FUJITSU

Multi Air Conditioning System for Buildings

SIMULTANEOUS OPERATION / INDIVIDUAL OPERATION

SERVICE INSTRUCTIONS

FUJITSU GENERAL LIMITED

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4. TROUBLESHOOTING

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6. REPLACEMENT PARTS (OUTDOOR UNIT)

1. SYSTEM DESCRIPTION

1.1 Freely possible to select indoor unit

Indoor Units Line-up for Simultaneous Operation

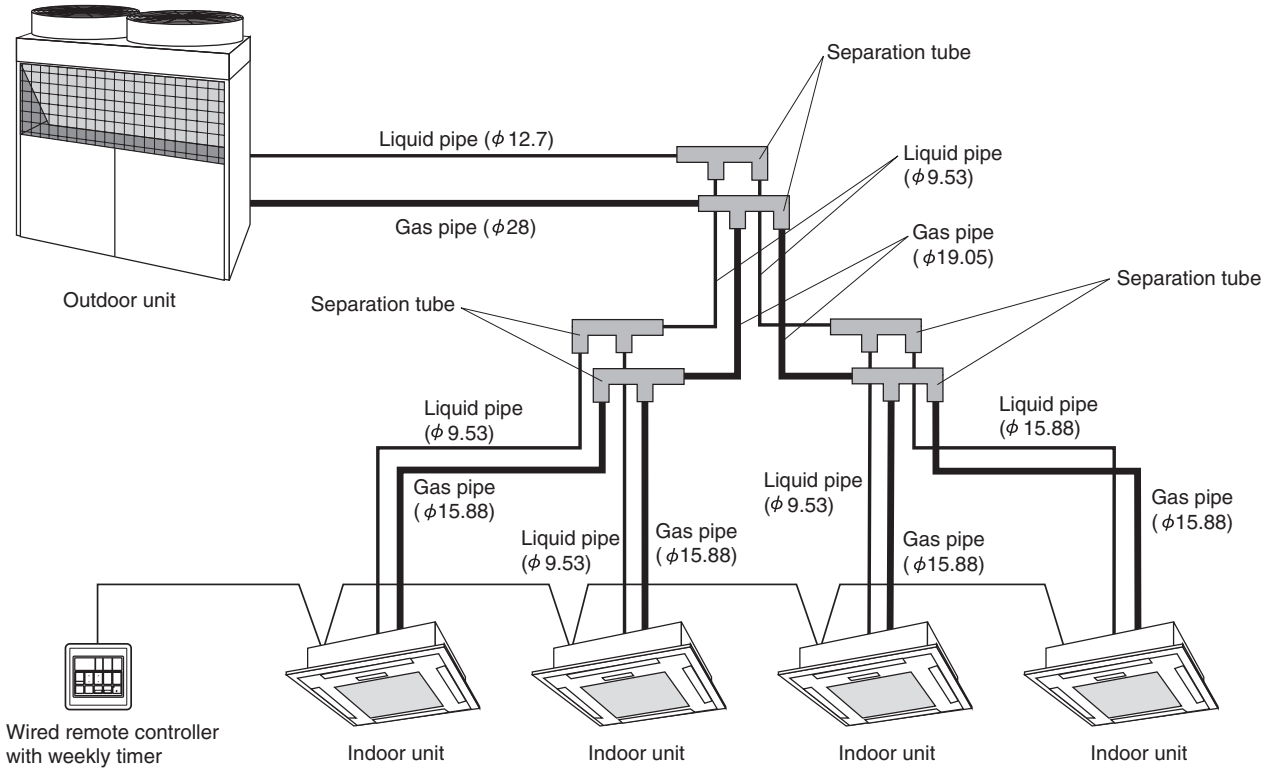
Capacity (BTU)	Cassette (Compact)	Cassette	Duct	Ceiling/Floor	Ceiling
					
45,000		●	●		●
36,000		●	●		●
30,000		●	●		●
24,000 (25,000)		●	●	●	
18,000	●			●	

Indoor Units Line-up for Individual Operation

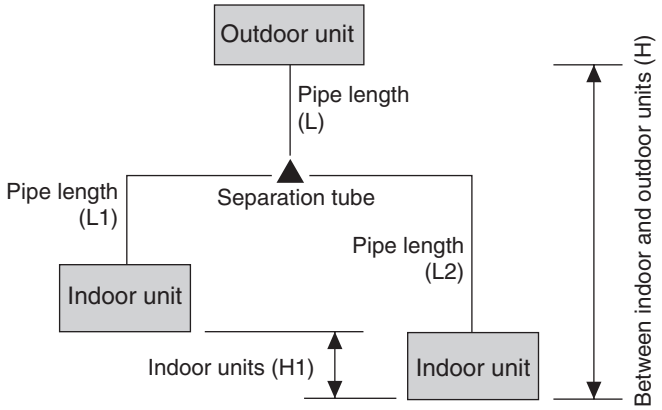
Capacity (BTU)	Cassette	Duct	Ceiling/Floor	Ceiling
				
45,000	●	●		●
30,000	●	●		●
24,000 (25,000)	●	●	●	
18,000			●	

1.2 Simultaneous operation A/C system

(Example) 24,000 model x 4



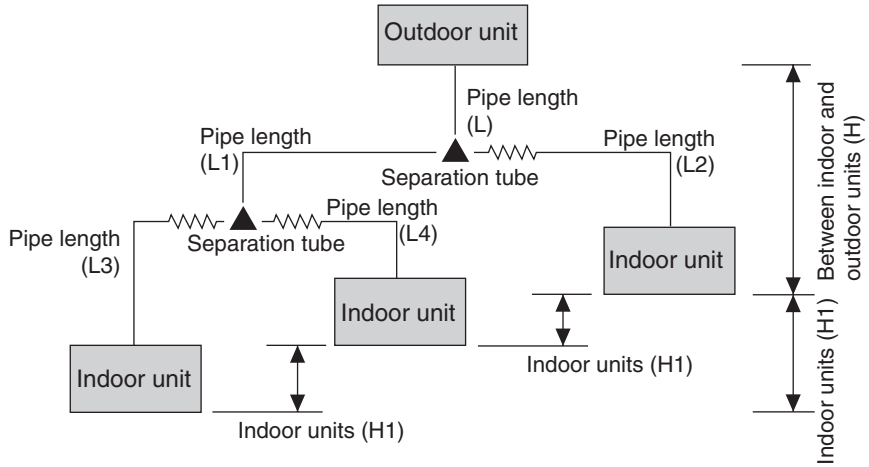
1.2–1 One + One type configuration



(unit: m)

Total length L + L1 + L2	——
Maximum allowable length L + L1, L + L2	**50** **(100)**
Length after branch L1, L2	**10**
Difference length after branch L1 - L2	**5**
Between indoor and outdoor units (H)	**30** **(50)**
Indoor units (H1)	**0.5**

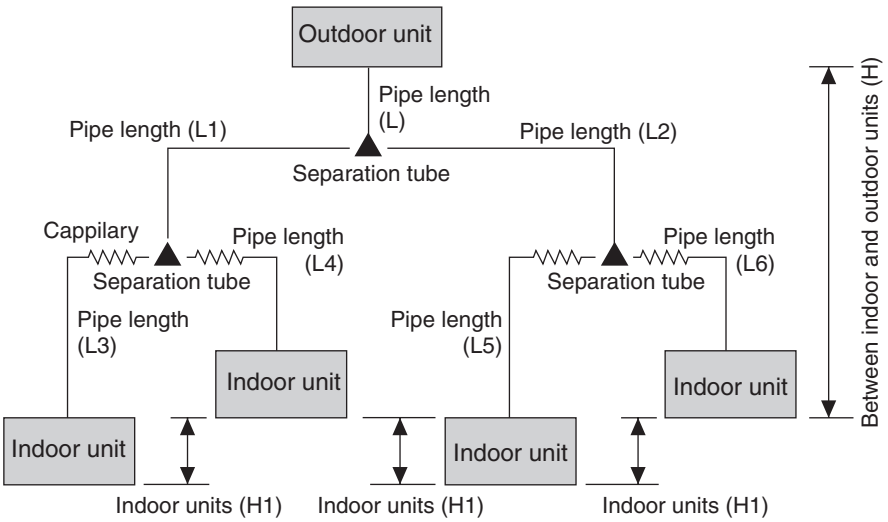
1.2–2 Two + One type configuration



(unit: m)

Total length L + L1 + L2 + L3 + L4	—
Maximum allowable length L + L1 +L3, L + L1 + L4, L + L2	50 (100)
Maximum length after branch L1 + L3, L1 + L4, L2	10
After the branch (L1 + L3) - L2, (L1 + L4) - L2	5
After the branch (L3 - L4)	5
Indoor and outdoor units (H)	30 (50)
Indoor units (H1)	0.5

1.2–3 Two + Two type configuration

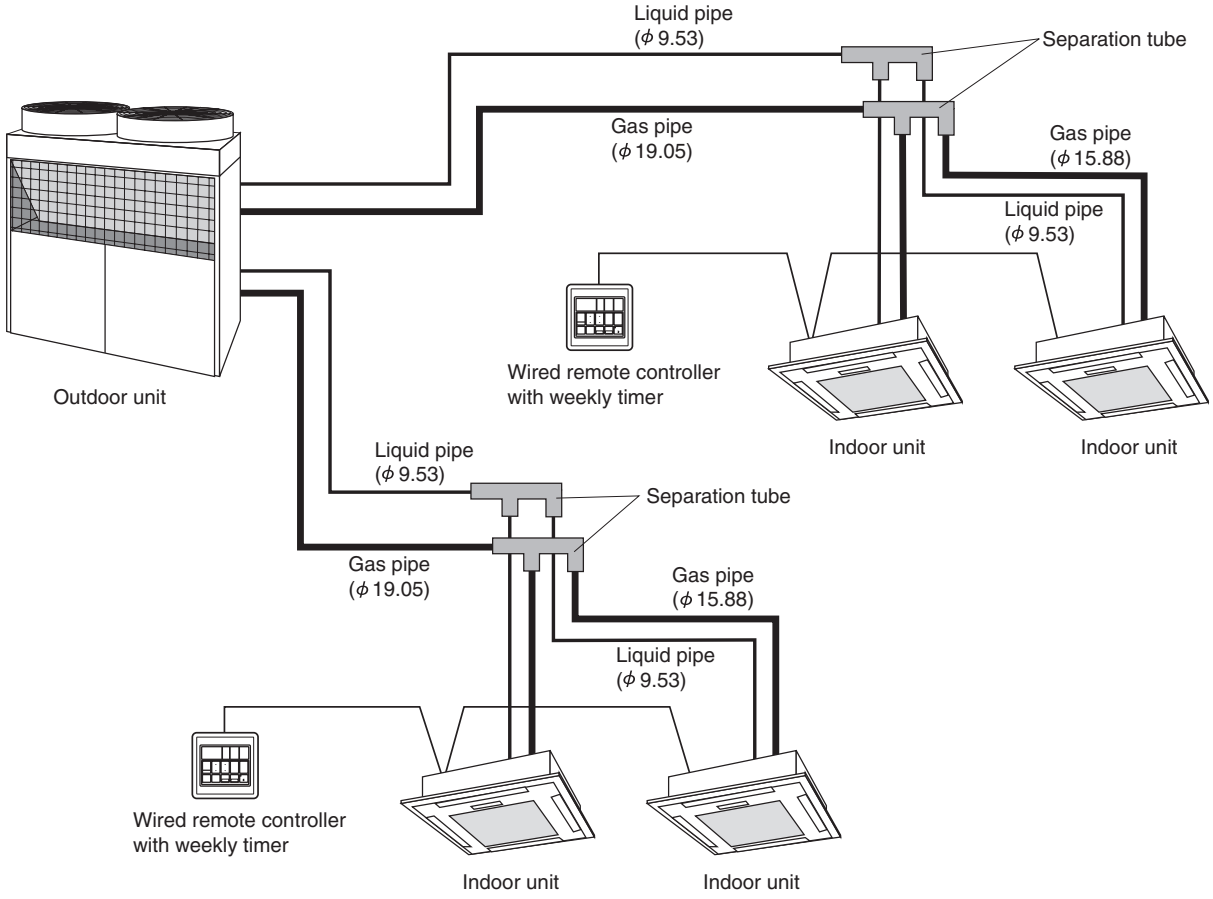


(unit: m)

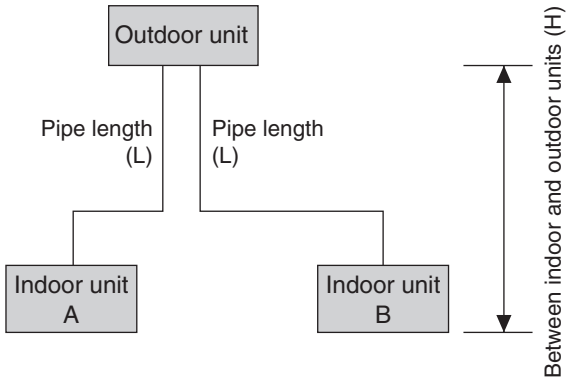
Total length L + L1 + L2 + L3 + L4 + L5 + L6	—
Maximum allowable length L + L1 +L3, L + L1 + L4, L + L2 + L5, L + L2 + L6	50 (100)
Maximum length after branch L1 + L3, L1 + L4, L2 + L5, L2 + L6	10
After the branch (L1 + L3) - (L2 + L5) (L1 + L4) - (L2 + L5) (L1 + L3) - (L2 + L6) (L1 + L4) - (L2 + L6)	5
After the branch (L3 - L4) (L5 - L6)	5
Between indoor and outdoor units (H)	30 (50)
Indoor units (H1)	0.5

1.3 Individual operation A/C system

(Example) 24,000 model x 4



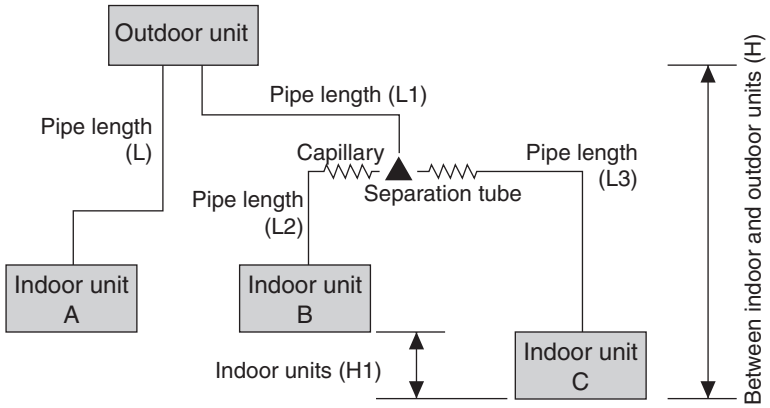
1.3–1 One + One type configuration



(unit: m)

Maximum length (L)	**50**
Between indoor and outdoor units (H)	**30**

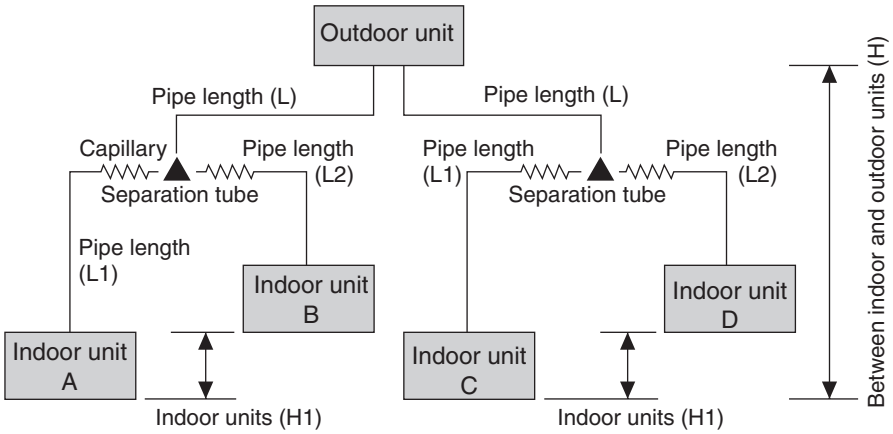
1.3–2 Two + One type configuration



(unit: m)

Total length L + L1 + L2	——
Maximum allowable length L, L1 + L2, L2 + L3	**50**
Length after branch L2, L3	**10**
Difference length after branch L2 - L3	**5**
Between indoor and outdoor units (H)	**30**
Between indoor units (H1)	**0.5**

1.3–3 Two + Two type configuration

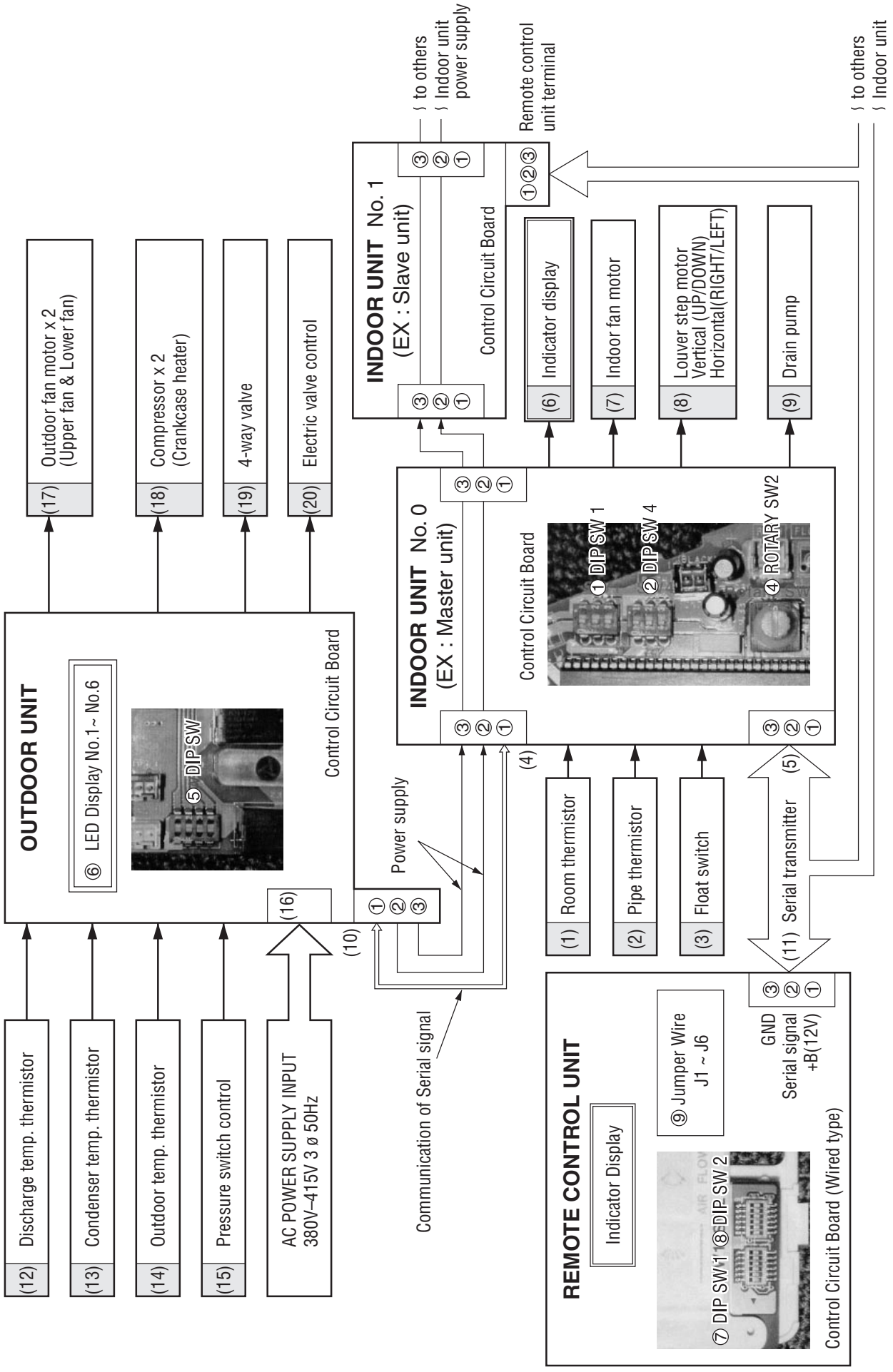


(unit: m)

Total length L + L1 + L2	——
Maximum allowable length L + L1, L + L2	**50**
Length after branch L1, L2	**10**
Difference length after branch L1 - L2	**5**
Between Indoor and outdoor units (H)	**30**
Between Indoor units (H1)	**0.5**

2. MICROPROCESSOR CONTROL AND FUNCTION

2.1 Electric Control Block Diagram



2.2 Electric Control Function Table

INDOOR UNIT TYPE				Large Ceiling	Universal (Ceiling/Floor)	Compact Cassette	Large Cassette	Duct
CAPACITY (BTU/h) ◎ : Simultaneous ● : Individual			45,000	◎ ●			◎ ●	◎ ●
			36,000	◎			◎	◎
			30,000	◎ ●			◎ ●	◎ ●
			24,000 (25,000)		◎ ●		◎ ●	◎ ●
			18,000		◎ ●	◎ ●		
INPUT	(1)	Room Thermistor (Sensor)		○	○	○	○	○
	(2)	Pipe Thermistor (Sensor)		○	○	○	○	○
	(3)	Float Switch Control		×	○	○	○	×
	Thermal Fuse (Within Terminal board)			×	×	×	○	×
	① DIP SW1	No. 1	a) Not used b) High Ceiling mode c) Zone control	○ × ×	○ × ×	○ × ×	× ○ ×	○ × ×
		No. 2 No. 3	Compensation Heating 1 Compensation Heating 2	○ ○	○ ○	○ ○	○ ○	○ ○
	② DIP SW4	No. 1	Not used Indoor Fan Table 1	× ○	○ ×	○ ×	× ○	○ ×
		No. 2	Not used Indoor Fan Table 2 High Ceiling mode 1	× ○ ×	○ × ×	○ × ×	× ○ ×	○ × ×
		No. 3	Not used Indoor Fan Table 3 High Ceiling mode 2	× ○ ×	○ × ×	○ × ×	× ○ ×	○ × ×
	③ Jumper	JP 1 JP 2 JP 3	Not used Compensation Cooling De-icing Prevent temp.	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○
	④ Rotary SW		Select No. of indoor unit	○	○	○	○	○
	(4)	Serial Transmitter-Receiver Signal (Outdoor unit ⟶ Indoor unit)		○	○	○	○	○
	(5)	Remote Transmitter-Forward Signal (Remote control ⟶ Indoor unit) ∗ Right and left switching signal ∗ Right and left swing signal		○ ○ ○	○ ○ ○	○ × ×	○ × ×	○ × ×
OUTPUT	(6)	Indicator Display LED	• Operation • Timer • Swing (UP/DOWN) • Swing (RIGHT/LEFT)	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ×	× × × ×	× × × ×
	(7)	Indoor Fan Motor Speed	• High • Med • Low • S-Low	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
	(8)	Louver Motor	Vertical (UP/DOWN) Horizontal (RIGHT/LEFT)	○ ○	○ ○	○ ×	○ ×	× ×
	(9)	Drain Pump		×	○	○	○	×
	(10)	Serial Transmitter-Forward Signal (Indoor unit ⟶ Outdoor unit)		○	○	○	○	○
	(11)	Remote Transmitter-Receiver Signal (Indoor unit ⟶ Remote Control)		○	○	○	○	○

OUTDOOR UNIT TYPE					Simultaneous Type		Individual Type	
					Cooling	Cooling & Heating	Cooling	Cooling & Heating
CAPACITY (BTU/h)		90,000			○		—	
		45,000 x 2			—		○	
INPUT	(12)	Discharge Temp. Thermistor A			○		○	
		Discharge Temp. Thermistor B			×		○	
	(13)	Condensor Temp. Thermistor A			○		○	
		Condensor Temp. Thermistor B			×		○	
	(14)	Outdoor Temp. Thermistor			○		○	
	(15)	Pressure Switch A			○		○	
		Pressure Switch B			×		○	
	(16)	Receiver Pulse Prevention			—	○	—	○
	⑤ DIP SW		No. 1	Defrost temp. Selected	×	○	×	○
			No. 2	Forced Defrost	×	○	×	○
			No. 3	Pump down	○	○	○	○
			No. 4	Outdoor Fan-low sound	○	○	○	○
	(10)	Serial Transmitter-Forward Signal A (Indoor unit ⟶ Outdoor unit)			○		○	
		Serial Transmitter-Forward Signal B (Indoor unit ⟶ Outdoor unit)			×		○	
OUTPUT	(17)	Outdoor Fan Motor Speed	Fan motor 1	High	○		○	
				Low	○		○	
			Fan motor 2	High	○		○	
				Low	○		○	
	(18)	Compressor A			○		○	
		Compressor B			○		○	
	(19)	4-Way Valve A			×	○	×	○
		4-Way Valve B			×		×	○
	(20)	Electric Expansion Valve A			○		○	
		Electric Expansion Valve B			×		○	
	⑥ LED Display No. 1 ~ No. 6				○		○	
	(4)	Remote Transmitter-Receiver Signal A (Indoor unit ⟶ Outdoor unit)			○		○	
		Remote Transmitter-Receiver Signal B (Indoor unit ⟶ Outdoor unit)			×		○	

2.3 Printed Circuit Board Setting Function

■ INDOOR UNIT

q DIP SW 1

¥ No. 1 : When installing the indoor unit, select the indoor fan speed mode according to the height of the ceiling.

¥ No. 2 and No. 3 : Heating compensation value at heating operation. (However, not included in AUTO mode.)

No.1	Function	Model setting
ĐĐĐ	Not used	Large Ceiling & Others
OFF	Standard	Large Cassette only
ON	High Ceiling Selected	Large Cassette only

No. 2	No. 3	Compensation (¡C)
OFF	OFF	+ 2 deg
ON	OFF	Đ 2 deg
OFF	ON	0 deg

w DIP SW 4

¥ No. 1, No. 2 and No. 3 : Indoor fan speed function (Except Universal, Compact Cassette, and Duct type.)

(1) Capacity Selected (Large Ceiling type only)

Capacity	DIP SW4 Setting mode		
	No. 1	No. 2	No. 3
45,000 BTU/h	OFF	OFF	ON
36,000 BTU/h	OFF	ON	OFF
30,000 BTU/h	OFF	OFF	OFF

(2) Indoor fan speed mode Selected (Large Cassette type only)

	DIP SW4 Setting mode		
	No. 1	No. 2	No. 3
45,000 BTU/h	ON	OFF	OFF
36,000 BTU/h	OFF	ON	OFF
30,000 BTU/h	OFF	OFF	ON
25,000 BTU/h	OFF	ON	ON

③ Jumper

- JP1 : Cooling compensation value at heating operation. (However, not included in AUTO mode.)
- JP3 : To eliminate indoor heat exchange icing, select the de-icing operation temperature.

JP 1	Not used		
JP 2	Wire mode	Compensation (°C)	
	Connect	0 deg	
	Disconnect	+ 2 deg	
JP 3	Wire mode	SET-UP (°C)	RESET (°C)
	Connect	2	6
	Disconnect	4	8

Note) JP3 SET-UP stops the compressor and RESET operates the compressor normally.

④ Rotary SW2

- Sets the unit No. of the indoor unit to MASTER or SLAVE.

(1) Master setting (2) Other Slave setting

Indoor unit No. 1 Indoor unit No. 2 Indoor unit No. 3 Indoor unit No. 4

■ OUTDOOR UNIT

⑤ DIP SW

- No. 1 : This function first melts the outdoor heat exchange ice and inspects the pressure and temperature when servicing and maintaining the outdoor unit at heating operation.
- No. 2 : The Defrost start operation temperature can be changed according to the outside air temperature region environment.
- No. 3 : This function disables the pressure switch when operation is stopped by low pressure switch and Pump Down is not longer possible.
- No. 4 : Set the outdoor fan noise value [2dB (A)] to the low-noise mode. (See par. 2.4-6 "OUTDOOR FAN SPEED CONTROL FUNCTION OPERATION".)

SW	Function	OFF	ON
No. 1	Forced Defrost	——	Defrost start
No. 2	Defrost Temperature Selected	– 10 °C	– 7°C
No. 3	Pump Down (Pressure SW mode)	Operate	Release
No. 4	Outdoor Fan-Low sound	Standard	Fan-Low sound

■ REMOTE CONTROL UNIT

⑦ DIP SW1

- No. 1~4 : Number of connected indoor unit setting
- No. 5, 6 : System control selected

unit	No.1	No.2	No.3	No.4	No.5	No.6	System Control Selected
1	OFF	OFF	OFF	OFF	OFF	OFF	Remote control 1 : Indoor 1
2	OFF	OFF	OFF	ON	OFF	ON	Remote control 1 : Indoor n ≦ 16
3	OFF	OFF	ON	OFF			
4	OFF	OFF	ON	ON			

⑧ DIP SW2

- No. 1~6 : Function selected

SW	Function	ON	OFF
No.1	Selected mode	Cooling only	Reverse
No.2	Auto restart	Yes	No
No.3	Not used	——	——
No.4	Not used	——	——
No.5	Not used	——	——
No.6	Memory back-up	Yes	No

⑨ JUMPER WIRE

- No. J1~J6 : Function selected

No	Function	Short	Open
J 1	Time reduce 1/10	Yes	No
J 2	Not used	——	——
J 3	Remote controller type (∗)	1	——
J 4	Auto-changeover	Yes	No
J 5	Not used	——	——
J 6	Not used	——	——

Note ∗) JP3-1 : Multi system for buildings

2.4 OPERATION

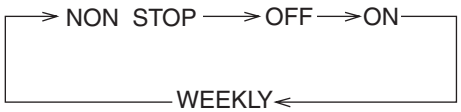
2.4–1 TIMER CONTROL

There are three timer modes: “OFF TIMER”, “ON TIMER” and “WEEKLY TIMER”.

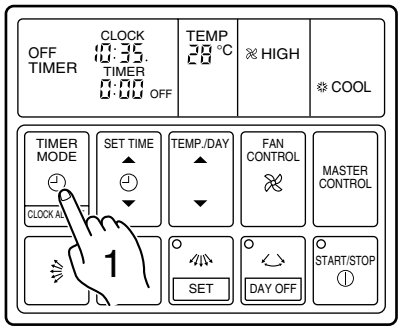
(1) Set the clock time when the unit is in the stop mode (only the current time will be shown on the remote control unit display).

(2) While adjusting the current clock time, do not use other remote control functions.

(3) Each time the TIMER button is pressed, the remote control unit display will change in the order shown below:



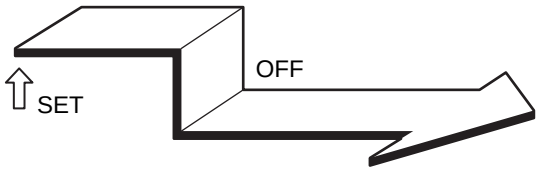
Remote control button selected



1) OFF timer

Use when going to bed or otherwise to stop operation. When the clock reaches the set time, the air conditioner will be turned off.

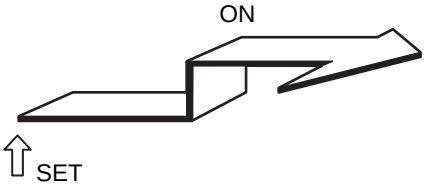
OFF timer setting



2) ON timer

When the timer mode is set to “ON TIMER”, operation automatically starts when the set time has elapsed.

ON timer setting



3) WEEKLY timer

Use the weekly timer to set operating times for each day of the week.

Weekly Timer Features

- Set different operating times for each day of the week.
- Set one or two operating spans (one or two ON times and one or two OFF times) per day.
- Set time to a resolution of 5 minutes.
- OFF time can be carried over to the subsequent day.
- Use the “DAY OFF” setting to cancel operation for any day of the coming week (one-time cancellation).

Setting Up the Weekly Timer Operation

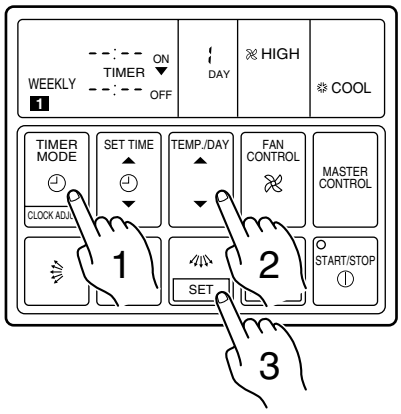
Press the START/STOP button to stop the air conditioner, and then proceed as follows.

1. **Press the TIMER MODE button so that “WEEKLY” appears on the display.**

   The display now shows the current day (by DAY CODE), the first ON and OFF times for the day (the “WEEKLY 1” times), the fan speed, and the operating mode.

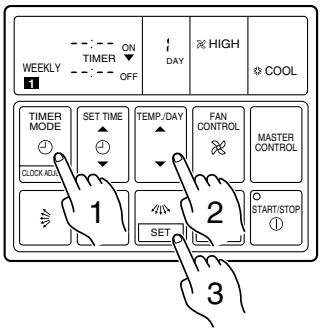
   The top time value gives the ON time, and the bottom value gives the OFF time.

   If either time is not set, the corresponding time display is blank “ - - : - - ”.



2. **Press the SET TEMP./DAY button to select the day that you want to set up.**
   ▲ : Use to advance the day forward.
   ▼ : Use to turn the day back.

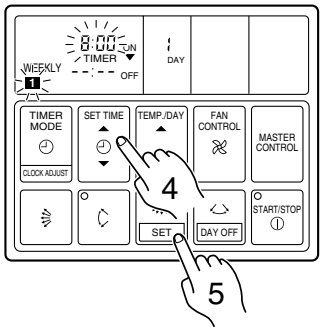
DAY CODE	1	2	3	4	5	6	7
DAY OF THE WEEK	MON	TUE	WED	THU	FRI	SAT	SUN



3. **Hold the SET button down for 3 seconds.**
   The "WEEKLY 1" ON time starts flashing, and the fan speed and operating mode displays go off.

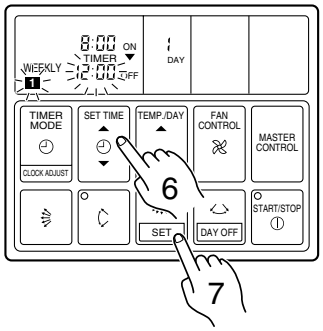
4. **Press the SET TIME button to set the day's first ON time.**
   ▲ : Use to advance the day forward.
   ▼ : Use to turn the day back.
   (Press once to move the time 5 minute; hold down and the time will move 10 minutes at a time.)

5. **Press the SET button.**
   This registers the first ON time setting for the selected day.
   The ON time display stops flashing, and the "WEEKLY 1" OFF time starts flashing.



6. **Press the SET TIME button to set the day's first OFF time.**
   The earliest OFF time you can set is 5 minutes after the ON time. The latest OFF time is 23:55 on the subsequent day.

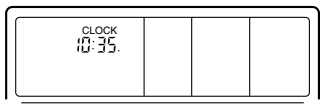
7. **Press the SET button.**
   This registers the first OFF time for the day, completing the "WEEKLY 1" settings for that day.
   The display switches to "WEEKLY 2", and the day's second ON time begins flashing.



8. **Repeat the operations described in Steps 4 to 7 to set the second ON and OFF times for the day (the "WEEKLY 2" times).**
   When you press the SET button after setting the "WEEKLY 2" OFF time, the system registers the "WEEKLY 2" settings for the day and returns you to the "WEEKLY 1" ON time setup process. (The first ON setting reappears and begins flashing.)
   You can review your settings by pressing the SET button. Each press moves you to the next setting, as follows.

   → WEEKLY 1 ON → WEEKLY 1 OFF → WEEKLY 2 ON → WEEKLY 2 OFF →

If the timer is not set, press the SET button with the time display blank " - - : - - ", and perform next operation.



9. **Press the SET TEMP./DAY button to select another day for setup. The repeat steps 4 to 8 above to set the ON and OFF times for that day.**

10. **When you have finished setting all of the times, hold down the SET button for 3 seconds.**
    The WEEKLY display flashes for 3 seconds while the new WEEKLY TIMER settings are registered, and then the clock display reappears.

NOTES:

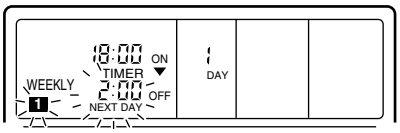
(1) If no time values are flashing, the clock display will automatically reappear after 15 seconds if no buttons are pressed.

(2) A flashing time value indicates that the system is in time-setting mode. To return to the clock display you must hold down the SET button for 3 seconds.

(3) You do not need to set values for both WEEKLY 1 and WEEKLY 2. If you wish, you can set values only for WEEKLY 1 or only for WEEKLY 2.

(4) The allowable range for the day's time settings is shown below.

(5) If you set the OFF time to occur on the day following the ON time, the NEXT DAY caption appears on the display.

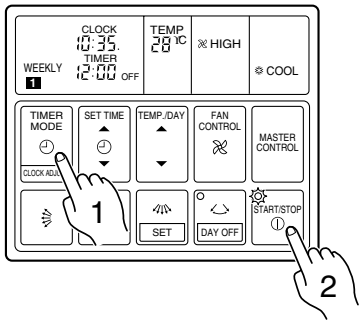


Starting Weekly Timer Operation

1. **Press the TIMER MODE button so that "WEEKLY" appears on the display.**
2. **Press the START/STOP button to start operation.**
   (This step is not necessary if the air conditioner is already running.)

   Weekly timer operation starts, and the operation lamp comes on.
   (If the current time is between the first or second ON and OFF time settings for the current day, the air conditioner will start. Otherwise the air conditioner will remain off.)

   The day display is replaced by the temperature display.
   The upper time display now shows the current time, and the lower time display shows the next scheduled ON or OFF time.



To Stop Weekly Timer Operation

- To stop weekly timer while leaving the air conditioner running:

  Press the TIMER MODE button to select NONSTOP, OFF TIMER, or ON TIMER.

- To stop weekly timer operation and the air conditioner also:

  Press the START/STOP button.

Reviewing the Time Settings

Press the START/STOP button to stop the air conditioner, and then proceed as follows.

1 Press the TIMER MODE button so that "WEEKLY" appears on the display.

2 Press the SET TEMP./DAY button to select the day that you want check.

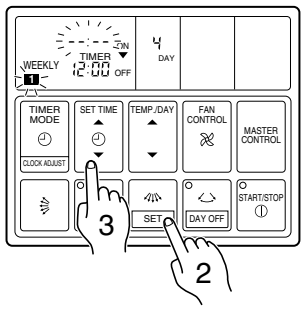
3 Press the SET TIME button (▲ or ▼) to switch between the "WEEKLY 1" or "WEEKLY 2" time displays.

Cancelling Selected Time Settings

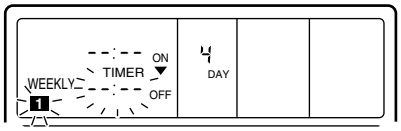
Press the START/STOP button to stop the air conditioner, and then proceed as follows.

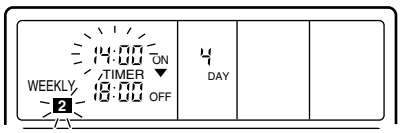
1. **Carry out steps 1 to 3 of the "Setting Up the Weekly Timer Operation" procedure to select the day you want to edit.**
2. **Press the SET button to select the ON time that you want to cancel.**

   Be sure to select an ON time (the upper time display).
3. **Hold down the ▼ side of the SET TIME button until the time display becomes blank " --:-- ".**
4. **Press the SET button.**
   The first OFF time setting ("WEEKLY 1" OFF time) is deleted and replaced by a flashing blank pattern " --:-- ".
5. **Press the SET button again.**
   This completes deletion of the "WEEKLY 1" ON/OFF settings. The second ON time setting ("WEEKLY 2" ON time) appears and flashes.
   If you wish to delete other time settings, repeat steps 2 through 5.
6. **Once the setting has been canceled, hold down the SET button for 3 seconds.**
   The WEEKLY display flashes briefly, and then the clock display appears.



Example : Clearing the "WEEKLY 1" ON/OFF times for day 4 (Thursday).



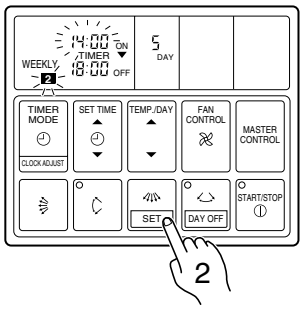


To Change Selected Time Settings

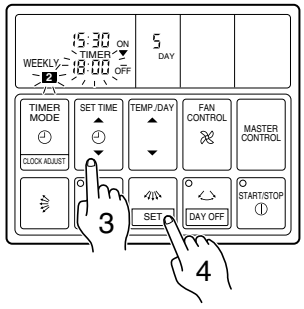
Press the START/STOP button to stop the air conditioner, and then proceed as follows.

1. **Carry out steps 1 to 3 of the "Setting Up the Weekly Timer Operation" procedure to select the day you want to edit.**
2. **Press the SET button to select the time that you want to change.**
   The selected setting flashes on the display. Each press moves you to the next setting for the selected day, as follows.

   →WEEKLY 1 ON → WEEKLY 1 OFF → WEEKLY 2 ON → WEEKLY 2 OFF →
3. **Press the SET TIME button to change the time setting.**
4. **Press the SET button.**
   The new setting overwrites the previous setting.
5. **Once the setting has been canceled, hold down the SET button for 3 seconds.**
   The WEEKLY display flashes briefly, and then the clock display appears.



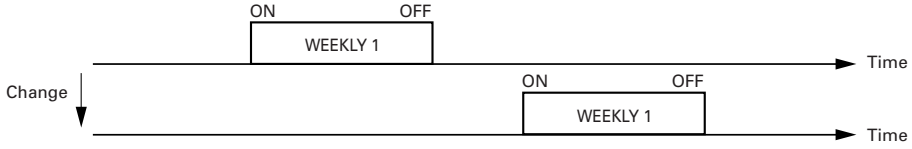
Example : Changing the "WEEKLY 2" ON setting for day 5 (Friday) from 14:00 to 15:30.



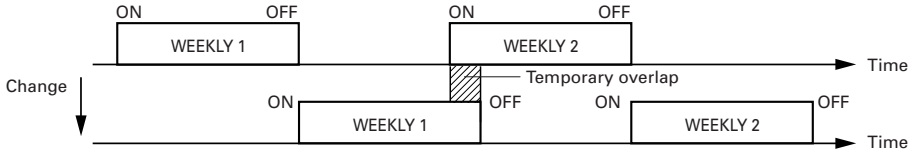
NOTES:

In the following cases, cancel the set time prior to making the required amendments.

(1) If you want to change the ON time to a time that is later than the currently set OFF time.



(2) If the change would cause a temporary overlap between the first and second ON/OFF time spans.



About the DAY OFF

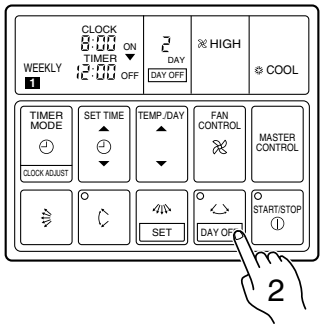
- Use the DAY OFF setting to switch off timed operation for a selected day in the coming week.
- This is a temporary, one-time setting. The DAY OFF setting is automatically cleared as soon as the specified day passes.

Using the DAY OFF Setting

Press the START/STOP button to stop the air conditioner, and then proceed as follows.

1. **Carry out steps 1 to 2 of the "Setting Up the Weekly Timer Operation" procedure to select the day that you want to set as the DAY OFF.**
2. **Press the DAY OFF button.**
   The DAY OFF setting is registered, and the DAY OFF caption appears on the display.

- To cancel the DAY OFF setting:
  You can cancel the setting by pressing the DAY OFF button again.



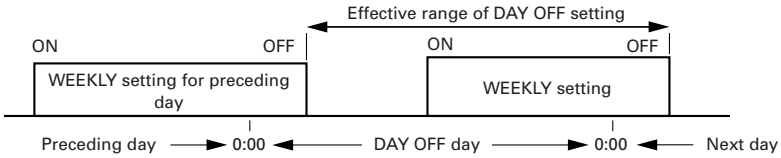
Example : To switch off timed operation for day 2 (Tuesday).

NOTES:

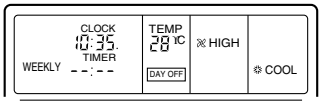
(1) The DAY OFF setting is only available for days for which weekly time settings already exist.

(2) You can make this setting for any of the next seven days (counting from the current day).

(3) The DAY OFF setting is effective over the range illustrated below. The Weekly setting for which an ON time has been set is eligible for the day in which the DAY OFF has been set.



(4) The display on the clock's lower line will usually be " ----- " for the DAY OFF set day during Weekly operations.



Precautions during setup

Setup is not possible in the following cases, so amend the time.

- If you set an ON time while leaving the OFF time setting blank:
  Nothing will happen when you press the SET button.
  To proceed, press the SET TIME button and enter an appropriate setting.
- When an attempt is made to set only the OFF time.
  Nothing will happen when you press the SET TIME button.
  Press the SET button and amend the entry for the ON time.
- ON and OFF times cannot be set to the same value.
- The OFF time cannot be set earlier than the ON time.
- The WEEKLY 2 settings cannot be set earlier than the WEEKLY 1 settings.
- The WEEKLY 1 and WEEKLY 2 time spans cannot overlap.

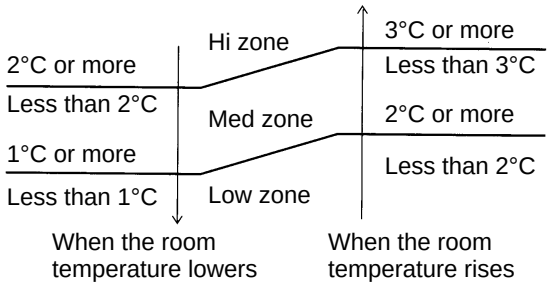
2.4–2 FAN CONTROL

1. “AUTO” position

1) COOLING OPERATION

Air flow mode is set automatically in accordance with the condition “(Room temp. — Set temp.)” as shown at the right.

Fan speed zone



2) HEATING OPERATION

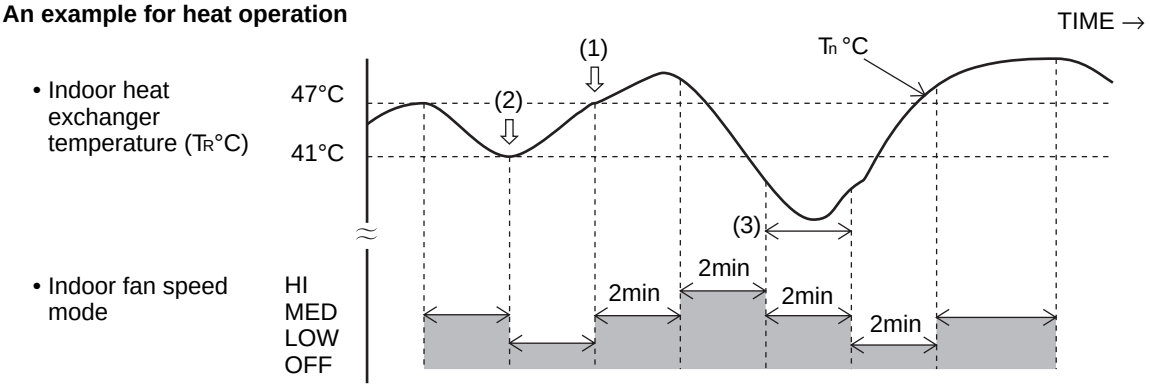
(1) When the indoor heat exchanger temperature reaches 47°C or more, the fan mode switches to the next higher position (“LOW” → “MED”, “MED” → “HIGH”).

(2) When the indoor heat exchanger temperature drops below 41°C while the compressor operates, the fan mode switches to the next lower position (“HIGH” → “MED”, “MED” → “LOW”).

(3) After switching the fan mode, it does not switch again within 2 minutes.

(4) When “FAN CONTROL” is switched to “AUTO” while the unit is operated at the “FAN CONTROL” position of “HIGH”, “MED” or “LOW”, the unit operation is performed in the “MED” fan mode.

An example for heat operation

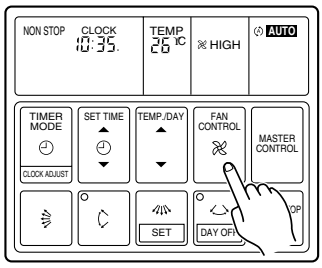


3) FAN OPERATION

The indoor fan is repeatedly turned on and off at the interval of 1 min. in the LOW mode.

2. “LOW”, “MED” and “HIGH” position

The indoor fan operates at the air flow set in the FAN CONTROL mode.

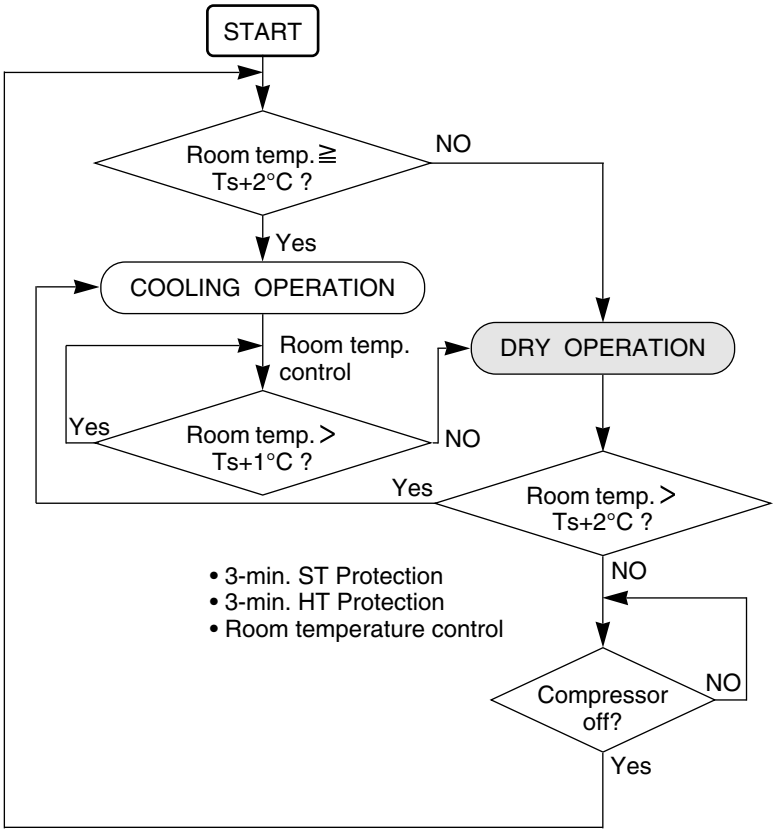


2.4–3 MASTER CONTROL

1) "AUTO" position

A : COOLING & DRY operation (COOLING ONLY MODEL)

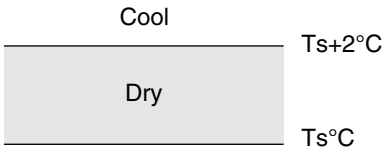
Operation flow chart



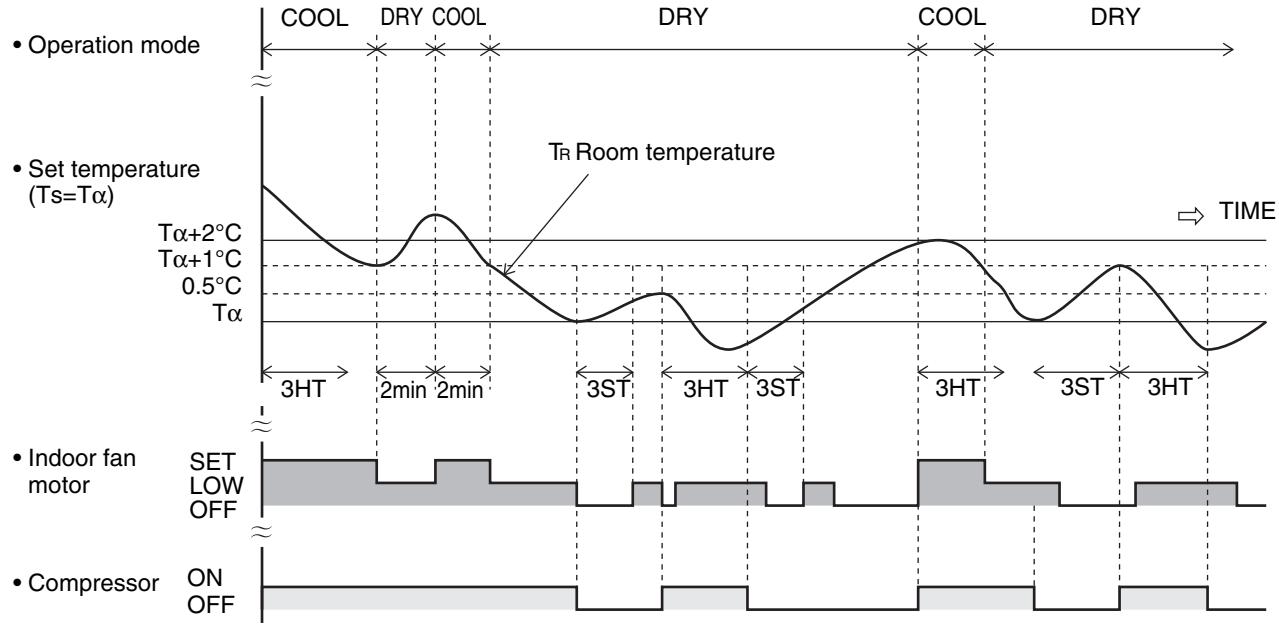
(1) When starting the operation at "AUTO" or when switched to "AUTO" from other modes, if the room temperature is higher than the set temperature +2°C (Room temp. ≧Set temp. (Ts) +2°C), "COOL" mode is set automatically and an air conditioner operates until the room temperature reaches the condition "Room temp. ≦ Set temp. (Ts) +1°C".

(2) When the room temperature is less than the set temperature (Ts) +2°C at the start of operation or changing into "AUTO", or after the room temperature reaches the condition "Room temp.< Set temp. (Ts) +2°C", the unit is changed into the "DRY" mode.

"Room Temp. ≦Set Temp. (Ts) +2°C"



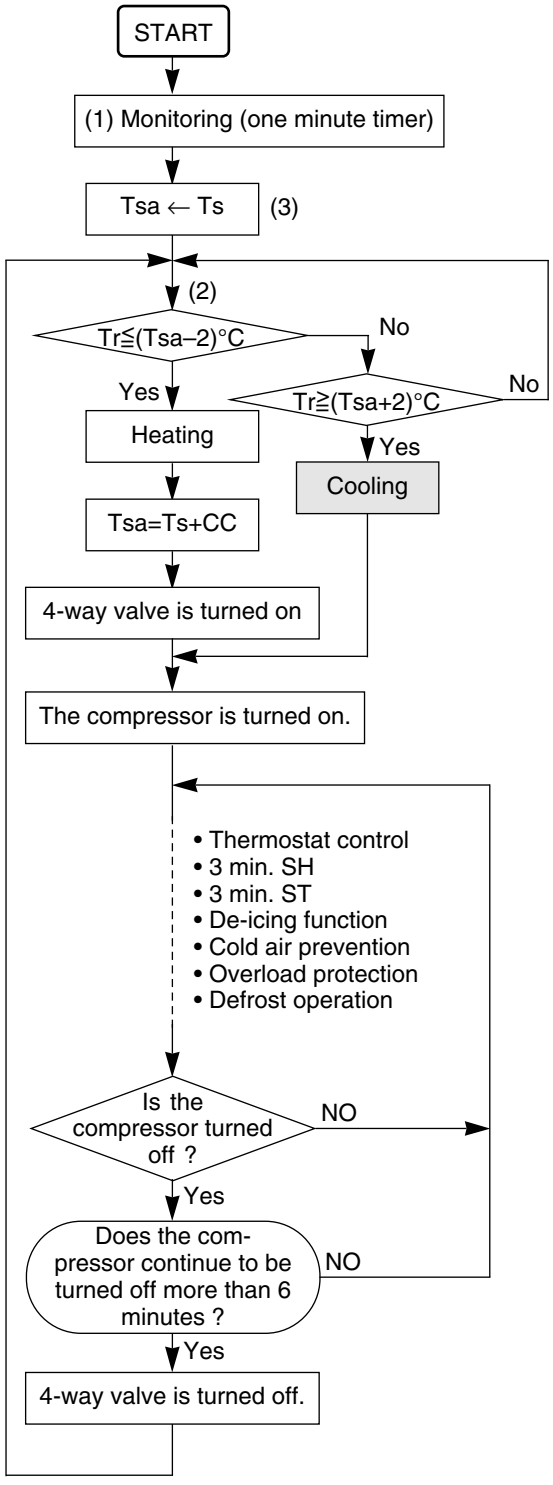
Cooling or Dry temperature control operation time chart



B : AUTO CHANGEOVER operation [REVERSE CYCLE]

- When AUTO CHANGEOVER operation is selected, the air conditioner selects the appropriate operation mode (Cooling or Heating) in response to your room's temperature.
- When AUTO CHANGEOVER operation first selected, the fan will operate at very LOW speed for about one minute, during which time the unit detects the room conditions and selects the proper operating mode.

Auto changeover flow chart



(1) Monitoring (Room temperature detection)

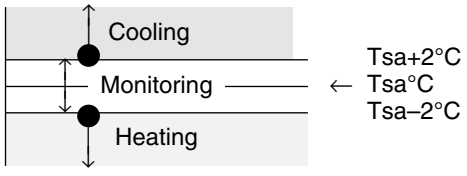
* The monitoring is that the indoor fan motor rotates intermittently (0.5sec ON at Low/2.0sec OFF) for 60 seconds to detect the room temperature (Tr) after the unit starts with the MASTER CONTROL of AUTO.
* In case that the 3-min delay function actuates or is actuating, the monitoring continues until the 3-min delay function is expired and furthermore 30 seconds elapses.
* During the monitoring :
  - Indoor fan motor : S–Lo
  - Outdoor fan motor Hi : OFF
  - Outdoor fan motor Lo : OFF
  - 4-way valve
  - Compressor : OFF

(2) Auto operation

* The cooling operation starts when the monitoring is expired and then the detected room temperature (Tr) is given in the formula [Tr≧(Tsa+2)°C].
* The heating operation starts when the monitoring is expired and then the detected room temperature (Tr) is given in the formula [Tr≦(Tsa–2)°C].
* The monitoring continues when the detected room temperature (Tr) is given in the following formula.

  [(Tsa–2)°C < Tr < (Tsa+2)°C]
* The cooling or heating operation is performed in accordance with the microcomputer functions such as thermostat control, 3-min delay function, etc.
* When the compressor continues to be in the OFF state for 6 minutes by the thermostat control in either of the cooling or heating, it is switched to the monitoring.

Room temperature (T_R) control zone

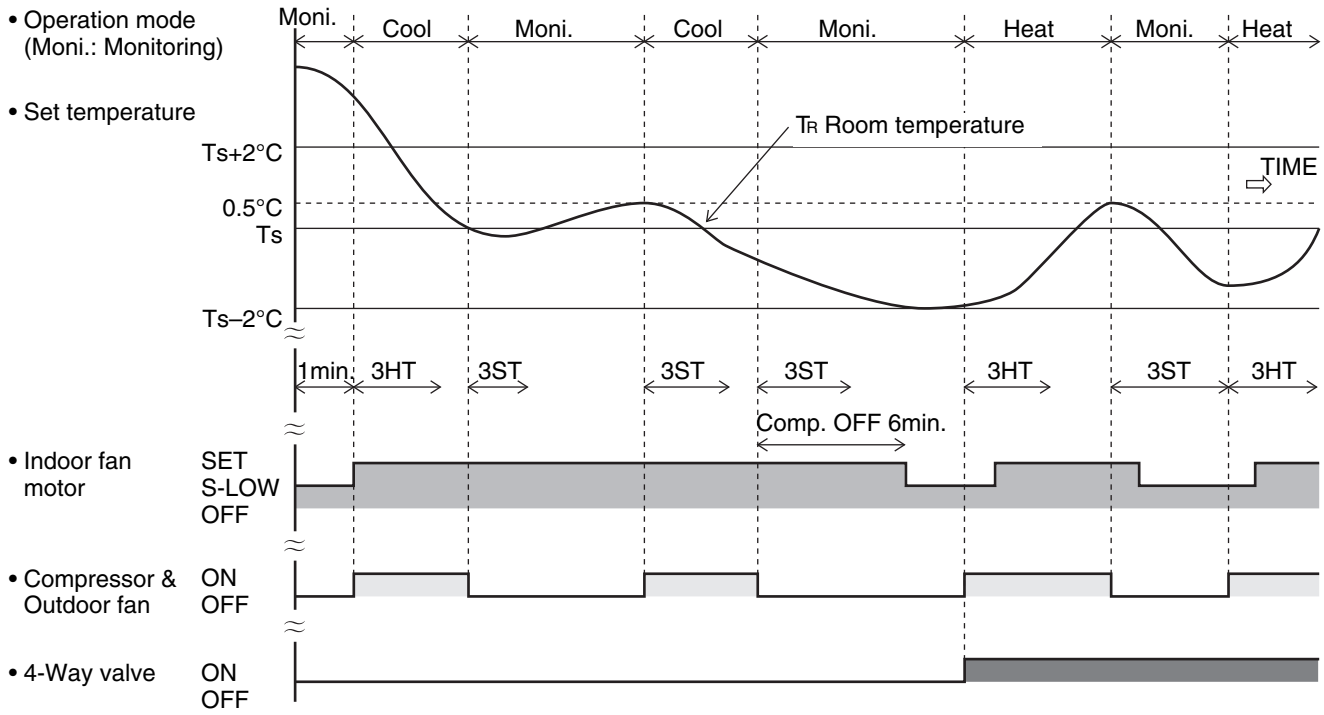


(3) Tsa : Set temperature in AUTO operation

* During cooling operation or after switching to monitoring from cooling operation, Tsa is identical to the temperature (Ts) selected out of the THERMOSTAT.

* During heating operation or after switching to monitoring from heating operation, “Tsa” is a value which the heating correction coefficient (CC) is added to the temperature (Ts) select out of the THERMOSTAT.
  (Tsa=Ts+CC)
  [Heating correction coefficient (CC) : See page 10]
* When the set temperature of the THERMOSTAT (Ts) is changed, the last temperature has priority over the former set temperature.
* Even though the set temperature is changed to switch from cooling to heating or from heating to cooling, such a switching is carried out after the compressor continues to be in the OFF state for 6 minutes by the thermostat control.

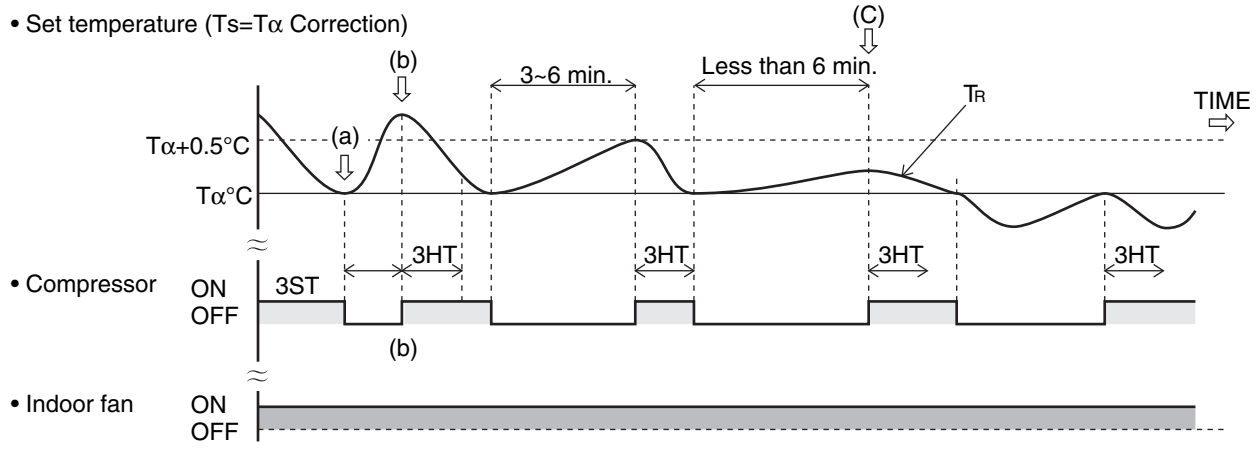
An example for AUTO CHANGEOVER TEMPERATURE CONTROL time chart



2) “COOL” position:

(1) When using the cooling mode, set the temperature to a value lower than the current room temperature.
(2) If it is set higher than the current room temperature the unit will not enter the cooling mode and only the fan will operate.

An example for COOLING TEMPERATURE CONTROL time chart (Manual setting)



(a) Compressor turned OFF : $T_R < T\alpha$
(b) Compressor turned ON : $T_R \geqq T\alpha+0.5°C$ (In case of 3 to 6 minutes)
(c) Compressor turned ON : $T_R \leqq T\alpha$ (In case that the compressor stops more than 6 minutes)

3) "HEAT" position:

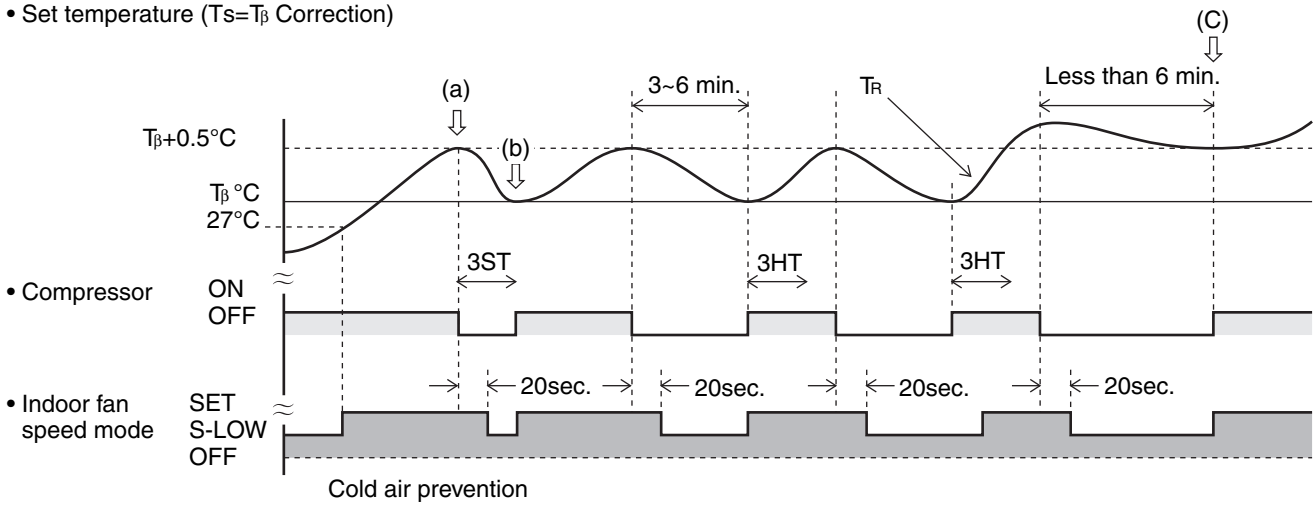
(1) Set the temperature higher than the current room temperature. If it is set to a lower temperature, heating will not start.

(2) For about 3 ~ 5 minutes after the start of heating, the fan will operate very slowly, and then switch to the selected fan setting. This period allows the indoor unit's heat exchanger to warm-up before emitting warm air.

(3)
temporarily interrupted.

An example for HEATING TEMPERATURE CONTROL time chart (Manual setting)

• Set temperature (Ts=Tβ Correction)



(a) Compressor OFF : $T_R \geqq T_\beta+0.5°C$
(b) Compressor ON : $T_R < T_\beta$
(c) Compressor ON : $T_R < T_\beta+0.5°C$ (When the compressor stops after less than 6min.)

During defrosting, the OPERATION indicator lamp flashes 3 sec. ON and 1 sec. OFF, and the heating mode will be

4) "FAN" position:

(1) In this position, the fan operates alone to circulate air. The room temperature will not be changed.

(2) Operates at the air flow set in the FAN CONTROL mode.

(3) When only the "FAN" mode is being used, setting to "AUTO" is equivalent to set it at "MED".

2.4–4 LOUVER CONTROL

(1) ADJUSTING THE DIRECTION OF AIR CIRCULATION

Instructions relating to heating (∗) are applicable only to "HEAT & COOL MODEL" (Reverse Cycle).

Begin air conditioner operation before performing this procedure.

Vertical Air Direction Adjustment

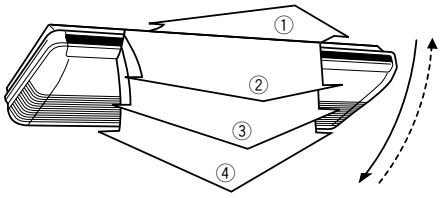
This instructions are applicable to "CEILING SUSPENSION TYPE", "FLOOR CONSOLE/UNDER CEILING DUAL TYPE" and "CASSETTE TYPE".

Press the VERTICAL AIR FLOW DIRECTION SET button.

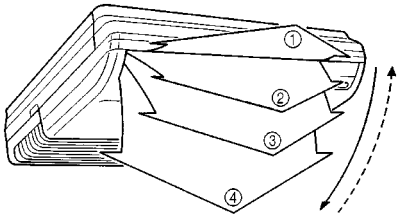
Each time the button is pressed, the air direction range will change as follows:

The remote controller's display does not change.

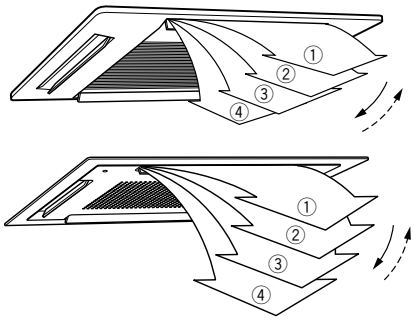
■ CEILING SUSPENSION TYPE



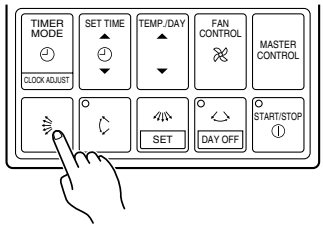
■ FLOOR CONSOLE/UNDER CEILING DUAL TYPE



■ CASSETTE TYPE



- Use the air direction adjustments within the ranges shown above.
- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  During Cooling mode : Horizontal flow ①
  ∗ During Heating mode : Downward flow ④
- During AUTO mode operation, for the first minute after beginning operation, airflow will be horizontal ①; the air direction cannot be adjusted during this period.



Example : When set to vertical air direction.

⚠ DANGER!

Never place fingers or foreign objects inside the outlet port could cause personal injury.

- Always use the remote controller's AIR FLOW DIRECTION button to adjust the UP/DOWN air direction flap or RIGHT/LEFT air direction louvers. Attempting to move them manually could result in improper operation; in this case, stop operation and restart. The flaps should begin to operate properly again.
- During use of the Cooling mode, do not set the UP/DOWN air direction flap in the ④ position for long periods of time, since water vapor may condense near the outlet port and drops of water may drip from the air conditioner.
- When used in a room with infants, children, elderly or sick persons, the air direction and room temperature should be considered carefully when making settings.

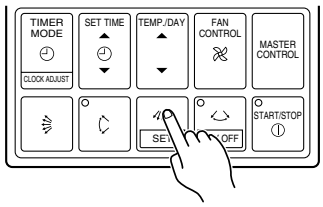
Horizontal Air Direction Adjustment

This instructions are applicable to “CEILING SUSPENSION TYPE” and “FLOOR CONSOLE/UNDER CEILING DUAL TYPE”.

Press the HORIZONTAL AIR FLOW DIRECTION SET button.

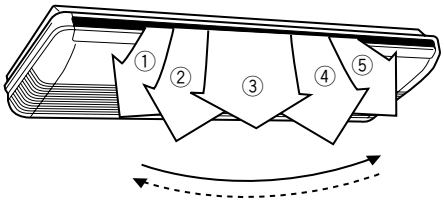
Each time the button is pressed, the air direction range will change as follows:

The remote controller’s display does not change.

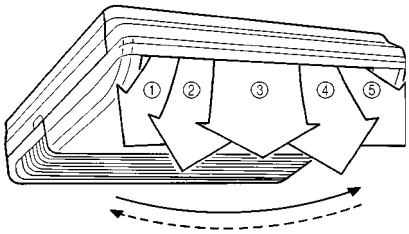


Example : When set to horizontal air direction.

■ **CEILING SUSPENSION TYPE**



■ **FLOOR CONSOLE/UNDER CEILING DUAL TYPE**



(2) SWING OPERATION

Instructions relating to “the indoor unit’s indicator lamp” (∗∗) are applicable to “CEILING SUSPENSION TYPE” and “FLOOR CONSOLE/UNDER CEILING DUAL TYPE”.

Begin air conditioner operation before performing this procedure.

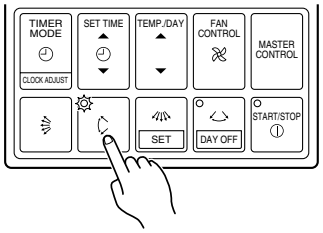
To select Vertical airflow SWING Operation

This instructions are applicable to “CEILING SUSPENSION TYPE”, “FLOOR CONSOLE/UNDER CEILING DUAL TYPE” and “CASSETTE TYPE”.

Press the VERTICAL SWING button.

The remote controller’s VERTICAL SWING lamp (orange) **and indoor unit’s SWING indicator lamp (VERTICAL SWING) (orange) will light up.

In this mode, the UP/DOWN air direction flaps will swing automatically to direct the air flow both up and down.



Example : When set to vertical swing.

To Stop Vertical airflow SWING Operation

Press the VERTICAL SWING button once again.

The remote controller’s VERTICAL SWING lamp **and indoor unit’s SWING indicator lamp (VERTICAL SWING) will go out. Airflow direction will return to the setting before swing was begun.

Instructions relating to "the indoor unit's indicator lamp" (**) are applicable to "CEILING SUSPENSION TYPE" and "FLOOR CONSOLE/UNDER CEILING DUAL TYPE".

About Vertical Airflow Swing Operation

- The range of swing is relative to the currently set airflow direction.
- If the swing range is not as desired, use the remote controller's VERTICAL AIR FLOW DIRECTION SET button to change the range of swing.
- The SWING operation may stop temporarily when the air conditioner's fan is not operating, or when operating at very low speeds.
- During use of the Cooling mode, do not set the air UP/ DOWN direction flap, in the ④ position for long periods of time, since water vapor may condense near the outlet port and drops of

Air flow direction set	Range of swing
①	① to ③
②	② to ④
③	② to ④
④	① to ④ (All range)

Air direction range (See page 22)

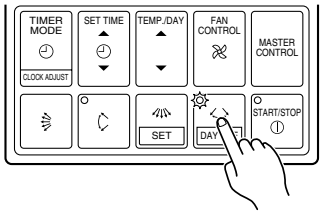
To select Horizontal Airflow SWING Operation

This instructions are applicable to "CEILING SUSPENSION TYPE" and "FLOOR CONSOLE/UNDER CEILING DUAL TYPE".

Press the HORIZONTAL SWING button.

The remote controller's HORIZONTAL SWING lamp (orange) **and indoor unit's SWING indicator lamp (HORIZONTAL SWING) (orange) will light up.

In this mode, the RIGHT/LEFT air direction louvers will swing automatically to direct the airflow both right and left.



Example : When set to horizontal swing.

To Stop Horizontal airflow SWING Operation

Press the HORIZONTAL SWING button once again.

The remote controller's HORIZONTAL SWING lamp **and indoor unit's SWING indicator lamp (HORIZONTAL SWING) will go out. Airflow direction will return to the setting before swing was begun.

About Horizontal Airflow Swing Operation

- The range of swing is relative to the currently set airflow direction.
- If the swing range is not as desired, use the remote controller's HORIZONTAL AIR FLOW DIRECTION SET button to change the range of swing.
- The SWING operation may stop temporarily when the air conditioner's fan is not operating, or when operating at very low speeds.

Air flow direction set	Range of swing
①	① to ⑤ (All range)
②	① to ③
③	② to ④
④	③ to ⑤
⑤	① to ⑤ (All range)

Air direction range (See page 23)

2.4–5 DRAIN PUMP OPERATION

(1) When a compressor starts, the drain pump starts simultaneously.
(2) The drain pump operates continuously for 3 minutes after the compressor is turned off.
(3) When the compressor stops by the “Indoor heat exchanger de-icing function”, the drain pump is turned off in 1 hour after the compressor stops.
(4) When the water level in the drain pan rises up and then the float switch functions:
  ① Microcomputer stops the compressor and indoor and outdoor fan motor operation.
  ② Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
(5) When the float switch turns ON continuously for 3 min., “FAILURE INDICATION” operates.
(6) When the float switch turns OFF within 3 min., the unit starts cooling operation.

2.4–6 OUTDOOR FAN SPEED CONTROL FUNCTION OPERATION

- The Outdoor Fan speed operates in the following mode, depending on the outside temperature condition.
- Outdoor Fan speed switching has a ±1 °C differential relative to the following temperature setting table.

■ Simultaneous type : Cooling operation

OUTDOOR DIP SW - No.4	OFF		ON	
Outdoor Fan motor	Right	Left	Right	Left
T > 25 °C	Hi	Hi	Hi	STOP
25 °C ≧ T > 10 °C	Lo	Lo	Lo	Lo
10 °C ≧ T	Lo	STOP	Lo	STOP

T °C : Outdoor Temperature thermistor

■ Simultaneous type : Heating operation

OUTDOOR DIP SW - No.4	OFF		ON	
Outdoor Fan motor	Right	Left	Right	Left
T > 16 °C	Intermittent operation			
16 °C ≧ T > 11 °C	Lo	STOP	Lo	STOP
11 °C ≧ T > 9 °C	Lo	Lo	Lo	Lo
9 °C ≧ T	Hi	Hi	Hi	STOP

Intermittent operation:
The outdoor fan repeatedly operates at the following timing:

Time	Right	Left
2 min.	STOP	STOP
10 sec.	Lo	Lo

■ Individual type : Cooling and heating operations Common mode

OUTDOOR DIP SW - No.4	OFF		ON	
Outdoor Fan motor	Right	Left	Right	Left
T > 26 °C	Hi	Hi	Hi	STOP
26 °C ≧ T > 10 °C	Lo	Lo	Lo	Lo
10 °C ≧ T	Hi	Hi	Hi	STOP

2.4–7 ELECTRONIC EXPANSION VALVE CONTROL

After the power is turned on, the following operation is controlled automatically to control the most suitable refrigerant charge by the operation mode and operation conditions of each indoor unit.

Control process of electronic expansion valve and each thermistor detection temperature

To control the quantity of super heat constant, the electronic expansion valve is controlled by the difference between thermistor detection temperature of outdoor temperature and discharge thermistor detection temperature.

2.4–8 AUTO RE-START

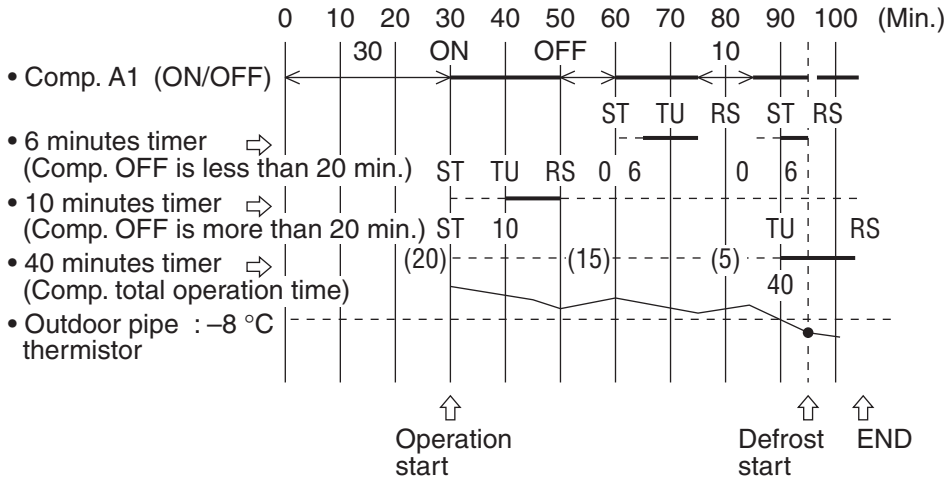
(1) The air conditioner restarts with the previous setting operation.
(2) At the restarting of air conditioner, “THREE MINUTE DELAY FUNCTION” operates.
(3) At the restarting of air conditioner for heating operation, “COLD AIR DISCHARGE PREVENTION FUNCTION” operates.
(4) When the power of the timer is interrupted during operation and resets later, the timer display lamp flashes on and off (turned on 3 sec. / off 1 sec.).

2.4–9 DEFROSTING [REVERSE CYCLE]

1) Defrosting operation

When the outdoor piping thermistor detection temperature is -7°C (DIP SW : ON) or less (-12°C or less for 10 minutes after switching from one room operation to two rooms operation, and -7°C after 10 minutes and in one room operation) after timer of 6 minutes timer or 10 minutes timer, besides 40 minutes timer are up, defrosting starts.

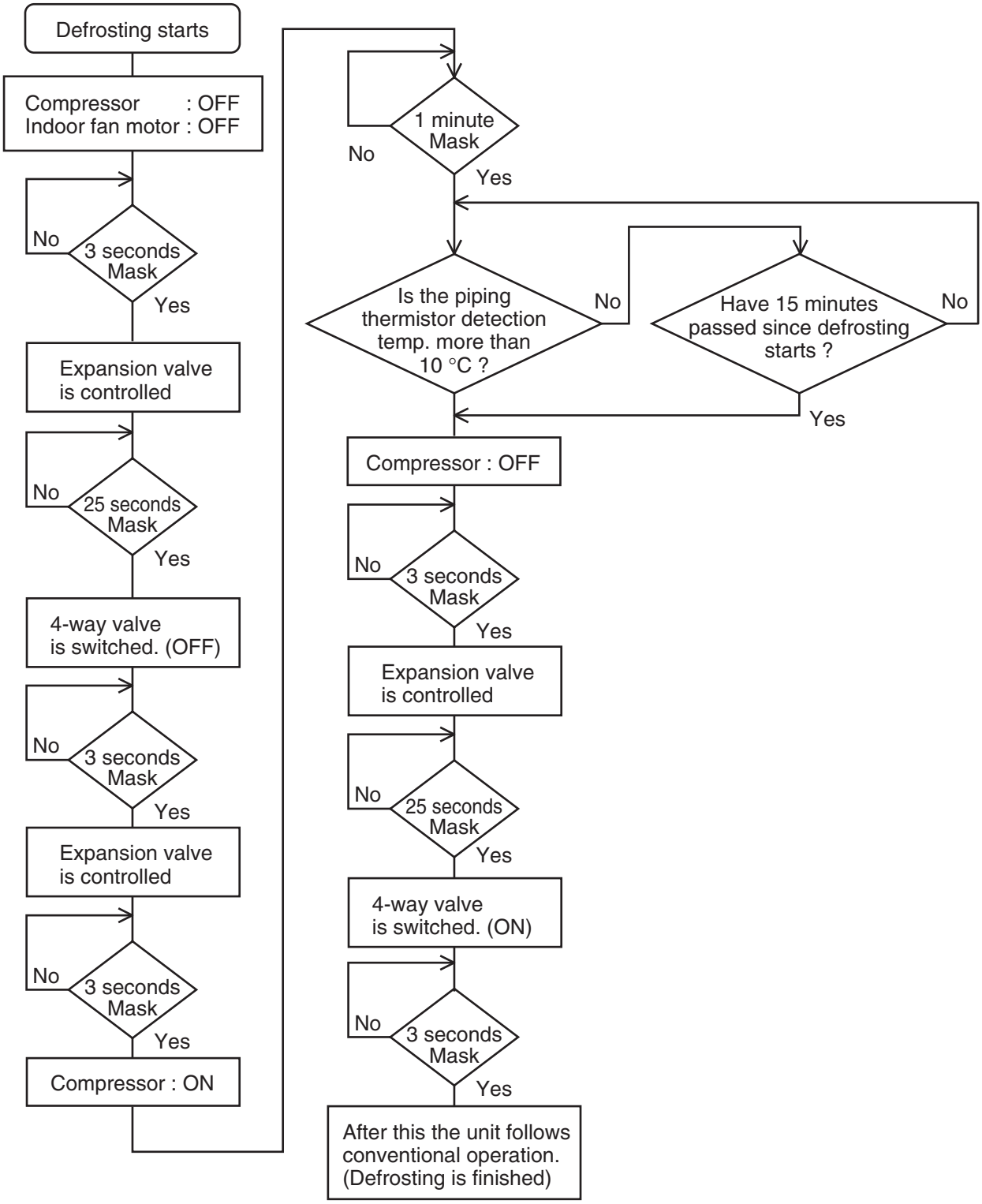
Defrosting start condition



[Note]

- ST : Timer Start (Comp. A OFF ⟶ ON)
- TU : Timer UP 6,10,40 after the setting time passed
- RS : Reset (Comp. A ON ⟶ OFF

2) Defrosting flow-chart



3) DEFROSTING FINISH

Defrosting is performed after the compressor is turned on and one minute mask is finished.
It will be completed when the outdoor piping thermistor temperature is 10°C or more or time of 15 minutes timer is up.

2.5 FUNCTIONS

2.5–1 COMPRESSOR PROTECTION FUNCTION

1) THREE MINUTES DELAY FUNCTION (3ST)

The outdoor unit does not operate for three minutes after the power switch is turned on. (Compressor protection, breaker off prevention, etc.)

2) THREE MINUTES CONTINUOUS FUNCTION (3HT)

The unit continues to run for three minutes after the compressor starts.

Compressor ON/OFF control

Note:

When test operation is performed during continuous heating operation, it takes some time until air blows out from the indoor unit because “Three minutes delay” and “Cold air discharge prevention” have priority over TEST operation.

2.5-2 INDOOR HEAT EXCHANGER DE-ICING FUNCTION (Cooling operation)

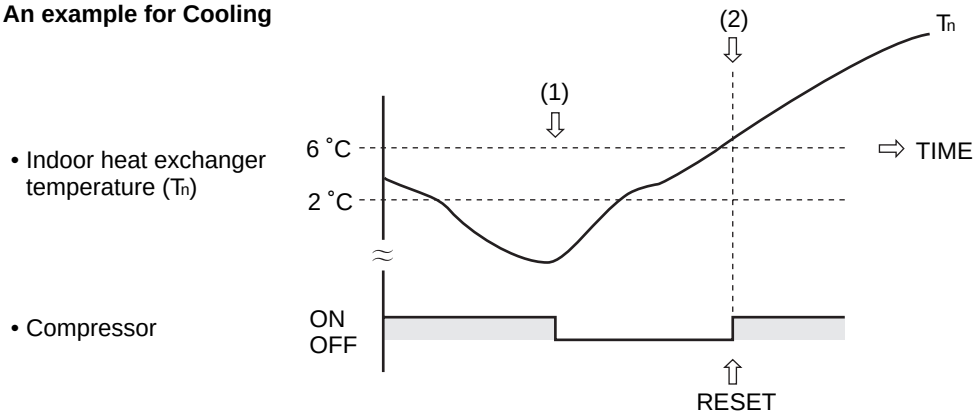
(1) When the temperature of the heat exchanger at the indoor side drops below 2°C during cooling operation, operation of the compressor stops.

(2) After that, when the temperature of the indoor heat exchanger rises above 6°C, compressor starts. (Reset)

Note :

The de-icing setting temperature can be selected at JP3 on the control PCB.

An example for Cooling



2.5–3 SET TEMPERATURE COMPENSATION AT THE OPERATION START

At the start of the operation and when MASTER CONTROL is switched to heating and cooling, the set temperature are compensated by +2°C for heating operation for 60 minutes and by -1 °C for cooling operation for 40 minutes.

2.5–4 4-WAY VALVE DELAY SWITCHING FUNCTION [REVERSE CYCLE]

When heat operation is stopped, 4-way valve is stopped 2 min. 35 sec later.

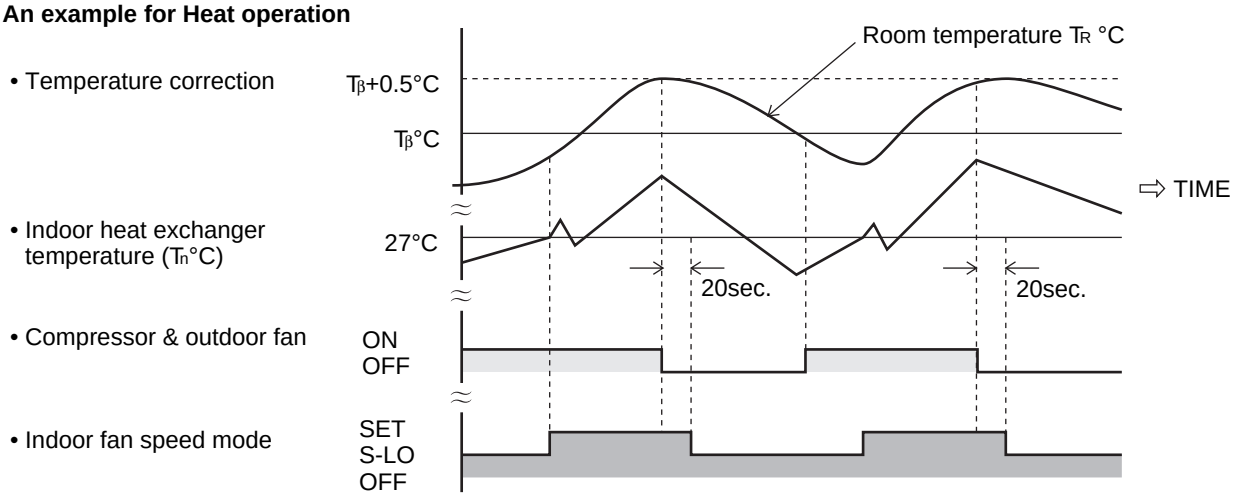
2.5–5 COLD AIR DISCHARGE PREVENTION FUNCTION [Reverse cycle]

(1) When the heating operation starts, the indoor unit fan operates intermittently in the S-LO* (Super-Low) mode. After the temperature of the indoor heat exchanger rises above 27°C, operation enters to the specified flow mode.

(2) When the compressor is stopped by the thermostat, the indoor fan starts the intermittent operation in 20 seconds as described above.

(3) While the compressor is stopped, the indoor unit fan operates in the S-LO mode.

An example for Heat operation



* Temperature correction $T_\beta = T_s$ (Indoor setting temperature) + Ta (+4)°C

2.5–6 DE-ICING OPERATION

- To prevent outdoor heat exchanger icing at heating operation heating overload, after the compressor and outdoor fan have been operated for two hours, the compressor is stopped for 3 minutes and the outdoor fan is de-iced at Hi.

2.5–7 PRESSURE SWITCH PROTECTION

- To prevent the refrigerant liquid from returning to the compressor during cooling operation, the following operations are performed :

Pressure SW	ON	OFF
Pressure value (kgf/cm²)	Up to 2	3 or more
Function operation	Compressor stop	Normal operation (Reset)

2.5–8 DISCHARGE TEMPERATURE PROTECTION

- The following operations are performed for compressor body heating protection :

Discharge temperature	125 °C	95°C
Function operation	Compressor stop	Normal operation (Reset)

2.6 OTHER OPERATION

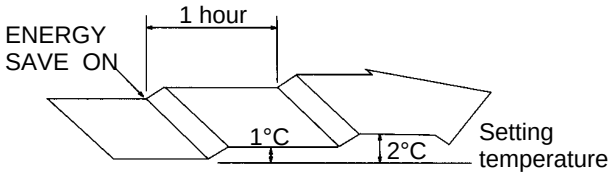
2.6–1 ENERGY SAVE FUNCTION [Single Large Cassette Type only]

(1) During cooling/dry operation:

The thermostat temperature setting increases by 1°C as soon as the ENERGY SAVE button is pressed, and then increases by 1°C after one hour passed.

Afterwards, energy consumption is saved by continuing to cool or dry at a thermostat temperature of 2°C more than that set.

ENERGY SAVE setting

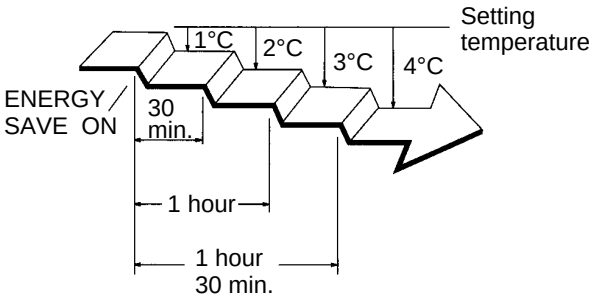


(2) During heating operation [REVERSE CYCLE]:

The thermostat temperature setting decreases by 1°C as soon as the ENERGY SAVE button is pressed, and then decreases by another 1°C every thirty minutes.

Afterwards, energy consumption is saved by continuing to heat at a thermostat temperature of 4°C less than that set.

ENERGY SAVE setting



2.6–2 BELT HEATER

Belt heater is installed around the compressor.

When the outdoor temperature is less than 21°C, oil is fallen in the compressor and the refrigerant is melted into oil and oil may be diluted, then the bearing metal etc. of the compressor motor is easy to damage when starting the compressor.

To prevent the above, the crank case heater is installed. The heater operates under the compressor halt.

2.6–3 BASE HEATER FUNCTION (OPTION)

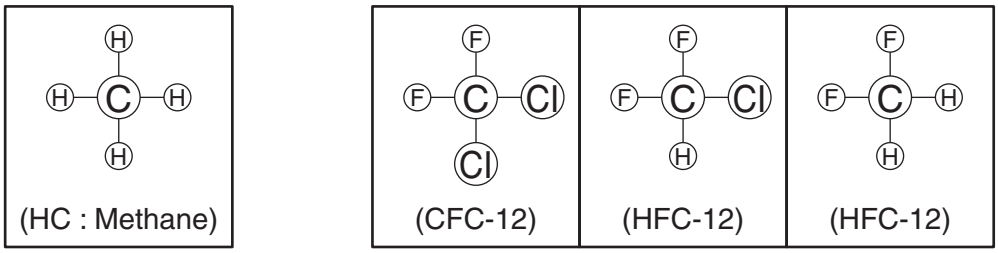
- When the outdoor temperature is minus, turn ON to warm the outdoor unit drain pan and positively discharge the drain water when the outdoor temperature thermistor is 2˚C or lower and the operating mode is HEAT.

CN6 OUT-PUT	MAXIMUM HEATER OUTPUT 100W

(CN6 FOR OUTDOOR UNIT PRINTED CIRCUIT BOARD)

3. In use of the new refrigerant R407C

3.1 What is CFC/HCFC/HFC ?



CFC : Chloro-Fluoro-Carbon
= high ODP(ozone depletion potential) chemical compound containing chlorine (ODP: 0.6 - 1.0)
HCFC : Hydro-Chloro-Fluoro-Carbon (R22)
= low ODP chemical compound containing chlorine and hydrogen (ODP:1/10 - 1150 of CFC)
HFC : Hydro-Fluoro-Carbon (R407C)
= zero ODP new chemical compound in which is not containing chlorine (ODP: 0)

3.2 Characteristics of R410A and R407C

HANDLING

- As in the case of R22, the specific gravity of its vapor is larger than that of air and should it leak in an air-tight room it may stay at a low level and cause oxygen starvation accident.
- It may also, should it come in direct contact with fire, cause a poisonous gas to occur, so be sure to handle it only in a well ventilated area.

SELECTION OF REFRIGERANT

- As there is no appropriate mono-constituent refrigerant to replace R22 which has been used for conventional air conditioners, the mixed refrigerant of HFC series was developed.

R407C

- Merits

  As working pressure is nearly equal to R22 (about 1.1 times), pressure resistance design is easy.

  — Discharge compressor
  Max. 30.0 bar for reciprocating compressor
  Max. 28.5 bar for rotary compressor

- Demerits

  Composition control is necessary for charging refrigerant as it is zeotropic refrigerant.

  — When leaked, it will become composition of more R134a constituent with high boiling point.
  Also, charging refrigerant must be done from the liquid phase side.
  Review of control system is required as there is temperature glide.

  → R407C is used for large air conditioners.
  Pressure resistance design is easy and safe.

	R22	R407C
Composition (wt%)	R22 (100)	R32/R125/R134a (23/25/52)
Boiling point (°C)	-40.8	-43.6
Ozone depletion potential ODP	0.055	0
Global warming potential GWP	1,700	1,530
Inflammability	Nonflammable (A1)	Nonflammable (A1/A1)
Toxicity	less	less
Azeotropic or Zeotropic	————	Zeotropic
Features	————	Necessary to handle carefully because of zeotropic. Working pressure is nearly equal to that of R22 (about I .1 times).

3.3 Difference from conventional model (R22) and precautions

OIL

- Use new synthetic oils such as ester because HFC series refrigerant has less solubility with mineral oils conventionally used for R22.
- As these new synthetic oils are easily influenced by moisture and dusts, they must be treated morecarefully than the conventional lubricating oils.

CAUTION

For installation/servicing, take more precautions than before to avoid moisture and dusts. Also, for storing parts, same precautions must be taken.

COMPRESSOR

- Use better grade of material for sliding parts for securing good lubrication of sliding part as HFC refrigerant does not contain chloride.
- Review insulating materials
- Increase pressure resistance strength

CAUTION

Check if the compressor is suitable for the refrigerant (model) when replacing.

Complete welding within 15 minutes after opening the cap when replacing.

HEAT EXCHANGER

- Review the water,contaminants controlling level
- Use thinner tube to increase pressure Increase capacity for resistance strength (only outdoor unit) improving performance

CAUTION

During storage, due care must be taken so that foreign matters such as dust and water do not enter.

4-WAY VALVE

- Review materials

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

CHECK VALVE

- Review materials
- Change shape of pipe ends to increase pressure resistance strength

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

2, 3-WAY VALVE

- Review material O-ring, valve core seal for securing suitability with oil.

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

BALL VALVE

- Review material O-ring, valve core seal for securing suitability with oil.

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

DRYER

- Change desiccant (XH-6 → XH-10) Volume of desiccant is increased.

CAUTION

Complete welding within one hour after the package of dryer is opened.

PRESSURE SWITCH

- Adopt for some models for better reliability.

CAUTION

Check if the valve is suitable for the refrigerant (model) when replacing.

OTHER PIPING

- Review the water, contaminants controlling level.
- Review thickness of pipes.

CAUTION

During storage, due care must be taken so that foreign matters such as dust and water do not enter.

3.4 Tools

Gauge manifold . . . . . (Fig.4-1)
Pressure gauge changed.

Charge hose . . . . . (Fig.4-2)
Changed to HFC resistant material.

Charging cylinder . . . . . (Fig.4-3)
Gauge changed

Electronic balance for refrigerant charging . . . . . (Fig.4-4)
Electronic balance is recommended as in the case of R410A.

Vacuum pump with adapter to prevent reverse flow . . . . . .(Fig.4-5)
Conventional pump can be used.

Vacuum holder . . . . . (Fig.4-6)
Conventional pump can be used if adapter for preventing vacuum pump oil from flowing back is used.

Gas leakage tester . . . . . (Fig.4-7)
Exclusive for HFC

Refrigerant cleaner . . . . . (Fig.4-8)
Brown paint as designated by the ARI, USA

Flare tool . . . . . (Fig.4-9)
Conventional tool can be used.

Torque wrench . . . . . (Fig.4-10)
Conventional wrench can be used.

Refrigerant recovering equipment (Collector) . . . . . (Fig.4-11)
The type which can be used for any refrigerant is available

Nitrogen cylinder . . . . . (Fig.4-12)
This prevents an oxide film from forming in the pipe silver-alloy brazing work by turning the air out of the pipe and preventing the inside combustion.

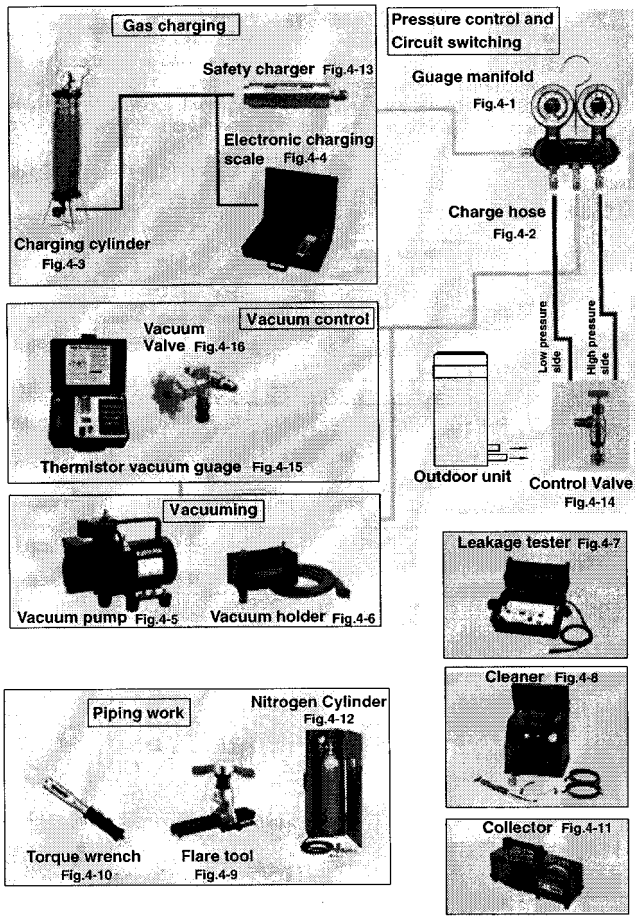
Safety charger . . . . . (Fig.4-13)
It is always compulsory to change the liquid, because R407C is a mixed refrigerant and there is some fear that a mixing ratio changes. In order to avoid the refrigerant from returning to the compressor in a liquid state, the refrigerant can be charged instead of giving a load to the compressor with a safety charger.

Control valve . . . . . (Fig.4-14)
The control valve prevents the refrigerant from spouting when it is removed, as the charging hose side and the service port side are possible to open and close at the same time.

Thermistor vacuum guage . . . . . (Fig.4-15)
To remove moisture from the refrigerating cycle completely, it is necessary to perform appropriate vacuum drying. For that reason, vacuum conditions can be confirmed certainly.

Vacuum valve . . . . . (Fig.4-16)
This valve builts in a check valve, and it is easily possible to vacuum a refrigerating cycle or check for degree of vacuum with it.

TOOLS AND EQUIPMENT (R407C)



3.5 Precautions for installation

COPPER PIPES

(1) It is necessary to choose adequate materials.
If new synthetic oil is mixed with residual oil(ex : mineral type) ,they may deteriorate, and block the capillary tubes, or cause the compressor to fail.
So it is desirable that the amount of residual oil in connection pipes is less than 40 mg/10 m.
Thickness of copper pipes is shown below.

Nominal diameter (inch)	Outer diameter (mm)	Thickness (mm)
1/4	ø 6.35	0.8
3/8	ø 9.52	0.8
1/2	ø 12.70	0.8
5/8	ø 15.88	1.0
3/4	ø 19.05	1.0

(2) Control contaminants
Since new synthetic oil is easily influenced by contaminants (water, residual oil, etc.), it must be handled with care more than the conventional lubricating oil.

(3) Refrigerant charge
When charging refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

(4) Correct refrigerant charge
As there are air conditioner models using different refrigerant such as R22, R407C, make sure to check and not to use wrong refrigerant when installing and servicing.

(5) Air purge
Always use a vacuum pump to purge the air.
In the case of Fujitsu General's new refrigerant model, refrigerant for purging the air is not charged in the outdoor unit at the factory.

3.6 Precautions for Servicing

1. Countermeasure when the refrigerant leaks

As R407C is zeotropic refrigerant, the composition of the remaining refrigerant changes when the refrigerant leaks.
Therefore, recharging refrigerant cannot be done.
Recover the remaining refrigerant and charge the specified amount of new refrigerant.

2. Never use the existing refrigerant piping

The existing piping used for R22 cannot be used for the cycle of HFC series refrigerant as the conventional mineral oils are adhering to the piping.
Due to the deteriorated mineral oils, compressor may be damaged.
Therefore, basically use a brand new piping. However,in case of the existing piping buried in the wall and replacement with new piping is difficult, wash the piping fully with detergent.

3. Replacement of refrigeration cycle parts

As refrigeration cycle parts are basically different from conventional parts, be sure to use the parts suitable for the refrigerant when replacing.
For R407C, the materials are being reviewed.

4. Charging wrong refrigerant

As there are air conditioner models using different refrigerant such as R22, R407C, make sure to check and not to use wrong refrigerant when installing and servicing.

5. Storage of parts

When storing parts, make such treatment as packing the parts in bags so as to avoid dusts, water, etc.

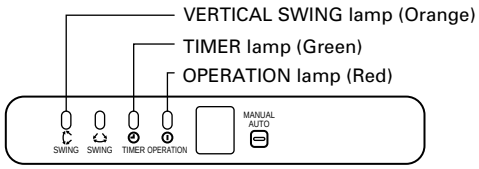
6. Replacing parts

When replacing parts, be sure to check if the parts are suitable for the refrigerant(model).
For most refrigeration cycle parts which have same appearance, the inside material is changed.
When changing compressor, complete brazing within 15 minutes after opening the cap. After opening the cap, the moist air enters the compressor, and oil absorbs the moisture causing sludge. When changing dryer, complete brazing within one hour after the package of dryer is opened.
The desiccant starts to absorb the water content as soon as the package of dryer is opened.
If it absorbs too much water content when replacing, it cannot absorb fully the water content in the refrigerating cycle.

4. TROUBLESHOOTING

4.1 Indoor unit

Operation can be checked by lighting and flashing of the display section OPERATION, TIMER and VERTICAL SWING lamps.
Perform judgment in accordance with the following.



- Test running

When the air conditioner is run by pressing the remote controller test run button, the OPERATION, TIMER and VERTICAL SWING lamps flash slowly at the same time.

- Error

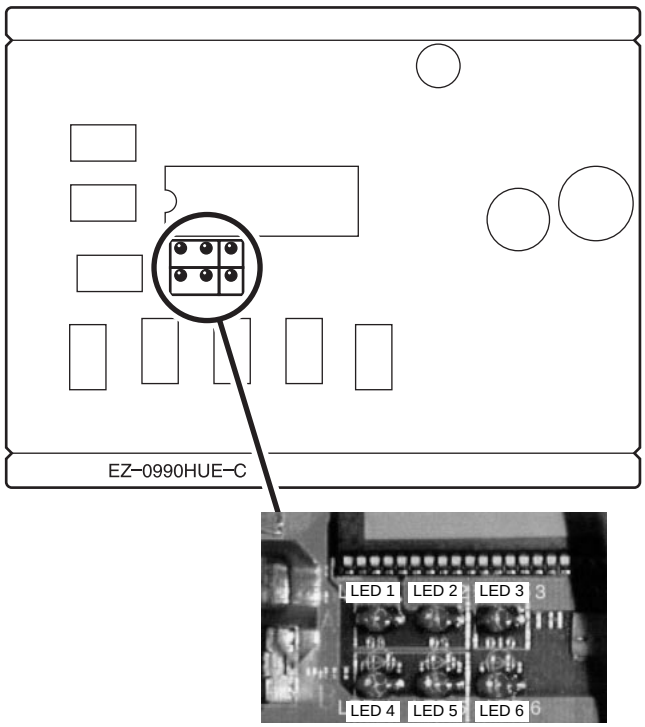
The OPERATION, TIMER and VERTICAL SWING lamps operate as shown in Table 4.1 according to the error contents.

Table 4.1

Error display			Error contents
OPERATION lamp	TIMER lamp	VERTICAL SWING lamp	
Blinks	Blinks	Goes off	Model information abnormal (permanent type)
Pulses 4 times	Blinks	Goes off	Drain abnormal (permanent type)
Pulses 6 times	Blinks	Goes off	Indoor fan abnormal
Pulses 2 times	Blinks	Goes off	Room air temperature thermistor open circuited
		Blinks	Room air temperature thermistor shortcircuited
Pulses 3 times	Blinks	Goes off	Piping thermistor open circuited
		Blinks	Piping thermistor short-circuited
Pulses 5 times	Blinks	Goes off	Serial communications abnormal
Blinks	Pulses 2 times	Goes off	Reverse phase wire connection abnormal
Blinks	Pulses 3 times	Goes off	Outdoor heat exchange thermistor open circuited
		Blinks	Outdoor heat exchange thermistor shortcircuited
Blinks	Pulses 6 times	Goes off	Low pressure abnormal
Blinks	Pulses 5 times	Goes off	Outdoor discharge thermistor open circuited
		Blinks	Outdoor discharge thermistor shortcircuited
Blinks	Pulses 7 times	Goes off	Discharge temperature abnormal
Blinks	Pulses 4 times	Goes off	Outdoor air temperature thermistor open circuited
		Blinks	Outdoor air temperature thermistor shortcircuited

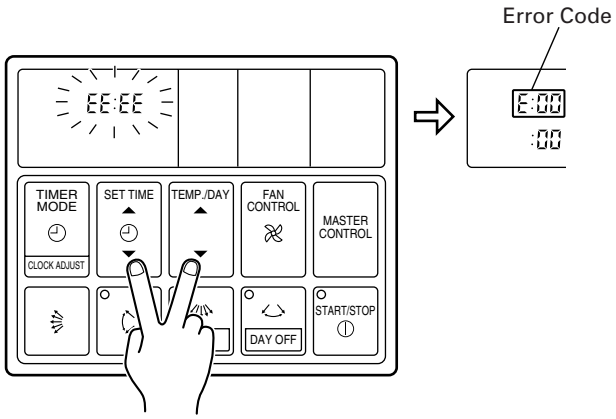
4.2 Outdoor unit

OUTDOOR P.C.B. BOARD LAYOUTS



LED	DESCRIPTION OF FAILURE	LED DISPLAY
LED 1	Compressor A operation	Lighted continuously
	Pressure switch A faulty (when turning on)	0.1 sec./0.1 sec. flashing
LED 2	4-way valve A operation	Lighted continuously
	Serial signal A faulty	0.5 sec./0.5 sec. flashing once
	Pressure A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature A abnormal	0.5 sec./0.5 sec. flashing 3 times
LED 3	Solenoid controlled valve A operation	Lighted continuously
	Discharge temperature thermistor A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature thermistor B faulty	0.5 sec./0.5 sec. flashing 3 times
	Heat exchanger thermistor A faulty	0.5 sec./0.5 sec. flashing 4 times
	Heat exchanger thermistor B faulty	0.5 sec./0.5 sec. flashing 5 times
	Outside temperature thermistor faulty	0.5 sec./0.5 sec. flashing 6 times
LED 4	Compressor B operation	Lighted continuously
	Pressure switch B faulty (When turning on)	0.1 sec./0.1 sec. flashing
LED 5	4-way valve B operation	Lighted continuously
	Serial signal B faulty	0.5 sec./0.5 sec. flashing once
	Pressure B faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature B faulty	0.5 sec./0.5 sec. flashing 3 times
LED 6	Solenoid controlled valve B operation	Lighted continuously
	Negative-phase prevention faulty	0.5 sec./0.5 sec. flashing once
	EEPROM access faulty	0.5 sec./0.5 sec. flashing 7 times
	EEPROM ERASE faulty	0.1 sec./0.1 sec. flashing
ALL LEDs	Incorrect model No. error	0.1 sec./0.1 sec. flashing

4.3 Remote control unit



If there is a problem with the air conditioner, it will stop running and “EE: EE” will be displayed instead of the clock.

1. **If the operation lamp is on then press the START/STOP button to turn it off.**
2. **Press the SET TIME (▼) and the SET TEMP./DAY (▼) buttons at the same time for more than three secondsto start the self diagnosis check. An error code will be displayed in the clock display area.**
3. **Press the SET TIME (▼) and the SET TEMP./DAY (▼) buttons again for more than three seconds to end the selfdiagnosis check.**

Error Code	Error contents
E:00	Communication error (indoor unit ◄—► remote controller)
E:01	Communication error (indoor unit ◄—► outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shorted
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shorted
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shorted
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shorted
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shorted
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E:11	Model abnormal
E:12	Indoor fan abnormal
E:13	Outdoor signal abnormal
E:14	Outdoor EEPROM abnormal

4.4 WORKING INSPECTION (Ex. In cooling operation)

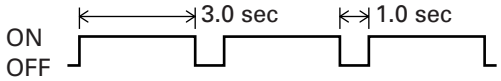
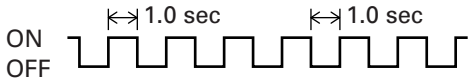
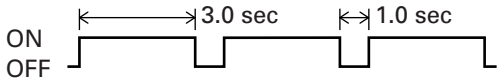
Symptom	Possible causes	Remedy
(1) Indoor unit evaporator is covered with frost. a: Frost near inlet. b: Frost all over.	Gas leakage Clogged filter Low ambient temperature (less than 20°C)	Check the leaking part, and charge gas. Clean the filter. Check the ambient temperature.
(2) Compressor operates, but does not cool.	Dirty condenser	Clean.
(3) Water does not come out of drain hose.	When the compressor operates normally, the gas leaks.	Charge gas and replace the parts.
(4) Compressor return pipe (low pressure) is not cold.	Gas leakage	Charge gas. Replace the parts.
(5) Compressor outlet pipe (high pressure) is not hot.	Gas leakage	Charge gas.
(6) Compressor operates, but does not cool. a: Indoor unit evaporator is cold. b: Outdoor unit condenser is hot, but it does not cool.	Overload operation Dirty condenser	Eliminate overload. Clean.
(7) Indoor unit air outlet temperature is low, but it does not cool.	Clogged filter The cooled air is shortcircuited. Overload operation	Clean. Isolate the problem and correct. Eliminate the overload.

Note: Display lamps light on the front panel of the indoor unit.

4.5 SYMPTOMS AND CHECK ITEMS

Symptom	Possible causes	Check points
No operation	Power supply circuit section	• Microcomputer input signal • DC output voltage • Switching transformer • Remote control signal receiver unit • Remote control unit
Erroneous operation	Reset section	• Reset circuit
Auto louver control faulty	Auto louver control section	• Auto louver control circuit
Display faulty	Indicator PC board LED display control section	• Display LED • Microcomputer output signal
Remote control input faulty	Remote control unit Signal receiving section	• Remote control unit • Microcomputer input / output signal
Temperature control faulty	Room temperature thermistor Indoor pipe temperature thermistor A/D converter input section	• Room temperature thermistor • Indoor pipe temperature thermistor • Microcomputer input signal
Indoor fan motor control faulty	Indoor fan motor control output section	• Fan motor control circuit • Remote control unit
Indoor unit to outdoor unit control faulty	Output to the indoor unit	• Output circuit to the indoor unit

4.6 NORMAL OPERATION DISPLAY

OPERATION FACTOR	INDICATOR LAMP	FLASH / TIME (SEC)
① Test operation	Operation lamp (red)	
	Timer lamp (green)	
② Power failure *1 Auto-restart enable (JM1 : Disconnect)	Timer lamp (green)	
*2 Auto-restart disable (JM1 : Connect)	Operation lamp (red)	
	Timer lamp (green)	
③ Defrost operation *3 (Heating operation)	Operation lamp (red)	

Note: Display lamps light on the front panel of the indoor unit.

*1: The power is failed during timer operation, then the timer lamp flashes on and off when the power returns.

*2: The power is failed during operation, then both lamps flash on and off when the power returns.

*3: While the indoor fan motor stops, the operation lamp flashes on and off.

4.7 MISCELLANEOUS

Thermistor resistance values

1) Room temperature thermistor

Room temperature (°C)	3	5	8	10	15	20	25	29	31	33	36	40	44
Resistance value (kΩ)	28.7	25.9	22.3	20.1	15.8	12.5	10.0	8.4	7.7	7.0	6.2	5.3	4.5

2) Indoor unit pipe temperature thermistor

Room temperature (°C)	0	2	6	10	14	18	22	26
Resistance value (kΩ)	176.0	157.8	127.3	103.3	84.4	69.3	57.2	47.5

Room temperature (°C)	30	34	38	44	50	56	60
Resistance value (kΩ)	39.6	33.2	27.9	21.7	17.0	13.5	11.6

Note: Thermistor resistance values <Outdoor unit side>

1) Outdoor heat exchanger temperature thermistor

Pipe temperature (°C)	–8	–4	0	5	8	10	15	20	25	29	33	36	40
Resistance value (kΩ)	24.4	19.7	16.0	12.5	10.8	9.8	7.8	6.2	5.0	4.2	3.6	3.2	2.7

2) Discharge pipe temperature thermistor

Pipe temperature (°C)	10	15	20	25	30	35	40	50	60	70	80	90	100
Resistance value (kΩ)	646	503	395	313	250	201	163	109	74.4	52.1	37.2	27.1	20.0

3) Outdoor temperature thermistor

Room temperature (°C)	3	5	8	10	15	20	25	29	31	33	36	40	44
Resistance value (kΩ)	28.7	25.9	22.3	20.1	15.8	12.5	10.0	8.4	7.7	7.0	6.2	5.3	4.5

5. INSTALLATION WORK

5.1 INDOOR UNIT

5.1–1 Ceiling Suspension Type

Refrigerant R407C

SPLIT TYPE AIR CONDITIONER

(PART NO. 9363005011)

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the air conditioner piping and cords available standards parts.** **This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area.** **If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**

SELECTING THE MOUNTING POSITION

⚠ WARNING

Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.

⚠ CAUTION

(1) Do not install where there is the danger of combustible gas leakage.

(2) Do not install the unit near a source of heat, steam, or flammable gas.

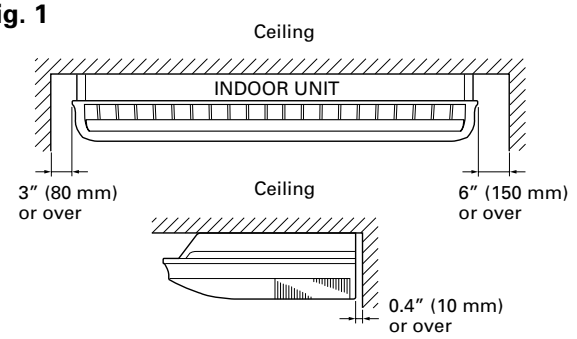
(3) If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

Decide the mounting position with the customer as follows:

INDOOR UNIT

(1) Install the indoor unit level on a strong wall which is not subject to vibration.
(2) The inlet and outlet ports should not be obstructed : the air should be able to blow all over the room.
(3) Do not install the unit where it will be exposed to direct sunlight.
(4) Install the unit where connection to the outdoor unit is easy.
(5) Install the unit where the drain pipe can be easily installed.
(6) Take servicing, etc. into consideration and leave the spaces shown in (Fig. 1 or 2). Also install the unit where the filter can be removed.

Fig. 1



[FOR HALF CONCEALED INSTALLATION]

Fig. 2

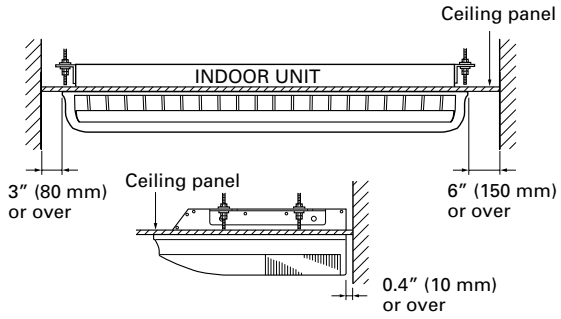
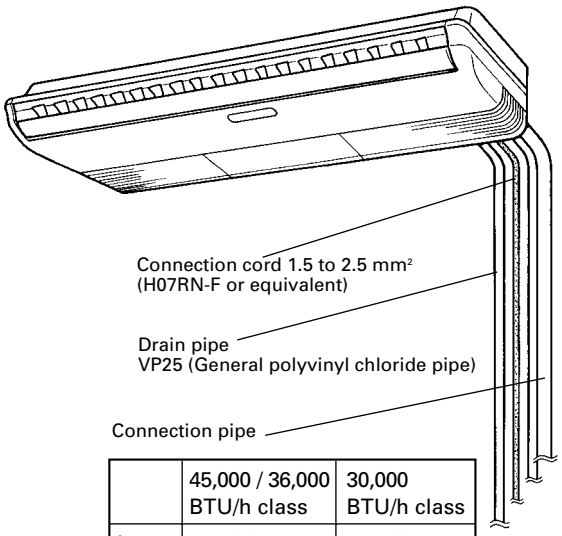


Fig. 3

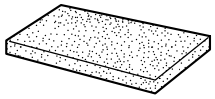
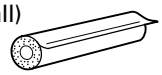
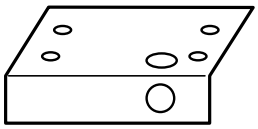
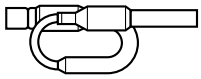
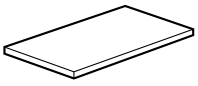


	45,000 / 36,000 BTU/h class	30,000 BTU/h class
Large	ø19.05 mm	ø15.88 mm
Small	ø9.53 mm	ø9.53 mm

STANDARD PARTS

The following installation parts are furnished.
Use them as required.

INDOOR UNIT ACCESSORIES

Description	Q'ty	Application
Drain hose insulation 	1	Adhesive type 70 x 230
VT wire 	1	For fixing the drain hose L 280 mm
Coupler heat insulation (large) 	2	For indoor side pipe joint (large pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (small pipe)
Nylon fastener 	Large 4 Small 4	For fixing the coupler heat insulation
Special nut A (large flange) 	4	For installing indoor unit
Special nut B (small flange) 	4	For installing indoor unit
Installation template 	1	For positioning the indoor unit
Auxiliary pipe assembly 	1	For connecting the piping
Indoor capillary tube 	1	(This part is enclosed with the 30,000 and 36,000 BTU/h versions.)
BR sheet 	2	65 x 130 x T5 (This part is enclosed with the 30,000 and 36,000 BTU/h versions.)

CONNECTION PIPE REQUIREMENT

Table 1

	Diameter	
	Small	Large
45,000 / 36,000 BTU/h class	9.53 mm	19.05 mm
30,000 BTU/h class	9.53 mm	15.88 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Connection cord (mm^2)	MAX	2.5
	MIN	1.5

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

Install the air conditioner as follows:

1. PREPARING INDOOR UNIT INSTALLATION

REMOVE THE INTAKE GRILLE AND SIDE COVER.

(1) Remove the two Air filters (Fig.4).

(2) Remove the two Intake grilles (Fig.4).

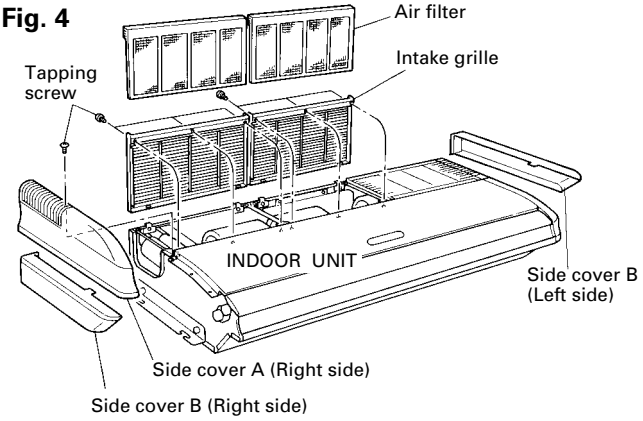
- For ④ Left rear drain and ⑤ Left drain: Remove air filters and intake grilles at three places. (Refer to "2. INDOOR UNIT INSTALLATION".)

(3) Remove the Side cover A (Right side) and Side cover B (Right and Left side).

- For ⑤ Left drain : Remove both the Side cover A (Right and Left side). (Refer to "2. INDOOR UNIT INSTALLATION".)

(4) This air conditioner can be set up to intake fresh air. For information about how to install for fresh-air intake, refer to "13. FRESH-AIR INTAKE".

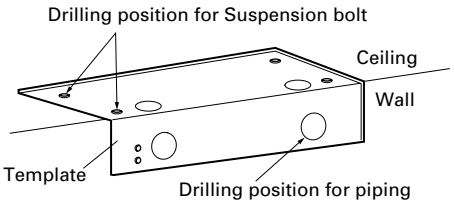
Fig. 4



2. INDOOR UNIT INSTALLATION

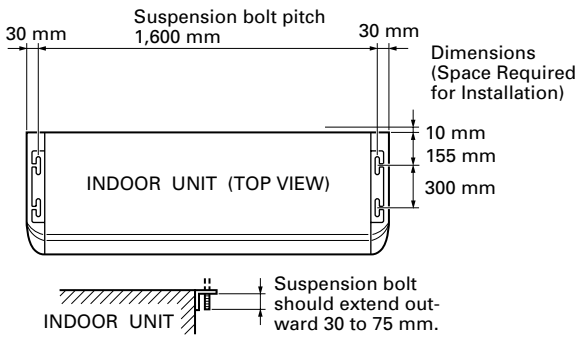
You can use the accessory template to help you install the indoor unit. The template helps you determine the appropriate locations for suspension bolts and pipe openings (drain pipe and connection cord).

Fig. 5



1. LOCATION OF CEILING SUSPENSION BOLTS

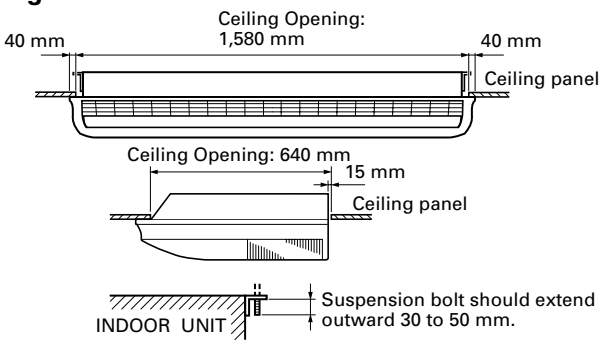
Fig. 6



[For Half-Concealed Installation]

- Suspension-bolt pitch should be as shown in Fig. 6.

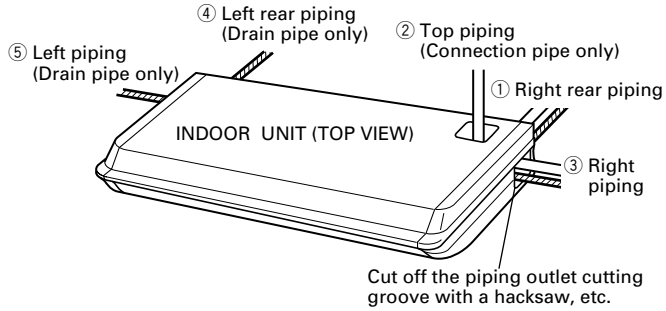
Fig. 7



2. SELECT PIPING DIRECTION

Select connection piping and drain piping directions. (Fig.8)

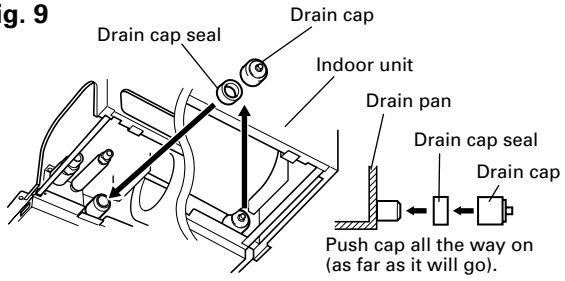
Fig. 8



[For ④ Left rear piping, ⑤ Left piping]

- Transfer the Drain cap and Drain cap seal.

Fig. 9



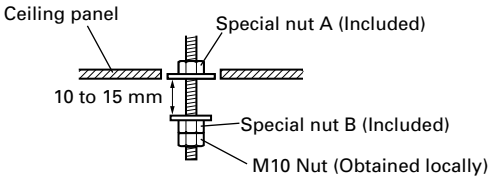
3. DRILLING THE HOLES AND ATTACHING THE SUSPENSION BOLTS

(1) Drill ø25mm holes at the suspension-bolt locations.

(2) Install the bolts, then temporarily attach Special nuts A and B and a normal M10 nut to each bolt. (The two special nuts are provided with the unit. The M10 nut must be obtained locally.) Refer to Fig. 10.

Bolt Strength	980 to 1,470 N (100 to 150 kgf)

Fig. 10



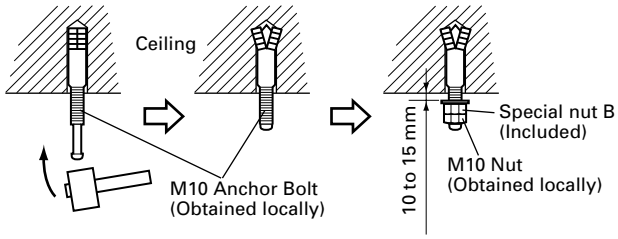
[If using anchor bolts]

(1) Drill holes for anchor bolts at the locations at which you will set the suspension bolts. Note that anchor bolts are M10 bolts (to be obtained locally).

(2) Install the anchor bolts, then temporarily attach special nut "B" (included) and a locally-procured M10 nut to each of the bolts. (See Fig. 11.)

Anchor-Bolt Strength	980 to 1,470 N (100 to 150 kgf)

Fig. 11



4. INSTALLING THE INDOOR UNIT

(1) Lift unit so that suspension bolts pass through the suspension fittings at the sides (four places), and slide the unit back. (See Fig. 13.)

Fig. 12

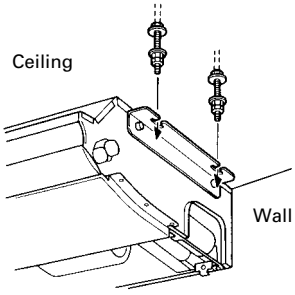
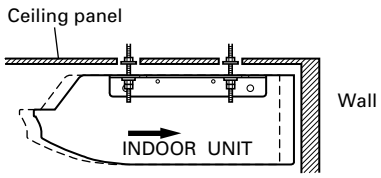


Fig. 13

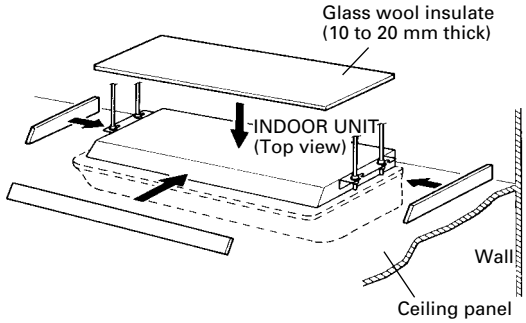


(2) Fasten the indoor unit into place by tightening-up the special "B" bolts and the M10 nuts. Make sure that unit is secure and will not shift back and forth.

[For Half-Concealed Installation]

When installing the indoor unit in a semi-concealed shape, make sure to reinforce the insulation of the unit on all sides. Drops of water may fall from the unit if it is not thoroughly insulated.

Fig. 14



⚠ CAUTION

In order to check the drainage, be sure to check a level during installation of the indoor unit. If the installation site of the indoor unit is not level, water leakage may occur.

3. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

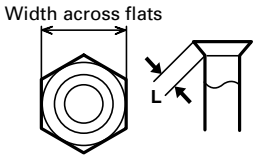
1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.
(2) Holding the pipe downwards so that cuttings cannot enter the pipe and remove the burrs.
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.
(4) Check if the flared part "L" (Fig. 15) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe (9.53 mm dia)	Small (width across flats 22 mm)
Large pipe (15.88 mm dia)	Large (width across flats 24 mm)
Large pipe (19.05 mm dia)	Large (width across flats 36 mm)

Fig. 15

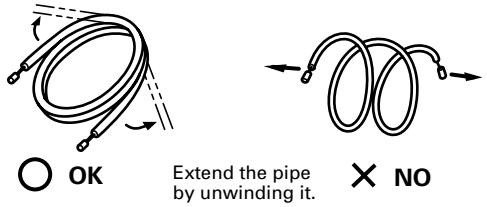


L dimension
Small pipe (9.53 mm dia)
1.8 to 2.0 mm
Large pipe (15.88 mm dia)
2.2 to 2.4 mm
Large pipe (19.05 mm dia)
2.6 to 3.0 mm

2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

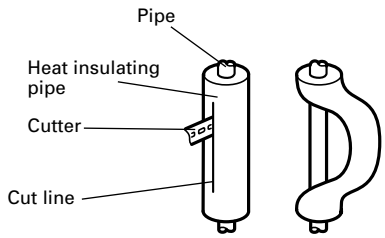
Fig. 16



Do not bend the pipes in an angle more than 90°.
When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 17, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

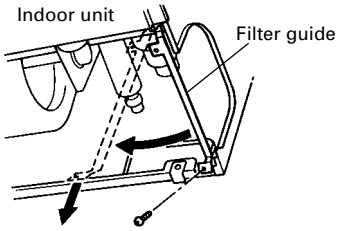
Fig. 17



3. CONNECTION PIPES

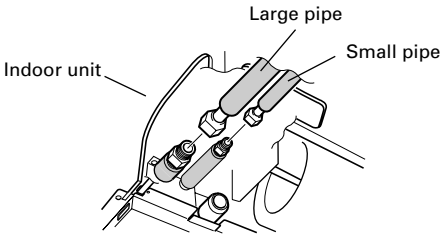
(1) Remove the filter guide (Fig. 18).

Fig. 18



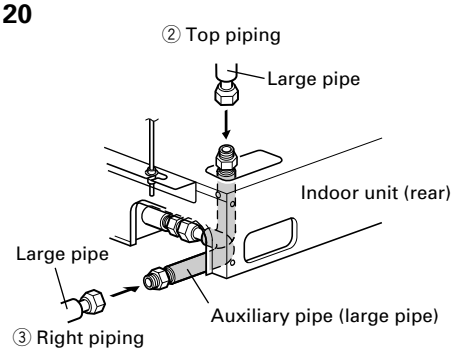
(2) Attach the connection pipe (Fig. 19).

Fig. 19



- For ② Top piping and ③ Right piping connections, use the Auxiliary pipe (large pipe) provided.

Fig. 20

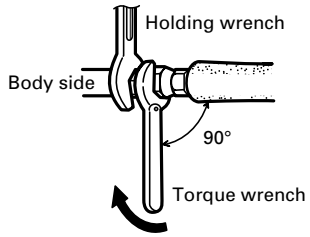


⚠ CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench (Fig. 21).

Fig. 21



⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 21, in order to tighten the flare nut correctly.

Table 4 : Flare nut tightening torque

Pipe	Tightening torque
Small pipe (9.53 mm dia)	310 to 350 kgf • cm (30.4 to 34.3 N • m)
Large pipe (15.88 mm dia)	750 to 800 kgf • cm (73.5 to 78.4 N • m)
Large pipe (19.05 mm dia)	800 to 1,000 kgf • cm (78.4 to 98 N • m)

4. CONNECTING AN INDOOR CAPILLARY TUBE

These instructions refer to the 30,000 and 36,000 BTU/h versions.

Installation Procedure

(1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 22.

(2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 23.

(3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 24) and affix the insulation with tape.

(4) Secure the insulation using the binders (Fig. 25).

- If the joint pipe must be installed, refer to the installation installation manual for the outdoor unit for details.

Fig. 22

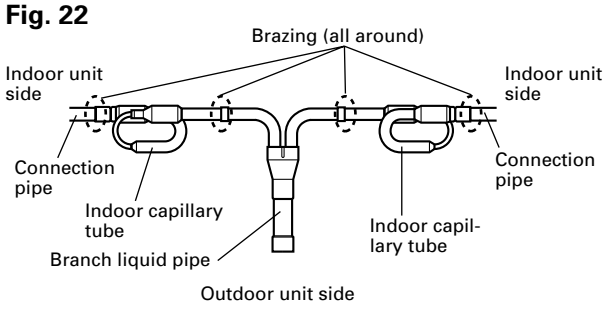


Fig. 23

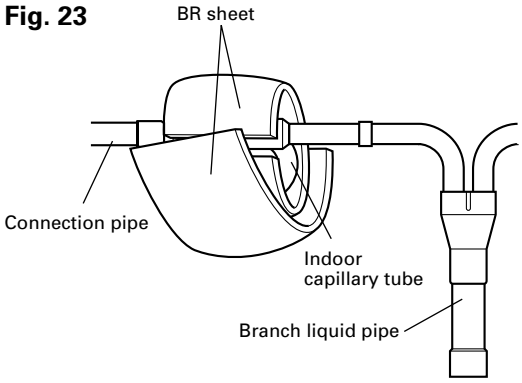


Fig. 24

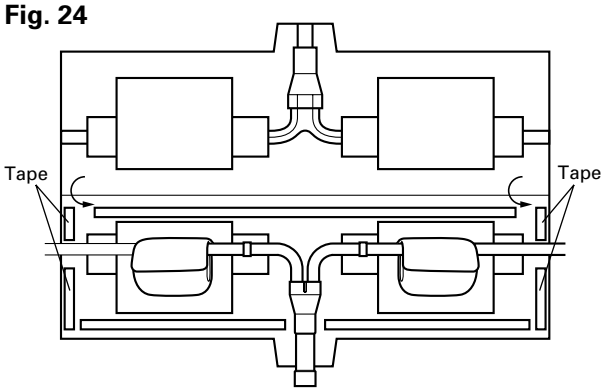
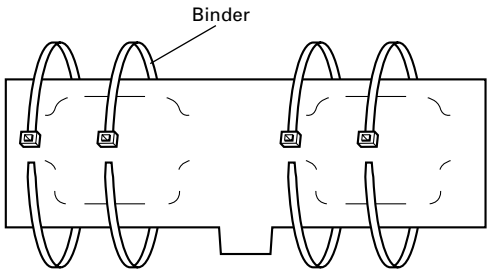


Fig. 25



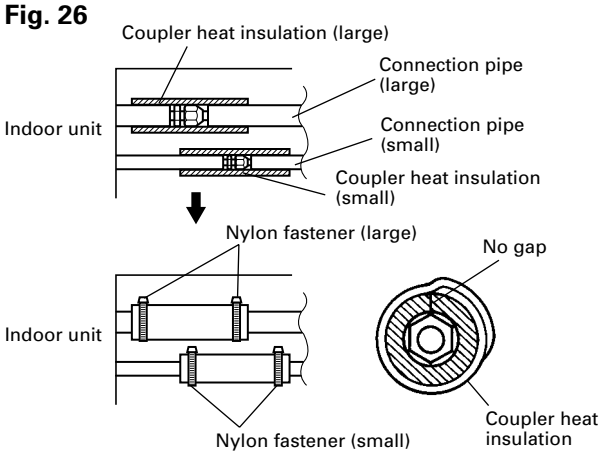
4. INSTALLING THE COUPLER HEAT INSULATION

After checking for gas leaks, insulate by wrapping insulation around the two parts (large and small) of the indoor unit coupling, using the coupler heat insulation.

After installing the coupler heat insulation, wrap both ends with vinyl tape so that there is no gap.

Secure both ends of the heat insulation material using nylon fasteners.

Fig. 26

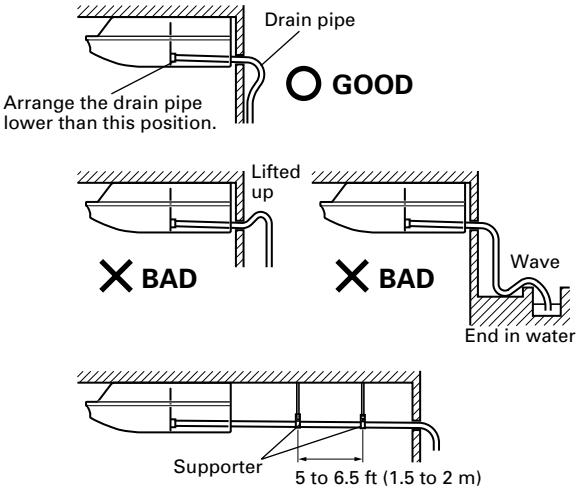


- When using an auxiliary pipe, make sure that the fastener used is insulated in the same way.

5. DRAIN PIPING

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 38 mm].
- During installation of the drain pipe, be careful to avoid applying pressure to the drain port of the indoor unit.
- When the pipe is long, install supporters (Fig. 27).
- Do not perform air bleeding.
- Always heat insulate (8 mm or over thick) the indoor side of the drain pipe.

Fig. 27



(1) Install insulation for the drain pipe (See Figs. 28 and 29).
Cut the included insulation material to an appropriate size and adhere it to the pipe.

Fig. 28

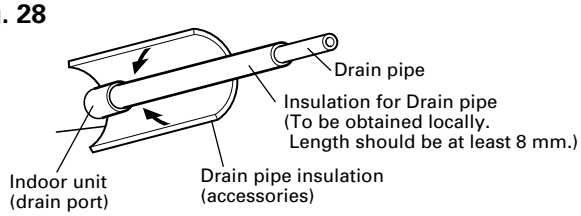
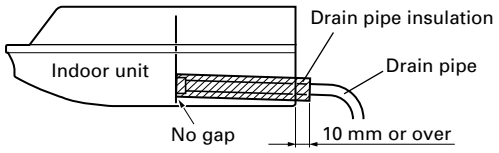
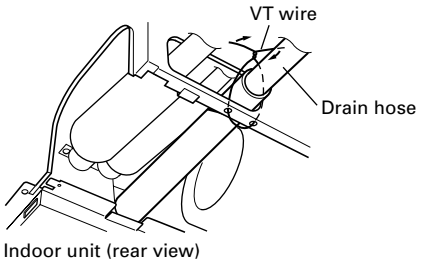


Fig. 29



(2) If "① Right rear piping": fasten the drain pipe with VT wire so that the pipe slopes correctly within the indoor unit (Fig. 30).

Fig. 30



6. HOW TO CONNECT WIRING TO THE TERMINALS

1. IF ONE WIRE IS CONNECTED TO ONE TERMINAL BLOCK

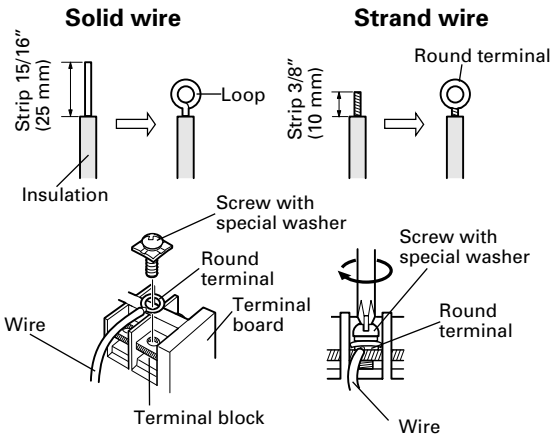
A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 15/16" (25 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screw-driver.

Fig. 31



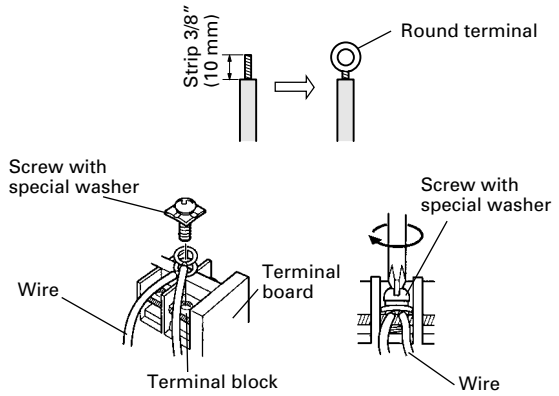
2. IF TWO WIRES ARE CONNECTED TO ONE TERMINAL BLOCK.

A. As a rule, round terminal should be used to connect to the terminal block.

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screw-driver.

Fig. 32

Strand wire



B. If round terminal cannot be used, the following items should be followed. For solid core wiring (or F-cable)

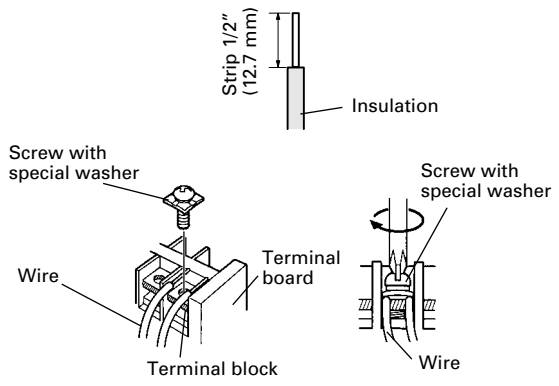
(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 1/2″ (12.7 mm) to expose the solid wire.

(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Wires with the same diameter should be connected on both sides as shown in Fig. 33. Since connecting wires with different diameters causes the wires to heat up due to loose connections, this method should not be used.

Fig. 33

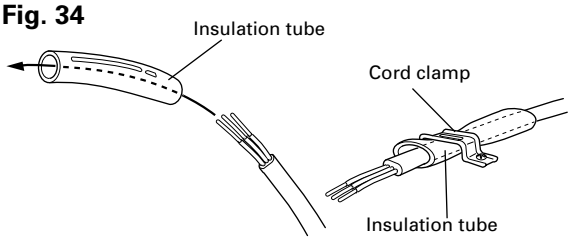
Solid wire



HOW TO FIX THE CONNECTION CORD

After passing the connection cord through the insulation tube, fasten it with the cord clamp.

Fig. 34



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

7. ELECTRICAL WIRING

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the indoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

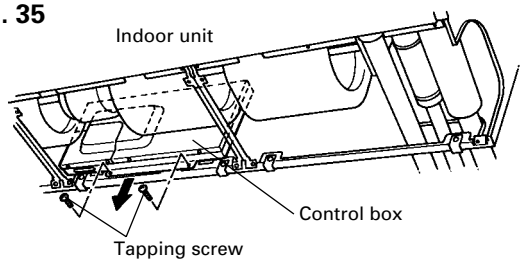
(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulation is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

(1) Remove the two tapping screws and pull the control box downward (Fig. 35).

Fig. 35



(2) Remove the cover A and install the connection cord (Fig.36).

(3) After wiring is complete, clamp the connection cord with the cord clamp (Fig.37).

(4) Reattach cover A. Then fasten the control box back into its original position using the two tapping screws.

(5) Attach the connection cord and cable clips. Make sure that they are positioned so that they will not interfere with opening and closing of the intake grille or with removal and installation of the air filters (Fig. 37).

Fig. 36

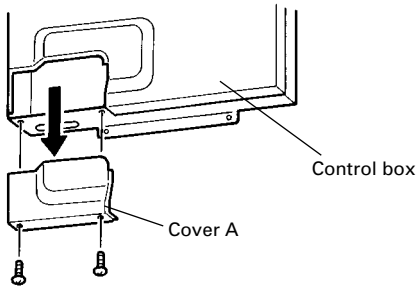
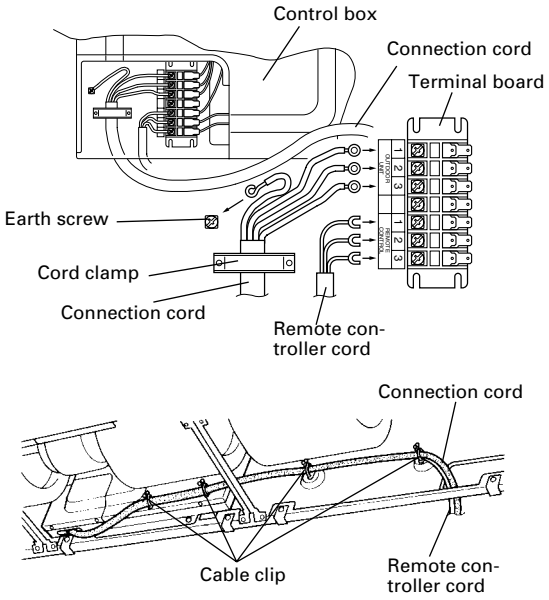


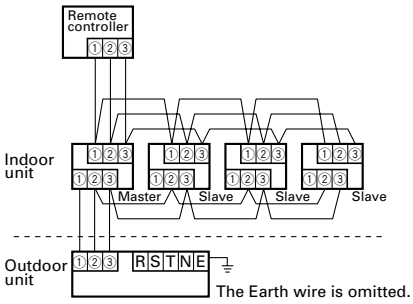
Fig. 37



CONNECTION CORD

A. Simultaneous operation for buildings

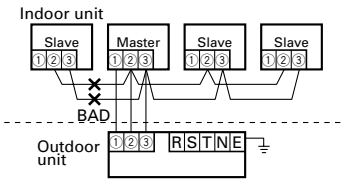
Fig. 38



⚠ CAUTION

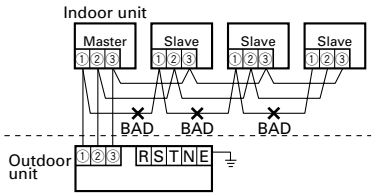
(1) Connect a maximum of 2 wires on a single terminal block. (If 3 or more wires are connected, they could become loose and cause heating.)

Fig. 39



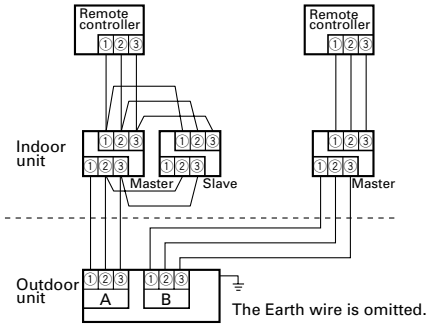
(2) Crossovers as in (①) should not be connected when connecting wires between the master unit and slave units, and from slave unit to slave unit. (The system will not operate correctly.)

Fig. 40



B. Individual operation for buildings

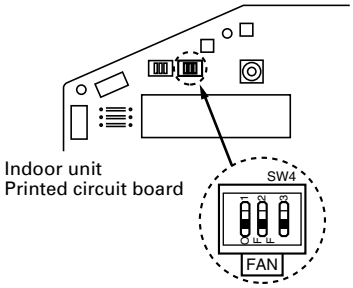
Fig. 41



8. PRINTED CIRCUIT BOARD SETTING

1. MODEL SELECT SWITCH

Fig. 42



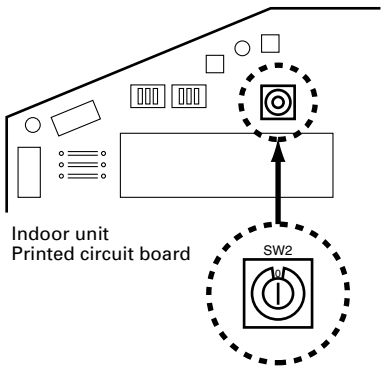
- SW4, mounted on the circuit board, should be checked.

Table 5 : Switch Setting

Model Name	SW4		
	1	2	3
45,000 BTU/h class	OFF	OFF	ON
36,000 BTU/h class	OFF	ON	OFF
30,000 BTU/h class	OFF	OFF	OFF

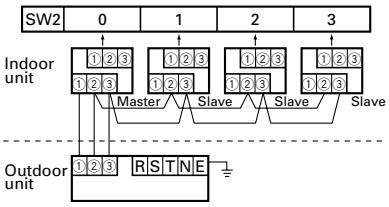
2. MASTER/SLAVE SELECT SWITCH

Fig. 43



• For the master unit, set SW2 on "0". For a slave unit, set SW2 on "1~3".

Fig. 44 [Example]



• A master unit is an indoor unit with the power line connected directly from the outdoor unit.

9. FINISHING

(1) Install the filter guide.
(2) Install the intake grilles.
(3) Install side covers A and B (if the unit is installed in a half-concealed orientation, only install side cover A).
(4) Install the air filters.

10. CUSTOMER GUIDANCE

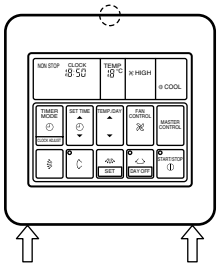
Explain the following to the customer in accordance with the operating manual:

(1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow adjustment, and other remote controller operations.
(2) Air filter removal and cleaning.
(3) Give the operating and installation manuals to the customer.

11. REMOTE CONTROLLER INSTALLATION

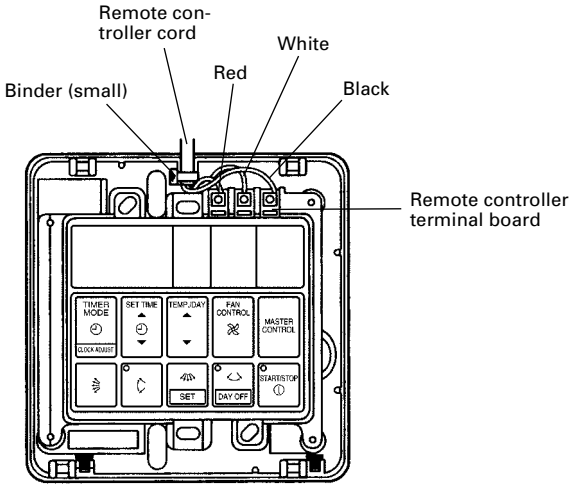
• Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
• Disconnect the remote controller cord from the remote controller terminal board.

Fig. 45



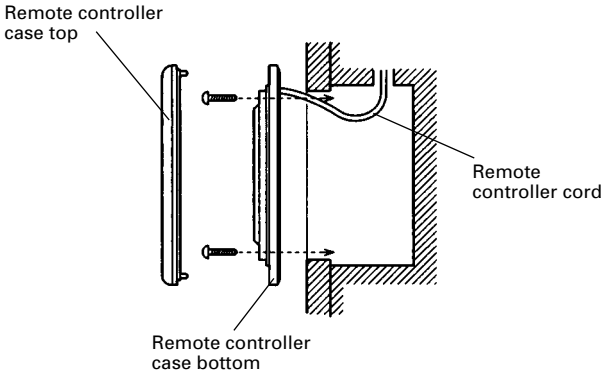
(1) When remote controller exposed
  1) Make a notch in the thin part (◌ part of Fig. 45) at the remote controller case top and bottom with nippers, file, etc.
  2) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 46).
  3) Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 46.
  4) Cut off the excess binder.

Fig. 46



(2) When remote controller cord embedded
  1) Embed the remote controller cord and box.
  2) Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 47).
  3) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 46).

Fig. 47 [Example]



• After wiring work is complete, return the remote controller case top to its original state.

⚠ CAUTION

(1) Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.

(2) When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.

(3) Do not touch the remote controller PC board and PC board parts directly with your hands.

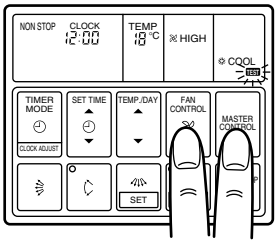
12. TEST RUNNING

REMOTE CONTROLLER

- Supply power to the crankcase heater 12 hours before the start of operation in the winter.
- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display.

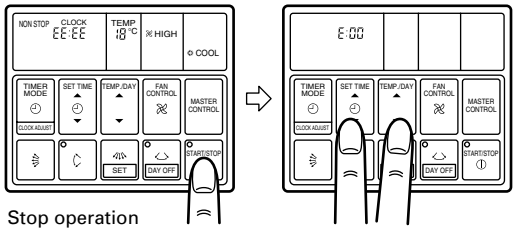
  However, the SET TEMP. setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 48).

Fig. 48



- When EE : EE blinks at the current time display, there is an error inside the air conditioner. If the SET TIME button (▼) and SET TEMP./DAY button (▼) are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display. (Fig. 49) When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation. (Fig. 49) Process the error contents by referring to (Table 6).

Fig. 49



Stop operation

Table 6

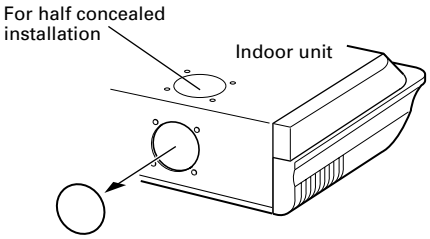
Error cord	Error contents
E:00	Communication error (indoor unit ←→ remote controller)
E:01	Communication error (indoor unit ←→ outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shorted
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shorted
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shorted
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shorted
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shorted
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E:11	Model abnormal
E:12	Indoor fan abnormal
E:13	Outdoor signal abnormal
E:14	Outdoor EEPROM abnormal

- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test running.

13. FRESH-AIR INTAKE

(1) Open up the knockout hole for the fresh-air intake, as shown in Fig. 50. (If using half-concealed installation, open up the top knockout hole instead.)

Fig. 50



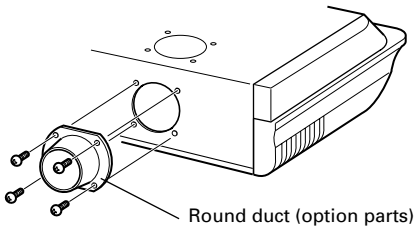
⚠ CAUTION

(1) When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case).

(2) When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.

(2) Fasten the round flange (optional) to the fresh-air intake, as shown in Fig. 51. (If using half-concealed installation, attach to the top.)

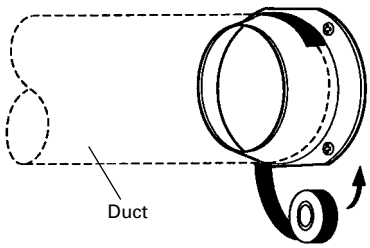
Fig. 51



[After completing "2. INDOOR UNIT INSTALLATION"...]

(3) Connect the duct to the round flange.
(4) Seal with a band and vinyl tape, etc. so that air does not leak from the connection.

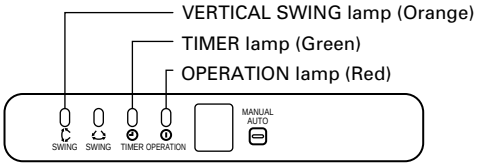
Fig. 52



14. A ERROR DISPLAY

Operation can be checked by lighting and flashing of the display section OPERATION, TIMER and VERTICAL SWING lamps.
Perform judgment in accordance with the following.

Fig. 53



• Test running

When the air conditioner is run by pressing the remote controller test run button, the OPERATION, TIMER and VERTICAL SWING lamps flash slowly at the same time.

• Error

The OPERATION, TIMER and VERTICAL SWING lamps operate as follows (Table 7) according to the error contents.

Table 7

Error display			Error contents
OPERATION lamp	TIMER lamp	VERTICAL SWING lamp	
Blinks	Blinks	Goes off	Model information abnormal (permanent type)
Pulses 4 times	Blinks	Goes off	Drain abnormal (permanent type)
Pulses 6 times	Blinks	Goes off	Indoor fan abnormal
Pulses 2 times	Blinks	Goes off	Room air temperature thermistor open circuited
		Blinks	Room air temperature thermistor shortcircuited
Pulses 3 times	Blinks	Goes off	Piping thermistor open circuited
		Blinks	Piping thermistor short-circuited
Pulses 5 times	Blinks	Goes off	Serial communications abnormal
Blinks	Pulses 2 times	Goes off	Reverse phase wire connection abnormal
Blinks	Pulses 3 times	Goes off	Outdoor heat exchange thermistor open circuited
		Blinks	Outdoor heat exchange thermistor shortcircuited
Blinks	Pulses 6 times	Goes off	Low pressure abnormal
Blinks	Pulses 5 times	Goes off	Outdoor discharge thermistor open circuited
		Blinks	Outdoor discharge thermistor shortcircuited
Blinks	Pulses 7 times	Goes off	Discharge temperature abnormal
Blinks	Pulses 4 times	Goes off	Outdoor air temperature thermistor open circuited
		Blinks	Outdoor air temperature thermistor shortcircuited

5.1–2 Floor Console/ Under Ceiling Dual Type

SPLIT TYPE AIR CONDITIONER
(PART NO. 9363073010)

Refrigerant
R407C

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the air conditioner piping and cords available standards parts.** **This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area.** **If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Never cut the power cord, lengthen or shorten the cord, or change the plug.**
(6)	**Also, do not use an extension cord.**
(7)	**Plug in the power cord plug firmly. If the receptacle is loose, repair it before using the air conditioner.**
(8)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**

SELECTING THE MOUNTING POSITION

⚠ WARNING

Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.

⚠ CAUTION

(1) Do not install where there is the danger of combustible gas leakage.

(2) Do not install the unit near a source of heat, steam, or flammable gas.

(3) If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

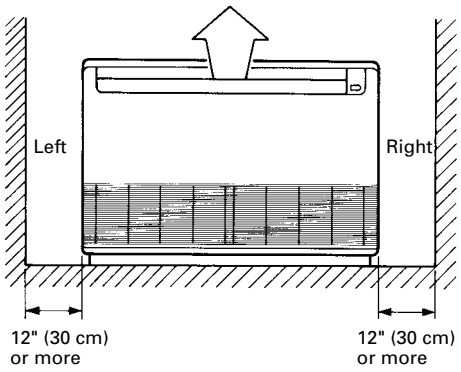
Decide the mounting position with the customer as follows:

INDOOR UNIT

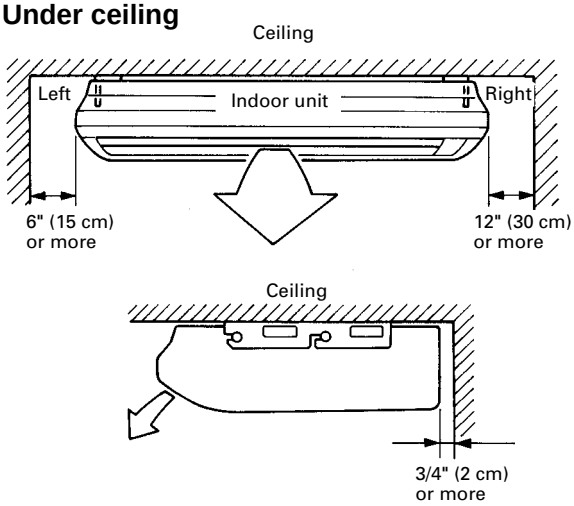
(1) Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
(2) The inlet and outlet ports should not be obstructed : the air should be able to blow all over the room.
(3) Install the unit near an electric outlet or special branch circuit.
(4) Do not install the unit where it will be exposed to direct sunlight.
(5) Install the unit where connection to the outdoor unit is easy.
(6) Install the unit where the drain pipe can be easily installed.
(7) Take servicing, etc. into consideration and leave the spaces shown in Fig.1. Also install the unit where the filter can be removed.

Fig. 1

• Floor console



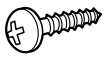
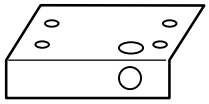
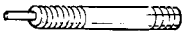
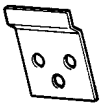
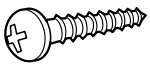
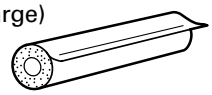
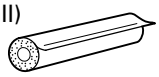
• Under ceiling

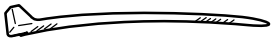
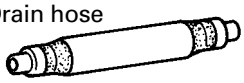
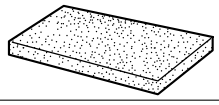
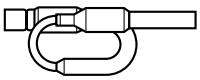
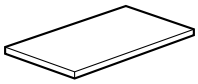


STANDARD PARTS

The following installation parts are furnished.
Use them as required.

INDOOR UNIT ACCESSORIES

Description	Q'ty	Application
Cover plate (left) 	1	
Cover plate (right) 	1	
Tapping screw (ø4 x 10) 	2	
Installation template 	1	For positioning the indoor unit For under ceiling type
Bracket (left) 	1	For suspending the indoor unit from ceiling
Bracket (right) 	1	
Anchor bolt (M12) 	4	
Spring washer 	4	
Special nut 	4	
Wall bracket 	2	For suspending the indoor unit on the wall
Tapping screw (ø4 x 20) 	6	For fixing the wall bracket
Coupler heat insulation (large) 	1	For indoor side pipe joint (large pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (small pipe)

Name and Shape	Q'ty	Application
Nylon fastener 	1	For fixing the drain hose
Drain hose 	1	
Insulation (drain hose) 	1	Adhesive type 70 x 230
VT wire 	1	For fixing the drain hose L 280 mm
Indoor capillary tube 	1	
BR sheet 	2	65 x 130 x T5

OPTIONAL PARTS FOR INDOOR UNIT

Description	Part No.	Application
Joint pipe-A 	9302812021	For indoor side pipe joint

CONNECTION PIPE REQUIREMENT

Table 1

Diameter	
Small	Large
9.53 mm	15.88 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Connection cord (mm^2)	MAX	2.5
	MIN	1.5

- Always use H07RN-F or equivalent to the con-nection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

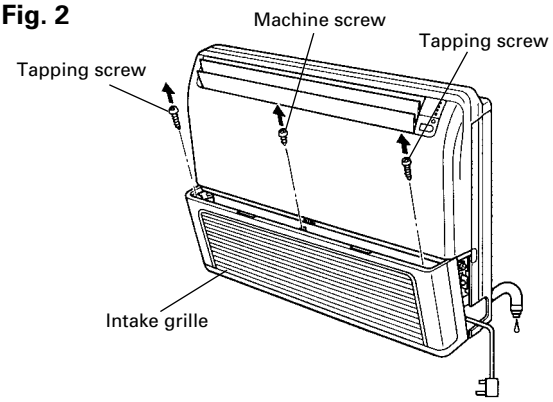
Install the air conditioner as follows:

1. PREPARING INDOOR UNIT INSTALLATION

REMOVE THE INTAKE GRILLE

Open the intake grille and remove the three screws (Fig. 2).

Fig. 2



Remark : The main unit can be wired before the indoor unit is installed. Select the most appropriate installation order.

2. INDOOR UNIT INSTALLATION

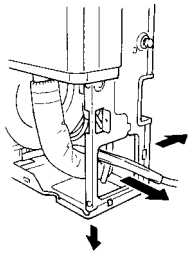
A. FLOOR CONSOLE TYPE

1. DRILLING FOR PIPING

Select piping and drain directions (Fig. 3).

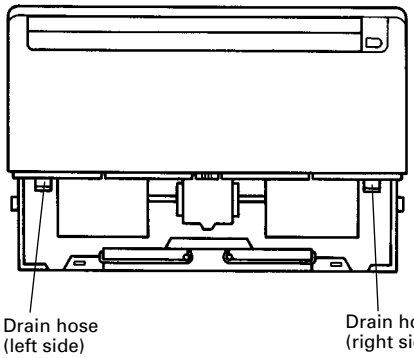
The piping and drain can be made in three directions as shown below.

Fig. 3



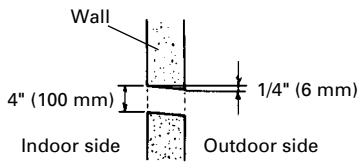
The drain hose can be connected to either the left or right side (Fig. 4).

Fig. 4



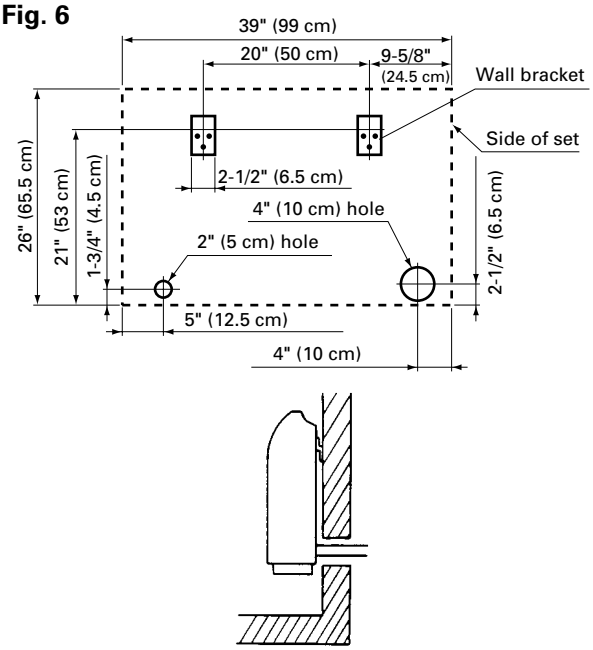
When the directions are selected, drill a 4" (10 cm) dia. hole on the wall so that the hole is tilted downward toward the outdoor for smooth water flow. When the pipe is led out from the rear, make a hole in Fig. 5, at the position shown.

Fig. 5



When installing set to wall install the accessory wall bracket at the position shown in Fig. 6, and mount the set to it.

Fig. 6



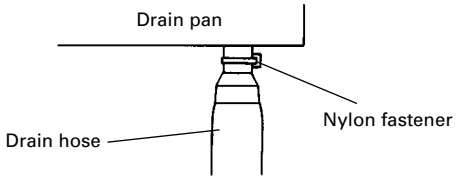
2. INSTALLING DRAIN HOSE

INSTALL THE DRAIN HOSE

Select whether the drain hose will be connected to the left or right side (Fig. 4).

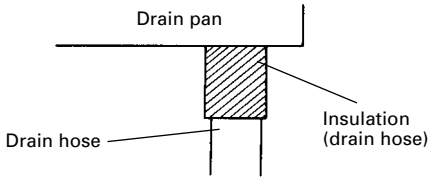
Insert the drain hose into the drain pan, then secure the drain hose with a nylon fastener (Fig. 7).

Fig. 7



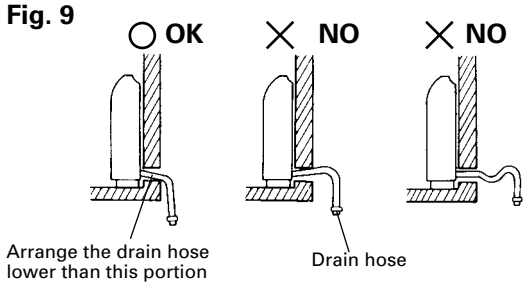
Wrap the insulation (drain hose) around the drain hose connection (Fig. 8).

Fig. 8



Be sure to arrange the drain hose so that it is leveled lower than the drain hose connecting port of the indoor unit.

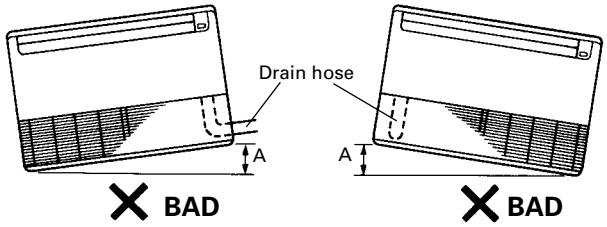
Fig. 9



⚠ CAUTION

Do not install the unit so that the drain hose side is too high. Height A should be less than 5 mm (Fig. 10).

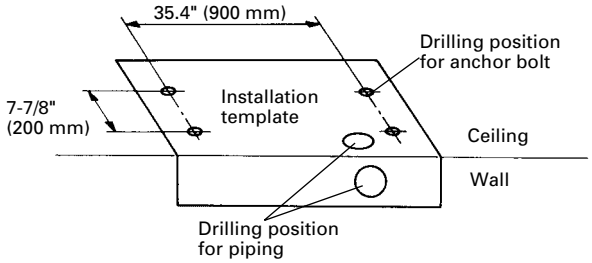
Fig. 10



B. UNDER CEILING TYPE

Using the installation template, drill holes for piping and anchor bolts (for holes) (Fig. 11).

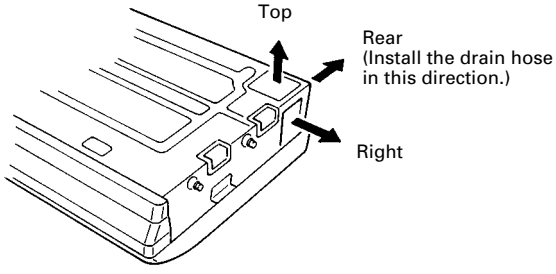
Fig.11



1. DRILLING FOR PIPING

Select piping and drain directions (Fig. 12).

Fig.12

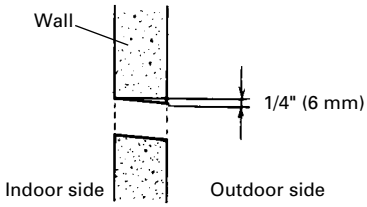


⚠ CAUTION

Install the drain hose at the rear; it should not be installed on the top or right side.

When the directions are selected, drill 3-1/8″ (80 mm) and 2″ (50 mm) or 6″ (150 mm) dia. hole on the wall so that the hole is tilted downward toward the outdoor for smooth water flow.

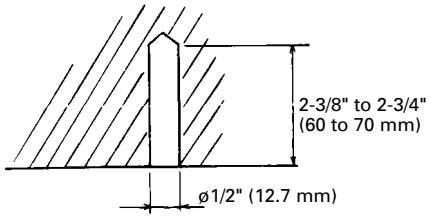
Fig.13



2. DRILLING HOLES FOR ANCHOR BOLTS AND INSTALLING THE ANCHOR BOLTS

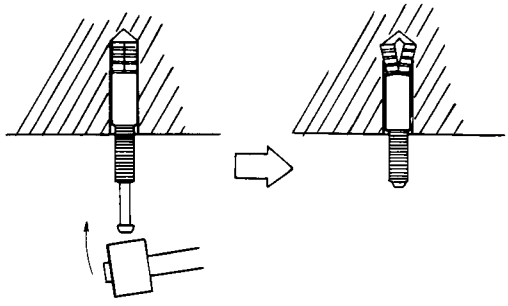
With a concrete drill, drill four 1/2″ (12.7 mm) dia. holes (Fig. 14).

Fig.14



Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer (Fig. 15).

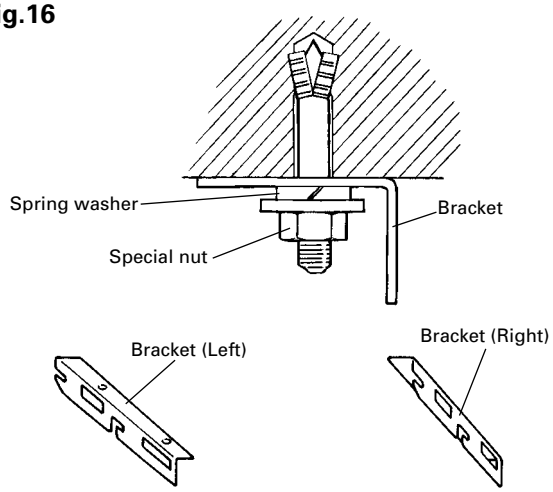
Fig.15



3. INSTALLING BRACKETS

Install the brackets with nuts, washers and spring washers (Fig. 16).

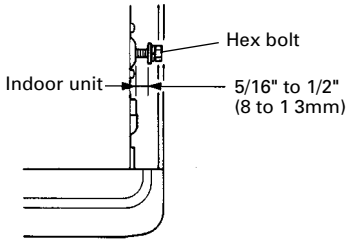
Fig.16



4. INSTALLING INDOOR UNIT

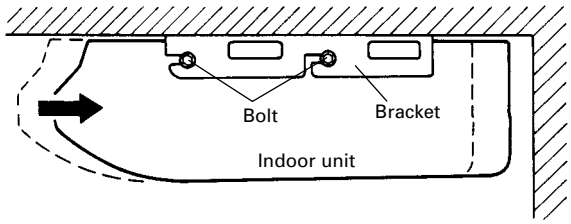
Reset the hex bolts as shown in Fig. 17.

Fig.17



Apply the indoor unit to the brackets (Fig. 18).

Fig.18



Now, securely tighten the hex bolts in both sides.

5. INSTALL THE DRAIN HOSE

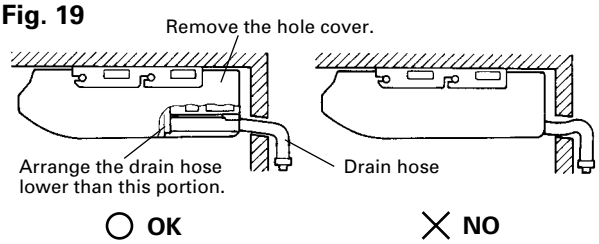
Select whether the drain hose will be connected to the left or right side (Fig. 4).

Insert the drain hose into the drain pan, then secure the drain hose with a nylon fastener (Fig. 7).

Wrap the insulation (drain hose) around the drain hose connection (Fig. 8).

Be sure to arrange the drain hose so that it is leveled lower than the drain hose connecting port of the indoor unit (Fig. 19).

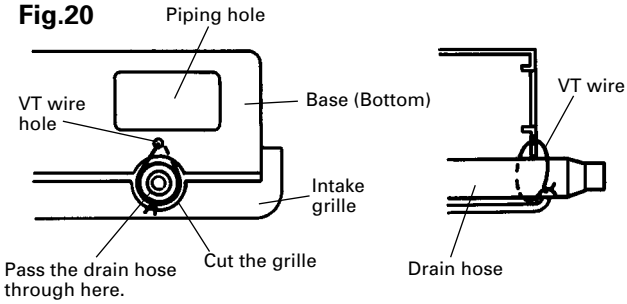
Fig. 19



When drain hose is arranged backward.

Secure the drain hose with the VT wire (Fig.20).

Fig.20



3. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part.

Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.

(2) Holding the pipe downwards so that cuttings cannot enter the pipe and remove the burrs.

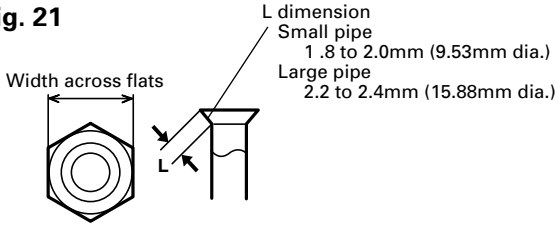
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.

(4) Check if the flared part "L" (Fig. 21) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe	Small (width across flats 22 mm)
Large pipe	Large (width across flats 24 mm)

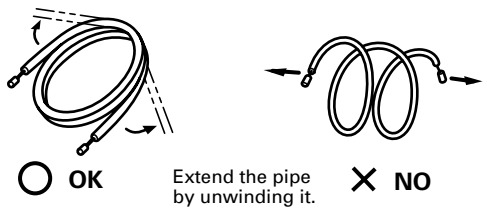
Fig. 21



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Fig. 22

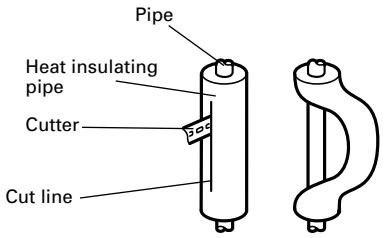


Do not bend the pipes in an angle more than 90°.

When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 23, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 23

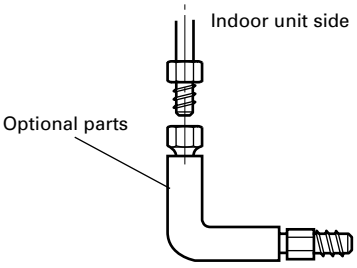


3. CONNECTION PIPES

Centering the pipe against port on the indoor unit, turn the flare nut with your hand (Fig. 24).

Be sure that the small pipe is completely installed before connecting the large pipe.

Fig. 24



⚠ CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.

Fig. 25

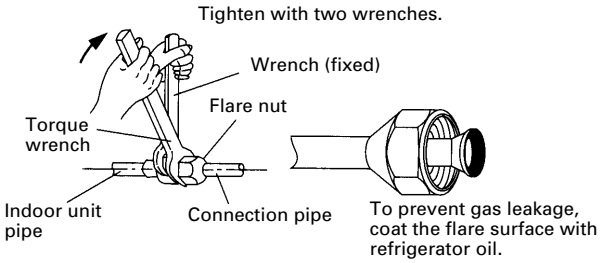


Table 4 : Flare nut tightening torque

Flare nut	Tightening torque
Small pipe (9.53 mm dia.)	30.4 to 34.3 N · m (310 to 350 kgf · cm)
Large pipe (15.88 mm dia.)	73.6 to 78.5 N · m (750 to 800 kgf · cm)

Do not remove the cap from the connection pipe before connecting the pipe.

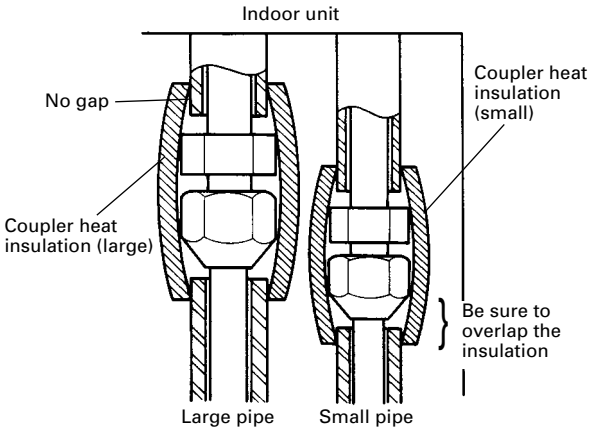
⚠ CAUTION

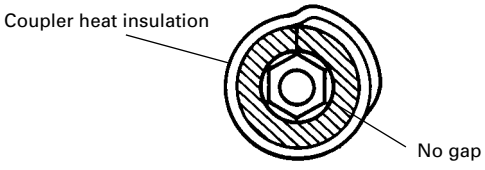
Be sure to connect the large pipe after connecting the small pipe completely.

4. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)

Put coupler heat insulation on the joints (indoor side only) (Fig. 26).

Fig.26





5. CONNECTING AN INDOOR CAPILLARY TUBE

Installation Procedure

(1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 27.

(2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 28.

(3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 29) and affix the insulation with tape.

(4) Secure the insulation using the binders (Fig. 30).

- If the joint pipe must be installed, refer to the installation installation manual for the outdoor unit for details.

Fig. 27

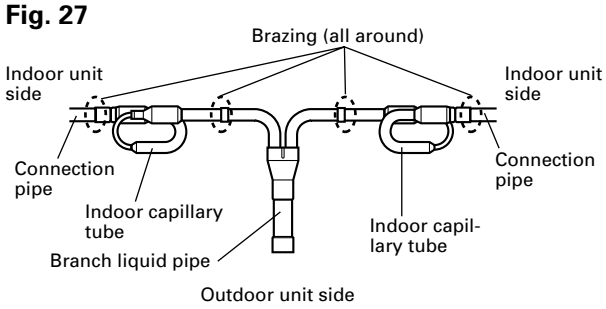


Fig. 28

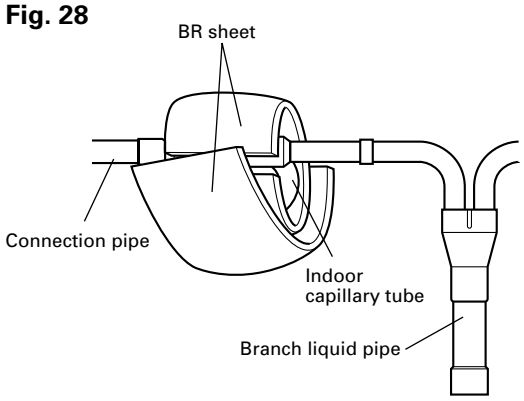


Fig. 29

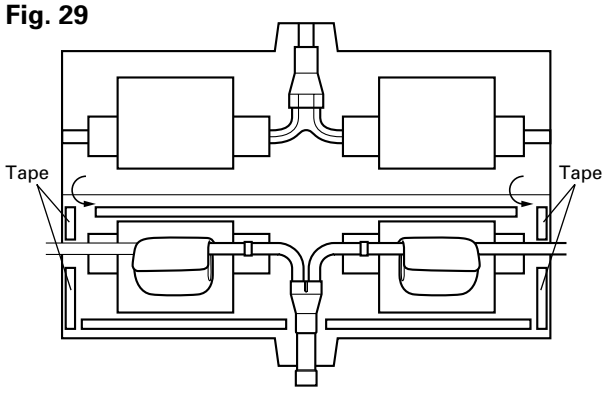
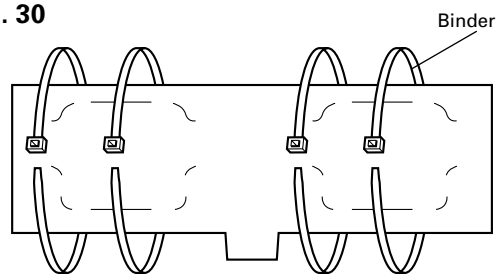


Fig. 30



4. GAS LEAKAGE INSPECTION

⚠ CAUTION

After connecting the piping, check the joints for gas leakage with gas leak detector.

5. HOW TO CONNECT WIRING TO THE TERMINALS

1. IF ONE WIRE IS CONNECTED TO ONE TERMINAL BLOCK.

A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 15/16" (25 mm) to expose the solid wire.

(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.

(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

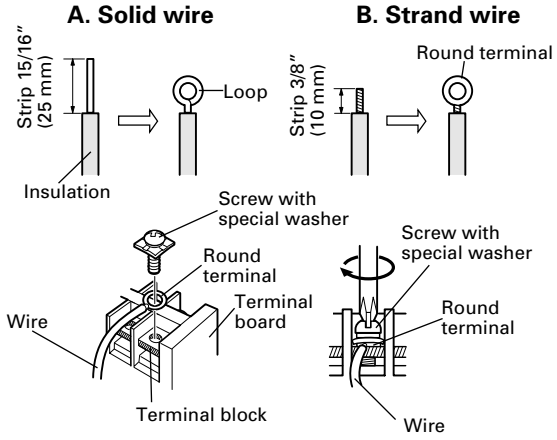
(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.

(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.

(4) Position the round terminal wire, and replace and tighten the terminal screw using a screw-driver.

Fig. 31

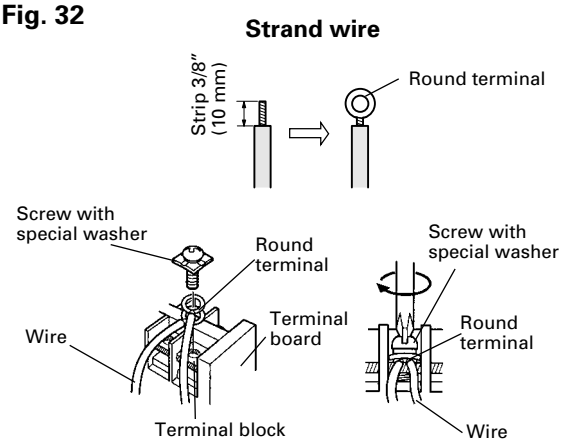


2. IF TWO WIRES ARE CONNECTED TO ONE TERMINAL BLOCK.

A. As a rule, round terminal should be used to connect to the terminal block.

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screw-driver.

Fig. 32

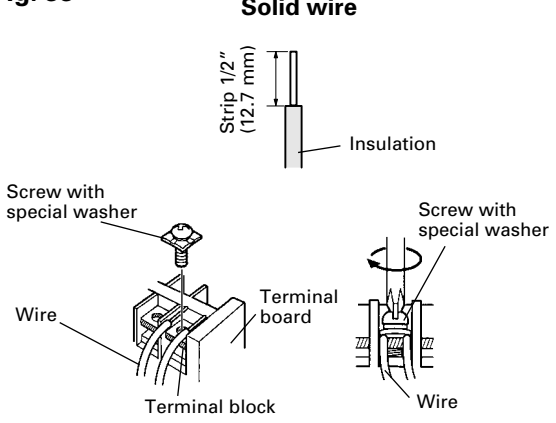


B. If round terminal cannot be used, the following items should be followed.

For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 1/2" (12.7 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Wires with the same diameter should be connected on both sides as shown in Fig. 33.
Since connecting wires with different diameters causes the wires to heat up due to loose connections, this method should not be used.

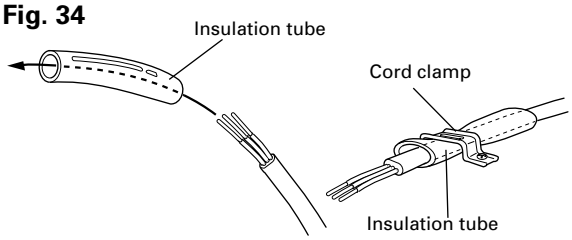
Fig. 33



HOW TO FIX THE CONNECTION CORD

After passing the connection cord through the insulation tube, fasten it with the cord clamp.

Fig. 34



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

6. ELECTRICAL WIRING

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the indoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the indoor unit.
Erroneous wiring may cause burning of the electric parts.

(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulation is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

1. REMOVE THE ELECTRIC COMPONENT BOX

Fig.35

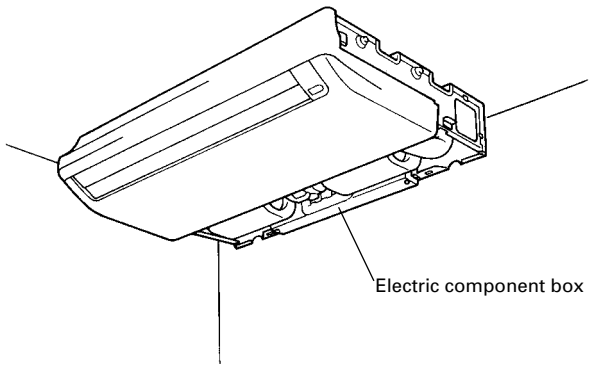
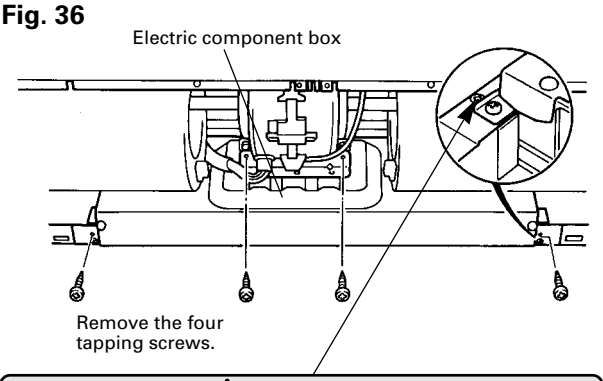


Fig. 36

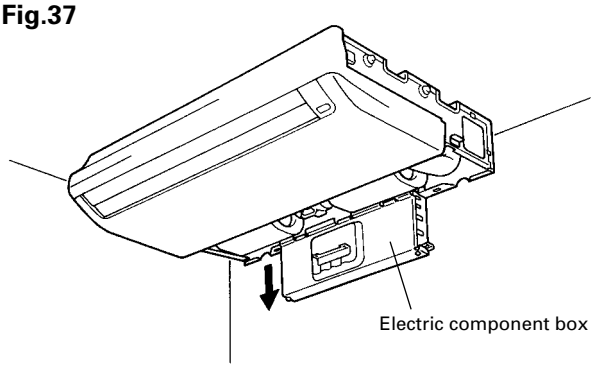


⚠ CAUTION

Do not remove the screws. If the stays are removed, the electric component box will fall.

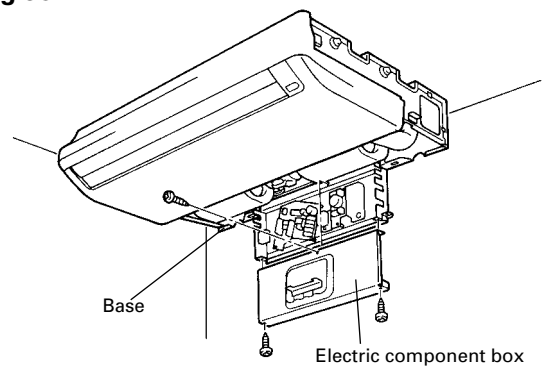
2. PULL OUT THE ELECTRIC COMPONENT BOX

Fig.37



3. REMOVE THE ELECTRIC COMPONENT BOX COVER

Fig.38



Remove the three tapping screws.

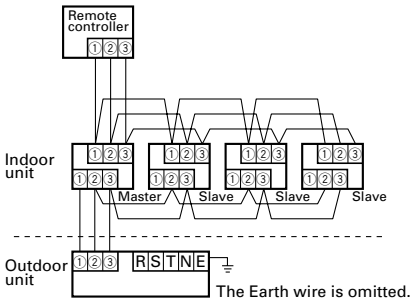
⚠ CAUTION

Be careful not to pinch the lead wires between the electric component box and base.

4. WIRING

A. Simultaneous operation for buildings

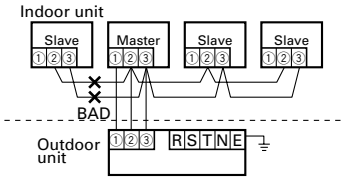
Fig. 39



⚠ CAUTION

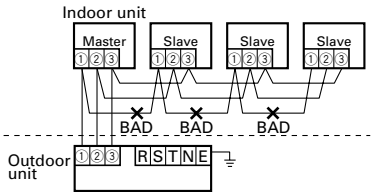
(1) Connect a maximum of 2 wires on a single terminal block. (If 3 or more wires are connected, they could become loose and cause heating.)

Fig. 40



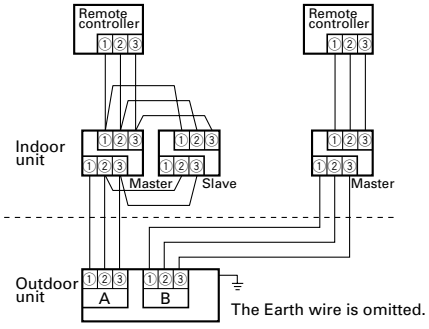
(2) Crossovers as in (①) should not be connected when connecting wires between the master unit and slave units, and from slave unit to slave unit. (The system will not operate correctly.)

Fig. 41



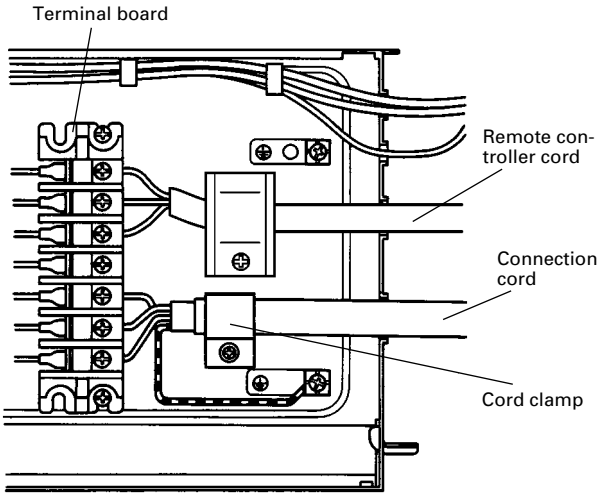
B. Individual operation for buildings

Fig. 42



(1) Remove the cord clamp.
(2) Process the end of the connection cords to the dimensions shown in Fig. 43.
(3) Connect the end of the connection cord fully into the terminal board.

Fig. 43



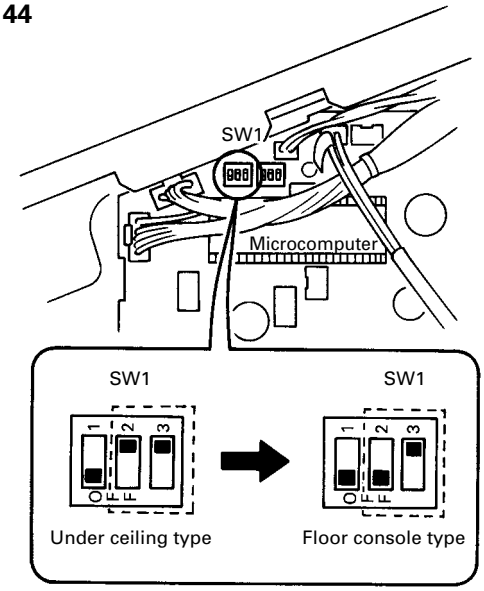
(4) Fasten the connection cord with a cord clamp.
(5) Fasten the end of the connection cord with the screw.

7. PRINTED CIRCUIT BOARD SETTING

1. FLOOR CONSOLE / UNDER CEILING SELECT SWITCH

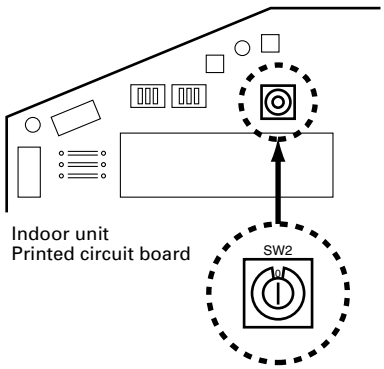
(1) The electrical circuits for this were set for use as a ceiling type at the factory.
(2) The following changes must be made to the settings if the unit is to be used as a floor type.
(3) Changing the settings for the electrical circuits.
Switch 1 (SW1) on the printed circuit board inside the electric component box must be set as follows.

Fig. 44



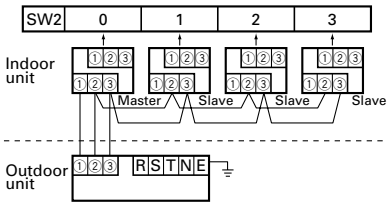
2. MASTER/SLAVE SELECT SWITCH

Fig. 45



- For the master unit, set SW2 on "0". For a slave unit, set SW2 on "1~3".

Fig. 46 [Example]

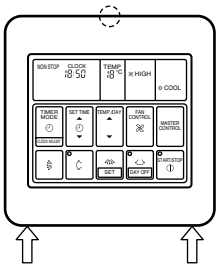


- A master unit is an indoor unit with the power line connected directly from the outdoor unit.

8. REMOTE CONTROLLER INSTALLATION

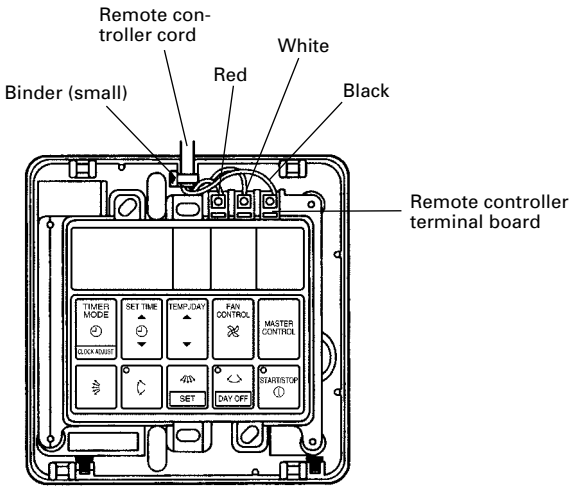
- Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
- Disconnect the remote controller cord from the remote controller terminal board.

Fig. 47



(1) When remote controller exposed
1) Make a notch in the thin part (part of Fig. 47) at the remote controller case top and bottom with nippers, file, etc.
2) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 48).
3) Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 48.
4) Cut off the excess binder.

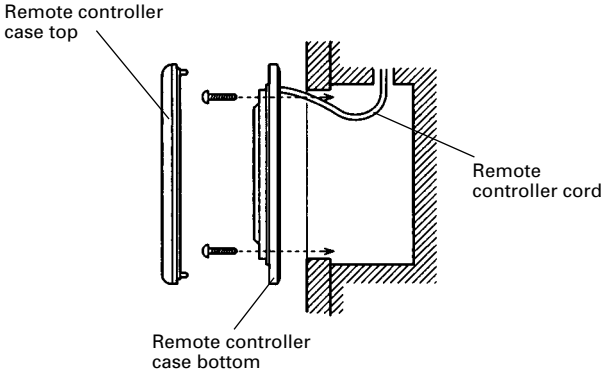
Fig. 48



(2) When remote controller cord embedded

1) Embed the remote controller cord and box.
2) Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 49).
3) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 48).

Fig. 49 [Example]



- After wiring work is complete, return the remote controller case top to its original state.

⚠ CAUTION

(1) Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.

(2) When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.

(3) Do not touch the remote controller PC board and PC board parts directly with your hands.

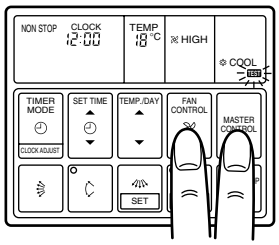
9. TEST RUNNING

REMOTE CONTROLLER

- Supply power to the crankcase heater 12 hours before the start of operation in the winter.
- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display.

  However, the SET TEMP./DAY setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 50).

Fig. 50



- When EE : EE blinks at the current time display, there is an error inside the air conditioner. If the SET TIME button (▼) and SET TEMP./DAY button (▼) are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display (Fig. 51). When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation (Fig. 51). Process the error contents by referring to (Table 5).

Fig. 51

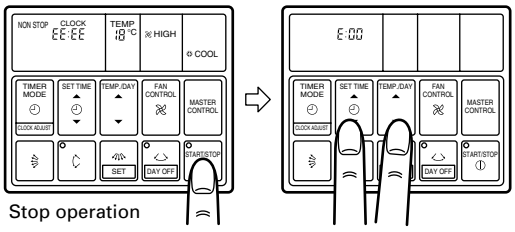


Table 5

Error cord	Error contents
E:00	Communication error (indoor unit ⟷ remote controller)
E:01	Communication error (indoor unit ⟷ outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shorted
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shorted
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shorted
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shorted
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shorted
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E:11	Model abnormal
E:12	Indoor fan abnormal
E:13	Outdoor signal abnormal
E:14	Outdoor EEPROM abnormal

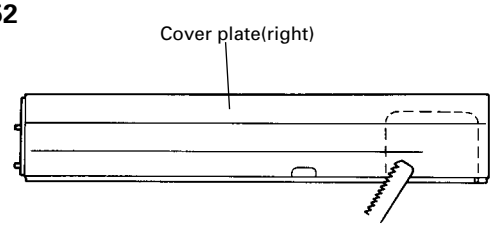
- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test running.

10. MOUNT THE COVER PLATE AND THE INTAKE GRILLE

1. MOUNT THE COVER PLATE (RIGHT)

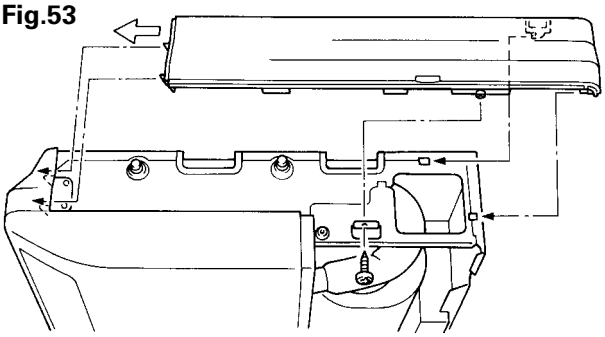
(1) Cut a pipe exit hole in the right plate. This is only when the pipe exits from the right side. (This operation is not required when the protrusion is on the top or rear.)

Fig.52



(2) Join the cover plates (right) and mount with screws (Fig.53).

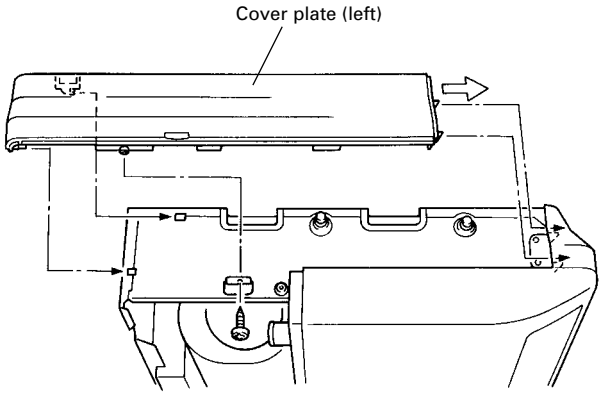
Fig.53



2. MOUNT THE COVER PLATE (LEFT)

(1) Join the cover plates (left) and mount with screws.

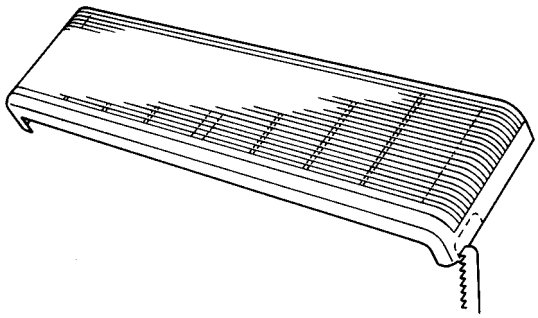
Fig.54



3. MOUNT THE INTAKE GRILLE

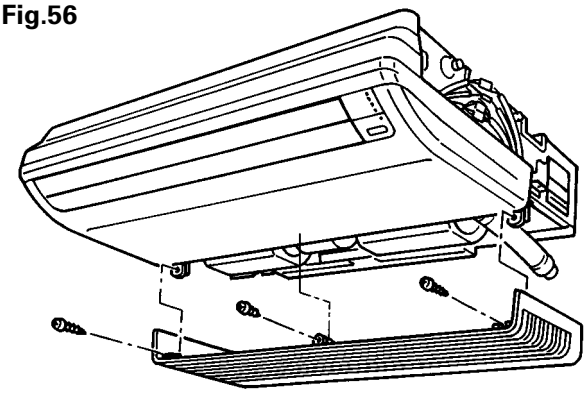
(1) Cut the right side of the intake grille. This is only when the pipe exits from the right side (Fig. 55).

Fig.55



(2) Insert the hinges on the bottom of the intake grille into the holes in the base assembly. Then mount the arms to the three areas on the top of the intake grille (Fig. 56).

Fig.56



11. CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual :

(1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote controller operations.

(2) Air filter removal and cleaning, and how to use the air louvers.

(3) Give the operating and installation manuals to the customer.

5.1–3 Compact Cassette Type

Refrigerant R407C

SPLIT TYPE AIR CONDITIONER (PART NO. 9364130019)

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

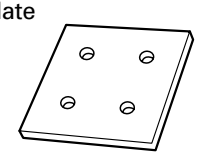
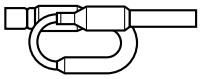
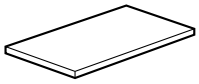
⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**

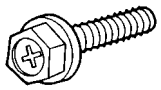
STANDARD PARTS

The following installation parts are furnished.
Use them as required.

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Coupler heat insulation 	2	For indoor side pipe joint
Special nut A (large flange) 	4	For installing indoor unit
Special nut B (small flange) 	4	For installing indoor unit
Template 	1	For ceiling hole cutting
Indoor capillary tube 	1	
BR sheet 	2	65 x 130 x T5

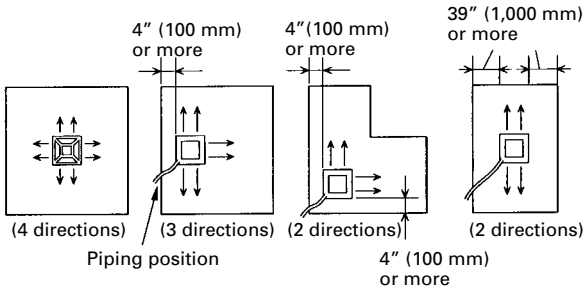
GRILLE ACCESSORIES

Bolt 	4	For mounting grille
Washer 	4	For mounting grille
Spring washer 	4	For mounting grille
Blower cover insulation 	2	For discharged air

SELECTING THE MOUNTING POSITION

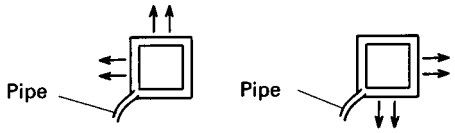
Especially, the installation place is very important for the split type air conditioner because it is very difficult to move from place to place after the first installation.
Decide the mounting position together with the customer as follows:
The discharge direction can be selected as shown below.

Fig. 1



⚠ CAUTION

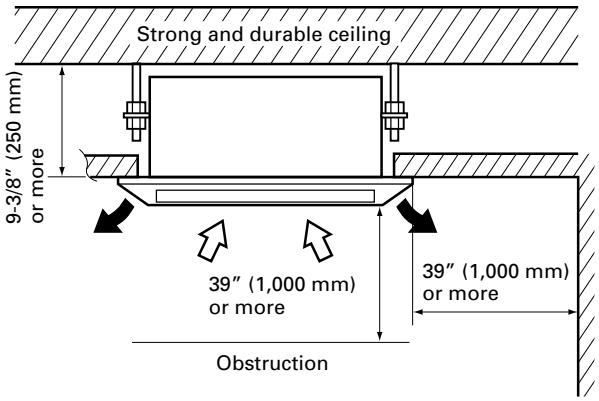
Since 2-way outlet as shown below causes performance problems, do not set it.



INDOOR UNIT

(1) Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
(2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
(3) Leave the space required to service the air conditioner (Fig. 2).
(4) The ceiling rear height is 9-3/8″ inches (250 mm) or more.
(5) A place from where the air can be distributed evenly throughout the room by the unit.
(6) A place from where drainage can be extracted outdoors easily.

Fig. 2



CONNECTION PIPE REQUIREMENT

Table 1

Diameter	
Small	Large
6.35 mm (1/4 in)	12.7 mm (1/2 in)

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Connection cord (mm^2)	MAX	2.5
	MIN	1.5

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units (Both indoor unit and outdoor unit).

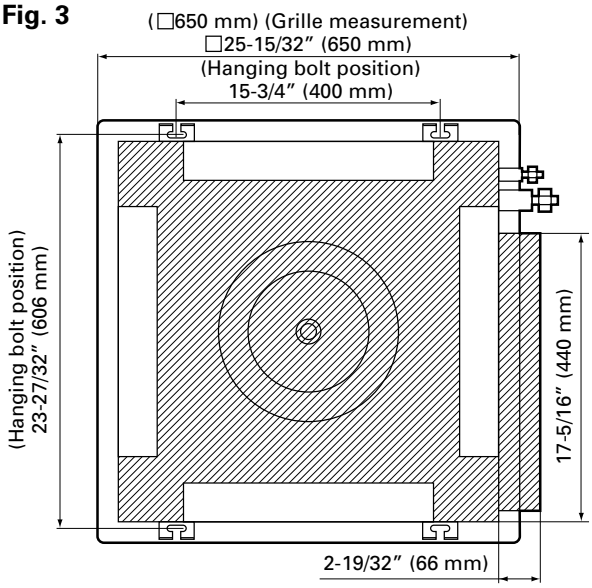
INSTALLATION PROCEDURE

Install the air conditioner as follows:

1. INDOOR UNIT INSTALLATION

1. POSITION THE CEILING HOLE AND HANGING BOLTS

Fig. 3



2. HANGING PREPARATIONS

Firmly fasten the hanging bolts as shown in Fig. 4 or by another method.

Fig. 4

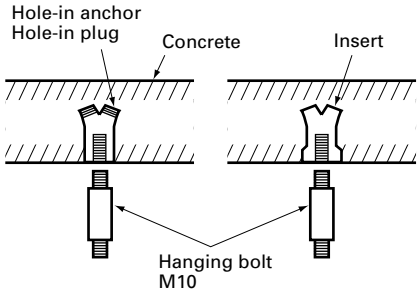
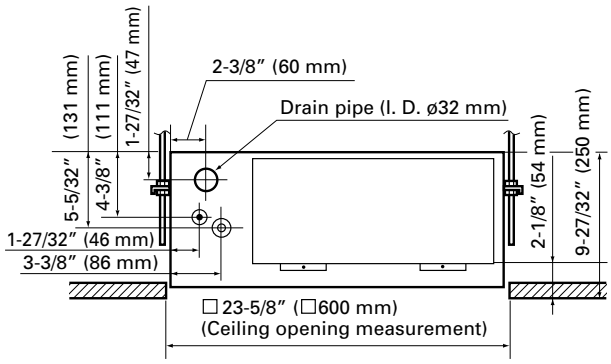


Fig. 5



3. BODY INSTALLATION

(1) Install special nut A, then special nut B onto the hanging bolt (Fig. 6).
(2) Raise the body and mount its hooks onto the hanging bolt between the special nuts (Fig. 6).
(3) Turn special nut B to adjust the height of the body (Fig. 6).
(4) Leveling
Using a level, or vinyl hose filled with water, fine adjust so that the body is level.

⚠ WARNING

Perform final tightening by tightening the double nut firmly.

Fig. 6

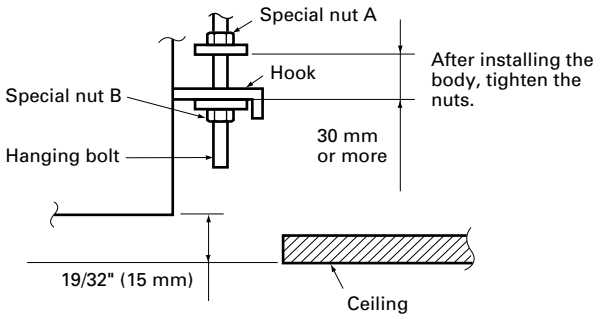
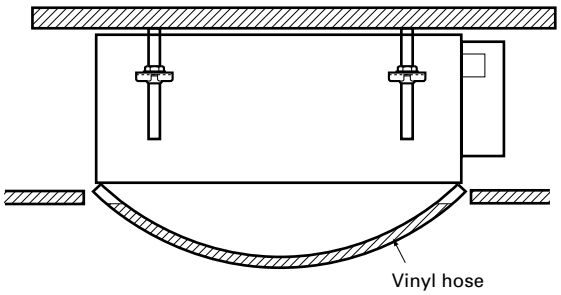


Fig. 7



2. INSTALLING DRAIN PIPE

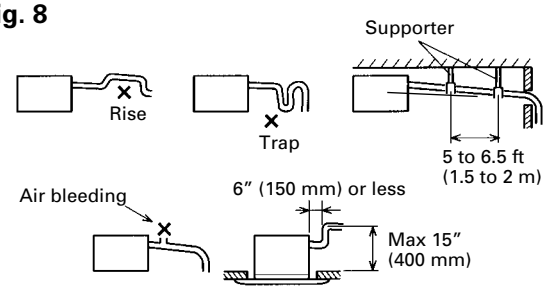
⚠ WARNING

Install the drain pipe in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

NOTE : Install the drain pipe.

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 1-1/4" (32 mm)] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the pipe is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain pipe.
- When desiring a high drain pipe height, raise it up to 15" (400 mm) or less from the ceiling within a range of 6" (150 mm) from the body. A rise dimension over this range will cause leakage.

Fig. 8



3. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

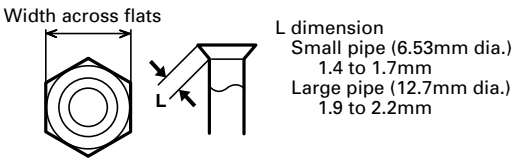
1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.
(2) Holding the pipe downward so that cuttings cannot enter the pipe and remove the burrs.
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.
(4) Check if the flared part "L" (Fig. 9) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe (6.35 mm dia.)	Small (width across flats 17 mm)
Large pipe (12.7 mm dia.)	Large (width across flats 24 mm)

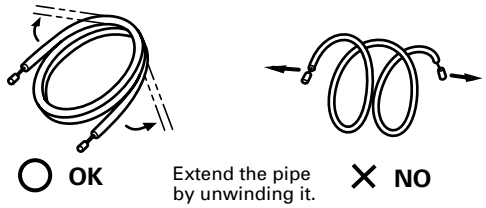
Fig. 9



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Fig. 10

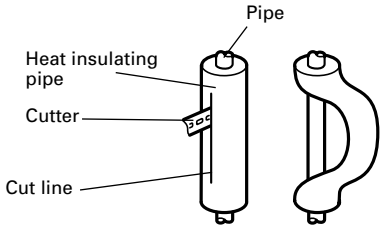


Do not bend the pipes in an angle more than 90°.

When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bent or stretch them any more. Do not bent or stretch the pipes more than three times.

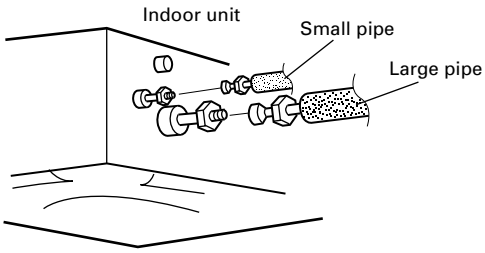
When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 11, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 11



3. CONNECTION PIPES

Fig. 12



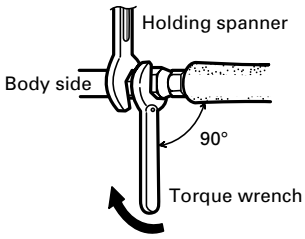
⚠ CAUTION

(1) Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

(2) Do not remove the flare nut from the indoor unit pipe immediately before connecting the connection pipe.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench (Fig. 13).

Fig. 13



⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 13, in order to tighten the flare nut correctly.

Table 4 : Flare nut tightening torque

Flare nut	Tightening torque
Small pipe (6.35 mm dia.)	14.7 to 19.6 N · m (150 to 200 kgf · cm)
Large pipe (12.7 mm dia.)	49.0 to 53.9 N · m (500 to 550 kgf · cm)

⚠ CAUTION

Be sure to connect the large pipe after connecting the small pipe completely.

4. CONNECTING AN INDOOR CAPILLARY TUBE

Installation Procedure

(1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 14.

(2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 15.

(3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 16) and affix the insulation with tape.

(4) Secure the insulation using the binders (Fig. 17).

- If the joint pipe must be installed, refer to the installation manual for the outdoor unit for details.

Fig. 14

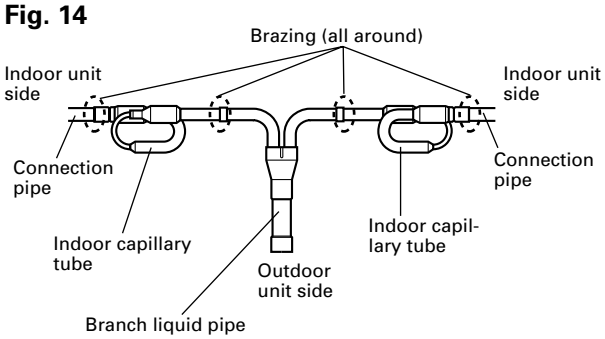


Fig. 15

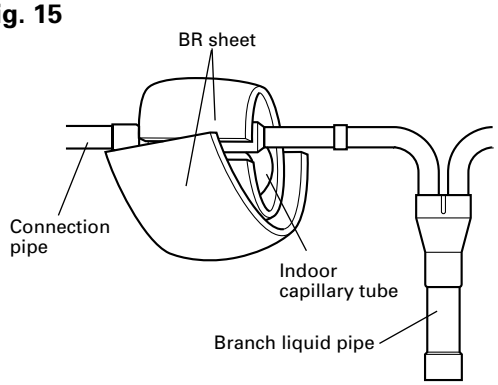


Fig. 16

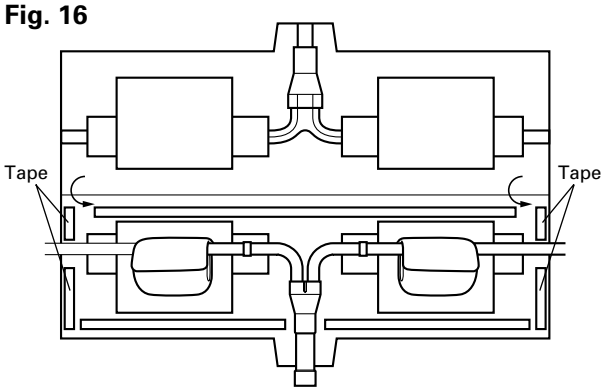
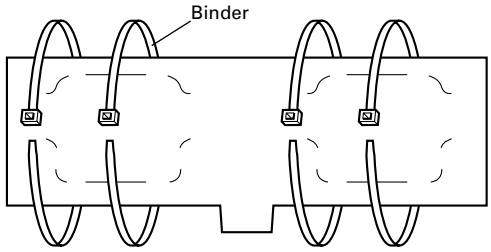


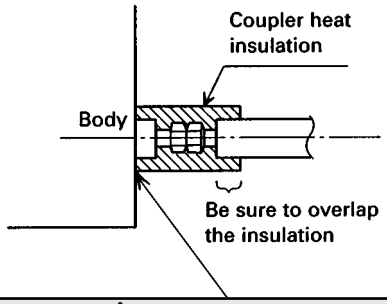
Fig. 17



4. INSTALLING THE COUPLER HEAT INSULATION

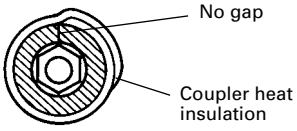
After checking for gas leaks, insulate by wrapping insulation around the two parts (large and small) of the indoor unit coupling, using the coupler heat insulation.

Fig. 18



⚠ CAUTION

Must fit tightly against body without any gap.



5. ELECTRICAL WIRING

HOW TO CONNECT WIRING TO THE TERMINALS

1. IF ONE WIRE IS CONNECTED TO ONE TERMINAL BLOCK

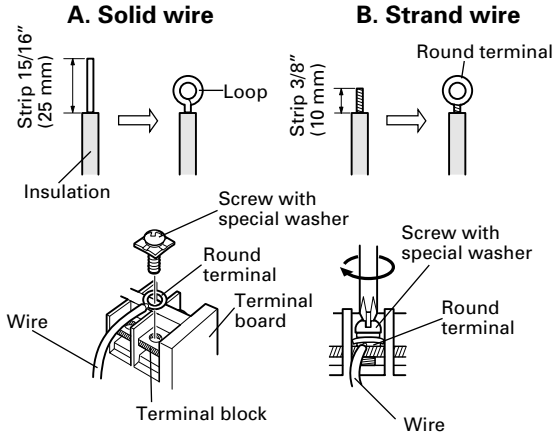
A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 15/16" (25 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 19



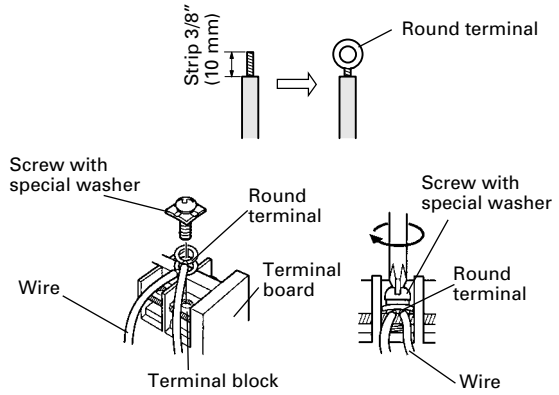
2. IF TWO WIRES ARE CONNECTED TO ONE TERMINAL BLOCK

A. As a rule, round terminal should be used to connect to the terminal block.

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 20

Strand wire



B. If round terminal cannot be used, the following items should be followed.

For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 1/2" (12.7 mm) to expose the solid wire.

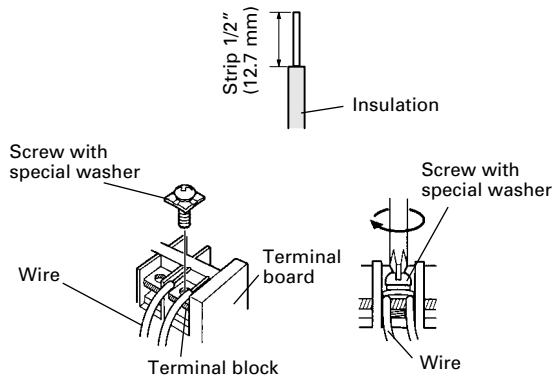
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Wires with the same diameter should be connected on both sides as shown in Fig. 21.

Since connecting wires with different diameters causes the wires to heat up due to loose connections, this method should not be used.

Fig. 21

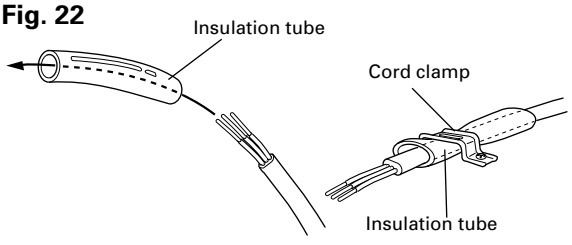
Solid wire



HOW TO FIX THE CONNECTION CORD

After passing the connection cord through the insulation tube, fasten it with the cord clamp.

Fig. 22



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the indoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulation is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

Remove the control box cover and install the connection cord (Figs. 23 and 24).

Fig. 23

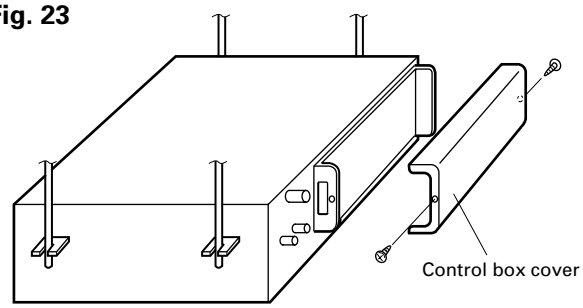
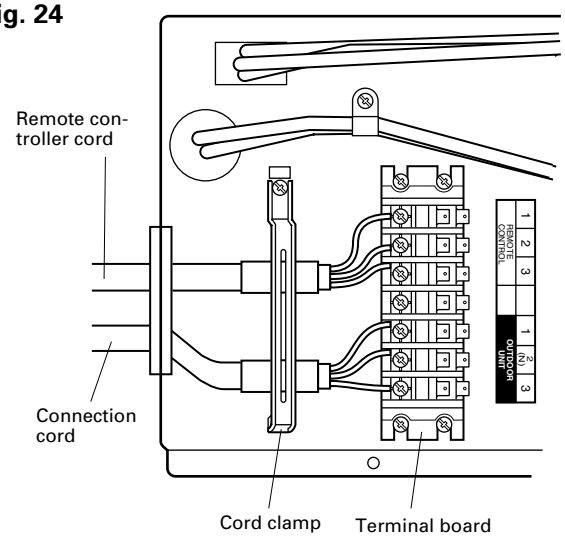


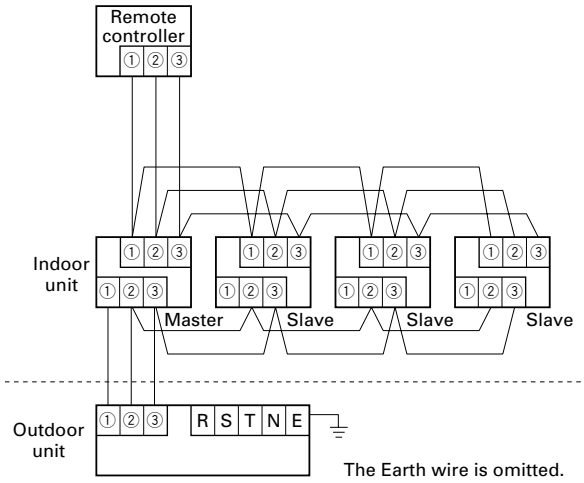
Fig. 24



CONNECTION CORD

A. Simultaneous operation for buildings

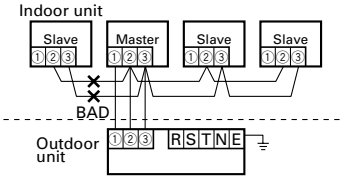
Fig. 25



⚠ CAUTION

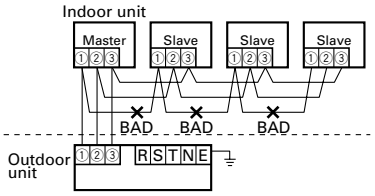
(1) Connect a maximum of 2 wires on a single terminal block. (If 3 or more wires are connected, they could become loose and cause heating.)

Fig. 26



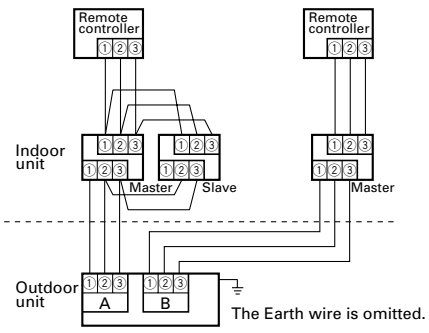
(2) Crossovers as in (①) should not be connected when connecting wires between the master unit and slave units, and from slave unit to slave unit. (The system will not operate correctly.)

Fig. 27



B. Individual operation for buildings

Fig. 28



6. GRILLE INSTALLATION

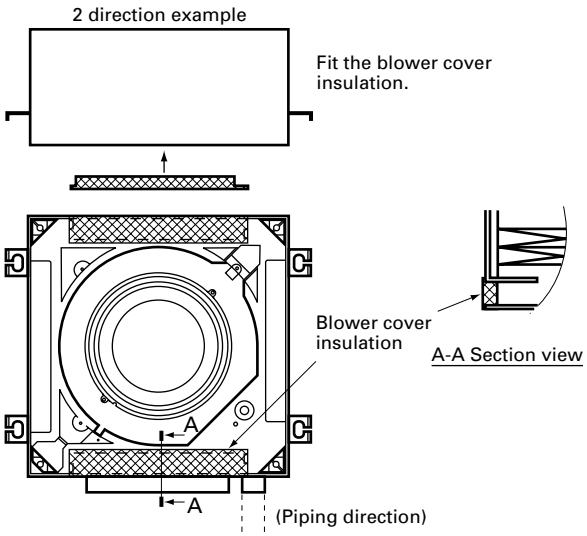
1. BLOWER COVER INSULATION

Install the blower cover insulation only when the outlet direction is not specified.

Two blower cover insulations are packed with the grille assembly.

Install the blower cover insulation at the diffuser position shown in Fig. 29. At the time, use the piping position as the criteria.

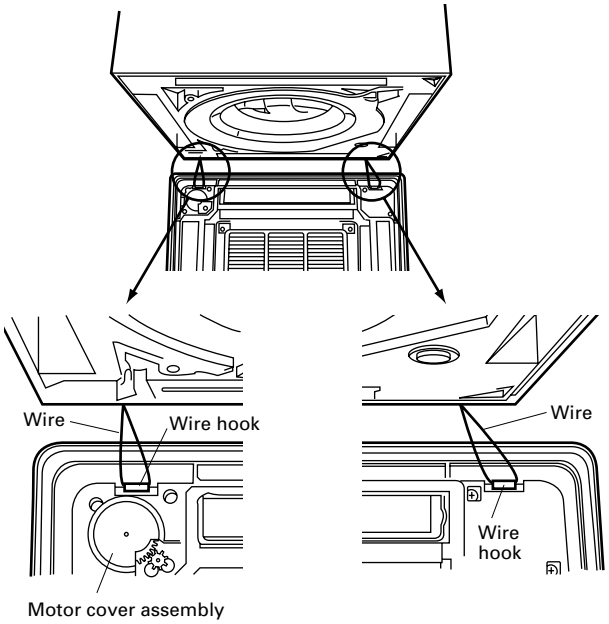
Fig. 29



2. INSTALLING GRILLE ASSEMBLY TO BODY

Hang the grille assembly on the wires attached to the indoor unit as shown in Fig. 30.

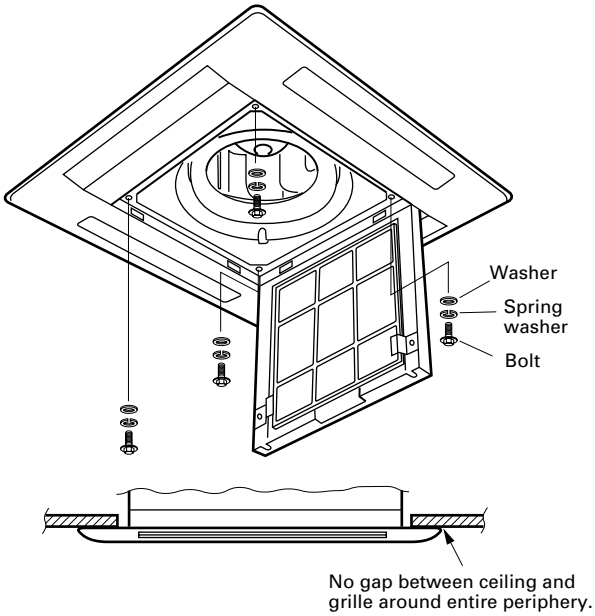
Fig. 30



Bolting the grille assembly to the body

Install the grille assembly to the body with the four bolts, spring washers, and washers.

Fig. 31



Wireless unit connection wire wiring

Connect the connector in accordance with part A detail view.

Then clamp the lead wire with clamp so that it does not touch the rotating parts.

Fig. 32

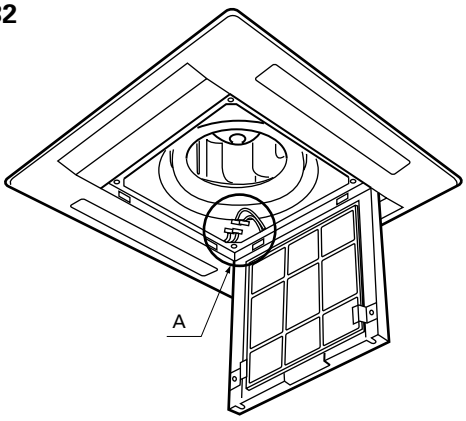
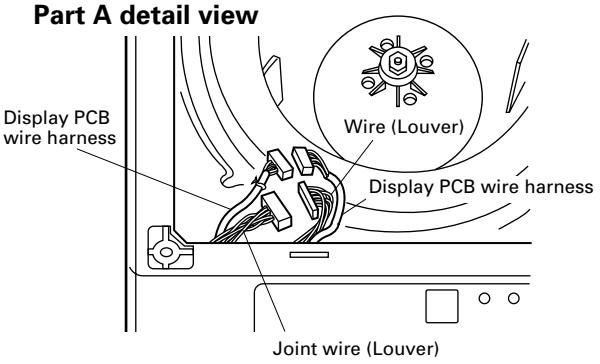


Fig. 33

Part A detail view

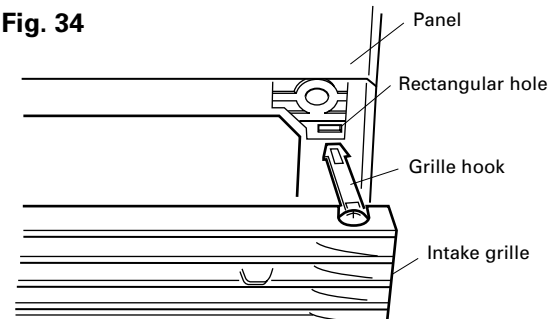


INSTALLING/REMOVING THE INTAKE GRILLE

1. INSTALLING THE INTAKE GRILLE

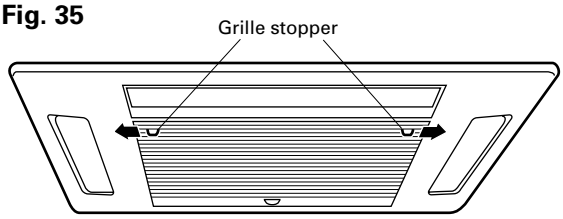
(1) Fully insert the intake grille hooks into the rectangular holes in the panel.

Fig. 34



(2) Close the intake grille, then slide the two grille stoppers outward.

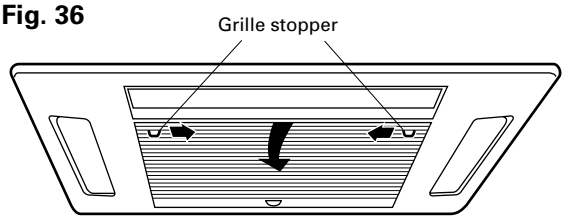
Fig. 35



2. REMOVING THE INTAKE GRILLE

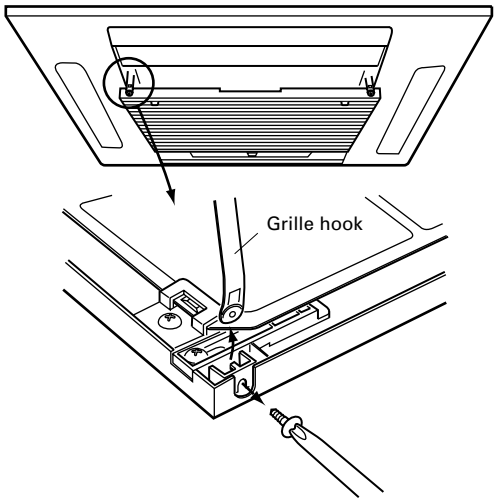
(1) Slide the two grille stoppers inward, then open the intake grille.

Fig. 36



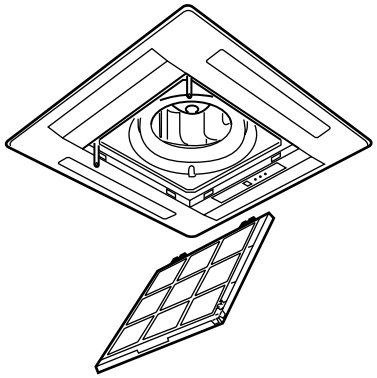
(2) Remove the grille hook screws, then open the intake grille.

Fig. 37



(3) Open the intake grille so that it is at an angle of 20° to 40°, then remove the grille.

Fig. 38



⚠ CAUTION

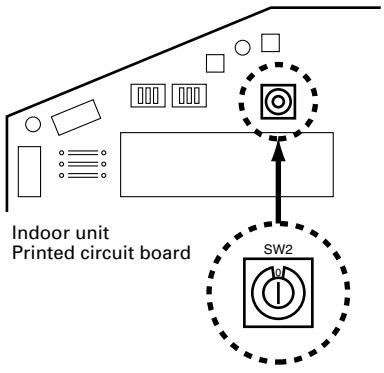
(1) The louver angle cannot be changed if the power is not on, (If moved by hand, it may be damaged.)

(2) The grille assembly is directional relative to the air conditioner body.

(3) Install so that there is no gap between the grille assembly and the air conditioner body.

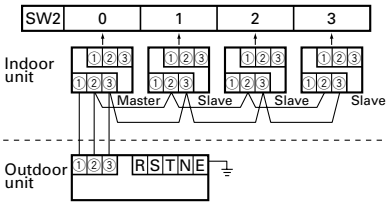
7. MASTER/SLAVE SELECT SWITCH

Fig. 39



- For the master unit, set SW2 on "0". For a slave unit, set SW2 on "1~3".

Fig. 40 [Example]

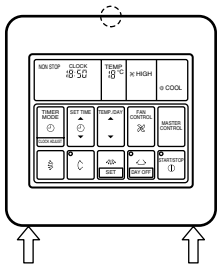


- A master unit is an indoor unit with the power line connected directly from the outdoor unit.

8. REMOTE CONTROLLER INSTALLATION

- Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
- Disconnect the remote controller cord from the remote controller terminal board.

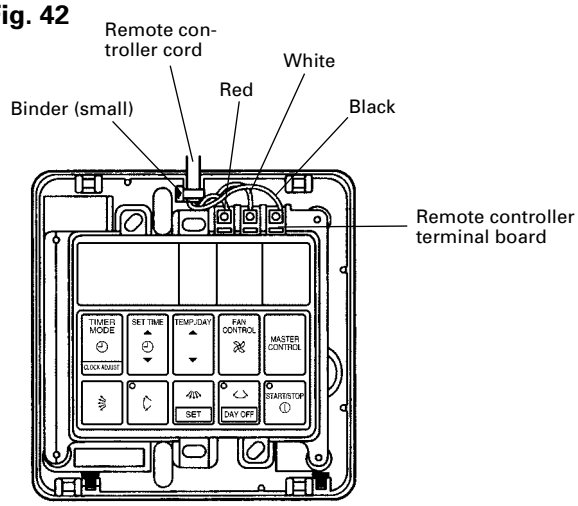
Fig. 41



(1) When remote controller exposed

1) Make a notch in the thin part (◌ part of Fig. 41) at the remote controller case top and bottom with nippers, file, etc.
2) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 42).
3) Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 42.
4) Cut off the excess binder.

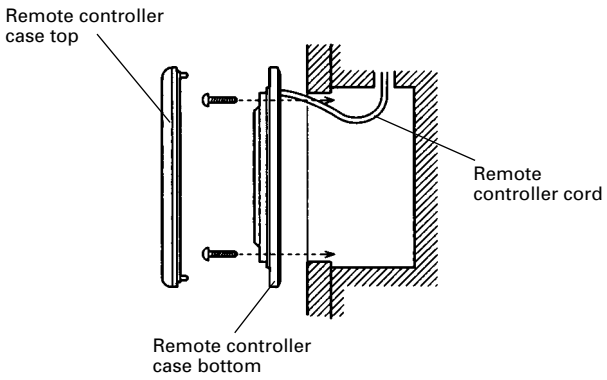
Fig. 42



(2) When remote controller cord embedded

1) Embed the remote controller cord and box.
2) Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 43).
3) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 42).

Fig. 43 [Example]



- After wiring work is complete, return the remote controller case top to its original state.

⚠ CAUTION

(1) Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.

(2) When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.

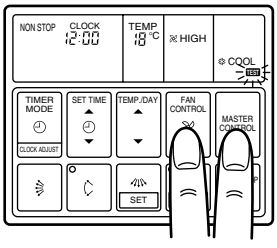
(3) Do not touch the remote controller PC board and PC board parts directly with your hands.

9. TEST RUNNING

REMOTE CONTROLLER

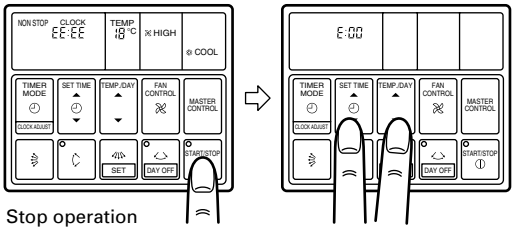
- Supply power to the crankcase heater 12 hours before the start of operation in the winter.
- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display.
  However, the SET TEMP./DAY setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 44).

Fig. 44



- When EE : EE blinks at the current time display, there is an error inside the air conditioner. If the SET TIME button (▼) and SET TEMP./DAY button (▼) are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display. (Fig. 45) When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation. (Fig. 45) Process the error contents by referring to (Table 5).

Fig. 45



Stop operation

Table 5

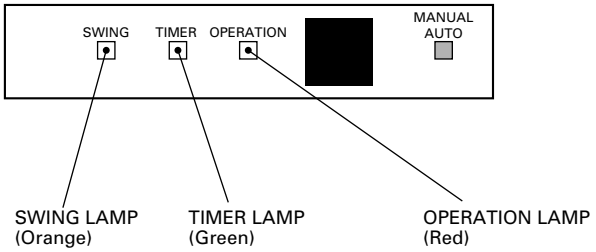
Error cord	Error contents
E:00	Communication error (indoor unit ⟷ remote controller)
E:01	Communication error (indoor unit ⟷ outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shortcircuited
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shortcircuited
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shortcircuited
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shortcircuited
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shortcircuited
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E:11	Model abnormal
E:12	Indoor fan abnormal
E:13	Outdoor signal abnormal
E:14	Outdoor EEPROM abnormal

- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test running.

10. AN ERROR DISPLAY

- Run the air conditioner in accordance with the operating manual.

Fig. 46



Operation can be checked by lighting and flashing of the grille display section OPERATION and TIMER lamps.
Perform judgment in accordance with the following.

- Test running

When the air conditioner is run by pressing the remote controller test run button, the OPERATION and TIMER lamps flash slowly at the same time.

- Error

The OPERATION and TIMER lamps operate as follows (Table 6) according to the error contents.

Table 6

Error display	Error contents
OPERATION LAMP: 0.5 sec ON / 0.5 sec OFF / 5 sec — Two quick flashes repeated **TIMER LAMP**: 0.1 sec ON / 0.1 sec OFF — 0.1 sec ON/OFF repeated	Room temperature thermistor abnormal temperature detected
OPERATION LAMP: 0.5 sec ON / 0.5 sec OFF / 5 sec — Three quick flashes repeated **TIMER LAMP**: 0.1 sec ON / 0.1 sec OFF — 0.1 sec ON/OFF repeated	Piping thermistor abnormal temperature detected
OPERATION LAMP: 0.5 sec ON / 0.5 sec OFF / 5 sec — Four quick flashes repeated **TIMER LAMP**: 0.1 sec ON / 0.1 sec OFF — 0.1 sec ON/OFF repeated	Float switch ON for 3 minutes or longer

5.1–4 Large Cassette Type

Refrigerant R407C

SPLIT TYPE AIR CONDITIONER
(PART NO. 9364123011)

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

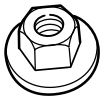
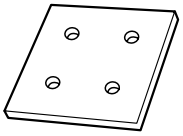
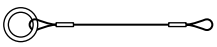
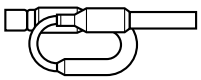
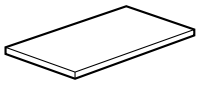
⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**

STANDARD PARTS

The following installation parts are furnished.
Use them as required.

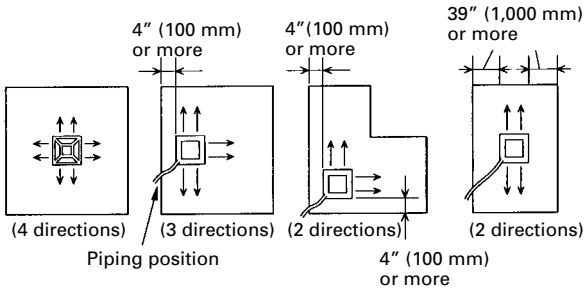
INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Coupler heat insulation 	2	For indoor side pipe joint
Special nut A (large flange) 	4	For installing indoor unit
Special nut B (small flange) 	4	For installing indoor unit
Template 	1	For ceiling hole cutting
Blower cover insulation 	2	For discharged air
Hook wire 	2	For installing intake grille
Indoor capillary tube 	1	(This part is enclosed with the 30,000 and 36,000 • 25,000 BTU/h versions.)
BR sheet 	2	65 x 130 x T5 (This part is enclosed with the 30,000 and 36,000 • 25,000 BTU/h versions.)

SELECTING THE MOUNTING POSITION

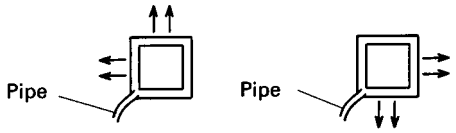
Especially, the installation place is very important for the split type air conditioner because it is very difficult to move from place to place after the first installation.
Decide the mounting position together with the customer as follows:
The discharge direction can be selected as shown below.

Fig. 1



⚠ CAUTION

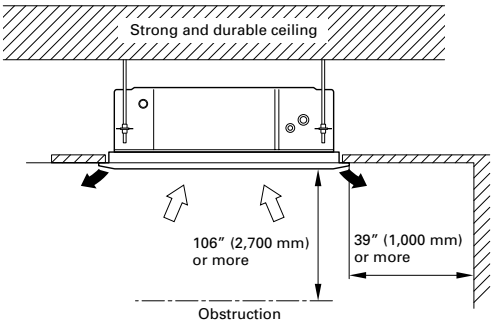
Since 2-way outlet as shown below causes performance problems, do not set it.



INDOOR UNIT

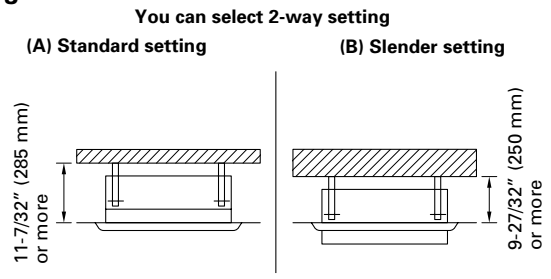
(1) Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
(2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
(3) Leave the space required to service the air conditioner (Fig. 2).
(4) The ceiling rear height as shown in Fig. 3.
(5) A place from where the air can be distributed evenly throughout the room by the unit.
(6) A place from where drainage can be extracted outdoors easily.
(7) Install the unit where noise and vibrations are not amplified.

Fig. 2



This mechanism enables the cassette body to move 35 mm downward and realizes installation to the space of 250 mm. No special works and option is needed.

Fig. 3



CONNECTION PIPE REQUIREMENT

Table 1

	Diameter	
	Small	Large
45,000 BTU/h class	9.53 mm	19.05 mm
36,000 BTU/h class	9.53 mm	19.05 mm
30,000 BTU/h class	9.53 mm	15.88 mm
25,000 BTU/h class	9.53 mm	15.88 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Connection cord (mm^2)	MAX	2.5
	MIN	1.5

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

Install the air conditioner as follows:

1. INDOOR UNIT INSTALLATION

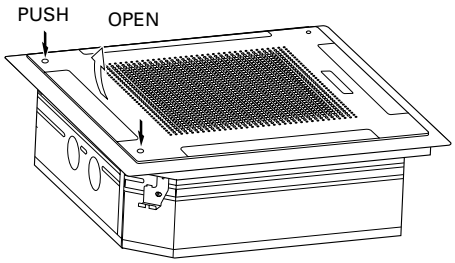
⚠ WARNING

- **Install the air conditioner in a location which can withstand a load do at least five times the weight of the main unit and which will not amplify sound or vibration.**
  If the installation location is not strong enough, the indoor unit may fall and cause injuries.
- **If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.**

REMOVING THE INTAKE GRILLE

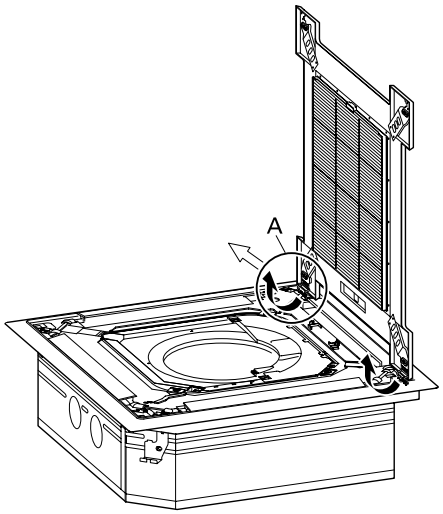
(1) Push the intake grille pushbuttons (two places).
(2) Open the intake grille.

Fig. 4



(3) Remove the grille hinge wire.

Fig. 5



- Pull up while pressing the B section (Fig. 6).

Fig. 6
Part A detail view

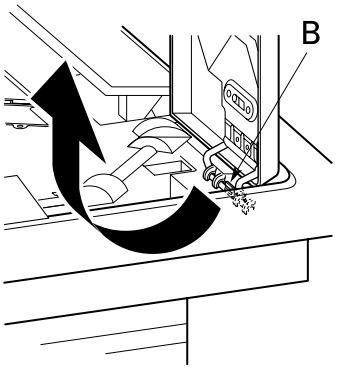
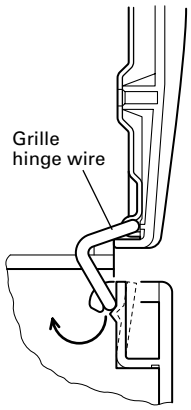


Fig. 7
Part A detail view

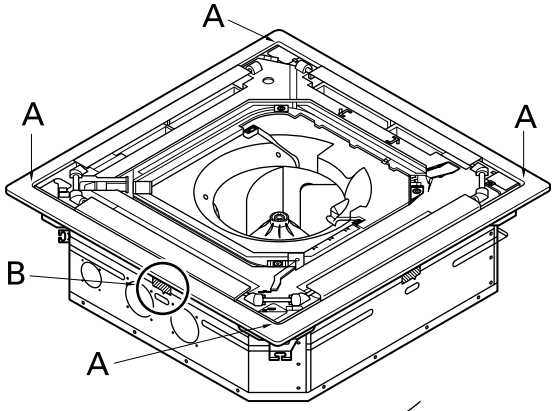


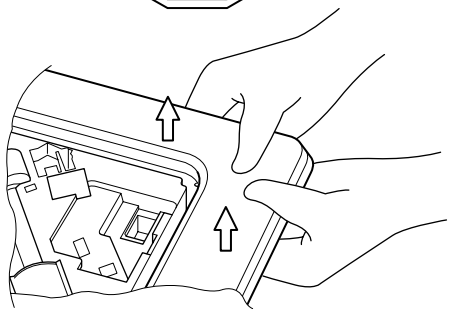
(4) Remove the intake grille.

REMOVING THE PANEL FRAME

- Pull up the corner sections (A) of the panel frame as shown in Fig. 8. (4 locations)

Fig. 8
Part A detail view





- Pull up in the direction of the arrow while holding down the C section of Fig. 9. (4 locations)

Fig. 9
Part B detail view

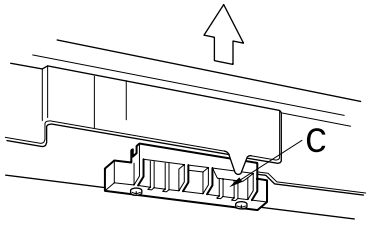
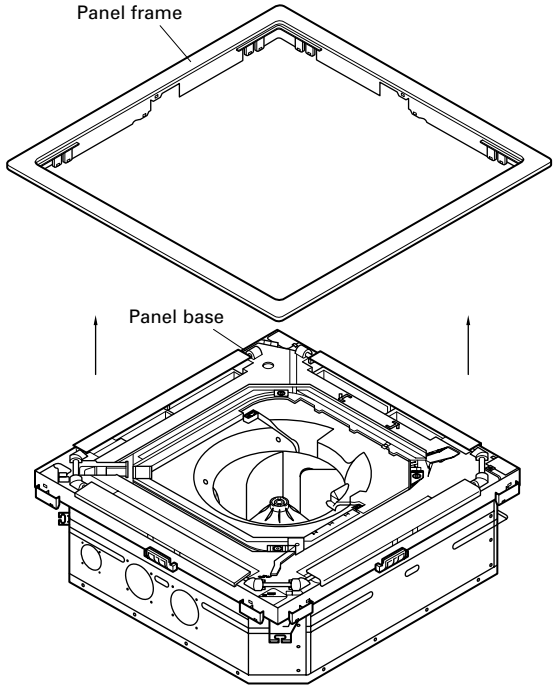


Fig. 10

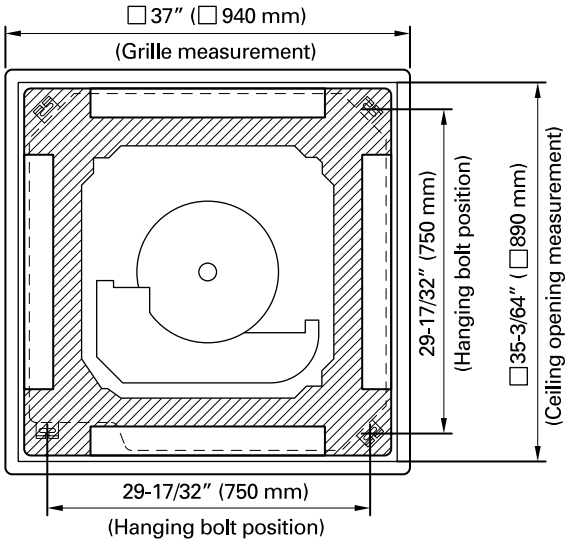


⚠ CAUTION

Always remove the panel frame after removing the intake grille.

1. POSITION THE CEILING HOLE AND HANGING BOLTS

Fig. 11



2. HANGING PREPARATIONS

- Firmly fasten the hanging bolts as shown in Fig. 12 or by another method.
- Install the hanging bolts at a place where they would be capable of holding a weight of at least 50 kgf per bolt.

Fig. 12

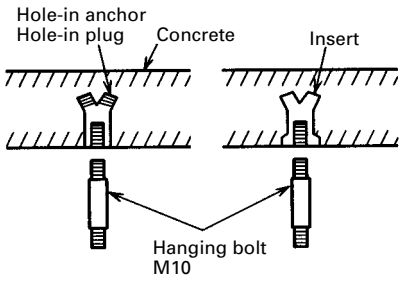
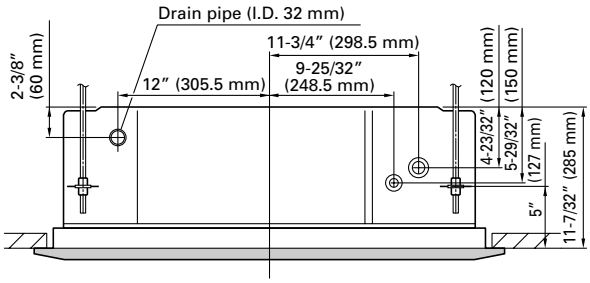
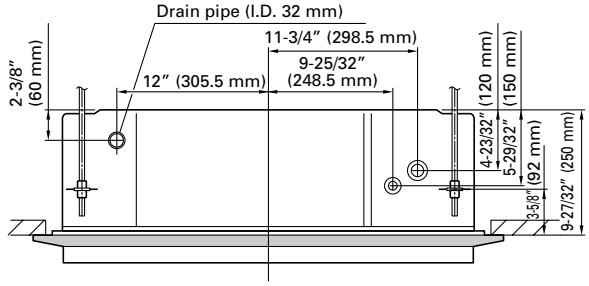


Fig. 13

(A) Standard setting



(B) Slender setting



3. BODY INSTALLATION

[The ceiling rear height is 11-7/32″ (285 mm) or more.]

[Standard setting]

[The ceiling rear height is 9-27/32″ (250 mm) or more.]

[Slender setting]

(1) Install special nut A, then special nut B onto the hanging bolt (Fig. 14).

(2) Raise the body and mount its hooks onto the hanging bolt between the special nuts (Fig. 14).

(3) Turn special nut B to adjust the height of the body (Fig. 14).

(4) Leveling

Using a level, or vinyl hose filled with water, fine adjust so that the body is level.

⚠ WARNING

Perform final tightening by tightening the double nut firmly.

Fig. 14

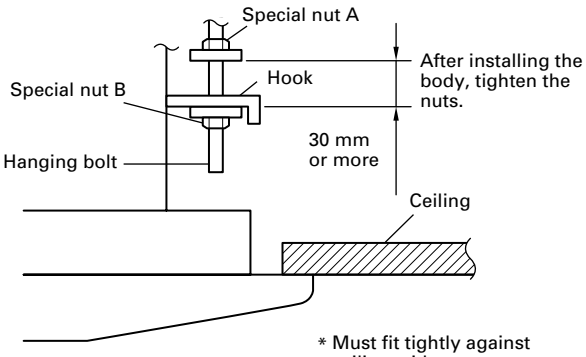
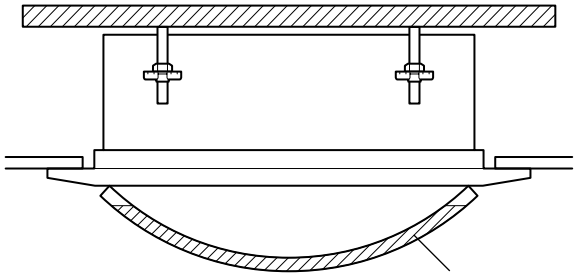


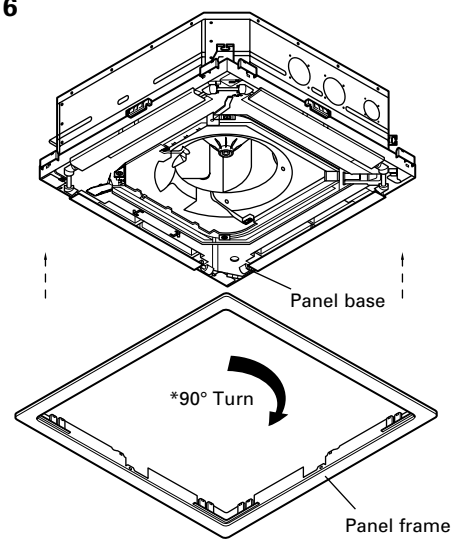
Fig. 15



* Allowable space between the unit and the ceiling 5 mm or less

INSTALLING THE PANEL FRAME

Fig. 16



* With slender setting, turn the panel frame 90° as shown in the diagram above.

Grille setting method has been changed at the marked positions on the panel frame and panel base.

Fig. 17

(A) Standard setting (B) Slender setting

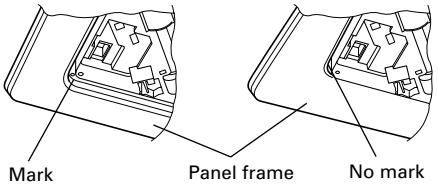
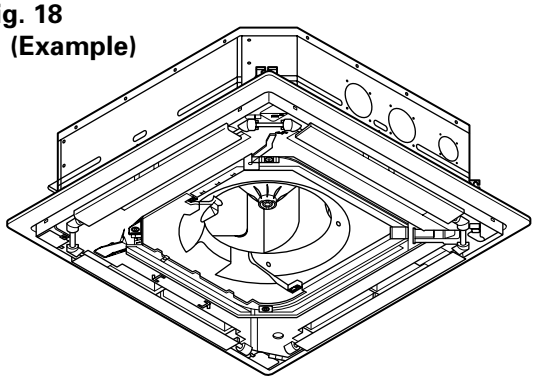


Fig. 18

(Example)



* Appearance of slender setting

2. INSTALLING DRAIN PIPE

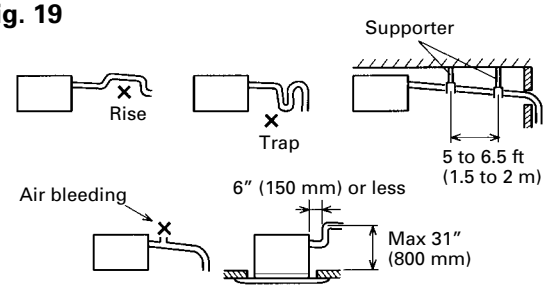
⚠ CAUTION

Install the drain pipe in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

NOTE : Install the drain pipe.

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 1-1/4″ (32 mm)] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the pipe is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain pipe.
- When desiring a high drain pipe height, raise it up to 31″ (800 mm) or less from the ceiling within a range of 6″ (150 mm) from the body. A rise dimension over this range will cause leakage.

Fig. 19



3. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.

(2) Holding the pipe downward so that cuttings cannot enter the pipe and remove the burrs.

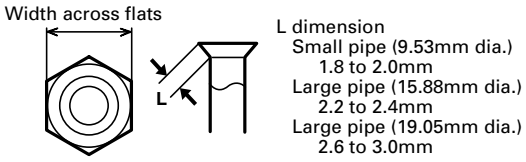
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.

(4) Check if the flared part "L" (Fig. 20) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe (9.53 mm dia.)	Small (width across flats 22 mm)
Large pipe (15.88 mm dia.)	Large (width across flats 24 mm)
Large pipe (19.05 mm dia.)	Large (width across flats 36 mm)

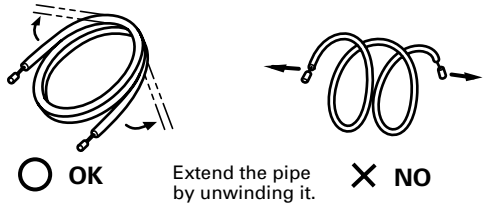
Fig. 20



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Fig. 21

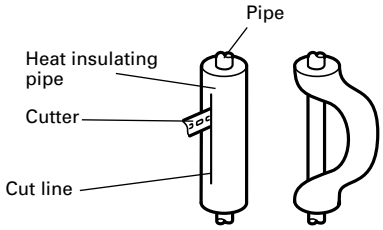


Do not bend the pipes in an angle more than 90°.

When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

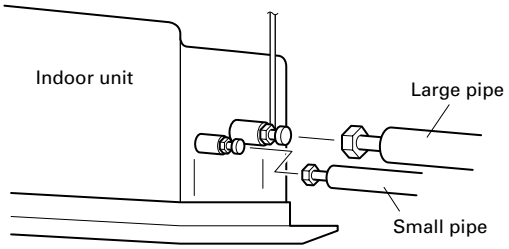
When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 22, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 22



3. CONNECTION PIPES

Fig. 23



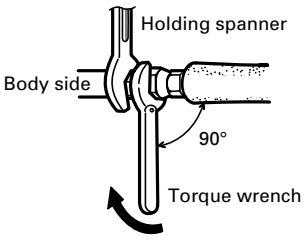
⚠ CAUTION

(1) Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

(2) Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench (Fig. 24).

Fig. 24



⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 24, in order to tighten the flare nut correctly.

Table 4 : Flare nut tightening torque

Pipe	Tightening torque
Small pipe (9.53 mm dia.)	310 to 350 kgf · cm (30.4 to 34.3 N · m)
Large pipe (15.88 mm dia.)	750 to 800 kgf · cm (73.5 to 78.4 N · m)
Large pipe (19.05 mm dia.)	800 to 1,000 kgf · cm (78.4 to 98 N · m)

⚠ CAUTION

Be sure to connect the large pipe after connecting the small pipe completely.

4. CONNECTING AN INDOOR CAPILLARY TUBE

These instructions refer to the 25,000 • 30,000 and 36,000 BTU/h versions.

Installation Procedure

(1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 25.

(2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 26.

(3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 27) and affix the insulation with tape.

(4) Secure the insulation using the binders (Fig. 28).

- If the joint pipe must be installed, refer to the installation manual for the outdoor unit for details.

Fig. 25

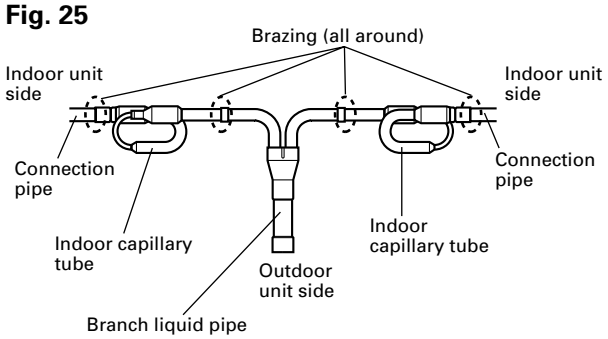


Fig. 26

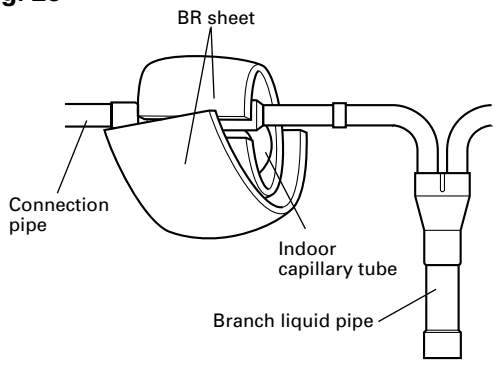


Fig. 27

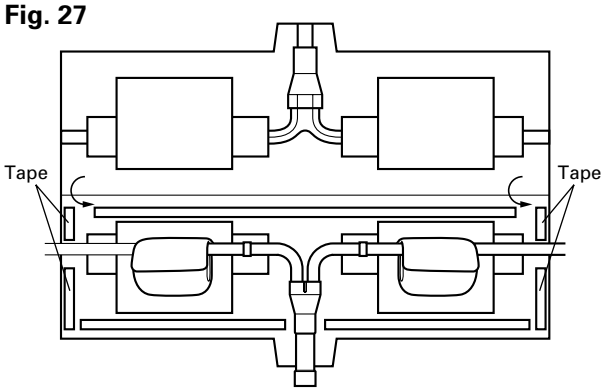
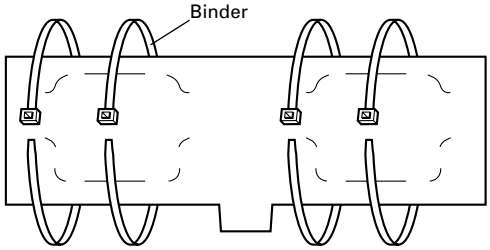


Fig. 28

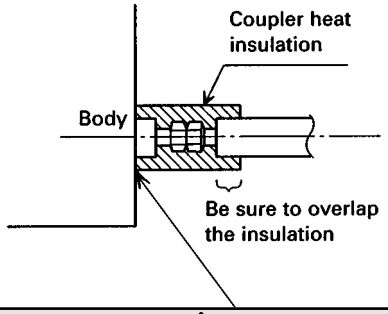


4. INSTALLING THE COUPLER HEAT INSULATION

After checking for gas leaks, insulate by wrapping insulation around the two parts (large and small) of the indoor unit coupling, using the coupler heat insulation.

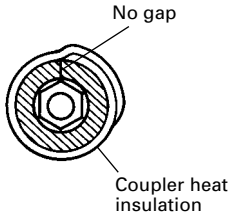
After installing the coupler heat insulation, wrap both ends with vinyl tape so that there is no gap.

Fig. 29



⚠ CAUTION

Must fit tightly against body without any gap.



5. ELECTRICAL WIRING

HOW TO CONNECT WIRING TO THE TERMINALS

1. IF ONE WIRE IS CONNECTED TO ONE TERMINAL BLOCK

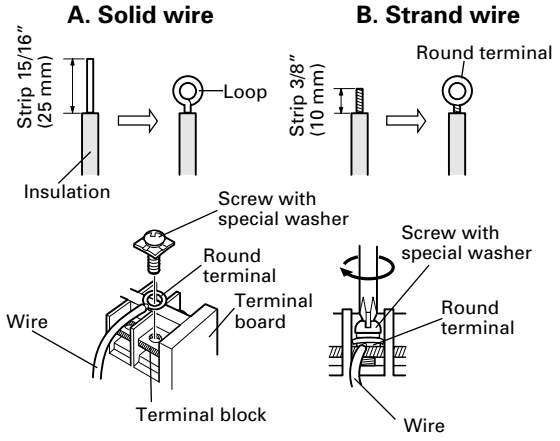
A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 15/16" (25 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 30

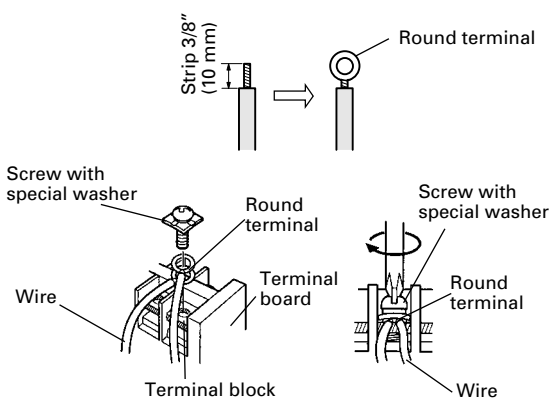


2. IF TWO WIRES ARE CONNECTED TO ONE TERMINAL BLOCK

A. As a rule, round terminal should be used to connect to the terminal block.

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 31

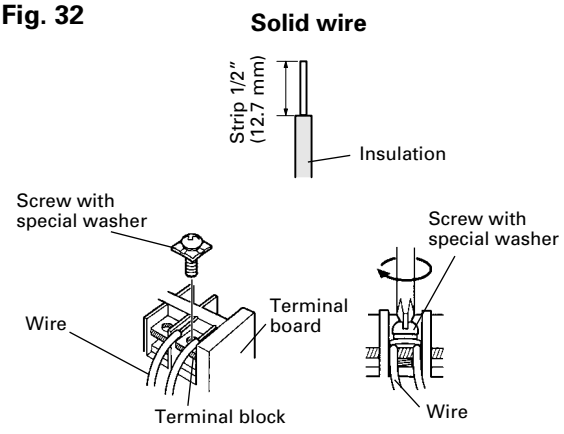


B. If round terminal cannot be used, the following items should be followed.

For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 1/2" (12.7 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Wires with the same diameter should be connected on both sides as shown in Fig. 32.
Since connecting wires with different diameters causes the wires to heat up due to loose connections, this method should not be used.

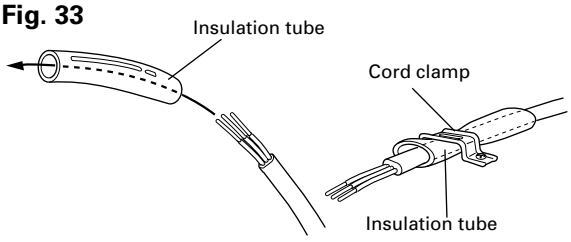
Fig. 32



HOW TO FIX THE CONNECTION CORD

After passing the connection cord through the insulation tube, fasten it with the cord clamp.

Fig. 33



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the indoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

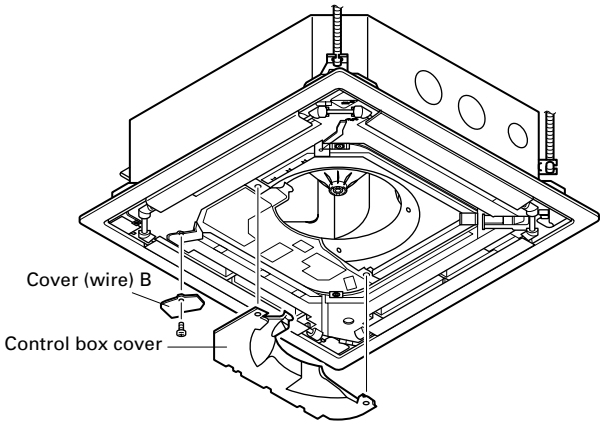
(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulation is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

(1) Remove the control box cover and cover (wire) B and install the connection cord.

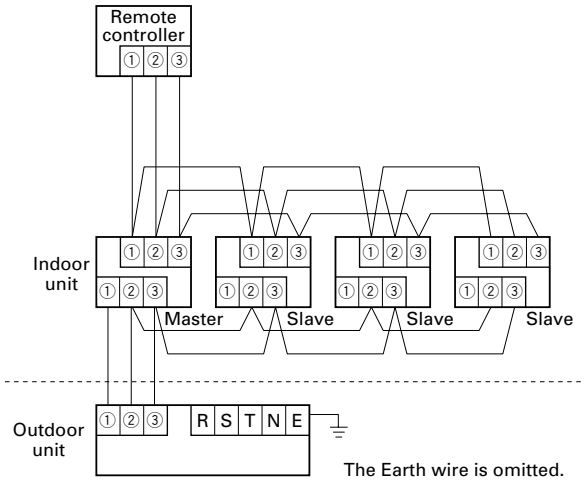
Fig. 34



CONNECTION CORD

A. Simultaneous operation for buildings

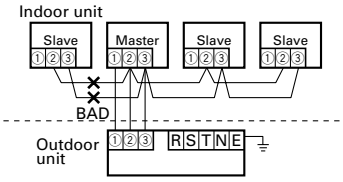
Fig. 35



⚠ CAUTION

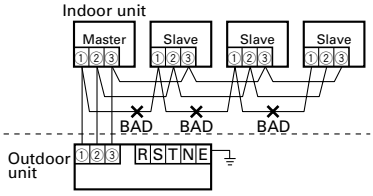
(1) Connect a maximum of 2 wires on a single terminal block. (If 3 or more wires are connected, they could become loose and cause heating.)

Fig. 36



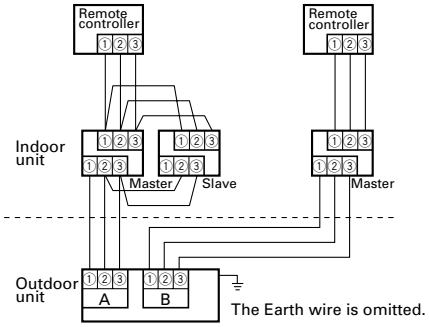
(2) Crossovers as in (①) should not be connected when connecting wires between the master unit and slave units, and from slave unit to slave unit. (The system will not operate correctly.)

Fig. 37



B. Individual operation for buildings

Fig. 38



(2) After wiring is complete, clamp the remote controller cord and connection cord with the cord clamp.

(3) Install the control box cover and cover (wire) B.

Fig. 39

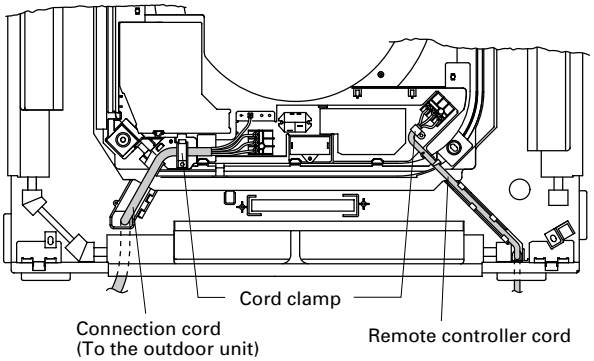
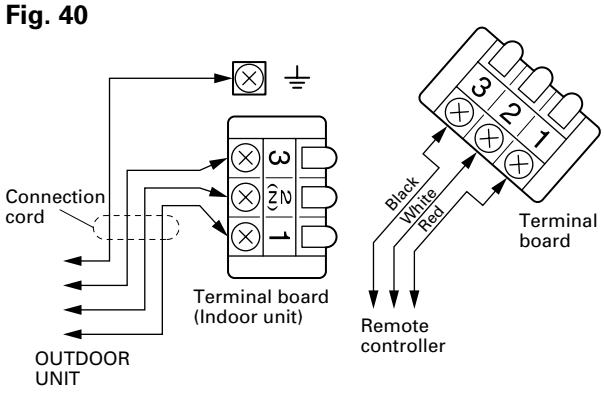


Fig. 40



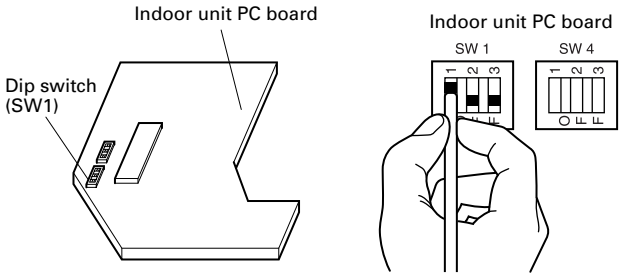
CEILING HEIGHT SETTING

Set the DIP switch for the ceiling height according to the table below.

Table 5

Ceiling height (m)		DIP-SW1		
		1	2	3
Less than 3.0	Normal	OFF	—	—
More than 3.0	High ceiling	ON	—	—

Fig. 41



⚠ CAUTION

(1) If the setting for a low ceiling is selected, the capacity of the air conditioner decreases slightly.

(2) Do not set any switches other than those specified in this sheet or the remote controller installation manual. The air conditioner may not operate correctly if any switches other than those specified are changed.

6. GRILLE INSTALLATION

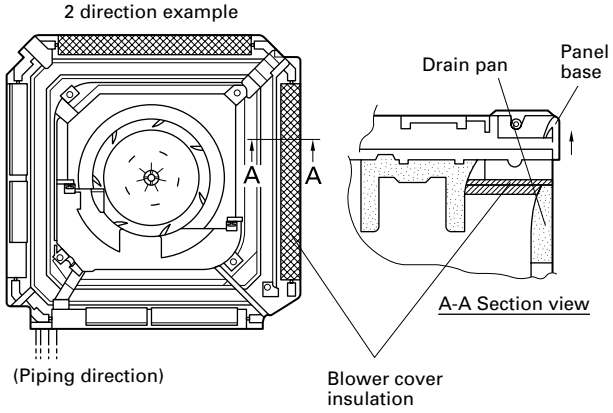
BLOWER COVER INSULATION

Install the blower cover insulation only when the outlet direction is not specified.

Two blower cover insulations are packed with the indoor unit.

Install the blower cover insulation at the diffuser position shown in Fig. 42. At this time, use the piping position as the criteria.

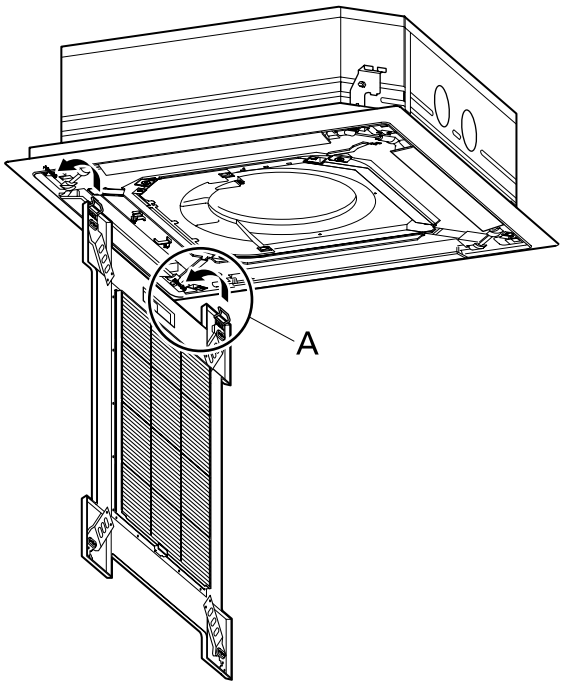
Fig. 42



INSTALLING THE INTAKE GRILLE

(1) Mount the grille hinge wire to the hook shaft as shown in Fig. 43.

Fig. 43



• Latch the grille hinge wire to the hook shaft, and fasten.

Fig. 44
Part A detail view

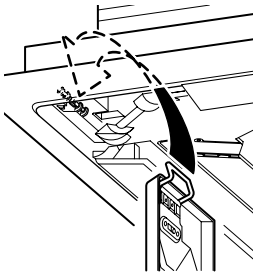
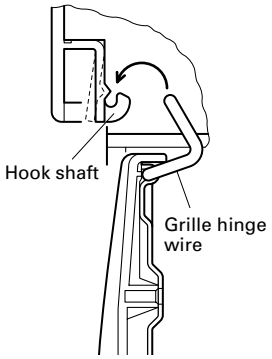


Fig. 45
Part A section view



(2) Install the hook wire.

• Pass the hook wire through the panel base from the rear side as shown in Fig. 46, and fasten to the reinforced metal fitting of the intake grille using a screw.

Fig. 46

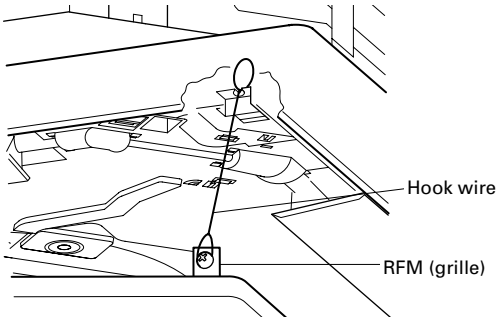
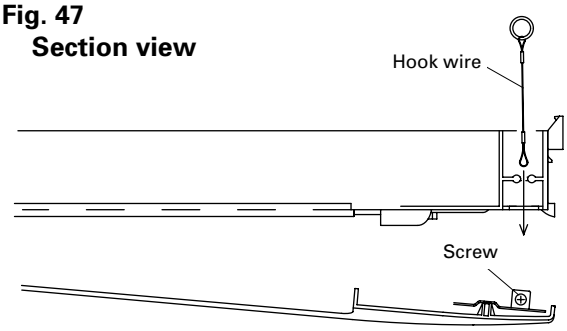
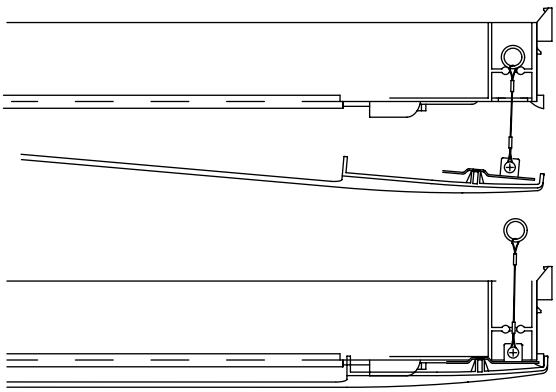


Fig. 47
Section view



(3) Loosen the screw, put the loop of the hook wire over it, and tighten the screw again.



⚠ CAUTION

Install the intake grille hook wire to the grille assembly. If it falls, it may cause injuries.

(4) Bring up the intake grille by pushing it up at an angle as shown in Figs. 48, 49, and fasten.

Fig. 48

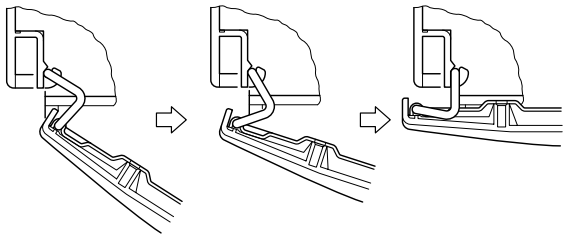
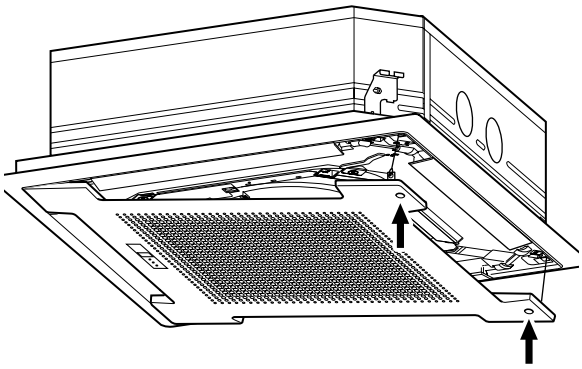
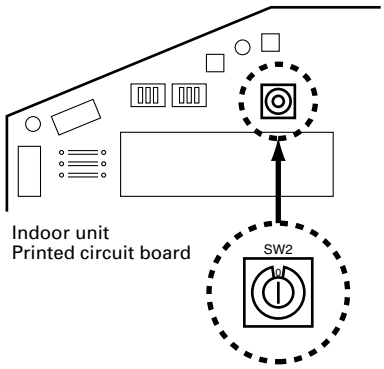


Fig. 49



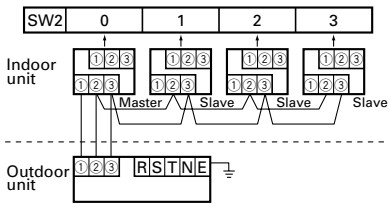
7. MASTER/SLAVE SELECT SWITCH

Fig. 50



• For the master unit, set SW2 on "0". For a slave unit, set SW2 on "1~3".

Fig. 51 [Example]



• A master unit is an indoor unit with the power line connected directly from the outdoor unit.

8. POWER

⚠ WARNING

(1) The rated voltage of this product is 380 – 415V 3ø 50Hz.

(2) Before turning on verify that the voltage is within the 342 to 457V range.

(3) Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.

(4) Use a special branch circuit breaker and receptacle matched to the capacity of the air conditioner. (Install in accordance with standard.)

(5) Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.

(6) Install a leakage special branch circuit breaker in accordance with the related laws and regulations and electric company standards.

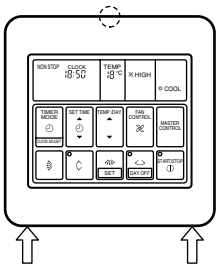
⚠ CAUTION

When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

9. REMOTE CONTROLLER INSTALLATION

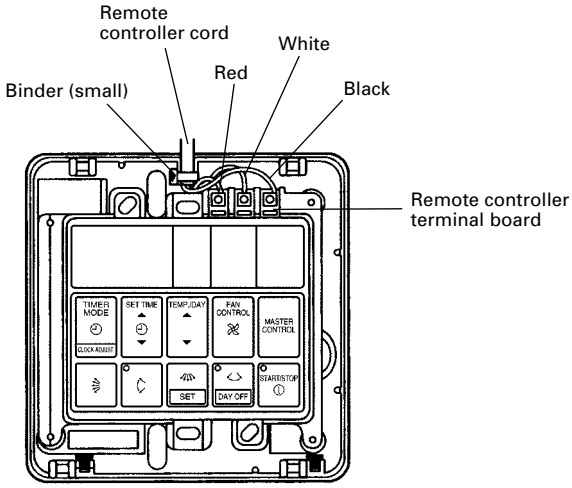
- Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
- Disconnect the remote controller cord from the remote controller terminal board.

Fig. 52



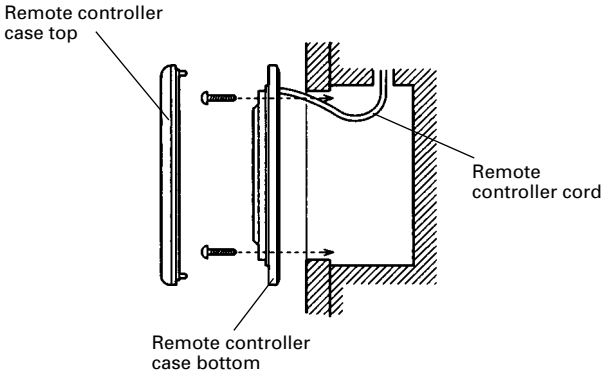
(1) When remote controller exposed
1) Make a notch in the thin part (◌ part of Fig. 52) at the remote controller case top and bottom with nippers, file, etc.
2) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 53).
3) Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 53.
4) Cut off the excess binder.

Fig. 53



(2) When remote controller cord embedded
1) Embed the remote controller cord and box.
2) Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 54).
3) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 53).

Fig. 54 [Example]



- After wiring work is complete, return the remote controller case top to its original state.

⚠ CAUTION

(1) Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.

(2) When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.

(3) Do not touch the remote controller PC board and PC board parts directly with your hands.

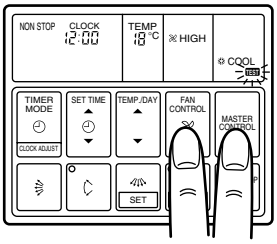
10. TEST RUNNING

1. REMOTE CONTROLLER

- Supply power to the crankcase heater 12 hours before the start of operation in the winter.
- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display.

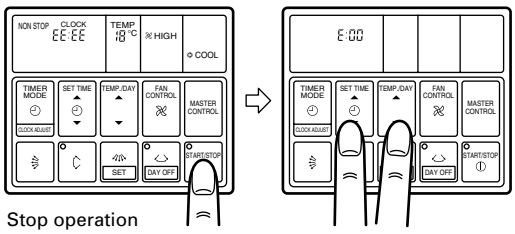
  However, the SET TEMP./DAY setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 55).

Fig. 55



- When EE : EE blinks at the current time display, there is an error inside the air conditioner. If the SET TIME button (▼) and SET TEMP./DAY button (▼) are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display. (Fig. 56) When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation. (Fig. 56) Process the error contents by referring to (Table 6).

Fig. 56



Stop operation

Table 6

Error cord	Error contents
E:00	Communication error (indoor unit ←→ remote controller)
E:01	Communication error (indoor unit ←→ outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shortcircuited
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shortcircuited
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shortcircuited
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shortcircuited
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shortcircuited
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E:11	Model abnormal
E:12	Indoor fan abnormal
E:13	Outdoor signal abnormal
E:14	Outdoor EEPROM abnormal

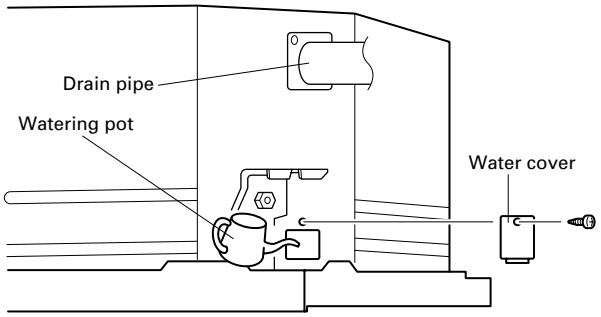
- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test running.

2. CHECKING DRAINAGE

To check the drain, remove the water cover and fill with 2 to 3 ℓ of water as shown in Fig. 57.

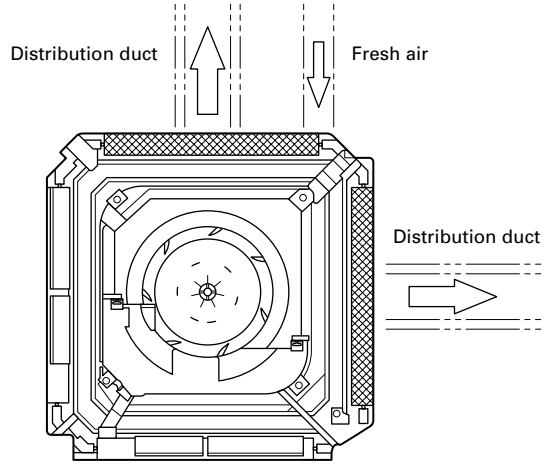
The drain pump operates when operating in the cooling mode.

Fig. 57



11. OPENING THE DUCT CONNECTION HOLE

Fig. 58



⚠ CAUTION

(1) When performing hole opening work, be careful not to damage the drain pan.

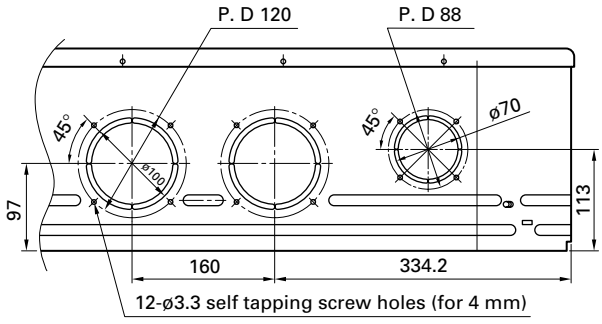
(2) When connecting the distribution duct, to make the air flow easily, block the outlet port with the blower cover insulation as shown by the hatched lines in Fig. 58. For the blocking direction, refer to Fig. 42.

1. DIMENSION

Screw position and connection hole which are fresh air duct and distribution duct.

Fig. 59

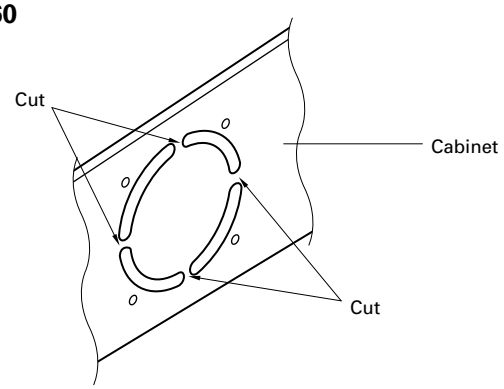
Unit: mm



2. DISTRIBUTION DUCT AND FRESH AIR DUCT HOLE PROCESSING

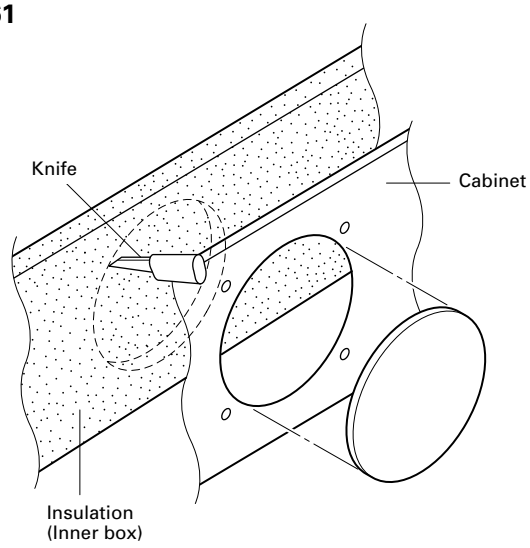
Use the distribution duct hole and fresh air duct hole by removing the insulation material as shown below.

Fig. 60



- Cut off the part (Cabinet) indicated by the arrow in the Fig. 60 with nippers, needle nose pliers, etc.

Fig. 61



- Open the holes and cut the insulation with a knife.
  - ∗ Be careful not to damage the internal parts.
  - ∗ Be careful not to cut yourself on the cutout in the metal plate.
  - ∗ Please remove the insulation (inner box) left over after cutting.
- Connect the distribution duct.
  - ∗ When mounting the duct, block the gap so that there is no cold air leakage.
  - ∗ Insulate the duct and cut connection.

⚠ CAUTION

The air conditioner cannot take in fresh air by itself. When connecting a fresh air duct, always use a duct fan.

5.1–5 Duct Type

Refrigerant
R407C

SPLIT TYPE AIR CONDITIONER
(PART NO. 9363065015)

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

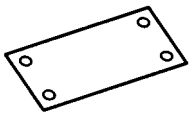
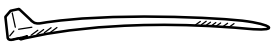
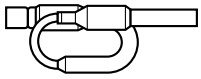
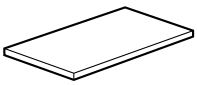
⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**

STANDARD PARTS

The following installation parts are furnished.
Use them as required.

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Installation template 	1	For positioning the indoor unit
Hanger 	4	For suspending the indoor unit from ceiling
Special nut A (large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (small flange) 	4	
Coupler heat insulation (large) 	2	For indoor side pipe joint (large pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (small pipe)
Nylon fastener 	1	For fixing the drain hose
Auxiliary pipe assembly 	1	For wiring conduit (gas side) connection
Drain hose insulation 	1	Insulates the drain hose and vinyl hose connection
Indoor capillary tube 	1	(This part is enclosed with the 30,000 and 36,000 • 25,000 BTU/h versions.)
BR sheet 	2	65 x 130 x T5 (This part is enclosed with the 30,000 and 36,000 • 25,000 BTU/h versions.)

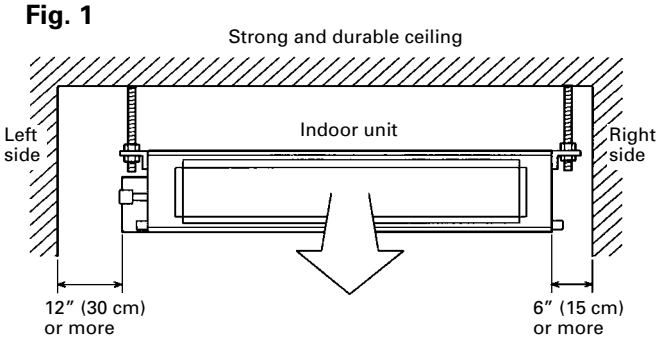
SELECTING THE MOUNTING POSITION

Decide the mounting position together with the customer as follows:

INDOOR UNIT

(1) Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
(2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
(3) Leave the space required to service the air conditioner (Fig. 1).

Fig. 1



(4) Install the unit where the drain pipe can be easily installed.
(5) Providing as much space as possible between the indoor unit and the ceiling will make work much easier.

CONNECTION PIPE REQUIREMENT

Table 1

	Diameter	
	Small	Large
45,000 BTU/h class	9.53 mm	19.05 mm
36,000 BTU/h class	9.53 mm	19.05 mm
30,000 BTU/h class	9.53 mm	15.88 mm
25,000 BTU/h class	9.53 mm	15.88 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Connection cord (mm^2)	MAX	2.5
	MIN	1.5

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

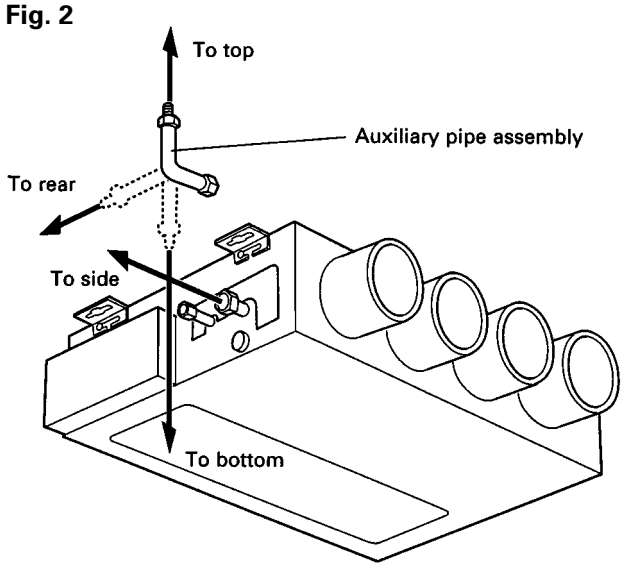
Install the air conditioner as follows:

1. INDOOR UNIT INSTALLATION

1. PIPING CONNECTION DIRECTION AND PREPARATION

- Select piping directions (Fig. 2).

Fig. 2

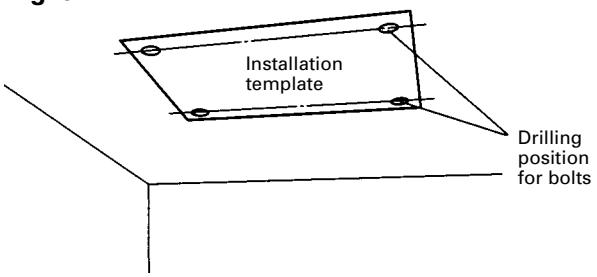


- When bending the piping is difficult, use the auxiliary pipe assembly.

2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

- Using the installation template, drill holes for bolts (four holes) (Fig. 3).

Fig. 3

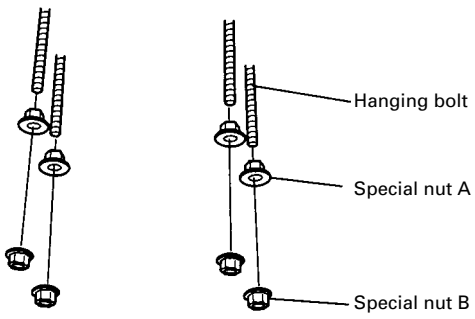


3. INSTALLING THE HANGERS

Installation method (1)

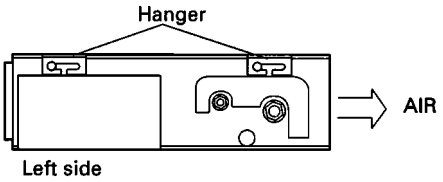
- Fasten the hanging bolts to the ceiling and install special nuts A and B.

Fig. 4



- Install the hangers to the unit.

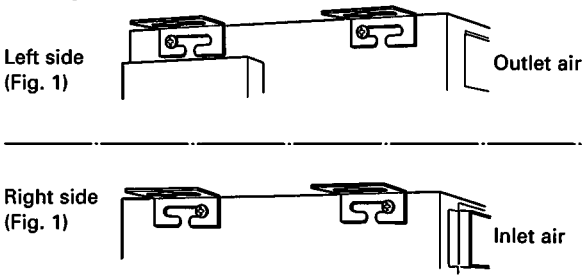
Fig. 5



⚠ CAUTION

When fastening the hangers, make the bolt positions uniform.

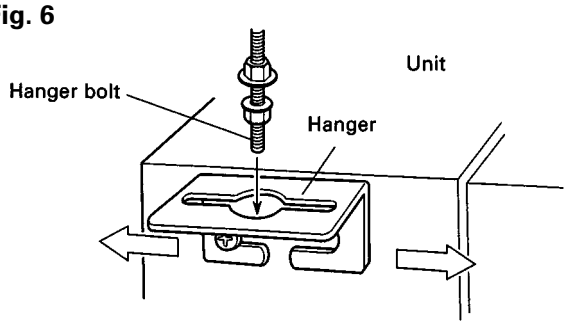
(Example)



- Hang the unit.

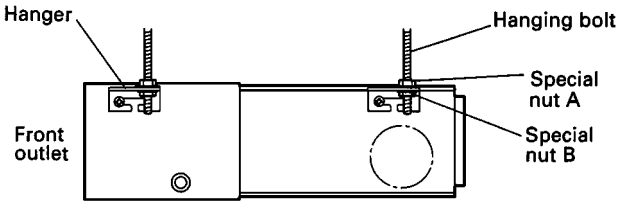
(1) Pass the hanging bolts through the hangers. (Four places)

Fig. 6



(2) Slide the unit in the arrow direction and fasten it.

Fig. 7



⚠ CAUTION

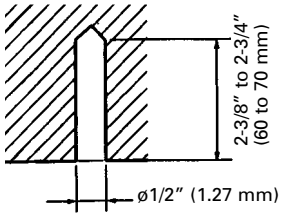
Fasten the unit securely with special nuts A and B.

Installation method (2)

- Install the bolts to the ceiling at a place strong enough to hang the unit. Mark the bolt positions from the installation template.

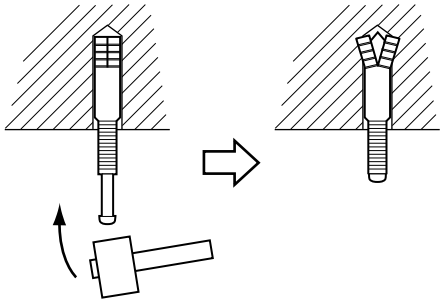
  With a concrete drill, drill for 1/2" (12.7 mm) dia. holes (Fig. 8).

Fig. 8



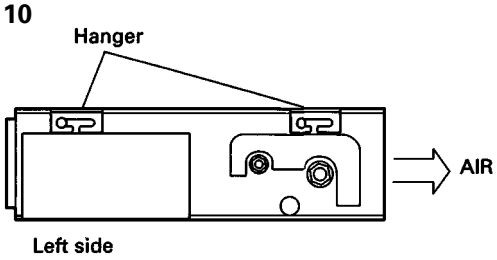
- Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer.

Fig. 9



- Install the hangers to the unit.

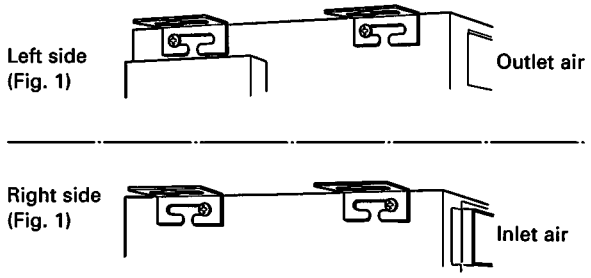
Fig. 10



⚠ CAUTION

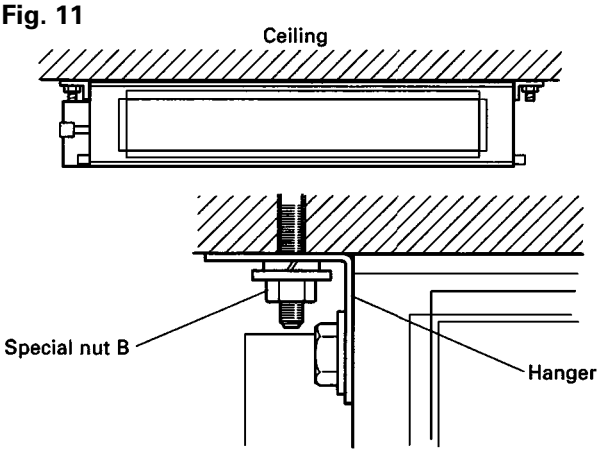
When fastening the hangers, make the bolt positions uniform.

(Example)



- Install the unit
  Pass the unit hangers over the bolts installed to the ceiling and install the unit with the special nut B.

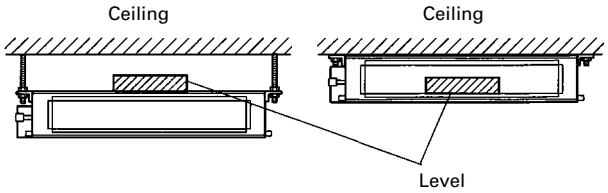
Fig. 11



4. LEVELING

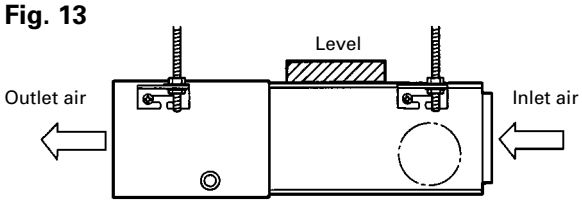
Base horizontal direction leveling on top of the unit.

Fig. 12



Base vertical direction leveling on the unit (right and left).

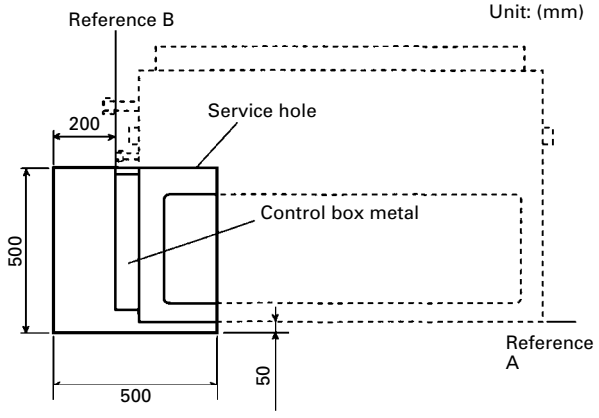
Fig. 13



5. SERVICE HOLE DIMENSIONS

It shall be possible to install and remove the control box metal.

Fig. 14



- Vertical dimension
  500 mm from 50 mm below reference A
- Horizontal dimension
  500 mm from 200 mm from the left from reference B

2. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.

(2) Holding the pipe downward so that cuttings cannot enter the pipe and remove the burrs.

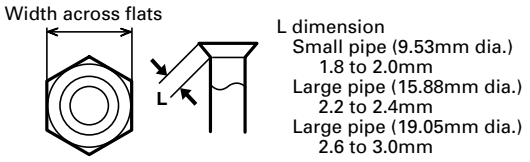
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.

(4) Check if the flared part "L" (Fig. 15) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe (9.53 mm dia.)	Small (width across flats 22 mm)
Large pipe (15.88 mm dia.)	Large (width across flats 24 mm)
Large pipe (19.05 mm dia.)	Large (width across flats 36 mm)

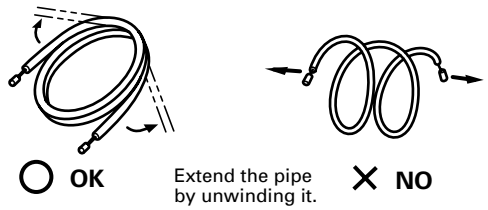
Fig. 15



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Fig. 16

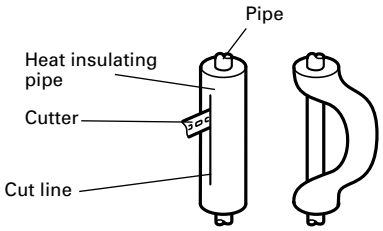


Do not bend the pipes in an angle more than 90°.

When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 17, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 17



3. CONNECTION PIPES

Detach the caps and plugs from the pipes.

⚠ CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

Centering the pipe against port on the indoor unit, turn the flare nut with your hand.

⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 19, in order to tighten the flare nut correctly.

When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.

Fig. 18

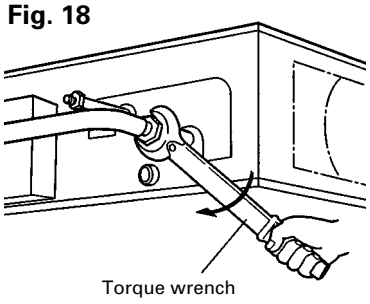


Fig. 19

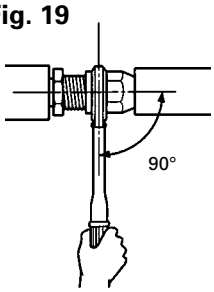


Table 4 : Flare nut tightening torque

Pipe	Tightening torque
Small pipe (9.53 mm dia.)	310 to 350 kgf · cm (30.4 to 34.3 N · m)
Large pipe (15.88 mm dia.)	750 to 800 kgf · cm (73.5 to 78.4 N · m)
Large pipe (19.05 mm dia.)	800 to 1,000 kgf · cm (78.4 to 98 N · m)

⚠ CAUTION

Be sure to connect the large pipe after connecting the small pipe completely.

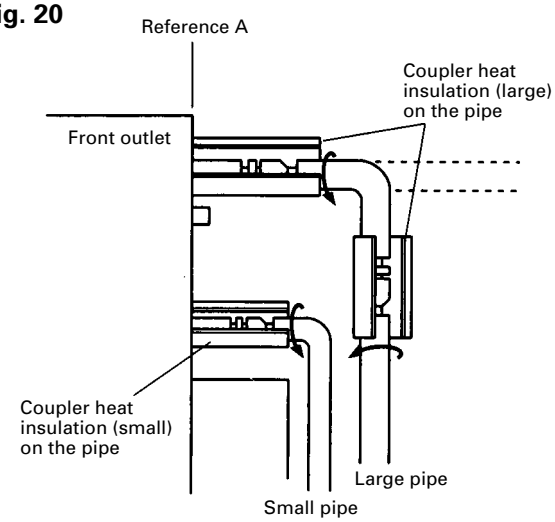
4. CHECKING THE PIPE CONNECTIONS FOR GAS LEAKING

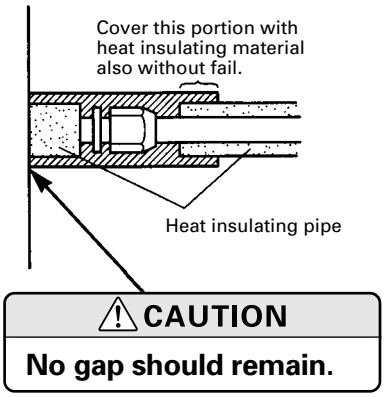
For both the indoor and outdoor unit sides, check the joints for gas leaking by the use of a gas leakage detector without fail when the pipes are connected.

5. HEAT INSULATION ON THE PIPE JOINTS

- Stick coupler heat insulation (large and small) to the place where connecting pipes.
- When using auxiliary piping with large pipe, stick coupler heat insulation (large) to the pipe at the two places shown below.

Fig. 20





⚠ CAUTION

No gap should remain.

6. CONNECTING AN INDOOR CAPILLARY TUBE

These instructions refer to the 25,000•30,000 and 36,000 BTU/h versions.

Installation Procedure

(1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 21.
(2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 22.
(3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 23) and affix the insulation with tape.
(4) Secure the insulation using the binders (Fig. 24).
  - If the joint pipe must be installed, refer to the installation manual for the outdoor unit for details.

Fig. 21

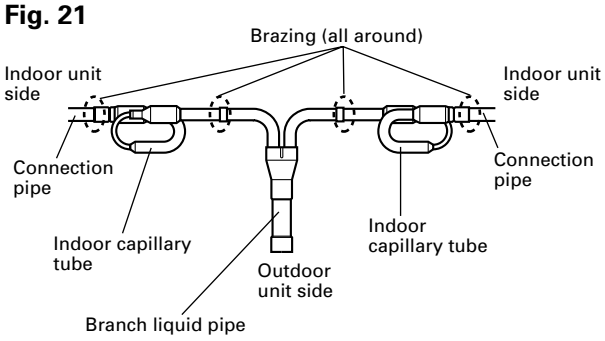


Fig. 22

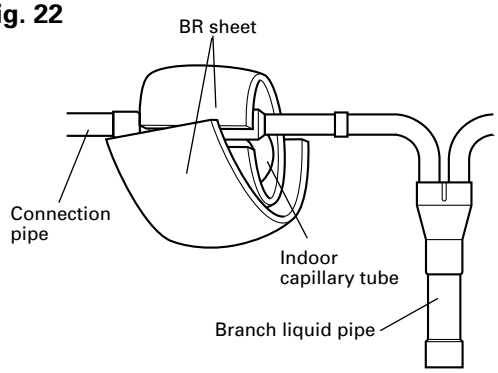


Fig. 23

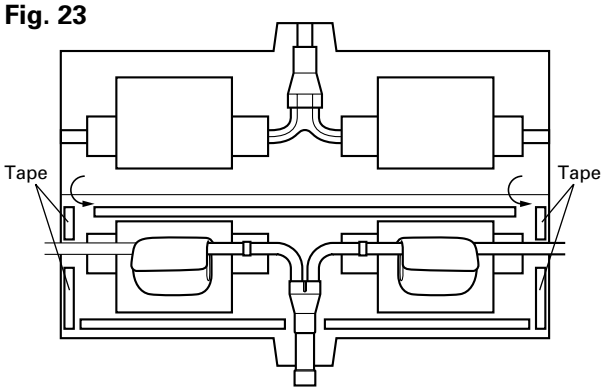
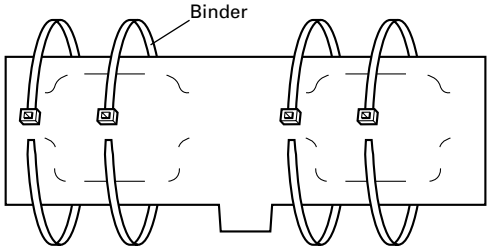


Fig. 24

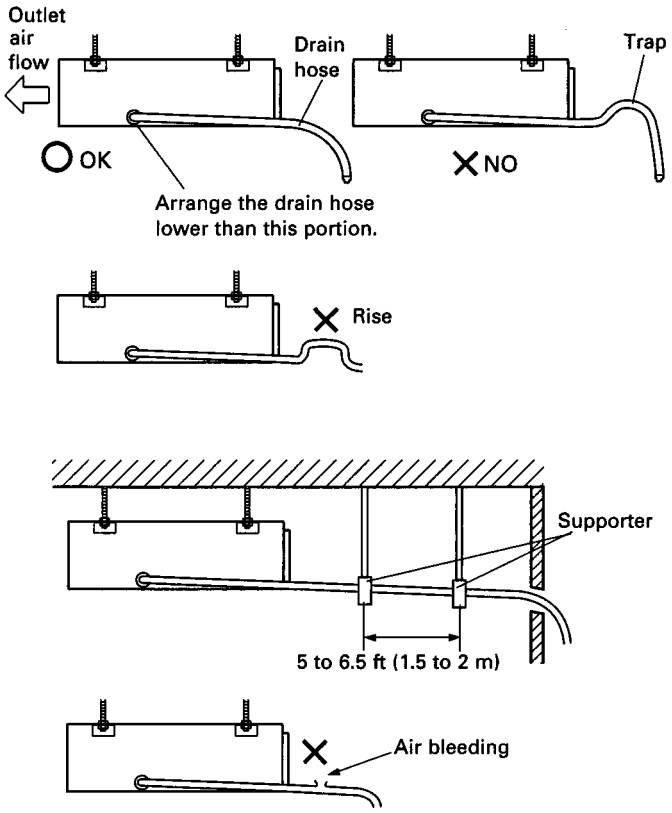


3. INSTALLING DRAIN HOSE

NOTE : INSTALL THE DRAIN HOSE

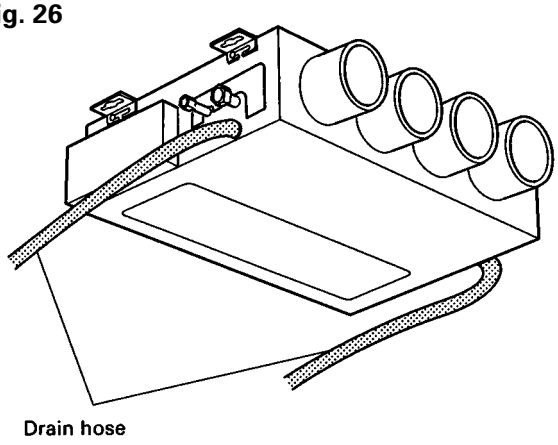
- Install the drain hose with downward gradient (1/50 to 1/100) and so there are no rises or traps in the hose.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 38 mm] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the hose is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain hose.

Fig. 25



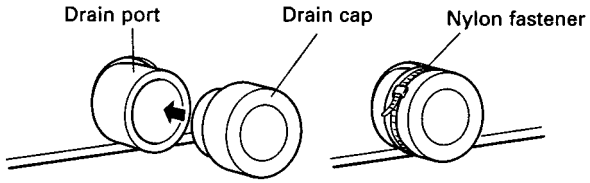
- The outside diameter of the drain port is 38 mm. Use a suitable drain hose.
- There is a drain port on both the left and right sides. Select the drain port to match the local conditions.

Fig. 26



- When the unit is shipped from the factory, the drain port is on the left side (control box side).
- When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port.

Fig. 27



⚠ CAUTION

Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

- Cut the drain hose insulation at a position approximately 30 mm from the end with cutters, etc (Fig. 28-(1)).
- Stick the large drain hose insulation at the drain hose installation side (Fig. 28-(2)).
- Stick the small drain hose insulation at the drain cap side (Fig. 28-(3)).

Fig. 28-(1)

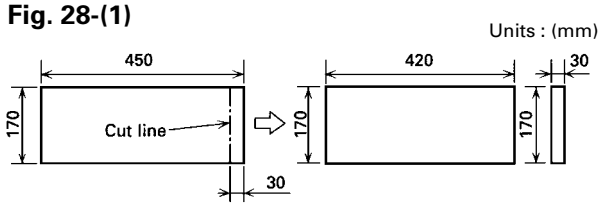


Fig. 28-(2)

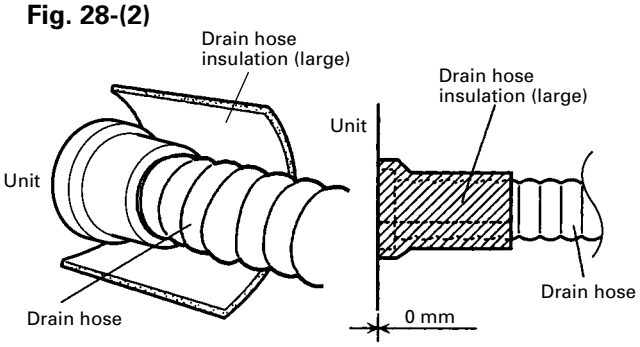
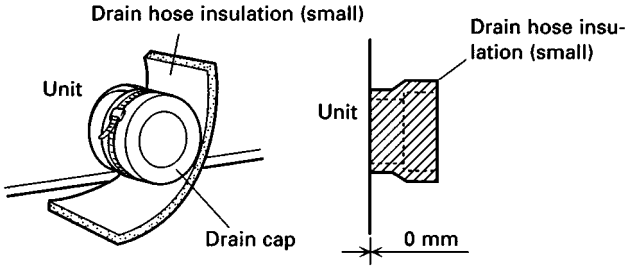


Fig. 28-(3)



4. ELECTRICAL WIRING

HOW TO CONNECT WIRING TO THE TERMINALS

1. IF ONE WIRE IS CONNECTED TO ONE TERMINAL BLOCK

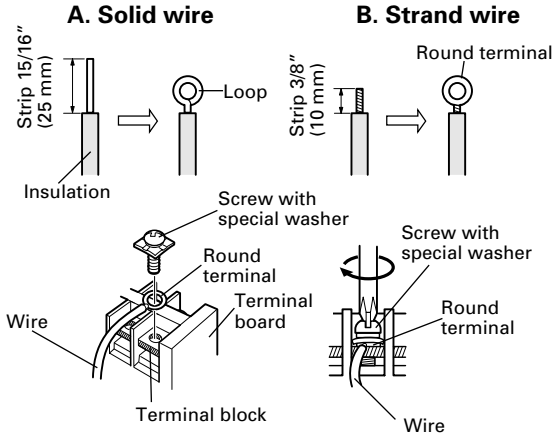
A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 15/16" (25 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 29

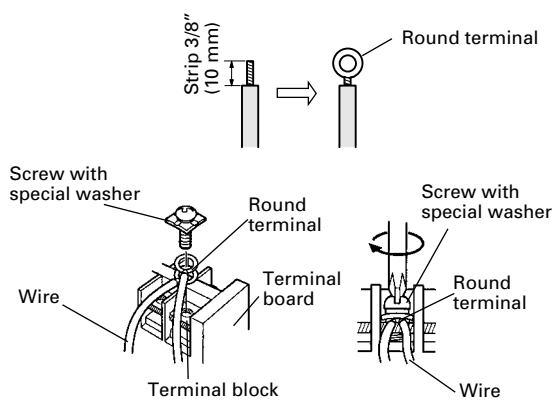


2. IF TWO WIRES ARE CONNECTED TO ONE TERMINAL BLOCK

A. As a rule, round terminal should be used to connect to the terminal block.

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 30

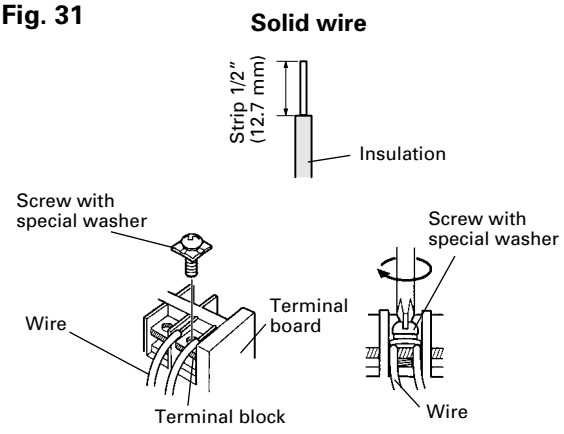


B. If round terminal cannot be used, the following items should be followed.

For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation to about 1/2" (12.7 mm) to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Wires with the same diameter should be connected on both sides as shown in Fig. 31.
Since connecting wires with different diameters causes the wires to heat up due to loose connections, this method should not be used.

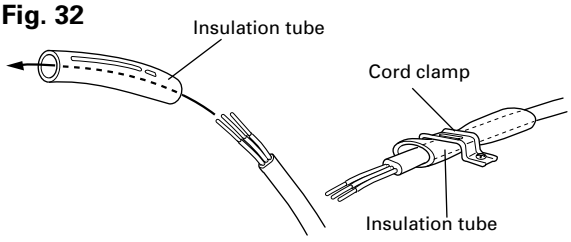
Fig. 31



HOW TO FIX THE CONNECTION CORD

After passing the connection cord through the insulation tube, fasten it with the cord clamp.

Fig. 32



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

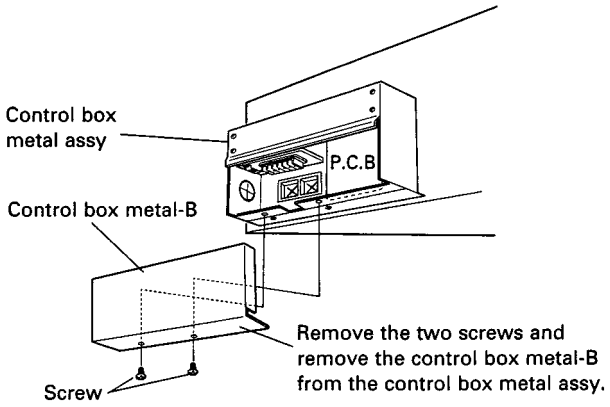
⚠ WARNING

(1) Before starting work, check that power is not being supplied to the indoor unit.

(2) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulation is chafed, electric leakage may occur.)

(1) Remove the control box metal-B from the control box metal assy.

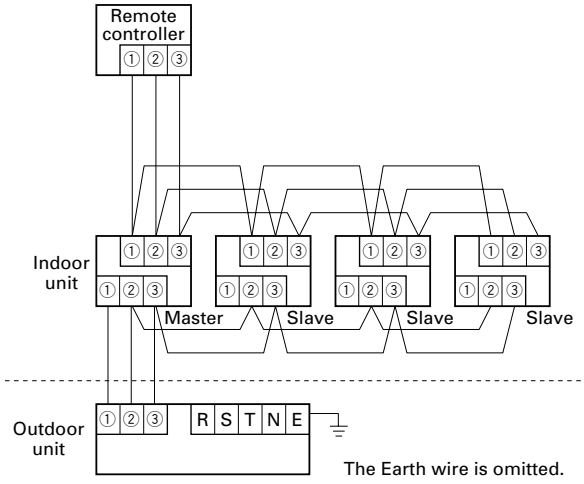
Fig. 33



CONNECTION CORD

A. Simultaneous operation for buildings

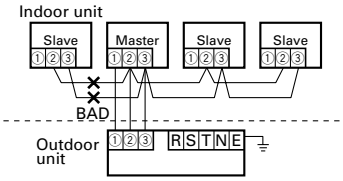
Fig. 34



⚠ CAUTION

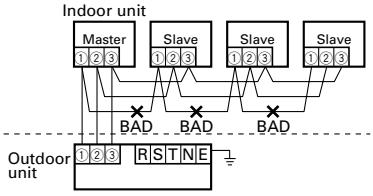
(1) Connect a maximum of 2 wires on a single terminal block. (If 3 or more wires are connected, they could become loose and cause heating.)

Fig. 35



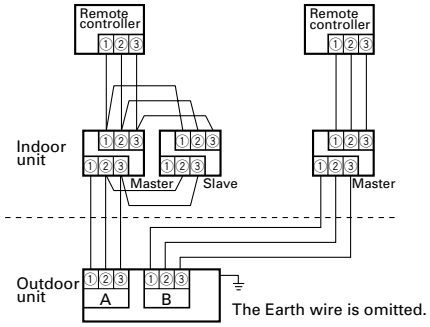
(2) Crossovers as in (①) should not be connected when connecting wires between the master unit and slave units, and from slave unit to slave unit. (The system will not operate correctly.)

Fig. 36



B. Individual operation for buildings

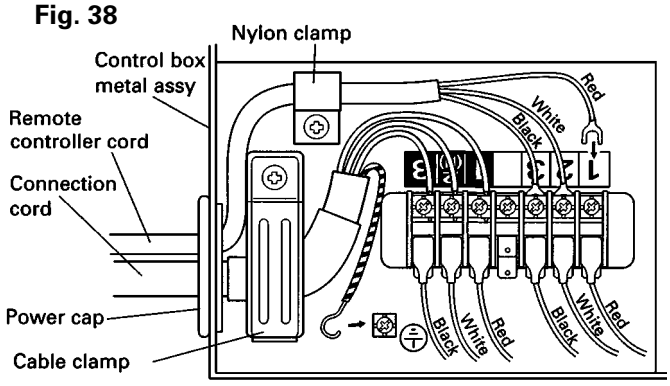
Fig. 37



(2) Connection cord and remote controller cord connections

- Clamp the connection cord with the cable clamp and the remote controller cord with the nylon clamp.
- Connect the connection cord to the terminals with the white characters on the terminal nameplate.
- Connect the remote controller cord to the terminals with the black characters on the terminal nameplate.

Fig. 38



⚠ CAUTION

(1) Tighten the indoor unit connection cord (to the outdoor unit) and power supply indoor and outdoor unit terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.

(2) If the indoor unit connection cord (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.

(3) Wire the indoor unit connection cord (to the outdoor unit) by matching the numbers of the outdoor and indoor units terminal board numbers as shown in (Fig. 38).

(4) Ground both the indoor and outdoor units by attaching a ground wire.

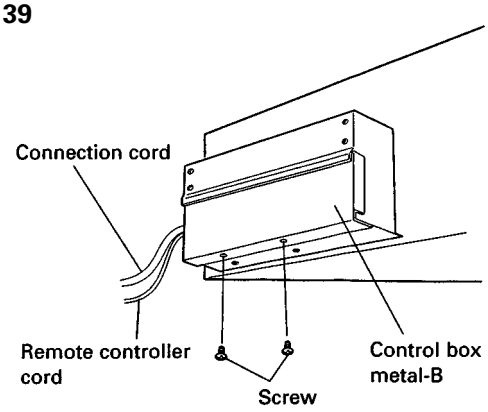
(5) Unit shall be grounded in compliance with the applicable local and national codes.

(3) Control box metal-B installation

Fasten control box metal-B with the two screws.

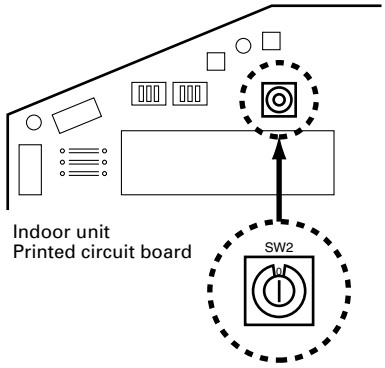
For the connection cord outlet port, see Fig. 39.

Fig. 39



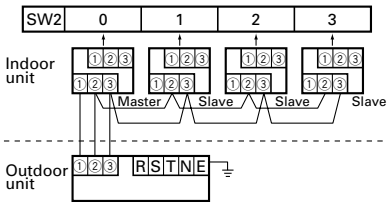
5. MASTER/SLAVE SELECT SWITCH

Fig. 40



- For the master unit, set SW2 on "0". For a slave unit, set SW2 on "1~3".

Fig. 41 [Example]

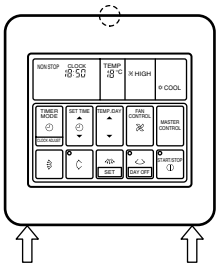


- A master unit is an indoor unit with the power line connected directly from the outdoor unit.

6. REMOTE CONTROLLER INSTALLATION

- Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
- Disconnect the remote controller cord from the remote controller terminal board.

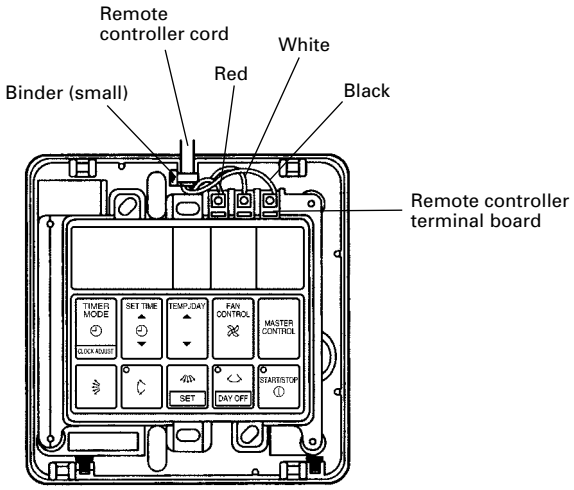
Fig. 42



(1) When remote controller exposed

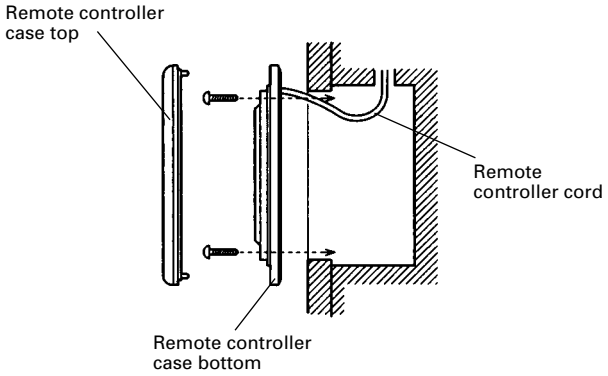
1) Make a notch in the thin part (◌ part of Fig. 42) at the remote controller case top and bottom with nippers, file, etc.
2) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 43).
3) Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 43.
4) Cut off the excess binder.

Fig. 43



(2) When remote controller cord embedded
   1) Embed the remote controller cord and box.
   2) Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 44).
   3) Connect the remote controller cord to the remote controller terminal board specified in (Fig. 43).

Fig. 44 [Example]



- After wiring work is complete, return the remote controller case top to its original state.

⚠ CAUTION

(1) Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.

(2) When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.

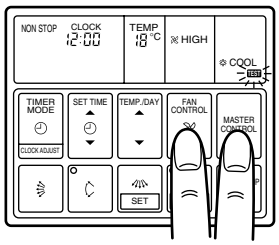
(3) Do not touch the remote controller PC board and PC board parts directly with your hands.

7. TEST RUNNING

REMOTE CONTROLLER

- Supply power to the crankcase heater 12 hours before the start of operation in the winter.
- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display.
  However, the SET TEMP./DAY setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 45).

Fig. 45



- When EE : EE blinks at the current time display, there is an error inside the air conditioner. If the SET TIME button (▼) and SET TEMP./DAY button (▼) are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display. (Fig. 46) When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation. (Fig. 46) Process the error contents by referring to (Table 5).

Fig. 46

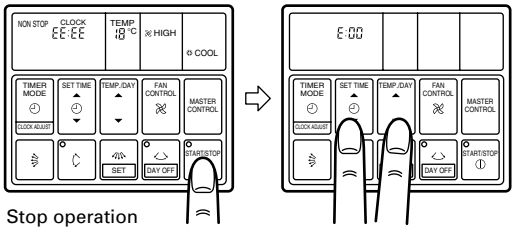


Table 5

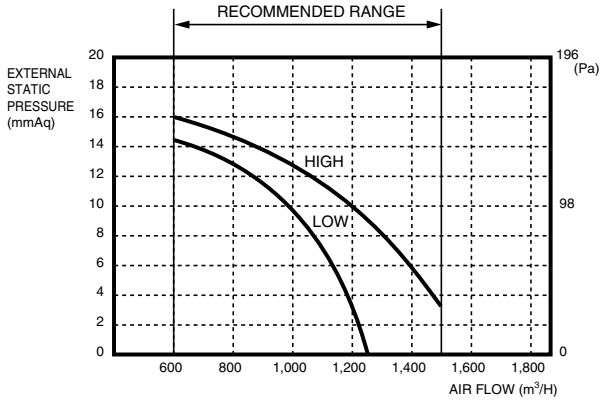
Error cord	Error contents
E:00	Communication error (indoor unit ←→ remote controller)
E:01	Communication error (indoor unit ←→ outdoor unit)
E:02	Room temperature sensor open
E:03	Room temperature sensor shortcircuited
E:04	Indoor heat exchanger temperature sensor open
E:05	Indoor heat exchanger temperature sensor shortcircuited
E:06	Outdoor heat exchanger temperature sensor open
E:07	Outdoor heat exchanger temperature sensor shortcircuited
E:08	Power source connection error
E:09	Float switch operated
E:0A	Outdoor temperature sensor open
E:0b	Outdoor temperature sensor shortcircuited
E:0C	Discharge pipe temperature sensor open
E:0d	Discharge pipe temperature sensor shortcircuited
E:0E	Outdoor low pressure abnormal
E:0F	Discharge pipe temperature abnormal
E: 11	Model abnormal
E: 12	Indoor fan abnormal
E: 13	Outdoor signal abnormal
E: 14	Outdoor EEPROM abnormal

- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test running.

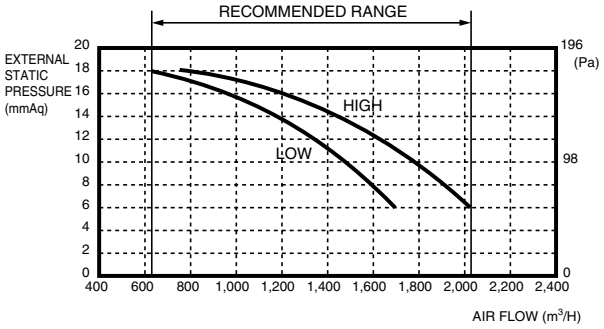
8. STATIC PRESSURE CHARACTERISTIC

Fig. 47
FAN PERFORMANCE AND AIR FLOW EXTERNAL STATIC PRESSURE

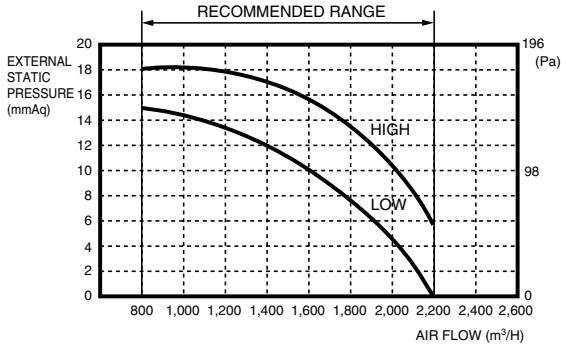
25,000 BTU/h class



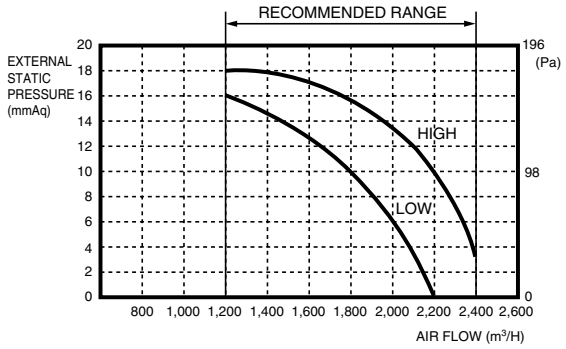
30,000 BTU/h class



36,000 BTU/h class



45,000 BTU/h class



9. OUTLET DUCT CONNECTION

1. DUCT INSTALLATION PATTERN (■ CUT PART)

Fig. 48

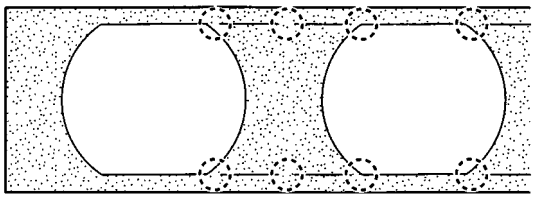
(1) Square duct

(2) Round duct outlet x 4 (This is the factory setting.)

2. WHEN USING AS A SQUARE DUCT

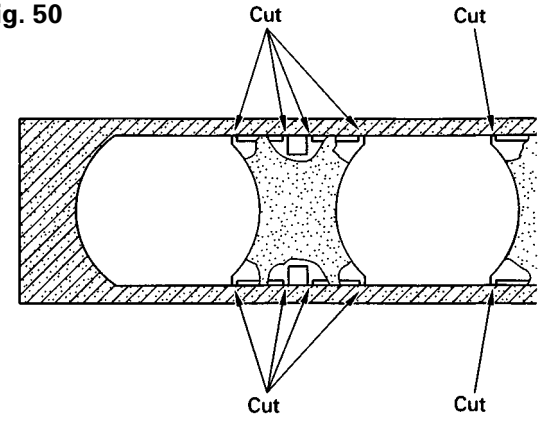
(1) Cut the slit seam ◌ with a cutter.

Fig. 49



(2) Turn up the insulation around the points to be cut according to the outlet port shape working points so that the insulation does not stick out at the ////// part.

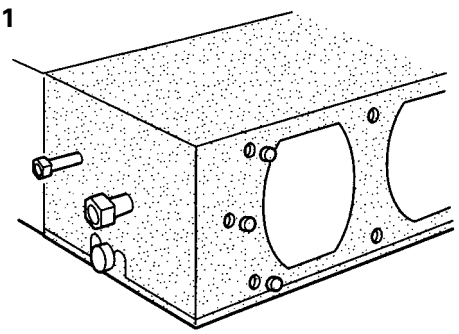
Fig. 50



(3) Cut with nippers and remove the sheet metal.

(4) Since there is a slit in the insulation, use radio pliers, tweezers, etc. to stretch tight the screw hole part used when installing the round flange and square flange when connecting the duct.

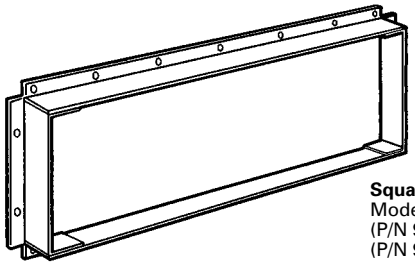
Fig. 51



3. SPECIAL ITEMS

When connecting the square duct and round duct, use the optional square flange or round flange and flexible duct.

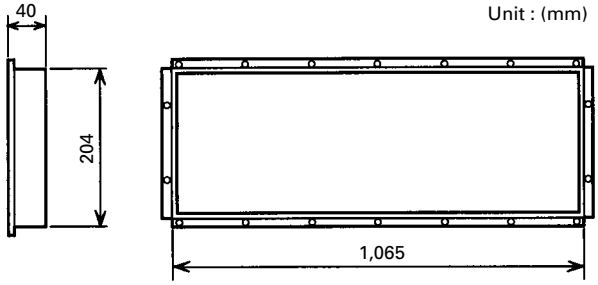
Fig. 52

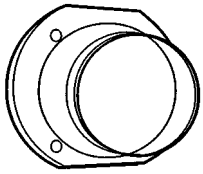


Square flange
Model name : UTD-SF045
(P/N 9054229009)
(P/N 9098180007)

- Square flange dimensions

Unit : (mm)

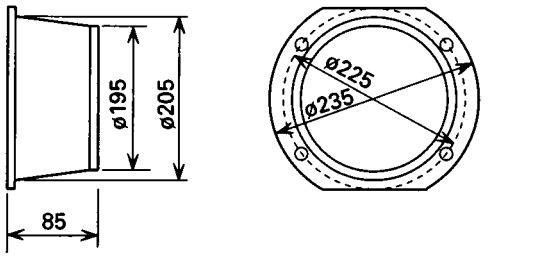




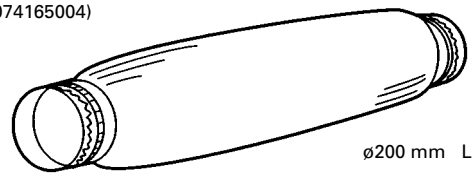
Round flange
Model name : UTD-RF204
(P/M 9093160004)

- Round flange dimensions

Unit : (mm)



Flexible duct
Model name : UTD-RD202
(P/N 9074165004)

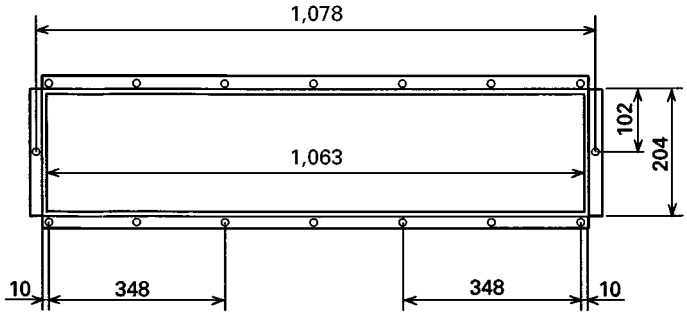


ø200 mm L 2 m

10. INTAKE PORT REAR COVER DIMENSIONS

Fig. 53

Unit:(mm)



11. INTAKE PORT

(1) The square flange (rear side) and panel (intake panel) are installed at the factory at the places shown in Fig. 54.

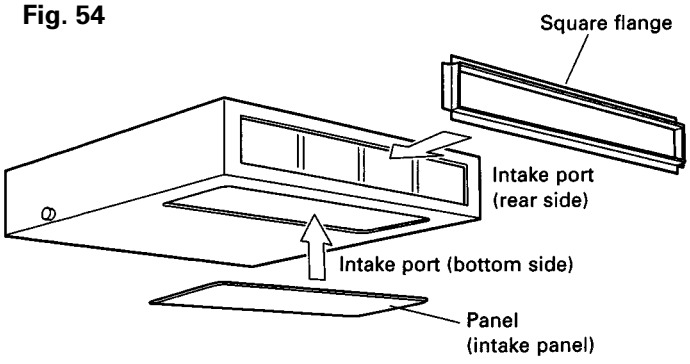
(2) When taking in air from the bottom side, reinstall the square flange (rear side) and panel (intake panel).

⚠ CAUTION

When air is taken in from the bottom side, the operating sound of the product will easily enter the room.

Install the product and intake grilles where the affect of the operating sound is small.

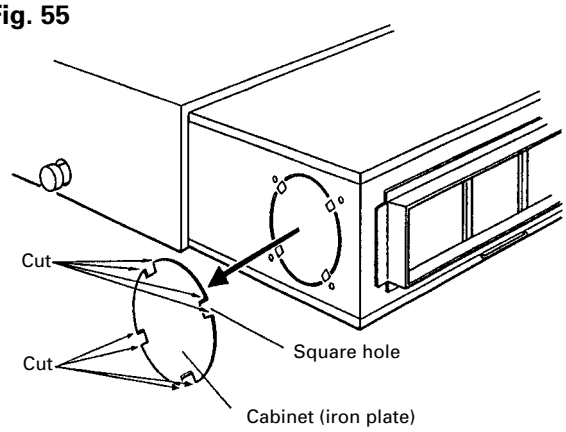
Fig. 54



12. FRESH AIR INTAKE (Processing before use)

(1) When taking in fresh air, cut a slit shaped cabinet in the left side of the outer case as shown in Fig. 55 with nippers.

Fig. 55



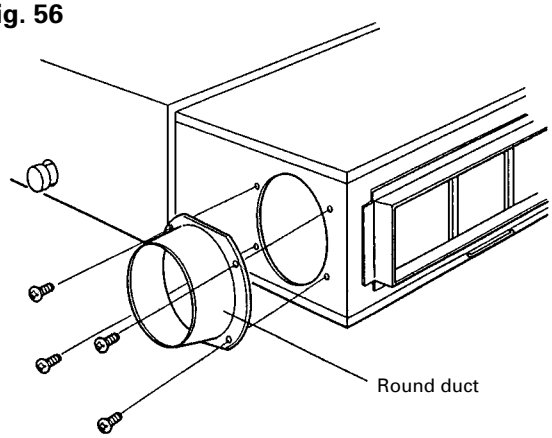
⚠ CAUTION

(1) When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case).

(2) When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.

(2) Install the round flange (optional parts) to the fresh air intake.

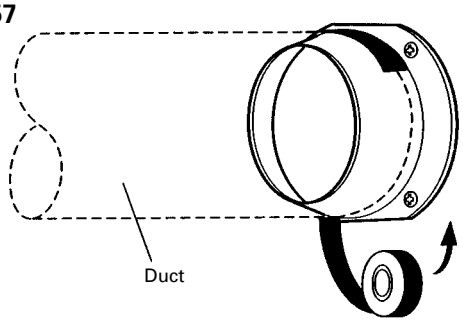
Fig. 56



(3) Connect the duct to the round flange.

(4) Seal with a band and vinyl tape, etc. so that air does not leak from the connection.

Fig. 57



5.2 OUTDOOR UNIT

5.2–1 Simultaneous Operating Multi Type

SPLIT TYPE AIR CONDITIONER
(PART NO. 9363769012)

Refrigerant
R407C

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

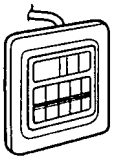
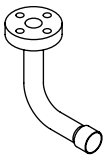
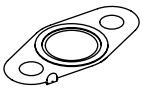
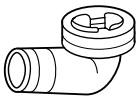
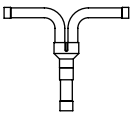
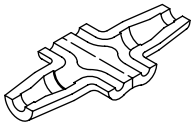
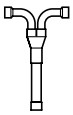
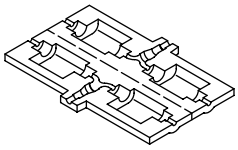
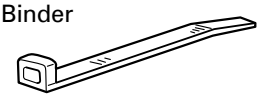
⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**
- **The maximum length of the piping is shown in Table 1. If the units are further apart than this, correct operation cannot be guaranteed.**

STANDARD PARTS

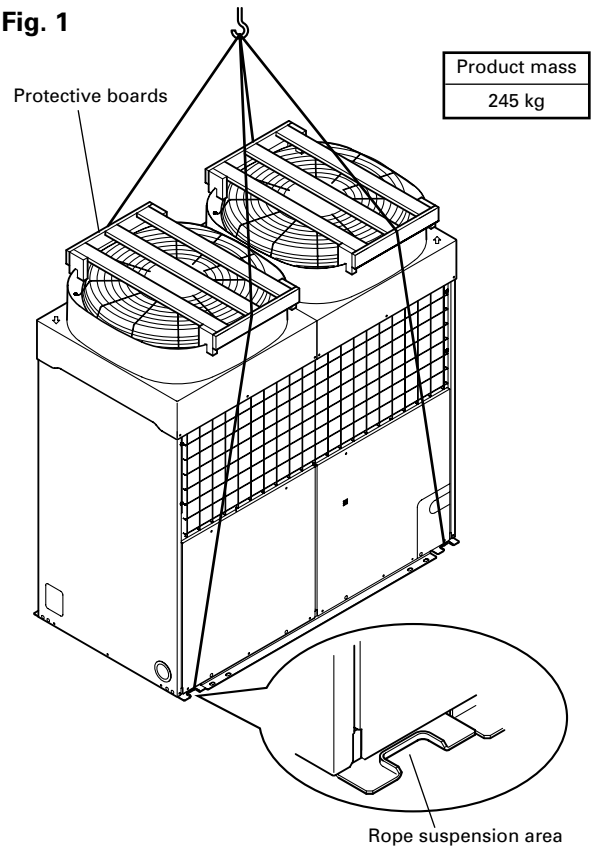
The following installation parts are supplied.
Use them as required.

Description	Q'ty	Application
Remote controller 	1	Use for air conditioner operation
Flange joint assembly 	1	For connecting the piping
Coupler heat insulation 	1	For outdoor side pipe joint
Gasket 	1	Installation between flange joint assembly and valve B
Bolt 	2	For fixing the flange joint assembly
Drain pipe 	3	For outdoor unit drain piping work (Reverse cycle model only)
Branch gas pipe 	1	For distributing the connecting pipe (Gas side)
Insulation for branch gas pipe 	1	For branch gas pipe
Branch liquid pipe 	1	For distributing the connecting pipe (Liquid side)
Insulation for branch liquid pipe 	1	For branch liquid pipe
Binder 	6	For fixing the insulation for branch pipe

CONVEYANCE METHOD AND PRODUCT MASS

- If you are suspending the unit and conveying it to its installation location, place the ropes under the bottom, using the two places on the front and rear provided for suspending it.
- Be sure to suspend the unit with ropes from 4 places and be careful not to subject it to impacts.
- Place protective boards on the unit so the rope doesn't make contact with the bell mouth.
- Use 2 ropes which are 7 m in length or longer.

Fig. 1



SELECTING THE MOUNTING POSITION

Decide the mounting position together with the customer as follows.

⚠ WARNING

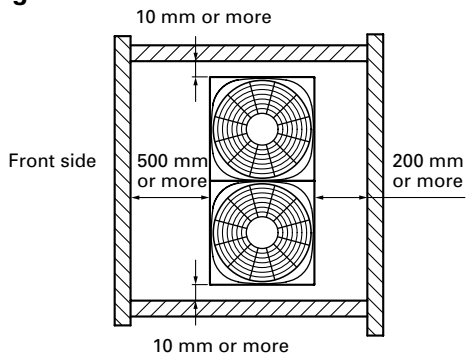
(1) Install the unit where it will not be tilted by more than 5°.

(2) When installing the outdoor unit it may be exposed to strong wind, fasten it securely.

(1) If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)
(2) Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
(3) Install the unit where connection to the indoor unit is easy.
(4) During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where drain water flow will not be obstructed. (Reverse cycle model only)
(5) Do not place animals and plants in the path of the warm air.
(6) Take the air conditioner weight into account and select a place where noise and vibration are small.
(7) Select place so that the warm air and noise from the air conditioner do not disturb neighbours.
(8) Install inlet and outlet ducts in order to maintain stable operation in cold or snowy regions.
(9) Provide the space shown in Fig. 2 so that the air flow is not blocked.

• Installing the unit individually

Fig. 2



• Installing continuous units

Fig. 3

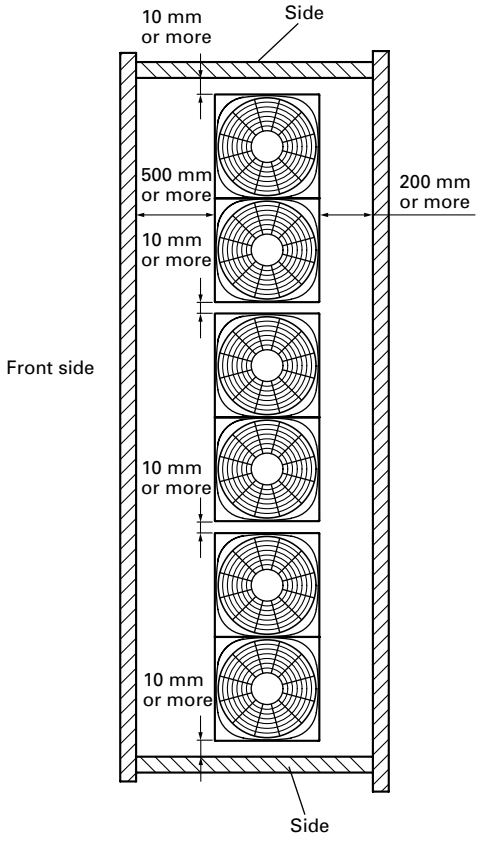
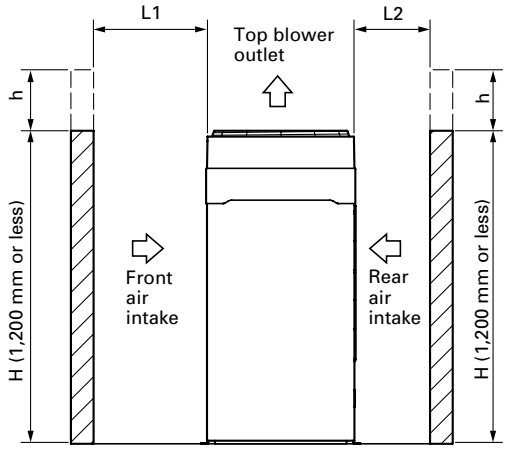


Fig. 4



- There is no limit to the height of the side wall.
- The height of the wall (H) on the front side and rear side should be 1,200 mm or less (Fig. 4).
- If the wall height exceeds 1,200 mm, add dimension (h) to the respective service space dimensions L1 and L2 (Fig. 4).

CONNECTION PIPE REQUIREMENT

Table 1

Diameter		Maximum length	Maximum height (between indoor and outdoor)
Small	Large		
12.7 mm	28.58 mm	50 mm	30 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Power supply cord (mm^2)	Maximum	8.0
	Minimum	6.0
Connection cord (mm^2)	Maximum	2.5
	Minimum	1.5
Fuse capacity (A)		40

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)
- When using a circuit breaker, be sure to use one rated 30 mA or more.

INSTALLATION PROCEDURE

Install the air conditioner as follows.

1. OUTDOOR UNIT INSTALLATION

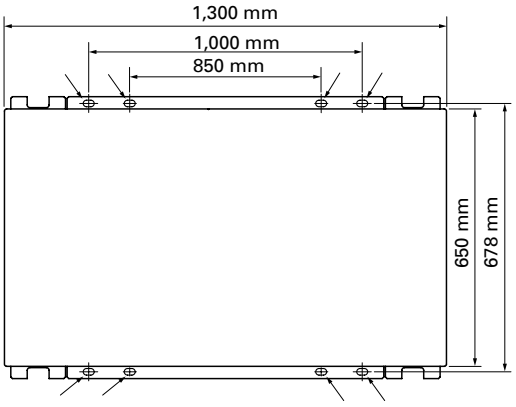
1. OUTDOOR UNIT PROCESSING

When the outdoor unit will be exposed to strong wind, fasten it with anchor bolts at the four places indicated by the arrows (Fig. 5).

(1) Anchor Bolt Positions

- The distance between the left and right anchor bolts should be at least 850 mm.

Fig. 5

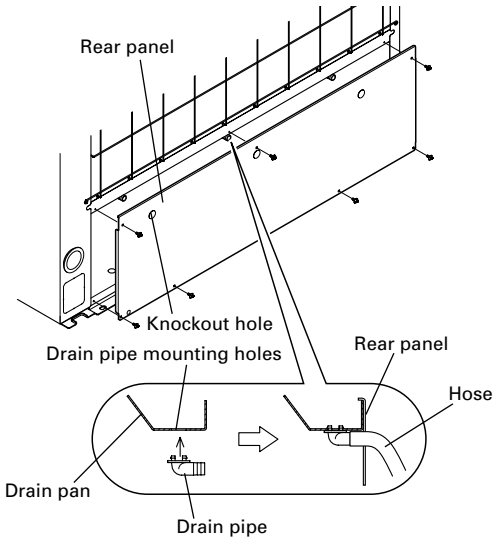


- Set the unit on a strong stand, such as concrete blocks to minimize shock and vibration.
- Do not set the unit directly on the ground because it will cause problems.

(2) Drain Processing (Reverse cycle model only)

- Remove the rear panel.

Fig. 6

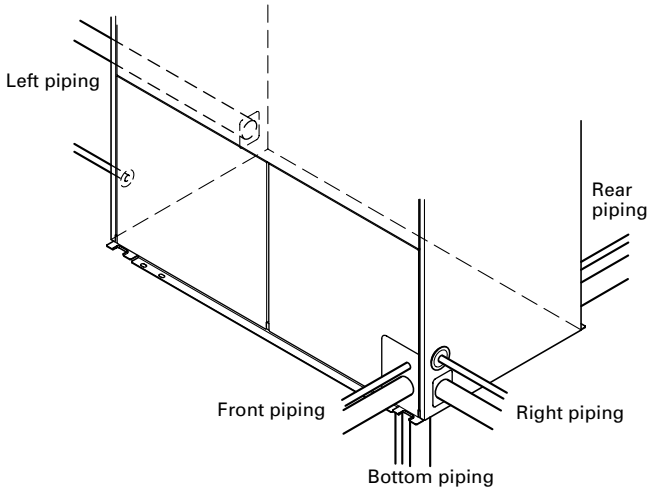


- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to an commercial 16 mm hose. (When heating the outdoor temperature is 0 °C or less, construct so that drain water from the outdoor unit will not freeze in the drain pipe.)
- Always use a drain pipe at three places.

2. OUTDOOR UNIT CONNECTION CORD AND PIPE CONNECTION PREPARATIONS

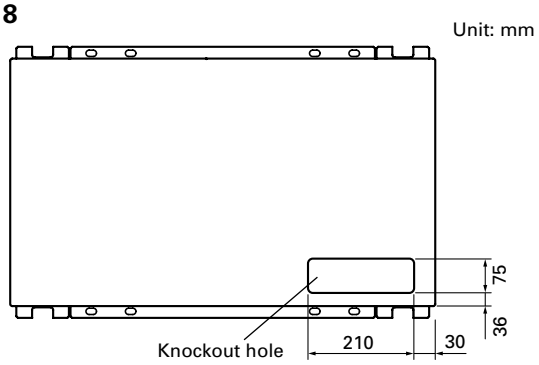
(1) Piping and connection cord mounting direction (5-way mounting possible).

Fig. 7



- Remove the rear panel in order to install the left piping.
- If a mounting bracket is installed at the knockout hole section in the base, do not connect the piping from the bottom.

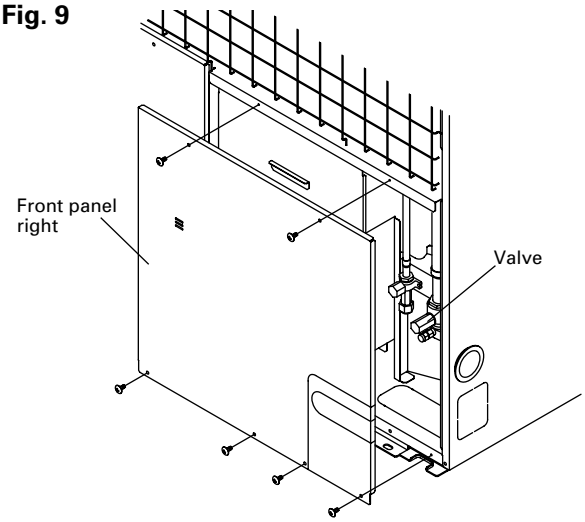
Fig. 8



- If the piping is connected from the left and rear, be sure that there is enough space around the unit to make connections.

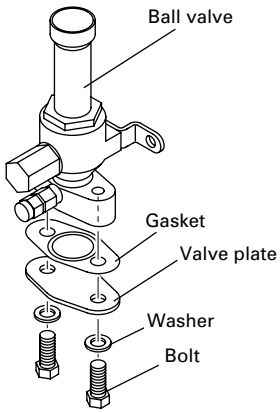
(2) Remove the front panel right.

Fig. 9



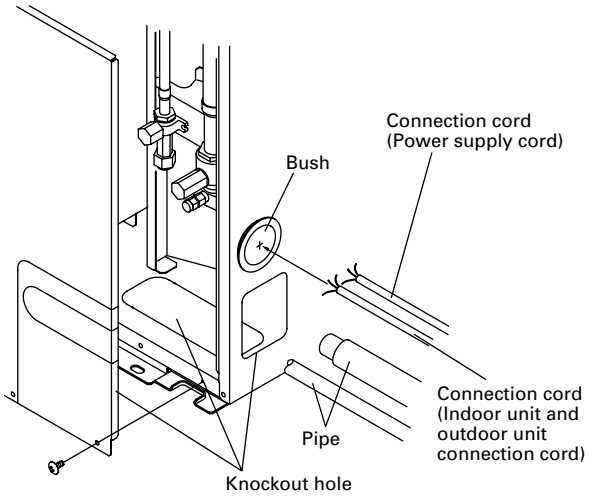
(3) Before connecting flange joint assembly to ball valve.
Remove bolts, valve plate and gasket.

Fig. 10



(4) Open the piping and connection cord knockout holes of the desired direction with nippers, etc.
After opening a hole in the center of bush, pierce with connection cord. (Rear, Right and Left wiring)

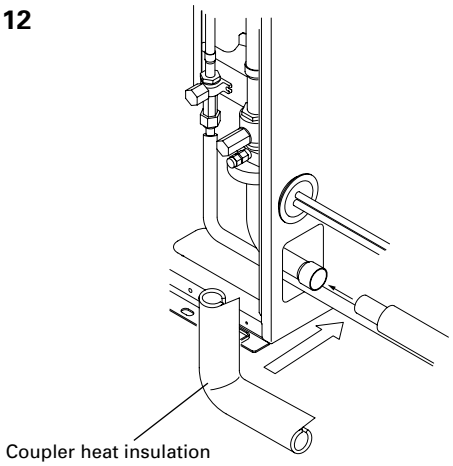
Fig. 11



(5) Connect the piping and connection cord from the mounting holes.

(Example)

Fig. 12



2. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

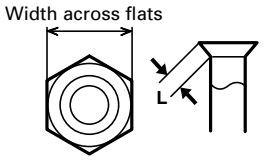
1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.
(2) Holding the pipe downwards so that cuttings cannot enter the pipe and remove the burrs.
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.
(4) Check if the flared part "L" (Fig. 13) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut	L dimension
Small pipe (ø12.7 mm)	width across flats 24 mm	1.9 to 2.2 mm

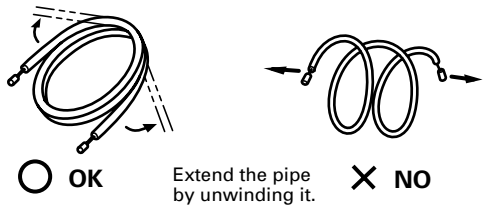
Fig. 13



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

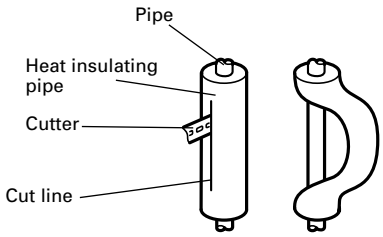
Fig. 14



Do not bend the pipes in an angle more than 90°.
When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

When bending the pipe, there is a possibility to collapse. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 15, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 15



⚠ CAUTION

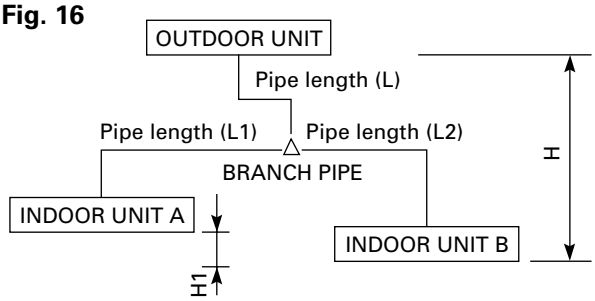
(1) To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.

(2) If the pipe is bent repeatedly at the same place, it will break.

3. PERMISSIBLE LENGTH OF CONNECTION PIPING

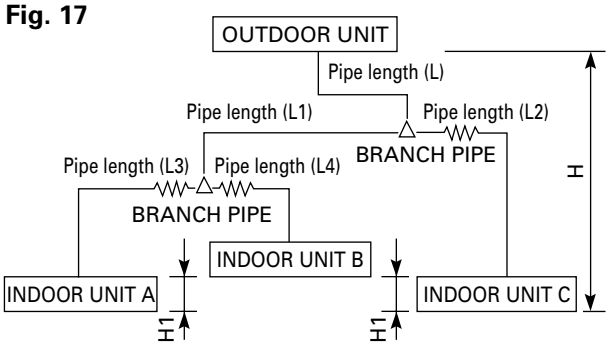
A. In the case of Two connection

Fig. 16



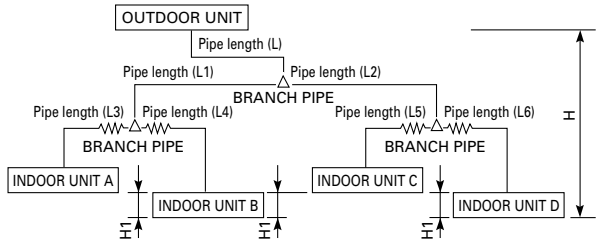
B. In the case of Three connection

Fig. 17



C. In the case of Four connection

Fig. 18



H : Maximum height (between indoor and outdoor)
H1 : Maximum height (between indoor and indoor)
: Indoor capillary tube

Table 4

	Pipe diameter			
	Liquid pipe		Gas pipe	
	Main pipe	Branch pipe	Main pipe	Branch pipe
Two	ø 12.7	ø 9.53	ø 28.58	ø 19.05
Three	ø 12.7	ø 9.53	ø 28.58	ø 19.05 L1, L2 ø 15.88 L3, L4
Four	ø 12.7	ø 9.53	ø 28.58	ø 19.05 L1, L2 ø 15.88 L3, L4, L5, L6

Table 5

	Actual pipe length			High - Low difference	
	Maximum permissible length	Branch pipe length	Branch pipe length difference	Indoor ~ Outdoor	Indoor ~ Indoor
Two	L+L1, L+L2 50 m	L1, L2 10 m	L1-L2 5 m	H 30 m	* H 0.5 m
Three	L+L1+L3, L+L1+L4 L+L2 50 m	L1+L3, L1+L4 L2 10 m	(L1+L3)-L2, (L1+L4)-L2 L3-L4 5 m		
Four	L+L1+L3, L+L1+L4 L+L2+L5, L+L2+L6 50 m	L1+L3, L1+L4 L2+L5, L2+L6 10 m	(L1+L3)-(L2+L5), (L1+L4)-(L2+L5) (L1+L3)-(L2+L6), (L1+L4)-(L2+L6) L3-L4, L5-L6 5 m		

* Acceptable to 3 m only when used with AB (floor console) type indoor unit.

- Separately sold option parts should be used in branches.

Table 6

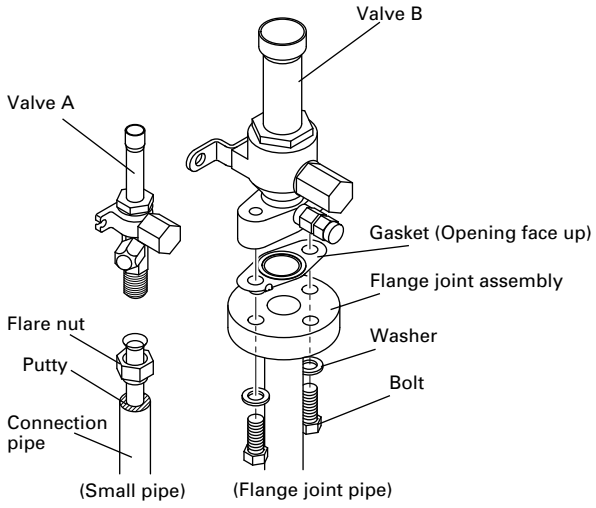
	Branch option parts					
	Gas pipe		Liquid pipe	Joint pipe		
	ø19.05 ø19.05 ø28.58	ø15.88 ø15.88 ø19.05	ø9.53 ø9.53 ø12.7	ø15.88 ↓ ø19.05	ø19.05 ↓ ø15.88	ø12.7 ↓ ø9.53
Two	Standard part 1	——	Standard part 1	—	—	—
Three	Standard part 1	Option part 1	(Standard part 1) Option part 1	Option part 1	Option part 1	Option part 1
Four	Standard part 1	Option part 2	(Standard part 1) Option part 2	Option part 1	—	Option part 2

- Connect the capillary tube provided with the indoor unit to the liquid branching pipe, except in the case of model 45.

4. CONNECTION PIPES

(1) Tighten the flare nut of the connection pipe at the outdoor unit valve connector.
(2) Seal with the accessory putty so that water does not enter at the top of the pipe insulation installed to the connection pipe.
(3) After connecting the pipes, an air tightness test must be performed. To perform the test, close the valve and increase the pressure of the nitrogen gas to 30 kg/cm² G.

Fig. 19

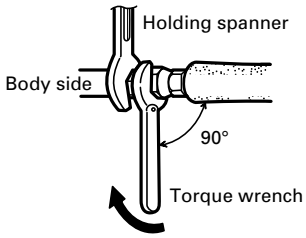


⚠ CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench (Fig. 20).

Fig. 20



⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 21, in order to tighten the flare nut correctly.

- Connecting the flange joint pipe.

Fig. 21

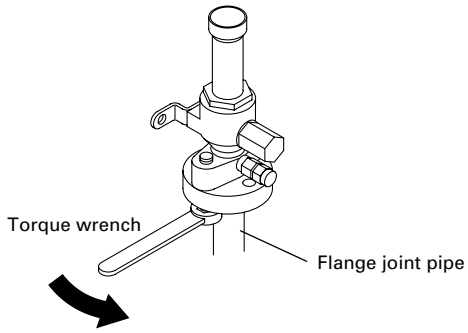


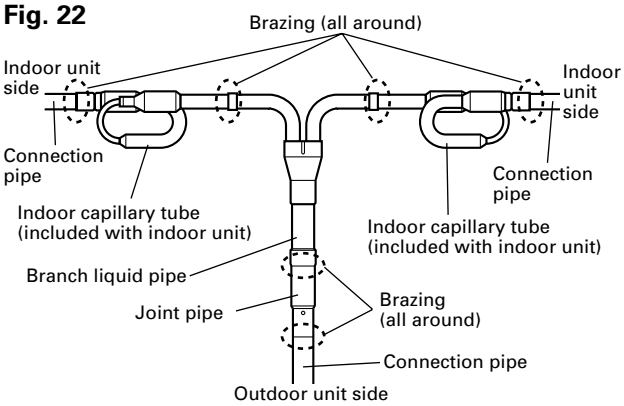
Table 7 : Flare nut tightening torque

Pipe	Tightening torque
Small pipe	500 to 550 kgf • cm (49 to 53.9 N • m)
Bolt (Flange joint pipe)	350 to 400 kgf • cm (34.3 to 39.2 N • m)

5. CONNECTING BRANCHES

(1) Connecting the branch liquid pipe.
1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 22.
2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 23.
3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 24) and affix the insulation with tape.
4) Secure the insulation using the binders (Fig. 25).
- The branch liquid pipe, the joint pipe, and the insulation are available as optional parts.

Fig. 22



- Do not attach the indoor capillary tube to model 45.
- With Three and Four, attach the joint pipe (option parts).

Fig. 23

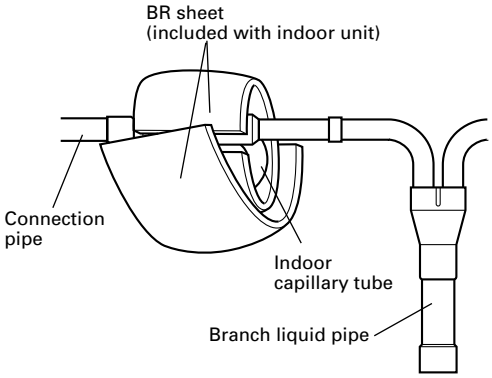


Fig. 24

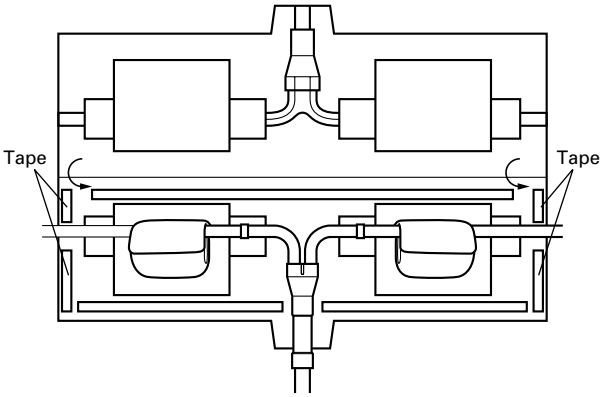
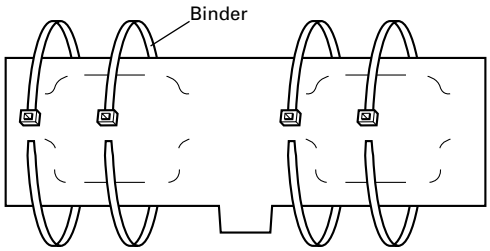


Fig. 25



(2) Connecting the branch gas pipe.
1) Braze the branch gas pipe to the connecting pipe (Fig. 26).
2) Cover the branch gas pipe with insulation (Fig. 27) and affix the insulation with tape.
3) Secure the insulation using the binders (Fig. 28).
- The branch gas pipe and the insulation are as optional parts.

Fig. 26

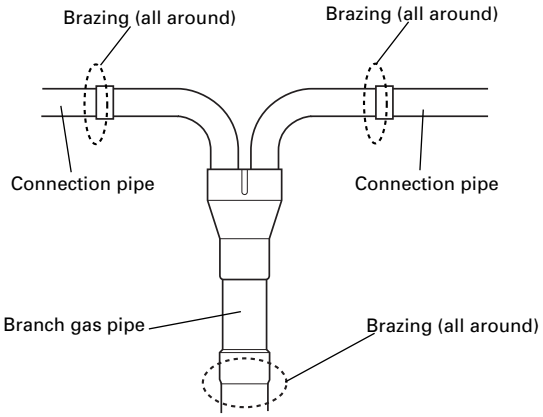


Fig. 27

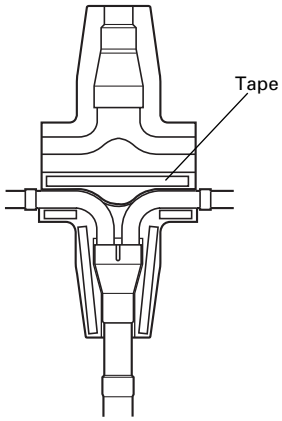
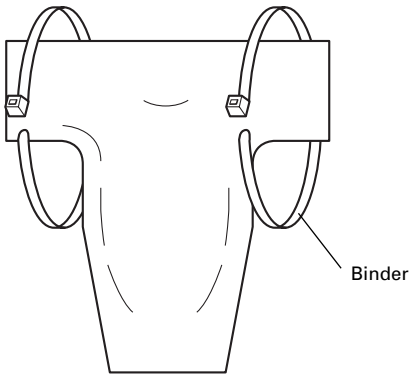


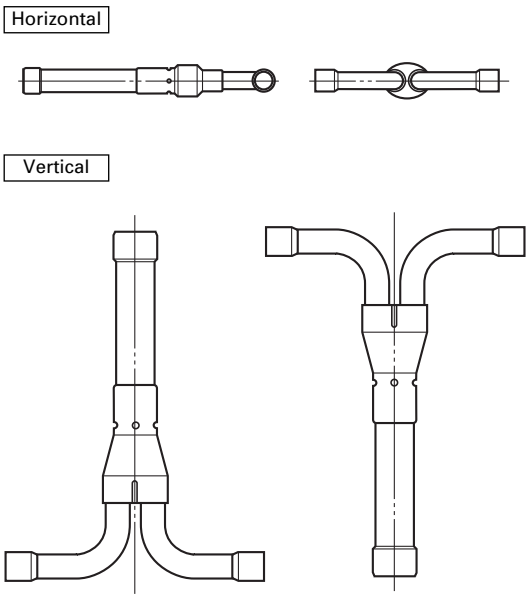
Fig. 28



(3) Installation angle

Be sure that the branch liquid pipe and the branch gas pipe are installed so that they are either exactly horizontal or vertical (Fig. 29).

Fig. 29



3. VACUUM PROCESS

⚠ CAUTION

(1) Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

(2) Use a vacuum pump for R407C exclusively. Using the same vacuum pump for different refrigerant may damage the vacuum pump or the unit.

1. VACUUM

(1) Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
(2) Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -76 cmHg.
(3) When -76 cmHg is reached, operate the vacuum pump for at least 1 hour.
(4) After vacuuming inside the indoor unit and the piping, remove the cap of the two valves.
(5) Open the spindle (handle) of the two valves from the closed state. (Table 9)
(6) Tighten the cap of the two valves to the specified torque.

Table 8

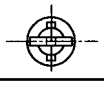
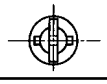
	Tightening torque	
	Large valve	Small valve
Handle	15 kgf • cm (1.47 N • m) or less	
Cap	150 to 200 kgf • cm (14.7 to 19.6 N • m)	

Table 9

Valve A

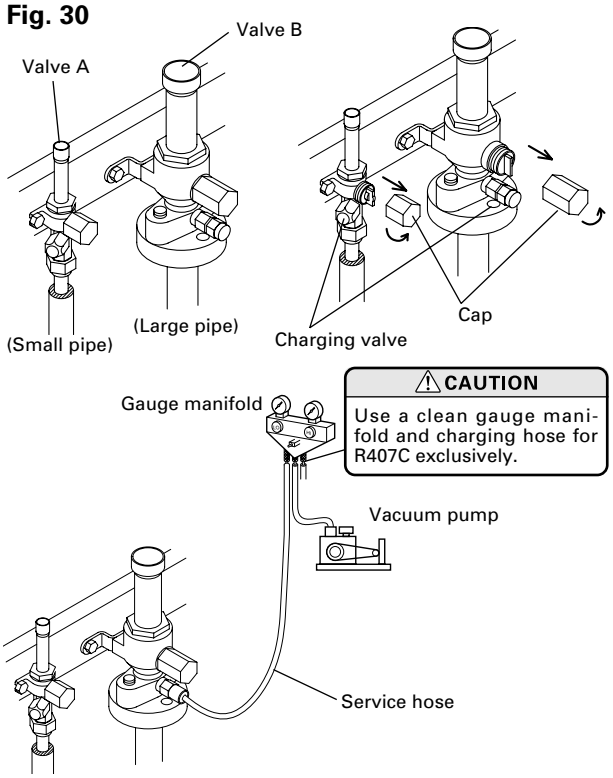
Open valve state	Closed valve state
	

Valve B

Open valve state	Closed valve state
	

∗ If the spindle (handle) is not fully open, performance will drop and an abnormal sound will be generated.

Fig. 30



⚠ CAUTION

Use a clean gauge manifold and charging hose for R407C exclusively.

2. ADDITIONAL CHARGE

- Up to a pipe length of 30 m, charging with additional refrigerant is not necessary.
- If the pipe length exceeds 30 m, charging with refrigerant is necessary.
- Charge with additional refrigerant in the amounts shown in the table below.

Table 10

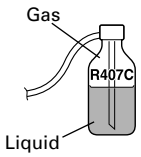
Actual pipe length	30 m (99 ft)	40 m (132 ft)	50 m (164 ft)	g/m (oz/ft)
Additional refrigerant (R407C)	None	1,000 g (35 oz)	2,000 g (70 oz)	100 g/m (3.5 oz/3.3 ft)

⚠ CAUTION

(1) When moving and installing the air conditioner, do not mix gas other than the specified refrigerant R407C inside the refrigerant circuit.

(2) When charging the refrigerant R407C, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).

(3) When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.



(4) Add refrigerant from the charging valve after the completion of the work.

(5) The maximum length of the piping is 50 m. If the units are further apart than this, correct operation can not be guaranteed.

4. ELECTRICAL WIRING

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the outdoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

HOW TO CONNECT WIRING TO THE TERMINALS

A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (15/16″) to expose the solid wire.

(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.

(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

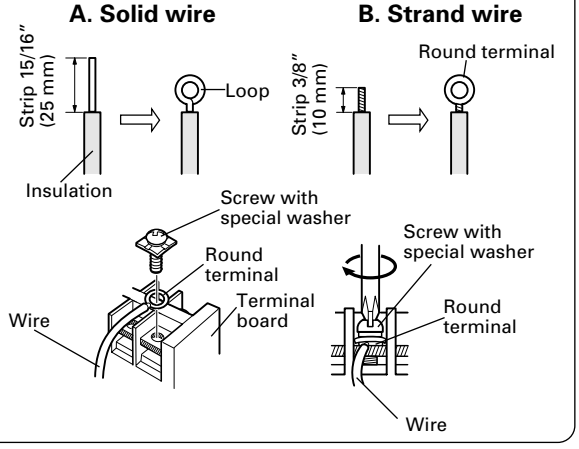
(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8″) to expose the strand wiring.

(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.

(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.

(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

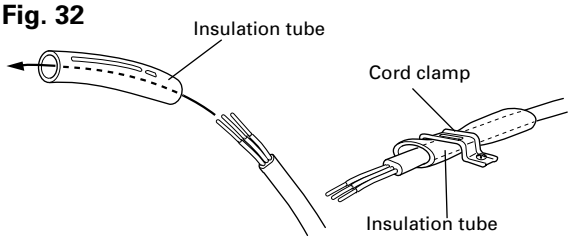
Fig. 31



HOW TO FIX THE CONNECTION CORD AND POWER SUPPLY CORD AT THE CORD CLAMP

After passing the connection cord and power supply cord through the insulation tube, fasten it with the cord clamp.

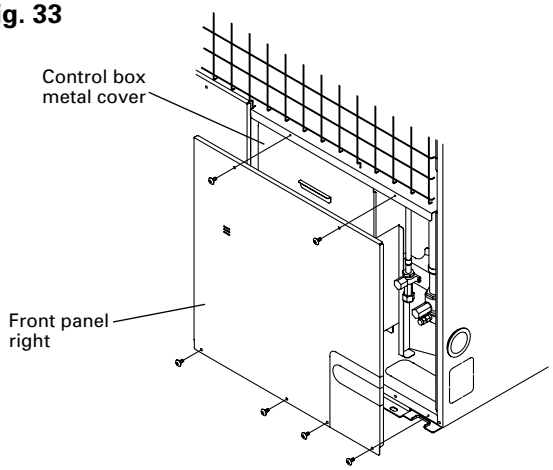
Fig. 32



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

(1) Remove the front panel right.

Fig. 33



(2) Remove control box metal cover and connect the power supply cord and the outdoor unit connection cord wire at the indoor unit.

Fig. 34

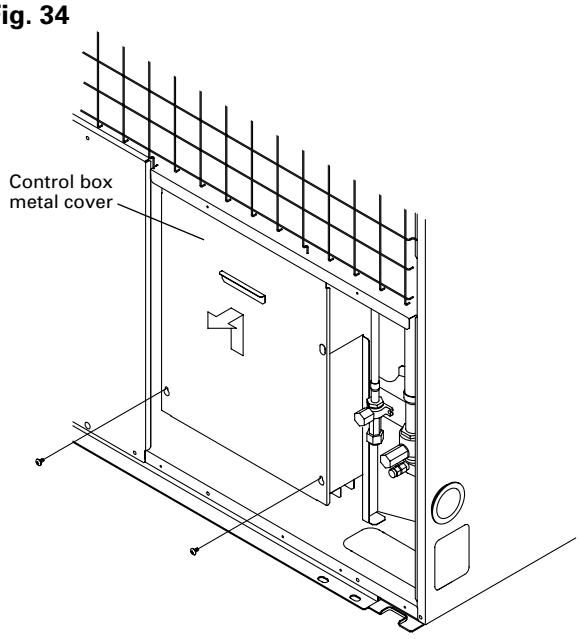


Fig. 35

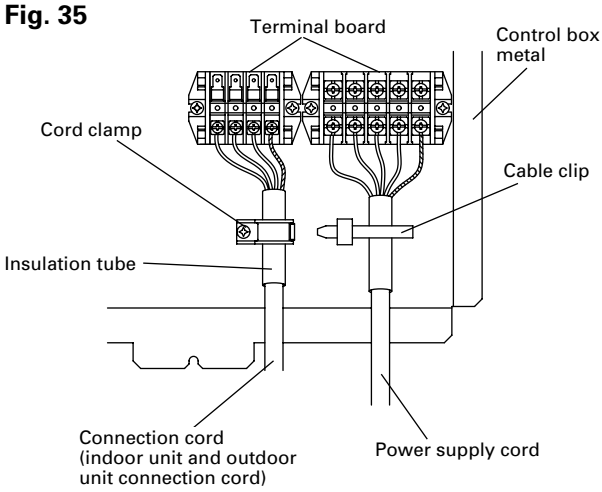
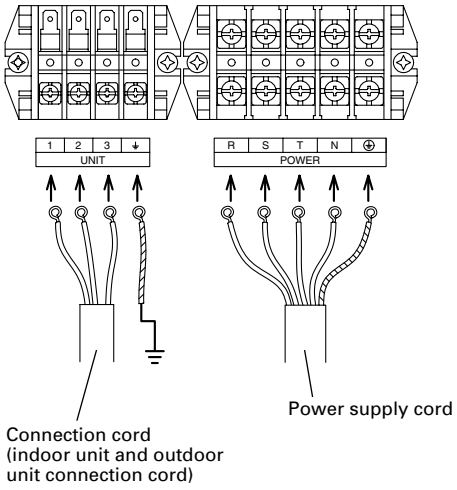
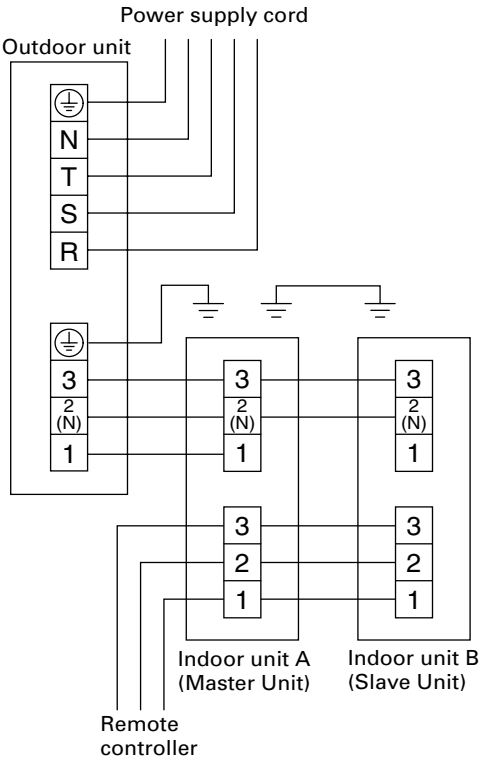


Fig. 36



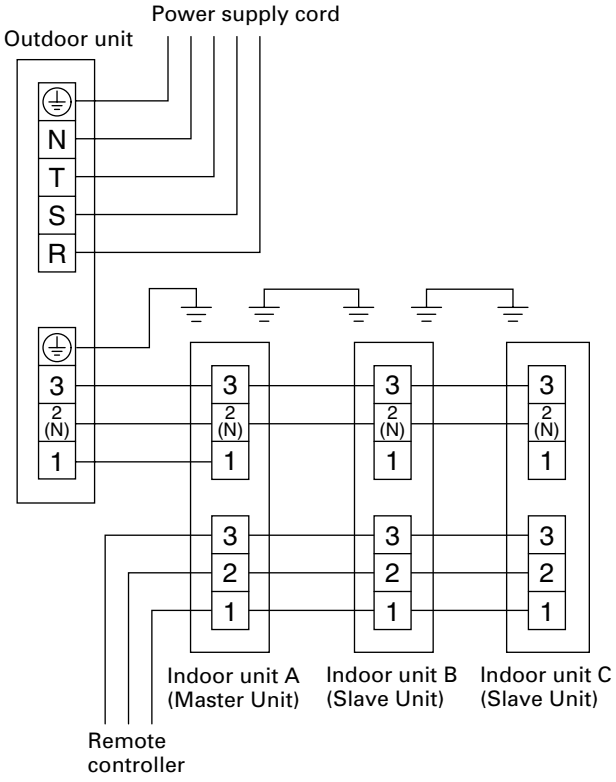
A. Two Connections

Fig. 37



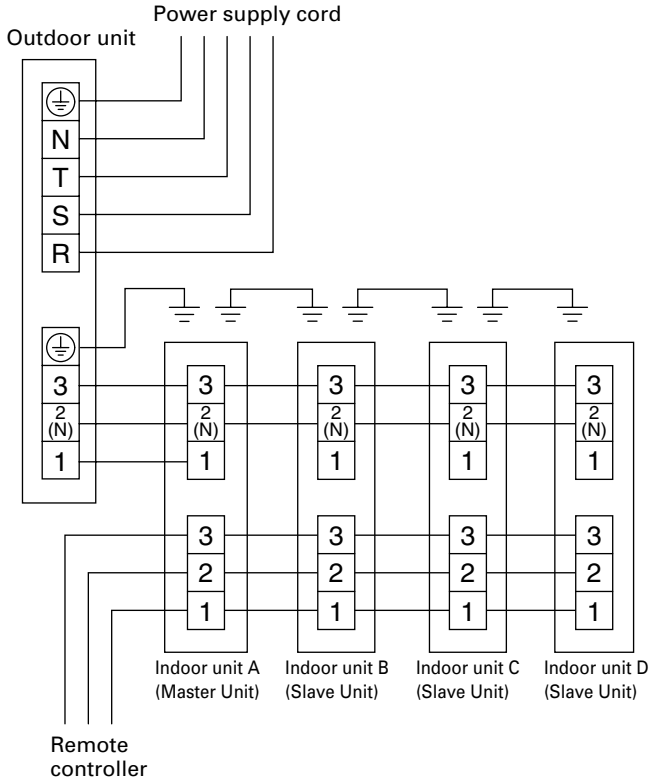
B. Three Connections

Fig. 38



C. Four Connections

Fig. 39

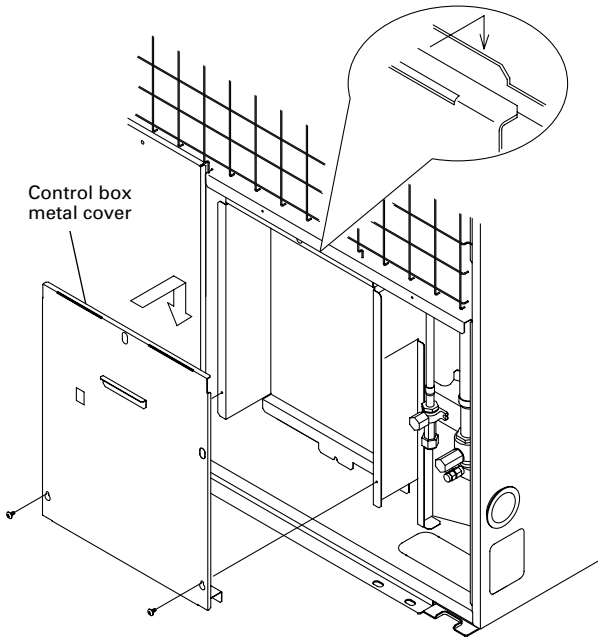


⚠ CAUTION

For connections between indoor and outdoor units, make connections with the indoor master unit. (Do not make connections with the slave units)

(3) Install the control box metal cover and front panel right.

Fig. 40



5. AN ERROR DISPLAY

Operation can be checked by lighting and flashing of the LED lamps.

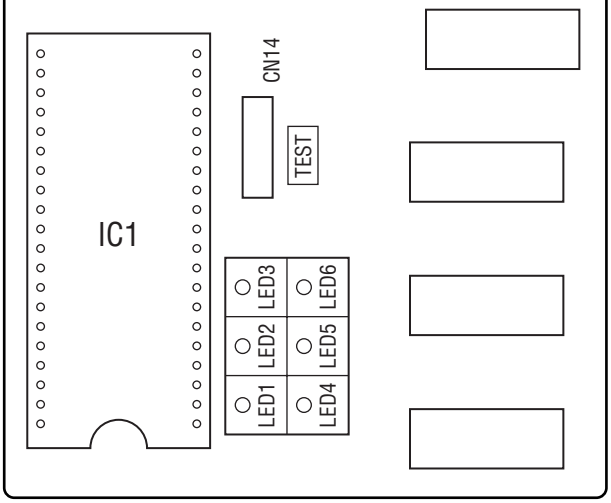
Perform judgment in accordance with the following.

Table 11

LED	DESCRIPTION OF FAILURE	LED DISPLAY
LED 1	Compressor A operation	Lighted continuously
	Pressure switch A faulty (when turning on)	0.1 sec./0.1 sec. flashing
LED 2	4-way valve A operation	Lighted continuously
	Serial signal A faulty	0.5 sec./0.5 sec. flashing once
	Pressure A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature A abnormal	0.5 sec./0.5 sec. flashing 3 times
LED 3	Solenoid controlled valve A operation	Lighted continuously
	Discharge temperature thermistor A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature thermistor B faulty	0.5 sec./0.5 sec. flashing 3 times
	Heat exchanger thermistor A faulty	0.5 sec./0.5 sec. flashing 4 times
	Heat exchanger thermistor B faulty	0.5 sec./0.5 sec. flashing 5 times
	Outside temperature thermistor faulty	0.5 sec./0.5 sec. flashing 6 times
LED 4	Compressor B operation	Lighted continuously
	Pressure switch B faulty (When turning on)	0.1 sec./0.1 sec. flashing
LED 5	4-way valve B operation	Lighted continuously
	Serial signal B faulty	0.5 sec./0.5 sec. flashing once
	Pressure B faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature B faulty	0.5 sec./0.5 sec. flashing 3 times
LED 6	Solenoid controlled valve B operation	Lighted continuously
	Negative-phase prevention faulty	0.5 sec./0.5 sec. flashing once
	EEPROM access faulty	0.5 sec./0.5 sec. flashing 7 times
	EEPROM ERASE faulty	0.1 sec./0.1 sec. flashing
ALL LEDs	Incorrect model No. error	0.1 sec./0.1 sec. flashing

⚠ CAUTION

ERROR LED DISPLAY LAYOUT



5.2–2 Indiviual Operating Multi Type

SPLIT TYPE AIR CONDITIONER
(PART NO. 9363815016)

Refrigerant
R407C

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

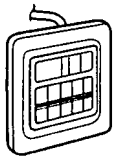
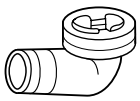
⚠ **WARNING!**	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
⚠ **CAUTION!**	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

⚠ WARNING	
(1)	**For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.**
(2)	**Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.**
(3)	**Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
(4)	**If refrigerant leaks while work is being carried out, ventilate the area.** **If the refrigerant comes in contact with a flame, it produces a toxic gas.**
(5)	**Do not turn on the power until all installation work is complete.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.**
- **The maximum length of the piping is shown in Table 1. If the units are further apart than this, correct operation cannot be guaranteed.**

STANDARD PARTS

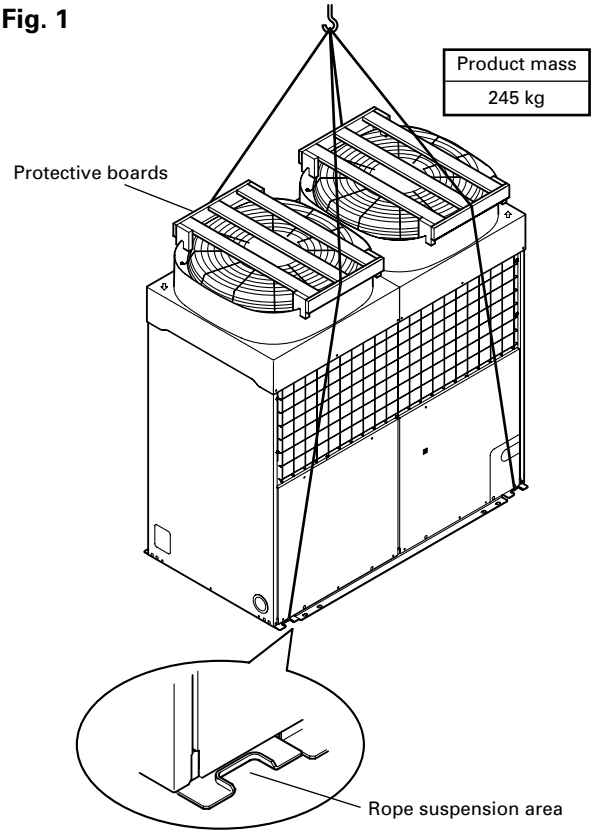
The following installation parts are furnished.
Use them as required.

Description	Q'ty	Application
Remote controller 	2	Use for air conditioner operation
Auxiliary pipe assembly 	2	For connecting the piping
Coupler heat insulation 	2	For outdoor side pipe joint
Drain pipe 	3	For outdoor unit drain piping work (Reverse cycle model only)

CONVEYANCE METHOD AND PRODUCT MASS

- If you are suspending the unit and conveying it to its installation location, place the ropes under the bottom, using the two places on the front and rear provided for suspending it.
- Be sure to suspend the unit with ropes from 4 places and be careful not to subject it to impacts.
- Place protective boards on the unit so the rope doesn't make contact with the bell mouth.
- Use 2 ropes which are 7 m in length or longer.

Fig. 1



SELECTING THE MOUNTING POSITION

Decide the mounting position together with the customer as follows.

⚠ WARNING

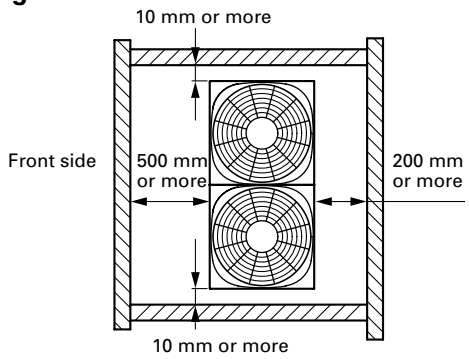
(1) Install the unit where it will not be tilted by more than 5°.

(2) When installing the outdoor unit it may be exposed to strong wind, fasten it securely.

(1) If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)
(2) Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
(3) Install the unit where connection to the indoor unit is easy.
(4) During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where drain water flow will not be obstructed. (Reverse cycle model only)
(5) Do not place animals and plants in the path of the warm air.
(6) Take the air conditioner weight into account and select a place where noise and vibration are small.
(7) Select place so that the warm air and noise from the air conditioner do not disturb neighbours.
(8) Install inlet and outlet ducts in order to maintain stable operation in cold or snowy regions.
(9) Provide the space shown in Fig. 2 so that the air flow is not blocked.

• Installing the unit individually

Fig. 2



• Installing continuous units

Fig. 3

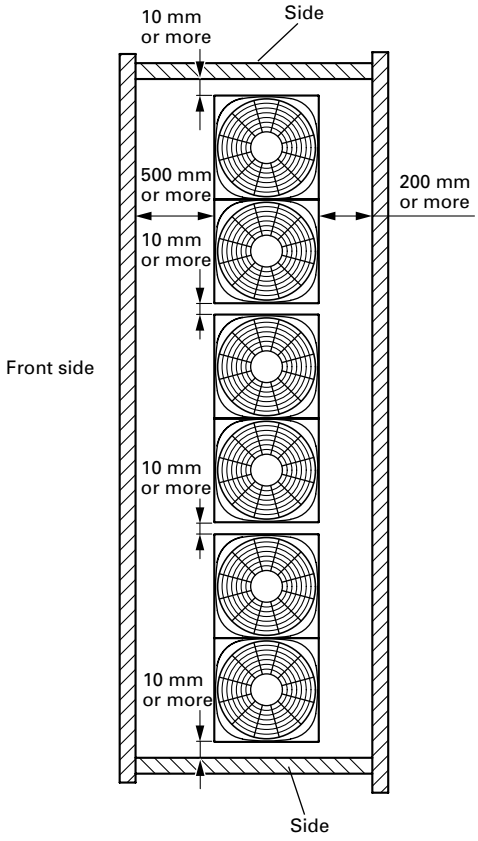
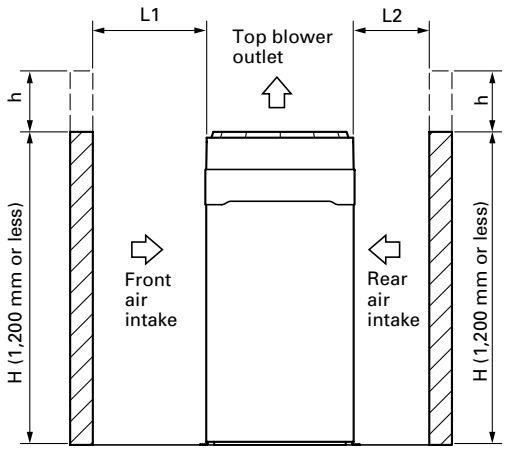


Fig. 4



- There is no limit to the height of the side wall.
- The height of the wall (H) on the front side should be 1,200 mm or less (Fig. 4).
- If the wall height exceeds 1,200 mm, add dimension (h) to the respective service space dimensions L1 and L2 (Fig. 4).

CONNECTION PIPE REQUIREMENT

Table 1

Diameter		Maximum length	Maximum height (between indoor and outdoor)
Small	Large		
9.53 mm	19.05 mm	50 mm	30 mm

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

ELECTRICAL REQUIREMENT

Table 2

Power supply cord (mm^2)	Maximum	8.0
	Minimum	6.0
Connection cord (mm^2)	Maximum	2.5
	Minimum	1.5
Fuse capacity (A)		40

- Always use H07RN-F or equivalent to the connection cord.
- Install the disconnection device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)
- When using a circuit breaker, be sure to use one rated 30 mA or more.

INSTALLATION PROCEDURE

Install the air conditioner as follows:

1. OUTDOOR UNIT INSTALLATION

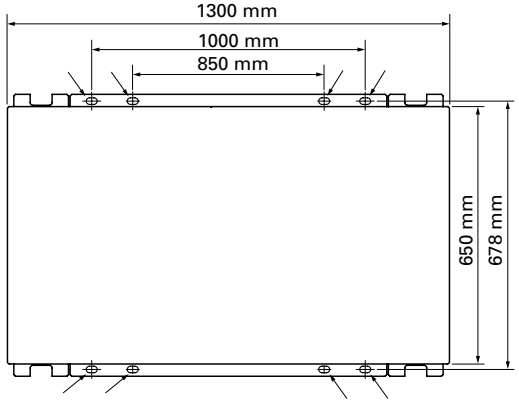
1. OUTDOOR UNIT PROCESSING

When the outdoor unit will be exposed to strong wind, fasten it with anchor bolts at the four places indicated by the arrows (Fig. 5).

(1) Anchor Bolt Positions

- The distance between the left and right anchor bolts should be at least 850 mm.

Fig. 5

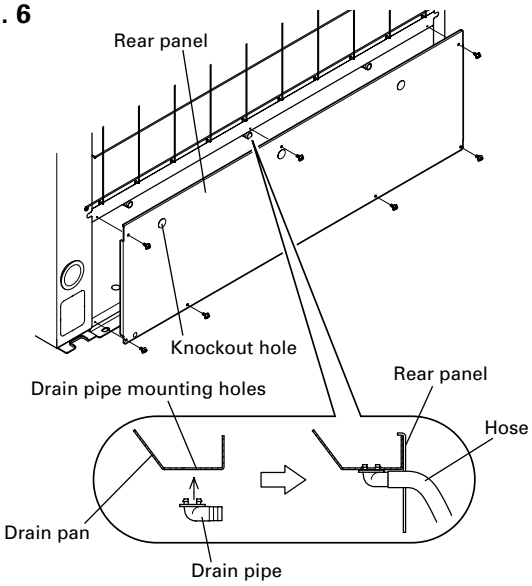


- Set the unit on a strong stand, such as concrete blocks to minimize shock and vibration.
- Do not set the unit directly on the ground because it will cause problems.

(2) Drain Processing (Reverse cycle model only)

- Remove the rear panel.

Fig. 6

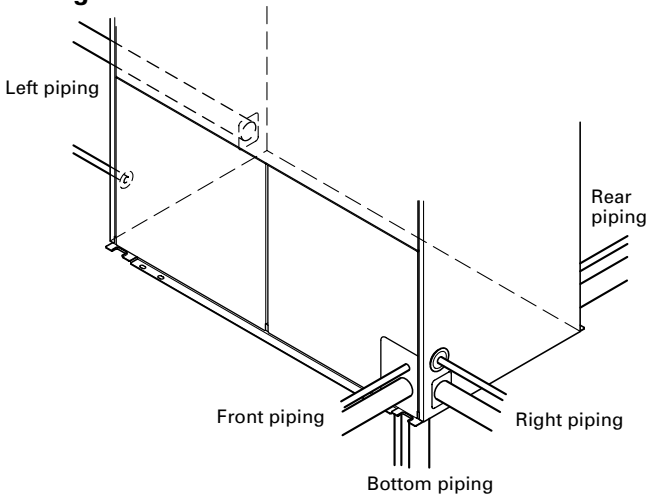


- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to an commercial 16 mm hose. (When heating the outdoor temperature is 0°C or less, construct so that drain water from the outdoor unit will not freeze in the drain pipe.)
- Always use a drain pipe at three places.

2. OUTDOOR UNIT CONNECTION CORD AND PIPE CONNECTION PREPARATIONS

(1) Piping and connection cord mounting direction. (5-way mounting possible)

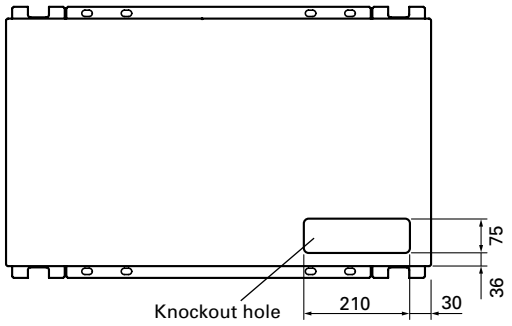
Fig. 7



- Remove the rear panel in order to install the left piping.
- If a mounting bracket is installed at the knockout hole section in the base, do not connect the piping from the bottom.

Fig. 8

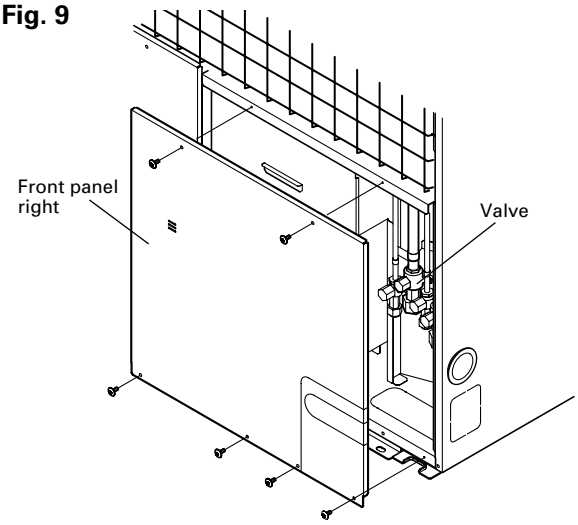
Unit: mm



- If the piping is connected from the left and rear, be sure that there is enough space around the unit to make connections.

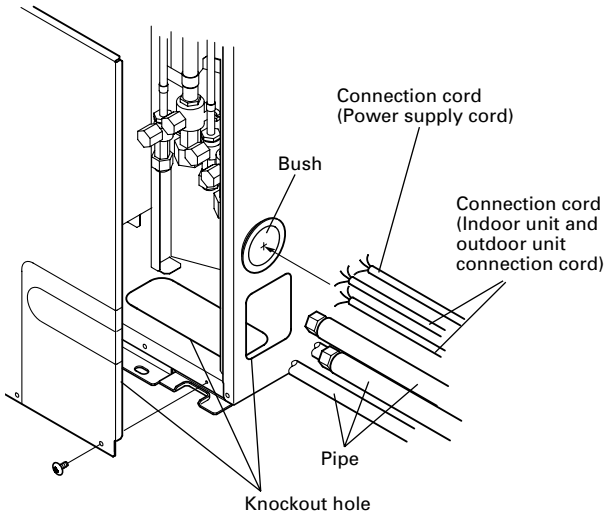
(2) Remove the front panel right.

Fig. 9



(3) Open the piping and connection cord knockout holes of the desired direction with nippers, etc.
After opening a hole in the center of bush, pierce with connection cord. (Rear, Right and Left wiring)

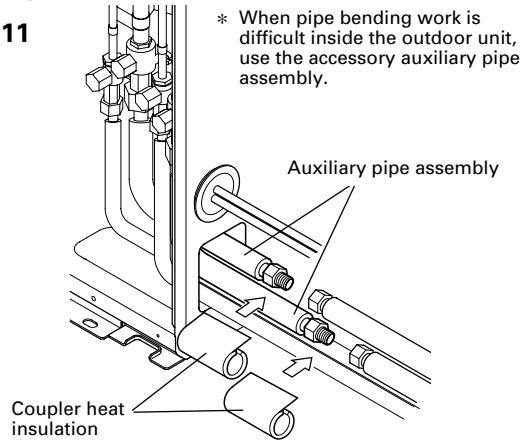
Fig. 10



(4) Connect the piping and connection cord from the mounting holes.

(Example)

Fig. 11



2. CONNECTING THE PIPING

⚠ CAUTION

(1) Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(2) Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.

(3) While welding the pipes, be sure to blow dry nitrogen gas through them.

1. FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.

(2) Holding the pipe downwards so that cuttings cannot enter the pipe and remove the burrs.

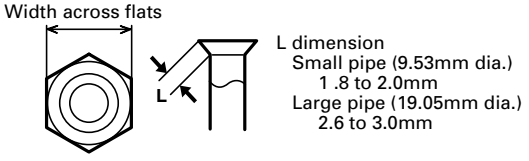
(3) Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.

(4) Check if the flared part "L" (Fig. 12) is spread uniformly and that there are no cracks.

Table 3

Pipe	Flare nut
Small pipe	Small (width across flats 22 mm)
Large pipe	Large (width across flats 36 mm)

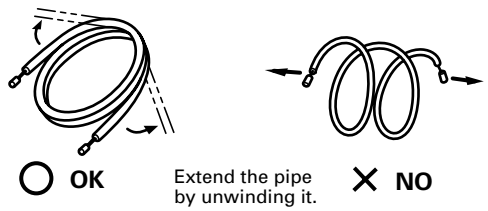
Fig. 12



2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

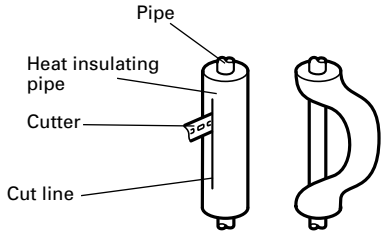
Fig. 13



Do not bend the pipes in an angle more than 90°.
When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bent or stretch them any more. Do not bent or stretch the pipes more than three times.

When bending the pipe, there is a possibility to collapse. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 14, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

Fig. 14



⚠ CAUTION

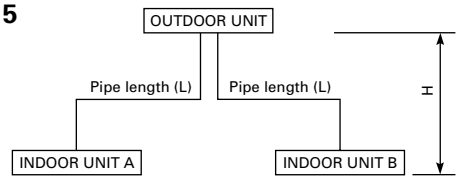
(1) To prevent breaking of the pipe, avoid sharp bends.
Bend the pipe with a radius of curvature of 150 mm or over.

(2) If the pipe is bent repeatedly at the same place, it will break.

3. PERMISSIBLE LENGTH OF CONNECTION PIPING

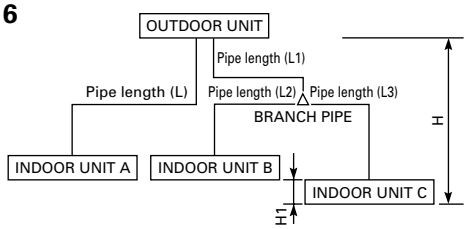
A. In the case of a One + One connection

Fig. 15



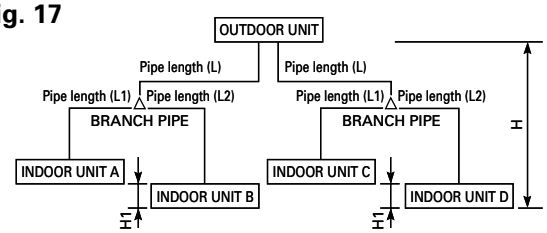
B. In the case of a One + Two connection

Fig. 16



C. In the case of a Two + Two connection

Fig. 17



H : Maximum height (between indoor and outdoor)
H1 : Maximum height (between indoor and indoor)

Table 4

	Pipe diameter			
	Liquid pipe		Gas pipe	
	Main pipe	Branch pipe	Main pipe	Branch pipe
One + One	ø 9.53	———	ø 19.05	———
One + Two	ø 9.53	ø 9.53	ø 19.05	ø 15.88
Two + Two	ø 9.53	ø 9.53	ø 19.05	ø 15.88

Table 5

	Actual pipe length			High - Low difference	
	Maximum permissible length	Branch pipe length	Branch pipe length difference	Indoor ~ Outdoor	Indoor ~ Indoor
One + One	L 50 m	———	———	H 30 m	———
One + Two	L, L1+L2, L1+L3 50 m	L2, L3 10 m	L2-L3 5 m	H 30 m	* H1 0.5 m
Two + Two	L+L1, L+L2 50 m	L1, L2 10 m	L1-L2 5 m	H 30 m	* H1 0.5 m

* Acceptable to 3 m only when used with AB (floor console) type indoor unit.

- Separately sold option parts should be used in branches.

Table 6

	Branch option parts		
	Gas pipe	Liquid pipe	Joint pipe
	ø 15.88 ø 15.88 ø 19.05	ø 9.53 ø 9.53 ø 12.7	ø 9.53 → ø 12.7
One + One	———	———	———
One + Two	1	1	1
Two + Two	2	2	2

4. CONNECTION PIPES

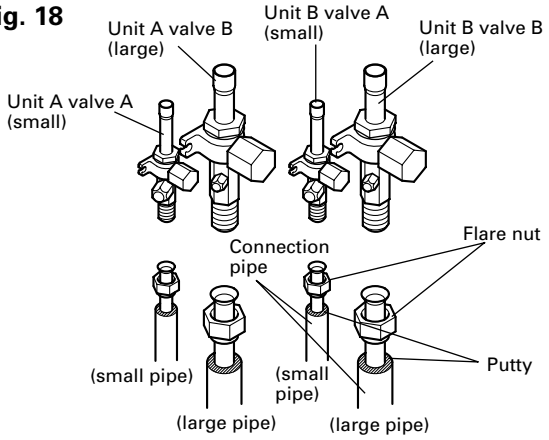
(1) Tighten the flare nut of the connection pipe at the outdoor unit valve connector.

(2) Seal with the accessory putty so that water does not enter at the top of the pipe insulation installed to the connection pipe. (large pipe and small pipe)

(3) Connection piping should be connected in the order.
Unit A Valve A → Unit A Valve B → Unit B Valve B → Unit B Valve A

(4) After connecting the pipes, an airtightness test must be performed. To perform the test, close the valve and increase the pressure of the nitrogen gas to 30 kg/cm² G.

Fig. 18

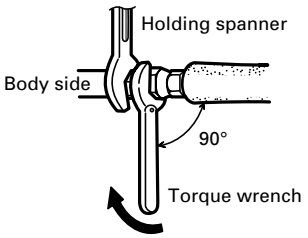


⚠ CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench (Fig.19).

Fig. 19



⚠ CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 19, in order to tighten the flare nut correctly.

Table 7 : Flare nut tightening torque

Flare nut	Tightening torque
Small pipe	310 to 350 kgf · cm (30.4 to 34.3 N · m)
Large pipe	800 to 1,000 kgf · cm (78.4 to 98 N · m)

5. CONNECTING BRANCHES

These instructions apply to a "One + Two connection" or a "Two + Two connection".

(1) Connecting the branch liquid pipe.

1) Braze each part (connection pipe, indoor capillary tube, and branch liquid pipe) as shown in Fig. 20.
2) Wrap the two BR sheets around the indoor capillary tube as shown in Fig. 21.
3) Cover the indoor capillary tube and the branch liquid pipe with insulation (Fig. 22) and affix the insulation with tape.
4) Secure the insulation using the binders (Fig. 23).

• The branch liquid pipe, the joint pipe, and the insulation are available as optional parts.

Fig. 20

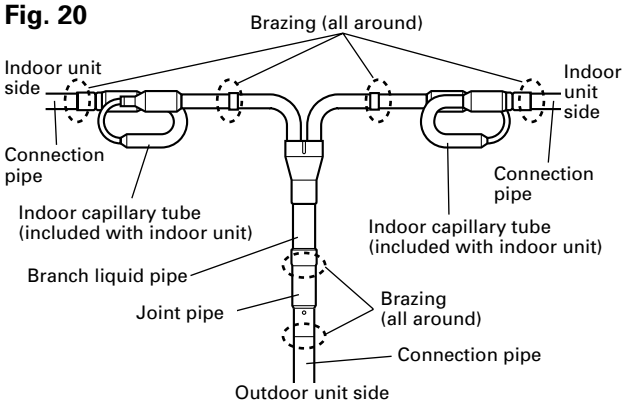


Fig. 21

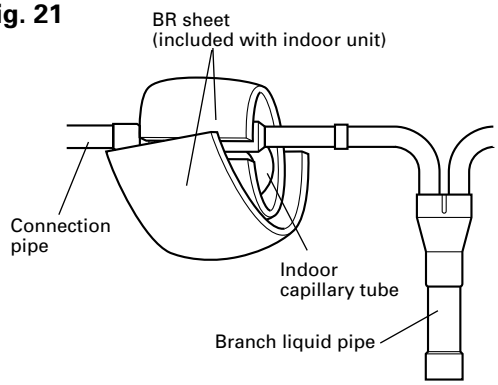


Fig. 22

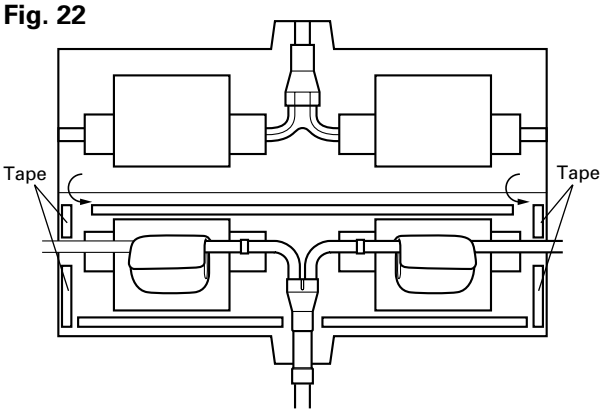
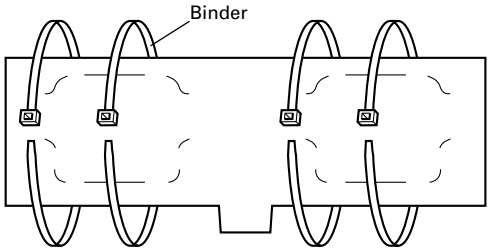


Fig. 23



(2) Connecting the branch gas pipe.

1) Braze the branch gas pipe to the connecting pipe (Fig. 24).
2) Cover the branch gas pipe with insulation (Fig. 25) and affix the insulation with tape.
3) Secure the insulation using the binders (Fig. 26).

• The branch gas pipe and the insulation are available as optional parts.

Fig. 24

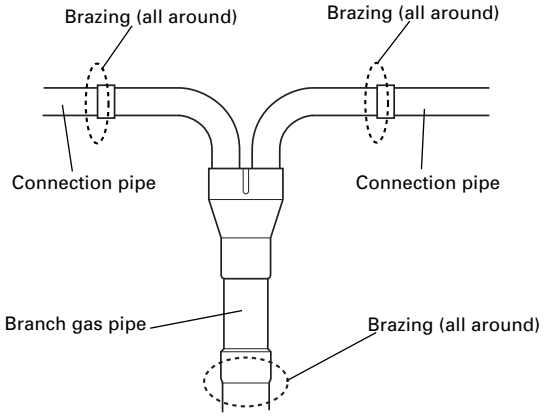


Fig. 25

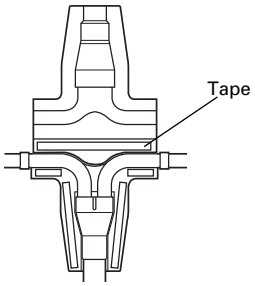
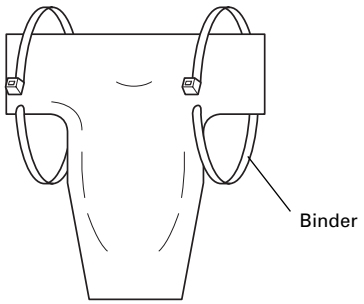


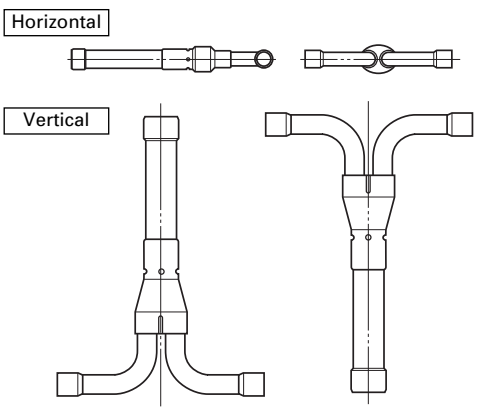
Fig. 26



(3) Installation angle

Be sure that the branch liquid pipe and the branch gas pipe are installed so that they are either exactly horizontal or vertical. (Fig. 27)

Fig. 27



3. VACUUM PROCESS

⚠ CAUTION

(1) Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

(2) Use a vacuum pump for R407C exclusively. Using the same vacuum pump for different refrigerant may damage the vacuum pump or the unit.

1. VACUUM

(1) Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
(2) Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -76 cmHg.
(3) When -76 cmHg is reached, operate the vacuum pump for at least 1 hour.
(4) After vacuuming inside the indoor unit and the piping, remove the cap of the two valves.
(5) Open the spindle (handle) of the two valves from the closed state. (Table 9)
(6) Tighten the cap of the two valves to the specified torque.

Table 8

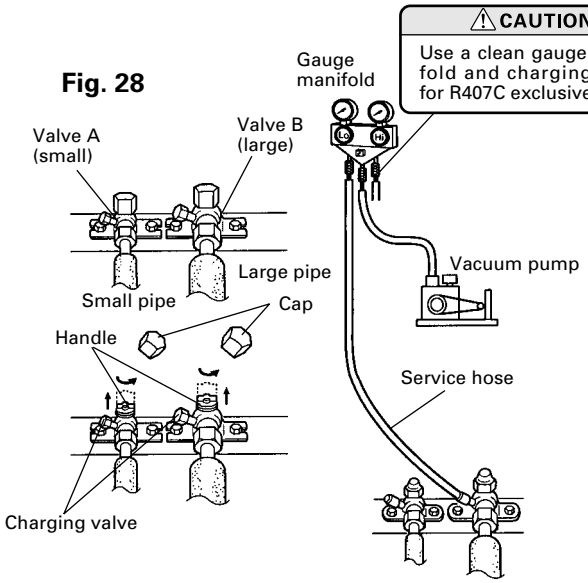
	Tightening torque	
	Large valve	Small valve
Handle	15 kgf • cm (1.47 N • m) or less	
Cap	150 to 200 kgf • cm (14.7 to 19.6 N • m)	

Table 9

Open valve state	Closed valve state
	

* If the spindle (handle) is not fully open, performance will drop and an abnormal sound will be generated.

Fig. 28



2. ADDITIONAL CHARGE

- Up to a pipe length of 30 m, charging with additional refrigerant is not necessary.
- If the pipe length exceeds 30 m, charging with refrigerant is necessary.
- Charge with additional refrigerant in the amounts shown in the table below.

Table 10

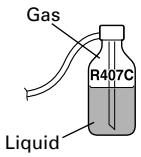
Actual pipe length	30 m (99 ft)	40 m (132 ft)	50 m (164 ft)	g/m (oz/ft)
Additional refrigerant (R407C)	None	400 g (14 oz)	800 g (28 oz)	40 g/m (1.4 oz/3.3 ft)

⚠ CAUTION

(1) When moving and installing the air conditioner, do not mix gas other than the specified refrigerant R407C inside the refrigerant circuit.

(2) When charging the refrigerant R407C, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).

(3) When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.



(4) Add refrigerant from the charging valve after the completion of the work.

(5) The maximum length of the piping is 50 m. If the units are further apart than this, correct operation can not be guaranteed.

4. ELECTRICAL WIRING

⚠ WARNING

(1) Before starting work, check that power is not being supplied to the outdoor unit.

(2) Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

(3) Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.

(4) Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)

(5) Always connect the ground wire.

HOW TO CONNECT WIRING TO THE TERMINALS

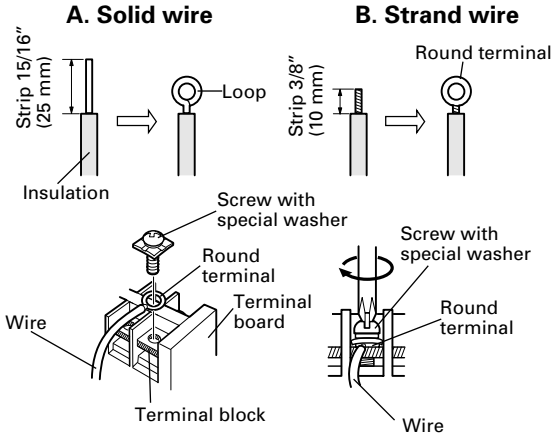
A. For solid core wiring (or F-cable)

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (15/16") to expose the solid wire.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
(4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screw driver.

B. For strand wiring

(1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") to expose the strand wiring.
(2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
(4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

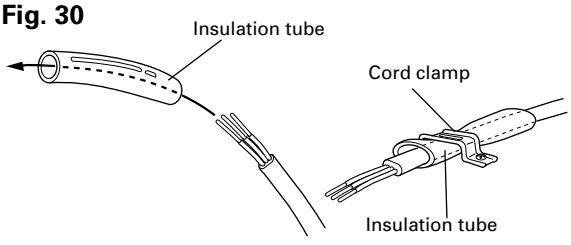
Fig. 29



HOW TO FIX THE CONNECTION CORD AND POWER SUPPLY CORD AT THE CORD CLAMP

After passing the connection cord and power supply cord through the insulation tube, fasten it with the cord clamp.

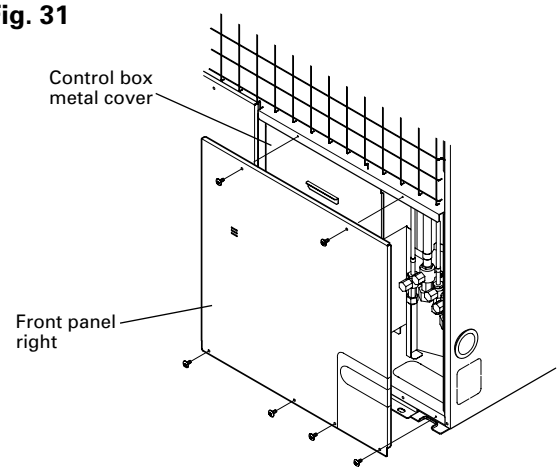
Fig. 30



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

(1) Remove the front panel right.

Fig. 31



(2) Remove control box metal cover and connect the power supply cord and the outdoor unit connection cord wire at the indoor unit.

Fig. 32

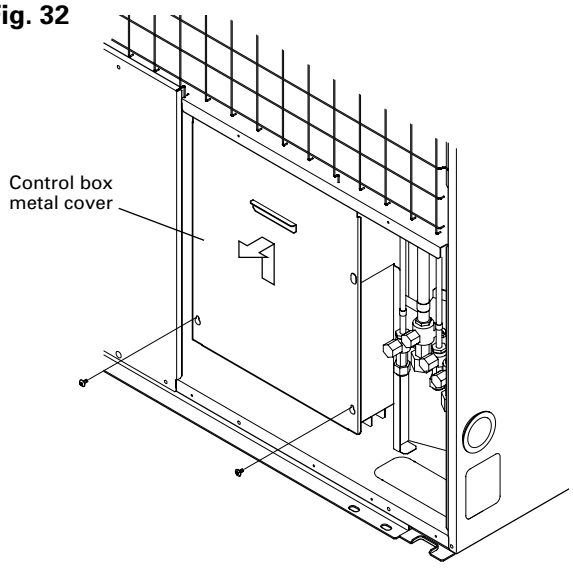


Fig. 33

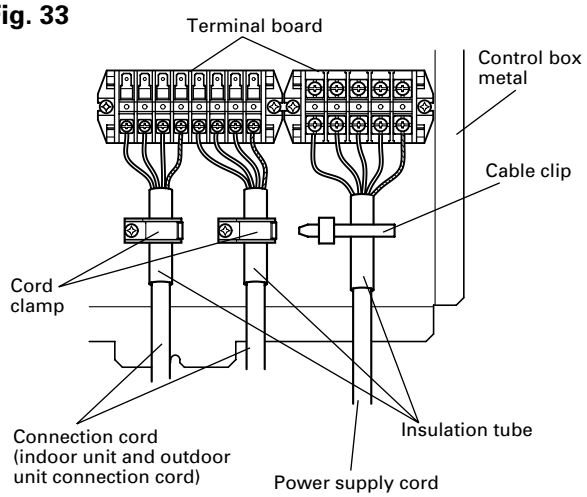
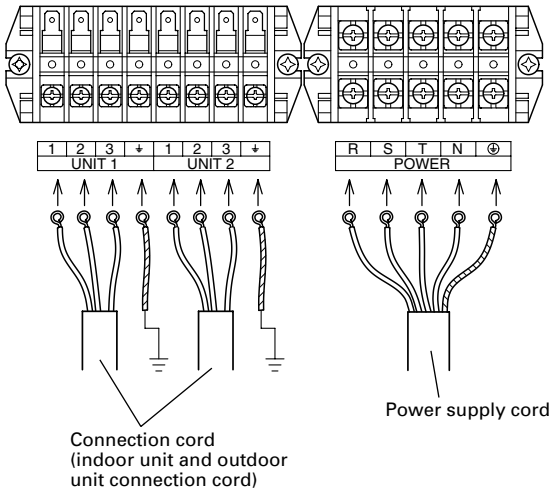
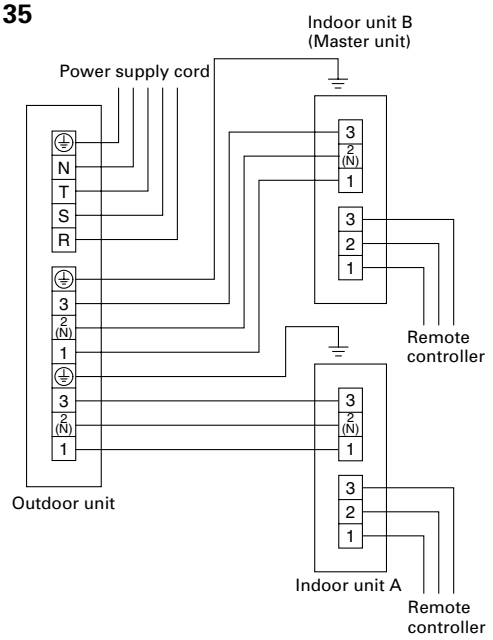


Fig. 34



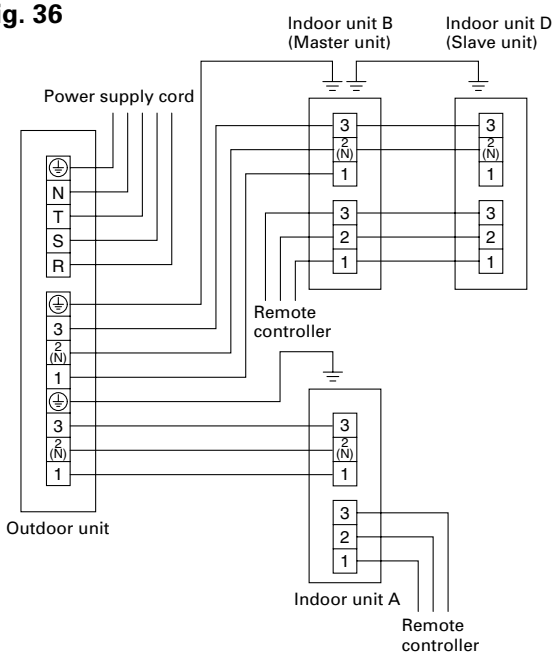
A. One + One Connections

Fig. 35



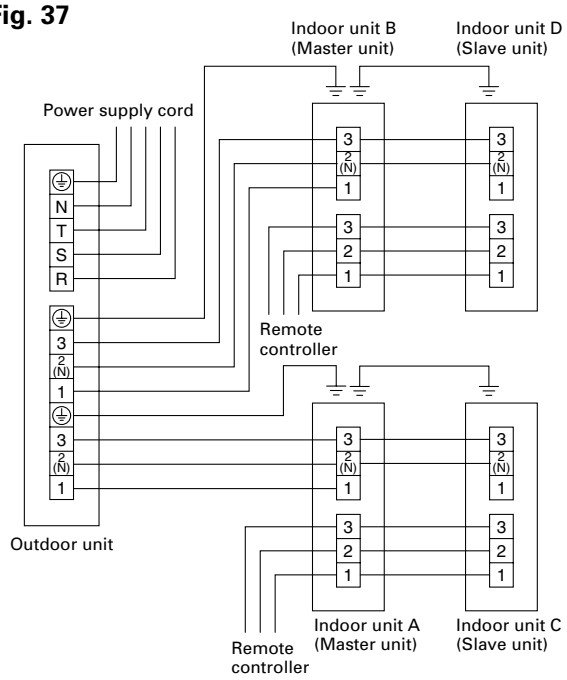
B. One + Two Connections

Fig. 36



C. Two + Two Connections

Fig. 37

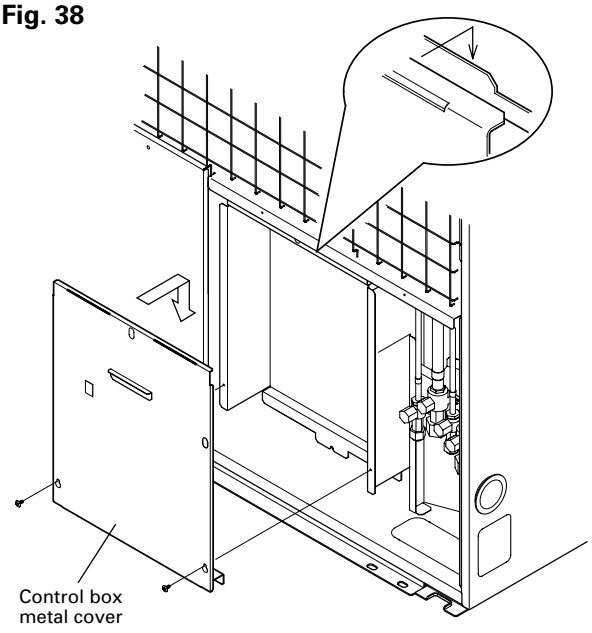


⚠ CAUTION

For connections between indoor and outdoor units, make connections with the indoor master unit. (Do not make connections with the slave units.)

(3) Install the control box metal cover and front panel right.

Fig. 38



5. AN ERROR DISPLAY

Operation can be checked by lighting and flashing of the LED lamps.

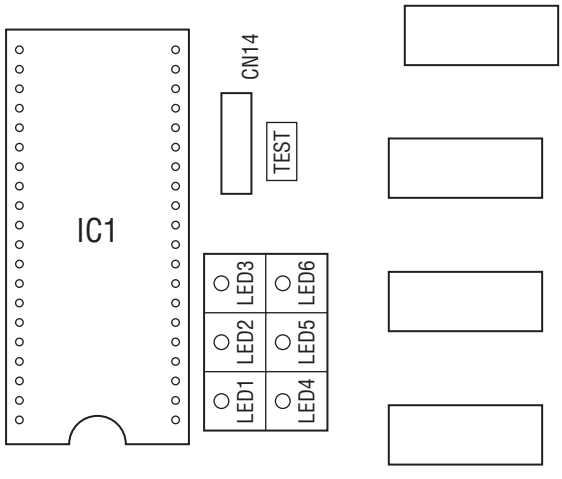
Perform judgment in accordance with the following.

Table 11

LED	DESCRIPTION OF FAILURE	LED DISPLAY
LED 1	Compressor A operation	Lighted continuously
	Pressure switch A faulty (when turning on)	0.1 sec./0.1 sec. flashing
LED 2	4-way valve A operation	Lighted continuously
	Serial signal A faulty	0.5 sec./0.5 sec. flashing once
	Pressure A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature A abnormal	0.5 sec./0.5 sec. flashing 3 times
LED 3	Solenoid controlled valve A operation	Lighted continuously
	Discharge temperature thermistor A faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature thermistor B faulty	0.5 sec./0.5 sec. flashing 3 times
	Heat exchanger thermistor A faulty	0.5 sec./0.5 sec. flashing 4 times
	Heat exchanger thermistor B faulty	0.5 sec./0.5 sec. flashing 5 times
	Outside temperature thermistor faulty	0.5 sec./0.5 sec. flashing 6 times
LED 4	Compressor B operation	Lighted continuously
	Pressure switch B faulty (When turning on)	0.1 sec./0.1 sec. flashing
LED 5	4-way valve B operation	Lighted continuously
	Serial signal B faulty	0.5 sec./0.5 sec. flashing once
	Pressure B faulty	0.5 sec./0.5 sec. flashing 2 times
	Discharge temperature B faulty	0.5 sec./0.5 sec. flashing 3 times
LED 6	Solenoid controlled valve B operation	Lighted continuously
	Negative-phase prevention faulty	0.5 sec./0.5 sec. flashing once
	EEPROM access faulty	0.5 sec./0.5 sec. flashing 7 times
	EEPROM ERASE faulty	0.1 sec./0.1 sec. flashing
ALL LEDs	Incorrect model No. error	0.1 sec./0.1 sec. flashing

⚠ CAUTION

ERROR LED DISPLAY LAYOUT



5.3 INSTALLATION WORK

5.3–1 PRELIMINARY WORK

- **Warning and Caution**
- **Conveyance method and product mass**
- **Selecting the Mounting Position**
- **Standard Parts and Optional Parts**
- **Connection Pipe Requirement**
- **Electrical Requirement**

5.3–2 INSTALLATION PROCEDURE

INDOOR UNIT INSTALLATION	• Water leakage check • Drain pipe insulation
⇩	
PIPING CONNECTION WORK	• Special attention to dryness, cleanliness and tightness • Pipe joints heat insulation
⇩	
ELECTRICAL WIRING WORK (Inside)	• Separation of control and power supply cables
⇩	
OUTDOOR UNIT INSTALLATION	• Connection branches (Note :Soldering) • Refrigerant pipe flushing
⇩	
PIPING CONNECTION WORK	
⇩	
VACUUM PROCESS	• Vacuum drying • Additional charge
⇩	
GAS LEAKAGE INSPECTION	
⇩	
REMOTE CONTROLLER INSTALLATION	
⇩	
ELECTRICAL WIRING WORK (Outside)	• Circuit breaker selection • Grounding
⇩	
PRINTED CIRCUIT BOARD SETTING	• DIP switch selection • Master/Slave rotary switch selection
⇩	
TEST RUNNING	• Error display check
⇩	
CUSTOMER GUIDANCE	

The above list shows the order in which the individual work is normally carried out, but this order may be changed where warranted by local conditions.

5.3–3 REFRIGERANT PIPING WORK (Soldering)

If soldering work is carried out without passing nitrogen gas through the pipes which are being solered then this allows the formation of oxidation bubbles on the inside surface of the pipes. Oxidation bubbles are then carried along inside the pipes to cause damage to various members of the system such as valves or compressors and the system ceases to function properly.

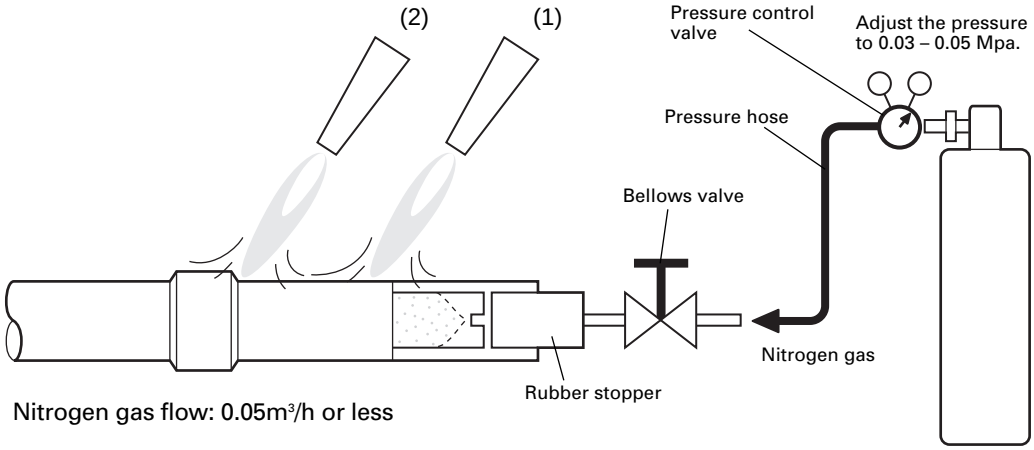
In order to avoid this problem, nitrogen is passed through the pipes while the soldering work is being carried out. This operation is known as nitrogen replacement.
(Air is replaced by nitrogen)

This is standard work practice for all soldering work.

• Nitrogen gas blow during piping welding

Weld the pipe while blowing the nitrogen gas into it.

(1) Heat the inside pipe uniformly.
(2) Heat the outside pipe uniformly to put plenty of solder in a pipe.

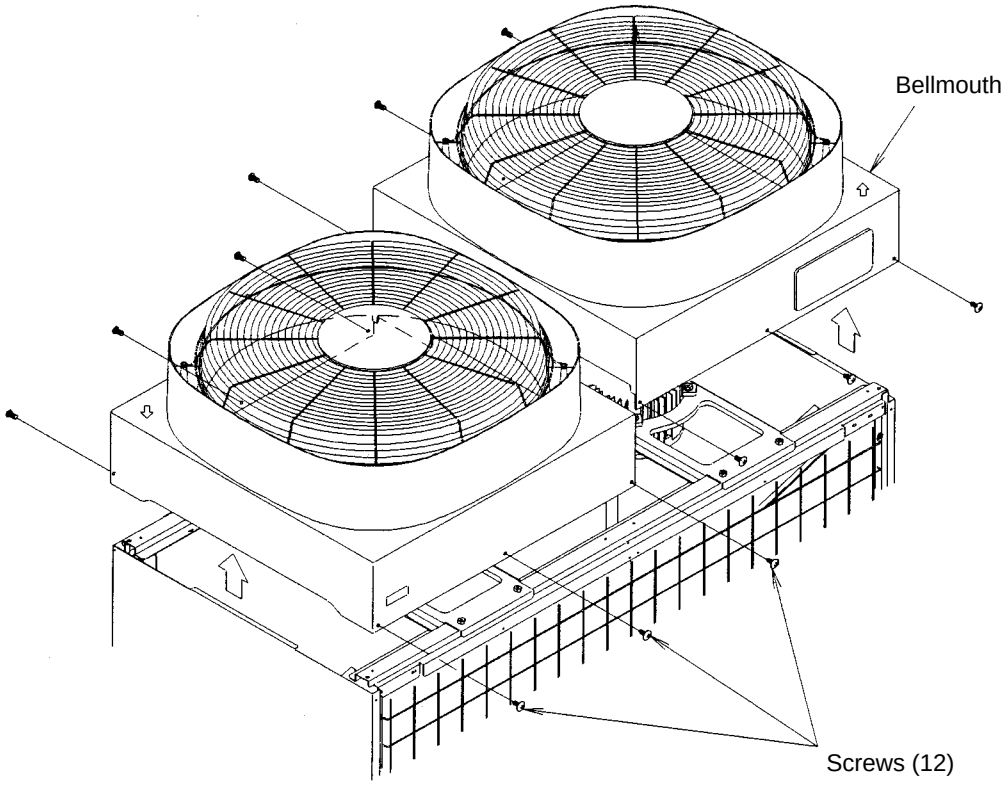


Nitrogen gas flow: 0.05m³/h or less

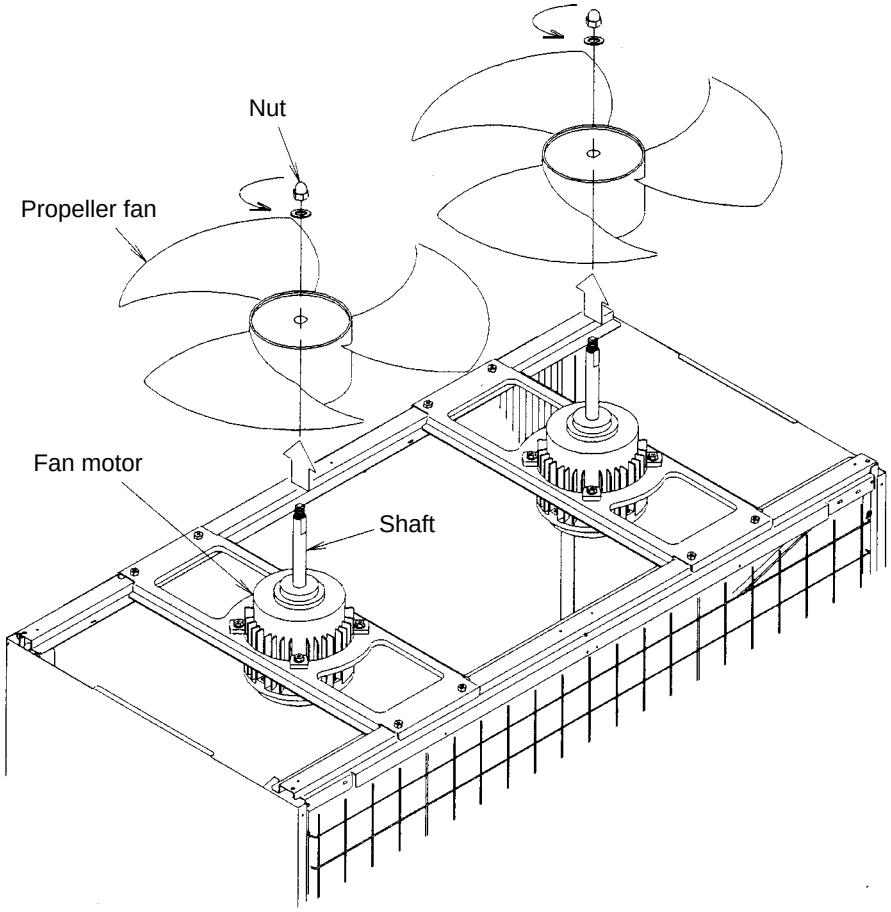
6. REPLACEMENT PARTS (OUTDOOR UNIT)

6.1 Propeller fan and fan motor removal

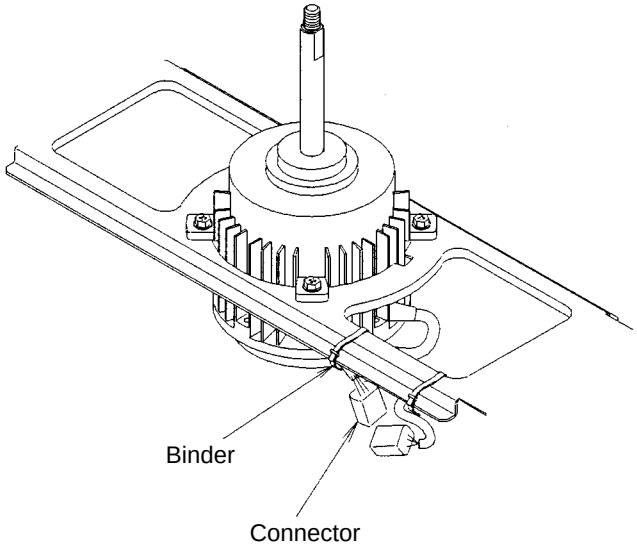
(1) Remove 12 screws fastening two bellmouths, and remove them.



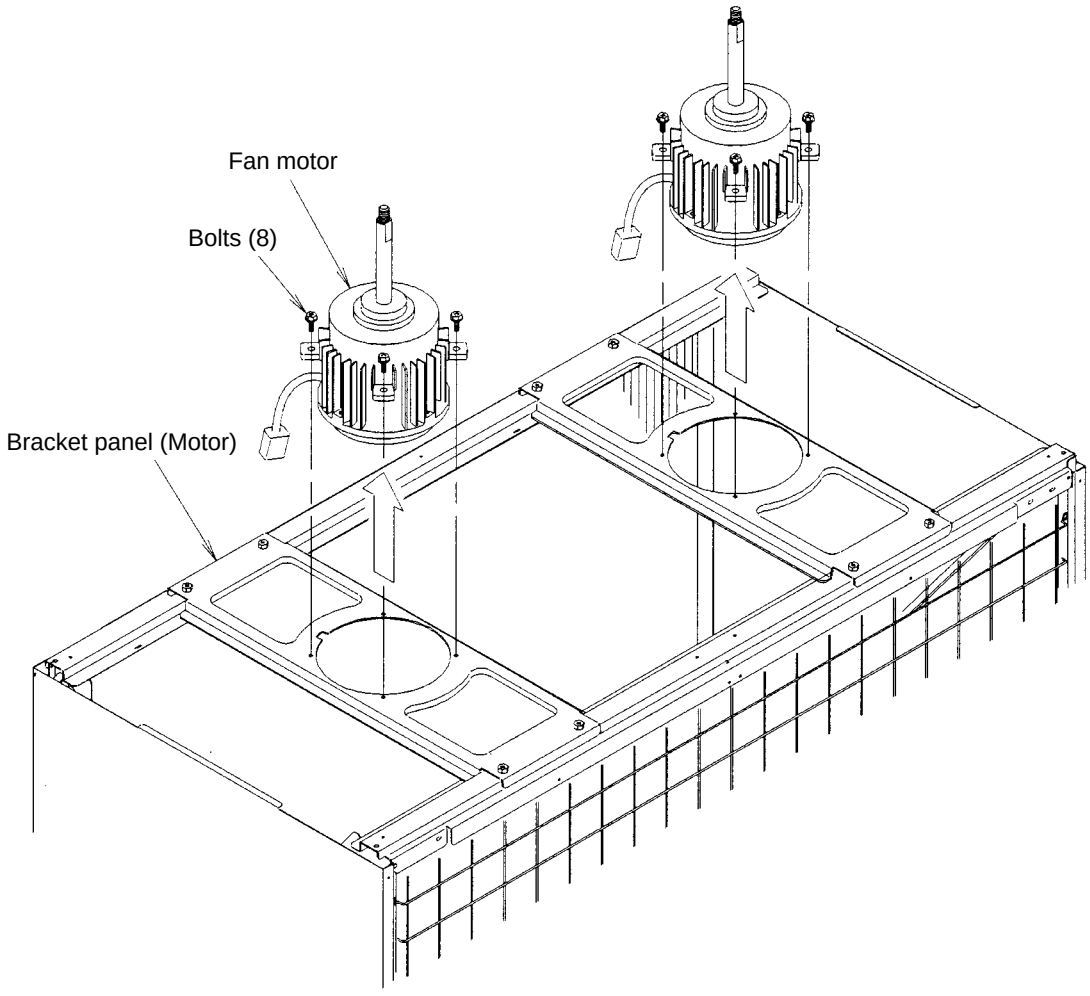
(2) Remove the nut fastening the propeller fan, and pull it out of the fan motor shaft.



(3) Cut the binder with a nipper to remove the connector.

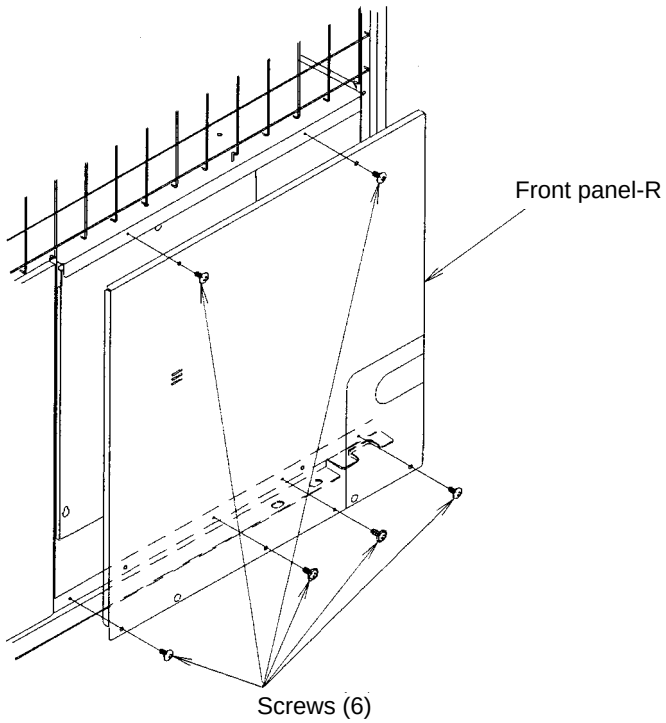


(4) Remove 8 bolts fastening two fan motors, and remove the fan motor from the Bracket panel (Motor).

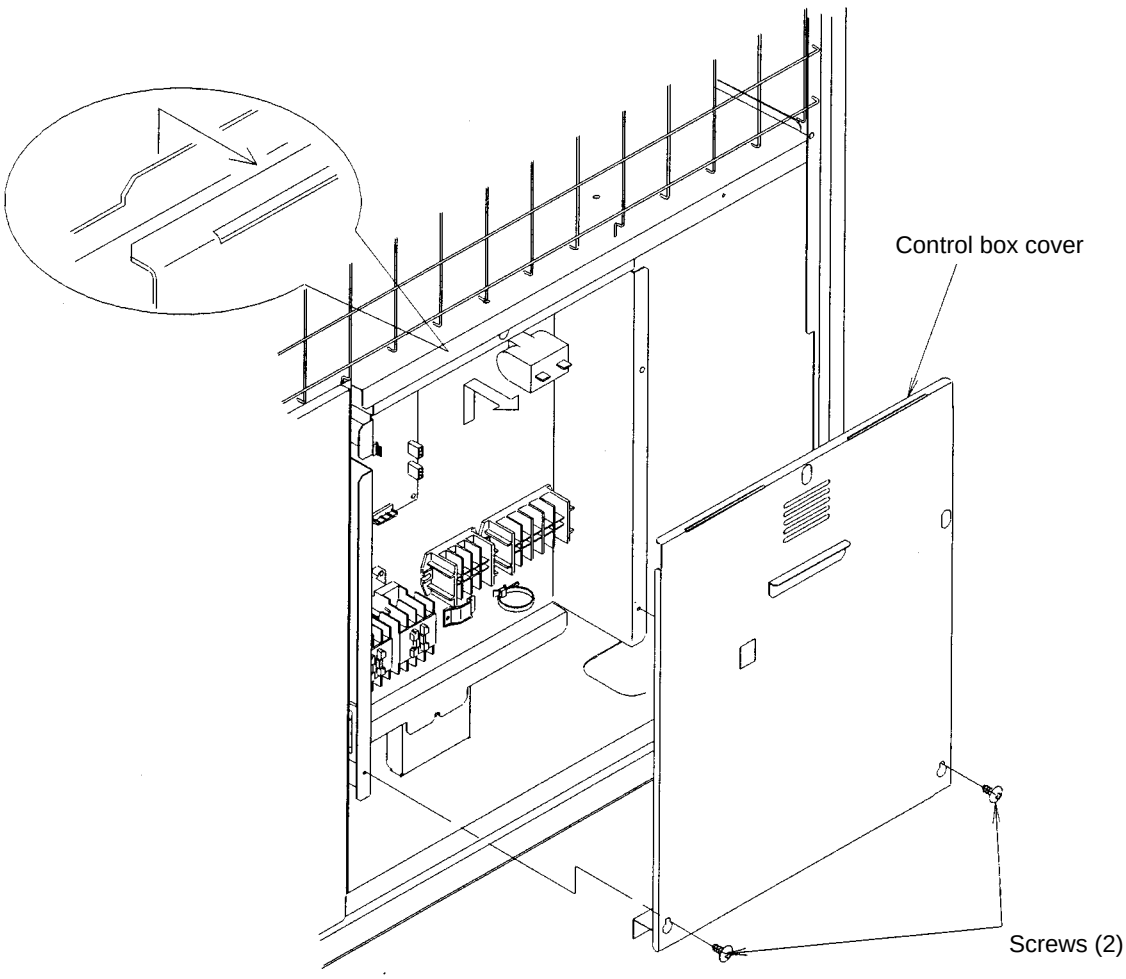


6.2 Control box removal

(1) Remove six screws to remove the front panel-R.

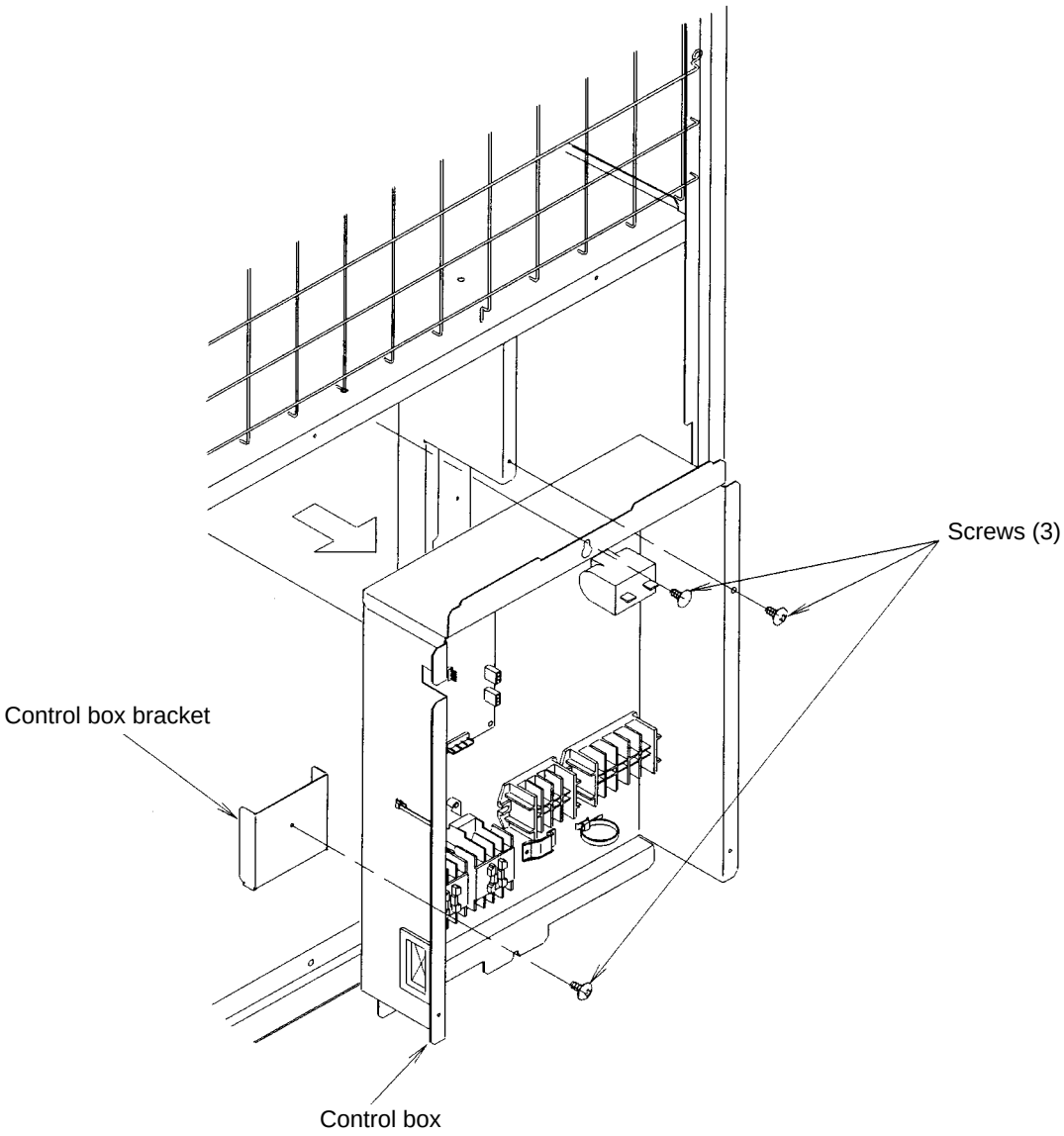


(2) Remove two screws fastening the control box cover, and slide it upwards to remove.



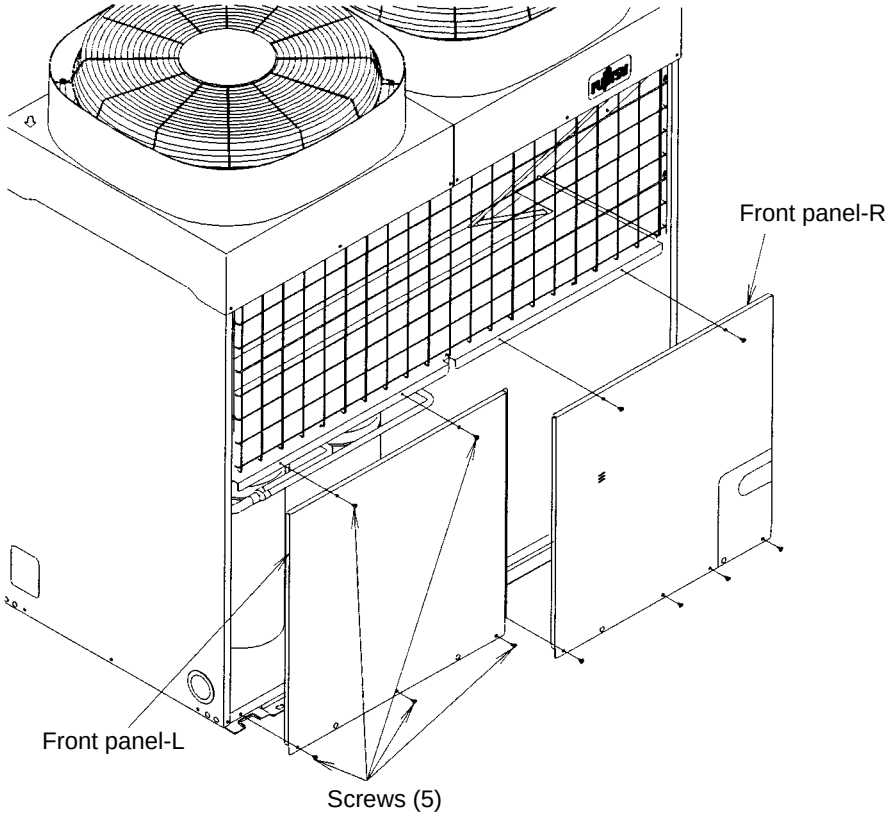
(3) Remove the connector and cable clamp.

(4) Remove three screws fastening the control box, and remove it.

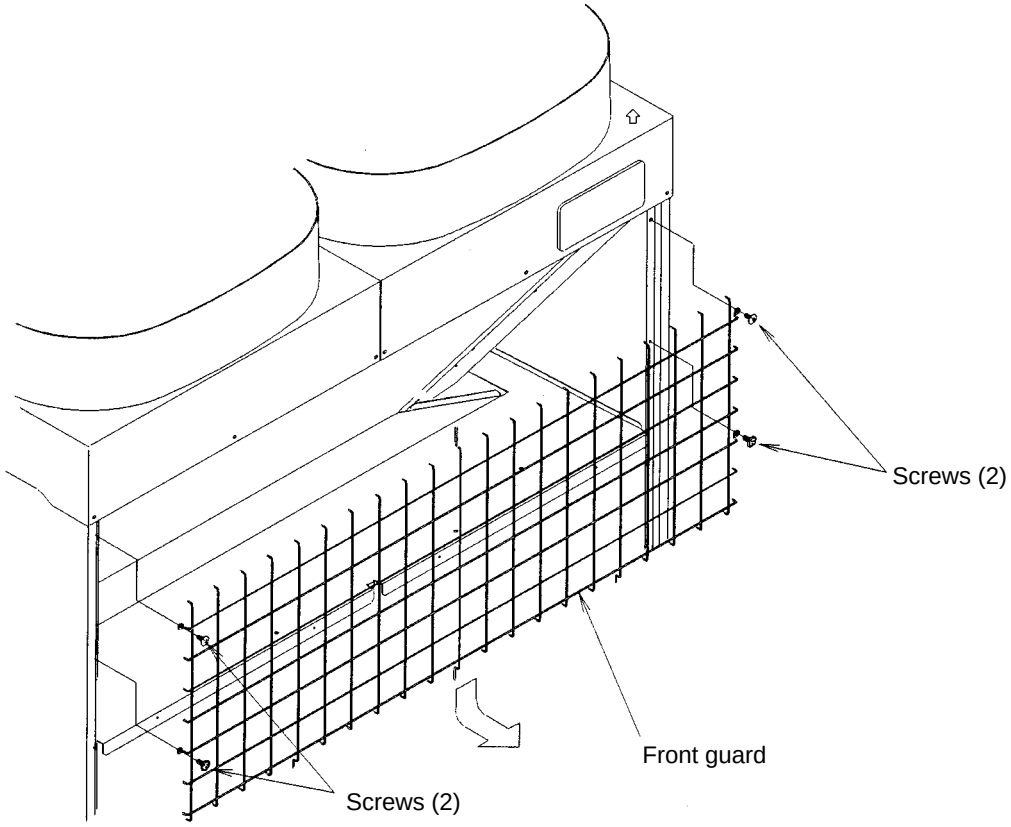


6.3 Compressor removal

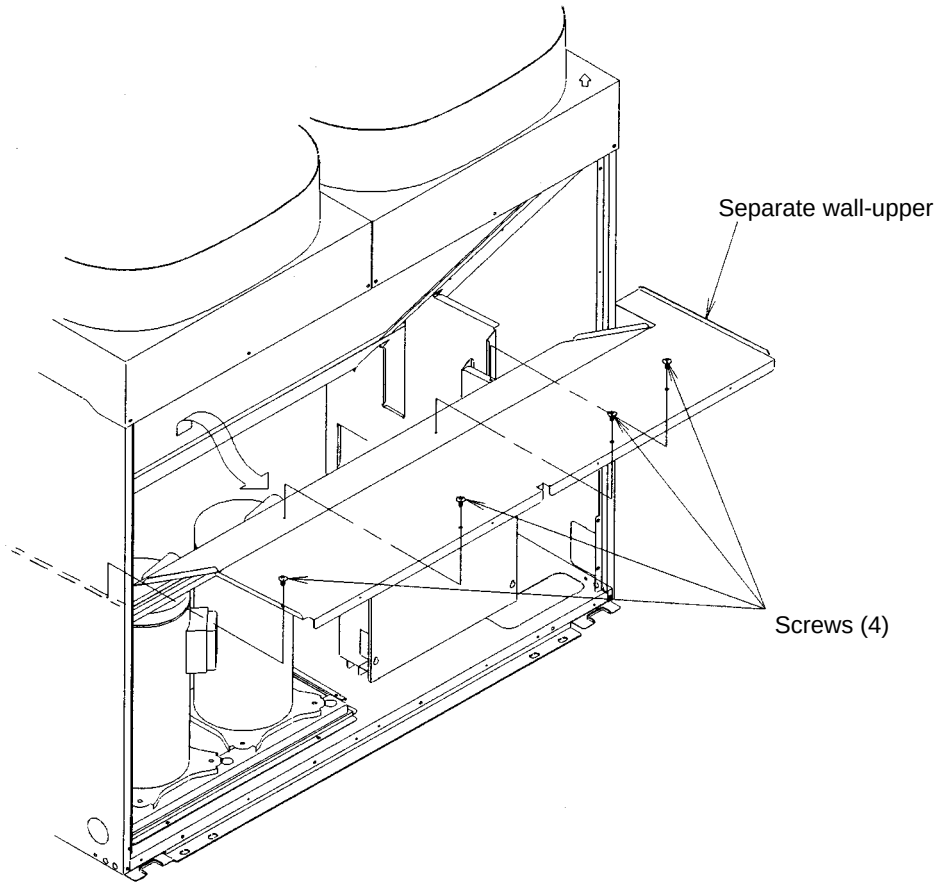
(1) Remove six screws fastening the front panel-R and five screws fastening the front panel-L, and remove them.



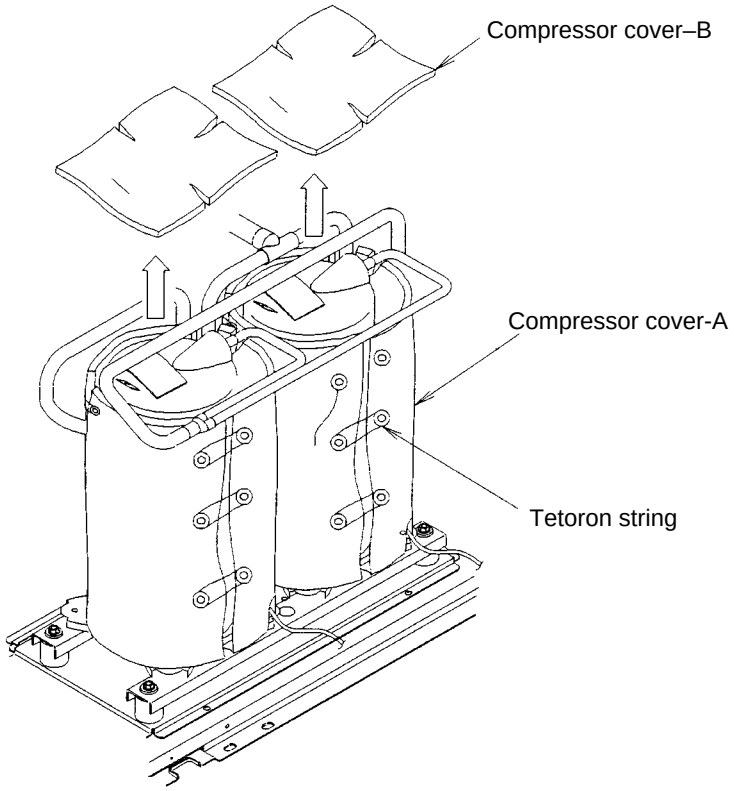
(2) Remove four screws fastening the front guard, and remove it.



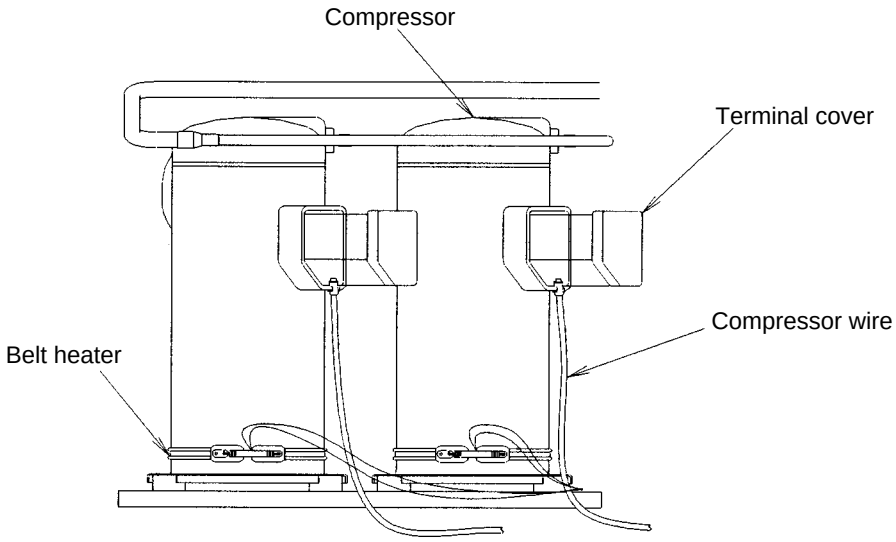
(3) Remove four screws to remove the Separate wall-upper.



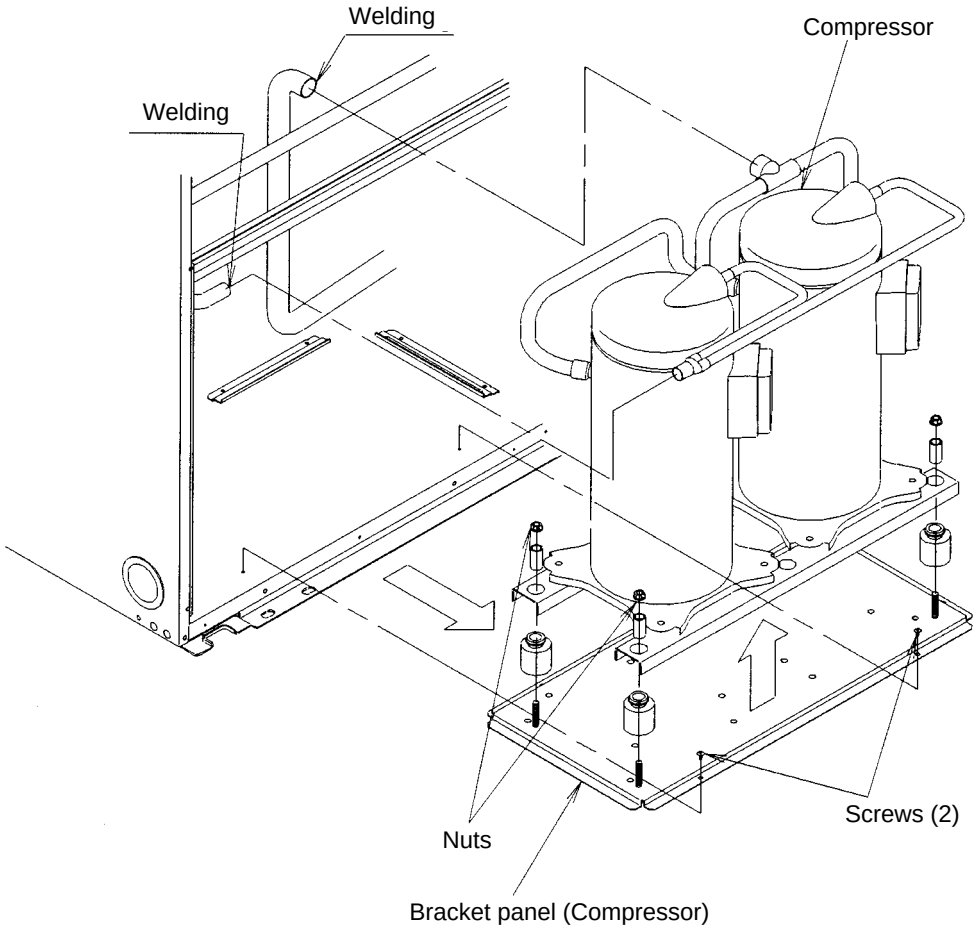
(4) Remove the compressor cover-A and –B.
(For the compressor cover-A, remove five Tetoron (polyester fiber) strings, and then remove the compressor cover-A and –B respectively.)



(5) Remove the terminal cover and pull out the compressor wire, and then remove the belt heater.

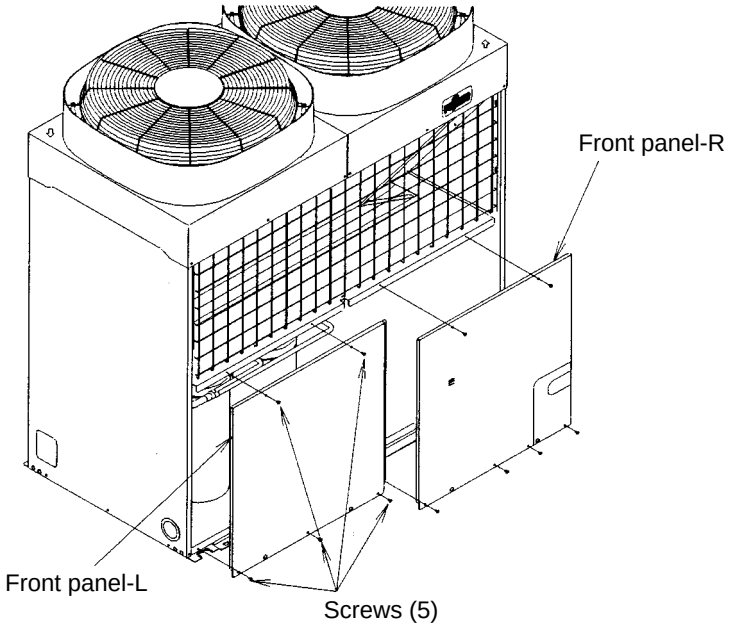


(6) Remove each welded joint. Then, remove two screws to draw out the compressor on the Bracket panel (Compressor).

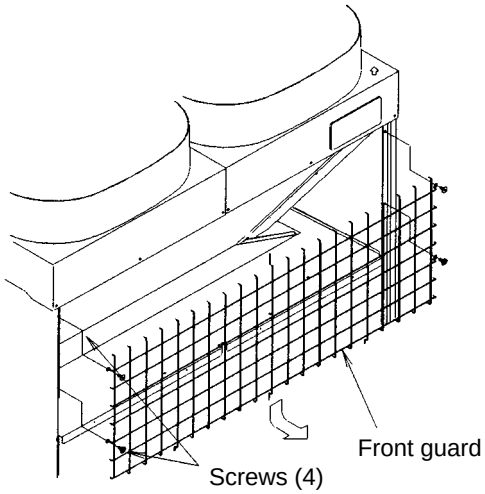


6.4 Condenser removal

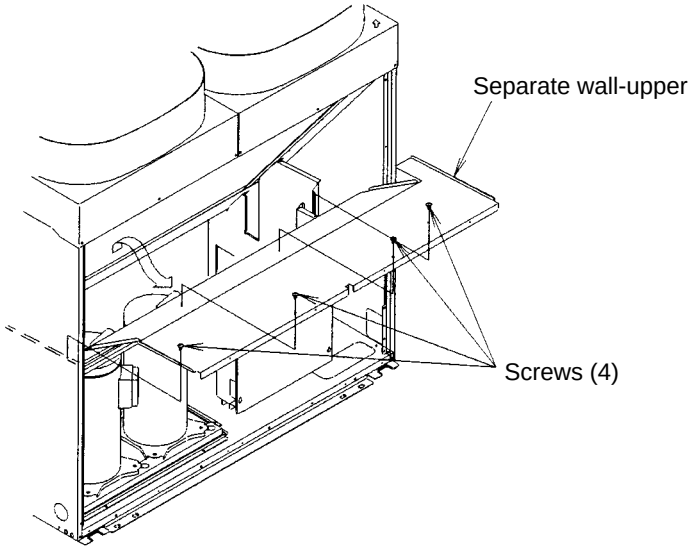
(1) Remove six screws to remove the front panel-R. Then, remove five screws to remove the front panel-L.



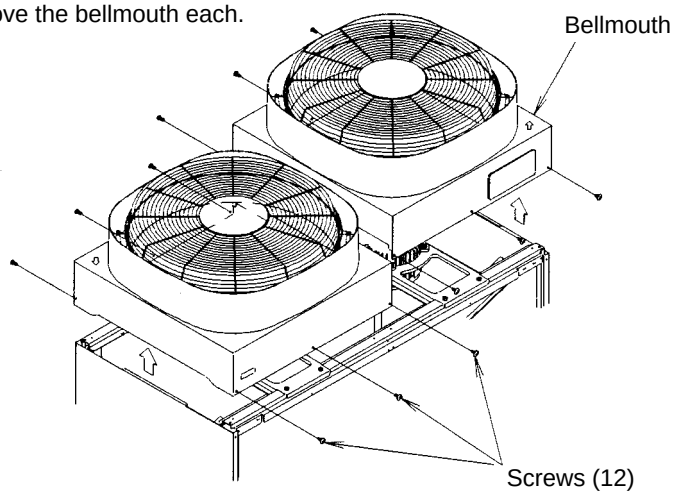
(2) Remove four screws to remove the front guard.



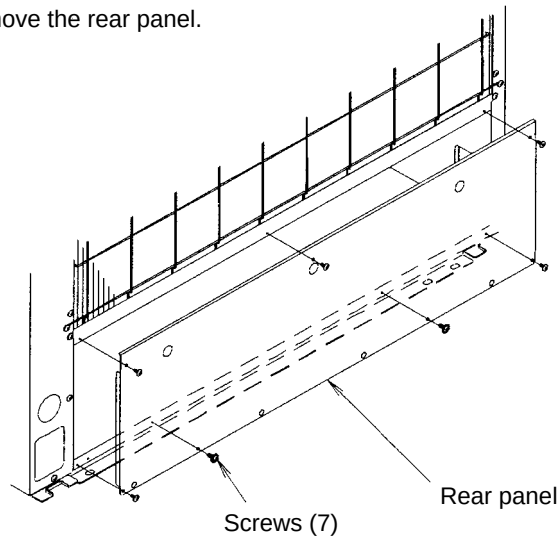
(3) Remove four screws to remove the Separate wall-upper.



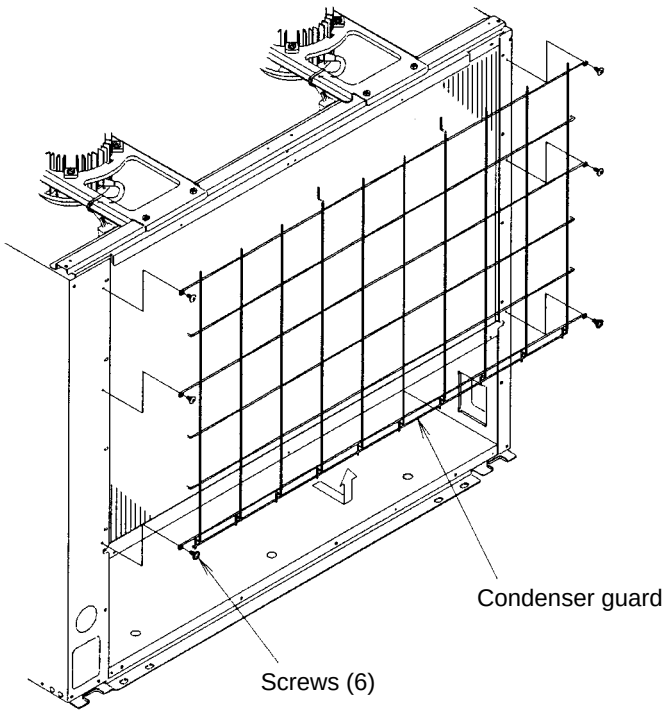
(4) Remove 12 screws to remove the bellmouth each.



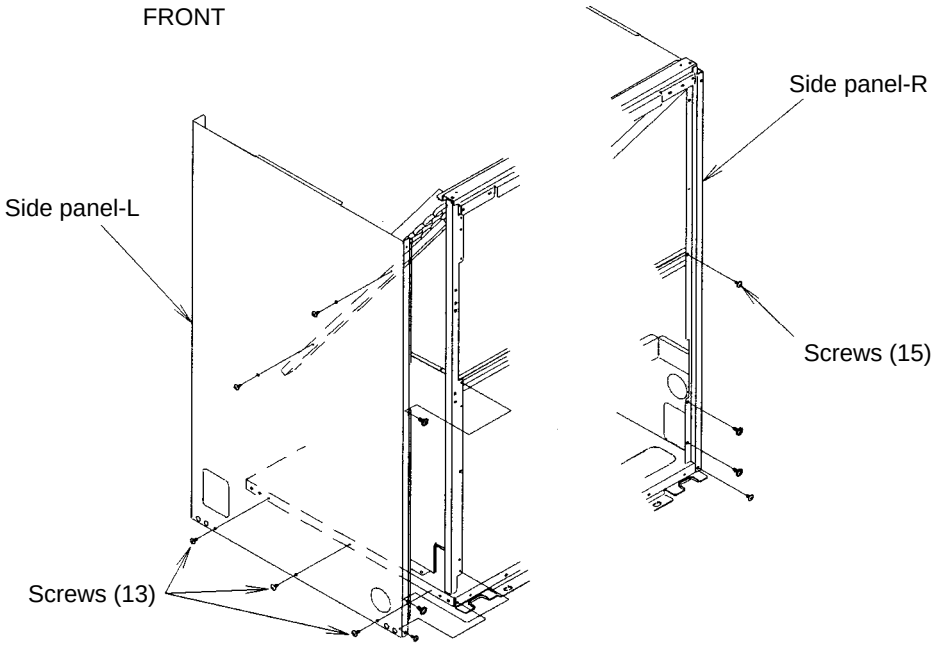
(5) Remove seven screws to remove the rear panel.

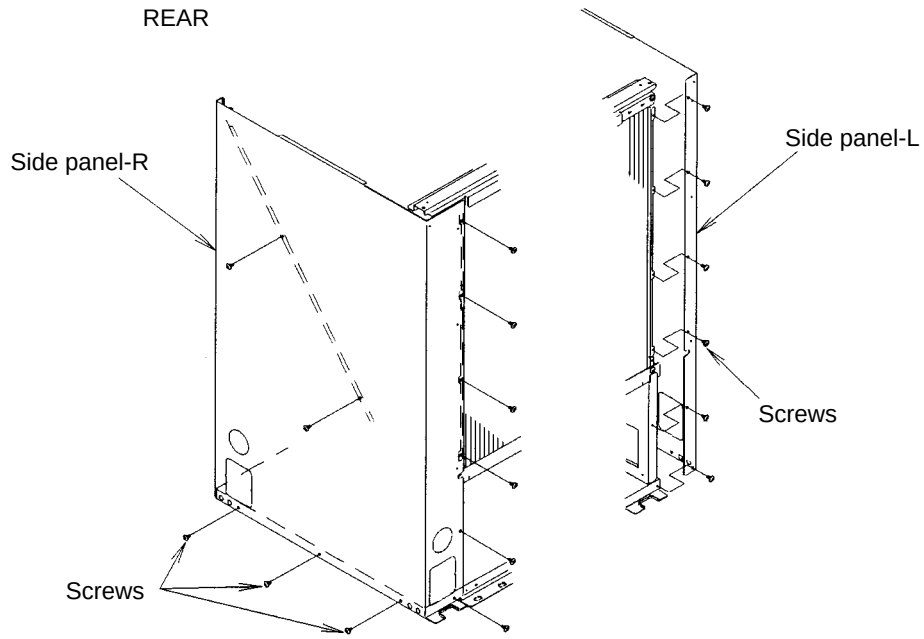


(6) Remove six screws to remove the condenser guard.

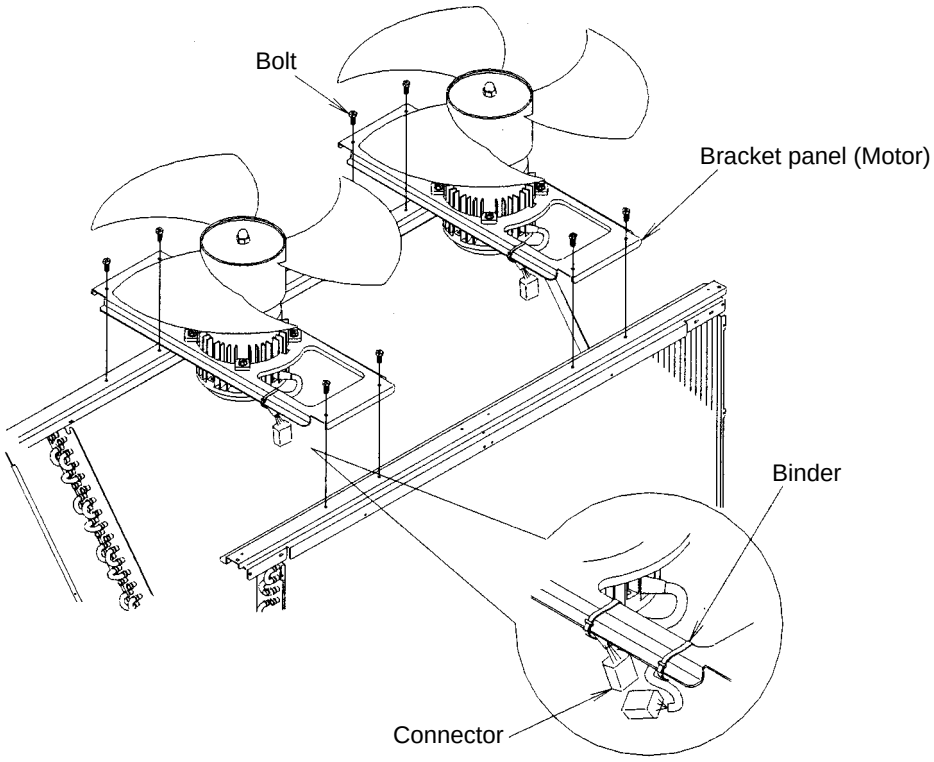


(7) Remove 15 screws to remove the side panel-R and 13 screws to remove the side panel-L.

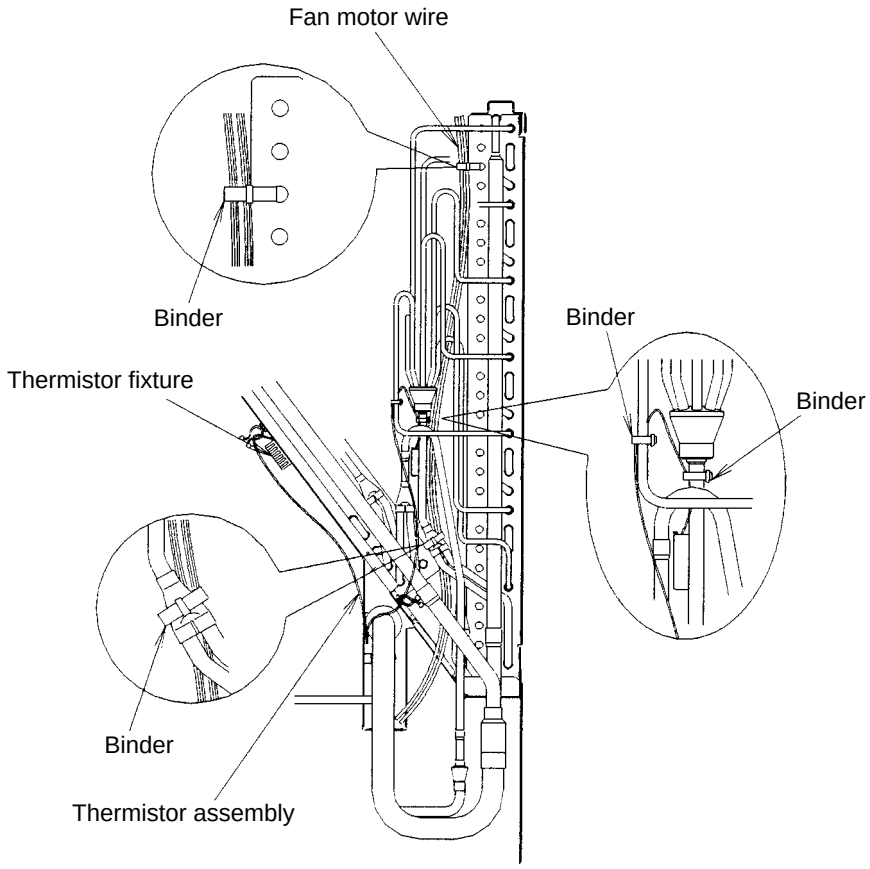




(8) Cut the binder with a pair of nippers, and remove the connector.
Then, remove eight bolts to remove two Bracket panel (Motor) with a fan motor respectively lifting upwards.

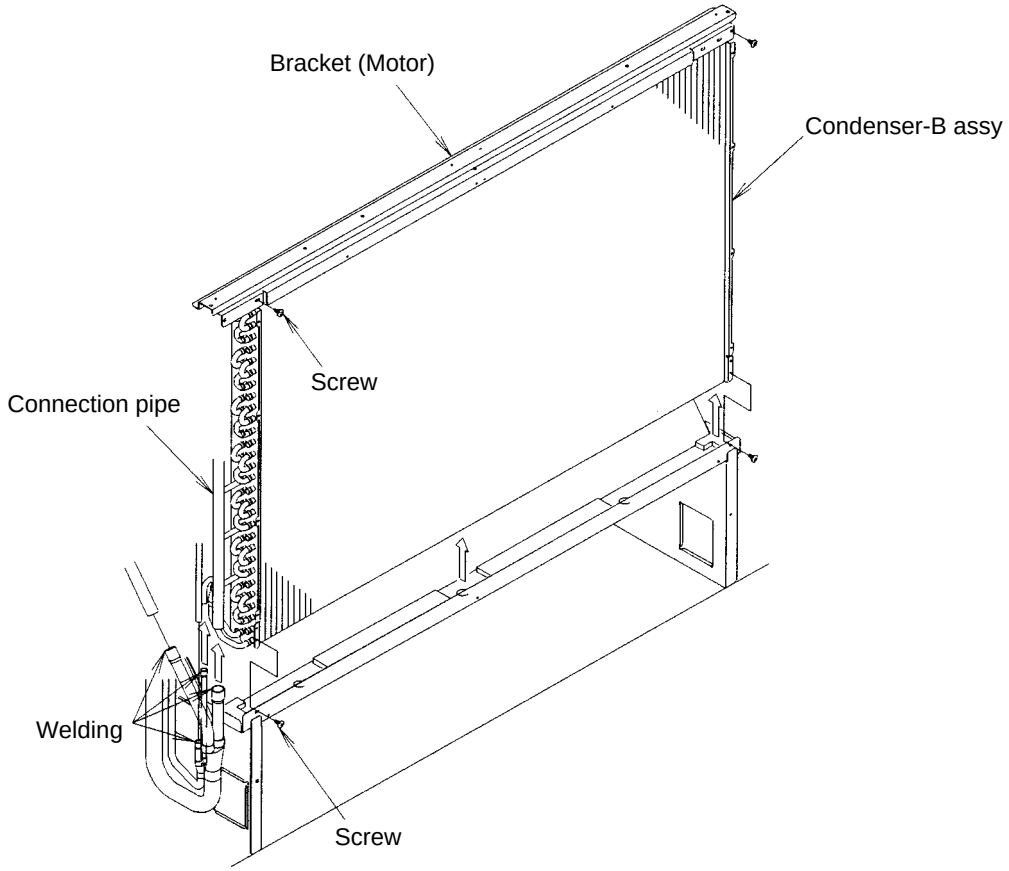


(9) Cut the binder with a pair of nippers, remove the fan motor wire, thermistor assy and thermistor bracket from the condenser.

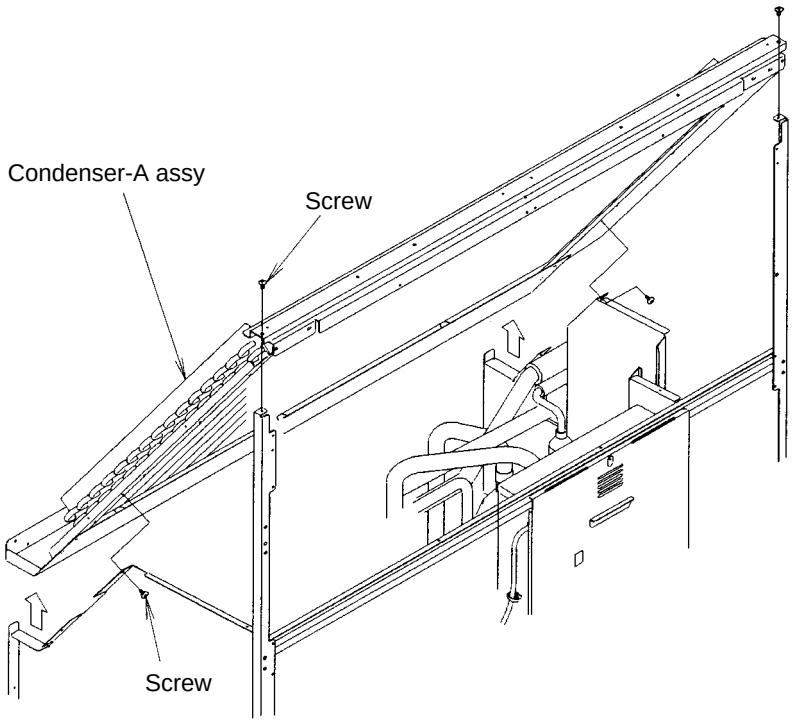


(10) First, remove each welded joint. Then, remove two screws, and remove the condenser-B assy lifting upwards. Furthermore, remove the Bracket (Motor) and the connection pipe installed on the condenser-B assy.

[Condenser-B assy = Condenser + Condenser pipe]

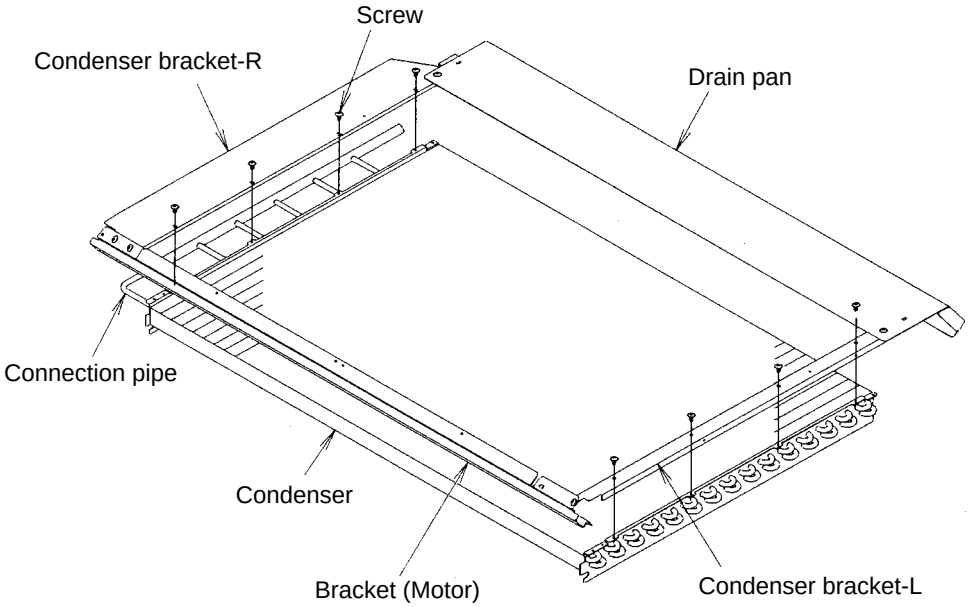


(10) Remove four screws to remove the condenser-A assy lifting upwards.



(12) Remove the mounting screws fastening the condenser brackets-R and –L, drain pan, Bracket (Motor) and connection pipe to the condenser-A assy.

[Condenser-A assy = Condenser + Condenser bracket-R + Condenser bracket-L + Drain pan + Bracket (Motor) + Connection pipe]



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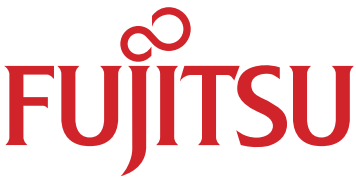

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