## **R410A** SPLIT TYPE ROOM AIR CONDITIONER **INSTALLATION INSTRUCTION**

## (PART NO. 9372571019)

	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 properly.

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Th	is als conditioner uses now refrigerant MEC (P410A)

ne passic installation work procedures are the same as conventional reingerant (N22) models.  owever, pay careful attention to the following points:
Since the working pressure is 1.6 tiese higher than that of conventional retrigerant (R22) models, some of the piping an installation and service locks are special. (See the tables below.)  Especially, when replacing a conventional retrigerant (R22) model with a new retrigerant R410.4 model, always replace to conventional principa and flare note.

	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other
Gauge manifold	refrigerants, the diameter of each port has been changed.
Gange mannon	It is recommended the gauge with seals =0.1 to 5.3 MPs (=76 cmHg to 53 kgflcm²) for high pressure.
	-0.1 to 3.8 MPa (-76 cmHg to 38 kgflcm*) for low pressure.
Charge hose	To increase pressure resistance, the hose material and base size were changed.
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter.
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A.

Copper pipes	
It in ecosists by 5 uses assentises copper pipes and it is desirable that the amount in estimated in Its less than 40 mg/tim. Do not use copper pipes having a col- apped, deformed or discoblend portion (especially on the Interior surface). Oth- realise, the expansion value or capillary tube may become blocked with con- minisants.	
is an air conditioner using R493A incurs pressure higher than when using 222, it is necessary to choose adequate materials. Thicknesses of copper pipes used with R440A are as shown in Tablet. Never are copper pipes thinner than 0.8 mm (Normal diameter is 1/4 in., 3/6 in.).	



(1)	For the room air conditioner to operate satisfactority, install it as outlined in this installation instruction sheet.
(2)	Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards 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.

## SELECTING THE MOUNTING POSITION

Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will no topple or fall.
A





## STANDARD ACCESSORIES

The following installation accessories are supplied. Use them as required INDOOR UNIT ACCESSORIES						
Name and Shape	Qty	Lb llee				
	1	For indoor unit installation				
Remote control unit	1	Use for air conditioner operation				
Battery (persigns)	2	For remote control unit				
Remote control unit holder	1	Use as remote control unit holder				
Tapping screw (big) (a4 × 20)	12	For wall hook bracket installation				
Tapping screw (small) (eG × 12)	2	For remote control unit holder installation				

OUTDOOR UNIT ACCESSORIES					
Drain pipe	<b>E</b>	1	For outdoor unit drain pip work (Heat & Cool model		
rain cap	8	1	(Reverse cycle) only]		







## INSTALLATION PROCEDURE

1 INDOOR UNIT INSTALLATION

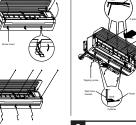




































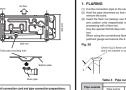
















## **VACUUM PROCESS**

**⚠** CAUTION

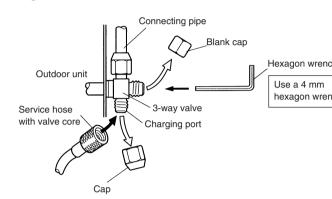
(1) Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

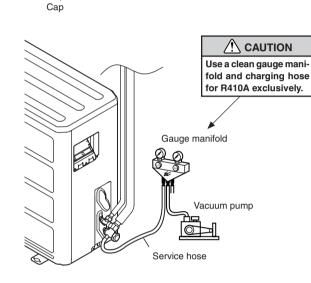
(2) Use a vacuum pump for R410A exclusively. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.

- (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 -0.1 MPa (-76 cmHg). (3) When -0.1 MPa (-76 cmHg) is reached, operate the vacuum pump for at least 15 minutes.
- (4) Disconnect the service hoses and fit the cap to the charging valve to the specified torque
- (5) Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench (Torque: 6 to 7 N · m (60 to 70
- (6) Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque.

	Tightening torque
Blank cap (2-way valve)	20 to 25 N $\cdot$ m (200 to 250 kgf $\cdot$ cm)
Blank cap (3-way valve)	30 to 35 N $\cdot$ m (300 to 350 kgf $\cdot$ cm)
Charging port cap	10 to 12 N · m (100 to 120 kgf · cm)

## Fig. 30





## 2. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 7.5 m is charged in the outdoor unit at the factory. When the piping is longer than 7.5 m, additional charging is necessary. For the additional amount, see the table below.

Additional refrigerant	Pipe length	7.5 m (25 ft)	10 m (33 ft)	15 m (49 ft)	20 m (66 ft)	g/m (oz/ft)
Cooling model	18,000 BTU/h class 24,000 BTU/h class	None	50 g (1.8 oz)	150 g (5.3 oz)	250 g (8.9 oz)	20 g/m (0.71 oz/3.3 ft)
Heat & Cool model	18,000 BTU/h class	None	50 g (1.8 oz)	150 g (5.3 oz)	250 g (8.9 oz)	20 g/m (0.71 oz/3.3 ft)
(Reverse cycle)	24,000 BTU/h class	None	100 g (3.5 oz)	300 g (10.6 oz)	500 g (17.7 oz)	40 g/m (1.41 oz/3.3 ft)

## **CAUTION**

- (1) When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R410A) inside the refrigerant cycle.
- (2) When charging the refrigerant R410A, 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) If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

## 3. GAS LEAKAGE INSPECTION

## **CAUTION**

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

## **ELECTRICAL WIRING**

**⚠ WARNING** (1) Before starting work, check that power is not being supplied to indoor unit and the outdoor unit.

) Match the terminal block numbers and connection cord colors of the indoor unit and the outdoor unit. Erroneous wiring may cause burning of the electric parts. (3) Connect the connection cords firmly to the terminal

block. 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,

(5) Always connect the ground wire.

electric leakage may occur.)

## **HOW TO CONNECT WIRING** TO THE TERMINALS

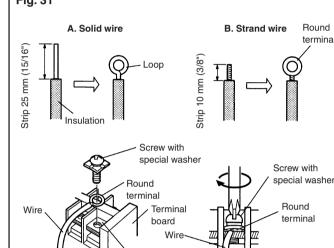
## A. For solid core wiring (or F-cable)

- (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. Using a screwdriver, remove the terminal screw(s) on the terminal
- 3) Using pliers, bend the solid wire to form a loop suitable for the 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

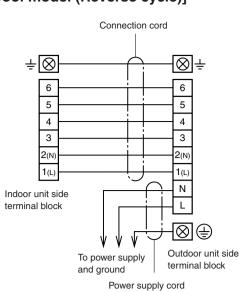
- ) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") to expose the strand wiring. 2) Using a screwdriver, remove the terminal screw(s) on the terminal
- 3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped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

# minal screw using a screwdriver.

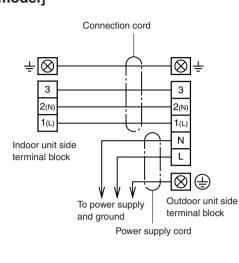


## 1. CONNECTION DIAGRAM

## Fig. 32 [Heat & Cool model (Reverse cycle)]

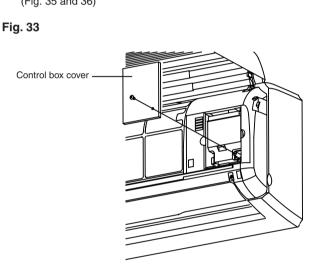


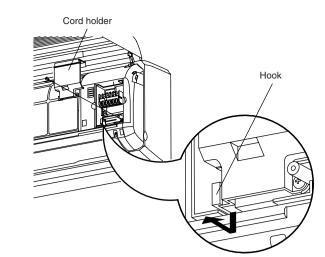
## [Cooling model]



## 2. INDOOR UNIT SIDE

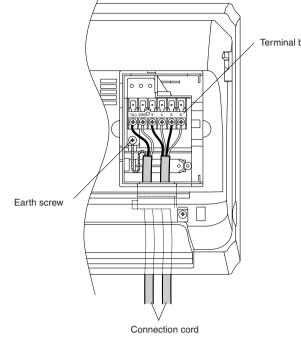
- (1) Open the intake grille. Remove the tapping screw for the control box cover and remove the control box cover. (Fig. 33) (2) Remove the tapping screw and while minding the cord holder hook,
- remove the cord holder. (Fig. 34) (3) Connect the end of the connection cord fully into the terminal block. (Fig. 35 and 36)

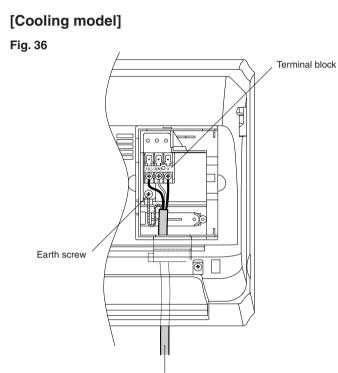




## [Heat & Cool model (Reverse cycle)]

Fig. 34



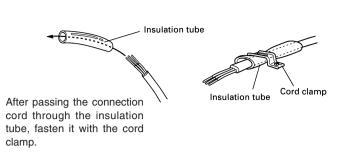


## 3. OUTDOOR UNIT SIDE

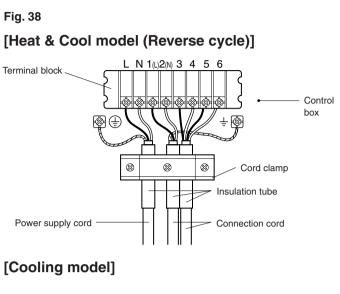
## **CAUTION** Use VW-1, 12 mm diameter, 0.5 to 1.0 mm thick, connection PVC tube as the insulation tube.

(1) Process the end of the connection cords to the dimensions shown in (2) Connect the end of the connection cord fully into the terminal block

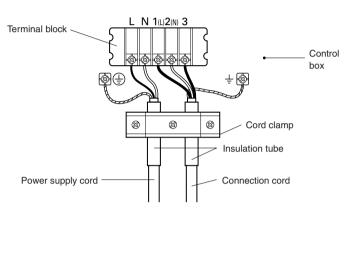
and fasten with the screws. (3) Fasten the sheath with a cord clamp. (Fig. 37) (4) Install the terminal cover. (Fig. 39)



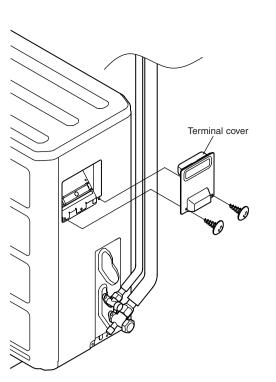
# Fig. 38



## [Cooling model]



# Fig. 39



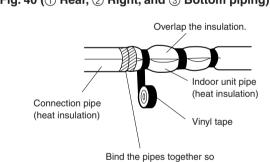
## 1. CONNECTION PIPE, CORD AND DRAIN HOSE

(1) Insulate between pipes.

• For ① Rear, ② Right, and ③ Bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap. (Fig. 40) • For 4 Left rear and 5 Left piping, butt the connection pipe heat insulation and indoor unit pipe heat insulation together and bind them with vinyl tape so that there is no gap. (Fig. 41)

**FINISHING** 

Fig. 40 (① Rear, ② Right, and ③ Bottom piping)

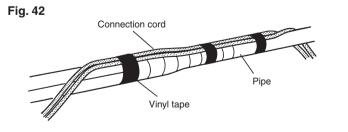


that there is no gap.

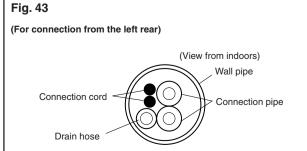
• For 4 Left rear piping, 6 Left piping and 6 Center piping, wrap the area which accommodates the rear piping housing section with cloth

# Fig. 41 (4) Left rear piping, 6) Left piping and 6) Center piping)

• For 4 Left rear piping, 5 Left piping and 6 Center piping bind the connection cord to the top of the pipe with vinyl tape.

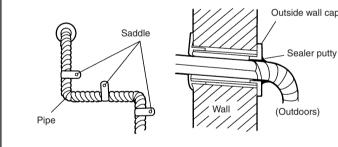


## • When connected from the left rear, the drain hose is at the bottom left of the wall pipe.

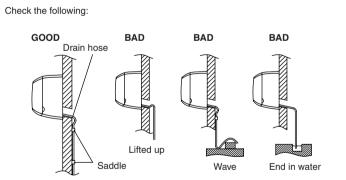


# bottom of the pipe so that water does not enter.)

(3) Fasten the connection pipe to the outside wall with a saddle, etc. 4) Fill the gap between the outside wall pipe hole and the pipe wit

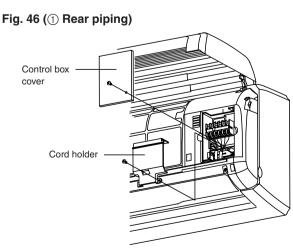


## Fig. 45



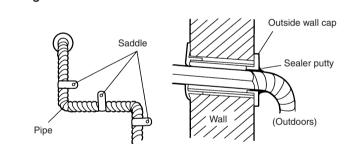
## 2. INSTALLING FINAL PARTS

(1) Secure the cord holder with tapping screw. (Fig. 46) (2) Secure the control box cover and tapping screw. (Fig. 46) (3) Close the intake grille. (Fig. 47)

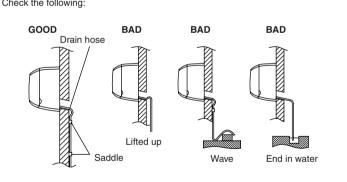


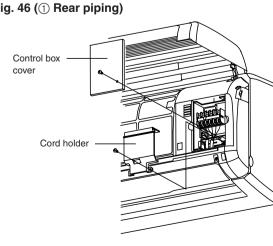
(2) Temporarily fasten the connection cord along the connection pipe with vinyl tape. (Wrap to about 1/3 the width of the tape from the

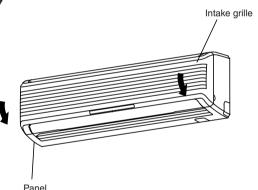
sealer so that rain water and wind cannot blow in.



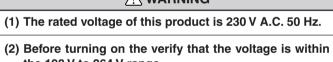
(5) Fasten the drain hose to the outside wall, etc.







Check that: • The top and bottom hooks are hooked firmly and the indoor unit does not move to the front and rear or left and right. • The indoor unit is accurately positioned horizontally and vertically.



(4) Use a circuit breaker matched to the capacity of the room air conditioner. (Install in accordance with stand-

mm between the contacts of each pole. (6) Perform wiring work in accordance with standards so

that the room air conditioner can be operated safely and positively. (7) Install a leakage circuit breaker in accordance with the related laws and regulations and electric company

## **⚠** CAUTION

is insufficient, change the contracted capacity.

(2) When the voltage is low and the air conditioner is diffi-

cult to start, contact the power company the voltage

# **POWER**

# **!**\ WARNING

the 198 V to 264 V range. (3) Always use a special branch circuit and install a spe-

cial breaker to supply power to the room air conditioner.

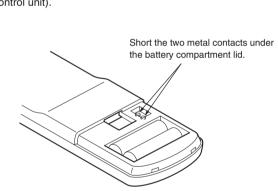
(5) The circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all the poles of the wiring and has an isolation distance of at least 3

(1) The power source capacity must be the sum of the room air conditioner current and the current of other electrical appliances. When the current contracted capacity

## Perform test operation and check items 1 and 2 below.

operation (use a metallic object to short the two metal contacts under the battery compartment lid and send the 'TEST RUN' signal from the

Fig. 48



OPERATION and TIMER lamps.

Test running

ble 8) according to the error contents.

_	Error display				
Error contents	OPERATION (RED)	TIMER (GREEN)	SWING (ORANGE)		
Indoor unit circuit board error	0	0	_		
Indoor unit room temperature sensor wire opened	2 times	0	_		
Indoor unit room temperature sensor wire short circuited	2 times	0	0		
Indoor unit piping sensor wire opened	3 times	0	_		
Indoor unit piping sensor short circuited	3 times	0	0		
Indoor unit fan error	6 times	0	_		

(1) Is operation of each button on the remote control unit normal? (2) Does each lamp light normally? (3) Do not air flow direction louvers operate normally?

○ : Fast flashing● : Slow flashing— : Off

- (1) Is there any abnormal noise and vibration during operation? (2) Will noise, wind, or drain water from the unit disturb the neighbors? (3) Is there any gas leakage?
- operation check.

## **TEST RUNNING**

- The outdoor unit may not run, depending on the room temperature. In this case, the 'TEST RUN' signal is received during air conditioner

Operation can be checked by lighting and flashing of the display section

Table 8

Error contents	Error display		
	OPERATION (RED)	TIMER (GREEN)	SWING (ORANGE)
door unit circuit board error	0	0	_
door unit room temperature sensor re opened	2 times	0	_
door unit room temperature sensor re short circuited	2 times	0	0
door unit piping sensor wire opened	3 times	0	_
door unit piping sensor short circuited	3 times	0	0
door unit fan error	6 times	0	_

## **CHECK ITEMS**

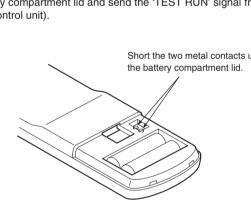
## (1) INDOOR UNIT

- (4) Is the drain normal? (5) Is there any abnormal noise and vibration during operation? (2) OUTDOOR UNIT
- Do not operate the air conditioner in the test running state for a long • For the operation method, refer to the operating manual and perform

Connection cord

• For the operation method, refer to the operating manual.

remote control unit).

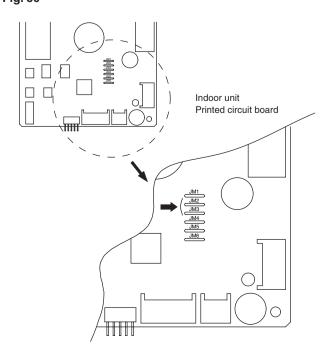


Perform judgement in accordance with the following.

When the air conditioner is run by pressing the remote control unit test run button, the OPERATION and TIMER lamps flash slowly at

The OPERATION, TIMER and SWING lamps operate as follows (Ta-

Remote contr holder fixing		Remote contrunit mounting
Remote control unit holder	② Push Remote control unit	



# (1) Press the START/STOP button and display only the clock.

Fig. 51

## **↑** CAUTION (1) Check that the indoor unit correctly receives the sig-

nal from the remote control unit, then install the remote control unit holder. (2) Select the remote control unit holder selection site by paying careful attention to the following: Avoid places in direct sunlight.

**REMOTE CONTROL UNIT** 

**INSTALLATION** 

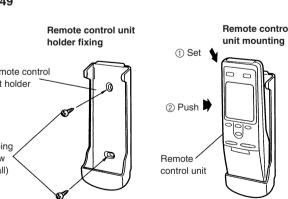
## a stove, etc. 1. REMOTE CONTROL UNIT HOLDER INSTALLA-

Select a place that will not be affected by the heat from

• Install the remote control unit with a distance of 7 m between the remote control unit and the photocell as the criteria. However, when installing the remote control unit, check that it operates positively.

• Install the remote control unit holder to a wall, pillar, etc. with the tap-

# ping screw (Fig. 49).



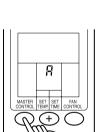
# 2. SWITCHING REMOTE CONTROL UNIT SIGNAL

• Air conditioner settings

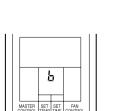
## Remote control unit settings



(2) Press the MASTER CONTROL button continuously for more than five seconds to display the current signal code.



(3) Change the signal code with the  $\bigcirc$  /  $\bigcirc$  button ( $\nearrow$   $\rightarrow$   $\bigcirc$   $\rightarrow$   $\bigcirc$   $\bigcirc$ ).



- (4) Press the MASTER CONTROL button again to return to the clock display and change the signal code.
- Confirm the setting of the remote control unit signal code and the printed If these are not confirmed, the remote control unit cannot be used to operate for the air conditioner.

Remote control unit signal code

A (Primary setting)

## Connect Disconnect Disconnect Disconnect

Connect

Connect

Jumper wire

Connect

Disconnect

# **CUSTOMER GUIDANCE**

Explain the following to the customer in accordance with the operating

(1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote control unit op-

(2) Air filter removal and cleaning, and how to use the air louvers. (3) Give the operating manual and installation instruction sheet to the

(4) If the signal code is changed, explain to the customer how it changed (the system returns to signal code A when the batteries in the remote control unit are replaced).