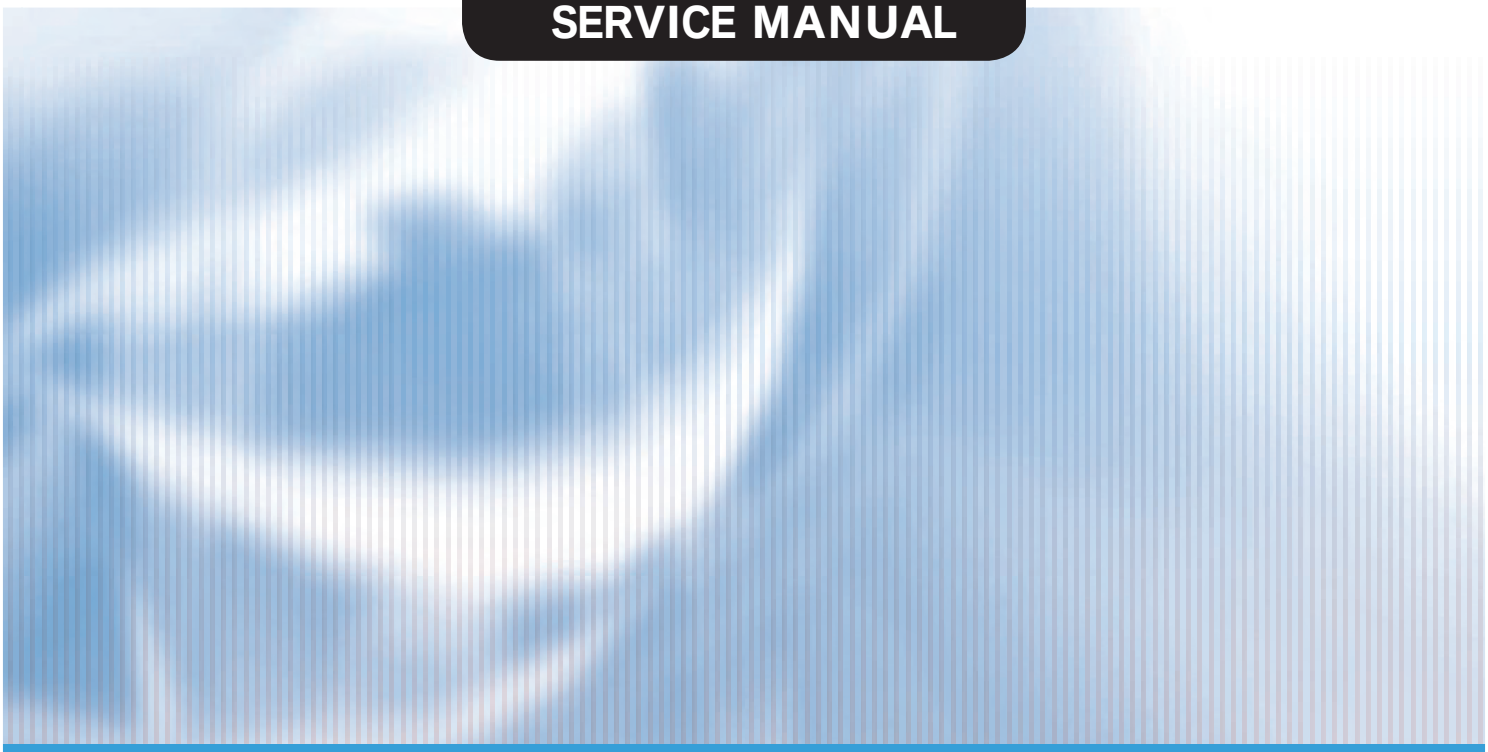
SERVICE MANUAL



DUCT SERIES

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

sinclair
AIR CONDITIONING

Super-Pressure Duct Type Indoor Unit (with Heathy Filter)

Outdoor Unit

1. Introduction and Features

1.1 Characteristics

With the advantage of central air conditioner in comfort and deluxe integrated into the small-sized split household air conditioner for its easy installation and high flexibility, Sinclair duct type air-conditioner unit is characterized in high efficiency, long blowing of air, good quality of room air, reliable performance and simple operation. It may be widely used in small supermarket, chain stores, living rooms, hotel, restaurant, office, meeting room and villa type family.

a) **Flexible installation:** The user may determine the air blow/return mode, condensate outflow direction and air port type according to the needs of installation.

b) **High Efficiency and Low Energy Consumption:** High-quality compressor is installed. The evaporator employs hydrophilic aluminum foil and inner threaded copper tube. This results in high efficiency of heat exchange and increased energy-efficiency ratio of the unit.

c) **Long-distance Air Blow:** For super pressure design, the air can be blown to a long distance after centralized treatment within the indoor unit.

d) **Good Quality of Room Air:** The air duct of the unit may be connected to multiple outlets so that the air-conditioning temperature and humidity within the room will be evenly distributed. To improve the room air quality, the unit is complete with highly efficient and healthy filter in which nanometer photocatalyst or catechins is used as the filtering medium.

e) **Reliable Performance:** The unit is provided with complete protections and powerful self-diagnosis function. (See the Microcomputer Control System for detailed information).

f) **Simple Operation:** Simple controller and flexible remote controller allow to control the unit as you desire.

g) **Fresh Air Control:** There are 11 types of fresh air flow available for setting, so that you may perform fine adjustment of the fresh air flow and the power consumption caused due to intake of fresh air.

h) **Lock of Temperature Range:** The user may lock the temperature range as desired. This is suitable for public space.

i) **Week Timer:** The week timer, which is provided with centralized control function, allows the user to set the AUTO START / STOP in 1 week (7 days) and 4 time intervals each day.

1.2 Microcomputer Control System

See Table 1-1

Table 1-1

Control Function	Protection Function	Display Functions
Memory Function	High/Low Pressure Protection	Auto Start / Stop
Remote Control	Overload Protection	Fan Speed

Timer Function	Overcurrent Protection	Running Mode
Diagnosis and Alarm Function	Exhaust Over-temperature Protection	Defrost
Sleep Function	Reverse Phase Protection	Test
Auto Function	Antifreeze Protection	Sleep
Prevention of Cold Air	Over-temperature Protection	Temperature
Blowing of Residual Heats	Sensor Fault Alarm	Fault Code
Sub-room Control Function		
Centralized Control★		

◇ **Control Functions:**

- Memory Function (Upon restart after a power shutdown, the unit will run under its original status without any change in mode and parameters).
- Remote Control (The unit is provided with different controllers for your option. The wired controller can receive the command from a distance up to 10 meters).
- Timer Function (The unit may be set to AUTO START / STOP separately or in cycle).
- Diagnosis and Alarm Function (Upon any fault during operation, the unit will display the fault code and give out alarm).
- Energy Saving Function (The unit can automatically perform cost-effective control under energy-saving mode).
- Auto Function (When the unit is under cooling or heating mode, the indoor fan can automatically adjust its speed according to the actual needs of the system).
- Cold Air Prevention (Under heating mode, the indoor fan will not start until the heat exchanger of indoor unit is higher than the indoor temperature).
- Sub-room Control Function (The unit can be started or stopped from the switch in any sub-room).
- Blow of Residual Heats (After the compressor is stopped under heating mode, the indoor fan will continue to run a period of time before it is stopped).

◇ Protection Functions:

- High / Low Pressure Protection (If the suction pressure of the compressor is too low and the exhaust pressure is two high, the compressor will be stopped and the fault code will be displayed).
- Overload Protection: (The compressor is complete with heat protection. The compressor will be stopped if its temperature exceeds the permissible value, and will be started as long as the temperature resumes to normal.
- Over-current Protection (When the compressor current exceeds the normal value, the compressor will be stopped and the fault code will be displayed).
- Exhaust Over-temperature Protection (When the exhaust temperature of the compressor exceeds the permissible value, the compressor will be stopped and the fault code will be displayed).

- Reverse Phase (Phase Loss) Protection (If the power is of inconsistent phase sequence or phase loss, the unit will not be started and the fault code will be displayed).
- Antifreeze Protection (When the surface temperature of indoor heat exchanger is too low, the compressor will be stopped and the fault code will be displayed).
- Over-temperature Protection (When the surface temperature of indoor heat exchanger is too high, the compressor will be stopped and the fault code will be displayed).
- Sensor Fault Alarm (When the sensor is in short circuit or open circuit, the fault code will be displayed).

◇ **Display Function:**

- CLOCK Display (To display and set the real time).
- AUTO START / STOP Display (To display and set the time for auto start or stop).
- CANCEL TIMER Display (To display the timer cancellation).
- FAN SPEED Display (The fan speed is displayed in HIGH, MEDIUM or LOW).
- RUN MODE Display (Cooling, Dehumidify, Heating, Fan)
- DEFROST Display (Display when the unit under heating mode is defrosting)
- TEST Display (Display when under test mode).
- ENERGY SAVING Display (Display when running under energy saving mode)
- TEMPERATURE Display (Display the room temperature and preset temperature)
- Fault Code Display

★ **Centralized Week Timer Control Function**

This unit is available with centralized week timer control function for your option. One piece of centralized week timer controller can realize simultaneous control over 16 main units for their start / stop and timing. And it can also execute separate control over one unit for its start / stop and timing. This relieves you from the trouble to run back an forth to start or stop the main unit. The centralized week timer controller for air duct model communicates with the manipulator of a single unit by 485 mode, with maximum communication distance up to 1200m. The number of each unit will be shown on the centralized week timer controller. The number of the unit depends on the position of the dial switch on the manipulator for each duct type air conditioner. The connection between centralized controller and manipulator is shown below:

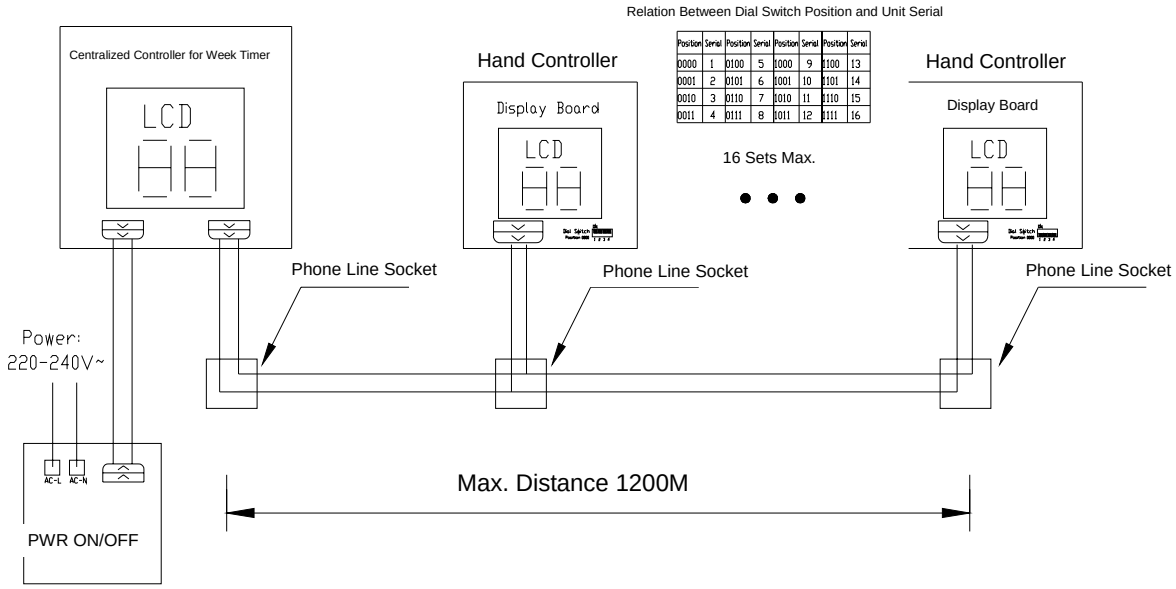


Fig. 1-1

Note: If you need this function, please indicate before ordering.

2. Specifications and Data Sheet

2.1 Nominal Working Condition and Working Temperature Range See Table 2-1

Table 2-1

Working Condition	Temperature	Indoor Air Temperature	Outdoor Air Temperature
Cooling	Nominal	27℃ DB / 19℃ WB	35℃ DB / 24℃ WB
	Max.	32℃ DB / 23℃ WB	43℃ DB / 26℃ WB
	Min.	18℃ DB / 14℃ WB	18℃ DB / —
Heating	Nominal	20℃ DB / —	7℃ DB / 6℃ WB
	Max.	27℃ DB /18℃ WB	24℃ DB / 18℃ WB
	Min.	15℃ DB / —	－7℃ DB / -8℃ WB

2.2 Specifications and Data Sheet

2.2.1 Data Sheet for ASD-09A, ASD-12A and ASD-18A

Model			ASD-09A		ASD-12A		ASD-18A	
Item			Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity		W	2600	2900	3500	3700	5000	5800
Power		W	930	980	1340	1217	1935	1849
Current		A	4.5	5	6.8	6.1	8.9	8.54
Power Supply			230V~ 50Hz		230V~ 50Hz		230V~ 50Hz	
Compressor			Fully-enclosed Scroll Compressor					
Air Flow		m3/h	450		520		840	
Noise	Indoor	dB(A)	38		40		42	
	Outdoor	dB(A)	55		56		57	
Refrigerant			R410A					
Refrigerant Charge		kg	0.95		0.9		2.1	
Connection Pipe	Liquid Pipe	mm	Φ9.52		Φ12		Φ12	
	Air Pipe	mm	Φ16		Φ19		Φ22	
Indoor Unit	Width	mm	913		913		980	
	Depth	mm	680		680		736	
	Height	mm	220		220		276	
	Weight	kg	27		27		36	
Outdoor Unit	Width	mm	848		848		848	
	Depth	mm	320		320		320	
	Height	mm	540		540		540	
	Weight	kg	32		32		40	
Discharge Pipe (I.D.×THK)		mm	Φ20×1.5		Φ20×1.5		Φ32×1.5	

2.2.3 Data Sheet for ASD-24A, ASD-36A, ASD-41A, ASD-60A

Model			Heat Pump				
Item			ASD-24A		ASD-36A	ASD-41A	ASD-60A
Cooling Capacity		W	7000		10000	12000	16000
Heating Capacity		W	8300		11000	14500	17000
Power	Cooling	W	2800		4050	5300	6500
	Heat Pump	W	2560		3300	4950	5500
Current	Cooling	A	13.2		7.2	8.9	11.6
	Heat Pump	A	11.8		8.9	8.4	9.8
Power			220V-240V~ 50Hz		380V-420V 3N~ 50Hz		
Compressor			Hermetic Scroll Compressor				
Air Flow		m3/h	1400		2000	2000	2500
Outside Static Pressure		Pa	80	150			
Noise	Indoor	dB(A)	44		48	48	53
	Outdoor	dB(A)	59		60	62	64
Refrigerant			R410A				
Refrigerant Charge		kg	2		3.2	3.5	5
Connection Pipe	Liquid Pipe	mm	ф9.52	ф12			ф12
	Air Pipe	mm	ф16	ф19			ф22
Indoor Unit	Width	mm	1270		1251	1251	1251
	Depth	mm	504		744	744	788
	Height	mm	268		290	290	330
	Weight	kg	37		57	57	66
Outdoor Unit	Width	mm	950		950	950	950
	Depth	mm	412		412	412	412
	Height	mm	700		840	1250	1250
	Weight	kg	59		90	112	123
Discharge Pipe (I.D. x THK)		mm	ф20×1.5		ф20×1.5	ф20×1.5	ф32×1.5

Notes:

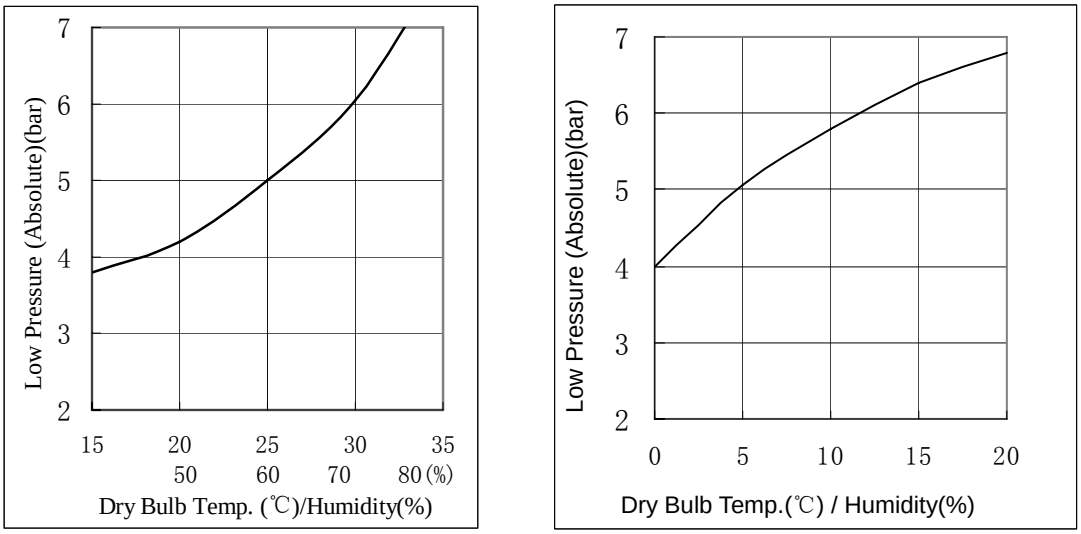
1. The cooling (heating) capacity shown above is measured under nominal condition corresponding to the standard residual pressure outside the unit. The parameters are subject to change with the modification of the products. Those on the nameplate shall prevail.
2. The noise is measured within semi-anechoic room. In actual operation, it may be higher due to change of environment.

3. Characteristics Curve

3.1 Relation of Air-Conditioner Low Pressure and Temperature (Fig. 3-1)

Cooling: The indoor and outdoor have the same condition.

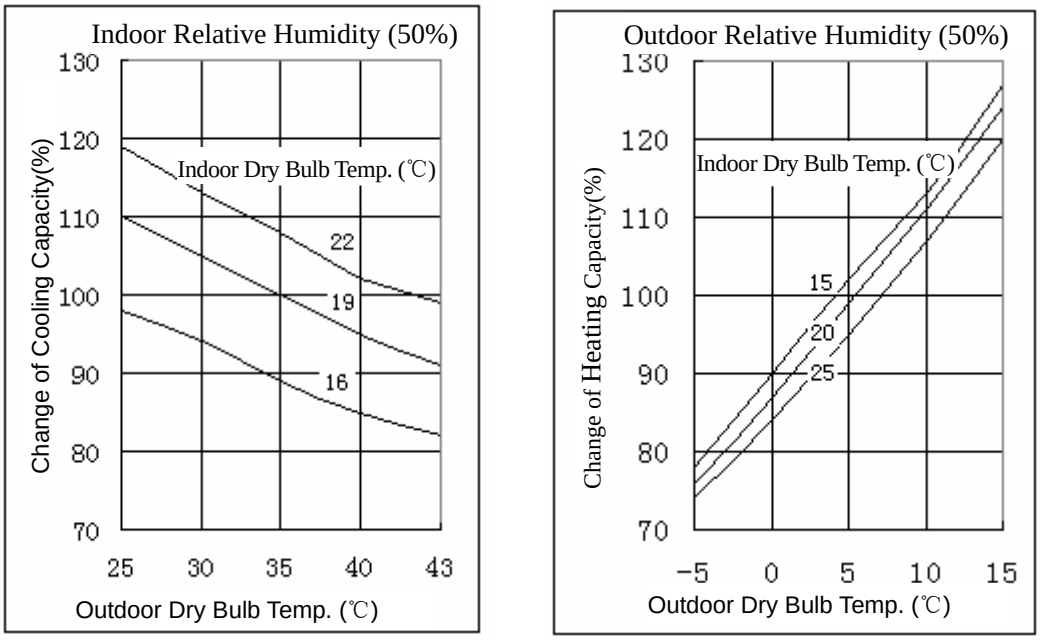
Heating: For indoor condition, the dry bulb temperature is 21℃ and the wet bulb temperature 15.5℃.



(a) Cooling (b) Heating

Fig. 3-1

3.2 Performance Curve (Fig. 3-2)



(a) Cooling Characteristics (b) Heating Characteristics

Fig. 3-2

3.3 Relation between Cooling Capacity / Refrigerant Charge and Connection Pipe Length (Fig. 3-3)

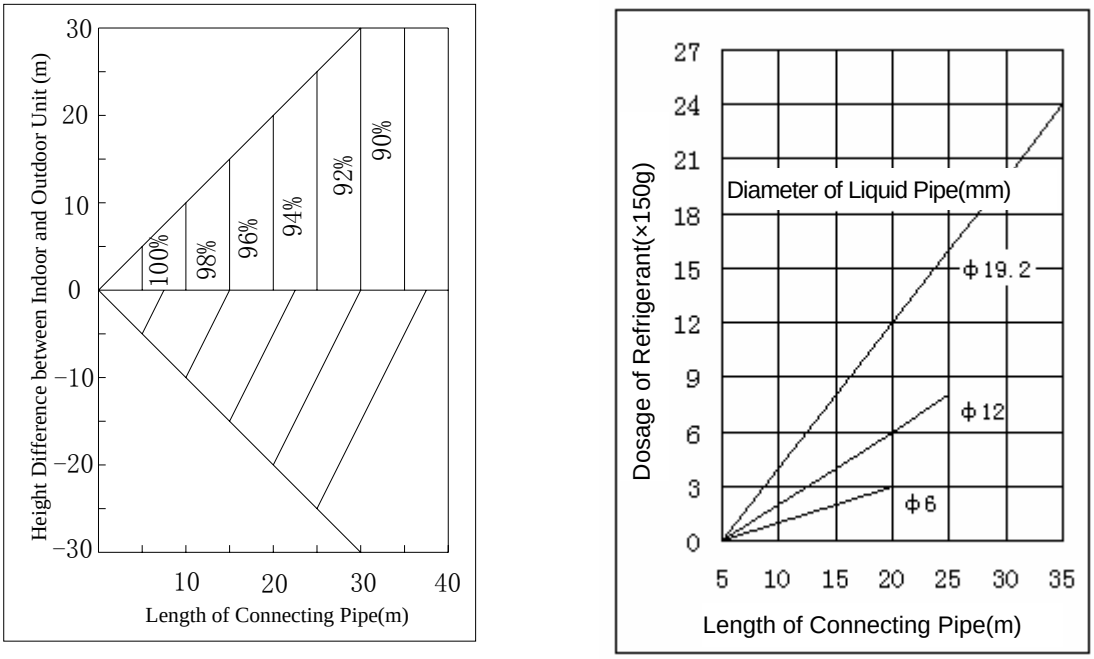
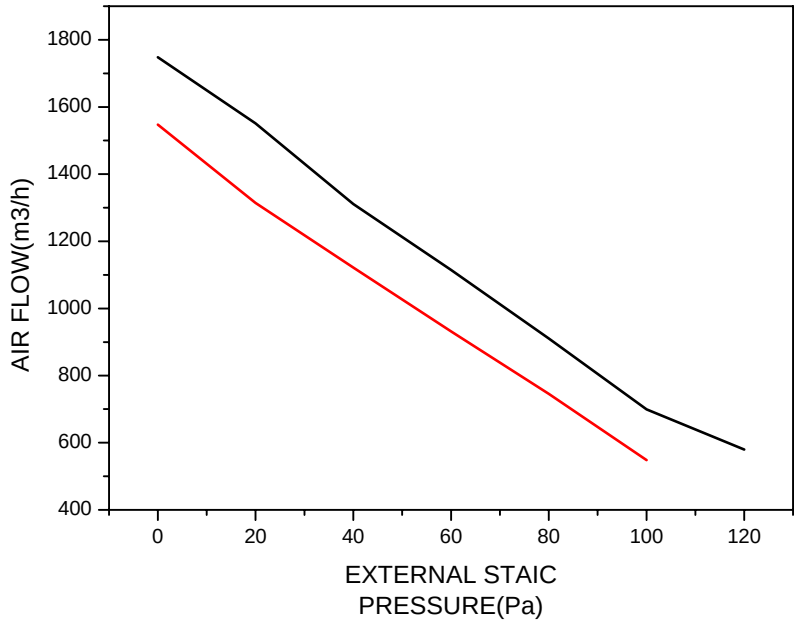
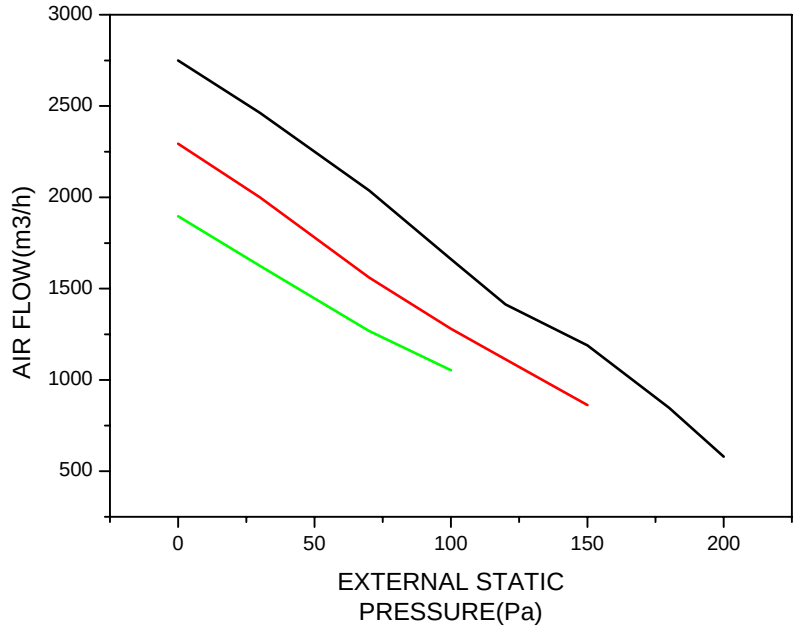


Fig. 3-3

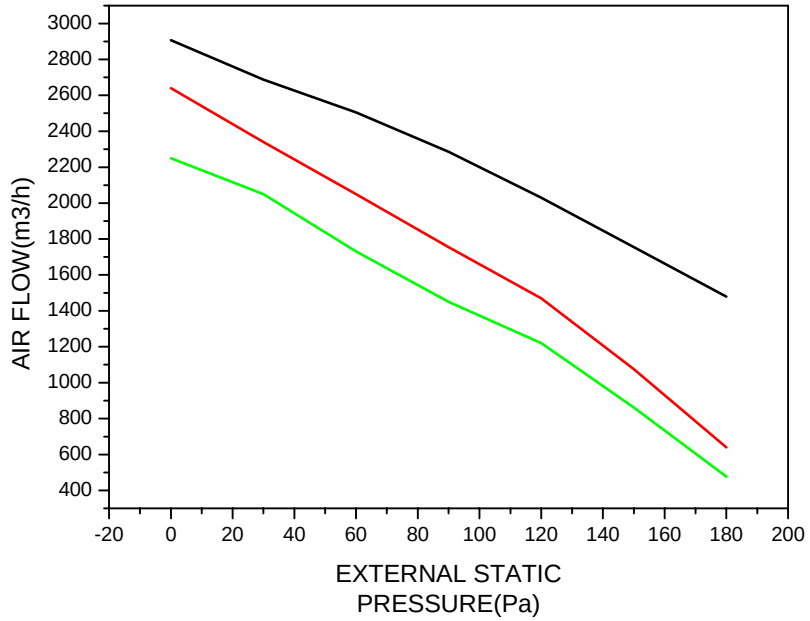
3.4 Relation between Air Flow and Static Pressure



(a) Air Flow and Static Pressure for ASD-24A



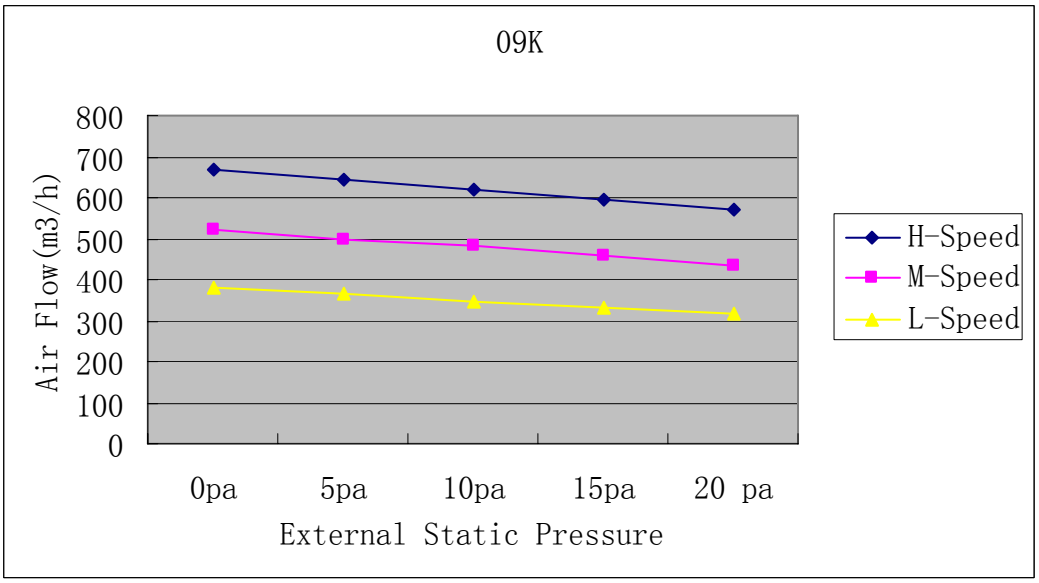
(b) Air Flow and Static Pressure for ASD-36A, ASD-41A

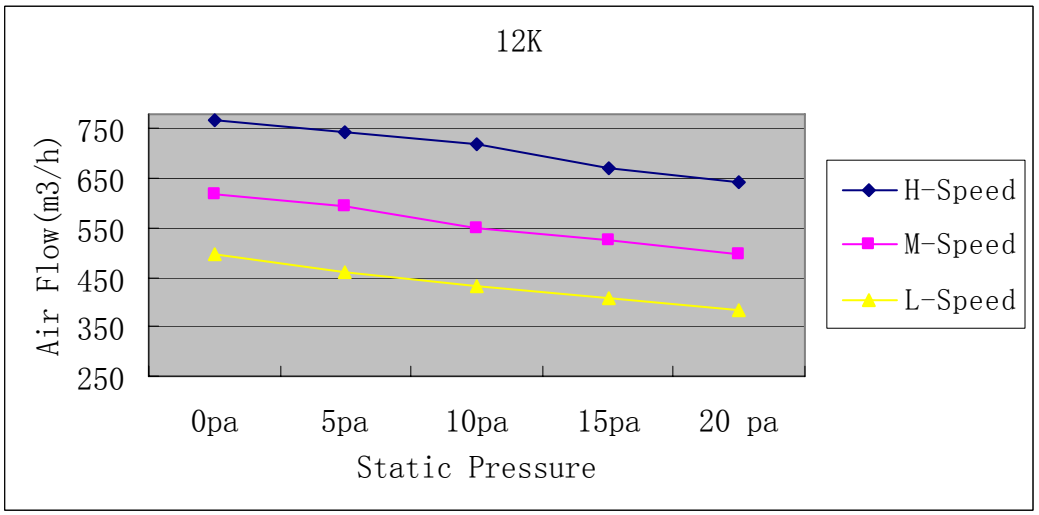


(a) ASD-60A

Fig. 3-4

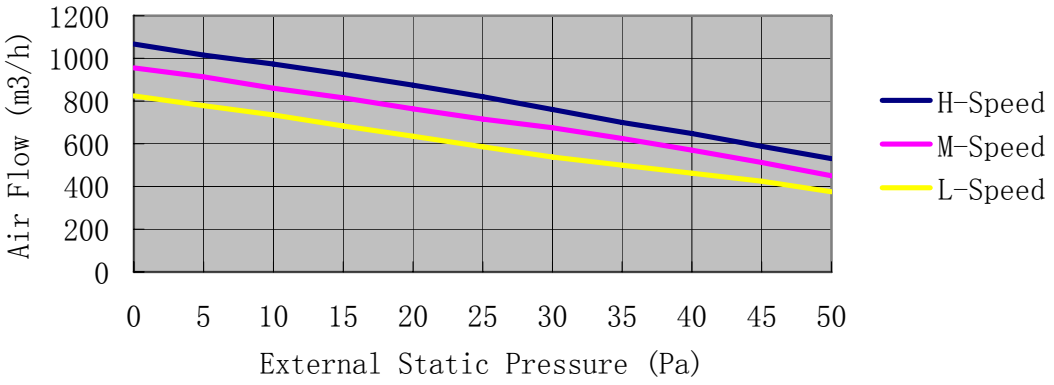
STATIC PRESSURE GRAPHS



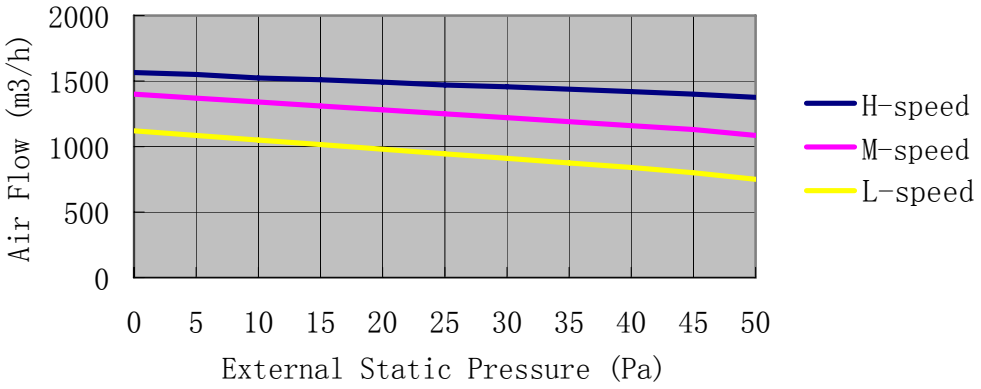


STATIC PRESSURE GRAPHS

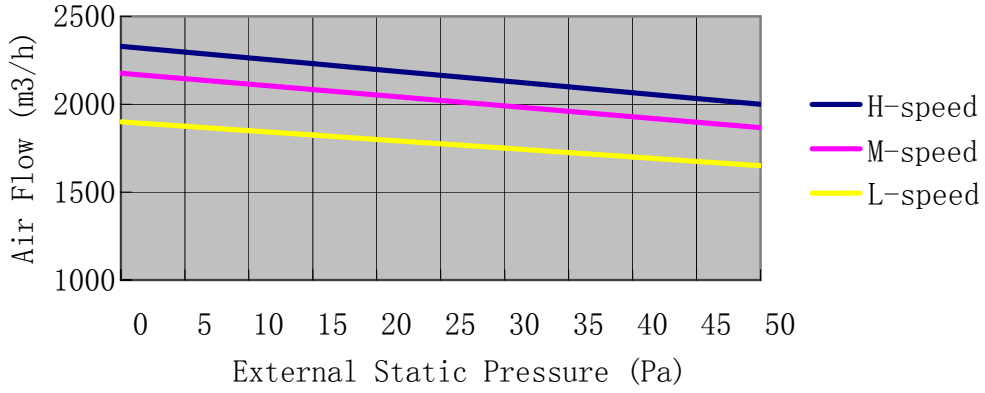
18K



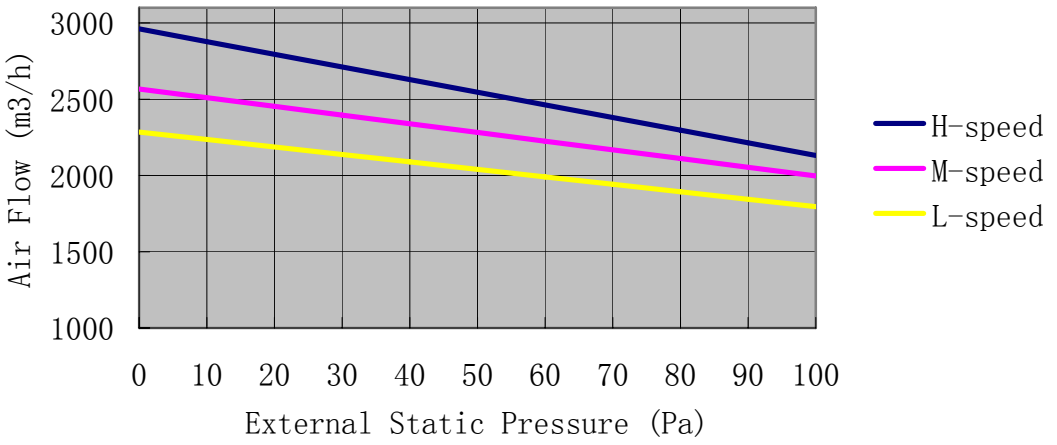
24K



36K、42K、48K

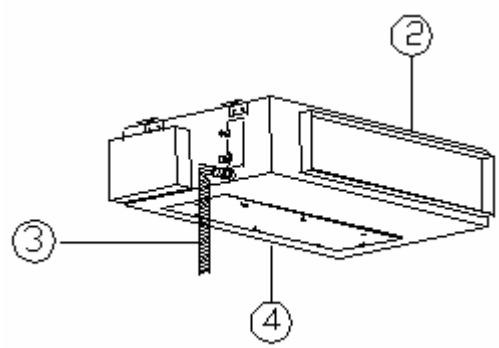


60K

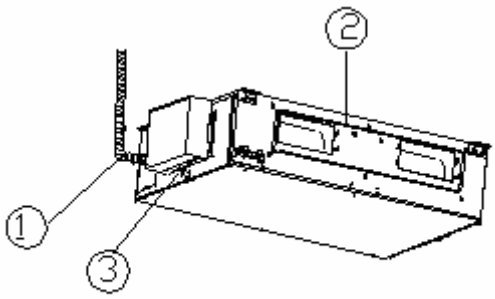

3000
2500
2000
1500
1000
Air Flow (m3/h)
0
10
20
30
40
50
60
70
80
90
100
External Static Pressure (Pa)
H-speed
M-speed
L-speed

4. Description of Main Components

4.1 Structural Diagram of Indoor and Outdoor Unit



(a) 2.6～5kw Indoor Unit

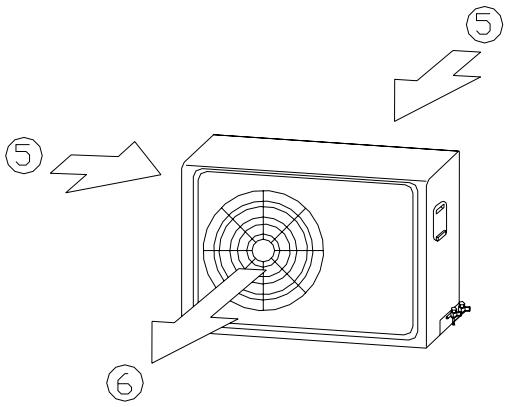


(b) 7～16kw Indoor Unit

Fig. 4-1 Indoor Unit

Notes:

1: Condensate Pipe of Discharge Pump
2: Rectangular Air Outlet
3: Natural Condensate Discharge Pipe of Water Tray
4: Air Intake



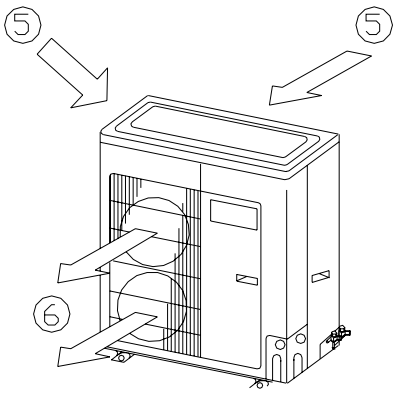
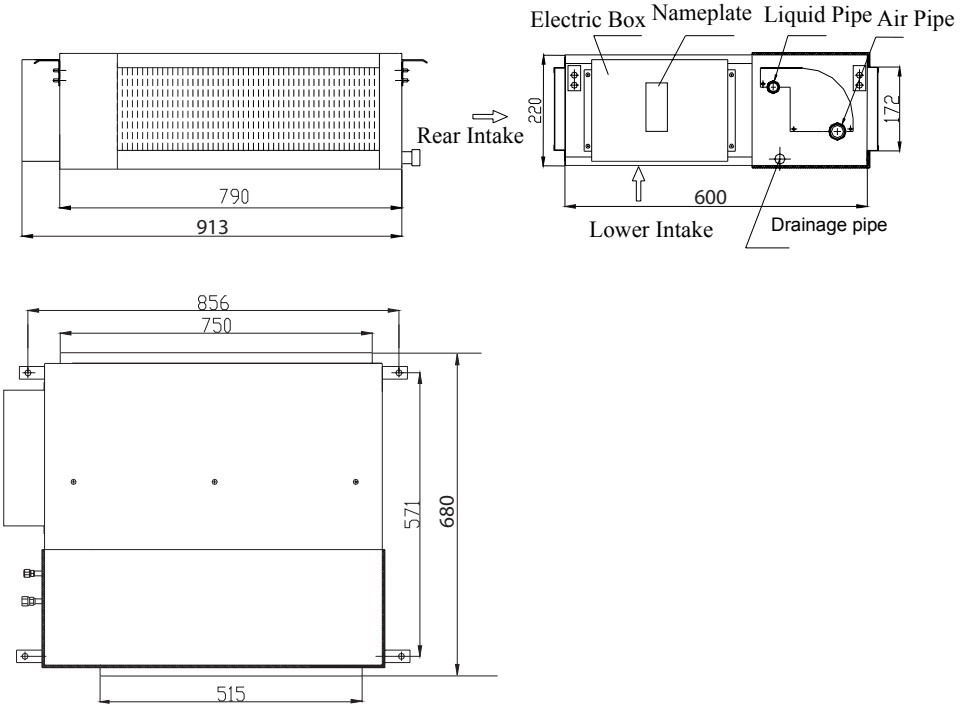


Fig. 4-2 Outdoor Unit

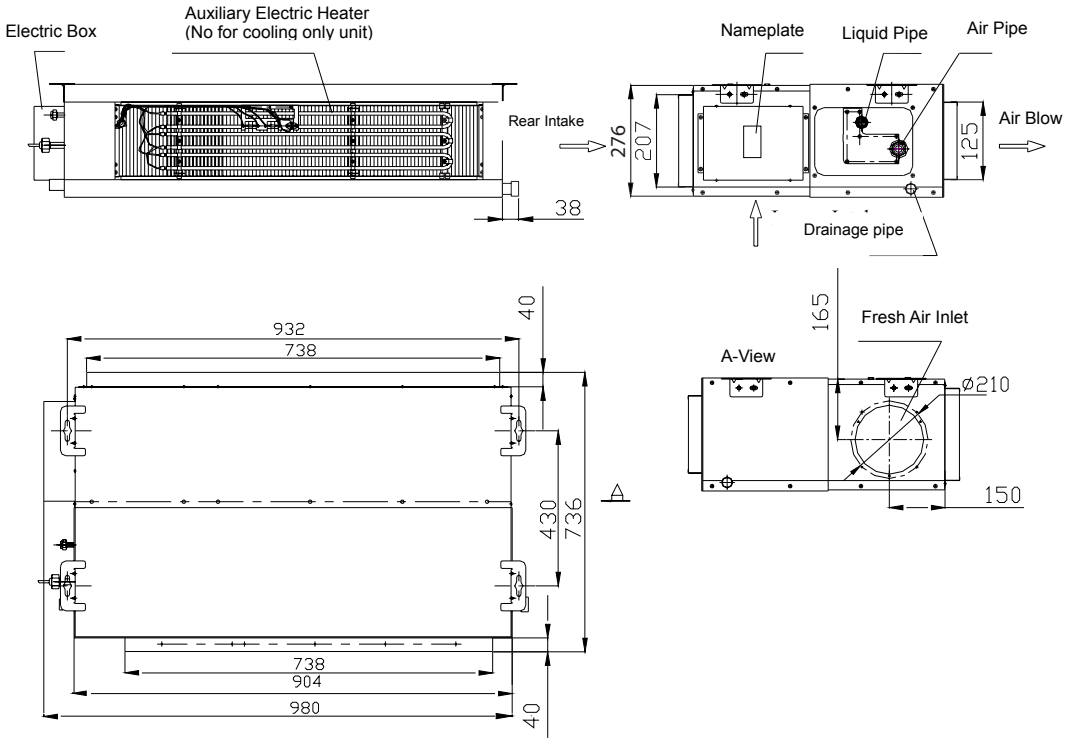
Notes: 5 – Air Inlet 6 – Air Exhaust

5. Overall and Installing Dimension

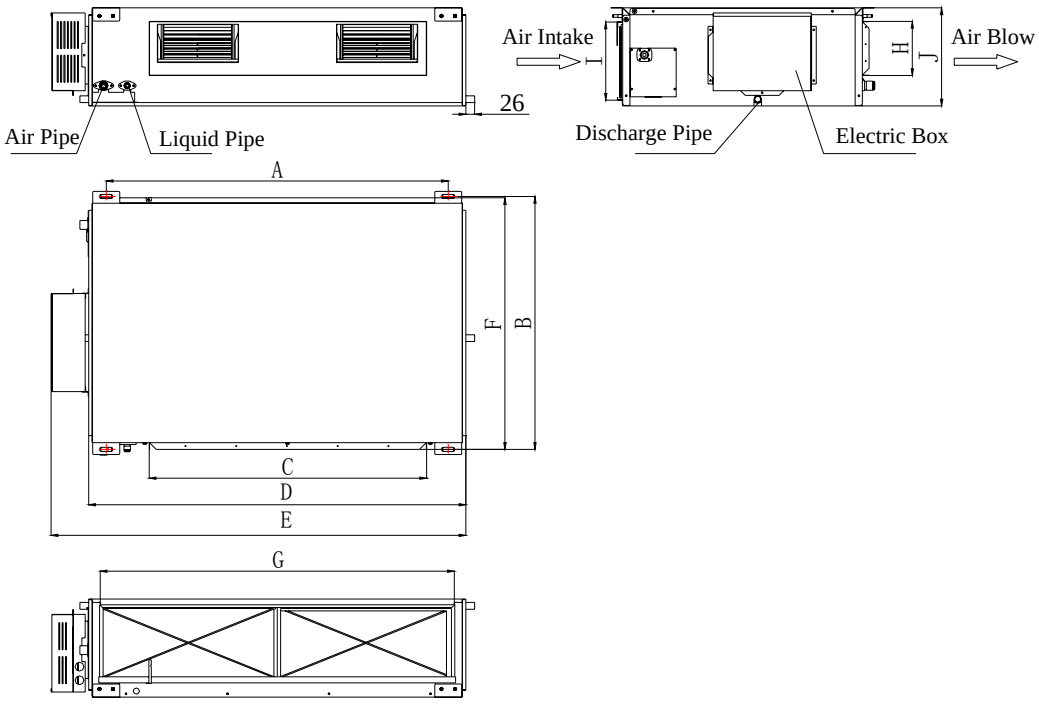
5.1 Dimensional Size, Installation Size and Component Name of Indoor Unit (Fig. 5-1)



(a) ASD-09A, ASD-12A



(b) ASD-18A



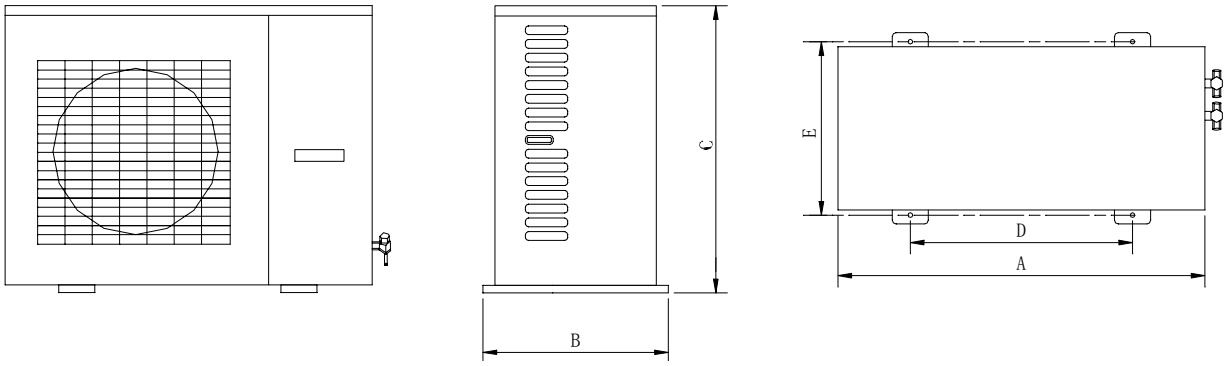
Unit: mm

Item / Model	A	B	C	D	E	F	G	H	I	J	Connection Pipe (Liquid Pipe)	Connection Pipe (Air Pipe)	Drainage Pipe (O.D.× THK)
ASD-24A	1063	505	820	1159	1270	504	1088	160	211	268	ф9.52	ф16	ф20×1.5
ASD-36A	1011	748	820	1115	1251	744	1047	160	231	290	ф12	ф19	ф20×1.5
ASD-36A	1011	748	820	1115	1251	744	1047	160	231	290	ф12	ф19	ф20×1.5
ASD-41A	1011	748	820	1115	1251	744	1047	160	231	290	ф12	ф19	ф20×1.5
ASD-60A	1015	784	820	1115	1251	788	1051	160	258	330	ф12	ф22	ф32×1.5

(c) Other Models

Fig. 5-1 Dimensional Size, Installation Size and Component Name of Indoor Unit

5.2 Dimensional Size, Installation Size and Component Name of Outdoor Unit (Fig. 5-2)



Unit: mm

Item \ Model	ASD-09A ASD-12A ASD-18A	ASD-24A	ASD-36A	ASD-41A	ASD-60A
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.5-2 Dimensional Size, Installation Size and Component Name of Outdoor Unit

6. Electrical Wiring Diagram

6.1 Wiring Diagram for Indoor Residual Pressure Adjustment

The indoor unit of extra residual pressure selects the desired residual pressure by changing the wiring of indoor unit. It includes common residual pressure and high residual pressure, respectively wired as in Fig. 6-1.

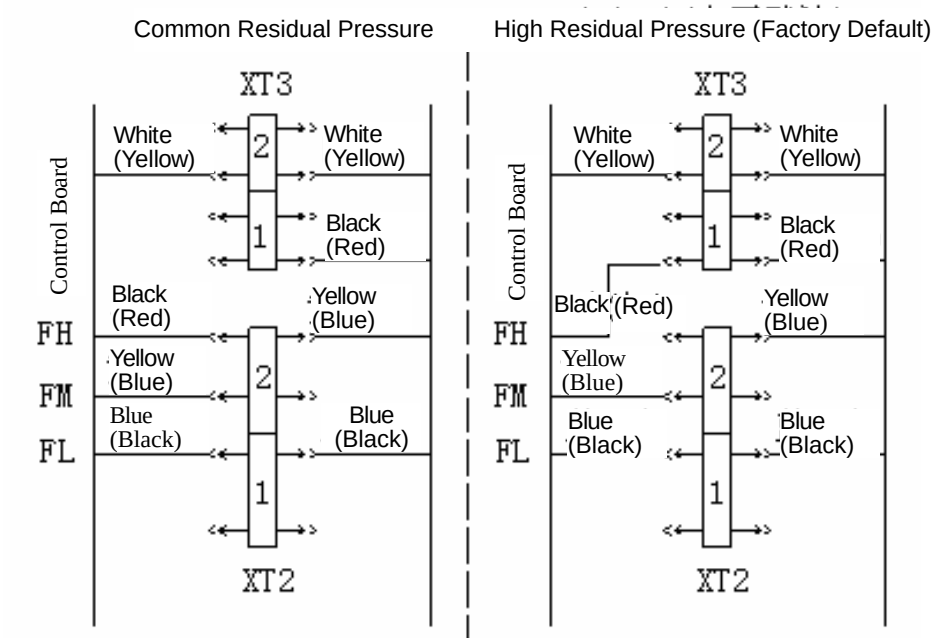
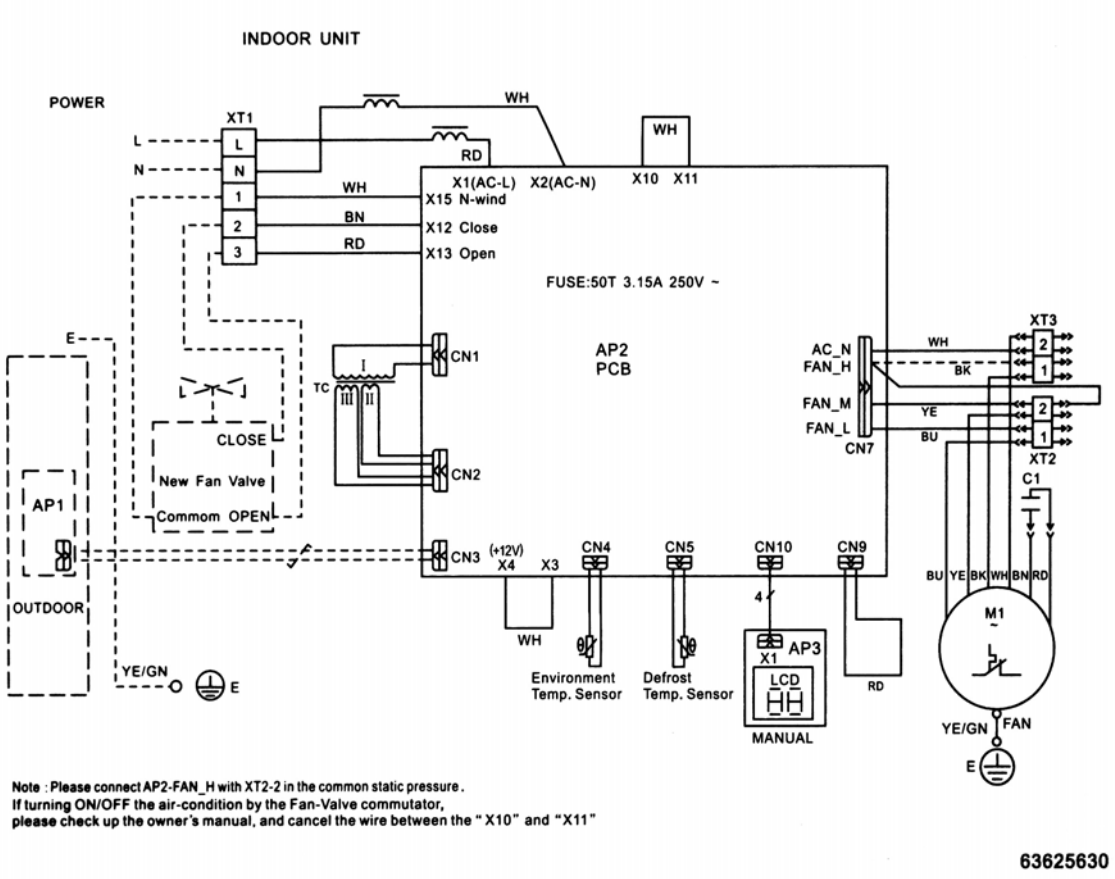


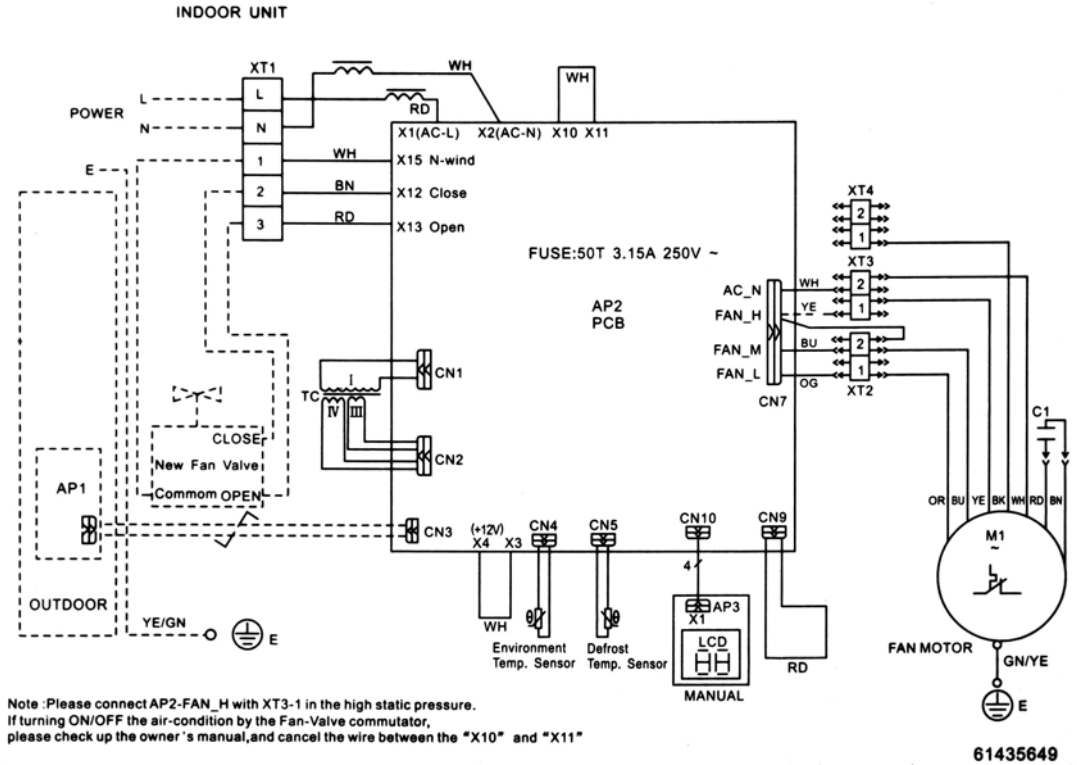
Fig. 6-1 Duct Type Air Conditioner with Single Motor and Extra Residual Pressure

6.2 Electrical Wiring Diagram

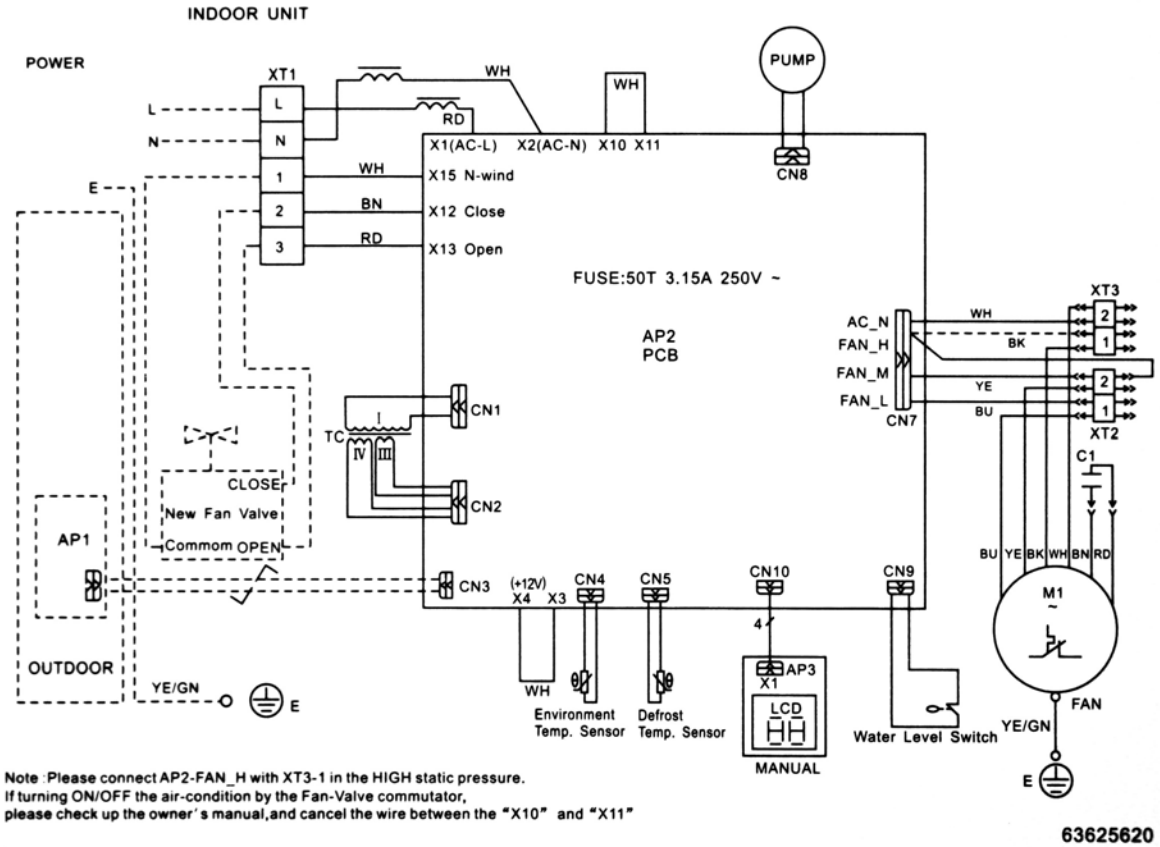
1. ASD-09A, ASD-12A Indoor unit



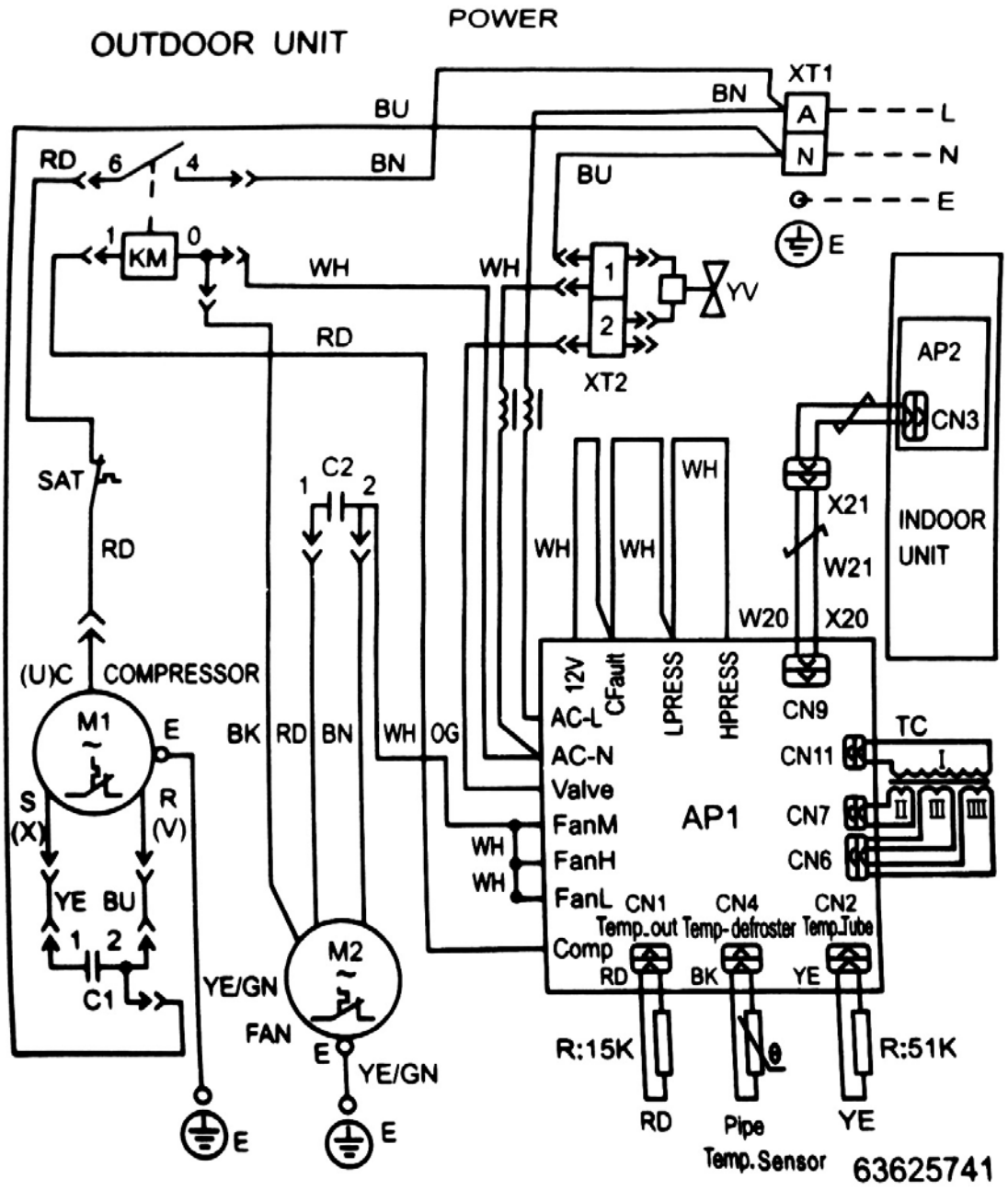
2. ASD-18A, Indoor unit



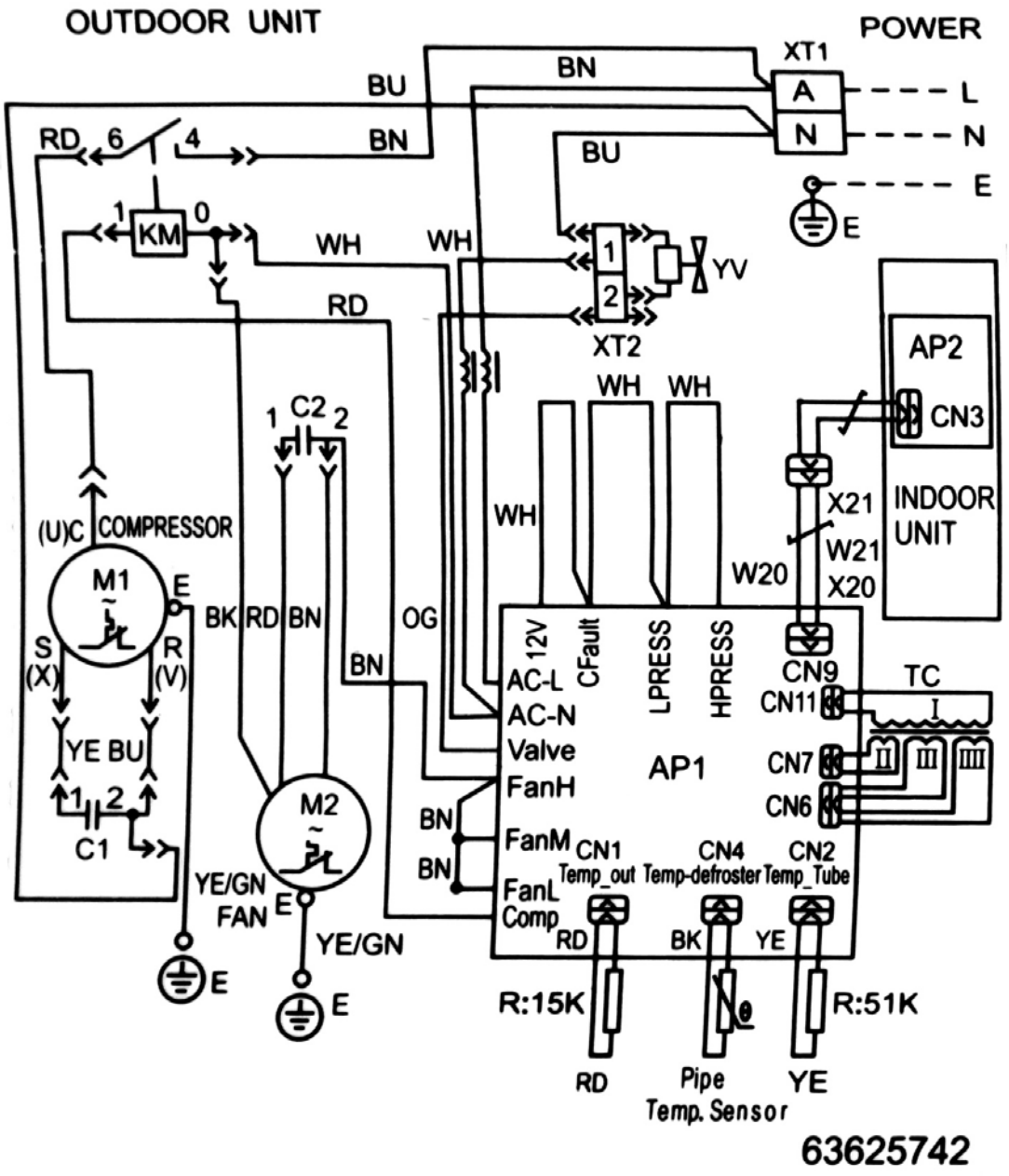
3. ASD-24A, ASD-36A, ASD-41A, ASD-60A, Indoor unit



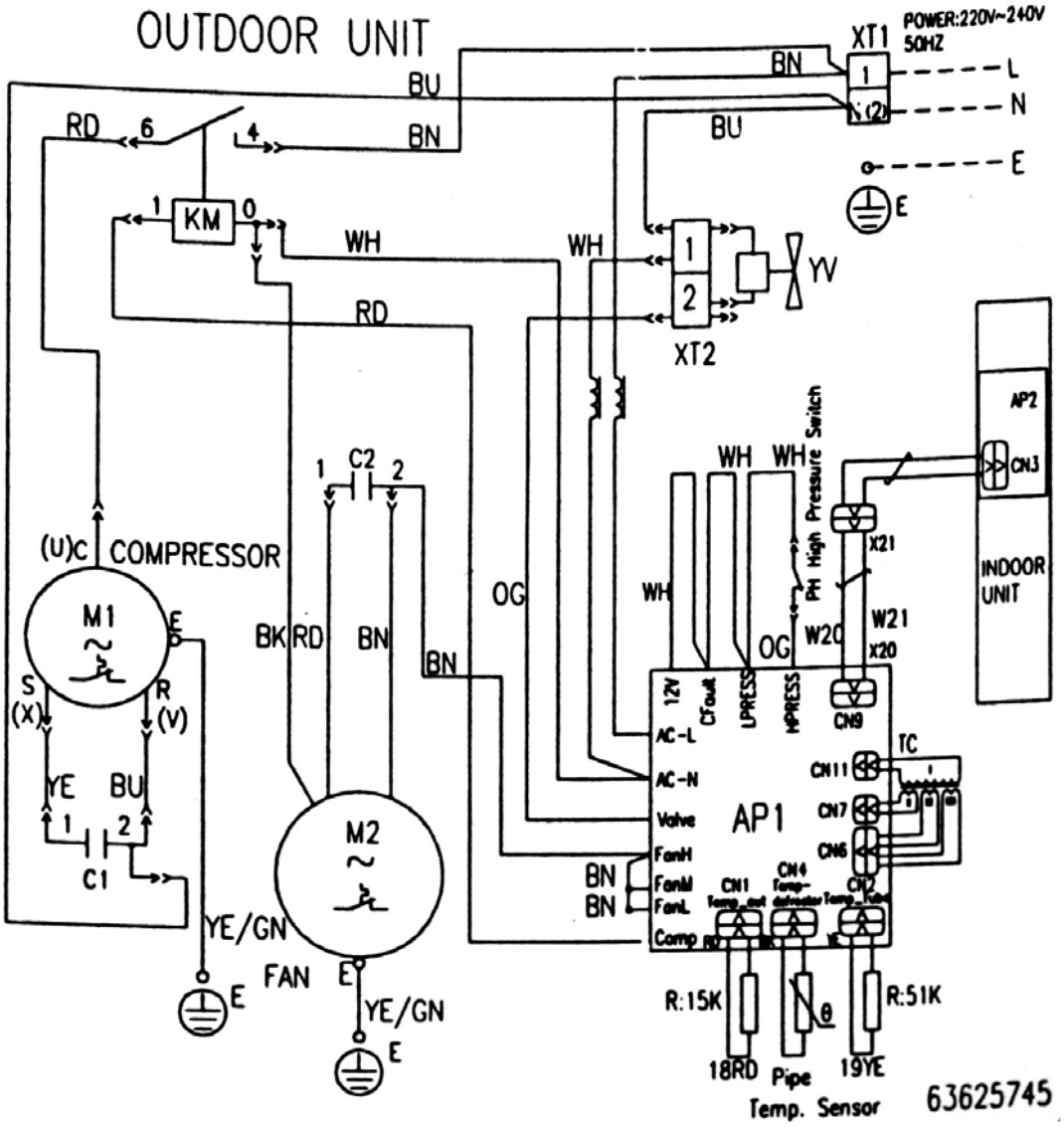
4. ASD-09A, outdoor unit



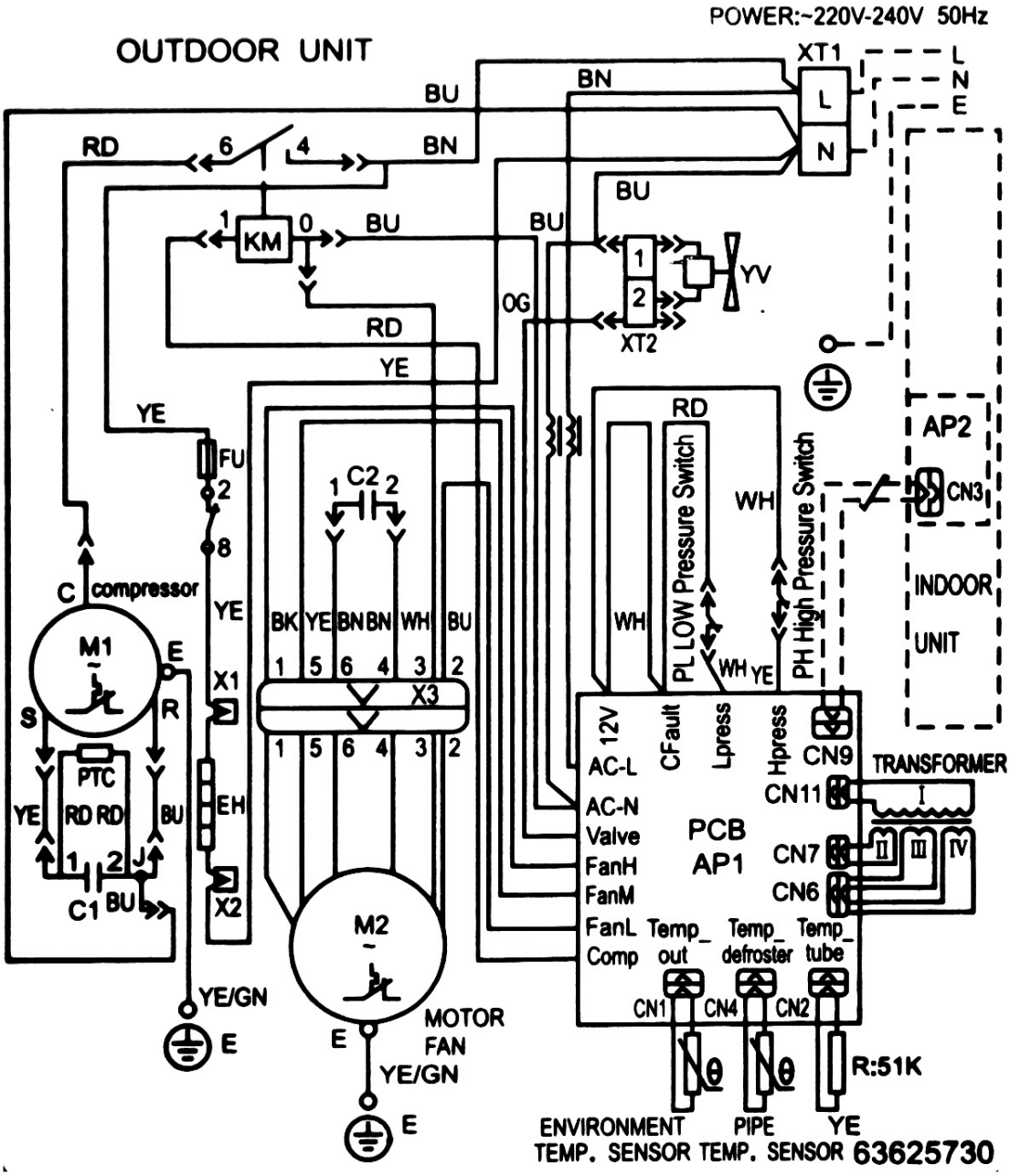
5. ASD-12A, outdoor unit



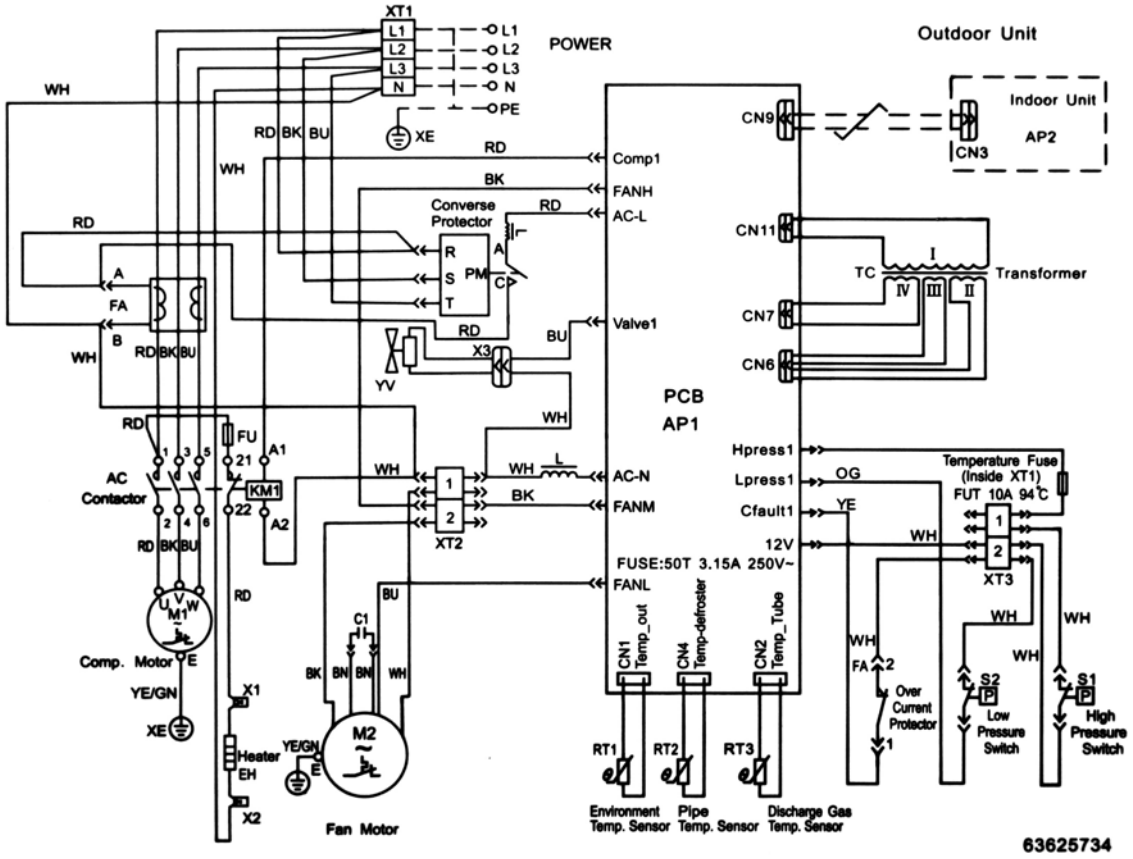
6. ASD-18A, outdoor unit



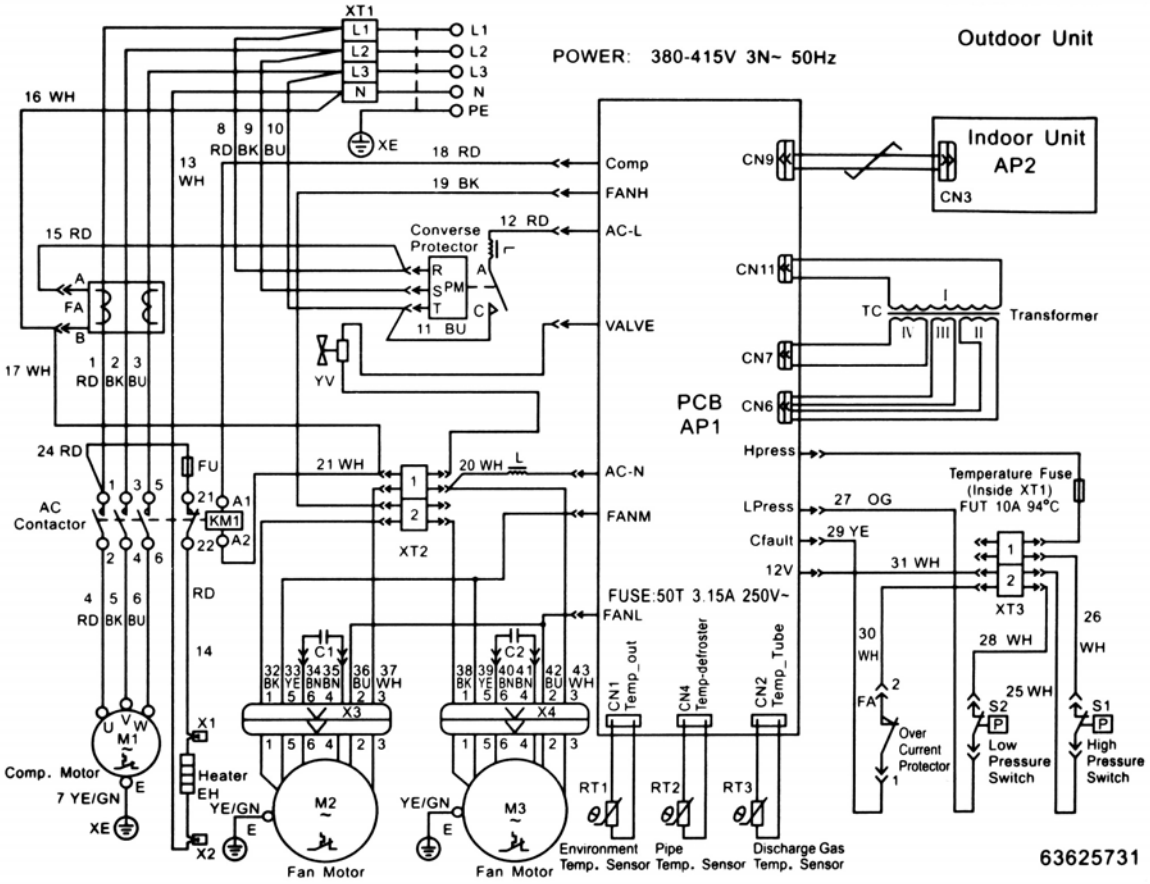
7. ASD-24A, outdoor unit



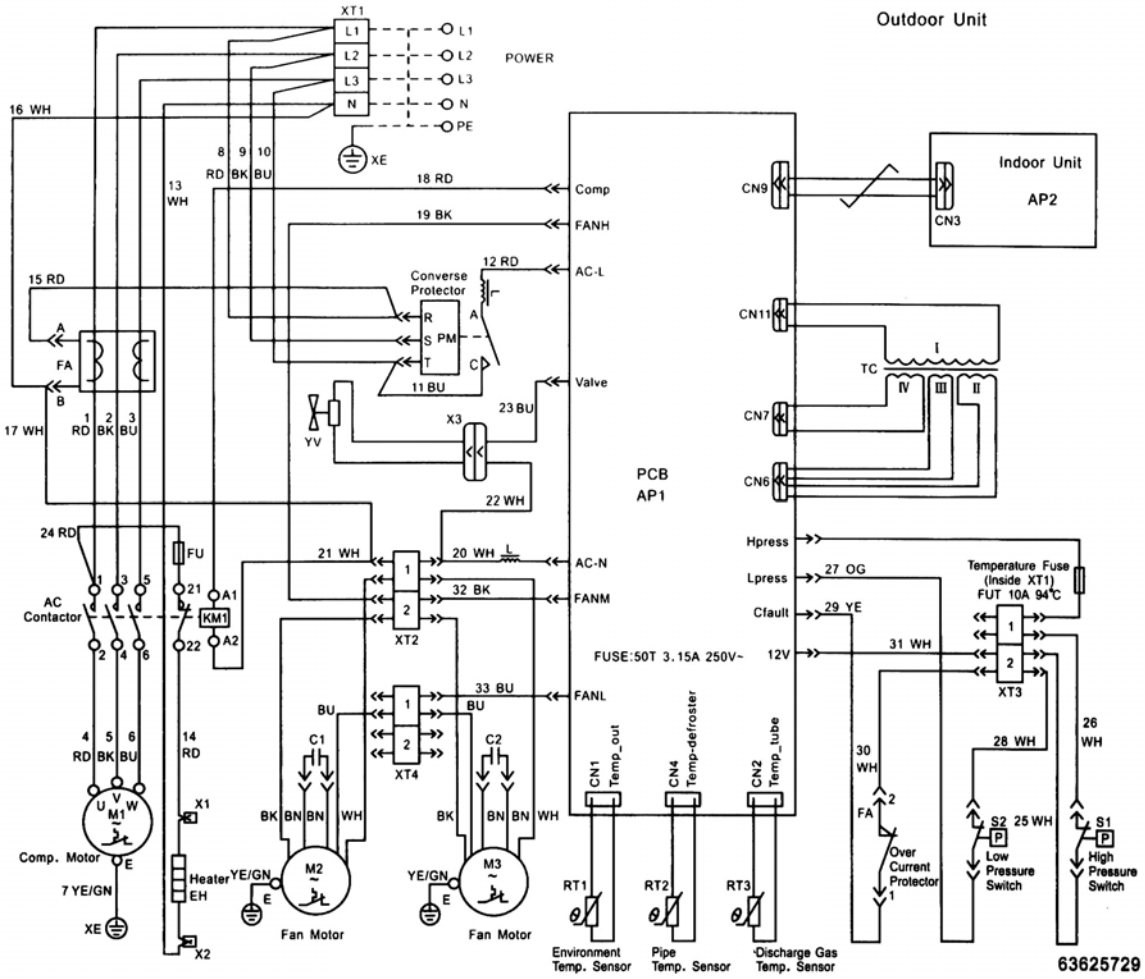
8. ASD-36A, outdoor unit



9. ASD-41A, outdoor unit



10. ASD-60A, outdoor unit



7. Function and Operation of Controller

7.1 Description and Function of the Buttons on Wired controller

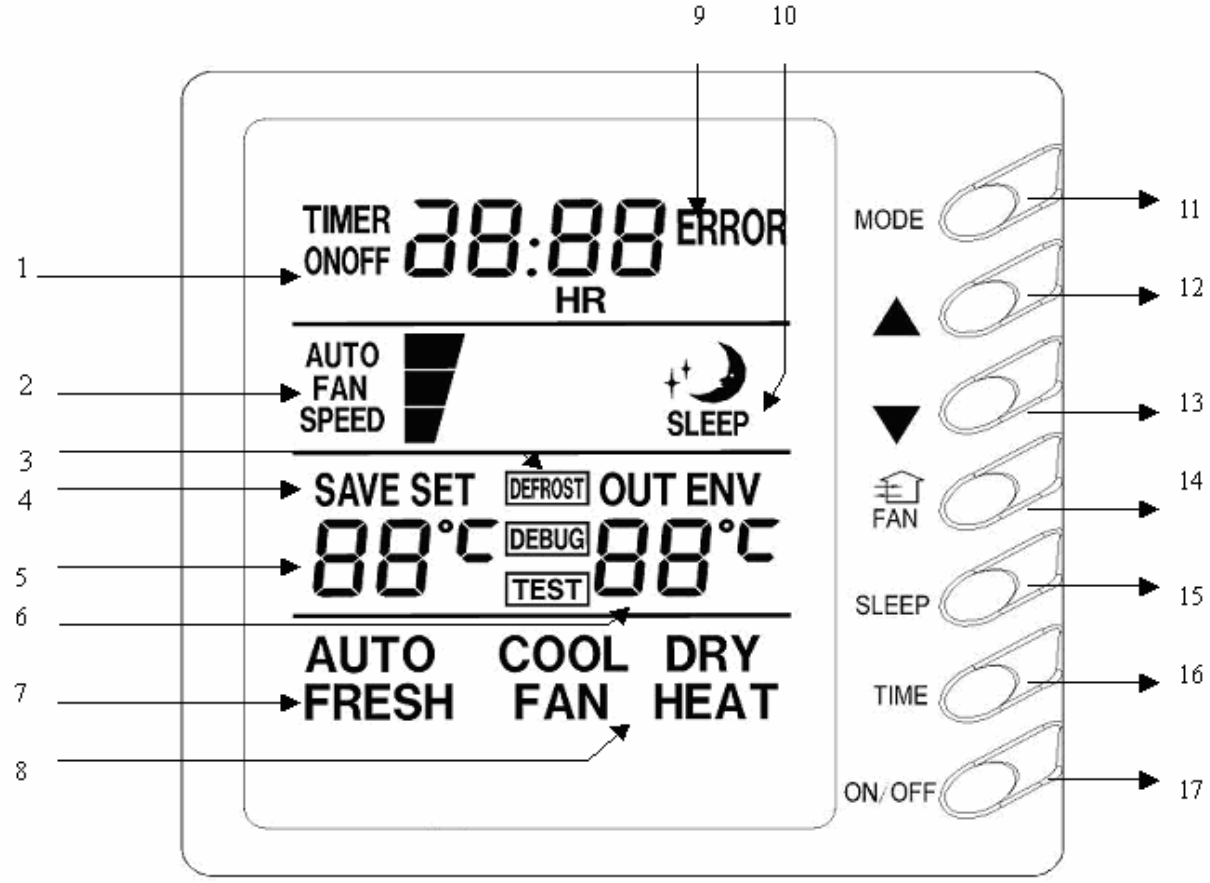


Fig. 7-1

Component of Wired controller			
1	Display of Timer	10	Display of Sleep Status
2	Display of Fan Speed (AUTO, HIGH, MEDIUM, LOW)	11	MODE Button
3	Display of Defrost Status	12	Increase preset temperature
4	Display of Energy-Saving Status	13	Decrease preset temperature
5	Display of Temperature Setting	14	FAN SPEED Button (Set Fresh Air)
6	Display of Environmental Temperature	15	SLEEP Button (Find Outdoor Environmental Temperature)
7	Display of Fresh Air Status	16	TIME Button
8	Mode (Cool, Dehumidify, Fan, Heat, Auto)	17	ON/OFF Button
9	Display of Error Status		

7.2 Operation of Wired controller

7.2.1 Turn On / Off the Unit (Fig. 7-2)

Press ON/OFF button to start the unit. Press ON/OFF button again to stop the unit.

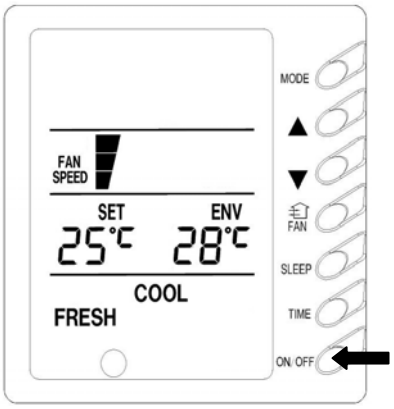


Fig. 7-2

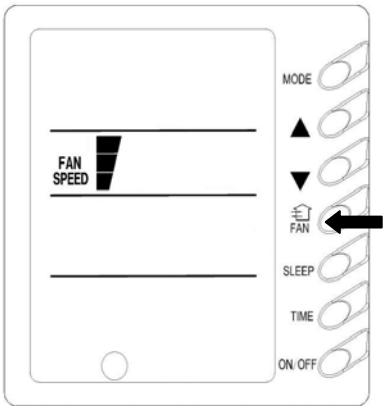


Fig. 7-3

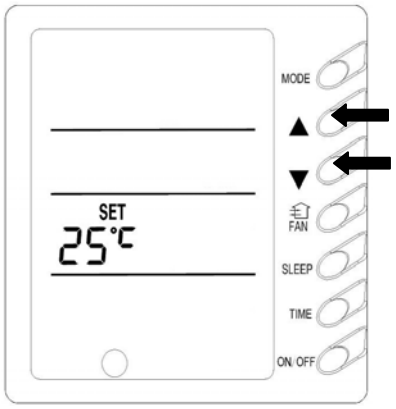


Fig. 7-4

7.2.2 Fan Control (Fig. 7-3) (Shown is the related display area. Same as below)

With each press of FAN button, the fan speed will change in the following order:

→LOW→MED→HIGH→AUTO→ Under dehumidifying mode, the fan speed will be automatically set to LOW.

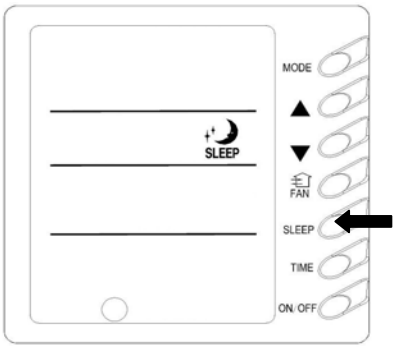


Fig. 7-5

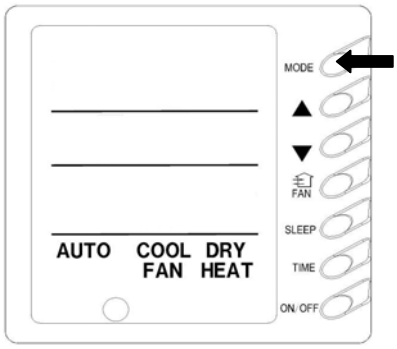


Fig. 7-6

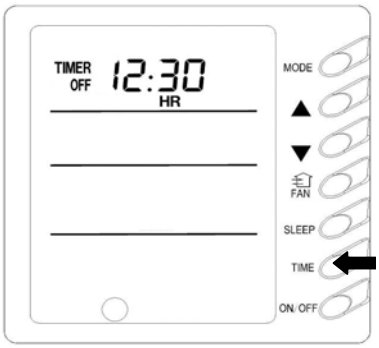


Fig. 7-7

7.2.3 Temperature Adjustment (Fig. 7-4)

Press the temperature adjustment button. ▲ is used to increase the temperature setting; and▼ is used to decrease the temperature setting.

(With each press of this button, the temperature will be increased or decreased by 1℃).

Note: Button Lock Function: When ▲ and ▼ are simultaneously pressed and held for 5s, "**EE**' will be displayed at the temperature setting and all buttons will be locked. Simultaneous press and hold of ▲ and ▼ for 5s will unlock the buttons.

When the remote control or centralized controller has shielded the wired controller, both the buttons on

the wired controller and the signals from the remote controller will be shielded, in which case "**CC**" will be displayed at the temperature setting.

Range of temperature setting under different modes:

Heat -------- 16℃～30℃

Cool -------- 16℃～30℃

Dry -------- 16℃～30℃

Auto -------- 16℃～30℃

Fan -------- Disabled to set the temperature.

7.2.4 SLEEEP Function Setting（Fig. 7-5）

If the controller is under COOL or DEHUMIDIFY mode, the temperature setting will increase by 1℃ one hour after pressing of SLEEP button and increase by another 1℃ after two hours. After that, the unit will run at this temperature setting.

If the controller is under HEAT mode, the temperature setting will decrease by 1℃ one hour after pressing of SLEEP button and decrease by another 1℃ after two hours. After that, the unit will run at this temperature setting. There is no SLEEP function under FAN mode.

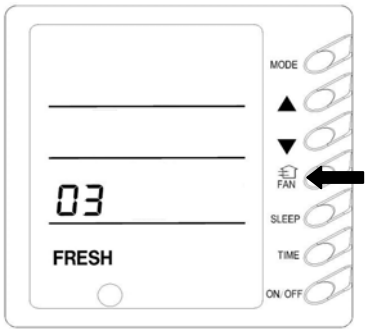


Fig. 7-9

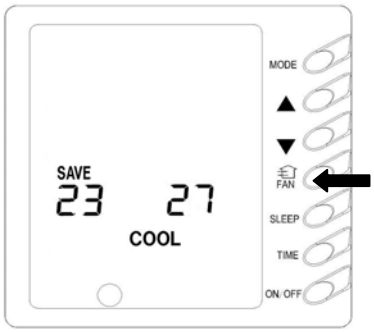


Fig. 7-10

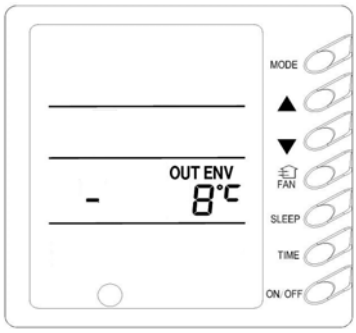


Fig. 7-11

7.2.5 Operational mode setting (Fig. 7-6)

Note: The AUTO mode of this air conditioner can only be controlled from wired controller other than from the remote controller.

With each press of this key, the operational mode will change in the following order:

┌→COOL→DEHUMIDIFY→FAN→HEAT→AUTO┐

During "COOL" mode operation, the "**COOL**" indicator will be on. The temperature must be set to a value lower than the current room temperature. If not, this air conditioning system will not enter into the COOL mode. Instead, only the fan will operate.

During “DRY” mode operation, the “**DRY** indicator for dehumidification operation will be on. The indoor fan will operate in LOW speed within the range of a certain temperature. The dehumidification effect under this mode is more obvious than the operation under COOL mode, as well as more energy saving.

During “HEAT” mode operation, the **“HEAT”** indicator for heating operation will be on. The temperature must be set to a value higher than the current room temperature. If not, this air conditioning system will not be activated for HEAT operation.

During “FAN” mode operation, the “FAN” indicator will be on. During “AUTO” mode operation, the “AUTO” indicator will be on. The unit will automatically adjust its operational mode according to the environment temperature.

During HEAT mode operation, if the outdoor temperature is low while the humidity is high, there will be frost on the outdoor unit, which will lower heating effect. In this case, the controller will automatically activate the defrosting cycle, with the “DEFROST” indicator displayed.

NOTE: Cooling-only unit does not have HEAT mode. The AUTO mode will be deactivated after SAVE-ENERGY setting.

7.2.6 Timer setting (Fig. 7-7)

Under turn-off state, timed turn-on can be set, while under turn-on state, timed turn-off can be set. Press TIMER button to enter into timer setting status, in which case the TIMER indicator will blink and the user may increase or decrease the timer setting by pressing ▲ or ▼. Press TIMER again to activate the timer function. The unit starts to count the time. When the unit is under timed status, you may press TIMER to cancel the timer function.

The setting range is 0.5-24 hours.

7.2.7 Fresh Air Setting (Fig. 7-8)

Under turn-off state, you may press and hold FAN button for 5 seconds to call out the fresh air setting, in which case the FRESH indicator on the LCD will blink. The existing FRESH mode will be displayed in the temperature setting area. The user may press ▲ or ▼ to adjust the FRESH mode.

The meaning of the number is as below:

00——Always under closed status.

01——The fresh air will open 5 minutes for every 60-min. continuous operation of the unit.

02——The fresh air will open 12 minutes for every 60-min. continuous operation of the unit.

03——The fresh air will open 18 minutes for every 60-min. continuous operation of the unit.

04——The fresh air will open 24 minutes for every 60-min. continuous operation of the unit.

05——The fresh air will open 30 minutes for every 60-min. continuous operation of the unit.

06——The fresh air will open 36 minutes for every 60-min. continuous operation of the unit.

07——The fresh air will open 42 minutes for every 60-min. continuous operation of the unit.

08——The fresh air will open 48 minutes for every 60-min. continuous operation of the unit.

09——The fresh air will open 52 minutes for every 60-min. continuous operation of the unit.

10——Full-open

After adjusting the FRESH mode, you may press ON/OFF button to confirm so that the system will save the number. After that, the unit will run per this FRESH mode. The factory default setting is “0”, which means that the fresh air is under closed status. If turning on the unit under this circumstance, the FRESH will not be shown on the LCD.

If the user has set the FRESH mode, the **FRESH** on the LCD will keep appearing under turn-on state, regardless of the operational mode of the system.

The FRESH setting will not be cleared if the unit is re-energized after a power failure.

7.2.8 Save-Energy Setting (Fig. 7-9)

Under turn-off state, you may simultaneously hold down “**FAN**”+“▼” buttons for 5 seconds to call out the SAVE-ENERGY setting menu. In this case, the “**SAVE-ENERGY SETTING**”“**COOL**” will be displayed. (For the first time of setting, the initial value, i.e. 26℃, will be displayed). Displayed in the temperature setting area is the lower limit temperature, and the temperature under setting will blink. Use “▲” or “▼” to set the lower limit of cooling temperature (setting range: 16-30) and press **ON/OFF** button to confirm. Use “▲” or “▼” to set the upper limit of cooling temperature (setting range: 16-30), which will blink in the environment temperature area. Press **ON/OFF** button to confirm.

Take care that the upper limit temperature must not be lower than the lower limit temperature setting. If the upper limit temperature is lower than the lower limit, the system will automatically default the higher one as the upper limit temperature and the lower one as the lower limit temperature. Press **MODE** button to complete the SAVE-ENERGY setting under COOLING and DRY mode and turn to the SAVE-ENERGY setting under HEAT mode (This function unavailable for cooling-only unit), in which case the ‘’**SAVE-ENERGY SETTING**”“**HEAT”** will be displayed. After completing the setting, you may again press and hold “**FAN**”+“▼” buttons for 5 seconds to exit the SAVE-ENERGY setting. Once the SAVE-ENERGY setting interface is called out, if there is no operation within 10 seconds after the system

has responded to the last input, the system will exit this menu and display the normal turn-off interface.

After completing above setting, the system will display **SAVE-ENERGY** icon on the LCD when the unit is turned on next time. In this case, no matter from the wired controller or remote controller, the user is unable to set the temperature beyond the range defined during the previous SAVE-ENERGY setting. As shown in Fig. 9, we have set the lower limit of cooling to 23℃ and the upper limit to 27℃. After that, the user can only set the cooling temperature between 23~27℃ no matter from remote controller or wired controller.

If the upper limit temperature is equal to the lower limit, the system can only run at this temperature setting under corresponding mode.

Release of SAVE-ENERGY Setting: After the setting of SAVE-ENERGY mode is effected, you may simultaneously press "**FAN**"+"▼" buttons under turn-off state and hold them for 5 seconds to release the SAVE-ENERGY function. But the value set before will not be cleared, and will be used as the initial temperature for the next SAVE-ENERGY setting.

After a power failure, SAVE-ENERGY setting will be memorized and will remain active upon energization next time.

Once set to SAVE-ENERGY mode, the SLEEP mode and AUTO mode will be shielded.

7.2.9 Display of Outdoor Environment Temperature (Fig. 7-10)

Normally, only the indoor environment temperature will be displayed in the TEMP. column. Pressing and holding **SLEEP** button for 5 seconds under turn-on or turn-off mode, **OUTDOOR ENVIRONMENT** will be displayed on the LCD. 10 seconds after displaying of the outdoor environment temperature, the system jump back to the display of indoor environment temperature. **Note**: This function is unavailable for the unit which is not equipped with Outdoor Ambient Sensor .

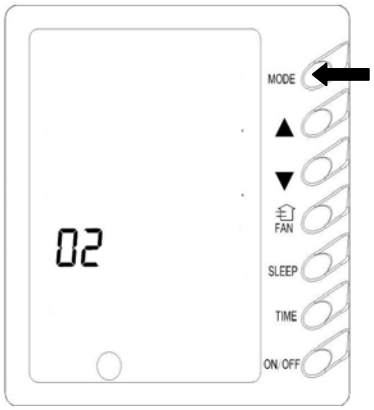


Fig. 7-11

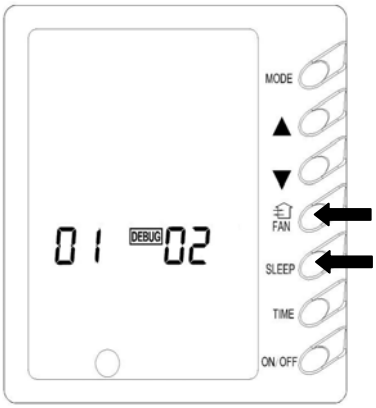


Fig. 7-12

Fig. 7-13

7.2.10 Setting of De-energization Memory Function (Fig. 7-11)

Under turn-off state, you may hold **MODE** button for 10 seconds to validate the memory of turn-on and turn-off state after a power failure. 01 will be displayed in the temperature setting area, indicating that the memory of turn-on and turn-off state after a power failure is activated. 02 indicates that the memory of turn-on and turn-off state after a power failure is deactivated. Press **ON/OFF** button to save and exit the setting.

7.2.11 Test Function (Fig. 7-12)

Under turn-off state, you may simultaneously press and hold "**FAN**"+"**SLEEP**" buttons for 10 seconds to call out the test menu, in which case the TEST icon will be displayed. You may use MODE button to adjust the setting and use "▲" or "▼" to set the actual value.

Setting of Environment Temperature Sensor

Under test state, use the **MODE** button to adjust the temperature setting to "01" (TEST icon on the left side). The setting state is displayed in the environment temperature area (TEST icon on the right side). Use "▲" and "▼" to adjust. You have two options:

① The indoor environment temperature is the environment temperature at the air intake (01 is displayed in environment temperature area).

② The indoor environment temperature is the environment temperature at the wired controller (02 is displayed in environment temperature area)

The environment temperature sensor is factory defaulted at the air intake.

7.3 Display of Errors (Fig. 7-13)

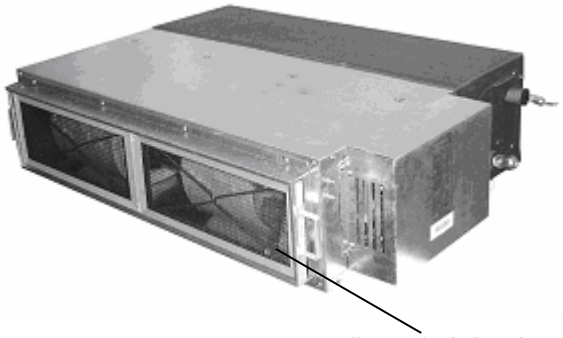
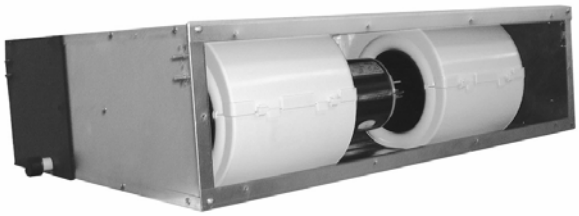
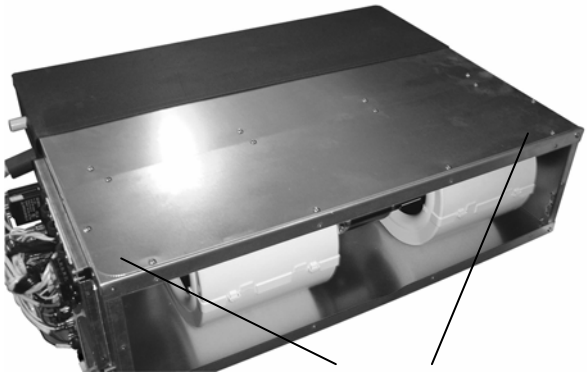
When an error occurs in the system, the ERROR icon on the wired controller will blink and the error code will be displayed as well. In case multiple errors occur in the system, the wired controller will display the error codes cyclically. The first digit indicates the system number, but the system will not be displayed if there is only one system. The last two digits are the error code. For example, Fig. 7-13 indicates that the compressor of the system 1 is under low-pressure protection.

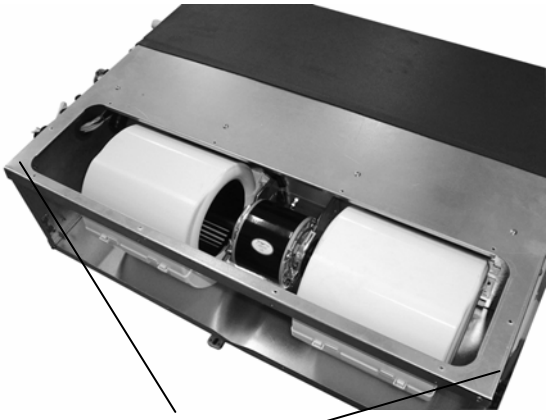
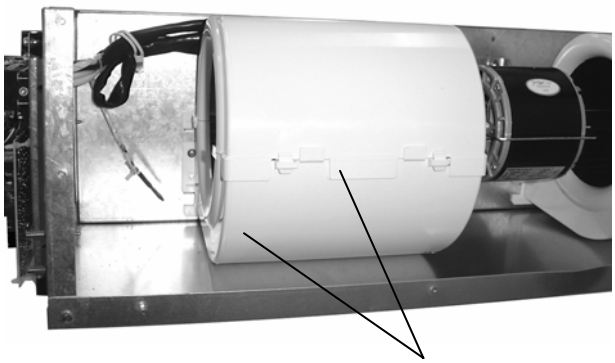
Definition of Error Code

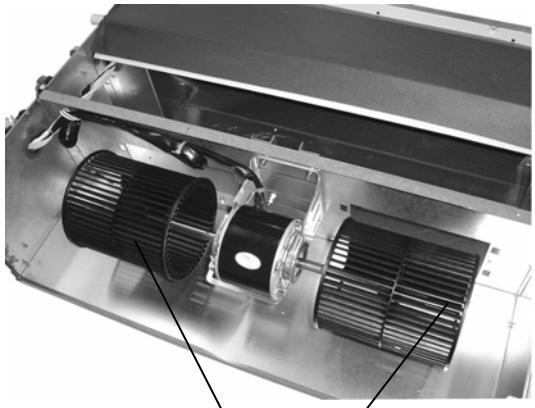
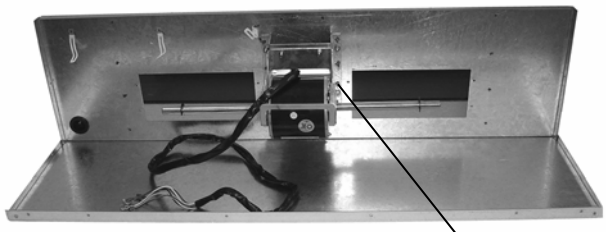
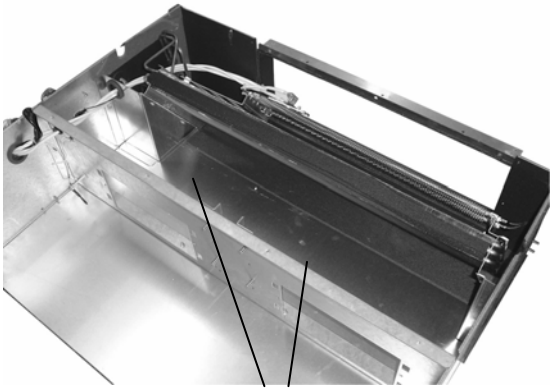
Error Code	Error	Error Code	Error
E0	Water pump error	F0	Error to the indoor environment sensor at air intake
E1	Compress high-pressure protection	F1	Evaporator temperature sensor error
E2	Indoor antifreeze protection	F2	Condenser temperature sensor error
E3	Compressor low-pressure protection	F3	Outdoor Ambient Sensor error
E4	Compressor exhaust over-temperature protection	F4	Exhaust temperature sensor error
E5	Compressor overload protection	F5	Error to the indoor environment sensor on wired controller
E6	Communication error	EH	Auxiliary heater error
E8	Indoor fan protection	EE	Button locked (not error)
E9	Water-full protection	CC	This unit is put under remote control or controlled by centralized controller, while the wired controller operation is shielded (not error)

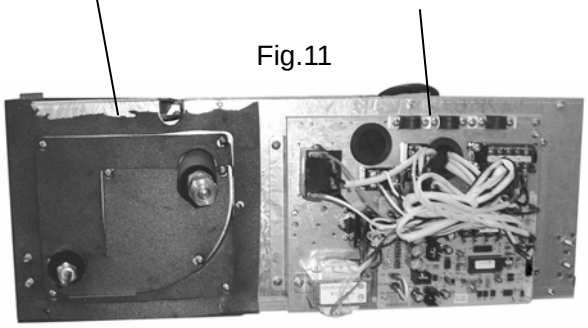
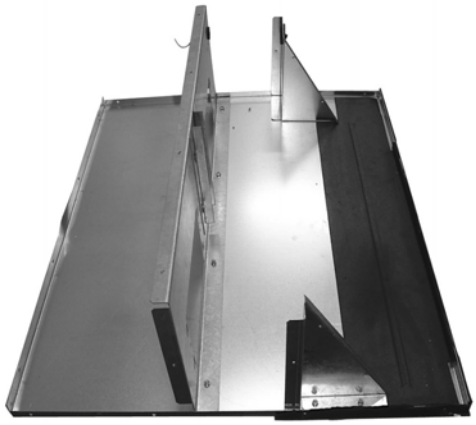
8. Removal Procedures

8.1 Removal Procedures for Indoor Unit ASD-09A/12A/18A

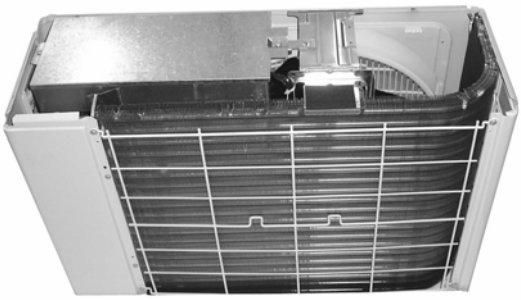
Operating Procedures	Illustration
(1) Remove the outdoor case 1) Remove the filter of rear air intake. • Pull out the two filters of rear air intake. (See Fig. 1)	 Filter of air intake Fig. 1
2) Remove the side plate of rear air intake. • Loosen the screws fixing the rear air intake and remove the side plate. (See Fig. 2).	 Fig. 2
3) Remove the cover of air intake. • Loosen the screws fixing the cover of air intake and remove the cover. (See Fig. 3)	 Cover of air intake Fig. 3

Operating Procedures	Illustration
4) Remove the cover. • Loosen the screws fixing the bottom cover, and remove the bottom cover. (See Fig. 4)	 Fig. 4
(2) Remove the water tray • Loosen the screws fixing the water tray and remove the water tray. (See Fig. 5)	 Fig. 5
(3) Remove the fan and motor 1) Remove the front and rear propeller housing. • Loosen the screws fixing the propeller housing and remove the front and rear propeller housing. (See Fig. 6)	 Fig. 6

Operating Procedures	Illustration
2) Remove the centrifugal fan • Loosen the screws fixing the fan and motor. Remove the centrifugal fan. (See Fig.7)	 Centrifugal fan Fig. 7
3) Remove the motor support assembly • Loosen the screws fixing the motor support and remove the motor support assembly. (See Fig.8)	 Motor support Fig. 8
• Loosen the motor wire plug within the electric box. Remove the motor. (See Fig. 9)	 Fig. 9
	 Fan fixed plate Fig. 10

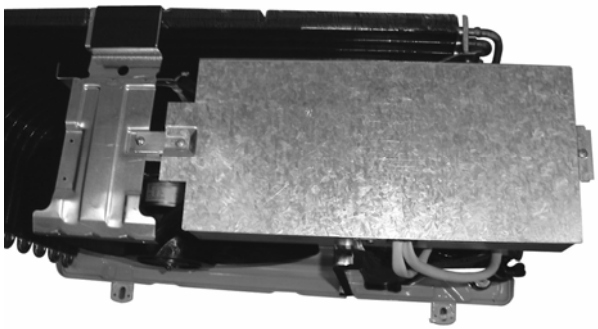
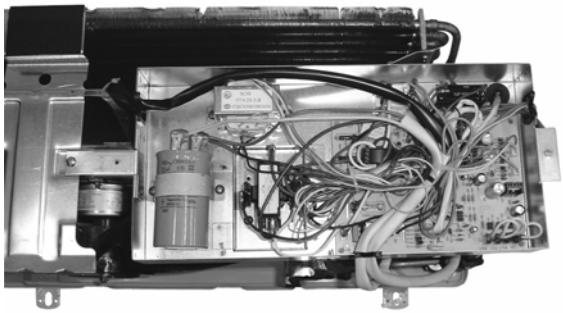
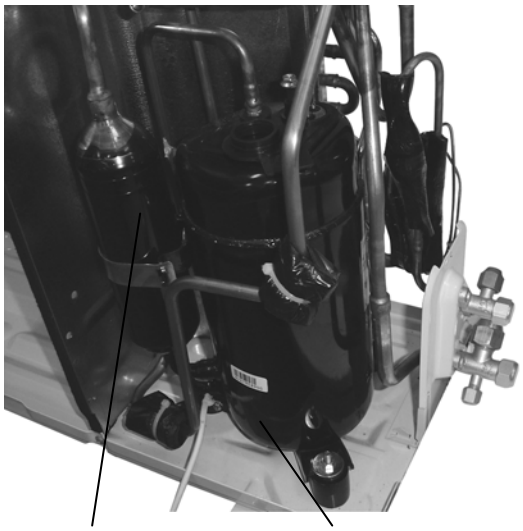
Operating Procedures	Illustration
(4) Remove the evaporator 1) Remove the right side plate • Loosen the screws fixing the right side plate, and remove the right side plate. (See Fig. 11) 2) Remove the left side plate • Loosen the screws fixing the left side plate, and remove the left side plate. (See Fig. 12) 3) Evaporator • Loosen the screws fixing the evaporator. • Remove the evaporator. (See Fig. 13) 4） Evaporator support • Loosen the tapping screws fixing the evaporator support and remove the evaporator support. (See Fig. 14)	 Fig.11  Fig.12  Fig. 13  Fig.14

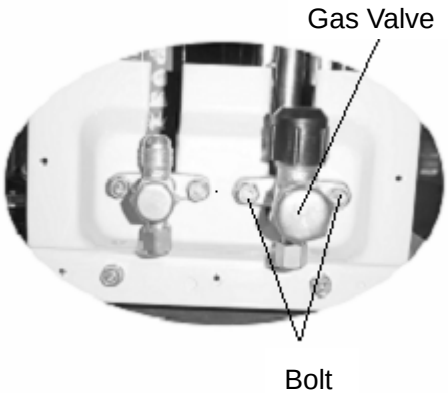
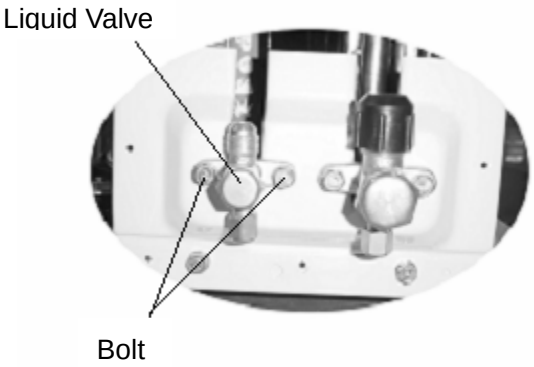
8.2 Removal Procedures for Outdoor Unit ASD-09A/12A/18A

Operating Procedures	Illustration
(1) Remove the front case 1) Remove the panel • Loosen the two tapping screws fixing the front grill. • Pull downward to remove the front grill. (There is a clamp on the back of the front grill) (See Fig. 2) 2) Remove the top cover. • Loosen the tapping screws fixing the top cover. Remove the top cover. (See Fig. 3) 3) Remove the protection grill • Loosen the tapping screws fixing the protection grill. Remove the protection grill. (See Fig. 3)	 Fig. 1  Fig. 2  Fig. 3

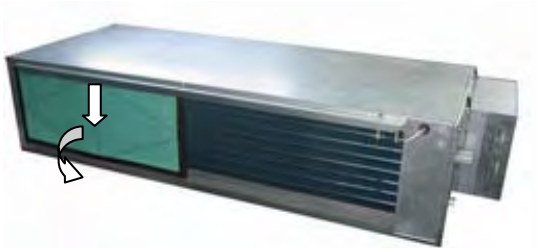
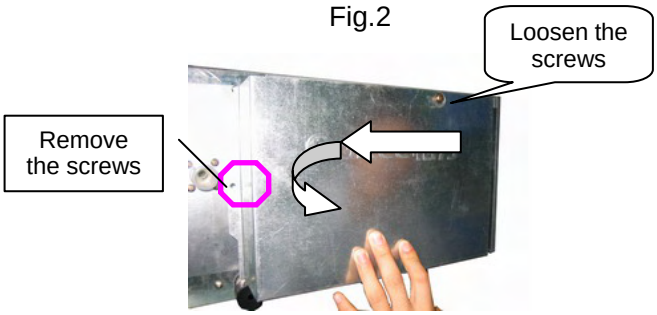
Operating Procedures	Illustration
4) Remove the front plate • Loosen the tapping screws fixing the front plate. Remove the front plate. (See Fig. 4)	 Fig. 4
(2) Remove the axial flow fan • Loosen the ball nuts fixing the axial flow fan and remove the lock washer. (See Fig. 5) • Pull outward to remove the axial flow fan. (See Fig. 5)	 Fig. 5
(3) Remove the fan motor • Loosen the screws fixing the motor support. Remove the motor support. (See Fig. 6)	 Fig.6

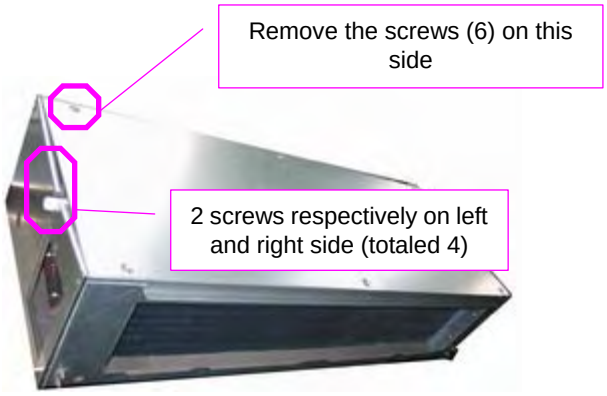
Operating Procedures	Illustration
(3) Remove the fan motor • Loosen the screws fixing the motor support. Remove the motor support. (See Fig. 7) • Loosen the screws fixing the motor to the motor support. Pull backward to remove the motor. (See Fig. 7) • Loosen the motor wire plug, and insert the motor wire through the cable-cross hole.	 Fig. 7
(4) Remove the 4-way valve and capillary 1. Remove the 4-way valve • Loosen the screws fixing the electromagnetic coil on the 4-way valve. • Remove the electromagnetic coil. • Cut the weld between the 4-way valve and other pipes. • Remove the 4-way valve. (See Fig. 8) Note: When cutting the weld, take care to prevent the flame from touching other parts. The valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature. 2. Remove the capillary • Cut the two welds between capillary and other pipes. • Remove the capillary. (See Fig. 8)	 Fig.8

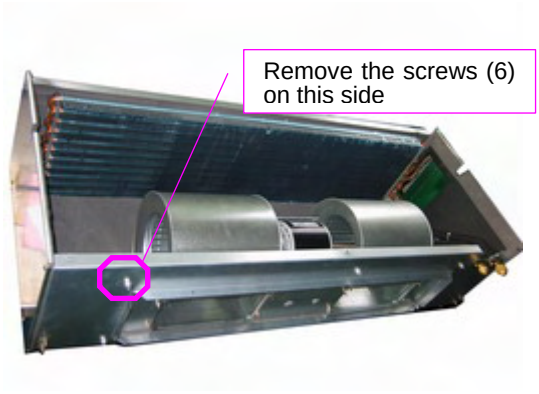
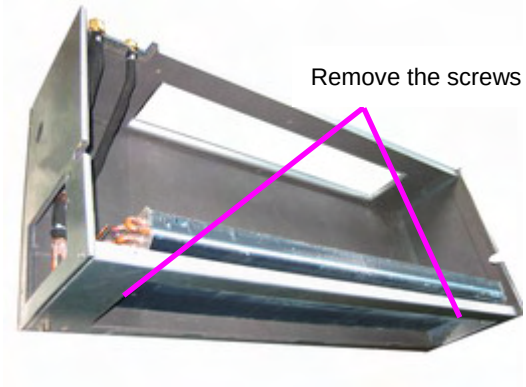
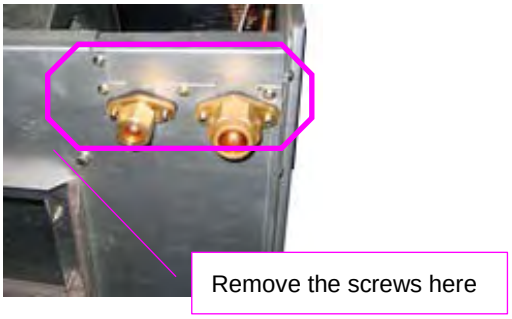
Operating Procedures	Illustration
(5) Remove the electric box 1) Remove the electric box • Loosen the screws fixing the electric box. Remove the pressure switches and temperature sensors. Use your hand to lift upward to remove the electric box. (See Fig. 9)	 Fig. 9  Fig.10
(6) Remove the compressor and gas-liquid separator • Loosen the insert on the electrical terminal of the compressor. • Cut the suction and exhaust pipe of the compressor. (See Fig. 11) • Loosen the nuts fixing the compressor. Remove the compressor and gas-liquid separator.	 Gas-liquid separator Compressor Fig. 11

Operating Procedures	Illustration
(7) Remove the gas valve and liquid valve 1. Remove the gas valve • Loosen the two bolts fixing the gas valve. • Cut the weld between gas valve and gas return pipe. Remove the gas valve. (See Fig. 12) Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature. 2. Remove the liquid valve • Loosen the two bolts fixing the liquid valve. • Cut the weld between liquid valve and gas return pipe. Remove the liquid valve. (See Fig. 13) Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature.	 Fig.12  Fig.13

8.3. Removal Procedures for Indoor Unit ASD-24A

Operating Procedures	Illustration
(1) Remove the auxiliaries 5) Remove the filter of air intake • Press down the filter of air intake tight against the sponge in the guide groove. Remove it as directed by the arrow. (See Fig. 1 & Fig. 2). 6) Remove the electric box cover and electric box • Loosen and remove the screws along the arrow direction as shown. (See Fig. 3 & Fig. 4) • Remove the electric box and the screws.	 Fig.0  Fig.1  Fig.2  Fig. 3  Fig. 4  Fig. 5

Operating Procedures	Illustration
7） Remove the drainage pump • Loosen the screws fixing the side seal plate and pump drainage. Remove the seal plate. (See Fig. 5, Fig. 6 & Fig. 7)	 Fig. 6  Fig. 7
(2) Remove the water tray • Remove the 10 screws fixing the bottom cover. Remove the bottom cover and water tray. (See Fig. 8 & Fig. 9)	 Fig.8  Fig.9

Operating Procedures	Illustration
(3) Remove the fan and motor 1) Remove the fan • Remove the screws fixing the fan assembly. (See Fig. 10)	 Fig. 10
2) Remove the motor • Loosen the screws fixing the fan and motor. Remove the fan. (See Fig. 11)	 Fig.11
(4) Remove the evaporator 1) Remove the screws fixing the side plate of evaporator. • Loosen the screws fixing the left and right side plate of evaporator to the top cover. (See Fig. 12)	 Fig.12
2) Remove the sealplate of evaporator valve • Loosen the screws fixing the sealplate of valve. Remove the sealplate of valve. (See Fig.13)	 Fig.13

3） Remove the evaporator

- Loosen the flanged screws on the evaporator connector.
- Remove the evaporator.

(See Fig. 14 & Fig. 15)

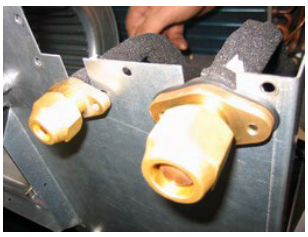


Fig.14

Fig.15

(5)Remove the external housing

- Loosen the screws fixing the left and right side plate to the top cover. remove the left and right side plate. (See Fig. 16, Fig. 17 & Fig. 18)

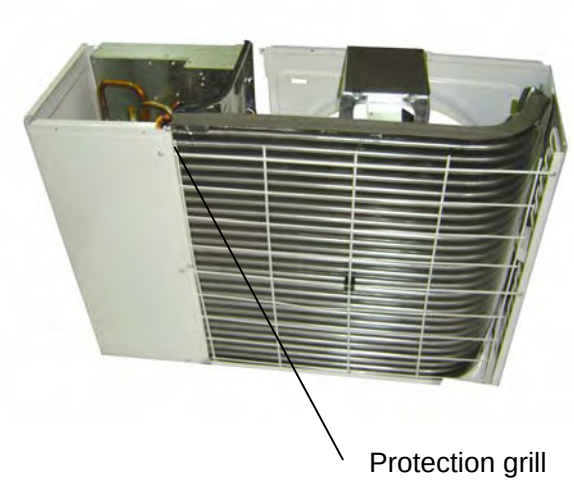
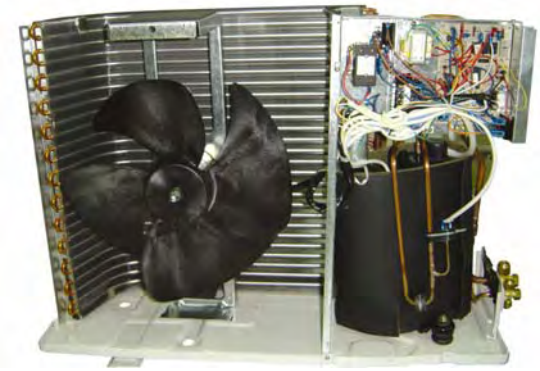
Fig.16

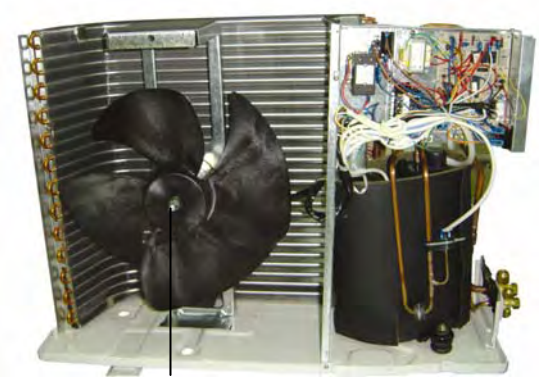
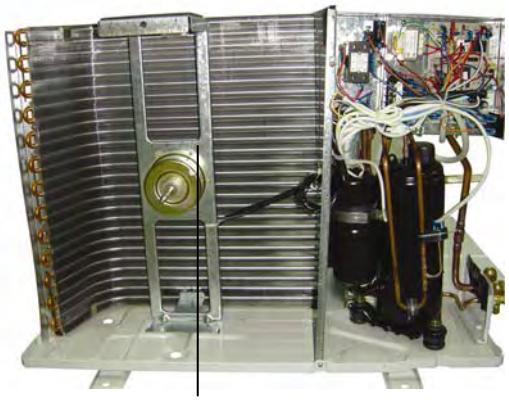
Fig.17

Fig.18

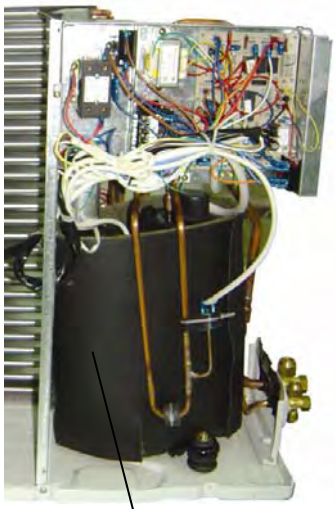
8.4. Removal Procedures for Outdoor Unit ASD-24A/36A

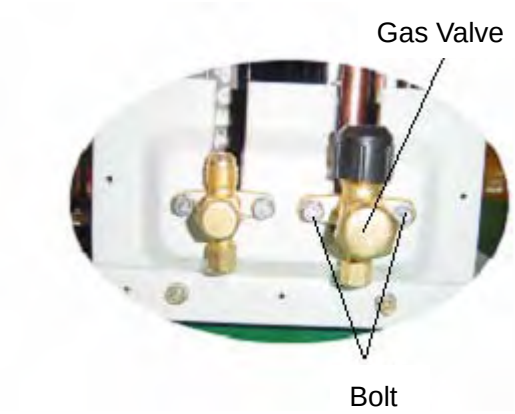
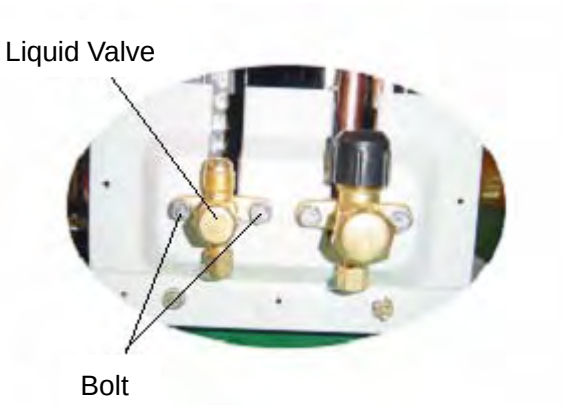
Operating Procedures	Illustration
(1) **Remove the outdoor case** 8) Remove the panel • Loosen the two tapping screws fixing the panel grill. • Pull downward to remove the panel grill (There is a clamp on the back of the front grill). (See Fig. 2)	 Fig.1  Fig.2
9) Remove the top cover • Loosen the tapping screws fixing the top cover. Remove the top cover. (See Fig. 3)	 Fig.3

Operating Procedures	Illustration
3) Remove the front plate • Loosen the tapping screws fixing the front plate. Remove the front plate. (See Fig. 5)	 Fig.4
	 Fig.5
4) Remove the protection grill • Loosen the tapping screws fixing the protection grill. Remove the protection grill. (See Fig. 6)	 Fig.6

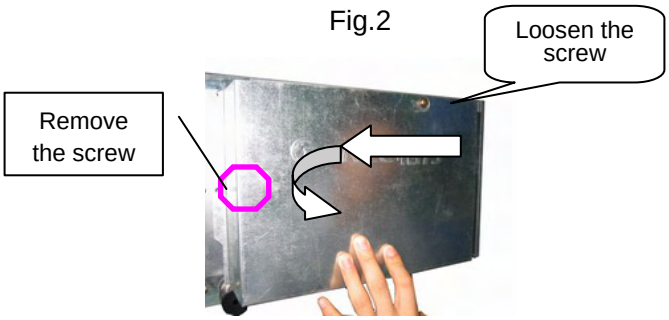
Operating Procedures	Illustration
(2) **Remove the axial flow fan** • Loosen the ball nuts fixing the axial flow fan and remove the lock washer. (See Fig. 7) • Pull outward to remove the axial flow fan. (See Fig. 7)	 Ball nut Fig.7
(3) Remove the fan motor • Loosen the screws fixing the motor support. Remove the motor support. (See Fig. 8)	 Motor support Fig.8
	 Fig.9

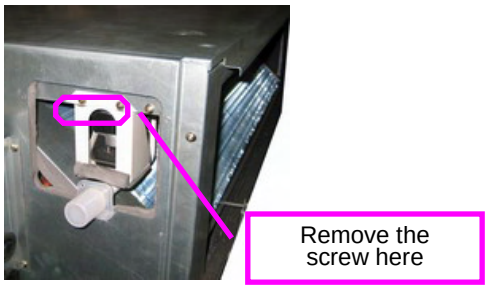
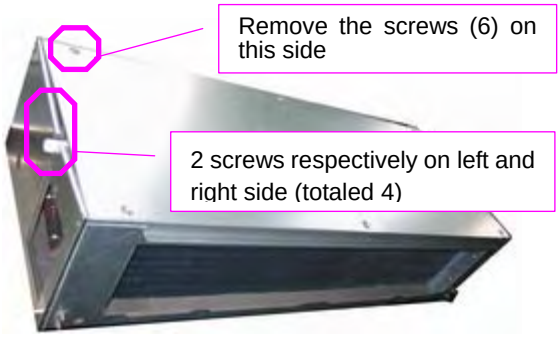
Operating Procedures	Illustration
• Loosen the screws fixing the motor to the motor support. Pull backward to remove the motor. (See Fig. 10) • Loosen the motor wire plug, and insert the motor wire through the cable-cross hole.	 Fig.10
(4) Remove the 4-way valve and capillary 1. Remove the 4-way valve • Loosen the screws fixing the electromagnetic coil on the 4-way valve. • Remove the electromagnetic coil. • Cut the weld between the 4-way valve and other pipes. • Remove the 4-way valve. (See Fig. 11) Note: When cutting the weld, take care to prevent the flame from touching other parts. The valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature.	 Fig.11
2. Remove the capillary • Cut the two welds between capillary and other pipes. • Remove the capillary. (See Fig. 12)	 Fig.12

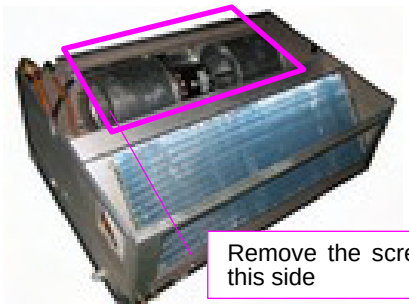
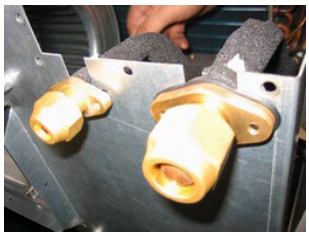
Operating Procedures	Illustration
(5) Remove the electric box 1) Remove the electric box • Loosen the screws fixing the electric box. Remove the pressure switches and temperature sensors. Use your hand to lift upward to remove the electric box. (See Fig. 13)	 Sound absorption sponge Fig.13
(6) Remove the compressor and gas-liquid separator • Loosen the insert on the electrical terminal of the compressor. (See Fig. 14) •Cut the suction and exhaust pipe of the compressor. (See Fig. 14) • Loosen the nuts fixing the compressor. Remove the compressor and gas-liquid separator.	 Gas-liquid separator Compressor Fig.14

Operating Procedures	Illustration
(7) Remove the gas valve and liquid valve 1. Remove the gas valve • Loosen the two bolts fixing the gas valve. • Cut the weld between gas valve and gas return pipe. Remove the gas valve. (See Fig. 15) Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature. 2. Remove the liquid valve • Loosen the two bolts fixing the liquid valve. • Cut the weld between liquid valve and gas return pipe. Remove the liquid valve. (See Fig. 16) Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature.	 Fig.15  Fig.16

8.5 Removal Procedures for Indoor Unit ASD-36A/41A/60A

Operating Procedures	Illustration
(1) Remove the auxiliaries 1) Remove the filter of air intake • Press down the filter of air intake tight against the sponge in the guide groove. Remove it as directed by the arrow. (See Fig. 1 & Fig. 2)	 Fig.0  Fig.1  Fig.2
2） Electric box cover and electric box • Loosen and remove the screws along the arrow direction as shown. (See Fig. 3 & Fig. 4). • Remove the electric box and the screws.	 Fig.3  Fig.4

Operating Procedures	Illustration
3） Remove the drainage pump • Loosen the screws fixing the side seal plate and pump drainage. Remove the seal plate. (See Fig. 5, Fig. 6 & Fig. 7)	 Fig.5  Fig.6
(2) Remove the water tray • Remove the 10 screws fixing the bottom cover. Remove the bottom cover and water tray. (See Fig. 8 & Fig. 9)	 Fig.7  Fig. 8  Fig. 9

Operating Procedures	Illustration
(3) Remove the fan and motor 1) Remove the fan ● Remove the screws fixing the fan assembly. (See Fig. 10)	 Fig.10
1) Remove the motor ●·Loosen the screws fixing the fan and motor. Remove the fan. (See Fig. 11)	 Fig.11
(4) Remove the evaporator 1) Remove the sealplate of evaporator valve ● Loosen the screws fixing the sealplate of valve. Remove the sealplate of valve. (See Fig. 12)	 Fig.12
2) Remove the sealplate of evaporator valve ● Loosen the flanged screws on the evaporator connector. (See Fig. 13)	 Fig.13

3） Remove the evaporator

- Loosen the screws fixing the upper side plate of evaporator to the top cover plate. (See Fig. 14)
- Remove the evaporator.

Fig.14

(5) Remove the external housing

1) Remove the left and right side plate

- ·Loosen the screws fixing the left and right side plate to the top cover plate. Remove the left and right side plate. (See Fig. 15, Fig. 16 & Fig. 17)

Fig.15

Fig.16

Fig.17

8.6 Removal Procedures for Outdoor Unit ASD-41A/60A

Operating Procedures	Illustration
(1) Remove the front case 1) Remove the panel ●·Loosen the two tapping screws fixing the front grill. ●·Pull downward to remove the front grill. (There is a clamp on the back of the front grill) (See Fig. 1) 2) Remove the top cover. ● Loosen the tapping screws fixing the top cover. Remove the top cover. (See Fig. 2)	 Fig.1  Fig.2

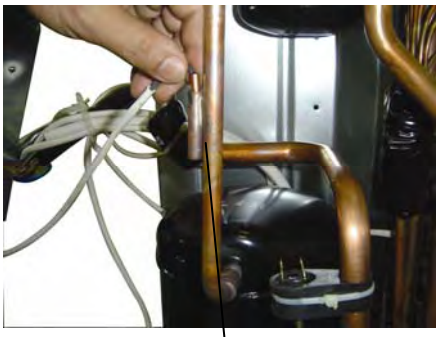
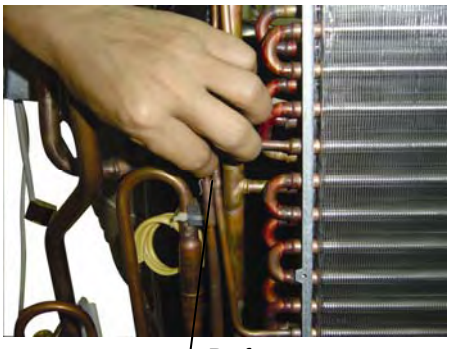
Operating Procedures	Illustration
3) Remove the front plate • Loosen the tapping screws fixing the front plate. Remove the front plate. (See Fig. 3)	 Fig.3
4) Remove the protection grill • Loosen the tapping screws fixing the protection grill. Remove the protection grill. (See Fig. 4)	 Fig.4

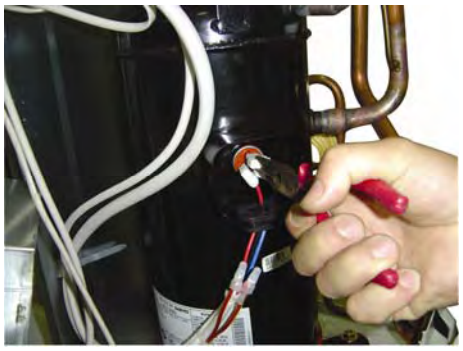
Operating Procedures	Illustration
(2) Remove the axial flow fan • Loosen the ball nuts fixing the axial flow fan and remove the lock washer. (See Fig. 5) • Pull outward to remove the axial flow fan. (See Fig. 6)	 Fig.5  Fig.6

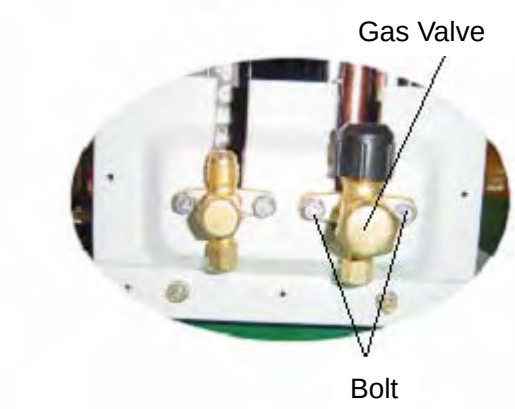
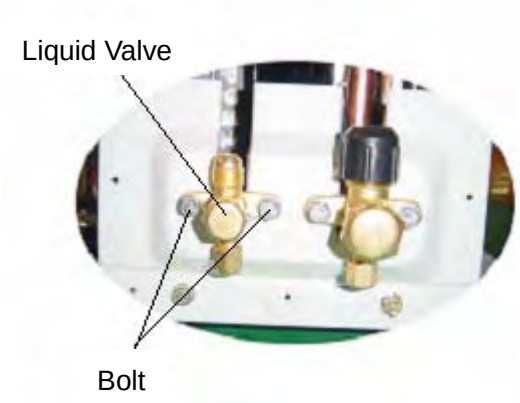
Operating Procedures	Illustration
(3) Remove the fan motor	 Fig.7
• Loosen the screws fixing the motor support. Remove the motor support.	
• Loosen the screws fixing the motor to the motor support. Pull backward to remove the motor. (See Fig. 8)	Fig.8
• Loosen the motor wire plug, and insert the motor wire through the cable-cross hole.	 Fig.9

Operating Procedures	Illustration
(4) Remove the 4-way valve and capillary 1. Remove the 4-way valve • Loosen the screws fixing the electromagnetic coil on the 4-way valve. • Remove the electromagnetic coil. • Cut the weld between the 4-way valve and other pipes. • Remove the 4-way valve. (See Fig. 10) Note: When cutting the weld, take care to prevent the flame from touching other parts. The valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature. 2. Remove the capillary • Cut the two welds between capillary and other pipes. • Remove the capillary. (See Fig. 11)	 Electromagnetic coil Fig.10  Fig.11

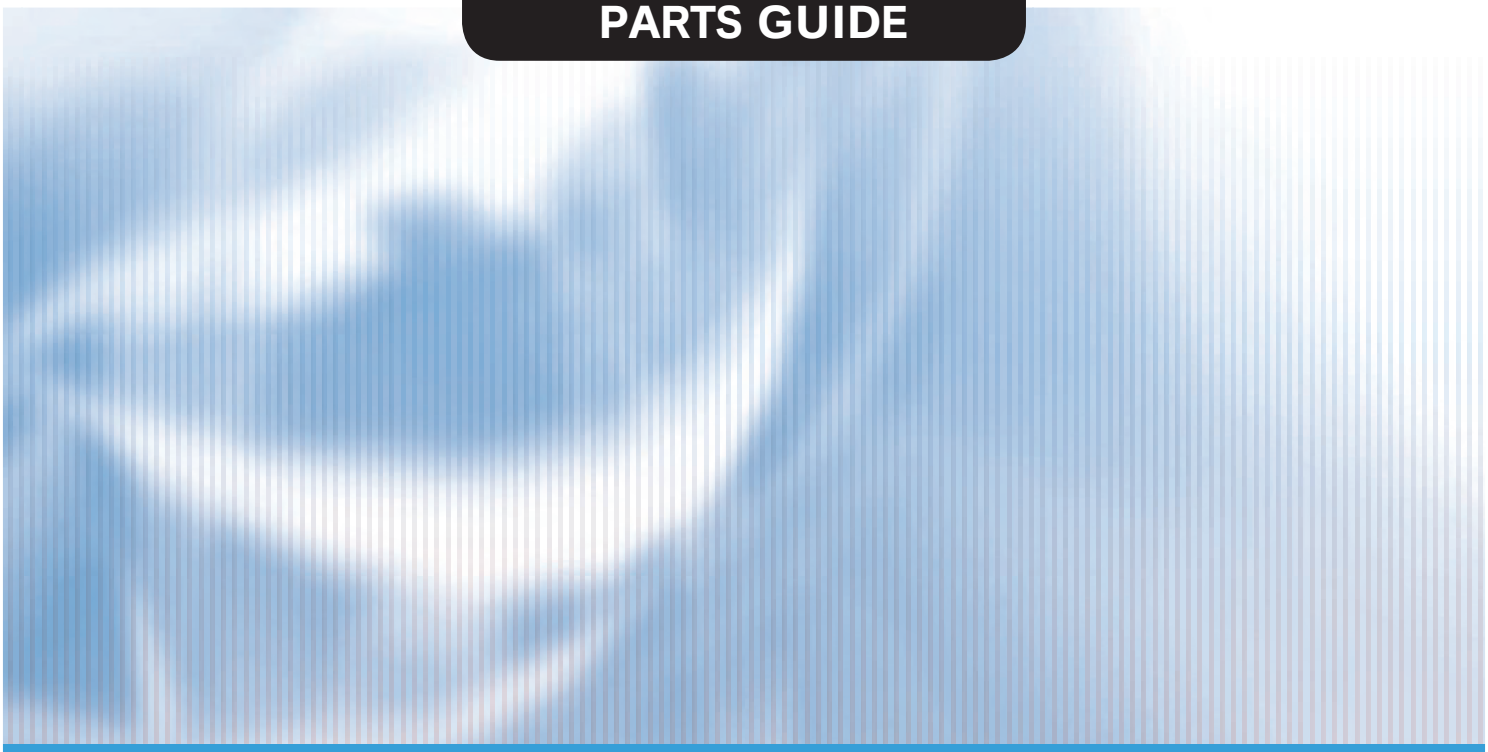
Operating Procedures	Illustration
(5) Remove the electric box and the components 1) Remove the electric box • Loosen the screws fixing the electric box. Use your hand to lift upward to remove the electric box (See Fig. 12)	 Fig.12
2) Remove the environment temperature sensor • Pull off the environment temperature sensor inserted in the condenser. • Remove it with the communication wire. (See Fig. 13 & 14)	 Environment temperature senso Fig.13  Fig.14

Operating Procedures	Illustration
3) Remove the exhaust temperature sensor • Pull off the exhaust temperature sensor inserted to the exhaust pipe. Remove it with the communication wire. (See Fig. 15)	 Exhaust temperature sensor Fig.15
4) Remove the high pressure switch • Pull off the high pressure switch inserted to the exhaust pipe. Remove it with the communication wire. (See Fig.16)	 High pressure switch Fig.16
5) Remove the low pressure switch • Pull off the low pressure switch inserted to the suction pipe. Remove it with the communication wire. (See Fig. 17)	 Fig.17
6) Remove the defrost temperature sensor • Plug off the defrost temperature sensor inserted to the condenser. Remove it with the communication wire. (See Fig. 18)	 Defrost temperature sensor Fig.18

Operating Procedures	Illustration
(6) Remove the compressor and gas-liquid separator 1） Remove the compressor • Loosen the insert on the electrical terminal of the compressor. (See Fig. 20) •Loosen and remove the spring fixing the auxiliary electric heater of the compressor. Remove the electrical connections. (See Fig. 19). •·Cut the suction and exhaust pipe of the compressor. (See Fig. 21) • Loosen the nuts fixing the compressor. Remove the compressor.	 Fixing spring Fig.19  Fig.20  Fig.21

Operating Procedures	Illustration
2) Remove the gas-liquid separator • Loosen the screws fixing the gas-liquid separator. (See Fig. 22)	 Fixing screw Fig.22
(7) Remove the gas valve and liquid valve 1. Remove the gas valve • Loosen the two bolts fixing the gas valve. • Cut the weld between gas valve and gas return pipe. Remove the gas valve. (See Fig. 23). Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature.	Gas Valve  Bolt Fig.23
2. Remove the liquid valve • Loosen the two bolts fixing the liquid valve. • Cut the weld between liquid valve and gas return pipe. Remove the liquid valve. (See Fig. 24) Note: When cutting the weld, the valve body shall be completely wrapped with wet cloth in order to avoid damage under high temperature.	Liquid Valve  Bolt Fig.24

PARTS GUIDE



DUCT SERIES

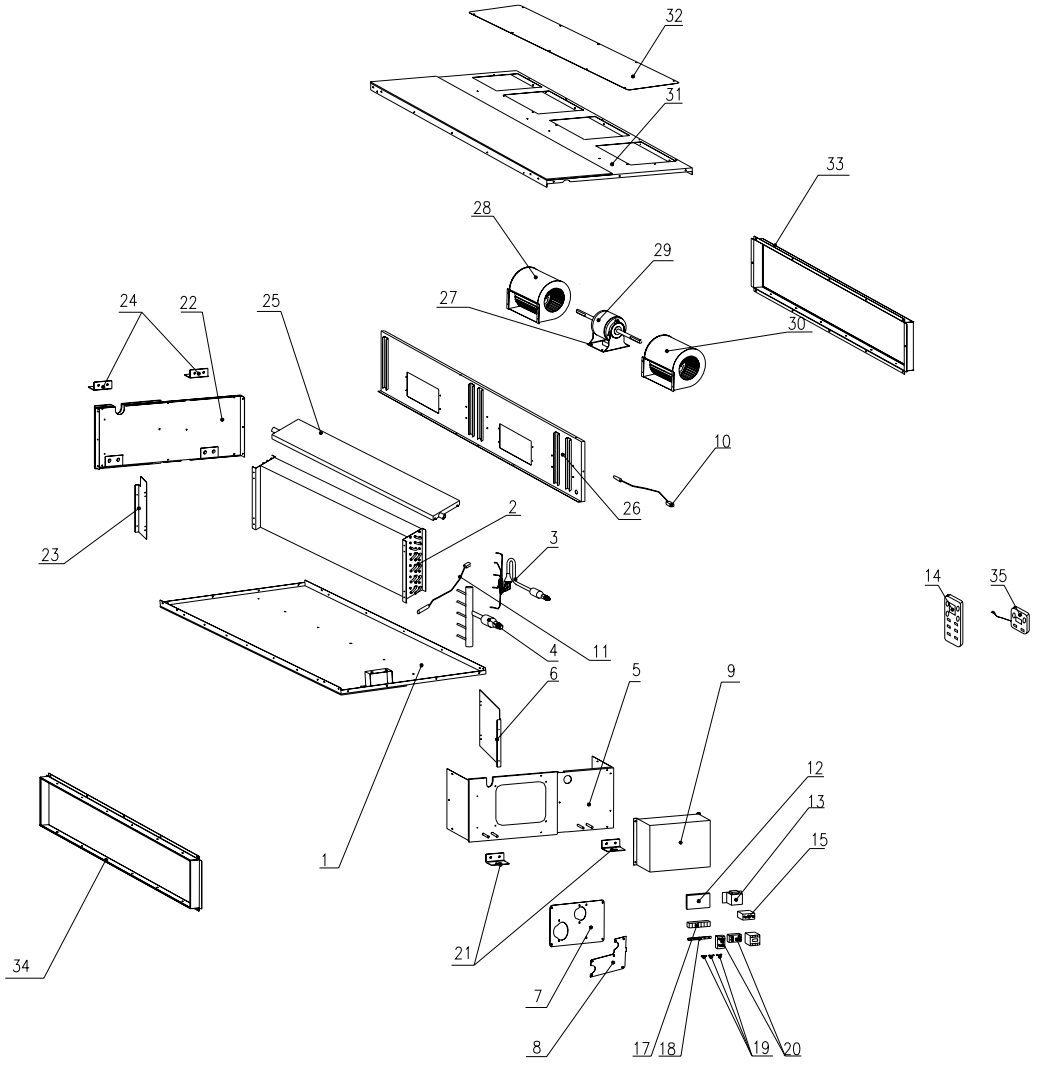
ASD-09A, ASD-12A, ASD-18A, ASD-24A
ASD-36A, ASD-41A, ASD-60A

sinclair
AIR CONDITIONING

9. Disassembly and Parts List

9.1 Explosion View and Parts List for ASD-09A, ASD-12A, ASD-18A

9.1.1 Indoor Unit Explosion View and Parts List for ASD-09A, ASD-12A



Parts List in Explision View of ASD-09A

No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-09A Indoor Unit						
1	Top Cover Plate	01259051			1	AS
2	Evaporator Sub-Assy	01039059			1	BL
3	Liquid Divider Assy	32390521			1	AV
4	Collecting Gas Pipe	03638704			1	AX
5	Left Side Plate	01309051			1	AN
6	Left Support of Evaporator	01079055			1	AE
7	Seal of Left Side Plate	01499051			1	AE
8	Seal of Connection Pipe	01499054			1	AD
9	Electric Box	01408627			1	AF
10	Temperature Sensor	390000451			1	AD
11	Tube Sensor	3900018711			1	AD
12	Main Board	30224018			1	BC
13	Transformer	43110209			1	AK
14	Remote Control	305050031			1	AT
15	Capacitor	33010020			1	AE
17	Terminal Board	420111562			1	AD
18	Isolation Washer	70410523			1	AC
19	Fixed Clamp	71010102			3	AB
20	Terminal Board 2-8	42011103			2	AD
21	Hook	02112446			2	AD
22	Right Side Plate Assy	01309055			1	AM
23	Right Evaporator Support	01079056			1	AE
24	Hook	02112446			2	AD
25	Water Tray Assy	01279051			1	AW
26	Fan Motor Holder	01339062			1	AU
27	Motor Support Sub-Assy	01709058			2	AE
28	Motor Sub-Assy	15002401			1	AX
29	Fan Motor	15019053			1	BB
30	Motor Sub-Assy	15002401			1	AX
31	Bottom Cover	01259055			1	AU
32	Bottom Cover Assy	01259054			1	AM
33	Cover of Air Intake	01259056			1	AP
34	Border Plate Assy of Air Retu	01499055			1	AP
35	Display Board	30294213			1	BA

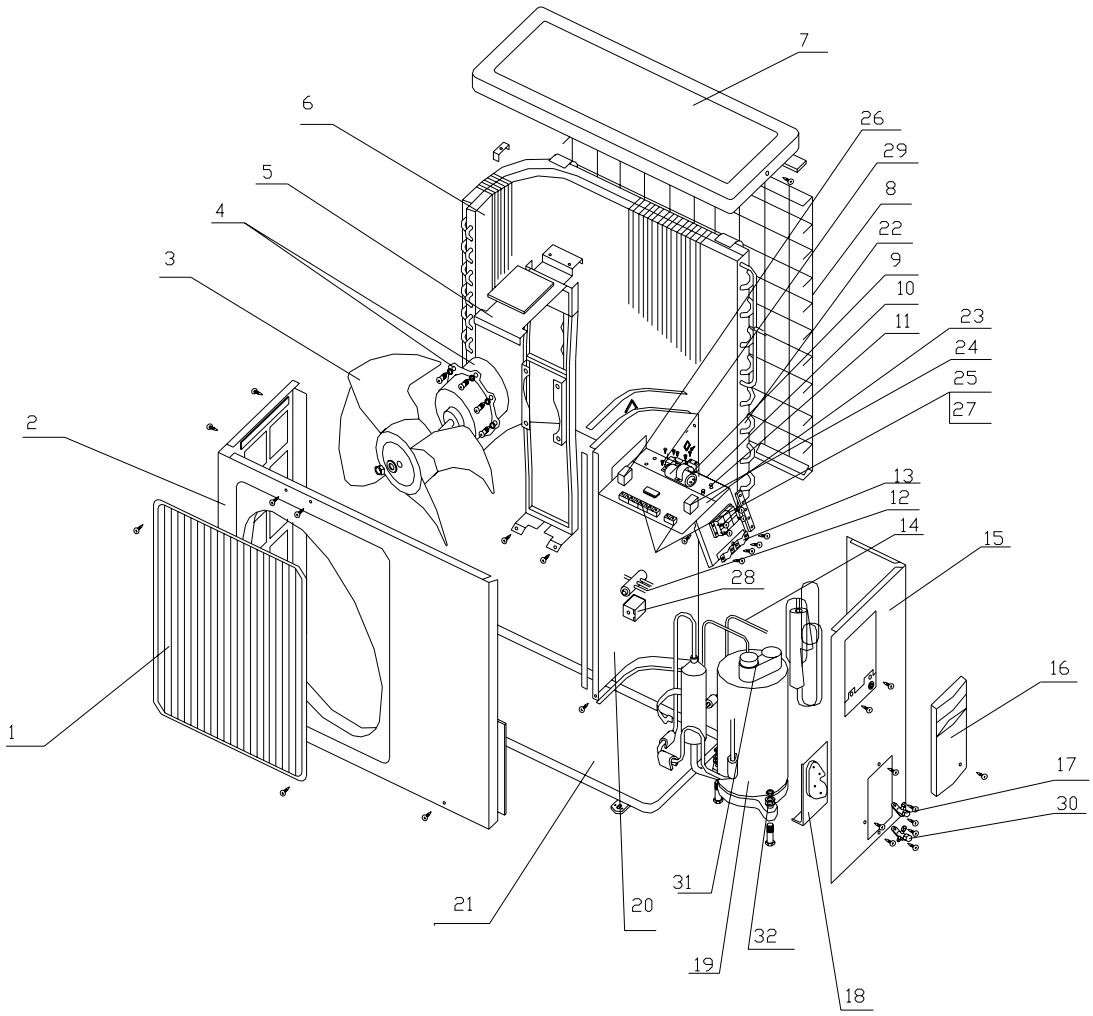
The data are subject to change without notice.

Parts List in Explision View of ASD-12A

No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
	ASD-12A Indoor Unit					
1	Top Cover Plate	01259051			1	AS
2	Evaporator Sub-Assy	01039062			1	BN
3	Liquid Inlet Pipe	036324561			1	AV
4	Collecting Gas Pipe	03639090			1	AX
5	Left Side Plate	01309051			1	AN
6	Left Support of Evaporator	01079055			1	AE
7	Seal of Left Side Plate	01499051			1	AE
8	Seal of Connection Pipe	01499054			1	AD
9	Electric Box	01408627			1	AF
10	Temperature Sensor	390000451			1	AD
11	Tube Sensor	3900018717			1	AD
12	Main Board	30224018			1	BC
13	Transformer	43110209			1	AK
14	Remote Control	305050031			1	AT
15	Capacitor	33010027			1	AE
17	Terminal Board	420111562			1	AD
18	Isolation Washer	70410523			1	AC
19	Fixed Clamp	71010102			3	AB
20	Terminal Board	42011103			2	AD
21	Hook	02112446			2	AD
22	Right Side Plate Assy	01309055			1	AM
23	Right Evaporator Support	01079056			1	AE
24	Hook	02112446			2	AD
25	Water Tray Assy	01279051			1	AW
26	Fan Fixed Plate	01339062			1	AU
27	Motor Support	01709058			2	AE
28	Front Volute Casing	1500 24011			2	AX
29	Fan Motor	15019522			1	BD
30	Rear Volute Casing	150024011			2	AX
31	Bottom Cover	01259055			1	AU
32	Bottom Cover Assy	01259054			1	AM
33	Cover of Air Intake	01259056			1	AP
34	Border Plate Assy of Air Retu	01499055			1	AP
35	Display Board	30294403			1	BA

The data are subject to change without notice.

9.1.2 Outdoor Unit Explosion View and Parts List for ASD-09A, ASD-12A



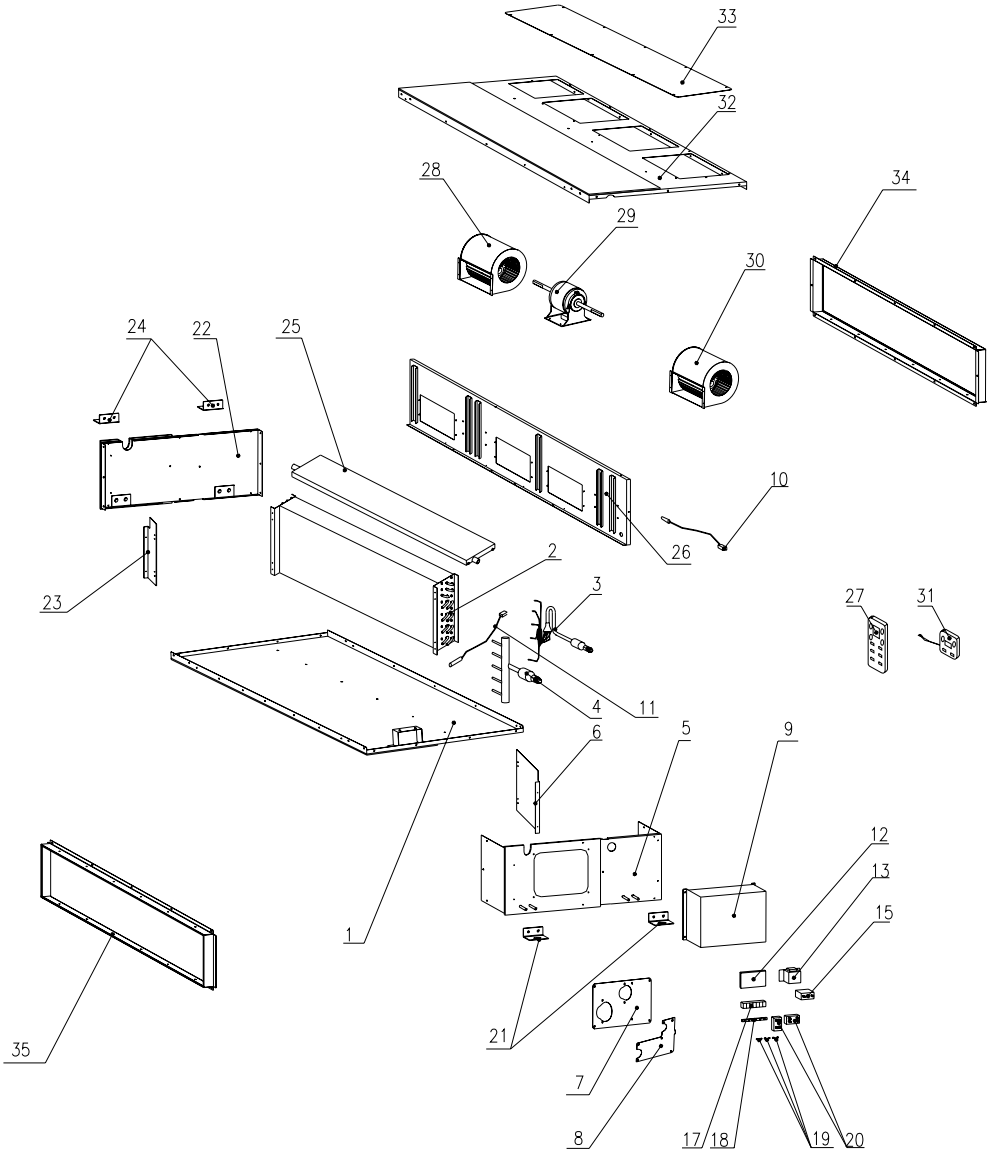
Outdoor Unit Explosion View and Parts List for ASD-09A

No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-09A - Outdoor Unit						
1	Panel Grille(A model)	22413431			1	AL
2	Front Panel	01533428			1	AQ
3	Axial-flow Fan	10333412			1	AM
4	Fan Motor	15013005			1	AU
5	Motor Support	01703069			1	AE
6	Condenser Sub-Assy	01103124			1	BP
7	Top Cover Board	01253448			1	AQ
8	Rear Grill	11123404			1	AG
9	Capacitor	33000002			1	AG
10	Electric Box	01409070			1	AH
11	Isolation Washer	70410525			1	AC
12	4-Way Valve	03023162			1	AM
13	Fixed Clamp	71010103			2	AB
14	Discharge pipe	03613129			1	BA
15	Right Side Plate Sub-Assy	01302004			1	AM
16	Big Handle	26233433			1	AE
17	Cut-off Valve	07100134			1	AG
18	Valve Support	01713041			1	AD
19	Compressor and Fittings	00120145			1	BN
20	Clapboard	01239052			1	AK
21	Base Plate	01213429			1	AU
22	Temperature Sensor	3900012125			1	AD
23	Main Board	30224033			1	BA
24	Transformer	43110209			1	AK
25	Terminal Board	42011153			1	AD
26	AC Contactor CJX9B-25S/D	44010245			1	AT
27	Terminal Board 2-8	42011103			1	AD
28	4-way Valve Accessary	430004002			1	AM
29	Capacitor CBB61 2.5uF/450V	33010026			1	AE
30	Cut-off Valve	07100135			1	AM
31	Overload Protector	00180037			1	AR
32	Compressor Gasket	76710228			3	AC

Outdoor Unit Explosion View and Parts List for ASD-12A

No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-12A - Outdoor Unit						
1	Grille	22413009			1	AL
2	Front Panel	01533433			1	AQ
3	Axial-flow Fan	10333412			1	AM
4	Fan Motor	15013039			1	AX
5	Motor support	01703069			1	AE
6	Condenser Assy	11032002			1	BP
7	Top Cover Plate	01253448			1	AQ
8	Rear Grill	11123404			1	AG
9	Capacitor	33000017			1	AH
10	Electric Box	01409070			1	AH
11	Isolation Washer	70410525			1	AC
12	4-way Valve	03029065			1	AM
13	Fixed Clamp	71010103			2	AB
14	Discharge pipe	03613105			1	BA
15	Right Side Plate Sub-Assy	01302004			1	AM
16	Big Handle	26233433			1	AE
17	Cut-off Valve	07100149			1	AG
18	Valve Support	01713041			1	AD
19	Compressor and Fittings	00120139			1	BP
20	Clapboard	01239052			1	AK
21	Base Plate	01203008			1	AU
22	Temperature Sensor	3900012125			1	AD
23	Main Board	30224033			1	BA
24	Transformer	43110209			1	AK
25	Terminal Board	420111531			1	AD
26	AC Contactor	44010245			1	AT
27	Terminal Board	42011103			1	AD
28	4-way Valve Accessary	430004002			1	AM
29	Capacitor	33010027			1	AE
30	Cut-off Valve	07100133			1	AM
31	Overload Protector	00180037			1	AR
32	Compressor Gasket	76710228			3	AC

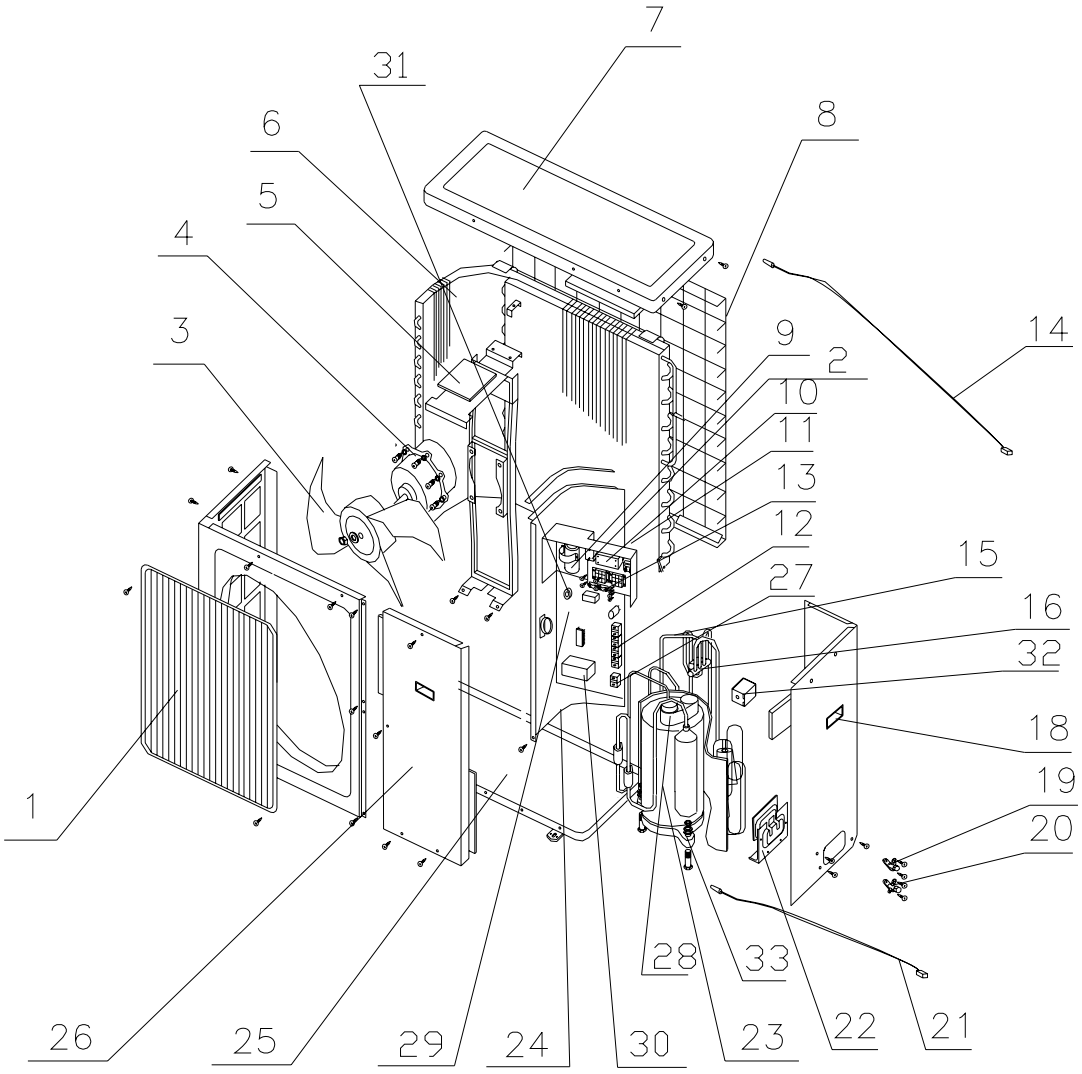
9.1.3 Indoor Unit Explosion View and Parts List for ASD-18A



No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-18A Indoor Unit						
1	Upper Cover Plate Assy	01259064			1	AS
2	Evaporator Sub-Assy	01038623			1	BQ
3	Liquid Inlet Pipe	03239109			1	AV
4	Collecting Gas Pipe	03639072			1	AX
5	Left Side Plate	01308668			1	AN
6	Left Support of Evaporator	01078626			1	AE
7	Seal of Connection Pipe 1	01498640			1	AE
8	Seal of Connection Pipe 2	01498644			1	AD
9	Electric Box	01409204			1	AF
10	Temperature Sensor	3900018717			1	AD
11	Tube Sensor	390000451			1	AD
12	Main Board	30224018			1	BC
13	Transformer	43110209			1	AK
31	Display board	30294213			1	BA
15	Capacitor	33010011			1	AE
17	Terminal Board	420111562			1	AD
18	Isolation Washer	70410523			1	AC
19	Fixed Clamp	71010102			3	AB
20	Terminal Board	42011103			2	AD
21	Hook	02112466			2	AD
22	Right Side Plate Assy	01308670			1	AM
23	Right Support of Evaporator	01078625			1	AE
24	Hook	02112466			2	AD
25	Water Tray	01278633			1	AW
26	Fan Fixed Plate	0133905			1	AU
27	Remonte Controller	305050031			1	AT
28,30	Motor Sub-Assy	15002401			2	AY
29	Fan Motor	15018322			1	BF
32	Bottom Cover	01258649			1	AU
33	Cover of Air Intake	01258650			1	AM
34	Side Plate of Air intake	01499061			1	AP
35	Side Plate of Air intake	01498641			1	AP

The data are subject to change without notice.

9.1.4 Outdoor Unit Explosion View and Parts List for ASD-18A



No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-18A - Outdoor Unit						
1	Grille	22265251			1	AL
2	Capacitor CBB65	33000001			1	AL
3	Axial-flow Fan	10335253			1	AQ
4	Fan Motor	15015205			1	AY
5	Motor Support	01703027			1	AE
6	Condenser Assy	11032922			1	BS
7	Top Cover Plate	01255262			1	AQ
8	Rear Grill	01473025			1	AG
9	Capacitor	33010010			1	AG
10	AC Contactor CJX9B-25S/D	44010245			1	AT
11	Electric Box	01419067			1	AH
12	Terminal Board 2-8	42011103			1	AD
13	Wire Clamp	71010102			2	AB
14	Temperature Sensor	3900012125			1	AD
15	Capillary Assy	03009067			1	BA
16	4-way Valve	03023083			1	AM
17	Pressure Switch	46020011			1	AK
18	Handle					AC
19	Valve Assy	07103014			1	AG
20	Valve Assy	07100131			1	AG
21	Temperature Sensor	3900012125			1	AD
22	Valve Support	01715001			1	AD
23	Comperssor ASH232SV-C8L	00103702			1	BS
24	Isolation plate	01233024			1	AK
25	Chassis	01205073			1	AU
26	Front side plate	01303023			1	AG
27	Terminal Board 2	420111531			1	AD
28	Overload Protector	In-built			1	/
29	Main PCB WZC352	30224033			1	BA
30	Transformer SC39	43110209			1	AK
31	Isolation Washer D	70410525			1	AC
32	4-way Valve Coil	430004002			1	AM
33	Compressor Gasket	76710202			1	AE

9.2 Explosion View and Parts List for ASD-24A, ASD-36A, ASD-41A, ASD-60A

9.2.1 Model 7~16KW

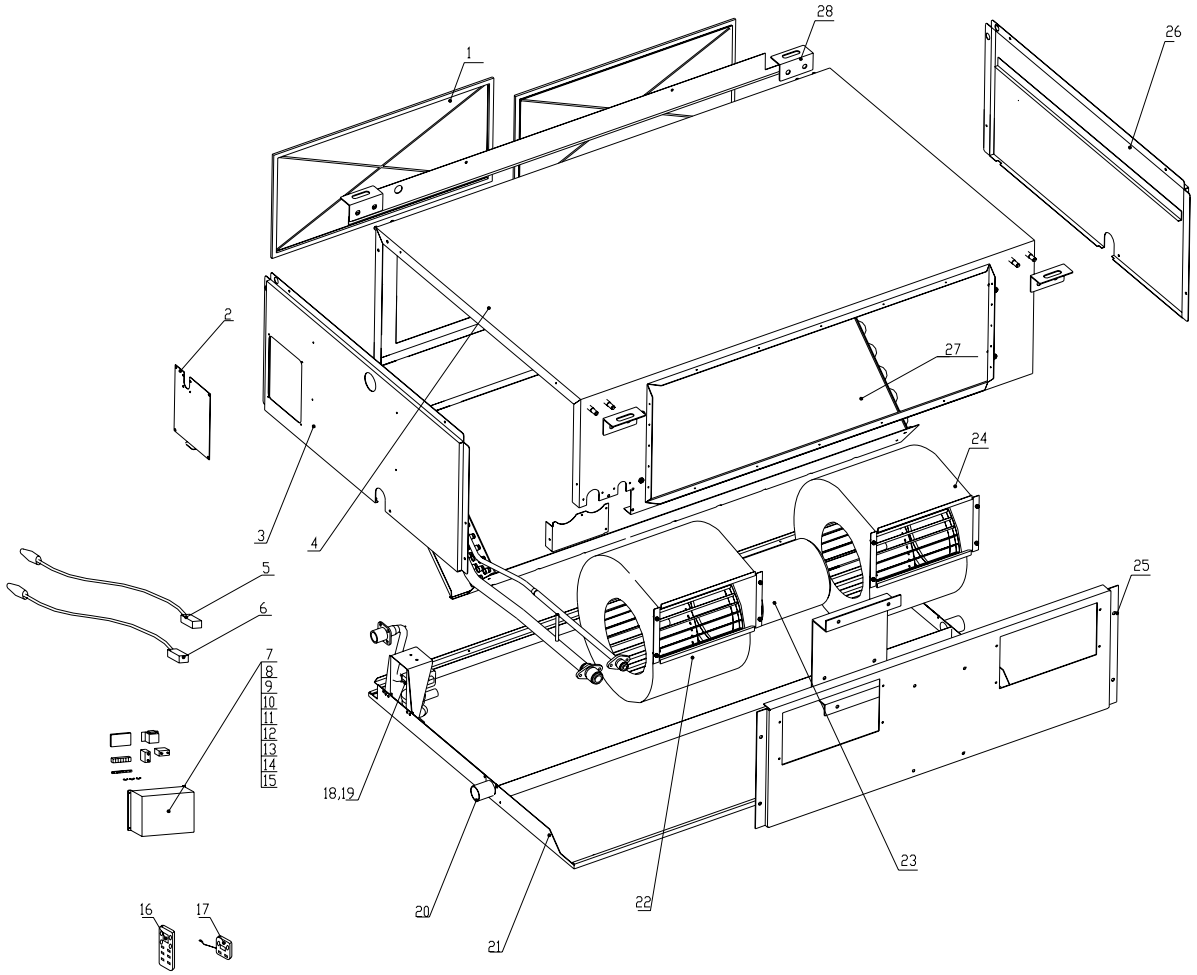
ASD-24A

ASD-36A

ASD-41A

ASD-60A

Explosion View and Parts List for Indoor Unit



Parts List for ASD-24A

No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-24A Indoor Unit						
1	Filter Sub-assy	11125301			2	AG
2	Seal of Connection Pipe	01495302			1	AE
3	Left Side Plate	01315302			1	AN
4	Top Cover	01265301			1	BA
5	Temperature Sensor	3900012123			1	AD
6	Temperature Sensor	3900012121			1	AD
7	Electric Box Assy	01395301			1	AF
8	Main Board	30224018			1	BC
9	Transformer	43110176			1	AK
10	Capacitor	33010014			1	AG
11	Capacitor CBB61 5μF/450V					
12	Terminal Board 2-8	42011103			2	AD
13	Terminal Board	42010194			1	AD
14	Isolation Washer	70410523			1	AC
15	Fixed Clamp	71010102			2	AB
16	Remote Control	305050031			1	AT
17	Display Board	30294213			1	BA
18	Water Level Switch	450127011			1	AH
19	Water Pump Assy	15405302			1	BC
20	Water Tray Sub-Assy	01285301			1	AX
21	Bottom Cover	01265304			1	AU
22	Motor(right) SYP-160/200J	15012458			1	AY
23	Motor FG500A	15705301			1	BM
24	Motor(left) SYP-160/200J	15012454			1	AY
25	Fan Fixed Plate	01325301			1	AU
26	Right Side Plate	01315304			1	AM
27	Evaporator Assy	01025301			1	BS
28	Hook	02112466			4	AD

The data are subject to change without notice.

Parts List for ASD-36A

No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-36A Indoor Unit						
1	Filter Sub-Assy	11129050			2	AG
2	Seal of Connection Pipe	01495306			1	AE
3	Left Side Plate	01315307			1	AN
4	Top Cover	01265307			1	BA
5	Temperature Sensor	3900012123			1	AD
6	Tube Sensor	390001921			1	AD
7	Electric Box Sub-Assy	01399152			1	AF
8	Main Board	30224018			1	BC
9	Transformer	43110176			1	AK
10	Capacitor	33010734			1	AG
11	Capacitor CBB61 5μF/450V				0	
12	Terminal Board 2-8	42011103			3	AD
13	Terminal Board	42010194			1	AD
14	Isolation Washer	70410523			1	AC
15	Fixed Clamp	71010102			2	AB
16	Remote Control	305050031			1	AT
17	Display Board	30294213			1	BA
18	Water Level Switch	450127011			1	AH
19	Water Pump Assy	15405302			1	BC
20	Water Tray Sub-Assy	01285304			1	AY
21	Bottom Cover	15265301			1	AU
22	Motor	15018604			1	BB
23	Fan Motor	15019063			1	BP
24	Motor	15018603			1	BB
25	Fan Fixed Plate	01325303			1	AU
26	Right Side Plate	01315310			1	AM
27	Evaporator Assy	01025302			1	BU
28	Hook	02112466			4	AD

The data are subject to change without notice.

Parts List for ASD-41A

No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-41A Indoor Unit						
1	Filter Sub-Assy	11129050			2	AG
2	Seal of Connection Pipe	01495306			1	AE
3	Left Side Plate	01315307			1	AN
4	Top Cover	01265307			1	BA
5	Temperature Sensor	3900012123			1	AD
6	Tube Sensor	390001921			1	AD
7	Electric Box Sub-Assy	01399152			1	AF
8	Main Board	30224018			1	BC
9	Transformer	43110176			1	AK
10	Capacitor	33010734			1	AG
11	Capacitor CBB61 5μF/450V				0	
12	Terminal Board 2-8	42011103			3	AD
13	Terminal Board	42010194			1	AD
14	Isolation Washer	70410523			1	AC
15	Fixed Clamp	71010102			2	AB
16	Remote Control	305050031			1	AT
17	Display Board	30294213			1	BA
18	Water Level Switch	450127011			1	AH
19	Water Pump Assy	15405302			1	BC
20	Water Tray Sub-Assy	01285304			1	AY
21	Bottom Cover	15265301			1	AU
22	Motor	15018604			1	BB
23	Fan Motor	15019063			1	BP
24	Motor	15018603			1	BB
25	Fan Fixed Plate	01325303			1	AU
26	Right Side Plate	01315310			1	AM
27	Evaporator Assy	01025302			1	BU
28	Hook	02112466			4	AD

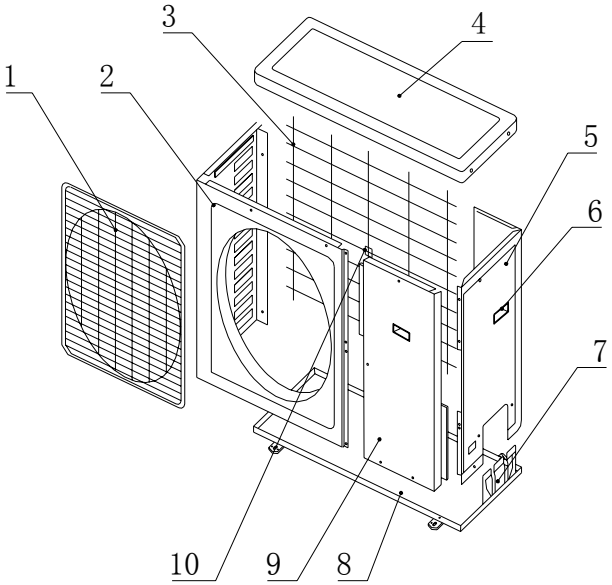
The data are subject to change without notice.

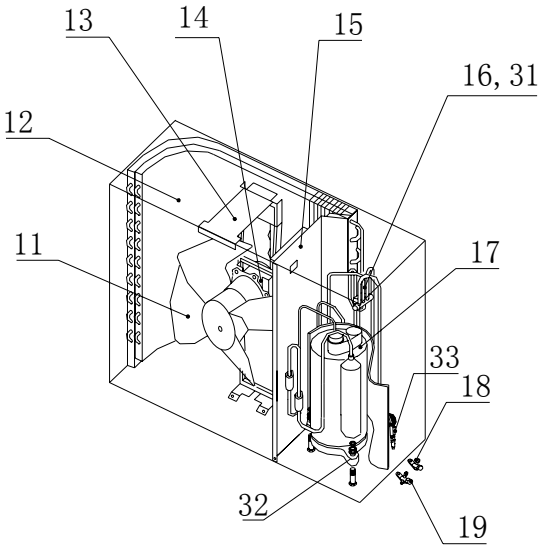
Parts List for ASD-60A

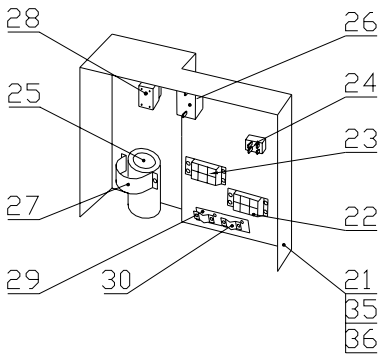
No.	Description	Part Code	Updated		Qty	Price Rank
			Part code	Date		
ASD-60A Indoor Unit						
1	Filter Sub-assy	11129072			2	AG
2	Seal of Connection Pipe	01499105			1	AE
3	Left Side Plate	01309109			1	AN
4	Top Cover	01259112			1	BA
5	Temperature Sensor 15K	900012123			1	AD
6	Temperature Sensor 20K	900018717			1	AD
7	Electric Box Sub-Assy	01399152			1	AF
8	Main Board	30224018			1	BC
9	Transformer	43110176			1	AK
10	Capacitor	33010734			1	AG
12	Terminal Board 2-8	42011103			3	AD
13	Terminal Board	42010194			1	AD
14	Isolation Washer	70410523			1	AC
15	Fixed Clamp	71010102			2	AB
16	Remote Control	305050031			1	AT
17	Display Board	30294213			1	BA
18	Water Level Switch	450127011			1	AH
19	Water Pump Assy	01339112			1	BC
20	Water Tray Assy	01279114			1	AY
21	Bottom Cover	01259114			1	AU
22	Fan (right) SYP-200/190J-3	15019066			1	BB
23	Fan Motor	15019063			1	BP
24	Fan (left) SYP-200/190J-3	15019065			2	BB
25	Fan Fixed Plate	01339110			1	AU
26	Right Side Plate	01309111			1	AM
27	Evaporator Assy	01009129			1	BZ
28	Hook	02118504			4	AD

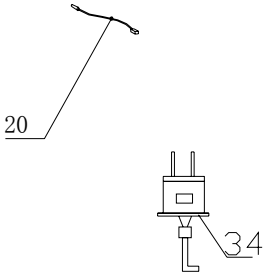
The data are subject to change without notice.

9.2.2 Parts List for ASD-24A







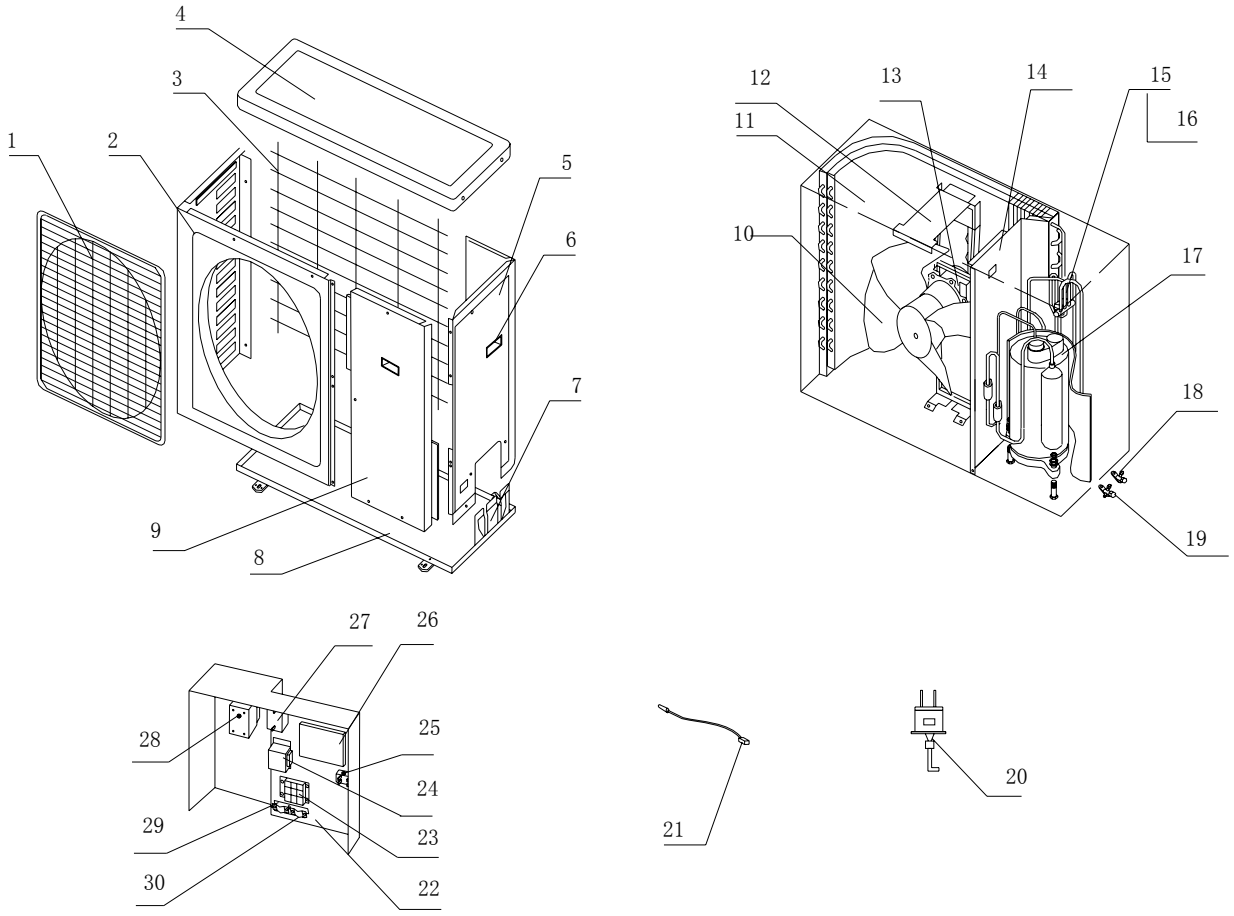


No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-24A - Outdoor Unit						
1	Front Grill	22265251			1	AL
2	Housing	01433031			1	AN
3	Rear Grill Sub-Assy	01473027			1	AG
4	Top Cover	01255262			1	AQ
5	Rear Side Plate Sub-Assy	01303115			1	AM
6	Handle	26235253			1	AC
7	Valve Support Sub-Assy	01715001			1	AD
8	Underpan Sub-Assy	012052014			1	AU
9	Front Side Plate	01303092			1	AR
10	Protection Grill Gasket					
11	Axial-flow Fan	10335253			1	AQ
12	Condenser Assy	01125701			1	BU
13	Motor Support	01705103			1	AE
14	Fan Motor	15013110			1	BC
15	Mid Clapboard Sub-Assy	01233024			1	AK
16	4-way Valve	04145701			1	BA
17	Compressor and Fittings	00109051			1	CK
18	Gas Valve Sub-Assy	07103030			1	AV
19	Cut-off Valve	07130209			1	AG
20	Temperature Sensor	3900012125			1	AD
21	Electric Box Assy	01395701			1	AH
22	Terminal Board	420111451			1	AD
23	Terminal Board 2-8	42011103			1	AD
24	Resistance	34060008			1	AE
25	Capacitor	33010010			1	AG
26	Capacitor	33000039			1	AM
27	Capacitor Clamp	01419068			1	AC
28	Double Pole AC Contactor	44010222			1	AT
29	Isolation Washer	70410523			1	AC
30	Fixed Clamp	71010102			1	AB
31	4-way Valve Accessary	430004002			1	AM
32	Compressor Gasket				3	
33	Capillary Assy	04105701			1	BA
34.1	Pressure Switch	460200061			1	AL
34.2	Low Pressure Switch	46020007			1	AH
35	Transformer	43110240			1	AL
36	Main Board	30224026			1	BA
	Temperature Sensor	390002064			1	AE

The data are subject to change without notice.

9.2.3 ASD-36A

Explosion View and Parts List for Outdoor Unit

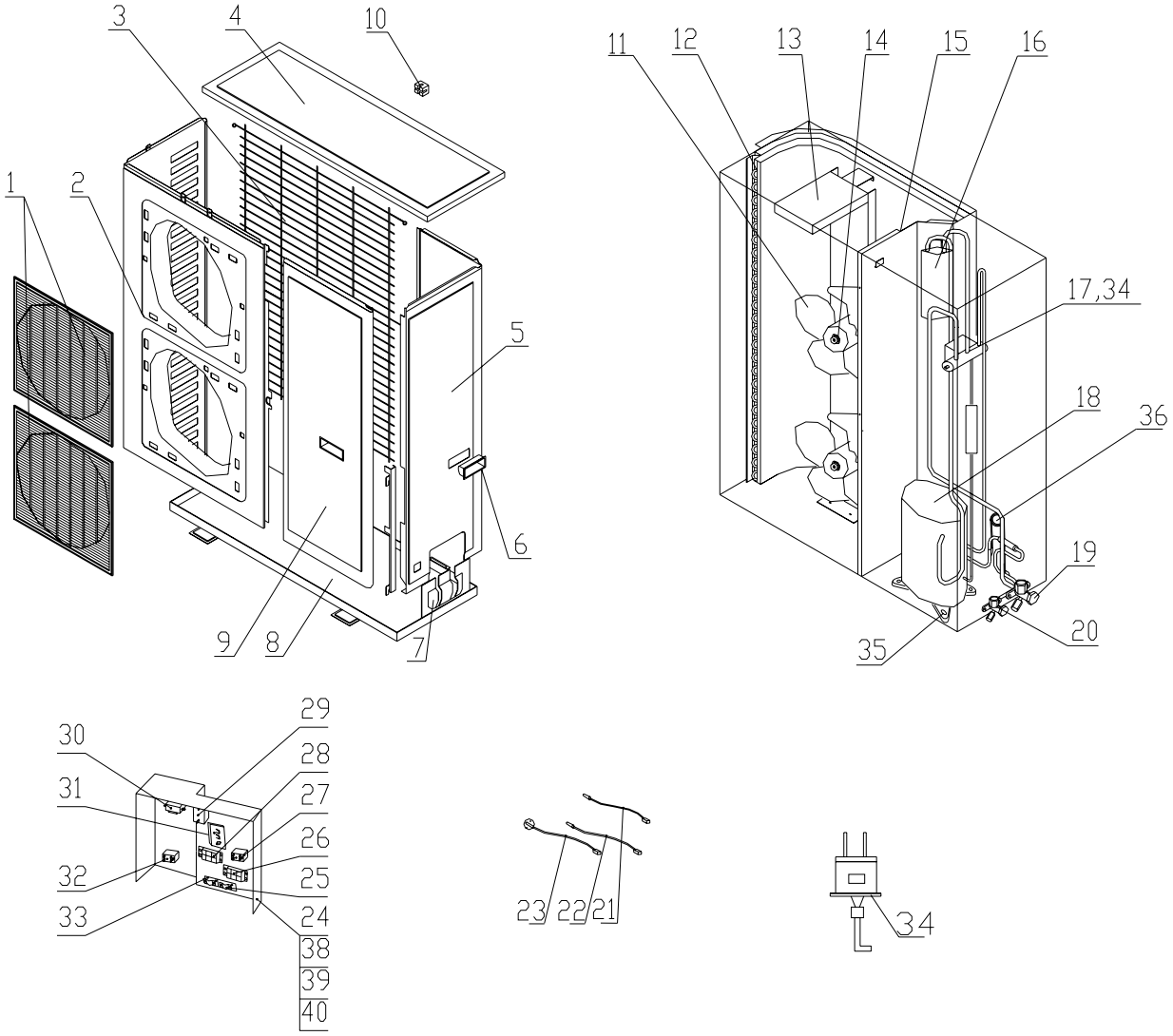


Parts List for ASD-36A

No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-36A - Outdoor Unit						
1	Front Grill	22265401			1	AL
2	Housing	01435402			1	AX
3	Rear Grill	01475401			1	AG
4	Top Cover	01255402			1	AQ
5	Rear Side Plate	01305401			1	AM
6	Handle	26235252			3	AC
7	Valve Support Sub-Assy	01715402			1	AK
8	Underpan Sub-Assy	01205402			1	AU
9	Front Side Plate	01305403			1	AR
10	Axial-flow Fan	10335401			1	AQ
11	Condenser Assy	01125703			1	BW
12	Motor Support Sub-Assy	01705402			1	AE
13	Fan Motor	150154511			1	BC
14	Clapboard Sub-Assy	01235403			1	AK
15	4-way Valve	43000338			1	BA
16	4-way Valve Accessary	430004005			1	AM
17	Compressor and Fittings	00129050			1	CM
18	Cut-off Valve	07130212			1	AY
19	Cut-off Valve Sub-Assy	071302335			1	AG
20	Pressure Switch	460200061			1	AL
21	Temperature Sensor	3900012126			1	AE
22	Electric Box Sub-Assy	01405720			1	AH
23	Terminal Board	42011044			1	AD
24	Transformer	43110240			1	AL
25	Terminal Board 2-8	42011103			1	AD
26	Main Board	30224026			1	BA
27	Capacitor CBB61	33010013			1	AF
28	AC Contactor	44010226			1	AT
29	Isolation Washer D	70410525			2	AC
30	Fixed Clamp	71010102			2	AB

The data are subject to change without notice.

9.2.4 ASD-41A
ASD-60A
Explosion View and Parts List for Outdoor Unit



Parts List for ASD-41A

No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-41A - Outdoor Unit						
1	Front Grill	22265251			2	AL
2	Housing	01435433			1	BA
3	Rear Grill	01475432			1	AH
4	Top Cover	01255262			1	AQ
5	Rear Side Plate	01305434			1	AR
6	Handle	26235252			3	AC
7	Valve Support Sub-Assy	01715001			1	AD
8	Underpan Sub-Assy	01205433			1	AU
9	Front Side Plate	01305431			1	AT
10	Protection Grill Gasket				0	
11	Axial-flow Fan	10335253			2	AQ
12	Condenser Assy	01125702			1	CA
13	Motor Support Sub-Assy	01705431			1	AE
14	Fan Motor	15013110			2	BC
15	Clapboard Sub-Assy	01235440			1	AQ
16	Gas-liquid Separator Assy	07225433			1	AT
17	4-way Valve	43000338			1	BA
18	Compressor and Fittings	00129051			1	CN
19	Cut-off Valve	07130212			1	AY
20	Cut-off Valve 1/2	071302115			1	AG
21	Temperature Sensor	3900012126			1	AE
22	Temperature Sensor	3900012125			1	AD
23	Temp. Limiter				0	
24	Electric Box Sub-Assy	01409067			1	AH
25	Fixed Clamp	71010102			2	AB
26	Terminal Board	42011044			1	AD
27	Terminal Board 2-8	42011103			1	AD
28	Terminal Board				0	
29	Capacitor	33010010			2	AG
30	AC Contactor	44010226			1	AT
31	Over Current Protector	46020112			1	AR
32	Phase Reverse Protector				0	
33	Isolation Washer D	70410525			2	AC
34	4-way Valve Accessary	430004002			1	AM
35	Compressor Gasket				0	
36	Capillary Sub-Assy	04105702			1	BA
37	Pressure Switch	460200061			1	AL
38	Capacitor Clamp				0	
39	Transformer	43110240			1	AL
40	Main Board	30224033			1	BA

The data are subject to change without notice.

Parts List for ASD-60A

No.	Description	Part Code	Updated		Qty	Price Code
			Part code	Date		
ASD-60A - Outdoor Unit						
1	Front Grill	22265251			2	AL
2	Housing	01435433			1	BA
3	Rear Grill	01475432			1	AH
4	Top Cover	01255472			1	AQ
5	Rear Side Plate	01305434			1	AR
6	Handle	26235252			3	AC
7	Valve Support Sub-Assy	01715001			1	AD
8	Underpan Sub-Assy	01205472			1	AU
9	Front Side Plate	01305431			1	AT
10	Protection Grill tub	42035201			1	AC
11	Axial-flow Fan	10335253			2	AQ
12	Condenser Assy	01109107			1	CA
13	Motor Support Sub-Assy	01705471			1	AE
14	Fan Motor	150154511			2	BC
15	Mid Clapboard Sub-Assy	01235473			1	AQ
16	Gas-liquid Separator Assy	07225479			1	AT
17	4-way Valve	43000338			1	BA
18	Compressor and Fittings	00129052			1	CR
19	Cut-off Valve	07130212			1	AY
20	Cut-off Valve Sub-Assy	071302335			1	AG
21	Temperature Sensor	3900012126			1	AE
22	Temperature Sensor	3900012125			1	AD
23	Temperature Sensor	3900012129			1	AE
24	Electric Box Sub-Assy	01409069			1	AH
25	Fixed Clamp	71010102			2	AB
26	Terminal Board	42011044			1	AD
27	Terminal Board 2-8	42011103			2	AD
28	Terminal Board				0	
29	Capacitor CBB61	33010013			2	AF
30	AC Contactor	44010213			1	AT
31	Over Current Protector	46020103			1	AS
32	Anti-phase Protector	46020052			1	AX
33	Isolation Washer	70410523			1	AC
34	4-way Valve Accessary	430004005			1	AM
35	Compressor Gasket M-0101-	76710209			4	AC
36	Capillary Sub-Assy	03009105			1	BA
37	Pressure Protect Switch	46020006			1	AL
38	Capacitor Clamp				0	
39	Transformer	43110240			1	AL
40	Main Board	30224026			1	BA

The data are subject to change without notice.

10. Care and Maintenance of Air Conditioner

10.1 Clean the air filter

1) Do not remove the air filter when cleaning; otherwise any fault may occur.
2) Please clean the air filter more frequently if the air conditioner works under dusty environment. (Generally, clean every two weeks).

Note: When you are cleaning the air conditioner, please take care on the following:

a) Be sure to disconnect all power supplies before touching any wiring device.
b) Be sure to turn off the unit and disconnect the power supply before you can clean the air conditioner. Otherwise, electric shock or injury may be caused.
c) Do not wash the air conditioner with water; otherwise electric shock may be caused.
d) Take special care to use a firm and stable stand when cleaning the air conditioner.

10.2 Maintenance at the Start of Service Season

1) Check the air inlet and outlet of the indoor and outdoor units for any block.
2) Check if the ground wire is in good condition.
3) Check if the cable connection is in good condition.
4) Check if any words will appear on the display of wired controller after connecting to the power supply.

Note: In event of any abnormality, please consult the after-sales service technicians.

10.3 Maintenance at the End of Service Season

1) In a fine weather, run the air conditioner under fan mode to dry the inside of the unit.
2) If the air conditioner will be long of service, please disconnect the power supply to save the energy. After disconnecting the power supply, the words on the display of the wired controller will disappear.

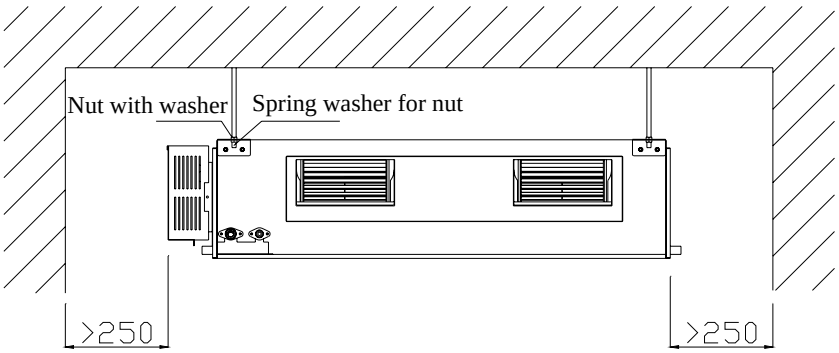
11. Installation Guideline

11.1. Installation Accessories See Table 11-1

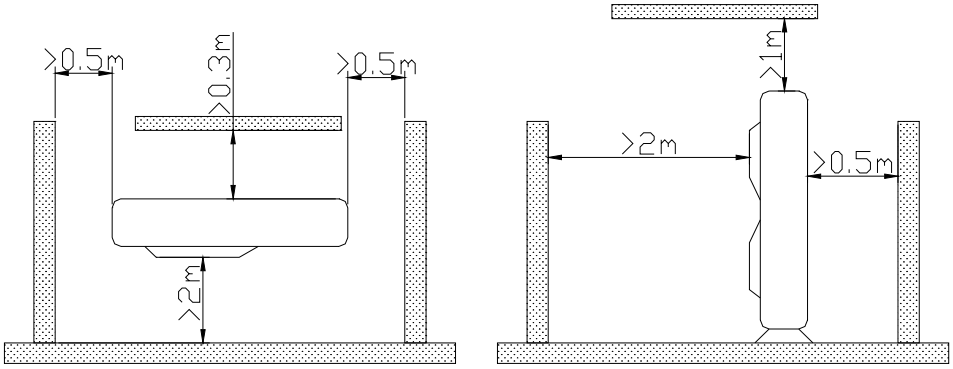
Table 11-1

Description & Shape	QTY	Notes
Installation Instructions	1	
Heat insulation for gas connector	1	For indoor gas pipe connector
Heat insulation for liquid connector	1	For outdoor liquid pipe connector
Heat insulation for drainage pipe	2	For wrapping of condensate pipe and rubber plug
M8 nut with washer	8	For fixing the hook
M10 nut with washer	4	4 sets, for fixing indoor unit to ceiling
Nut and spring gasket	4	
Hook	4	For fixing the indoor unit to the ceiling
Tie strap	4 or 8 pcs	4 pcs for 2HP model; 8 pcs for other models
Wired controller	1	
Remote controller	1	
Battery	2	
Corrugated pipe	0, 2 or 4 pcs	0 pc for 2HP model; 2 pcs for 2.5－3HP; and 4 pcs for 4－5HP
Power cable	1－2 pcs	2 pcs for 4－5HP model, and 1 pc for other models
Connection cable	2－3 pcs	3 pcs for 4－5HP model, and 2 pcs for other models

11.2. Size of Installation Space



(a) Indoor Unit



Outdoor Unit

Fig. 11-1

11.3. Installation of Indoor Unit

11.3.1. Select the location of installation

1) Ensure that the top hanger frame has enough strength to support the weight of the unit.
2) The drainage pipe shall be easy to drain water.
3) There shall be no obstacle at the inlet and outlet so as to keep the air in good circulation.
4) Ensure the space needed for installation, repair and maintenance works.
5) Select a place far from heat source, flammable gas or smoke.
6) The machine is ceiling mounted (Concealed installed in the ceiling).
7) The indoor unit, outdoor unit, power cable and connection cable shall be kept 1m at least from the TV set or radio. This is to prevent image interference and noise on above appliances.

11.3.2. Installation of Air Conditioner Body and Check of Indoor Unit Level

1) Install the expansion bolt

Drill four holes (Dia. 10mm approx.) on the ceiling. Refer to Fig. 3-1 for the spacing between the holes. Insert M10 expansion bolt into the hole and then punch the iron nail into the bolt as shown in Fig. 11-2.

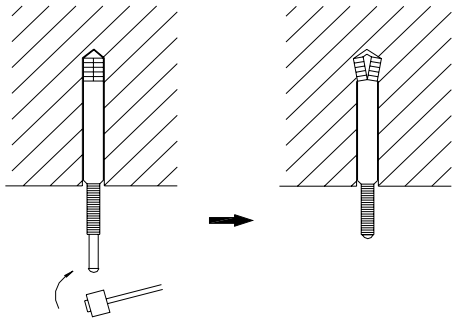


Fig. 11-2

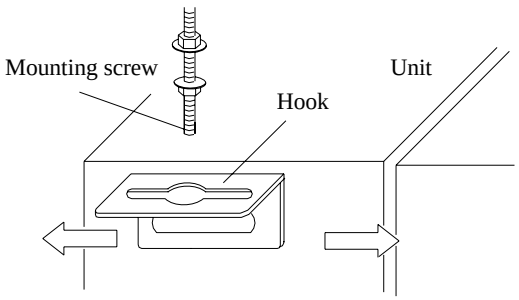


Fig. 11-3

2) Install the hook to indoor unit. See Fig. 11-3.

3) Install indoor unit to the ceiling. See Fig. 11 -4

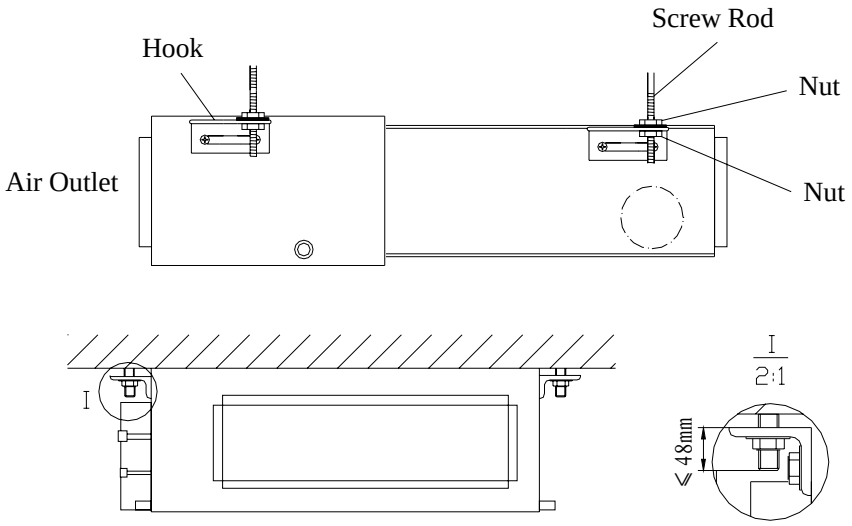


Fig.11-4

4) Check of Indoor Unit Level

After completing the installation of the indoor unit, be sure to check the level of the complete unit so as to make the front, back, left and right of the unit on the same level. See Fig. 11-5

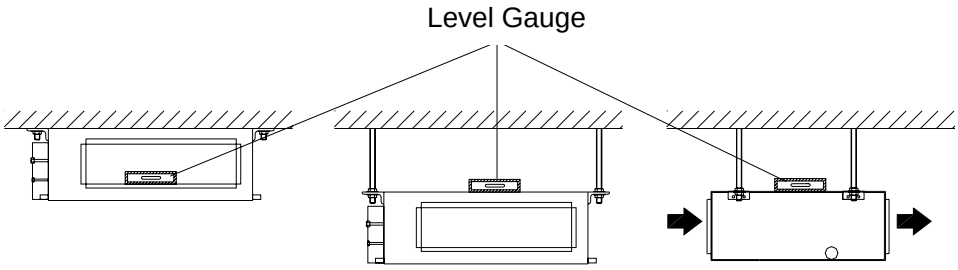
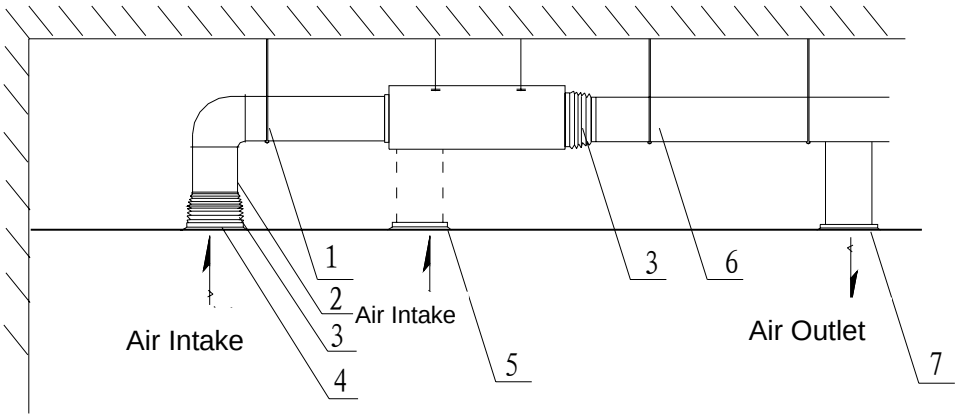


Fig.11-5

11.3.3 Installation of Air Duct

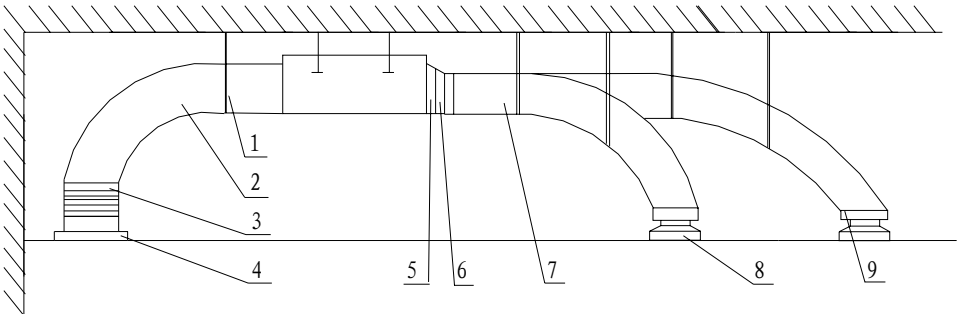
1) Install the rectangular duct. See Fig.11-6



S/N	Description	S/N	Description
1	Hanger Bar	5	Filter
2	Intake Pipe	6	Main Outlet Pipe
3	Canvas Duct	7	Air Outlet
4	Air Intake		

Fig.11-6

2) Install the round duct. See Fig.11-7



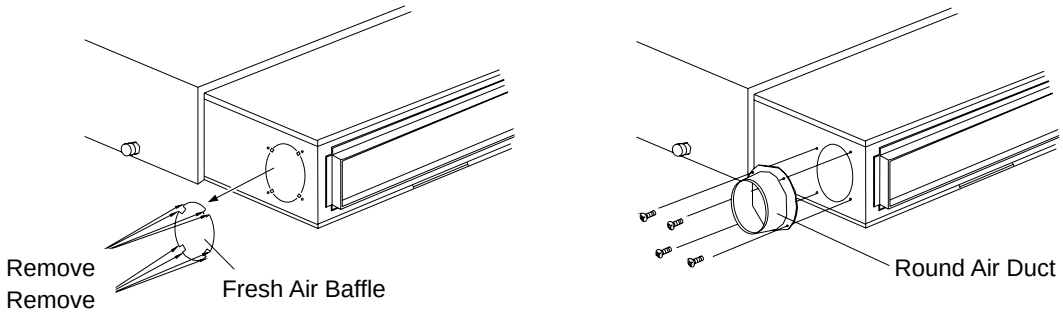
S/N	Description	S/N	Description
1	Hanger Bar	6	Transition Duct
2	Intake Pipe	7	Air Outlet Pipe
3	Canvas Duct	8	Diffuser
4	Intake Louver	9	Diffuser connector
5	Air Outlet		

Fig.11-7

Note: Shown above is the installation of rear air intake. Bottom air intake may be used according to the needs of actual installation. The installation method is similar to that of rear air intake. In all intake pipes, at least one shall be kept open. Round duct may also be adopted and round heat insulation hose may be used to blow the air to each room. Heat insulation shall be provided for both outlet pipe and intake pipe.

11.3.4 Installation of Fresh Air Pipe (Limited to extra residual pressure unit with a cooling capacity over 6000W)

1) To connect the fresh air pipe, cut off the fresh air baffle firstly, as shown in Fig.11-8(a). If fresh air pipe is not required, use sponge to seal the seam on fresh air baffle.
2) Mount a round flange for connection of fresh air pipe. See Fig.11-8(b).
3) Both the duct and round flange need good sealing and heat insulation.
4) The fresh air shall be filtered air.



(a) (b)

Fig.11 -8

11.3.5 Installation of Intake Pipe

1) The square flange is factory mounted at the rear part, while the cover of air intake is mounted at the bottom. See Fig.11-9.

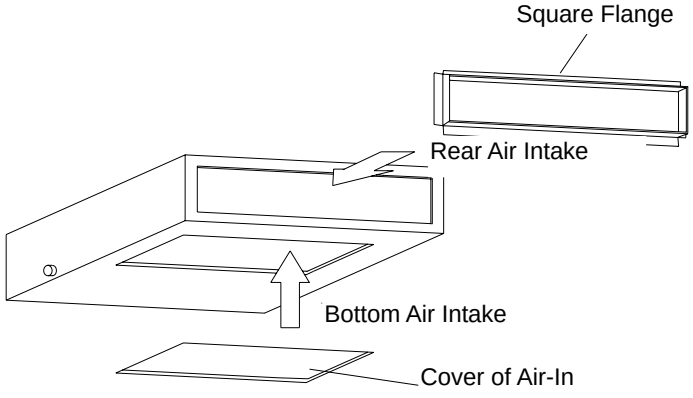
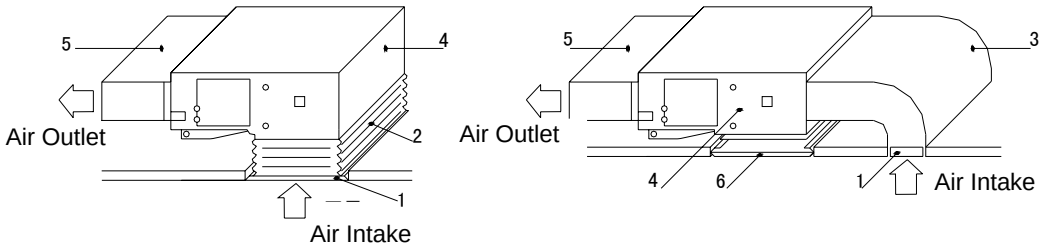


Fig.11-9

2) If bottom air intake is required, just change the position of square flange and air intake cover.

3) Rivet the intake pipe to the air intake of indoor unit and another end to the intake window. For free adjustment of the height, you may fabricate a section of canvas duct and reinforce with 8# iron wires in folded form. The user may select the installation method in unified consideration of the constructions and maintainability. See Fig.11-10.



S/N	Description	S/N	Description
1	Intake Window (with filter)	4	Indoor Unit
2	Canvas Duct	5	Outlet Pipe
3	Intake Pipe	6	Test Grill

Fig.11-10

11.3.6 Installation of Round Outlet Pipe

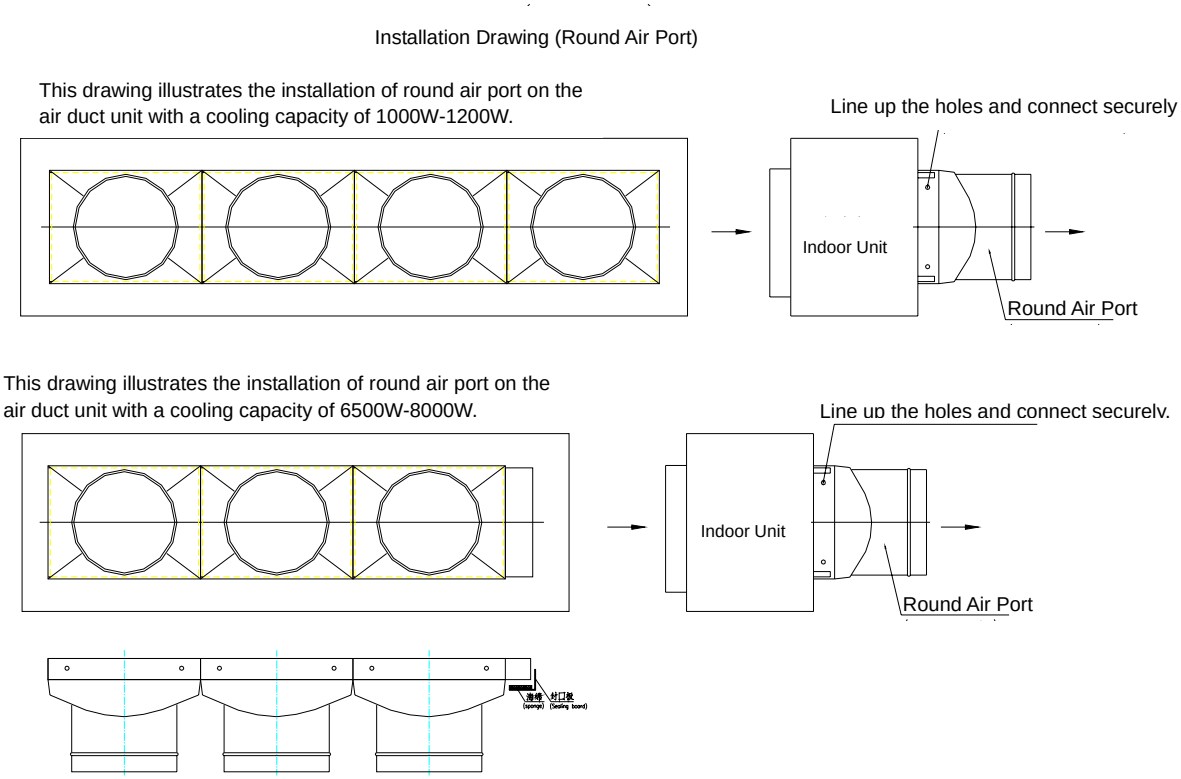


Fig.11-11

11.3.7 Installation of Condensate Pipe

1) The condensate pipe shall be kept an inclination 5~10° for easier drain of the condensate water. To prevent condensed dew, the connector of condensate pipe shall be heat insulated. (See Fig.11-11)
2) One condensate outlet is provided on the left and right side of the indoor unit respectively. After the condensate outlet is determined, please use rubber plug to block the outlet on another side and fix with tie strap to prevent leakage. Wrap properly with heat insulation materials.
3) The right condensate outlet is factory blocked by rubber plug.

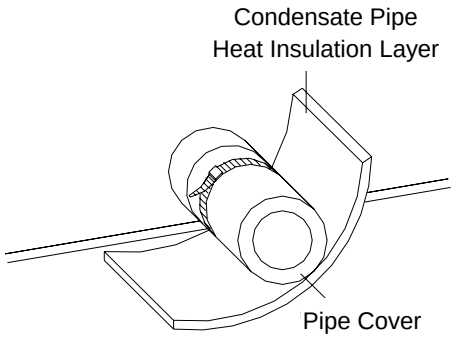


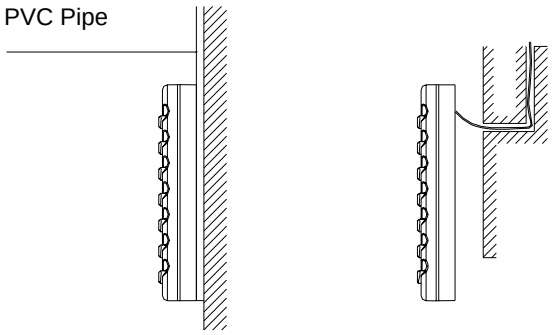
Fig.11-12

11.3.8 Installation and Connection of Wired controller

1) Firstly, select the install location. According to the size of communication wire for wired controller, reserve a groove or cable hole for embedding of communication wire.
2) For open installation of the communication wire between wired controller (85 X 85 X16) and indoor unit, you use 1# PVC pipe and set up an appropriate groove in the wall (See Fig.11-13(a)). For concealed installation, you may use 1＃PVC pipe (See Fig.11-13(b)).
3) Both open installation and concealed installation
4) Fig. 11-14 shall be followed no matter for open installation or for concealed installation. Firstly, refer to the spacing of mounting holes (60mm) on the base panel of wired controller and drill 2 holes (kept level) in the wall. Then, knock a wood plug into each hole and fix the base panel of wired controller onto the wall. After that, insert the communication wire into the control board. Finally, cover up the front panel of wired controller.

Note:

When installing the base panel of wired controller, take special care on the direction of base panel. The side with 2 notches must face downward; otherwise it will be impossible to mount the front panel correctly.



(a) Open Installation of Cable (b) Concealed Installation of Cable

Fig.11-13

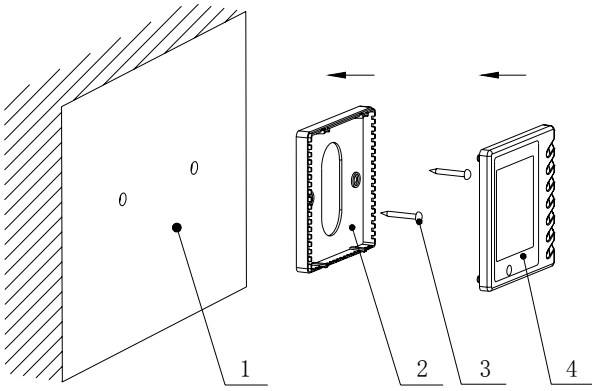


Fig. 11-14 Installation Sketch

S/N	Description
1	Wall
2	Base Panel of Wired controller
3	Screw M4X10
4	Front Panel of Wired controller

11.3.9 Connection of Electric Wire to Terminal Board See Fig.11-16。

1) Before installing the electrical equipment, please take care on the following:

a) Check if the power supply is identical to the ratings on nameplate.

b) The power capacity shall be high enough and the section area of the cables in the room shall be over 2.5mm^2.

c) The cable must be installed by professional technicians.

d) The permanent circuit must be installed with leakage protection switch and air switch with electrode contacts spaced over 3mm.

2) Connect the single wire

a) Use a wire stripper to remove the insulation layer for about 25mm at the end of the single wire.

b) Remove the screws from the terminal board of air conditioner.

c) Use pliers to bend the end of single wire to a round ring conforming to the screw size.

d) Insert the screw through the round ring of single wire and fix onto the terminal board.

3) Connect the stranded wire

a) Use a wire stripper to remove the insulation layer for about 10mm at the end of the stranded wire.

b) Remove the screws from the terminal board of air conditioner.

c) Use crimping pliers to clamp the end of stranded wire and make a terminal conforming to the screw size.

d) Insert the screw through the terminal of stranded wire and fix onto the terminal board.

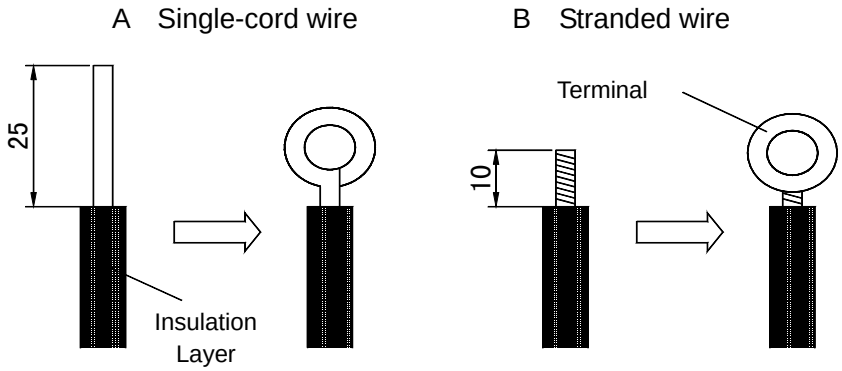


Fig.11-16

Notes:

a) If the power cord or signal wire is damaged, be sure to replace with special cord.

b) Please identify the voltage indicated on the nameplate before starting cable connection according to the wiring diagram.

c) The air conditioner shall be provided with special power cable and equipped with leakage switch and air switch to respond to any overloading.

d) The air conditioner must be properly earthed to avoid the harm caused by insulation failure.

e) All wires must be connected via press terminal or single wire. Direct connection of stranded wire to the terminal board may cause spark.

f) All cables shall be correctly connected in accordance with the wiring diagram. Wrong connection may cause malfunction or damage to the air conditioner.

g) Prevent the cables from contacting the refrigerant pipe, compressor, fan or other moving parts.

h) Do not change the cable connection inside the air conditioner. The manufacturer is not liable for any loss or abnormal operation thus arising.

11.3.10 Connection of Power Cable

1) For air conditioner using 1-phase supply:

   a) Remove the front side plate of outdoor unit.

   b) Open the cable-cross hole of outdoor unit and mount a rubber ring.

   c) Insert the cable through rubber ring.

   d) Connect the power cable to “L”, “N” terminals and earth screw.

   e) Fix the cable with tie strap.

2) For air conditioner using 3-phase supply:

   a) Remove the front side plate of outdoor unit.

   b) Open the cable-cross hole of outdoor unit and mount a rubber ring.

   c) Insert the cable through rubber ring.

   d) Connect the power cable to “L1”, “L2”, “L3”, “N” terminals and earth screw.

   e) Fix the cable securely with cable clamp.

Notes: For the air conditioner with auxiliary electric heater, the power cable shall also be connected to “L1” , “L2”, “L3”, “N” terminals and earth screw in the electric box of indoor unit.

11.3.11 Connection of Wired controller Signal Wire

1) Open the electric box of indoor unit.
2) Insert the wired controller signal wire through the rubber ring.
3) Insert the wired controller signal wire into the 4-bit seat.
4) Fix the signal wire of wired controller tightly with tie strap.

Notes:

a) To prevent the air conditioner from malfunction due to electromagnetic interference, be sure to take special care when performing the cable connection below.
b) The signal wire of wired controller shall be separated from power cable and indoor/outdoor connection cable.
c) If the air conditioner is installed at a place subject to electromagnetic interference, it is best to use the shield wire and twisted pair as the signal wire of wired controller.

11.4 Installation of Outdoor Unit

11.4.1 Select the install location of outdoor unit

a) Ensure that the noise and air flow generated by exhaust will not affect your neighbor.
b) Ensure good ventilation for outdoor unit.
c) Near the air outlet of outdoor unit, there shall be no obstacles that may affect the air flow into or out of the unit.
d) The installing position shall be able to support the weight and vibration of outdoor unit, and can ensure safe completion of installation works.
e) A place without possible leakage of flammable or corrosive gas.
f) Prevent any strong wind from blowing directly to the air outlet of outdoor unit. If any strong wind is blown directly to the air outlet, the fan will be incurred to insufficient air flow.
g) Avoid installing at a place where organic oil, sulfur gas or high noise exists.

11.4.2 Install the outdoor unit

1) If the outdoor unit is installed on a firm and stable ground as concrete, please fix with M10 bolt and nut to ensure the unit is upright and level.
2) Do not install at the top of a building.
3) If the vibration causes noise, please add rubber gasket between the outdoor unit and installation base.
4) To run under HEAT or DEFROST mode, the water shall be drained from the outdoor unit.
5) To install the drainage pipe, insert the drainage connector into the drainage hole on the base of outdoor unit. Then, connect a drainage to the drainage connector. (To use drainage connector, the installing height of outdoor unit shall be 5cm at least).

11.4.3 Install the connecting pipe

Select the connecting pipe according to Table 11-2.

Table 11-2

Item / Model	Pipe Size(mm)		Max. Length (m)	Max. Height Difference between Indoor and Outdoor(m)	Adding of Refrigerant (For Extra Length)
	Gas Pipe	Liquid Pipe			
ASD-09A	1/4 "	3/8 "	20	15	15
ASD-12A	1/4 "	1/2 "	20	15	20
ASD-18A					
ASD-24A	φ9.52	φ16	30	15	60g/m
ASD-36A	φ12	φ19	50	30	120g/m
ASD-41A					
ASD-60A	φ12	φ22	50	30	120g/m

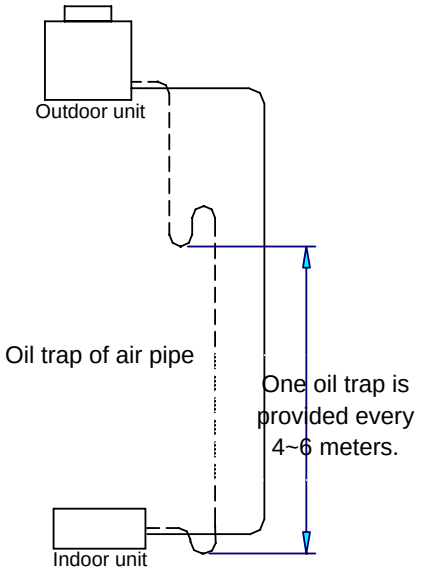
The layout of connecting pipes must be in accordance with site conditions by referring to the following principles:

1. Shorten the length of connecting pipe to its minimum, better within 5m.
2. Reduce the height difference between indoor unit and outdoor unit to its minimum.
3. Minimize the number of elbows on connecting pipe.
4. If the connecting pipe is over 20m, it is required to check if the system lubricant is sufficient. Add if necessary.
5. The quantity of refrigerant inside the unit is applicable to the connecting pipe 7m long. For extended length of connecting pipe, more refrigerant shall added. For every 1-meter extra length, the quantity of refrigerant to be added is shown in the table below. The maximum allowable pipe length is 30m.
6. If the height difference between indoor unit and outdoor unit is over 10m, one trap elbow shall be installed every 6 meters.

If the indoor unit and outdoor unit are on different height, please arrange the pipes by referring to the illustration below.

——— Liquid Pipe (Small Pipe)

- - - - - - Gas Pipe (Big Pipe)



b. Outdoor Unit Placed Higher than Indoor Unit

Fig.11-17

1) Pipe Connection

a) Align the bell mouth of copper tube with the center of threaded connector. Tighten the bell-mouthed nut with your hand.

b) Tighten the bell-mouthed nut with torque wrench, until you hear a click sound. See Fig.11-18. The torque specification is shown in Table 11-3.

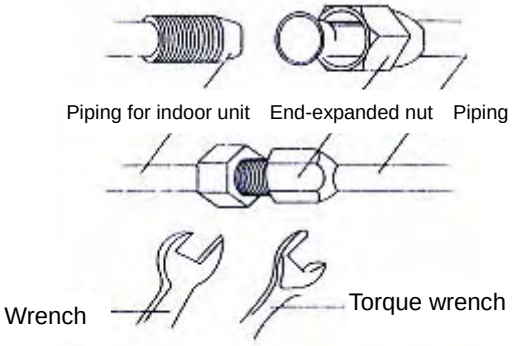


Fig.11-18

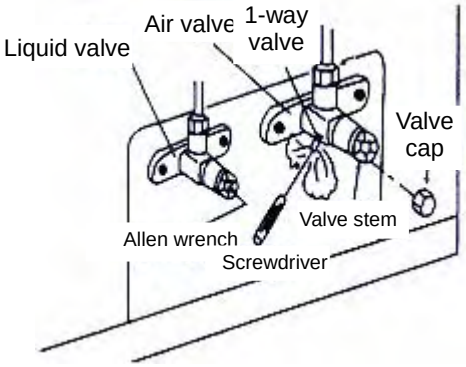


Fig.11-19

Table 11-3

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

c) The pipe bend shall not be too small; otherwise the pipe might break. Please use pipe bender to bend the pipe.

d) Use sponge to wrap up the connecting pipe and connector without heat insulations, and fasten with plastic tape.

2) Vacuumizing and Leakage Detection

a) Remove the cap from liquid valve and gas valve.

b) Align the pipe center and tighten the connecting pipe nut securely with your hand.

c) Tighten the nut with a wrench.

d) Remove the 1-way valve cap on the gas valve.

e) Use inner hexagonal wrench to loosen the core of liquid valve for 1/4 turn, and use a screwdriver to pop up the core of gas valve to discharge the gas.

f) The discharge will last 15 seconds until refrigerant gas flows out. Immediately close the 1-way valve and tighten the cap.

g) Open the core of liquid valve and gas valve to full (See Fig.11-20).

h) Tighten the valve cap. Then, use soap water or leakage detector to check if there is leakage at the connection to indoor and outdoor unit.

i) If permitted, it is best to use a vacuum pump to expel the air out of unit from the valve. See Fig.11-20.

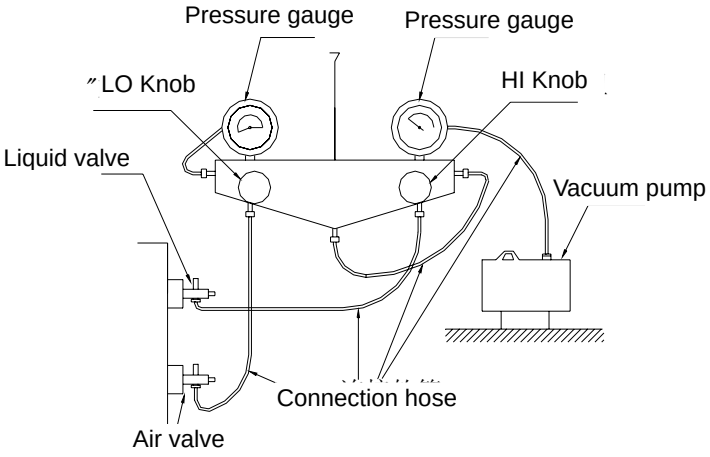


Fig.11-20

3) Installation of Protection Layer on Connecting Pipe

a) To avoid condensing or water leakage, the small and big connecting pipes must be wrapped with heat insulation materials and adhesive tape to isolate from the air.

b) The connector of indoor unit shall be wrapped with heat insulations properly, without any clearance to the wall surface on which the indoor unit is mounted. See Fig.11-21.

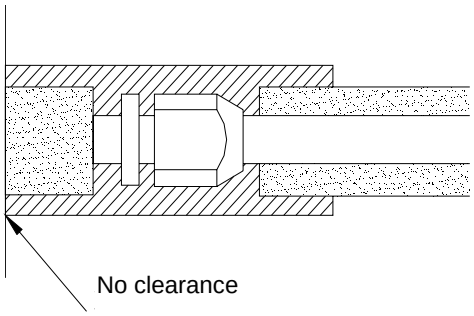


Fig.11-21

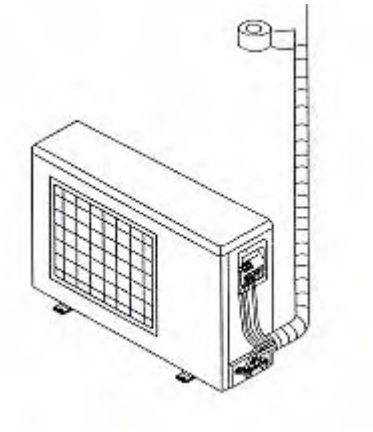


Fig.11-22

c) Tie strap the connecting pipes and cables with adhesive tape. To prevent overflow of condensate water, the drainage pipe shall be separated from the connecting pipes and cables.

d) Tie strap the heat insulation tapes o the outdoor unit from the bottom, until the upper end of the pipe is deep in the wall. When tie strapping the heat insulation tapes, each circle shall compress half of the tapes in previous circle. See Fig.11-22.

e) Fix the pipes onto the wall with pipe clamp.

Notes:

1. When the pipe is protected, never bend the pipe to a very small angle; otherwise the pipe is easy to crack or break.

2. Wrap the protection tapes tightly, as this will decrease the heat insulation efficiency. Make sure that the condensate drainage hose is separated from the pipe bundle.

3. After completing the protection works and wrapping the pipes properly, use sealant to seal the holes in the wall, so as to prevent rain or wind from invasion into the room.

11.4.4 Cable Connection

1) Remove the right side plate of outdoor unit and open the cable-cross hole. Install the cable-cross loop.
2) Remove the cable clamp. Connect the power cable to the terminals and fix.
3) Use wire clamp to fix the power cable and signal control wire. Then, connect correctly.
4) Check if the cable is properly fixed.
5) Reinstall the front side plate.

11.4.5 Drainage of Outdoor Condensate Water (No for cooling-only unit)

When the air conditioner is working under HEAT mode, the condensate water generated by the outdoor unit and the defrosting water during DEFROST mode operation will be drained to a proper place via drainage pipe.

How to Install: Clamp the outdoor drainage connector to Φ25 hole on the base, as shown in Fig.11-23. Then, connect the drainage pipe to drainage nozzle, so that the condensate water and defrosting water can be drained to an appropriate place.

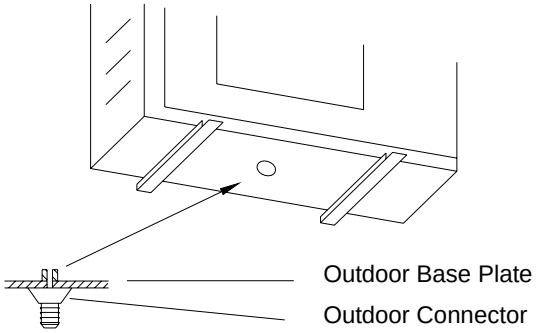


Fig.11-23

11.5 Precautions on Installation

1. Follow the illustrated requirements to ensure there is enough space and good ventilation for operation, repair and maintenance of the unit.
2. Drainage ditch shall be provided on the ground of outdoor unit.
3. To meet the restrictions of noise and vibration, the outdoor unit shall be installed with rubber damping cushion, spring damper or rubber connector.
4. The beam and frame to lift the indoor unit shall be able to support 4 times the weight. The bolts, caps and other fasteners shall be subjected to antirust treatment. Soft connector shall be added at the connection of duct, thus to reduce the vibration.
5. The duct shall be designed in reference to data provided in the data sheet and the computation method described in Part 1 of this manual. Heat insulation and sound insulation shall be provided. It is recommended to use air flow regulation valve to adjust the air flow at different positions of the air outlet system, making the unit run under optimum state.
6. Be sure to lift the indoor and outdoor unit by using the designated lifting holes. During lift, take care to protect the unit and avoid knocking the plates, thus to prevent possible rusting in the future.
7. Sinclair will not provide the copper tube, power cable and signal wire. Please prepare according to technical parameters, and connect the pipe, power supply and circuits correctly.

8. The unit must be tested by professional technicians or the user's people with air conditioner knowledge under the instructions of Sinclair's professional technicians.
9. Before installing the indoor and outdoor connecting pipe, do not remove the plug sealing the pipe.
10. To prevent dust or moisture entering into the system, connect the pipe quickly after removing the seal plug.
11. The pipe must be installed in a wall-cross tube when passing the wall.
12. The shorter the connecting pipe, the better. The smaller the height difference between indoor unit and outdoor unit, the better. The fewer the pipe bends, the better. The bending radius shall be as large as possible.
13. When laying the pipes along the designated route, do not flatten the pipe. The bending radius must be over 200MM. The connecting pipe shall not frequently bent or stretched; otherwise it will become hardened. One pipe shall not be bent at the same position over 3 times the maximum.

11.6 Precautions on Installation of Outdoor Condensate Pipe

It is usually found that the condensate water of duct type air conditioner cannot be drained out. Through our investigation and analysis, it is the relative high-speed air flow generated under negative pressure inside the unit that obstacles the normal drain of condensate water. Therefore, we need to install a section of water seal at the drainage outlet.

As shown in Fig. 11-24, the height of water seal depends on the pressure inside the section where the condensate pipe is located.

When the section of condensate pipe is under negative pressure, $h=x \geqslant \frac{P}{10}+20(mm)$

When the section of condensate pipe is under positive pressure, $x \geqslant 30mm$，$h \geqslant \frac{P}{10}+20(mm)$

In which: P – Absolute pressure of this section inside the equipment, Pa。

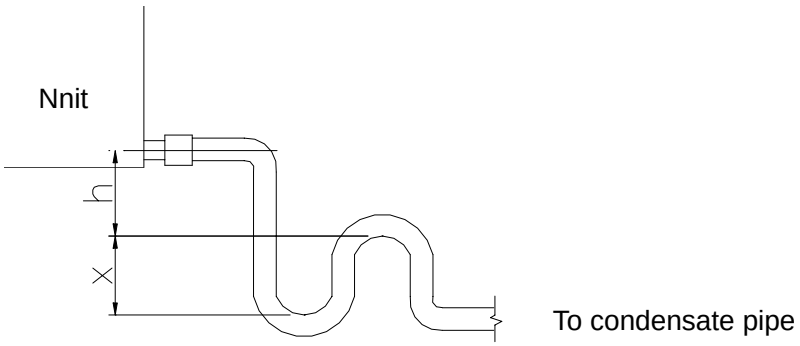


Fig. 11-24 Indoor Water Seal Sketch

Note: 1. "h" shall be less than 50mm the minimum.

2. The condensate pipe shall be heat insulated.

3. The condensate pipe shall be kept an inclination $5 \sim 10°$ for easier drain of the condensate water. To avoid condensing dew, the connector of condensate pipe shall be heat insulated.

4. Please test the drainage system after completing the installation works. During test, check if the water flows through the pipe correctly. Check the connecting point with care to ensure there is no leakage. If the unit is installed in a new house, it is recommended to test before starting decoration of the ceiling.

11.7 Test Run and Checks after Installation

11.7.1 Test Run

1) Preparations for Test Run

a) Do not connect to the power supply unless all installation works has been completed.

b) The control circuit is correctly connected and all cables are fixed securely.

c) The valve of gas pipe and liquid pipe shall be open.

d) All scattered articles, especially the metal scraps and threads, shall be removed from the unit.

2) Method of Test Run

a) Switch on the power and press the ON/OFF button on the remote controller to start the test run.

b) Press MODE button and select COOL, HEAT and FAN mode to check if the run is normal.

c) Emergency run.

11.7.2 Checks after Installation See Table 11-4

Table 11-4

Items to be Checked	Possible Result in Case of Improper Installation
If the installation is secure?	The unit may fall, vibrate or give out noise
If the leakage detection is done?	Possibly causing low cooling capacity (heating capacity).
If the unit is heat insulated satisfactorily?	Possible dew or drips of water
If the water drainage is smooth?	Possible dew or drips of water
If the power voltage is identical to the ratings on nameplate?	The machine may be incurred to failure or the parts may be burnt
If the cables and pipes are connected correctly?	The machine may be incurred to failure or the parts may be burnt
If the unit is safely earthed?	Risk of electric leakage
If the cable type conforms to the specification?	The machine may be incurred to failure or the parts may be burnt
If there is obstacles at the air inlet and outlet of indoor and outdoor unit?	Possibly causing low cooling capacity (heating capacity).
If the refrigerant pipe length and refrigerant fill are recorded?	Unable to control the quantity of refrigerant filled

12 Fault Analysis

12.1 Process of Fault Analysis See Fig.12-1

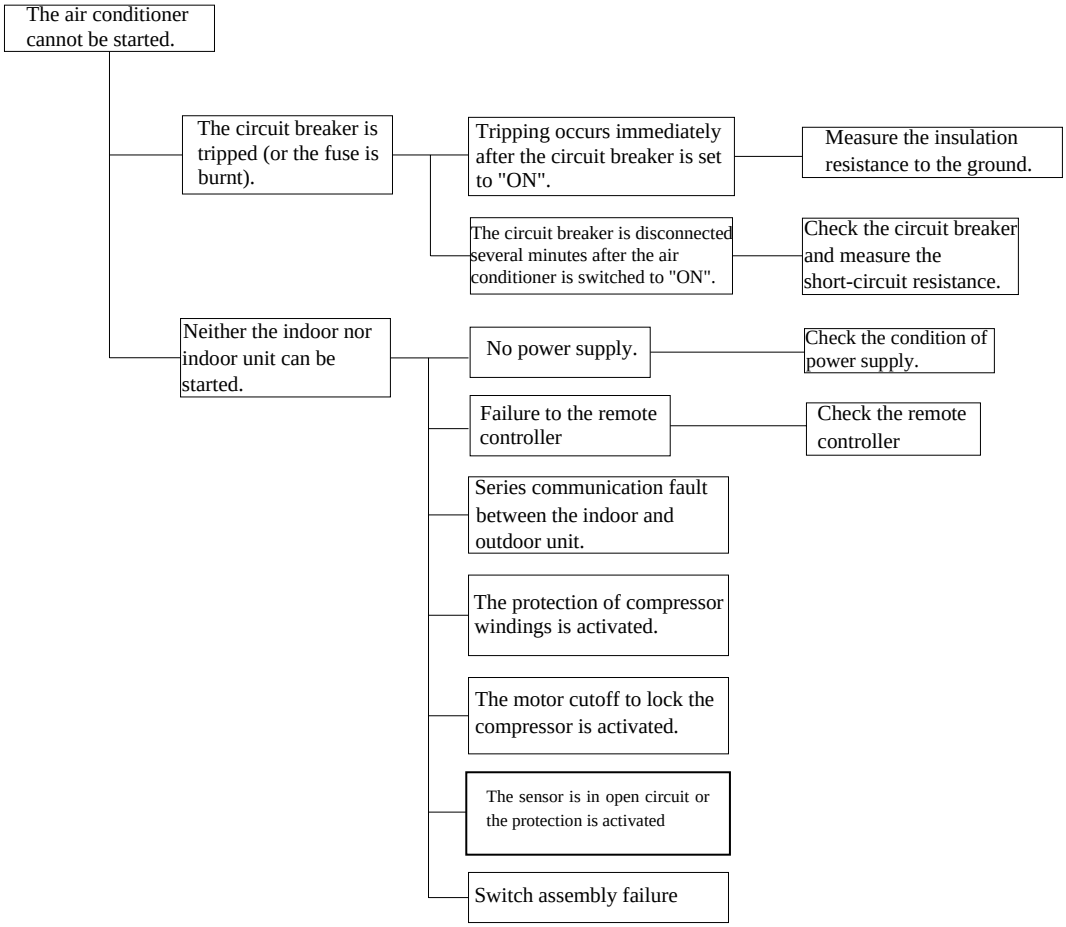


Fig.12-1

12.2 Fault Analysis See Table 12-1

Fault	Possible Cause		How to Eliminate
Neither the indoor unit nor the outdoor unit can work	Power failure		Resume the power supply
	Fuse is burnt	Short circuit	Eliminate short circuit; replace the fuse
		Earth failure (Damaged insulation)	Eliminate the earth failure or replace the cable
	The power plug is not inserted properly or the contact is poor		Eliminate the cause of poor contact
			Insert into the socket firmly
	Wrong cable connection between indoor unit and outdoor unit		Check the circuit according to wiring diagram and connect correctly.
	The controller fuse is burnt		Replace the controller fuse
	The controller is burnt		Replace the controller
When switched to FAN position, the fan does run	The indoor fan motor is burnt or disconnected		Repair or replace the fan motor
	Remote controller failure		Eliminate the fault or replace the controller
Under COOL or HEAT mode, neither the indoor fan nor the compressor works	Relay failure	The coil is broken	Replace the relay
		The contact is poor	
Under COOL or HEAT mode, the compressor runs but the outdoor fan does not run	Failure of outdoor fan motor		Replace the motor
	Failure of outdoor relay		Replace the relay
	The defrost temp. sensor and tube temp. sensor are in poor contact		Replace the defrost temp. sensor and tube temp. sensor
Under COOL or HEAT mode, the outdoor fan runs but the compressor does not run	Compressor failure		Replace the compressor
	The compressor capacitor is burnt		Replace the capacitor
The cooling is poor under COOL mode operation.	Cooling load is too high		Check the predicted cooling loads.
	Temperature setting is too high		Lower the temperature setting
	Cooling unit is installed at an improper position		The outdoor side shall have good ventilation and installed with sunshade.
	The indoor filter is blocked		Clean the filter periodically.
	The indoor heat exchanger is blocked		Wash the heat exchanger
	The fan speed setting is too low		Set to HIGH or MED speed

Fault	Possible Cause	How to Eliminate
	4-way valve failure	Replace the 4-way valve
	Capillary is partially blocked	Replace the capillary
	Leakage between high pressure and low pressure section of the compressor	Replace the compressor
	The pipe valve is not full open	Open the valve to full
	Leakage of refrigerant	Find the leaking point and add refrigerant
	The heat insulation of connecting pipe between indoor unit and outdoor unit is poor	Heat insulate the gas pipe and liquid pipe separately
The heating is poor under HEAT mode operation.	The heating load is too high	Check the predicted heating load
	The temperature setting is too low	Increase the temperature setting
	The installation position of outdoor unit is improper	The outdoor side shall have good ventilation and installed with sunshade.
	The indoor filter is blocked	Clean the filter periodically.
	The indoor heat exchanger is blocked	Wash the outdoor heat exchanger
	The air through indoor heat exchanger is low	Increase the motor speed and set it to HIGH or MED.
	Compressor failure	Replace the compressor
	4-way valve failure	Replace the 4-way valve
	The 1-way valve of outdoor unit leaks	Replace the 1-way valve
	Capillary is partially blocked	Replace the capillary
	Defrosting is not thorough	Replace the defrost temp. sensor
	The pipe valve is not full open	Open the valve to full
	Leakage of refrigerant	Find the leaking point and add refrigerant
	The heat insulation of connecting pipe between indoor unit and outdoor unit is poor	Heat insulate the gas pipe and liquid pipe separately
Abnormal noise or vibration	The indoor fan touches other substances	Adjust the fan position
	The compressor vibration is too high	Adjust the compressor support and tighten the loose bolts
	Foreign articles inside the indoor unit	Remove the foreign articles
	The indoor unit is installed on plate wall or thin wall thus generating high resonance noise	Avoid mounting on steel window directly
		Wall with appropriate strength
		Take proper measures to reduce the vibration.
	The outdoor pipes knock each other	Separate the knocking pipes
	The metals inside the unit knock each other	Tighten the screws
		Add damping glue between metal plates.
	The outdoor fan knock the casing	Adjust the fan position
	Abnormal noise inside the compressor	Replace the compressor
	Under HEAT mode operation, abnormal electromagnetic noise is heard in the 4-way valve	The electromagnetic valve is short circuited. Replace the electromagnetic valve.

Table 12-1