on/off setting can be done by pressing on/off button.
5. Connection between WEEKLY TIMER and manual control is shown as following:

2. Setting of Double Indoor Room Sensors

This series of ducted air-conditioning unit has two indoor room sensors. One is located at the air intake of the indoor unit and the other one is located inside the wire controller.

User can select one from the two indoor room sensors on the basis of the engineering requirement (Refer to the section of wire controller instructions for detailed operation. The default indoor room sensor is the one located at air intake.)

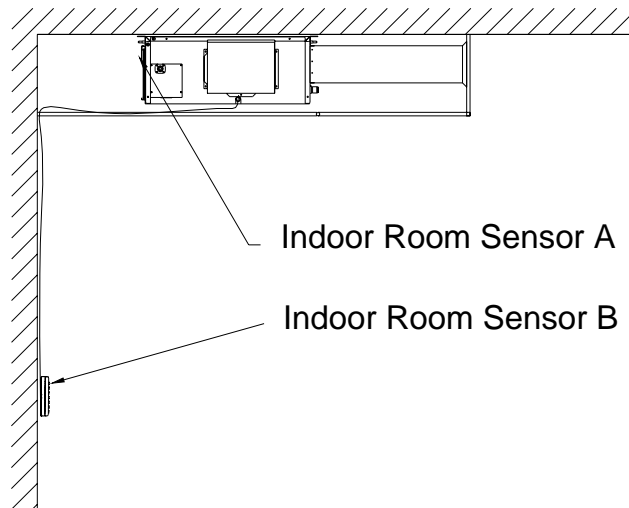


Fig.22

3. Checking of Outdoor Ambient Temperature

The outdoor ambient temperature can be checked on the wire controller for the convenience of users before going out. (Refer to the section of wire controller instructions for detailed operation.)

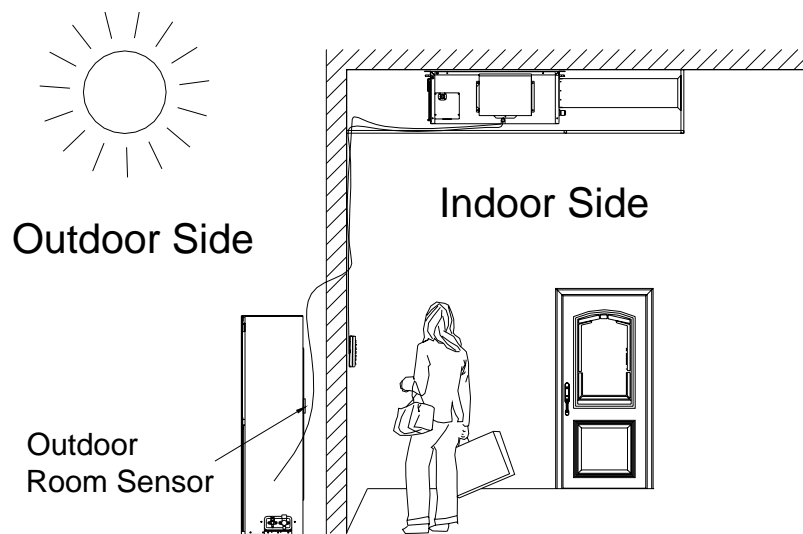


Fig 23

4. Fresh Air Control

11-level control can be realized for the amount of fresh air taken in. The function not only facilitates the health of users, but also controls the electricity consumption loss because of taking in fresh air. This kind of control can be carried out through the wire controller. The function can set at any time, goes into effect at any time, and features very simple operation. (Refer to the section of wire controller instructions for detailed operation.)

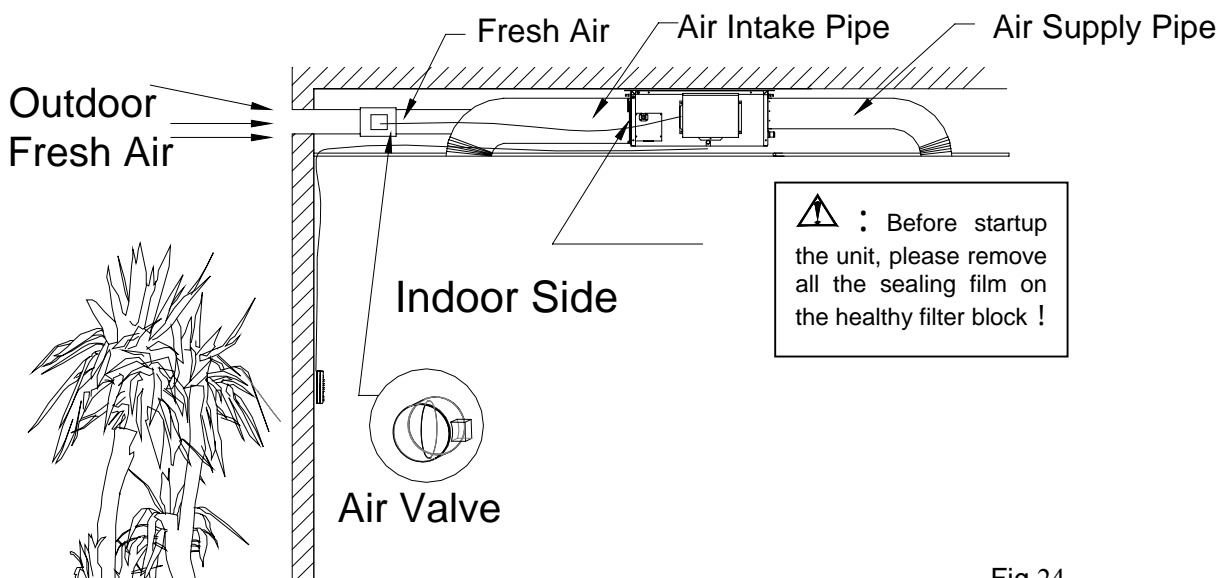


Fig.24

4. The head of delivery of the condensate drainage pump can reach 1.1m, so that the engineering installation is very convenient and prompt.

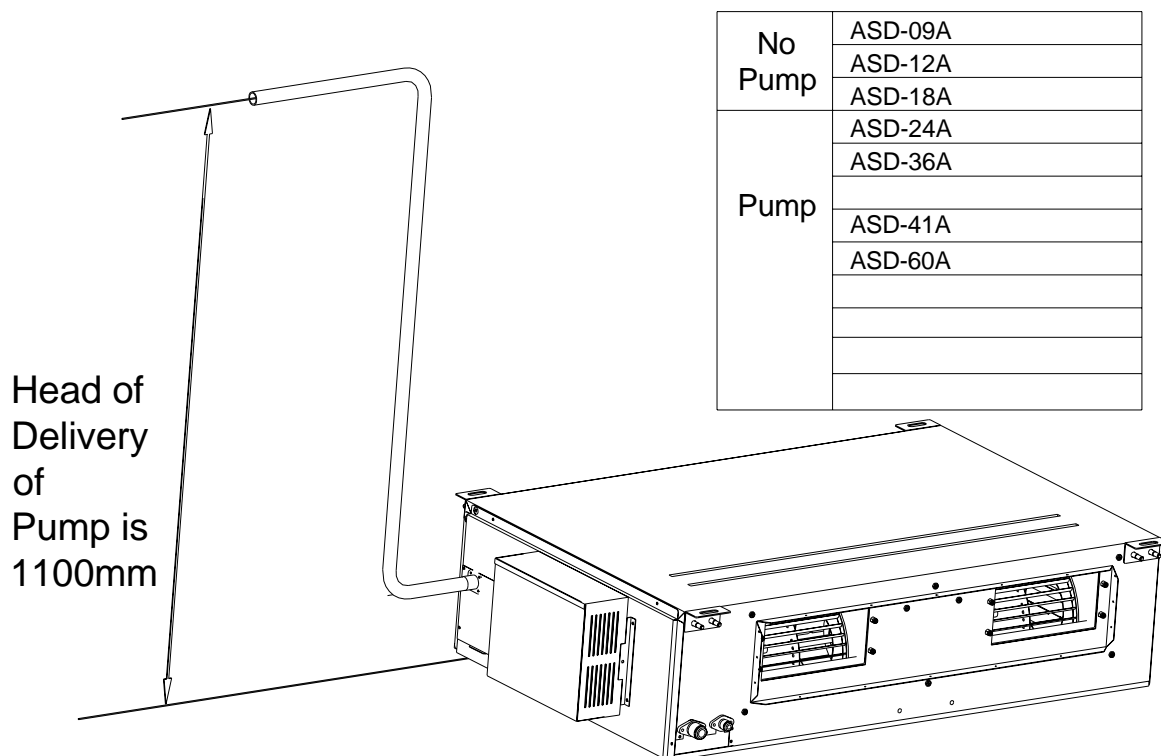


Fig.25

Profile Dimensions of Indoor Unit

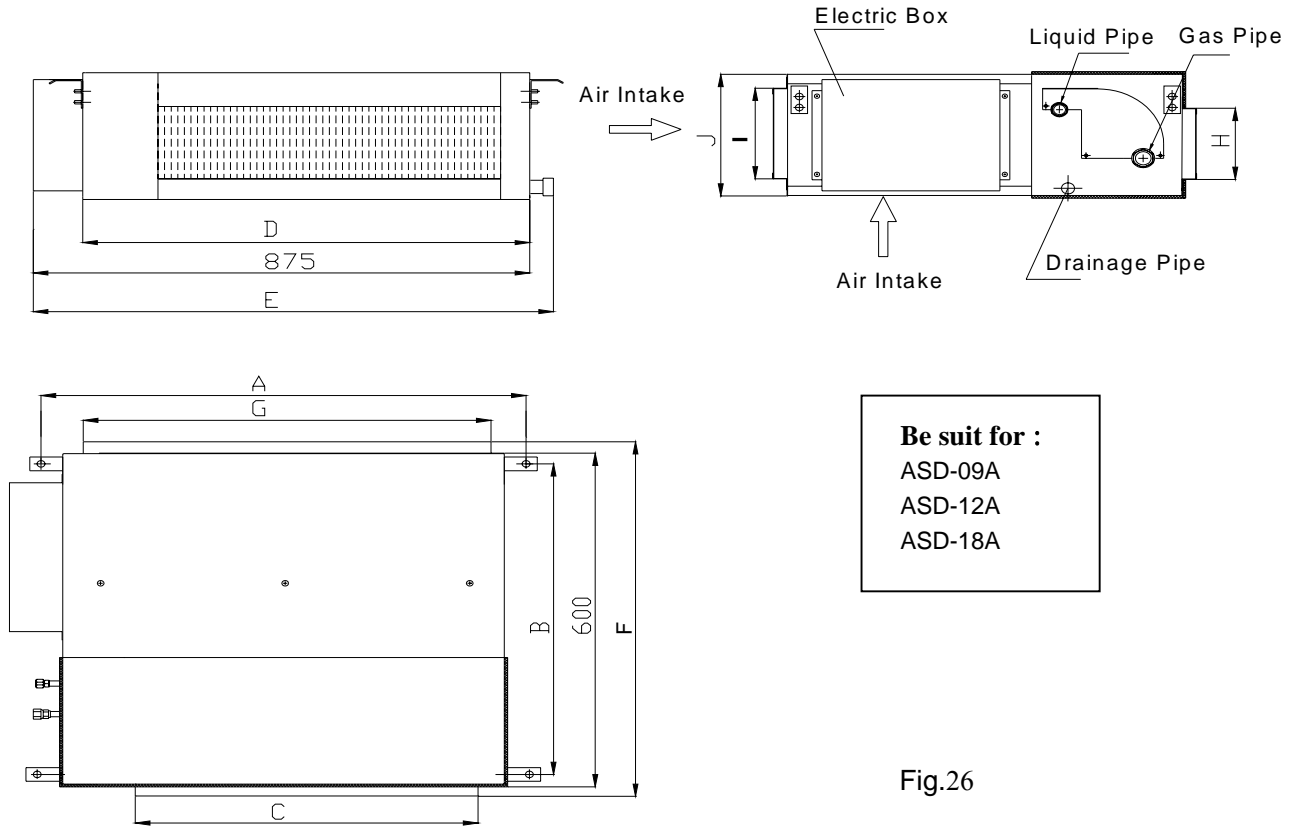


Fig.26

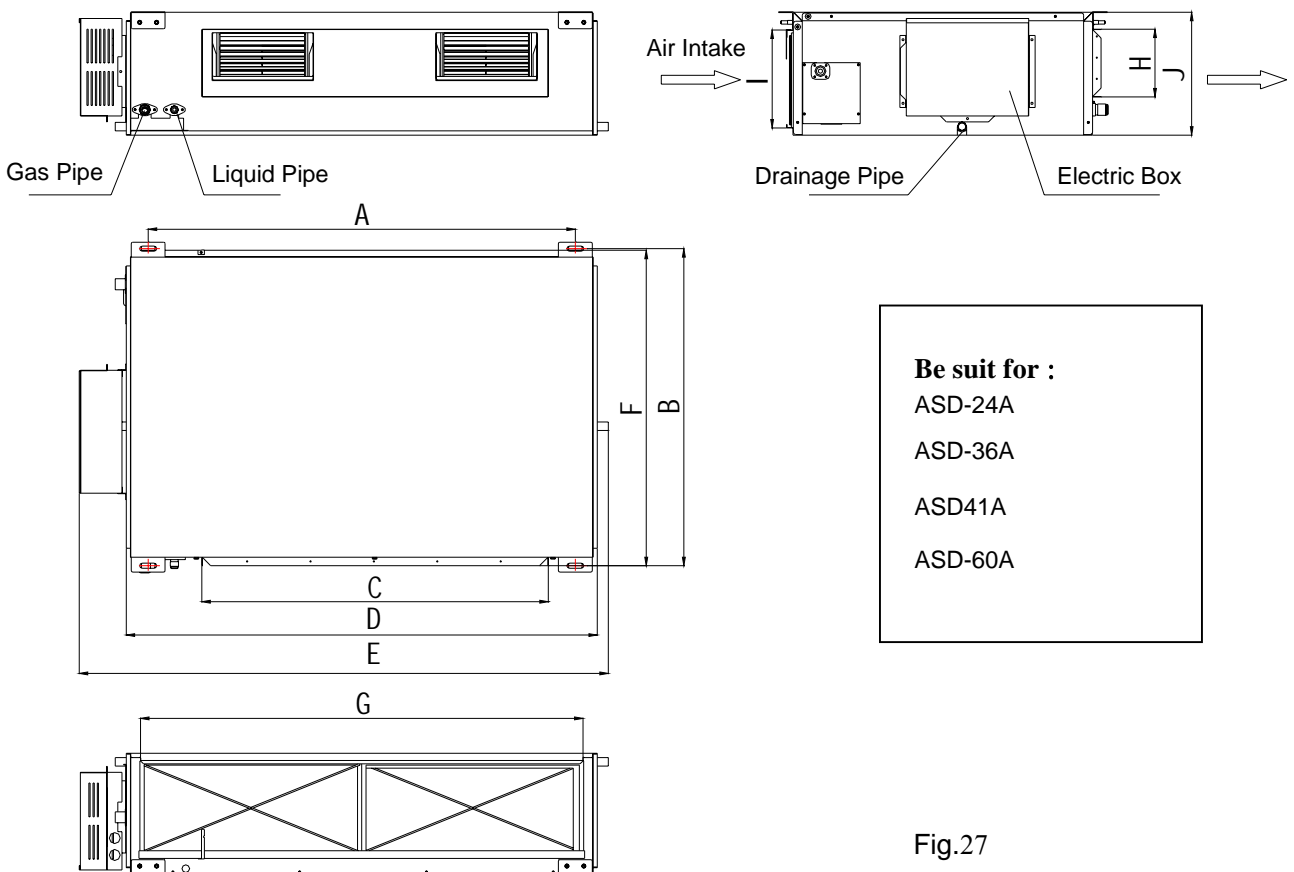


Fig.27

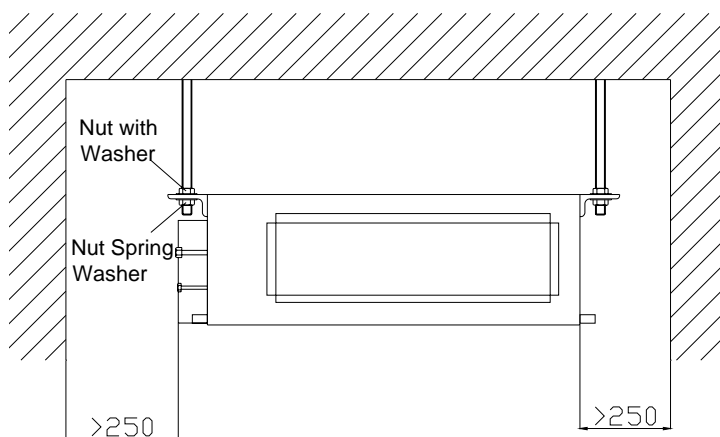
Instructions of Unit Installation

Profile Dimensions of Indoor Unit

Profile Dimensions of Indoor Unit

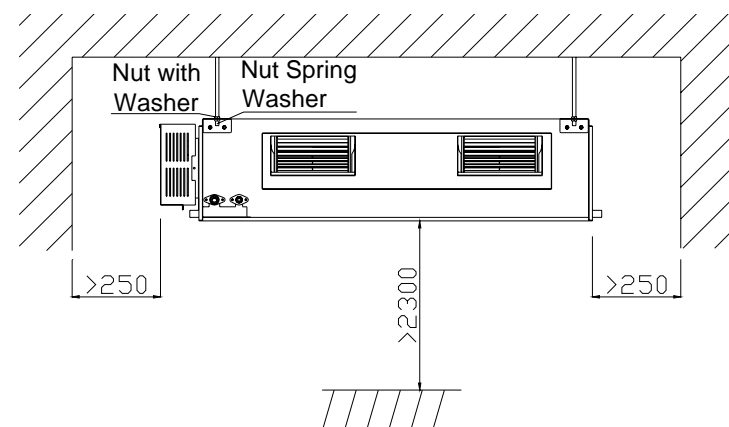
Model \ Item	A	B	C	D	E	F	G	H	I	J	Connecting Pipe (Liquid Pipe)	Connecting Pipe (Gas Pipe)	Drainage Pipe (Outer Diameter × Wall Thickness)
ASD-09A	856	571	515	790	913	680	750	100	172	220	1/4"	3/8"	20 × 1.5
ASD-12A													
ASD-18A	932	430	738	904	980	736	738	207	207	276	1/4"	1/2"	30 × 1.5
ASD-24A	1063	505	849	1159	1270	504	1088	202	211	268	3/8"	5/8"	20 × 1.5
ASD-36A ASD-41A	1011	748	820	1115	1251	744	1047	160	231	290	1/2"	3/4"	20 × 1.5
ASD-60A	1015	784	825	1115	1251	788	1051	285	258	330	1/2"	7/8"	32 × 1.5

Dimension Requirement of the Installation Space of Indoor Unit



Be suit for :
ASD-09A
ASD-12A
ASD--18A

Fig.28



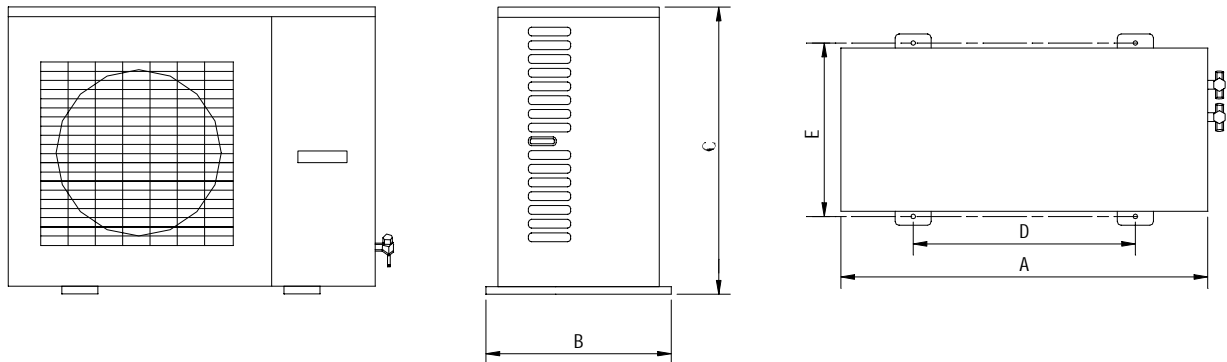
Be suit for :
ASD-24A
ASD-36A
ASD-41A
ASD-60A

Fig.29



Warning: The height of installation for the indoor unit should be 2.3m above.

2. Profile Dimensions of Outdoor Unit



Unit : mm

Fig. 30

Model	ASD-09A ASD-12A ASD-18A	ASD-24A	ASD-36A	ASD-41A ASD-60A
Item				
A	760/848	950	950	950
B	320	412	412	412
C	530	700	840	1250
D	540	572	572	572
E	286	378	378	378

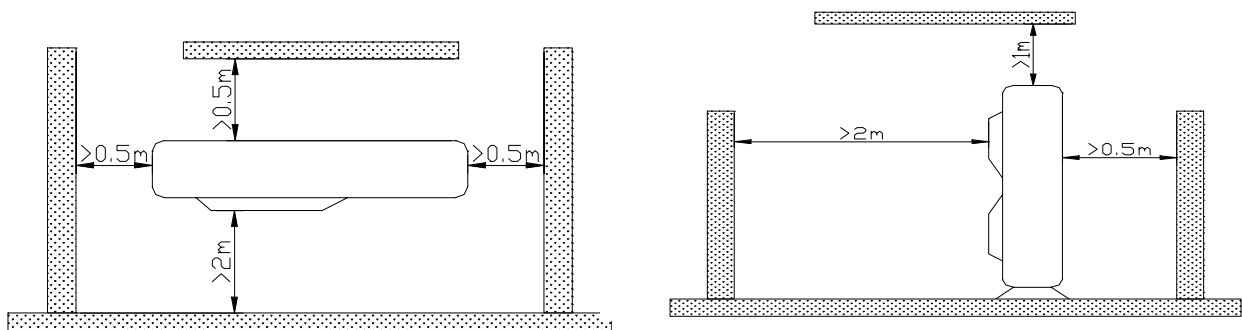


Fig.31

Unit Installation Instructions

Precautions on Installation of Outdoor Unit

To ensure the unit in proper function, selection of installation location must be in accordance with following principles:

- (1) Outdoor unit shall be installed so that the air discharged by outdoor unit will not return and that sufficient space for repair shall be provided around the machine.
- (2) The installation site must have good ventilation, so that the outdoor unit can take in and exhaust enough air. Ensure that there is no obstacle for the air intake and exhaust of the outdoor unit. If there is any obstacle blocking the air intake or exhaust, remove it.
- (3) Place of installation shall be strong enough to support the weight of outdoor unit, and it shall be able to insulate noise and prevent vibration. Ensure that the wind and noise from the unit will not affect your neighbors.

- (4) Avoid direct sunshine over the unit. It is better to set up a sun shield as the protection.
- (5) Place of installation must be able to drain the rainwater and defrosting water.
- (6) Place of installation must ensure the machine will not be buried under snow or subject to the influence of rubbish or oil fog.
- (7) The installation site must be at a place where the air exhaust outlet does not face strong wind.

Installation of Indoor Unit

1. Selection of Installation Site

- (1) Ensure the top hanging piece has strong strength to withstand the weight of the unit.
- (2) The drainage pipe has convenient flow of water.
- (3) There is no obstacle blocking the air intake and exhaust outlet, so as to ensure sound air circulation.
- (4) The installation spaces required by the drawing must be ensured, so as to provide enough space for the service and maintenance.
- (5) The installation site must be far away from heat source, leakage of inflammable gas or smoke.
- (6) The indoor unit is of ceiling mount (indoor unit is hidden inside the ceiling).
- (7) The indoor and outdoor units, the power cable and the connecting electrical lines must be at least 1 meter from any TV set or radio. This is to avoid image interference or noise of the TV set or radio. (Even if the distance is 1 meter, noise can also exist if there is strong electric wave.)

2. Installation of Indoor Unit

- (1) Insert a M10 expansion bolt into the hole. Drive a nail into the bolt. Refer to the profile dimensions drawing of the indoor unit for the distance between the holes. Refer to Figure 32 for the installation of the expansion bolt.

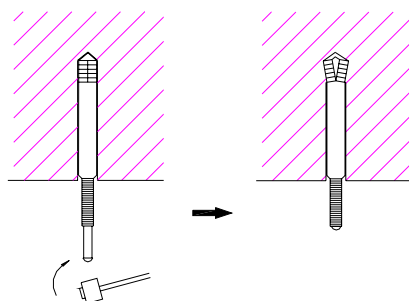


Fig. 32

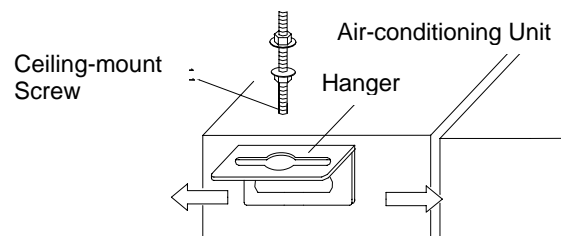


Fig. 33

- (2) Install the hanger onto the indoor unit as Figure 33 shows.
- (3) Install the indoor unit at the ceiling as Figure 34 shows.

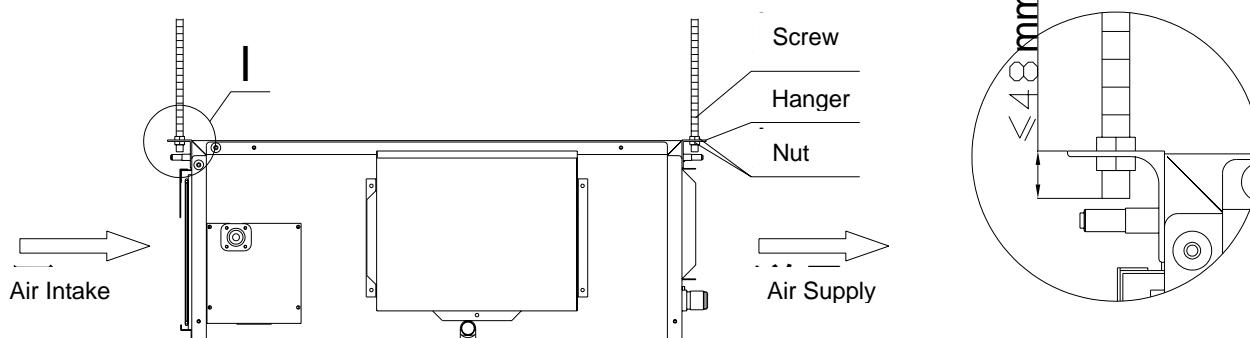


Fig. 34



Precautions:

1. The preparation of all pipes (connecting pipes and drainage pipes) and cables (connecting lines of wire controller, indoor unit and outdoor unit) must be ready before the installation, so as to achieve smooth installation.
2. Drill an opening on the ceiling. Maybe it is required to support the ceiling to ensure the evenness of it and avoid the vibration of it. Consult with the user or a construction company for details.
3. In case the strength of ceiling is not enough, use angle iron sections to set up a beam support. Place the unit at the beam and fix it.

Level Check of the Indoor Unit

After the indoor unit is installed, it is required to check the level of the whole unit. The unit must be placed horizontally, but the condensate pipe shall be installed obliquely, so as to facilitate the drainage of condensate.

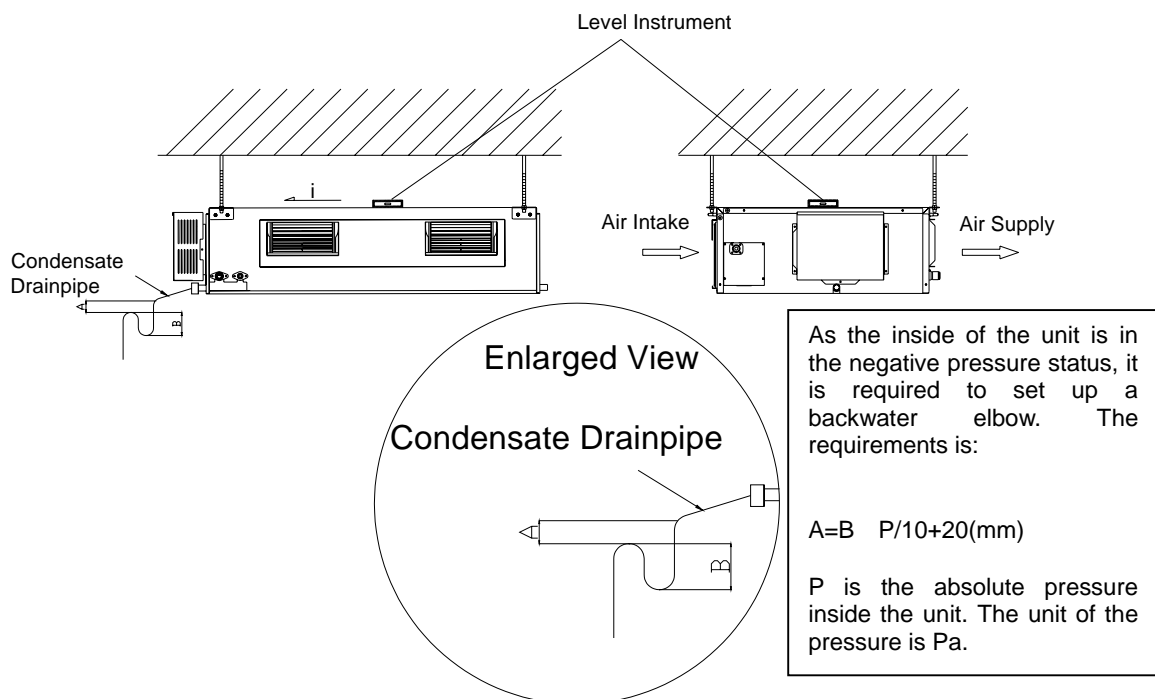


Fig. 35

Installation of Rectangular Air Pipe

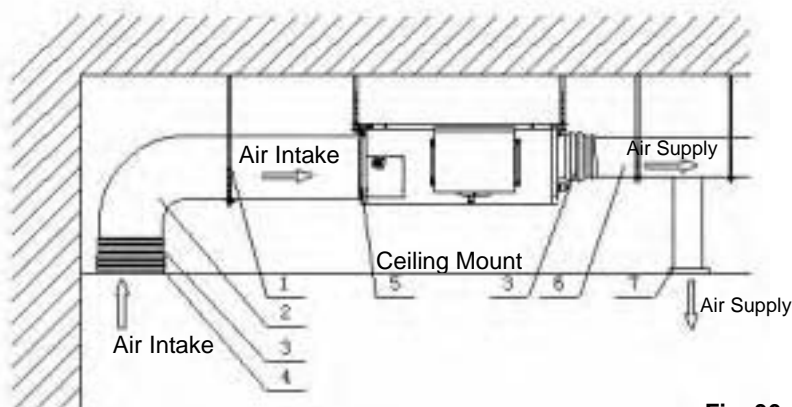


Fig. 36

No.	Name	No.	Name
1	Hanger	5	Filter
2	Air Intake Pipe	6	Main Air Supply Pipe
3	Canvas Air Pipe	7	Air Supply Outlet
4	Air Intake		

Cautions:

- The air supply pipe, the air intake pipe and the fresh air pipe must be covered with a layer of thermal insulation, so as to avoid thermal leakage and condensation. Firstly apply liquid nail on the pipes, then attach the thermal insulation cotton with a layer of tinfoil. Use the liquid nail cover to fix it. Lastly use tinfoil adhesive tape to carefully seal the joints; other good thermal insulation materials can also be used.
- The air supply pipes and the air intake pipes shall be fixed to the prefabricated boards of the ceiling by using iron supports. The joints of the pipes must be sealed by glue so as to avoid leakage.
- The design and installation of air pipes must be in conformity with the relevant state engineering criteria.
- The edge of the air intake pipe must be at least 150mm away from the wall. The air intake must be covered with filter.
- Silencing and shock absorption shall be considered in the design and installation of the air pipes. Additionally, the noise source must be far away from where people stay. The air intake shall not be located above the place where users stay (offices and rest places, etc.).

Installation of Condensate Pipe

- (1) The condensate pipe shall be installed with an inclining angel of $5 \sim 10^\circ$, so as to facilitate the drainage of condensate. The joints of the condensate pipe must be covered by thermal insulation materials to avoid generation of exterior condensate. (As shown in Figure 23)
- (2) A condensate outlet is located at both the left and right sides of the indoor unit. After selecting one condensate outlet, the other outlet shall be blocked by rubber plug. Bundle the blocked outlet with string to avoid leakage, and also use thermal insulation materials to wrap the blocked outlet.
- (3) When shipped out from factory, both the condensate outlets are blocked by rubber plugs.

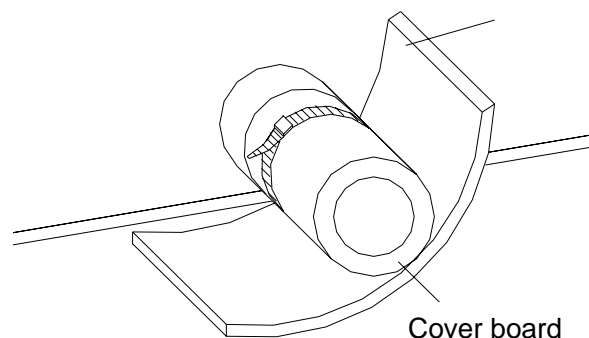


Figure 37 Thermal Insulation of Condensate Pipe

Caution: The joint of condensate pipe must not have leakage.

Design of Drainage Pipeline

- (1) The pipeline must always have an inclining angle ($1/50 \sim 1/100$), so as to prevent the pipeline from forming projection and water flow elbow.
- (2) When connecting the drainage pipe with the unit, do not apply excessive force to the pipeline at the side of the unit. The fixing position of the pipeline shall be near the unit.
- (3) Purchase general-purpose hard PVC pipe locally to be used as the drainage pipeline. When carrying out connection, place the end of the PVC pipeline into the drainage hole. Use flexible drainage tube and tighten it with thread loop. Never use adhesive to connect the drainage hole

and the flexible drainage tube.

- (4) When the laid drainage pipe is used for multiple units, the common pipe shall be about 100mm lower than the drainage outlet of each set of unit. A pipe with thicker wall shall be used for such purpose.

Testing of Drainage System

- (1) After the electrical installation is completed, carry out the testing of the drainage system.
- (2) During the test, check if the water correctly flows through the pipelines. Carefully observe the joints to ensure that there is no leakage. If the unit is to be installed in a new house, carry out testing before decorating the ceiling.

Selection of Connecting Pipe

Item Model	Size of Fitting Pipe (Inch)		Max. Pipe Length (m)	Max. Height Difference between Indoor Unit and Outdoor Unit (m)	Amount of Additional Refrigerant to be Filled (For Extra Length of Pipe)
	Gas Pipe	Liquid Pipe			
ASD-09A	3/8"	1/4"	20	15	30g/m
ASD-12A ASD-18A	1/2"				
ASD-24A	3/8"	5/8"	30	15	60g/m
ASD-36A ASD-41A	1/2"	3/4"	50	30	120g/m
ASD-60A	1/2"	7/8"	50	30	120g/m

Note : 1 The standard pipe length is 5m. When the length (L) of the connecting pipe is less than or equals 5m, there is no need to add refrigerant. If the connecting pipe is longer than 5m, it is required to add refrigerant. In the above table, the amounts of refrigerant to be added for the models are listed for each additional meter of pipe length.

2. The pipe wall thickness shall be 0.5-1.0 mm and the pipe wall shall be able to withstand the pressure of 6.0 MPa.

3. The longer the connecting pipe, the lower the cooling effect and the heating effect.

Connection of Pipeline

1. Align the flared end of the copper pipe with the center of the thread joint. Manually tighten the flared end nut.
2. Use torque spanner to tighten the flared end nut until the spanner clatters (Figure 38).

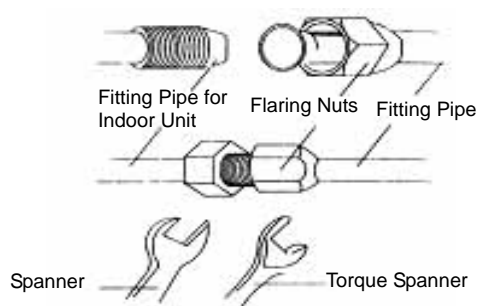


Fig.38

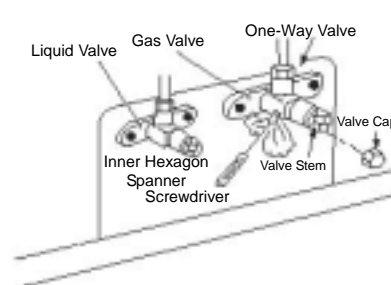


Fig.39

The following table describes the torques for tightening nuts of different pipe diameters.

Pipe Diameter	Tightening Torque
1/4" (Inch)	15-30 (N · m)
3/8" (Inch)	35-40 (N · m)
5/8" (Inch)	60-65 (N · m)
1/2" (Inch)	45-50 (N · m)
3/4" (Inch)	70-75 (N · m)
7/8" (Inch)	80-85 (N · m)

3. The bending angle of the fitting pipe shall not be too small, and otherwise the pipe may break. Please use a bender when bending the fitting pipes.
4. Use sponge to wrap the connecting pipe and joint without thermal insulation, and use plastic tape to bundle the sponge.
5. Remove the bonnets of the liquid valve and the gas valve.
6. Use an inner hexagon spanner to turn the spool of the liquid valve for 1/4 circle. At the same time, use a screwdriver to lift the spool. Then there is discharge of gas.
7. Refrigerant gas shall appear after the gas is discharged for 15 seconds. Now close the one way valve immediately and tighten the bonnet.
8. Fully open the spools of the liquid valve and the gas valve (refer to Figure 39).
9. Tighten the valve cover. Then use soap water or leakage detector to check if there is leakage at the position where the indoor unit or the outdoor unit is connected with pipelines.

10. If conditions allow, use a vacuum pump to remove air out from the valve. Refer to Figure 40

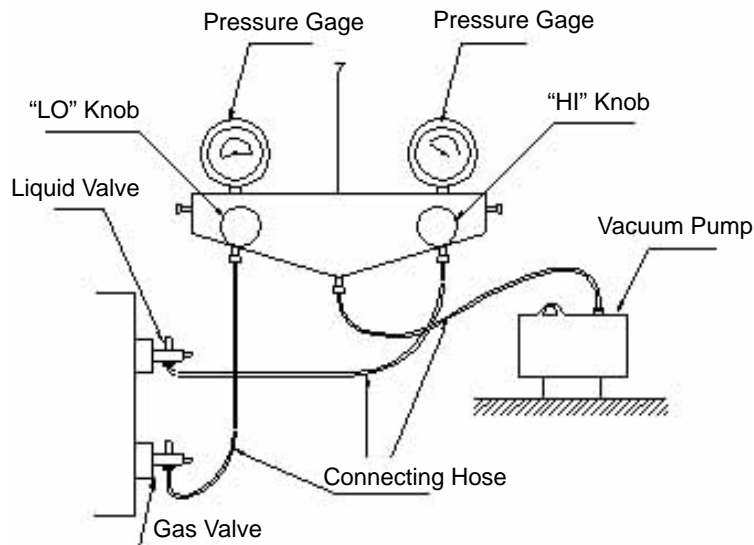


Fig.40



- Caution :**
1. When connecting the indoor unit with the connecting pipe, do not pull the big and small joints of the indoor unit forcefully, so as to prevent the capillary of the indoor unit and other pipes from breaking and leaking.
 2. The connecting pipe shall be supported by proper bracket. The weight of the pipe shall not be withstood by the unit.

Installation of Protective Layer of Connecting Pipe

1. To avoid generation of condensate on the connecting pipe and avoid leakage, the big pipe and the small pipe of the connecting pipe must be covered by thermal insulation materials, be bundled by adhesive tape, and be isolated from air.
2. The joint connecting to the indoor unit must be wrapped by thermal insulation material. There shall be no gap between the connecting pipe joint and the wall of the indoor unit. Refer to Figure 41.

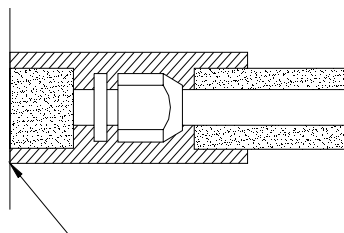


Fig.41

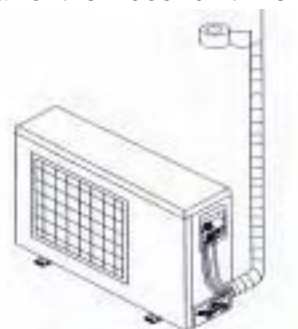


Fig.42



Caution: After the pipes are wrapped by protective materials, never bend the pipes to form very small angle, and otherwise the pipes may crack or break.

3. Use adhesive tape to wrap the pipes:

- (1) Use adhesive tape to bundle the connecting pipe and the cables together. To prevent condensate from overflowing out from the drainage pipe, separate the drainage pipe from the connecting pipe and the cables.

- (2) Use thermal insulation tape to wrap the pipes from the bottom of the outdoor unit until the upper end of the pipe where the pipe enters the wall. When wrapping thermal insulation tape, the later circle of tape must cover half of the front circle of tape (Refer to Figure 42).
- (3) Wrapped pipe must be fixed to wall using pipe clamps.



Caution:

- (1) Do not wrap the protective tape too tight, and otherwise the efficiency of thermal insulation may be decreased. Ensure that the condensate drainage flexible tube is separate from the bundled pipes.
- (2) After the protective work is completed and the pipes are wrapped, use seal material to block the hole in the wall, so as to prevent rain and wind from entering the room.

Position and Method of Installing Wire Controller

1. One end of the control wire of the manual controller is connected with main board of electric box of indoor unit inside, it should be tightened by wire clamp, the other end should be connected with the manual controller (installation sketch map as shown in below). The control wire be used for the indoor unit and manual controller, which is the special communication wire, the length is 8 meters, the material be adopted for the control wire should be metallic substance. The manual controller could not be disassembled and the communication wire be used for the manual controller should not be changed by users optionally, the installation and maintenance should be carried out by the professional personnel.
2. First select an installation position. According to the size of the communication line of the wire controller, leave a recess or a embedded wire hole to bury the communication line.
3. If the communication line between the wire controller (85 × 85 × 16) and the indoor unit is surface-mounted, use 1# metallic pipe and make matching recess in the wall (refer to Figure 41); If concealed installation is adopted, 1# metallic pipe can be used (Refer to Figure 42).
4. No matter if surface mounting or concealed mounting is selected, it is required to drill 2 holes (in the same level) which distance shall be the same as the distance (60mm) of installation holes in the bottom plate of the wire controller. Then insert a wood plug into each hole. Fix the bottom plate of the wire controller to the wall by using the two holes. Plug the communication line onto the control panel. Lastly install the panel of the wire controller.

Caution:

During the installation of the bottom plate of the wire controller, pay attention to the direction of the bottom plate. The plate's side with two notches must be at the lower position, and otherwise the panel of the wire controller cannot be correctly installed.

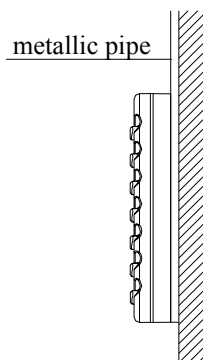
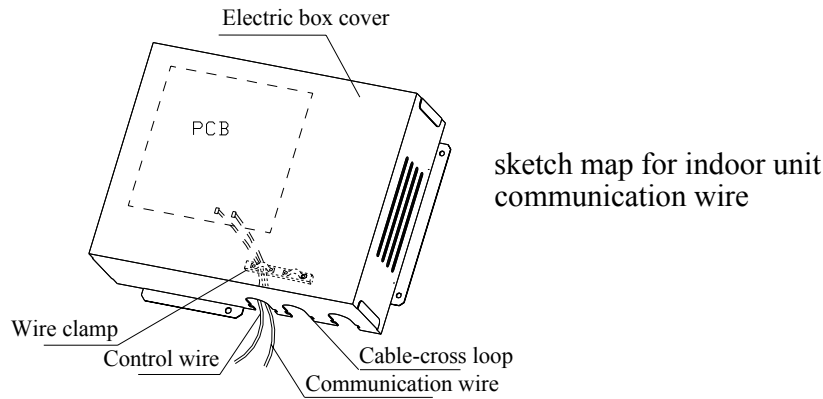


Figure 43 Surface Mounting of Cable

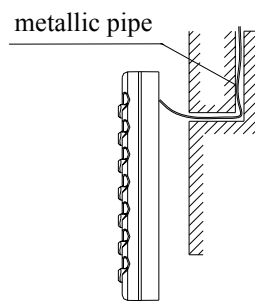


Figure 44 Concealed mounting of Cable

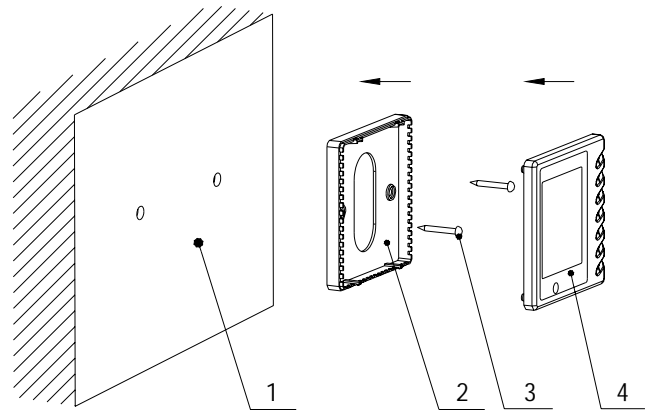


Figure 45 Schematic Diagram of Installation

No.	Name
1	Wall Surface
2	Bottom Plate of Wire Controller
3	Screw M4X10
4	Panel of Wire Controller

Caution:

1. The communication distance between the main board and the wire controller is 8 meters.
2. The wire controller shall not be installed in a place where there is water drop or large amount of water vapor.

Caution:

- 1.ASD-24A can be connected only to a supply with system impedance no more than 0.211 ohm. In case necessary, please consult your supply authority for system impedance information.
- 2.ASD-36A can be connected only to a supply with system impedance no more than 0.466 ohm. In case necessary, please consult your supply authority for system impedance information.



Caution: Before installing the electrical equipment, please pay attention to the following matters which have been specially pointed out by our designers:

- (1) Check to see if the power supply used conforms to the rated power supply specified on the nameplate.
- (2) The capacity of the power supply must be large enough. The section area of fitting line in the room shall be larger than 2.5mm².
- (3) The lines must be installed by professional personnel.

An electricity leakage protection switch and an air switch with gap between electrode heads larger than 3mm shall be installed in the fixed line.

1. Connection of single wire

- (1) Use wire stripper to strip the insulation layer (25mm long) from the end of the single wire.
- (2) Remove the screw at the terminal board of the air-conditioning unit.
- (3) Use pliers to bend the end of the single wire so that a loop matching the screw size is formed.
- (4) Put the screw through the loop of the single wire and fix the loop at the terminal board.

2. Connection of multiple twisted wires

- (1) Use wire stripper to strip the insulation layer (10mm long) from the end of the multiple twisted wires.
- (2) Remove the screw at the terminal board of the air-conditioning unit.
- (3) Use crimping pliers to connect a terminal (matching the size of the screw) at the end of the multiple twisted wires.
- (4) Put the screw through the terminal of the multiple twisted wires and fix the terminal at the terminal board.



Warning:

If the power supply flexible line or the signal line of the equipment is damaged, only use special flexible line to replace it.

1. Before connecting lines, read the voltages of the relevant parts on the nameplate. Then carry out line connection according to the schematic diagram.
2. The air-conditioning unit shall have special power supply line which shall be equipped with electricity leakage switch and air switch, so as to deal with overload conditions.
3. The air-conditioning unit must have grounding to avoid hazard owing to insulation failure.
4. All fitting lines must use crimp terminals or single wire. If multiple twisted wires are connected to terminal board, arc may arise.
5. All line connections must conform to the schematic diagram of lines. Wrong connection may cause abnormal operation or damage of the air-conditioning unit.
6. Do not let any cable contact the refrigerant pipe, the compressor and moving parts such as fan.
7. Do not change the internal line connections inside the air-conditioning unit. The manufacturer shall not be liable for any loss or abnormal operation arising from wrong line connections.

Power Cable Connection:

1. Air-conditioning unit with single-phase power supply

- (1) Remove the front-side panel of the outdoor unit.
- (2) Pass the cable through rubber ring.
- (3) Connect the power supply cable to the "L, N" terminals and the grounding screw.



Caution:

For air-conditioner with auxiliary heater, it is required to connect the power cable to the "L1, L2 L3" terminals and the grounding screw.

- (4) Use cable fastener to bundle and fix the cable.
- 2. Air-conditioning unit with 3-phase power supply
 - (1) Remove the front-side panel of the outdoor unit.
 - (2) Attach rubber ring to the cable-cross hole of the outdoor unit.
 - (3) Pass the cable through rubber ring.
 - (4) Connect the power cable to the terminal and earthing screws marked "L1, L2, L3 & N".
 - (5) Use cable fastener to bundle and fix the cable.

3. FASD-18A

This model should be connected only to a supply with the relevant system impedance no more than $Z_{\max}=0.27+j0.17 \text{ ohm}$.

In case necessary, please consult supply authority for system impedance information.

ASD-12A

This model should be connected only to a supply with the relevant system impedance no more than $Z_{\max}=0.29+j0.18 \text{ ohm}$.

In case necessary, please consult supply authority for system impedance information



Caution:

Take great care when carrying out the following connections, so as to avoid malfunction of the air-conditioning unit because of electromagnetic interference.

(1) The signal line of the wire controller must be separated from the power line and the connecting line between the indoor unit and the outdoor unit.

(2) In case the unit is installed in a place vulnerable by electromagnetic interference, it is better to use shielded cable or double-twisted cable as the signal line of the wire controller.

Connection of Signal Line of Wire Controller

- 1. Open the cover of the electric box of the indoor unit.
- 2. Pull the signal cable of the wire controller through the rubber ring.
- 3. Plug the signal line of the wire controller onto the 4-bit pin socket at the circuit board of the indoor unit.
- 4. Use cable fastener to bundle and fix the signal cable of the wire controller.

Instructions of Unit Installation

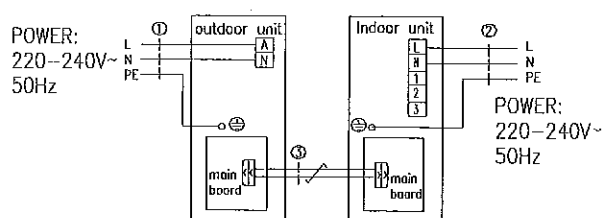
Connection of Cables

Cable Connecting Diagram of Unit

The section area of cables selected by users must not be smaller than the specifications shown in the diagram.

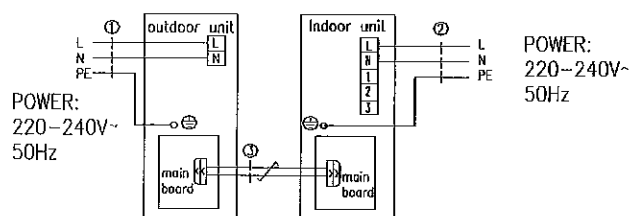
Schematic Diagram of Unit Line Connection:

ASD-09A, ASD-12A, ASD-18A



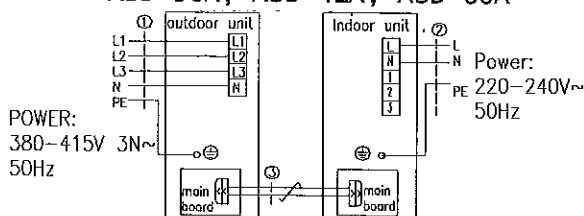
1. Power cord $3 \times 2.5\text{mm}^2$ (H07RN-F)
2. Power cord $3 \times 1.5\text{mm}^2$ (H05VV-F)
3. Twisted-pair

ASD-24A

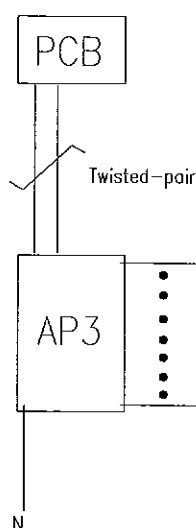


1. Power cord $3 \times 6\text{mm}^2$ (H07RN-F)
2. Power cord $3 \times 1.5\text{mm}^2$ (H05VV-F)
3. Twisted-pair

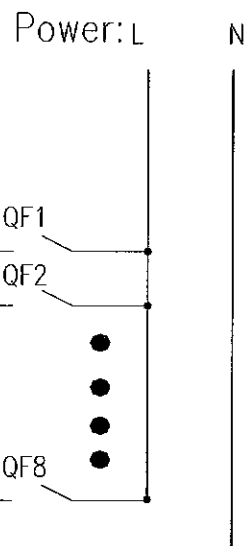
ASD-36A, ASD-41A, ASD-60A



- 1 Power Cord $5 \times 2.5\text{mm}^2$ (H07RN-F)
- 2 Power Cord $3 \times 1.5\text{mm}^2$ (H05VV-F)
- 3 Twisted-pair



Adopt the natural water drainage method, please remove the "WATER" plug wire from the controller in the indoor unit, in order to prohibit the water pump running.



NOTE:

When using the connected control, eliminate the stop wire of x10;x11 on main board. Connect the signal live wire with "ON" of corresponding wind valve to the corresponding L1~L8 on connected control (quantity of wind valve can be up to 8), and the "N" at connected control can be acquired from the neutral wire digit of any wind valve.

NOTE: All the Wind Valve must be connected by the only one Power

If your air-conditioning unit suffers from abnormal operation or failure, please first check the following points before repair:

Failure	Possible Reasons
The unit cannot be started.	<ol style="list-style-type: none"> 1. The power supply is not connected. 2. Electrical leakage of air-conditioning unit causes tripping of leakage switch. 3. The voltage of electrical line is too low. 4. The operating keys are locked. 5. The control loop has failure.
The unit operates for a while and then stops.	<ol style="list-style-type: none"> 1. There is obstacle in front of the condenser. 2. The control loop is abnormal. 3. Cooling operation is selected when the outdoor ambient temperature is above 43℃.
Poor cooling effect.	<ol style="list-style-type: none"> 1. The air filter is dirty or blocked. 2. There is heat source or too many people inside the room. 3. The door or window is open. 4. There is obstacle at the air intake or outlet. 5. The set temperature is too high thus cooling is hindered. 6. There is refrigerant leakage. 7. The performance of room temperature sensor becomes worse.
Poor heating effect	<ol style="list-style-type: none"> 1. The air filter is dirty or blocked. 2. The door or window is not firmly closed. 3. The set room temperature is too low thus heating is hindered. 4. There is refrigerant leakage. 5. The outdoor ambient temperature is lower than -5℃. 6. Control line is abnormal.
The indoor fan does not start under the heating mode.	<ol style="list-style-type: none"> 1. The installation site of the tube sensor is not proper. 2. Tube sensor is not correctly plugged. 3. The connecting line of the tube sensor is broken. 4. The capacitance has leakage.

Note: After carrying out the check of the above items and taking relevant measures to solve the problems found but the air-conditioning unit still does not function well, please stop the operation of the unit immediately and contact the local service agency designated by SINCLAIR. Only ask professional serviceman to check and repair the unit.

Routine Maintenance

1. Cleaning the Air Filter

- (1) Do not disassemble the air filter when cleaning it. Otherwise failure may be caused.
- (2) If the air-conditioning unit is used in an environment with much dust, you should clean the air filter frequently (once every two weeks).



Caution: You shall pay attention to the following matters when cleaning the air-conditioning unit.

- 1) Cut off all power supply before contacting the line connecting equipment.
- 2) Only clean the air-conditioning unit after the unit is shut off and the power supply is disconnected. Otherwise electrical shock or injury may be caused.
- 3) Do not use water to clean the air-conditioning unit. Otherwise there may be electrical shock.

- 4) Take care when cleaning the air-conditioning unit. Use a steady stepping stand.

2. Maintenance at the Beginning of Operating Season

- (1) Check the air inlet and outlet of the indoor and outdoor units to confirm there is no blockage.
- (2) Check to see if the grounding wire is in good condition;
- (3) Check to see if the line connection is in good condition;
- (4) Check if there is any word displaying on the LCD of the wire controller after connecting the unit to power supply.

Note: If there is any abnormal condition, ask aftersales personnel to offer guidance.

3. Maintenance at the End of the Operational Season

- (1) When the weather is clear, operate the unit under fan mode for half a day, so as to dry the inside of the unit.
- (2) If not to use the air-conditioning unit for a long time, please disconnect the power supply. Now the words on the LCD of the wire controller shall disappear.

Performance Parameters Sheet

Continued

Item \ Model			Heat pump type						
			ASD-09A	ASD-12A	ASD-18A	ASD-24A	ASD-36A	ASD-41A	ASD-60A
Cooling Capacity		W	2600	3500	5000	7000	10000	12000	16000
Heating Capacity		W	2900	3700	5800	8000	11000	14500	19000
Power	Cooling	W	960	1300	2100	2800	4050	5300	6500
	Heat Pump	W	930	1200	1800	2400	3300	4950	5500
Current	Cooling	A	4.5	5.9	9.6	13.2	7.2	9.0	10.9
	Heat Pump	A	4.4	5.6	8.5	11.4	6.1	8.2	9.6
Power Supply			220V-240V~ 50Hz				380V-415V 3N~ 50Hz		
Compressor			Hermetic-rotary				Hermetic Scroll		
Air Volume			450	520	840	1400	2000	2500	
Static Air Pressure Outside Unit			-			80	150		
Noise	Indoor		37	40	42	44	48		53
	Outdoor		55	56		59	60		62
Name of Refrigerant			R410A						
Filled Amount of Refrigerant		kg	1.0	1.1	1.5	2.0	3.2	3.5	5.0
Connec-ting	Liquid Pipe	Inch	φ1/4"			φ3/8"	φ1/2"		
	Gas Pipe	Inch	φ3/8"	φ1/2"		φ5/8"	φ3/4"		φ7/8"
Indoor Unit	Width	mm	913		980	1270	1251		1251
	Depth	mm	680		736	504	744		788
	Height	mm	220		276	268	290		330
	Wt.	kg	27		36	37	57		66
Outdoor Unit	Width	mm	760/848			950	950	950	950
	Depth	mm	250/320			412	412	412	412
	Height	mm	530/540			700	840	1250	1250
	Wt.	kg	32			59	90	112	123
Drainage pipe diameter (interior X exterior)		mm	φ20×1.5			20 × 1.5			32 × 1.5

Appendix:

Air conditioner nominal working condition and working range:

Test condition	Indoor side		Outdoor side	
	DB()	WB()	DB()	WB()
Nominal cooling	27	19	35	24
Nominal heating	20		7	6
Max. cooling	32	23	43	26
Low temp. cooling	27	19	- 7	
Max. heating	27		24	18
Low temp. heating	20		- 7	- 8

Note:

1. The design of this unit conforms to the requirements of GB/T 18836-2002 standard.
2. The air volume is measured at the relevant standard external static pressure.
3. Cooling (heating) capacity stated above is measured under nominal working conditions corresponding to standard external static pressure. The parameters are subject to change with the improvement of products, in which case the values on nameplate shall prevail.
4. The cooling (heating) capacity is measured at the nominal work conditions with the relevant standard external static pressure. The parameters may be changed following the improvement of the product. Refer to the nameplate of the unit for actual parameters.

ENVIRONMENTAL INFORMATION

This unit contains fluorinated gases with greenhouse effect covered by the Kyoto Protocol.
Maintenance and disposal must be carried out by qualified persons only.
Refrigerant gas R410A, GWP = 1730

EXTRA REFRIGERANT CHARGE

Pursuant to Regulation EC 842/2006 on certain fluorinated greenhouse gases, in case of extra refrigerant charge, it is compulsory to:

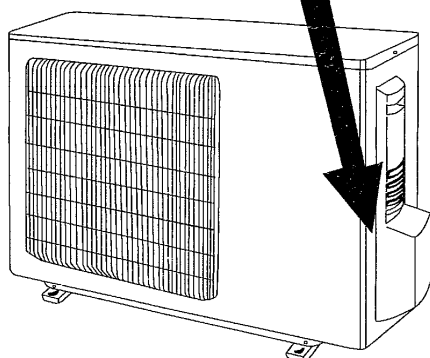
- Fill in the label accompanying the unit inserting the factory quantity of refrigerant charge (see the technical label), the extra refrigerant charge and the total charge.
- Apply the label next to the technical label applied on the unit. For the split-type air conditioner apply on the outdoor unit.

1 = [] Kg

2 = [] Kg

1 + 2 = [] Kg

- 1 Factory charge
2 Extra charge
1+2 Total charge





This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized place for recycling of electrical and electronic appliances.

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