

Refrigerant
R407C&R22

Cassette Type (VRF System)



INSTALLATION INSTRUCTION SHEET

(PART NO. 9370083002)

This air conditioner uses R407C and R22.

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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 instruction sheet.
- ② Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation instruction sheet 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.
- ⑥ When installing or moving the air conditioner, use care not to charge it with the wrong refrigerant (such as R407C or R22).

CAUTION

Observe the following precautions when using R407C refrigerant.

- Do not use mineral oil on flared part.
Prevent mineral oil from getting into the system as this would reduce the lifetime of the unit.
- Never use piping which has been used for previous installations. Only use parts that are delivered with the unit.

- 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 instruction sheet because it is used when the air conditioner is serviced or moved.


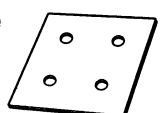



English

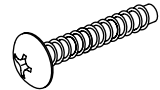


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STANDARD PARTS


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

INDOOR UNIT ACCESSORIES			
Name and Shape	Q'ty	Name and Shape	Q'ty
Coupler heat insulation 	2	Template 	1
Special nut A (large flange) 	4	Binder 	2
Special nut B (small flange) 	4		

GRILLE ACCESSORIES	
Name and Shape	Q'ty
Bolt 	4
Washer 	4
Blower cover insulation 	2

SELECTING THE MOUNTING POSITION

- Leave the space specified in Fig. 1 so that the air from the blower will cover the entire room.
- Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
- A place from where drainage can be extracted outdoors easily.

 WARNING
① Never install in a room where there is the potential of leaking flammable gas. A spark could ignite the gas and cause an explosion or fire.
② Avoid installing in a location with high temperature.

- The blower direction can be set for two directions or three directions. When using two-direction or three-direction blower, follow Fig. 2 for the blower direction and space.
- The method for changing the blower direction is shown in the "9. GRILLE INSTALLATION" section of the "INSTALLATION PROCEDURE".

Fig. 1

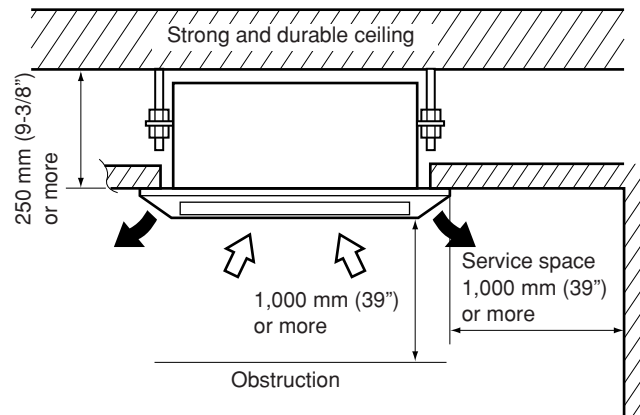
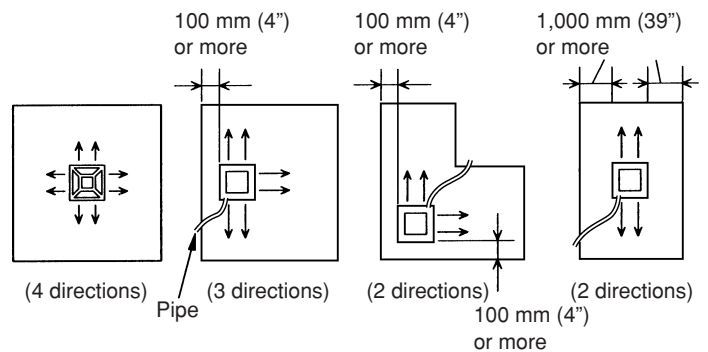


Fig. 2



INSTALLATION PROCEDURE

Install the air conditioner as follows.

1. INDOOR UNIT INSTALLATION

- (1) Make the holes for installing in the ceiling. (Fig. 4)
- (2) Install the hanging bolts (M10), refer to the position in Fig. 3.
- (3) Install special nut A, then special nut B onto the hanging bolt (Fig. 4).
- (4) Raise the body and mount its hooks onto the hanging bolt between the special nuts.
- (5) Turn special nut B to adjust the height of the body.

Fig. 3

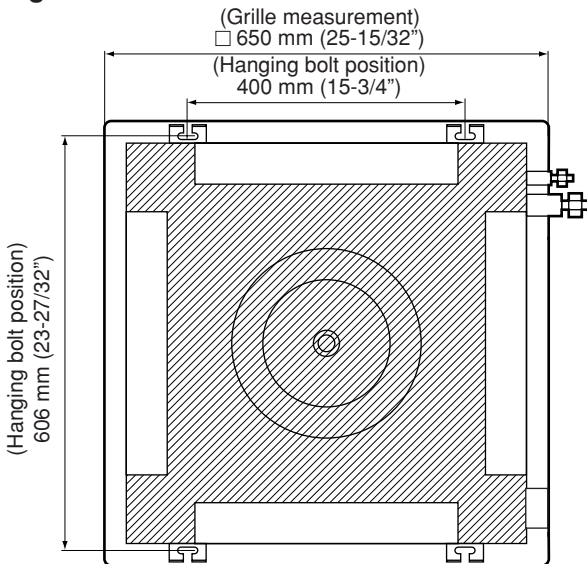
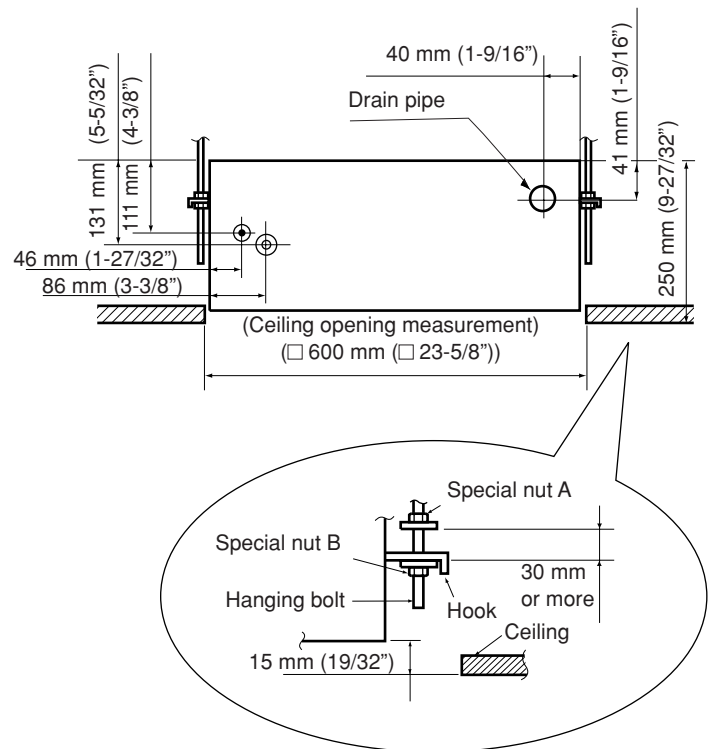


Fig. 4



⚠ WARNING

- ① Perform final tightening by tightening the double nut firmly. The product may fall if not installed properly.
- ② Using a level, or vinyl hose filled with water, fine adjust so that the body is level.

2. INSTALLING DRAIN PIPE

⚠ CAUTION

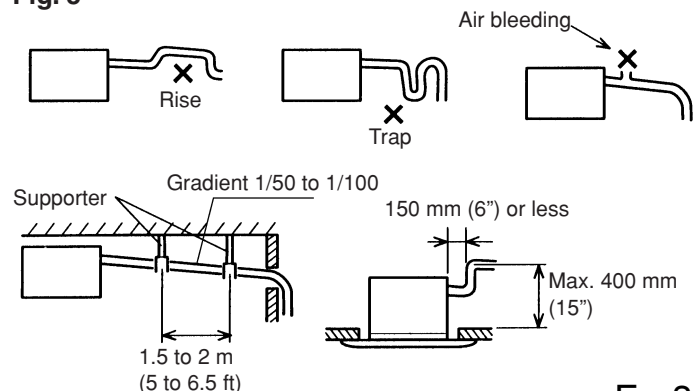
Install the drain pipe in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

Use general hard polyvinyl chloride pipe (VP25) [outside diameter 32 mm (1-1/4")] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.

Always heat insulate the indoor side of the drain pipe.

- Do not provide a rise, trap and air bleeding.
- Provide a downward gradient (1/50 to 1/100).
- Provide supports when long pipes are installed.
- When desiring a high drain pipe height, raise it up to 400 mm (15") or less from the ceiling within a range of 150 mm (6") from the body. A rise dimension over this range will cause leakage.

Fig. 5



3. CONNECTION PIPE REQUIREMENT

(1) Connected to outdoor unit

Table 1

unit : mm

Capacity of outdoor unit	Suction Gas Pipe	Discharge Gas Pipe	Liquid Pipe
90	ø28.58 (1.2)	ø19.05 (1.0)	ø12.7 (0.8)

() : thickness

(2) Connected between two immediately adjacent refrigerant branch kits

Table 2

unit : mm

Total capacity of indoor unit	Suction Gas Pipe	Discharge Gas Pipe	Liquid Pipe
Less than 30	ø15.88 (1.0)	ø12.7 (0.8)	ø9.53 (0.8)
31 or more to 60	ø19.05 (1.0)	ø15.88 (1.0)	ø9.53 (0.8)
61 or more	ø28.58 (1.2)	ø19.05 (1.0)	ø12.7 (0.8)

() : thickness

(3) Connected to indoor unit

Table 3

unit : mm

Capacity of indoor unit	Gas Pipe	Liquid Pipe
7, 9	ø9.53 (0.8)	ø6.35 (0.8)
12, 14	ø12.7 (0.8)	ø6.35 (0.8)
18, 20, 24, 25	ø15.88 (1.0)	ø6.35 (0.8)
30	ø15.88 (1.0)	ø9.53 (0.8)
36, 45, 54, 60	ø19.05 (1.0)	ø9.53 (0.8)

() : thickness

* Capacity: The number displayed on the model name for the indoor and outdoor units.

- Use pipe with water-resistant heat insulation.
- The discharge gas pipe is only connected on heat recovery models.

4. CONNECTING THE PIPING

1. FLARE PROCESSING

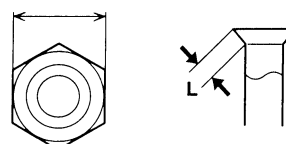
- (1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.
- (2) Holding the pipe downwards so that cuttings cannot enter the pipe and remove the burrs.
- (3) Remove the flare nut from the indoor unit pipes and assemble as shown in Table 4 and insert the flare nut onto the pipe, and flare with a flaring tool.
- (4) Check if the flared part "L" (Fig. 6) is spread uniformly and that there are no cracks.

Table 4

Pipe	Width across flats	L dimension
Liquid pipe (ø6.35 mm)	17 mm	1.4 to 1.7 mm
Gas pipe (ø9.53 mm)	22 mm	1.8 to 2.0 mm
Gas pipe (ø12.7 mm)	24 mm	1.9 to 2.2 mm
Gas pipe (ø15.88 mm)	24 mm	2.2 to 2.4 mm

Fig. 6

Width across flats



2. CONNECTION PIPES

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. 8, Table 5).

Fig. 7

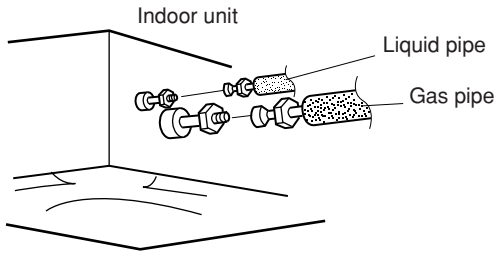


Fig. 8

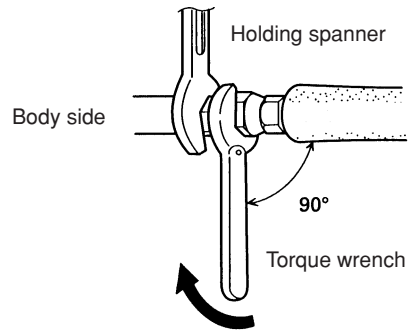


Table 5: Flare nut tightening torque

Flare nut	Tightening Torque
Liquid pipe (ø6.35 mm)	150 to 220 kgf-cm (14.7 to 19.6 N·m)
Gas pipe (ø9.53 mm)	310 to 350 kgf-cm (30.4 to 34.3 N·m)
Gas pipe (ø12.7 mm)	500 to 550 kgf-cm (49.0 to 53.3 N·m)
Gas pipe (ø15.88 mm)	750 to 800 kgf-cm (73.5 to 78.4 N·m)

⚠ 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.
- ③ Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 8, in order to tighten the flare nut correctly.

5. INSTALLING THE COUPLER HEAT INSULATION

After checking for gas leaks, insulate by the coupler heat insulation around the gas pipe and liquid pipe of the indoor unit.

Fig. 9



⚠ CAUTION

Must fit tightly against body without any gap.

6. ELECTRICAL REQUIREMENT

Table 6

Power supply cord (mm ²)	Maximum	2.5	H07RN-F or equivalent
	Minimum	1.5	
Transmission cord (mm ²)	Maximum	1.25	Shield cord (LONWORKS compatible part)
	Minimum	0.75	
Remote control cord (mm ²)	Maximum	1.25	Sheathed vinyl cord or cable
	Minimum	0.75	
Fuse capacity (A)		20	

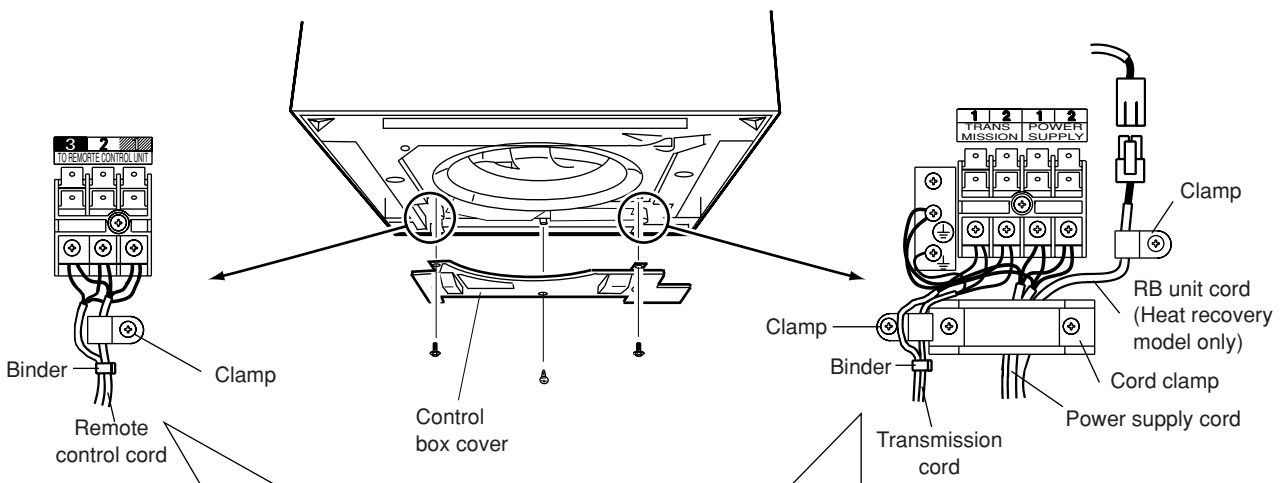
7. ELECTRICAL WIRING

⚠ WARNING

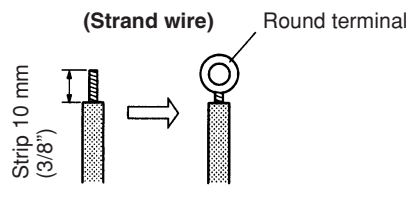
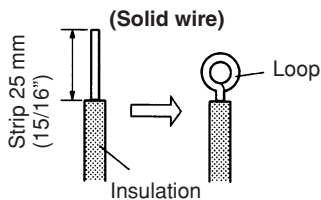
- ① Before starting work, check that power is not being supplied to the indoor unit.
- ② Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.
- ③ Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
- ④ Always connect the ground wire.

Remove the control box cover and install the connection cord (Figs. 10 and 11).

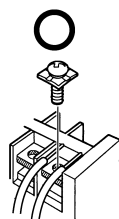
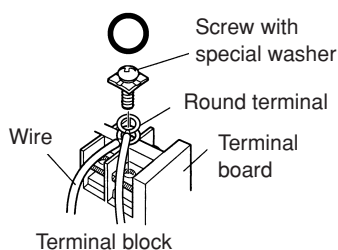
Fig. 10



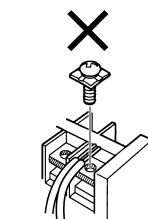
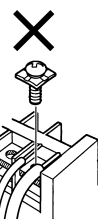
- Before attaching the wire to terminal block.



- When the two wires are attached.

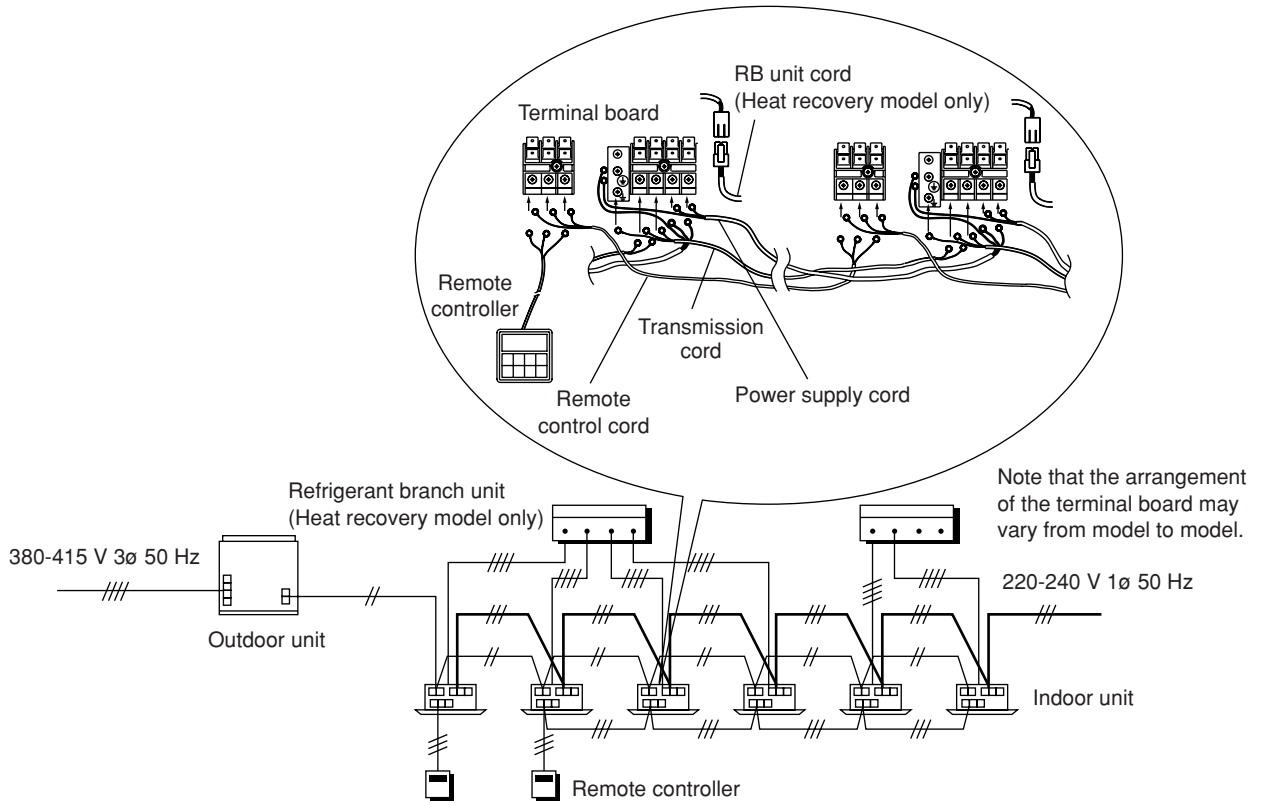


different diameter



connect to one side

Fig. 11



⚠ CAUTION	
①	Use care to wire properly. (Miss-wiring will result in damage.)
②	Never bundle the power supply cord, transmission cord and remote controller cord together. Bundling these cords together will cause misoperation.
③	For transmission cord, only ground one side of the ground wire.
④	The total length of the transmission cord should not exceed 500 meters. Note that the total length of the transmission cord can be extended to 2,000 meters if the optional signal amplifier is used.
⑤	The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
⑥	When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

⚠ WARNING	
①	The rated voltage of this product is 220-240 V A.C. 50 Hz. Before turning on verify that the voltage is within the 198 V to 264 V range.
②	Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
③	Use a circuit breaker and receptacle matched to the capacity of the air conditioner.
④	Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
⑤	Install a leakage circuit breaker in accordance with the related laws and regulations and electric company standards.
⑥	Never connect other electrical equipment to the power supply for this system.

8. CIRCUIT BOARD SETTING

Set the switch on the circuit board.

(1) Indoor unit addresses

Rotary switch (SW5) - - - Factory setting "0"

When connecting multiple indoor units to one refrigerant system, set the address at SW5 in sequence from 0.

(2) Refrigerant circuit address

Rotary switch (SW7) - - - Factory setting "0"

Rotary switch (SW8) - - - Factory setting "0"

In the case of multiple refrigerant systems, set SW7 and SW8 as shown in the Table 7 for each refrigerant system. Set to the same refrigerant circuit address as the outdoor unit.

Example: When SW8 is set to "1" and SW7 is set to "14", the refrigerant circuit address will be "30".

Table 7

Refrigerant circuit address	Rotary Switch Setting		Refrigerant circuit address	Rotary Switch Setting		Refrigerant circuit address	Rotary Switch Setting		Refrigerant circuit address	Rotary Switch Setting		Refrigerant circuit address	Rotary Switch Setting	
	INDOOR UNIT			INDOOR UNIT			INDOOR UNIT			INDOOR UNIT				
	SW8	SW7		SW8	SW7		SW8	SW7		SW8	SW7		SW8	SW7
0	0	0	20	1	4	40	2	8	60	3	12	80	5	0
1	0	1	21	1	5	41	2	9	61	3	13	81	5	1
2	0	2	22	1	6	42	2	10	62	3	14	82	5	2
3	0	3	23	1	7	43	2	11	63	3	15	83	5	3
4	0	4	24	1	8	44	2	12	64	4	0	84	5	4
5	0	5	25	1	9	45	2	13	65	4	1	85	5	5
6	0	6	26	1	10	46	2	14	66	4	2	86	5	6
7	0	7	27	1	11	47	2	15	67	4	3	87	5	7
8	0	8	28	1	12	48	3	0	68	4	4	88	5	8
9	0	9	29	1	13	49	3	1	69	4	5	89	5	9
10	0	10	30	1	14	50	3	2	70	4	6	90	5	10
11	0	11	31	1	15	51	3	3	71	4	7	91	5	11
12	0	12	32	2	0	52	3	4	72	4	8	92	5	12
13	0	13	33	2	1	53	3	5	73	4	9	93	5	13
14	0	14	34	2	2	54	3	6	74	4	10	94	5	14
15	0	15	35	2	3	55	3	7	75	4	11	95	5	15
16	1	0	36	2	4	56	3	8	76	4	12	96	6	0
17	1	1	37	2	5	57	3	9	77	4	13	97	6	1
18	1	2	38	2	6	58	3	10	78	4	14	98	6	2
19	1	3	39	2	7	59	3	11	79	4	15	99	6	3

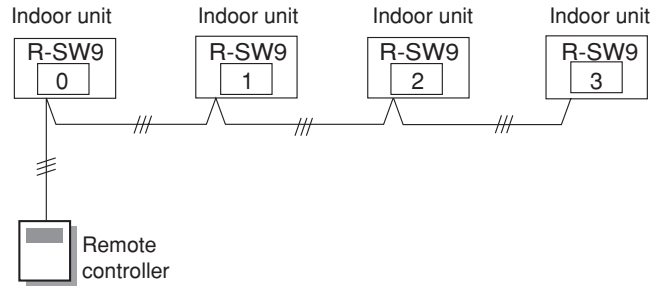
(3) Remote controller address

Rotary switch (SW9) - - - Factory setting "0"

When connecting multiple indoor units to one standard wired remote controller, set the address at SW9 in sequence from 0.

Fig. 12

Example If 4 indoor units are connected.



(4) Model select switch

SW4 should be checked.

Table 8

Capacity	18	14	12	9	7
SW4-1	OFF	ON	OFF	ON	OFF
SW4-2	OFF	ON	ON	OFF	OFF
SW4-3	ON	OFF	OFF	OFF	OFF
SW4-4	OFF	OFF	OFF	OFF	OFF

⚠ CAUTION

Do not set any switches other than those specified in this sheet. The air conditioner may not operate correctly if any switches other than those specified are changed.

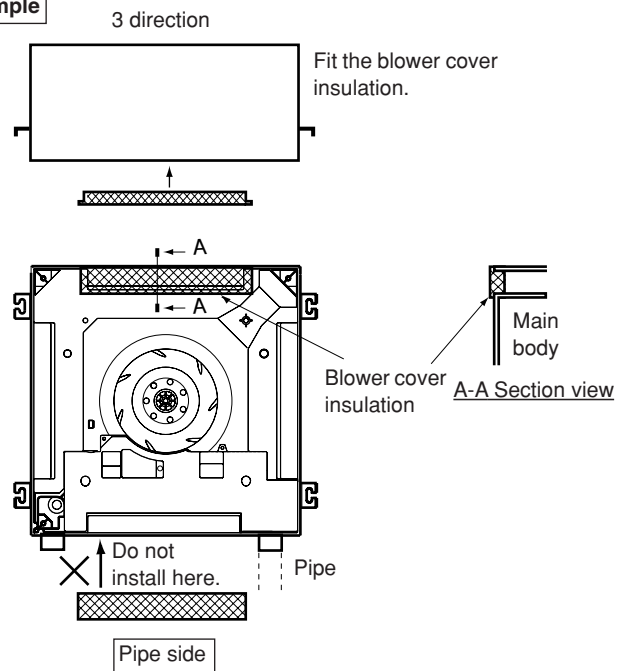
9. GRILLE INSTALLATION

1. INSTALLING BLOWER COVER INSULATION (IN CASE OF 2 OR 3 OUTLET DIRECTION)

- Install the blower cover insulation only when the outlet direction is changed to 2 or 3 direction.
- Two blower cover insulations are packed with the grille assembly.
- Install the blower cover insulation at the diffuser position shown in Fig. 13. At this time, use pipe side as the criteria.

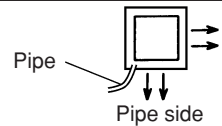
Fig. 13

Example



CAUTION

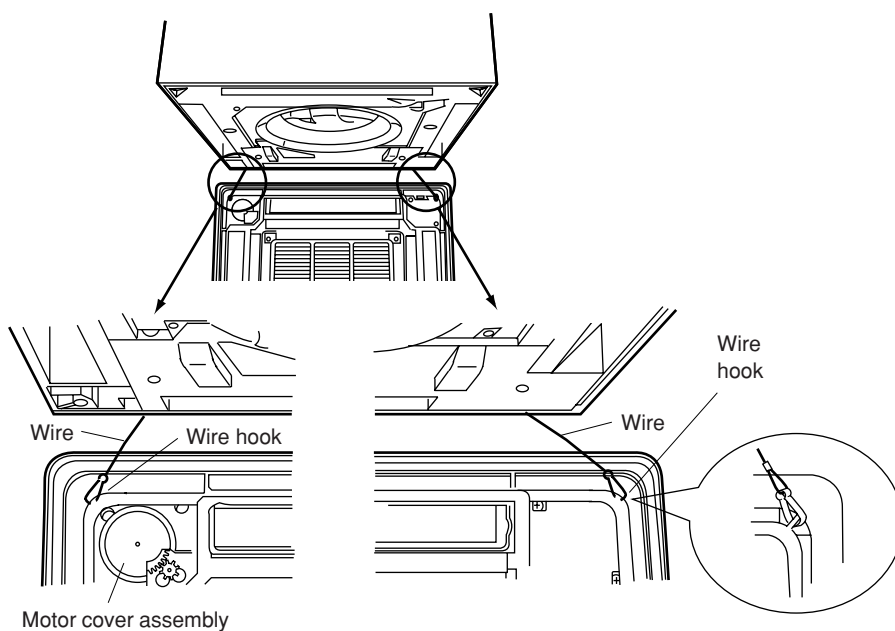
- Do not install the blower cover insulation at the diffuser position on pipe side.
- Do not set the 2-way outlet as shown in the figure to the right. Setting in this manner will cause performance problems.



2. INSTALLING GRILLE ASSEMBLY TO BODY

Hang the grille assembly on the wires attached to the indoor unit as shown in Fig. 14.

Fig. 14



Installing the grille assembly to the body

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

- (1) Lightly tighten the bolts shown in "B" of Fig. 15. Hang the panel.
- (2) Tighten the other bolts.
- (3) Tighten all bolts securely.
- (4) Connect the connector in accordance with part A detail view. (Fig. 16)

Fig. 15

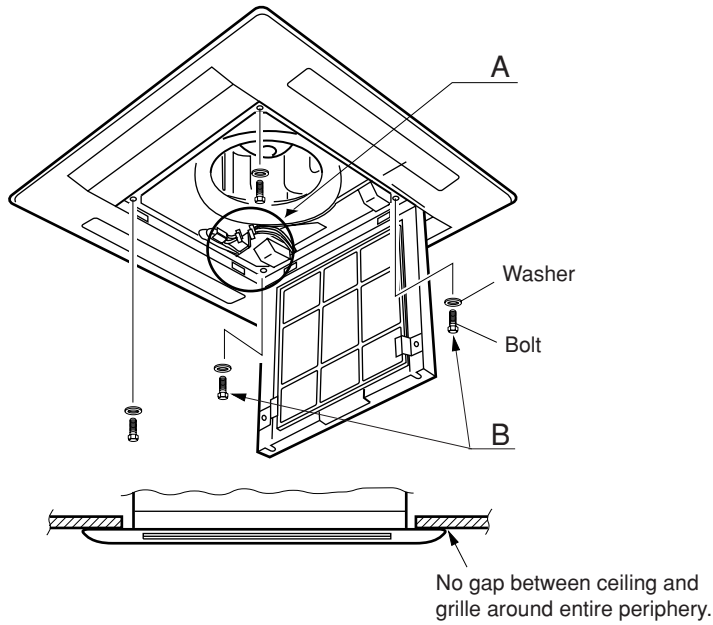
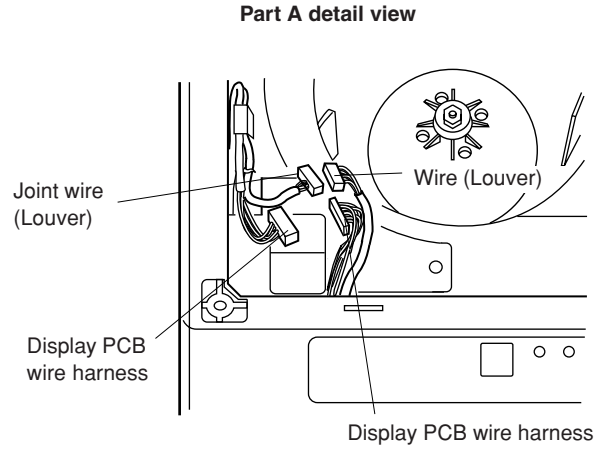


Fig. 16



3. INSTALLING/REMOVING THE INTAKE GRILLE

INSTALLING THE INTAKE GRILLE

- (1) Fully insert the intake grille hooks into the rectangular holes in the panel. (Fig. 17)
- (2) Close the intake grille, then slide the two grille stoppers outward. (Fig. 18)

Fig. 17

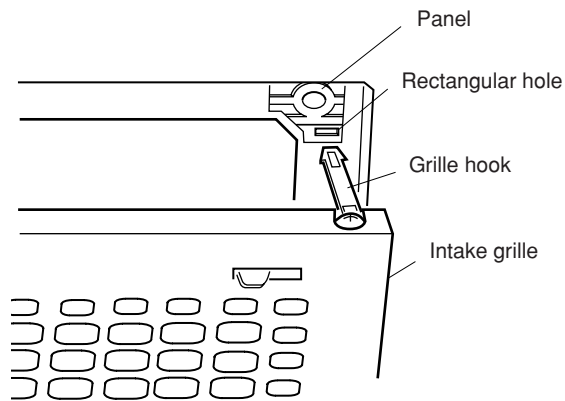
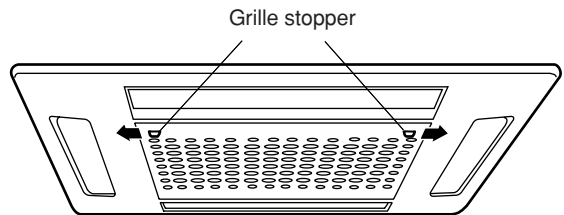


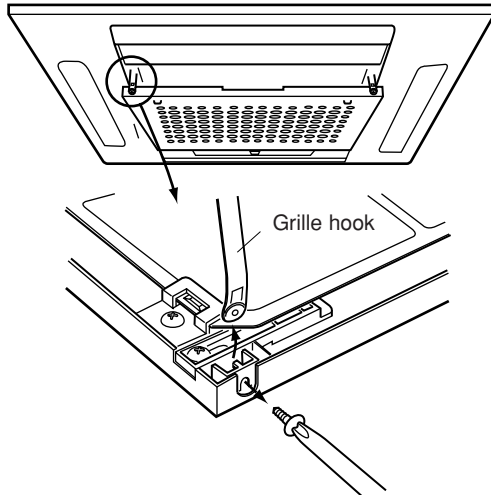
Fig. 18



REMOVING THE INTAKE GRILLE

- (1) Slide the two grille stoppers inward, then open the intake grille.
- (2) Remove the grille hook screws, then open the intake grille. (Fig. 19)
- (3) Open the intake grille so that it is at an angle of 20° to 40°, then remove the grille.

Fig. 19



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.

10. TEST OPERATION

Supply power to the crankcase heater for 12 hours prior to the start of operation in the winter.
The following is the procedure for the test operation.

1. TEST OPERATION USING CIRCUIT BOARD (OUTDOOR UNIT)

Refer to the Installation Instruction Sheet for the outdoor unit if the circuit board for the outdoor unit is to be used for the test operation.

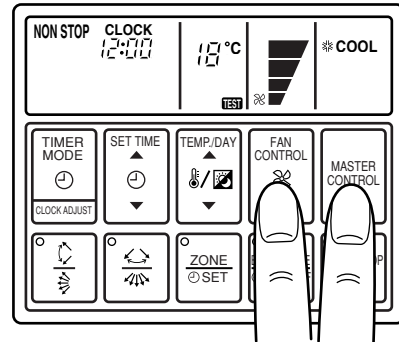
2. TEST OPERATION USING REMOTE CONTROLLER

(1) Standard wired remote controller

- 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. 20).

Fig. 20



- 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. In addition, the remote controller address will be displayed below. When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation (Fig. 21).

Fig. 21

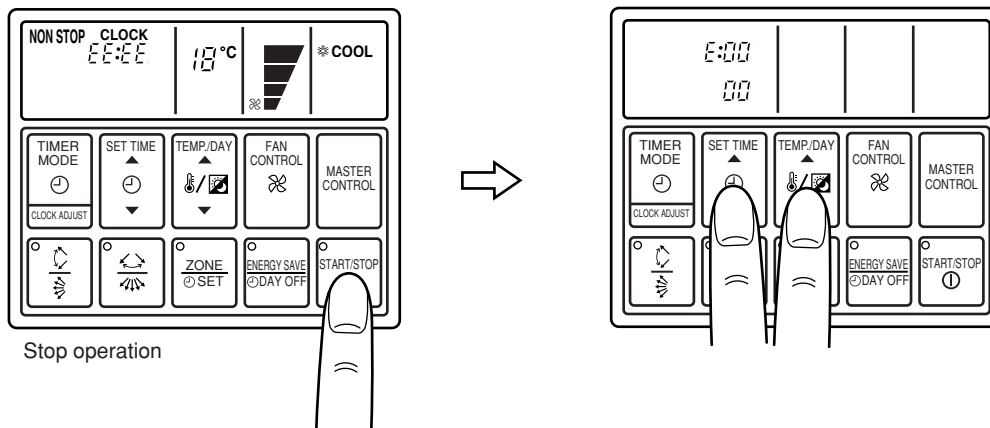


Table 9

Error code	Error contents
E:00	No error
E:02	Model information abnormal
E:04	Power supply frequency abnormal
E:06	EEPROM access error
E:07	EEPROM deletion error
E:09	Room temperature thermistor error
E:0A	Indoor unit heat exchanger thermistor (middle) error
E:0B	Indoor unit heat exchanger thermistor (inlet) error
E:0C	Indoor unit heat exchanger thermistor (outlet) error

Error code	Error contents
E:0D	Blower temperature thermistor error
E:11	Drain abnormal
E:12	Room temperature abnormal
E:13	Indoor unit fan error
E:1F	Transmission error
E:20	Node setting error
E:21	Parallel communication error
E:32	Outdoor unit error

- 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.

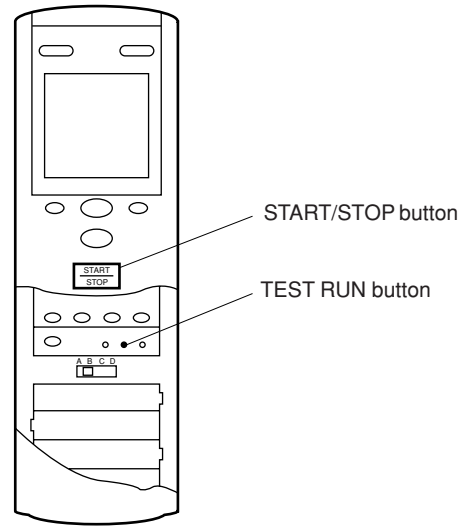
(2) Standard wireless remote controller

- Press the remote control unit test run button while the air conditioner is running.
- At the end of test running, press the remote control unit start-stop button (Fig. 22).

Operation can be checked by lighting and flashing of the display section OPERATION and TIMER lamps.

Perform judgement in accordance with the following.

Fig. 22



11. AN ERROR DISPLAY

- (1) Run the air conditioner in accordance with the operating manual.
- (2) Operation can be checked by lighting and flashing of the grille display section OPERATION and TIMER lamps.
- (3) 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 10) according to the error contents.

Fig. 23

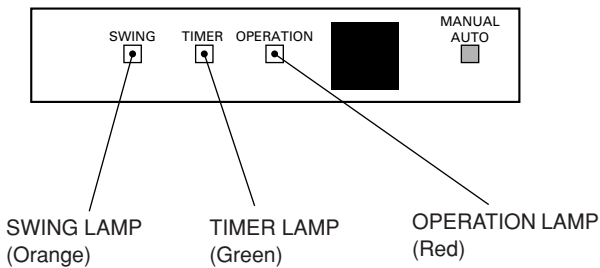


Table 10

Error display			Error contents
OPERATION lamp	TIMER lamp	VERTICAL SWING lamp	
Blinks	Blinks	Goes off	Model information abnormal
Blinks	Blinks	Blinks	Power supply frequency abnormal
Pulses 2times	Blinks	Goes off	Room temperature thermistor error
Pulses 3times	Blinks	Pulses 1time	Indoor unit heat exchanger thermistor (inlet) error
Pulses 3times	Blinks	Pulses 2times	Indoor unit heat exchanger thermistor (middle) error
Pulses 3times	Blinks	Pulses 3times	Indoor unit heat exchanger thermistor (outlet) error
Pulses 4times	Blinks	Goes off	Drain abnormal
Pulses 5times	Blinks	Pulses 1time	Communication error (Indoor unit ↔ remote controller)
Pulses 5times	Blinks	Pulses 2times	Microcomputer error
Pulses 6times	Blinks	Goes off	Indoor unit fan error
Pulses 7times	Blinks	Goes off	Blower temperature thermistor error
Blinks	Pulses 3times	Pulses 3times	Outdoor unit error
Blinks	Pulses 4times	Pulses 1time	EEPOM access error
Blinks	Pulses 4times	Pulses 2times	EEPROM deletion error
Blinks	Pulses 5times	Pulses 1time	Transmission error
Blinks	Pulses 5times	Pulses 2times	Node setting error
Blinks	Pulses 6times	Goes off	Parallel communication error
Blinks	Pulses 7times	Goes off	Room temperature abnormal